



Electricity spot prices above \$5000/MWh

**Victoria and
South Australia,
30 January 2020**

27 March 2020

© Commonwealth of Australia 2020

This work is copyright. In addition to any use permitted under the Copyright Act 1968, all material contained within this work is provided under a Creative Commons Attributions 3.0 Australia licence, with the exception of:

- the Commonwealth Coat of Arms
- the ACCC and AER logos
- any illustration, diagram, photograph or graphic over which the Australian Competition and Consumer Commission does not hold copyright, but which may be part of or contained within this publication. The details of the relevant licence conditions are available on the Creative Commons website, as is the full legal code for the CC BY 3.0 AU licence.

Requests and inquiries concerning reproduction and rights should be addressed to the Director, Corporate Communications, Australian Competition and Consumer Commission, GPO Box 4141, CANBERRA ACT 2601 or publishing.unit@acc.gov.au.

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 520
MELBOURNE VIC 3001

Tel: (03) 9290 1444
Fax: (03) 9290 1457

Email: AERInquiry@er.gov.au
AER Reference: 10684461

Amendment Record

Version	Date	Pages
Final report	27 March 2020	24

Contents

1	Obligation	4
2	Summary	5
3	Analysis	6
	3.1. Overview of actual and expected conditions	6
	3.2. Demand	7
	3.3. Supply	7
	3.3.1 Generation availability	7
	3.3.2 Network availability	9
	Appendix A: Spot Prices Victoria and South Australia.	11
	Appendix B: Closing bids	12
	Appendix C: Significant rebids	16
	Appendix D: Price setter	20

1 Obligation

The Australian Energy Regulator (AER) regulates energy markets and networks under national legislation and rules in eastern and southern Australia, 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, South Australia, 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 \$5000 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 \$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.

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 30 January 2020, the spot price for electricity for the 6.30 pm and 7 pm trading intervals reached \$11 096/MWh and \$11 948/MWh in Victoria, and \$11 204/MWh and \$12 217/MWh in South Australia respectively. Maximum temperatures in Melbourne and Adelaide exceeded 39 degrees, leading to a high demand for electricity.

The high spot prices were as a result of three factors. First, demand across both regions was collectively up to 870 MW greater than forecast. Second, a unit at Loy Yang A tripped, removing 560 MW of capacity priced at the floor from the market. Finally, with light wind conditions, the output of wind generation was around 3200 MW lower than what is installed across both regions and up to 122 MW lower than forecast earlier in the day. Despite 98 per cent of the available capacity across Victoria and South Australia being offered to the market below \$5000/MWh, these three factors combined led to the need to dispatch capacity priced above \$5000/MWh to meet demand.

Generator rebidding from low to high prices did not contribute to the price exceeding \$5000/MWh. In fact, generators shifted capacity from high to low prices throughout the day, shifting the forecast high prices until later in the day.

Given the extreme conditions it seems the market performed as expected. With high temperatures and calm wind conditions almost all generation that could be available was offered into the market. There were no actual supply shortfalls declared by AEMO, despite the unplanned generator outage.

3 Analysis

The following sections explore the reasons why the spot prices occurred. Prices were aligned across Victoria and South Australia so the analysis will consider both regions as a combined region¹.

Spot prices exceeded the reporting threshold in the 6.30 pm and 7 pm trading intervals following a generator at Loy Yang A suddenly shutting down, removing 560 MW of available low priced capacity from the market. This, in conjunction with higher than forecast demand and lower than forecast wind generation, saw high priced generation dispatched to meet demand.

3.1 Overview of actual and expected conditions

Across both regions, the spot price exceeded \$11 000/MWh for the 6.30 pm and 7 pm trading intervals. Table 1 shows the actual and forecast spot prices for Victoria, along with demand and generator availability for the 4.30 pm to 7.30 pm trading intervals for Victoria and South Australia combined.

Price, demand and generator availability tables for the individual regions are included in *Appendix A: Spot Prices for Victoria and South Australia*.

Table 1: Actual and forecast spot price for Victoria, demand and available capacity for Victoria and South Australia combined

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	332	364	1642	11 668	11 173	11 067	12 325	12 295	12 302
5 pm	2123	363	11 501	11 946	11 328	11 329	12 242	12 286	12 269
5.30 pm	1958	371	12 002	12 033	11 426	11 410	12 240	12 261	12 214
6 pm	4590	380	12 375	12 236	11 531	11 493	12 262	12 177	12 153
6.30 pm	11 096	376	12 069	12 298	11 490	11 485	11 782	12 139	12 122
7 pm	11 948	350	11 501	12 116	11 260	11 246	11 406	12 157	12 076

Table 1 shows:

- Across the afternoon, the four hour ahead forecast price was significantly lower than the 12 hour forecast price. This was primarily because participants rebid capacity into lower price bands. As a result, earlier forecast high prices did not eventuate.²

¹ While the same generators set price for both regions, MLFs (marginal loss factors) affect the price calculation for each region. MLFs represent the loss of electricity between the generator and the region receiving the generation. For more information see the [factsheet](#) published by the AEMC.

² Although not shown here, initial forecasts from the day prior indicated spot prices to exceed \$11 500/MWh in both regions from 4.30 pm to 7.30 pm.

- Across the 6.30 pm and 7 pm trading intervals, demand was up to 850 MW higher than forecast. Generator availability was up to 751 MW lower than forecast, reflecting the Loy Yang A trip and up to 122 MW less of low priced wind.

3.2 Demand

The temperature in Melbourne and Adelaide reached 39 degrees and 43 degrees³ respectively on the day. It was the second consecutive day in South Australia where the temperature exceeded 40°C. Persistent high temperatures drove demand to reach a maximum of 9284 MW and 3085 MW in Victoria and South Australia respectively.

Figure 1: Forecast versus actual demand for Victoria and South Australia

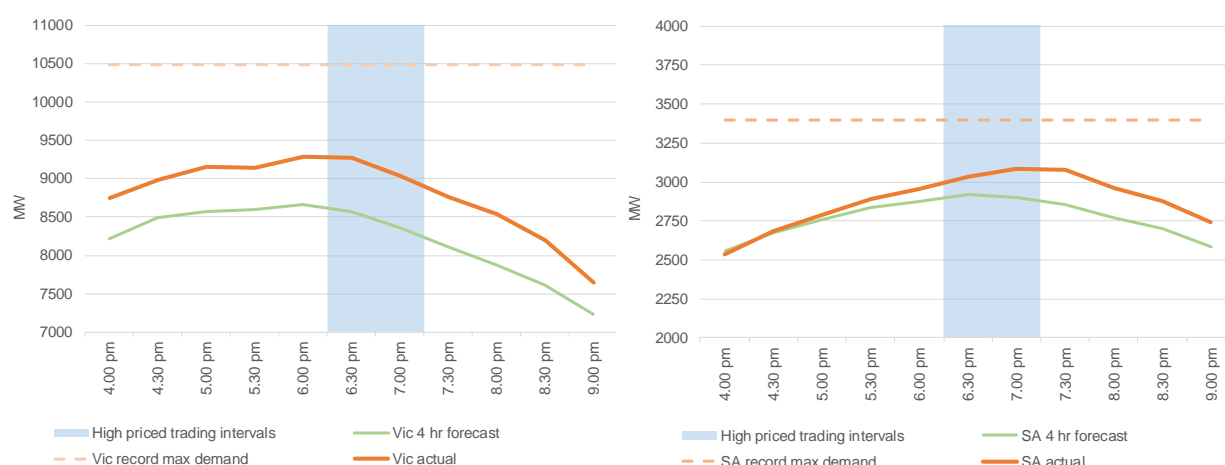


Figure 1 shows how actual demand was above the four hour forecast demand in both regions for much of the afternoon. While demand across both regions was well below record demand levels, actual demand was almost 700 MW and 190 MW greater than forecast in Victoria and South Australia respectively during the high priced trading intervals.

3.3 Supply

This section examines the supply side factors that had an effect on the high price outcomes.

3.3.1 Generation availability

During summer, across both regions around 15 900 MW of possible generation is available. On this day around 12 400 MW was initially offered into the market. During the high priced trading intervals semi-scheduled wind generation reached a maximum of 360 MW, compared to an installed capacity of around 3600 MW.

Figure 2 shows the cumulative generator offers for Victoria and South Australia. Also known as closing bids, the figure shows the actual capacity offered by generators in each region at the time of dispatch. Capacity offered below \$5000/MWh is shown in light green and capacity offered above \$5000/MWh is in dark green. Also shown is the initial amount of capacity offered below \$5000/MWh (green dotted line) from the previous day, before participants rebid capacity into

³[Melbourne, Victoria - Jan 2020 \(Bureau of Meteorology\)](#)
[Adelaide, South Australia - Jan 2020 \(Bureau of Meteorology\)](#)

lower price bands. The red, black and blue lines show the combined dispatch (MW), demand (MW) and the Victorian spot price (\$/MWh) respectively.

Figure 2: Combined generator closing bids for Victoria and South Australia

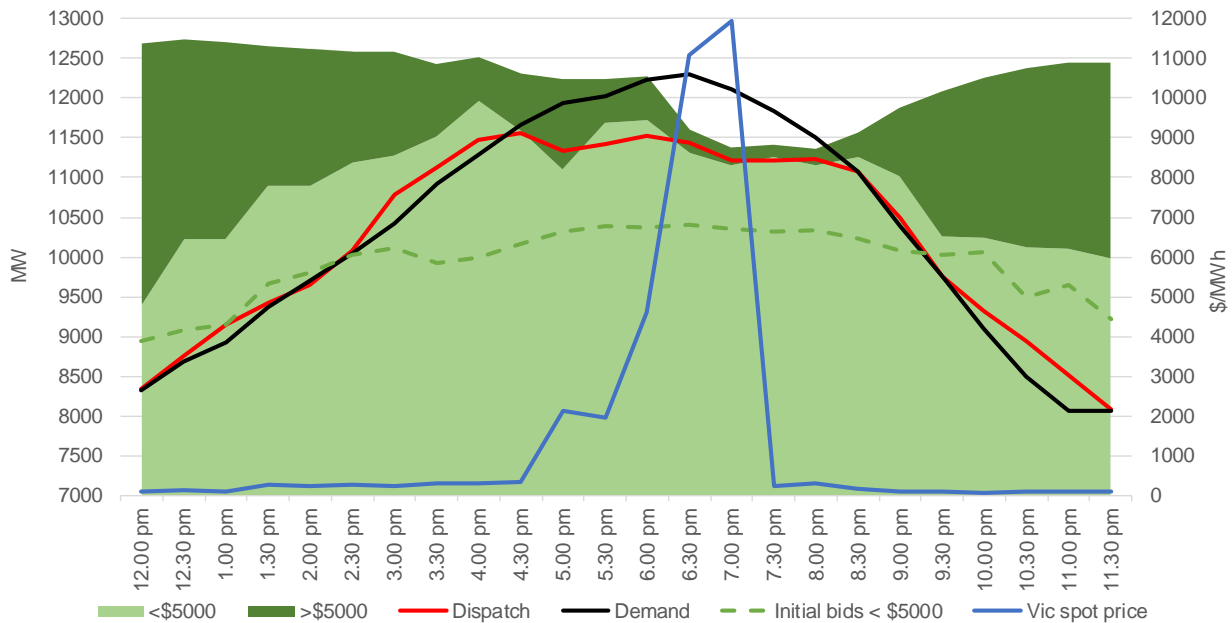


Figure 2 shows that:

- In response to initial forecasts of high prices, participants shifted around 900 MW of capacity from prices greater than \$5000/MWh to less than \$5000/MWh. As a result, 98 per cent of the capacity offered to the market by participants in Victoria and South Australia during the 6.30 pm and 7 pm trading intervals was priced below \$5000/MWh.
- The difference between demand (black line) and available generation (red line), was met by imports from Tasmania and New South Wales. However, it was still necessary to dispatch local generation above \$5000/MWh (dark green band).

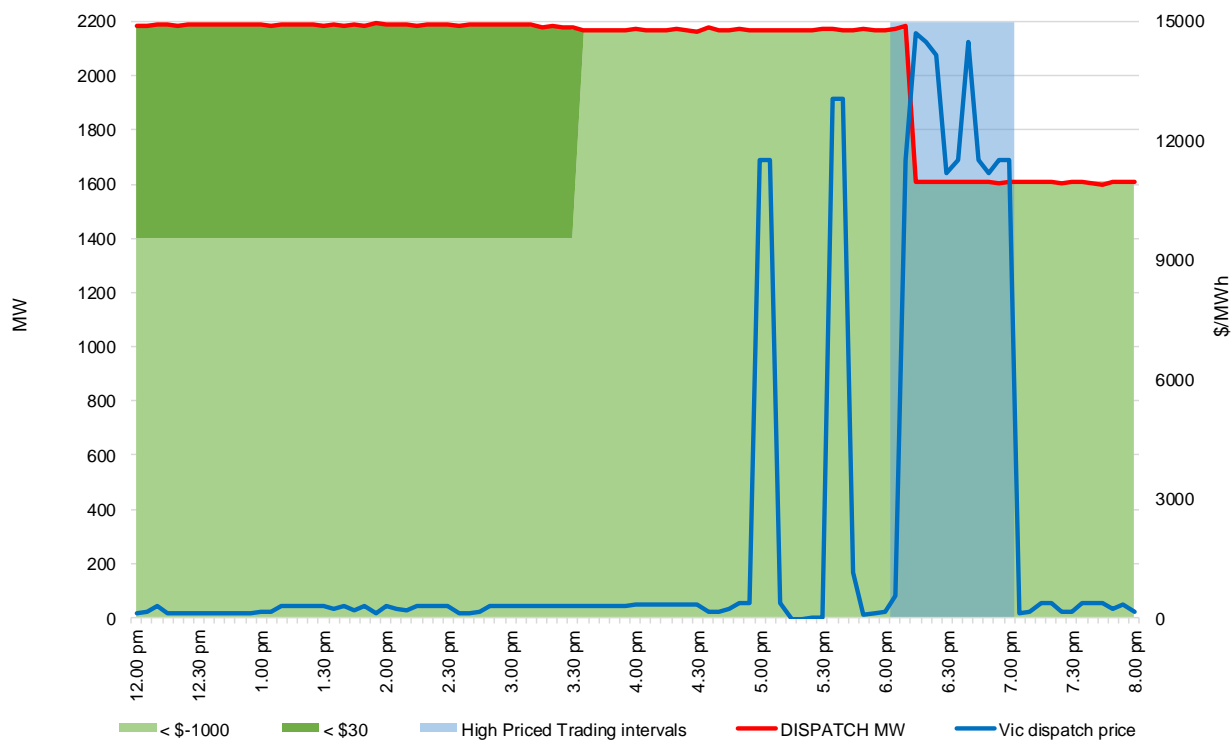
Rebidding into high price bands did not contribute to the high prices in South Australia and Victoria. However any significant rebids are contained in *Appendix C: Significant rebids*.

3.3.1.1 Trip of Loy Yang A unit 3

AGL's Loy Yang A power station is a coal fired generator in Victoria that can generate up to 2210 MW of electricity. The station is made up of four individual generating units. The station was generating at full capacity for the afternoon, and all of its capacity was priced at the floor from 3.35 pm onwards. At 6.08 pm, unit 3 tripped, effectively removing 560 MW of capacity priced at the floor from the market.

Figure 3 shows the loss of low priced generation coinciding with the consistent high priced dispatch intervals.

Figure 3: Loy Yang A offers, dispatch and trip



3.3.1.2 Lack of Reserve 2 (LOR 2)

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.

Following the trip at Loy Yang A, a LOR 2 condition was declared in both Victoria and South Australia.⁴ No customer load shedding was required to maintain the power system in a secure operating state. The LOR 2 conditions were then cancelled for both regions at around 7.30 pm as demand fell.⁵

3.3.2 Network availability

The regions of the National Electricity Market are connected via high voltage interconnectors, through which electricity is transferred. South Australia is connected to Victoria via two interconnectors, Heywood and Murraylink. Victoria is connected to Tasmania via Basslink and to New South Wales via the Vic-NSW interconnector. Import and export limits control the maximum amount of electricity that can flow between regions across interconnectors. The market operator, AEMO, manages the flow of electricity across the network using constraints to ensure that system security is maintained. Constraints are mathematical equations that manage or “limit” flows on specific transmission lines (including interconnectors) for each five minute interval.

⁴ AEMO Market Notices 73130 and 73131.

⁵ AEMO Market Notices 73147 and 73159.

Following the trip of the Loy Yang A unit 3, imports into Victoria, across the Vic-NSW interconnector, were up to 580 MW higher than forecast, four hours prior. With actual flows from other regions at the limit, capacity priced above \$5000/MWh was dispatched in Victoria and South Australia.

The closing bids for all participants in Victoria and South Australia with capacity priced at or above \$5000/MWh for the high-price periods are set out in *Appendix B: Closing bids*.

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 D: Price Setter*.

Australian Energy Regulator

March 2020

Appendix A: Spot Prices Victoria and South Australia.

Table 2 and Table 3 show actual and forecast spot prices, demand and local availability (that is, excluding imports from other regions) for the high priced trading intervals in Victoria and South Australia respectively.

Table A1: Actual and forecast spot price, demand and available capacity for Victoria

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	332	364	1642	8986	8496	8419	9139	9116	9134
5 pm	2123	363	11 501	9159	8571	8598	9122	9129	9137
5.30 pm	1958	371	12 002	9144	8592	8599	9224	9125	9129
6 pm	4590	380	12 375	9284	8659	8635	9218	9069	9089
6.30 pm	11 096	376	12 069	9268	8572	8574	8729	9039	9096
7 pm	11 948	350	11 501	9031	8361	8343	8426	9069	9063

Table A2: Actual and forecast spot price, demand and available capacity for South Australia

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	332	396	1750	2682	2677	2648	3186	3178	3167
5 pm	2193	395	12 247	2787	2757	2730	3119	3156	3132
5.30 pm	2094	406	13 100	2889	2834	2811	3016	3135	3086
6 pm	4982	412	13 100	2953	2872	2858	3044	3108	3064
6.30 pm	11 204	410	13 100	3030	2919	2911	3053	3100	3026
7 pm	12 217	398	12 427	3085	2899	2904	2980	3088	3013

Appendix B: Closing bids

Figure B1 to B7 highlight the half hour closing bids for participants in Victoria and South Australia and with 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.

Victoria

Figure B1: AGL Energy (Somerton, Dartmouth, Eildon, Loy Yang A, Macarthur Wind Farm, Mckay, Oaklands Hill Wind Farm, West Kiewa) closing bids, dispatch and spot price

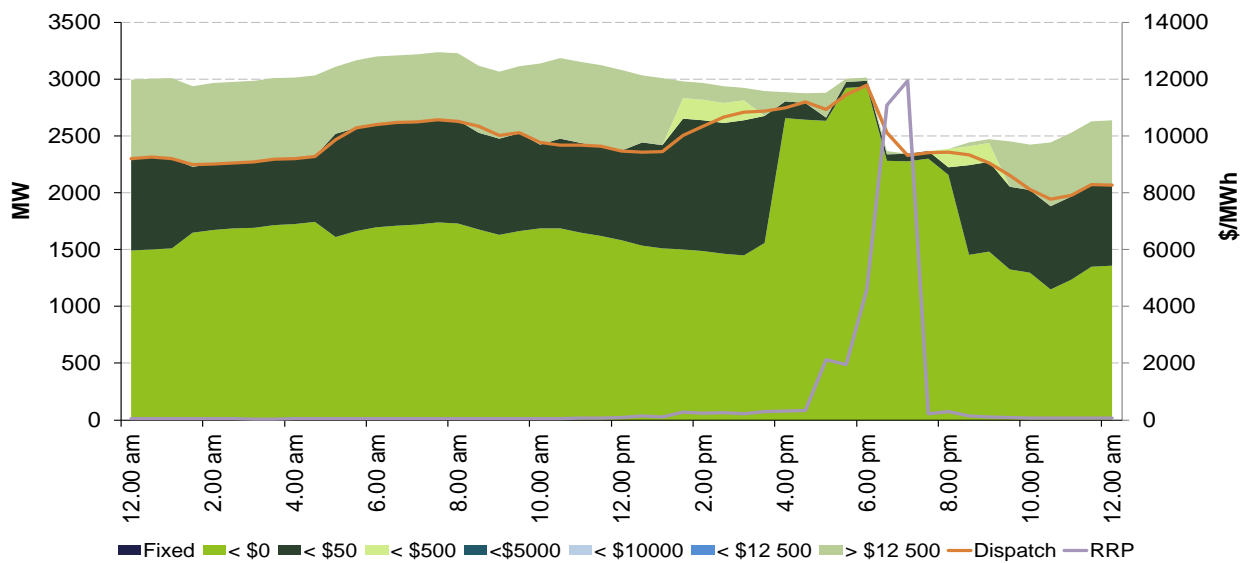


Figure B2: EnergyAustralia (Ballarat Battery, Gannawarra Energy, Jeeralang A, Jeeralang B, Newport, Yallourn) closing bids, dispatch and spot price

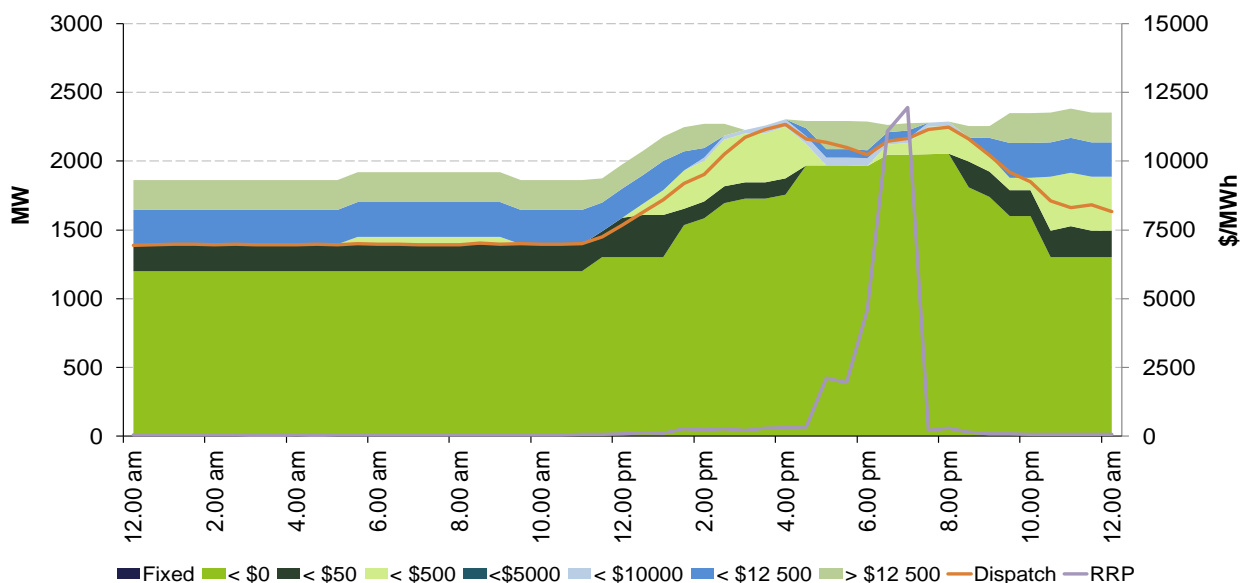


Figure B3: Origin Energy (Mortlake) closing bids, dispatch and spot price

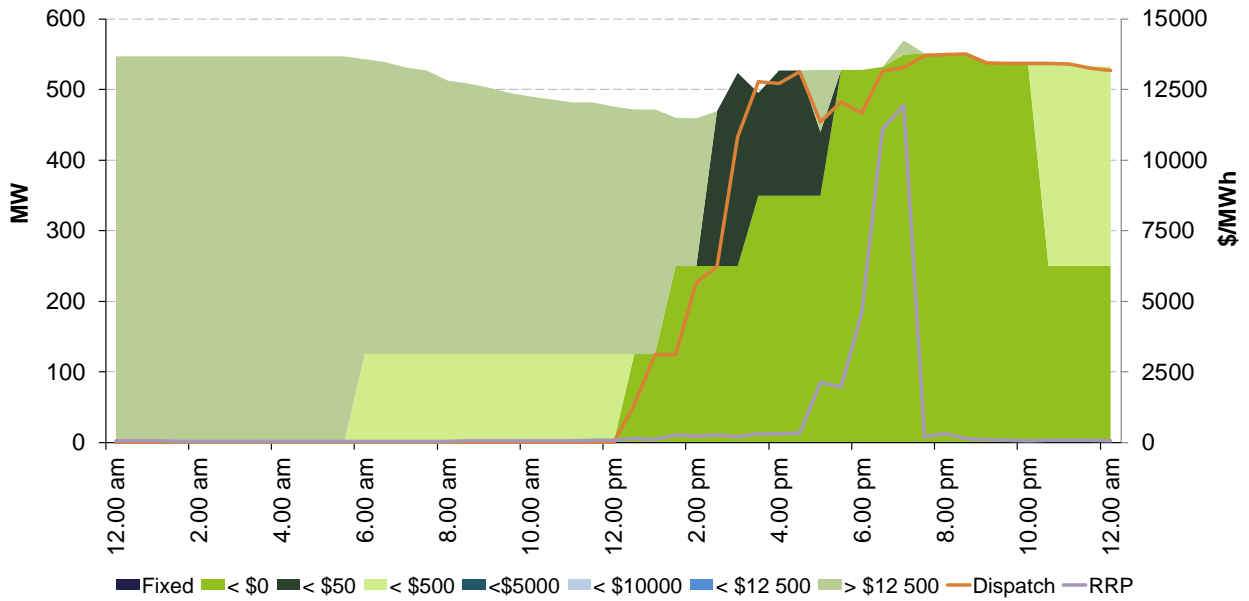
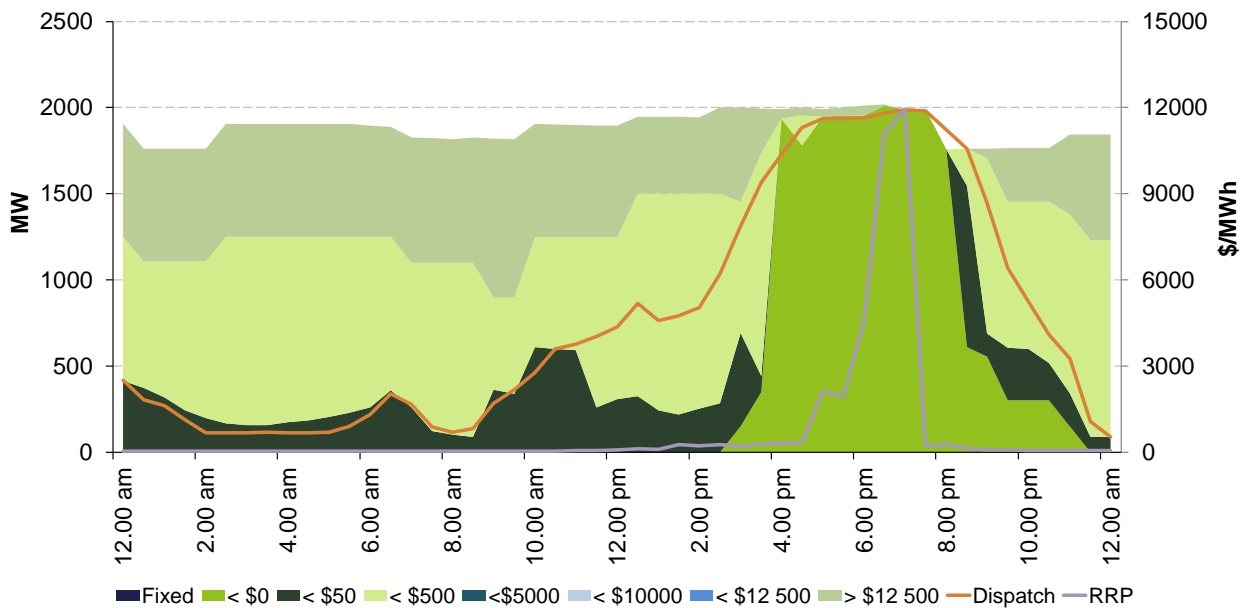


Figure B4: Snowy Hydro (Laverton North, Murray, Valley Power) closing bids, dispatch and spot price



South Australia

Figure B5: AGL Energy (Barker Inlet, The Bluff, Hallett, North Brown Hill, Torrens Island) closing bids, dispatch and spot price

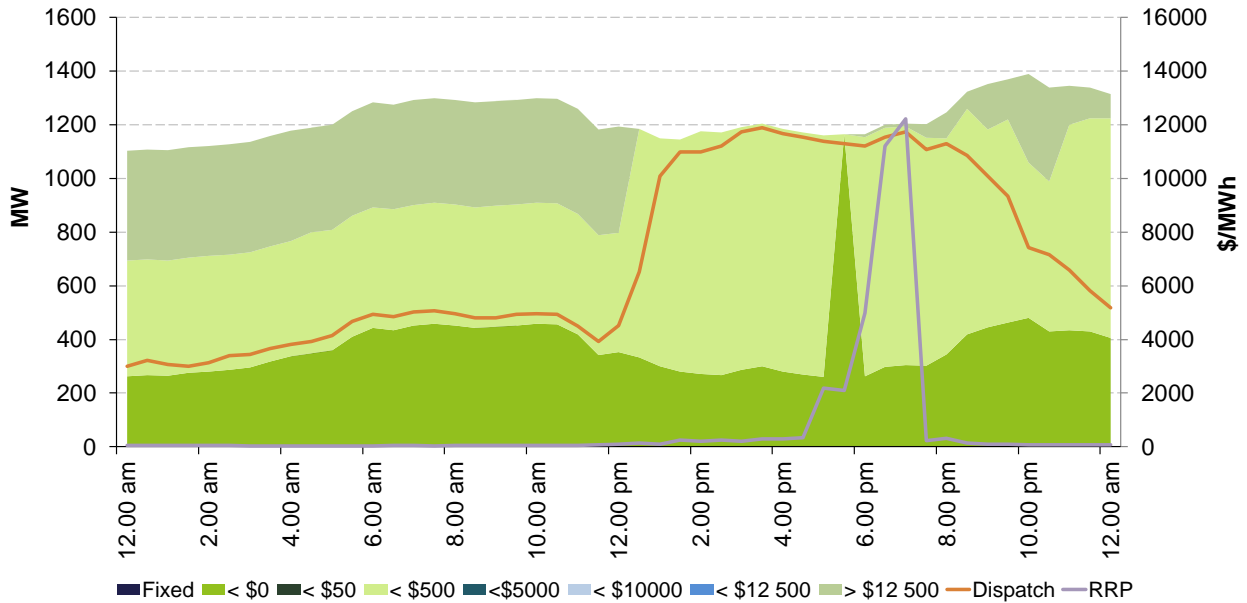


Figure B6: EnergyAustralia (Hallett, Waterloo) closing bids, dispatch and spot price

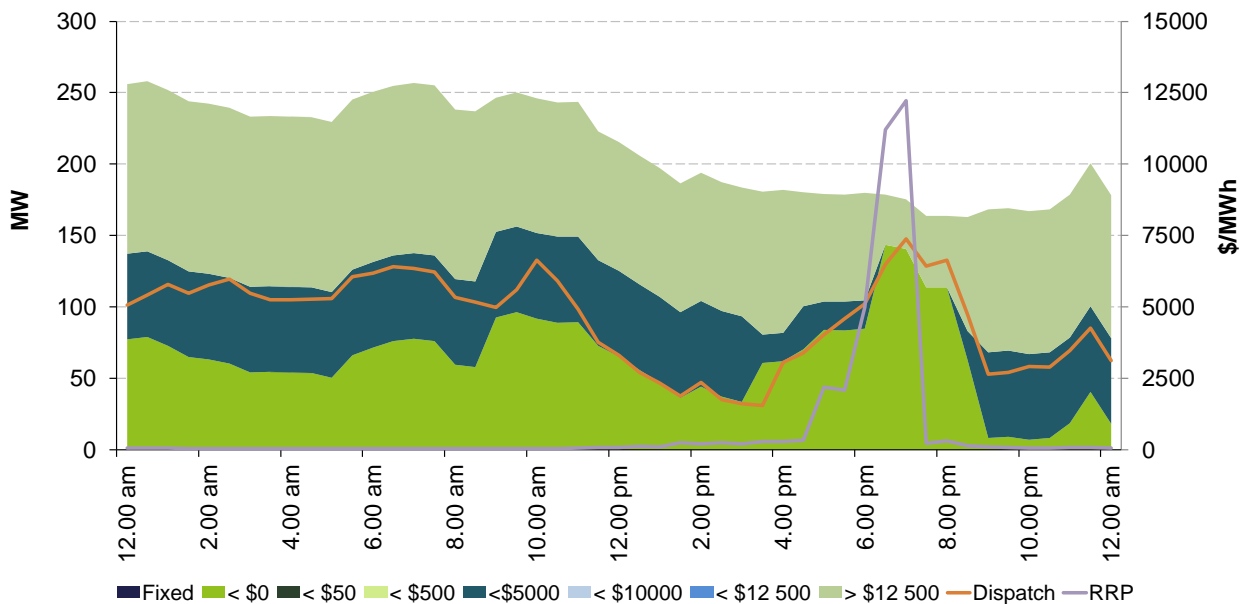
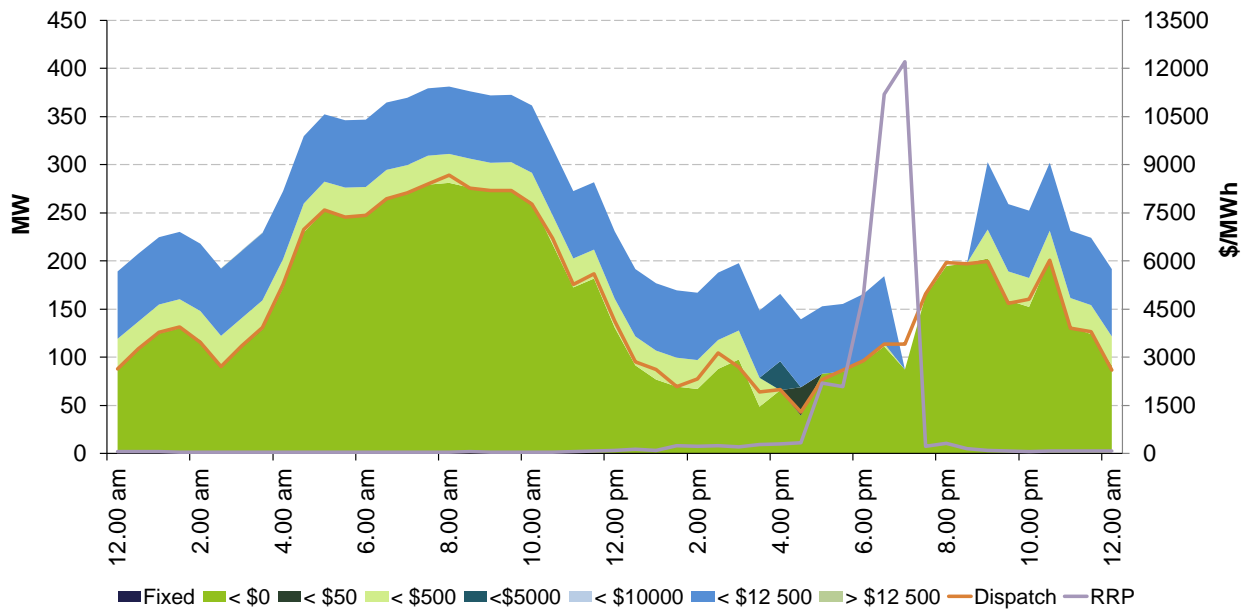


Figure B7: Neoen (Hornsedale Wind Farm, Hornsdale Power Reserve) closing bids, dispatch and spot price



Appendix C: 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 C1: Victoria 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
5.36 pm		Origin Energy	Mortlake	182	14 700	-1000	1732A constraint management - N^N_Nil_1 SI
5.37 pm		AGL Energy	McKay	165	>13 304	-1000	1735~A~040 chg in AEMO disp~40 demand decrease vs pd NSW \$718.80 vs \$2267.58
6.08 pm	6.15 pm	AGL Energy	Loy Yang A	-560	-1000	N/A	1805~p~020 reduction in avail cap~204 unit trip
6.11 pm	6.20 pm	Snowy Hydro	Valley Power	47	14 700	-1000	18:05:04 a VIC 5min actual price \$11,083.10 higher than 5min pd 18:10@18:01 (\$11,500.80)

Table C2: Victoria significant rebids for 7pm trading interval

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
5.36 pm		Origin Energy	Mortlake	184	14 700	-1000	1732A constraint management - N^N_Nil_1 SI
5.37 pm		AGL Energy	McKay	165	>13 304	-1000	1735~A~040 chg in AEMO disp~40 demand decrease vs pd NSW \$718.80 vs \$2267.58
6.08 pm		AGL Energy	Loy Yang A	-560	-1000	N/A	1805~P~020 reduction in avail cap~204 unit trip
6.25 pm	6.35 pm	Snowy Hydro	Valley Power	49	14 700	-1000	18:06:00 A VIC 5min pd price \$11,283.24 higher than 5min pd 18:35@18:01 (\$11,500.80)
6.33 pm	6.40 pm	Snowy Hydro	Murray	-56	-1000	N/A	18:32:45 P update capability parameters for change to outage plan/plant conditions
6.34 pm	6.40 pm	Snowy Hydro	Murray	20	N/A	-1000	18:33:54 P update capability parameters for change to outage plan/plant conditions

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
6.35 pm	6.45 pm	EnergyAustralia Pty Ltd	Ballarat Battery Energy Storage System	20	N/A	<302	1830~F~optimise between energy/fcas markets sl~
6.44 pm	6.55 pm	Snowy Hydro	Murray	20	N/A	-1000	18:44:40 P update capability parameters for change to outage plan/plant conditions

Table C3: South Australian 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
3.04 pm		Engie	Dry Creek	40	13 100	<390	1440~A~respond to 5 min pd > \$282.23~
3.19 pm		EnergyAustralia	Hallett	20	13 999	<579	1515~A~chg SA net interchange in p30 fcsts 1630-2230 sl ~
3.19 pm		Engie	Dry Creek	37	13 100	-1000	1510~A~respond to 5 min >\$ 280.81~
3.35 pm		Engie	Dry Creek	37	13 100	-1000	1515~A~respond to 5 min pd \$ \$289.67~
4.06 pm		Engie	Port Lincoln	43	14 700	<390	1555~A~respond to 5 min predispatch >\$311.55~
4.56 pm		Engie	Port Lincoln	23	14 700	-1000	1650~A~respond to pr5 min pd > \$ 11,876.64~
5.04 pm		Engie	Snuggery	30	14 700	-1000	1700~A~respond to 5 min predispatch >\$ 12,290.98~
5.31 pm		Engie	Snuggery	20	14 700	-1000	1720~A~respond to 5 min pd. >\$ 14,467.79~
5.36 pm		Origin Energy	Quarantine	100	14 700	-1000	1732A constraint management - N^N_Nil_1 SI
6.03 pm	6.10 pm	Engie	Pelican Point	142	-1000	14 700	1735~A~respond to 5 min pd <\$578.81~
6.07 pm	6.15 pm	Engie	Pelican Point	142	14 700	54	1805~a~out of mcl mode. bands adjusted based on availability
6.12 pm	6.20 pm	Engie	Pelican Point	142	54	-1000	1735~A~respond to 5 min pd <\$578.81~
6.12 pm	6.20 pm	Snowy Hydro	Angaston	47	14 538	-989	18:10:07 A VIC 5min actual price \$10,893.22 higher than 5min pd 18:15@18:06 (\$14,700.00)
6.12 pm	6.20 pm	Snowy Hydro	Lonsdale	21	14 774	-1005	18:10:07 A VIC 5min actual price \$10,893.22 higher than 5min pd 18:15@18:06 (\$14,700.00)

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
6.12 pm	6.20 pm	Snowy Hydro	Pt Stanvac	60	14 744	-1003	18:10:07 A VIC 5min actual price \$10,893.22 higher than 5min pd 18:15@18:06 (\$14,700.00)
6.18 pm	6.25 pm	EnergyAustralia	Hallett	40	13 999	-1000	1805~A~mat chg VIC gen lya3 and VIC price 1810,1815,1820 and p5 fcst 1825-1915 sl~

Table C4: South Australian significant rebids for 7 pm trading interval

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.04 pm		Engie	Dry Creek	40	13 100	<390	1440~A~respond to 5 min pd > \$282.23~
3.19 pm		EnergyAustralia	Hallett	20	13 999	<579	1515~A~chg SA net interchange in p30 fcsts 1630-2230 sl ~
3.19 pm		Engie	Dry Creek	38	13 100	-1000	1510~A~respond to 5 min >\$ 280.81~
3.35 pm		Engie	Dry Creek	38	13 100	-1000	1515~A~respond to 5 min pd \$ \$289.67~
3.49 pm		Origin Energy	Osborne	25	N/A	53	1549P change in avail - peaking enabled sl
4.06 pm		Engie	Port Lincoln	43	14 700	<390	1555~A~respond to 5 min predispatch >\$311.55~
4.56 pm		Engie	Port Lincoln	23	14 700	-1000	1650~A~respond to pr5 min pd > \$ 11,876.64~
4.56 pm		Engie	Port Lincoln	23	14 700	-1000	1650~A~respond to pr5 min pd > \$ 11,876.64~
5.04 pm		Engie	Snuggery	30	14 700	-1000	1700~A~respond to 5 min predispatch >\$ 12,290.98~
5.36 pm		Origin Energy	Quarantine	100	14 700	-1000	1732A constraint management - N^N_Nil_1 SI
6.12 pm		Snowy Hydro	Angaston	47	14 538	-989	18:10:07 A Vic 5min actual price \$10,893.22 higher than 5min pd 18:15@18:06 (\$14,700.00)
6.12 pm		Snowy Hydro	Lonsdale	21	14 774	-1005	18:10:07 A VIC 5min actual price \$10,893.22 higher than 5min pd 18:15@18:06 (\$14,700.00)

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
6.12 pm		Snowy Hydro	Pt Stanvac	60	14 744	-1003	18:10:07 A VIC 5min actual price \$10,893.22 higher than 5min pd 18:15@18:06 (\$14,700.00)
6.18 pm		EnergyAustralia	Hallett	40	13 999	-1000	1805~A~mat chg VIC gen lya3 and VIC price 1810,1815,1820 and p5 fcst 1825-1915 sl~
6.28 pm	6.35 pm	Greentricity Pty Ltd	Dalrymple North Battery Energy Storage System	-22	<9950	N/A	1827~P~soc/mw change (1828 scheduled update)

Appendix D: Price setter

The following tables identify 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.

Victoria

Table D1: Price setter 6.30 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
6.05 pm	\$554.17	EnergyAustralia	AGLHAL	Energy	\$578.81	0.96	\$555.66
6.10 pm	\$11 500.80	EnergyAustralia	JLB02	Energy	\$11 500.80	0.50	\$5750.40
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.50	\$5750.40
6.15 pm	\$12 1447.89	Snowy Hydro	MURRAY	Energy	\$14 700	7.10	\$10 4370
		AGL Hydro	WKIEWA1	Energy	\$14 700	0.66	\$9702
		AGL Hydro	WKIEWA2	Energy	\$14 700	0.66	\$9702
		AGL (SA)	TORRB1	Energy	\$301	-0.13	-\$39.13
		AGL (SA)	TORRB2	Energy	\$301	-0.13	-\$39.13
		AGL (SA)	TORRB3	Energy	\$301	-0.13	-\$39.13
		Snowy Hydro	TUMUT3	Energy	\$299.60	-9.14	-\$2738.34
		AGL Energy	LYA1	Lower reg	\$100	-0.40	-\$40
		EnergyAustralia	YWPS4	Lower 60 sec	\$0.08	-1.32	-\$0.11
		AGL (SA)	TORRB1	Lower 60 sec	\$0.03	0.44	\$0.01
		AGL (SA)	TORRB2	Lower 60 sec	\$0.03	0.44	\$0.01
		AGL (SA)	TORRB3	Lower 60 sec	\$0.03	0.44	\$0.01
		Origin Energy	ER03	Raise 5 min	\$44.99	-0.40	-\$18
		AGL (SA)	TORRB1	Raise 5 min	\$20	0.13	\$2.60
		AGL (SA)	TORRB2	Raise 5 min	\$20	0.13	\$2.60
		AGL (SA)	TORRB3	Raise 5 min	\$20	0.13	\$2.60
		AGL Hydro	WKIEWA1	Raise 60 sec	\$0.50	-0.66	-\$0.33
		AGL Hydro	WKIEWA2	Raise 60 sec	\$0.50	-0.66	-\$0.33
		AGL (SA)	TORRB1	Raise 60 sec	\$0.04	0.44	\$0.02
		AGL (SA)	TORRB2	Raise 60 sec	\$0.04	0.44	\$0.02
		AGL (SA)	TORRB3	Raise 60 sec	\$0.04	0.44	\$0.02
		EnergyAustralia	MP1	Raise 6 sec	\$1100	0.47	\$517
		AGL Hydro	WKIEWA1	Raise 6 sec	\$0.50	-0.66	-\$0.33
		AGL Hydro	WKIEWA2	Raise 6 sec	\$0.50	-0.66	-\$0.33
AGL (SA)	TORRB1	Raise 6 sec	\$0.50	0.28	\$0.14		
AGL (SA)	TORRB2	Raise 6 sec	\$0.50	0.28	\$0.14		
AGL (SA)	TORRB3	Raise 6 sec	\$0.50	0.28	\$0.14		
6.20 pm	\$14 499.99	EnergyAustralia	JLA01	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA02	Energy	\$14 499.99	0.25	\$3625

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
		EnergyAustralia	JLA03	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA04	Energy	\$14 499.99	0.25	\$3625
6.25 pm	\$14 143.93	EnergyAustralia	AGLHAL	Energy	\$13 998.99	1.01	\$14 138.98
6.30 pm	\$11 179.38	EnergyAustralia	BALBG1	Energy	\$10 100.01	1	\$10 100.01
		Stanwell	TARONG#1	Energy	\$68.99	0.29	\$20.01
		Stanwell	TARONG#2	Energy	\$68.99	0.29	\$20.01
		Stanwell	TARONG#3	Energy	\$68.99	0.24	\$16.56
		Stanwell	TARONG#4	Energy	\$68.99	0.29	\$20.01
		Origin Energy	ER01	Energy	-\$1000	-0.33	\$330
		Origin Energy	ER02	Energy	-\$1000	-0.33	\$330
		Origin Energy	ER03	Energy	-\$1000	-0.33	\$330
		Origin Energy	ER01	Raise 5 min	\$2.79	0.33	\$0.92
		Origin Energy	ER02	Raise 5 min	\$2.79	0.33	\$0.92
		Origin Energy	ER03	Raise 5 min	\$2.79	0.33	\$0.92
		EnergyAustralia	BALBG1	Raise 5 min	\$1.89	-1	-\$1.89
		Origin Energy	ER01	Raise 60 sec	\$2.80	0.33	\$0.92
		Origin Energy	ER02	Raise 60 sec	\$2.80	0.33	\$0.92
		Origin Energy	ER03	Raise 60 sec	\$2.80	0.33	\$0.92
		EnergyAustralia	BALBG1	Raise 60 sec	\$1.89	-1	-\$1.89
		EnergyAustralia	BALBG1	Raise 6 sec	\$1.89	-1	-\$1.89
		Origin Energy	ER01	Raise 6 sec	\$1.74	0.33	\$0.57
		Origin Energy	ER02	Raise 6 sec	\$1.74	0.33	\$0.57
		Origin Energy	ER03	Raise 6 sec	\$1.74	0.33	\$0.57
Spot Price		\$11 096/MWh					

Table D2: Price setter 7 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
6.35 pm	\$11 500.80	EnergyAustralia	JLB02	Energy	\$11 500.80	0.50	\$5750.40
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.50	\$5750.40
6.40 pm	\$14 499.99	EnergyAustralia	JLA01	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA02	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA03	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA04	Energy	\$14 499.99	0.25	\$3625
6.45 pm	\$11 500.80	EnergyAustralia	JLB02	Energy	\$11 500.80	0.50	\$5750.40
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.50	\$5750.40
6.50 pm	\$11 186.93	EnergyAustralia	BALBG1	Energy	\$10 100.01	1.00	\$10 100.01
		Origin Energy	ER01	Energy	-\$1000	-0.33	\$330
		Origin Energy	ER02	Energy	-\$1000	-0.33	\$330
		Origin Energy	ER03	Energy	-\$1000	-0.33	\$330
		Origin Energy	ER02	Raise 5 min	\$2.79	0.67	\$1.87
		Origin Energy	ER04	Raise 5 min	\$2.79	0.33	\$0.92
		EnergyAustralia	BALBG1	Raise 5 min	\$1.89	-1	-\$1.89

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
		Origin Energy	ER02	Raise reg	\$2.84	-0.33	-\$0.94
		Origin Energy	ER03	Raise reg	\$2.84	0.33	\$0.94
		Origin Energy	ER01	Raise 60 sec	\$2.80	0.33	\$0.92
		Origin Energy	ER02	Raise 60 sec	\$2.80	0.67	\$1.88
		EnergyAustralia	BALBG1	Raise 60 sec	\$1.89	-1	-\$1.89
		EnergyAustralia	MP1	Raise 6 sec	\$87.00	1	\$87
		EnergyAustralia	BALBG1	Raise 6 sec	\$1.89	-1	-\$1.89
6.55 pm	\$11 500.80	EnergyAustralia	JLB02	Energy	\$11 500.80	0.50	\$5750.40
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.50	\$5750.40
7 pm	\$11 500.80	EnergyAustralia	JLB02	Energy	\$11 500.80	0.50	\$5750.40
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.50	\$5750.40
Spot Price		\$11 948/MWh					

South Australia

Table D3: Price setter 6.30 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
6.05 pm	\$578.81	EnergyAustralia	AGLHAL	Energy	\$578.81	1	\$578.81
6.10 pm	\$12 422.79	EnergyAustralia	JLB02	Energy	\$11 500.80	0.54	\$6210.43
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.54	\$6210.43
6.15 pm	\$11 9721.16	Snowy Hydro	MURRAY	Energy	\$14 700	7	\$10 2900
		AGL Hydro	WKIEWA1	Energy	\$14 700	0.65	\$9555
		AGL Hydro	WKIEWA2	Energy	\$14 700	0.65	\$9555
		AGL (SA)	TORRB1	Energy	\$301	-0.13	-\$39.13
		AGL (SA)	TORRB2	Energy	\$301	-0.13	-\$39.13
		AGL (SA)	TORRB3	Energy	\$301	-0.13	-\$39.13
		Snowy Hydro	TUMUT3	Energy	\$299.60	-9.01	-\$2699.40
		AGL Energy	LYA1	Lower reg	\$100	-0.39	-\$39
		AGL (SA)	TORRB1	Lower reg	\$0	0.13	\$0
		AGL (SA)	TORRB2	Lower reg	\$0	0.13	\$0
		AGL (SA)	TORRB3	Lower reg	\$0	0.13	\$0
		EnergyAustralia	YWPS4	Lower 60 sec	\$0.08	-1.31	-\$0.10
		AGL (SA)	TORRB1	Lower 60 sec	\$0.03	0.44	\$0.01
		AGL (SA)	TORRB2	Lower 60 sec	\$0.03	0.44	\$0.01
		AGL (SA)	TORRB3	Lower 60 sec	\$0.03	0.44	\$0.01
		Origin Energy	ER03	Raise 5 min	\$44.99	-0.39	-\$17.55
		AGL (SA)	TORRB1	Raise 5 min	\$20	0.13	\$2.60
		AGL (SA)	TORRB2	Raise 5 min	\$20	0.13	\$2.60
		AGL (SA)	TORRB3	Raise 5 min	\$20	0.13	\$2.60
		AGL Hydro	WKIEWA1	Raise 60 sec	\$0.50	-0.65	-\$0.33
		AGL Hydro	WKIEWA2	Raise 60 sec	\$0.50	-0.65	-\$0.33

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
		AGL (SA)	TORRB1	Raise 60 sec	\$0.04	0.44	\$0.02
		AGL (SA)	TORRB2	Raise 60 sec	\$0.04	0.44	\$0.02
		AGL (SA)	TORRB3	Raise 60 sec	\$0.04	0.44	\$0.02
		EnergyAustralia	MP1	Raise 6 sec	\$1100	0.47	\$517
		AGL Hydro	WKIEWA1	Raise 6 sec	\$0.50	-0.65	-\$0.33
		AGL Hydro	WKIEWA2	Raise 6 sec	\$0.50	-0.65	-\$0.33
		AGL (SA)	TORRB1	Raise 6 sec	\$0.50	0.28	\$0.14
		AGL (SA)	TORRB2	Raise 6 sec	\$0.50	0.28	\$0.14
		AGL (SA)	TORRB3	Raise 6 sec	\$0.50	0.28	\$0.14
6.20 pm	\$14 352.09	EnergyAustralia	JLA01	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA02	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA03	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA04	Energy	\$14 499.99	0.25	\$3625
6.25 pm	\$13 998.99	EnergyAustralia	AGLHAL	Energy	\$13 998.99	1	\$13 998.99
6.30 pm	\$11 171.07	EnergyAustralia	BALBG1	Energy	\$10 100.01	1	\$10 100.01
		Stanwell	TARONG#1	Energy	\$68.99	0.29	\$20.01
		Stanwell	TARONG#2	Energy	\$68.99	0.29	\$20.01
		Stanwell	TARONG#3	Energy	\$68.99	0.24	\$16.56
		Stanwell	TARONG#4	Energy	\$68.99	0.29	\$20.01
		Origin Energy	ER01	Energy	-\$1000	-0.33	\$330
		Origin Energy	ER02	Energy	-\$1000	-0.33	\$330
		Origin Energy	ER03	Energy	-\$1000	-0.33	\$330
Spot Price		\$ 11 204 /MWh					

Table D4: Price setter 7 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
6.35 pm	\$11730.75	EnergyAustralia	JLB02	Energy	\$11 500.80	0.51	\$5865.41
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.51	\$5865.41
6.40 pm	\$14661.03	EnergyAustralia	JLA01	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA02	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA03	Energy	\$14 499.99	0.25	\$3625
		EnergyAustralia	JLA04	Energy	\$14 499.99	0.25	\$3625
6.45 pm	\$11680.48	EnergyAustralia	JLB02	Energy	\$11 500.80	0.51	\$5865.41
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.51	\$5865.41
6.50 pm	\$11461.44	EnergyAustralia	BALBG1	Energy	\$10 100.01	1.02	\$10 302.01
		Origin Energy	ER01	Energy	-\$1000	-0.34	\$340
		Origin Energy	ER02	Energy	-\$1000	-0.34	\$340
		Origin Energy	ER03	Energy	-\$1000	-0.34	\$340
		Origin Energy	ER02	Raise 5 min	\$2.79	0.68	\$1.90
		Origin Energy	ER04	Raise 5 min	\$2.79	0.34	\$0.95
		EnergyAustralia	BALBG1	Raise 5 min	\$1.89	-1.02	-\$1.93

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
		Origin Energy	ER02	Raise reg	\$2.84	-0.34	-\$0.97
		Origin Energy	ER03	Raise reg	\$2.84	0.34	\$0.97
		Origin Energy	ER01	Raise 60 sec	\$2.80	0.34	\$0.95
		Origin Energy	ER02	Raise 60 sec	\$2.80	0.68	\$1.90
		EnergyAustralia	BALBG1	Raise 60 sec	\$1.89	-1.02	-\$1.93
		EnergyAustralia	MP1	Raise 6 sec	\$87	1.02	\$88.74
		EnergyAustralia	BALBG1	Raise 6 sec	\$1.89	-1.02	-\$1.93
6.55 pm	\$11885.01	EnergyAustralia	JLB02	Energy	\$11 500.80	0.52	\$5980.42
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.52	\$5980.42
7 pm	\$11884.05	EnergyAustralia	JLB02	Energy	\$11 500.80	0.52	\$5980.42
		EnergyAustralia	JLB03	Energy	\$11 500.80	0.52	\$5980.42
	Spot Price	\$12 217/MWh					