

# Market analysis



6 AUGUST – 12 AUGUST 2006

Spot prices for the week averaged between \$28/MWh in Queensland and \$40/MWh in South Australia with prices generally aligned across the market for most of the time.

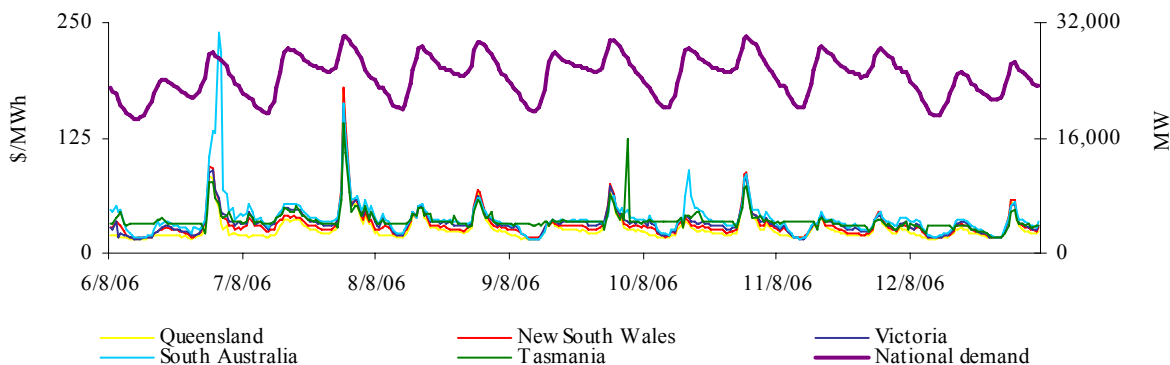
Turnover in the energy market was \$133 million. The total cost of ancillary services for the week was \$186 000, or 0.14 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 28, or 8 per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 14 per cent of all trading intervals across the market. These variations were most frequent in South Australia, occurring in almost a third of all trading intervals.

## Energy prices

Figure 1 sets out the national demand and spot prices in each region for each trading interval. Figure 2 compares the volume weighted average price with the averages for the previous week, the same quarter last year and for the previous financial year.

**Figure 1: national demand and spot prices**



**Figure 2: volume weighted average spot price for energy market (\$/MWh)**

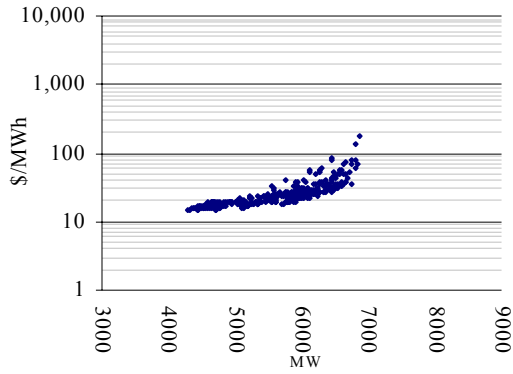
	QLD	NSW	VIC	SA	TAS
Last week	28	32	34	40	37
Previous week	27	35	37	49	38
Same quarter last year	22	29	30	34	100
Financial year 2005 - 06	31	43	36	44	60
% change from previous week*	▲3%	▼9%	▼9%	▼20%	▼5%
% change from same quarter last year**	▲28%	▲12%	▲13%	▲17%	▼63%

\*The percentage change between last week's average spot price and the average price for the previous week.

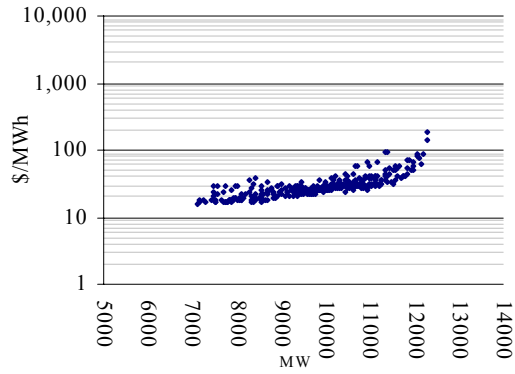
\*\*The percentage change between last week's average spot price and the average price for the same quarter last year.

Figures 3 to 7 show the weekly correlation between spot price and demand.

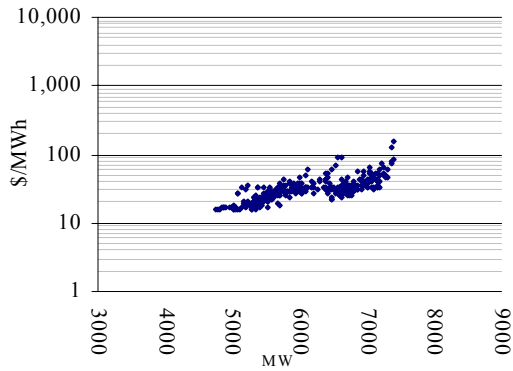
**Figure 3: Queensland**



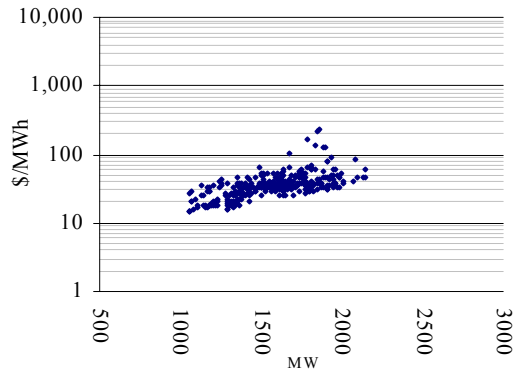
**Figure 4: New South Wales**



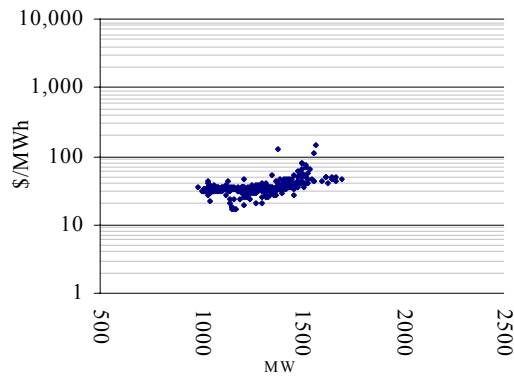
**Figure 5: Victoria**



**Figure 6: South Australia**



**Figure 7: Tasmania**



Maximum spot prices for the week were \$173/MWh in Queensland, \$180/MWh in New South Wales, \$159/MWh in Victoria and \$191/MWh in Tasmania, all occurring 6.30 pm on Monday. In South Australia, a maximum spot price of \$238/MWh occurred at 8 pm on Sunday. Figure 8 compares the weekly price volatility index with the averages for the previous week and the same quarter last year.

**Figure 8: volatility index during peak periods**

	QLD	NSW	VIC	SA	TAS
Last week	0.77	0.73	0.58	0.58	0.46
Previous week	1.09	1.14	0.77	0.82	0.63
Same quarter last year	0.64	0.86	0.86	0.83	0.81

A definition of the price volatility index is available on the AER website.  
<http://www.aer.gov.au/content/index.phtml/tag/MarketSnapshotLongTermAnalysis>

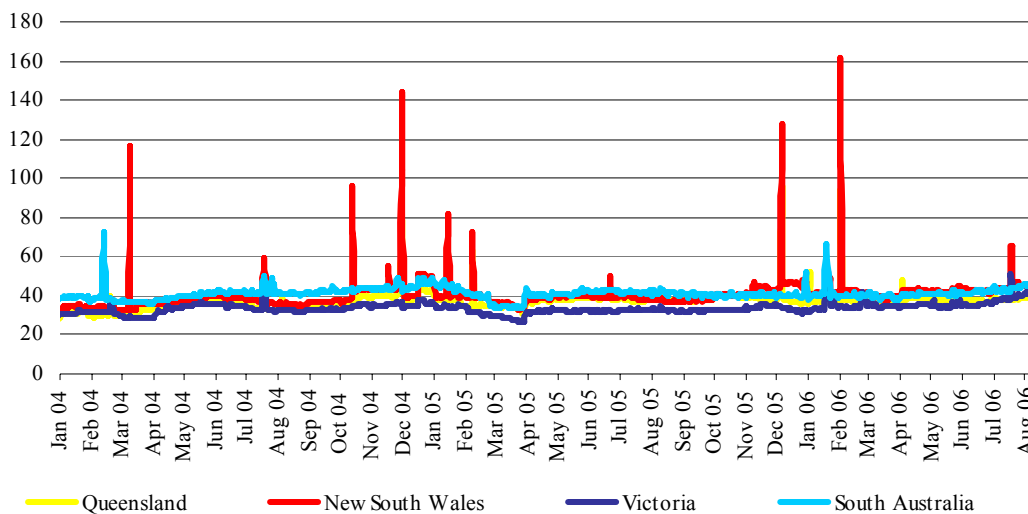
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)\* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

**Figure 9: d-cyphaTrade WEPI for the week**

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	39.16	39.46	39.56	39.49	39.16
New South Wales	46.11	46.17	45.75	45.61	45.39
Victoria	41.69	41.47	41.39	41.29	41.24
South Australia	45.51	45.17	46.39	46.24	45.35

\* A definition of the wholesale electricity price index is available on the d-cyphaTrade website  
[http://www.d-cyphatrade.com.au/products/wholesale\\_electricity\\_price\\_i](http://www.d-cyphatrade.com.au/products/wholesale_electricity_price_i)

**Figure 10: d-cyphaTrade WEPI**

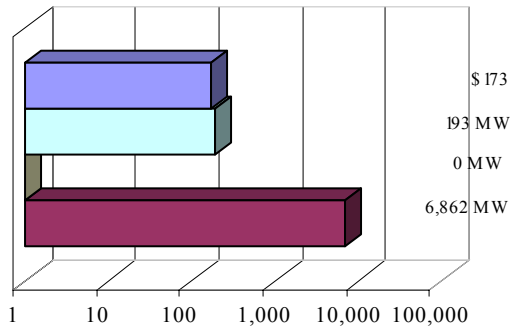


## Reserve

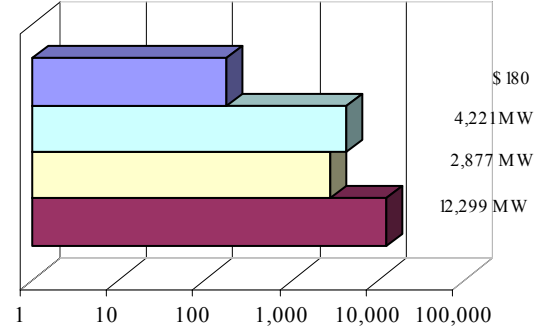
There were no low reserve conditions forecast.

Figures 11 to 15: spot price, net import and limit at time of weekly maximum demand

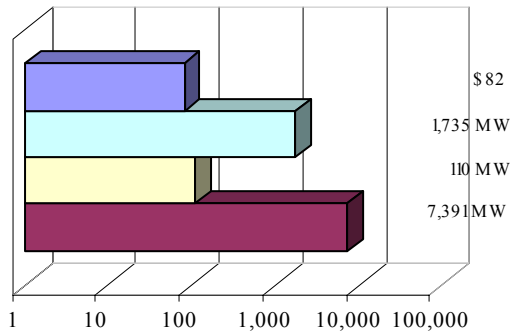
**Figure 11: Queensland**



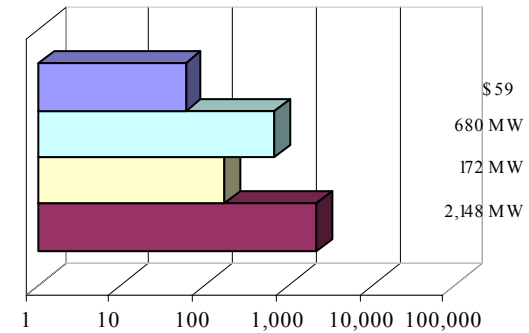
**Figure 12: New South Wales**



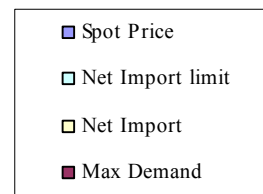
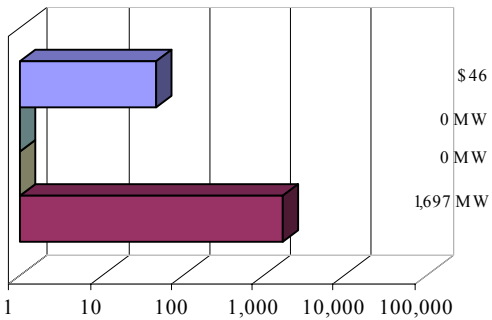
**Figure 13: Victoria**



**Figure 14: South Australia**



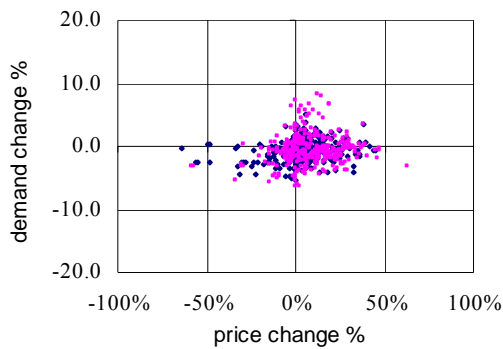
**Figure 15: Tasmania**



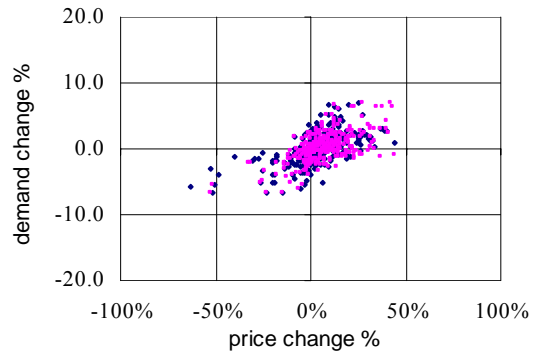
## Price variations

There were 28 trading intervals where actual prices significantly varied from forecasts made 4 and 12 hours ahead of dispatch. Figures 16 to 20 show the difference in actual and forecast price versus the difference in actual and forecast demand. The figures highlight the relationship between price variation and demand forecast error. The information is presented in terms of the percentage difference from actual. Price differences beyond 100 per cent have been capped.

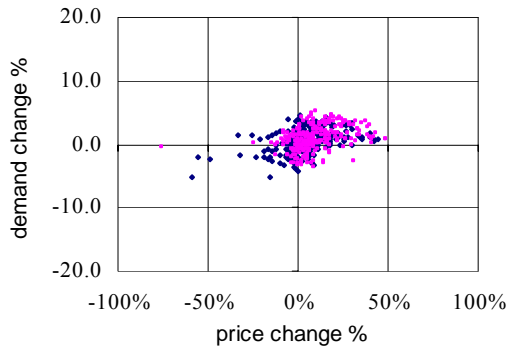
**Figure 16: Queensland**



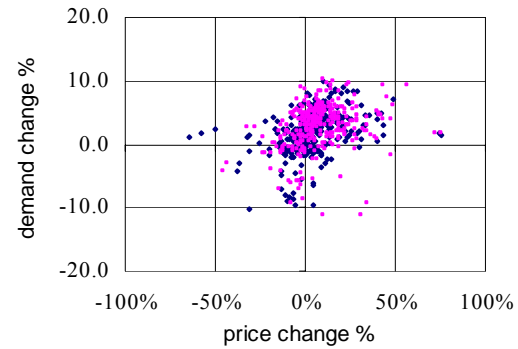
**Figure 17: New South Wales**



**Figure 18: Victoria**



**Figure 19: South Australia**



**Figure 20: Tasmania**

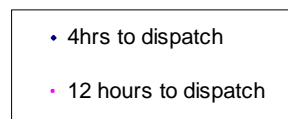
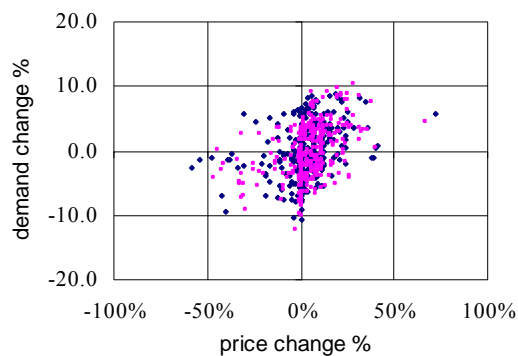
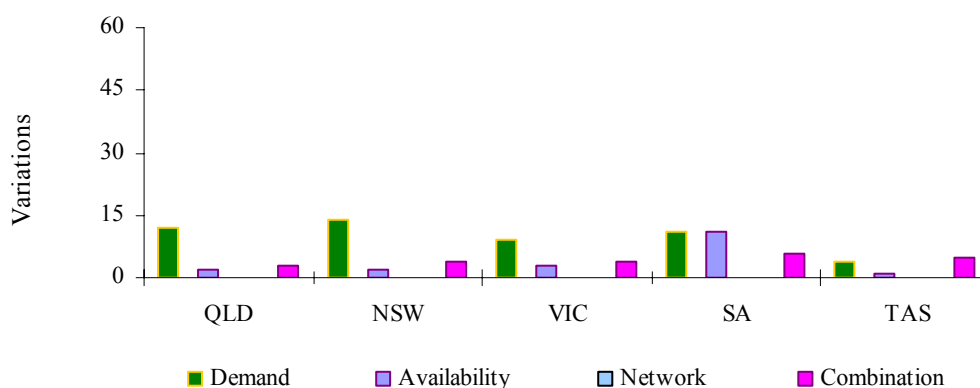


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

**Figure 21: reasons for variations between forecast and actual prices**



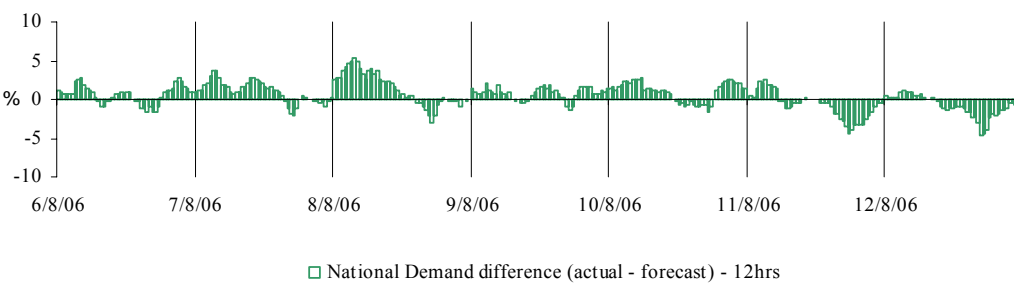
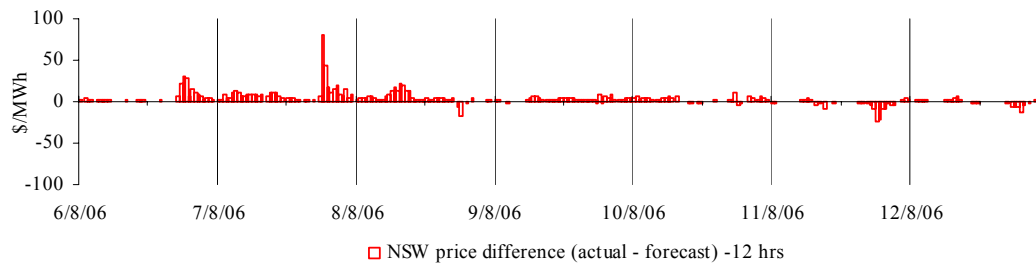
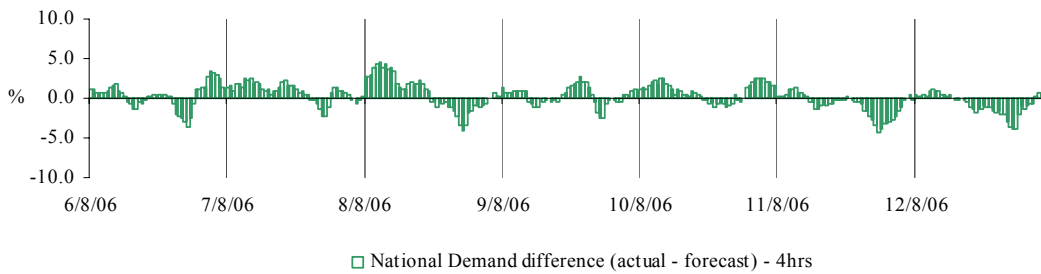
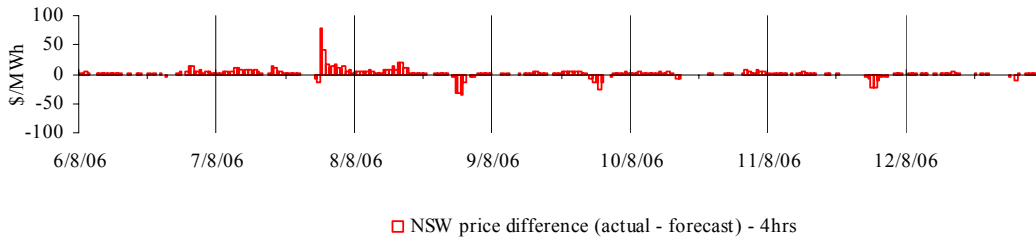
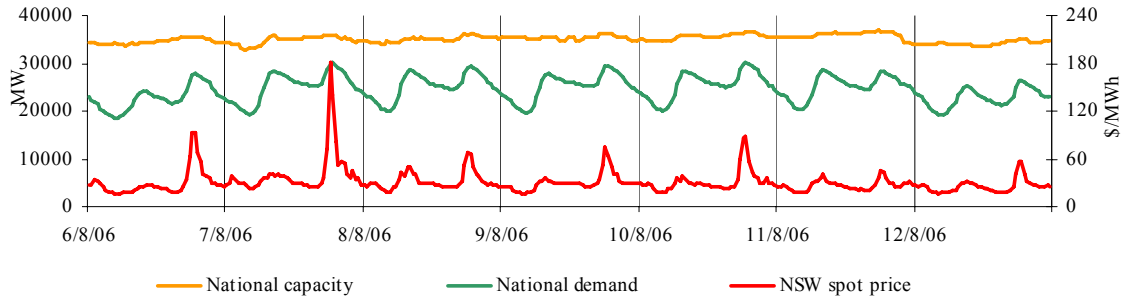
### Price and demand

Figures 22 – 56 set out details of spot prices and demand on a national and regional basis. They include the actual spot price, actual demand and variation from forecasts made 4 and 12 hours ahead of dispatch.

The regions within the national market are regularly aligned, with conditions in one region reflected across all others. The national market outcomes section highlights pricing events that occurred when spot prices were generally aligned across all regions of the national electricity market – the New South Wales spot price has been used to represent a pseudo national price under these conditions.

On a regional basis the differences between the maximum temperature and the temperature forecast at around 6.00 pm the day before are also included. In each section, the occurrences of all prices for the week greater than three times the average have been presented. The price forecast is compared to the demand and availability forecasts made 4 and 12 hours ahead, with significant changes to these forecasts explained.

**Figures 22-26: National market outcomes**



## National market outcomes

There were two occasions where spot prices were generally aligned nationally and the New South Wales price<sup>1</sup> was greater than three times the New South Wales weekly average price of \$32/MWh.

### Monday, 7 August

<b>6:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	180.10	101.29	99.57
National demand (MW)	29987	29754	29977
National capacity (MW)	35763	35829	36302
<b>7:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	140.92	99.32	98.29
National demand (MW)	30031	29610	29921
National capacity (MW)	35739	35829	36292

Conditions at the time saw national demand up to 420 MW higher than forecast four hours ahead.

At 8.58 am Millmerran reduced the availability of unit one by 430 MW. The rebid reason given was “Unit trip”.

At 5.51 pm Macquarie Generation rebid 600 MW of capacity at Bayswater from prices below \$85/MWh to above \$240/MWh. The rebid reason given was “Change in sensitivities”.

At 6.07 pm TRUenergy rebid 90 MW of capacity across Torrens Island B from prices above \$290/MWh to below \$60/MWh. The rebid reason given was “Market conditions-gen response to PD conditions”.

At 6.18 pm Hydro Tasmania rebid 80 MW of capacity across its portfolio from prices above \$7000/MWh to below \$160/MWh. The rebid reason given was “Demand higher than forecast”.

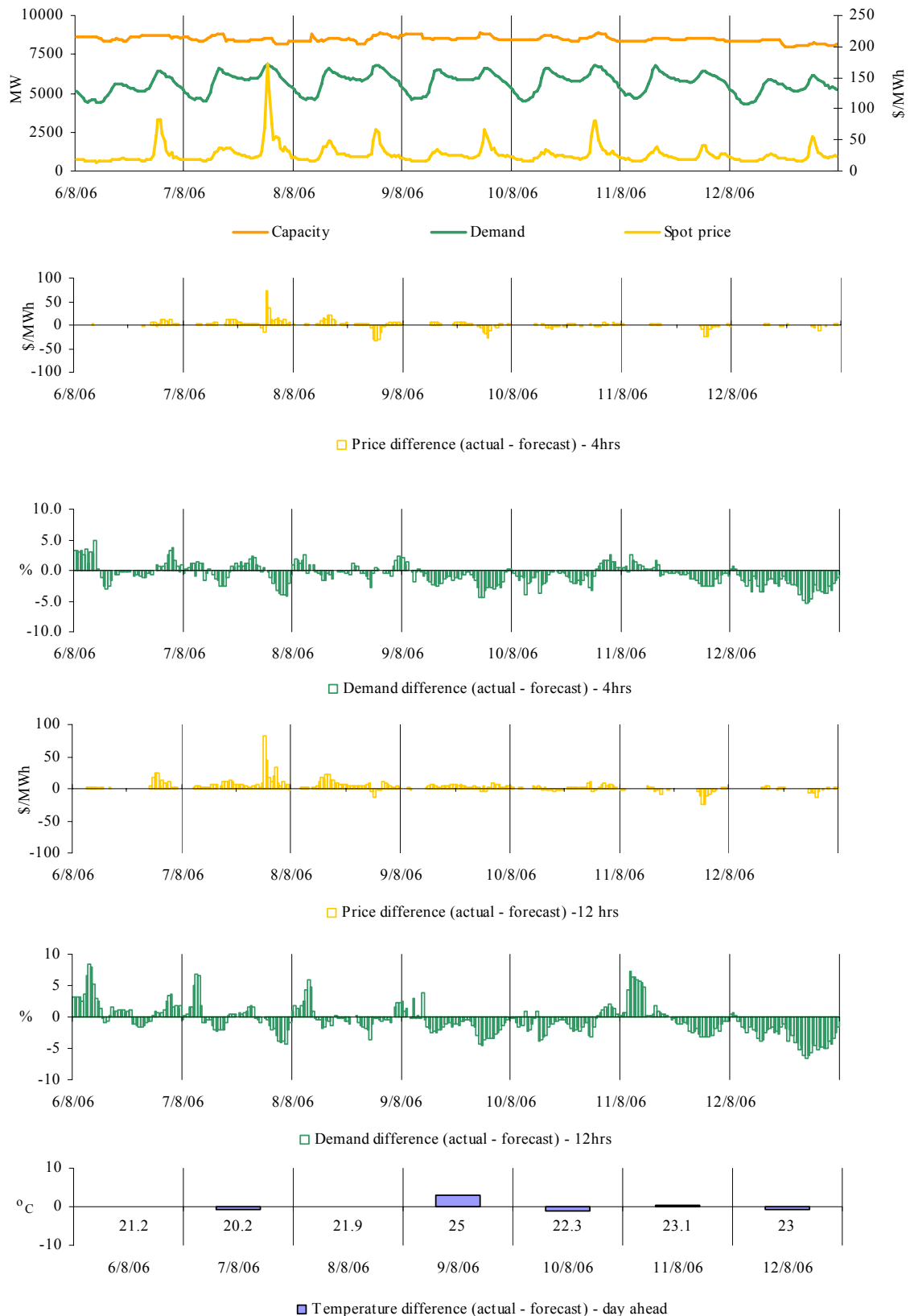
There was no other significant rebidding.

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<sup>1</sup> The New South Wales spot price has been used to represent a pseudo national price under these conditions.

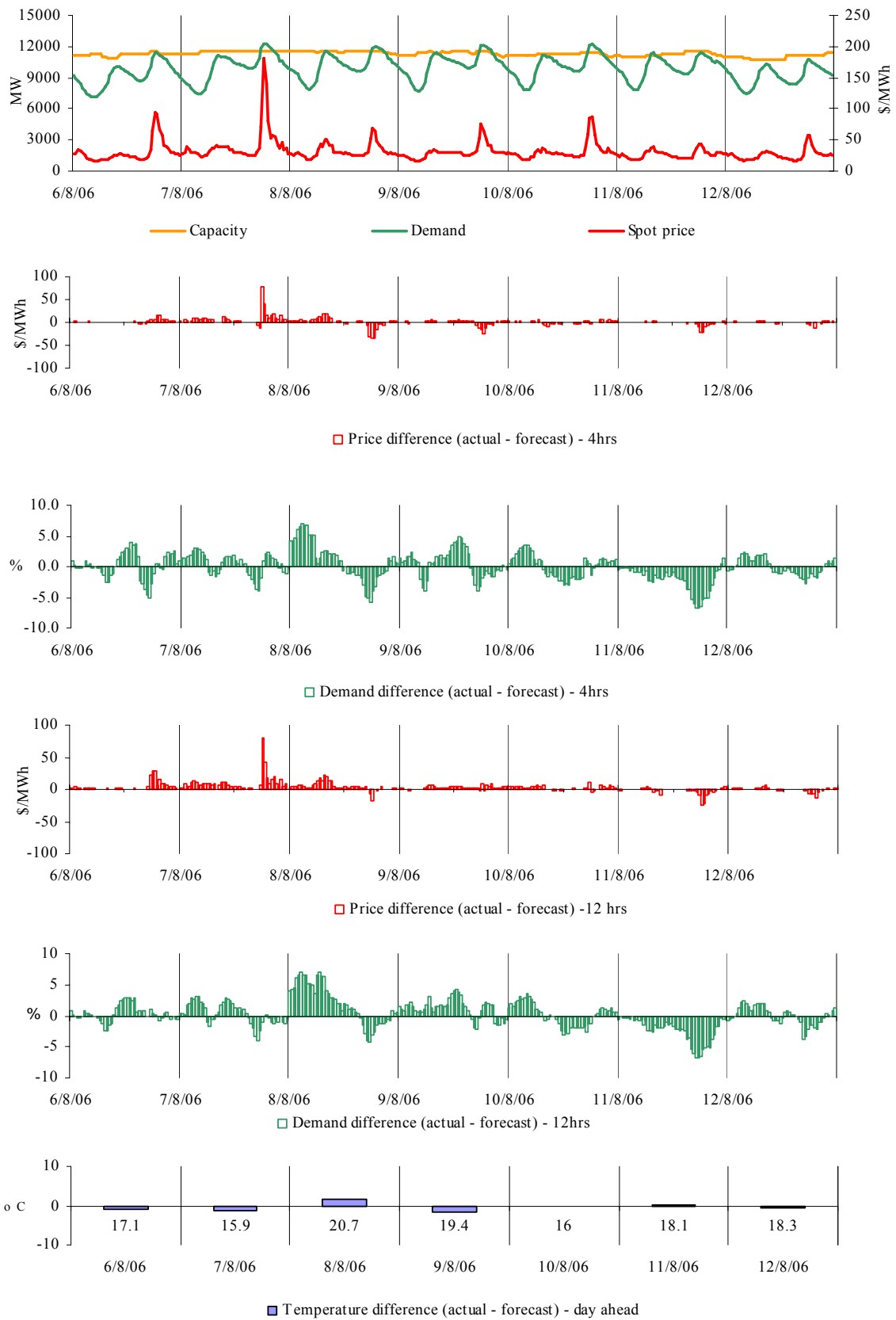


**Figures 27-32: Queensland actual spot price, demand and forecast differences**



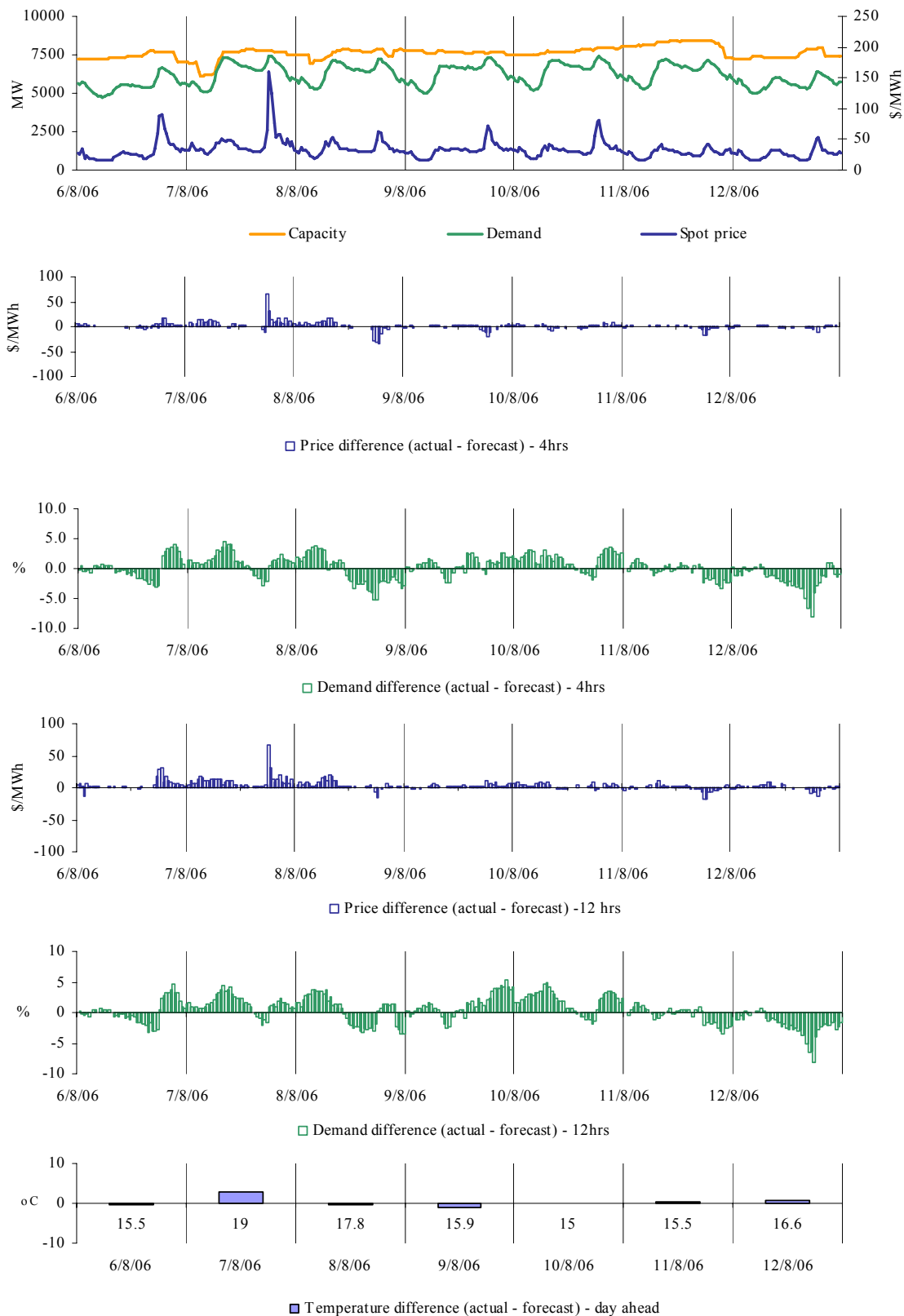
There were two occasions where the spot price in Queensland was greater than three times the weekly average price of \$28/MWh. These occasions both occurred when prices were aligned across the market and are detailed under the national market outcomes section.

**Figures 33-38 New South Wales actual spot price, demand and forecast differences**



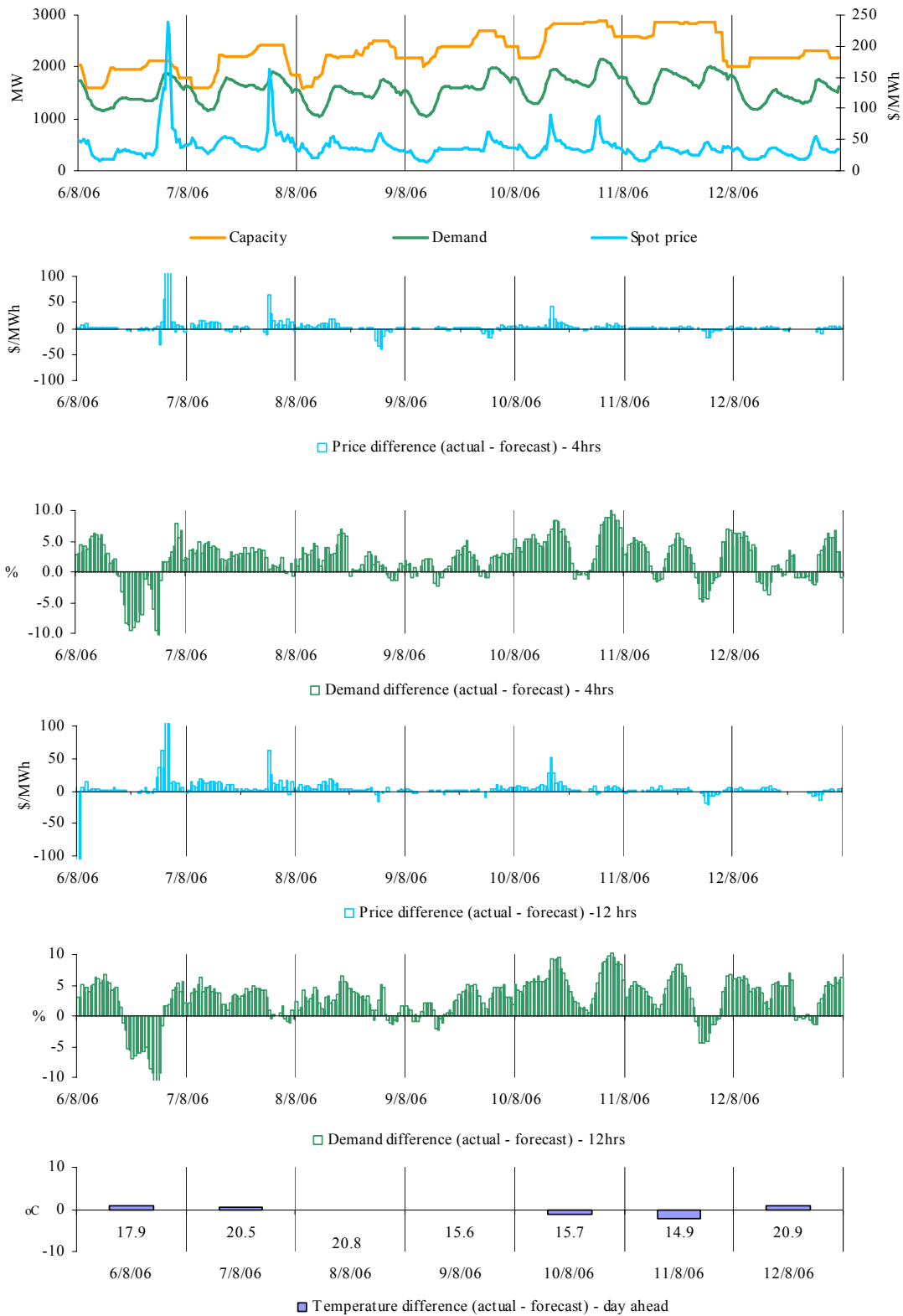
There were two occasions where the spot price in New South Wales was greater than three times the weekly average price of \$32/MWh. These occasions both occurred when prices were aligned across the market and are detailed under the national market outcomes section.

**Figures 39-44: Victoria actual spot price, demand and forecast differences**



There were two occasions where the spot price in Victoria was greater than three times the weekly average price of \$34/MWh. These occasions both occurred when prices were aligned across the market and are detailed under the national market outcomes section.

**Figures 45-50: South Australia actual spot price, demand and forecast differences**



There were six occasions where the spot price in South Australia was greater than three times the weekly average price of \$40/MWh. Two of these occurred when prices were generally aligned across all regions and are detailed in the national market outcomes section. The remaining four occasions are presented below.

### Sunday, 6 August

<b>7:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	132.58	121.34	69.19
Demand (MW)	1837	1864	1867
Available capacity (MW)	2108	2108	2108
<b>7:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	130.58	73.84	94.89
Demand (MW)	1884	1854	1855
Available capacity (MW)	2108	2108	2108
<b>8:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	238.41	58.77	65.54
Demand (MW)	1866	1837	1835
Available capacity (MW)	2111	2108	2108
<b>8:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	217.36	54.56	53.69
Demand (MW)	1846	1816	1812
Available capacity (MW)	2113	2108	2108

Conditions at the time saw demand and available capacity in South Australia close to forecast four hours ahead.

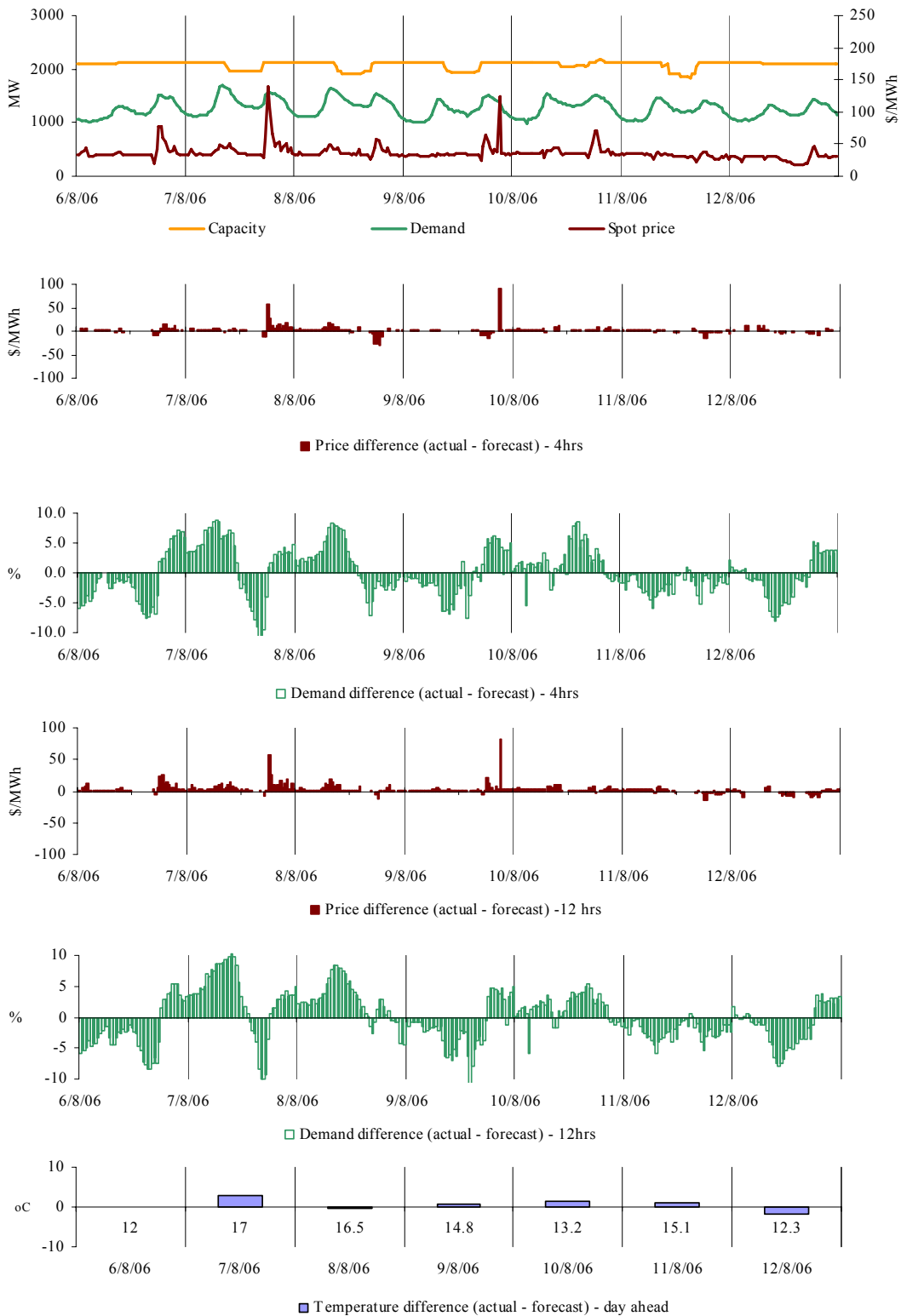
At 6.53 am TRUenergy rebid 200 MW of capacity at Torrens Island B units two and four from prices below \$50/MWh to above \$285/MWh. The rebid reason given was “Market conditions-gen response to PD conditions”.

Over a number of rebids from 5 pm TRUenergy rebid 150 MW of capacity at Torrens Island from prices below \$50/MWh to above \$7500/MWh. The rebid reasons given was “Market conditions-gen response to IC conditions”, “Market conditions-demand higher than forecast” and “Market conditions-gen response to PD conditions”.

During this period, flows from Victoria across the Murraylink and Heywood interconnectors were at the combined limit of 680 MW.

There was no other significant rebidding.

**Figures 51-56: Tasmania actual spot price, demand and forecast differences**



There were two occasions where the spot price in Tasmania was greater than three times the weekly average price of \$37/MWh. One of these occasions occurred when prices were generally aligned across all regions and are detailed in the national market outcomes section. The remaining one occasion is presented below.

### **Wednesday, 9 August**

<b>9:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	124.92	34.72	42.00
Demand (MW)	1379	1299	1316
Available capacity (MW)	2133	2133	2133

Conditions at the time saw demand in Tasmania around 80 MW higher than forecast four hours ahead.

With the start of the trading interval, at 9.05 pm, a change in the offer profile saw a 200 MW reduction in the amount of capacity offered by Hydro Tasmania at prices of less than \$50/MWh. This reduction was set up as part of Hydro Tasmania's day ahead offer. Exports on BassLink were reduced as a result.

At 8.59 pm, first effective from 9.10 pm, Hydro Tasmania rebid a further 280 MW of capacity across its portfolio from prices below \$50/MWh to above \$7500/MWh. The rebid reason given was "PD FCAS co-optimisation".

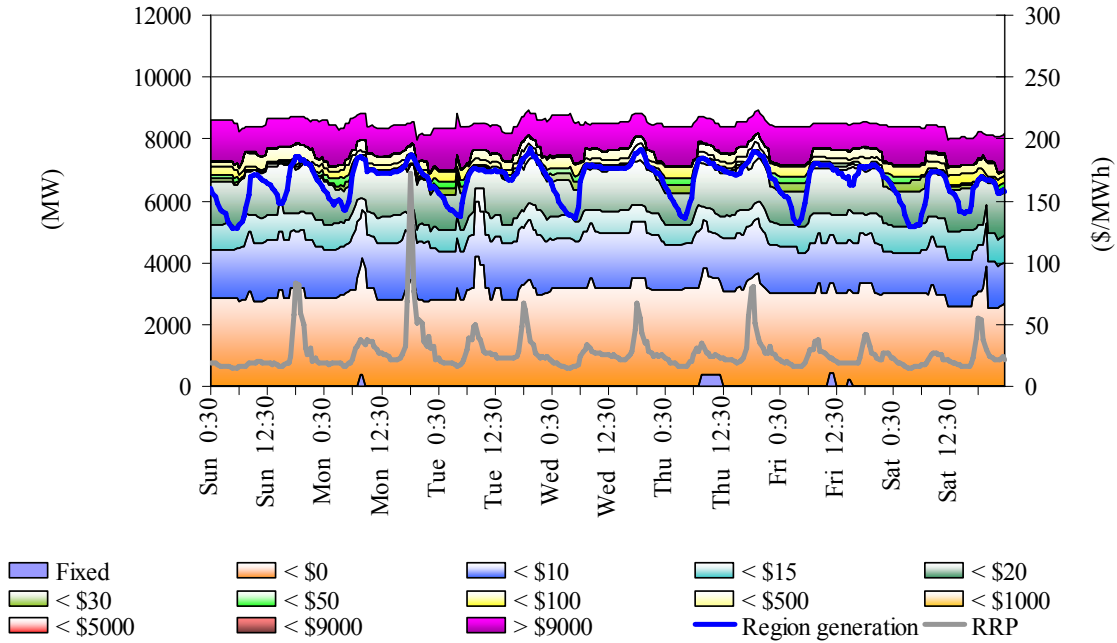
At the same time, the requirement for locally sourced raise 6 second ancillary services increased from zero to around 20 MW.

The co-optimisation of the energy and the raise 6 second service, resulted in the 5-minute energy price increasing from \$61/MWh to \$208/MWh at 9.10 pm. The price of locally sourced raise 6 second service increased from zero to \$140/MW at the same time.

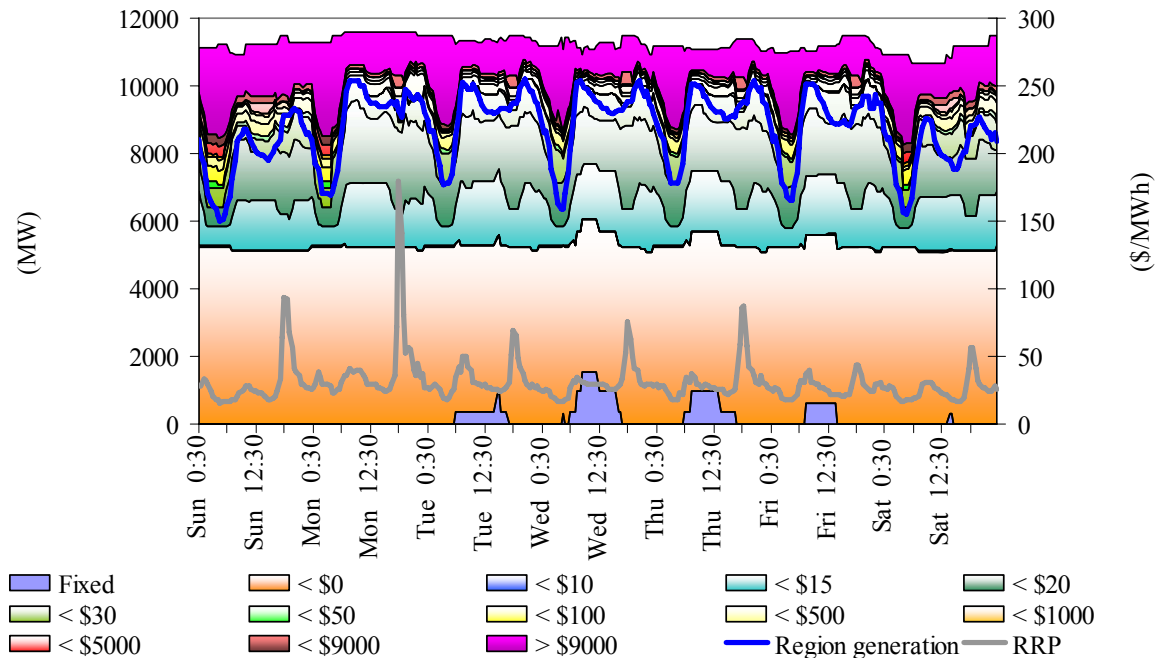
There was no other significant rebidding.

Figures 57 – 61 set out for each region the extent of capacity offered into the market within a series of price thresholds. Actual price and generation dispatched in a region are overlaid.

**Figure 57: Queensland closing bid prices, dispatched generation and spot price**

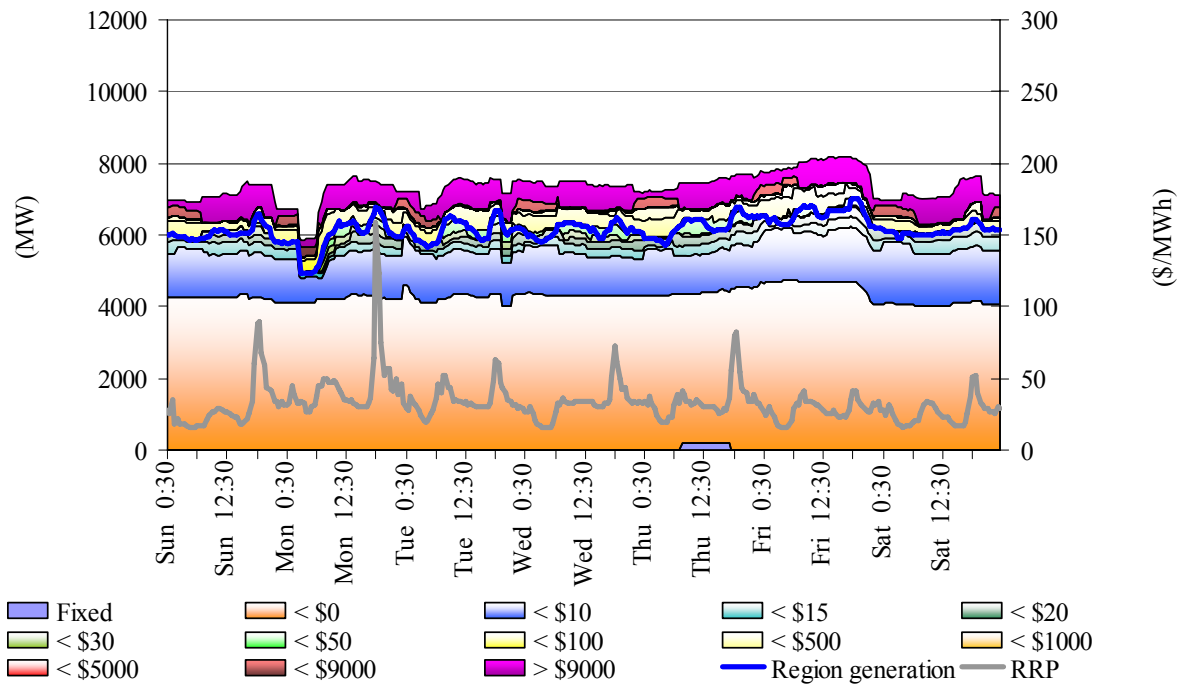


**Figure 58: New South Wales closing bid prices, dispatched generation and spot price**

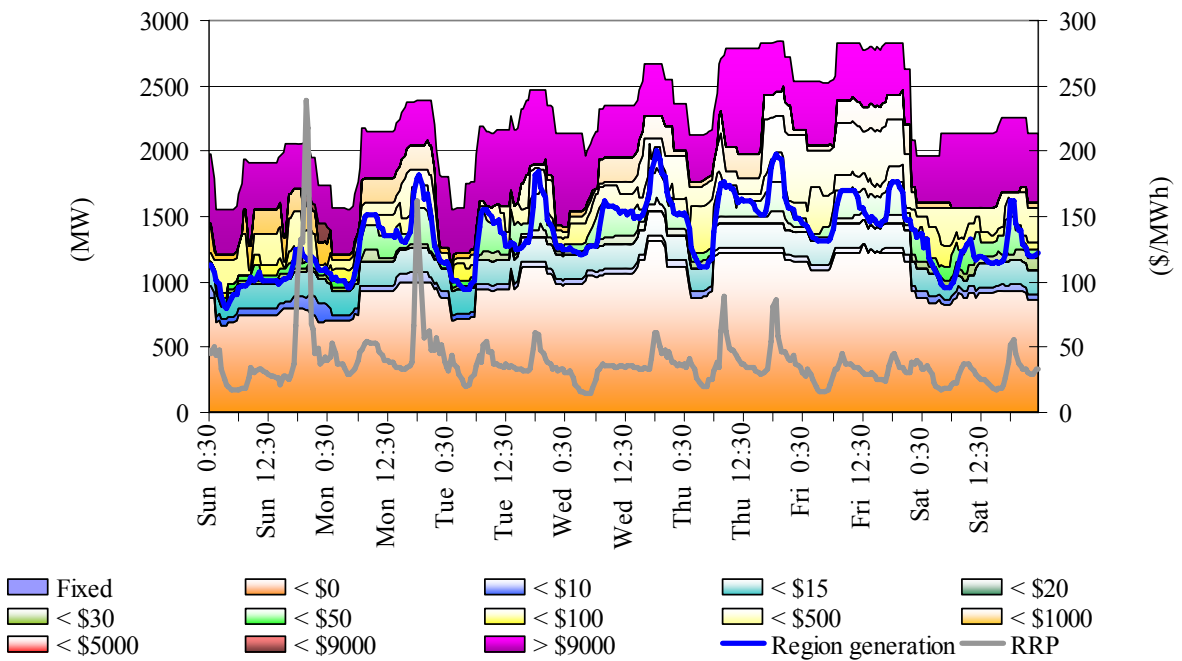




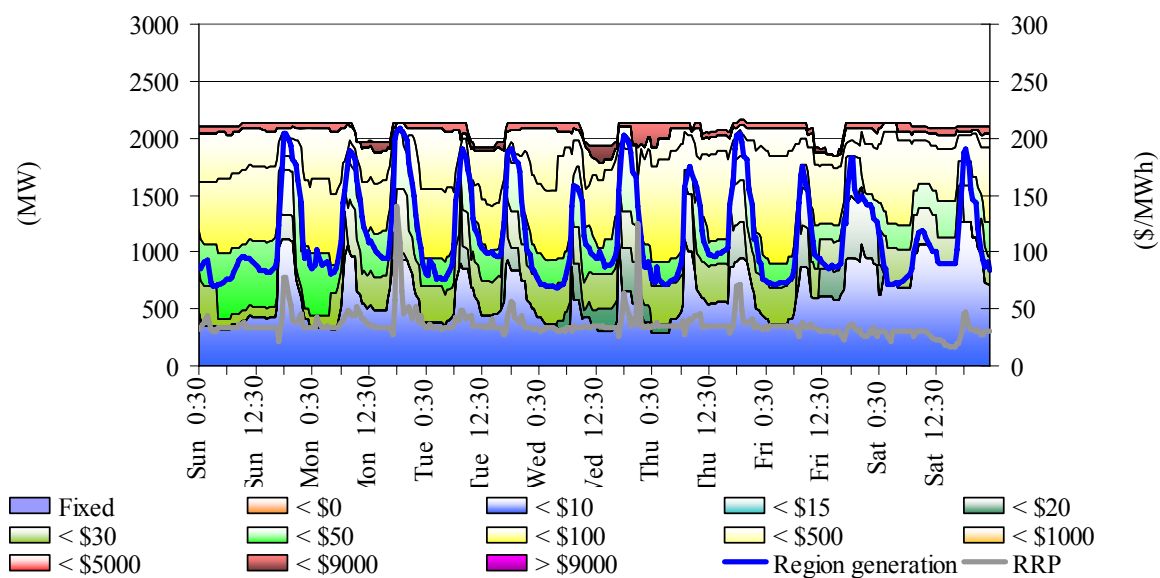
**Figure 59: Victoria closing bid prices, dispatched generation and spot price**



**Figure 60: South Australia closing bid prices, dispatched generation and spot price**



**Figure 61: Tasmania closing bid prices, dispatched generation and spot price**



**Ancillary service market**

The total cost of ancillary services on the mainland for the week was \$125 000 or 0.1 per cent of the energy market. Figure 62 summarises the volume weighted average prices and costs for the eight frequency control ancillary services across the mainland.

**Figure 62: frequency control ancillary service prices and costs for the mainland**

	Raise 6 sec	Raise 60 sec	Raise 5 min	Raise reg	Lower 6 sec	Lower 60 sec	Lower 5 min	Lower reg
Last week (\$/MW)	0.51	0.08	0.52	1.54	0.05	1.18	0.88	0.92
Previous week (\$/MW)	0.57	0.10	0.70	1.60	0.12	0.03	0.29	0.92
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$18	\$3	\$28	\$37	\$0	\$7	\$19	\$15
% of energy market	0.01%	0.01%	0.02%	0.03%	0.01%	0.01%	0.02%	0.01%

The total cost of ancillary services in Tasmania for the week was \$61 000 or 0.8 per cent of the total turnover in the energy market in Tasmania. Figure 63 summarises for Tasmania the prices and costs for the eight frequency control ancillary services.

**Figure 63: frequency control ancillary service prices and costs for Tasmania**

	Raise 6 sec	Raise 60 sec	Raise 5 min	Raise reg	Lower 6 sec	Lower 60 sec	Lower 5 min	Lower reg
Last week (\$/MW)	1.70	0.17	1.61	2.62	0.23	0.60	0.81	0.87
Previous week (\$/MW)	3.92	0.21	2.10	3.43	0.30	0.24	0.64	0.86
Last quarter (\$/MW)	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost (\$1000s)	\$8	\$2	\$21	\$6	\$1	\$9	\$11	\$3
% of energy market	0.10%	0.02%	0.26%	0.07%	0.02%	0.12%	0.14%	0.04%

Figure 64 shows the daily breakdown of cost for each frequency control ancillary service.

**Figure 64: daily frequency control ancillary service costs**

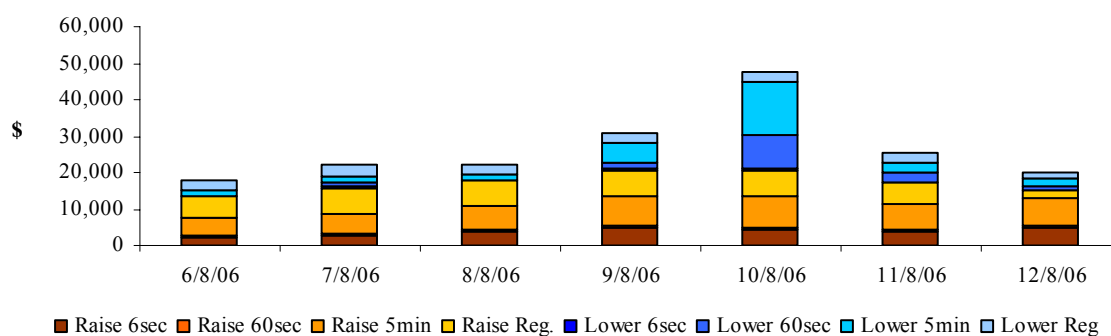
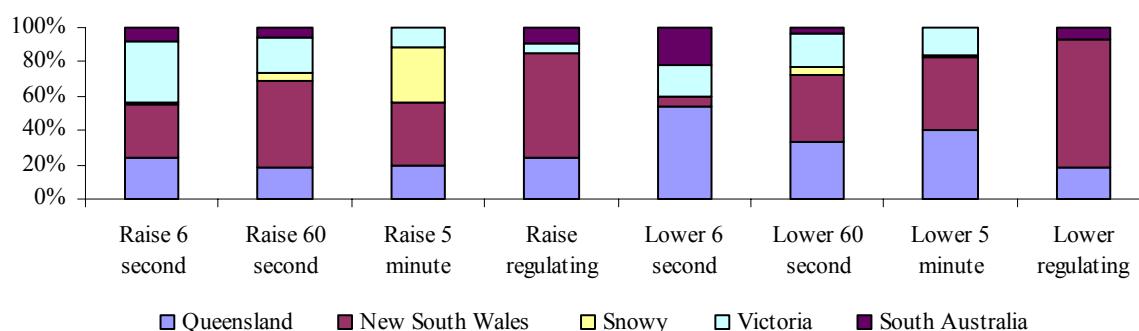


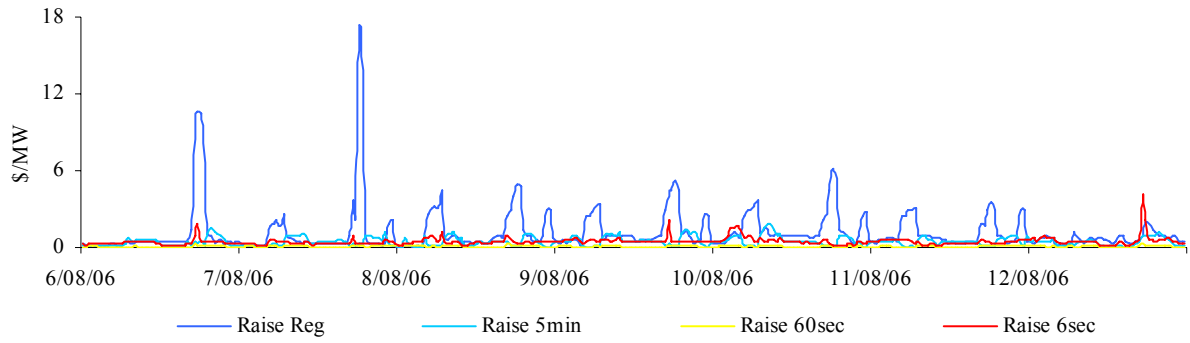
Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

**Figure 65: regional participation in ancillary services on the mainland**

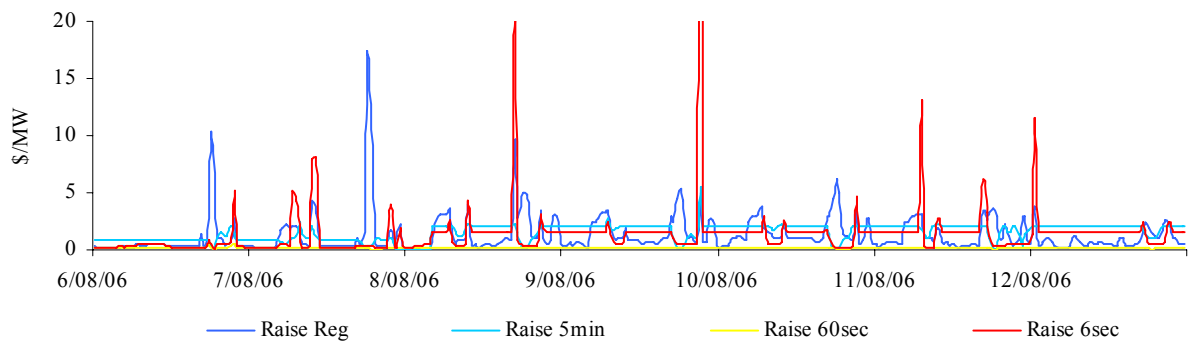


Figures 66 and 67 show 30-minute prices for each frequency control ancillary service throughout the week.

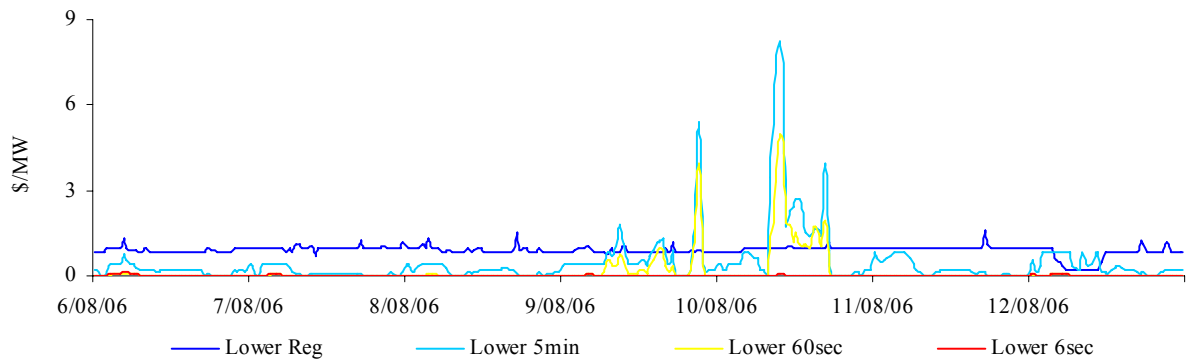
**Figure 66: prices for raise services**



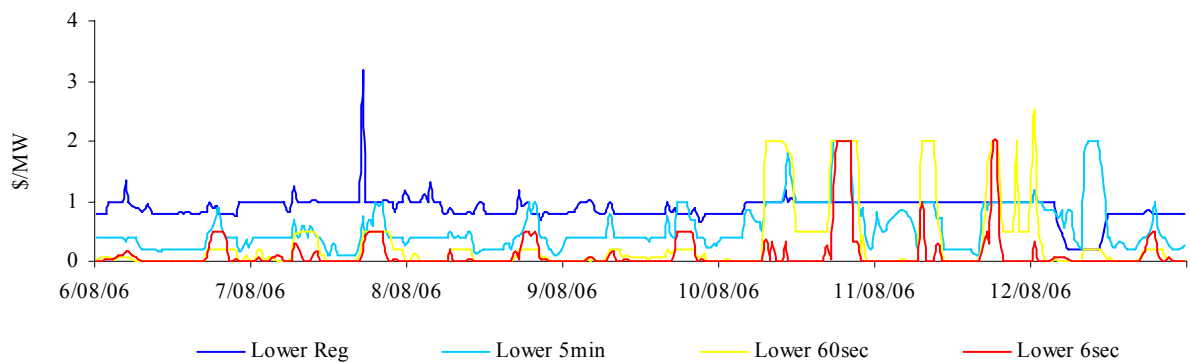
**Figure 66A: prices for raise services – Tasmania**



**Figure 67: prices for lower services**

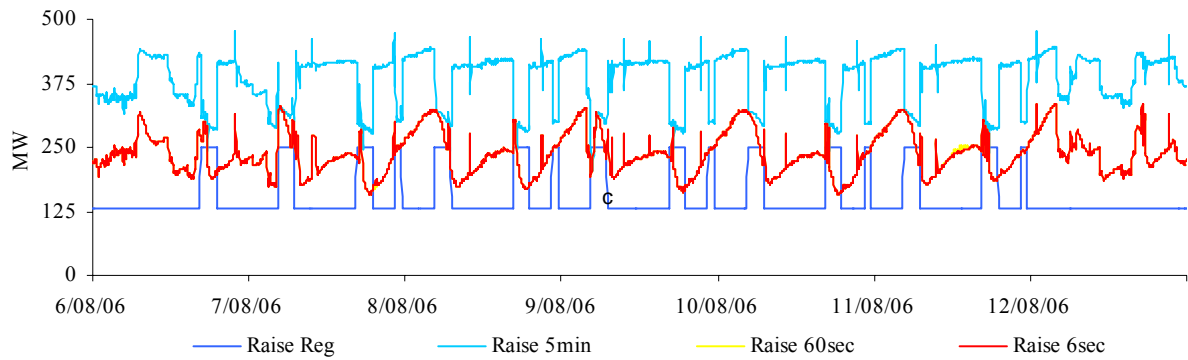


**Figure 67A: prices for lower services – Tasmania**

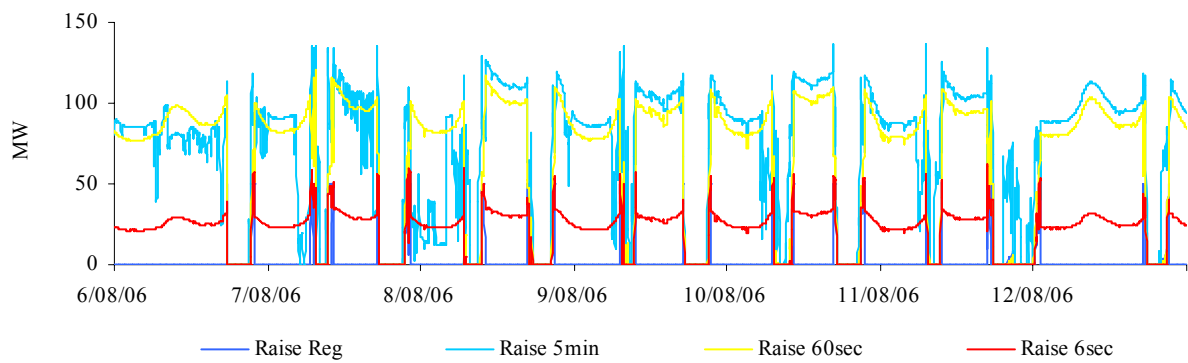


Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

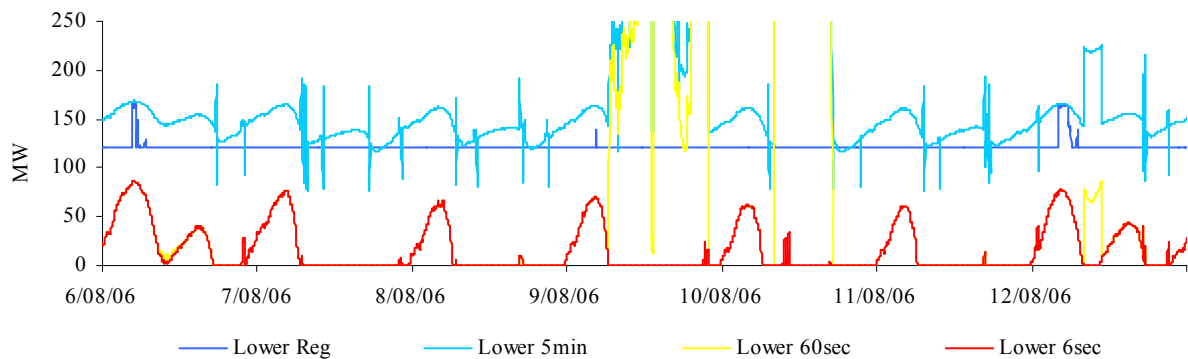
**Figure 68: raise requirements**



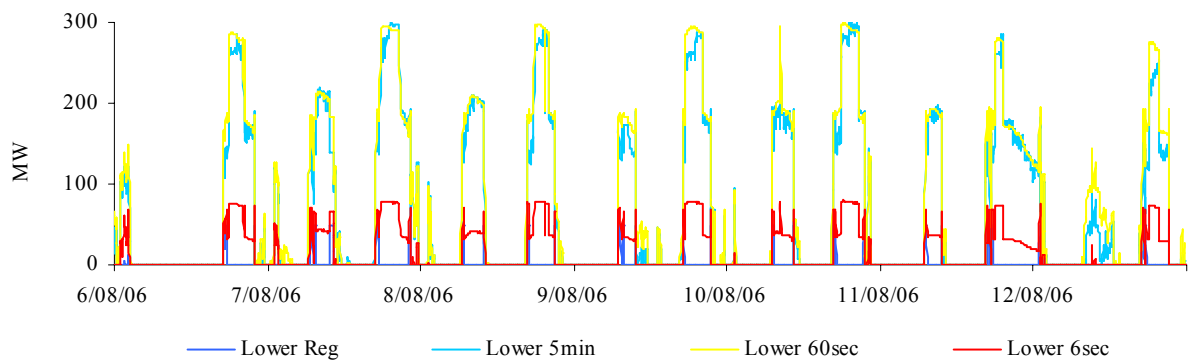
**Figure 68A: raise requirements – Tasmania**



**Figure 69: lower requirements**



**Figure 69A: lower requirements – Tasmania**



**Australian Energy Regulator  
August 2006**