# **Australian Energy Regulator logoElectricity Report**

**21 – 27 August 2016**

Introduction

The AER is required to publish the reasons for significant variations between forecast and actual price and is responsible for monitoring activity and behaviour in the National Electricity Market. The Electricity Report forms an important part of this work. The report contains information on significant price variations, movements in the contract market, together with analysis of spot market outcomes and rebidding behaviour. By monitoring activity in these markets, the AER is able to keep up to date with market conditions and identify compliance issues.

Spot market prices

Figure 1 shows the spot prices that occurred in each region during the week 21 to 27 August 2016.

Figure : Spot price by region ($/MWh)

Figure 1 shows the spot prices for this week in each region. The markers indicate the daily maximum and minimum spot prices in each region.    


Figure 2 shows the volume weighted average (VWA) prices for the current week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.

Figure : Volume weighted average spot price by region ($/MWh)

Figure 2 shows the volume weighted average (VWA) prices for this week (with prices shown in Table 1) and the preceding 12 weeks, as well as the VWA price over the previous 3 financial years.    


Table : Volume weighted average spot prices by region ($/MWh)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Region | Qld | NSW | Vic | SA | Tas |
| Current week | 67 | 69 | 67 | 100 | 65 |
| 15-16 financial YTD | 46 | 39 | 36 | 72 | 34 |
| 16-17 financial YTD | 57 | 62 | 58 | 171 | 59 |

Longer-term statistics tracking average spot market prices are available on the [AER website](http://www.aer.gov.au/industry-information/industry-statistics).

Spot market price forecast 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 participants react to changing market conditions. A key focus is whether the actual price differs significantly from the forecast price either four or 12 hours ahead. These timeframes have been chosen as indicative of the time frames within which different technology types may be able to commit (intermediate plant within four hours and slow start plant within 12 hours).

There were 270 trading intervals throughout the week where actual prices varied significantly from forecasts. This compares to the weekly average in 2015 of 133 counts and the average in 2014 of 71. Reasons for the variations for this week are summarised in Table 2. Based on AER analysis, 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.

Table : Reasons for variations between forecast and actual prices

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Availability | Demand | Network | Combination |
| % of total above forecast | 5 | 55 | 0 | 1 |
| % of total below forecast | 31 | 5 | 0 | 1 |

Note: Due to rounding, the total may not be 100 per cent.

Generation and bidding patterns

The AER reviews generator bidding as part of its market monitoring to better understand the drivers behind price variations. Figure 3 to Figure 7 show the total generation dispatched and the amounts of capacity offered within certain price bands for each 30 minute trading interval in each region.

Figure : Queensland generation and bidding patterns

Figure 3 shows the total generation dispatched and the amounts of capacity bid in within certain price bands for each 30 minute trading interval in Queensland this week.
Should you require a description of the data for the week under review, please email us at AERInquiry@aer.gov.au.   


Figure : New South Wales generation and bidding patterns

Figure 4 shows the total generation dispatched and the amounts of capacity bid in within certain price bands for each 30 minute trading interval in New South Wales this week.
Should you require a description of the data for the week under review, please email us at AERInquiry@aer.gov.au.   


Figure : Victoria generation and bidding patterns

Figure 5 shows the total generation dispatched and the amounts of capacity bid in within certain price bands for each 30 minute trading interval in Victoria this week.
Should you require a description of the data for the week under review, please email us at AERInquiry@aer.gov.au.   


Figure : South Australia generation and bidding patterns

Figure 6 shows the total generation dispatched and the amounts of capacity bid in within certain price bands for each 30 minute trading interval in South Australia this week.
Should you require a description of the data for the week under review, please email us at AERInquiry@aer.gov.au.

Figure : Tasmania generation and bidding patterns

Figure 7 shows the total generation dispatched and the amounts of capacity bid in within certain price bands for each 30 minute trading interval in Tasmania this week.
Should you require a description of the data for the week under review, please email us at AERInquiry@aer.gov.au.   


Frequency control ancillary services markets

Frequency control ancillary services (FCAS) are required to maintain the frequency of the power system within the frequency operating standards. Raise and lower regulation services are used to address small fluctuations in frequency, while raise and lower contingency services are used to address larger frequency deviations. There are six contingency services:

* fast services, which arrest a frequency deviation within the first 6 seconds of a contingent event (raise and lower 6 second)
* slow services, which stabilise frequency deviations within 60 seconds of the event (raise and lower 60 second)
* delayed services, which return the frequency to the normal operating band within 5 minutes (raise and lower 5 minute) at which time the five minute dispatch process will take effect.

The Electricity Rules stipulate that generators pay for raise contingency services and customers pay for lower contingency services. Regulation services are paid for on a “causer pays” basis determined every four weeks by AEMO.

The total cost of FCAS on the mainland for the week was $8 155 000 or less than 1 per cent of energy turnover on the mainland.

The total cost of FCAS in Tasmania for the week was $133 500 or around 1 per cent of energy turnover in Tasmania.

Figure 8 shows the daily breakdown of cost for each FCAS for the NEM, as well as the average cost since the beginning of the previous financial year.

Figure 8: Daily frequency control ancillary service cost

Figure 8 shows the daily breakdown of cost for each FCAS for the NEM, as well as the average cost since the beginning of the previous financial year.
Should you require a description of the data for the week under review, please email us at  AERInquiry@aer.gov.au.

Detailed market analysis of significant price events

## National

There were two occasions where the spot price aligned nationally and the New South Wales price was greater than three times the New South Wales weekly average price of $69/MWh and above $250/MWh. The New South Wales price is used as a proxy for the NEM.

### Wednesday, 24 August

Table 3: Price, Demand and Availability

| Time | Price ($/MWh) | | | Demand (MW) | | | Availability (MW) | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast |
| 8 am | 275.36 | 69.81 | 114.95 | 26 607 | 26 162 | 26 508 | 35 518 | 35 847 | 35 463 |

Conditions at the time saw demand around 450 MW higher than forecast four hours ahead and availability was around 300 MW lower than forecast four hours ahead.

Table : Rebids for the 8 am trading interval

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Submitted time | Time effective | Participant | Station | Capacity rebid (MW) | Price from ($/MWh) | Price to ($/MWh) | Rebid reason |
| 6.15 am |  | Snowy Hydro | Tumut | 95 | 100 | 300 | 06:11 A VIC: 5MPD PRICE $62.82 HGR THN 30MPD 07:00@06:01 |
| 6.45 am |  | Origin Energy | Darling Downs | 127 | <76 | 249 | 0644P PLANT CONDITIONS - AVOID DB USE SL |
| 6.57 am |  | AGL Energy | Loy Yang A | 540 | <25 | 500 | 0648~P~010 UNEXPECTED/PLANT LIMITS~104 COAL |
| 6.59 am |  | Energy  Australia | Mt Piper | -60 | 40 | N/A | 06:57 P ADJ AVAIL DUE TO COAL QUALITY LIMIT |
| 7.23 am |  | AGL Energy | Loy Yang A | -50 | 16 | N/A | 0720~P~010 UNEXPECTED/PLANT LIMITS~101 MILLING LIMITS |
| 7.43 am | 7.50 am | AGL Energy | Loy Yang A | -50 | 16 | N/A | 0740~P~010 UNEXPECTED/PLANT LIMITS~105 DUST LIMITS |

The above rebidding saw prices across the NEM at around $275/MWh for a majority of the trading interval.

### Friday, 26 August

Table 5: Price, Demand and Availability

| Time | Price ($/MWh) | | | Demand (MW) | | | Availability (MW) | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast |
| 7 am | 263.73 | 88.73 | 50.98 | 25 153 | 24 694 | 24 700 | 35 144 | 35 931 | 36 838 |

Conditions at the time saw demand around 460 MW higher than forecast four hours ahead and availability was around 790 MW lower than forecast four hours ahead. The spot price was aligned during the 7 am trading interval across the NEM, with the New South Wales and Queensland spot prices exceeding the reporting threshold.

Table 6: Rebids for the 7 am trading interval

| Submitted time | Time effective | Participant | Station | Capacity rebid (MW) | Price from ($/MWh) | Price to ($/MWh) | Rebid reason |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 3.29 am |  | CS Energy | Callide B | -30 | 17 | N/A | 0328P MARCH CURRENT UNIT OUTPUT-SL |
| 4.02 am |  | AGL Energy | Mckay | -115 | <69 | N/A | 0400~P~020 REDUCTION IN AVAIL CAP~203 PLANT FAILURE 135MW |
| 4.17 am |  | CS Energy | Gladstone | -170 | <49 | N/A | 0417P UNIT RTS REVISED-DELAYED-SL |
| 4.41 am |  | CS Energy | Gladstone | -15 | -1000 | N/A | 0441P UNIT RTS REVISED-DELAYED-SL |
| 4.44 am |  | CS Energy | Wivenhoe | 160 | >300 | 0 | 0443P PORTFOLIO REARRANGEMENT DUE TO-GPS 1 DELAYED RTS-SL |
| 5.24 am |  | CS Energy | Gladstone | -40 | -1000 | N/A | 0524P UNIT RTS REVISED-DELAYED-SL |
| 5.55 am |  | CS Energy | Gladstone | -50 | -1000 | N/A | 0555P UNIT RTS REVISED-DELAYED-SL |
| 5.55 am |  | EnergyAustralia | Mt Piper | 100 | 40 | 290 | 05:52 P ADJ AVAIL DUE TO AMBIENT CONDITIONS |
| 6.01 am |  | EnergyAustralia | Mt Piper | 100 | 290 | 13 405 | 06:00 P ADJ AVAIL DUE TO AMBIENT CONDITIONS |
| 6.15 am |  | AGL Energy | Mckay | -165 | 0 | N/A | 0610~P~020 REDUCTION IN AVAIL CAP~203 PLANT FAILURE 165MW |
| 6.45 am | 6.55 am | EnergyAustralia | Mt Piper | -200 | <40 | N/A | 06:44 P ADJ AVAIL FUEL SUPPLY LIMIT |

At 6.40 am, there was a 400 MW increase in demand in the NEM (largely driven by demand increases in New South Wales, Victoria and Queensland). This, combined with the above rebidding, saw the dispatch price in the NEM regions increase from less than $95/MWh at 6.35 am to between $240/MWh to $300/MWh at 6.40 am. Dispatch prices remained between $240/MWh to $300/MWh for the remainder of the trading interval.

## South Australia

There were seven occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of $100/MWh and above $250/MWh. One of these occurred when prices were generally aligned across all regions and is detailed in the national market outcomes section. The remaining six occasions are presented below.

### Sunday, 21 August

Table 7: Price, Demand and Availability

| Time | Price ($/MWh) | | | Demand (MW) | | | Availability (MW) | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast |
| 9.30 pm | 301.39 | 119.99 | 296.00 | 1724 | 1646 | 1678 | 1958 | 1987 | 2048 |

Conditions at the time saw demand 78 MW higher than forecast four hours ahead and availability was close to forecast four hours ahead.

Table 8: Rebids for the 9.30 pm trading interval

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Submitted time | Time effective | Participant | Station | Capacity rebid (MW) | Price from ($/MWh) | Price to ($/MWh) | Rebid reason |
| 8.03 pm |  | Origin Energy | Quarantine | 123 | 125 | 14 000 | 2001A DEC SA DEM 5PD 1719 MW < 30PD 1784 MW @ 2030 SL |

There was no capacity priced between $193/MWh and $300/MWh meaning small changes in demand and availability could lead to volatile prices. The above rebid saw the price increase from $126/MWh at 9 pm to $301/MWh at 9.05 pm. The dispatch price remained above $300/MWh for the remainder of the trading interval.

### Monday, 22 August

Table 9: Price, Demand and Availability

| Time | Price ($/MWh) | | | Demand (MW) | | | Availability (MW) | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast |
| 8 am | 353.76 | 124.99 | 119.99 | 1761 | 1701 | 1657 | 1937 | 2232 | 2252 |
| 8.30 am | 388.17 | 296.00 | 124.99 | 1807 | 1761 | 1713 | 1929 | 2231 | 2245 |
| 9 am | 334.40 | 278.81 | 124.99 | 1759 | 1729 | 1691 | 1928 | 2221 | 2238 |

Conditions at the time saw demand up to 60 MW higher than forecast, while availability was up to 300 MW lower than forecast. This was due to wind generation being up to 53 MW less than forecast four hours ahead and all 235 MW of available capacity at Pelican Point being withdrawn due to a unit start issues.

Table Rebids for the 8 am, 8.30 am and 9 am trading intervals

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Submitted time | Time effective | Participant | Station | Capacity rebid (MW) | Price from ($/MWh) | Price to ($/MWh) | Rebid reason |
| 4.42 am |  | GDF Suez | Pelican Point | -165 | <300 | N/A | 0441P UPDATE RTS - UNIT START ELECTRICAL FAULT |
| 5.49 am |  | GDF Suez | Pelican Point | -70 | -1000 | N/A | 0548P UPDATE AVAIL: STARTING DEVICE UNABLE TO SYNC UNIT SL |
| 7.18 am |  | Origin Energy | Quarantine | 120 | 296 | 14 000 | 0715A CONSTRAINT MANAGEMENT - V:S\_PA\_SVC\_575 SL |
| 7.36 am | 7.45 am | Snowy Hydro | Angaston | 35 | 349 | 13 958 | 07:31 A SA: 5MPD PRICE $68.82 HGR THN 30MPD 08:00@07:31 |
| 7.50 am | 8 am | AGL Energy | Torrens Island | 70 | 300 | >485 | 0601~A~050 CHG IN AEMO PD~50 PD AVAILABLE GENERATION |

There was no capacity priced between $193/MWh and $300/MWh meaning small changes in demand and availability could lead to volatile prices. The reduction in capacity at Pelican Point saw forecast prices increase to between $300/MWh and $370/MWh. The subsequent rebidding resulted in dispatch prices remaining above $300/MWh for the 8 am, 8.30 am and 9 am trading intervals.

### Friday, 26 August

Table 11: Price, Demand and Availability

| Time | Price ($/MWh) | | | Demand (MW) | | | Availability (MW) | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast |
| 8.30 am | 300.00 | 300.00 | 300.00 | 1878 | 1790 | 1784 | 2296 | 2331 | 2337 |

The spot price was as forecast.

### Saturday, 27 August

Table 12: Price, Demand and Availability

| Time | Price ($/MWh) | | | Demand (MW) | | | Availability (MW) | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast |
| 2 am | 299.99 | 349.95 | 49.99 | 1390 | 1339 | 1320 | 1684 | 1769 | 1973 |

The spot price was close to that forecast four hours ahead.

## Tasmania

There were two occasions where the spot price in Tasmania was greater than three times the Tasmania weekly average price of $65/MWh and above $250/MWh. One of these occurred when prices were generally aligned across all regions and is detailed in the national market outcomes section. The remaining occasion is presented below.

### Wednesday, 24 August

Table 13: Price, Demand and Availability

| Time | Price ($/MWh) | | | Demand (MW) | | | Availability (MW) | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast | Actual | 4 hr forecast | 12 hr forecast |
| 9 am | 250.82 | 407.55 | 102.81 | 1433 | 1477 | 1480 | 1846 | 1842 | 1851 |

Conditions at the time saw demand and availability close to that forecast. There was no capacity priced between $81/MWh and $276/MWh meaning small changes in demand and availability could lead to volatile prices. At 8.35 am there was a planned decrease in the available capacity of Poatina 110kV, which had been setting the price at 8.30 am. With all low-priced generation stranded in FCAS or fully dispatched the price increase from $80/MWh at 8.30 am to $277/MWh at 8.35 am and stayed at that price for the rest of the trading interval.

## Financial markets

Figure 9 shows for all mainland regions the prices for base contracts (and total traded quantities for the week) for each quarter for the next four financial years.

Figure : Quarterly base future prices Q3 2016 – Q2 2020 Figure 9 shows for all mainland regions the prices for base contracts (and total traded quantities for the week) for each quarter for the next four financial years. 

Source. [ASXEnergy.com.au](https://asxenergy.com.au/)

Figure 10 shows how the price for each regional quarter 1 2017 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2015 and quarter 1 2016 prices are also shown. The AER notes that data for South Australia is less reliable due to very low numbers of trades.

Figure : Price of Q1 2017 base contracts over the past 10 weeks (and the past 2 years)

Figure 10 shows how the price for each regional Quarter 1 2017 base contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2015 and quarter 1 2016 prices are also shown. The AER notes that data for South Australia is less reliable due to very low numbers of trades.      
Note. Base contract prices are shown for each of the current week and the previous 9 weeks, with average prices shown for periods 1 and 2 years prior to the current year.

Source. [ASXEnergy.com.au](https://asxenergy.com.au/)

Prices of other financial products (including longer-term price trends) are available in the [Industry Statistics](http://www.aer.gov.au/industry-information/industry-statistics) section of our website.

Figure 11 shows how the price for each regional Quarter 1 2017 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2015 and quarter 1 2016 prices are also shown.

Figure : Price of Q1 2017 cap contracts over the past 10 weeks (and the past 2 years)

Figure 11 shows how the price for each regional Quarter 1 2017 cap contract has changed over the last 10 weeks (as well as the total number of trades each week). The closing quarter 1 2015 and quarter 1 2016 prices are also shown.       
Source. [ASXEnergy.com.au](https://asxenergy.com.au/)

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