



Electricity spot prices above \$5000/MWh

Queensland, 5 March 2015

7 May 2015

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1 Introduction

The AER is required to publish a report whenever the electricity spot price exceeds \$5000/MWh.¹ The report:

- describes the significant factors contributing to the spot price exceeding \$5000/MWh, including withdrawal of generation capacity and network availability;
- assesses whether rebidding contributed to the spot price exceeding \$5000/MWh;
- identifies the marginal scheduled generating units; and
- identifies all units with offers for the trading interval equal to or greater than \$5000/MWh and compares these dispatch offers to relevant dispatch offers in previous trading intervals.

¹ This requirement is set out in clause 3.13.7 (d) of the National Electricity Rules.

2 Summary

On 5 March 2015, the spot price in Queensland exceeded \$5000/MWh for all of the trading intervals from 4.30 pm to 7 pm, with the exception of the 6.30 pm trading interval (the price reached \$4353/MWh). Both four and twelve hours ahead, the forecast spot price for these trading intervals was between \$39/MWh and \$60/MWh. Prices were volatile for the entire day with 39 dispatch intervals at or above \$12 900/MWh.

It was the hottest weekday in Brisbane of the 2014/15 summer with the temperature in Brisbane and surrounding areas, reaching 36.1 degrees, as forecast. Maximum demand of 8969 MW² occurred at 5 pm, a new record for Queensland. A demand side response from some commercial and industrial customers was also evident during the high price periods.

While high demand contributed to the high prices there was no capacity shortfall, with around 800 MW of available generation capacity in Queensland in excess of demand. Four hours ahead there was around 400 MW of capacity priced between \$60/MWh and \$12 500/MWh. Through rebidding, almost all of this capacity was shifted to high prices, the majority of which became effective within most of the high priced trading intervals.

For most of the high price periods a binding network constraint limited flows from New South Wales into Queensland on the QNI interconnector. In addition, the partial outage of the Terranora interconnector forced around 80 MW to flow (counter price) from Queensland to New South Wales.

Given these conditions, minor changes in availability, rebidding, or demand resulted in large price variations.

² Previous record was 8933 MW in summer 2009/10.

3 Analysis

Table 1 shows actual and forecast spot price, demand and availability for each high price³ trading interval. The spot price in Queensland exceeded \$5000/MWh for all but one of the trading intervals from 4.30 pm to 7 pm.

The table shows that high prices were not forecast four or twelve hours ahead of dispatch.

Actual demand for all the trading intervals was between 180 MW and 496 MW higher than forecast four hours ahead. Although availability was between 157 MW and 516 MW lower than forecast four hours ahead this did not materially affect prices as there was still around 800 MW in excess of demand.

The analysis in section 3.1 shows that supply conditions were such that small variations in demand and limited interconnector flows had the potential to lead to large variations in price.

Table 1: Actual and forecast spot price, demand and available capacity

Trading interval	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
4.30 pm	12 958	59	55	8690	8510	8492	9922	10 433	10 461
5 pm	9383	55	55	8809	8570	8521	9911	10 427	10 460
5.30 pm	13 166	55	39	8758	8429	8341	9913	10 134	10 462
6 pm	8673	39	39	8647	8355	8260	9922	10 129	10 441
6.30 pm	4353	39	39	8597	8251	8268	9932	10 112	10 441
7 pm	11 025	39	39	8794	8298	8341	9953	10 110	10 454

³ Although below \$5000/MWh, the spot price of \$4353/MWh at 6.30 pm is discussed as part of this report as it was within the period of high prices.

3.1 Supply and Demand

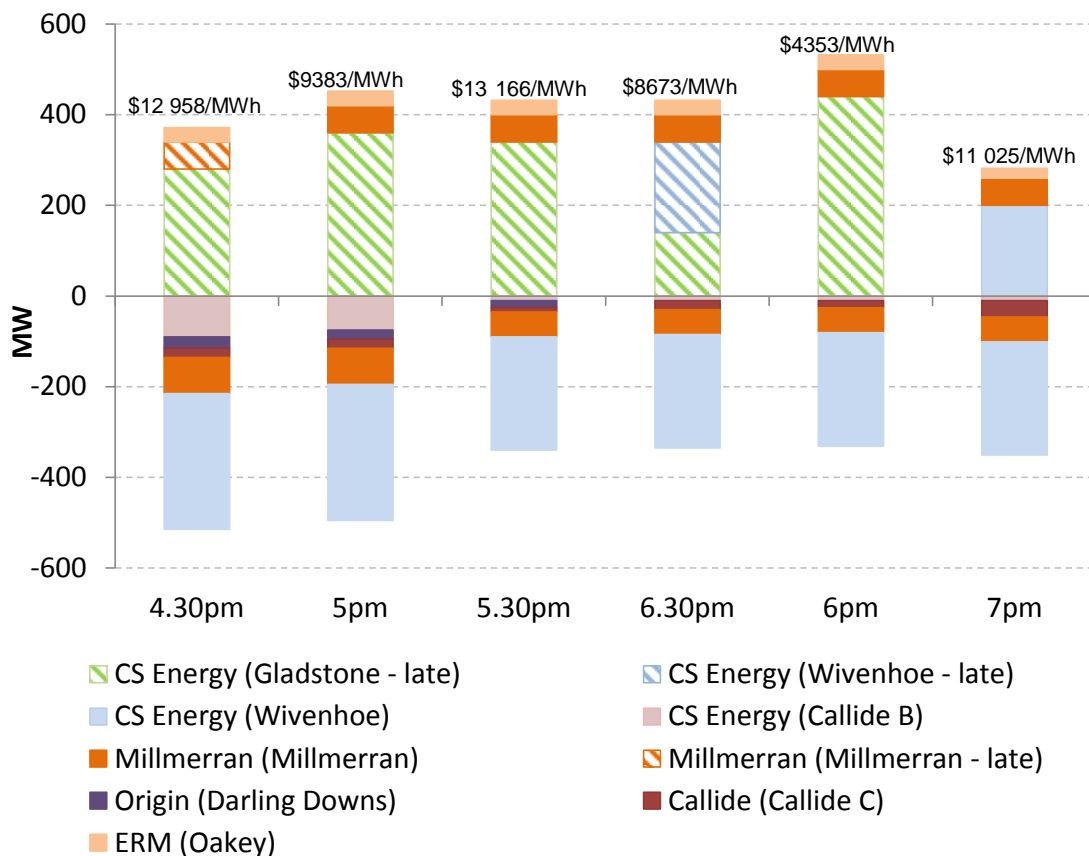
This section discusses changes to the offered prices and capacity and market demand conditions relevant to the high price periods.

3.1.1 Rebidding

Appendix A contains all significant rebids that contributed to the high prices. Figure 1 graphically summarises significant rebids made within 12 hours of dispatch and which were effective during the high price period.

Areas above the horizontal axis represent capacity rebid from low prices to high prices for each trading interval, by participant and station. Areas below the horizontal axis represent capacity withdrawn, for each trading interval. Hatched areas represent capacity rebids (some shortly before the trading interval i.e. late) becoming effective within the trading interval. The spot price in each interval is shown above each column.

Figure 1: Rebidding to high prices and capacity withdrawn, by trading interval



To understand Figure 1, take for example the 5.30 pm trading interval, when the spot price reached its maximum for the day (\$13 166/MWh):

- ERM rebid 32 MW of the 342 MW available at Oakey (light orange) from low prices to high prices.

- Millmerran rebid 60 MW of the 760 MW available at Millmerran (dark orange) from low prices to high prices.
- CS Energy rebid 340 MW of the 1120 MW available at Gladstone (green hatched) from low prices to high prices which became effective during the trading interval.
- CS Energy reduced the available capacity at Callide B (light red) by 10 MW.
- Origin reduced the available capacity at Darling Downs (purple) by 15 MW.
- Callide reduced the available capacity at Callide C (maroon) 10 MW.
- Millmerran reduced the available capacity at Millmerran (dark orange) by 55 MW.
- CS Energy reduced the available capacity at Wivenhoe (light blue) by 250 MW (this capacity was priced at the price cap).

3.1.2 Supply curve

This section examines actual and forecast supply curves that existed as a result of the rebidding in 3.1.1 for the 5.30 pm trading interval (when the spot price reached its maximum for the day of \$13 166/MWh).

Figure 2: Forecast and actual supply curves for 5.30 pm

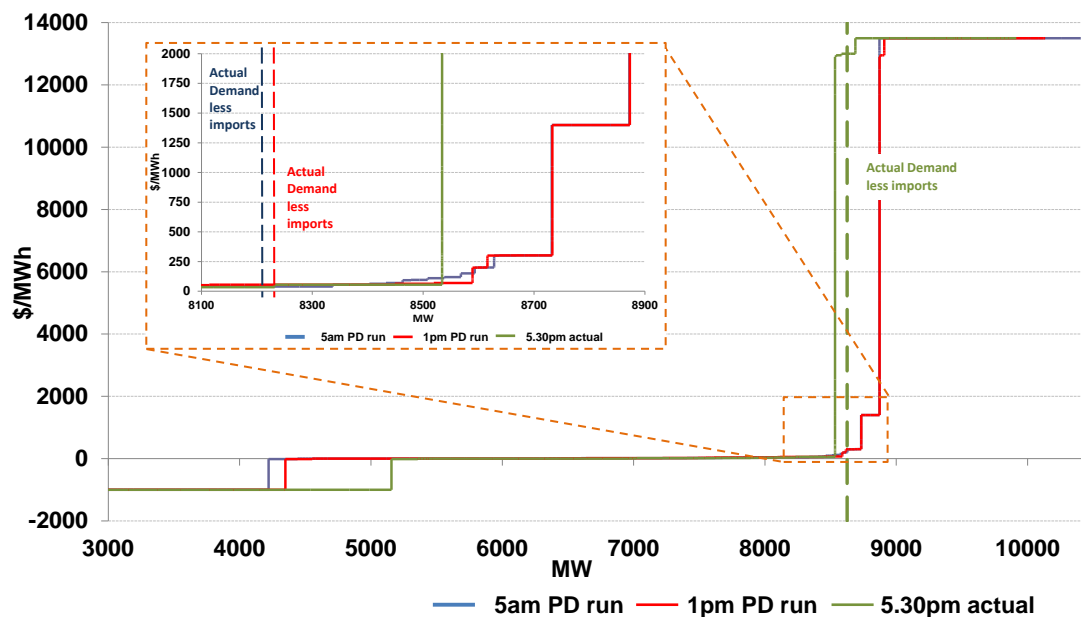


Figure 2 shows the actual supply curve for the 5.30 pm trading interval (denoted by the solid green line), the supply curve forecast 12 hours ahead (i.e. 5 am, denoted by the solid blue line)⁴, and the supply curve forecast four hours ahead (i.e. 1 pm, denoted by the solid red line). The supply curves were derived by summing the available capacity in each price band for all generators in Queensland.

⁴ This line is difficult to see as it effectively coincides with the supply curves for the 1 pm and 5 am since the forecasts are very similar.

Also shown is actual demand less imports, and forecast demand less forecast imports 12 and 4 hours ahead for the 5.30 pm trading interval (represented as vertical dotted lines, they follow the same colour convention as the supply curves).

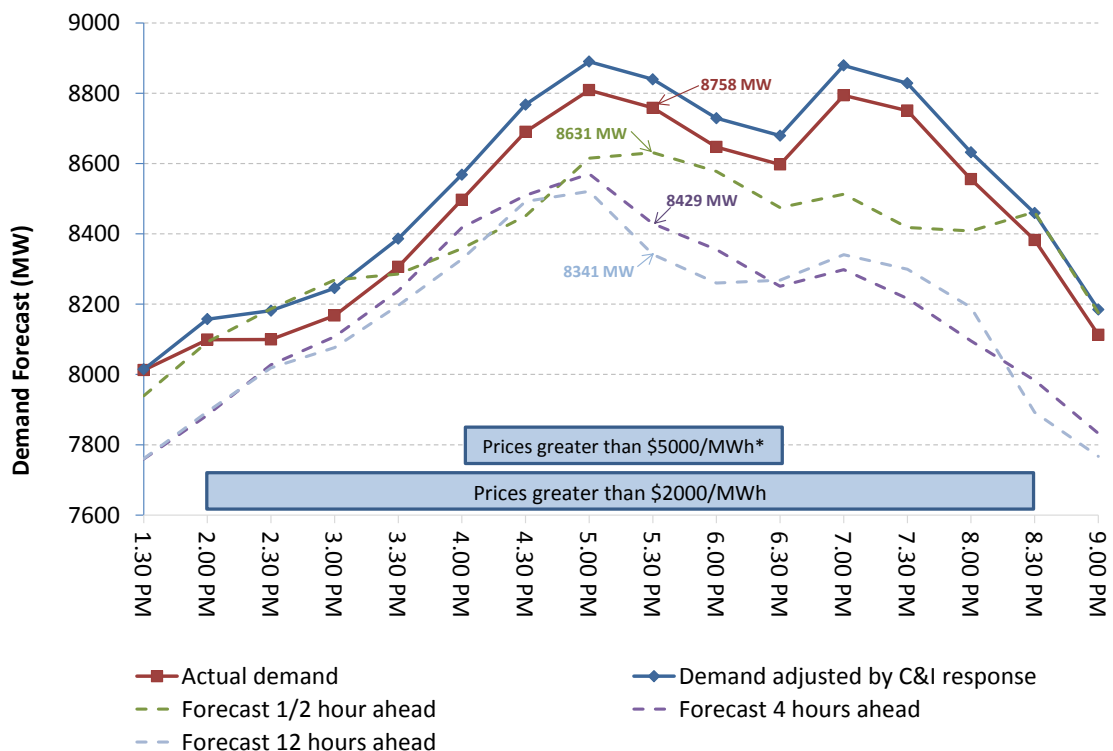
Figure 2 shows that the rebidding up to four hours ahead did not have a significant effect on the supply curve or forecast prices. However rebidding within four hours (i.e. after 1 pm) moved capacity priced between \$60/MWh and \$2000/MWh to prices greater than \$12 900/MWh. The inset in Figure 2 shows the effect rebidding within four hours of dispatch had on the shape of the supply curve for prices up to \$2000/MWh. The red (forecast) supply curve shifted to the left and became vertical, as shown by the green, or actual supply curve for 5.30 pm. The green supply curve shows that as a result of rebidding, there was no capacity left between \$56/MWh and \$12 900/MWh.

3.1.3 Demand

The maximum temperature in Brisbane was, as forecast, 36 degrees making it the hottest week day for the 2014/15 summer. Maximum demand for the day reached 8969 MW⁵ at 5 pm, a new record for Queensland.

Figure 3 shows actual demand, forecast demand over several timeframes and demand adjusted for commercial and industrial customer response.

Figure 3: Actual and forecast demand



* Note: the spot price at 6.30 pm was \$4353/MWh

⁵ Previous record was 8933 MW in summer 2009/10. This is based on native demand, a different measure to that used in Figure 3. Figure 3 uses total demand which is used when determining prices. See AEMO's [Regional demand definition](#) document for further details.

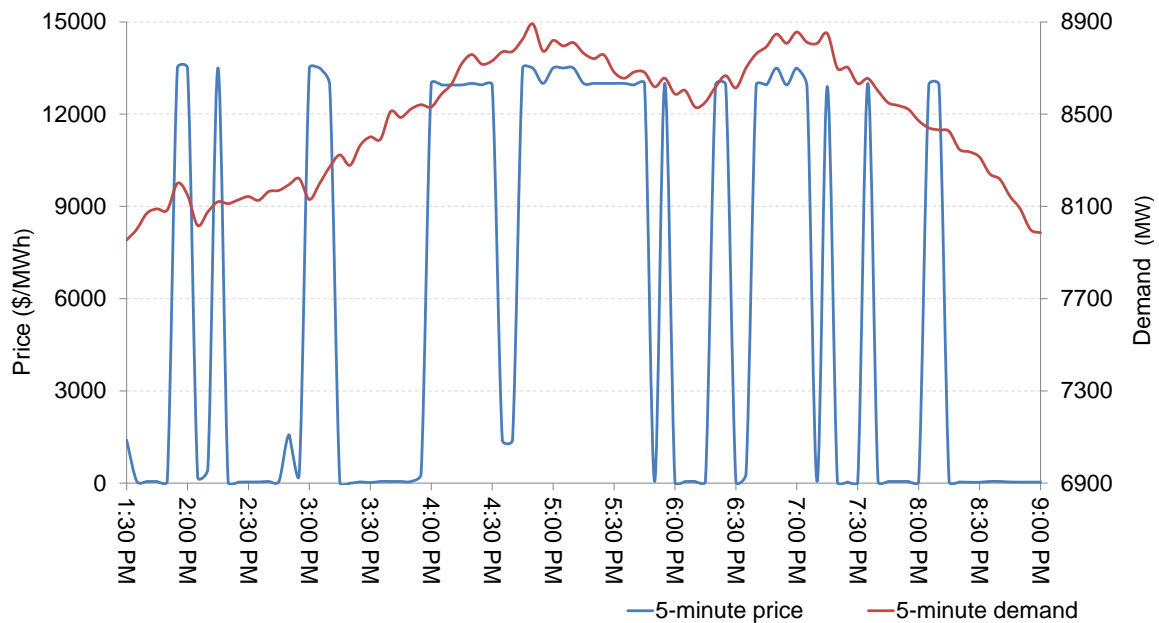
Taking the 5.30 pm (i.e. highest price trading interval) as an example, Figure 3 (as does Table 1) shows that that demand for the 5.30 pm trading interval was forecast to be 8341 MW twelve hours ahead (blue dashed line), 8429 MW four hours ahead and 8631 MW half an hour ahead of dispatch (green dashed line). However, actual demand (denoted by the red line) reached 8758 MW, almost 130 MW higher than forecast half an hour ahead.

According to data provided by AEMO, commercial and industrial customer demand reduced in response to the high prices by an average of 79 MW for the trading intervals from 2.30 pm to 9 pm.

The solid blue line in Figure 4 shows what demand would have been had the commercial and industrial demand not reduced in response to high prices. As these customers are non-scheduled their response at any point in time is not incorporated in AEMO's demand forecasts. The figure shows that had these customers not reduced their demand, the demand forecast error of 127 MW half an hour ahead for the 5.30 pm trading interval would have been even larger at 208 MW.

Figure 4 shows 5-minute demand and price over the high price period. The figure shows that, with the vertical supply curve as discussed in section 3.1.2, small increases in 5-minute demand coincided with increases in price.

Figure 4: Queensland 5-minute price and demand graph



Appendix B details the generators involved in setting the price during the high-price periods, and how that price was determined by the market systems. The closing bids for all participants in Queensland with capacity priced at or above \$5000/MWh for the high-price periods are set out in Appendix C.

3.2 Network Availability

Table 2 shows the net import limit into Queensland from New South Wales was around 460 MW lower than the nominal limit of 600 MW during the time of high prices.

Table 2: Actual and forecast network capability

Trading interval	Imports (MW)			Import limit (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
4.30 pm	141	166	145	141	166	145
5 pm	136	166	144	136	166	144
5.30 pm	132	190	133	132	190	174
6 pm	130	190	133	139	190	175
6.30 pm	148	197	133	148	197	178
7 pm	152	183	169	152	183	176

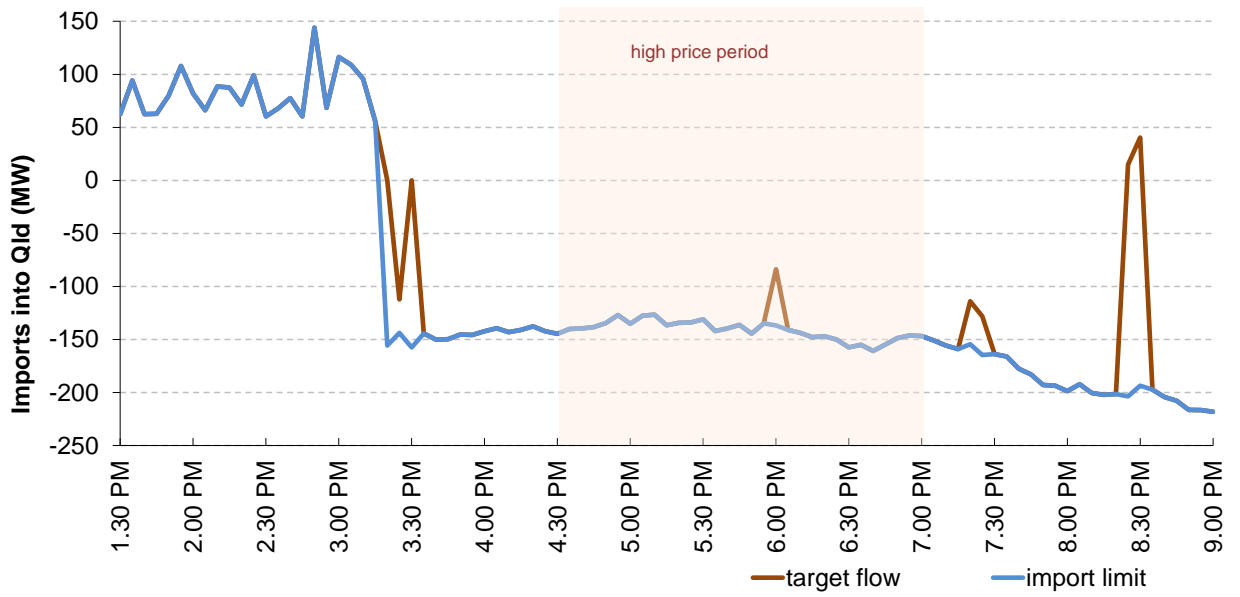
Flows into Queensland across QNI and Terranora interconnectors combined were limited to around 140 MW during the time of high prices.

Imports on the Queensland to New South Wales interconnector (QNI) were limited to around 220 MW by a system normal constraint designed to avoid voltage collapse in Queensland on the loss of the largest generator in Queensland.

Terranora has been partially out of service since August 2013 due to faulty cables. During the time of high prices, constraints on this line forced around 80 MW to flow counter price from Queensland to New South Wales. The interconnector is scheduled to return to service in mid-2015, which should return its nominal limit to around 110 MW.

Figure 5 shows the net import limit, and net target flows into Queensland. Interconnectors were operating close to, or at, their import limits at the time of high prices. As shown in Table 2, at the time of high prices the import limit was almost up to 60 MW lower than forecast four hours ahead.

Figure 5: Net import limit and target flows



Australian Energy Regulator

May 2015

A Significant Rebids

The rebidding tables highlight the relevant rebids submitted by generators that impacted on market outcomes during the time of high prices. It details the time the rebid was submitted and used by the dispatch process, the capacity involved, the change in the price of the capacity was being offered and the rebid reason.

Significant rebids for 4.30 pm

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
12.36 pm	Origin	Darling Downs	-5	-1	N/A	1234P change in avail - backpressure issues SL
12.37 pm	CS Energy	Wivenhoe	-50	0	N/A	1236P technical issues-unit vibrations-SL
12.48 pm	Callide	Callide C	-10	<14	N/A	1248P unit max cap bfp
12.49 pm	CS Energy	Callide B	-50	17	N/A	1248P coal quality-SL
1.21 pm	CS Energy	Callide B	-25	-17	N/A	1320P condenser unloading-SL
1.36 pm	Origin	Darling Downs	-10	-1	N/A	1335P change in avail - backpressure issues SL
1.56 pm	Millmerran	Millmerran	-25	-7	N/A	13:56 p: plant-limitation, condensate
2.01 pm	CS Energy	Callide B	-15	-17	N/A	1401P condenser vacuum-SL
2.34 pm	Origin	Darling Downs	-10	-1	N/A	1430P change in avail - backpressure issues SL
3.34 pm	CS Energy	Wivenhoe	-250	13 000	N/A	1534P technical issues-control system-sl
3.40 pm	Millmerran	Millmerran	-55	7	N/A	15:40 P high condensate temps
3.50 pm	Callide	Callide C	-10	<14	N/A	1549P both pa fan in hi motor load alarm
3.51 pm	ERM	Oakey	32	458	13 499	1550F material change in market conditions ::change mw distrib.
3.57 pm (effective 4.05 pm)	CS Energy	Gladstone	280	<1400	>13 000	1557A QLD demand higher than forecast-SL

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
4.02 pm (effective 4.10 pm)	Millmerran	Millmerran	60	7	13 500	16:02 A RRP above PD
Total capacity rebid from low to high prices			372			
Total capacity withdrawn			515			

Significant rebids for 5 pm

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
12.36 pm	Origin	Darling Downs	-5	-1	N/A	1234P change in avail - backpressure issues SL
12.37 pm	CS Energy	Wivenhoe	-50	0	N/A	1236P technical issues-unit vibrations-SL
12.48 pm	Callide	Callide C	-10	<14	N/A	1248P unit max cap bfp
12.49 pm	CS Energy	Callide B	-50	17	N/A	1248P coal quality-SL
1.21 pm	CS Energy	Callide B	-25	17	N/A	1320P condenser unloading-SL
1.36 pm	Origin	Darling Downs	-5	-1	N/A	1335P change in avail - backpressure issues SL
1.56 pm	Millmerran	Millmerran	-25	7	N/A	13:56 P: plant limitation, condensate
2.34 pm	Origin	Darling Downs	-10	-1	N/A	1430P change in avail - backpressure issues SL
3.34 pm	CS Energy	Wivenhoe	-250	13 500	N/A	1534P technical issues-control system-sl
3.40 pm	Millmerran	Millmerran	-55	-7	N/A	15:40 P high condensate temps
3.50 pm	Callide	Callide C	-10	<14	N/A	1549P both pa fan in hi motor load alarm
4.02 pm	Millmerran	Millmerran	60	7	13 500	16:02 A RRP above pd
4.07 pm	ERM	Oakey	32	458	13 499	1606F material change in market conditions :: change mw distrib.

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
4.20 pm	Origin	Mt Stuart	-8	55	N/A	1620P change in avail - ambient conditions SL
4.26 pm (effective from 4.35 pm)	CS Energy	Gladstone	80	39	13 500	1625A change in QLD demand-SL
4.30 pm (effective from 4.40 pm)	CS Energy	Callide B	-10	17	N/A	1629P condenser vacuum-SL
4.32 pm (effective from 4.40 pm)	CS Energy	Gladstone	60	39	13 500	1630A dispatch price higher than 30min forecast-SL
4.36 pm (effective from 4.45 pm)	Origin	Darling Downs	-5	-1	N/A	1630P change in avail - backpressure issues SL[1]
4.36 pm (effective from 4.45 pm)	CS Energy	Gladstone	220	<1400	>13 000	1636A reviewed sensitivities-SL
Total capacity rebid from low to high prices			452			
Total capacity withdrawn			518			

Significant rebids for 5.30 pm

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
1.36 pm	Origin	Darling Downs	-5	-1	N/A	1335P change in avail - backpressure issues SL
2.34 pm	Origin	Darling Downs	-10	-1	N/A	1430P change in avail - backpressure issues SL[1]
3.34 pm	CS Energy	Wivenhoe	-250	13 500	N/A	1534P technical issues-control system-sl
3.40 pm	Millmerran	Millmerran	-55	7	N/A	15:40 P high condensate temps
3.50 pm	Callide	Callide C	-10	<14	N/A	1549P both pa fan in hi motor load alarm

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
4.02 pm	Millmerran	Millmerran	60	7	13 500	16:02 A RRP above PD
4.20 pm	Origin	Mt Stuart	-8	55	N/A	1620P change in avail - ambient conditions SL
4.30 pm	CS Energy	Callide B	-10	17	N/A	1629P condenser vacuum-SL
4.40 pm	ERM	Oakey	32	458	13 499	1639F material change in market conditions ::change mw distrib.
4.56 PM (effective from 5.05 pm)	CS Energy	Gladstone	340	<1400	>13 000	1651A QLD demand reduction-SL
5.17 pm (effective from 5.25 pm)	Callide	Callide C	-6	<14	N/A	1716P decreasing coal quality, maxing out feeder rates
Total capacity rebid from low to high prices			432			
Total capacity withdrawn			354			

Significant rebids for 6 pm

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.34 pm	CS Energy	Wivenhoe	-250	13 500	N/A	1534P technical issues-control system-sl
3.40 pm	Millmerran	Millmerran	-55	7	N/A	15:40 P high condensate temps
3.50 pm	Callide	Callide C	-10	<14	N/A	1549P both pa fan in hi motor load alarm
4.02 pm	Millmerran	Millmerran	60	7	13 500	16:02 A RRP above PD
4.20 pm	Origin	Mt Stuart	-7	55	N/A	1620P change in avail - ambient conditions SL
4.30 pm	CS Energy	Callide B	-10	17	N/A	1629P condenser vacuum-SL

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
5.03 pm	ERM	Oakey	32	458	13 499	1703F material change in market conditions ::change mw distrib.
5.17 pm	Callide	Callide C	-6	<14	N/A	1716P decreasing coal quality, maxing out feeder rates
5.25 pm (effective from 5.35 pm)	CS Energy	Gladstone	340	<1400	>13 000	1724A QLD demand reduction-SL
5.46 pm (effective from 5.55 pm)	CS Energy	Gladstone	100	35	13 500	1744A QLD demand reduction-SL
Total capacity rebid from low to high prices			532			
Total capacity withdrawn			338			

Significant rebids for 6.30 pm

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.34 pm	CS Energy	Wivenhoe	-250	13 500	N/A	1534P technical issues-control system-sl
3.40 pm	Millmerran	Millmerran	-55	<7	N/A	15:40P high condensate temps
3.50 pm	Callide	Callide C	-10	<14	N/A	1549P both pa fan in hi motor load alarm
4.02 pm	Millmerran	Millmerran	60	7	13 500	16:02 A rrp above pd
4.20 pm	Origin	Mt Stuart	-7	55	N/A	1620P change in avail - ambient conditions sl
4.30 pm	CS Energy	Callide B	-10	17	N/A	1629P condenser vacuum-sl
5.17 pm	Callide	Callide C	-6	<14	N/A	1716P decreasing coal quality, maxing out feeder rates

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
5.40 pm	ERM	Oakey	32	458	13 499	1740F material change in market conditions::change mw distrib.
5.44 pm	Callide	Callide C	-4	<14	N/A	1743P coal quality still falling, feeder rates maxed out
5.56 pm (effective from 6.05 pm)	CS Energy	Wivenhoe	50	0	13 500	1754P fuel management-manage splityard creek level-sl
6.02 pm (effective from 6.10 pm)	CS Energy	Wivenhoe	150	0	13 500	1802P fuel management-manage splityard creek level-sl
6.06 pm (effective from 6.15 pm)	Callide	Callide C	-10	<14	NA	1805P unit feeder maxed on low cv coal
6.13 pm (effective from 6.20 pm)	CS Energy	Gladstone	140	1400	13 000	1813P portfolio rearrangement due to-W/hoe reduction-sl
Total capacity rebid from low to high prices			432			
Total capacity withdrawn			352			

Significant rebids for 7 pm

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.34 pm	CS Energy	Wivenhoe	-250	13 500	N/A	1534P technical issues-control system-sl
3.40 pm	Millmerran	Millmerran	-55	7	N/A	15:40 P high condensate temps
3.50 pm	Callide	Callide C	-10	<14	N/A	1549P both pa fan in hi motor load alarm
4.02 pm	Millmerran	Millmerran	60	7	13 500	16:02 A RRP above PD
4.30 pm	CS Energy	Callide B	-10	17	N/A	1629P condenser vacuum - sl

Submit time	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
5.17 pm	Callide	Callide C	-6	<14	N/A	1716P decreasing coal quality, maxing out feeder rates
5.44 pm	Callide	Callide C	-4	<14	N/A	1743P coal quality still falling, feeder rates maxed out
6.02 pm	CS Energy	Wivenhoe	200	0	13 500	1802P fuel management-manage splityard creek level-
6.02 pm	ERM	Oakey	22	<458	13 499	1802F material change in market conditions ::change
6.06 pm	Callide	Callide C	-10	<14	N/A	1805P unit feeder maxed on low cv coal
6.37 pm (effective from 6.45 pm)	Callide	Callide C	-6	<14	N/A	1836P coal quality still falling, feeder rates at max
Total capacity rebid from low to high prices			282			
Total capacity withdrawn			351			

B Price setter

The following table identifies for the trading interval in which the spot price exceeded \$5000/MWh, each five minute dispatch interval price and the generating units involved in setting the energy price. This information is published by AEMO.⁶ The 30-minute spot price is the average of the six dispatch interval prices.

4.30 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
16:05	12 949.00	Origin Energy	MSTUART1	Energy	12 949.00	0.34	\$4402.66
		Origin Energy	MSTUART2	Energy	12 949.00	0.34	\$4402.66
		Origin Energy	MSTUART3	Energy	12 949.00	0.31	\$4014.19
16:10	12 949.00	Origin Energy	MSTUART1	Energy	12 949.00	0.34	\$4402.66
		Origin Energy	MSTUART2	Energy	12 949.00	0.34	\$4402.66
		Origin Energy	MSTUART3	Energy	12 949.00	0.31	\$4014.19
16:15	12 949.00	Origin Energy	MSTUART1	Energy	12 949.00	0.50	\$6474.50
		Origin Energy	MSTUART2	Energy	12 949.00	0.50	\$6474.50
16:20	13 000.00	CS Energy	GSTONE1	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE3	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE4	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE6	Energy	13 000.00	0.25	\$3250.00
16:25	12 949.00	Origin Energy	MSTUART1	Energy	12 949.00	0.50	\$6474.50
		Origin Energy	MSTUART2	Energy	12 949.00	0.50	\$6474.50
16:30	12 949.00	Origin Energy	MSTUART1	Energy	12 949.00	0.50	\$6474.50
		Origin Energy	MSTUART2	Energy	\$12 949.00	0.50	\$6474.50
Spot Price		\$12 958/MWh					

5 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
16:35	1400.00	CS Energy	GSTONE1	Energy	1400.00	0.25	\$350.00
		CS Energy	GSTONE3	Energy	1400.00	0.25	\$350.00
		CS Energy	GSTONE4	Energy	1400.00	0.25	\$350.00
		CS Energy	GSTONE6	Energy	1400.00	0.25	\$350.00
16:40	1400.00	CS Energy	GSTONE1	Energy	1400.00	0.25	\$350.00
		CS Energy	GSTONE3	Energy	1400.00	0.25	\$350.00
		CS Energy	GSTONE4	Energy	1400.00	0.25	\$350.00
		CS Energy	GSTONE6	Energy	1400.00	0.25	\$350.00

⁶ Details on how the price is determined can be found at www.aemo.com.au

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
16:45	13 499.00	Stanwell	STAN-1	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-2	Energy	13 499.00	0.14	\$1889.86
		Stanwell	STAN-3	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-4	Energy	13 499.00	0.17	\$2294.83
		Stanwell	TARONG#1	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#3	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#4	Energy	13 499.00	0.15	\$2024.85
16:50	13 499.00	Stanwell	STAN-1	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-2	Energy	13 499.00	0.14	\$1889.86
		Stanwell	STAN-3	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-4	Energy	13 499.00	0.17	\$2294.83
		Stanwell	TARONG#1	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#3	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#4	Energy	13 499.00	0.15	\$2024.85
16:55	13 000.00	CS Energy	GSTONE1	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE3	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE4	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE6	Energy	13 000.00	0.25	\$3250.00
17:00	13 499.00	Stanwell	STAN-1	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-2	Energy	13 499.00	0.14	\$1889.86
		Stanwell	STAN-3	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-4	Energy	13 499.00	0.17	\$2294.83
		Stanwell	TARONG#1	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#3	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#4	Energy	13 499.00	0.15	\$2024.85

Spot Price \$9383/MWh

5.30 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
17:05	13 499.00	Stanwell	STAN-1	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-2	Energy	13 499.00	0.14	\$1889.86
		Stanwell	STAN-3	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-4	Energy	13 499.00	0.17	\$2294.83
		Stanwell	TARONG#1	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#3	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#4	Energy	13 499.00	0.15	\$2024.85
17:10	13 499.00	Stanwell	STAN-1	Energy	13 499.00	0.12	\$1619.88

Electricity spot prices above \$5000/MWh

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
		Stanwell	STAN-2	Energy	13 499.00	0.14	\$1889.86
		Stanwell	STAN-3	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-4	Energy	13 499.00	0.17	\$2294.83
		Stanwell	TARONG#1	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#3	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#4	Energy	13 499.00	0.15	\$2024.85
17:15	13 000.00	CS Energy	GSTONE1	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE3	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE4	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE6	Energy	13 000.00	0.25	\$3250.00
17:20	13 000.00	CS Energy	GSTONE1	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE3	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE4	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE6	Energy	13 000.00	0.25	\$3250.00
17:25	13 000.00	CS Energy	GSTONE1	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE3	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE4	Energy	13 000.00	0.25	\$3250.00
		CS Energy	GSTONE6	Energy	13 000.00	0.25	\$3250.00
17:30	12 999.62	CS Energy	GSTONE3	Energy	13 000.00	0.33	\$4290.00
		CS Energy	GSTONE3	Lower reg	0.01	0.33	\$0.00
		CS Energy	GSTONE4	Energy	13 000.00	0.33	\$4290.00
		CS Energy	GSTONE4	Lower reg	0.01	0.33	\$0.00
		CS Energy	GSTONE6	Energy	13 000.00	0.33	\$4290.00
		CS Energy	GSTONE6	Lower reg	0.01	0.33	\$0.00
		Hydro Tasmania	JBUTTERS	Lower 5 min	0.39	-1.00	-\$0.39

Spot Price \$13 166/MWh

6 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
17:35	12 999.58	CS Energy	GSTONE3	Energy	13 000.00	0.33	\$4290.00
		CS Energy	GSTONE3	Lower reg	0.01	0.33	\$0.00
		CS Energy	GSTONE4	Energy	13 000.00	0.33	\$4290.00
		CS Energy	GSTONE4	Lower reg	0.01	0.33	\$0.00
		CS Energy	GSTONE6	Energy	13 000.00	0.33	\$4290.00
		CS Energy	GSTONE6	Lower reg	0.01	0.33	\$0.00
		EnergyAustralia	MP1	Lower reg	0.43	-1.00	-\$0.43
17:40	12 949.00	Origin Energy	MSTUART1	Energy	12 949.00	0.50	\$6474.50

Electricity spot prices above \$5000/MWh

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
		Origin Energy	MSTUART2	Energy	12 949.00	0.50	\$6474.50
17:45	13 000.00	CS Energy	GSTONE1	Energy	13 000.00	0.33	\$4290.00
		CS Energy	GSTONE3	Energy	13 000.00	0.33	\$4290.00
		CS Energy	GSTONE6	Energy	13 000.00	0.33	\$4290.00
17:50	55.18	Origin Energy	MSTUART1	Energy	55.18	0.32	\$17.66
		Origin Energy	MSTUART2	Energy	55.18	0.38	\$20.97
		Origin Energy	MSTUART3	Energy	55.18	0.30	\$16.55
17:55	13 000.00	CS Energy	GSTONE1	Energy	13 000.00	0.50	\$6500.00
		CS Energy	GSTONE6	Energy	13 000.00	0.50	\$6500.00
18:00	35.97	Snowy Hydro	MURRAY	Energy	28.15	1.28	\$36.03

Spot Price \$8673/MWh

7 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
18:35	302.01	ERMPower	BRAEMAR5	Energy	302.01	0.50	\$151.01
		ERMPower	BRAEMAR6	Energy	302.01	0.50	\$151.01
18:40	12 949.00	Origin Energy	MSTUART1	Energy	12 949.00	0.50	\$6474.50
		Origin Energy	MSTUART2	Energy	12 949.00	0.50	\$6474.50
18:45	12 949.00	Origin Energy	MSTUART1	Energy	12 949.00	0.50	\$6474.50
		Origin Energy	MSTUART2	Energy	12 949.00	0.50	\$6474.50
18:50	13 499.00	Stanwell	STAN-1	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-2	Energy	13 499.00	0.14	\$1889.86
		Stanwell	STAN-3	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-4	Energy	13 499.00	0.17	\$2294.83
		Stanwell	TARONG#1	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#3	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#4	Energy	13 499.00	0.15	\$2024.85
18:55	12 949.00	Origin Energy	MSTUART1	Energy	12 949.00	0.50	\$6474.50
		Origin Energy	MSTUART2	Energy	12 949.00	0.50	\$6474.50
19:00	13 499.00	Stanwell	STAN-1	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-2	Energy	13 499.00	0.14	\$1889.86
		Stanwell	STAN-3	Energy	13 499.00	0.12	\$1619.88
		Stanwell	STAN-4	Energy	13 499.00	0.17	\$2294.83
		Stanwell	TARONG#1	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#3	Energy	13 499.00	0.15	\$2024.85
		Stanwell	TARONG#4	Energy	13 499.00	0.15	\$2024.85

Spot Price \$11 025/MWh

C Closing bids

Figures C1 to C5 highlight the half hour closing bids for participants in Queensland with significant capacity priced at or above \$5000/MWh during the periods in which the spot price exceeded \$5000/MWh. They also show generation output and the spot price.

Figure C1 - CS Energy (Callide B, Gladstone, Kogan Creek, Wivenhoe) closing bid prices, dispatch and spot price

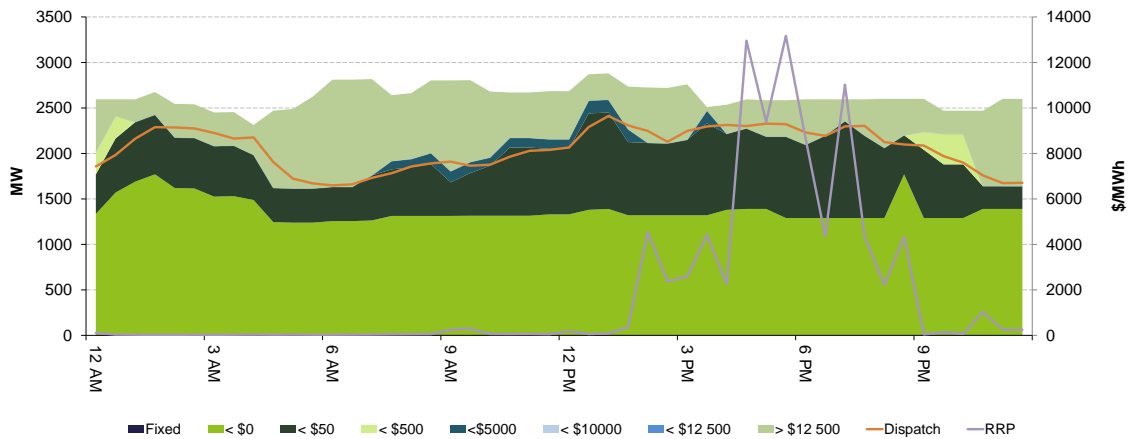


Figure C2 - Stanwell (Barron Gorge, Kareeya, Mackay, Stanwell, Tarong, Tarong North) closing bid prices, dispatch and spot price

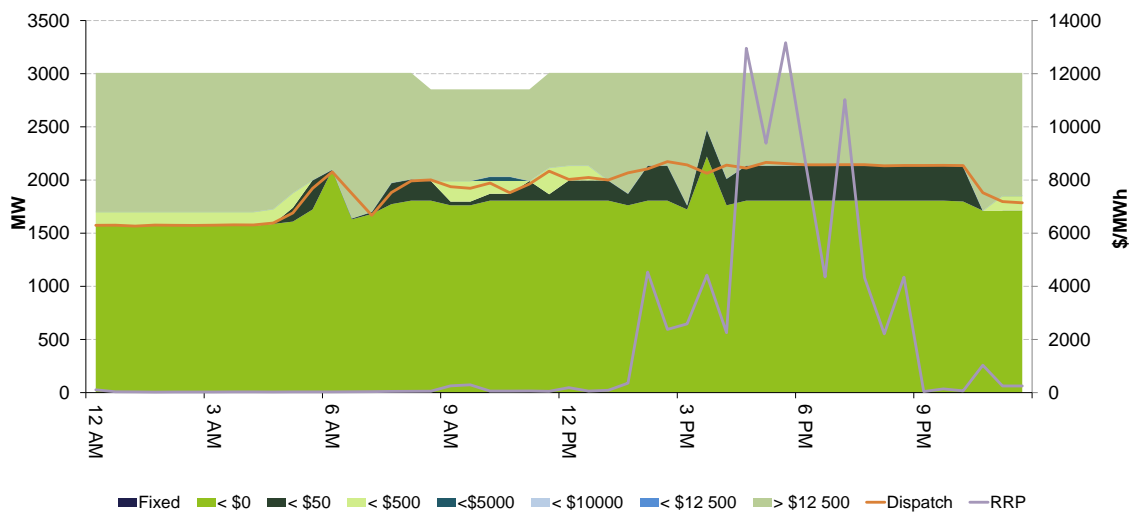


Figure C3 - Millmerran Energy Trader (Millmerran) closing bid prices, dispatch and spot price

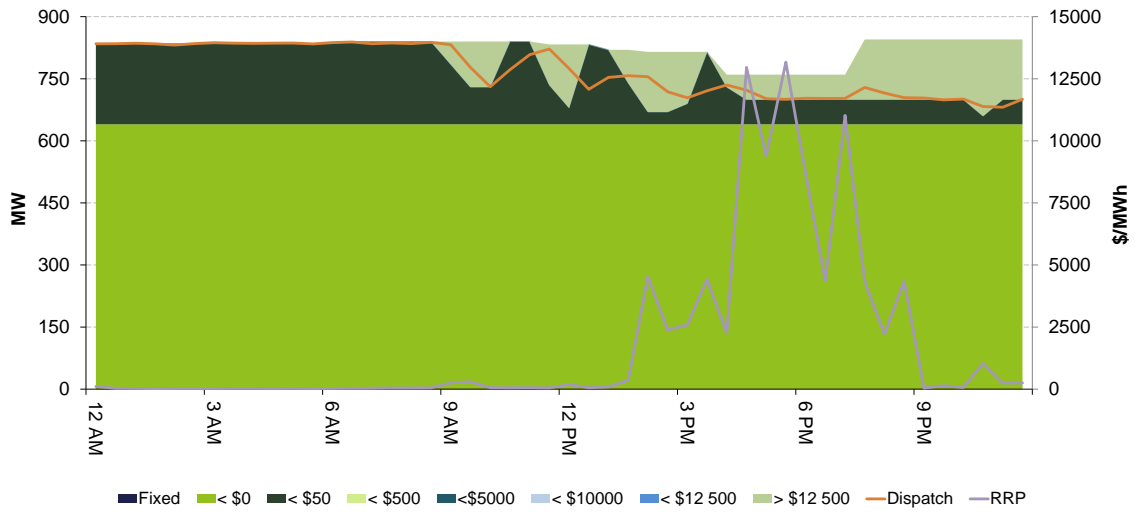


Figure C4 - ERM (Oakey) closing bid prices, dispatch and spot price

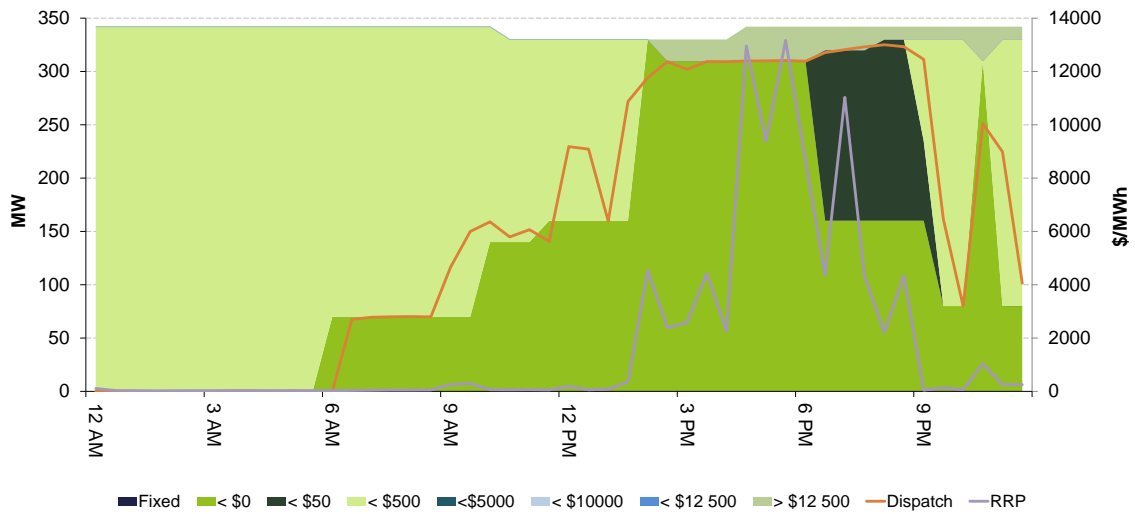


Figure C5 – Origin (Darling Downs, Mt Stuart, Roma) closing bid prices, dispatch and spot price

