WEEKLY ELECTRICITY MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

22 January - 28 January 2012

Summary

Congestion issues in Queensland as a result of real time changes to transmission line ratings led to un-forecast price fluctuations resulting in high and low priced trading intervals. Tasmania experienced one high priced trading interval which contributed to the higher average spot price for the week compared to other regions, reaching $44/MWh. Weekly average spot prices in the remaining regions ranged from $25/MWh in Queensland to $33/MWh in South Australia.

Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 22 January to 28 January and the 11/12 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 22 Jan - 28 Jan 2012	25	27	28	33	44
% change from previous week*	5	6	13	18	11
11/12 financial YTD	30	30	27	34	31
% change from 10/11 financial YTD **	21	5	17	29	-1

*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[1].

Financial markets

Figures 2 to 9 show futures contract[2] prices traded on the Australian Securities Exchange (ASX) as at close of trade on Monday 30 January 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[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 ASX 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	42	-1%	46	-1%	41	-1%	47	-3%
Calendar Year 2013	55*	0%	60*	0%	55*	-1%	59*	-3%
Calendar Year 2014	58	0%	61	1%	59	-1%	69	0%
Three year average	52	0%	55	0%	51	-1%	58	-2%

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

* denotes trades in the product.

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

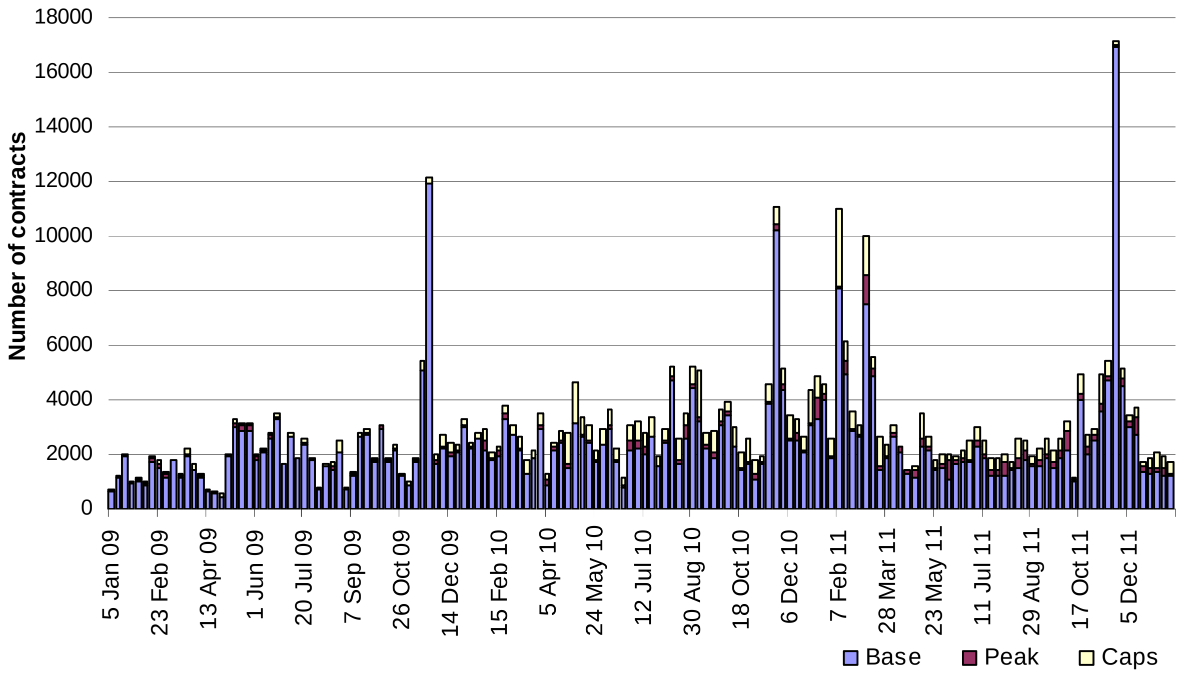
Figure 3: $300 cap contract prices ($/MWh)

	QLD		NSW		VIC		SA	
Q1 2012 (% change)	12*	-13%	10*	-14%	12*	-14%	24	-15%
2012 (% change)	6	-6%	7	-5%	5	-10%	10	-10%

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

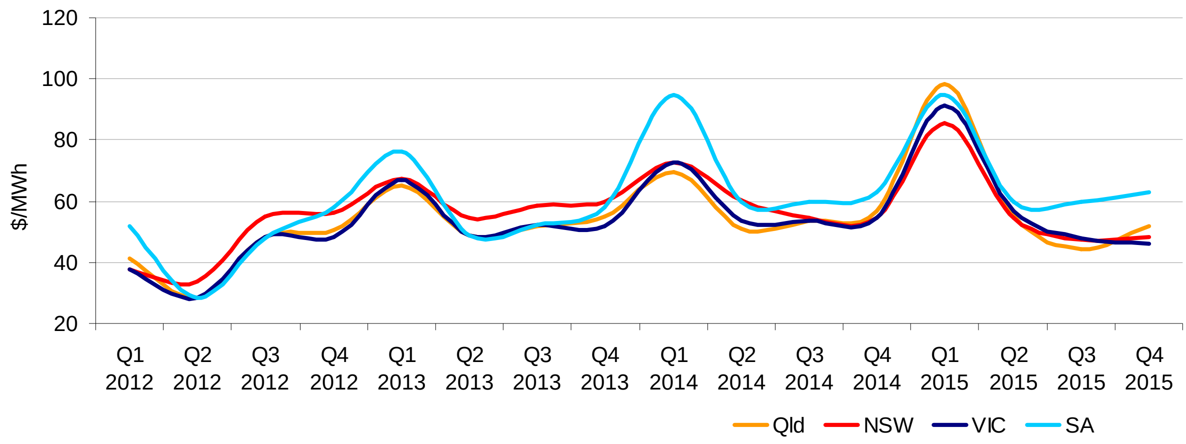


Source: d-cyphaTrade www.d-cyphatrade.com.au

[4] Calculated on prices prior to rounding.

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

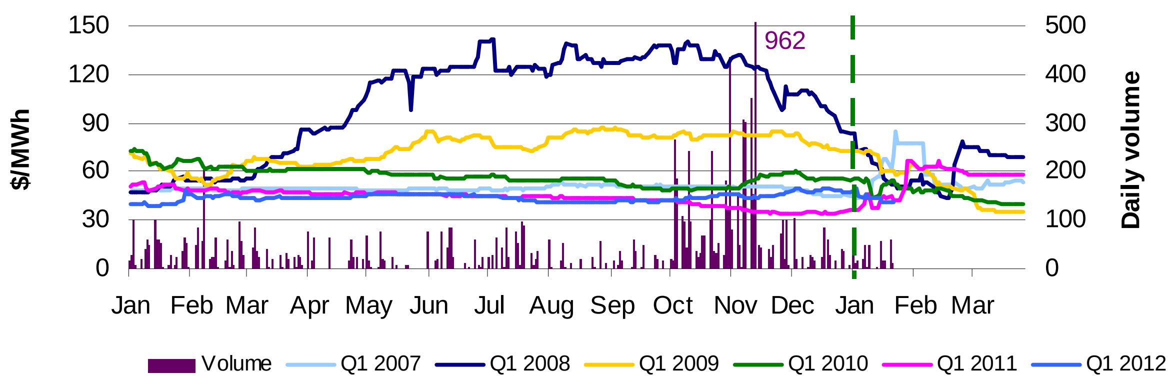
Figure 5: Quarterly base future prices Q1 2012 – Q4 2015



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

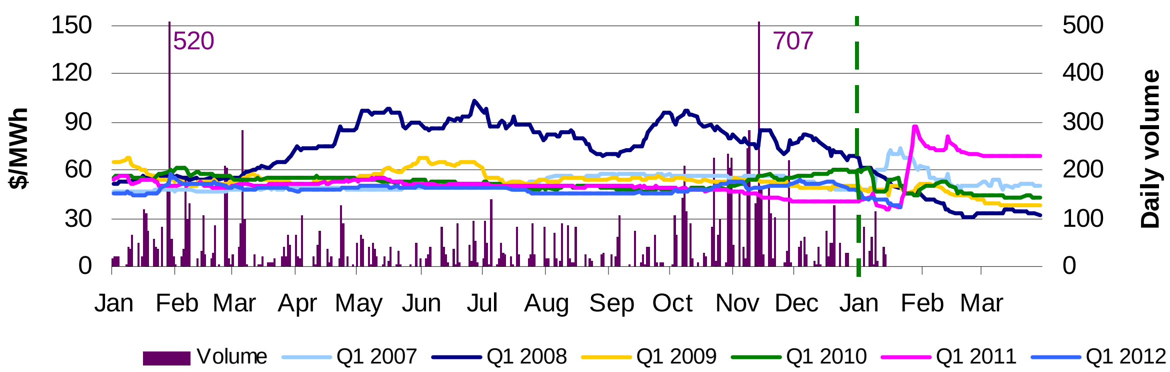
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2007, 2008, 2009, 2010, 2011 and 2012. Also shown is the daily volume of Q1 2012 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased. 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



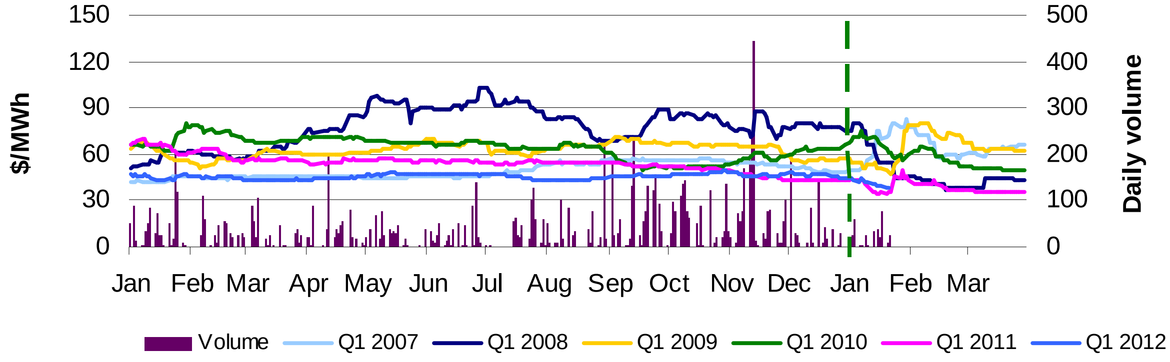
Source: d-cyphaTrade www.d-cyphatrade.com.au

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



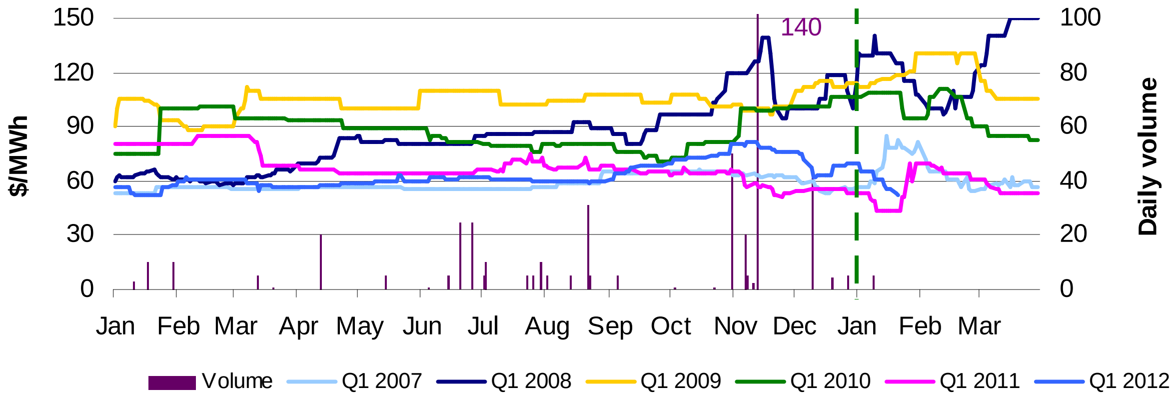
Source: d-cyphaTrade www.d-cyphatrade.com.au

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 91 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	7	30	2	2
% of total below forecast	51	2	5	1

[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 51 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	-51	-133	36	-158
NSW	-816	-66	-884	-587
VIC	192	-231	51	53
SA	24	31	151	195
TAS	-125	78	12	-33
TOTAL	-776	-321	-634	-530

Ancillary services market

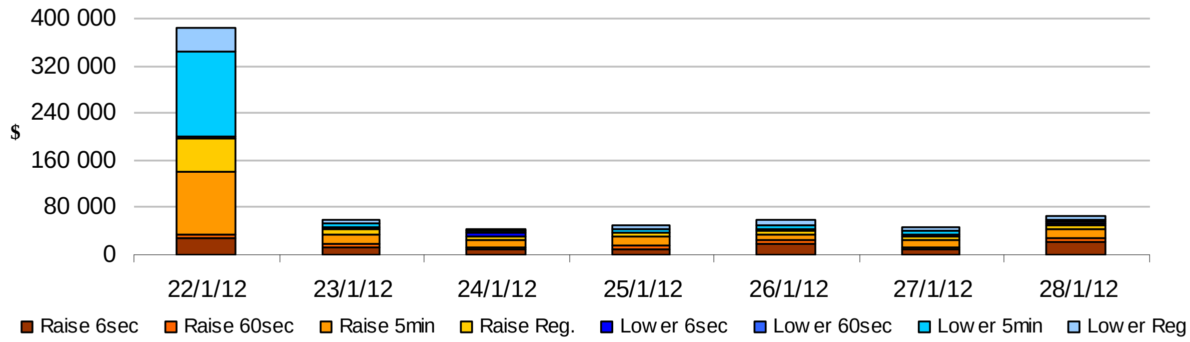
The total cost of frequency control ancillary services (FCAS) on the mainland for the week was $280 000 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $428 000 or five and a half per cent of energy turnover in Tasmania.

A majority of the costs accrued on 22 January. At 7.20 pm, there was a 231 MW step change in flow across Basslink, from 77 MW into Victoria at 7.15 pm to 154 MW into Tasmania. This saw a large step increase in FCAS requirements. Both raise and lower 5-minute and regulation services in Tasmania reached the price cap for one dispatch interval at 7.20 pm.

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
February 2012

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

Detailed Market Analysis

AUSTRALIAN ENERGY REGULATOR

22 January – 28 January 2012

Queensland:

There were three occasions where the spot price in Queensland was either greater than three times the Queensland weekly average price of $25/MWh and above $250/MWh, or less than -$100/MWh.

Friday, 27 January

1:00 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	509.09	34.17	23.92
Demand (MW)	6927	7234	6728
Available capacity (MW)	10 710	11 083	11 458
1:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	-116.50	30.85	24.94
Demand (MW)	6904	7109	6862
Available capacity (MW)	10 695	11 083	11 458
3:00 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	-195.35	34.30	24.94
Demand (MW)	6854	6943	6806
Available capacity (MW)	10 679	11 023	11 458

Conditions at the time saw demand up to 307 MW below that forecast four hours ahead while available capacity was up to 388 MW below that forecast four hours ahead.

Between 11.55 am and 12.05 pm, there was a 70 MVA reduction in the dynamic rating of the Calvale to Stanwell 275 kV line resulting in the constraint managing the loading on the Calvale to Stanwell 275 kV line for the loss of the Calvale to Wurdong 275 kV line binding. The constraint equation affects the majority of Queensland generators.

This constraint caused the export limit on the QNI interconnector to reduce from 428 MW into Queensland at 11.55 am to 414 MW into New South Wales at 12.05 pm and then to 906 MW into New South Wales by 12.15 pm. The export limit at times was forcing flow counter-price into New South Wales. From 12.25 pm to 12.30 pm, and from 12.55 pm to 3.55 pm, AEMO invoked constraints to manage the accumulation of negative settlement residues from Queensland to New South Wales. Approximately $300 000 of negative residues accrued.

The 5-minute dispatch price reached $951/MWh at 12.05 pm as low priced generation was ramped down causing higher priced generation to be dispatched. In response, around 1600 MW of capacity was rebid into price bands close to the floor price for the 12.30 pm trading interval, leading to these negative priced offers being dispatched and setting a negative price. Further rebids saw around 330 MW of capacity shifted into prices close to floor price for subsequent trading intervals.

From 12.05 pm to 3.25 pm, the effect of the constraint varied, which saw dispatch prices fluctuate wildly between $1297/MWh and -$872/MWh.

At 11.57 pm, effective from 12.05 pm, CS Energy reduced the available capacity of Gladstone unit two from 280 MW to 145 MW. The reason given was "1156P GSTONE2 condenser backflush sl".

Over two rebids at 1.02 pm and 1.17 pm. Origin Energy reduced the available capacity of Mount Stuart to zero (a total of 284 MW). The reason given was "Avoid uneconomical dispatch SL".

Over two rebids at 2.29 pm and 2.48 pm, AGL Hydro reduced the available capacity of Oakey unit two and Yabulu to zero (a total of 300 MW). The reasons given were "1245A chg in dispatch:: demand decrease vs PD Qld - $300" and "1237F unit triggered by market::avoid uneconomical start".

There was no other significant rebidding.

<u>Victoria:</u>

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

Sunday, 22 January

8:00 AM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	-117.79	14.85	14.85
Demand (MW)	4815	4816	4804
Available capacity (MW)	9801	9863	9862

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

A constraint managing the planned outage of the Hazelwood No.4 500/220 kV transformer bound intermittently from 12.30 am. At 7.35 am, a constraint managing transient instability in the event of the loss of a Hazelwood to South Morang 500 kV transmission line bound. This constraint limits exports out of Victoria and constrains off Victorian generation. Flows and limits from Victoria into Tasmania were reduced from 452 MW at 7.30 am to 255 MW by 7.50 am.

The reduced exports saw the dispatch of low priced generation in Victoria and the price between 7.35 am and 8 am set at less than -$88/MWh.

Subsequent rebidding of capacity into higher price bands led to prices returning to previous levels.

There was no other significant rebidding.

Tasmania:

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

Tuesday, 24 January

3:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1526.64	34.16	34.28
Demand (MW)	1184	1134	1219
Available capacity (MW)	2234	2234	2291

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

At 3.20 pm, the flow across Basslink reached 450 MW into Victoria. This flow caused a step change in the network control special protection scheme (NCSPS) constraint requirement and the constraint was violated at 3.25 pm. The NCSPS (which manages Tasmania network flows, through the control of Basslink flows and FCAS when interconnector transfers toward Victoria are high) manages power system frequency by constraining Tasmanian generation and limiting flow to Victoria.

The constraint caused flows into Victoria to reduce at 3.25 pm to 255 MW, and exceed the limit (of 297 MW into Victoria, which was a further limit set by the Basslink rate of change limit). At the same time there was around 600 MW of Tasmanian generation either "constrained down" or trapped in FCAS. This resulted in the dispatch of high priced offers in Victoria (from Snowy's Murray generator priced at $295/MWh) contributing to setting the 5-minute dispatch price in Tasmania to $8974/MWh.

The step reduction in flows into Victoria saw the 5-minute price there and in South Australia also increase to almost $500/MWh. At 3.23 pm, effective from 3.30 pm, Snowy Hydro rebid 1510 MW of capacity (mostly in high priced bands) at its Murray Power station in Victoria down to zero. The reason given was "15:23:A vic higher than expected price sl".

This rebid increased the availability of lower priced generation in Victoria, which further reduced flows on Basslink and prices returned to previous levels in all regions.

There was no other significant rebidding.

Detailed NEM Price and Demand Trends

for Weekly Market Analysis
22 January - 28 January 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 ($/MWh) YTD	30	30	27	34	31
2010-11 ($/MWh) YTD	25	29	23	26	31
Change*	21%	5%	17%	29%	-1%
2010-11 ($/MWh)	34	43	29	42	31

Table 2: NEM turnover

Financial year	NEM Turnover** ($, billion)	Energy (TWh)
2011-12 (YTD)	$3.421	115
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)
Sep-11	29	29	28	40	27	0.427
Oct-11	28	29	24	43	33	0.421
Nov-11	35	40	27	32	31	0.512
Dec-11	26	26	23	25	26	0.369
Jan-12 (MTD)	33	25	25	28	39	0.391
Q1 2012	33	25	25	28	39	0.430
Q1 2011	47	42	27	28	26	0.593
Change*	-30%	-41%	-6%	-1%	53%	-27.48%

Table 4: ASX energy futures contract prices at end of 30 January 2012

	QLD		NSW		VIC		SA	
Q1 2012	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Price on 23 Jan ($/MWh)	41	66	40	61	40	66	55	100
Price on 30 Jan ($/MWh)	41	63	38	57	38	61	52	100
Open interest on 30 Jan	1411	349	2480	619	2117	314	294	5
Traded in the last week (MW)	107	1	193	21	131	6	0	0
Traded since 1 Jan 11 (MW)	11256	417	13208	1486	10181	1276	498	5
Settled price for Q1 11($/MWh)	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
November 11 with November 10						
MW Priced <$20/MWh	-961	-2254	-1184	-182	-523	-5105
MW Priced $20 to $50/MWh	165	1274	938	174	374	2926
December 11 with December 10						
MW Priced <$20/MWh	-767	-1462	-931	-239	-401	-3799
MW Priced $20 to $50/MWh	65	971	767	134	164	2100
January 12 with January 11 (MTD)						
MW Priced <$20/MWh	67	745	109	-264	-226	431
MW Priced $20 to $50/MWh	167	99	252	48	1	567

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