

Snowy Hydro Limited

In accordance with clause 3.13.7 (d) of the National Electricity Rules, the Australian Energy Regulator is required to publicly report whenever the electricity spot price exceeds \$5,000 per megawatt hour (\$/MWh). Attached is a report dated 8 July 2021 with respect to price events in NSW, Victoria and South Australia on 17 and 18 May 2021.

The summary of the analysis and conclusion is set out in Section 2 of the report:

“On 17 May 2021 the spot price in NSW, Victoria and South Australia exceeded \$5,000/MWh for the 6 pm trading interval. On 18 May 2021 the spot price in NSW, Victoria and South Australia exceeded \$5,000/MWh for the 6 pm and 6.30 pm trading intervals.

Prices were forecast to be \$15,000/MWh for all the high priced intervals, but actually settled below \$7,500/MWh for all the intervals which exceeded the \$5,000/MWh threshold. High prices were forecast because wind forecasts were low and a number of baseload units were out on planned maintenance.

The main drivers related to reduced supply and increased demand.

- Calm conditions meant wind generation across the three regions was very low. Of the 6,510 MW of installed semi scheduled wind capacity, only between 320 MW and 430 MW of electricity was generated by wind during the high priced intervals.
- Across the three regions almost 4,000 MW of baseload generation was unavailable.
 - Two thirds of this capacity was undergoing planned maintenance, as expected during the lower demand periods of spring and autumn.
 - One third was unplanned due to various technical plant issues.
- By 6 pm on both evenings there was no solar generation available in NSW and Victoria, meaning grid supply was reduced and grid demand increased as consumers switched from consuming some electricity from their rooftop PV to the grid instead.
- Demand was high during the evening peak, driven by cooler weather increasing heating requirements.
- Upgrades on the Queensland-NSW Interconnector (QNI) meant flow from Queensland into NSW was around 700 MW, while its nominal limit is over 1,000 MW.

The spot prices ended up lower than forecast because actual demand was lower than forecast and imports from Queensland were higher than expected.

During the high priced dispatch intervals around 20% of the capacity offered was priced above \$5,000/MWh. Rebidding capacity into higher priced bands did not contribute to the price outcomes. (emphasis added)”



Electricity spot prices above \$5,000/MWh

**NSW, Victoria and
South Australia,
17 & 18 May 2021**

8 July 2021

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AER Reference: AER212799

Amendment Record

Version	Date	Pages
Final report	8/07/2021	28

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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 (NEM)), 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 \$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 17 May 2021 the spot price in NSW, Victoria and South Australia exceeded \$5,000/MWh for the 6 pm trading interval. On 18 May 2021 the spot price in NSW, Victoria and South Australia exceeded \$5,000/MWh for the 6 pm and 6.30 pm trading intervals.

Prices were forecast to be \$15,000/MWh for all the high priced intervals, but actually settled below \$7,500/MWh for all the intervals which exceeded the \$5,000/MWh threshold. High prices were forecast because wind forecasts were low and a number of baseload units were out on planned maintenance.

The main drivers related to reduced supply and increased demand.

- Calm conditions meant wind generation across the three regions was very low. Of the 6,510 MW of installed semi scheduled wind capacity, only between 320 MW and 430 MW of electricity was generated by wind during the high priced intervals.
- Across the three regions almost 4,000 MW of baseload generation was unavailable.
 - Two thirds of this capacity was undergoing planned maintenance, as expected during the lower demand periods of spring and autumn.
 - One third was unplanned due to various technical plant issues.
- By 6 pm on both evenings there was no solar generation available in NSW and Victoria, meaning grid supply was reduced and grid demand increased as consumers switched from consuming some electricity from their rooftop PV to the grid instead.
- Demand was high during the evening peak, driven by cooler weather increasing heating requirements.
- Upgrades on the Queensland-NSW Interconnector (QNI) meant flow from Queensland into NSW was around 700 MW, while its nominal limit is over 1,000 MW.

The spot prices ended up lower than forecast because actual demand was lower than forecast and imports from Queensland were higher than expected.

During the high priced dispatch intervals around 20% of the capacity offered was priced above \$5,000/MWh. Rebidding capacity into higher priced bands did not contribute to the price outcomes.

3 Analysis

The high priced intervals discussed in this report occurred when the NSW, Victorian and South Australian regions were aligned, as interconnector flows between all three regions were unconstrained. This meant the same units set price across all three regions, so our analysis will consider them as one region. When we discuss a region specific price, the NSW price is used, but the Victorian and South Australian prices were very similar. We have used summed totals across NSW, Victoria and South Australia when discussing demand and availability.

On 17 May 2021 the spot price was \$5,844/MWh for the 6 pm trading interval. On 18 May 2021 the spot price was \$6,043/MWh and \$7,492/MWh for the 6 pm and 6.30 pm trading intervals, respectively.

3.1 Overview of actual and expected conditions

Table 1 and Table 2 show that spot prices close to the cap were forecast for much of the evening on both days. Lower than forecast demand and more imports from Queensland meant the actual spot price was lower than forecast.

Table 1: 17 May actual and forecast spot price, demand and available capacity

Trading interval	NSW Price (\$/MWh)			Combined demand (MW)			Combined availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
5 pm	859	442	14,999	17,113	17,192	17,287	21,771	21,686	21,085
5.30 pm	100	15,000	15,000	18,049	18,331	18,428	21,752	21,557	20,978
6 pm	5,844	15,000	15,000	18,850	19,324	19,353	21,747	21,485	20,905
6.30 pm	900	15,000	15,000	19,055	19,476	19,549	21,805	21,625	20,937
7 pm	518	15,000	15,000	18,650	19,272	19,316	21,799	21,697	20,990

Table 2: 18 May actual and forecast spot price, demand and available capacity

Trading interval	NSW Price (\$/MWh)			Combined demand (MW)			Combined availability (MW)		
	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast	Actual	4 hr forecast	12 hr forecast
5.30 pm	3,367	14,999	14,999	17,691	17,625	17,702	21,564	21,806	21,727
6 pm	6,043	15,000	15,000	18,543	18,717	18,697	21,558	21,813	21,777
6.30 pm	7,492	15,000	15,000	18,846	19,019	19,086	21,515	21,861	21,825
7 pm	721	15,000	15,000	18,530	18,873	18,941	21,545	21,914	22,031
7.30 pm	84	14,999	15,000	18,431	18,506	18,595	21,687	21,947	22,095

3.2 Observations

This section details conditions before and during the high price periods.

- Calm conditions meant little electricity was generated from wind farms. Across the three regions, there is around 6,500 MW of semi scheduled wind generation installed but only between 320 MW and 430 MW of electricity was generated.
- Almost 4,000 MW of baseload generation was unavailable.
 - Two thirds of this capacity was planned, which is typical during shoulder periods. Participants generally schedule plant maintenance during spring and autumn, when temperatures are not too extreme, which drives high demand.
 - The remaining third of this capacity was unplanned due to technical issues.
- Cool evening temperatures across the regions drove higher demand.
- Ongoing upgrades of the QNI meant imports from Queensland were reduced by around 300 MW compared to the nominal limit.
- Prices were forecast to be close to the cap across both evenings because of low wind generation, falling solar generation as the sun sets and limited imports from Queensland.

3.3 Supply

Figure 1 shows the combined offers above and below \$5,000/MWh from 4 pm on 17 May to 7 pm on 18 May in the three regions. Most of this time, capacity priced greater than \$5,000/MWh was not required. However, during the high price periods between 17 MW and 250 MW of capacity priced greater than \$5,000/MWh was needed. Rebidding capacity to above \$5,000/MWh did not contribute to the high prices on either day. Actual capacity offered below \$5,000/MWh was greater than the average forecast (green line), indicating participants rebid capacity below \$5,000/MWh.

Figure 1: Spread of offers in NSW, Victoria and South Australia 17 and 18 May

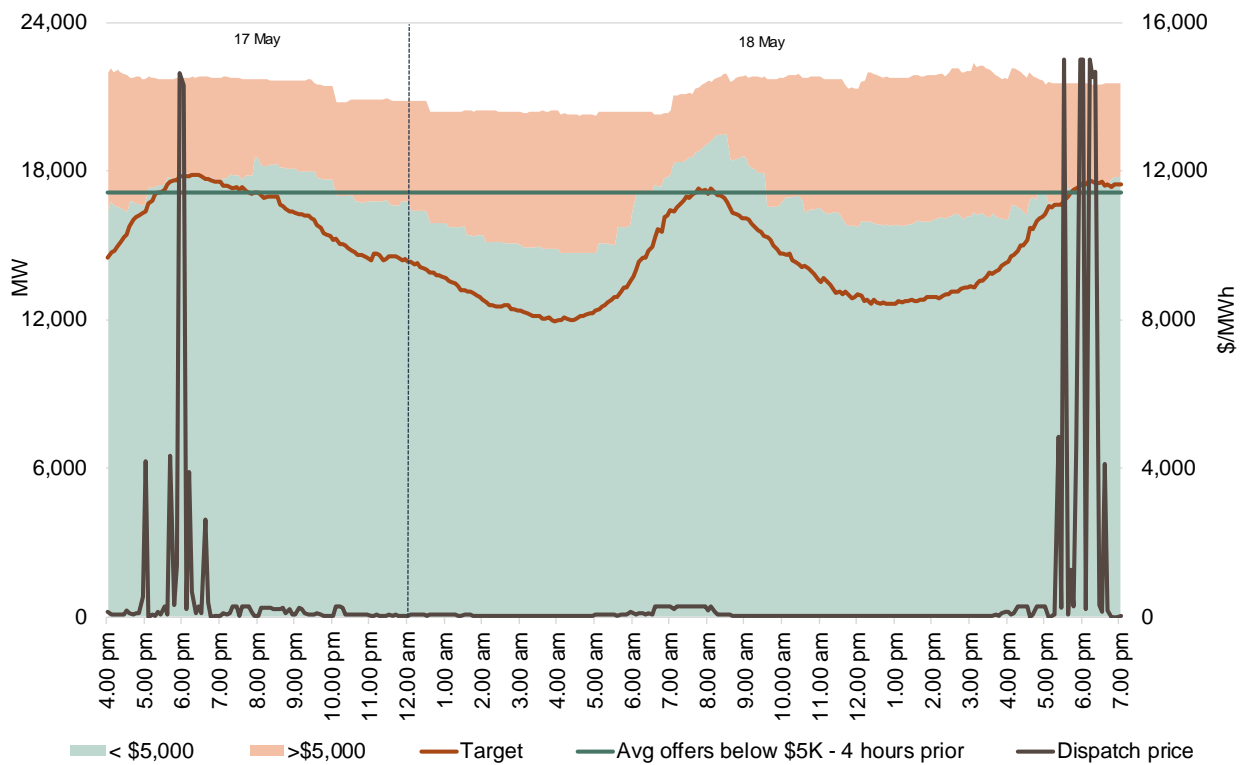


Figure 2 shows the total amount of wind generation capacity installed across the three regions and the actual output from those wind farms. Calm weather across the regions meant the capacity factor of the wind farms was between 5% and 7% during the times of the high prices.

Figure 2: Installed wind generation and actual wind generated electricity.

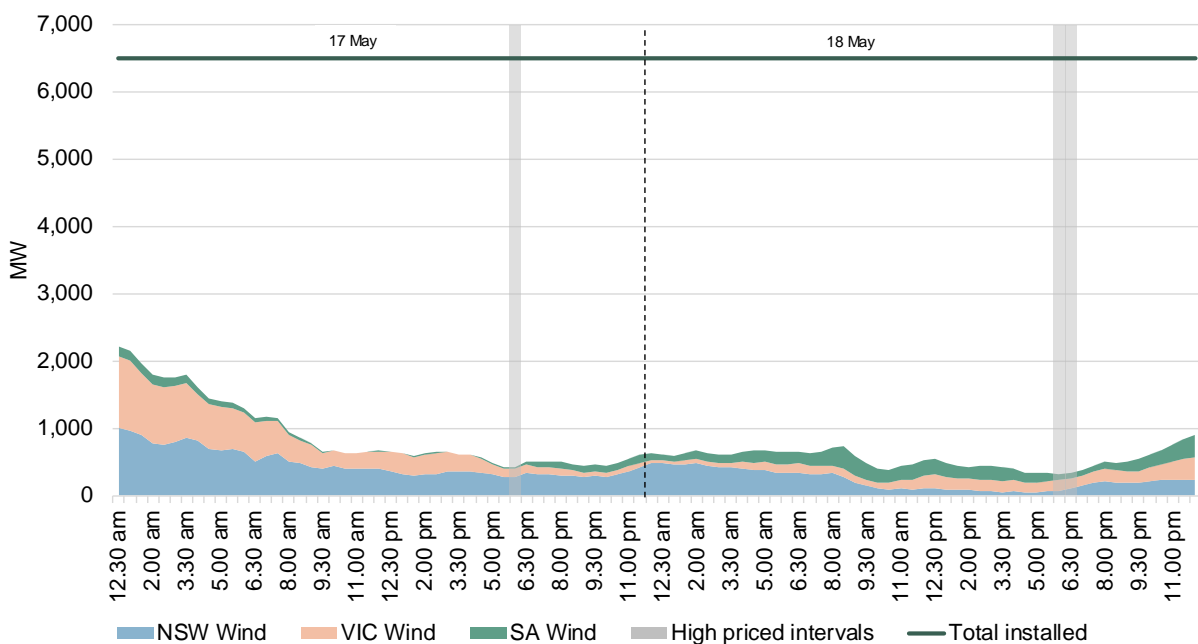


Table 3 shows the baseload units that were out of service due to planned or unplanned reasons. Planned maintenance is completed for baseload generation when the temperatures are not too

extreme so those units are ready for very high demand days in the summer. However, 3 units were also offline due to unplanned plant issues, removing 1,420 MW of baseload capacity from the market.

Table 3: Generator outage table

Region	Unit	Capacity (MW)	Outage type
NSW	Bayswater unit 2	660	Planned
NSW	Vales Point unit 6	660	Planned
NSW	Smithfield	185	Planned
NSW	Liddell unit 1	500	Planned
NSW	Liddell unit 3	500	Unplanned – due to ‘unit trip’ since 16 May
Vic	Loy Yang A unit 3	560	Unplanned- due to ‘plant failure’ since 14 May
Vic	Yallourn unit 2	360	Unplanned – due to ‘tube leak’ since 16 May
SA	Torrens unit B3	200	Planned
SA	Torrens unit B4	200	Planned
Total		3,825	

Table 4 shows how many MW priced greater than \$5,000/MWh were offered at each station in the affected regions along with their registered capacity and fuel types during the high priced intervals.¹

Table 4: Capacity offered greater than \$5,000/MWh

Region	Participant	Station	Reg. Capacity (MW)	Fuel Type	Capacity offered >\$5,000/MWh		
					17 May 6 pm (MW)	18 May 6 pm (MW)	18 May 6.30 pm (MW)
NSW	EnergyAustralia	Mt Piper	1,430	Coal-Black	150	150	150
		Tallawarra	440	Gas	190	210	210
	Origin Energy	Eraring	2,880	Coal-Black	350	640	498
		Uranquinty	664	Gas	503	503	504
	Snowy Hydro	Colongra	724	Gas	712	712	712

¹ Participants are able to offer the maximum capacity of their generators which is sometimes greater than the registered capacity. This is why we can see Valley Power's offers are greater than its registered capacity.

Region	Participant	Station	Reg. Capacity (MW)	Fuel Type	Capacity offered >\$5,000/MWh		
					17 May 6 pm (MW)	18 May 6 pm (MW)	18 May 6.30 pm (MW)
		Tumut	1,500	Hydro	515	499	471
		Upper Tumut	616	Hydro	25	23	23
SA	AGL Energy	Dalrymple	30	Battery	27	22	
	EnergyAustralia	Hallett	217	Gas	94	50	50
	Engie	Port Lincoln	73	Liquid	71	71	71
		Snuggery	63	Liquid	65	65	65
	Origin Energy	Quarantine	229	Gas	24	73	73
	Snowy Hydro	Angaston	50	Liquid	49	49	49
		Lonsdale	21	Liquid	21	21	21
		Pt Stanvac	58	Liquid	65	65	65
Vic	EnergyAustralia	Ballarat	30	Battery	30	30	30
		Gannawarra	30	Battery	10	10	10
		Jeeralang A	204	Gas	72	102	27
		Jeeralang B	228	Gas	162	162	78
	Origin Energy	Mortlake	566	Gas	521	398	380
	Snowy Hydro	Murray	1,500	Hydro	43	120	101
		Valley Power	300	Gas	342	336	336

Similar to the table above, charts showing the closing bids for all participants in NSW, Victoria and South Australia with capacity priced at or above \$5,000/MWh for the high-price periods are set out in *Appendix A: Closing bids*.

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

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*.

Australian Energy Regulator

July 2021

Appendix A: Closing bids

Figure A1 to A22 highlight the half hour closing bids for participants in South Australia, Victoria and NSW 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.

17 May 2021

Figure A1: SA: AGL Energy (Barker Inlet, Dalrymple BESS, The Bluff, Hallett wind farm, North Brown Hill, Torrens Island) closing bids, dispatch and spot price

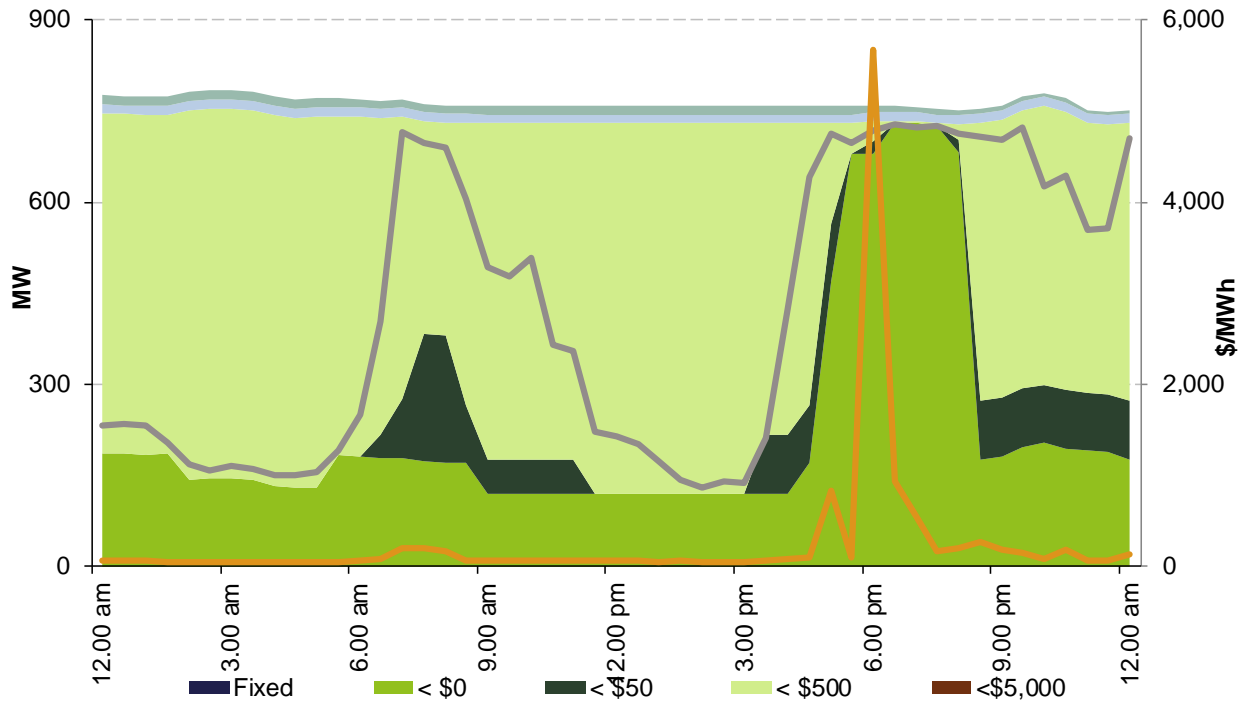


Figure A2: SA: EnergyAustralia (Hallett, Waterloo wind farm) closing bids, dispatch and spot price

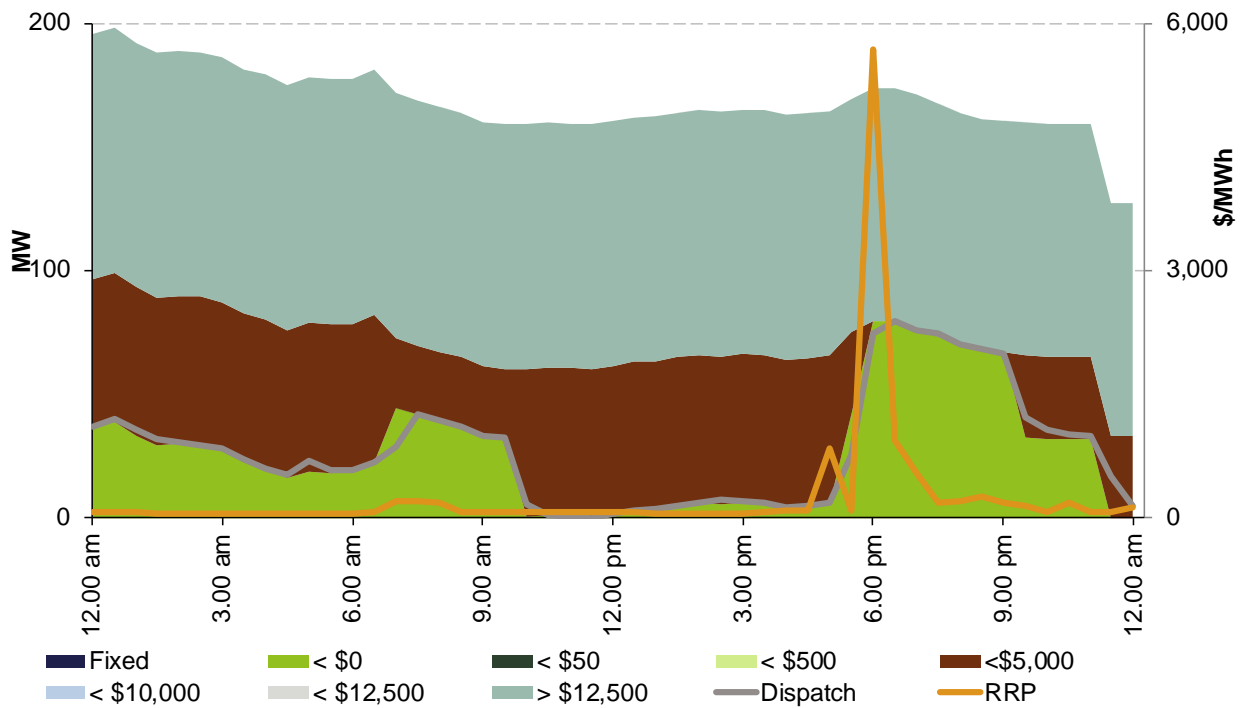


Figure A3: SA: Engie (Dry Creek, Mintaro, Pelican Point, Port Lincoln, Snuggery, Willogoleche wind farm) closing bids, dispatch and spot price

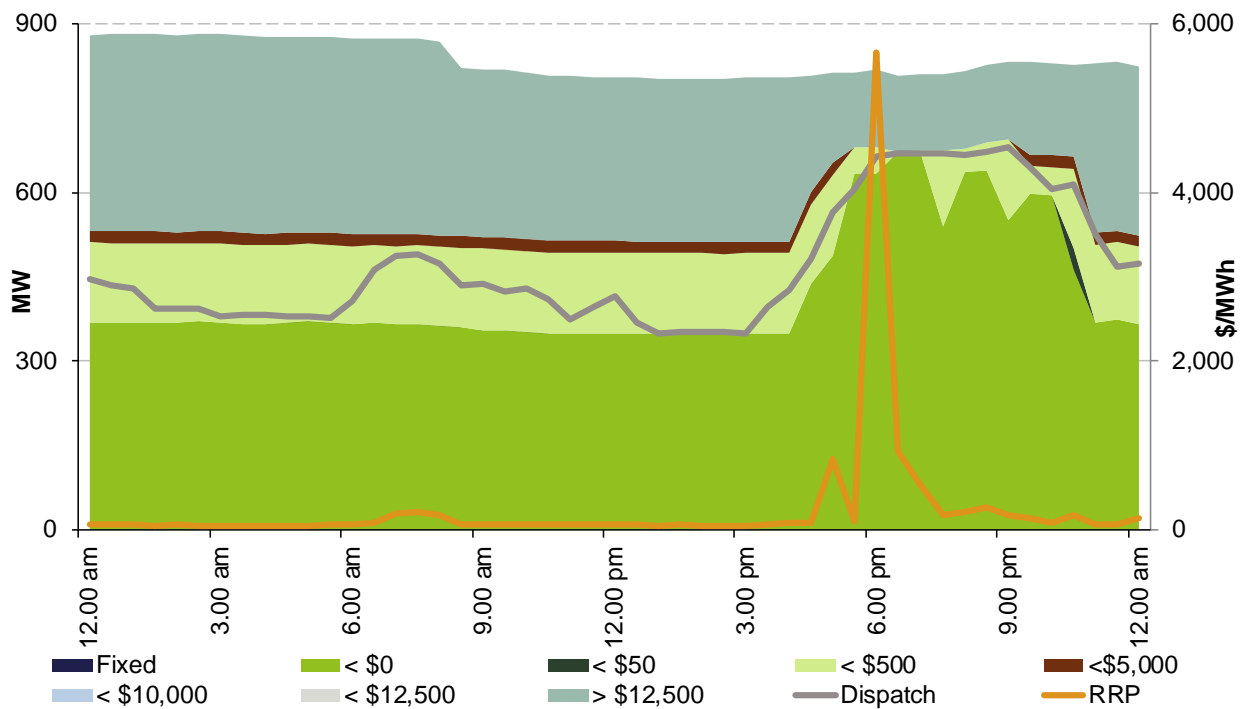


Figure A4: SA: Origin (Ladbroke, Osborne and Quarantine) closing bids, dispatch and spot price

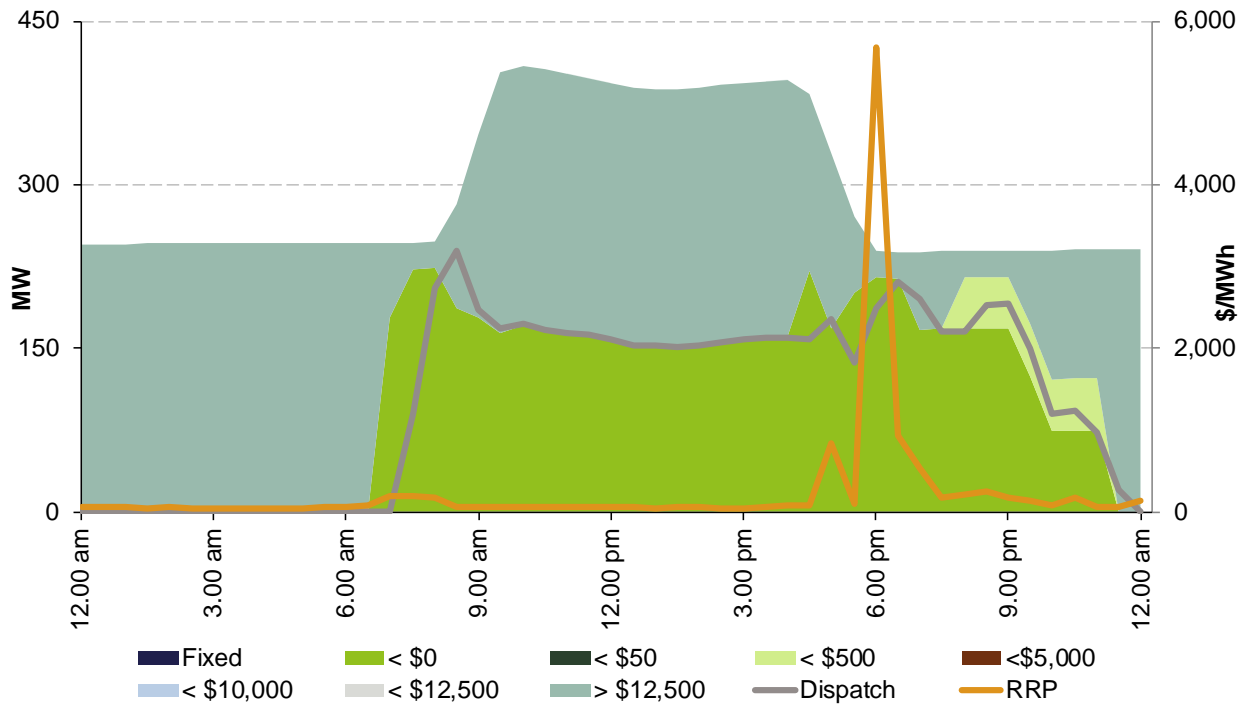


Figure A5: SA: Snowy Hydro (Angaston, Lonsdale, Pt Stanvac) closing bids, dispatch and spot price

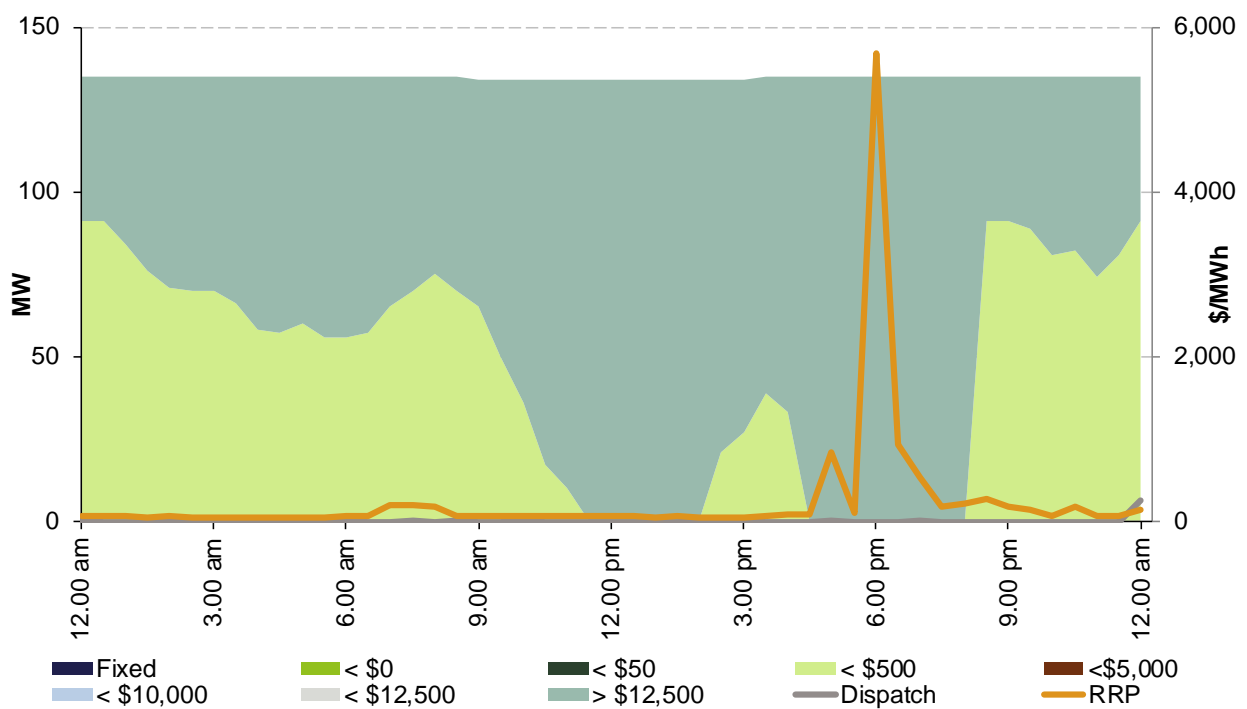


Figure A6: Vic: Snowy Hydro (Laverton North, Murray, Valley Power) closing bids, dispatch and spot price

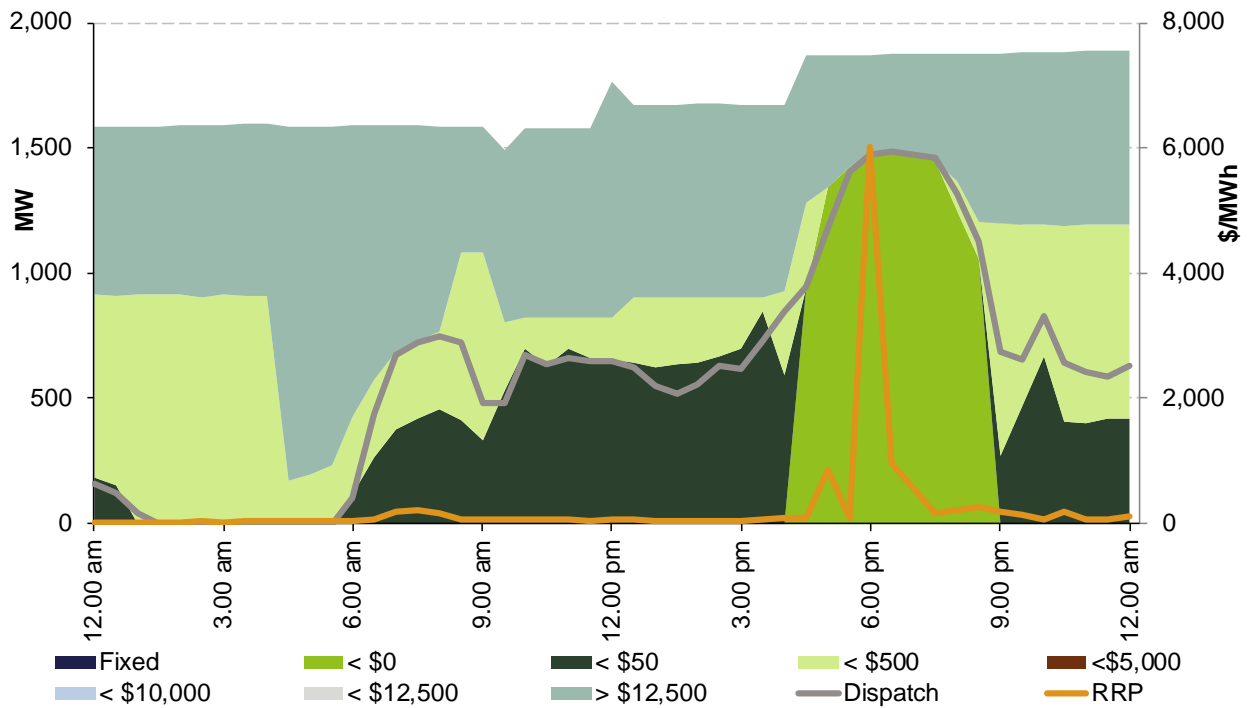


Figure A7: Vic: EnergyAustralia (Ballarat BESS, Jeeralang A, Jeeralang B, Newport, Gannawarra BESS, Yallourn) closing bids, dispatch and spot price

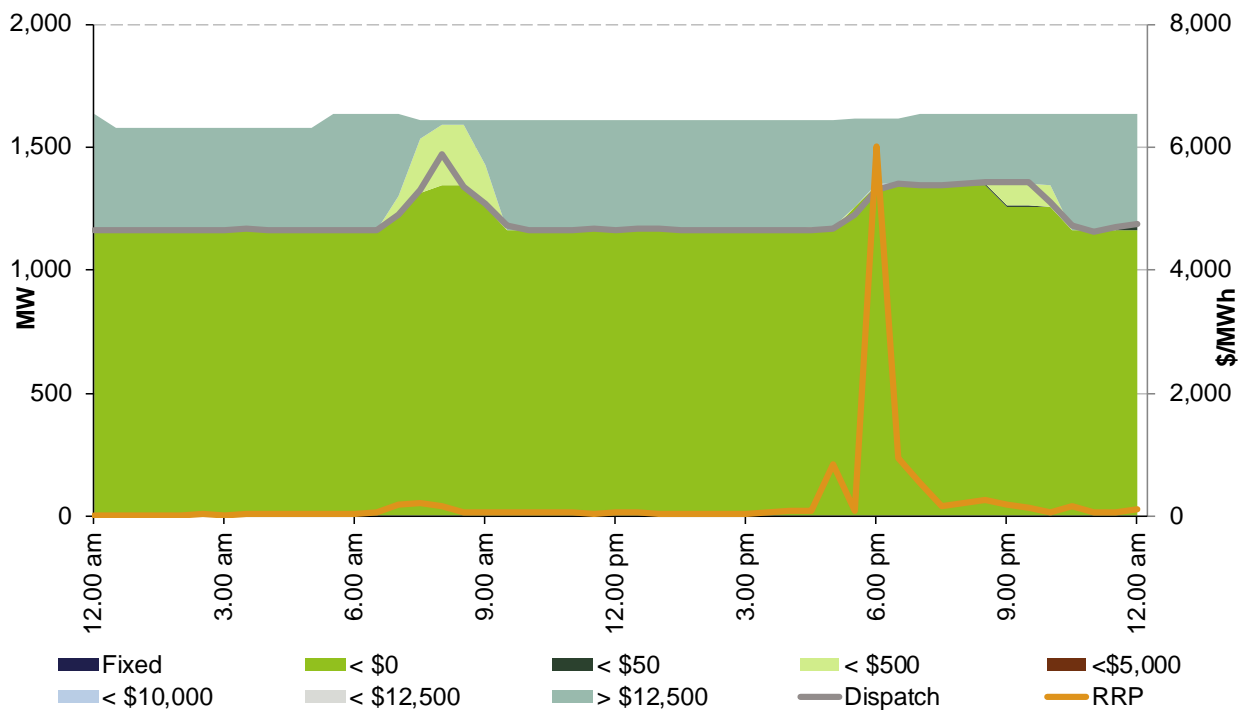


Figure A8: Vic: Origin (Mortlake) closing bids, dispatch and spot price

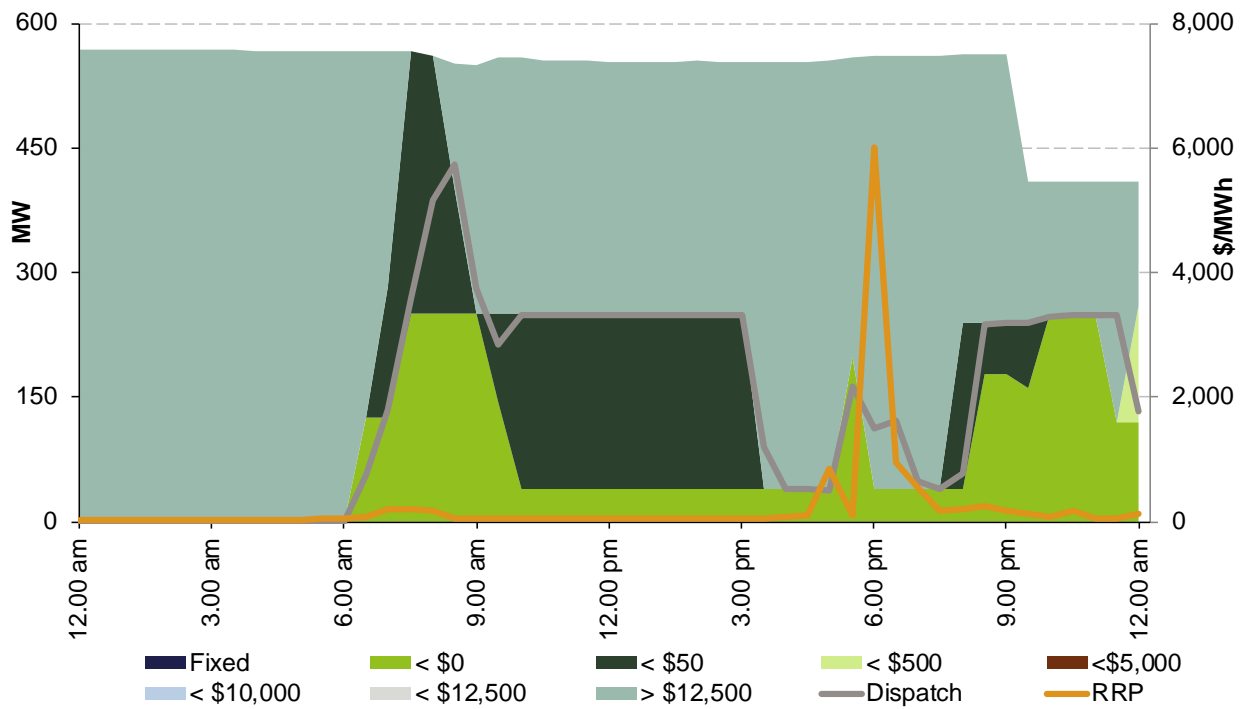


Figure A9: NSW: Origin (Eraring, Shoalhaven, Uranquinty) closing bids, dispatch and spot price

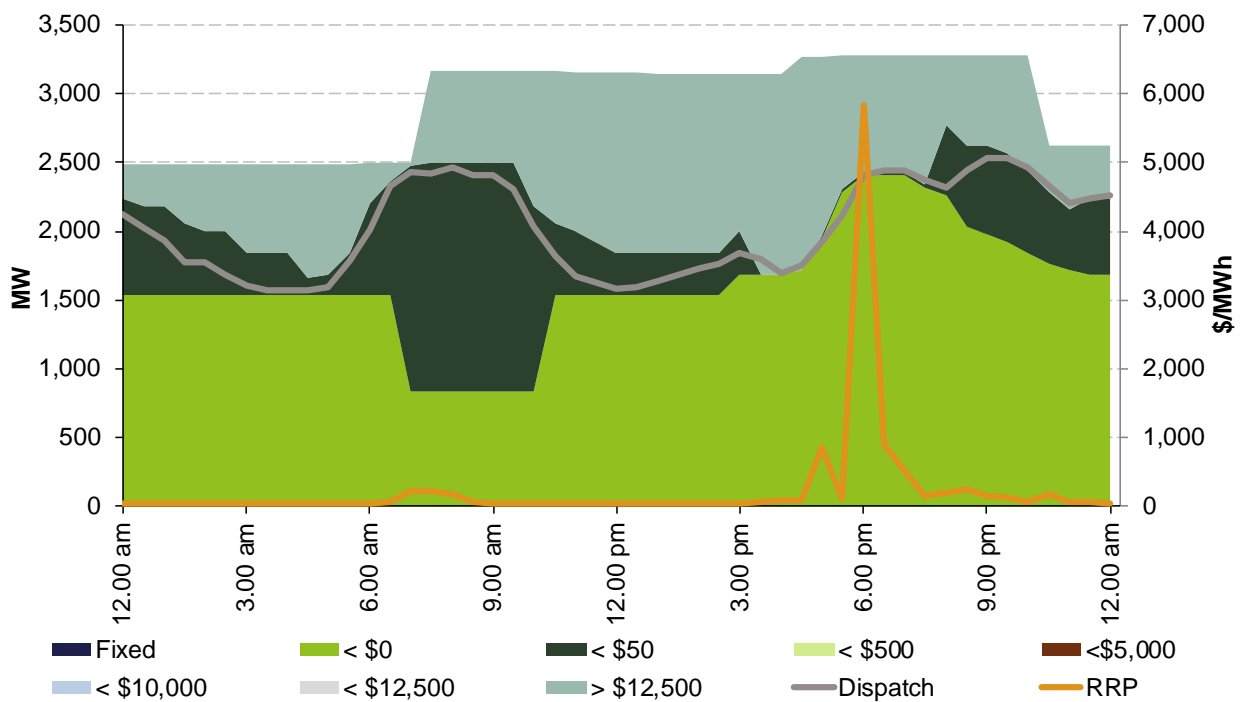


Figure A10: NSW: Snowy Hydro (Colongra, Tumut, Upper Tumut, Guthega, Blowering) closing bids, dispatch and spot price

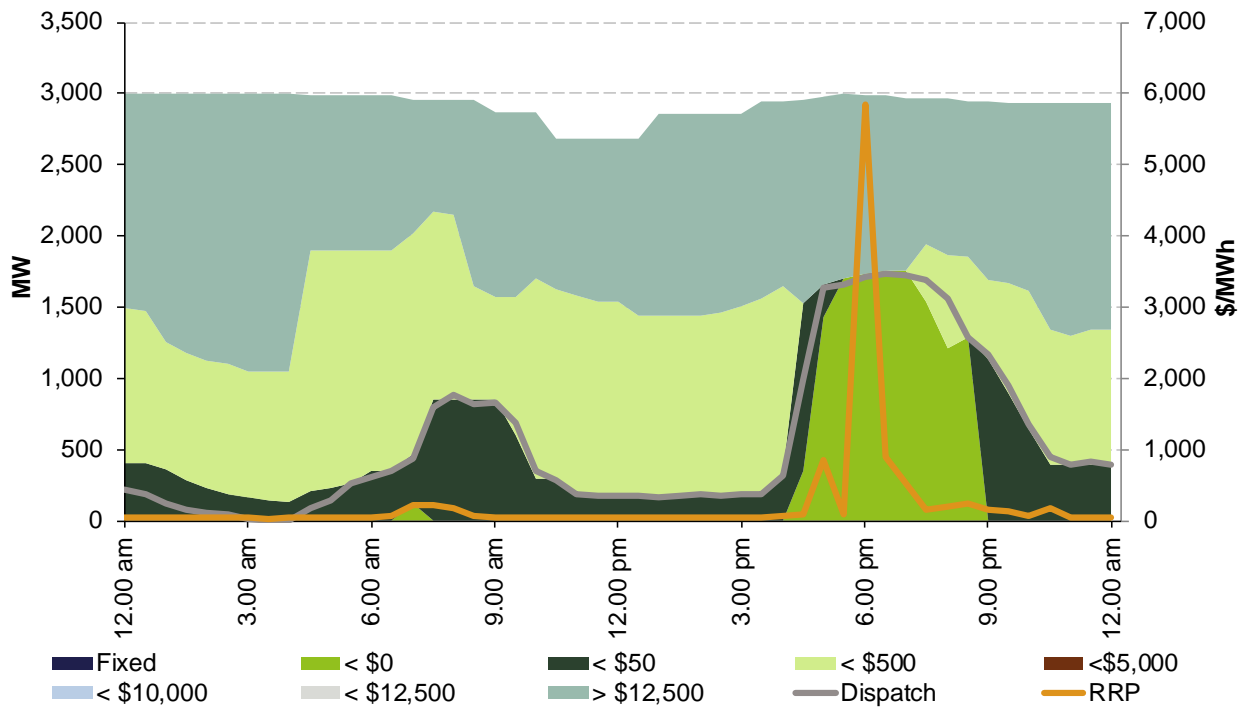
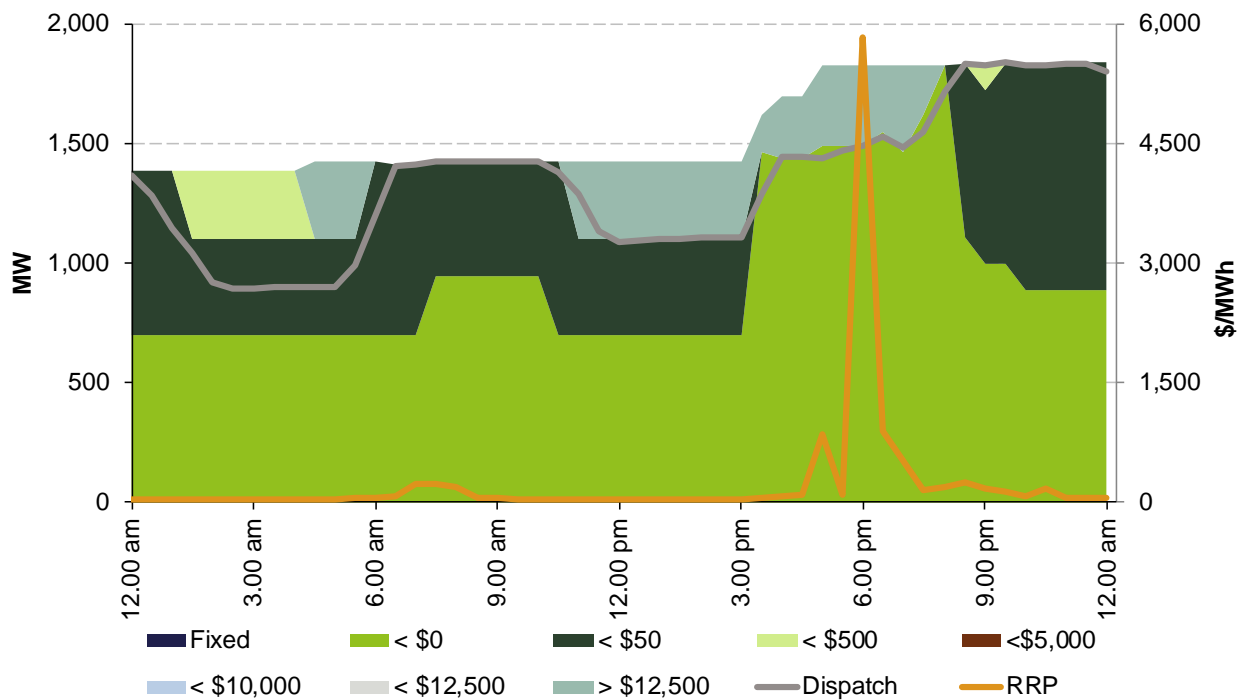


Figure A11: NSW: EnergyAustralia (Mt Piper, Tallawarra) closing bids, dispatch and spot price



18 May 2021

Figure A12: SA: AGL Energy (Barker Inlet, Dalrymple BESS, The Bluff wind farm, Hallett wind farm, North Brown Hill, Torrens Island) closing bids, dispatch and spot price

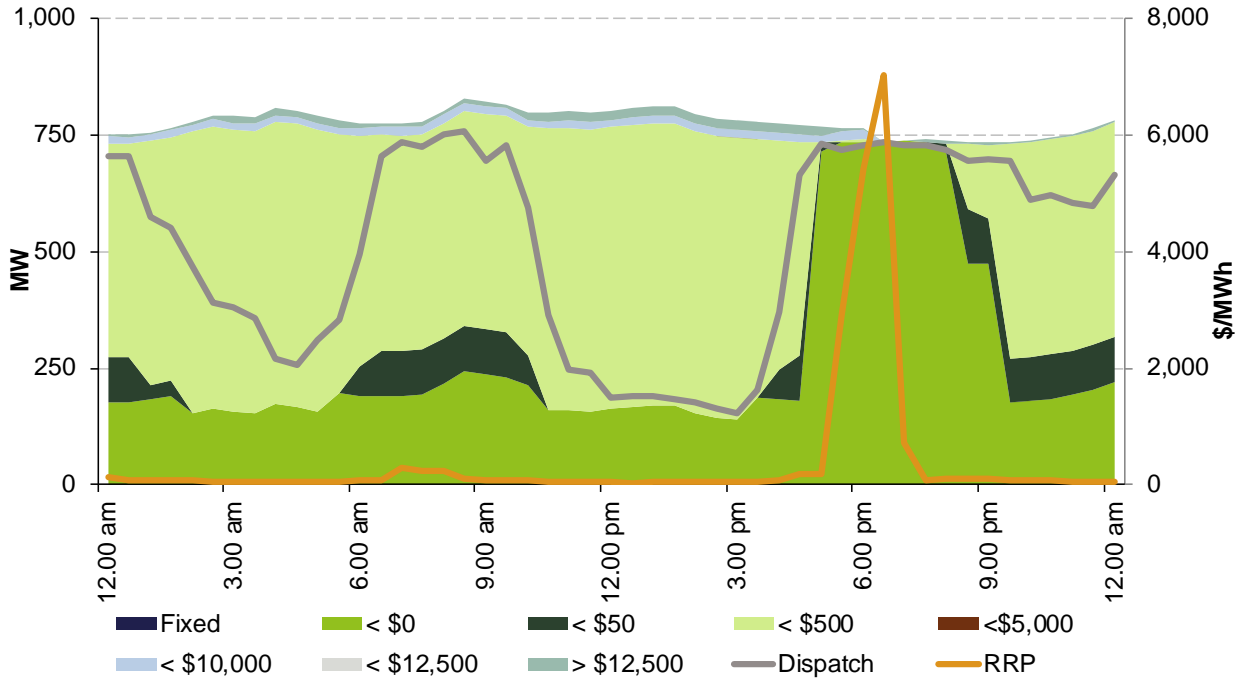


Figure A13: SA: EnergyAustralia (Hallett, Waterloo wind farm) closing bids, dispatch and spot price

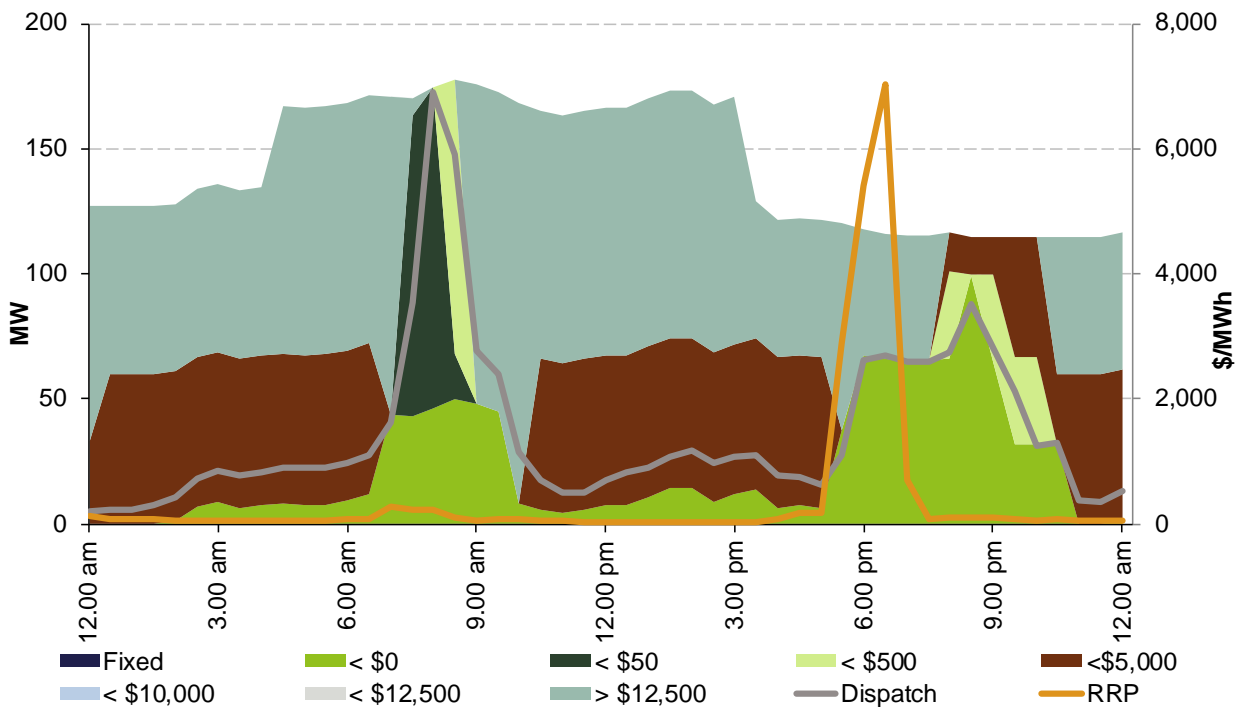


Figure A14: SA: Engie (Dry Creek, Mintaro, Pelican Point, Port Lincoln, Snuggery, Willogoleche wind farm) closing bids, dispatch and spot price

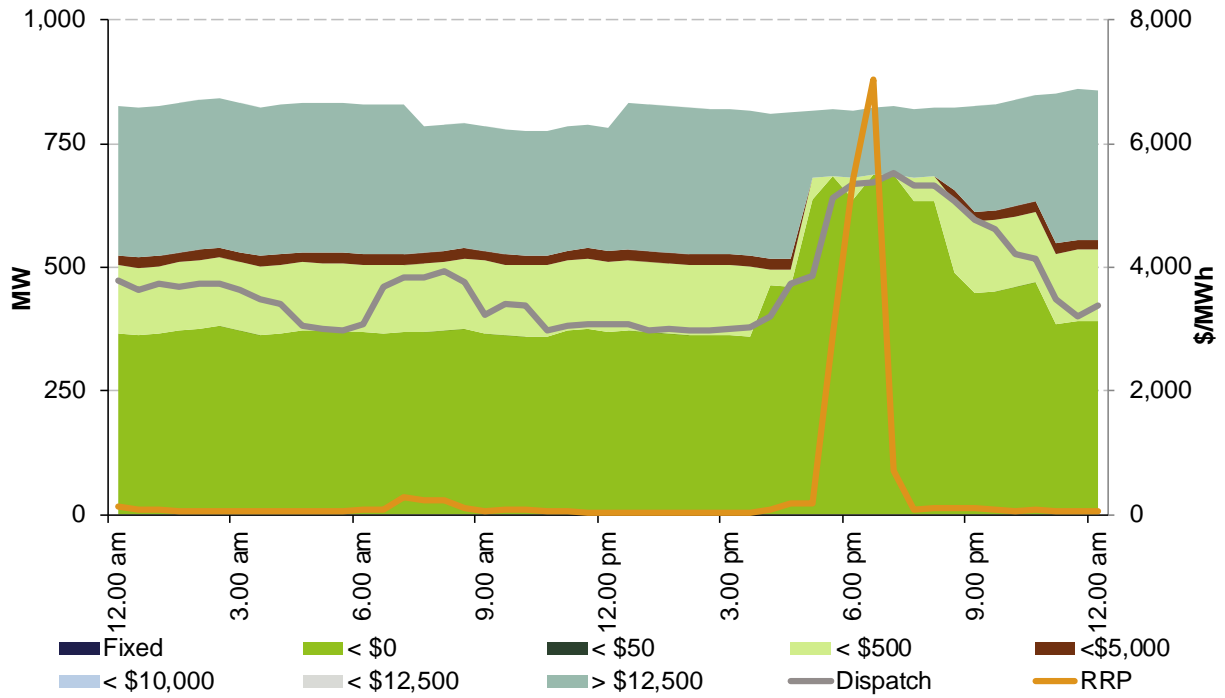


Figure A15: SA: Origin (Ladbroke, Osborne and Quarantine) closing bids, dispatch and spot price

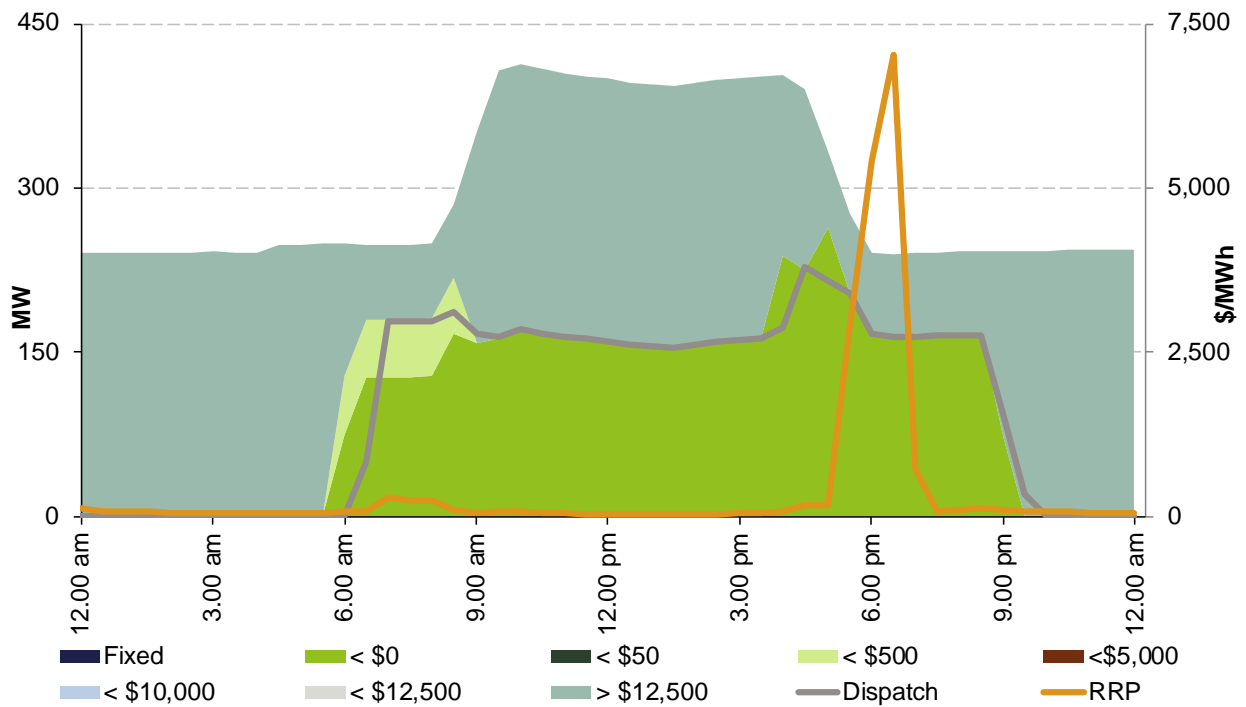


Figure A16: SA: Snowy Hydro (Angaston, Lonsdale, Pt Stanvac) closing bids, dispatch and spot price

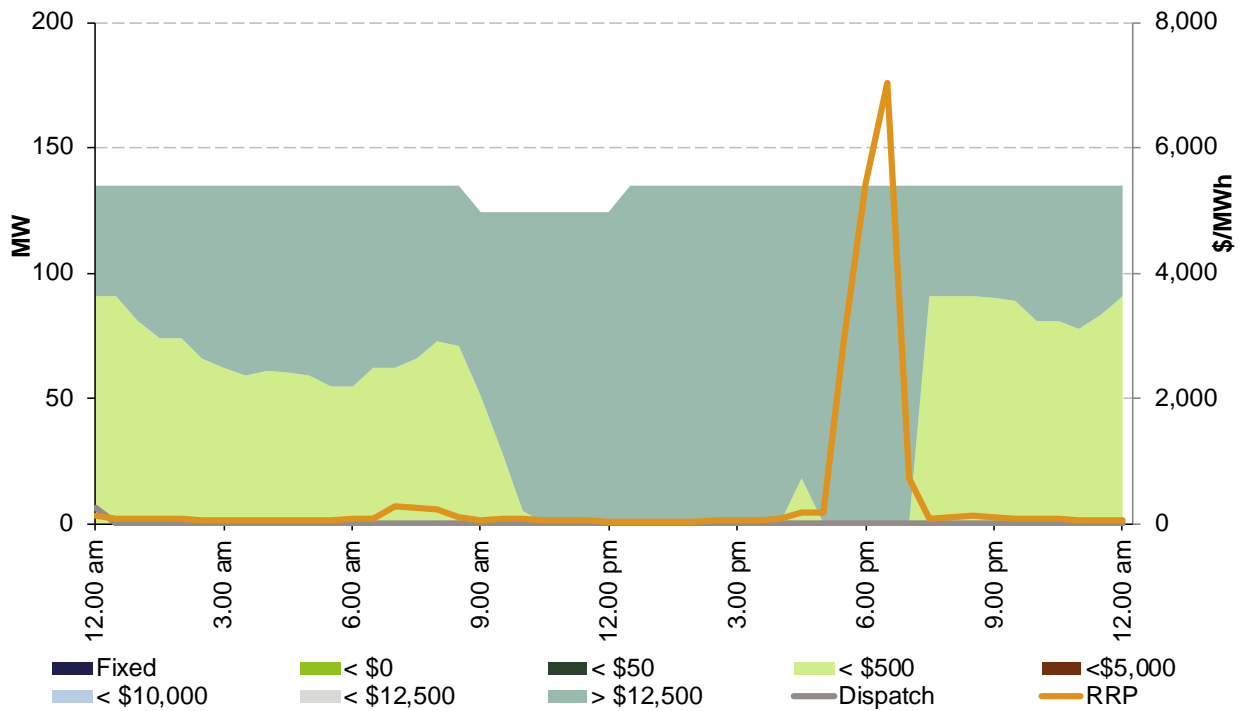


Figure A17: Vic: EnergyAustralia (Ballarat BESS, Jeeralang A, Jeeralang B, Newport, Gannawarra BESS, Yallourn) closing bids, dispatch and spot price

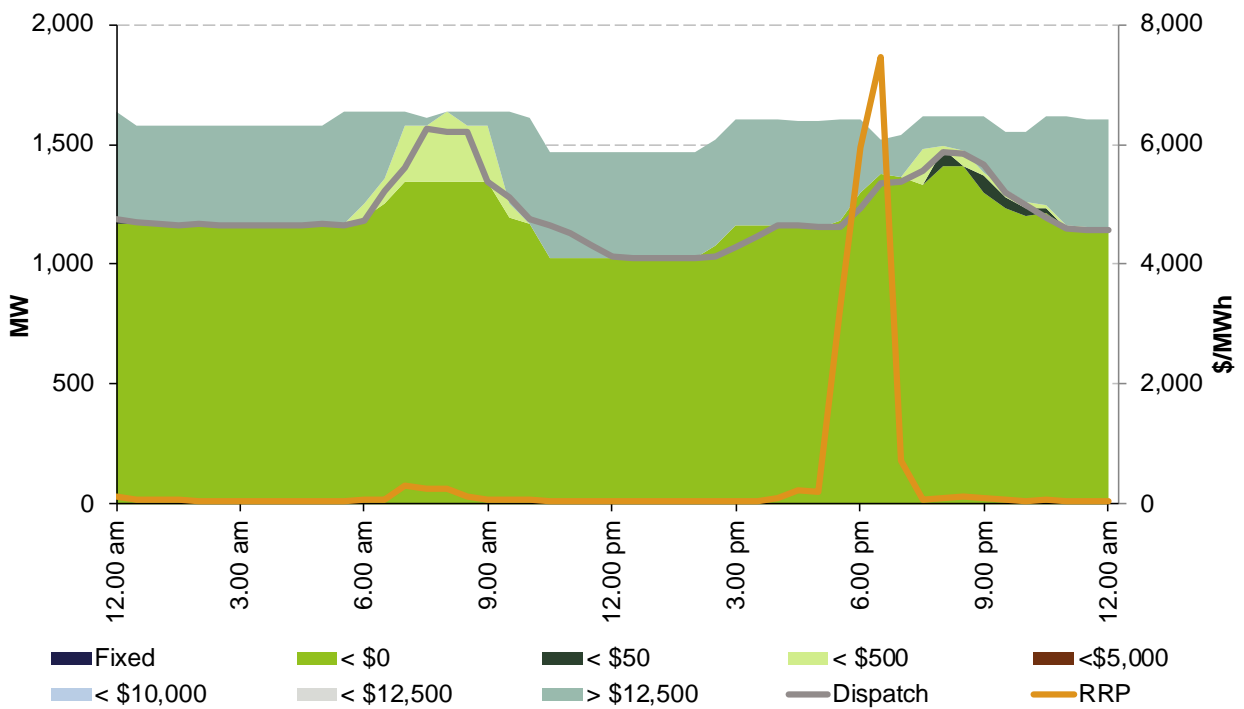


Figure A18: Vic: Origin (Mortlake) closing bids, dispatch and spot price

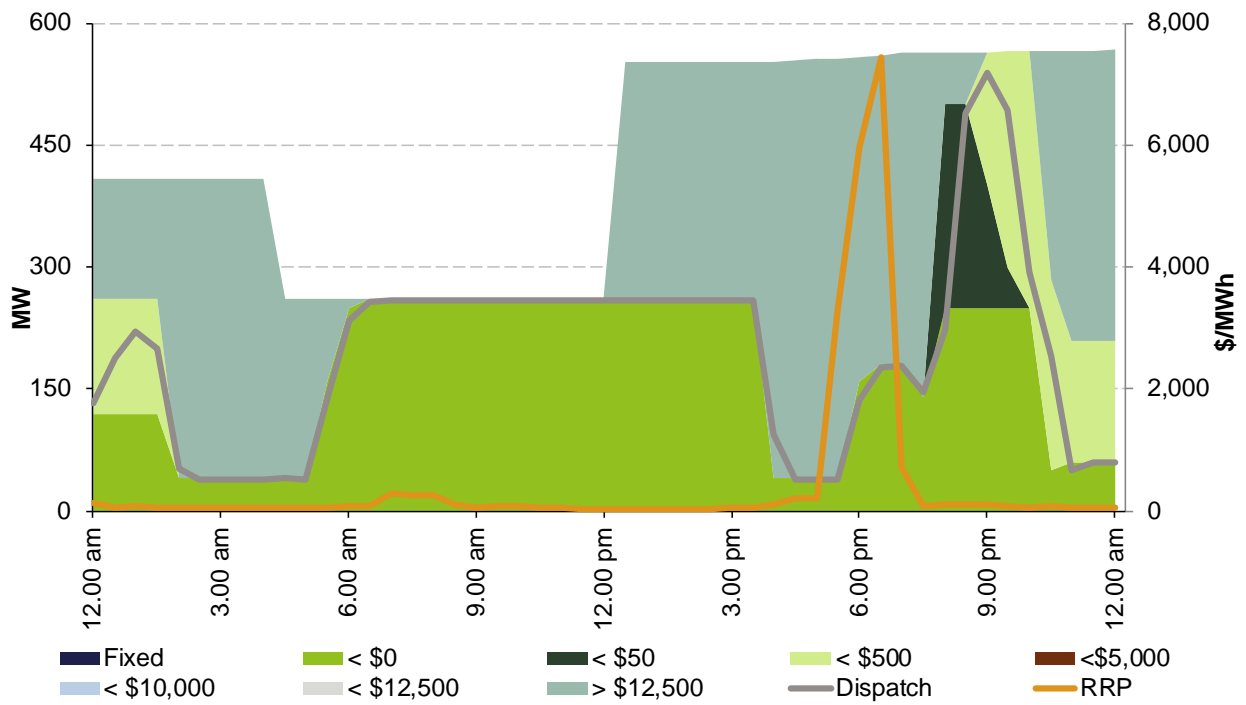


Figure A19: Vic: Snowy Hydro (Laverton North, Murray, Valley Power) closing bids, dispatch and spot price

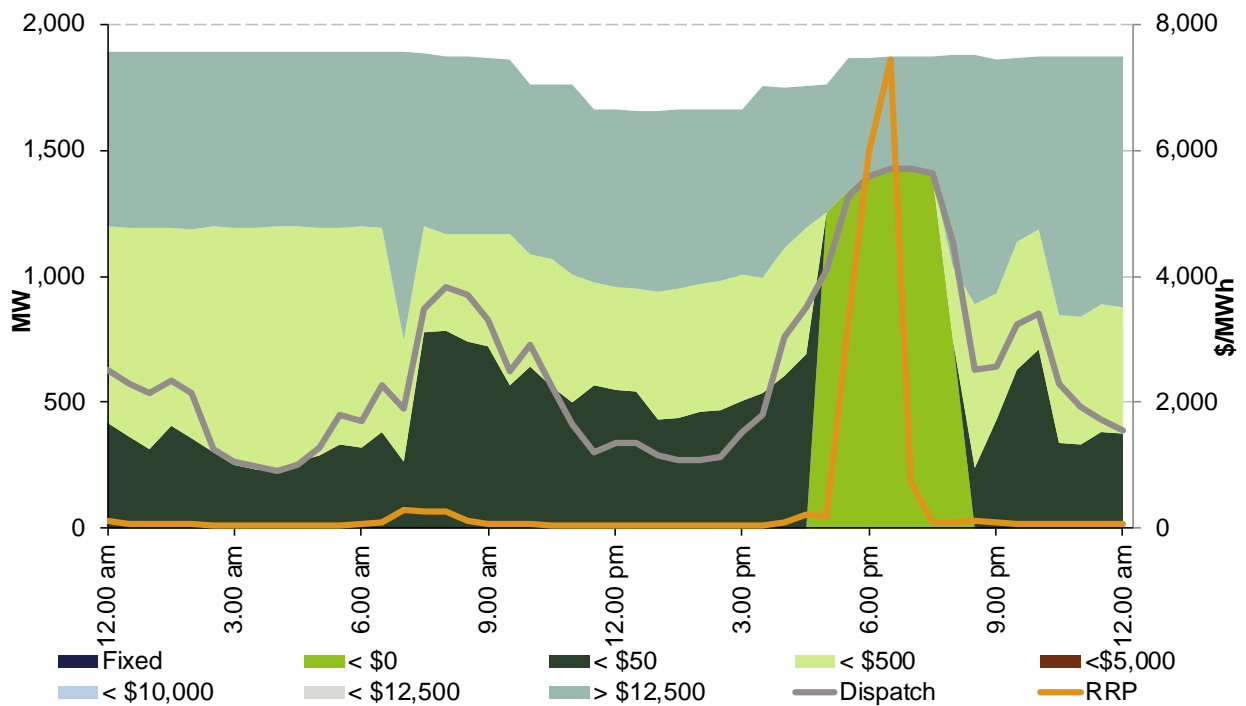


Figure A20: NSW: Origin (Eraring, Shoalhaven, Uranquinty) closing bids, dispatch and spot price

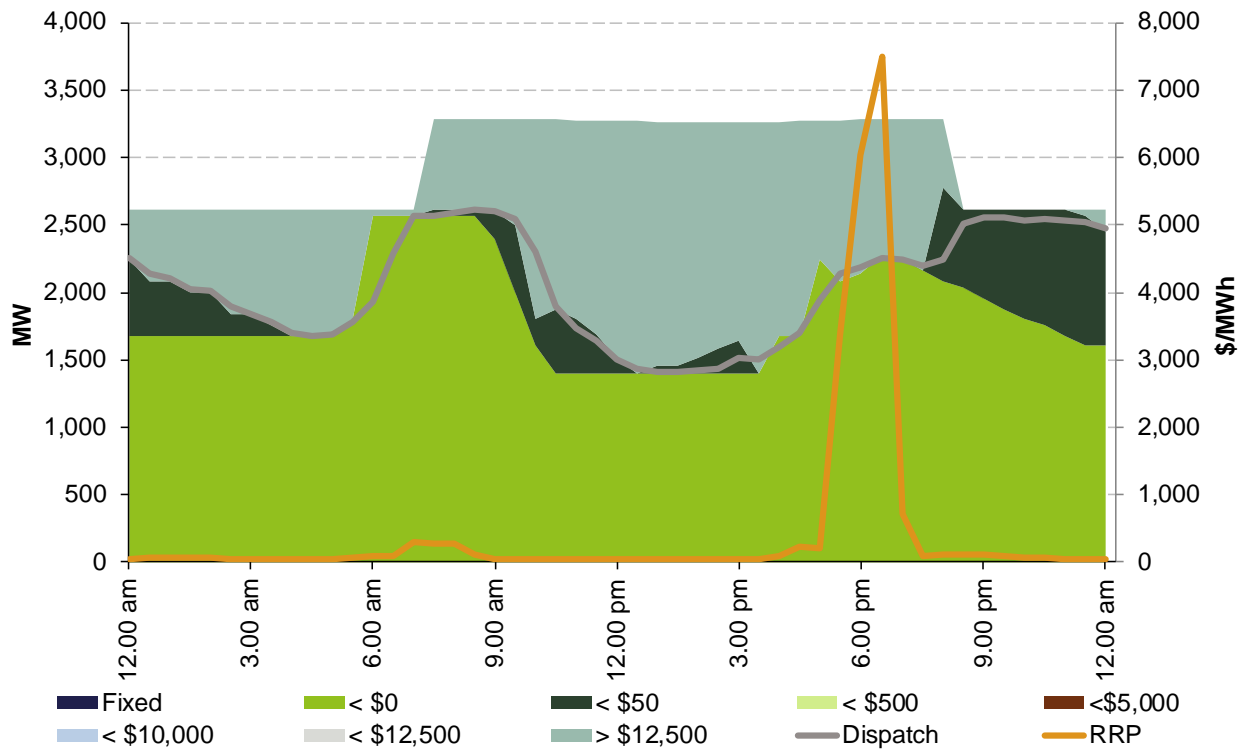


Figure A21: NSW: Snowy Hydro (Colongra, Tumut, Upper Tumut, Guthega, Blowering) closing bids, dispatch and spot price

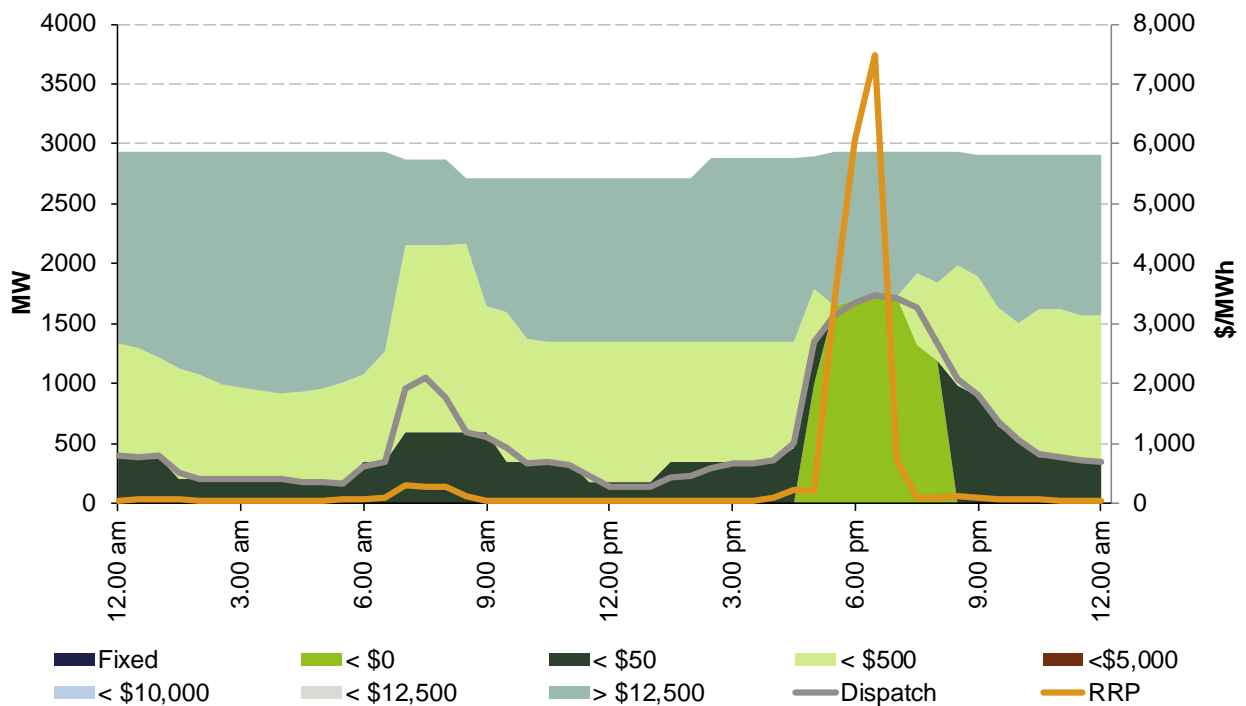
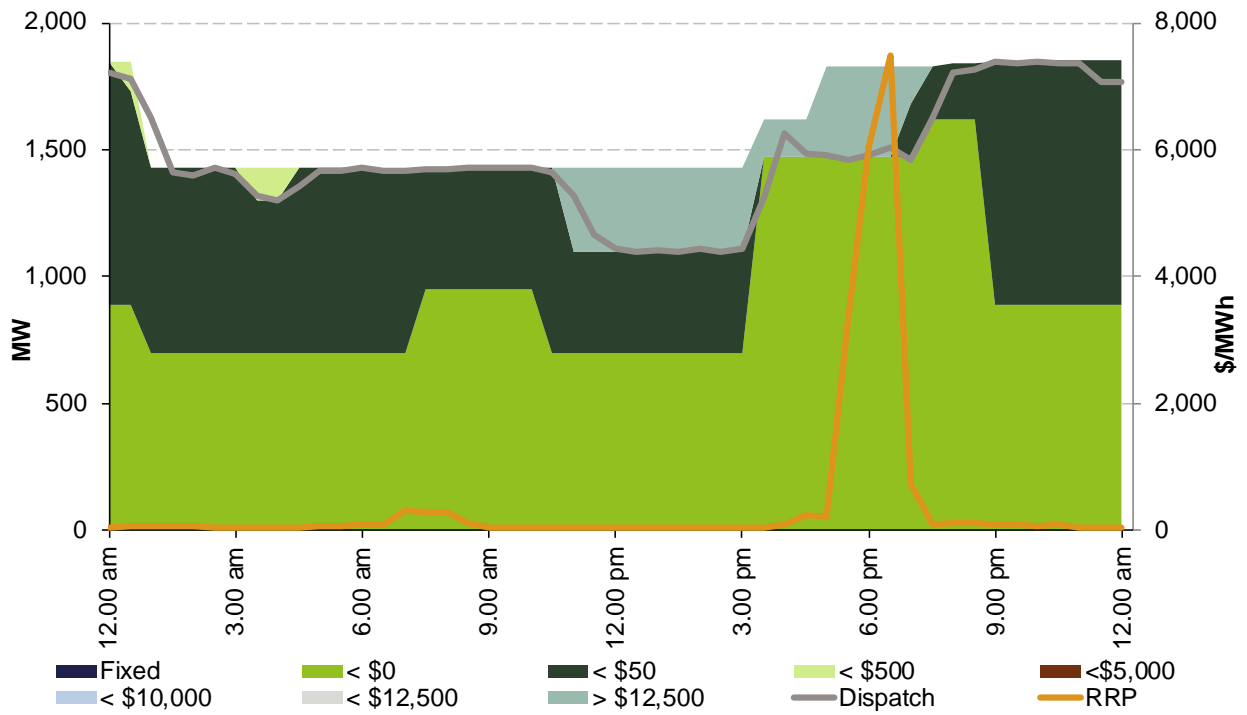


Figure A22: NSW: EnergyAustralia (Mt Piper, Tallawarra) closing bids, dispatch and spot price



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 5: Significant rebids 17 May, 6 pm trading interval

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
2.35 pm		AGL Energy	Bayswater	40	N/A	-1,003	14:35~P~030 increase in avail cap~301 plant limit lifted oil firing 20MW
3.00 pm		Origin Energy	Quarantine	74	15,000	-1,003	1459A constraint management - F_Q++MUTW_L6 SL
4.03 pm		AGL Energy	Bayswater	10	N/A	-1,003	16:03~P~030 increase in avail cap~301 plant limit lifted fuel quality 10MW
4.21 pm		Origin Energy	Ladbroke Grove	42	15,000	-1,003	1620P MW redistribution - MOPS TO LG01 SL
4.51 pm		Engie	Dry Creek	46	13,100	-1,003	1650~A~dispatch price \$523.57 SA higher than pd price \$228.76 PE17:00~~
4.57 pm		Engie	Dry Creek	46	13,100	-1,003	1655~A~dispatch price \$4,065.87 higher than PD price \$833.34~~
5.02 pm		AGL Energy	Bayswater	15	N/A	-1,003	1651~P~030 increase in avail cap~301 plant limit lifted~
5.12 pm		Origin Energy	Mortlake	160	-1,003	15,000	1712P MW redistribution SL
5.12 pm		Origin Energy	Uranquinty	160	15,000	-1,003	1712P MW redistribution SL
5.21 pm		Origin Energy	Mortlake	51	-1,003	15,000	1721P MW redistribution SL
5.21 pm		Origin Energy	Quarantine	51	15,000	-1,003	1721P MW redistribution SL
5.29 pm	5.40 pm	Origin Energy	Mortlake	48	-1,003	15,000	1729P MW redistribution MPS TO QPS5 SL
5.29 pm	5.40 pm	Origin Energy	Quarantine	47	15,000	-1,003	1729P MW redistribution MPS TO QPS5 SL

Table 6: Significant rebids for 18 May, 6 pm trading interval

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
2.01 pm		Snowy Hydro	Tumut	70	15,000	-1,000	13:37:00 A VIC 30min PD -200 sensitivity \$1,770.07 higher than 30min PD 17:30@13:07 (\$10,820.92)
2.01 pm		Snowy Hydro	Murray	30	<300	15,000	13:37:00 A VIC 30min PD -200 sensitivity \$1,770.07 higher than 30min PD 17:30@13:07 (\$10,820.92)

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
2.01 pm		Snowy Hydro	Angaston	25	376	14,835	13:37:00 A VIC 30min PD -200 sensitivity \$1,770.07 higher than 30min PD 17:30@13:07 (\$10,820.92)
2.01 pm		Snowy Hydro	Pt Stanvac	49	381	15,060	13:37:00 A VIC 30min PD -200 sensitivity \$1,770.07 higher than 30min PD 17:30@13:07 (\$10,820.92)
3.31 pm		Origin Energy	Ladbroke Grove	42	15,000	-1,000	1528A Inc NEM dem 5PD 22628 MW > 30PD 22126 MW @1600 SL
3.31 pm		Origin Energy	Quarantine	52	15,000	-1,000	1528A Inc NEM dem 5PD 22628 MW > 30PD 22126 MW @1600 SL
4.28 pm		Origin Energy	Mortlake	120	15,000	-1,000	1627A Inc NEM dem 5PD 24002 MW > 30PD 23594 MW @1630 SL
4.40 pm		Engie	Dry Creek	48	13,100	-1,000	1635~A~change in AEMO 5PD - price increase to \$9980 FOR DI17:30. SL~~
4.46 pm		Engie	Dry Creek	47	13,100	-1,000	1640~A~change in AEMO 5PD - price increase to \$12532 FOR DI17:30. SL~~
4.48 pm		Infigen Energy	Temporary Generation South	20	10,010	-1,003	1635~A~SA price DP@1650 for 1650 205 higher than 5PD@1645 SL~~
5.28 pm	5.35 pm	Infigen Energy	Temporary Generation South	20	10,010	-1,003	1725~A~SA price 5PD@1730 for 1755 4566 higher than 5PD@1725 SL~~
5.32 pm	5.40 pm	Infigen Energy	Lake Bonney BESS1	24	15,000	-1,000	1732~A~change in forecast prices~~
5.38 pm	5.45 pm	Infigen Energy	Temporary Generation South	23	10,010	-1,003	1737~A~SA price DP@1740 for 1740 1092 higher than 5PD@1735 SL~~
5.50 pm	6.00 pm	Origin Energy	Eraring	100	-1,000	15,000	1750A Dec NSW dem 5PD 10056 MW < 30PD 10155 MW @HHE1830 SL

Table 7: Significant rebids for 18 May, 6.30 pm trading interval

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.31 pm		Origin Energy	Ladbroke Grove	42	15,000	-1,000	1528A Inc NEM dem 5PD 22628 MW > 30PD 22126 MW @1600 SL
3.31 pm		Origin Energy	Quarantine	52	15,000	-1,000	1528A Inc NEM dem 5PD 22628 MW > 30PD 22126 MW @1600 SL

Submit time	Time effective	Participant	Station	Capacity rebid (MW)	Price from (\$/MWh)	Price to (\$/MWh)	Rebid reason
3.34 pm		Engie	Snuggery	21	1,750	15,000	1530-A~change in aemo pd - price increase to \$231.51 PE16:30~~
4.28 pm		Origin Energy	Mortlake	140	15,000	-1,000	1627A Inc NEM dem 5PD 24002 MW > 30PD 23594 MW @1630 SL
4.40 pm		Engie	Dry Creek	49	13,100	-1,000	1635-A~change in AEMO 5PD - price increase to \$9980 FOR D17:30. SL~~
4.46 pm		Engie	Dry Creek	47	13,100	-1,000	1640-A~change in AEMO 5PD - price increase to \$12532 FOR D17:30. SL~~
4.48 pm		Infigen Energy	Temporary Generation South	20	10,010	-1,003	1635-A~SA price dp@1650 for 1650 205 higher than 5pd@1645 SL~~
5.28 pm		Infigen Energy	Temporary Generation South	20	10,010	-1,003	1725-A~SA price 5pd@1730 for 1755 4566 higher than 5pd@1725 SL~~
5.38 pm		Infigen Energy	Temporary Generation South	23	10,010	-1,003	1737-A~SA price dp@1740 for 1740 1092 higher than 5pd@1735 SL~~
6.05 pm	6.15 pm	EnergyAustralia	Jeeralang B	-50	<14,500	N/A	1800-P~adj avail unit tripped on high exhaust temp - portfolio redistribution from JJB3 to JJB1/JJB2 SL~~
6.05 pm	6.15 pm	EnergyAustralia	Jeeralang B	30	14,950	-1,000	1800-P~adj avail unit tripped on high exhaust temp - portfolio redistribution from JJB3 to JJB1/JJB2 SL~~
6.15 pm	6.25 pm	EnergyAustralia	Jeeralang A	45	14,950	-1,000	1805-A~band adj due to change in 5min pd price Vic 5min ending 1830 \$14500 v \$14784 at 1815 pd run SL~~

Appendix C: Price setter

The following tables identify the generating units involved in setting the energy price when the spot price exceeded \$5,000/MWh. This information is published by AEMO.² The 30-minute spot price is the average of the 6 dispatch interval prices. We have only included the price setter data for NSW on both days here as the regions were aligned and the same units set price in all regions.

Table 8: 17 May 2021 - NSW price setter 6 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
17:35	\$60.75	Hydro Tasmania	LI_WY_CA	Raise 5 min	\$0.90	1.07	\$0.96
		Hydro Tasmania	MACKNTSH	Raise 5 min	\$0.90	-1.07	-\$0.96
		Hydro Tasmania	MACKNTSH	Raise reg	\$45.00	1.07	\$48.15
		Stanwell	TARONG#3	Energy	\$32.30	1.07	\$34.56
		Stanwell	TARONG#3	Raise reg	\$20.68	-1.07	-\$22.13
17:40	\$4,340.22	NEON	HPRG1	Energy	\$4,065.87	1.07	\$4,350.48
17:45	\$36.93	CS Energy	GSTONE3	Energy	\$70.73	0.26	\$18.39
		CS Energy	GSTONE3	Raise reg	\$23.73	-0.26	-\$6.17
		CS Energy	GSTONE4	Energy	\$70.73	0.26	\$18.39
		CS Energy	GSTONE4	Raise reg	\$23.73	-0.26	-\$6.17
		CS Energy	GSTONE5	Energy	\$70.73	0.26	\$18.39
		CS Energy	GSTONE5	Raise reg	\$23.73	-0.26	-\$6.17
		CS Energy	GSTONE6	Energy	\$70.73	0.26	\$18.39
		CS Energy	GSTONE6	Raise reg	\$23.73	-0.26	-\$6.17
		AGL Energy	DALNTH01	Energy	\$55.28	1.06	\$58.60
		AGL Energy	DALNTH01	Raise 5 min	\$0.00	-1.06	\$0.00
		AGL Energy	DALNTH01	Raise 60	\$0.00	-1.06	\$0.00
		AGL Energy	DALNTH01	Raise 6 sec	\$0.00	-1.06	\$0.00
		Hydro Tasmania	GORDON	Raise 5 min	\$0.90	1.06	\$0.95
		Stanwell	TARONG#3	Energy	\$38.95	-1.06	-\$41.29
		Stanwell	TARONG#3	Raise 60	\$3.68	0.45	\$1.66
		Stanwell	TARONG#3	Raise 6 sec	\$3.68	1.06	\$3.90
		EnergyAustralia	MP1	Raise reg	\$218.81	1.06	\$231.94
EnergyAustralia	YWPS3	Raise 60	\$52.00	0.61	\$31.72		
17:50	\$1,384.08	CS Energy	GSTONE2	Energy	\$70.73	1.13	\$79.92
		CS Energy	GSTONE2	Raise 60	\$33.73	-1.13	-\$38.11
		CS Energy	GSTONE2	Raise 6 sec	\$33.73	-1.13	-\$38.11
		CS Energy	GSTONE6	Lower 60	\$299.73	1.06	\$317.71
		NEON	HPRG1	Raise 6 sec	\$750.00	1.13	\$847.50
		NEON	HPRL1	Lower 6	\$0.00	-1.06	\$0.00
		AGL Hydro	MCKAY1	Lower reg	\$20.00	-1.06	-\$21.20
		Stanwell	STAN-1	Lower reg	\$74.99	1.06	\$79.49

² 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
		Stanwell	STAN-1	Lower6	\$97.25	1.06	\$103.09
		EnergyAustralia	MP1	Raise 60	\$51.00	1.13	\$57.63
17:55	\$14,635.99	EnergyAustralia	JLA02	Energy	\$14,950.00	0.20	\$2,990.00
		EnergyAustralia	JLA03	Energy	\$14,950.00	0.20	\$2,990.00
		EnergyAustralia	JLA04	Energy	\$14,950.00	0.20	\$2,990.00
		EnergyAustralia	JLB01	Energy	\$14,950.00	0.39	\$5,830.50
18:00	\$14,308.26	EnergyAustralia	JLA02	Energy	\$14,950.00	0.11	\$1,644.50
		EnergyAustralia	JLA03	Energy	\$14,950.00	0.11	\$1,644.50
		EnergyAustralia	JLA04	Energy	\$14,950.00	0.11	\$1,644.50
		EnergyAustralia	JLB01	Energy	\$14,950.00	0.21	\$3,139.50
		EnergyAustralia	JLB02	Energy	\$14,950.00	0.21	\$3,139.50
		EnergyAustralia	JLB03	Energy	\$14,950.00	0.21	\$3,139.50
Spot Price		\$5,844/MWh					

Table 9: 18 May 2021 - NSW price setter 6 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
17:35	\$80.06	Callide Power	CPP_4	Energy	\$24.52	0.05	\$1.23
		CS Energy	GSTONE6	Energy	\$70.73	1.04	\$73.56
		CS Energy	GSTONE6	Lower reg	\$0.73	1.04	\$0.76
		AGL Energy	LYA1	Lower reg	\$20.90	-1.04	-\$21.74
		Stanwell	STAN-4	Lower 6 sec	\$16.68	1.04	\$17.35
		Stanwell	TARONG#3	Lower 60	\$8.68	1.04	\$9.03
		EnergyAustralia	MP2	Lower 60	\$0.07	-1.04	-\$0.07
17:40	\$1,290.49	Arrow	BRAEMAR6	Energy	\$1,000.02	1.11	\$1,110.02
		CleanCo	SWAN_E	Lower 60	\$18.00	1.05	\$18.90
		AGL Energy	DALNTHL1	Lower 60	\$0.00	-1.05	\$0.00
		HydroTasmania	GORDON	Lower reg	\$2.50	-1.05	-\$2.63
		Stanwell	STAN-1	Lower reg	\$74.99	1.05	\$78.74
		Stanwell	STAN-4	Lower 6 sec	\$79.25	1.05	\$83.21
17:45	\$298.98	CleanCo	SWAN_E	Lower reg	\$96.36	1.05	\$101.18
		CleanCo	SWAN_E	Lower 60	\$18.00	-1.05	-\$18.90
		CS Energy	KPP_1	Energy	\$11.84	1.12	\$13.26
		HydroTasmania	GORDON	Lower reg	\$2.50	-1.05	-\$2.63
		Stanwell	STAN-3	Lower 6 sec	\$97.25	1.05	\$102.11
		Stanwell	TARONG#2	Lower 60	\$49.25	2.10	\$103.43
17:50	\$4,588.17	NEON	HPRG1	Energy	\$4,065.87	1.13	\$4,594.43
17:55	\$14,999.50	Snowy Hydro	TUMUT3	Energy	\$14,999.50	1.00	\$14,999.50
18:00	\$14,999.50	Snowy Hydro	TUMUT3	Energy	\$14,999.50	1.00	\$14,999.50
Spot Price		\$6,043/MWh					

Table 10: 18 May 2021 - NSW price setter 6.30 pm

DI	Dispatch Price (\$/MWh)	Participant	Unit	Service	Offer price (\$/MWh)	Marginal change	Contribution
18:05	\$231.79	CS Energy	GSTONE5	Energy	\$70.73	1.12	\$79.22
		CS Energy	GSTONE5	Lower reg	\$0.73	1.12	\$0.82
		CS Energy	GSTONE5	Raise reg	\$0.73	-1.12	-\$0.82
		Hydro Tasmania	GORDON	Lower reg	\$2.50	-1.05	-\$2.63
		Hydro Tasmania	GORDON	Raise 5 min	\$0.90	-1.12	-\$1.01
		Hydro Tasmania	POAT220	Raise reg	\$45.00	1.12	\$50.40
		Stanwell	STAN-4	Lower6	\$79.25	1.05	\$83.21
		Stanwell	TARONG#3	Raise 5 min	\$8.89	1.12	\$9.96
		Stanwell	TARONG#4	Lower reg	\$74.99	-0.07	-\$5.25
Stanwell	TARONG#4	Lower60	\$16.68	1.05	\$17.51		
18:10	\$14,999.50	Snowy Hydro	TUMUT3	Energy	\$14,999.50	1.00	\$14,999.50
18:15	\$14,540.11	EnergyAustralia	JLB01	Energy	\$14,499.94	0.50	\$7,249.97
		EnergyAustralia	JLB02	Energy	\$14,499.94	0.50	\$7,249.97
18:20	\$14,675.61	EnergyAustralia	JLB01	Energy	\$14,499.94	0.51	\$7,394.97
		EnergyAustralia	JLB02	Energy	\$14,499.94	0.51	\$7,394.97
18:25	\$341.60	CS Energy	CALL_B_2	Energy	\$36.62	2.10	\$76.90
		CS Energy	CALL_B_2	Lower reg	\$0.01	1.05	\$0.01
		CS Energy	CALL_B_2	Lower60	\$0.61	1.05	\$0.64
		CS Energy	CALL_B_2	Lower6	\$0.61	1.05	\$0.64
		CS Energy	CALL_B_2	Raise 60	\$0.62	-0.80	-\$0.50
		CS Energy	CALL_B_2	Raise 6 sec	\$0.01	-0.81	-\$0.01
		AGL Energy	DALNTHL1	Lower60	\$0.00	-1.05	\$0.00
		Hydro Tasmania	GORDON	Lower reg	\$2.50	-1.05	-\$2.63
		Braemar Power	BRAEMAR1	Energy	-\$0.10	-0.98	\$0.10
		Origin Energy	ER04	Raise 60	\$29.60	0.80	\$23.68
		Stanwell	TARONG#3	Raise 6 sec	\$300.68	0.81	\$243.55
18:30	\$162.87	CS Energy	GSTONE4	Lower reg	\$0.73	-1.04	-\$0.76
		CS Energy	GSTONE4	Lower60	\$0.73	1.04	\$0.76
		CS Energy	GSTONE4	Lower6	\$0.73	1.04	\$0.76
		AGL Energy	LYA1	Lower60	\$0.03	-1.04	-\$0.03
		AGL Energy	LYA4	Lower reg	\$20.90	-1.04	-\$21.74
		Origin Energy	ER04	Raise 60	\$29.60	0.47	\$13.91
		Stanwell	TARONG#2	Energy	\$19.15	0.55	\$10.53
		Stanwell	TARONG#2	Raise 60	\$16.68	-0.24	-\$4.00
		Stanwell	TARONG#3	Lower reg	\$74.99	2.09	\$156.73
		Stanwell	TARONG#4	Energy	\$19.15	0.55	\$10.53
		Stanwell	TARONG#4	Raise 60	\$16.68	-0.24	-\$4.00
Spot Price		\$7,492/MWh					