

# WEEKLY ELECTRICITY MARKET ANALYSIS



AUSTRALIAN ENERGY  
REGULATOR

4 March- 10 March 2012

## Summary

For the ninth consecutive week there were volatile pricing outcomes in Queensland. The spot price exceeded \$250/MWh on five occasions, with the highest spot price of \$339/MWh occurring at 3 pm on Sunday 4 March. The spot price exceeded \$100/MWh on 10 other occasions during the week in Queensland and negative spot prices of -\$112/MWh, -\$27/MWh and -\$24/MWh were also recorded.

Despite the high prices in Queensland, with sustained periods of spot prices at almost \$70/MWh during the minimum load period in the early hours of the morning, Tasmania recorded the highest average spot price for the week at \$39/MWh.

## Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 4 March to 10 March 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 4 Mar - 10 Mar 2012 | 32  | 23  | 21  | 23  | 39  |
| % change from previous week*          | 2   | -11 | -14 | -6  | 3   |
| 11/12 financial YTD                   | 30  | 30  | 27  | 33  | 32  |
| % change from 10/11 financial YTD **  | -18 | -40 | -7  | -29 | 4   |

\*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 12 March 2012.

<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) -> Monitoring, reporting and enforcement -> Electricity market reports -> Long-term analysis.

<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.

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.

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

|                    | QLD |     | NSW |     | VIC |     | SA |     |
|--------------------|-----|-----|-----|-----|-----|-----|----|-----|
| Calendar Year 2012 | 40  | -1% | 42  | -2% | 37  | -2% | 38 | -2% |
| Calendar Year 2013 | 55  | -1% | 59* | -1% | 53  | -1% | 57 | 0%  |
| Calendar Year 2014 | 56  | 0%  | 60  | -1% | 54  | -2% | 66 | 0%  |
| Three year average | 50  | -1% | 54  | -1% | 48  | -2% | 54 | 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 2012 and calendar year 2012 and the percentage change<sup>4</sup> from the previous week.

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

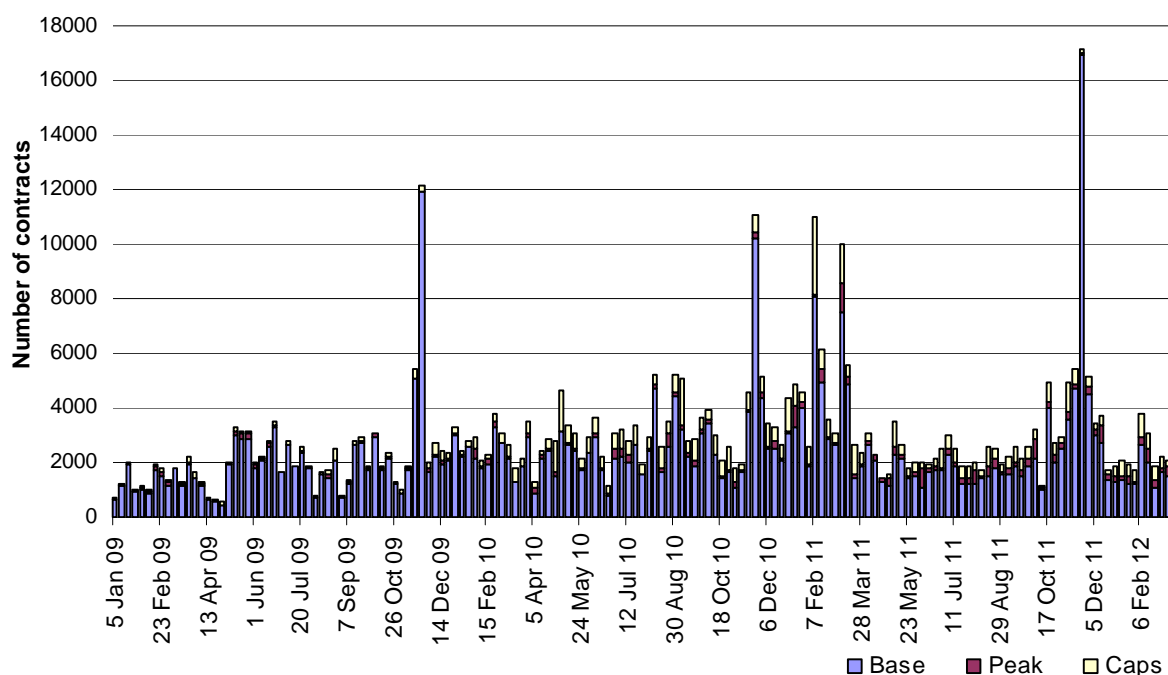
|                    | QLD |      | NSW |      | VIC |      | SA |      |
|--------------------|-----|------|-----|------|-----|------|----|------|
| Q1 2012 (% change) | 3   | -11% | 0*  | -72% | 0*  | -53% | 1  | -78% |
| 2012 (% change)    | 3   | -4%  | 4   | -7%  | 2   | -16% | 4  | -21% |

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**



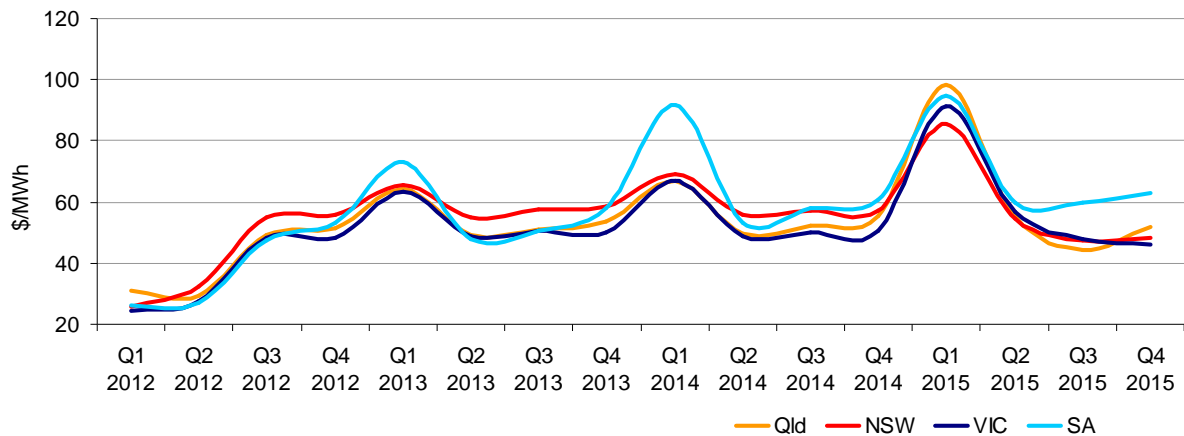
Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

<sup>3</sup> Calculated on prices prior to rounding.

<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.

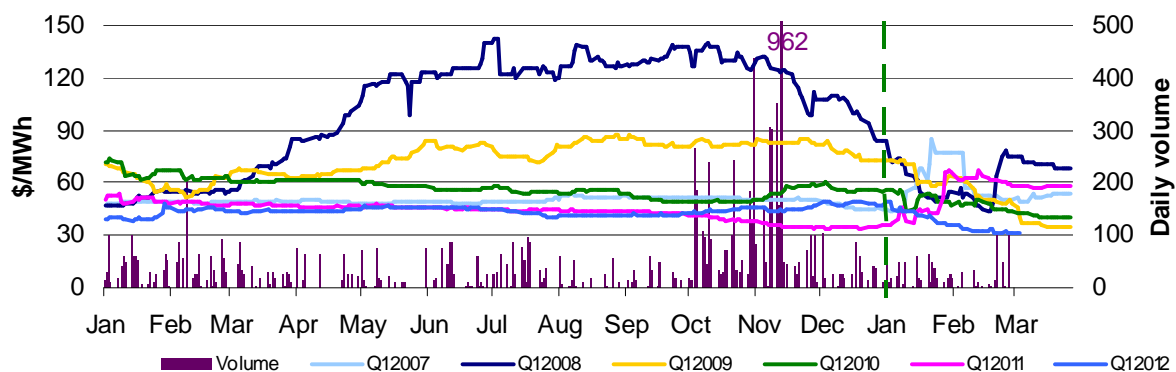
**Figure 5: Quarterly base future prices Q1 2012 – Q4 2015**



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

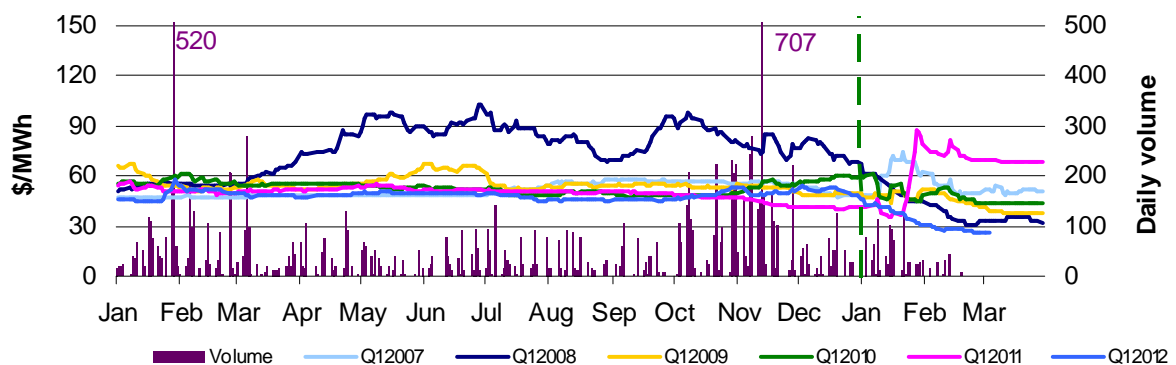
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2007, 2008, 2009, 2010, 2011 and 2012. Also shown is the daily volume of Q1 2012 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.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



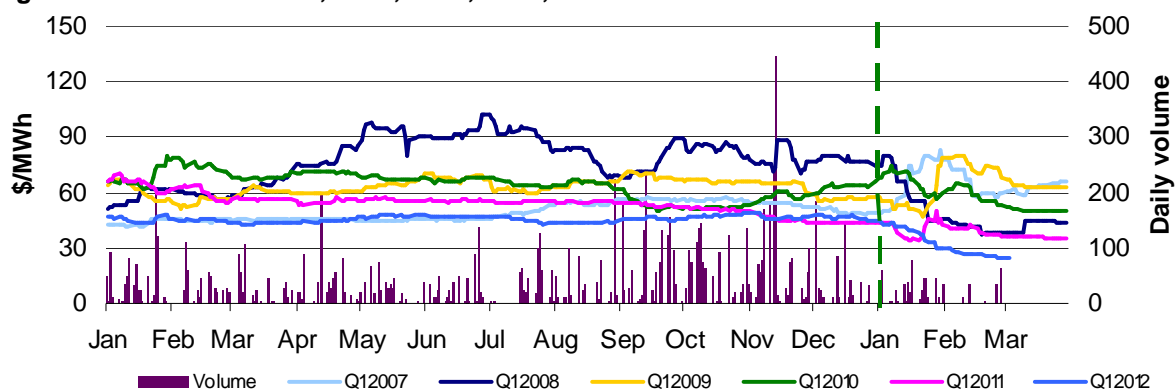
Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

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



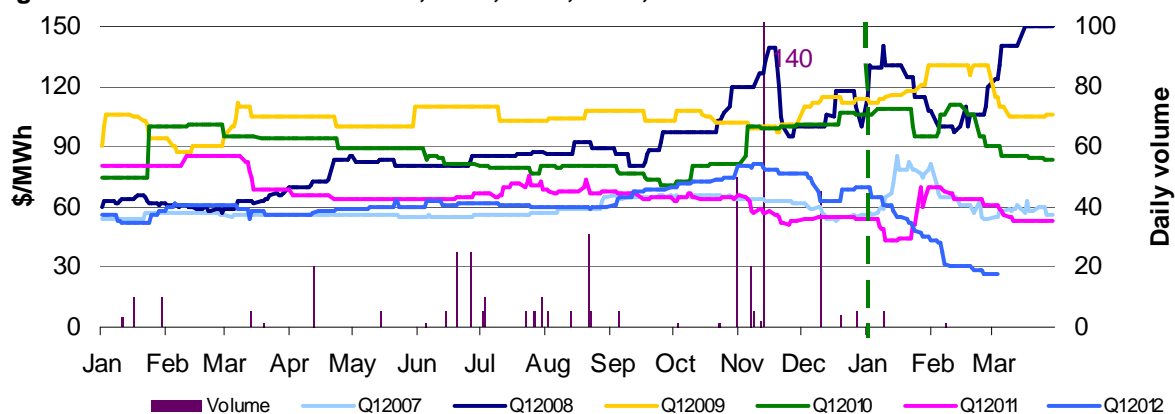
Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://www.d-cyphatrade.com.au)

**Figure 8: Victoria Q1 2007, 2008, 2009, 2010, 2011 and 2012**



Source: d-cyphaTrade [www.d-cyphatrade.com.au](http://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](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 141 trading intervals throughout the week where actual prices varied significantly from forecasts<sup>5</sup>. 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<sup>6</sup>.

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

|                           | Availability | Demand | Network | Combination |
|---------------------------|--------------|--------|---------|-------------|
| % of total above forecast | 0            | 22     | 21      | 0           |
| % of total below forecast | 51           | 2      | 3       | 1           |

<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 101 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          | 101        | 44                        | 113                | -254                     |
| NSW          | 2          | -16                       | 48                 | -943                     |
| VIC          | 179        | -401                      | -177               | -249                     |
| SA           | -149       | -179                      | -222               | -47                      |
| TAS          | -18        | -182                      | 19                 | -7                       |
| <b>TOTAL</b> | <b>115</b> | <b>-734</b>               | <b>-219</b>        | <b>-1500</b>             |

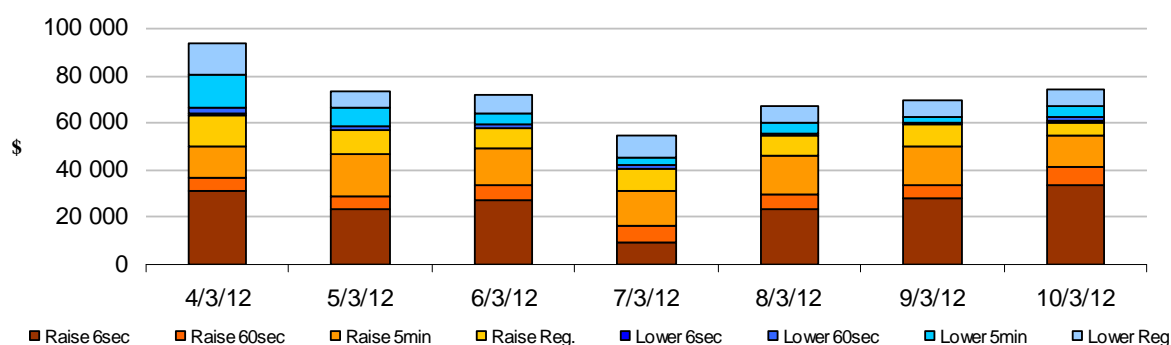
## Ancillary services market

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was \$316 000 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was \$188 000 or around two and a half 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 March 2012

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

## Detailed Market Analysis

AUSTRALIAN ENERGY  
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4 March– 10 March 2012

**Queensland:**

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

**Sunday, 4 March**

| <b>3 PM</b>             | <b>Actual</b> | <b>4 hr forecast</b> | <b>12 hr forecast</b> |
|-------------------------|---------------|----------------------|-----------------------|
| Price (\$/MWh)          | 339.28        | 21.32                | 25.49                 |
| Demand (MW)             | 6603          | 6624                 | 6401                  |
| Available capacity (MW) | 10 558        | 11 100               | 11 200                |

| <b>3:30 PM</b>          | <b>Actual</b> | <b>4 hr forecast</b> | <b>12 hr forecast</b> |
|-------------------------|---------------|----------------------|-----------------------|
| Price (\$/MWh)          | -111.71       | 23.02                | 24.01                 |
| Demand (MW)             | 6575          | 6694                 | 6408                  |
| Available capacity (MW) | 10 370        | 11 095               | 11 195                |

Conditions at the time saw demand close to that forecast, while available capacity was 542 MW below that forecast four hours ahead.

From 12.30 pm, a constraint managing the loading on the Calvale to Stanwell 275 kV line for the loss of the Calvale to Wurdong 275 kV line was binding. The constraint equation affects the majority of Queensland generators.

Over three rebids from 2.38 pm, effective from 2.45 pm and 2.50 pm, Origin Energy reduced the available capacity of Mt Stuart Power Station from 402 MW to zero (all of which was priced at or below \$500/MWh). The reason given was “A avoid uneconomic start sl”.

At 2.40 pm, effective from 2.50 pm, CS Energy rebid 450 MW of available capacity at Gladstone Power Station from prices below \$40/MWh to prices above \$10 900/MWh. The reason given was “1436F G/stone prevent un-economic dispatch sl”.

The flow on QNI went from 465 MW into New South Wales at 2.45 pm to 354 MW (forced counter-price) at 2.50 pm. The 5-minute dispatch price reached \$1429/MWh at 2.50 pm as low priced generation was ramped down causing higher priced generation to be dispatched.

In response to the high price, effective from 3.05 pm, 711 MW of capacity was rebid close to the floor resulting in the dispatch price falling to -\$716/MWh at 3.05 pm and 3.10 pm.

At 2.40 pm a constraint invoked by AEMO to manage negative settlement residues started to bind. The constraint bound for the majority of the time between 2.40 pm and 3.10 pm. Around \$92 000 of negative settlement residues accrued between 1 pm and 5 pm.

There was no other significant rebidding.

## Monday, 5 March

| <b>12 PM</b>            | <b>Actual</b> | <b>4 hr forecast</b> | <b>12 hr forecast</b> |
|-------------------------|---------------|----------------------|-----------------------|
| Price (\$/MWh)          | 275.68        | 32.90                | 27.89                 |
| Demand (MW)             | 7332          | 7594                 | 7172                  |
| Available capacity (MW) | 10 883        | 11 010               | 11 150                |
| <b>12:30 PM</b>         | <b>Actual</b> | <b>4 hr forecast</b> | <b>12 hr forecast</b> |
| Price (\$/MWh)          | 289.35        | 31.94                | 25.76                 |
| Demand (MW)             | 7242          | 7571                 | 7198                  |
| Available capacity (MW) | 10 651        | 11 001               | 11 156                |

Conditions at the time saw demand up to 329 MW below that forecast four hours ahead with available capacity up to 350 MW below forecast.

From 11.10 am, a constraint managing the loading on the Calvale to Stanwell 275 kV line for the loss of the Calvale to Wurdong 275 kV line was binding. The constraint equation affects the majority of Queensland generators.

At 11.44 am, effective from 11.55 am, CS Energy rebid 360 MW of available capacity at Gladstone Power Station from prices below \$40/MWh to \$10 900/MWh. The reason given was “1142A G/stone intraconnector constraint 855-871 bid gps down sl”.

The limit on QNI went from 423 MW into New South Wales at 11.50 am to 188 MW (counter-price) at 11.55 am. The 5-minute dispatch price reached \$1376/MWh at 12 pm as low priced generation was ramped down causing higher priced generation to be dispatched.

Over two rebids from 11.52 am, Origin Energy reduced the availability of Mt Stuart Power Station by 260 MW to 142 MW. The reason given was “change in avail – avoid uneconomic start al”.

At 12.03 pm, effective from 12.10 pm, Stanwell Corporation rebid 1240 MW of low priced capacity at its Tarong and Tarong North Power Stations into price bands close to the floor. The reason given was “1200A manage constraint Q>>NIL\_855\_871 sl”.

At 12.18 pm, effective from 12.25 pm for the 12.30 pm trading interval CS Energy rebid 360 MW of capacity at Gladstone Power Station from priced below \$40/MWh to above \$10/900/MWh. The reason given was “1216A G/stone intraconnector constraint 855-871 SL”:

Flows on QNI went from 882 MW into New South Wales at 12.20 pm to 609 MW (forced counter-price) at 12.25 pm. The 5-minute dispatch price reached \$1325/MWh at 12.25 pm as low priced generation was ramped down causing higher priced generation to be dispatched.

At 12.35 pm a constraint invoked to manage negative settlement residues started to bind. The constraint bound for the majority of the time between 12.35 pm and 1.20 pm. Around \$120 000 of negative settlement residues accrued during this period.

There was no other significant rebidding.

## Tuesday, 6 March

| <b>2 PM</b>             | <b>Actual</b> | <b>4 hr forecast</b> | <b>12 hr forecast</b> |
|-------------------------|---------------|----------------------|-----------------------|
| Price (\$/MWh)          | 267.63        | 20.76                | 25.76                 |
| Demand (MW)             | 6971          | 7053                 | 7144                  |
| Available capacity (MW) | 11 096        | 11 382               | 11 497                |

Conditions at the time saw demand close to that forecast, while available capacity was 286 MW below that forecast four hours ahead.

From 12.05 pm, a constraint managing the loading on the Calvale to Stanwell 275 kV line for the loss of the Calvale to Wurdong 275 kV line was binding. The constraint equation affects the majority of Queensland generators.

At 12.42 pm, CS Energy reduced the available capacity of Gladstone unit three by 150 MW (all of which was priced at zero). The reason given was “1241P Gstone3 unit availability boiler tube leak sl”. At 1.39 pm, effective from 1.50 pm, CS Energy rebid 260 MW of available capacity priced below \$40/MWh to above \$10 900/MWh. The reason given was “1338A G/stone intraconnector constraint 855-871 sl”.

Over two rebids from 1.35 pm, Origin Energy reduced the available capacity of Mt Stuart Power Station from 260 MW to 142 MW (all of which was priced at or below \$450/MWh). The reason given was “A avoid uneconomic start sl”.

The flow on QNI went from 837 MW into New South Wales at 1.45 pm to 669 MW (forced counter-price) at 1.50 pm. The 5-minute dispatch price reached \$1268/MWh at 1.50 pm as low priced generation was ramped down causing higher priced generation to be dispatched.

From 2 pm to 2.15 pm inclusive, a constraint invoked to manage negative settlement residues bound. Around \$175 000 of negative settlement residues accrued between 1.30 pm and 2 pm, inclusive.

There was no other significant rebidding.

## Friday, 9 March

| <b>4 PM</b>             | <b>Actual</b> | <b>4 hr forecast</b> | <b>12 hr forecast</b> |
|-------------------------|---------------|----------------------|-----------------------|
| Price (\$/MWh)          | 260.12        | 92.82                | 25.77                 |
| Demand (MW)             | 7087          | 7016                 | 7255                  |
| Available capacity (MW) | 11 059        | 11 394               | 11 381                |

Conditions at the time saw demand close to that forecast and available capacity 335 MW below that forecast four hours ahead.

From 11.40 am, a constraint managing the loading on the Calvale to Stanwell 275 kV line for the loss of the Calvale to Wurdong 275 kV line was binding. The constraint equation affects the majority of Queensland generators.

From 2.47 pm, Origin Energy rebid the availability of Mt Stuart Power Station to zero (from 404 MW), all of which was priced at \$550/MWh or lower. The reasons given were “avoid uneconomic dispatch sl”.



At 3.47, effective from 3.55 pm, CS Energy rebid 160 MW of capacity at Gladstone Power Station from prices below \$40/MWh to above \$10 900/MWh. The reason given was “1544A G/stone intraconnector constraint 855\_871 sl”.

The flow on QNI went from 915 MW into New South Wales at 3.50 pm to 829 MW (forced counter-price) at 4 pm. The 5-minute dispatch price reached \$1304/MWh at 4 pm as low priced generation was ramped down causing higher priced generation to be dispatched.

At 1.50 pm a constraint to manage negative settlement residues started to bind. The constraint bound for the majority of the time between 1.50 pm and 4.10 pm. Around \$280 000 of negative settlement residues accrued between 12.40 pm and 4.15 pm.

There was no other significant rebidding.

# Detailed NEM Price and Demand Trends

for Weekly Market Analysis  
4 March - 10 March 2012



**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  | 33   | 32  |
| 2010-11 (\$/MWh) YTD | 37   | 50   | 29  | 47   | 31  |
| Change*              | -18% | -40% | -7% | -29% | 4%  |
| 2010-11 (\$/MWh)     | 34   | 43   | 29  | 42   | 31  |

**Table 2: NEM turnover**

| Financial year | NEM Turnover** (\$, billion) | Energy (TWh) |
|----------------|------------------------------|--------------|
| 2011-12 (YTD)  | \$4.091                      | 139          |
| 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) |
|----------------------------------|------|------|------|------|-----|------------------------|
| 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                           | 32   | 27   | 27   | 29   | 37  | 0.427                  |
| Mar-12 (MTD)                     | 33   | 23   | 21   | 22   | 39  | 0.127                  |
| Q1 2012                          | 33   | 26   | 25   | 28   | 38  | 1.100                  |
| Q1 2011                          | 76   | 109  | 46   | 99   | 27  | 3.173                  |
| Change*                          | -57% | -76% | -44% | -72% | 40% | -65.32%                |

**Table 4: ASX energy futures contract prices at end of 12 March 2012**

|                                 | QLD   |      | NSW   |      | VIC   |      | SA   |      |
|---------------------------------|-------|------|-------|------|-------|------|------|------|
|                                 | Base  | Peak | Base  | Peak | Base  | Peak | Base | Peak |
| Q1 2012                         |       |      |       |      |       |      |      |      |
| Price on 05 Mar (\$/MWh)        | 32    | 42   | 27    | 31   | 25    | 31   | 28   | 33   |
| Price on 12 Mar (\$/MWh)        | 31    | 40   | 26    | 30   | 25    | 30   | 26   | 33   |
| Open interest on 12 Mar         | 1079  | 258  | 2374  | 595  | 2126  | 302  | 293  | 5    |
| Traded in the last week (MW)    | 100   | 100  | 2     | 1    | 99    | 0    | 0    | 0    |
| Traded since 1 Jan 11 (MW)      | 11809 | 691  | 13898 | 1715 | 10533 | 1336 | 499  | 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  |
|------------------------------|------|------|------|------|------|------|
| 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 |      |      |      |      |      |      |
| MW Priced <\$20/MWh          | -194 | -460 | -25  | -213 | 154  | -738 |
| MW Priced \$20 to \$50/MWh   | 416  | 621  | 98   | 94   | -404 | 825  |
| March 12 with March 11 (MTD) |      |      |      |      |      |      |
| MW Priced <\$20/MWh          | -252 | 1197 | 270  | -373 | -113 | 729  |
| MW Priced \$20 to \$50/MWh   | 438  | 1135 | -262 | -69  | -565 | 676  |

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

\*\* Estimated value