



Electricity spot prices above \$5,000/MWh

**Queensland
3 June 2021**

2 August 2021

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Contents

1. Obligation	4
2. Summary.....	5
3. Analysis	6
3.1. Overview of actual and expected conditions	6
3.2. Supply Conditions	7
3.2.1. Generator Outages in Queensland	7
3.2.2. Interconnector flows.....	7
3.2.3. Capacity offered.....	8
3.2.4. Lack of reserve notices	9
3.2.5. Interaction between energy and FCAS markets	9
Appendix A: Offers	11
Appendix B: Significant rebids	15
Appendix C: Price setter	19

1. Obligation

The Australian Energy Regulator (AER) regulates energy markets and networks under national legislation and rules in eastern and southern Australia (known as the National Energy Market), as well as networks in the Northern Territory. Its functions include:

- monitoring wholesale electricity and gas markets to ensure energy businesses comply with the legislation and rules, and taking enforcement action where necessary;
- setting the amount of revenue that network businesses can recover from customers for using networks (electricity poles and wires and gas pipelines) that transport energy;
- regulating retail energy markets in Queensland, New South Wales, NSW, Tasmania (electricity only), and the ACT;
- operating the Energy Made Easy website, which provides a retail price comparator and other information for energy consumers;
- publishing information on the performance of energy markets, including the annual State of the energy market report and biennial effective competition report, to assist stakeholders and the wider community.

The AER is required to publish a report whenever the electricity spot price exceeds \$5,000 per megawatt hour (\$/MWh) in accordance with clause 3.13.7 (d) of the National Electricity Rules.

The report:

- describes the significant factors contributing to the spot price exceeding \$5,000/MWh, including withdrawal of generation capacity and network availability;
- assesses whether rebidding contributed to the spot price exceeding \$5,000/MWh;
- identifies the marginal scheduled generating units; and
- identifies all units with offers for the trading interval equal to or greater than \$5,000/MWh and compares these dispatch offers to relevant dispatch offers in previous trading intervals.

These reports are designed to examine market events and circumstances that contributed to wholesale market price outcomes and are not an indicator of potential compliance issues or enforcement action.

2. Summary

On 3 June 2021 the spot price in Queensland exceeded \$5,000/MWh for the 6.30 pm and 7 pm trading intervals. These prices were forecast to be above \$5,000/MWh from midday 2 June.

The main drivers related to reduced supply.

- Planned and unplanned generator outages meant over 3,400 MW of baseload generation in Queensland was unavailable, majority of which is normally priced below \$100/MWh.
- Upgrades to the Queensland to New South Wales interconnector (QNI) limited supply of cheap generation from New South Wales and meant Queensland needed to provide its own Frequency Control Ancillary Services (FCAS) locally.
- Interactions between the energy and FCAS markets limited the effective amount of low priced capacity available during high prices.

Rebidding of capacity from low to high prices did not contribute to prices above \$5,000/MWh.

3. Analysis

On 3 June 2021 the spot price in Queensland exceeded the \$5,000/MWh for the 6.30 pm and 7 pm trading intervals.

3.1. Overview of actual and expected conditions

Table 1 shows the actual and forecast spot price, demand and generator availability for the high priced trading intervals and shows:

- Spot prices were forecast to exceed \$14,500/MWh between 3.30 pm and 10 pm, both 4 and 12 hours prior.
- Demand was up to 371 MW lower than forecast 4 hours prior.
- Availability was higher than forecast throughout the afternoon, however it was close to forecast at 6.30 pm and 7 pm.

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
3.30 pm	112	14,501	14,501	6,375	6,380	6,385	8,981	8,766	8,832
4 pm	1,688	14,701	14,700	6,453	6,580	6,571	8,940	8,689	8,754
4.30 pm	1,498	14,701	14,700	6,548	6,780	6,753	8,870	8,631	8,755
5 pm	1,498	14,701	14,989	6,829	7,027	6,962	8,662	8,560	8,618
5.30 pm	1,706	14,701	15,000	7,093	7,267	7,157	8,645	8,490	8,538
6 pm	2,038	15,000	15,000	7,255	7,436	7,294	8,634	8,487	8,546
6.30 pm	6,310	15,000	15,000	7,209	7,462	7,302	8,569	8,531	8,528
7 pm	6,878	15,000	15,000	7,140	7,413	7,269	8,435	8,541	8,517
7.30 pm	1,894	14,701	15,000	6,939	7,309	7,175	8,525	8,540	8,515
8 pm	-1	14,700	14,701	6,884	7,255	7,165	8,498	8,391	8,517
8.30 pm	1,954	14,701	14,923	6,974	7,190	7,146	8,483	8,361	8,524
9 pm	1,796	14,923	15,000	6,812	6,993	6,996	8,068	8,079	8,239
9.30 pm	1,923	14,701	14,701	6,655	6,768	6,803	8,268	8,351	8,525
10 pm	1,773	14,501	14,504	6,403	6,519	6,550	8,235	8,219	8,528

3.2. Supply Conditions

3.2.1. Generator Outages in Queensland

There was over 3,400 MW of baseload capacity unavailable due to planned and unplanned outages, including over 1,500 MW of capacity from the Callide incident on 25 May. This limited the amount of low-priced capacity available (Table 2) as most of this capacity is usually offered below \$100/MWh.

Table 2: Baseload generator outages

Participant	Station	Unit	Registered capacity (MW)	Capacity available	Outage
Callide Power Trading	Callide C	Unit 3	420	0	Unplanned – significant failure on 25 May
	Callide C	Unit 4	420	0	Unplanned – significant failure on 25 May
CS Energy	Callide B	Unit 1	350	0	Unplanned – significant failure on 25 May
	Callide B	Unit 2	350	0	Unplanned – significant failure on 25 May
	Kogan Creek	Unit 1	744	0	Planned
InterGen	Millmerran	Unit 2	426	0	Planned
Stanwell Corporation	Stanwell	Unit 2	365	0	Planned
	Tarong	Unit 1	350	0	Planned
		Total	3,425	0	

3.2.2. Interconnector flows

Queensland is electrically connected to New South Wales by QNI and the Terranora interconnector. QNI can transfer FCAS from the rest of the NEM but Terranora does not have a frequency controller and therefore cannot transfer FCAS.

A planned outage of the Liddell to Muswellbrook line in New South Wales, as part of upgrades to QNI, reduced Queensland's ability to access cheap generation from New South Wales. In fact, constraints used to manage FCAS in Queensland stopped any imports and forced flows out of Queensland at around 200 MW for the 6.30 pm and 7 pm trading intervals, counter-priced.

The outage caused QNI to be placed on a single contingency meaning Queensland was at risk of being electrically isolated from the rest of the NEM. When this occurs Queensland needs to supply its own FCAS.

3.2.3. Capacity offered

Figure 1 shows how much available capacity was offered above and below \$5,000/MWh and how much local generation was targeted to meet demand in Queensland. During the 6.30 pm and 7 pm trading intervals, at least 86% of capacity was offered below \$5,000/MWh. Despite this, higher-priced capacity was still required to meet demand. Other forecast high spot prices throughout the afternoon and evening did not eventuate due to participant rebidding. In response to high prices at the start of trading intervals, participants would rebid capacity to low prices for the remainder of that trading interval, resulting in lower than forecast spot prices.

Figure 1: Generation offered above and below \$5,000/MWh, target and dispatch price in Queensland

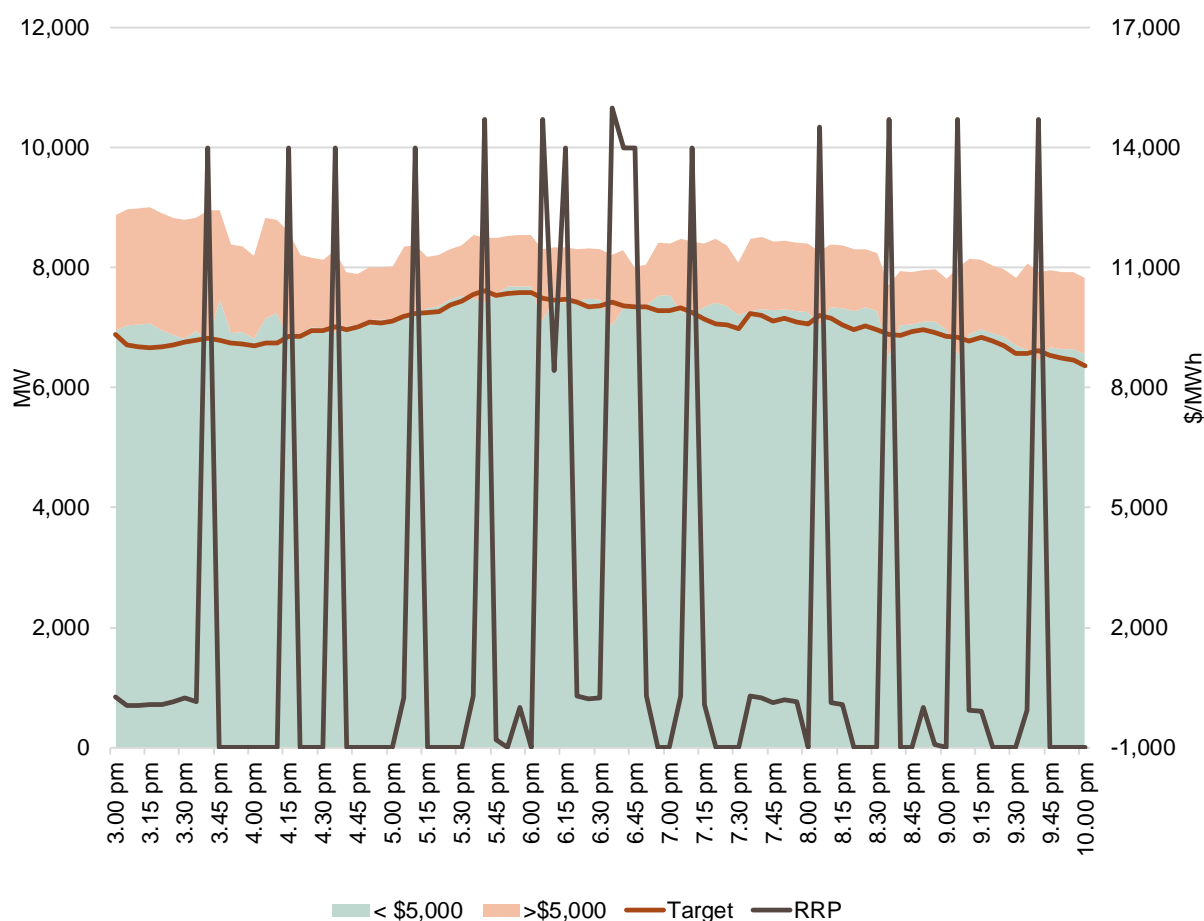


Table 3 shows participants who offered capacity priced above \$5,000/MWh for the 6.30 pm and 7 pm trading intervals. While CS Energy and Stanwell rebid capacity to prices above \$5,000/MWh this capacity plus some of their low priced capacity was not available to the energy market as it was required for FCAS at the time (section 3.2.5). As a result rebidding did not contribute to prices exceeding \$5,000/MWh.

Any significant rebids are contained in *Appendix B: Significant rebids*

Table 3: Capacity offered above \$5,000/MWh during the high priced trading intervals

Participant	Station	Registered Capacity (MW)	Fuel Type	Capacity offered >\$5,000/MWh	
				6.30 pm (MW)	7 pm (MW)
Alinta Energy	Braemar A	504	Gas	13	0
Arrow Energy	Braemar 2	519	Gas	65	82
CleanCo	Swanbank	385	Gas	30	30
	Wivenhoe	570	Hydro	285	285
CS Energy	Gladstone	1,680	Black coal	132	132
ERM Power	Oakey	288	Gas	145	145
Origin Energy	Darling Downs	644	Gas	48	85
	Mt Stuart	419	Gas	316	240
	Roma	80	Gas	36	36
Stanwell Corporation	Stanwell	1,460	Black coal	23	14
	Tarong	1,400	Black coal	51	51
			Total	1,144	1,100

Note: Capacity offered >\$5,000/MWh is calculated by using average offered capacity above \$5,000/MWh when the dispatch price in the trading interval is >\$5,000/MWh

Similar to the table above, charts showing the offers for all participants with capacity priced at or above \$5,000/MWh for the high-price periods are set out in Appendix A: Offers.

3.2.4. Lack of reserve notices

When demand and supply conditions are tight AEMO notifies the market, through Lack of Reserve (LOR) notices, to elicit a market response to increase generation or reduce demand. LORs have three levels – LOR 1, 2 and 3 with LOR 1 being the least severe and LOR 3 meaning there is not enough supply to meet demand. LOR 3 requires AEMO to shed load (commercial and industrial first then residential customers if required) in order to maintain power system security.

An LOR 1 was declared from 4.45 pm to 7 pm and an LOR 2 was declared from 5.40 pm to 6.05 pm. While there was not a market response through increased generation, these LOR conditions were partially relieved by lower than forecast demand.

3.2.5. Interaction between energy and FCAS markets

The interactions between energy and FCAS markets kept prices high for the 6.30 pm and 7 pm trading intervals, even though capacity was rebid to lower prices after high prices at the start of the trading interval.

Prices at the start of each trading interval were close to the market cap as forecast. Despite participants rebidding capacity to lower prices in response, a high requirement for raise FCAS services reduced the effective amount of low-priced capacity available to meet demand in the energy market. For example, a unit with 100 MW of low priced capacity may only be

dispatched 80 MW in energy as the remaining 20 MW is needed to provide raise services. As a result, capacity priced above \$5,000/MWh may be required in its place.

This trade-off between the provision of FCAS and energy effectively reduced low priced capacity by up to 321 MW and contributed to high dispatch prices at 6.15 pm, 6.40 pm and 6.45 pm. Energy and FCAS markets were co-optimised at 6.10 pm leading to a high dispatch price.

The generators involved in setting the price during the high-price periods and how that price was determined by the market systems are detailed in Appendix C: Price Setter.

Appendix A: Offers

Figures A1 to A7 highlight the offers for participants in Queensland with capacity priced at or above \$5,000/MWh during the periods in which the spot price exceeded \$5,000/MWh. They also show generation output and the spot price.

Figure A1: Alinta Energy (Braemar A, Collinsville Solar PV, Rugby Run Solar Farm) closing bids, dispatch and spot price

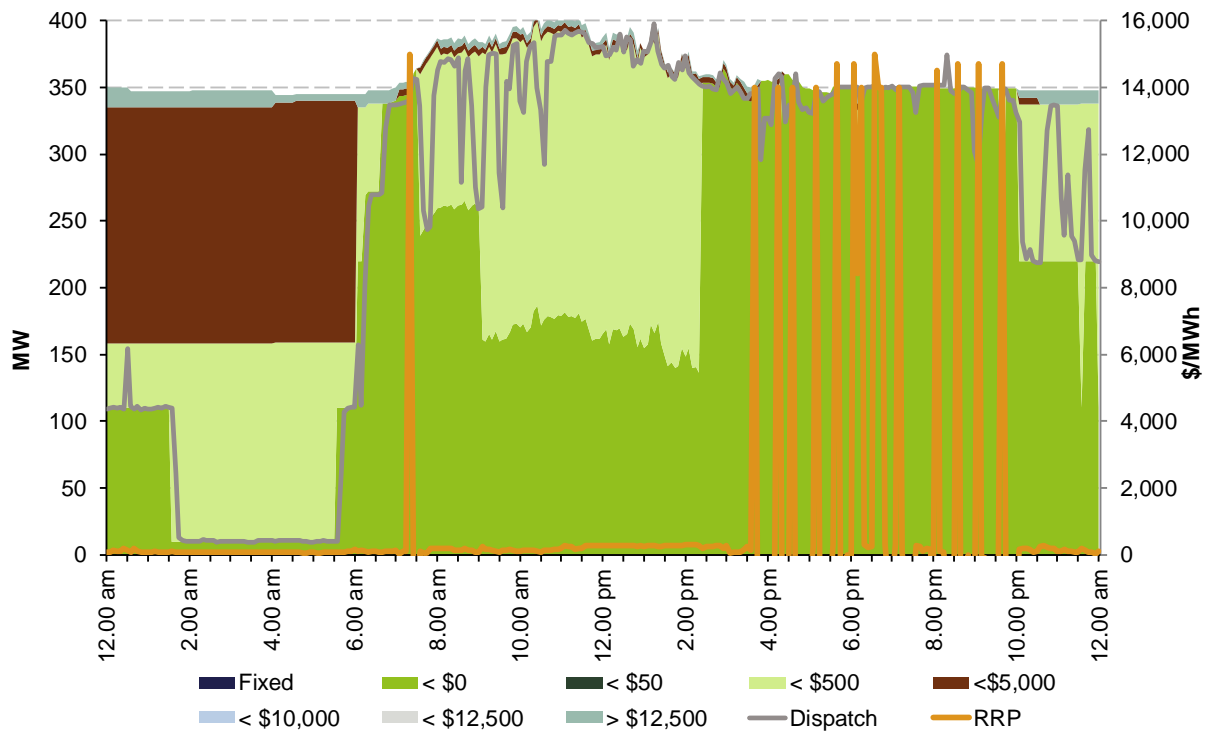


Figure A2: Arrow Energy (Braemar 2) closing bids, dispatch and spot price

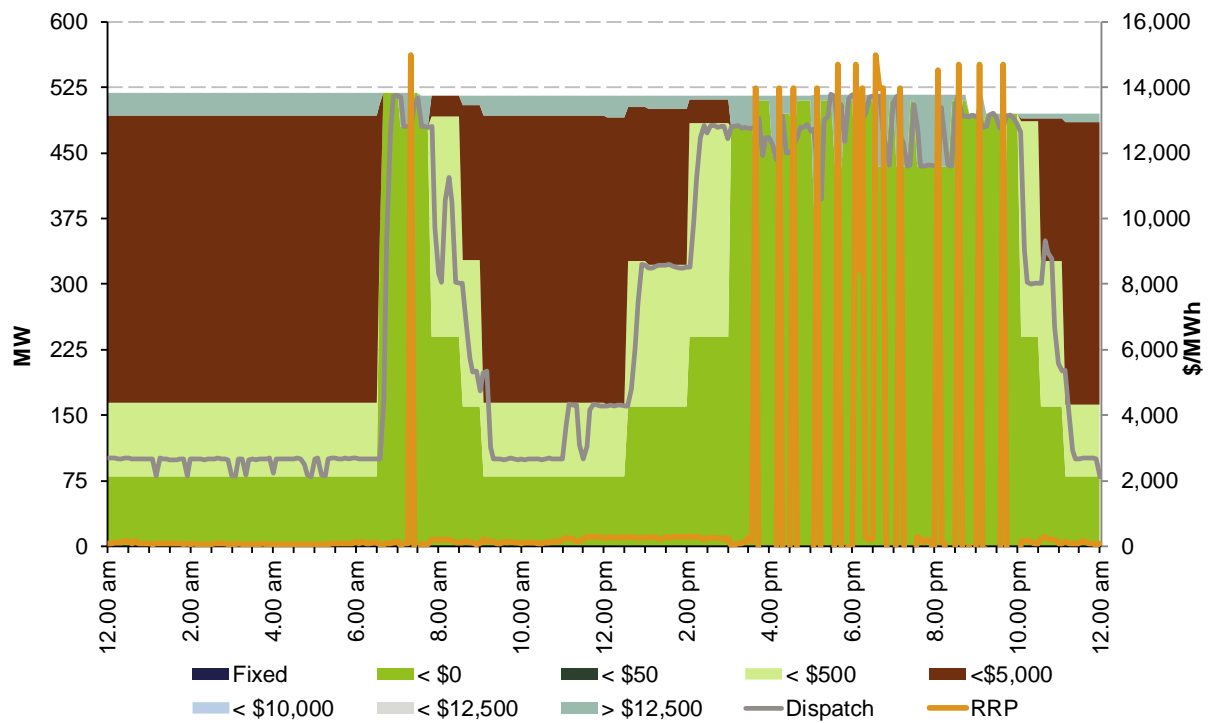


Figure A3: CleanCo (Barron Gorge, Kareeya, Swanbank, Wivenhoe) closing bids, dispatch and spot price

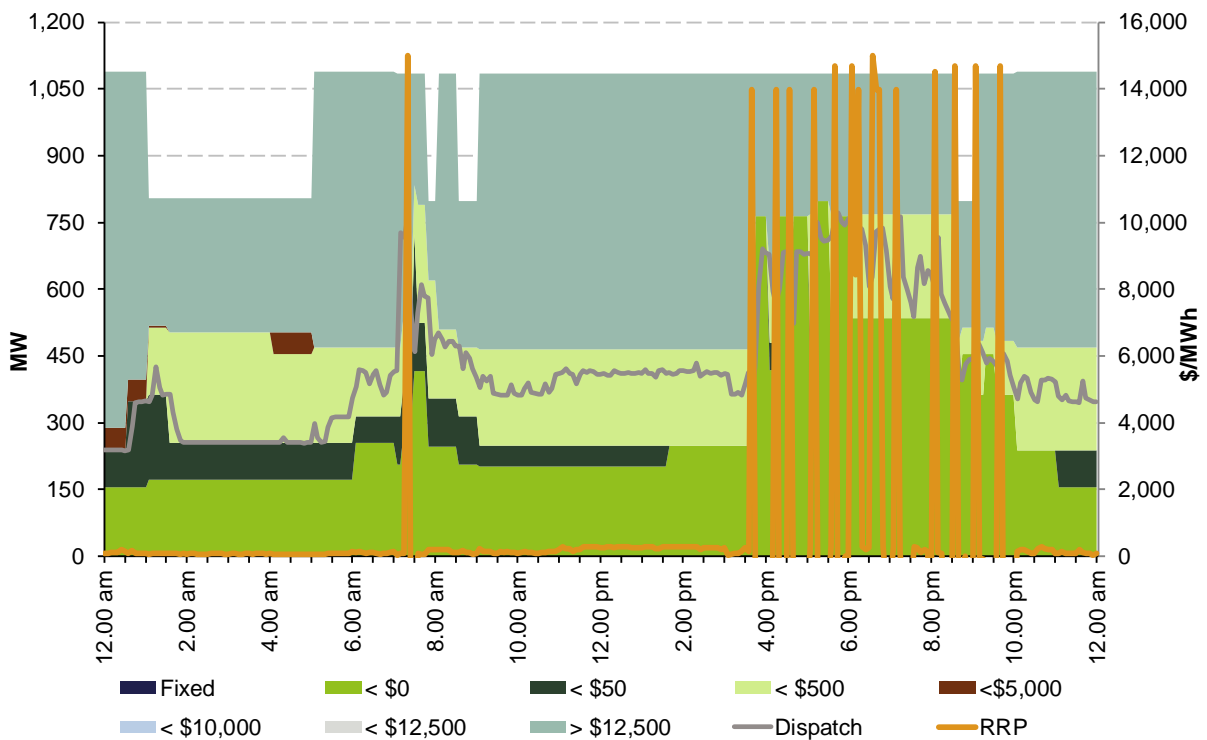


Figure A4: CS Energy (Callide B, Gladstone, Kogan Creek) closing bids, dispatch and spot price

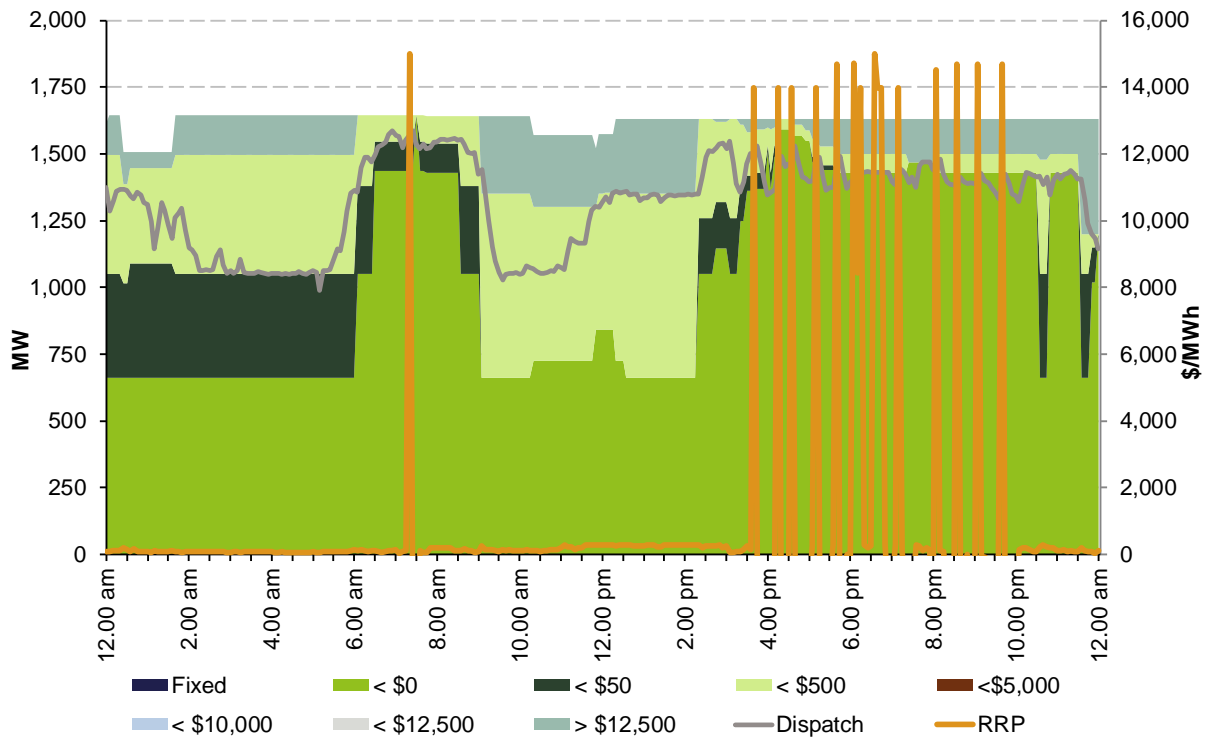


Figure A5: ERM Power (Oakey) closing bids, dispatch and spot price

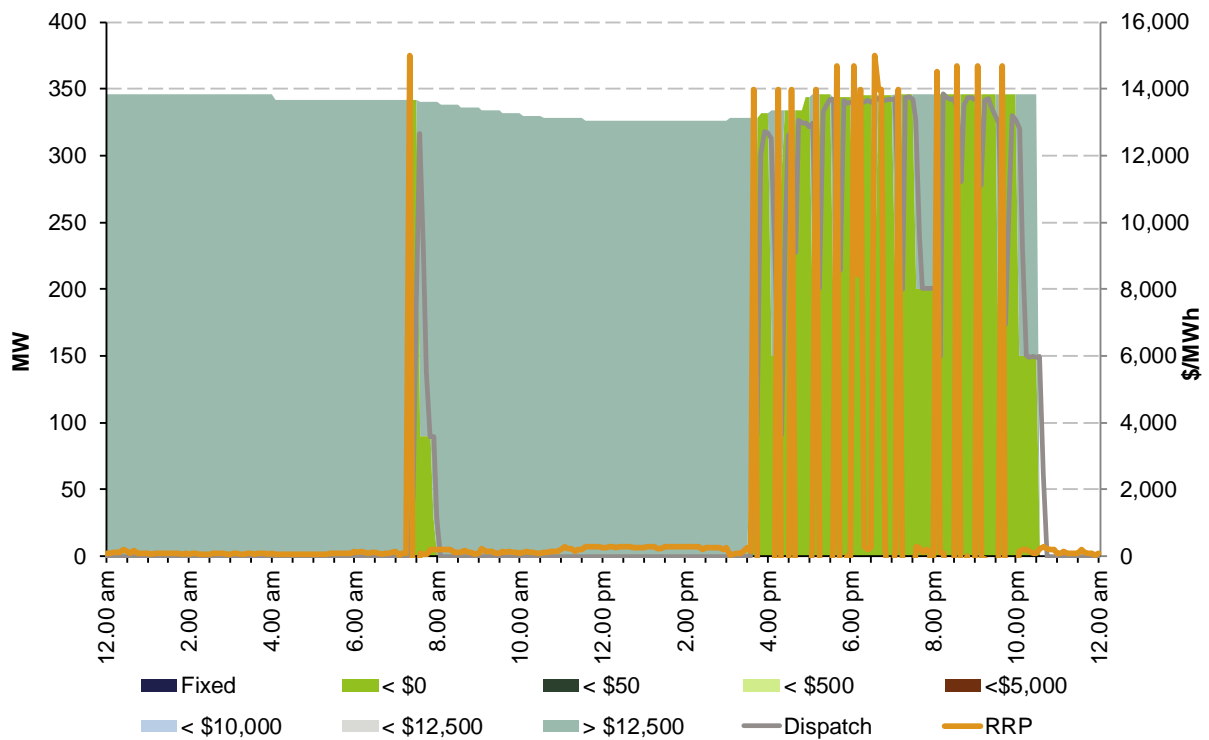


Figure A6: Origin Energy (Darling Downs, Mt Stuart, Roma) closing bids, dispatch and spot price

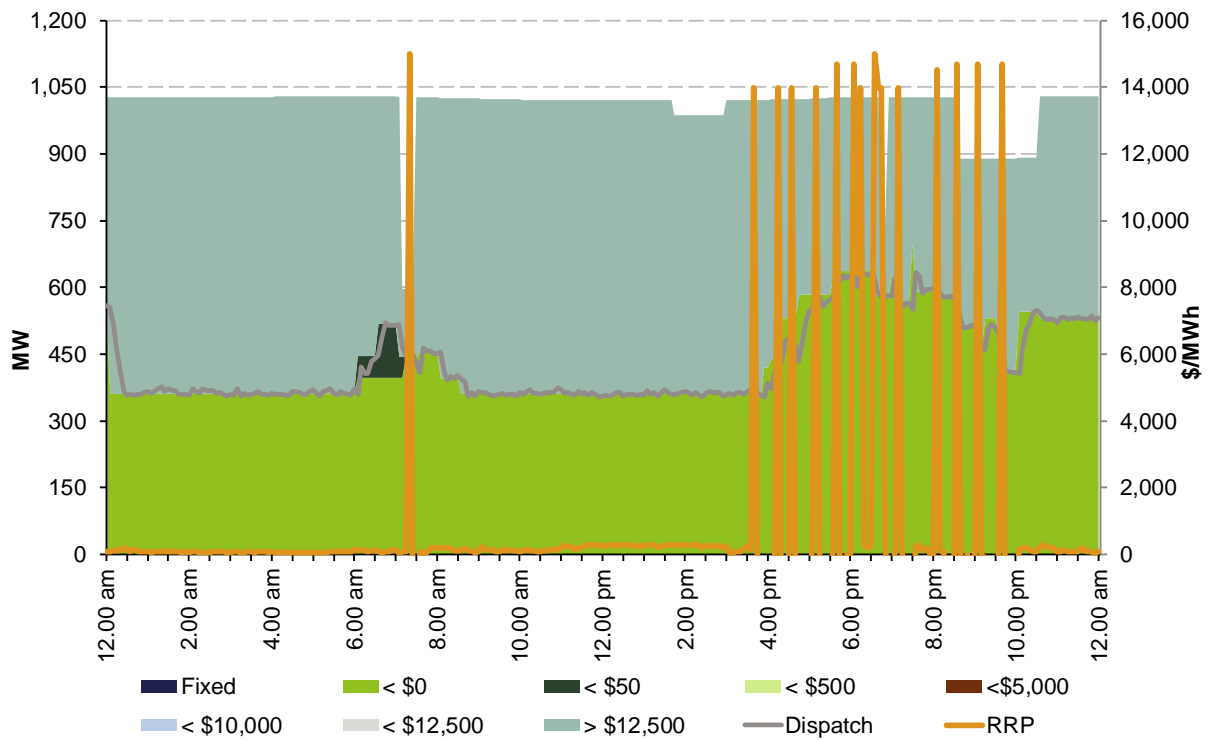
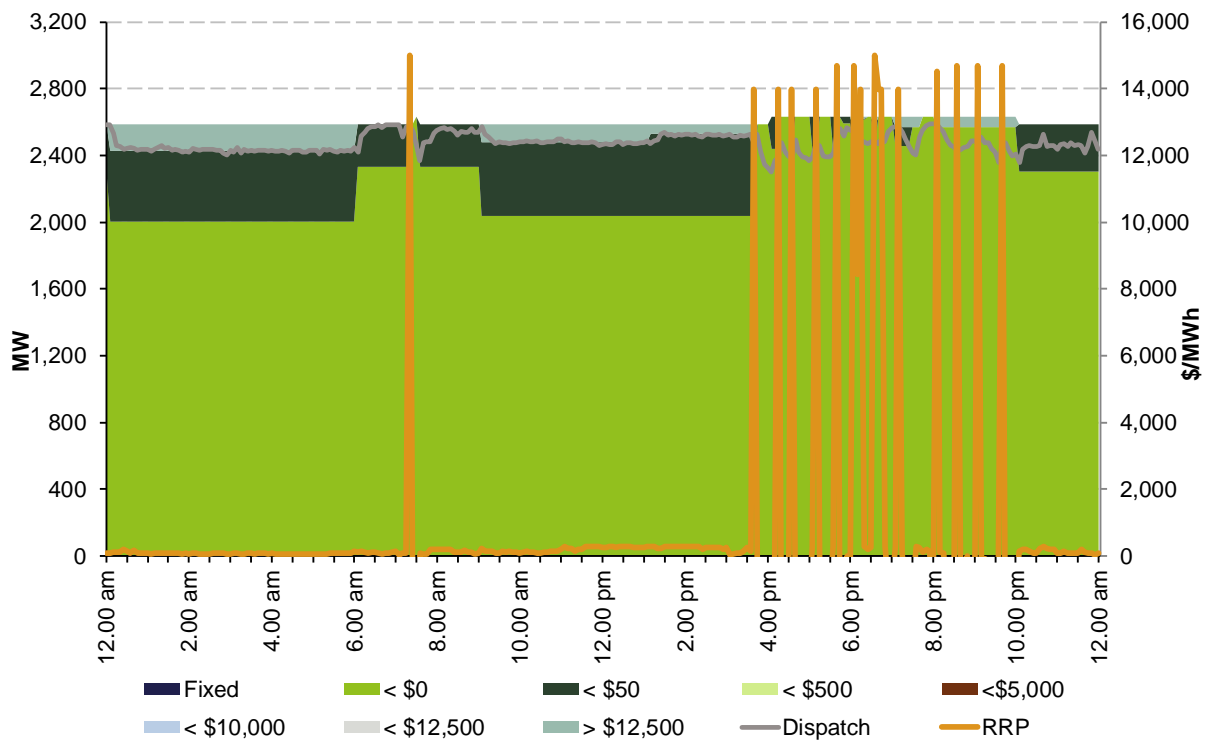


Figure A7: Stanwell Corporation (Stanwell, Tarong, Tarong North) closing bids, dispatch and spot price



Appendix B: 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 maximum capacity involved, the change in the price of the capacity being offered, and the rebid reason.

Table 4: Significant rebids for 6.30 pm trading interval

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
1.53 pm		Ergon Energy	Barcaldine	37	N/A	-882	1350a high prices in pd
2.43 pm		Origin Energy	Mt Stuart	30	15,000	-1,000	1442a constraint management - f_q++ldmu_r6 sl
3.05 pm		ERM Power	Oakey	200	>14,700	-1,000	f 1504 1504 commit to economic start
3.09 pm		CS Energy	Gladstone	10	<236	14,501	1508a change in aemo forecast-qld1 ti 03-06-2021 15:30:00 p30 dispatchable gen 6648.04mw vs p30 dispatchable gen 6814.47mw @ p30 run 03-06-2021 14:32:07 change of -166.43mw-sl
3.13 pm		CS Energy	Gladstone	10	<86	15,000	1513a change in aemo forecast-qld1 di 03-06-2021 15:15:00 rrp \$79.66 vs p5 rrp \$72.88 @ p5 run 03-06-2021 15:10:00 - rrp change of \$6.78-sl
3.23 pm		CS Energy	Gladstone	30	<236	14,501	1523a qld1 di 03-06-2021 15:25:00 rrp \$149 vs p5 rrp \$77 @ p5 run 03-06-2021 15:20:00 - rrp change of \$72-sl
3.34 pm		CS Energy	Gladstone	10	14,501	-1,000	1534a qld1 di 03-06-2021 15:35:00 rrp \$140.56 vs p5 rrp \$85.73 @ p5 run 03-06-2021 15:30:00 - rrp change of \$54.83-sl
4.04 pm		CS Energy	Gladstone	10	15,000	-1,000	1601a qld1 di 03-06-2021 16:05:00 rrp \$-1000 vs p30 rrp \$85.73 @ p30 run 03-06-2021 15:31:58 - rrp change of \$-1085.73-sl
4.26 pm		CS Energy	Gladstone	22	-1,000	>14,851	1602a qld1 di 03-06-2021 16:05:00 rrp \$-1000 vs p30 rrp \$85.73 @ p30 run 03-06-2021 15:31:58 - rrp change of \$-1085.73-sl
							1623a fcas/energy co-optimisation-sl

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
4.46 pm		CS Energy	Gladstone	20	51	14,501	1642a fcas/energy co-optimisation-sl
5.10 pm		Origin Energy	Mt Stuart	50	15,000	-1,000	1709a constraint management - f_q++ldmu_r6 sl
5.20 pm		CS Energy	Gladstone	30	-1,000	14,501	1719a fcas/energy co-optimisation-sl
5.23 pm		Arrow Energy	Braemar 2	60	13,988	-1,000	1723a change in 5min pd: qld price increase sl
5.29 pm		CS Energy	Gladstone	30	<51	14,501	1724a fcas/energy co-optimisation-sl
5.48 pm		Stanwell Corporation	Stanwell	31	19	15,000	1747a avoid units being stranded
5.48 pm		Stanwell Corporation	Tarong	51	19	15,000	1747a avoid units being stranded
6.01 pm	6.10 pm	Arrow Energy	Braemar 2	25	13,988	-1,000	1801a change in 5min pd: qld price increase sl
6.01 pm	6.10 pm	ERM Power	Oakey	145	>14,700	-1,000	a 1801 1800 increase in qld rrp for 1820: \$14,701.00 pd5@1800 vs \$339.18 pd5@1725
6.03 pm	6.10 pm	Origin Energy	Darling Downs	25	15,000	-1,000	1802a constraint management - nrm_qld1_nsw1 sl
6.03 pm	6.10 pm	Stanwell Corporation	Stanwell	31	15,000	-1,000	1803a high qld dispatch price
6.03 pm	6.10 pm	Stanwell Corporation	Tarong	51	15,000	-1,000	1803a high qld dispatch price
6.06 pm	6.15 pm	Stanwell Corporation	Stanwell	14	-1,000	15,000	1806a unit stranded
6.07 pm	6.15 pm	Alinta Energy	Braemar A	13	14,199	-1,000	1805~a~spot price higher than pd~~
6.11 pm	6.20 pm	Arrow Energy	Braemar 2	50	13,988	-1,000	1810a change in 5min pd: qld price increase sl
6.18 pm	6.25 pm	Stanwell Corporation	Stanwell	14	15,000	-1,000	1818a co-optimize energy and fcas

Table 5: Significant rebids for 7 pm trading interval

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
1.53 pm		Ergon Energy	Barcaldine	37	N/A	-882	1350a high prices in pd
2.43 pm		Origin Energy	Mt Stuart	30	15,000	-1,000	1442a constraint management - f_q++ldmu_r6 sl
3.05 pm		ERM Power	Oakey	200	>14,700	-1,000	f 1504 1504 commit to economic start
3.09 pm		CS Energy	Gladstone	10	<236	14,501	1508a change in aemo forecast-qld1 ti 03-06-2021 15:30:00 p30 dispatchable gen 6648.04mw vs p30 dispatchable gen 6814.47mw @ p30 run 03-06-2021 14:32:07 change of -166.43mw-sl
3.13 pm		CS Energy	Gladstone	10	<86	15,000	1513a change in aemo forecast-qld1 di 03-06-2021 15:15:00 rrp \$79.66 vs p5 rrp \$72.88 @ p5 run 03-06-2021 15:10:00 - rrp change of \$6.78-sl
3.23 pm		CS Energy	Gladstone	30	<236	14,501	1523a ql d1 di 03-06-2021 15:25:00 rrp \$149 vs p5 rrp \$77 @ p5 run 03-06-2021 15:20:00 - rrp change of \$72-sl
3.34 pm		CS Energy	Gladstone	10	14,501	-1,000	1534a ql d1 di 03-06-2021 15:35:00 rrp \$140.56 vs p5 rrp \$85.73 @ p5 run 03-06-2021 15:30:00 - rrp change of \$54.83-sl
4.04 pm		CS Energy	Gladstone	10	15,000	-1,000	1601a ql d1 di 03-06-2021 16:05:00 rrp \$-1000 vs p30 rrp \$85.73 @ p30 run 03-06-2021 15:31:58 - rrp change of \$-1085.73-sl
4.26 pm		CS Energy	Gladstone	22	-1,000	>14,851	1602a ql d1 di 03-06-2021 16:05:00 rrp \$-1000 vs p30 rrp \$85.73 @ p30 run 03-06-2021 15:31:58 - rrp change of \$-1085.73-sl
4.46 pm		CS Energy	Gladstone	20	51	14,501	1623a fcas/energy co-optimisation-sl
5.10 pm		Origin Energy	Mt Stuart	40	15,000	-1,000	1642a fcas/energy co-optimisation-sl
5.20 pm		CS Energy	Gladstone	30	-1,000	14,501	1709a constraint management - f_q++ldmu_r6 sl
5.23 pm		Arrow Energy	Braemar 2	60	13,988	-1,000	1719a fcas/energy co-optimisation-sl
							1723a change in 5min pd: ql d price increase sl

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
5.29 pm		CS Energy Stanwell	Gladstone	30	<51	14,501	1724a fcas/energy co-optimisation-sl
5.48 pm		Stanwell Corporation	Stanwell	31	19	15,000	1747a avoid units being stranded
5.48 pm		Stanwell Corporation	Tarong	51	19	15,000	1747a avoid units being stranded
6.07 pm		Alinta Energy	Braemar A	4	N/A	-1,000	1805~a~spot price higher than pd~~
6.07 pm		Alinta Energy	Braemar A	9	>14,199	-1,000	1805~a~spot price higher than pd~~
6.18 pm		Stanwell Corporation	Stanwell	17	15,000	-1,000	1818a co-optimize energy and fcas
6.32 pm	6.40 pm	Stanwell Corporation	Stanwell	14	15,000	-1,000	1832a high qld dispatch price
6.32 pm	6.40 pm	Stanwell Corporation	Tarong	51	15,000	-1,000	1832a high qld dispatch price
6.32 pm	6.40 pm	ERM Power	Oakey	145	>14,700	-1,000	a 1831 1830 manage impact of transmission constraint
6.46 pm	6.55 pm	Arrow Energy	Braemar 2	75	13,988	-1,000	1845a change in 5min pd: qld price decrease sl
6.53 pm	7.00 pm	Origin Energy	Darling Downs	50	15,000	-1,000	1851a constraint management - f_q++ldmu_r5 sl

Appendix C: Price setter

The following tables identify for the trading interval in which the spot price exceeded \$5,000/MWh, each 5 minute dispatch interval price and the generating units involved in setting the energy price. This information is published by AEMO.¹ The 30-minute spot price is the average of the 6 dispatch interval prices.

Table 6: Queensland price setter 6.30 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
18:05	\$14,701	ERM Power	OAKEY2	Energy	\$14,701	1.00	\$14,701
18:10	\$8,426.95	CleanCo	SWAN_E	Energy	\$149	1.00	\$149
		CleanCo	SWAN_E	Raise 60 sec	\$96.36	-0.57	-\$54.93
		CS Energy	GSTONE5	Raise 60 sec	\$14,500	0.57	\$8,265
18:15	\$13,988	ERMPower and Arrow	BRAEMAR5	Energy	\$13,988	0.50	\$6,994
		ERMPower and Arrow	BRAEMAR6	Energy	\$13,988	0.50	\$6,994
18:20	\$292	CleanCo	W/HOE#2	Energy	\$292	1.00	\$292
18:25	\$208.39	CleanCo	SWAN_E	Energy	\$149	1.00	\$149
		Alcoa	APD01	Raise 5 min	\$0.75	-1.00	-\$0.75
		CleanCo	W/HOE#1	Raise 5 min	\$12.50	1.00	\$12.50
		CleanCo	SWAN_E	Raise reg	\$15.36	-1.00	-\$15.36
		AGL (SA)	TORRB1	Raise reg	\$63	1.00	\$63
18:30	\$242	CleanCo	W/HOE#2	Energy	\$242	1.00	\$242
		CS Energy	GSTONE3	Energy	-\$1,000	0.04	-\$40
		CS Energy	GSTONE4	Energy	-\$1,000	0.04	-\$40
		CS Energy	GSTONE5	Energy	-\$1,000	0.03	-\$30
		Ergon Energy	BARCALDN	Energy	-\$1,000	0.01	-\$10
		ERM Power	OAKEY1	Energy	-\$1,000	0.03	-\$30
		ERM Power	OAKEY2	Energy	-\$1,000	0.03	-\$30
		Millmerran	MPP_1	Energy	-\$1,000	0.08	-\$80
		Braemar Power Projects	BRAEMAR1	Energy	-\$1,000	0.03	-\$30
		Braemar Power Projects	BRAEMAR2	Energy	-\$1,000	0.03	-\$30
		Stanwell	STAN-1	Energy	-\$1,000	0.06	-\$60
		Stanwell	STAN-3	Energy	-\$1,000	0.06	-\$60
		Stanwell	STAN-4	Energy	-\$1,000	0.06	-\$60
		Stanwell	TARONG#2	Energy	-\$1,000	0.06	-\$60
		Stanwell	TARONG#3	Energy	-\$1,000	0.06	-\$60
		Stanwell	TNPS1	Energy	-\$1,000	0.08	-\$80
Stanwell	TNPS1	Energy	-\$1,000	0.08	-\$80		
Spot price		\$6,309.72/MWh					

¹ Details on how the price is determined can be found at www.aemo.com.au

Table 7: Queensland price setter 7 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
18:35	\$15,000	Origin Energy	DDPS1	Energy	\$15,000	0.70	\$10,500
		Origin Energy	MSTUART1	Energy	\$15,000	0.30	\$4,500
18:40	\$13,988	ERMPower and Arrow	BRAEMAR5	Energy	\$13,988	0.33	\$4,616.04
		ERMPower and Arrow	BRAEMAR6	Energy	\$13,988	0.33	\$4,616.04
		ERMPower and Arrow	BRAEMAR7	Energy	\$13,988	0.33	\$4,616.04
18:45	\$13,988	ERMPower and Arrow	BRAEMAR5	Energy	\$13,988	0.33	\$4,616.04
		ERMPower and Arrow	BRAEMAR6	Energy	\$13,988	0.33	\$4,616.04
		ERMPower and Arrow	BRAEMAR7	Energy	\$13,988	0.33	\$4,616.04
18:50	\$292	CleanCo	W/HOE#2	Energy	\$292	1.00	\$292
18:55	-\$1,000	ERMPower and Arrow	BRAEMAR5	Energy	-\$1,000	0.03	-\$30
		ERMPower and Arrow	BRAEMAR6	Energy	-\$1,000	0.03	-\$30
		ERMPower and Arrow	BRAEMAR7	Energy	-\$1,000	0.03	-\$30
		Origin Energy	DDPS1	Energy	-\$1,000	0.08	-\$80
		Origin Energy	MSTUART1	Energy	-\$1,000	0.01	-\$10
		CleanCo	BARRON-1	Energy	-\$1,000	0.01	-\$10
		CleanCo	BARRON-2	Energy	-\$1,000	0.01	-\$10
		CleanCo	W/HOE#2	Energy	-\$1,000	0.03	-\$30
		CS Energy	GSTONE1	Energy	-\$1,000	0.04	-\$40
		CS Energy	GSTONE3	Energy	-\$1,000	0.04	-\$40
		CS Energy	GSTONE4	Energy	-\$1,000	0.04	-\$40
		CS Energy	GSTONE5	Energy	-\$1,000	0.03	-\$30
		Ergon Energy	BARCALDN	Energy	-\$1,000	0.01	-\$10
		ERM Power	OAKY1	Energy	-\$1,000	0.03	-\$30
		ERM Power	OAKY2	Energy	-\$1,000	0.03	-\$30
		Millmerran	MPP_1	Energy	-\$1,000	0.08	-\$80
		Braemar Power Projects	BRAEMAR1	Energy	-\$1,000	0.03	-\$30
		Braemar Power Projects	BRAEMAR2	Energy	-\$1,000	0.03	-\$30
		Stanwell	STAN-1	Energy	-\$1,000	0.06	-\$60
		Stanwell	STAN-3	Energy	-\$1,000	0.06	-\$60
Stanwell	STAN-4	Energy	-\$1,000	0.06	-\$60		
Stanwell	TARONG#2	Energy	-\$1,000	0.06	-\$60		
Stanwell	TARONG#3	Energy	-\$1,000	0.06	-\$60		
Stanwell	TNPS1	Energy	-\$1,000	0.08	-\$80		
19:00	-\$1,000	ERMPower and Arrow	BRAEMAR5	Energy	-\$1,000	0.03	-\$30
		ERMPower and Arrow	BRAEMAR6	Energy	-\$1,000	0.03	-\$30
		ERMPower and Arrow	BRAEMAR7	Energy	-\$1,000	0.03	-\$30
		Origin Energy	DDPS1	Energy	-\$1,000	0.09	-\$90
		Origin Energy	MSTUART1	Energy	-\$1,000	0.01	-\$10
		CleanCo	BARRON-1	Energy	-\$1,000	0.01	-\$10
		CleanCo	BARRON-2	Energy	-\$1,000	0.01	-\$10

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
		CleanCo	W/HOE#2	Energy	-\$1,000	0.03	-\$30
		CS Energy	GSTONE1	Energy	-\$1,000	0.04	-\$40
		CS Energy	GSTONE3	Energy	-\$1,000	0.04	-\$40
		CS Energy	GSTONE4	Energy	-\$1,000	0.04	-\$40
		CS Energy	GSTONE5	Energy	-\$1,000	0.03	-\$30
		Ergon Energy	BARCALDN	Energy	-\$1,000	0.01	-\$10
		ERM Power	OAKY1	Energy	-\$1,000	0.03	-\$30
		ERM Power	OAKY2	Energy	-\$1,000	0.03	-\$30
		Millmerran	MPP_1	Energy	-\$1,000	0.08	-\$80
		Braemar Power Projects	BRAEMAR1	Energy	-\$1,000	0.03	-\$30
		Braemar Power Projects	BRAEMAR2	Energy	-\$1,000	0.03	-\$30
		Stanwell	STAN-1	Energy	-\$1,000	0.06	-\$60
		Stanwell	STAN-3	Energy	-\$1,000	0.06	-\$60
		Stanwell	STAN-4	Energy	-\$1,000	0.06	-\$60
		Stanwell	TARONG#2	Energy	-\$1,000	0.06	-\$60
		Stanwell	TARONG#3	Energy	-\$1,000	0.06	-\$60
		Stanwell	TNPS1	Energy	-\$1,000	0.08	-\$80
Spot Price		\$6,878/MWh					