

# WEEKLY ELECTRICITY MARKET ANALYSIS



AUSTRALIAN ENERGY  
REGULATOR

24 June - 30 June 2012

## Spot market prices

South Australia recorded a weekly average spot price of \$10/MWh (the second lowest on record for that region) as a result of 24 negative spot prices, all lower than -\$100/MWh (with 15 below -\$600/MWh). These low prices resulted from rebidding by AGL in both the energy and FCAS markets. The lowest-ever weekly average price on South Australia occurred on the week ending 9 October 2010 also as a result of rebidding by AGL.

Figure 1 sets out the volume weighted average (VWA) prices for the week 24 June to 30 June and the 11/12 financial year across the NEM. It compares these prices with price outcomes from the previous week and year respectively.

**Figure 1: Volume weighted average spot price by region (\$/MWh)**

	Qld	NSW	VIC	SA	Tas
Average price for 24 June – 30 June 2012	39	39	41	10	36
% change from previous week*	8	3	3	-74	-1
11/12 financial	30	31	28	32	33
% change from 10/11 financial **	-11	-29	-3	-24	6

\*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 2 July 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	57*	2%	61*	3%	59*	7%	60*	4%
Calendar Year 2014	53	3%	57	4%	53*	7%	54	0%
Calendar Year 2015	57	-8%	53	-4%	53	-11%	69	0%
Three year average	55	-2%	57	1%	55	0%	61	1%

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)**

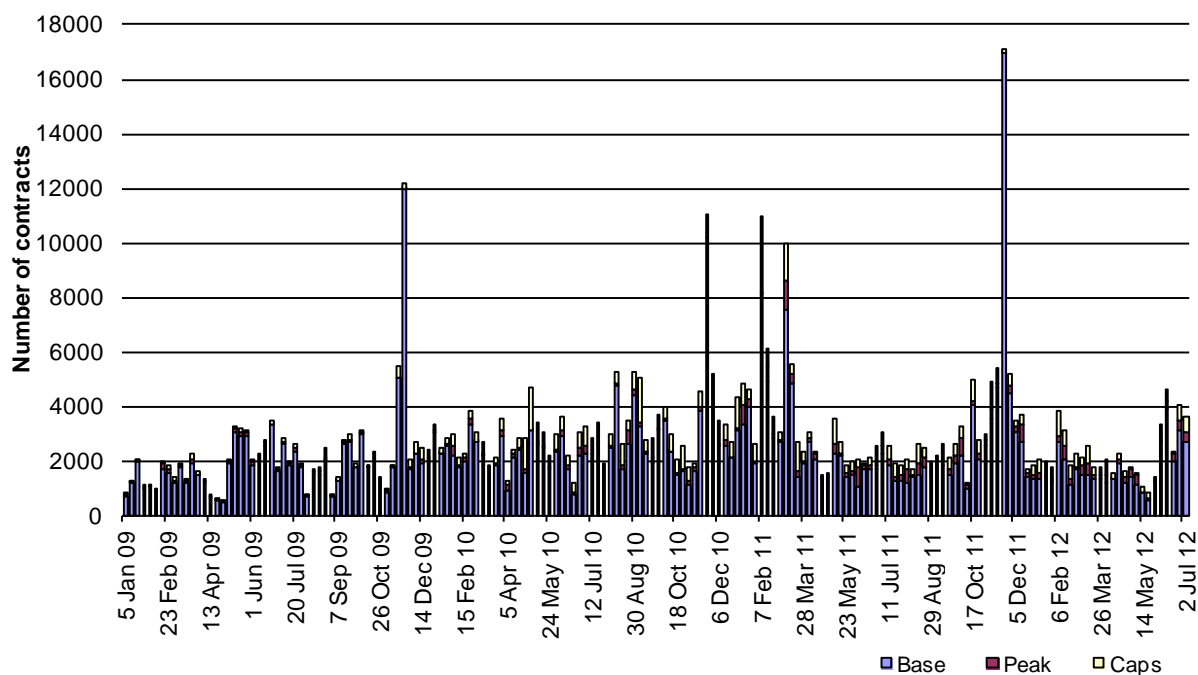
	QLD		NSW		VIC		SA	
Q1 2013 (% change)	15*	7%	15*	6%	16*	12%	22	0%
2013 (% change)	7	3%	8	1%	6	7%	9	0%

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**

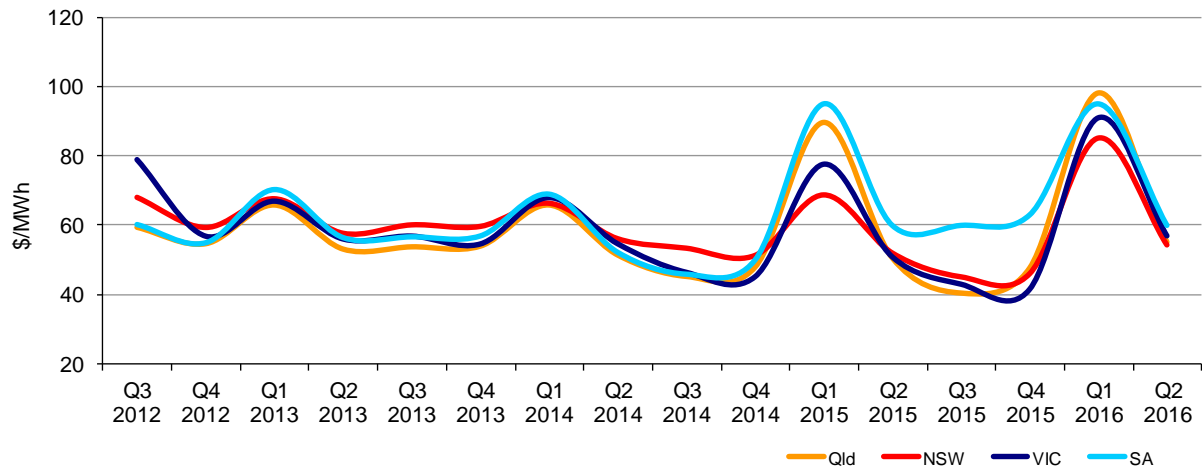


Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

<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.

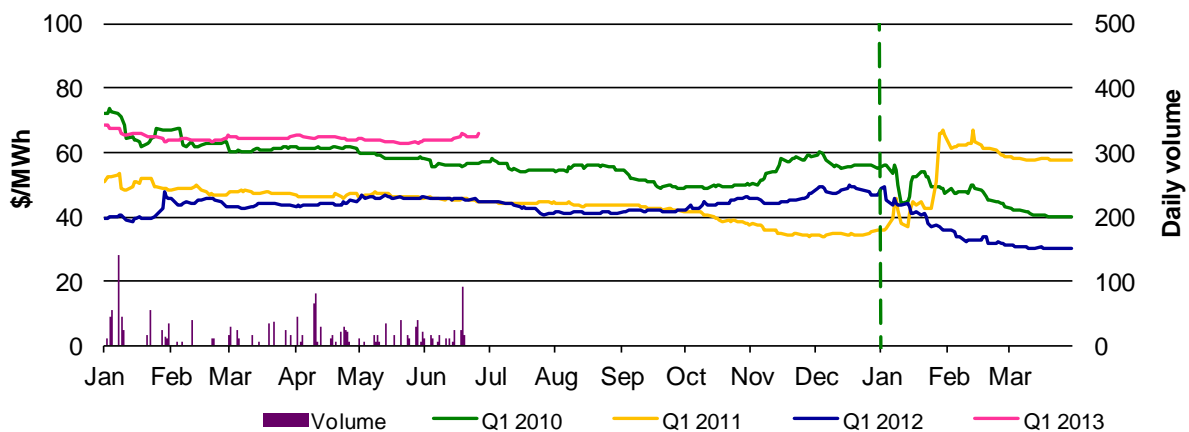
**Figure 5: Quarterly base future prices Q3 2012 – Q2 2016**



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

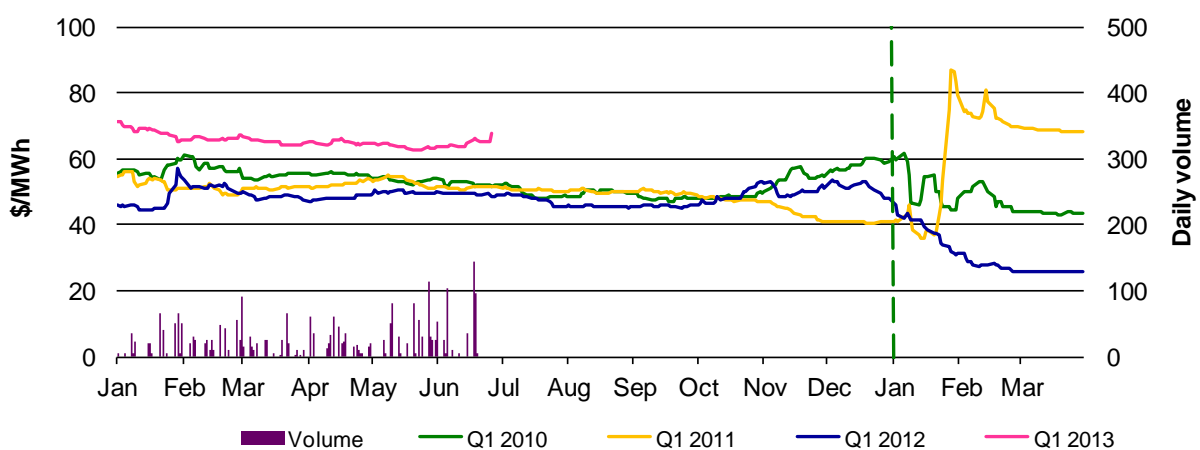
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2010, 2011, 2012 and 2013. Also shown is the daily volume of Q1 2013 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.

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



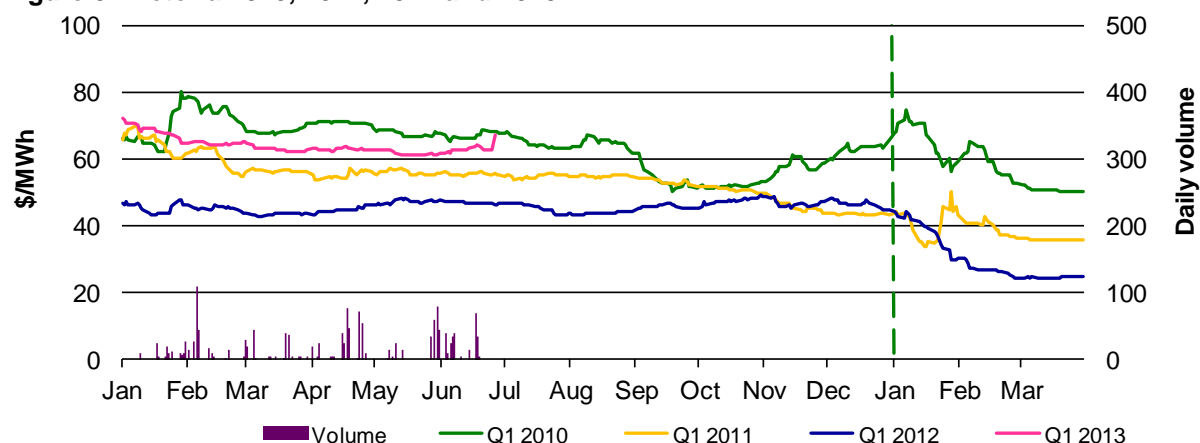
Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

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



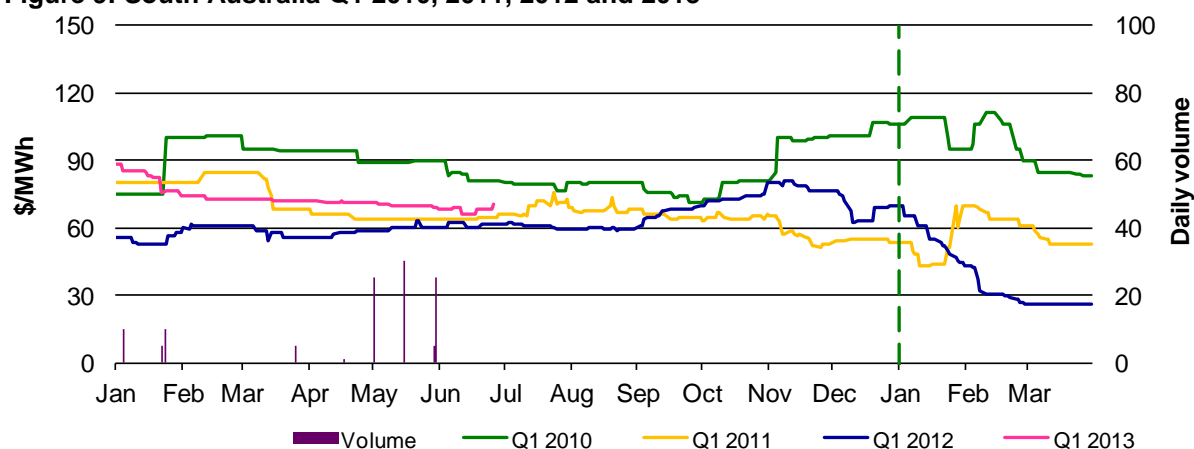
Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

**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 84 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	3	10	0	2
% of total below forecast	43	32	0	10

<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 13 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	13	-307	650	293
NSW	-24	109	-284	87
VIC	106	-500	158	-97
SA	-21	-268	-3	-21
TAS	84	11	70	24
<b>TOTAL</b>	<b>158</b>	<b>-955</b>	<b>591</b>	<b>286</b>

## Ancillary services market

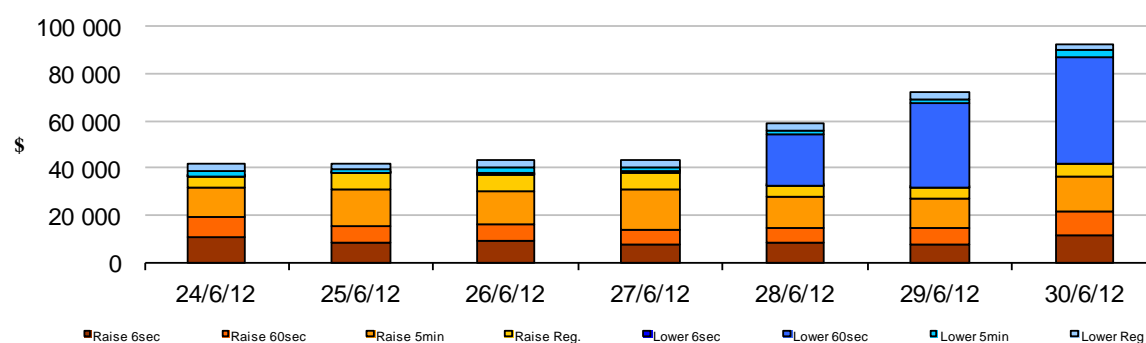
The total cost of frequency control ancillary services (FCAS) on the mainland for the week was \$341 000 or less than one per cent of energy turnover on the mainland.

Around \$100 000 in local lower 60 second FCAS accrued in South Australia in the latter half of the week as a result of the outage of a Heywood transformer in Victoria and rebidding by AGL (see Appendix A for details).

The total cost of FCAS in Tasmania for the week was \$53 000 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 July 2012

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

24 June – 30 June 2012

There were 24 occasions where the spot price in South Australia was below -\$100/MWh.

**Thursday, 28 June**

<b>3.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-299.22	17.14	-28.37
Demand (MW)	1169	1166	1089
Available capacity (MW)	3066	3025	3051
<b>4 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-930.26	16.84	-28.37
Demand (MW)	1123	1122	1054
Available capacity (MW)	2784	2966	3036
<b>4.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-919.38	16.09	-28.37
Demand (MW)	1099	1095	1032
Available capacity (MW)	2685	2993	3041
<b>5 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-631.21	14.84	-28.37
Demand (MW)	1132	1087	1027
Available capacity (MW)	2776	3000	3069
<b>5.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-759.75	13.81	-43.65
Demand (MW)	1137	1085	1032
Available capacity (MW)	2765	3021	3088
<b>6 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-488.89	3.04	-28.37
Demand (MW)	1197	1126	1069
Available capacity (MW)	2806	3064	3106
<b>6.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-287.53	19.75	-28.37
Demand (MW)	1249	1181	1134
Available capacity (MW)	2801	3064	3128

Conditions at the time saw demand close to forecast. Available capacity was up to 308 MW lower than that forecast four hours ahead. This was all related to reductions in output from semi-scheduled wind generation as a result of network constraints or as a result of regional prices lower than their offer price, which is reported as a reduction in available capacity.

During the low price period around 1700 MW of capacity priced below zero was offered into the market. Wind generation was at around 860 MW before the onset of the negative prices.

At 3.19 am, effective from 3.25 am to 4 am, AGL rebid 380 MW of capacity for energy at Torrens Island from prices between \$45/MWh and \$60/MWh to close to the price floor. This rebid also shifted 70 MW of lower 60 second frequency control ancillary services (FCAS) at Torrens Island from \$100/MW to \$1010/MW. The reason given was “03:15A chg in dispatch::price decrease vs pd sa - \$0 price”. At 3.25 am the price for energy fell from zero to -\$920/MWh and the price of lower 60 second FCAS increased from \$20/MW to \$943/MW.

At 3.28 am AGL extended the 3.19 am rebid until 6.30 am. The five-minute dispatch price for energy reached close to the price floor (set by AGL) and the lower 60 second FCAS price reached around \$950/MW for a further 27 dispatch intervals until 6.15 am when a small increase in demand saw the price rise to \$20/MWh.

The low prices caused up to 285 MW of wind generation to be dispatched down because their offer prices were higher than the actual price. The reduced wind generation output from Clements Gap, Snowtown and Waterloo wind farms (in the mid north) caused a network constraint managing loading on a Robertstown transformer to bind. This in turn reduced export capability across Murraylink to Victoria from 158 MW at 3.20 am to 104 MW at 3.25 am, and constrained off wind generation at Bluff, Hallett and North Brown Hill Creek by up to a further 160 MW.

A planned outage (from 27 June to 1 July) of a Heywood transformer led to the requirement for local lower FCAS during exports from South Australia to Victoria. However, the -\$1000/MWh energy price meant that two of the usual providers of this service (Northern Power Station and Pelican Point) were able to provide only 0 MW and 2 MW of this service, respectively. As a consequence there was only limited availability of this service, predominately from Torrens Island at high prices, so maximum exports to Victoria were limited to around 50 MW.

There was no other significant rebidding.

### Friday, 29 June

<b>4 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-808.27	-28.37	-86.94
Demand (MW)	1107	1039	1027
Available capacity (MW)	2900	3211	3196
<b>4.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-624.58	-1.01	-86.94
Demand (MW)	1101	1017	1013
Available capacity (MW)	2823	3201	3202
<b>5 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-770.68	-1.01	-86.94
Demand (MW)	1096	1024	1009
Available capacity (MW)	2790	3196	3192
<b>5.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>

Price (\$/MWh)	-482.00	-1.01	-86.94
Demand (MW)	1108	1040	1029
Available capacity (MW)	2808	3181	3182
<b>6 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-917.07	.00	-86.94
Demand (MW)	1135	1073	1072
Available capacity (MW)	2862	3166	3169
<b>6.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-307.33	17.25	-43.65
Demand (MW)	1217	1121	1122
Available capacity (MW)	2878	3177	3160

Price outcomes on this day were driven by similar bidding by AGL in both energy and FCAS as occurred on 28 June during the continuing planned outage of equipment affecting the Heywood interconnector.

### Saturday, 30 June

<b>3 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-709.25	3.04	-43.65
Demand (MW)	1143	1114	1085
Available capacity (MW)	2895	3160	3222
<b>3.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-934.99	3.04	-43.65
Demand (MW)	1084	1084	1037
Available capacity (MW)	2780	3143	3212
<b>4 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-779.35	0.00	-86.94
Demand (MW)	1057	1064	1011
Available capacity (MW)	2683	3131	3200
<b>4.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-638.07	.00	-86.94
Demand (MW)	1108	1056	999
Available capacity (MW)	2765	3094	3154
<b>5 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-488.02	.00	-43.65



Demand (MW)	1119	1065	1011
Available capacity (MW)	2715	3082	3143
<b>5.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-764.05	3.04	-43.65
Demand (MW)	1119	1074	1023
Available capacity (MW)	2682	3072	3132
<b>6 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-609.32	13.90	-43.65
Demand (MW)	1150	1085	1045
Available capacity (MW)	2721	3040	3071
<b>6.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-622.42	15.24	.00
Demand (MW)	1160	1112	1064
Available capacity (MW)	2745	3028	3058
<b>7 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-480.65	-986.82	15.29
Demand (MW)	1179	1173	1114
Available capacity (MW)	2729	3021	3043
<b>7.30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-294.82	-905.50	19.75
Demand (MW)	1189	1234	1169
Available capacity (MW)	2729	2964	3043
<b>8 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	-167.12	-76.00	23.99
Demand (MW)	1251	1281	1230
Available capacity (MW)	2739	2906	3044

Price outcomes on this day were driven by similar bidding by AGL in both energy and FCAS as occurred on 28 June during the continuing planned outage of equipment affecting the Heywood interconnector.

# Detailed NEM Price and Demand Trends

for Weekly Market Analysis  
24 June - 30 June 2012



AUSTRALIAN ENERGY  
REGULATOR

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

Financial year	QLD	NSW	VIC	SA	TAS
2011-12 (\$/MWh)	30	31	28	32	33
2010-11 (\$/MWh)	34	43	29	42	31
Change*	-11%	-29%	-3%	-24%	6%
2010-11 (\$/MWh)	34	43	29	42	31

**Table 2: NEM turnover**

Financial year	NEM Turnover** (\$, billion)	Energy (TWh)
2011-12	\$5.987	199
2010-11	\$7.445	204
2009-10	\$9.643	206

**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-12	32	27	27	29	37	0.427
Mar-12	28	26	24	26	36	0.396
Apr-12	30	34	33	30	36	0.457
May-12	26	29	27	30	33	0.434
June-12	35	37	38	31	35	0.619
Q2 2012 (QTD)	30	33	33	30	35	1.600
Q2 2011 (QTD)	26	28	30	32	32	1.452
Change*	15%	19%	8%	-5%	7%	10.15%

**Table 4: ASX energy futures contract prices at end of 2 July 2012**

	QLD		NSW		VIC		SA	
	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Q1 2013								
Price on 25 Jun (\$/MWh)	66	88	66	88	64	87	68	110
Price on 02 Jul (\$/MWh)	66	87	68	88	67	87	70	108
Open interest on 02 Jul	779	88	1073	235	967	78	94	0
Traded in the last week (MW)	91	0	190	0	218	10	10	0
Traded since 1 Jan 12 (MW)	1726	162	2815	213	1822	134	126	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
April 12 with April 11						
MW Priced <\$20/MWh	22	-1904	-128	-53	139	-1924
MW Priced \$20 to \$50/MWh	414	646	-112	234	-151	1031
May 12 with May 11						
MW Priced <\$20/MWh	26	-1367	593	-94	34	-809
MW Priced \$20 to \$50/MWh	38	217	98	177	182	712
June 12 with June 11						
MW Priced <\$20/MWh	-685	-2047	-480	66	13	-3133
MW Priced \$20 to \$50/MWh	238	1100	269	40	168	1814

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

\*\* Estimated value