Electricity spot prices above $5000/MWh

19 November 2010
Tasmania

AUSTRALIAN ENERGY REGULATOR

Introduction

The AER is required to publish a report covering the circumstances in which the 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

On 19 November 2010, the spot price in Tasmania reached $12 400/MWh for the 7 am trading interval, the equal highest spot price ever recorded in the National Electricity Market[2]. The high price resulted from Hydro Tasmania's bidding strategy and its control of non-scheduled generation output.

At the time of high prices, there was a step reduction by Hydro Tasmania in the availability of its low-priced capacity, which it replaced with capacity priced at close to the price cap. As a result, at the time only 450 MW was offered by Hydro Tasmania at below $50/MWh, compared to around 1700 MW in surrounding periods. The output from Hydro Tasmania's non-scheduled generators was also reduced during this period, which effectively increases demand.

Imports across BassLink and other Tasmania generation was insufficient to meet demand. This meant that only a small amount of Hydro Tasmania's high-priced capacity was required to be dispatched and set the price. Hydro Tasmania has employed the same strategy on most occasions where the price has exceeded $5000/MWh in Tasmania.[3]

Actual and forecast conditions

Figure 1 compares the actual demand and spot price in Tasmania with that forecast by AEMO 4 and 12 hours ahead of dispatch.

Figure 1: Actual and forecast demand and spot price

Friday 7 am	Actual	4 hr forecast	12 hr forecast
Demand (MW)	1353	1277	1251
Spot Price ($MW/h)	12 400	12 400	32

[1] Pursuant to clause 3.13.7 (d) of the Electricity Rules.
[2] The other occasions were on 7 and 8 August 2010 in Tasmania. The market price cap increased on 1 July 2010 from $10 000/MWh to $12 500/MWh.
[3] The same strategies were employed by Hydro Tasmania on 10-19 June 2009, 22 May 2010 and 7-8 August 2010. The AER has published $5000 reports covering these events.

Conditions on the day saw demand around 100 MW higher than forecast 12 hours ahead and 80 MW higher than forecast four hours ahead. Prices were as forecast four hours ahead but much higher than forecast 12 hours ahead.

Initial forecasts (day ahead) showed prices of $10 000/MWh for the 6.30 am and 7 am trading intervals. The 12 hour ahead forecast price reduced significantly as a result of rebidding by Aurora Energy to commit all of its available plant into service (explained in the "Generator offers and rebidding" section). At 1 am on the Friday a small increase in forecast demand saw the forecast price for the 7am trading interval return to very high levels.

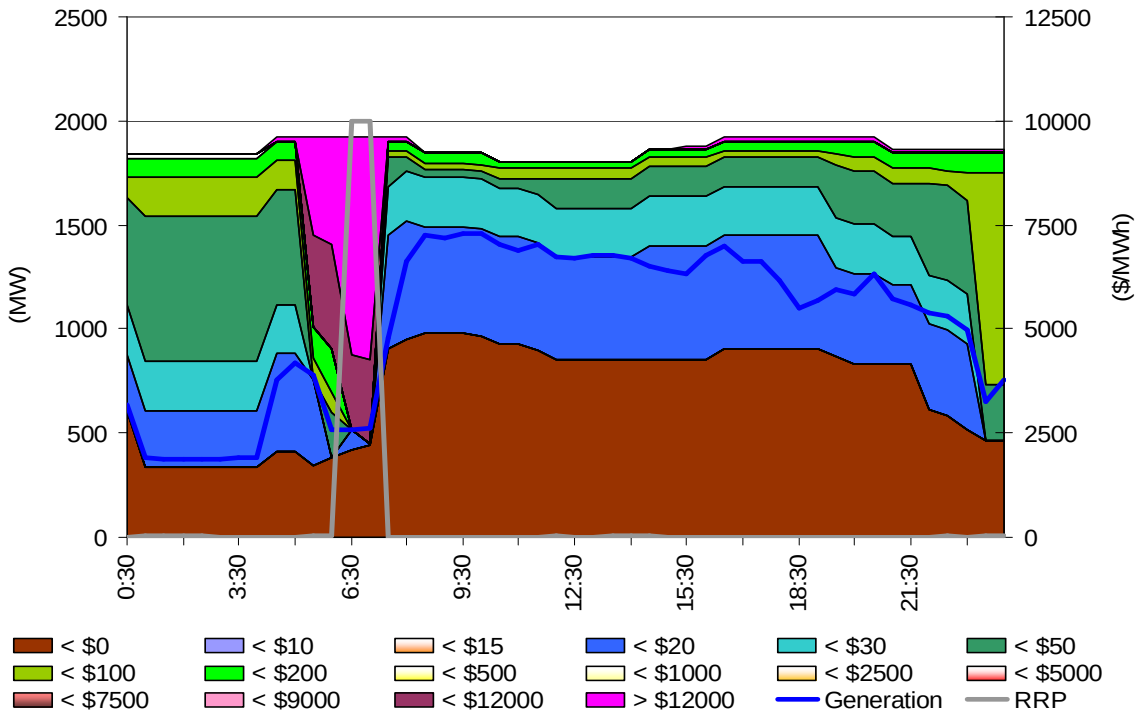
Generator offers and rebidding

Around 2267 MW was offered through initial (day-ahead) offers. Hydro Tasmania accounted for around 85 per cent of this capacity, while Aurora Energy offered 346 MW.

Figure 2 shows *initial (day-ahead)* offers for Hydro Tasmania. It can be seen that significant capacity was priced above $5000/MWh for the trading intervals between 5 am and 7 am on the morning of 19 November. The initial *forecast* prices (RRP) coincident with the high-priced offers is shown by the grey line.

For the remainder of the day, almost all capacity was priced at under $50/MWh (indicated by the dark green shading).

Figure 2: Initial Hydro Tasmania offers and forecast spot prices for Tasmania



In response to the high forecast prices, at 4.29 pm the day before, Aurora Energy rebid to commit 138 MW of open cycle gas turbines (at Bell Bay Three and Tamar Valley). This rebid shifted 138 MW of capacity from prices above $9900/MWh to zero during the morning of 19 November. The reason given was "15:26 A predispatch price forecast".

This increase in the availability of low-priced capacity resulted in the forecast price for the 7 am trading interval falling to $32/MWh.

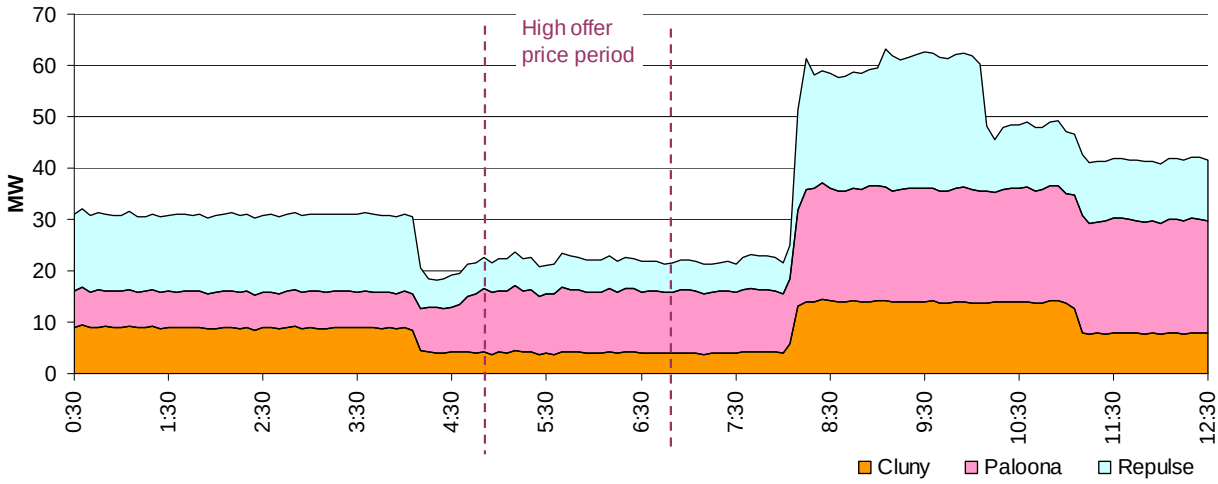
There was no available capacity priced between $18/MWh and $11 800/MWh for the 7 am trading interval, so small changes in demand or network capability had the potential to cause large swings in prices.

Hydro Tasmania was the only participant with capacity priced at or above $5000/MWh during the high priced period. Around 1473 MW out of the 1921 MW offered by Hydro Tasmania was priced above $11 000/MWh, while the remainder of the day almost all of its capacity was offered at prices below $50/MWh.

There was no other significant rebidding.

Three of Hydro Tasmania's non-scheduled generators (Cluny, Paloona and Repulse) reduced their output prior to the step reduction in low priced capacity[4]. The total output of these generators increased by almost 40 MW soon after 7 am, when the availability of capacity priced below $50/MWh increased from 448 MW to 1827 MW. Figure 3 shows the change in output coincident with the changed offer prices. The AER has written about the impacts of non-scheduled generation on high price outcomes in Tasmania in previous reports.[5]

Figure 3: Change in output from Hydro Tasmania's non-scheduled generators



Hydro Tasmania can raise prices almost at will, through bidding its capacity at high prices. It can also influence the price by varying the output of its non-scheduled generators, which is treated as a change in demand.

Details on how the price was determined by the market systems are in **Appendix A.**

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January 2011

[4] The output from non-scheduled generators is treated as negative demand, so any variation in their output is reflected in the demand that must be met by scheduled generators. For example, a 10 MW increase from a non-scheduled generator is treated as a 10 MW decrease in demand.

[5] $5000 reports covering the events of 10-19 June 2009, 22 May 2010, and 7-8 August 2010, and the weekly report for 16-22 May 2010.

Appendix A – Price setters for 19 November 2010

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. 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.

Friday 19 November – 7 am

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
06:35	$12 400.00	Hydro Tasmania	JBUTTERS	Energy	$12 400.00	$ 1.00	$12 400.00
06:40	$12 400.00	Hydro Tasmania	JBUTTERS	Energy	$12 400.00	$ 1.00	$12 400.00
06:45	$12 400.00	Hydro Tasmania	JBUTTERS	Energy	$12 400.00	$ 1.00	$12 400.00
06:50	$12 400.00	Hydro Tasmania	JBUTTERS	Energy	$12 400.00	$ 1.00	$12 400.00
06:55	$12 400.00	Hydro Tasmania	JBUTTERS	Energy	$12 400.00	$ 1.00	$12 400.00
07:00	$12 400.00	Hydro Tasmania	JBUTTERS	Energy	$12 400.00	$ 1.00	$12 400.00
Spot price		**$12 400/MWh**					