

# Spot prices greater than \$5000/MWh



AUSTRALIAN ENERGY  
REGULATOR

New South Wales and Queensland - 20 November 2009

## ***Introduction***

The AER is required to publish a report covering the circumstances in which the spot price exceeded \$5000/MWh, pursuant to clause 3.13.7 (d) of the Rules. That report should:

- describe significant factors contributing to the spot price exceeding \$5000/MWh, including withdrawal of generation capacity and network availability;
- assess whether rebidding pursuant to clause 3.8.22 contributed to the spot price exceeding \$5000/MWh;
- identify the marginal scheduled generating units; and
- identify all units with offers for the trading interval equal to or greater than \$5000/MWh and compare these dispatch offers to relevant dispatch offers in previous trading intervals.

## ***Summary***

On 20 November 2009, the spot price in New South Wales and Queensland exceeded \$5000/MWh for 10 trading intervals in total, reaching a maximum of \$9284/MWh and \$8388/MWh respectively.

The temperature in Sydney reached 40 degrees. This saw demand reach 13 276MW<sup>1</sup>, which was 1400 MW greater than that forecast four hours ahead.

Planned network outages in New South Wales significantly reduced the capability for imports from Victoria. The impact of these outages was not forecast, with import capability up to 900 MW lower than forecast four hours ahead. One of the network outages commenced at 6.30 am. At that time AEMO's assessment showed adequate reserves in New South Wales and the outage was allowed to proceed.

From early morning, demand was tracking well above forecast. From mid morning AEMO, over a number of adjustments, increased the demand forecast by 1300 MW. By 10 am the higher forecast demand led to very low reserves and consequently AEMO directed a New South Wales generator to be made available for dispatch. AEMO also instructed Transgrid to return network equipment to service to increase reserves.

Rebidding in both New South Wales and Queensland also contributed to prices exceeding \$5000/MWh.

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<sup>1</sup> The previous New South Wales summer record demand occurred in the 2008-09 summer, reaching 14 097 MW. The highest-ever demand of 14 287 MW occurred in the winter of 2008.

## **Actual and forecast demand**

Demand in New South Wales reached a maximum for the day of 13 276 MW, 1400 MW greater than that forecast four and 12 hours ahead. Demand in Queensland reached a maximum of 8213 MW<sup>2</sup> which was close to forecast.

At around 9 am, AEMO increased the forecast demand for New South Wales by 800 MW which saw four hour ahead forecast prices increasing to the price cap for the 1 pm to 5 pm trading intervals inclusive.

Figures 1 and 2 compare the actual demand and spot price in New South Wales and Queensland with that forecast by AEMO four and 12 hours ahead of dispatch. Surrounding trading intervals where the price was less than \$5000/MWh have been included for completeness.

**Figure 1: Actual and forecast demand, and spot price in New South Wales**

<b>Friday 10:00 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	12 253	11 045	11 046
Spot price (\$MWh)	6697	60	48
<b>Friday 10:30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	12 318	11 184	11 187
Spot price (\$MWh)	1696	61	60
<b>Friday 11:00 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	12 621	11 313	11 325
Spot price (\$MWh)	8664	64	60
<b>Friday 11:30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	12 860	11 429	11 442
Spot price (\$MWh)	6729	90	88
<b>Friday 12:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	13 012	11 613	11 584
Spot price (\$MWh)	908	139	120
<b>Friday 12:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	13 186	12 010	11 800
Spot price (\$MWh)	7051	303	265
<b>Friday 1:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	13 276	12 344	11 923
Spot price (\$MWh)	9284	5897	299
<b>Friday 1:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	13 269	13 238	12 087
Spot price (\$MWh)	6204	10 000	299
<b>Friday 3:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	13 199	13 969	12 661
Spot price (\$MWh)	5152	10 000	8804

\*There was also around 130 MW of non-scheduled generation that is not included in this demand figure. Actual non-scheduled generation was close to that forecast.

From around 1.30 pm following four hours of high prices, there appeared to be a demand side response in New South Wales with demand reducing from 13 244 MW to 12 745 MW by 2.15 pm. Demand at the time was trending to increase by around 500 MW. This demand side response led to lower prices for the 2 pm to 3 pm trading intervals. Demand then increased again to above 13 200 MW by 3.20 pm and the five-minute dispatch price returned to the price cap for a further three dispatch intervals.

<sup>2</sup> The highest-ever demand in Queensland of 8699 MW occurred in the 2008-09 summer.

**Figure 2: Actual and forecast demand and spot price in Queensland**

<b>Friday 11:00 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7730	7825	7694
Spot price (\$MW/h)	1698	65	53
<b>Friday 11:30 AM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7813	7922	7788
Spot price (\$MW/h)	1397	101	84
<b>Friday 12:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7927	8021	7899
Spot price (\$MW/h)	805	161	116
<b>Friday 12:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	8000	8102	7986
Spot price (\$MW/h)	5928	342	251
<b>Friday 1:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	8068	8148	8036
Spot price (\$MW/h)	8388	5209	281
<b>Friday 1:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	8137	8177	8065
Spot price (\$MW/h)	5564	8817	283
<b>Friday 3:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	8119	8002	8018
Spot price (\$MW/h)	4747	285	296

\*There was also around 30 MW of non-scheduled generation that is not included in this demand figure. This generation was not forecast.

### **Generator offers and rebidding**

Around 3000 MW of New South Wales generation was not offered into the market on the day. Figure 3 shows the generation capacity not available in New South Wales.

**Figure 3: New South Wales generation capacity not available**

<b>Participant</b>	<b>Capacity not available (MW)</b>	<b>Comment</b>
<b>Delta Electricity</b>		
Munmorah unit four	300	Planned – off since March
Vales Point unit six	660	Planned – off since 6 November
<b>Macquarie Generation</b>		
Liddell unit three	520	Planned – off since 24 October
<b>Eraring Energy</b>		
Eraring unit two	660	Plant problems – shutdown on 19 November
Eraring unit four	660	Planned – off since 21 August
<b>Redbank</b>		
Redbank	145	Planned – off since 13 November
<b>Total</b>	<b>2945</b>	

The tight supply-demand conditions in New South Wales contrasted with the situation in Queensland. In Queensland demand was just over 8000 MW with around 10 700 MW of capacity offered into the market on the day. Initial generator offers for this day saw 9000 MW of Queensland generation capacity offered at less than \$300/MWh, with the remaining 1680 MW of capacity priced above \$9000/MWh.

Between 9.45 am and 11.30 am the two interconnectors between New South Wales and Queensland were constrained. From midday to 3.30 pm, however, the interconnectors were unconstrained. As a result, the two regions were effectively one combined region for this latter period and rebidding in one region influenced outcomes in both regions.

At 9.05 am, effective from 9.15 am, Millmerran Energy Trader rebid 135 MW of capacity at Millmerran unit two from prices below \$10/MWh to above \$9500/MWh. The reason given was “System demand above PD”.

At 9.45 am, effective from 9.55 am, Callide Power Trading rebid 69 MW of capacity at Callide C unit three from prices below \$20/MWh to above \$9200/MWh. The reason given was “QNI constraint”.

At 10.36 am, for the 11 am and 11.30 am trading intervals, Delta Electricity reduced the available capacity at Wallerawang unit seven by 100 MW (70 MW of which was priced below \$100/MWh). The rebid reason given was “Dust burdens::capacity limit change”.

At midday, effective from 12.10 pm, Macquarie Generation reduced the available capacity of Liddell unit two by up to 200 MW (120 MW of this capacity was priced below zero). The reason given was “Blr tube leak”.

At 2.07 pm, effective from 2.15 pm, Delta Electricity rebid 120 MW of available capacity at Colongra from prices below zero to above \$9800/MWh. The reason given was “PD change::band shift”. At 3.12 pm, effective from 3.20 pm, Delta rebid 200 MW of available capacity at Mount Piper from prices below zero to above \$9500/MWh. The reason given was “Demand change::band shift”. At 3.11 pm, also effective from 3.20 pm, Delta reduced the available capacity of Colongra unit four by 175 MW (all of which was priced below zero). The reason given was “Commission test complete::capacity limit change”. The 5-minute price increased from \$320/MWh at 3.15 pm to \$10 000/MWh at 3.20 pm.

At 2.32 pm, effective from 2.40 pm, CS Energy rebid 55 MW of available capacity at Callide B two from prices below \$25/MWh to above \$9200/MWh. The reason given was “Call\_B\_2 gen trans winding temp high”. A further rebid at 2.47 pm, effective from 2.55 pm, shifted 101 MW of available capacity at Swanbank unit E from prices below zero to above \$9800/MWh. The reason given was “Changes in predispach 2009112021 V 20”.

At 2.34 pm, effective from 3.05 pm Millmerran Energy Trader rebid 135 MW of available capacity at Millmerran unit two from prices below \$10/MWh to above \$9500/MWh. The reason given was “5min NSW demand lower than predispach”. A further rebid at 3.01 pm, effective from 3.10 pm, reduced the capacity of Millmerran unit one by 185 MW (all of which was priced below \$10/MWh) in order to perform a valve stroke test.

There was no other significant rebidding.

At 10 am, in response to low reserves in New South Wales, AEMO issued a direction to Delta Electricity to bid Colongra unit one available. The direction was cancelled at 11.35 am. Intervention pricing was applied for the period from 10.10 am to 11.35 am.<sup>3</sup>

The generators involved in setting the price during the high-price period, and how that price was determined by the market systems is detailed in **Appendix A**.

The closing bids for all participants in New South Wales and Queensland with capacity priced at or above \$5000/MWh for the high-price period are presented in **Appendix B**.

### ***Changes to network availability***

Planned network outages in New South Wales significantly reduced import capability from Victoria but the impact of these outages was not forecast.

An outage of the Mt Piper to Wallerawang 330kV line in New South Wales commenced at 6.05 am. Later that morning in order to increase import capability and improve reserves,

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<sup>3</sup> Intervention or “what-if” pricing sets the energy price based on the dispatch that would have occurred in the absence of the direction.

AEMO instructed<sup>4</sup> Transgrid to return the line to service – the line was returned at 11.25 am. AEMO also instructed Transgrid to recall the Avon to Macarthur 330kV line, which had been out of service for planned maintenance since 15 November, but this did not occur. Transgrid increased the rating of the Dapto to Sydney South 330kV line in an attempt to reduce the impact of the outage of the Avon to Macarthur line.

Shoalhaven and Tallawarra power stations rebid inflexible as a result of being constrained down by the outage of the Avon to Macarthur line:

- Between 11.35 am and 11.55 am Shoalhaven was constrained down from 160 MW to less than 110 MW. At 11.52 am, effective from midday, Eraring Energy rebid its Shoalhaven Power Station as inflexible at 160 MW. The reason given was “Avoid non-conformance”. The AER has written to Eraring Energy seeking further information about this rebid.
- Between midday and 12.30 pm Tallawarra was constrained down from full load of 430 MW to less than 160 MW. At 12.29 pm, effective for the 1 pm trading interval, TRUenergy rebid Tallawarra inflexible at 190 MW to reflect the minimum technical generation limit of the plant. At 1.01 pm this was extended to the 1.30 pm trading interval. The AER has received advice from TRUenergy in relation to this inflexible rebidding. TRUenergy has stated that AEMO was notified of the technical limit. Given the tight supply situation at the time it was agreed that TRUenergy should maintain output at the technical minimum level rather than shutting the plant down. Following increases in the rating of transmission lines the inflexible bid was removed. The AER’s recently published rebidding and technical parameters guideline<sup>5</sup> proposed reducing ramp rates rather than bidding inflexible once the minimum technical limit is reached. TRUenergy acknowledges the approach in the guideline and have committed to this approach in the future. The AER is satisfied with the outcome in this particular case.

For the 11.30 am trading interval, actual capability into New South Wales from Victoria was 900 MW lower than that forecast four hours ahead. Generation at Snowy Hydro’s Tumut Stations (in New South Wales) was slightly higher than forecast, which partly accounts for this reduction. The majority of the reduction for this trading interval, however, was as a result of the Mt Piper to Wallerawang line outage. The outage of the Avon to Macarthur line reduced import capability at other times.

Flows across all interconnectors into New South Wales exceeded the limit for the majority of the time between 9.45 am and 11.20 am.

The two New South Wales to Queensland interconnectors were unconstrained from midday to the end of the high priced period. Prior to this time limits were lower than forecast, driven by similar constraints to those that restricted imports from Victoria.

## **Australian Energy Regulator December 2009**

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<sup>4</sup> In accordance with Clause 4.8.9 of the National Electricity Rules.

<sup>5</sup> Rebidding and technical parameters guideline - available at [www.aer.gov.au](http://www.aer.gov.au)

## Appendix A – Price setters for 20 November 2009

The following table identifies for the trading intervals above \$5000/MWh each five minute dispatch interval price and the generating units involved in setting the energy price. This information is published by AEMO<sup>6</sup>. 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 average of the six dispatch interval prices.

### New South Wales – 10 am

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
09:35	\$89.96	Snowy Hydro	TUMUT3	Energy	\$89.96	1.00	\$89.96
09:40	\$89.96	Snowy Hydro	TUMUT3	Energy	\$89.96	1.00	\$89.96
09:45	\$10 000*	Snowy Hydro	TUMUT3	Energy	\$299.48	306.63	\$91 829.90
		Hydro Tasmania	JBUTTERS	Energy	\$40.34	306.63	\$12 369.50
		Hydro Tasmania	GORDON	Energy	\$40.30	-306.63	-\$12 357.24
		Macquarie Generation	BW04	Energy	\$31.00	0.01	\$0.24
		Snowy Hydro	MURRAY	Energy	\$23.94	-307.28	-\$7356.34
		Hydro Tasmania	GORDON	Raise 5 min	\$1.10	306.63	\$337.29
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-306.63	\$0.00
09:50	\$10 000*	Snowy Hydro	GUTHEGA	Energy	\$299.80	76.67	\$22 984.45
		Snowy Hydro	MURRAY	Energy	\$23.94	-77.25	-\$1849.39
09:55	\$10 000*	Snowy Hydro	GUTHEGA	Energy	\$299.80	285.65	\$85 638.60
		Snowy Hydro	MURRAY	Energy	\$23.94	-286.30	-\$6854.00
10:00	\$10 000*	Snowy Hydro	GUTHEGA	Energy	\$299.80	83.11	\$24 915.11
		Hydro Tasmania	REECE1	Energy	\$33.18	-80.85	-\$2682.71
		Basslink	T-V-MNSP1,TAS1	Energy	\$0.00	80.85	\$0.00
<b>Spot price</b>		<b>\$6697/MWh</b>					

\*Price capped to \$10 000/MWh

### New South Wales – 11 am

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
10:35	\$1986.84	Delta Electricity	WW8	Energy	\$9999.00	0.20	\$1971.60
		TRUenergy (SA)	TORRB4	Energy	\$38.77	-0.07	-\$2.88
		Stanwell	GSTONE1	Energy	\$20.39	0.45	\$9.12
		Stanwell	GSTONE2	Energy	\$20.39	0.45	\$9.12
		Snowy Hydro	MURRAY	Raise reg	\$3.00	-0.07	-\$0.22
		TRUenergy (SA)	TORRB4	Raise reg	\$0.80	0.07	\$0.06
10:40	\$10 000*	Eraring Energy	SHGEN	Energy	\$9990.01	2.03	\$20 296.50
		Southern Hydro	WKIEWA2	Energy	\$60.88	-2.63	-\$159.94
		Stanwell	GSTONE1	Energy	\$20.39	0.58	\$11.83
		Stanwell	GSTONE2	Energy	\$20.39	0.58	\$11.83
10:45	\$10 000*	Delta Electricity	WW7	Energy	\$88.00	0.21	\$18.48
		Origin Energy	OSB-AG	Energy	\$29.98	-0.22	-\$6.71
		Macquarie Generation	BW01	Energy	\$22.00	0.33	\$7.18
		Macquarie Generation	BW02	Energy	\$22.00	0.33	\$7.18
		Macquarie Generation	BW03	Energy	\$22.00	0.33	\$7.18
10:50	\$10 000*	Southern Hydro	WKIEWA1	Energy	\$60.86	0.07	\$4.15
		Callide Power	CPP_3	Energy	\$12.94	35.79	\$463.14
		Macquarie Generation	LD01	Energy	-\$1000.00	-12.63	\$12 633.23
		Macquarie Generation	LD02	Energy	-\$1000.00	-9.74	\$9738.12
		Macquarie Generation	LD04	Energy	-\$1000.00	-11.84	\$11 843.66
10:55	\$10 000*	Eraring Energy	SHGEN	Energy	\$9990.01	0.16	\$1573.53
		Basslink	BRAEMAR6	Energy	\$140.01	30.14	\$4219.64
		Snowy Hydro	MURRAY	Energy	\$23.94	-0.34	-\$8.10
		Macquarie Generation	BW01	Energy	-\$1000.00	-8.58	\$8577.31
		Macquarie Generation	BW02	Energy	-\$1000.00	-8.58	\$8577.31
		Macquarie Generation	BW03	Energy	-\$1000.00	-8.58	\$8577.31
11:00	\$10 000*	Eraring Energy	SHGEN	Energy	\$9990.01	2.99	\$29 881.62
		Macquarie Generation	LD01	Energy	\$4998.00	2.72	\$13 613.25
		Snowy Hydro	MURRAY	Energy	\$23.94	-5.01	-\$119.99
		Hydro Tasmania	GORDON	Raise 5 min	\$1.10	0.14	\$0.15
		Macquarie Generation	LD01	Raise reg	\$0.01	-0.14	\$0.00
<b>Spot price</b>		<b>\$8664/MWh</b>					

\*Price capped to \$10 000/MWh

<sup>6</sup> Details on how the price is determined can be found at [www.aemo.com.au](http://www.aemo.com.au)

## New South Wales – 11.30 am

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution		
11:05	\$10 000*	Macquarie Generation	LD01	Energy	\$4998.00	5.23	\$26 156.63		
		Aurora Energy	TVCC201	Energy	\$23.70	-4.73	-\$112.13		
		Basslink	T-V-MNSP1,VIC1	Energy	\$0.01	-4.59	-\$0.05		
		Hydro Tasmania	GORDON	Raise 5 min	\$1.10	0.26	\$0.29		
		Macquarie Generation	LD01	Raise reg	\$0.01	-0.26	\$0.00		
11:10	\$10 000*	Macquarie Generation	LD01	Energy	\$4998.00	5.33	\$26 661.58		
		Aurora Energy	TVCC201	Energy	\$23.70	-4.81	-\$114.03		
		Basslink	T-V-MNSP1,VIC1	Energy	\$0.01	-4.67	-\$0.05		
		Hydro Tasmania	CETHANA	Raise 5 min	\$1.10	0.27	\$0.29		
		Macquarie Generation	LD01	Raise reg	\$0.01	-0.27	\$0.00		
11:15	\$10 000*	Stanwell	STAN-1	Energy	\$75.65	33.65	\$2545.48		
		TRUenergy (SA)	TORRB1	Energy	\$38.77	1.47	\$57.10		
		TRUenergy (SA)	TORRB2	Energy	\$38.77	1.47	\$57.10		
		TRUenergy (SA)	TORRB4	Energy	\$38.77	1.47	\$57.10		
		Macquarie Generation	BW01	Energy	-\$1000.00	-10.94	\$10 942.47		
		Macquarie Generation	BW02	Energy	-\$1000.00	-10.94	\$10 942.47		
		Macquarie Generation	BW03	Energy	-\$1000.00	-10.94	\$10 942.47		
		Hydro Tasmania	JBUTTERS	Lower reg	\$1.30	-4.42	-\$5.74		
		TRUenergy (SA)	TORRB1	Lower reg	\$0.25	1.47	\$0.37		
		TRUenergy (SA)	TORRB2	Lower reg	\$0.25	1.47	\$0.37		
		TRUenergy (SA)	TORRB4	Lower reg	\$0.25	1.47	\$0.37		
		11:20	\$10 000*	Macquarie Generation	LD01	Energy	\$4998.00	19.05	\$95 224.99
				Tarong	TARONG#2	Energy	\$295.79	-22.38	-\$6620.99
Snowy Hydro	MURRAY			Energy	\$29.96	0.08	\$2.51		
Hydro Tasmania	GORDON			Raise reg	\$1.20	-21.43	-\$25.72		
Macquarie Generation	LD01			Raise reg	\$0.01	-0.95	-\$0.01		
Tarong	TARONG#2			Raise reg	\$0.00	22.38	\$0.00		
11:25	\$325.21	Stanwell	GSTONE6	Energy	\$285.01	0.57	\$162.61		
		Stanwell	GSTONE5	Energy	\$285.01	0.57	\$162.61		
11:30	\$48.65	TRUenergy	TALWA1	Energy	\$43.76	-5.85	-\$255.98		
		TRUenergy (SA)	TORRA1	Energy	\$38.77	0.98	\$38.08		
		TRUenergy (SA)	TORRB2	Energy	\$38.77	1.96	\$76.16		
		TRUenergy (SA)	TORRB4	Energy	\$38.77	1.96	\$76.16		
		TRUenergy (SA)	TORRA4	Energy	\$38.77	0.98	\$38.08		
		TRUenergy (SA)	TORRB1	Energy	\$38.77	1.96	\$76.16		
<b>Spot price</b>		<b>\$6729/MWh</b>							

\*Price capped to \$10 000/MWh

## New South Wales – 12.30 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
12:05	\$989.34	Origin Energy	URANQ14	Energy	\$54.52	33.86	\$1846.10
		Aurora Energy	TVCC201	Energy	\$23.70	-36.14	-\$856.41
		Basslink	T-V-MNSP1,VIC1	Energy	\$0.01	-35.00	-\$0.35
12:10	\$8000.00	Delta Electricity	CG1	Energy	\$8000.00	0.50	\$4000.00
		Delta Electricity	CG2	Energy	\$8000.00	0.50	\$4000.00
12:15	\$8000.00	Delta Electricity	CG1	Energy	\$8000.00	0.50	\$4000.00
		Delta Electricity	CG2	Energy	\$8000.00	0.50	\$4000.00
12:20	\$9900.00	Eraring Energy	ER03	Energy	\$9900.00	1.00	\$9900.00
12:25	\$8000.00	Delta Electricity	CG1	Energy	\$8000.00	0.50	\$4000.00
		Delta Electricity	CG2	Energy	\$8000.00	0.50	\$4000.00
12:30	\$7419.61	Delta Electricity	CG1	Energy	\$8000.00	0.37	\$2990.96
		Delta Electricity	CG2	Energy	\$8000.00	0.37	\$2990.96
		Macquarie Generation	LD01	Energy	\$4998.00	0.29	\$1439.37
		Ecogen	JLB02	Energy	\$45.76	-0.04	-\$1.73
<b>Spot price</b>		<b>\$7051/MWh</b>					

\*Price capped to \$10 000/MWh

## Queensland – 12.30 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
12:05	\$867.02	Origin Energy	URANQ14	Energy	\$54.52	29.67	\$1617.85
		Aurora Energy	TVCC201	Energy	\$23.70	-31.67	-\$750.53
		Basslink	T-V-MNSP1,VIC1	Energy	\$0.01	-30.67	-\$0.31
12:10	\$6911.62	Delta Electricity	CG1	Energy	\$8000.00	0.43	\$3455.84
		Delta Electricity	CG2	Energy	\$8000.00	0.43	\$3455.84
12:15	\$6918.34	Delta Electricity	CG1	Energy	\$8000.00	0.43	\$3459.20
		Delta Electricity	CG2	Energy	\$8000.00	0.43	\$3459.20
12:20	\$8682.35	Eraring Energy	ER03	Energy	\$9900.00	0.88	\$8682.30
12:25	\$7013.29	Delta Electricity	CG1	Energy	\$8000.00	0.44	\$3506.64
		Delta Electricity	CG2	Energy	\$8000.00	0.44	\$3506.64
12:30	\$5174.10	Delta Electricity	CG1	Energy	\$8000.00	0.05	\$372.08
		Delta Electricity	CG2	Energy	\$8000.00	0.05	\$372.08
		Macquarie Generation	LD01	Energy	\$4998.00	0.89	\$4435.33
		Ecogen	JLB02	Energy	\$45.76	-0.12	-\$5.33
<b>Spot price</b>		<b>\$5928/MWh</b>					

## New South Wales – 1 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
12:35	\$8000.00	Delta Electricity	CG1	Energy	\$8000.00	0.50	\$4000.00
		Delta Electricity	CG2	Energy	\$8000.00	0.50	\$4000.00
12:40	\$8803.68	Delta Electricity	VP5	Energy	\$8803.58	1.00	\$8803.58
		Hydro Tasmania	GORDON	Raise 5 min	\$1.10	1.00	\$1.10
		Delta Electricity	VP5	Raise reg	\$1.00	-1.00	-\$1.00
12:45	\$9000.00	Delta Electricity	MM3	Energy	\$9000.00	1.00	\$9000.00
12:50	\$9900.00	Eraring Energy	ER03	Energy	\$9900.00	1.00	\$9900.00
12:55	\$10 000*	CS Energy	SWAN_B_1	Energy	\$9702.77	0.29	\$2792.26
		CS Energy	SWAN_B_3	Energy	\$9702.77	0.27	\$2606.07
		CS Energy	SWAN_B_4	Energy	\$9702.77	0.29	\$2792.26
		CS Energy	SWAN_B_2	Energy	\$9702.77	0.29	\$2792.26
		Macquarie Generation	BW02	Energy	\$8906.00	1.15	\$10222.84
13:00	\$10 000*	Hydro Tasmania	GORDON	Energy	\$38.30	-0.18	-\$6.80
		Basslink	T-V-MNSP1VIC1	Energy	\$0.01	-0.16	\$0.00
		Hydro Tasmania	GORDON	Lower 5 min	\$0.40	-0.16	-\$0.06
		TRUenergy (Vic)	YWPS3	Lower 5 min	\$0.05	0.16	\$0.01
		Hydro Tasmania	GORDON	Lower 60 sec	\$0.20	-0.16	-\$0.03
		Hydro Tasmania	JBUTTERS	Lower 6 sec	\$0.05	-0.27	-\$0.01
		Hydro Tasmania	GORDON	Lower 6 sec	\$0.05	0.11	\$0.01
		Delta Electricity	WW7	Raise 5 min	\$2.00	0.99	\$1.97
		Hydro Tasmania	JBUTTERS	Raise 5 min	\$1.10	-0.02	-\$0.02
		Hydro Tasmania	GORDON	Raise 5 min	\$1.10	0.18	\$0.20
		Macquarie Generation	BW02	Raise reg	\$0.02	-1.15	-\$0.02
		<b>Spot price</b>		<b>\$9284/MWh</b>			

\*Price capped to \$10 000/MWh



## Queensland – 1 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
12:35	\$6999.45	Delta Electricity	CG1	Energy	\$8000.00	0.44	\$3499.76
		Delta Electricity	CG2	Energy	\$8000.00	0.44	\$3499.76
12:40	\$7840.58	Delta Electricity	VP5	Energy	\$8803.58	0.89	\$7840.47
		Hydro Tasmania	GORDON	Raise 5 min	\$1.10	0.89	\$0.98
		Delta Electricity	VP5	Raise reg	\$1.00	-0.89	-\$0.89
12:45	\$8009.92	Delta Electricity	MM3	Energy	\$9000.00	0.89	\$8009.91
12:50	\$8748.64	Eraring Energy	ER03	Energy	\$9900.00	0.88	\$8748.63
12:55	\$9702.77	CS Energy	SWAN_B_1	Energy	\$9702.77	0.25	\$2466.83
		CS Energy	SWAN_B_3	Energy	\$9702.77	0.24	\$2302.37
		CS Energy	SWAN_B_4	Energy	\$9702.77	0.25	\$2466.83
		CS Energy	SWAN_B_2	Energy	\$9702.77	0.25	\$2466.83
13:00	\$9028.44	Macquarie Generation	BW02	Energy	\$8906.00	1.01	\$9032.64
		Hydro Tasmania	GORDON	Energy	\$38.30	-0.16	-\$6.01
		Basslink	T-V-MNSP1VIC1	Energy	\$0.01	-0.14	\$0.00
		Hydro Tasmania	GORDON	Lower 5 min	\$0.40	-0.14	-\$0.06
		TRUenergy (Vic)	YWPS3	Lower 5 min	\$0.05	0.14	\$0.01
		Hydro Tasmania	GORDON	Lower 60 sec	\$0.20	-0.14	-\$0.03
		Hydro Tasmania	JBUTTERS	Lower 6 sec	\$0.05	-0.24	-\$0.01
		Hydro Tasmania	GORDON	Lower 6 sec	\$0.05	0.10	\$0.00
		Delta Electricity	WW7	Raise 5 min	\$2.00	0.87	\$1.74
		Hydro Tasmania	JBUTTERS	Raise 5 min	\$1.10	-0.01	-\$0.02
		Hydro Tasmania	GORDON	Raise 5 min	\$1.10	0.16	\$0.17
		Macquarie Generation	BW02	Raise reg	\$0.02	-1.01	-\$0.02

**Spot price \$8388/MWh**

\*Price capped to \$10 000/MWh

## New South Wales – 1.30 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
13:05	\$10 000.00	Delta Electricity	CG1	Energy	\$10 000.00	0.50	\$5000.00
		Delta Electricity	CG2	Energy	\$10 000.00	0.50	\$5000.00
13:10	\$10 000.00	Delta Electricity	CG1	Energy	\$10 000.00	0.50	\$5000.00
		Delta Electricity	CG2	Energy	\$10 000.00	0.50	\$5000.00
13:15	\$8000.00	Delta Electricity	CG1	Energy	\$8000.00	0.50	\$4000.00
		Delta Electricity	CG2	Energy	\$8000.00	0.50	\$4000.00
13:20	\$9000.00	Delta Electricity	MM3	Energy	\$9000.00	1.00	\$9000.00
13:25	\$145.32	Stanwell	GSTONE1	Energy	\$135.24	0.54	\$72.66
		Stanwell	GSTONE2	Energy	\$135.24	0.54	\$72.66
13:30	\$80.70	Stanwell	STAN-1	Energy	\$75.65	1.05	\$79.60
		Stanwell	GSTONE2	Raise reg	\$1.99	1.05	\$2.09
		Stanwell	STAN-1	Raise reg	\$0.94	-1.05	-\$0.99

**Spot price \$6204/MWh**

## Queensland – 1.30 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
13:05	\$8918.69	Delta Electricity	CG1	Energy	\$10 000.00	0.45	\$4459.30
		Delta Electricity	CG2	Energy	\$10 000.00	0.45	\$4459.30
13:10	\$9043.26	Delta Electricity	CG1	Energy	\$10 000.00	0.45	\$4521.60
		Delta Electricity	CG2	Energy	\$10 000.00	0.45	\$4521.60
13:15	\$7181.14	Delta Electricity	CG1	Energy	\$8000.00	0.45	\$3590.56
		Delta Electricity	CG2	Energy	\$8000.00	0.45	\$3590.56
13:20	\$8026.82	Delta Electricity	MM3	Energy	\$9000.00	0.89	\$8026.83
13:25	\$135.24	Stanwell	GSTONE1	Energy	\$135.24	0.50	\$67.62
		Stanwell	GSTONE2	Energy	\$135.24	0.50	\$67.62
13:30	\$76.70	Stanwell	STAN-1	Energy	\$75.65	1.00	\$75.65
		Stanwell	GSTONE2	Raise reg	\$1.99	1.00	\$1.99
		Stanwell	STAN-1	Raise reg	\$0.94	-1.00	-\$0.94

**Spot price \$5564/MWh**

## New South Wales – 3.30 pm

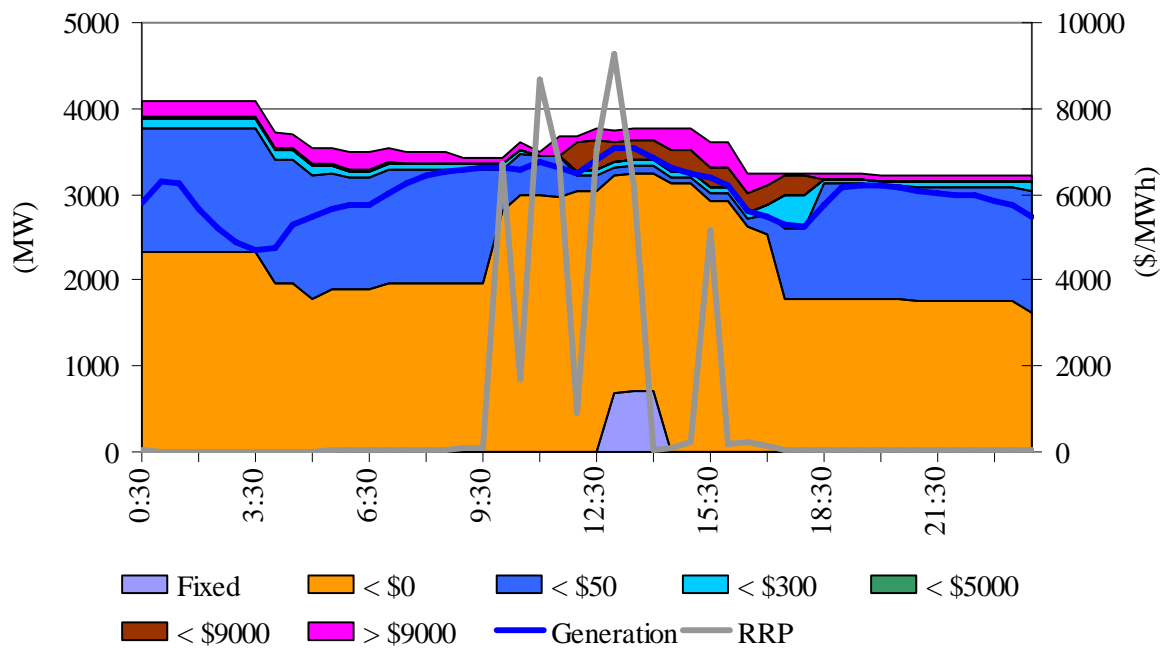
Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
15:05	\$299.48	Snowy Hydro	TUMUT3	Energy	\$299.48	1.00	\$299.48
15:10	\$293.07	Tarong	W/HOE#1	Energy	\$274.68	1.07	\$293.08
15:15	\$320.25	Tarong	TARONG#2	Energy	\$295.79	0.54	\$160.13
		Tarong	TARONG#3	Energy	\$295.79	0.54	\$160.13
15:20	\$10 000	Macquarie Generation	BW01	Energy	\$8958.00	1.12	\$10020.15
		TRUenergy	TALWA1	Energy	-\$996.81	-0.12	\$118.19
		Hydro Tasmania	GORDON	Raise 5 min	\$1.75	1.12	\$1.96
		Macquarie Generation	BW01	Raise reg	\$0.40	-1.12	-\$0.45
15:25	\$10 000.00	Delta Electricity	CG2	Energy	\$10 000.00	1.00	\$10 000.00
15:30	\$10 000.00	Delta Electricity	CG2	Energy	\$10 000.00	1.00	\$10 000.00
<b>Spot price</b>		<b>\$5152/MWh</b>					

\*Price capped to \$10 000/MWh

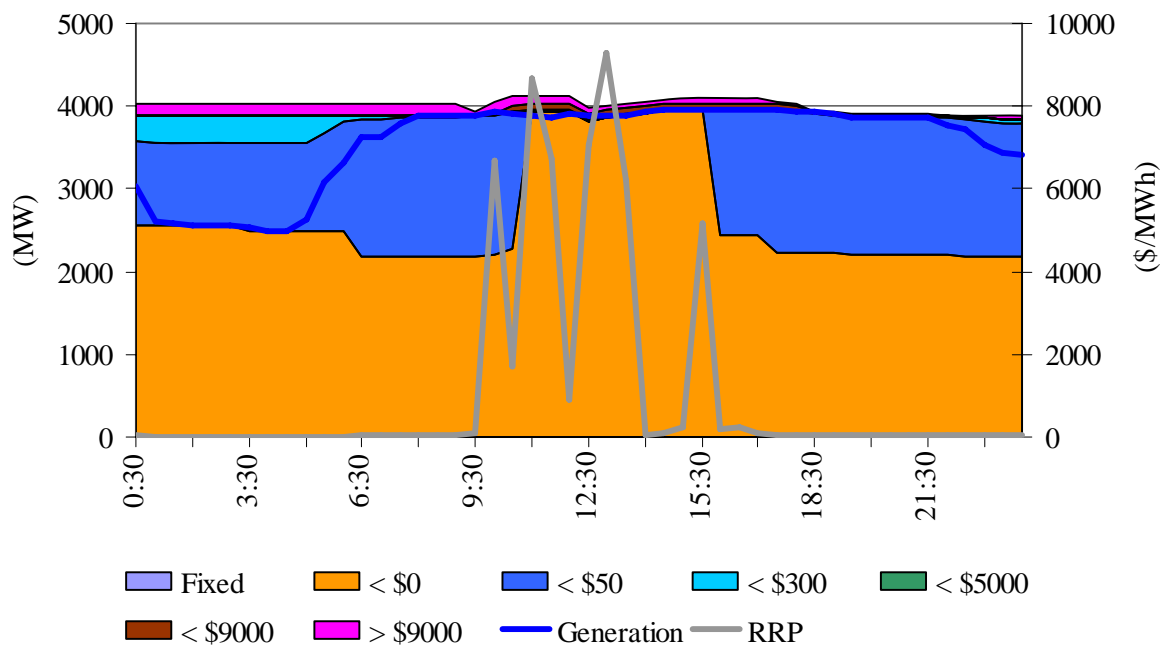
## Appendix B – Closing bids

Figures B1 – B10 highlight the half hour closing bids for participants in New South Wales and then for Queensland with significant capacity priced at or above \$5000/MWh during the trading interval in which the spot price exceeded \$5000/MWh. It also shows the generation output of that participant and the spot price.

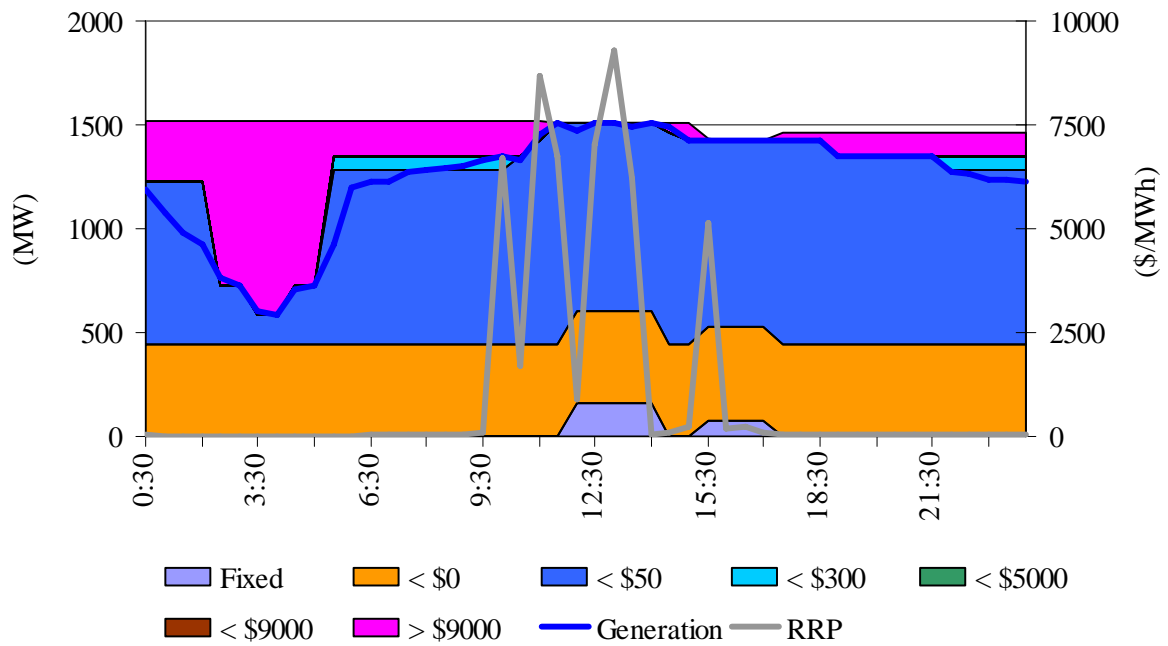
**Figure B1: Delta Electricity closing bid prices, dispatch and spot price**



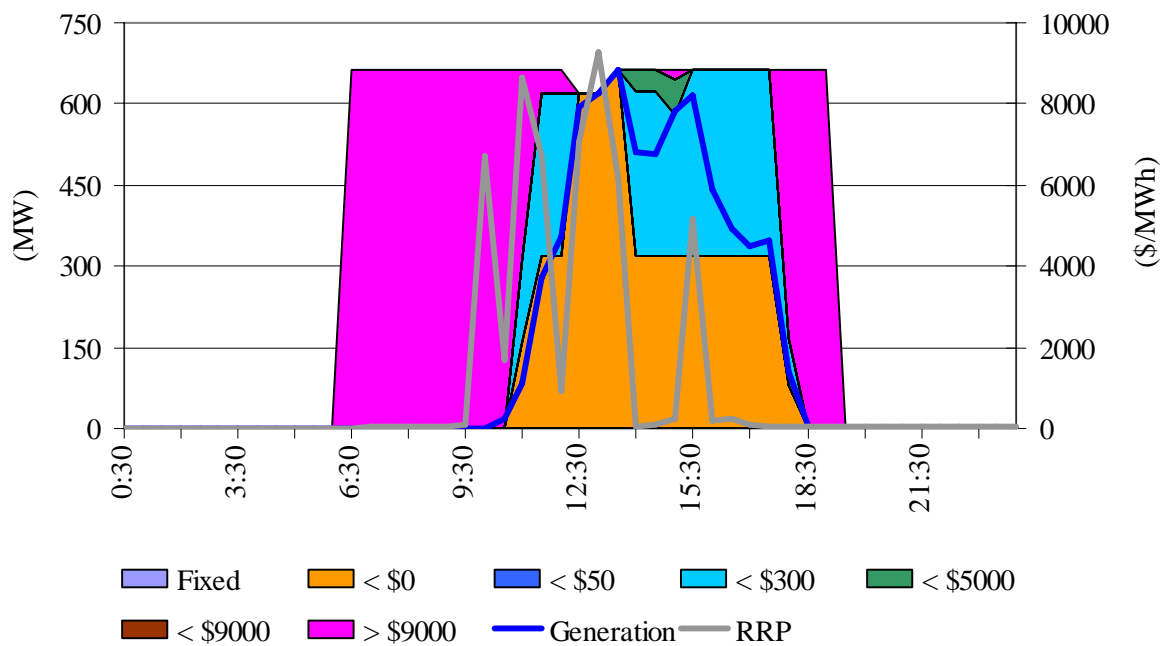
**Figure B2: Macquarie Generation closing bid prices, dispatch and spot price**



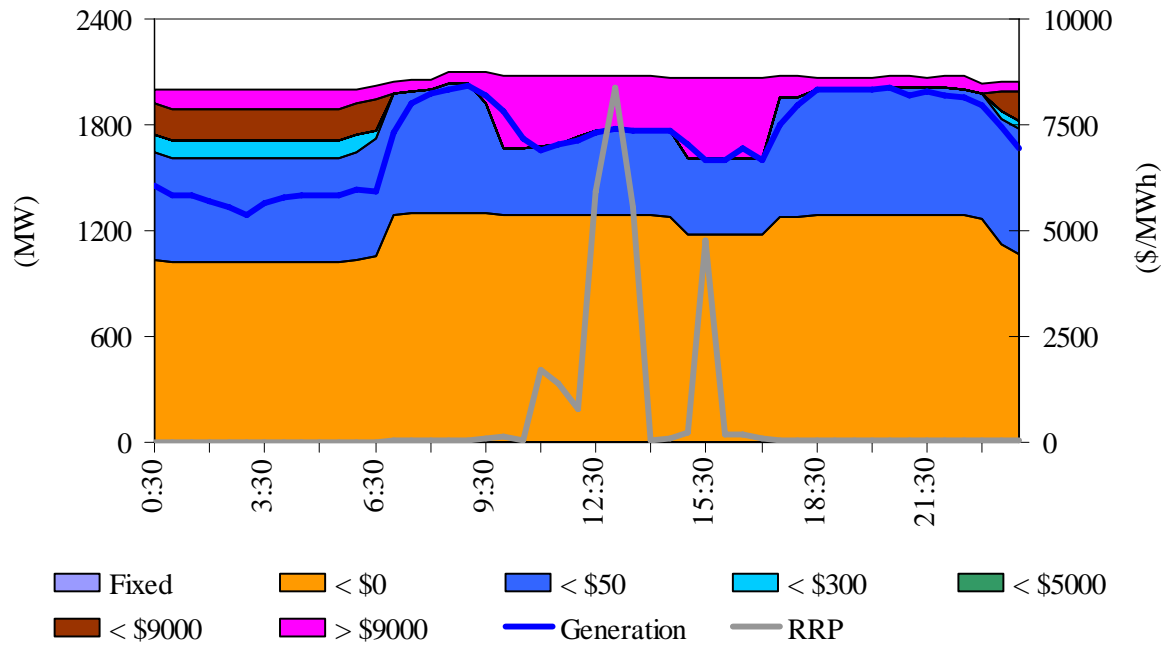
**Figure B3: Eraring Energy bid prices, dispatch and spot price**



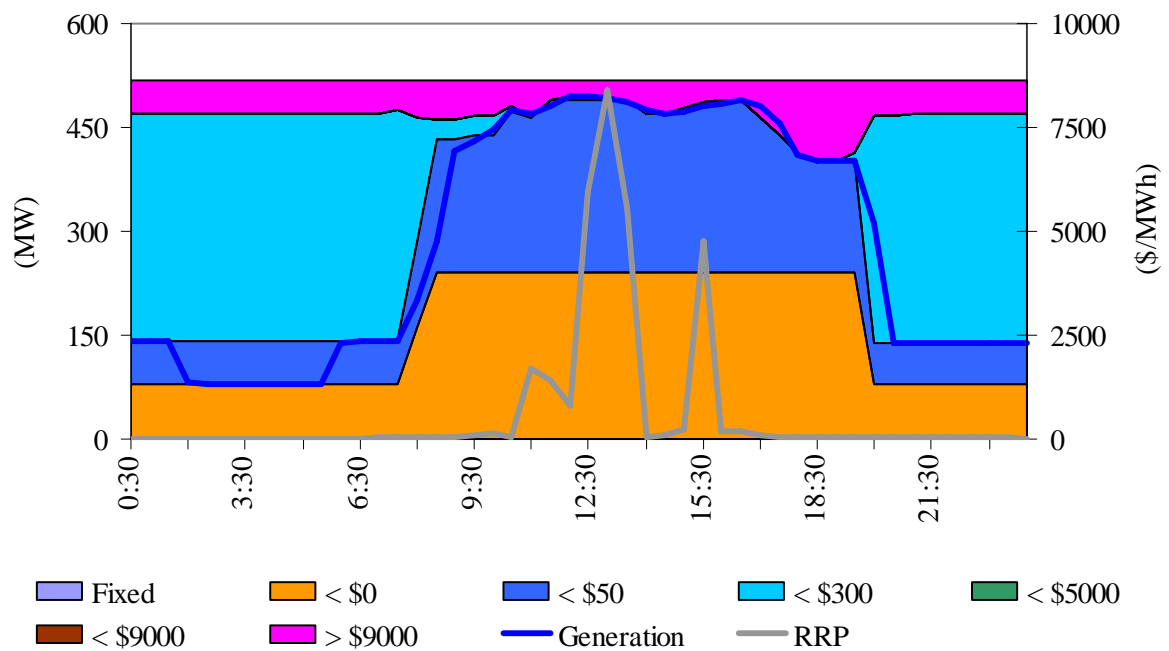
**Figure B4: Origin Energy (New South Wales) bid prices, dispatch and spot price**



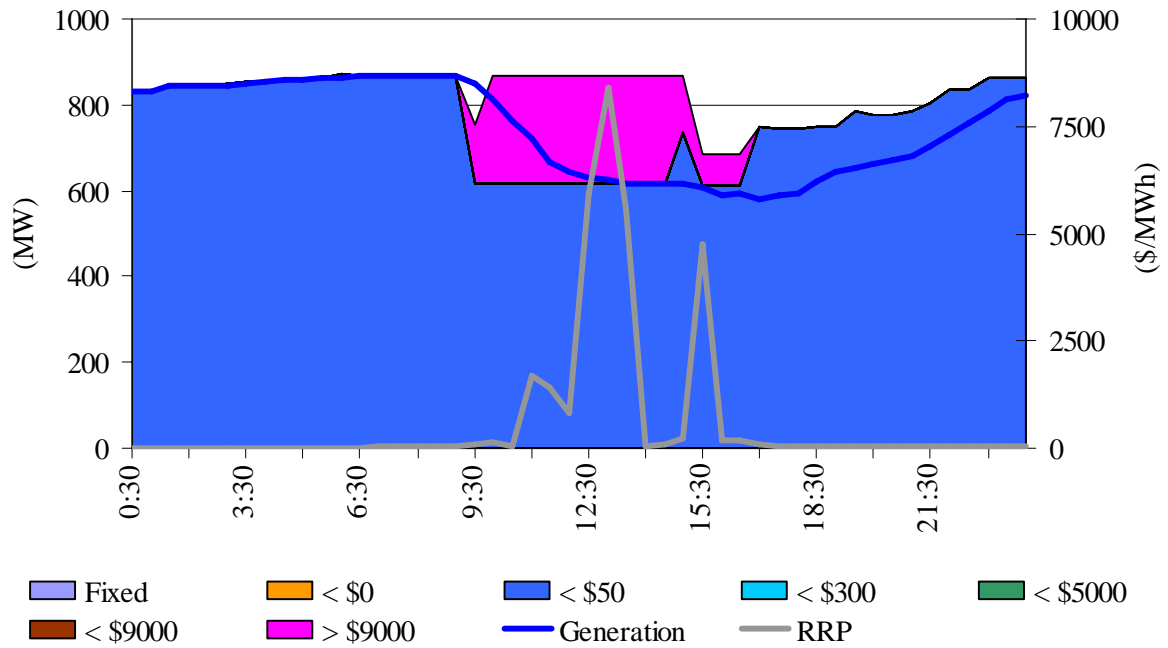
**Figure B5: CS Energy closing bid prices, dispatch and spot price**



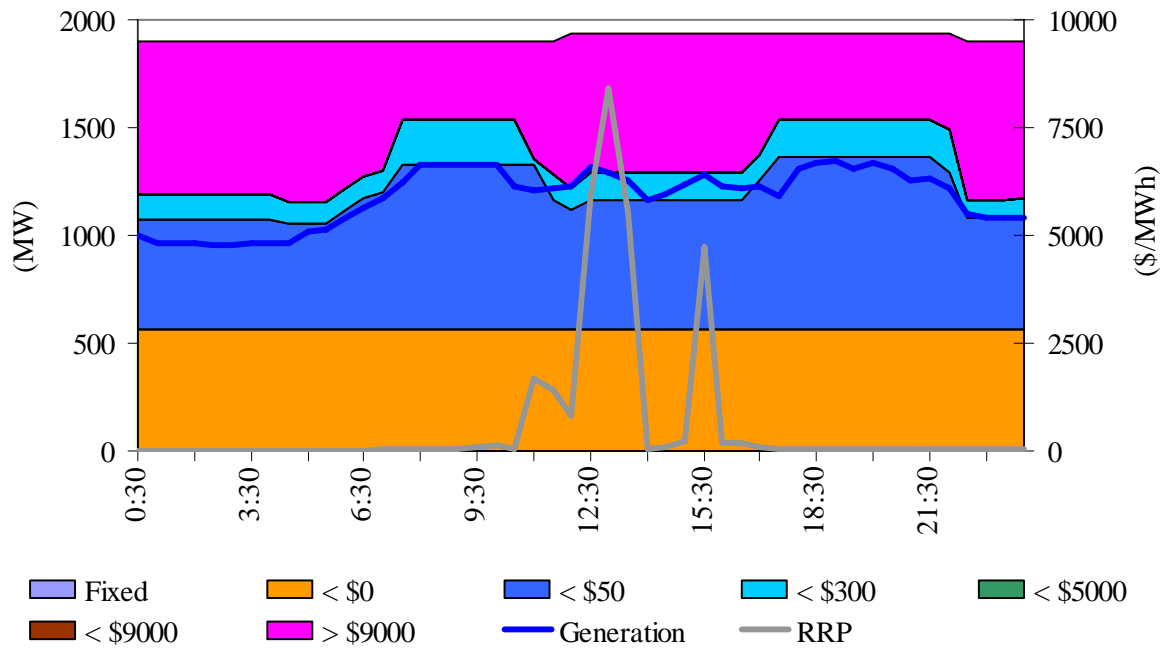
**Figure B6: ERM Power and Arrow closing bid prices, dispatch and spot price**



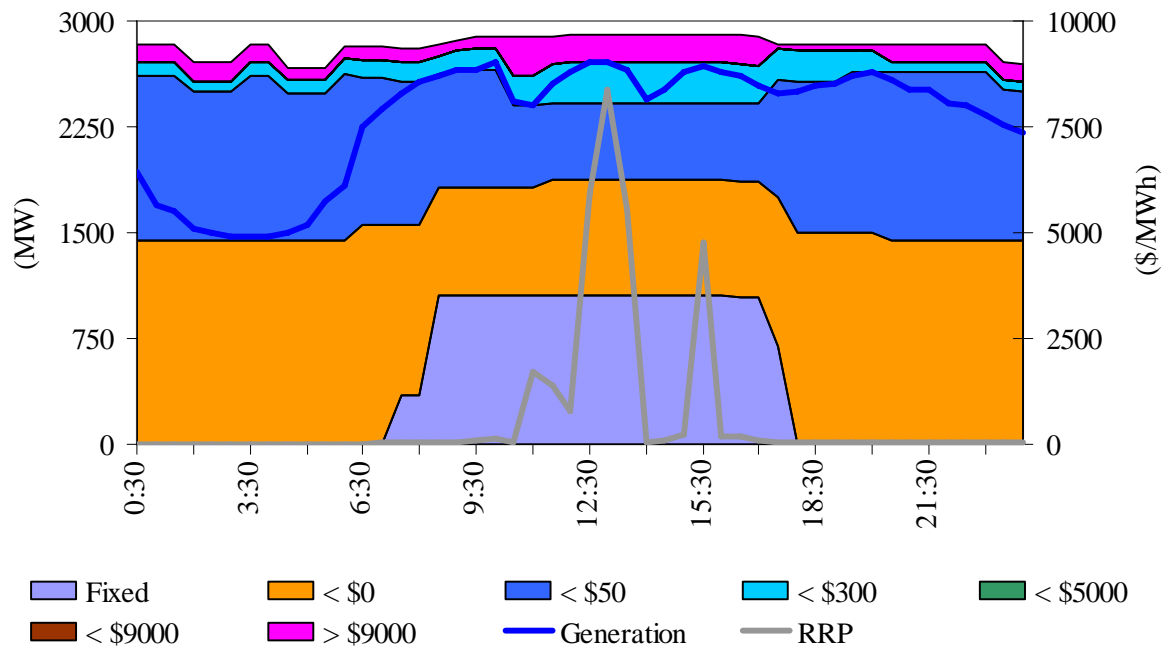
**Figure B7: Millmerran closing bid prices, dispatch and spot price**



**Figure B8: Tarong Energy bid prices, dispatch and spot price**



**Figure B9: Stanwell bid prices, dispatch and spot price**



**Figure B10: Callide Power Trading bid prices, dispatch and spot price**

