Spot prices greater than $5000/MWh

AUSTRALIAN ENERGY REGULATOR

South Australia: 2 November 2009

Introduction

The AER is required to publish a report covering the circumstances in which the spot price exceeds $5000/MWh, pursuant to clause 3.13.7 (d) of the National Electricity Rules (Electricity 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/Assessment

On Monday 2 November the spot price in South Australia reached $9999.74/MWh for the 2 pm trading interval. This was primarily due to significantly higher demand than that forecast. Imports into South Australia across both interconnectors were also lower than forecast. This meant that high priced capacity offered by AGL for its Torrens Island plant was dispatched and set the price. Around 1000 MW of low cost generation was not available on the day.

Rebidding did not contribute to the price outcomes.

Actual and forecast demand

Figure 1 compares the actual demand in South Australia with that forecast by AEMO four and 12 hours ahead of dispatch. It shows that demand was around 260 MW (or 12 per cent) higher than that forecast four hours ahead and 450 MW (or 24 per cent) higher than forecast 12 hours ahead.

Available capacity was close to that forecast four and twelve hours ahead.

Figure 1 also shows that the actual price for the 2 pm trading interval was significantly higher than forecast four and 12 hours ahead.

Figure 1: South Australia demand, spot price and available capacity

2 pm	Actual	4 hr forecast	12 hr forecast
Demand[1] (MW)	2342	2085	1891
Price ($/MWh)	9999.74	299.30	74.00
Available capacity (MW)	2335	2255	2327

[1] Figure 3 provides more detail of the different types of demand.

Generator offers and rebidding

At the time of the high price there was around 1000 MW of low cost generation that was not available to the market. Figure 2 shows the generators in South Australia that were not available, the last time the unit generated and the capacity of each unit[2]. AGL had five Torrens Island units not available on the day, a total of 730 MW of capacity.

Flinders Power's Northern Power Station unit one was forecast to be available for 90 MW on 2 November after an extended outage. The return to service of this unit was delayed during the morning.

Figure 2: South Australian generation that was not available on 2 November

Generating unit	Capacity (MW)	Last generated	Participant
Northern Power Station unit 1	274	4-Sep	Flinders Power
Torrens Island A unit 1	130	11-Sep	AGL
Torrens Island A unit 2	130	7-Feb	AGL
Torrens Island A unit 3	130	24-Jul	AGL
Torrens Island A unit 4	130	24-Sep	AGL
Torrens Island B unit 1	210	27-Oct	AGL
Total	**1004**		

During the 2 pm trading interval, 410 MW of available capacity in South Australia was priced above $9000/MWh. All of this capacity was from AGL's initial offers for Torrens Island and Angaston power stations. There were no other participants in South Australia with capacity priced at or above $5000/MWh during this trading interval. Details are presented in **Appendix A**.

AGL set the price for all dispatch intervals for the 2 pm trading interval. This is detailed in **Appendix B.**

There was no significant rebidding.

PASA assessments

The PASA (projected assessment of system adequacy) processes assist AEMO in assessing whether there is sufficient supply to meet demand in the short-term (STPASA—up to seven days into the future) and medium-term (MTPASA - seven days to two years into the future). The assessments include extreme demand forecasts and take into account generator availability offers and network capabilities to determine whether there are sufficient reserves.

On 27 October, the most recent MTPASA run for 2 November, AGL had six of its eight Torrens Island units forecast with non-zero PASA availability[3] on 2 November, a total of 1100 MW. On 28 October only three Torrens Island units were forecast with non-zero PASA availability, a total of 630 MW. The AER wrote to AGL seeking clarification for the 470 MW change between 27 October and 28 October. AGL replied that the decision to reduce the PASA availability of these units to zero was made on the morning of 28 October in respect of units A1 and A4, and in the afternoon of 27 October in respect of unit B1, to allow maintenance to be undertaken. The AER is satisfied with AGL's response.

With the advent of significant non-scheduled generation, AEMO commenced publishing "native demand" which is the demand supplied by scheduled, semi-scheduled or significant non-scheduled generators (South Australia has a large amount of non-scheduled wind generation). The native demand less the non-scheduled generation is the demand that is met

[2] This is the PASA availability for the unit.

[3] PASA availability is defined in the National Electricity Rules as the physical plant capability of a scheduled generating unit including any capability that can be made available within 24 hours.

by scheduled and semi-scheduled generators in the dispatch process. Figure 3 shows for 2 November the forecast maximum temperature, forecast native demand, forecast of significant non-scheduled generation, the most likely (or 50 per cent probability of exceedance (POE) demand) and PASA availability for South Australia in the week leading up to 2 November. It also shows the actual figures at the time of the high price on 2 November.

The actual (native) demand on the day was significantly greater (around 710 MW) than that forecast the day before and all other forecasts.

The large change in PASA available capacity on 28 October occurred when AGL changed the availability of its Torrens Island units A1, A4 and B1.

Figure 3: Forecast and actual maximum temperature, demand and available generation capacity for 2 November

Date of forecast	Forecast Maximum Temperature (ºC)	Native Demand (MW)	Forecast non-scheduled generation (MW)	Forecast demand (MW)	Available capacity (MW)
26-Oct	33.8	1787	161	1626	3046
27-Oct	34.1	1787	263	1524	3142
28-Oct	22.3	1787	231	1556	2655
29-Oct	24.0	1860	244	1616	2645
30-Oct	23.7	1910	224	1686	2585
31-Oct	34.4	1910	218	1692	2565
1-Nov	35.7	1910	265	1645	2381
Actual (2-Nov)	**37.1**	**2626**	**269**	**2342**	**2335**

Note that the forecasts, including temperature are those provided at around midday.

Changes to network availability

Combined imports into South Australia across the Heywood and Murraylink interconnectors were 150 MW lower than that forecast four hours ahead. Actual and forecast flows were at these limits.

Figure 4 shows actual and forecast import limits for each interconnector into South Australia.

Figure 4: Interconnector actual and forecast limits

Monday 2 pm	Actual	4 hr forecast	12 hr forecast
Heywood import limit	287	373	302
Murraylink import limit	155	220	220

Limits across the Heywood interconnector were around 85 MW lower than that forecast four hours ahead. The limitation was not the result of any network outages. The reduction compared to the forecast was related to an increase in the output from wind farms in the south east of South Australia compared to that forecast.

Limits across the Murraylink interconnector were 65 MW lower than that forecast four hours ahead, driven by the constraint used to manage the NSW Murraylink runback scheme[4]. This constraint was not forecast.

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[4] This constraint limits flows across Murraylink to avoid voltage collapse for the loss of Darlington Point to Buronga 220kV line.

Appendix A – Closing bids

Figures A1 and A2 highlight the half hour closing bids for participants in South Australia 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 A1: AGL (Torrens Island) closing bid prices, dispatch and spot price

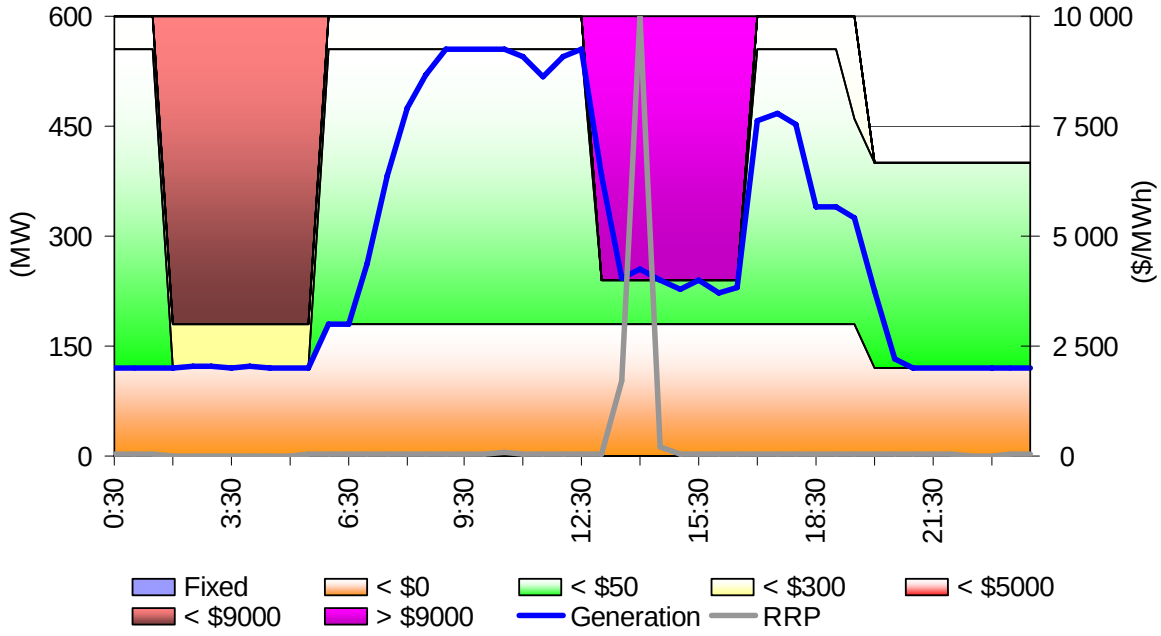
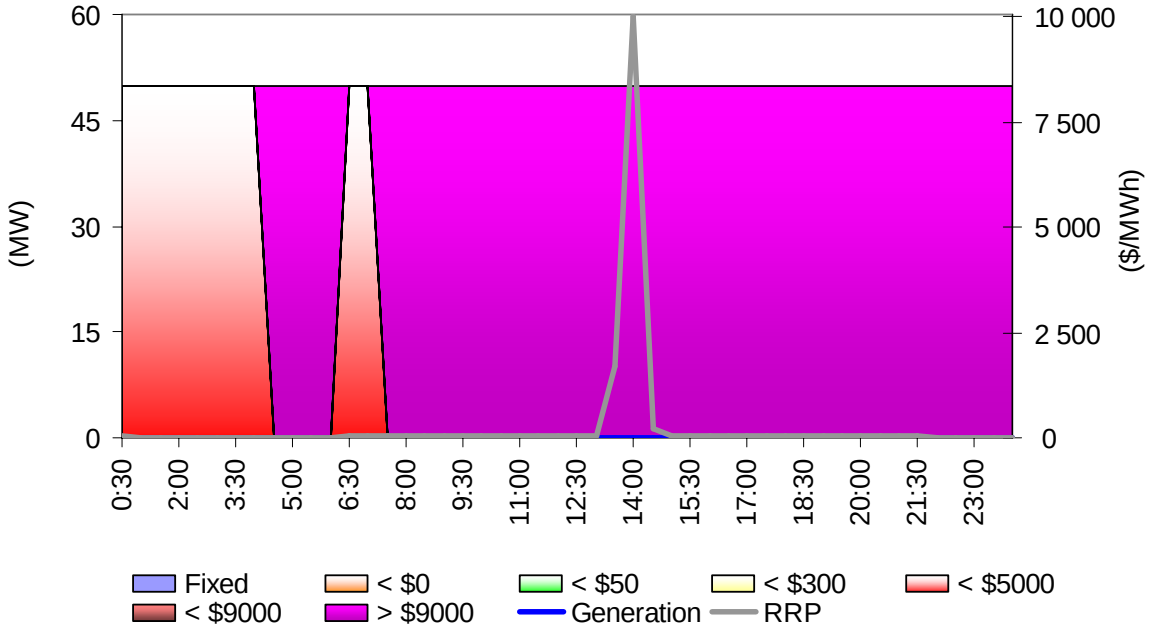


Figure A2: AGL (Angaston) closing bid prices, dispatch and spot price



Appendix B – Price setters for 2 November 2009

The following table identifies 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, as published in the market systems, are shown. This information is published by AEMO[5]. Also shown is the energy or ancillary service offer price involved in determining the dispatch price together with the quantity of that service and the contribution to the total energy price. The 30-minute spot price is the time weighted average of the six dispatch interval prices.

Monday– South Australia – 2 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
13:35	$9999.77	AGL SA	TORRB2	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB3	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB4	Energy	$9999.77	0.33	$3333.22
13:40	$9999.77	AGL SA	TORRB3	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB2	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB4	Energy	$9999.77	0.33	$3333.22
13:45	$9999.58	AGL SA	TORRB2	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB4	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB3	Energy	$9999.77	0.33	$3333.22
13:50	$9999.77	AGL SA	TORRB2	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB4	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB3	Energy	$9999.77	0.33	$3333.22
13:55	$9999.77	AGL SA	TORRB2	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB3	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB4	Energy	$9999.77	0.33	$3333.22
14:00	$9999.77	AGL SA	TORRB2	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB3	Energy	$9999.77	0.33	$3333.22
		AGL SA	TORRB4	Energy	$9999.77	0.33	$3333.22
Spot price		**$9999.74/MWh**					

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