WEEKLY ELECTRICITY MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

29 January - 4 February 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. This congestion led to counter priced flows into New South Wales and over $1 million of negative settlement residues accumulate on the QNI interconnector.

Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 29 January to 4 February 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 29 Jan - 4 Feb 2012	36	29	28	30	37
% change from previous week*	41	8	-1	-9	-17
11/12 financial YTD	30	30	27	34	31
% change from 10/11 financial YTD **	-20	-42	-7	-32	0

*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 6 February 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	41	-3%	44	-4%	38	-6%	44	-5%
Calendar Year 2013	54*	-1%	59*	-1%	54*	-2%	58	-2%
Calendar Year 2014	57	0%	60	-1%	58	-2%	69	0%
Three year average	51	-2%	54	-2%	50	-3%	57	-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.

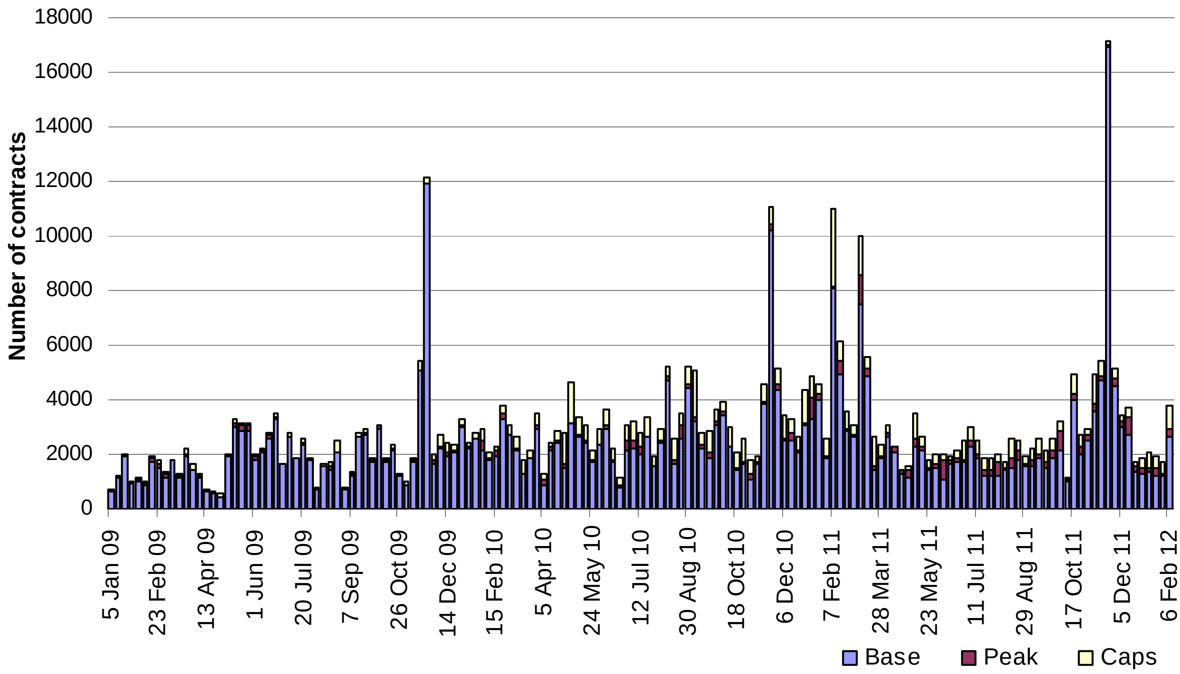
Figure 3: $300 cap contract prices ($/MWh)

	QLD		NSW		VIC		SA	
Q1 2012 (% change)	9*	-26%	5*	-46%	5*	-58%	18	-23%
2012 (% change)	5	-15%	6	-21%	3	-37%	8	-14%

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

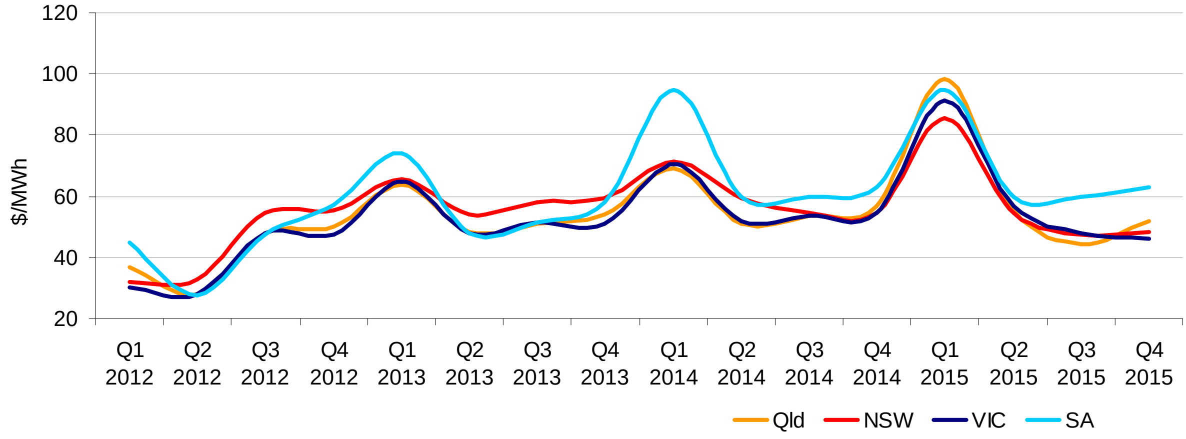


Source: d-cyphaTrade www.d-cyphatrade.com.au

[4] Calculated on prices prior to rounding.

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

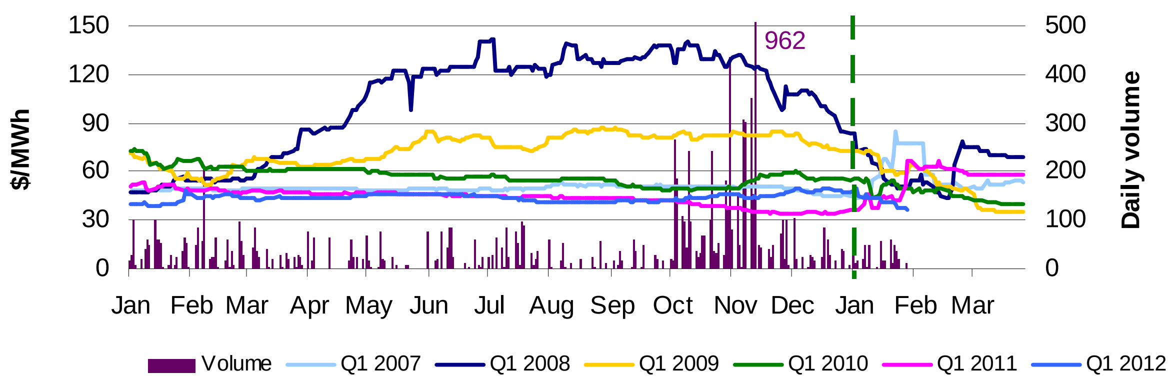
Figure 5: Quarterly base future prices Q1 2012 – Q4 2015



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

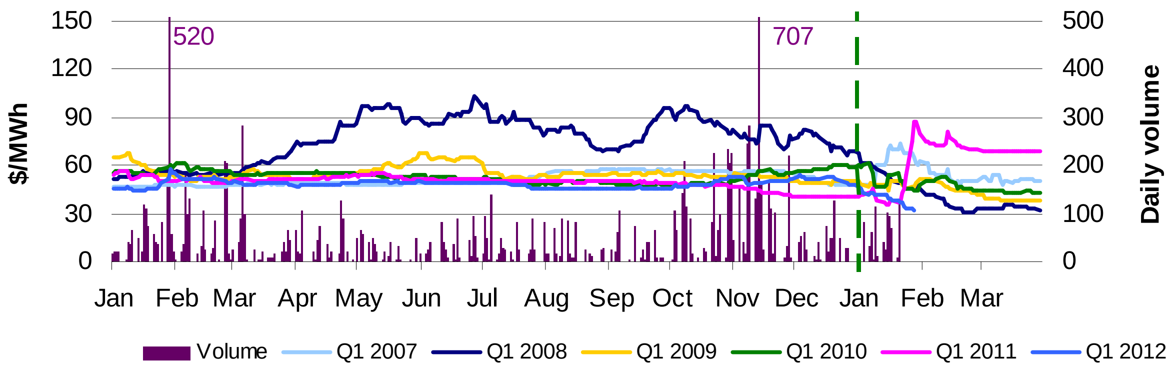
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2007, 2008, 2009, 2010, 2011 and 2012. Also shown is the daily volume of Q1 2012 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.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



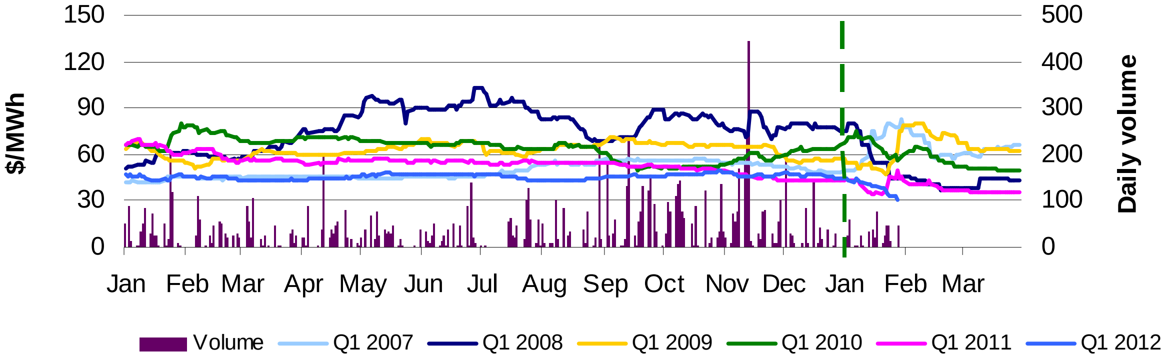
Source: d-cyphaTrade www.d-cyphatrade.com.au

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



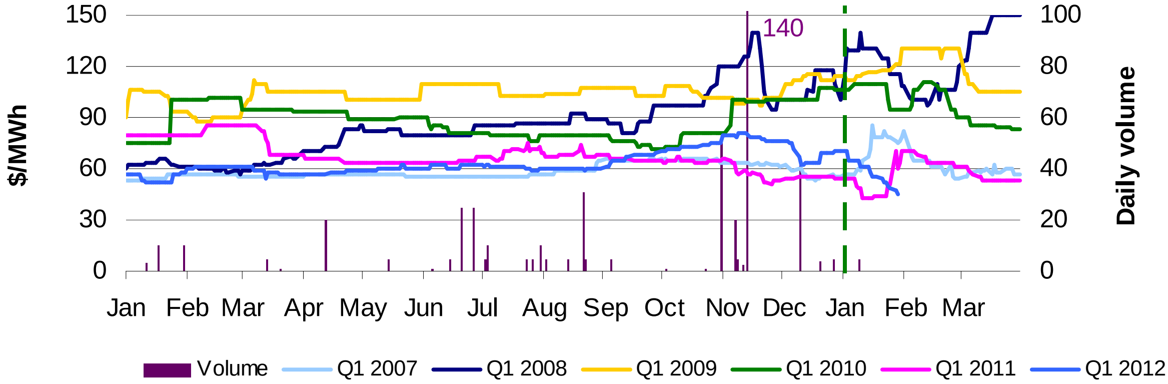
Source: d-cyphaTrade www.d-cyphatrade.com.au

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 111 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	5	30	3	2
% of total below forecast	48	11	0	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 91 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	-91	153	-80	328
NSW	-215	1	-713	344
VIC	-434	70	-103	-483
SA	-318	-180	-506	-561
TAS	8	-80	36	0
TOTAL	-1050	-36	-1,366	-372

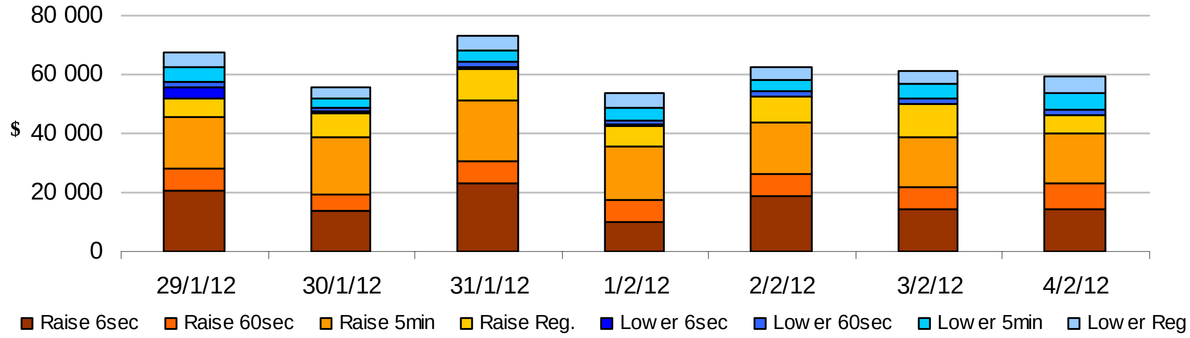
Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was $320 000 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $113 000 or around two 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
February 2012

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

Detailed Market Analysis

AUSTRALIAN ENERGY REGULATOR

29 January – 4 February 2012

Queensland:

There were four occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of $36/MWh and above $250/MWh.

Sunday, 29 January

1:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	263.62	26.12	21.16
Demand (MW)	6211	6259	6100
Available capacity (MW)	10 919	11 385	11 478

2:30 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	2079.70	29.15	23.76
Demand (MW)	6186	6256	6130
Available capacity (MW)	10 824	11 385	11 478

Conditions at the time saw demand close to forecast, while available capacity was up to 561 MW below that forecast four hours ahead.

From around 10.30 am, the constraint managing the loading on the Calvale to Wurdong 275 kV line for the loss of the Calvale to Stanwell 275 kV line bound. This constraint was binding for the majority of the time until 1.55 pm, forcing flows of up to around 1070 MW into New South Wales on the QNI interconnector, at times counter-priced.

The constraint caused rapid changes in exports on QNI, due to changes in dynamic limits causing a number of Queensland generators to be either constrained at their ramp rate limits or trapped in frequency control ancillary services.

This saw the five minute price reach $1289/MWh at 12.05 pm and $1247/MWh at 1.30 pm, and fall as low as -$871/MWh at 12.15 pm and -$456/MWh at 1.50 pm.

From 2 pm, the related constraint that manages the loading on the Calvale to Stanwell 275 kV line for the loss of the Calvale to Wurdong 275 kV line bound for the majority of the time until 4.25 pm. At 2.30 pm, a 70 MVA reduction in the dynamic rating of the Calvale to Stanwell 275 kV line saw a step change of around 285 MW in the forced export limit on the QNI interconnector. In response to this step change, a number of Queensland generators were constrained down and others required to increase their output but were either limited by their ramp rate or trapped in frequency control ancillary services. The change in Queensland generation dispatch was not sufficient to meet the step change in the limit and as a result the QNI limit was violated by around 150 MW. With lower priced generation either ramp rate limited or trapped in frequency control ancillary services, higher priced generation offers were dispatched and as a result, the five minute price reached $12 315/MWh.

A 150 MW reduction in the forced export limit at 2.35 pm saw the price fall to $110/MWh as Queensland generation dispatch was reduced and lower priced generation was no longer ramp rate limited. Prices did not return to lower levels until 2.55 pm, when the dynamic rating of the Calvale to Stanwell line increased above 780 MVA.

Around $1 million of negative settlement residues accrued on the QNI interconnector.

At 12.39 pm, effective from 12.50 pm, CS Energy reduced the available capacity of Gladstone unit 5 from 285 MW to 155 MW (the majority of which was priced below $50/MWh). The reason given was “1238P Gstone5 unit availability id fan issue sl”. A number of other rebids were made in response to the congestion:

- At around 1.14 pm, effective at 1.25 pm, CS Energy rebid a total of 345 MW of capacity priced below $80/MWh to prices above $10 900/MWh at Gladstone units 2, 3 and 6. The reason given was “1313A G/stone intraconnector constraint 855_871 sl”. This rebid contributed to setting the price for the 1.30 pm dispatch interval.
- At around 2.09 pm, effective from 2.15 pm, AGL Hydro reduced the available capacity of Yabulu from 155 MW to zero, all of which was priced around $300/MWh. The reason given was “14:08F unit triggered by market::avoid uneconomical dispatch”.
- In three rebids, effective between 12.40 pm and 1.40 pm, Origin Energy reduced all available capacity at its Mt Stuart Power Station from 402 MW to zero, all of which was priced between $450/MWh and $550/MWh. The reason given for each rebid was “Avoid uneconomic dispatch sl”.

There was no other significant rebidding.

Tuesday, 31 January

2:00 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	301.78	59.72	48.50
Demand (MW)	7450	7570	7457
Available capacity (MW)	11 120	11 216	10 944

Conditions at the time saw available capacity slightly below forecast and demand 120 MW below that forecast four hours ahead.

At 1.30 pm, the constraint managing the loading on the Calvale to Wurdong 275 kV line for the loss of the Calvale to Stanwell 275 kV line bound. This saw a step change in the export limit on the QNI interconnector of around 185 MW, forcing flows into New South Wales.

At 1.41 pm, effective from 1.50 pm, CS Energy rebid 295 MW of available capacity at Gladstone from prices below $50/MWh to prices above $10 950/MWh. The reason given was "1338A CS energy intraconnector constraint 855-871 sl".

A reduction in the forced export limit on QNI of around 290 MW at 1.50 pm saw several Queensland generators constrained down at their ramp rate limits. Despite this reduction in exports, the higher priced generation offers at Gladstone, following the rebid at 1.41 pm, were required to be dispatched and contributed to setting the price at $1342/MWh for one dispatch interval. At 1.55 pm, the price fell below $200/MWh as lower priced generation was no longer ramp rate limited and by 2.05 pm, the price had fallen below $30/MWh as Queensland demand fell by around 85 MW.

Around $75 500 of negative settlement residues accumulated on the QNI interconnector for dispatch intervals 1.50 pm to 2 pm.

There was no other significant rebidding.

Friday, 3 February

1:00 PM	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	263.96	24.01	24.80
Demand (MW)	7013	7135	7093
Available capacity (MW)	11 237	11 265	11 340

Conditions at the time saw demand 122 MW lower than that forecast four hours ahead with available capacity close to forecast.

From mid morning, the constraint managing the loading on the Calvale to Wurdong 275 kV line for the loss of the Calvale to Stanwell 275 kV line again bound, forcing exports on the QNI interconnector into New South Wales, at times counter priced.

At 12.41 pm, effective at 12.50 pm, CS Energy rebid 360 MW of capacity at Gladstone from prices below $40/MWh to prices above $10 900/MWh. The reason given was "1241A G/stone intraconnector constraint 855-871 sl".

At 12.55 pm, forced exports on QNI into New South Wales fell by around 185 MW.

Despite this reduction in exports, the higher priced generation offers at Gladstone, following the rebid at 12.41 pm, were required to be dispatched and contributed to setting the price at $1281/MWh for one dispatch interval. An apparent demand side response of 140 MW at 1.05 pm reduced Queensland generation dispatch and the five minute price fell to around $12/MWh.

Around $63 000 of negative settlement residues accrued on the QNI interconnector on the day.

There was no other significant rebidding.

Detailed NEM Price and Demand Trends

for Weekly Market Analysis
29 January - 4 February 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	38	52	29	50	31
Change*	-20%	-42%	-7%	-32%	0%
2010-11 ($/MWh)	34	43	29	42	31

Table 2: NEM turnover

Financial year	NEM Turnover** ($, billion)	Energy (TWh)
2011-12 (YTD)	$3.542	119
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)
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	35	26	25	28	39	0.447
Feb-12 (MTD)	27	26	26	29	36	0.054
Q1 2012	34	26	26	28	39	0.551
Q1 2011	120	177	63	164	27	2.556
Change*	-72%	-85%	-59%	-83%	44%	-78.44%

Table 4: ASX energy futures contract prices at end of 6 February 2012

	QLD		NSW		VIC		SA	
Q1 2012	Base	Peak	Base	Peak	Base	Peak	Base	Peak
Price on 30 Jan ($/MWh)	41	63	38	57	38	61	52	100
Price on 06 Feb ($/MWh)	37	54	32	44	30	44	45	85
Open interest on 06 Feb	1353	329	2540	620	2161	315	294	5
Traded in the last week (MW)	121	1	397	58	153	2	0	0
Traded since 1 Jan 11 (MW)	11377	418	13605	1544	10334	1278	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
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						
MW Priced <$20/MWh	77	609	76	-291	-211	259
MW Priced $20 to $50/MWh	168	131	226	57	-8	574
February 12 with February 11 (MTD)						
MW Priced <$20/MWh	483	-1400	-757	-685	-241	-2600
MW Priced $20 to $50/MWh	152	288	131	-173	-50	349

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