# WEEKLY ELECTRICITY MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

**24 March – 30 March 2013**

## Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 24 to 30 March and the 12/13 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 24 Mar - 30 Mar 2013 | 89 | 53 | 46 | 57 | 43 |
| % change from previous week* | 8 | 3 | 2 | 3 | -13 |
| 12-13 financial YTD | 74 | 56 | 62 | 65 | 49 |
| % change from 11-12 financial YTD** | 145 | 90 | 132 | 98 | 52 |

*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 Thursday 28 March 2013. 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 -> Australian energy industry -> Performance of the energy sector

[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 2013 | 71 | 4% | 56 | 1% | 53 | 0% | 59 | 3% |
| Calendar Year 2014 | 57 (20) | 2% | 55 | 0% | 51 | 0% | 57 | 0% |
| Calendar Year 2015 | 50 | 0% | 48 | 0% | 45 | -1% | 49 | 0% |
| Three year average | 59 | 2% | 53 | 0% | 50 | 0% | 55 | 1% |

Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au
* a number in brackets denotes the number of trades in the product.

Figure 3 shows the $300 cap contract price for Q1 2013 and calendar year 2013 and the percentage change[4] from the previous week.

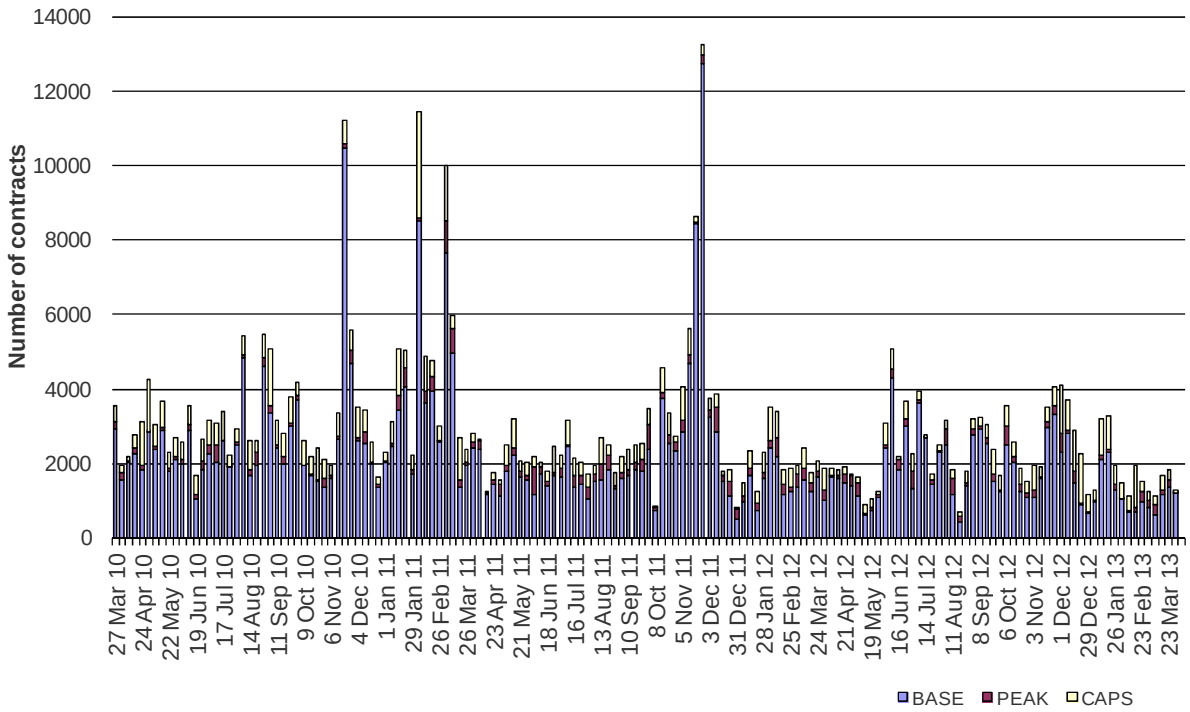
**Figure 3: $300 cap contract prices ($/MWh)**

| | QLD | | NSW | | VIC | | SA | |
|---|---|---|---|---|---|---|---|---|
| Q1 2013 | 21 | -5% | 0 | -42% | 3 | -7% | 5 | 0% |
| 2013 | 8 | -1% | 2 | 2% | 2 | -7% | 4 | 0% |

Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au
* a number in brackets denotes the number of 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**

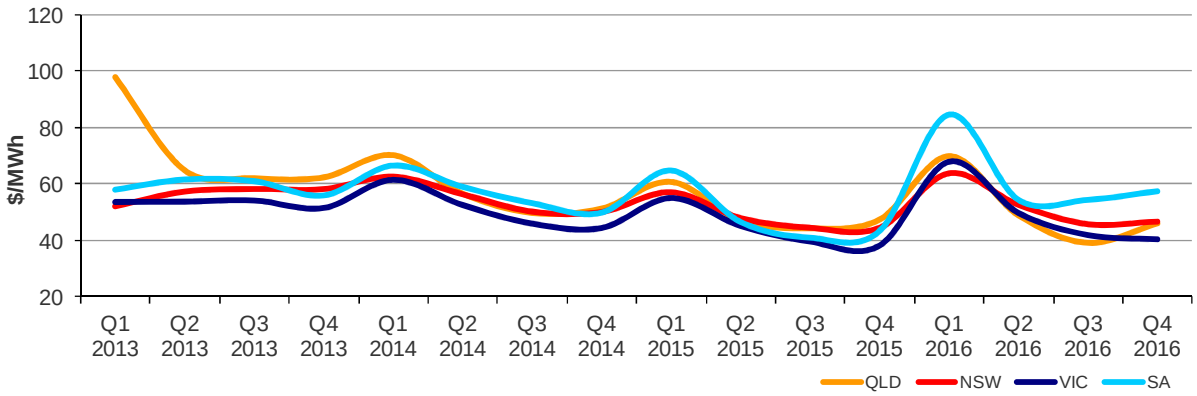



Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

[4] Calculated on prices prior to rounding.

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

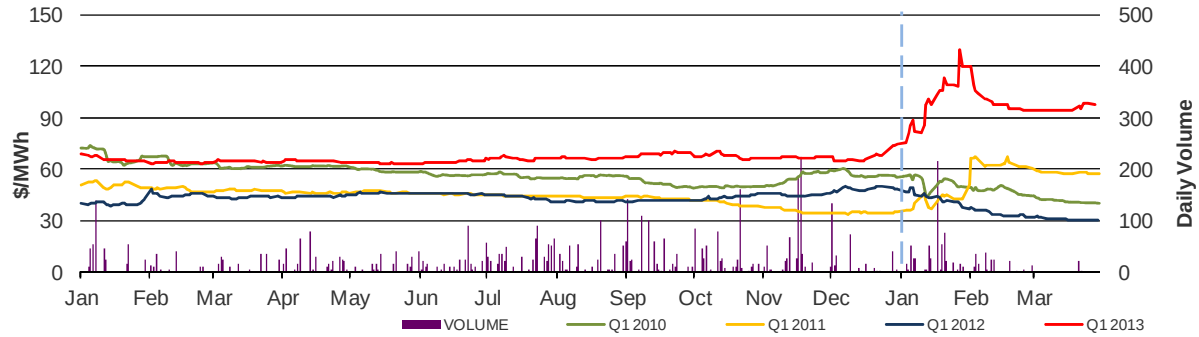
**Figure 5: Quarterly base future prices Q1 2013 – Q4 2016**




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

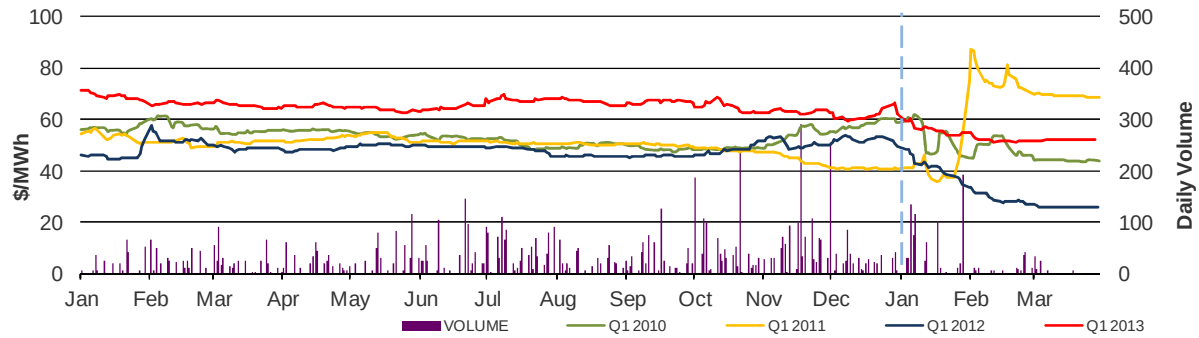
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2010, 2011, 2012 and 2013. Also shown is the daily volume of Q1 2013 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.

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



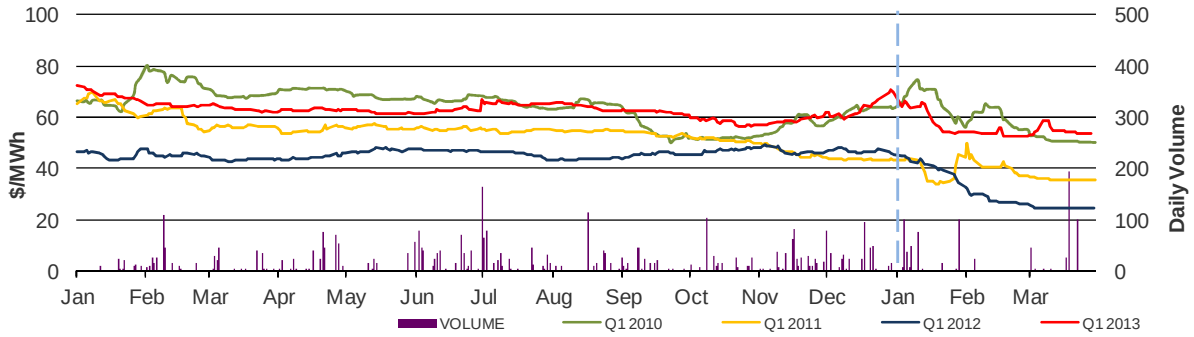

Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

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



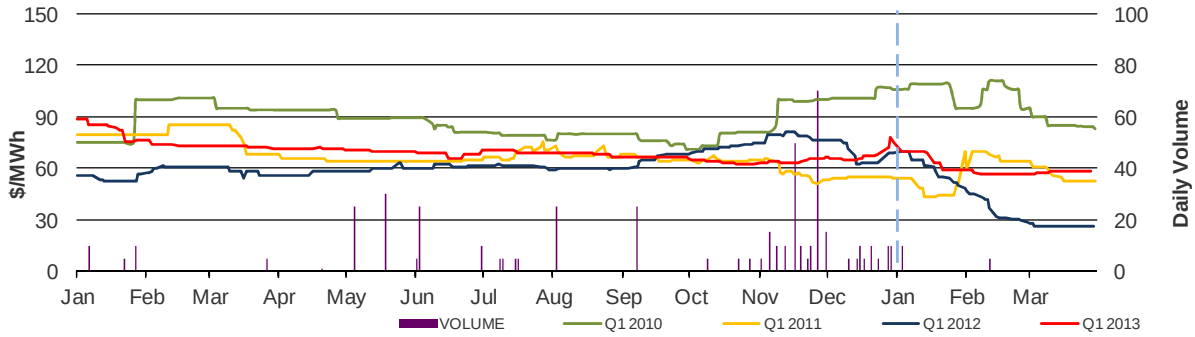

Source: d-cyphaTrade/ASX www.d-cyphatrade.com.au

**Figure 8: Victoria Q1 2010, 2011, 2012 and 2013**




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

**Figure 9: South Australia Q1 2010, 2011, 2012 and 2013**




Source: d-cyphaTrade/ASX 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 182 trading intervals throughout the week where actual prices varied significantly from forecasts[5]. This compares to the weekly average in 2012 of 60 counts and the average in 2011 of 78. Reasons for these variances are summarised in Figure 10[6].

[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 | 3 | 8 | 0 | 4 |
| % of total below forecast | 20 | 49 | 0 | 16 |

The total may not equal 100% due to rounding

**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 159 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 | 159 | -522 | -367 | -52 |
| NSW | -179 | 28 | -275 | 349 |
| VIC | 47 | -182 | 164 | 21 |
| SA | -107 | -65 | -203 | 31 |
| TAS | 153 | -13 | 134 | 73 |
| Total | 73 | -754 | -547 | 422 |

**Ancillary services market**

The total cost of frequency control ancillary services (FCAS) on the mainland for the week was $144 500 or less than one per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $761 000 or 11 per cent of energy turnover in Tasmania. This was driven by short duration price spikes for local services on 25 and 28 March.

At 12.55 am on 25 March, interconnector flows changed from northward flows to within its *no go zone* (50 MW to – 50 MW), which meant that Basslink was unable to transfer frequency control ancillary services and all services were required locally:

- the local lower 6 second (L6) service increased from 0 MW at 12.50 am, to 192 MW at 12.55 am and 202 MW at 1 am. This saw the lower 6 second price increase from zero at 12.50 am to $12 000/MWh for the 12.55 am and 1 am dispatch intervals;
- the local lower regulation (LReg) service increased from 0 MW at 12.50 am, to 50 MW for the 12.55 am and 1 am dispatch intervals. This saw the lower regulation price increase from zero at 12.50 am to $2227/MWh at 12.55 am and $9219/MWh at 1 am;
- the local raise 6 second (R6) service increased from 69 MW at 12.50 am, to 76 MW at 12.55 am and 84 MW at 1 am. This saw the raise 6 second price increase from $8.70/MW at 12.50 am to $156/MW for the 12.55 am and to the price cap at 1 am; and
- the local raise regulation (RReg) service increased from 26 MW at 12.50 am, to 50 MW for the 12.55 am and 1 am dispatch intervals. This saw the raise regulation price increase from $3/MW at 12.50 am to $2170/MW at 12.55 am and $9160/MWh at 1 am.

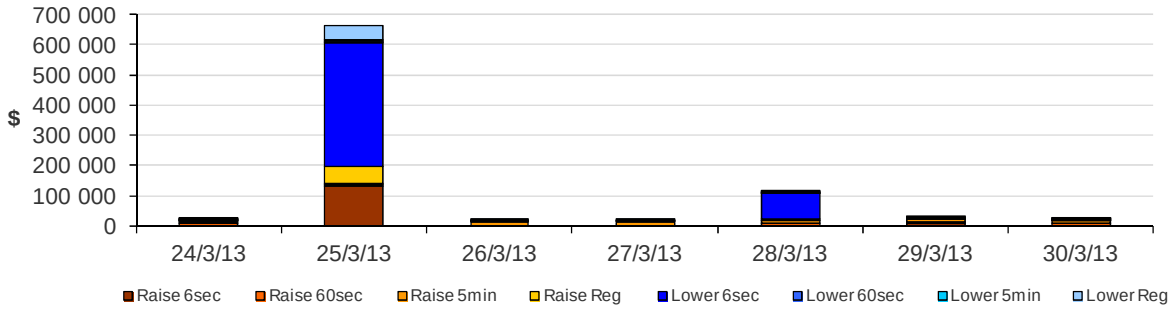
At 12.57 am, effective from 1.05 am, Hydro Tasmania rebid the low break point, high break point and the enablement maximum point for its Poatina unit for a number of its ancillary services. This increased the availability of ancillary services offered to the market. Further, effective from 1.10 am, Hydro Tasmania rebid to increase the availability of ancillary services at Cethana in the R6, RReg, L6 and LReg services by 16 MW to 26 MW.

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

At 11 am on 28 March a step change in flows on BassLink saw the requirement for local lower 6 second (L6) service increase from 0 MW at 10.55 am, to 79 MW at 11 am. This saw the lower 6 second price increase from zero at 10.55 am to the price cap at 11 am – resulting in $85 000 of cost on the day.

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**
**April 2013**

AUSTRALIAN ENERGY REGULATOR

**24 March – 30 March 2013**

**Queensland:**

There were two occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of $89/MWh and above $250/MWh.

### Monday, 25 March

| 6:30 PM | Actual | 4 hr forecast | 12 hr forecast |
|---|---|---|---|
| Price ($/MWh) | 290.43 | 155.03 | 299.99 |
| Demand (MW) | 7267 | 7154 | 7205 |
| Available capacity (MW) | 9799 | 9667 | 10 237 |
| **7:00 PM** | **Actual** | **4 hr forecast** | **12 hr forecast** |
| Price ($/MWh) | 301.67 | 155.03 | 299.99 |
| Demand (MW) | 7264 | 7121 | 7195 |
| Available capacity (MW) | 9767 | 9647 | 10 242 |

Conditions on the day saw price, demand and available capacity close to forecast.

Over two rebids at 3 pm and 6.15 pm, effective from 3.10 pm and 6.25 pm respectively, CS Energy rebid a total of 325 MW of capacity at Gladstone from prices below $90/MWh to above $12 500/MWh. The reasons given were “1459P fuel management-SL” and “1812 portfolio rearrangement due to-kogan”.

For a significant period of the day, Queensland spot prices were above $100/MWh. Limited low priced capacity offers was a significant contributing factor to these sustained high prices. For the period between 1 pm and 7 pm, there was around 6600 MW of capacity priced below $100/MWh, whilst demand during this period, minus imports, was around 6700MW to 7000 MW.

There was no other significant rebidding.

**South Australia:**
There was one occasion where the spot price in South Australia was greater than three times the Queensland weekly average price of $57/MWh and above $250/MWh.

## Sunday, 24 March

| Midnight | Actual | 4 hr forecast | 12 hr forecast |
|---|---|---|---|
| Price ($/MWh) | 2039.53 | 70.80 | 70.45 |
| Demand (MW) | 1451 | 1473 | 1461 |
| Available capacity (MW) | 2216 | 2238 | 2235 |

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

The scheduled demand in South Australia increased rapidly from 1356 MW at 11.30 pm to 1573 MW at 11.35 pm. This sharp increase in forecast demand of more than 210 MW in five minutes (compared to an increase in metered demand over the same period of around 100 MW) was related to off peak hot water load. As the ramp up rate capability from a number of generators was limited, high-priced capacity had to be dispatched to meet the increase in demand. As a result, the 5-minute price increased from $61/MWh at 11.30 pm to $12 001/MWh at 11.35 pm, before reducing to previous levels. Import limits across both the Heywood and Murraylink interconnectors were violated by around 5 MW in total at the same time.

There was no significant rebidding.

# Detailed NEM Price and Demand Trends

for Weekly Market Analysis

24 March - 30 March 2013

AUSTRALIAN ENERGY REGULATOR

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

| Financial year | QLD | NSW | VIC | SA | TAS |
|---|---|---|---|---|---|
| 2012-13 ($/MWh) YTD | 74 | 56 | 62 | 65 | 49 |
| 2011-12 ($/MWh) YTD | 30 | 30 | 27 | 33 | 32 |
| Change* | 145% | 90% | 132% | 98% | 52% |
| 2011-12 ($/MWh) | 30 | 31 | 28 | 32 | 33 |

**Table 2: NEM turnover**

| Financial year | NEM Turnover** ($, billion) | Energy (TWh) |
|---|---|---|
| 2012-13 YTD | 9.094 | 146 |
| 2011-12 | 5.987 | 199 |
| 2010-11 | 7.445 | 204 |

**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) |
|---|---|---|---|---|---|---|
| November-12 | 55 | 58 | 94 | 72 | 51 | 1.045 |
| December-12 | 62 | 50 | 55 | 57 | 47 | 0.881 |
| January-13 | 170 | 51 | 60 | 68 | 57 | 1.489 |
| February-13 | 60 | 53 | 56 | 63 | 46 | 0.855 |
| March-13 MTD | 76 | 53 | 56 | 62 | 50 | 0.964 |
| | | | | | | |
| Q1 2013 QTD | 105 | 52 | 57 | 65 | 51 | 3.308 |
| Q1 2012 QTD | 32 | 26 | 26 | 28 | 37 | 1.385 |
| Change* | 234% | 99% | 123% | 132% | 37% | 1.388 |

**Table 4: ASX energy futures contract prices at end of 28 March 2013**

| | QLD | | NSW | | VIC | | SA | |
|---|---|---|---|---|---|---|---|---|
| Q1 2013 | Base | Peak | Base | Peak | Base | Peak | Base | Peak |
| Price on 22 Mar ($/MWh) | 95 | 108 | 52 | 54 | 54 | 63 | 58 | 72 |
| Price on 28 Mar ($/MWh) | 98 | 108 | 52 | 54 | 54 | 63 | 58 | 72 |
| Open Interest on 28 Mar ($/MWh) | 1463 | 341 | 2456 | 691 | 1321 | 194 | 275 | 0 |
| Traded in the last week (MW) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Traded since 1 Jan 12 (MW) | 5982 | 705 | 8881 | 1070 | 4622 | 312 | 486 | 0 |
| Settled price for Q1 12 ($/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 |
|---|---|---|---|---|---|---|
| January 13 with January 12 | | | | | | |
| MW Priced $20/MWh | -2772 | -2217 | -1360 | -41 | -235 | -6625 |
| MW Priced $20/MWh to $50/MWh | 1812 | 1269 | 1255 | -346 | 339 | 4330 |
| | | | | | | |
| February 13 with February 12 | | | | | | |
| MW Priced $20/MWh | -3691 | -1475 | -1023 | -157 | -399 | -6745 |
| MW Priced $20/MWh to $50/MWh | 2240 | 47 | 635 | -421 | 389 | 2891 |
| | | | | | | |
| March 13 with March 12 MTD | | | | | | |
| MW Priced $20/MWh | -4598 | -1294 | -810 | 99 | -386 | -6989 |
| MW Priced $20/MWh to $50/MWh | 2509 | -548 | 1060 | -290 | 353 | 3084 |

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

** Estimated value