

Electricity spot prices above \$5000/MWh

18 January 2010
Queensland



AUSTRALIAN ENERGY
REGULATOR

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 factors such as 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.

Summary

On Monday 18 January 2010, the spot price in Queensland exceeded \$5000/MWh for four trading intervals from 2.30 pm to 4 pm inclusive. All of these prices were higher than forecast four and 12 hours ahead.

The temperature reached 36°C in Brisbane resulting in the Queensland demand reaching a record of 8902 MW² at 3 pm. Demand was up to 330 MW higher than forecast four hours ahead.

A system normal constraint reduced the import capability from New South Wales across both the QNI and Terranora interconnectors to around 150 MW (nominal import limit into Queensland is around 580 MW), which was lower than forecast four hours ahead.

Around 2000 MW of capacity was offered day-ahead at prices above \$5000/MWh. Rebidding of 750 MW of capacity from low prices to above \$5000/MWh also contributed to the high prices.

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

² Previous Queensland record demand was 8831 MW on 11 December 2009.

Actual and forecast demand

Figure 1 compares the actual demand, spot price and available capacity in Queensland during the high-priced period with that forecast by AEMO four and 12 hours ahead of dispatch.

Conditions at the time saw demand up to 330 MW higher than forecast four hours ahead and 360 MW higher than forecast 12 hours ahead.

Demand in Queensland reached a record of 8902 MW at 3 pm. Prices were much higher than forecast.

Available capacity³ from generators was close to forecast four and 12 hours ahead.

Figure 1: Queensland demand, spot price and available capacity

Monday 1:30 PM	Actual	4 hr forecast	12 hr forecast
Demand (MW)	8861	8531	8538
Spot Price (\$MW/h)	1575	134	60
Available capacity (MW)	10 624	10 731	10 777
Monday 2:00 PM	Actual	4 hr forecast	12 hr forecast
Demand (MW)	8868	8571	8551
Spot Price (\$MW/h)	4463	145	59
Available capacity (MW)	10 530	10 701	10 760
Monday 2:30 PM	Actual	4 hr forecast	12 hr forecast
Demand (MW)	8883	8580	8568
Spot Price (\$MW/h)	9208	135	60
Available capacity (MW)	10 559	10 705	10 760
Monday 3:00 PM	Actual	4 hr forecast	12 hr forecast
Demand (MW)	8902	8650	8558
Spot Price (\$MW/h)	9125	121	59
Available capacity (MW)	10 639	10 679	10 760
Monday 3:30 PM	Actual	4 hr forecast	12 hr forecast
Demand (MW)	8898	8642	8539
Spot Price (\$MW/h)	6717	99	58
Available capacity (MW)	10 649	10 693	10 760
Monday 4:00 PM	Actual	4 hr forecast	12 hr forecast
Demand (MW)	8882	8635	8542
Spot Price (\$MW/h)	5430	250	58
Available capacity (MW)	10 662	10 732	10 740

Generator offers and rebidding

Up to 10 662 MW of generation capacity was available in Queensland at the time of the high prices, with around 8300 MW of capacity priced below \$500/MWh and the remaining 1900 MW priced above \$5000/MWh. Around 2000 MW of capacity was originally offered above \$5000/MWh through day-ahead bids by Origin Energy, Braemar Power Projects, CS Energy, Stanwell, Tarong and ERM Power and Arrow. All of Braemar's and Origin's capacity priced above \$5000/MWh (around 580 MW) was rebid to below \$500/MWh during the day. Around 750 MW of capacity was shifted into prices above \$5000/MWh through rebidding by Millmerran Energy Trader, Callide Power Trading and CS Energy.

³ Available capacity is the sum of participants' offered capacity across all price bands.

Over two rebids at around 8 am Millmerran Energy Trader rebid 215 MW of capacity at Millmerran from prices below \$10/MWh to above \$9500/MWh. The reason given was “07:50 A: Qld demand higher than PD”. Over another two rebids at around 12.55 pm, Millmerran Energy shifted a further 40 MW of available capacity from prices below \$10/MWh to above \$9500/MWh. The reason given was “12:42 A: Change in Qld PD price-PD run 2010011817/18”. These rebids applied throughout the period of the high prices.

At 8.34 am Callide Power Trading rebid 112 MW of capacity at Callide C Unit Three from prices below \$45/MWh to above \$9200/MWh. The reason given was “18/01/10 08:32 1549 Initial offer F: change in sensitivitie” (sic). A further rebid at 11.34 am shifted 69 MW of capacity at Callide C Unit Three from prices below zero to above \$9200/MWh. The reason given was “18/01/10 11:32 1126 A:Qld demand higher than predispach”. A third rebid at 1.59 pm, effective from the 2.30 pm trading interval, shifted 50 MW of capacity at Callide C unit four from prices below zero to above \$9200/MWh. The reason given was “18/01/10 13:57 P: repeat bid due to CPT software erro” (sic). These rebids applied throughout the period of the high prices.

Over three rebids at 11.14 am, 11.53 am and 12.59 pm, CS Energy rebid 270 MW of capacity across its portfolio from prices below \$40/MWh to above \$7000/MWh (with 230 MW of this capacity priced at greater than \$9000/MWh). The reasons given related to changes in sensitivities.

There was no other significant rebidding.

Changes to network availability

During the time of high prices, the overall import capability into Queensland from New South Wales was up to 94 MW lower than forecast four hours ahead.

A system normal constraint (in this case it was the constraint required to protect against voltage collapse should the 750 MW Kogan Creek Power Station trip) was forcing flow across the Terranora interconnector into New South Wales at around 40 MW, 25 MW higher than forecast four hours ahead. It also limited imports into Queensland across the QNI interconnector to as little as 148 MW, around 95 MW lower than that forecast four hours ahead.

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Appendix A – Closing bids

Figures A1 to A6 highlight the half hour closing bids for participants in Queensland with capacity priced at or above \$5000/MWh during the trading intervals in which the spot price exceeded \$5000/MWh. It also shows the generation output of that participant and the spot price.

Figure A1: ERM Power and Arrow closing bid prices, dispatch and spot price

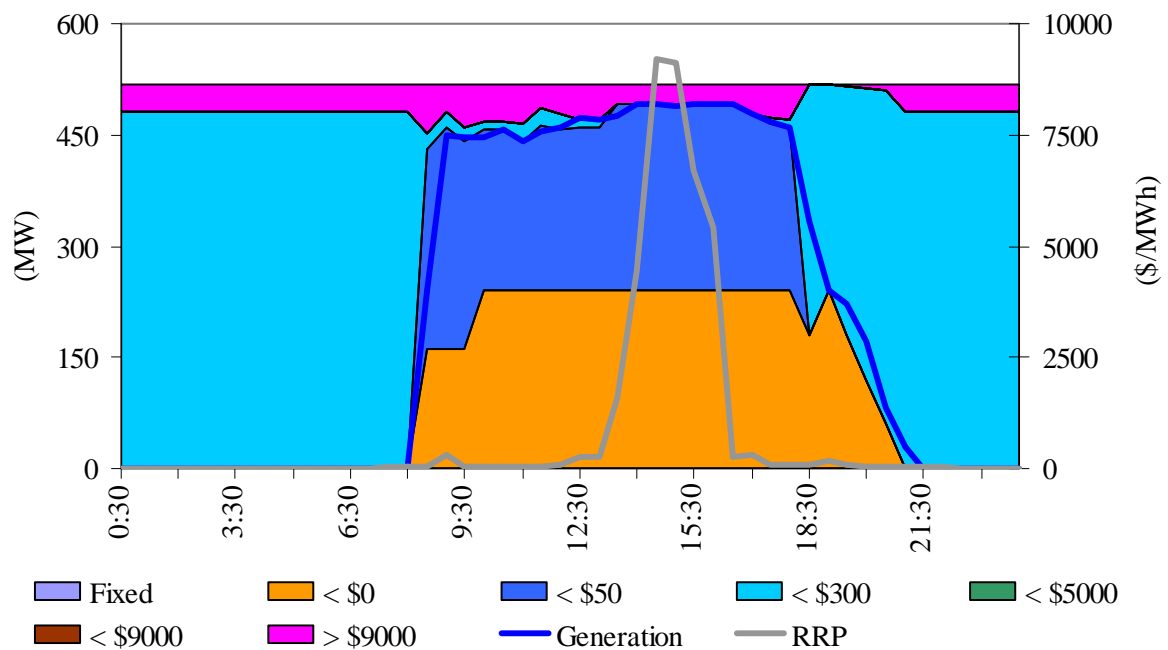


Figure A2: Callide Power Trading closing bid prices, dispatch and spot price

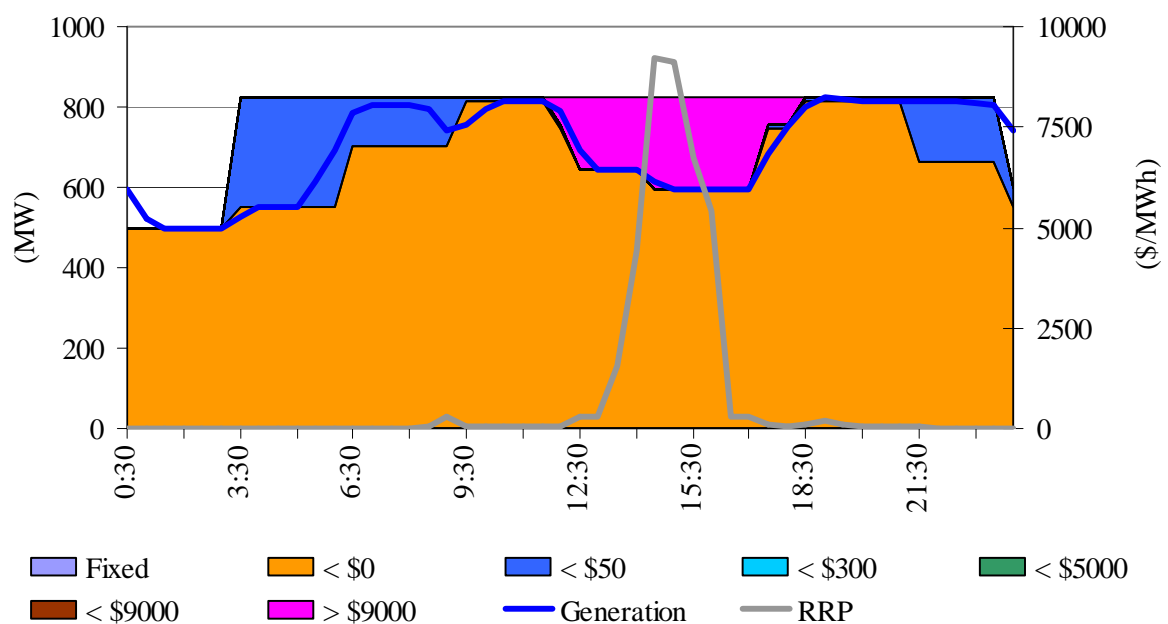


Figure A3: CS Energy closing bid prices, dispatch and spot price

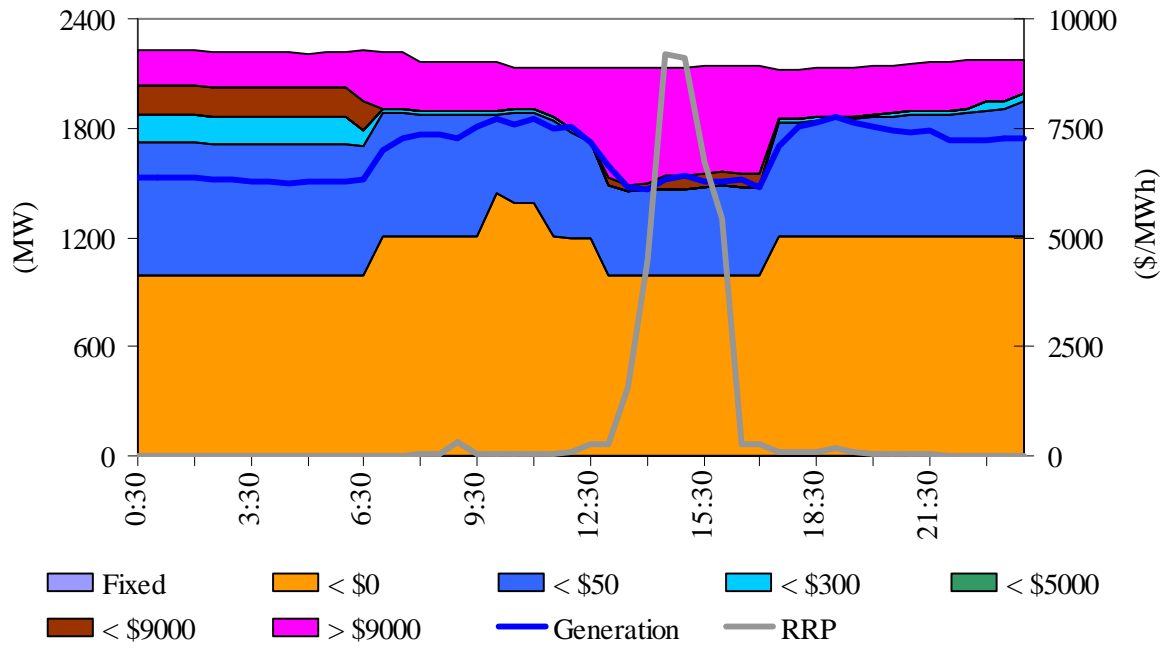


Figure A4: Millmerran Energy closing bid prices, dispatch and spot price

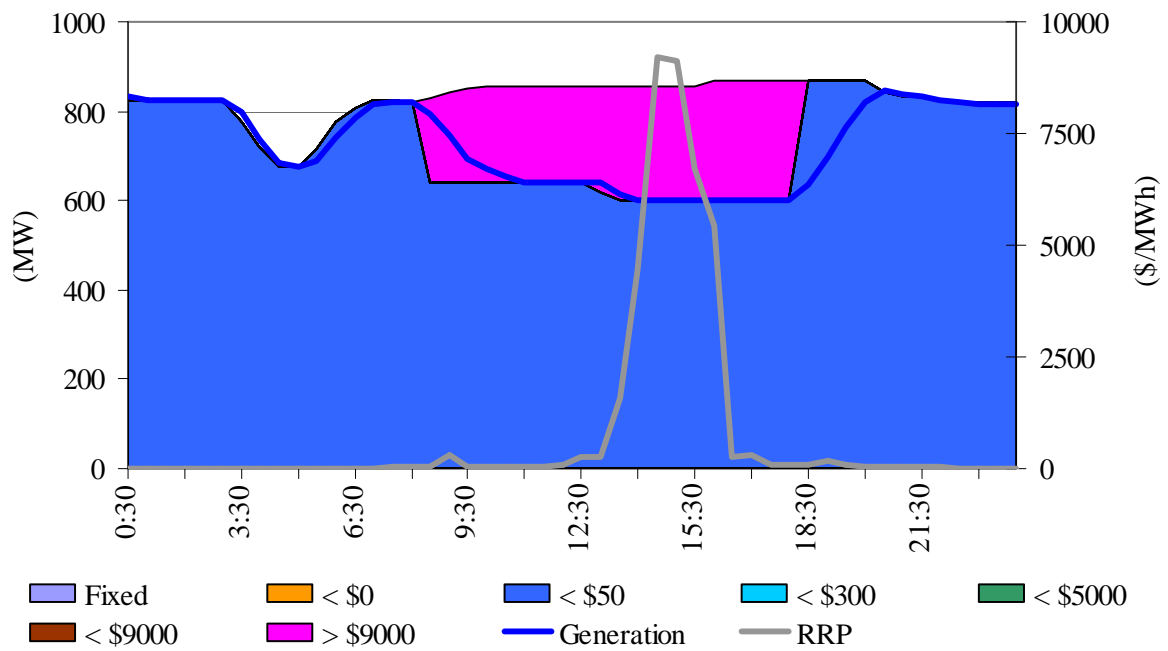


Figure A5: Stanwell closing bid prices, dispatch and spot price

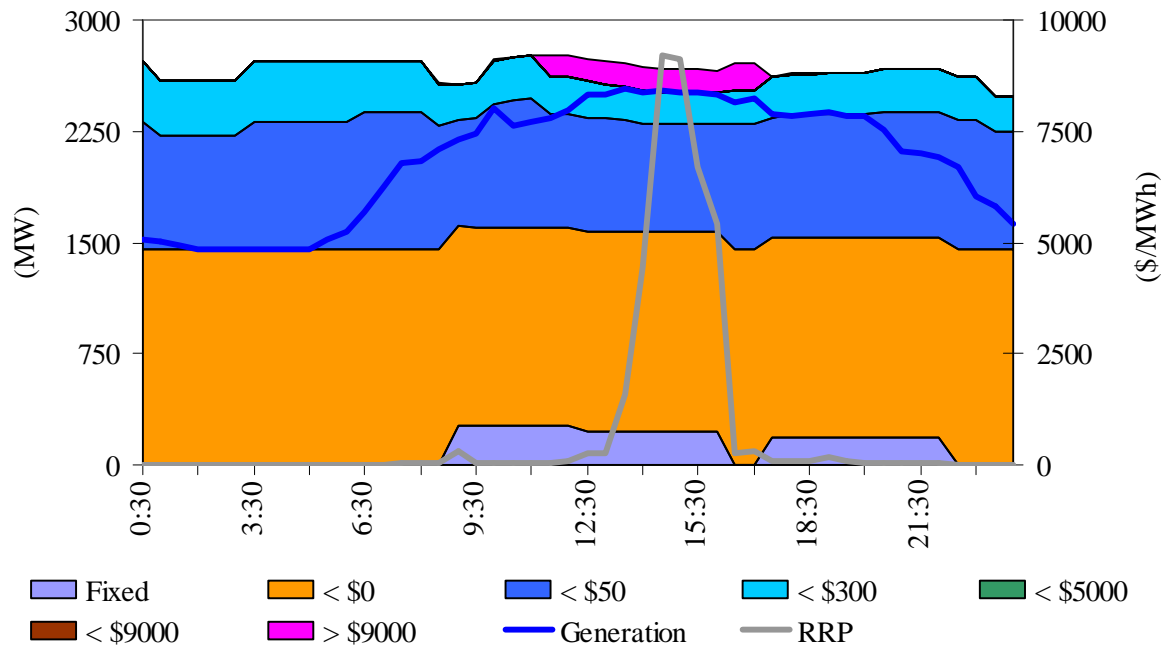
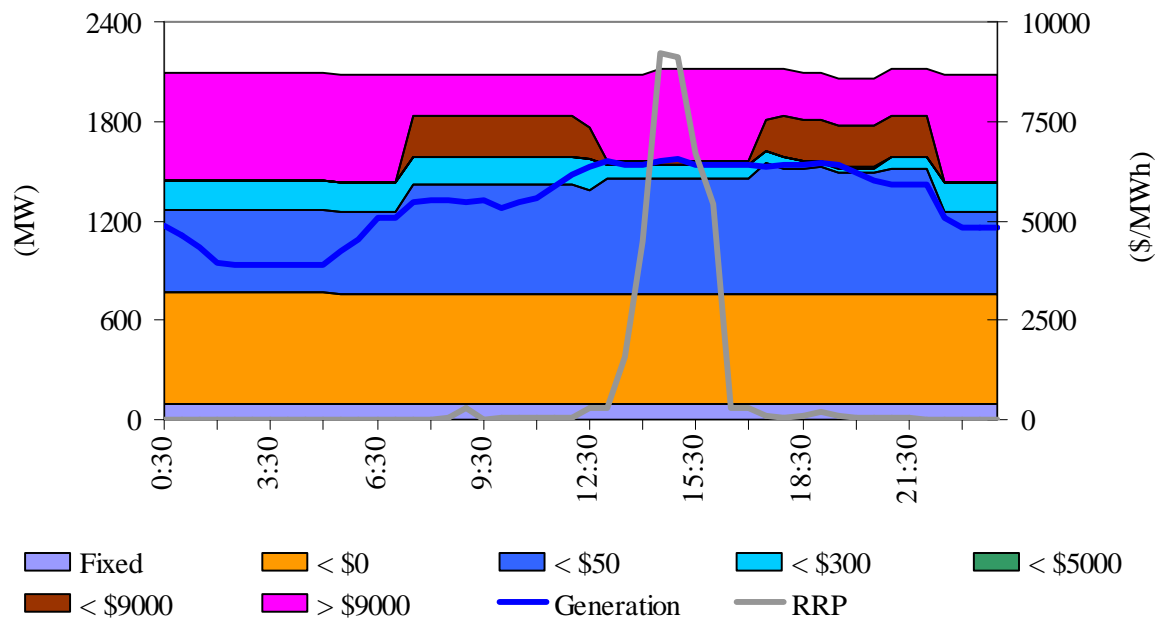


Figure A6: Tarong Energy closing bid prices, dispatch and spot price



Appendix B – Price setters for Monday 18 January 2010

The following tables identify the trading intervals in which the spot price exceeded \$5000/MWh. Each five minute dispatch interval price and the generating units involved in setting the energy price, as published in the market systems, are shown. This information is published by AEMO⁴. Also shown is the energy or ancillary service offer price involved in determining the dispatch price together with the quantity of that service and the contribution to the total energy price. The 30-minute spot price is the time weighted average of the six dispatch interval prices.

Monday 2.30 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
14:05	\$8500.00	Tarong	W/HOE#1	Energy	\$8500.00	1.00	\$8500.00
14:10	\$8500.00	Tarong	W/HOE#1	Energy	\$8500.00	1.00	\$8500.00
14:15	\$9915.94	Tarong	TARONG#3	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#2	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#4	Energy	\$9915.94	0.33	\$3305.28
14:20	\$8500.00	Tarong	W/HOE#1	Energy	\$8500.00	1.00	\$8500.00
14:25	\$9915.94	Tarong	TARONG#4	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#3	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#2	Energy	\$9915.94	0.33	\$3305.28
14:30	\$9915.94	Tarong	TARONG#4	Energy	\$9915.94	0.50	\$4957.97
		Tarong	TARONG#2	Energy	\$9915.94	0.50	\$4957.97
Spot price		\$9207.97/MWh					

Monday 3 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
14:35	\$9915.94	Tarong	TARONG#3	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#2	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#4	Energy	\$9915.94	0.33	\$3305.28
14:40	\$9915.94	Tarong	TARONG#4	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#3	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#2	Energy	\$9915.94	0.33	\$3305.28
14:45	\$9915.94	Tarong	TARONG#4	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#3	Energy	\$9915.94	0.33	\$3305.28
		Tarong	TARONG#2	Energy	\$9915.94	0.33	\$3305.28
14:50	\$8500.00	Tarong	W/HOE#1	Energy	\$8500.00	1.00	\$8500.00
14:55	\$8500.00	Tarong	W/HOE#1	Energy	\$8500.00	1.00	\$8500.00
15:00	\$8000.35	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
		Delta Electricity	MP2	Lower reg	\$1.40	-1.00	-\$1.40
		CS Energy	SWAN_E	Lower reg	\$0.75	1.00	\$0.75
Spot price		\$9124.70/MWh					

Monday 3.30 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
15:05	\$8001.00	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
15:10	\$8001.00	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
15:15	\$295.01	Stanwell	GSTONE2	Energy	\$295.01	1.00	\$295.01
15:20	\$8001.00	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
15:25	\$8001.00	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
15:30	\$8001.00	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
Spot price		\$6716.67/MWh					

Monday 4 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
15:35	\$280.00	Stanwell	GSTONE6	Energy	\$280.00	0.50	\$140.00
		Stanwell	GSTONE5	Energy	\$280.00	0.50	\$140.00
15:40	\$8001.00	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
15:45	\$295.01	Stanwell	GSTONE2	Energy	\$295.01	1.00	\$295.01
15:50	\$8001.00	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
15:55	\$8001.00	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
16:00	\$8001.00	CS Energy	SWAN_E	Energy	\$8001.00	1.00	\$8001.00
Spot price		\$5429.84/MWh					

⁴ Details on how the price is determined can be found at www.aemo.com.au