



Prices above \$5000 per megawatt hour in the National Electricity Market

June 12 to June 28 2007

Executive summary

The Australian Energy Regulator (AER) is required to report into prices of over \$5000/MWh in the National Electricity Market (NEM). This report covers 42 events in New South Wales, Queensland and Snowy from 12 – 28 June where prices exceeded this threshold.

The \$5000/MWh events resulted in some of the highest prices since the start of the NEM in 1998. In June prices averaged \$274/MWh in New South Wales, \$216/MWh in Queensland, \$157/MWh in Victoria and \$111/MWh in South Australia. By comparison prices in June 2006 ranged from \$26/MWh to \$42/MWh.

The price events also contributed to the highest annual prices in New South Wales and Victoria since NEM start. The average price in the 2006-07 financial year was \$65/MWh in New South Wales and \$59/MWh in Victoria compared to the previous highest prices of \$46/MWh and \$49/MWh respectively.

There were a number of contributing factors to these high priced events.

Electricity demand rose sharply in June across the NEM. New record demands were reached in New South Wales and across the NEM as a whole, while Queensland experienced its highest ever winter demand.

There was also constrained electricity supply across the NEM in June. Hydro generating capacity in the Snowy, Tasmania and Victoria continued to be affected by the drought. The drought also reduced water availability for cooling coal-fired generators, particularly in Queensland but also in New South Wales and Victoria. Rain and flooding in the Hunter Valley also reduced the capability of some New South Wales generators in June.

In combination these factors led to a tight supply – demand balance. The effect of the tight supply – demand balance on market outcomes appears to have been exacerbated by the day ahead bidding practices of generators, particularly Macquarie Generation. Macquarie Generation repriced capacity into higher price bands during evening peaks every day in June. It repriced up to 800MW (or around 20 per cent of its capacity) from under \$500/MWh to over \$5000/MWh between 5 pm and 7.30 pm. Each of the \$5000/MWh events occurred during these evening peaks.

These practices did not involve a breach of the National Electricity Rules.

1. Introduction

The AER is required under the National Electricity Rules to report on price events in the NEM that exceed \$5000/MWh. 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.

This report covers 42 events from Tuesday June 12 to Thursday June 28 2007 in which spot prices exceeded the \$5000/MWh threshold in several regions of the NEM.

The report is structured as follows:

- Section 2 provides a general overview of pricing outcomes in June
- Section 3 provides an analysis of underlying supply and demand features during June's high priced events
- Section 4 focuses on transmission constraints during these events
- Section 5 focuses on differences between actual prices and forecast prices
- Section 6 analyses the reliability of the power system during these events
- Section 7 summarises the factors that contributed to the high priced events

The report is followed by appendices which provide technical details on the events.

2. Overview

Table 1 summarises spot price events above \$5000/MWh in the NEM from Tuesday June 12 to Thursday 28 June 2007. The events occurred in New South Wales, Queensland and Snowy. Of the 42 occasions where the price exceeded \$5000/MWh, 17 occurred in New South Wales, 13 in the Snowy¹ and 12 in Queensland. The highest prices were observed in New South Wales, with the highest price of \$9936.37/MWh at 6pm on 13 June. The other three prices over \$9000/MWh also occurred in New South Wales. There were no prices above \$5000/MWh in any other regions, but there were flow-on impacts, particularly in Victoria.

Table 1: NEM spot price events above \$5000/MWh — June 12 to 28 2007

<i>Price (\$/MWh) for 30 minute interval</i>					
Date	Time	QLD	Snowy	NSW	Vic
Tue 12 Jun	6:00 PM	5697.11	5201.92	6276.44	2761.49
Wed 13 Jun	6:00 PM	6951.18	7715.69	9936.37	3928.81
	6:30 PM	881.57	7432.57	9420.63	3456.49
	7:00 PM	132.62	7143.03	8838.26	3296.95
	7:30 PM	196.96	4687.90	5793.82	1998.99
Thu 14 Jun	6:00 PM	7796.33	6868.66	8461.50	3145.27
	6:30 PM	4850.79	2923.28	5386.06	1077.74
Fri 15 Jun	6:30 PM	327.83	417.24	5350.05	108.16
Sat 16 Jun	6:00 PM	6215.97	5951.18	6868.57	2882.13
Tue 19 Jun	6:00 PM	8085.79	6383.03	7912.30	3875.54
Wed 20 Jun	6:00 PM	5393.07	4454.13	5367.37	1979.06
Tue 26 Jun	6:00 PM	6358.55	5748.13	7023.72	3133.15
Wed 27 Jun	6:00 PM	7846.63	7490.56	9176.17	2745.38
	6:30 PM	7685.67	7485.89	9106.18	3524.54
	7:00 PM	6354.42	6012.04	7264.44	2750.24
Thu 28 Jun	6:00 PM	8339.16	7051.62	8524.85	3278.26
	6:30 PM	7586.54	6435.96	7839.88	2936.50

¹ The analysis in this report focuses on the high price events in New South Wales and Queensland as Snowy is predominantly a generation-only region, with almost no demand.

3. Causes of \$5000/MWh price events

Prices in the NEM tend to spike to extreme levels due to high demand and/or constrained supply. Electricity prices between June 12 and 28 were affected by both winter peak demand and a number of factors which contributed to constrained supply. These demand and supply factors are highlighted in the remainder of the report. The combination of high demand and constrained supply led to a very tight demand–supply balance, with extreme price responses.

3.1 Electricity demand

The demand for electricity across the NEM was within three per cent of the peak winter demand last year on each day in June that recorded \$5000/MWh prices except for Saturday 16 June². This level of demand is a normal seasonal response at this time of year. Electricity demand tends to rise sharply across the NEM in June as cold winter days increase heating requirements. On cold days, demand tends to spike early in the evening when people return home and switch on heating appliances.

Table 2 presents the daily peak demands for New South Wales, Queensland and the NEM as a whole when the price exceeded \$5000/MWh. For comparison the highest demands over the previous 12 months, the record demand and winter forecast have been presented for each region. The table indicates that record demands were set in the NEM as a whole and also in New South Wales, while Queensland set a new record for winter. In other NEM jurisdictions, record demand was set in Tasmania while Victoria and South Australia both recorded their highest-ever winter demands. However, the table also indicates that the demands in New South Wales and Queensland did not exceed the winter forecasts.

² For further details see section 5.

Table 2 : Daily peak demands – June 2007

	QLD	NSW	NEM
Summer 2006-07 (MW)	8594	12 868	31 796
Winter 2006 (MW)	7615	13 078	31 674
Record (MW)	8594	13 297	31 796
Winter Forecast (MW) *	8233	14 140	32 331
12 June	6952	12 567	30 763
13 June	7089	12 852	31 496
14 June	7135	12 979	31 744
15 June	6702	12 697	30 728
16 June	6629	11 443	28 392
19 June #	7188	13 333	32 407
20 June	7838	12 913	32 323
26 June	7304	12 996	32 022
27 June	7296	13 466	32 514
28 June	7598	13 175	32 203

* Regional winter forecasts are conservative based on 10% POE (probability of exceedance) and medium economic growth. The 50% POE forecasts for Queensland and New South Wales, of 8082 MW and 13 810 respectively, were also not exceeded during June. The NEM forecast uses a less conservative 50% POE and a 95% co-incidence factor.

The peak demand in New South Wales on 19 June occurred at 6.30 pm, the price was not above \$5000/MWh at the time.

3.2 Generator offers to supply electricity

Electricity supply conditions were tight on each day that recorded \$5000/MWh prices in June. The tight supply conditions were created by a combination of offline and constrained generation plant and network issues.

3.2.1 Offline and constrained plant

As a backdrop to the tight supply conditions across the NEM in June, drought has constrained hydro-generating capacity in the Snowy, Tasmania and Victoria since early in the year. The drought has also constrained the availability of water for cooling in some coal-fired generators, especially at Tarong and Swanbank in Queensland, and in some generators in New South Wales and Victoria.

These tight supply conditions were further exacerbated in June 2007 by a number of additional generator outages. Table 3 sets out generation plant in New South Wales and Queensland that was not available to the market during each of the \$5000/MWh events from 12 June to 28 June 2007. Up to 20 per cent of New South Wales plant and up to 22 per cent of Queensland plant was offline during the extreme price events in June.

Some of the plant was unavailable throughout June, such as the water constrained Tarong and Swanbank plant. However, other plant was offline at various times throughout June due to maintenance outages and plant problems³. In New South Wales, Macquarie Generation's Bayswater 1 plant was available with 24 hours notice, but was not switched on until June 21.

Table 3 also provides an indication of reserves at 6 pm, and indicates that the available reserves during the high priced periods in New South Wales were less than the size of the largest New South Wales generator on 13 June and less than the two largest generators on 12, 14, 15 and 16 June.

In addition to offline capacity, some online plant was operating at a reduced capacity during the extreme price events in June. Table 4 estimates the extent of New South Wales and Queensland generation capacity that was online but operating at a reduced capacity during each of the \$5000/MWh price events. It shows the average reduction in capacity compared to the registered capacity for trading intervals where the price exceeded \$5000/MWh. The table demonstrates that the capacity reductions were generally greater in New South Wales than Queensland. Online plant capability was reduced by between 5% and 8% of overall New South Wales capacity over the 10 days when there were \$5000/MWh price events. The capacity reductions in New South Wales were partly caused by the effects of rain and flooding in the vicinity of the Hunter Valley coal mines, and the boiler stability problems caused by the wet coal. The effects of the wet coal started on June 9 and have continued on into July.

³ While some Victorian generation plant was also constrained, exports from Victoria into New South Wales were at maximum during all of the \$5000/MWh price events. Victorian plant issues therefore did not significantly affect the extreme price outcomes in June.

Table 3: Offline baseload generation in NSW and Qld: June 12 to June 28 2007

New South Wales			12 Jun	13 Jun	14 Jun	15 Jun	16 Jun	19 Jun	20 Jun	26 Jun	27 Jun	28 Jun	Comments	
Macquarie Generation	Bayswater 1	660 MW	Offline							Offline			Withheld until 21 June	
Delta Electricity	Munmorah 4	300 MW	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Tripped on 12 June	
	Wallerawang 7	500 MW	Offline							Offline	Offline	Offline	Offline	Plant problems 6 to 26 June (came back after peak)
	Vales Point 6	660 MW	Offline							Offline	Offline	Offline	Offline	Long term maintenance to 19 June
	Mount Piper 2	660 MW	Offline							Offline	Offline	Offline	Offline	Plant Problem
Eraring Energy	Eraring 3	660 MW	Offline						Offline	Offline	Offline	Offline	Offline	Weekend outage
Total capacity offline			1820	2120	1820	1820	2480	1160	1160	1460	960	960		
Percentage of registered capacity			15%	17%	15%	15%	20%	10%	10%	12%	8%	8%		
Indicative reserves at 6 pm			1046	443	1023	994	1173	1415	1525	1345	1374	1648		
Queensland			12 Jun	13 Jun	14 Jun	15 Jun	16 Jun	19 Jun	20 Jun	26 Jun	27 Jun	28 Jun	Comments	
Tarong Energy	Tarong (2 units)	700 MW	Offline										Water limited	
CS Energy	Swanbank B (1 unit)	120 MW	Offline										Water limited	
Milmerran Energy	Milmerran 1	450 MW	Offline							Offline	Offline	Offline	Offline	3 week planned outage
	Milmerran 2	450 MW	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Plant problems June 13, 14, 20	
Enertrade	Gladstone 2	280 MW	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Offline	Short notice outage	
	Gladstone 3	280 MW	Offline										Off since April 11	
Callide Power	Callide C 4	450 MW	Offline						Offline	Offline	Offline	Offline	Offline	Short term outage
Total capacity offline			1550	2280	2280	1830	1830	1830	1550	1100	1100	980		
Percentage of registered capacity			15%	22%	22%	17%	17%	17%	15%	10%	10%	9%		

Note Kogan Creek is not included as it is still in its commissioning phase

Table 4: Online capacity with reduced capability, during periods above \$5000/MWh June 12 to June 28 2007

Date	New South Wales		Queensland	
	Average reduction (MW) #	As % of registered capacity	Average reduction (MW) #	As % of registered capacity
12 June	1023	8%	170	2%
13 June	789	6%	169	2%
14 June	747	6%	150	1%
15 June	817	7%	N/A*	N/A*
16 June	643	5%	178	2%
19 June	797	7%	669	6%
20 June	981	8%	142	1%
26 June	731	6%	120	1%
27 June	962	8%	114	1%
28 June	817	7%	125	1%

These reductions in capacity are in addition to the generators that are offline in table 5.

* There were no prices in Queensland above \$5000/MWh on Friday 15 June.

3.2.2 *Rebidding*

There was ‘late’ rebidding activity by generators in some time intervals in June where prices spiked above \$5000/MWh. Late rebidding refers to bidding changes made within four hours of dispatch. Under the National Electricity Rules, changes must be made in ‘good faith’. Rebidding includes (a) changes in the total amount of capacity made available to the market and (b) changes in the amount of capacity offered to the market at particular price levels.

Figures 1 and 2 illustrate the amount of capacity that was affected by rebidding in the four hours leading to dispatch for each time interval with spot prices above \$5000/MWh. Figure 1 sets out changes in the amount of capacity offered to the market due to changes in plant availability, priced at below \$5000/MWh. Negative values represent a withdrawal of capacity and were usually related to reductions in technical plant capability.

The chart indicates a net reduction in capacity in most trading intervals where prices spiked above \$5000/MWh, including a number of significant withdrawals by Delta Electricity and CS Energy. In part, these withdrawals relate to delays on 14, 16 and 20 June in the start-up of CS Energy’s Kogan Creek plant (which is still being commissioned) and a delayed return to service of Delta Electricity’s Vales Point unit 6 on 13 June following a long term outage and Wallerawang unit 7 on 26 June following

a three week outage. On five occasions, there was a net withdrawal of over 600 MW – equivalent to around three per cent of combined installed capacity in New South Wales and Queensland.

Figure 1: Changes to availability at prices below \$5000/MWh made within four hours to dispatch during extreme price events.

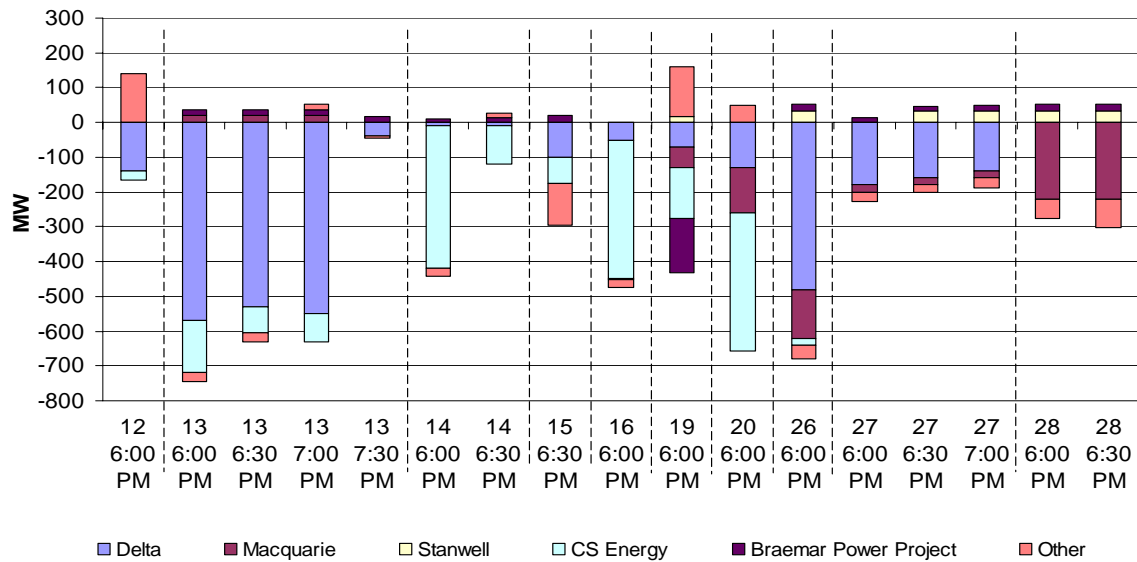


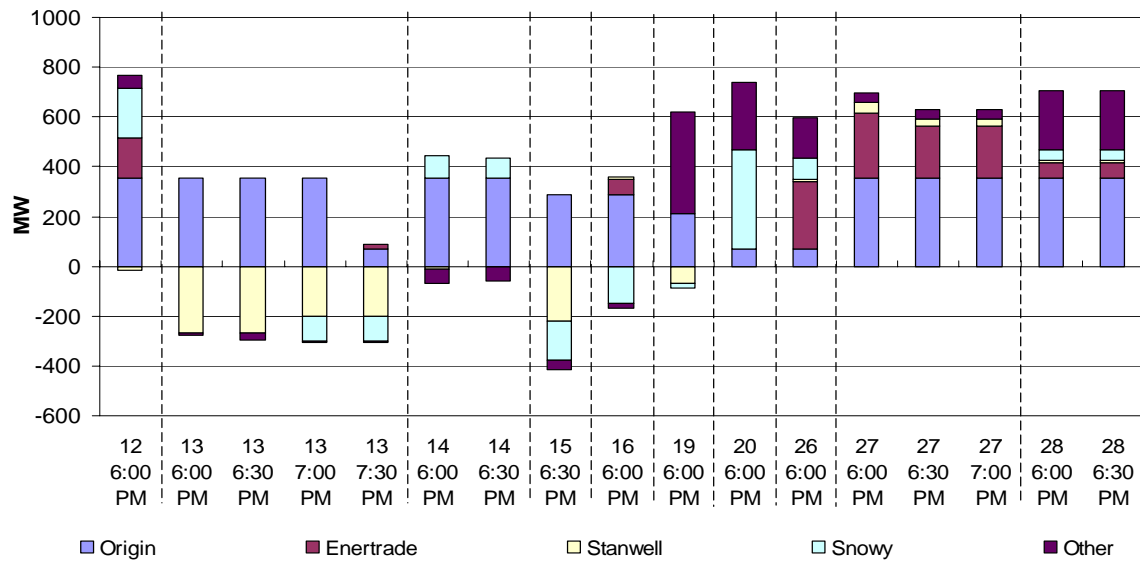
Figure 2 sets out changes in the amount of capacity offered to the market at prices below \$5000/MWh due to the shifting of offers into or out of higher price bands in the four hours prior to dispatch. Negative values represent a shift in offers from prices below \$5000/MWh to prices above \$5000/MWh, while positive numbers represent a shift in offers from prices above \$5000/MWh to prices below \$5000/MWh.

The chart indicates that there was a relatively small amount of band-shifting in the time intervals where prices exceeded \$5000/MWh. In most cases where band shifting occurred, there was a net movement of capacity into price bands *below* \$5000/MWh.

Rebidding, to reduce available capacity or to change the price offered for capacity, does not therefore appear to be a significant contributing factor to the extreme price outcomes that occurred in June 2007.

Further details are presented in Appendix A.

Figure 2: Shifting of capacity at prices around \$5000/MWh made within four hours to dispatch during extreme price events.



3.2.3 Generator offers above \$5000/MWh during trading intervals above \$5000/MWh

Clause 3.13.7 (d) of the National Electricity Rules requires the AER to identify generators with offers for the trading interval at or above \$5000/MWh and to compare these offers to relevant offers in previous trading intervals. Table 5 shows the average capacity priced above \$5000/MWh by each participant during the evening peak times for the days when the price for a trading interval exceeded \$5000/MWh and compares it to that offered for the hours leading up to that period.

Table 5: Comparison of capacity presented at prices above \$5000/MWh during extreme price events.

	Average capacity >\$5000/MWh		% of total bid	
	8 am to 4.30 pm	5 pm to 7.30 pm	8 am to 4.30 pm	5 pm to 7.30 pm
Qld				
Origin	318	61	91%	17%
CS Energy	62	76	4%	5%
Braemar	198	0	40%	0%
Enertrade	111	50	6%	3%
Stanwell	76	55	5%	3%
Tarong	325	363	21%	22%
NSW				
Macquarie	296	767	7%	19%
Eraring	39	41	1%	1%
Delta	14	10	1%	1%
Snowy				
Snowy Hydro	891	631	29%	20%

The table shows that only three generators offered more capacity at prices greater than \$5000/MWh during the high price events than at other times in the day.

Macquarie Generation offered an average of 471 MW more capacity at prices above \$5000/MWh over the evening peak. Macquarie Generation was the only generator in the NEM to consistently bid significant capacity into high prices at this time of the day. This is explained in more detail below.

Tarong Energy offered on average 38 MW more capacity at prices above \$5000/MWh over the evening peak than at other times of the day. This was, however, accompanied by an average increase in availability over the evening peak of 137 MW, with the percentage of total capacity presented at above \$5000/MWh generally remaining constant.

CS Energy offered an average of 14 MW more above \$5000/MWh over the evening peak. This was primarily as a result of capacity presented at high prices on two days. A rebid on 15 June shifted 330 MW of capacity at Callide B (that applied for the 5.30 pm trading interval only) from below \$50/MWh to above \$5000/MWh. This generator, however, was being constrained off at the time by the central to south Queensland constraint. On 28 June a rebid increased the availability of Swanbank E by extending

the runtime past the evening peak period - this increased capacity was offered at prices above \$5000/MWh.

3.2.4 Macquarie Generation bidding

Throughout the high price events in June 2007, Macquarie Generation presented large amounts of capacity at high price levels between 5 pm and 7.30 pm. Macquarie Generation was the only generator in the NEM to consistently bid significant capacity into high prices during these peak periods of the day. On average it priced almost 800 MW (around 20 per cent) of its capacity at above \$5000/MWh, compared to around 300 MW at earlier periods in the day. That additional capacity was generally priced at less than \$500/MWh at other times during the day. Whilst there was no evidence of a breach of the good faith rebidding rules, this 'day-ahead' bidding practice saw its output reduce over the evening peaks, when demand was at its highest. At times, these very high offers had to be dispatched, setting very high prices.

Table 6 compares the capacity presented by Macquarie Generation at prices below \$500/MWh and above \$5000/MWh for the 4.00 pm and 6.00 pm trading intervals on days when the price exceeded \$5000/MWh. The threshold price of \$500/MWh has been used as typical of the four hour ahead price forecasts. The data indicates that Macquarie effectively repriced over 8 per cent of its capacity from *below \$500/MWh* - at 4.00 pm - to *above \$5000/MWh* - at 6.00 pm - on June 12, 13, 14, 15, 26, 27 and 28. On June 13, 14 and 15 it repriced around 20 per cent of its capacity in this way.

Table 6: Macquarie bidding, June 12 to June 28 2007

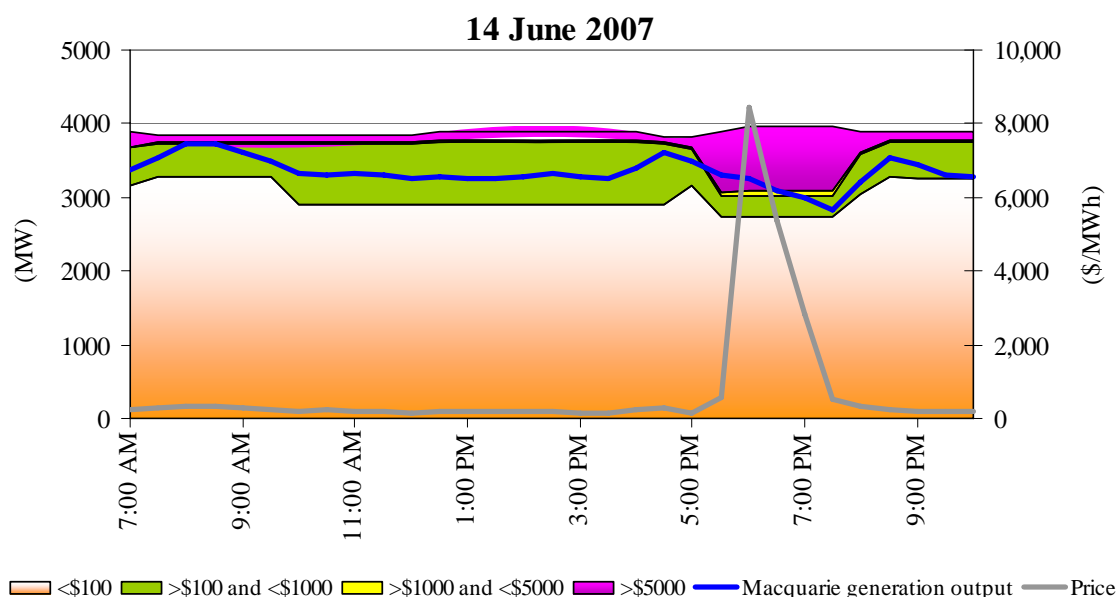
Macquarie bidding	Jun 12	Jun 13	Jun 14	Jun 15	Jun 16	Jun 19	Jun 20	Jun 26	Jun 27	Jun-28
Capacity bid at \$500/MWh or less 4 pm	3580	3780	3760	3760	3100	3080	3260	3870	3810	3750
Capacity bid at \$500/MWh or less 6 pm	3220	2950	2800	2800	2700	3280	3300	3320	3330	3340
<i>Change in capacity bid at \$500/MWh at 6 pm compared to 4 pm</i>	<i>-360</i>	<i>-830</i>	<i>-960</i>	<i>-960</i>	<i>-400</i>	<i>200</i>	<i>40</i>	<i>-550</i>	<i>-480</i>	<i>-410</i>
Capacity bid at \$5000/MWh or more 4 pm	0	110	110	110	710	500	0	610	505	435
Capacity bid at \$5000/MWh or more 6 pm	515	905	880	940	880	345	465	1045	1025	835
<i>Change in capacity bid at \$5000/MWh at 6 pm compared to 4 pm</i>	<i>515</i>	<i>795</i>	<i>770</i>	<i>830</i>	<i>170</i>	<i>-155</i>	<i>465</i>	<i>435</i>	<i>520</i>	<i>400</i>
<i>Capacity repriced from below \$500/MWh to above \$5000/MWh at 6 pm *</i>	<i>360</i>	<i>795</i>	<i>770</i>	<i>830</i>	<i>170</i>	<i>0</i>	<i>0</i>	<i>435</i>	<i>480</i>	<i>400</i>
Total available capacity bid in at 6 pm	3835	3995	3970	3990	3810	3755	3825	4365	4355	4175
<i>Repriced capacity as percentage of total available Macquarie capacity</i>	<i>9%</i>	<i>20%</i>	<i>19%</i>	<i>21%</i>	<i>4%</i>	<i>0%</i>	<i>0%</i>	<i>10%</i>	<i>11%</i>	<i>10%</i>

* At times due to changes in total availability between 4 pm and 6 pm, not all capacity priced below \$500/MWh is repriced to above \$5000/MWh.

In addition capacity was at times repriced to between \$500/MWh and \$5000/MWh.

As an example, Figure 3 shows Macquarie dispatch on 14 June, which is indicative of its dispatch on other days in June. The figure sets out the extent of capacity offered into the market by Macquarie Generation within a series of price thresholds. Actual New South Wales price (grey line) and the output from Macquarie (blue line) are overlaid. At 5 pm, Macquarie was generating at 3500 MW. Output from the portfolio was reduced over the next two hours to 2900 MW by 7 pm. At the same time, New South Wales demand increased from 12 200 MW to more than 13 000 MW and national demand increased from 29 450 MW to more than 31 800 MW.

Figure 3: Macquarie bidding strategy



In addition to this repricing strategy, Macquarie Generation increased its total availability marginally over the evening peak period on three days:

- On 13 June following a market notification of low reserves by NEMMCO, a further 105 MW of capacity was made available. All of this capacity was presented at prices above \$4000/MWh, with the majority priced above \$9000/MWh. This consisted of an additional 50 MW of capacity at Bayswater units 3 and 4, the commitment of the 25 MW Hunter Valley gas turbine and an increase in the capacity of Liddell unit 3 by 30 MW.

- On 14 June following a market notification of low reserves, a further 80 MW of capacity was made available. All of this capacity was presented at prices above \$5000/MWh. This included additional capacity at Bayswater 3 and 4 and an increase in the capacity of Liddell unit 3.
- On 15 June following a market notification of low reserves, a further 100 MW of capacity was made available. All of this capacity was presented at prices above \$5000/MWh. This included additional capacity at Bayswater 2, 3 and 4 and an increase in the capacity of Liddell unit 3.

Appendix B sets out the generating units involved in setting the energy price for each trading interval in which the spot price exceeded \$5000/MWh. For close to half the time the five-minute dispatch price was greater than \$5000/MWh, Macquarie Generation set the price⁴. Snowy Hydro set the price for around 40 per cent of the time⁵.

⁴ This only includes generator energy offers of greater than \$5000/MWh. Frequency control ancillary service offers and generator offer prices below \$5000/MWh have been excluded from this analysis.

⁵ Note that the capacity of Snowy Hydro is severely impacted by the drought conditions. The bidding strategy by Snowy reflects this situation.

4. Transmission network constraints

Clause 3.13.7 (d) of the National Electricity Rules requires the AER to assess whether network availability was a significant contributing factor to any prices over \$5000/MWh.

Transmission network constraints created further stress on the demand–supply balance in New South Wales during some of the periods in which prices exceeded \$5000/MWh in early June 2007. In particular, there were instances where transmission interconnectors were affected by outages or limitations that constrained flows of electricity into New South Wales that might otherwise have helped to relieve the tight supply conditions there. These occurrences were typically short in duration and did not consistently affect market outcomes during June.

Table 7 lists instances when transmission interconnectors into New South Wales were constrained at levels below their nominal capability. In particular, the QNI interconnector from Queensland to New South Wales was reduced from its nominal limit of 1078 MW on June 12-16 inclusive. The Snowy to New South Wales interconnector was reduced from its nominal limit of 3300 MW on June 15.

Table 7: Interconnector reductions during \$5000/MWh events

Date	Interconnector	Reduction	Comments
12 Jun	QNI	128 MW	1 Millmerran unit offline, reduced transfers
13 Jun	QNI	538 MW	Planned outage of Blackwall SVC (Qld)
14 Jun	QNI	128 MW	1 Millmerran unit offline, reduced transfers
15 Jun	QNI	128 MW	1 Millmerran unit offline, reduced transfers
15 Jun	Snowy	350 MW	Unplanned outages of 71 and 72 lines around Mt Piper (NSW)
16 Jun	QNI	128 MW	1 Millmerran unit offline, reduced transfers

Figure 4 shows electricity flows between Queensland and New South Wales on 13 and 14 June when the QNI interconnector was temporarily affected as a result of a planned outage of a network control element in Queensland (the Blackwall SVC). Figure 5 shows the Snowy to New South Wales flows on 15 June, when the interconnector capability was temporarily reduced by unplanned network outages around Mount Piper. Each of these incidents occurred during price events above \$5000/MWh.

Appendix A provides a more detailed analysis of network constraints during June 2007.

Figure 4: QNI (New South Wales to Queensland) flows for 13 and 14 June

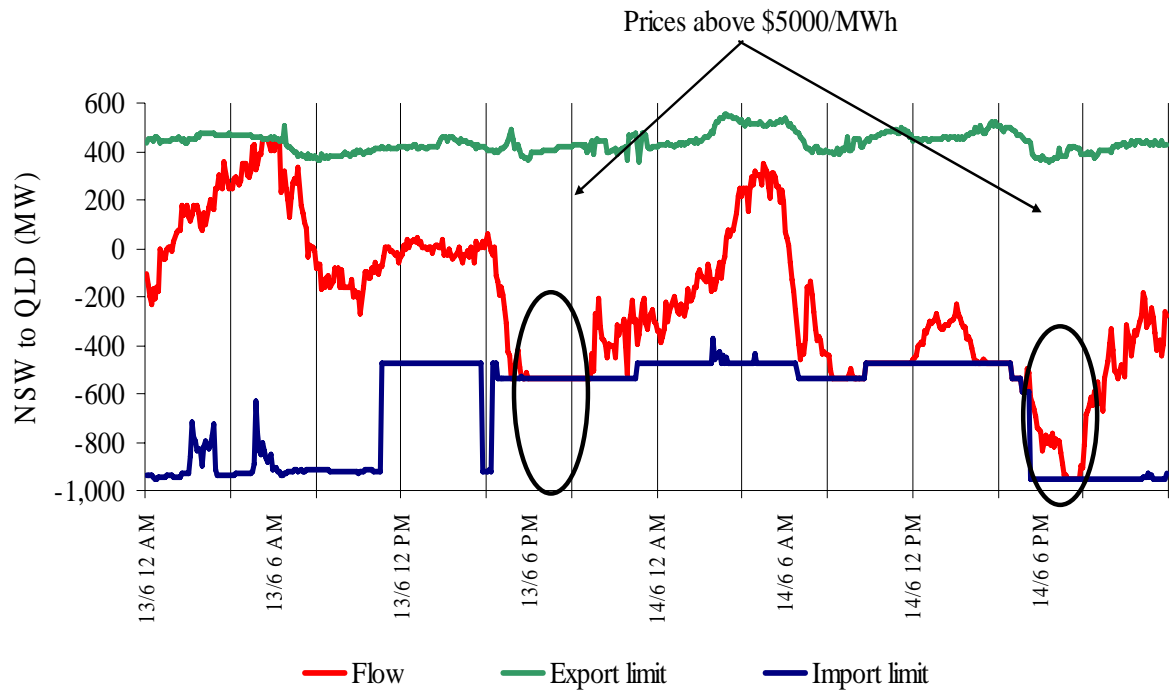
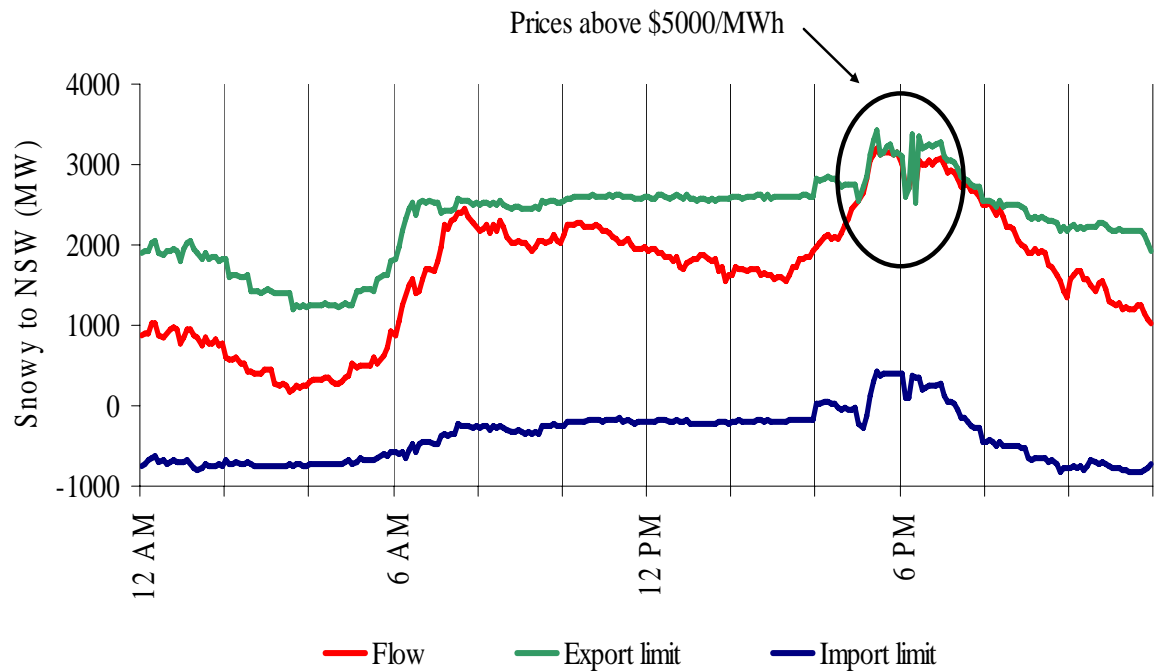


Figure 5: Snowy to New South Wales flows for 15 June



5. Forecast demand and prices

Tables 8 and 9 provide detailed half hourly demand information during the high priced events for New South Wales and Queensland respectively. Table 8 indicates that New South Wales electricity demand was very high during most of the \$5000/MWh events in June 2007. During 16 of the 17 time intervals where \$5000/MWh prices were recorded, New South Wales demand reached at least 95 per cent of the peak level recorded in winter 2006. On six occasions, demand exceeded the 2006 winter peak, and new demand records were set on Tuesday 19 June and Thursday 27 June. The table also indicates some significant discrepancies between actual demand and demand forecasts. Demand was generally above the forecasts made four and 12 hours ahead – in some cases, more than seven per cent, or 959 MW, above forecast.

Table 8: NSW demand during extreme price events: June 12 to 28 2007

Time	NSW price (\$/MWh)	NSW demand (MW)	Variance from 4 hr forecast	Variance from 12 hr forecast	Demand as percentage of 2006 winter peak
12/06 6:00 PM	6276.44	12488	6.0%	6.0%	95%
13/06 6:00 PM	9936.37	12782	1.7%	7.5%	98%
13/06 6:30 PM	9420.63	12852	2.1%	6.2%	98%
13/06 7:00 PM	8838.26	12770	2.2%	6.6%	98%
13/06 7:30 PM	5793.82	12543	2.9%	7.4%	96%
14/06 6:00 PM	8461.50	12923	0.3%	1.1%	99%
14/06 6:30 PM	5386.06	12979	0.4%	1.2%	99%
15/06 6:30 PM	5350.05	12597	0.5%	1.5%	96%
16/06 6:00 PM	6868.57	11443	2.2%	4.0%	87%
19/06 6:00 PM	7912.30	13327	3.2%	3.5%	102%
20/06 6:00 PM	5367.37	12793	-2.6%	-1.4%	98%
26/06 6:00 PM	7023.72	12965	1.0%	4.6%	99%
27/06 6:00 PM	9176.17	13425	3.8%	5.3%	103%
27/06 6:30 PM	9106.18	13466	3.9%	5.0%	103%
27/06 7:00 PM	7264.44	13351	1.8%	4.5%	102%
28/06 6:00 PM	8524.85	13122	-2.2%	0.4%	100%
28/06 6:30 PM	7839.88	13175	-1.3%	0.6%	101%

Table 9 indicates that high levels of demand were also experienced in Queensland throughout the high priced events in June. A new record winter demand was set on Wednesday 20 June. However, in only half of the 12 time intervals where \$5000/MWh prices were recorded did Queensland demand reach at least 95 per cent of the 2006 winter peak. In addition these only occurred over the latter part of the month when New South Wales demand was also at very high levels⁶. Demand was generally closer to the four hour and 12 hour forecasts for Queensland than for New South Wales.

The data indicates that Queensland electricity demand was generally not a major factor influencing the high prices in June. Rather prices spiked in Queensland principally as a flow-on effect of demand and supply issues in New South Wales.

Table 9: Queensland demand during extreme price events: June 2007

Time	Old price (\$/MWh)	Old demand (MW)	Variance from 4 hr forecast	Variance from 12 hr forecast	Demand as percentage of 2006 winter peak
12/06 6:00 PM	5697.11	6952	-2.3%	-2.6%	91%
13/06 6:00 PM	6951.18	7089	2.0%	1.7%	93%
14/06 6:00 PM	7796.33	7135	-0.3%	0.6%	94%
16/06 6:00 PM	6215.97	6629	1.0%	1.5%	87%
19/06 6:00 PM	8085.79	7188	1.9%	0.3%	94%
20/06 6:00 PM	5393.07	7838	3.9%	7.2%	103%
26/06 6:00 PM	6358.55	7304	-1.5%	-2.2%	96%
27/06 6:00 PM	7846.63	7205	0.2%	-1.2%	94%
27/06 6:30 PM	7685.67	7291	3.5%	1.4%	96%
27/06 7:00 PM	6354.42	7296	5.6%	3.7%	96%
28/06 6:00 PM	8339.16	7505	0.8%	0.6%	99%
28/06 6:30 PM	7586.54	7544	1.5%	1.2%	99%

Figure 6 illustrates the variation between actual and forecast demand in the four hours leading to dispatch for each time interval with spot prices above \$5000/MWh. Negative values indicate forecasts below actual demand (or demand above forecast). The chart

⁶ Note that Queensland is summer peaking. The maximum demand during June 2007 was around ten per cent lower than the record demand in the summer of 2006-07.

indicates an under forecasting of demand in most trading intervals where prices spiked above \$5000/MWh.

Figure 6: Errors in demand forecast within four hours to dispatch, during extreme price events.

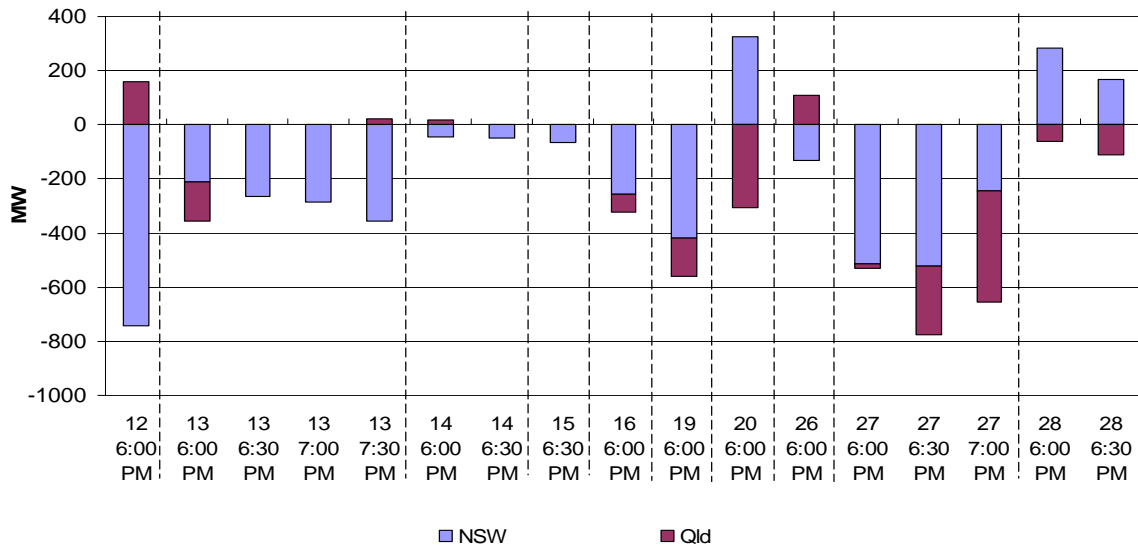


Table 10 summarises spot price events above \$5000/MWh in the NEM from Tuesday June 12 to Thursday 28 June 2007 together with the price forecasts four and 12 hours ahead. In many cases, the high price events were not anticipated in forecasts. The price variations from forecast were more than tenfold in some instances. Variations in demand, generator and network availability all contributed to these variations.

Table 10: NEM spot price events above \$5000/MWh — June 12 to 28 2007

Date	Time	Region	<i>Price (\$/MWh) for 30 minute interval</i>		
			Actual price	4 hr forecast	12 hr forecast
Tue 12 June	6:00 PM	NSW	6276.44	500.01	500.01
	6:00 PM	QLD	5697.11	481.36	484.75
	6:00 PM	Snowy	5201.92	430.06	429.91
Wed 13 June	6:00 PM	NSW	9936.37	359.68	331.48
	6:00 PM	Qld	6951.18	299.16	303.50
	6:00 PM	Snowy	7715.69	299.52	299.52
	6:30 PM	NSW	9420.63	360.15	335.66
	6:30 PM	Snowy	7432.57	300.21	299.52
	7:00 PM	NSW	8838.26	368.50	331.47
	7:00 PM	Snowy	7143.03	304.41	299.52
	7:30 PM	NSW	5793.82	361.06	293.50
Thu 14 June	6:00 PM	NSW	8461.50	8888.00	8667.00
	6:00 PM	Qld	7796.33	289.83	156.57
	6:00 PM	Snowy	6868.66	7129.03	7129.03
	6:30 PM	NSW	5386.06	8889.00	8888.00
Fri 15 June	6:30 PM	NSW	5350.05	500.00	538.52
Sat 16 June	6:00 PM	NSW	6868.57	402.80	334.75
	6:00 PM	QLD	6215.97	362.62	289.75
	6:00 PM	SNOWY	5951.18	349.07	300.00
Tue 19 June	6:00 PM	NSW	7912.30	6993.99	342.12
	6:00 PM	QLD	8085.79	6843.49	291.60
	6:00 PM	Snowy	6383.03	91.25	91.25
Wed 20 June	6:00 PM	NSW	5367.37	4327.86	340.55
	6:00 PM	QLD	5393.07	4002.80	290.52

<i>Price (\$/MWh) for 30 minute interval</i>					
Date	Time	Region	Actual	4 hr forecast	12 hr forecast
Tue 26 June	6:00 PM	NSW	7023.72	7950.51	259.82
	6:00 PM	Qld	6358.55	7451.35	232.34
	6:00 PM	Snowy	5748.13	6537.75	238.76
Wed 27 June	6:00 PM	NSW	9176.17	646.23	4839.50
	6:00 PM	Qld	7846.63	612.35	4624.95
	6:00 PM	Snowy	7490.56	539.93	4128.36
	6:30 PM	NSW	9106.18	534.05	6646.71
	6:30 PM	Qld	7685.67	487.77	6000.00
	6:30 PM	Snowy	7485.87	453.32	5757.08
	7:00 PM	NSW	7264.44	516.35	503.86
	7:00 PM	Qld	6354.42	457.45	457.19
	7:00 PM	Snowy	6012.04	438.30	439.12
Thu 28 June	6:00 PM	NSW	8524.85	8666.01	9350.00
	6:00 PM	Qld	8339.16	7889.78	9005.39
	6:00 PM	Snowy	7051.62	7139.82	7569.58
	6:30 PM	NSW	7839.88	7310.25	9351.22
	6:30 PM	Qld	7586.54	6748.21	8880.92
	6:30 PM	Snowy	6435.96	6024.16	7763.86

6. Effects on reliability

Aside from the price impact, the combined effect of demand and supply conditions on the market led to low reserves in New South Wales between 12 June and 19 June 2007. NEMMCO provides notification through the market systems when reserves fall below predetermined levels, as defined in the market rules. NEMMCO notified that actual reserves were less than the largest generating unit for a period on 13 June. On five other occasions during the high priced periods, reserves were less than the two largest generating units. The high prices over the period saw some demand side response by major users on several evenings. After Macquarie switched on its 660 MW Bayswater 1 generator on June 21, the reserves in New South Wales improved.

Table 11 lists market notifications by NEMMCO of low reserves on days when prices exceeded \$5000/MWh.

Table 11: Actual low reserve notices, June 12 to June 28 2007

Date	Time (actual shortfall)	Condition	Comments
12 Jun	6.15 pm - 7 pm	LOR 1 in NSW	Shortfalls not forecast
13 Jun	5.10 pm - 8.30 pm	LOR 1 in NSW	First forecast at 3.33 pm
13 Jun	5.30 pm - 6.40 pm	LOR 2 in NSW	First forecast at 5.03 pm
14 Jun	5 pm - 8.25 pm	LOR 1 in NSW	First forecast at 10.15 pm, June 13
15 Jun	5.30 pm - 6.10 pm	LOR 1 in NSW	First forecast at 4.55 pm
16 Jun	<i>No forecast or actual shortfalls</i>		
19 Jun	6 pm - 6.30 pm	LOR 1 in NSW	First forecast at 3.10 pm
20 Jun	<i>No forecast or actual shortfalls</i>		
26 Jun	-		LRC first forecast at 5 pm
27 Jun	-		LOR 1 first forecast at 3.55 pm
28 Jun	<i>No forecast or actual shortfalls</i>		

Notes:

LOR 1 indicates reserves less than the two largest contingencies, (which in NSW is the two largest generating units, each of 660 MW), or 1320 MW.

LOR 2 indicates reserves less than the largest contingency, or 660 MW.

LRC indicates reserves less than the minimum reserve level for New South Wales.

7. Assessment

The \$5000/MWh price events from 12 to 28 June 2007 can be traced to a layering of factors. Tight supply conditions which led to shortages of electricity at normal price levels combined with record demand for electricity occurred on many days through June. As a backdrop, drought had constrained hydro-generating capacity and some coal-fired capacity for several months. Actual demand for a number of the high priced periods was also considerably higher than forecast only a few hours earlier. This combined with a number of generator outages, network outages and generator limitations that were not drought related led to an extremely tight demand-supply balance.

In combination these factors led to a tight supply – demand balance. The effect of the tight supply – demand balance on market outcomes appears to have been exacerbated by the day ahead bidding practices of generators, particularly Macquarie Generation. Macquarie Generation repriced capacity into higher price bands during evening peaks every day in June. It repriced up to 800MW (or around 20 per cent of its capacity) from under \$500/MWh to over \$5000/MWh between 5 pm and 7.30 pm. Each of the \$5000/MWh events occurred during these evening peaks. These practices did not involve a breach of the National Electricity Rules.

Aside from the price impact, supply conditions were tight at times and NEMMCO reported low reserves on six separate occasions.

Appendix A \$5000/MWh prices in June 2007 — contributing factors

Appendix A provides further detail on significant factors related to the \$5000/MWh events of June 2007.

Generator rebidding

This section covers the rebids made by generators in the Queensland, New South Wales and Snowy regions, for all trading intervals where the price went above \$5000/MWh. Only those rebids which have had a significant impact on market outcomes have been included. Generally this comprises rebids that occurred in the four hours leading to dispatch that involved a shift in capacity of greater than 100 MW into or out of prices of less than \$500/MWh. The threshold price of \$500/MWh has been used as typical of the four hour ahead price forecasts.

Tuesday 12 June 6 pm

Eraring Energy reduced the available capacity across Eraring units 1, 2 and 3 by a total of 335 MW for the 6 pm trading interval. Most of this occurred at 6.36 pm the previous evening with a rebid which set a fixed loading level of 400 MW on unit 3, effectively reducing the unit's availability by 295 MW. The rebid reason given was "Change in capacity due to steam leak". The unit remained at this reduced fixed loading level until late Friday night when the unit was shutdown, returning around midday on Sunday. The other rebids quoted wet coal as the reason for the additional 40 MW availability reduction.

At 10.31 am, Delta Electricity rebid Vales Point unit 6 into the market with an expected synchronisation time of 2 pm. The unit's forecast availability for 6 pm was 220 MW. The rebid reason given was "Unit RTS::Avail change". The return was delayed with rebids at 3.34 pm, 4.03 pm and 5.06 pm. The unit synchronised during the 6 pm trading interval, tripped immediately, and eventually returning later that evening.

From 3.11 pm, Origin Energy rebid a total of 358 MW of capacity from above \$9000/MWh into prices of less than \$300/MWh across Mt Stuart and Roma. The rebid reasons given were “Change in PDS” and “Constraint management”.

Wednesday 13 June 6 pm to 7 pm

A number of rebids by Delta Electricity over the course of the day reduced its units' availability. At 2 pm 's Vales Point unit 6 tripped from 270 MW. In total 660 MW of capacity at Vales Point was made unavailable for the evening. The rebid reasons given over the day included “Feed pump::Capacity limit change” and “Plant testing capacity limit change” and “Unit trip::capacity limit change”. A further 320 MW of capacity across Munmorah units 3 and 4 was removed over the course of the morning as a result of coal problems before unit 4 tripped at 12.30 pm from 200 MW. The unit re-synchronised at around 6.15 pm with minimal output over the remainder of the evening peak. The rebid reasons given included “Vibration management::Capacity limit change”, “Coal supply::change capacity” and “Return to service::capacity changed”.

From midday, Tarong Energy rebid as much as 105 MW of capacity from prices below \$300/MWh to above \$4000/MWh. An extra 50 MW of capacity was presented, ultimately all priced above \$4000/MWh. The rebid reasons given were “Plant conditions::adjust avail”, “Manage WIV water resource ::Volume profile change”, “Manage interconnector constraint::volume profile change” and “Manage WIV water resource ::swap WIV for TAR gen”.

From 1.15 pm, Stanwell shifted around 550 MW of capacity into prices of less than \$10/MWh for the evening peak. The rebid reason given was “Manage transmission constraint”. Further rebids, from 4.56 pm saw 270 MW of capacity rebid from below zero to above \$9000/MWh. The rebid reason given was “Manage transmission constraint”.

Over two rebids at 4.25 pm and 4.43 pm, Macquarie Generation increased the availability across its portfolio by 105 MW. This included 50 MW across Bayswater, 30 MW at its Liddell and its 25 MW Hunter Valley gas turbine. All of this capacity was priced above \$4000/MWh with most priced above \$9000/MWh. The rebid reasons given were “Change in NSW availability” and “LRC Forecast for NSW”.

Delays in commissioning tests of CS Energy's Kogan Creek power station saw a reduction of 150 MW of available capacity with the unit synchronising at around 5.30 pm. The unit is continuing its commissioning.

Thursday 14 June 6 pm to 6.30 pm

The delayed return to service of Millmerran unit two, reduced the available capacity by 220 MW, all of this capacity was priced below zero. The rebid reason given was "Revised synchronisation". This followed the unit's trip at around 11.30 pm on Tuesday 12 June.

Full load tests on CS Energy's Kogan Creek were delayed with the unit reducing its available capacity by 410 MW over a number of rebids to 340 MW.

At 2.35 pm, Origin Energy shifted 360 MW of capacity into prices of less than \$10/MWh from prices above \$9000/MWh across Mt Stuart and Roma. The rebid reason given was "Change in PDS".

Friday 15 June 6.30 pm

Stanwell rebid a number of times during the day, shifting as much as 520 MW of capacity into prices of less than \$10/MWh. All of this capacity was previously priced at less than \$200/MWh. At 6.01 pm, effective 6.10 pm, 230 MW of capacity was shifted into prices above \$9000/MWh. The reason given for all rebids was "Manage transmission constraint".

From 9.30 am, over a number of rebids, Delta Electricity reduced its available capacity by a total of 100 MW. All of this capacity was priced below \$100/MWh. At 4.07 pm, 30 MW of capacity was shifted from prices of around \$5000/MWh to prices of around \$60/MWh. The rebid reasons included "Plant condition: Fabric filter availability", "Spot price change:capacity limit change", "Plant condition:Milling capacity", "High silica::Capacity limit change" and "Milling capacity::capacity limit change".

At 3.22 pm, Origin Energy shifted 288 MW of capacity at Mt Stuart from prices of above \$9000/MWh to below zero. The rebid reason given was "Change in PDS".

Over a number of rebids from 4.40 pm, Snowy Hydro shifted a total of 155 MW of capacity from prices below \$500/MWh to prices above \$5000/MWh. The rebids also included slight changes to the availability of the portfolio. The rebid reasons given included “Manage forecast voltage constraint Snowy1:Bandshift up”, “Manage Snowy1 voltage constraint:Re-Aloc gen”, “Manage Snowy1 constraint:Bandshift dn”, “Prices higher than expected:bandshift down”, “Manage Snowy1 constraint bandshift up”, “Manage Snowy constraint” and “Mng Snowy1:band shift down”.

Saturday 16 June 6 pm

At 1.13 pm CS Energy delayed commissioning tests on Kogan Creek reducing available capacity by 400 MW to zero.

At 4.45 pm Macquarie Generation rebid 460 MW of capacity at Liddell from prices below \$100/MWh to prices above \$4000/MWh. At the same time, 300 MW of capacity at Bayswater was shifted from prices above \$9000/MWh to under \$20/MWh. The rebid reasons given were “Coal management” and “Adjustment due to LD coaling”.

At 5.25 pm Snowy shifted 149 MW of capacity at Murray from prices of less than \$500/MWh to above \$9000/MWh. The rebid reason given was “Manage FCAST snowy constraint 5 min pd”.

At 5.41 pm Origin Energy rebid 288 MW of capacity across Mt Stuart from prices above \$9000/MWh to zero. The rebid reason given was “Change in PDS”.

Tuesday 19 June 6 pm

At 12.29 pm Callide Power Trader delayed the return to service of Callide C unit 4, reducing the available capacity by 450 MW to zero. All of this capacity was priced below \$30/MWh. The rebid reason given was “Unit RTS” or unit return to service.

Over two rebids at 12.37 pm and 3.16 pm Origin rebid 356 MW of capacity at Roma and Mt Stuart from prices above \$9000/MWh to below zero. The rebid reason given was “change in PDS”.

At 3.41 pm Macquarie Generation rebid 210 MW of capacity across its portfolio from prices above \$8000/MWh to below \$500/MWh. The rebid reasons given were “Coal management” and “Adjustments due to LD”.

Wednesday 20 June 6 pm

Over two rebids at 3.43 am and 8.39 am Millmerran reduced the available capacity of Millmerran unit two by 435 MW to zero. All of this capacity was priced at less than zero. The rebid reasons given were “Coal issues” and “Forced outage”.

Over two rebids at 11.54 am and 5.44 pm Delta Electricity reduced the available capacity at Vales Point unit six by 220 MW. All of this capacity was priced below \$20/MWh. The rebid reasons given were “FF performance tuning::capacity limit change” and “Blocked dust hoppers”.

At 4.18 pm CS Energy reduced the available capacity at Kogan Creek by 500 MW. The availability of this unit was increased over the following hour and a half by 100 MW.

Bayswater unit 1 attempted to come online following a long term outage. The unit initially synchronised at 6 pm before tripping, reducing capacity by 210 MW. All of this capacity was priced below zero. The unit successfully return to service at around 11 pm.

Tuesday 26 June 6 pm

At 4.18 am CS Energy reduced the available capacity at Swanbank unit 1 by 120 MW, most of which was priced below \$300/MWh. The rebid reason given was “Swan B1 Econ Leak”. A further rebid was made at 10.07 am which reduced the available capacity at Kogan Creek by 600 MW.

At 9.32 am Delta Electricity delayed the return of Munmorah unit four, reducing available capacity by 290 MW. All of this capacity was priced below \$20/MWh. From 1 pm, the return to service of Wallerawang unit seven was also delayed, reducing available capacity by 470 MW. All of this capacity was priced below \$300/MWh. The rebid reasons given were “RTS delay:capacity change” and “Turbine expansion::capacity limit change”.

Wednesday 27 June 6 pm to 7 pm

Over several rebids Macquarie Generation reduced its available capacity across Liddell units 1, 3 and 4 by 245 MW, with 120 MW of this capacity priced below \$30/MWh. The rebid reasons given were “Milling limit”, “Mill RTS”, “Milling limit and FCAS LR”.

Over several rebids from 1.24 pm Entertrade rebid 175 MW of capacity at Oakey from prices above \$8000/MWh to below \$500/MWh. The rebid reasons given included “Inter/intra connector constraint::change MW distrib” and “Material change in market conditions::change MW distrib.”

Over several rebids from 2.45 pm, Delta Electricity reduced the available capacity at Wallerawang unit seven by 190 MW, all of which was priced below \$300/MWh. The rebid reason given was “Pump::capacity limit change”.

At 3.19 pm Origin Energy rebid 360 MW of capacity across Mt Stuart and Roma from prices above \$9000/MWh to below zero, this included a slight increase in available capacity. The rebid reason given was “Change in PDS”.

Thursday 28 June 6 pm to 6.30 pm

At 12.50 pm CS Energy delayed commissioning tests at Kogan Creek, reducing the available capacity by 600 MW.

At 2.31 pm Origin Energy rebid 360 MW of capacity across Mt Stuart and Roma from prices above \$9000/MWh to below zero. This rebid also slightly increased the available capacity. The rebid reason given was “Change in PDS.”

From 2.43 pm Macquarie Generation reduced its available capacity across Liddell units 1, 2 and 3 by 445 MW, with 220 MW of this capacity priced below \$30/MWh. The rebid reasons given were “Milling limit” and “Revised Milling limit”.

Transmission network issues

A number of issues in the transmission network contributed to the \$5000/MWh spot price events that occurred between June 12 and June 28. The contributing network elements were:

- the 330 kV 71 line between Mt Piper and Wallerawang and the 330 kV 72 line between Mt Piper and Wellington, in New South Wales
- the Blackwall SVC in Queensland
- the 814 line from Gladstone to Gin Gin in Queensland

Unplanned outages on the 71 and 72 lines in New South Wales

Unplanned outages of the 71 and 72 lines occurred between Wednesday 13 June and Friday 15 June. These outages had a minor impact on the capability of the Snowy to New South Wales interconnector.

On Wednesday 13 June an unplanned outage of the 71 line between Mt Piper and Wallerawang occurred. Constraints were invoked between 5.25 pm and 11.30 pm to manage this outage. On this day, one constraint from this set bound for two 5-minute dispatch intervals, at 5.40 pm and 5.50 pm. The limit on flows from Snowy at the time was 3273 MW and 3259 MW. This is close to the nominal limit of around 3300 MW.

A second unplanned outage of the 71 line occurred for most of Thursday 14 June, with the same constraint set invoked from 8.30 am to 11.30 pm. There were no impacts on dispatch during this period.

A further unplanned outage of the 71 line occurred on Friday 15 June with constraints invoked for the 6 pm trading interval. A constraint from this set bound for two dispatch intervals at 5.55 pm and 6 pm, limiting flows to 3131 MW and 3139 MW, again close to the nominal limit of 3300 MW.

The short term outage on Friday 15 July was followed by a further unplanned outage of the 72 line between Mt Piper and Wellington for the 6.30 pm trading interval. No constraints from this set affected dispatch, however at 6.10 pm, 6.15 pm and 6.25 pm, a system normal constraint caused flows from Snowy to be limited to around 2700 MW.

Blackwall SVC

The Blackwall SVC was out of service for maintenance over Wednesday 13 June and Thursday 14 June. This outage was first entered into the NOS¹ on 15 May and was scheduled to take place on 13 June between 8.30 am and 3 pm. The commencement of the outage was delayed, with constraints invoked in the market systems from 11.10 am on 13 June and with the outage completed by 3.50 pm. However, shortly after, at 4.12 pm, constraints were again invoked, effective from 4.20 pm until 5 pm the next day. A further revision at 4.33 pm saw the constraints invoked until Thursday June 28, an additional two weeks.

When invoked, the constraints had the effect of reducing the Queensland to New South Wales interconnector to 540 MW, around half its nominal capability.

On Thursday 14 June as the evening peak commenced, the constraint set to manage this outage was revoked from the market systems at 5.28 pm. This was accompanied by a market notice which indicated that the network limits were originally calculated without consideration of the status of the Braemar and Kogan Creek generators. With these generators online, the Queensland to New South Wales transfer capability was increased and the lower limit was removed.

Transmission outages of 814 line between Gladstone and Gin Gin

Outages of the 814 line between Gladstone and Gin Gin in central Queensland occurred on Wednesday 13, Thursday 14, Friday 15, Monday 18, Tuesday 19, Wednesday 20, Thursday 21 and Friday 22 June. Five of these days coincided with the day of prices greater than \$5000/MWh. Notification for the outage on Wednesday 13 June was first provided through the NOS on Tuesday 15 May and the remaining outages were first notified on Thursday 31 May.

During this outage, the constraint set Q-GGGLD was invoked, this includes the constraint Q_CS_1650 which bound on all days except Tuesday 19 June. The constraint bound for between 3 hours and 6 hours on those days. The constraint limits flows

¹ The Network Outage Scheduler (NOS) is an element of NEMMCO's market systems, which provides information on network outages and their impacts on market operation.

between central and South Queensland, and directly affects around 5700 MW of generation capacity in central Queensland.

On each day, the network outage was planned to be completed before 5 pm (that is before the evening peak demand period). On 18 June, the outage continued until 7.25 pm. On 14 June, the constraint was removed from the system at 4.25 pm, half an hour early and led to a 5-minute dispatch interval price of zero in Queensland at 4.30 pm.

Appendix B Generators that set the energy price for \$5000/MWh trading intervals

The following tables B1–B24 identify each trading interval in which the spot price exceeded \$5000/MWh from June 12 to 28 2007. 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 NEMMCO². 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.

Tuesday 12 June 6 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$9046.29	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.21	\$9046.29
17:40	\$9038.59	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.21	\$9038.59
17:45	\$9037.76	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.21	\$9037.76
17:50	\$4993.99	Macquarie Generation	LD04	Energy	\$4993.99	1.00	\$4993.99
17:55	\$4934.00	Delta Electricity	MP2	Energy	\$4934.00	1.00	\$4934.00
18:00	\$608.00	Macquarie Generation	BW03	Energy	\$608.00	1.00	\$608.00
Spot price		\$6276.44/MWh					

Tuesday 12 June 6 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$8263.94	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.11	\$8263.94
17:40	\$8257.16	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.10	\$8257.16
17:45	\$8203.91	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.10	\$8203.91
17:50	\$4499.29	Macquarie Generation	LD04	Energy	\$4993.99	0.90	\$4499.29
17:55	\$4410.68	Delta Electricity	MP2	Energy	\$4934.00	0.89	\$4410.68
18:00	\$547.71	Macquarie Generation	BW03	Energy	\$608.00	0.90	\$547.71
Spot price		\$5697.11/MWh					

² NEMMCO first published details on how the price is determined, for every dispatch interval, in June 2004. Documentation of this process can be found at <http://www.nemmco.com.au/dispatchandpricing/140-0036.htm>

Tuesday 12 June 6 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
17:40	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
17:45	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
17:50	\$4161.23	Macquarie Generation	LD04	Energy	\$4993.99	0.83	\$4161.23
17:55	\$4109.82	Delta Electricity	MP2	Energy	\$4934.00	0.83	\$4109.81
18:00	\$506.33	Macquarie Generation	BW03	Energy	\$608.00	0.83	\$506.33

Spot price \$5201.92/MWh**Wednesday 13 June 6 pm – New South Wales**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$9906.99	Macquarie Generation	BW02	Energy	\$9906.99	1.00	\$9906.99
17:40	\$9987.25	Macquarie Generation	HVGTS	Energy	\$9987.25	1.00	\$9987.25
17:45	\$9909.00	Macquarie Generation	BW04	Energy	\$9909.00	1.00	\$9909.00
17:50	\$10 000.00	Snowy Hydro	TUMUT3	Energy	\$7478.04	-0.23	-\$1754.31
		Macquarie Generation	BW02	Energy	\$9906.99	1.19	\$11 777.03
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	0.22	\$0.00
		CS Energy	CALL_B_2	Raise 5 min	\$2.50	-0.22	-\$0.56
17:55	\$9908.00	Macquarie Generation	BW03	Energy	\$9908.00	1.00	\$9908.00
18:00	\$9906.99	Macquarie Generation	BW02	Energy	\$9906.99	1.00	\$9906.99

Spot price \$9936.37/MWh**Wednesday 13 June 6 pm – Queensland**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$9505.92	Macquarie Generation	BW02	Energy	\$9906.99	0.96	\$9505.93
17:40	\$9421.44	Snowy Hydro	TUMUT3	Energy	\$7478.04	0.18	\$1324.70
		Macquarie Generation	HVGTS	Energy	\$9987.25	0.81	\$8096.40
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.17	\$0.00
		Hydro Tasmania	CETHANA	Raise 5 min	\$2.00	0.17	\$0.34
17:45	\$4624.95	Tarong	TARONG#4	Energy	\$4624.95	1.00	\$4624.95
17:50	\$4628.10	Tarong	TARONG#4	Energy	\$4624.95	1.00	\$4624.95
		Tarong	TARONG#4	Raise reg	\$3.80	-1.00	-\$3.80
		Stanwell	STAN-3	Raise reg	\$6.95	1.00	\$6.95
17:55	\$9444.42	Macquarie Generation	BW03	Energy	\$9908.00	0.95	\$9444.42
18:00	\$4082.25	Tarong	W/HOE#1	Energy	\$4082.25	1.00	\$4082.25

Spot price \$6951.18/MWh

Wednesday 13 June 6 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$7479.94	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
		Hydro Tasmania	BASTYAN	Raise 5 min	\$2.00	0.95	\$1.90
17:40	\$7479.94	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
		Hydro Tasmania	CETHANA	Raise 5 min	\$2.00	0.95	\$1.90
17:45	\$7970.13	Macquarie Generation	BW04	Energy	\$9909.00	0.80	\$7970.14
17:50	\$7480.42	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
		CS Energy	CALL_B_2	Raise 5 min	\$2.50	0.95	\$2.38
17:55	\$7972.20	Macquarie Generation	BW03	Energy	\$9908.00	0.80	\$7972.20
18:00	\$7911.50	Macquarie Generation	BW02	Energy	\$9906.99	0.80	\$7911.50
Spot price		\$7715.69/MWh					

Wednesday 13 June 6.30 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$9901.00	Macquarie Generation	LD01	Energy	\$9901.00	1.00	\$9901.00
18:10	\$9904.00	Macquarie Generation	LD04	Energy	\$9904.00	1.00	\$9904.00
18:15	\$9299.62	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.24	\$9298.08
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-1.18	\$0.00
		CS Energy	SWAN_B_4	Raise 5 min	\$1.30	1.18	\$1.54
18:20	\$9299.94	Hydro Tasmania	MEADOWBK	Energy	-\$1000.00	-1.18	\$1184.29
		Hydro Tasmania	POAT110	Energy	-\$999.70	1.18	-\$1183.94
		Snowy Hydro	TUMUT3	Energy	\$7478.04	1.24	\$9299.00
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-1.18	\$0.00
		Hydro Tasmania	MEADOWBK	Raise 5 min	\$0.50	1.18	\$0.59
18:25	\$9230.20	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.23	\$9230.20
18:30	\$8889.00	Macquarie Generation	BW04	Energy	\$8889.00	1.00	\$8889.00
Spot price		\$9420.63/MWh					

Wednesday 13 June 6.30 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$7479.28	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
		CS Energy	SWAN_B_4	Raise 5 min	\$1.30	0.95	\$1.24

18:10	\$7479.94	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
		Hydro Tasmania	GORDON	Raise 5 min	\$2.00	0.95	\$1.90
18:15	\$7479.28	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
		CS Energy	SWAN_B_4	Raise 5 min	\$1.30	0.95	\$1.24
18:20	\$7478.80	Hydro Tasmania	MEADOWBK	Energy	-\$1000.00	-0.95	\$952.38
		Hydro Tasmania	POAT110	Energy	-\$999.70	0.95	-\$952.10
		Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
		Hydro Tasmania	MEADOWBK	Raise 5 min	\$0.50	0.95	\$0.48
18:25	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
18:30	\$7200.08	Macquarie Generation	BW04	Energy	\$8889.00	0.81	\$7200.08
Spot price		\$7432.57/MWh					

Wednesday 13 June 7 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:35	\$8888.00	Macquarie Generation	BW03	Energy	\$8888.00	1.00	\$8888.00
18:40	\$8888.00	Macquarie Generation	BW03	Energy	\$8888.00	1.00	\$8888.00
18:45	\$8667.00	Macquarie Generation	BW02	Energy	\$8667.00	1.00	\$8667.00
18:50	\$8888.00	Macquarie Generation	BW03	Energy	\$8888.00	1.00	\$8888.00
18:55	\$8888.00	Macquarie Generation	BW03	Energy	\$8888.00	1.00	\$8888.00
19:00	\$8810.53	Snowy Hydro	GUTHEGA	Energy	\$7125.00	1.24	\$8810.53
Spot price		\$8838.26/MWh					

Wednesday 13 June 7 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:35	\$7143.65	Macquarie Generation	BW03	Energy	\$8888.00	0.80	\$7143.65
18:40	\$7195.09	Macquarie Generation	BW03	Energy	\$8888.00	0.81	\$7195.08
18:45	\$7014.03	Macquarie Generation	BW02	Energy	\$8667.00	0.81	\$7014.03
18:50	\$7191.16	Macquarie Generation	BW03	Energy	\$8888.00	0.81	\$7191.16
18:55	\$7189.26	Macquarie Generation	BW03	Energy	\$8888.00	0.81	\$7189.26
19:00	\$7125.00	Snowy Hydro	GUTHEGA	Energy	\$7125.00	1.00	\$7125.00
Spot price		\$7143.03/MWh					

Wednesday 13 June 7.30 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
19:05	\$8888.00	Macquarie Generation	BW03	Energy	\$8888.00	1.00	\$8888.00
19:10	\$6991.00	Macquarie Generation	LD01	Energy	\$6991.00	1.00	\$6991.00
19:15	\$5843.85	Hydro Tasmania	JBUTTERS	Energy	-\$999.76	-5.85	\$5843.90
		Snowy Hydro	LAVNORTH	Energy	\$0.00	6.78	\$0.00
		Basslink	T-V-MNSP1VIC1	Energy	\$0.01	-5.63	-\$0.06
19:20	\$6991.10	Macquarie Generation	LD01	Energy	\$6991.00	1.00	\$6991.00
		Macquarie Generation	LD01	Raise reg	\$0.01	-0.05	\$0.00
		Stanwell	STAN-4	Raise reg	\$1.95	0.05	\$0.10
19:25	\$4992.00	Macquarie Generation	LD02	Energy	\$4992.00	1.00	\$4992.00
19:30	\$1056.97	Ecogen	JLB02	Energy	-\$1000.00	-0.01	\$5.38
		Ecogen	JLB03	Energy	-\$1000.00	-0.01	\$5.38
		International Power	LOYYB1	Energy	-\$1000.00	-0.14	\$141.27
		International Power	LOYYB2	Energy	-\$1000.00	-0.14	\$143.42
		International Power	HWPS1	Energy	-\$1000.00	-0.05	\$53.82
		International Power	HWPS2	Energy	-\$1000.00	-0.05	\$53.82
		International Power	HWPS5	Energy	-\$1000.00	-0.06	\$59.20
		LYMMCO	LYA1	Energy	-\$1000.00	-0.16	\$156.07
		LYMMCO	LYA2	Energy	-\$1000.00	-0.14	\$139.92
		LYMMCO	LYA3	Energy	-\$1000.00	-0.16	\$156.07
		LYMMCO	LYA4	Energy	-\$1000.00	-0.14	\$142.62
		Southern Hydro	AGLSOM	Energy	\$0.00	2.36	\$0.00

Spot price \$5793.82/MWh

Thursday 14 June 6 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$8667.00	Macquarie Generation	BW02	Energy	\$8667.00	1.00	\$8667.00
17:40	\$8888.00	Macquarie Generation	BW03	Energy	\$8888.00	1.00	\$8888.00
17:45	\$8888.00	Macquarie Generation	BW03	Energy	\$8888.00	1.00	\$8888.00
17:50	\$8667.00	Macquarie Generation	BW02	Energy	\$8667.00	1.00	\$8667.00
17:55	\$8667.00	Macquarie Generation	BW02	Energy	\$8667.00	1.00	\$8667.00
18:00	\$6992.00	Macquarie Generation	LD01	Energy	\$6991.00	1.00	\$6991.00
	\$6992.00	Macquarie Generation	LD01	Raise reg	\$0.01	-0.05	\$0.00
	\$6992.00	Tarong	TARONG#4	Raise reg	\$20.00	0.05	\$1.00

Spot price \$8461.50/MWh

Thursday 14 June 6 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$8033.70	Macquarie Generation	BW02	Energy	\$8667.00	0.93	\$8033.70
17:40	\$8239.71	Macquarie Generation	BW03	Energy	\$8888.00	0.93	\$8239.71
17:45	\$8246.41	Macquarie Generation	BW03	Energy	\$8888.00	0.93	\$8246.41
17:50	\$7983.31	Macquarie Generation	BW02	Energy	\$8667.00	0.92	\$7983.30
17:55	\$7925.19	Macquarie Generation	BW02	Energy	\$8667.00	0.91	\$7925.18
18:00	\$6349.69	Macquarie Generation	LD01	Energy	\$6991.00	0.91	\$6348.78
	\$6349.69	Macquarie Generation	LD01	Raise reg	\$0.01	-0.05	\$0.00
	\$6349.69	Tarong	TARONG#4	Raise reg	\$20.00	0.05	\$0.91

Spot price \$7796.33/MWh**Thursday 14 June 6 pm – Snowy**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$7071.19	Macquarie Generation	BW02	Energy	\$8667.00	0.82	\$7071.19
17:40	\$7257.67	Macquarie Generation	BW03	Energy	\$8888.00	0.82	\$7257.67
17:45	\$7207.28	Macquarie Generation	BW03	Energy	\$8888.00	0.81	\$7207.28
17:50	\$6975.96	Macquarie Generation	BW02	Energy	\$8667.00	0.80	\$6975.96
17:55	\$7029.44	Macquarie Generation	BW02	Energy	\$8667.00	0.81	\$7029.45
18:00	\$5670.43	Macquarie Generation	LD01	Energy	\$6991.00	0.81	\$5669.62
	\$5670.43	Macquarie Generation	LD01	Raise reg	\$0.01	-0.04	\$0.00
	\$5670.43	Tarong	TARONG#4	Raise reg	\$20.00	0.04	\$0.81

Spot price \$6868.66/MWh**Thursday 14 June 6.30 pm – New South Wales**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$5209.16	Tarong	TARONG#3	Energy	\$4728.55	1.10	\$5209.16
18:10	\$4993.00	Macquarie Generation	LD03	Energy	\$4993.00	1.00	\$4993.00
18:15	\$4993.00	Macquarie Generation	LD03	Energy	\$4993.00	1.00	\$4993.00
18:20	\$5137.18	Tarong	TARONG#4	Energy	\$4624.95	1.11	\$5137.18
18:25	\$6991.00	Macquarie Generation	LD01	Energy	\$6991.00	1.00	\$6991.00
18:30	\$4993.00	Macquarie Generation	LD03	Energy	\$4993.00	1.00	\$4993.00

Spot price \$5386.06/MWh

Friday 15 June 6 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$1392.27	LYMMCO	LYA2	Raise reg	\$0.95	1.05	\$0.99
		LYMMCO	LYA2	Energy	-\$1000.00	-1.05	\$1045.56
		Macquarie Generation	BW02	Raise 5 min	\$1.20	-1.00	-\$1.19
		Snowy Hydro	TUMUT3	Raise reg	\$15.00	-1.05	-\$15.68
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	1.00	\$0.00
		TRUenergy (SA)	TORRA4	Energy	\$145.00	0.94	\$135.97
		TRUenergy (SA)	TORRB1	Energy	\$145.00	1.56	\$226.62
18:10	\$9903.00	Macquarie Generation	LD03	Energy	\$9903.00	1.00	\$9903.00
18:15	\$9902.03	Macquarie Generation	LD02	Energy	\$9902.03	1.00	\$9902.03
18:20	\$500.00	Eraring Energy	ER04	Energy	\$500.00	1.00	\$500.00
18:25	\$9903.00	Macquarie Generation	LD03	Energy	\$9903.00	1.00	\$9903.00
18:30	\$500.00	Eraring Energy	ER04	Energy	\$500.00	1.00	\$500.00
Spot price		\$5350.05/MWh					

Saturday 16 June 6 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$8617.78	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.15	\$8617.78
17:40	\$8614.29	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.15	\$8614.29
17:45	\$6993.00	Macquarie Generation	LD03	Energy	\$6993.00	1.00	\$6993.00
17:50	\$8683.20	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.16	\$8683.20
17:55	\$6993.99	Macquarie Generation	LD04	Energy	\$6993.99	1.00	\$6993.99
18:00	\$1309.18	Ecogen	JLA02	Energy	-\$1000.00	-0.02	\$16.18
		International Power	LOYYB1	Energy	-\$1000.00	-0.14	\$143.69
		International Power	LOYYB2	Energy	-\$1000.00	-0.14	\$143.69
		International Power	HWPS1	Energy	-\$1000.00	-0.05	\$53.92
		International Power	HWPS2	Energy	-\$1000.00	-0.05	\$53.92
		International Power	HWPS5	Energy	-\$1000.00	-0.06	\$59.31
		LYMMCO	LYA1	Energy	-\$1000.00	-0.13	\$134.79
		LYMMCO	LYA2	Energy	-\$1000.00	-0.12	\$121.31
		LYMMCO	LYA3	Energy	-\$1000.00	-0.13	\$134.79
		LYMMCO	LYA4	Energy	-\$1000.00	-0.13	\$128.05
		TRUenergy (SA)	TORRB4	Energy	\$145.00	2.19	\$317.73
		LYMMCO	LYA1	Raise reg	\$2.42	2.19	\$5.30
		TRUenergy (SA)	TORRB4	Raise reg	\$1.60	-2.19	-\$3.51
Spot price		\$6868.57/MWh					

Saturday 16 June 6 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$7753.76	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.04	\$7753.76
17:40	\$7808.39	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.04	\$7808.39
17:45	\$6295.17	Macquarie Generation	LD03	Energy	\$6993.00	0.90	\$6295.17
17:50	\$7931.15	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.06	\$7931.15
17:55	\$6344.98	Macquarie Generation	LD04	Energy	\$6993.99	0.91	\$6344.98
18:00	\$1162.37	Ecogen	JLA02	Energy	-\$1000.00	-0.01	\$14.36
		International Power	LOYYB1	Energy	-\$1000.00	-0.13	\$127.58
		International Power	LOYYB2	Energy	-\$1000.00	-0.13	\$127.58
		International Power	HWPS1	Energy	-\$1000.00	-0.05	\$47.87
		International Power	HWPS2	Energy	-\$1000.00	-0.05	\$47.87
		International Power	HWPS5	Energy	-\$1000.00	-0.05	\$52.66
		LYMMCO	LYA1	Energy	-\$1000.00	-0.12	\$119.68
		LYMMCO	LYA2	Energy	-\$1000.00	-0.11	\$107.71
		LYMMCO	LYA3	Energy	-\$1000.00	-0.12	\$119.68
		LYMMCO	LYA4	Energy	-\$1000.00	-0.11	\$113.70
		TRUenergy (SA)	TORRB4	Energy	\$145.00	1.95	\$282.10
		LYMMCO	LYA1	Raise reg	\$2.42	1.95	\$4.71
		TRUenergy (SA)	TORRB4	Raise reg	\$1.60	-1.95	-\$3.11
Spot price		\$6215.97/MWh					

Saturday 16 June 6 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
17:40	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
17:45	\$6068.75	Macquarie Generation	LD03	Energy	\$6993.00	0.87	\$6068.75
17:50	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
17:55	\$6068.35	Macquarie Generation	LD04	Energy	\$6993.99	0.87	\$6068.34
18:00	\$1135.85	Ecogen	JLA02	Energy	-\$1000.00	-0.01	\$14.03
		International Power	LOYYB1	Energy	-\$1000.00	-0.12	\$124.67
		International Power	LOYYB2	Energy	-\$1000.00	-0.12	\$124.67
		International Power	HWPS1	Energy	-\$1000.00	-0.05	\$46.78
		International Power	HWPS2	Energy	-\$1000.00	-0.05	\$46.78
		International Power	HWPS5	Energy	-\$1000.00	-0.05	\$51.46
		LYMMCO	LYA1	Energy	-\$1000.00	-0.12	\$116.95
		LYMMCO	LYA2	Energy	-\$1000.00	-0.11	\$105.25

LYMMCO	LYA3	Energy	-\$1000.00	-0.12	\$116.95
LYMMCO	LYA4	Energy	-\$1000.00	-0.11	\$111.10
TRUenergy (SA)	TORRB4	Energy	\$145.00	1.90	\$275.66
LYMMCO	LYA1	Raise reg	\$2.42	1.90	\$4.60
TRUenergy (SA)	TORRB4	Raise reg	\$1.60	-1.90	-\$3.04

Spot price \$5951.18/MWh

Tuesday 19 June 6 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$9881.75	Stanwell	STAN-4	Energy	\$9993.87	0.99	\$9881.75
17:40	\$9189.37	Snowy Hydro	MURRAY	Energy	\$7477.00	1.23	\$9189.38
17:45	\$9121.32	Snowy Hydro	MURRAY	Energy	\$7477.00	1.22	\$9121.32
17:50	\$9131.00	Macquarie Generation	BW03	Energy	\$9008.00	1.00	\$9008.00
		CS Energy	SWAN_B_4	Raise 5 min	\$1.30	-1.00	-\$1.30
		#N/A	PTH01	Raise 5 min	\$97.99	1.00	\$97.99
		CS Energy	SWAN_B_4	Raise reg	\$32.00	1.00	\$32.00
		Macquarie Generation	BW03	Raise reg	\$5.80	-1.00	-\$5.80
		CS Energy	SWAN_B_4	Raise 6 sec	\$1.70	-0.38	-\$0.64
		Snowy Hydro	MURRAY	Raise 6 sec	\$2.00	0.38	\$0.75
17:55	\$8903.41	Macquarie Generation	BW03	Energy	\$8888.00	1.00	\$8888.00
		Macquarie Generation	BW03	Raise 5 min	\$0.03	-1.00	-\$0.03
		Snowy Hydro	MURRAY	Raise 5 min	\$15.00	1.00	\$15.00
		Macquarie Generation	BW03	Raise 60 sec	\$0.03	-0.61	-\$0.02
		Snowy Hydro	UPPTUMUT	Raise 60 sec	\$0.75	0.61	\$0.45
18:00	\$1246.93	Eraring Energy	ER03	Energy	\$1000.00	1.00	\$1000.00
		Eraring Energy	ER03	Raise reg	\$3.07	-1.00	-\$3.07
		Snowy Hydro	MURRAY	Raise reg	\$250.00	1.00	\$250.00

Spot price \$7912.30/MWh

Tuesday 19 June 6 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$9993.87	Stanwell	STAN-4	Energy	\$9993.87	1.00	\$9993.87
17:40	\$9359.97	Snowy Hydro	MURRAY	Energy	\$7477.00	1.25	\$9359.96
17:45	\$9414.39	Snowy Hydro	MURRAY	Energy	\$7477.00	1.26	\$9414.39
17:50	\$9364.88	Macquarie Generation	BW03	Energy	\$9008.00	1.03	\$9238.72
		CS Energy	SWAN_B_4	Raise 5 min	\$1.30	-1.03	-\$1.33
		#N/A	PTH01	Raise 5 min	\$97.99	1.03	\$100.50
		CS Energy	SWAN_B_4	Raise reg	\$32.00	1.03	\$32.82
		Macquarie Generation	BW03	Raise reg	\$5.80	-1.03	-\$5.95
		CS Energy	SWAN_B_4	Raise 6 sec	\$1.70	-0.38	-\$0.65
		Snowy Hydro	MURRAY	Raise 6 sec	\$2.00	0.38	\$0.77
17:55	\$9136.07	Macquarie Generation	BW03	Energy	\$8888.00	1.03	\$9120.26
		Macquarie Generation	BW03	Raise 5 min	\$0.03	-1.03	-\$0.03
		Snowy Hydro	MURRAY	Raise 5 min	\$15.00	1.03	\$15.39
		Macquarie Generation	BW03	Raise 60 sec	\$0.03	-0.62	-\$0.02
		Snowy Hydro	UPPTUMUT	Raise 60 sec	\$0.75	0.62	\$0.47
18:00	\$1245.57	Eraring Energy	ER03	Energy	\$1000.00	1.00	\$998.91
		Eraring Energy	ER03	Raise reg	\$3.07	-1.00	-\$3.07
		Snowy Hydro	MURRAY	Raise reg	\$250.00	1.00	\$249.73
Spot price	\$8085.79/MWh						

Tuesday 19 June 6 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$7554.23	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Hydro Tasmania	TUNGATIN	Raise 5 min	\$80.00	0.95	\$76.19
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
		Hydro Tasmania	TRIBUTE	Raise reg	\$15.00	0.95	\$14.29
		Hydro Tasmania	TUNGATIN	Raise reg	\$15.00	-0.95	-\$14.29
17:40	\$7477.00	Snowy Hydro	MURRAY	Energy	\$7477.00	1.00	\$7477.00
17:45	\$7477.00	Snowy Hydro	MURRAY	Energy	\$7477.00	1.00	\$7477.00
17:50	\$7477.00	Snowy Hydro	MURRAY	Energy	\$7477.00	1.00	\$7477.00
17:55	\$7298.34	Macquarie Generation	BW03	Energy	\$8888.00	0.82	\$7285.72
		Macquarie Generation	BW03	Raise 5 min	\$0.03	-0.82	-\$0.02
		Snowy Hydro	MURRAY	Raise 5 min	\$15.00	0.82	\$12.30
		Macquarie Generation	BW03	Raise 60 sec	\$0.03	-0.50	-\$0.01
		Snowy Hydro	UPPTUMUT	Raise 60 sec	\$0.75	0.50	\$0.37

18:00	\$1014.64	Eraring Energy	ER03	Energy	\$1000.00	0.81	\$813.71
		Eraring Energy	ER03	Raise reg	\$3.07	-0.81	-\$2.50
		Snowy Hydro	MURRAY	Raise reg	\$250.00	0.81	\$203.43

Spot price \$6383.03/MWh

Wednesday 20 June 6 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$3947.74	CS Energy	SWAN_E	Energy	\$4002.80	0.99	\$3947.74
17:40	\$4607.00	Tarong	TARONG#4	Energy	\$4624.95	0.99	\$4592.10
		CS Energy	CALL_B_1	Raise reg	\$15.00	0.99	\$14.89
		Tarong	TARONG#4	Raise reg	\$0.00	-0.99	\$0.00
17:45	\$5745.19	Ecogen	JLA02	Energy	-\$1000.00	-0.06	\$56.67
		Ecogen	JLA03	Energy	-\$1000.00	-0.06	\$56.67
		International Power	LOYYB1	Energy	-\$1000.00	-0.75	\$750.91
		International Power	LOYYB2	Energy	-\$1000.00	-0.74	\$743.83
		International Power	HWPS1	Energy	-\$1000.00	-0.28	\$283.36
		International Power	HWPS2	Energy	-\$1000.00	-0.28	\$283.36
		International Power	HWPS3	Energy	-\$1000.00	-0.31	\$311.70
		International Power	HWPS5	Energy	-\$1000.00	-0.31	\$311.70
		International Power	HWPS6	Energy	-\$1000.00	-0.31	\$311.70
		International Power	HWPS7	Energy	-\$1000.00	-0.31	\$311.70
		LYMMCO	LYA1	Energy	-\$1000.00	-0.82	\$821.75
		LYMMCO	LYA2	Energy	-\$1000.00	-0.75	\$750.91
		LYMMCO	LYA4	Energy	-\$1000.00	-0.75	\$750.91
		Snowy Hydro	LAVNORTH	Energy	\$0.00	7.00	\$0.00
17:50	\$5918.28	CS Energy	SWAN_B_1	Energy	\$6000.00	0.34	\$2064.52
		CS Energy	SWAN_B_3	Energy	\$6000.00	0.30	\$1789.25
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.34	\$2064.52
17:55	\$6992.00	Macquarie Generation	LD02	Energy	\$6992.00	1.00	\$6992.00
18:00	\$4993.99	Macquarie Generation	LD04	Energy	\$4993.99	1.00	\$4993.99

Spot price \$5367.37/MWh

Wednesday 20 June 6 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$4002.80	CS Energy	SWAN_E	Energy	\$4002.80	1.00	\$4002.80
17:40	\$4639.95	Tarong	TARONG#4	Energy	\$4624.95	1.00	\$4624.95
		CS Energy	CALL_B_1	Raise reg	\$15.00	1.00	\$15.00
		Tarong	TARONG#4	Raise reg	\$0.00	-1.00	\$0.00
17:45	\$5786.06	Ecogen	JLA02	Energy	-\$1000.00	-0.06	\$57.08
		Ecogen	JLA03	Energy	-\$1000.00	-0.06	\$57.08
		International Power	LOYB1	Energy	-\$1000.00	-0.76	\$756.26
		International Power	LOYB2	Energy	-\$1000.00	-0.75	\$749.12
		International Power	HWPS1	Energy	-\$1000.00	-0.29	\$285.38
		International Power	HWPS2	Energy	-\$1000.00	-0.29	\$285.38
		International Power	HWPS3	Energy	-\$1000.00	-0.31	\$313.92
		International Power	HWPS5	Energy	-\$1000.00	-0.31	\$313.92
		International Power	HWPS6	Energy	-\$1000.00	-0.31	\$313.92
		International Power	HWPS7	Energy	-\$1000.00	-0.31	\$313.92
		LYMMCO	LYA1	Energy	-\$1000.00	-0.83	\$827.60
		LYMMCO	LYA2	Energy	-\$1000.00	-0.76	\$756.26
		LYMMCO	LYA4	Energy	-\$1000.00	-0.76	\$756.26
		Snowy Hydro	LAVNORTH	Energy	\$0.00	7.05	\$0.00
17:50	\$6000.00	CS Energy	SWAN_B_1	Energy	\$6000.00	0.35	\$2093.02
		CS Energy	SWAN_B_3	Energy	\$6000.00	0.30	\$1813.96
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.35	\$2093.02
17:55	\$6998.91	Macquarie Generation	LD02	Energy	\$6992.00	1.00	\$6998.91
18:00	\$4930.67	Macquarie Generation	LD04	Energy	\$4993.99	0.99	\$4930.67

Spot price \$5393.07/MWh

Tuesday 26 June 6 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$6993.99	Macquarie Generation	LD04	Energy	\$6993.99	1.00	\$6993.99
17:40	\$6993.99	Macquarie Generation	LD04	Energy	\$6993.99	1.00	\$6993.99
17:45	\$8666.01	Macquarie Generation	BW01	Energy	\$8666.01	1.00	\$8666.01
17:50	\$6991.00	Macquarie Generation	LD01	Energy	\$6991.00	1.00	\$6991.00
17:55	\$6993.99	Macquarie Generation	LD04	Energy	\$6993.99	1.00	\$6993.99
18:00	\$5503.35	Tarong	TARONG#3	Energy	\$4899.04	1.12	\$5503.35

Spot price \$7023.72/MWh

Tuesday 26 June 6 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$6412.16	Macquarie Generation	LD04	Energy	\$6993.99	0.92	\$6412.16
17:40	\$6460.23	Macquarie Generation	LD04	Energy	\$6993.99	0.92	\$6460.23
17:45	\$7832.12	Macquarie Generation	BW01	Energy	\$8666.01	0.90	\$7832.12
17:50	\$6271.49	Macquarie Generation	LD01	Energy	\$6991.00	0.90	\$6271.49
17:55	\$6276.29	Macquarie Generation	LD04	Energy	\$6993.99	0.90	\$6276.29
18:00	\$4899.04	Tarong	TARONG#3	Energy	\$4899.04	1.00	\$4899.04
Spot price		\$6358.55/MWh					

Tuesday 26 June 6 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$5713.68	Macquarie Generation	LD04	Energy	\$6993.99	0.82	\$5713.68
17:40	\$5714.28	Macquarie Generation	LD04	Energy	\$6993.99	0.82	\$5714.28
17:45	\$7083.90	Macquarie Generation	BW01	Energy	\$8666.01	0.82	\$7083.90
17:50	\$5716.63	Macquarie Generation	LD01	Energy	\$6991.00	0.82	\$5716.63
17:55	\$5761.14	Macquarie Generation	LD04	Energy	\$6993.99	0.82	\$5761.14
18:00	\$4499.17	Tarong	TARONG#3	Energy	\$4899.04	0.92	\$4499.18
Spot price		\$5748.13/MWh					

Wednesday 27 June 6 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$9132.04	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.22	\$9130.63
		Macquarie Generation	BW04	Raise reg	\$7.80	0.61	\$4.76
		Snowy Hydro	UPPTUMUT	Raise reg	\$5.50	-0.61	-\$3.36
17:40	\$9129.31	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.22	\$9129.31
17:45	\$9138.77	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.22	\$9129.59
		International Power	LOYYB1	Raise reg	\$20.53	0.61	\$12.53
		Snowy Hydro	UPPTUMUT	Raise reg	\$5.50	-0.61	-\$3.36
17:50	\$9221.32	Snowy Hydro	MURRAY	Energy	\$7499.00	1.23	\$9221.32
17:55	\$9218.07	Snowy Hydro	MURRAY	Energy	\$7499.00	1.23	\$9218.07
18:00	\$9217.54	Snowy Hydro	MURRAY	Energy	\$7499.00	1.23	\$9217.54
Spot price		\$9176.17/MWh					

Wednesday 27 June 6 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$7561.78	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.01	\$7560.62
		Macquarie Generation	BW04	Raise reg	\$7.80	0.51	\$3.94
		Snowy Hydro	UPPTUMUT	Raise reg	\$5.50	-0.51	-\$2.78
17:40	\$7559.53	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.01	\$7559.53
17:45	\$7892.88	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.05	\$7884.96
		International Power	LOYYB1	Raise reg	\$20.53	0.53	\$10.82
		Snowy Hydro	UPPTUMUT	Raise reg	\$5.50	-0.53	-\$2.90
17:50	\$8023.02	Snowy Hydro	MURRAY	Energy	\$7499.00	1.07	\$8023.02
17:55	\$8019.98	Snowy Hydro	MURRAY	Energy	\$7499.00	1.07	\$8019.98
18:00	\$8022.59	Snowy Hydro	MURRAY	Energy	\$7499.00	1.07	\$8022.60
Spot price		\$7846.63/MWh					

Wednesday 27 June 6 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$7480.39	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.00	\$7479.24
		Macquarie Generation	BW04	Raise reg	\$7.80	0.50	\$3.90
		Snowy Hydro	UPPTUMUT	Raise reg	\$5.50	-0.50	-\$2.75
17:40	\$7479.24	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.00	\$7479.24
17:45	\$7486.76	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.00	\$7479.24
		International Power	LOYYB1	Raise reg	\$20.53	0.50	\$10.27
		Snowy Hydro	UPPTUMUT	Raise reg	\$5.50	-0.50	-\$2.75
17:50	\$7499.00	Snowy Hydro	MURRAY	Energy	\$7499.00	1.00	\$7499.00
17:55	\$7499.00	Snowy Hydro	MURRAY	Energy	\$7499.00	1.00	\$7499.00
18:00	\$7499.00	Snowy Hydro	MURRAY	Energy	\$7499.00	1.00	\$7499.00
Spot price		\$7490.56/MWh					

Wednesday 27 June 6.30 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$9062.77	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.21	\$9062.77
18:10	\$9130.38	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.22	\$9128.29
		Macquarie Generation	BW04	Raise 5 min	\$1.80	1.16	\$2.09
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-1.16	\$0.00
18:15	\$9154.90	Snowy Hydro	MURRAY	Energy	\$7499.00	1.22	\$9154.90
18:20	\$9065.11	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.21	\$9063.73
		Macquarie Generation	BW02	Raise 5 min	\$1.20	1.15	\$1.39
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-1.15	\$0.00
18:25	\$9156.57	Snowy Hydro	MURRAY	Energy	\$7499.00	1.22	\$9156.57
18:30	\$9067.35	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.21	\$9065.96
		Macquarie Generation	BW02	Raise 5 min	\$1.20	1.15	\$1.39
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-1.15	\$0.00
Spot price		\$9106.18/MWh					

Wednesday 27 June 6.30 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$7834.91	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.05	\$7834.91
18:10	\$7451.36	Enertrade	OAKEY2	Energy	\$7451.36	1.00	\$7451.36
18:15	\$7451.36	Enertrade	OAKEY2	Energy	\$7451.36	1.00	\$7451.36
18:20	\$7451.36	Enertrade	OAKEY2	Energy	\$7451.36	1.00	\$7451.36
18:25	\$8030.24	Snowy Hydro	MURRAY	Energy	\$7499.00	1.07	\$8030.24
18:30	\$7894.76	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.06	\$7893.56
		Macquarie Generation	BW02	Raise 5 min	\$1.20	1.01	\$1.21
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-1.01	\$0.00
Spot price		\$7685.67/MWh					

Wednesday 27 June 6.30 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$7479.24	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.00	\$7479.24
18:10	\$7479.75	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Macquarie Generation	BW04	Raise 5 min	\$1.80	0.95	\$1.71
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
18:15	\$7499.00	Snowy Hydro	MURRAY	Energy	\$7499.00	1.00	\$7499.00

18:20	\$7479.18	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Macquarie Generation	BW02	Raise 5 min	\$1.20	0.95	\$1.14
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
18:25	\$7499.00	Snowy Hydro	MURRAY	Energy	\$7499.00	1.00	\$7499.00
18:30	\$7479.18	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Macquarie Generation	BW02	Raise 5 min	\$1.20	0.95	\$1.14
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00

Spot price \$7485.89/MWh

Wednesday 27 June 7 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:35	\$9139.46	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.22	\$9138.29
		Enertrade	GSTONE1	Raise 5 min	\$1.00	1.16	\$1.16
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-1.16	\$0.00
18:40	\$9072.76	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.21	\$9072.77
18:45	\$9006.56	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.20	\$9006.56
18:50	\$8492.35	Enertrade	OAKEY2	Energy	\$7451.36	1.14	\$8492.34
18:55	\$6843.06	CS Energy	SWAN_B_2	Energy	\$6000.00	0.40	\$2387.11
		CS Energy	SWAN_B_3	Energy	\$6000.00	0.34	\$2068.83
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.40	\$2387.11
19:00	\$1032.42	Origin Energy	LADBROK1	Energy	\$0.01	1.36	\$0.01
		Origin Energy	LADBROK2	Energy	\$0.01	1.36	\$0.01
		Ecogen	JLB03	Energy	-\$1000.00	-0.02	\$19.57
		International Power	LOYYB1	Energy	-\$1000.00	-0.13	\$128.44
		International Power	LOYYB2	Energy	-\$1000.00	-0.13	\$128.44
		International Power	HWPS2	Energy	-\$1000.00	-0.05	\$48.93
		International Power	HWPS3	Energy	-\$1000.00	-0.05	\$53.82
		International Power	HWPS7	Energy	-\$1000.00	-0.05	\$53.82
		International Power	HWPS8	Energy	-\$1000.00	-0.05	\$53.82
		LYMMCO	LYA1	Energy	-\$1000.00	-0.14	\$141.89
		LYMMCO	LYA2	Energy	-\$1000.00	-0.13	\$129.66
		LYMMCO	LYA3	Energy	-\$1000.00	-0.14	\$144.34
		LYMMCO	LYA4	Energy	-\$1000.00	-0.13	\$129.66

Spot price \$7264.44/MWh

Wednesday 27 June 7 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:35	\$7959.03	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.06	\$7958.02
		Enertrade	GSTONE1	Raise 5 min	\$1.00	1.01	\$1.01
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-1.01	\$0.00
18:40	\$7963.60	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.06	\$7963.60
18:45	\$7841.07	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.05	\$7841.07
18:50	\$7451.36	Enertrade	OAKEY2	Energy	\$7451.36	1.00	\$7451.36
18:55	\$6000.00	CS Energy	SWAN_B_2	Energy	\$6000.00	0.35	\$2093.02
		CS Energy	SWAN_B_3	Energy	\$6000.00	0.30	\$1813.96
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.35	\$2093.02
19:00	\$911.48	Origin Energy	LADBROK1	Energy	\$0.01	1.20	\$0.01
		Origin Energy	LADBROK2	Energy	\$0.01	1.20	\$0.01
		Ecogen	JLB03	Energy	-\$1000.00	-0.02	\$17.28
		International Power	LOYYB1	Energy	-\$1000.00	-0.11	\$113.39
		International Power	LOYYB2	Energy	-\$1000.00	-0.11	\$113.39
		International Power	HWPS2	Energy	-\$1000.00	-0.04	\$43.20
		International Power	HWPS3	Energy	-\$1000.00	-0.05	\$47.52
		International Power	HWPS7	Energy	-\$1000.00	-0.05	\$47.52
		International Power	HWPS8	Energy	-\$1000.00	-0.05	\$47.52
		LYMMCO	LYA1	Energy	-\$1000.00	-0.13	\$125.27
		LYMMCO	LYA2	Energy	-\$1000.00	-0.11	\$114.47
		LYMMCO	LYA3	Energy	-\$1000.00	-0.13	\$127.43
		LYMMCO	LYA4	Energy	-\$1000.00	-0.11	\$114.47

Spot price \$6354.42/MWh

Wednesday 27 June 7 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:35	\$7478.99	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
		Enertrade	GSTONE1	Raise 5 min	\$1.00	0.95	\$0.95
		Snowy Hydro	TUMUT3	Raise 5 min	\$0.00	-0.95	\$0.00
18:40	\$7479.24	Snowy Hydro	UPPTUMUT	Energy	\$7479.24	1.00	\$7479.24
18:45	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
18:50	\$7100.67	Enertrade	OAKEY2	Energy	\$7451.36	0.95	\$7100.66
18:55	\$5678.76	CS Energy	SWAN_B_2	Energy	\$6000.00	0.33	\$1980.97
		CS Energy	SWAN_B_3	Energy	\$6000.00	0.29	\$1716.83
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.33	\$1980.97

19:00	\$856.52	Origin Energy	LADBROK1	Energy	\$0.01	1.13	\$0.01
		Origin Energy	LADBROK2	Energy	\$0.01	1.13	\$0.01
		Ecogen	JLB03	Energy	-\$1000.00	-0.02	\$16.24
		International Power	LOYYB1	Energy	-\$1000.00	-0.11	\$106.56
		International Power	LOYYB2	Energy	-\$1000.00	-0.11	\$106.56
		International Power	HWPS2	Energy	-\$1000.00	-0.04	\$40.59
		International Power	HWPS3	Energy	-\$1000.00	-0.04	\$44.65
		International Power	HWPS7	Energy	-\$1000.00	-0.04	\$44.65
		International Power	HWPS8	Energy	-\$1000.00	-0.04	\$44.65
		LYMMCO	LYA1	Energy	-\$1000.00	-0.12	\$117.72
		LYMMCO	LYA2	Energy	-\$1000.00	-0.11	\$107.57
		LYMMCO	LYA3	Energy	-\$1000.00	-0.12	\$119.75
		LYMMCO	LYA4	Energy	-\$1000.00	-0.11	\$107.57

Spot price \$6012.04/MWh

Thursday 28 June 6 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$9030.06	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.21	\$9030.06
17:40	\$9089.49	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.22	\$9089.49
17:45	\$9017.06	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.21	\$9017.07
17:50	\$8889.00	Macquarie Generation	BW04	Energy	\$8889.00	1.00	\$8889.00
17:55	\$8889.00	Macquarie Generation	BW04	Energy	\$8889.00	1.00	\$8889.00
18:00	\$6234.48	CS Energy	SWAN_B_1	Energy	\$6000.00	0.35	\$2078.14
		CS Energy	SWAN_B_2	Energy	\$6000.00	0.35	\$2078.14
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.35	\$2078.14
		CS Energy	SWAN_B_1	Raise 60 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_2	Raise 60 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_4	Raise 60 sec	\$0.01	-0.13	\$0.00
		TRUenergy	YWPS4	Raise 60 sec	\$0.05	0.39	\$0.02
		CS Energy	SWAN_B_1	Raise 6 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_2	Raise 6 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_4	Raise 6 sec	\$0.01	-0.13	\$0.00
		TRUenergy	TORRB1	Raise 6 sec	\$0.10	0.39	\$0.04

Spot price \$8524.85/MWh

Thursday 28 June 6 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$8748.96	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.17	\$8748.96
17:40	\$8932.99	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.19	\$8932.99
17:45	\$8864.30	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.19	\$8864.30
17:50	\$8745.21	Macquarie Generation	BW04	Energy	\$8889.00	0.98	\$8745.21
17:55	\$8743.43	Macquarie Generation	BW04	Energy	\$8889.00	0.98	\$8743.43
18:00	\$6000.05	CS Energy	SWAN_B_1	Energy	\$6000.00	0.33	\$2000.00
		CS Energy	SWAN_B_2	Energy	\$6000.00	0.33	\$2000.00
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.33	\$2000.00
		CS Energy	SWAN_B_1	Raise 60 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_2	Raise 60 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_4	Raise 60 sec	\$0.01	-0.13	\$0.00
		TRUenergy	YWPS4	Raise 60 sec	\$0.05	0.38	\$0.02
		CS Energy	SWAN_B_1	Raise 6 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_2	Raise 6 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_4	Raise 6 sec	\$0.01	-0.13	\$0.00
		TRUenergy	TORRB1	Raise 6 sec	\$0.10	0.38	\$0.04

Spot price \$8339.16/MWh

Thursday 28 June 6 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
17:35	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
17:40	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
17:45	\$7478.04	Snowy Hydro	TUMUT3	Energy	\$7478.04	1.00	\$7478.04
17:50	\$7371.74	Macquarie Generation	BW04	Energy	\$8889.00	0.83	\$7371.74
17:55	\$7372.02	Macquarie Generation	BW04	Energy	\$8889.00	0.83	\$7372.02
18:00	\$5131.82	CS Energy	SWAN_B_1	Energy	\$6000.00	0.29	\$1710.59
		CS Energy	SWAN_B_1	Raise 60 sec	\$0.01	-0.11	\$0.00
		CS Energy	SWAN_B_1	Raise 6 sec	\$0.01	-0.11	\$0.00
		CS Energy	SWAN_B_2	Energy	\$6000.00	0.29	\$1710.59
		CS Energy	SWAN_B_2	Raise 60 sec	\$0.01	-0.11	\$0.00
		CS Energy	SWAN_B_2	Raise 6 sec	\$0.01	-0.11	\$0.00
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.29	\$1710.59
		CS Energy	SWAN_B_4	Raise 60 sec	\$0.01	-0.11	\$0.00
		CS Energy	SWAN_B_4	Raise 6 sec	\$0.01	-0.11	\$0.00
		TRUenergy	TORRB1	Raise 6 sec	\$0.10	0.32	\$0.03

TRUenergy YWPS4 Raise 60 sec \$0.05 0.32 \$0.02

Spot price \$7051.62/MWh

Thursday 28 June 6.30 pm – New South Wales

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$8657.90	Snowy Hydro	GUTHEGA	Energy	\$7125.00	1.22	\$8657.90
18:10	\$6142.24	CS Energy	SWAN_B_1	Energy	\$6000.00	0.34	\$2047.40
		CS Energy	SWAN_B_2	Energy	\$6000.00	0.34	\$2047.40
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.34	\$2047.40
		CS Energy	SWAN_B_1	Raise 60 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_2	Raise 60 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_4	Raise 60 sec	\$0.01	-0.13	\$0.00
		TRUenergy	YWPS4	Raise 60 sec	\$0.05	0.38	\$0.02
		CS Energy	SWAN_B_1	Raise 6 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_2	Raise 6 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_4	Raise 6 sec	\$0.01	-0.13	\$0.00
		TRUenergy	TORRB3	Raise 6 sec	\$0.10	0.38	\$0.04
18:15	\$8679.80	Macquarie Generation	BW02	Energy	\$8667.00	1.00	\$8667.00
		Hydro Tasmania	BASTYAN	Raise reg	\$15.00	1.00	\$15.00
		Macquarie Generation	BW02	Raise reg	\$2.20	-1.00	-\$2.20
18:20	\$8666.01	Macquarie Generation	BW01	Energy	\$8666.01	1.00	\$8666.01
18:25	\$8667.00	Macquarie Generation	BW02	Energy	\$8667.00	1.00	\$8667.00
18:30	\$6226.31	CS Energy	SWAN_B_1	Energy	\$6000.00	0.35	\$2075.44
		CS Energy	SWAN_B_2	Energy	\$6000.00	0.35	\$2075.44
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.35	\$2075.44

Spot price \$7839.88/MWh

Thursday 28 June 6.30 pm – Queensland

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$8397.51	Snowy Hydro	GUTHEGA	Energy	\$7125.00	1.18	\$8397.51
18:10	\$6000.05	CS Energy	SWAN_B_1	Energy	\$6000.00	0.33	\$2000.00
		CS Energy	SWAN_B_2	Energy	\$6000.00	0.33	\$2000.00
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.33	\$2000.00
		CS Energy	SWAN_B_1	Raise 60 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_2	Raise 60 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_4	Raise 60 sec	\$0.01	-0.13	\$0.00
		TRUenergy	YWPS4	Raise 60 sec	\$0.05	0.38	\$0.02

		CS Energy	SWAN_B_1	Raise 6 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_2	Raise 6 sec	\$0.01	-0.13	\$0.00
		CS Energy	SWAN_B_4	Raise 6 sec	\$0.01	-0.13	\$0.00
		TRUenergy	TORRB3	Raise 6 sec	\$0.10	0.38	\$0.04
18:15	\$8417.60	Macquarie Generation	BW02	Energy	\$8667.00	0.97	\$8405.18
		Hydro Tasmania	BASTYAN	Raise reg	\$15.00	0.97	\$14.55
		Macquarie Generation	BW02	Raise reg	\$2.20	-0.97	-\$2.13
18:20	\$8351.68	Macquarie Generation	BW01	Energy	\$8666.01	0.96	\$8351.69
18:25	\$8352.43	Macquarie Generation	BW02	Energy	\$8667.00	0.96	\$8352.43
18:30	\$6000.00	CS Energy	SWAN_B_1	Energy	\$6000.00	0.33	\$2000.00
		CS Energy	SWAN_B_2	Energy	\$6000.00	0.33	\$2000.00
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.33	\$2000.00

Spot price \$7586.54/MWh

Thursday 28 June 6.30 pm – Snowy

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
18:05	\$7125.00	Snowy Hydro	GUTHEGA	Energy	\$7125.00	1.00	\$7125.00
18:10	\$5015.94	CS Energy	SWAN_B_1	Energy	\$6000.00	0.28	\$1671.97
		CS Energy	SWAN_B_2	Energy	\$6000.00	0.28	\$1671.97
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.28	\$1671.97
		CS Energy	SWAN_B_1	Raise 60 sec	\$0.01	-0.10	\$0.00
		CS Energy	SWAN_B_2	Raise 60 sec	\$0.01	-0.10	\$0.00
		CS Energy	SWAN_B_4	Raise 60 sec	\$0.01	-0.10	\$0.00
		TRUenergy	YWPS4	Raise 60 sec	\$0.05	0.31	\$0.02
		CS Energy	SWAN_B_1	Raise 6 sec	\$0.01	-0.10	\$0.00
		CS Energy	SWAN_B_2	Raise 6 sec	\$0.01	-0.10	\$0.00
		CS Energy	SWAN_B_4	Raise 6 sec	\$0.01	-0.10	\$0.00
		TRUenergy	TORRB3	Raise 6 sec	\$0.10	0.31	\$0.03
18:15	\$7089.78	Macquarie Generation	BW02	Energy	\$8667.00	0.82	\$7079.33
		Hydro Tasmania	BASTYAN	Raise reg	\$15.00	0.82	\$12.25
		Macquarie Generation	BW02	Raise reg	\$2.20	-0.82	-\$1.80
18:20	\$7130.83	Macquarie Generation	BW01	Energy	\$8666.01	0.82	\$7130.83
18:25	\$7131.29	Macquarie Generation	BW02	Energy	\$8667.00	0.82	\$7131.29
18:30	\$5122.92	CS Energy	SWAN_B_1	Energy	\$6000.00	0.28	\$1707.64
		CS Energy	SWAN_B_2	Energy	\$6000.00	0.28	\$1707.64
		CS Energy	SWAN_B_4	Energy	\$6000.00	0.28	\$1707.64

Spot price \$6435.96/MWh