# WEEKLY ELECTRICITY MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

**9 September – 15 September 2012**


## Summary

Weekly average spot prices ranged from $38/MWh in Tasmania to $73/MWh in South Australia.

The higher weekly average prices in Victoria and South Australia were driven by network outages in southern New South Wales. Rebidding of around 1400 MW of capacity by Snowy Hydro at Murray Power Station into low prices caused forced flows into New South Wales, counter price and negative settlement residues of around $1.2 million.


## Spot market prices

Figure 1 sets out the volume weighted average (VWA) prices for the week 9 September to 15 September 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 9 - 15 September 2011 | 57 | 54 | 70 | 73 | 38 |
| % change from previous week* | 3 | 3 | 37 | 50 | -9 |
| 12/13 financial YTD | 59 | 61 | 65 | 72 | 52 |
| % change from 11/12 financial YTD ** | 105 | 99 | 115 | 90 | 67 |

*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 17 September 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 -> 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 | 58* | 0% | 61* | 1% | 55* | 0% | 59 | 0% |
| Calendar Year 2014 | 55* | 0% | 59* | 1% | 54 | 0% | 55 | 0% |
| Calendar Year 2015 | 54 | -2% | 52 | 0% | 52 | 0% | 69 | 0% |
| Three year average | 56 | -1% | 57 | 0% | 54 | 0% | 61 | 0% |

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

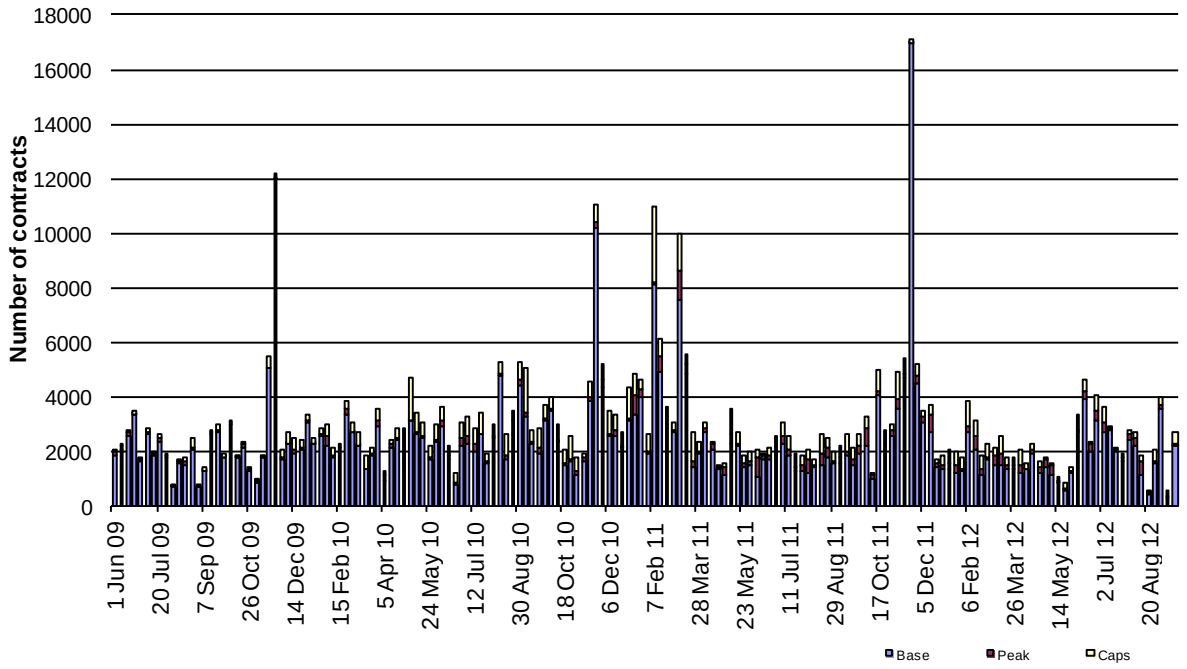
**Figure 3: $300 cap contract prices ($/MWh)**

| | QLD | | NSW | | VIC | | SA | |
|---|---|---|---|---|---|---|---|---|
| Q1 2013 (% change) | 15 | 5% | 14* | 13% | 12* | 1% | 16 | -10% |
| 2013 (% change) | 7 | 3% | 7 | 6% | 5 | 1% | 7 | -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**

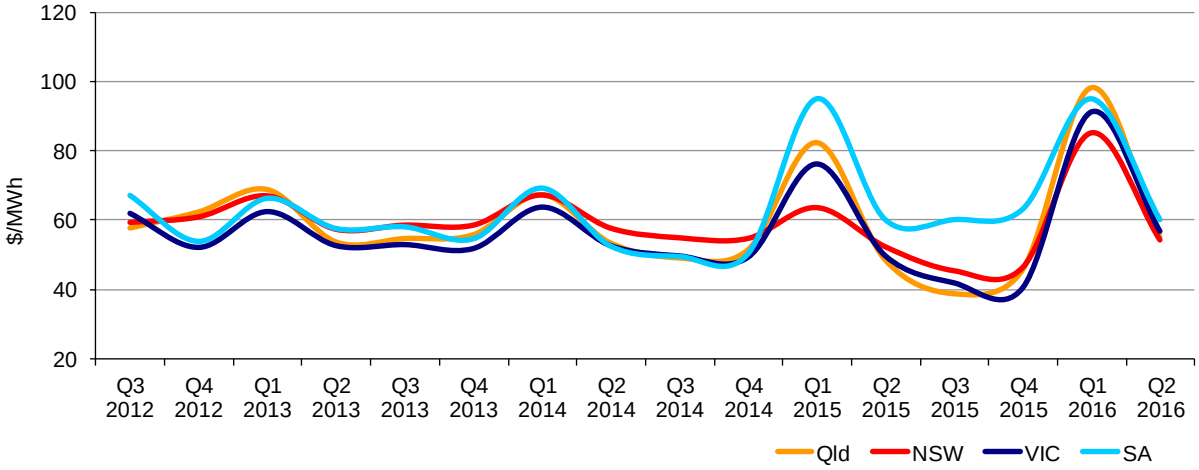



Source: d-cyphaTrade www.d-cyphatrade.com.au

[4] Calculated on prices prior to rounding.

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

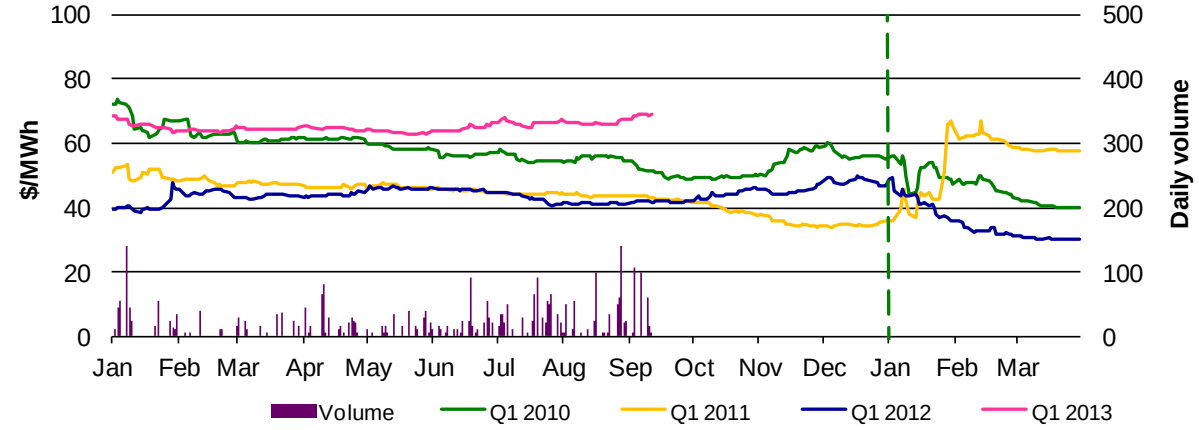
**Figure 5: Quarterly base future prices Q3 2012 – Q2 2016**




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

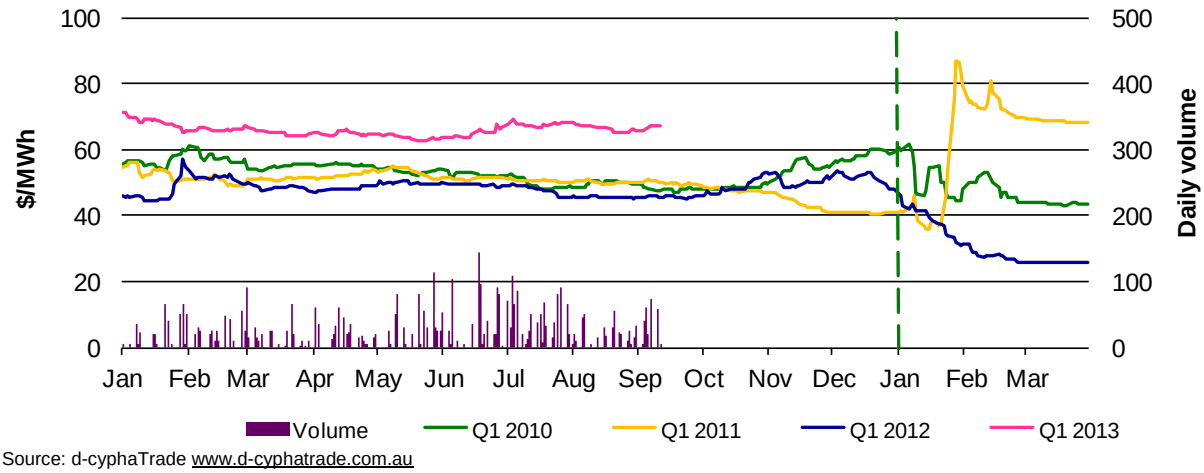
Figures 6-9 compare for each region the closing daily base contract prices for the first quarter of 2010, 2011, 2012 and 2013. Also shown is the daily volume of Q1 2013 base contracts traded. The vertical dashed line signifies the start of the Q1 period for which the contracts are being purchased.

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



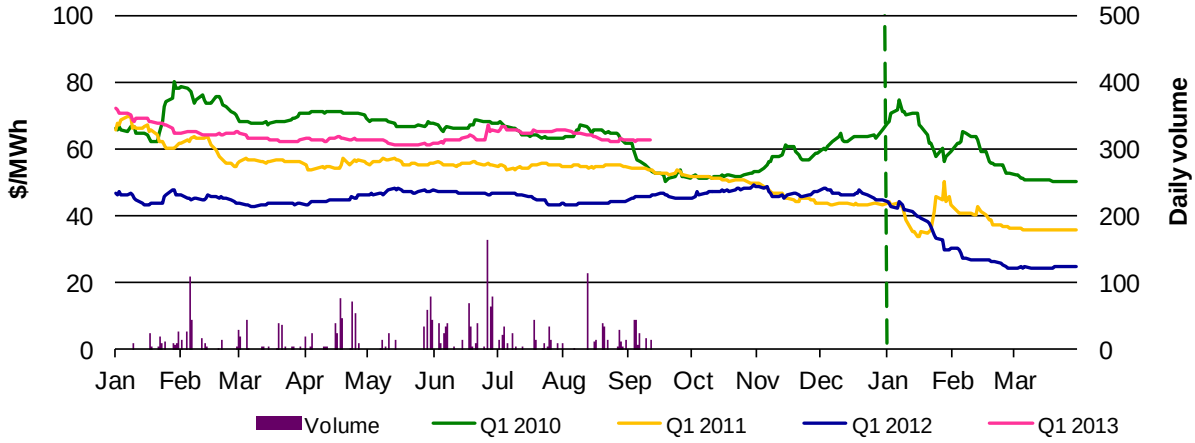

Source: d-cyphaTrade www.d-cyphatrade.com.au

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



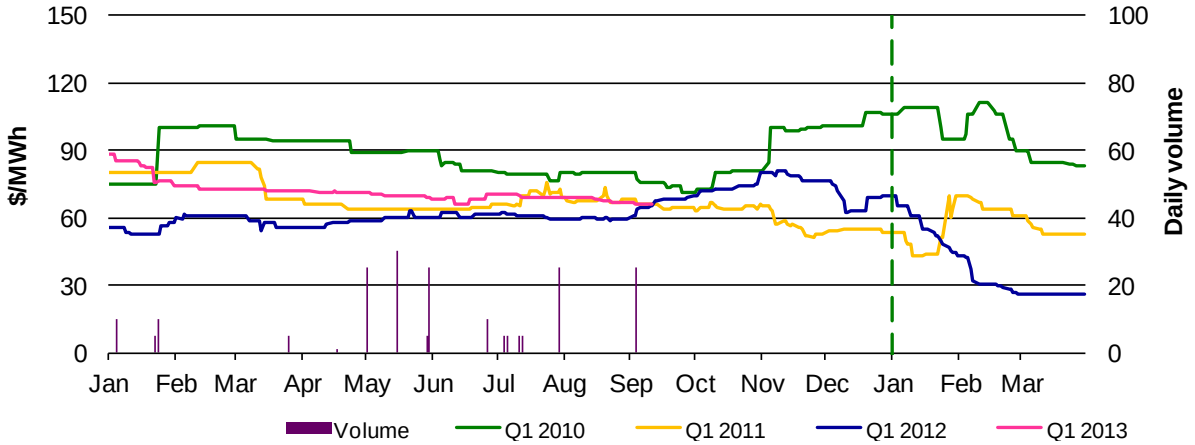

Source: d-cyphaTrade www.d-cyphatrade.com.au

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




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

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




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 39 trading intervals throughout the week where actual prices varied significantly from forecasts[5]. This compares to the weekly average in 2011 of 78 counts and the average in 2010 of 57. 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 | 2 | 2 | 6 | 5 |
| % of total below forecast | 26 | 52 | 1 | 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.

## 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 297 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 | -297 | -540 | -577 | -11 |
| NSW | -41 | -272 | 161 | -27 |
| VIC | 97 | 25 | 59 | 165 |
| SA | 52 | 15 | 275 | 119 |
| TAS | 141 | -136 | 40 | -95 |
| **TOTAL** | -48 | -908 | -42 | 151 |

## Ancillary services market

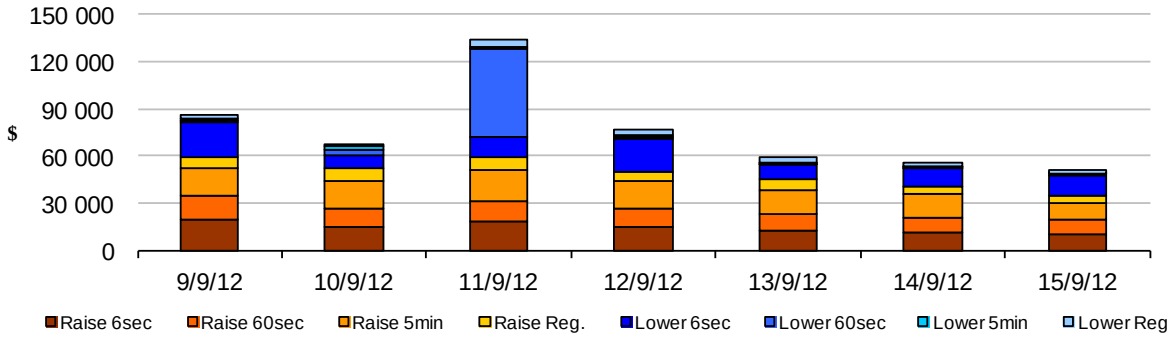
The total cost of frequency control ancillary services (FCAS) on the mainland for the week was $408 000 or less than one per cent of energy turnover on the mainland.

On 11 September lower local FCAS was required for South Australia as a result of a planned outage of the Heywood-Tarrone 500 kV line. Five-minute prices reached $3836/MW for the lower 60-second service, with the total cost of around $55 000 for the day.

The total cost of FCAS in Tasmania for the week was $121 000 or 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**

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**October 2012**

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

**9 – 15 September 2012**

**Victoria:**

There were two occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of $70/MWh and above $250/MWh.

**Tuesday, 11 September**

| **9 AM** | **Actual** | **4 hr forecast** | **12 hr forecast** |
|---|---|---|---|
| Price ($/MWh) | 2221.40 | 1971.26 | 245.86 |
| Demand (MW) | 6383 | 6798 | 6755 |
| Available capacity (MW) | 8093 | 8031 | 8290 |
| **9:30 AM** | **Actual** | **4 hr forecast** | **12 hr forecast** |
| Price ($/MWh) | 2212.40 | 3304.60 | 132.10 |
| Demand (MW) | 6230 | 6828 | 6768 |
| Available capacity (MW) | 8093 | 8031 | 8291 |

Conditions at the time saw demand up to 598 MW below that forecast four hours ahead and available capacity close to that forecast four hours ahead. From 6 pm the previous evening price forecasts varied considerably – reaching the price cap at times. Around an hour before dispatch the forecast price reduced to around $135/MWh as a result of a reduction in forecast demand.

At 8.05 am as a result of a scheduled outage of the Lower Tumut to Wagga line in New South Wales a constraint set was invoked. At 8.20 am one of the constraints in this set, which manages the flow on one Murray to Dederang line for the loss of the other Murray to Dederang line, by limiting generation from Murray power station and forcing flow from Victoria to New South Wales, started binding.

At 8.43 am, effective from 8.50 am, Snowy Hydro rebid 1437 MW of capacity at Murray from prices above $30/MWh to zero (with 535 MW priced between $145/MWh and $455/MWh). The reason given was "Vic:5MPD price $180.34 hgr than 5MPD 08:50@8:11". Then a further rebid at 8.44 am, effective from 8.55 am, saw the ramp down rate of Murray reduced from 50 MW/min to the minimum allowed of 3 MW/min. The reason given was "Avoid Murray being constrained off". For the five-minute predispatch just prior to this rebid, forecast prices increased to spike to near the price cap, but after the rebid, forecast prices returned to less than $75/MWh.

At 8.49 am, effective from 9 am, AGL rebid 270 MW of capacity at Eildon and McKay from prices below $74/MWh to above $12 700/MWh. The reason given was "Chg in forecast::price decrease vs PD Vic $66.74". Following this rebid, the dispatch price in Victoria increased from $73/MWh at 8.55 am to $12 890/MWh at 9 am (the price in South Australia also increased - from $72/MWh to $9602/MWh).

The combination of the network outage and Murray rebids saw flow forced counter price on the Vic-NSW interconnector. Negative settlement residues of around $1.2 million accrued. At 9.10 am a constraint that was invoked by AEMO to manage the accrual of negative settlement was violated as Murray could not be ramped down quickly enough to cease the counter-price flows.

**South Australia:**

There were three occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of $73/MWh and above $250/MWh.

**Monday, 10 September**

| **7 PM** | **Actual** | **4 hr forecast** | **12 hr forecast** |
|---|---|---|---|
| Price ($/MWh) | 872.48 | 96.17 | 150.01 |
| Demand (MW) | 1778 | 1764 | 1865 |
| Available capacity (MW) | 2314 | 2331 | 2322 |

Conditions at the time saw demand, import capability and available capacity close to that forecast four hours ahead.

From 3 September there was an outage of the Bendigo to Fosterville to Shepparton line which limits flow across Murraylink into South Australia to less than 60 MW. At around 6 am a planned outage of the Heywood to Tarrone and Moorabool to Tarrone 500kV lines commenced, which limits flows across Heywood into South Australia to around 220 MW.

At 6.55 pm a 50 MW increase in demand saw the five-minute dispatch price increase from $78/MWh to $4848/MWh. All low priced generation in South Australia was fully dispatched or ramp rate limited. At 7 pm the dispatch price fell to $63/MWh coinciding with a 55 MW reduction in demand.

There was no significant rebidding.

**Tuesday, 11 September**

| **9 AM** | **Actual** | **4 hr forecast** | **12 hr forecast** |
|---|---|---|---|
| Price ($/MWh) | 1670.16 | 1500.20 | 243.59 |
| Demand (MW) | 1579 | 1697 | 1643 |
| Available capacity (MW) | 2389 | 2361 | 2270 |
| **9:30 AM** | **Actual** | **4 hr forecast** | **12 hr forecast** |
| Price ($/MWh) | 1484.78 | 1500.30 | 130.21 |
| Demand (MW) | 1499 | 1676 | 1621 |
| Available capacity (MW) | 2355 | 2352 | 2379 |

Conditions at the time reflected conditions in Victoria.

There was no significant rebidding.

# Detailed NEM Price and Demand Trends

for Weekly Market Analysis
9 September - 15 September 2012

AUSTRALIAN ENERGY REGULATOR

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

| Financial year | QLD | NSW | VIC | SA | TAS |
|---|---|---|---|---|---|
| 2012-13 ($/MWh) YTD | 59 | 61 | 65 | 72 | 52 |
| 2011-12 ($/MWh) YTD | 29 | 31 | 30 | 38 | 31 |
| Change* | 105% | 99% | 115% | 90% | 67% |
| 2011-12 ($/MWh) | 30 | 31 | 28 | 32 | 33 |

**Table 2: NEM turnover**

| Financial year | NEM Turnover** ($, billion) | Energy (TWh) |
|---|---|---|
| 2012-13 (YTD) | $2.632 | 42 |
| 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) |
|---|---|---|---|---|---|---|
| May-12 | 26 | 29 | 27 | 30 | 33 | 0.434 |
| June-12 | 35 | 37 | 38 | 31 | 35 | 0.619 |
| July-12 | 65 | 68 | 76 | 83 | 60 | 1.228 |
| August-12 | 55 | 58 | 57 | 65 | 48 | 0.971 |
| September-12 (MTD) | 57 | 54 | 60 | 61 | 41 | 0.432 |
| | | | | | | |
| Q3 2012 (QTD) | 59 | 61 | 65 | 72 | 52 | 2.632 |
| Q3 2011 (QTD) | 29 | 31 | 30 | 38 | 31 | 1.338 |
| Change* | 105% | 99% | 115% | 90% | 67% | 96.69% |

**Table 4: ASX energy futures contract prices at end of 17 September 2012**

| | QLD | | NSW | | VIC | | SA | |
|---|---|---|---|---|---|---|---|---|
| Q1 2013 | Base | Peak | Base | Peak | Base | Peak | Base | Peak |
| Price on 10 Sep ($/MWh) | 69 | 94 | 66 | 86 | 62 | 83 | 66 | 101 |
| Price on 17 Sep ($/MWh) | 69 | 94 | 67 | 88 | 63 | 83 | 66 | 101 |
| Open interest on 17 Sep | 1088 | 176 | 1413 | 411 | 1249 | 78 | 159 | 0 |
| Traded in the last week (MW) | 180 | 10 | 157 | 10 | 62 | 0 | 0 | 0 |
| Traded since 1 Jan 12 (MW) | 3336 | 307 | 4553 | 429 | 2674 | 134 | 196 | 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 |
|---|---|---|---|---|---|---|
| July 12 with July 11 | | | | | | |
| MW Priced <$20/MWh | -3838 | -1796 | -1613 | -170 | -211 | -7628 |
| MW Priced $20 to $50/MWh | 2427 | -1157 | 516 | -497 | 110 | 1399 |
| | | | | | | |
| August 12 with August 11 | | | | | | |
| MW Priced <$20/MWh | -3009 | -1064 | -1217 | -133 | -170 | -5594 |
| MW Priced $20 to $50/MWh | 2583 | -1047 | 714 | -458 | 177 | 1969 |
| | | | | | | |
| September 12 with September 11 (MTD) | | | | | | |
| MW Priced <$20/MWh | -2333 | -602 | -2012 | -86 | -73 | -5106 |
| MW Priced $20 to $50/MWh | 1967 | -1048 | 910 | -369 | 178 | 1638 |

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