

WEEKLY ELECTRICITY MARKET ANALYSIS



AUSTRALIAN ENERGY
REGULATOR

10 – 16 January 2010

Summary

On Monday 11 January, extreme temperatures and high demand saw the spot price in Victoria and South Australia exceed \$5000/MWh in six and eight trading intervals, respectively, reaching a maximum of \$9200/MWh and \$9116/MWh. As a result the weekly average spot price for Victoria and South Australia reached \$280/MWh and \$420/MWh, respectively. In accordance with clause 3.13.7 of the Electricity Rules, the AER will issue a separate report into the circumstances that led to the spot price exceeding \$5000/MWh.

The weekly average spot price in other regions ranged from \$29/MWh in Queensland to \$52/MWh in New South Wales.

Spot market prices

Figure 1 sets out the volume weighted average prices for the week 10 January to 16 January 2010 and the financial year to date 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 10 –16 January 2010	29	52	280	420	33
% change from previous week*	16	84	928	134	4
09/10 financial YTD	39	61	37	97	28
% change from 08/09 financial YTD**	2	32	-4	86	-37

*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 to date and the average spot price over the similar period for the previous financial year. Percentage changes are calculated on VWA prices prior to rounding.

The AER provides further information if the spot price exceeds three times the weekly average and is above \$250/MWh. Details of these events are attached in Appendix A. Longer term market trends are attached in Appendix B¹.

Financial markets

Figures 2 to 9 show futures contract² prices traded on the Sydney Futures Exchange (SFE) as at close of trade on Monday 18 January 2010. Figure 2 shows the base futures contract prices

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 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.

for the next three calendar years, and the three year average. Also shown are percentage changes³ compared to the previous week.

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

	QLD		NSW		VIC		SA	
Calendar Year 2010	37	-4%	40	-8%	44	-4%	58	0%
Calendar Year 2011	39*	-4%	43*	-3%	45*	-2%	53	0%
Calendar Year 2012	47	-2%	50	0%	53	0%	69	0%
Three year average	41	-3%	44	-3%	47	-2%	60	0%

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

* denotes trades in the product.

Figure 3 shows the \$300 cap contract price for the first quarter of 2010 and the 2010 calendar year and the percentage change⁴ from the previous week.

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

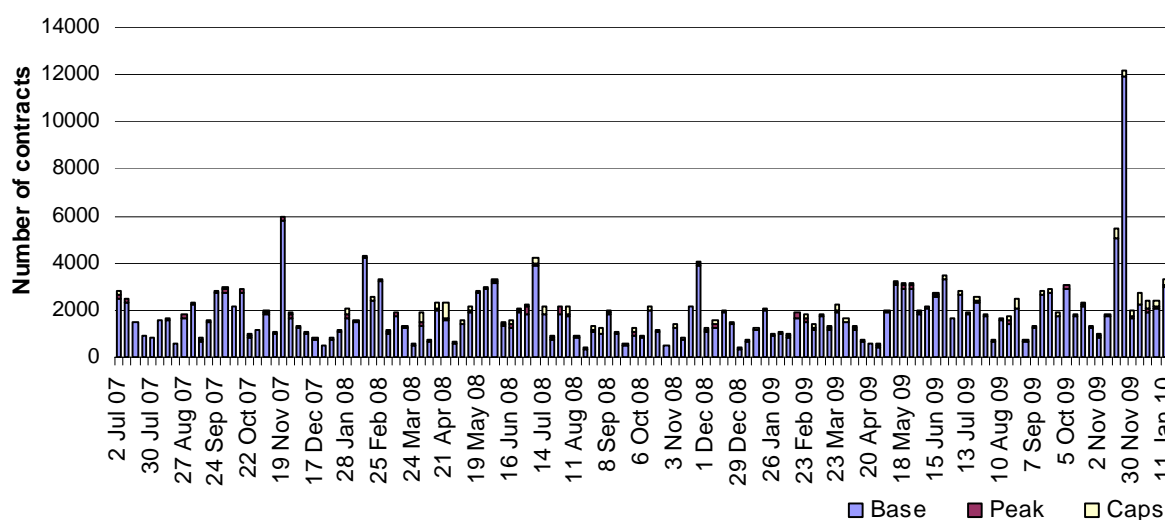
	QLD		NSW		VIC		SA	
Q1 2010 (% Change)	18*	-29%	17*	-41%	39	-11%	61	0%
2010 (% Change)	8	-19%	11	-21%	13	-8%	19	0%

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



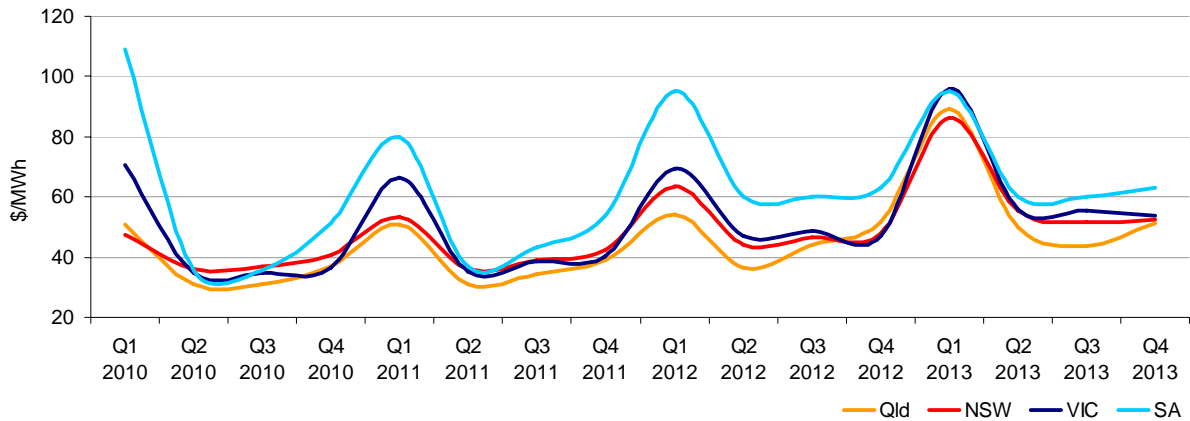
Source: d-cyphaTrade www.d-cyphatrade.com.au

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

³ Calculated on prices prior to rounding.

⁴ Calculated on prices prior to rounding.

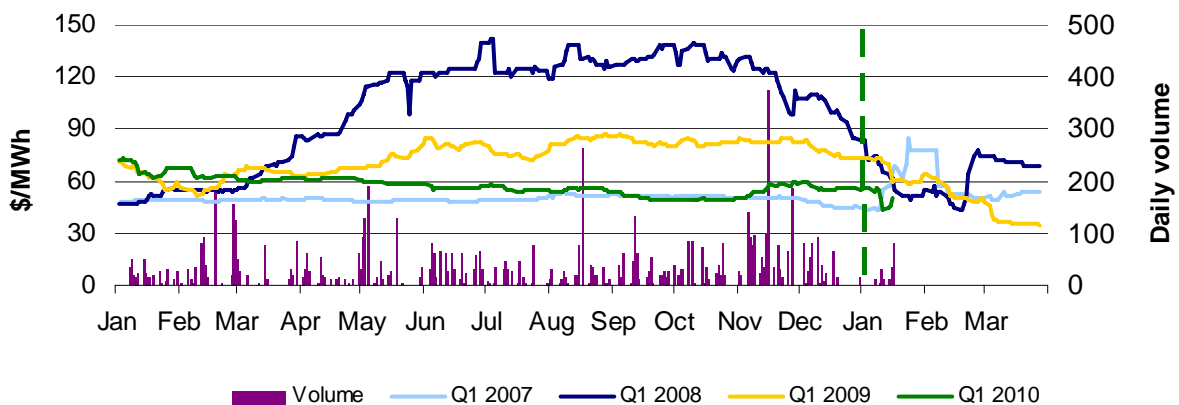
Figure 5: Quarterly base future prices Q1 2010 – Q4 2013



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

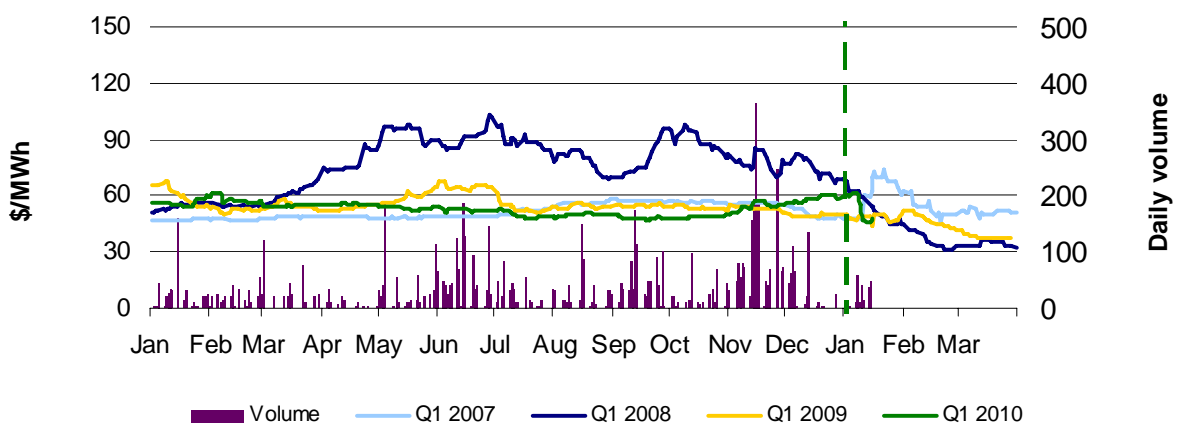
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2007, 2008, 2009 and 2010. Also shown is the daily volume of Q1 2010 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased. To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



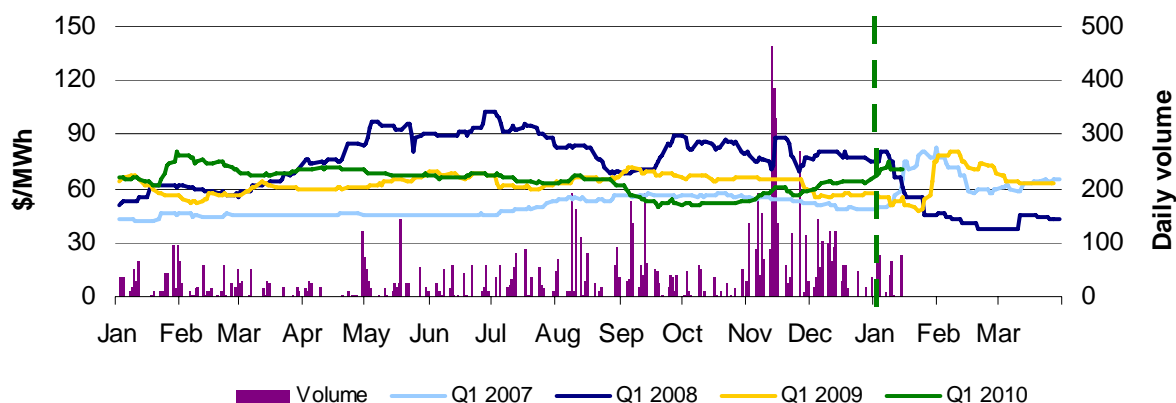
Source: d-cyphaTrade www.d-cyphatrade.com.au

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



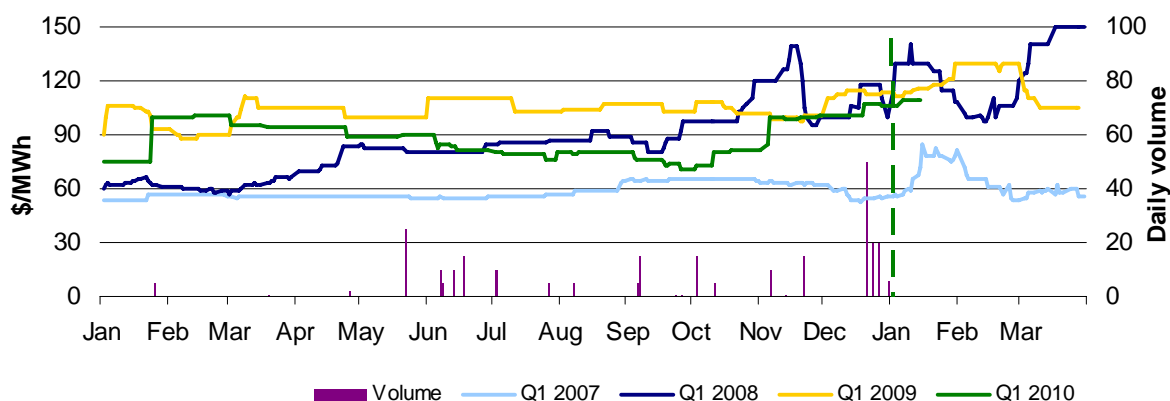
Source: d-cyphaTrade www.d-cyphatrade.com.au

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



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

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



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 153 trading intervals throughout the week where actual prices varied significantly from forecasts⁵. This compares to the weekly average in 2008 of 130 counts. Reasons for these variances are summarised in Figure 10⁶.

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.

Figure 10: Reasons for variations between forecast and actual prices

	Availability	Demand	Network	Combination
% of total above forecast	4	35	0	2
% of total below forecast	35	21	0	3

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 periods⁷. For example, in Queensland 404 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	404	-116	429	537
NSW	1829	-830	775	1047
VIC	326	-43	261	832
SA	148	-15	70	-51
TAS	68	73	54	4
TOTAL	2775	-931	1,589	2369

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

Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was \$166 000 or less than one per cent of energy turnover on the mainland.

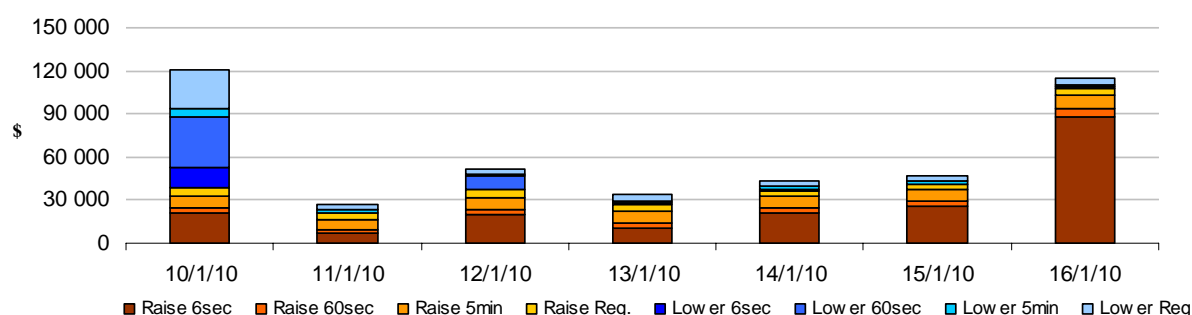
The total cost of FCAS in Tasmania for the week was \$273 000 or about five per cent of energy turnover in Tasmania.

On Sunday 10 January, between 11.10 am and 11.50 am Basslink transitioned from imports into Tasmania to exports from Tasmania through the no-go zone and it was unable to transfer FCAS. This led to an increase in the requirement for local services in Tasmania. The raise 6 second price increased from \$39/MWh at 11.10 am to \$127/MWh at 11.15 am and the raise regulation price increased from \$12/MWh at 11.10 am to \$55/MWh at 11.15 am. The lower regulation price increased from \$2/MWh at 11.20 am to \$265/MWh at 11.25 am and remained at this price until 11.50 am. Similarly, the lower 60 second price increased from \$0.20/MWh at 11.20 am to \$265/MWh at 11.25 am, the lower 6 second price increased from \$46/MWh at 11.20 am to \$147/MWh at 11.25 am and the lower 5 minute price increase from zero at 11.20 am to \$265/MWh at 11.25 am.

On Saturday 16 January, the interaction of Energy and FCAS markets saw the raise 6 second price in Tasmania increase significantly from \$16/MWh at 10.05 pm to \$3813/MWh at 10.10 pm and remained at this level until 10.20 pm.

Figure 12 shows the daily breakdown of cost for each FCAS for the NEM.

Figure 12: Daily frequency control ancillary service cost



Detailed Market Analysis

AUSTRALIAN ENERGY
REGULATOR

10 –16 January 2010

New South Wales: There were eight occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of \$52/MWh and above \$250/MWh.

Tuesday, 12 January

1:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	545.01	291.77	293.00
Demand (MW)	13 109	12 778	12 949
Available capacity (MW)	13 953	13 987	13 989
2:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1331.79	290.00	118.00
Demand (MW)	13 260	12 876	13 054
Available capacity (MW)	14 104	13 972	14 306
2:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	481.18	290.00	290.00
Demand (MW)	13 362	12 960	13 126
Available capacity (MW)	14 207	13 972	14 456
3:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	655.03	294.90	293.00
Demand (MW)	13 506	13 048	13 208
Available capacity (MW)	14 279	13 972	14 606
3:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	487.50	297.00	293.00
Demand (MW)	13 603	13 099	13 258
Available capacity (MW)	14 320	13 806	14 606
4:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	480.25	293.00	290.00
Demand (MW)	13 700	13 083	13 245
Available capacity (MW)	14 352	13 972	14 606
4:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	440.18	293.00	290.00
Demand (MW)	13 635	13 117	13 173
Available capacity (MW)	14 365	14 057	14 606
5:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	390.56	290.00	150.57
Demand (MW)	13 459	12 978	13 042
Available capacity (MW)	14 390	14 077	14 606

Conditions on the day saw demand up to 617 MW and available capacity up to 514 MW greater than that forecast four hours ahead.

Eraring Energy's Eraring unit four was scheduled to return to service by 3 pm that afternoon. However at 8.06 am, Eraring rebid to delay the unit's return to service until 8 pm (reducing available capacity by 660 MW). The reason given was "0801P RTS delayed – revised profile". The majority of this capacity was priced below \$20/MWh. In addition, at 1.26 pm,

200 MW of capacity across Eraring units one, two and three was rebid from prices below \$290/MWh to above \$8500/MWh. The reason given was “1321A Dispatch price higher than PD price @ 1420 \$1700 vs \$118”. The rebid was effective from the 2.35 pm.

Over a number of rebids from 7.42 am, Macquarie Generation reduced the available capacity across its Liddell units three and four and Bayswater unit one by a total of up to 220 MW of capacity, all of which was priced below \$25/MWh. The reasons given were “1215 Milling limit”, “0735 DAS limit released” and “0905 Revised feed pump limit”.

At 10.37 am Origin Energy reduced the available capacity at Uranquinty unit 14 by 166 MW (all priced below zero). This was effective from 10.45 am to 7 pm. However, at 11.23 am, effective from 11.30 pm to 7 pm, Origin Energy reversed this reduction and increased the unit’s availability by 166 MW, all priced below zero. The reason given for the first rebid was “1030 EST (P) Change in avail” and reason for the second rebid was “1120 EST (N) Change in PDS”.

Furthermore, over two rebids at 1.16 pm and 1.46 pm, Delta Electricity increased the available capacity at Colongra units one and three by a total of 322 MW (all priced below \$15/MWh). The reasons given were “1316 F dispatch demand higher than PD::Band shift capacity change” and “1345F price higher than expected &70 &71 line management:”.

There was no other significant rebidding.

Victoria: There were seven occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of \$280/MWh and above \$250/MWh.

Monday, 11 January

2:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	6839.82	129.92	129.39
Demand (MW)	9804	9262	9121
Available capacity (MW)	10 044	10 296	10 308
3:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	9195.56	308.49	9049.89
Demand (MW)	9751	9321	9282
Available capacity (MW)	10 041	10 291	10 308
3:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	9194.09	8220.59	8563.31
Demand (MW)	9839	9372	9374
Available capacity (MW)	10 083	10 276	10 308
4:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	9200.50	9402.07	8694.73
Demand (MW)	9879	9548	9425
Available capacity (MW)	10 063	10 179	10 308
4:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	8853.89	9251.40	8756.15
Demand (MW)	9846	9503	9421
Available capacity (MW)	10 042	10 160	10 308
5:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	4458.97	8216.32	8757.96
Demand (MW)	9589	9360	9419
Available capacity (MW)	10 057	10 219	10 303
5:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	5943.46	1573.99	8564.06
Demand (MW)	9570	9243	9332
Available capacity (MW)	10 035	10 179	10 303

In accordance with clause 3.13.7 of the Electricity Rules, the AER will issue a separate report into the circumstances that led to the spot price exceeding \$5000/MWh.

South Australia: There were 12 occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of \$420/MWh and above \$250/MWh.

Sunday, 10 January

7:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	2008.89	44.11	35.69
Demand (MW)	2818	2658	2648
Available capacity (MW)	2918	2948	2934

Conditions at the time saw demand around 160 MW greater than that forecast four hours ahead and available capacity close to forecast.

On the day, a planned network outage of the Bungama to Para line saw around 200 MW of low-priced generation in northern South Australia constrained-off⁸. The constraints used to manage these lines were invoked from 6.35 am to 9.35 pm.

At 6.35 pm, the Australian Energy Market Operator (AEMO) invoked a constraint to manage flows on the Mannum to Mobilong line for the loss of the Mt Barker to Cherry Gardens line. This saw significant reductions in the import capability into South Australia across the Heywood interconnector from 386 MW at 6.30 pm to 143 MW at 6.45 pm. The constraint also constrained-off around 150 MW of negatively priced generation in south eastern South Australia. The constraint was revoked at 7.20 pm and imports returned to previous levels.

The rapid decrease in imports resulted in the five minute price in South Australia increasing from \$56/MWh at 6.30 pm to above \$4800/MWh for 6.35 pm and 6.40 pm and then \$1873/MWh at 6.45 pm. The price returned to previous levels at 6.50 pm.

There was no significant rebidding.

⁸ Network constraints can cause generators to be dispatched at a price that is lower than its offer price (constrained-on) or generators to not be dispatched even though its offer price is lower than the regional price (constrained-off).

Monday, 11 January

1:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	5551.71	299.30	119.18
Demand (MW)	3023	3111	2968
Available capacity (MW)	3327	3189	3164
2:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	8524.97	488.96	133.17
Demand (MW)	3005	3184	3028
Available capacity (MW)	3341	3199	3161
2:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	7618.06	1000.00	142.76
Demand (MW)	2990	3217	3051
Available capacity (MW)	3355	3190	3157
3:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	9100.77	1000.00	9746.93
Demand (MW)	3002	3251	3089
Available capacity (MW)	3344	3192	3153
3:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	9100.77	9100.77	9100.77
Demand (MW)	3033	3276	3137
Available capacity (MW)	3329	3181	3145
4:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	9115.57	9999.77	9100.77
Demand (MW)	3085	3297	3170
Available capacity (MW)	3288	3063	3134
4:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	9100.77	9844.42	9100.77
Demand (MW)	3089	3310	3165
Available capacity (MW)	3265	3157	3196
5:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	4640.59	9100.77	9100.77
Demand (MW)	3077	3302	3146
Available capacity (MW)	3238	3174	3161
5:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	6099.82	1743.91	9100.77
Demand (MW)	3021	3252	3099
Available capacity (MW)	3229	3172	3175

In accordance with clause 3.13.7 of the Electricity Rules, the AER will issue a separate report into the circumstances that led to the spot price exceeding \$5000/MWh.

Friday, 15 January

8:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1686.25	25.28	23.34
Demand (MW)	1679	1626	1706
Available capacity (MW)	2254	2239	2472

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

The dispatch price spiked for one dispatch interval from below \$25/MWh at 7.30 pm to the price cap at 7.35 pm.

Planned generator outages at AGL's Torrens Island station (unit B3) and Flinders Operating Services' Playford unit saw a 235 MW step reduction in availability at the 7.30 pm dispatch interval (the majority of this capacity was priced below zero).

This reduction led to a rapid increase in dispatch from other generators but a number of generating units in South Australia were trapped by their FCAS trapezium or ramp rate limited at 7.35 pm. As a result the dispatch price increased to the price cap at 7.35 pm. As more generation was dispatched in the following five minute dispatch interval, the price fell to below \$30/MWh.

There was no significant rebidding.

Friday, 15 January

Midnight	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1692.17	29.69	29.69
Demand (MW)	1552	1596	1608
Available capacity (MW)	2127	2136	2200

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

The dispatch price spiked for one dispatch interval from \$30/MWh at 11.30 pm to the price cap at 11.35 pm.

Between 11.30 pm and 11.40 pm, the five minute demand increased by 130 MW. This increase was due to off-peak hot water heaters switching on. The increase in demand resulted in the dispatch of high-priced generation in South Australia for the 11.35 pm interval but a number of generating units in South Australia were trapped by their FCAS trapezium or ramp rate limited. This led to a violation of the Murraylink limit (driven by the constraint to manage the planned outage of Bendigo to Kerang line) at 11.35 pm. This constraint has been forcing flow across the Murraylink interconnector towards Victoria since 9 am.

There was no significant rebidding.

Detailed NEM Price and Demand Trends

for Weekly Market Analysis
10 - 16 January 2010



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

Financial year	QLD	NSW	VIC	SA	TAS
2009-10 (\$/MWh) (YTD)	39	61	37	97	28
2008-09 (\$/MWh) (YTD)	38	47	38	52	44
Change*	2%	32%	-4%	86%	-37%
2008-09 (\$/MWh)	36	43	49	69	62

Table 2: NEM turnover

Financial year	NEM Turnover** (\$, billion)	Energy (TWh)
2009-10 (YTD)	\$5.637	112
2008-09	\$9.413	208
2007-08	\$11.125	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)
Sep-09	25	26	24	28	22	0.406
Oct-09	27	28	26	30	26	0.459
Nov-09	99	138	36	325	34	1.924
Dec-09	34	130	25	26	32	1.172
Jan-10 (MTD)	27	38	145	275	31	0.705
Q4 2009	53	100	29	134	31	3.555
Q4 2008	39	51	34	32	44	2.133
Change*	35%	97%	-13%	312%	-30%	66.66%

Table 4: ASX energy futures contract prices at 18 January

	QLD		NSW		VIC		SA	
Q1 2010	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Price on 11 Jan (\$/MW)	55	95	59	104	75	130	109	185
Price on 18 Jan (\$/MW)	51	70	48	72	71	130	109	185
Open interest on 18 Jan	3142	215	3641	177	4302	305	153	0
Traded in the last week (MW)	168	0	151	0	191	0	0	0
Traded since 1 Jan 09 (MW)	7566	350	8042	228	9630	611	257	20
Settled price for Q1 09(\$/MW)	35	48	38	48	62	114	102	200

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

Comparison:	QLD	NSW	VIC	SA	TAS	NEM
November 09 with November 08						
MW Priced <\$20/MWh	855	-401	581	338	-101	1271
MW Priced \$20 to \$50/MWh	-354	-172	325	-124	812	487
December 09 with December 08						
MW Priced <\$20/MWh	872	-206	-165	503	-14	991
MW Priced \$20 to \$50/MWh	-423	-115	540	-68	441	375
January 10 with January 09						
MW Priced <\$20/MWh	718	600	374	359	-42	2010
MW Priced \$20 to \$50/MWh	-576	-200	-207	17	660	-306

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

** Estimated value