Electricity spot prices above $5000/MWh

15 January 2014
South Australia and Victoria

AUSTRALIAN ENERGY REGULATOR

Introduction

The AER is required to publish a report whenever the electricity spot price exceeds $5000/MWh.[1] The report:

- describes the significant factors contributing to the spot price exceeding $5000/MWh, including withdrawal of generation capacity and network availability;
- assesses whether rebidding contributed to the spot price exceeding $5000/MWh;
- identifies the marginal scheduled generating units; and
- identifies all units with offers for the trading interval equal to or greater than $5000/MWh and compares these dispatch offers to relevant dispatch offers in previous trading intervals.

Summary

At 4 pm on Wednesday 15 January 2014, the spot price reached $6213/MWh and $5972/MWh in South Australia and Victoria respectively. These prices were lower than forecast in all half-hour pre-dispatch forecasts.

These high price events occurred on the third day of a heat wave that affected South Australia, Victoria and southern New South Wales. On the day, the maximum temperature in Melbourne reached 41.7 degrees[2] with a minimum of 28.6 degrees, while in Adelaide the maximum temperature was 43.7 degrees (at 4 pm) with a minimum of 27.1 degrees. The event occurred in mid-January, which meant that industry was back on-line after the Christmas break.

Demand[3] reached its maximum of 10 042 MW in Victoria[4] at 4 pm (the time of high prices) and in South Australia demand reached a maximum of 3108 MW at 6 pm[5] (demand was 2960 MW at 4 pm).

Five-minute dispatch prices were aligned across the two regions and had been fluctuating between negative prices and high levels (several at the price cap) since 12.30 pm. Effectively the two regions were behaving as one combined region and, therefore, we consider it appropriate to analyse the pricing outcomes in both regions. In both regions the high 4 pm spot prices resulted from very high dispatch prices in the first three dispatch intervals.

Supply conditions across the two regions were extremely tight on the day. Indeed, AEMO issued Lack of Reserve (LOR) Level 3 market notices as forecasts indicated there was insufficient capacity available in the South Australian and Victorian regions to meet demand, and that if the forecasts were realised customers would need to be interrupted to maintain system security. Forecast LOR3

1 This requirement is set out in clause 3.13.7 (d) of the National Electricity Rules.
2 At 4 pm the temperature in Melbourne was 38.6 degrees.
3 Total demand is used as the measure of demand in this report.
4 Record demand for Victoria is 10 415 MW and occurred on 29 January 2009.
5 Record demand for South Australia is 3381 MW and occurred on 31 January 2011.

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conditions occur only infrequently. In response to the forecast LOR3 AEMO engaged the Reliability and Emergency Reserve Trader (RERT)[6] provision, but these were not exercised as the improved capability of Basslink provided adequate capacity to meet demand.

During the 4 pm trading interval there was no capacity priced between $100/MWh and $8000/MWh, and, as a consequence, small changes in demand, small reductions in import capacity from Tasmania, and some rebidding triggered large increases in price.

Prices were forecast to be greater than $12 000/MWh in South Australia and Victoria more than 12 hours earlier. While actual prices still exceeded $5000/MWh on the day, they were lower than forecast because:

- Actual demand was lower than that which had been forecast by AEMO.
- Basslink being available for more than 500 MW when it had been forecast to be unavailable.
- Participants rebidding capacity from high prices to low prices.
- To a small extent wind generation being higher than forecast.

Almost 1000 MW was made unavailable the day before, however no significant capacity was withdrawn from the market on the day. Around 1000 MW of capacity in South Australia and Victoria was rebid such that 95 per cent of the available capacity was offered at prices less than zero and only 2 per cent was offered at prices greater than $5000/MWh.

Solar power provided a significant contribution to a reduction in demand and potentially delayed the South Australian peak demand. However, cloudy conditions on the afternoon of 15 January made the contribution of solar potentially less predictable.

Analysis

The events leading to the high prices in the 4 pm trading interval are complex. As discussed previously, prices in the two regions were aligned for several hours. The following provides a summary of the events of each of the dispatch intervals in the 4 pm trading interval in chronological order. The specifics of these trading intervals are expanded upon elsewhere in this report.

4 pm trading interval

The 4 pm trading interval is comprised of the six dispatch intervals from 3.35 pm to 4 pm inclusive. At 3.30 pm, just prior to the start of the 4 pm trading interval, the dispatch price was $62/MWh in Victoria and $65/MWh in South Australia.

During the 4 pm trading interval there was no capacity priced between $100/MWh and $8000/MWh, and as a consequence small changes in demand, small reductions in import capacity from Tasmania and some rebidding triggered large increases in price.

3.35 pm

As shown in Appendix A, at 3.21 pm GDF Suez rebid 110 MW of capacity at Loy Yang B from low prices to high prices and at 3.24 pm Snowy Hydro rebid 152 MW of capacity at Laverton North from low prices to high prices. Both rebids became effective at 3.35 pm. At the same time imports into

[6] A key objective in the provision of electricity services in the National Electricity Market (NEM) is the reliable and secure supply of electricity to customers. A reliable supply of electricity minimises the interruptions to supply experienced by electricity customers. The RERT is as a 'safety net' designed to allow the Australian Energy Market Operator (AEMO) to procure reserves to ensure reliability and security of supply.

Victoria from Tasmania across the Basslink interconnector reduced by around 70 MW, and there was a small increase (only 8 MW) in combined demand across the two regions.

There was insufficient low-cost generation to meet demand. Capacity priced at $12 000/MWh at Loy Yang B was dispatched, but because it was ramp rate limited it did not set the price. However, 9 MW of high priced generation at Yallourn was dispatched, setting the price at $12 899/MWh in Victoria and (due to transmission losses) at the price cap in South Australia.

3.40 pm

Demand increased slightly in the two regions (12 MW) and Loy Yang B increased its output. Since Loy Yang B was no longer ramp limited, it set the price at $12 000/MWh in Victoria and $12 409/MWh in South Australia.

3.45 pm

Imports into Victoria across Basslink increased by 99 MW and the combined regional demand fell by 14 MW. High-priced Loy Yang B generation was no longer required and instead GDF Suez's Dry Creek station set the dispatch price at $11 005/MWh in South Australia and $10 554/MWh in Victoria.

3.50 pm

A small increase in imports (39 MW) into Victoria across the Vic-NSW interconnector, a reduction in combined regional demand (10 MW) and an increase in the capacity of Basslink enabled low cost generation in Tasmania to be dispatched, setting the price at $568/MWh in Victoria and $594/MWh in South Australia.

3.55 pm and 4 pm

Combined regional demand fell further in the 3.55 pm and 4 pm dispatch intervals by 69 MW and 56 MW respectively and dispatch prices fell to around $110/MWh and $60/MWh respectively.

Demand, generator and network availability are discussed in detail in the following sections.

Demand

In January 2014 a heat wave over a number of consecutive weekdays in South Australia and Victoria led to near record demands in those regions. For the second time in five years, Adelaide[7] experienced a period of five consecutive days (13 to 17 Jan) of temperatures greater than 40°degrees and Melbourne experienced its first recorded period of four consecutive days above 41°C (14-17 Jan).

Figure 1 shows total demand and sources of supply. Figure 2 shows the cumulative contribution of various sources of supply on the day (including estimates of PV and demand side response) in a stacked chart.

[7] Recorded at Kent Town

Figure 1: Demand and sources of supply for 15 January 2014 for South Australia

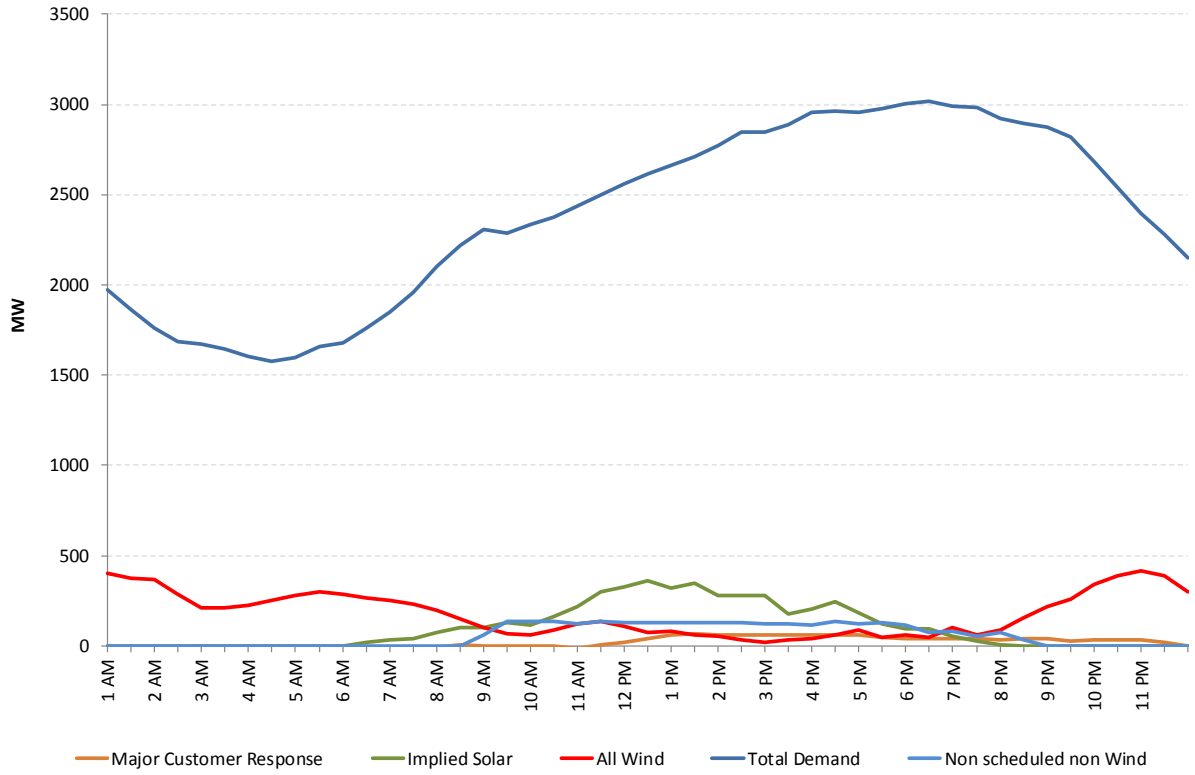


Figure 2: Sources of supply and spot price for 15 January 2014 for South Australia

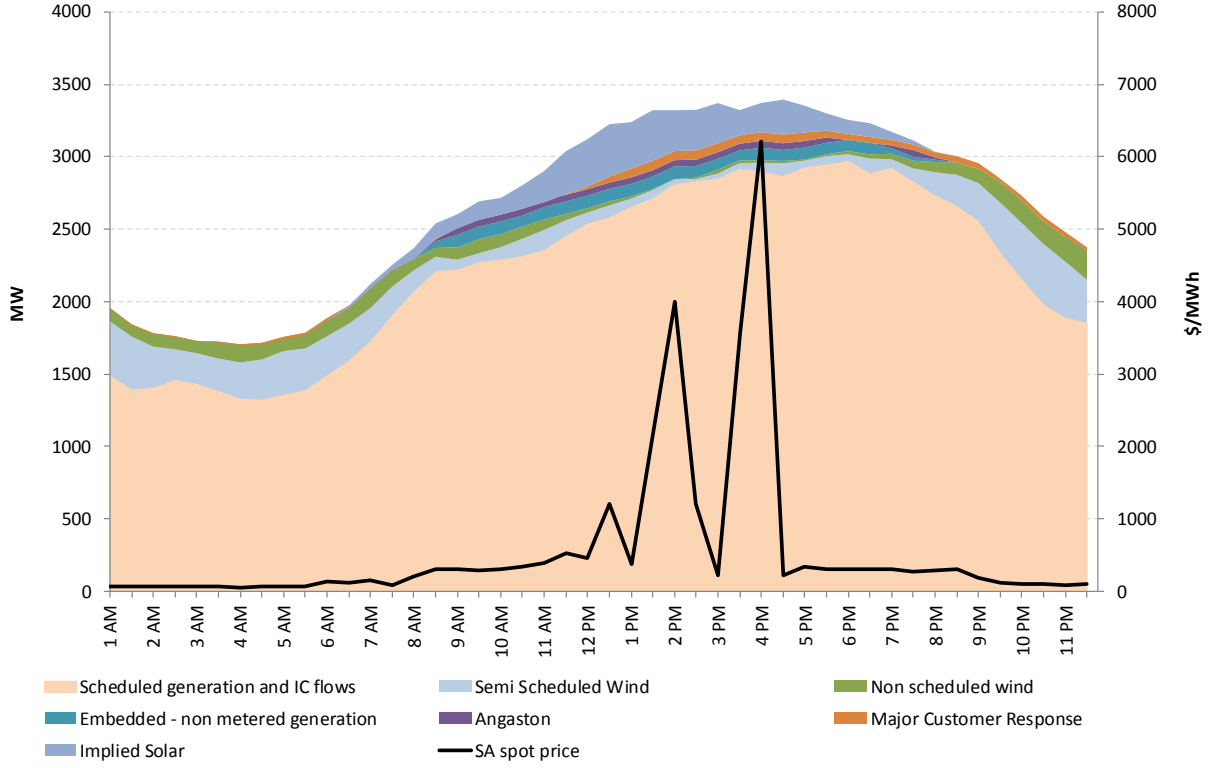


Figure 2 shows the different sources of potential supply for South Australia (it was not possible, in the time available, to secure the same level of information for Victoria). The reduction in the rate of increase in total demand at about 8.30 am is matched by an increase in embedded non-metered generation (such as from the Lonsdale and Port Stanvac reciprocating engine sets and Mini hydro -

shown in aqua), output from the Angaston reciprocating engine sets (shown in purple), and non-scheduled wind generation (shown in light green). All of these sources of generation offset customer consumption reducing the demand to be met by the NEM. Some customer response, shown in orange, was also detected, further reducing NEM demand. Had solar, embedded non-metered, non-scheduled non-wind generation and customer response not been available, we estimate that maximum demand for the day would have been around 3400 MW[8] at around 4.30 pm (typical of the time that peak customer demand has historically occurred, around 4.30 pm and 5.00 pm).

Figure 1 also shows the contribution from PV. As expected, the output from PV started soon after sunrise d at around 7.30 am and ended at about 8 pm. The PV data used in figures 1 and 2 shows that the output of these systems varied significantly across the day, reflecting the cloudy conditions. The real contribution from PV could be somewhat different to that represented as our approximation of the performance is based on a sample[9] of output data from actual PV systems operating on that day[10].

Non-scheduled non wind output is derived from meter data for a number of embedded reciprocating engine sites in the region (for example, Lonsdale and the Port Stanvac engines). Total capacity from this energy source is approaching 85 MW.

Our estimate of customer response has been calculated from the meter data for a number major customers in the region. These customers exhibited noticeably lower demand on this day than on days before and after the event. These sources made a significant contribution, offsetting generation from scheduled sources from quite early in the day until around 6.30 pm. The high price forecasts published by AEMO in predispatch may have encouraged these businesses to change their consumption behaviour and does not appear to have been accounted for in AEMO's forecasts.

Tables 1 and 2 show, for South Australia and Victoria respectively, actual and forecast price, demand and available capacity for the eight trading intervals between 12.30 pm and 4 pm (inclusive) compared to forecast four and twelve hours from dispatch.[11]

Table 1: Actual and forecast demand, spot price and available capacity in South Australia

Time	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
12:30 PM	1200	10 516	9890	2665	2799	2793	3094	3105	3156
1:00 PM	369	13 099	10 417	2711	2896	2799	3073	3065	3134
1:30 PM	2146	13 099	10 521	2770	2968	2890	3073	3050	3112
2:00 PM	4004	13 100	13 099	2844	3034	2959	3040	3040	3100
2:30 PM	1200	13 100	13 080	2847	3068	3029	3021	3036	3081
3:00 PM	220	13 100	13 099	2885	3111	3064	3040	3037	3073
3:30 PM	3570	13 100	13 100	2957	3162	3110	3027	3035	3068

8 This figure does not include distribution loss factor (DLF) for the solar increasing its effective contribution.

9 The sample was not a statistically significant portion of the approximately 170 000 systems in South Australia.

10 The data is sourced from PVOutput.org from around 20 systems with capacity between 3 and 10 kW distributed around Adelaide with 5 minute recording of PV output.

11 The weekly report from 12 to 18 January 2014 stated that we would investigate all of these prices as part of this report.

Time	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
4:00 PM	6213	13 100	13 100	2960	3195	3163	3072	3036	3070

Table 2: Actual and forecast demand, spot price and available capacity in Victoria

Time	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
12:30 PM	1189	10 271	10 058	9887	9877	9298	9884	10 133	10 204
1:00 PM	338	12 946	10 070	9920	10 077	9464	9914	10 135	10 201
1:30 PM	2053	12 990	12 681	9980	10 165	9545	9931	10 083	10 145
2:00 PM	3884	13 100	12 705	9993	10 417	9624	9914	10 066	10 193
2:30 PM	1127	13 100	12 986	9985	10 383	9710	9872	9899	10 048
3:00 PM	203	13 100	12 738	9968	10 326	9884	9849	9912	10 035
3:30 PM	3331	13 100	12 733	10 001	10 536	9980	9853	9871	10 010
4:00 PM	5972	13 075	12 689	10 042	10 549	10 101	9881	9868	9993

The tables show that over the period, demand was consistently lower than the four hour forecast—up to a maximum of 235 MW in South Australia and 535 MW in Victoria. This contributed to the actual price being lower than forecast. The tables also show that the 12 hour ahead demand forecasts were closer to actual demand than the four hours ahead forecasts.

Variations between forecast and actual demand across the day are shown graphically in figures 3 and 4. The figures show actual demand and forecast demands over several timeframes, ranging from 12 hours ahead up to half an hour prior to dispatch. Also shown on the figures is the actual spot price and the spot price forecast half an hour ahead.

Figure 3: Actual and forecast demands and prices in South Australia for 15 January 2014

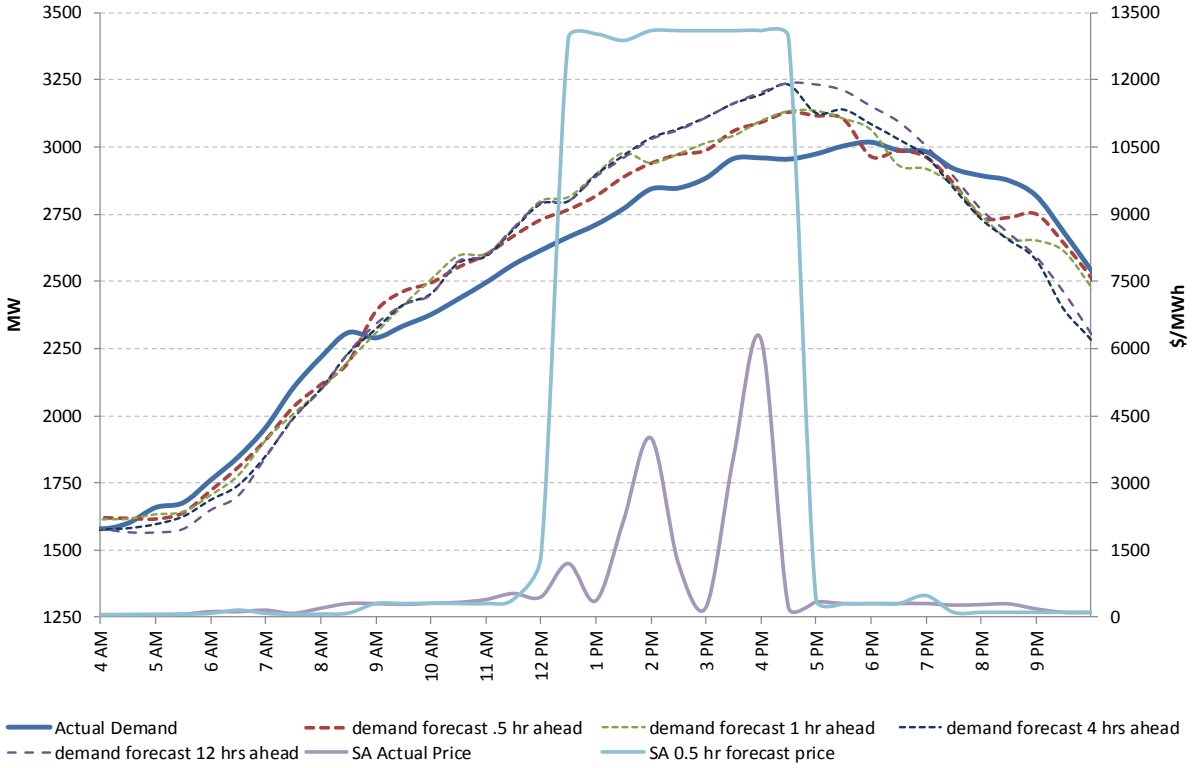
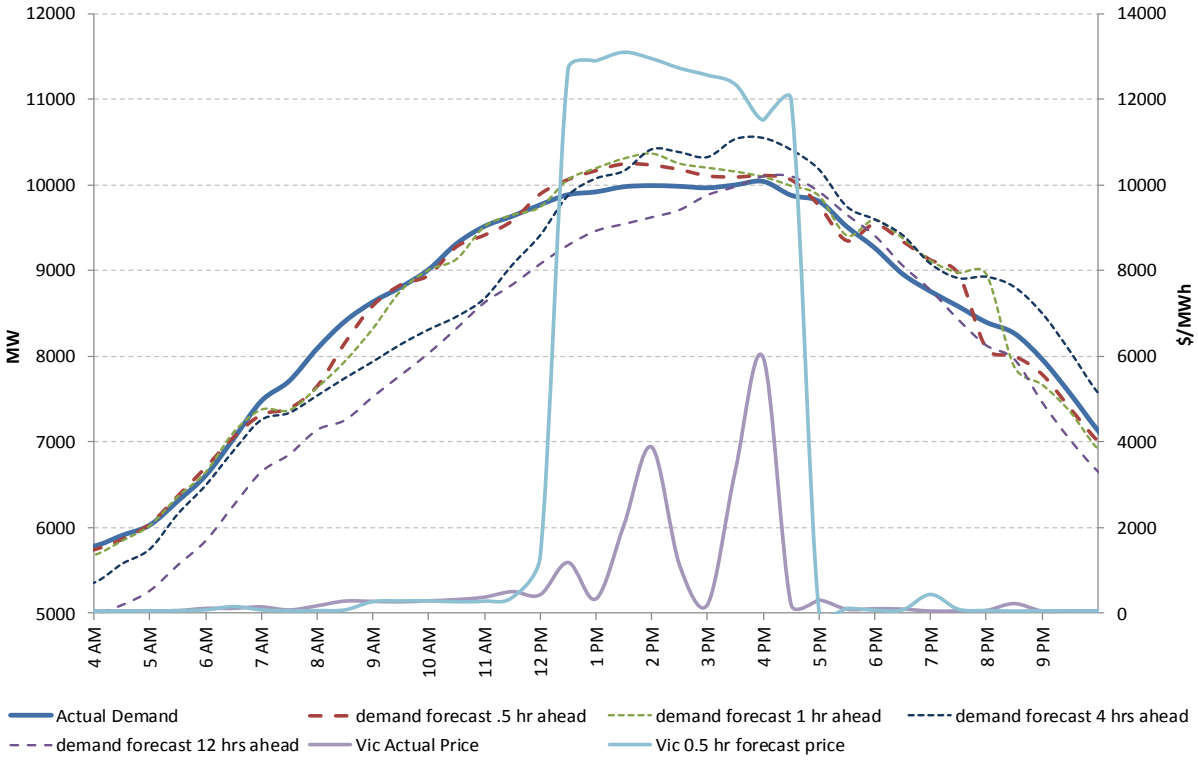


Figure 4: Actual and forecast demands and prices in Victoria for 15 January 2014



The light blue line in the figures shows that half an hour ahead, spot prices in both regions were forecast to exceed $5000/MWh from 12.30 pm to 4.30 pm. Demand forecasts are depicted by the broken lines. Again, the figures show that during the time of actual high prices (depicted by the lilac line), forecast demand was consistently higher than actual demand, even half an hour ahead of dispatch.

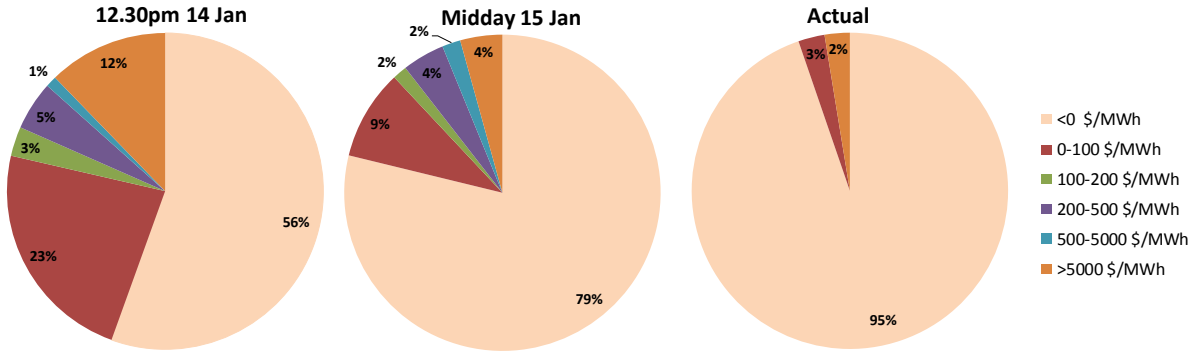
Generator Availability, Offers and Rebidding

Plant failures on 14 January at AGL's Torrens Island B unit 3 (200 MW) in South Australia, Loy Yang A unit 3 (around 560 MW) in Victoria, and cooling limitations at Loy Yang B reduced the capacity of the B1 and B2 units by 99 MW. The capacity of Loy Yang A1 and A4 was also affected by the ambient temperature conditions, leading to a reduction of 120 MW. In total the reduction in available capacity across the regions was around 1000 MW. Refer to Table A3 in Appendix A for details. We approached AGL, the owner of both Torrens Island and Loy Yang A, for evidence of the causes of these outages and were satisfied with their legitimacy.

Between first pre-dispatch run and the dispatch timeframes, approximately 1000 MW of capacity was rebid from prices above $5000/MWh to low prices across South Australia and Victoria, helping to reduce actual prices below forecast. Significant relevant rebids are detailed in Tables A.1 and A.2 in Appendix A.

Figure 5 shows how the rebids affected available capacity in a range of price bands. Starting from the left, the pie charts show three snapshots of the percentage of capacity available in various price bands as at: the first pre-dispatch[12] run for 15 January; four hours ahead; and at 4 pm. These charts show that, day ahead, 12 per cent of capacity was priced above $5000/MWh and 56 per cent priced at less than zero. Through rebidding (mainly early in the day), participants shifted capacity from above $5000/MWh to below zero until only 2 per cent of capacity remained above $5000/MWh.

Figure 5: Forecast and actual supply volume by price for generation in SA at 4 pm



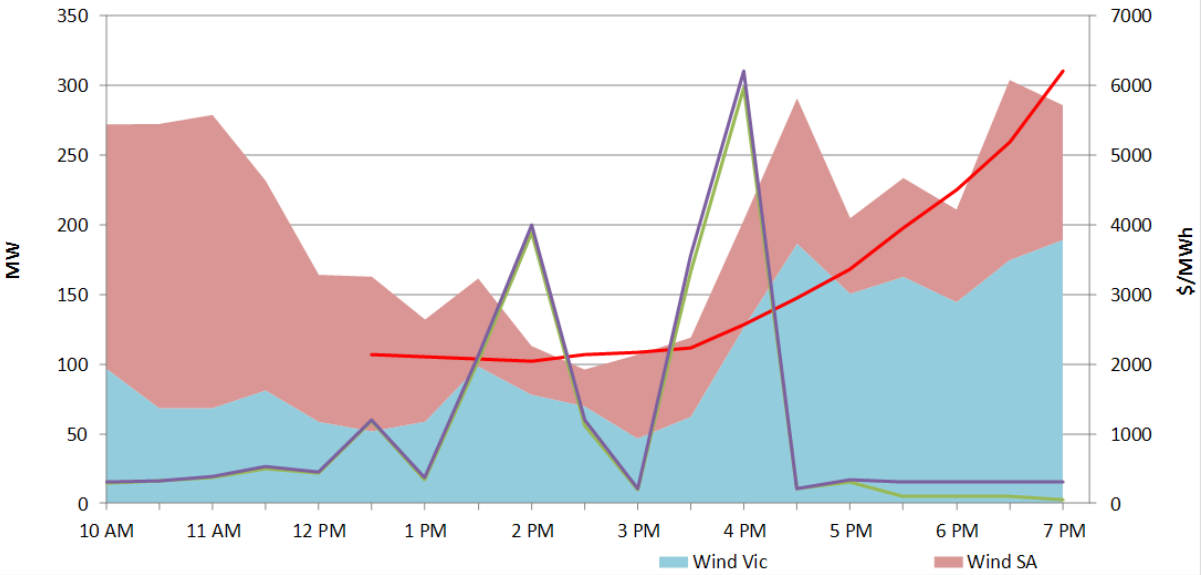
The generators involved in setting the price during the high-price periods, and how that price was determined by the market systems is detailed in **Appendix B**. The closing bids for all participants in South Australia with capacity priced at or above $5000/MWh for the high-price periods are set out in **Appendix C**.

Wind generation

Figure 6 shows total actual and forecast wind generation and spot prices in South Australia and Victoria. The figure shows that actual wind generation was above forecast (denoted by the red line) for the 4 pm trading interval, helping to reduce the actual price below forecast.

[12] First predispatch for the 15th of January was published ad 12.30 pm on the 14th of January 2014.

Figure 6: Wind output and spot prices in South Australia and Victoria



Network Availability

The Heywood interconnector was unconstrained during the high price period and prices in South Australia and Victoria were closely aligned (purple and green lines in figure 6). Flows across Murraylink were close to forecast but at low levels (importing into South Australia between zero and 60 MW). Flow into Victoria across the Vic-NSW interconnector for the 4 pm trading interval was 136 MW, slightly higher than forecast four hours ahead and despite initial forecasts to the contrary, Basslink was available on the day.

Basslink

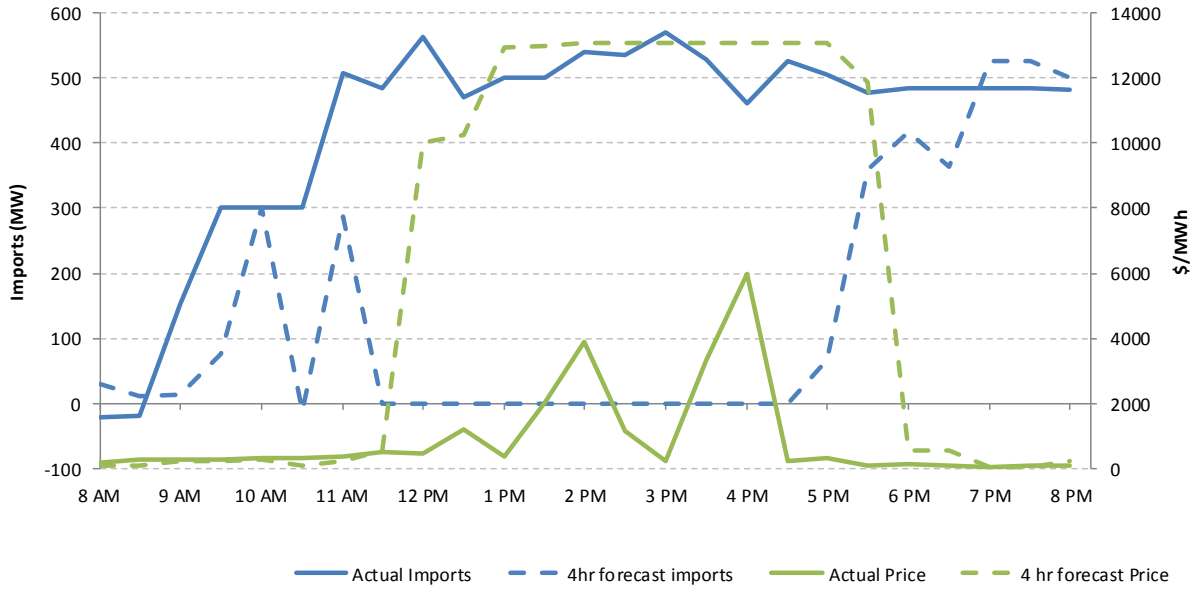
The capability of the Basslink interconnector is limited when temperatures reach particular (high) levels at the inverter stations at Loy Yang in Victoria and Bell Bay in Tasmania. When these temperatures are forecast the capacity of Basslink is rebid reflecting their operating envelope.

On 14 January temperatures at the inverter station in Victoria for 15 January were forecast to exceed Basslink's maximum allowable operating temperature. In response, the Basslink's day ahead availability for the 4 pm trading interval was zero. Fortuitously, at around 2.15 pm on 15 January, the temperatures at the Victorian end were significantly lower than had been previously forecast and as a result Basslink's availability was increased to 526 MW.

While the increase in available capacity from Basslink resulted in the cancelation of the forecast LOR 3 conditions in Victoria (discussed below under *Lack of reserve conditions*), it was not enough to prevent high prices.

Figure 7 below shows the actual and four hour forecast Victorian spot price and Basslink's availability. It shows that when Basslink's forecast availability was zero (the dotted blue line) the forecast price was high (represented by the dotted green line). However, as discussed above, actual temperatures weren't as high as forecast thereby allowing imports into Victoria across Basslink (solid blue line), reducing the actual price significantly below forecast (the solid green line).

Figure 7: Actual and 4 hour forecast Victorian prices and imports into Victoria across Basslink



Lack of Reserve Condition

Reductions in available capacity and high demand conditions resulted in a tight supply/demand situation. AEMO issued LOR 3 market notices as the forecasts indicated there was insufficient capacity available in the South Australian and Victorian regions to meet the anticipated peak demand, and that customers may need to be interrupted to maintain system security.

AEMO issues LOR notices when reserves are projected to be or are below critical levels. There are three types of LOR:

- **LOR1 -** Issued when, for the nominated period, AEMO considers there are insufficient short-term capacity reserves available. This capacity must be sufficient to provide complete replacement of the contingency capacity reserve when a critical single credible contingency event occurs in the nominated period.

- **LOR2 -** Issued when AEMO considers that the occurrence of a critical single credible contingency event is likely to require involuntary load shedding.

- **LOR3 -** Issued when AEMO considers that customer load (other than ancillary services or contracted interruptible loads) would be, or is actually being, interrupted automatically or manually in order to maintain or restore the security of the power system.

Figure 7 shows the relevant market notices for 15 January, when the notice was published, the times it was effective for and the reserve deficit.

Figure 7: LOR 3 market notices for 15 January

Notice id	Effective date	Description	When	Deficit
44525	14/01/2014 21:44	AEMO declares a LOR3 condition for the combined Victorian and South Australia Regions	4 pm to 4.30 pm 15 Jan	106 MW
44531	15/01/2014 5:15	Update LOR3 in the Victorian and South Australia	3.30 pm to 4.30 pm 15 Jan	172 MW

Notice id	Effective date	Description	When	Deficit
44539	15/01/2014 8:14	Update LOR3 in the Victorian and South Australia	2 pm to 5 pm 15 Jan	290 MW
44546	15/01/2014 10:22	Update LOR3 in the Victorian and South Australia	1 pm to 5 pm 15 Jan	545 MW
44560	15/01/2014 13:47	Update LOR3 in the Victorian and South Australia If there is insufficient market response to the LOR3 condition, AEMO intends to intervene by dispatching Reliability and Emergency Reserve Trader contracts (refer NER clause 3.20) to enable AEMO to maintain the power system in a reliable operating state.	3 pm to 5 pm 15 Jan	468 MW
44577	15/01/2014 15:17	LOR3 in the Victorian and South Australia Regions cancelled at 3 pm.	3 pm to 5 pm 15 Jan	

As can be seen in Figure 7, the LOR3 was not forecast until around 9.45 pm, around two hours after the loss of the Loy Yang and Torrens Island units at around 7.30 pm on 14 January. The AER sought clarification from AEMO regarding the delay between the unit outages and declaration of the LOR3 condition. AEMO indicated that it explored all additional avenues for securing more capacity prior to declaring the forecast LOR3 condition and activating the RERT. Forecasting an LOR3 condition is a significant event and the AER regards AEMO's diligence and time taken to investigate the market response as appropriate.

The forecast LOR 3 was cancelled shortly after the availability of Basslink was increased.

Australian Energy Regulator
March 2014

A Rebids

Table A.1and A.2 shows the significant rebids, the participant, unit, time price and the rebid reason for the 4 pm trading interval.

Table A.1: Significant rebids in Victoria for 15 January 2014

Time		Participant	Plant	Move			Reason
Submitted	Effective			MW	From $/MWh	To $/MWh	
5.41 am	5.50 am	Ecogen	Jeeralang B	80	>8900	1	05:40 P band adj portf plant condns newport capacity
7.56 am	11.35 am	Snowy Hydro	Laverton and Valley Power	351	>12 300	<-940	07:31 A Vic: 30MPD dem 155 hgr thn 30MPD 14:00@07:01
8.45 am	8.55 am	Ecogen	Newport	100	10 000	42	08:45 A band adj due to material change in vic demand
9.22 am	9.35 am	Ecogen	Jeeralang B 2	10	8932	-963	09:21 A band adj due to material change in demand
11.11 am	11.20 am	Ecogen	Jeeralang A1	30	>9700	-963	11:10 A band adj changed basslink conditions in predispatch
11.46 am	11.55 am	Snowy Hydro	Murray	58	12 900	>-980	11:45:A manage violating constraint V>>SML_NIL_1/V>>SML_NIL_8
12.03 pm	12.10 pm	Ecogen	Jeeralang A1	30	>9700	>12 501	12:02 A adj bands mat chg vic pd price fcst from 1235
12.41 pm	1.35 pm	Ecogen	Jeeralang B1	30	12501	-963	12:40 A band adj due to material change in pd price
1.01 pm	1.10 pm	Ecogen	Jeeralang B2,B3	40	12501	-963	13:01 P band adj portf plant condns yallourn vacuum limits
2.34 pm	2.45 pm	Ecogen	Jeeralang B1,B2,B3	50	12501	-963	14:32 P band adj portf plant condns yallourn plant limits
3.21 pm	3.35 pm	GDF Suez	Loy Yang B	110	42	11639	1521A chg in fcast - dec vic dem 5M 10005MW < 30MPD 10086MW
3.22 pm	3.30 pm	Ecogen	Newport	70	12 601	-994	15:21 A band adj due to material changes in pd price
3.24 pm	3.35 pm	Snowy Hydro	Laverton	152	<-994	>13 000	15:23:A Murray no longer constrained on in dispatch SL
Total				**587**			

Table A.2: Significant rebids in South Australia for 15 January 2014

Time		Participant	Plant	Move			Reason
Submitted	Effective			MW	From $/MWh	To $/MWh	
7.04 am	7.15 am	Energy Australia	Hallett	90	>10 200	-979	07:04 A band adj due to material change in SA demand
9.49 am	10 am	Energy Australia	Hallett	53	>10 200	-979	09:48 A band adj sa demand lower than forecast
11.04 am	11.10 am	GDF Suez	Mintaro	74	12 862	<394	1103A SA 5MD demand 2537MW < 3)MPD 2669MW HHE11:30
Total				**217**			

Table A.3 shows the significant capacity withdrawn from the market, the participant, unit, time price and the rebid reason for the 4 pm trading interval. All these rebids occurred on 14 January.

Table A.3: Significant withdrawal of capacity in South Australia and Victoria, 14 January 2014

Participant	Unit	Time of rebid	Reduced capacity (MW)	Capacity <$5000 (MW)	Capacity >$5000 (MW)	Reason
AGL	Loy Yang A3	4.28pm	280	280		16:18P reduction in avail cap::plant failure
		7.12pm	280	280		18:30P reduction in avail cap::unit trip 280MW
	Loy Yang A1,A4	8.41pm	120	120		20:31P reduction in avail cap::estimate ambient temp effects
	Torrens Island B3	7.15pm	200	180	20	18:35P reduction in avail cap::plant failure 200mw – steam leak
GDF Suez	Loy Yang B	10.51pm	99	99		2251P update avail: current ambient temperature sl
Total			**979**	**959**	**20**	

B Price setters for 15 January 2014

The following table identifies 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.[13] The 30-minute spot price is the average of the six dispatch interval prices.

South Australia – 4 pm

Time	Dispatch Price	Participant	Unit	Service	Offer price	Marginal Change	Contribution
15:35	$13 383.80*	TRUenergy (Vic)	YWPS1	Energy	$12 899.00	0.44	$5675.56
		TRUenergy (Vic)	YWPS4	Energy	$12 899.00	0.60	$7739.40
			ENOF,YWPS1,10,YWPS2,10		$0.00	17.48	$0.00
			ENOF,YWPS2,10,YWPS4,10		$0.00	24.03	$0.00
15:40	$12 409.33	GDF Suez	LOYYB1	Energy	$12 000.00	0.52	$6240.00
		GDF Suez	LOYYB2	Energy	$12 000.00	0.52	$6240.00
15:45	$11 004.50	GDF Suez	DRYCGT2	Energy	$11 004.50	1.00	$11 004.50
15:50	$594.02	Hydro Tasmania	MEADOWBK	Energy	$500.06	1.19	$595.07
		Hydro Tasmania	POAT220	Lower 60 sec	$0.50	1.08	$0.54
		Hydro Tasmania	GORDON	Lower 6 sec	$0.30	3.45	$1.04
		Hydro Tasmania	MEADOWBK	Lower 6 sec	$0.30	-2.37	-$0.71
		Hydro Tasmania	REECE2	Lower 5 min	$0.27	1.08	$0.29
		AGL Hydro	MCKAY1	Lower reg	$0.20	-1.08	-$0.22
		Basslink	T-V-MNSP1,VIC1	Energy	$0.01	1.08	$0.01
15:55	$110.20	GDF Suez	MINTARO	Energy	$110.20	1.00	$110.20
16:00	$62.26	Callide Power	CPP_3	Energy	$55.00	0.74	$40.70
		Callide Power	CPP_4	Energy	$55.00	0.39	$21.45
Spot Price		**$6213/MWh**					

* Price capped at the price cap of $13 100/MWh

Victoria – 4 pm

Time	Dispatch Price	Participant	Unit	Service	Offer price	Marginal Change	Contribution
15:35	$12 899.00	TRUenergy (Vic)	YWPS1	Energy	$12 899.00	0.42	$5417.58
		TRUenergy (Vic)	YWPS4	Energy	$12 899.00	0.58	$7481.42
			ENOF,YWPS1,10,YWPS2,10		$0.00	16.84	$0.00
			ENOF,YWPS2,10,YWPS4,10		$0.00	23.16	$0.00
15:40	$12 000.00	GDF Suez	LOYYB1	Energy	$12 000.00	0.50	$6000.00
		GDF Suez	LOYYB2	Energy	$12 000.00	0.50	$6000.00
15:45	$10 554.07	GDF Suez	DRYCGT2	Energy	$11 004.50	0.96	$10 564.32
15:50	$567.65	Hydro Tasmania	MEADOWBK	Energy	$500.06	1.13	$565.07
		Hydro Tasmania	POAT220	Lower 60 sec	$0.50	1.03	$0.52
		Hydro Tasmania	GORDON	Lower 6 sec	$0.30	3.30	$0.99
		Hydro Tasmania	MEADOWBK	Lower 6 sec	$0.30	-2.27	-$0.68
		Hydro Tasmania	REECE2	Lower 5 min	$0.27	1.03	$0.28
		AGL Hydro	MCKAY1	Lower reg	$0.20	-1.03	-$0.21
		Basslink	T-V-MNSP1,VIC1	Energy	$0.01	1.03	$0.01
15:55	$105.25	GDF Suez	MINTARO	Energy	$110.20	0.96	$105.79
16:00	$60.43	Callide Power	CPP_3	Energy	$55.00	0.72	$39.60
		Callide Power	CPP_4	Energy	$55.00	0.38	$20.90
Spot Price		**$5972/MWh**					

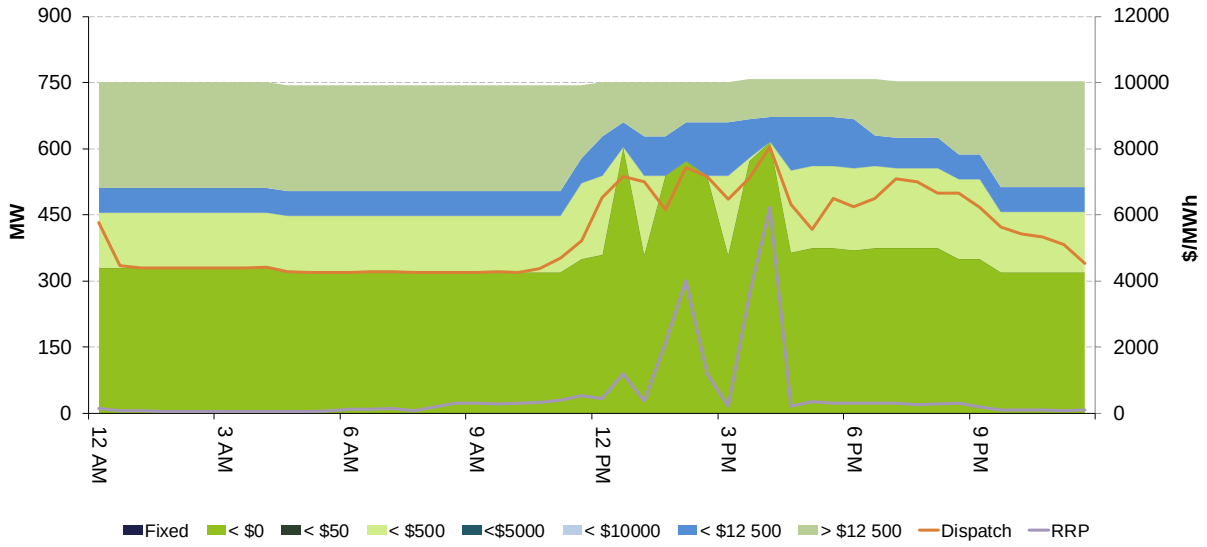
[13] Details on how the price is determined can be found at www.aemo.com.au

C Closing bids for 15 January 2014

Figures C1 to C3 highlight the half hour closing bids for participants in South Australia and Victoria with significant 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.

South Australia

Figure C1 GDF Suez (Pelican Point, Dry Creek, Mintaro, Port Lincoln, Snuggery) closing bid prices, dispatch and spot price



Victoria

Figure C2 Ecogen (Jeeralang, Newport) closing bid prices, dispatch and spot price

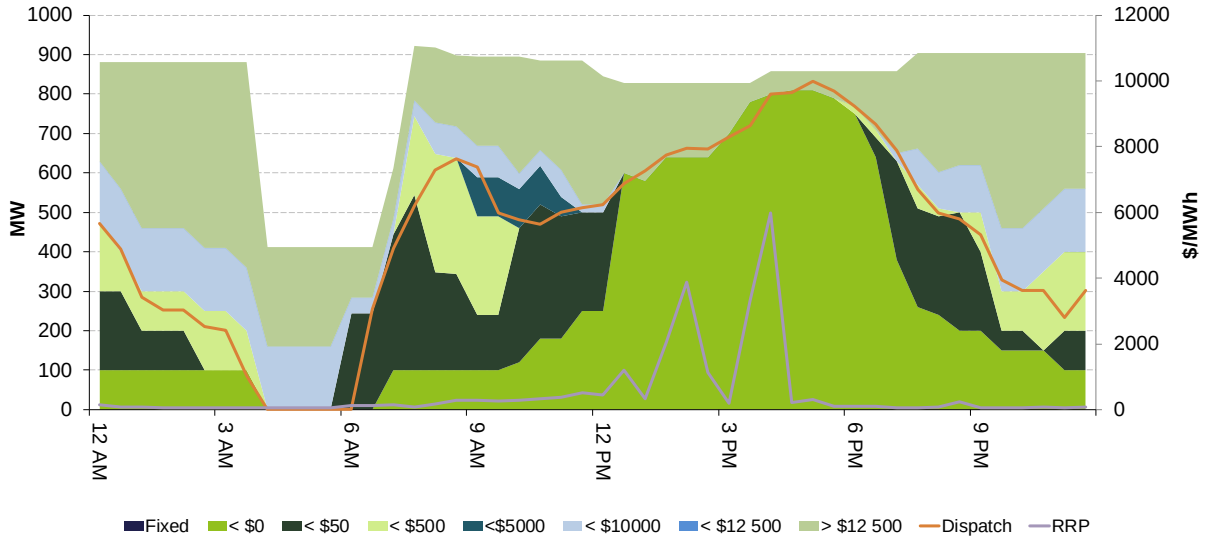


Figure C3 GDF Suez (Hazelwood, Loy Yang B) closing bid prices, dispatch and spot price