

23 September – 29 September 2007

## Summary

Spot prices for the week averaged between \$42/MWh and \$57/MWh across all regions.

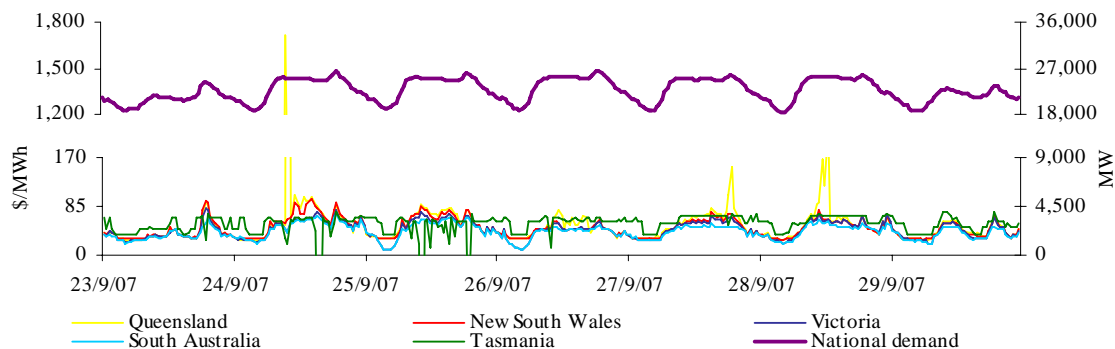
Turnover in the energy market in the week ended 29 September was \$189 million. The total cost of ancillary services for the week was \$1 million or 0.5 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 86, or a quarter, of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 12 per cent of all trading intervals across the market. These variations were most frequent in Tasmania, occurring in a quarter of 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	57	49	45	42	52
Previous week	51	51	48	46	54
Same quarter last year	26	39	39	43	42
Financial year to date	57	60	61	62	66
% change from previous week*	▲ 11%	▼ 4%	▼ 7%	▼ 8%	▼ 5%
% change from same quarter last year**	▲ 121%	▲ 26%	▲ 15%	▼ 2%	▲ 23%
% change from year to date***	▲ 117%	▲ 54%	▲ 55%	▲ 43%	▲ 55%

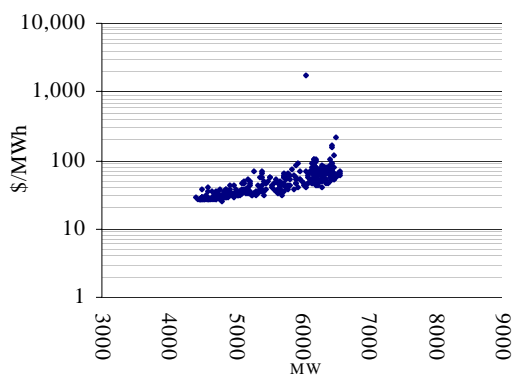
\*The percentage change between last week's average spot price and the average price for the previous week.

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

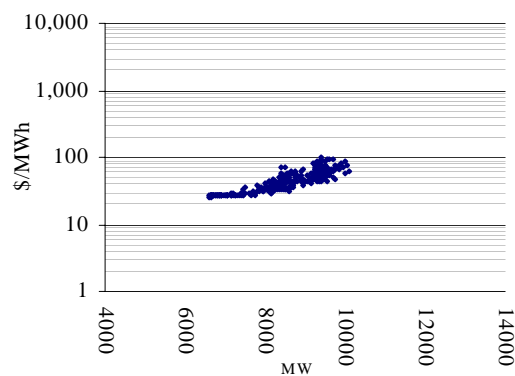
\*\*\*The percentage change between the average spot price for the current financial year to date and the average spot price over the similar period for the previous financial year.

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

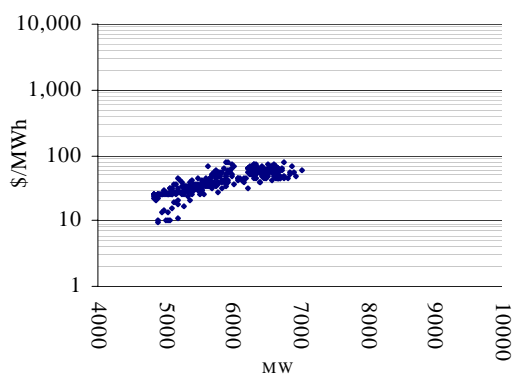
**Figure 3: Queensland**



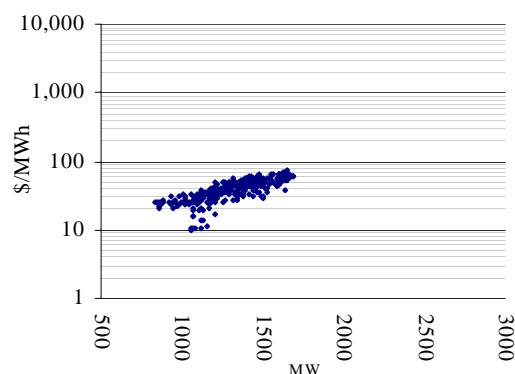
**Figure 4: New South Wales**



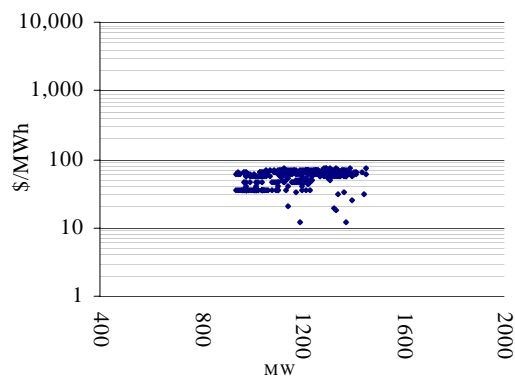
**Figure 5: Victoria**



**Figure 6: South Australia**



**Figure 7: Tasmania**



Maximum spot prices for the week ranged from \$72/MWh in South Australia to \$1711/MWh in Queensland. 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	0.60	0.51	0.37	0.38	0.20
Previous week	0.57	0.37	0.32	0.42	0.22
Same quarter last year	1.07	0.96	0.96	0.94	0.29

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

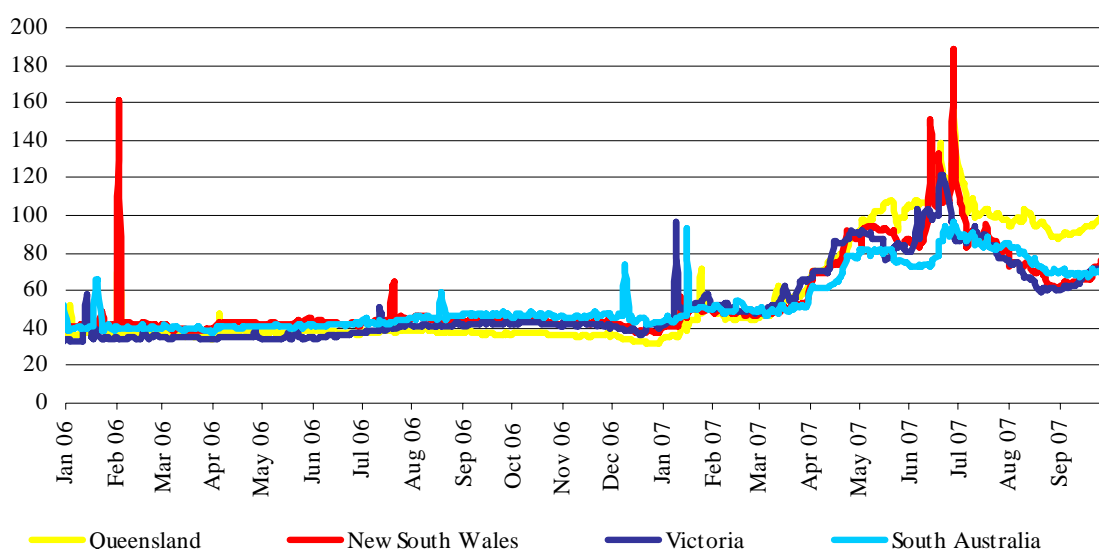
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)\* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2006.

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

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	98.14	97.72	99.27	98.76	71.10
New South Wales	73.05	74.07	75.42	76.72	99.17
Victoria	69.00	69.15	70.92	71.43	69.87
South Australia	70.00	69.59	70.18	70.35	69.87

\* The 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)  
 The WEPI applies for working days only.

**Figure 10: d-cyphaTrade WEPI**



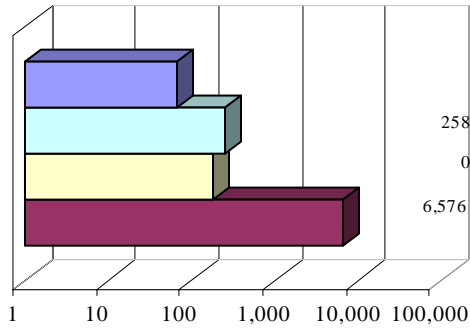
## Reserves

Low reserve conditions were forecast for Tuesday, Wednesday and Thursday in Queensland.

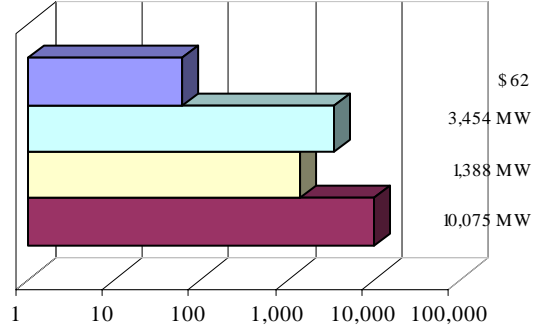
## Imports at time of maximum demand

Figures 11 to 15 show spot price, net imports and limits at the time of weekly maximum demand.

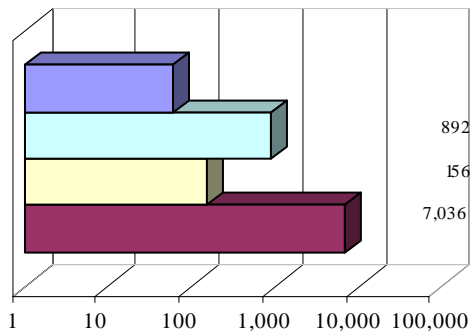
**Figure 11: Queensland**



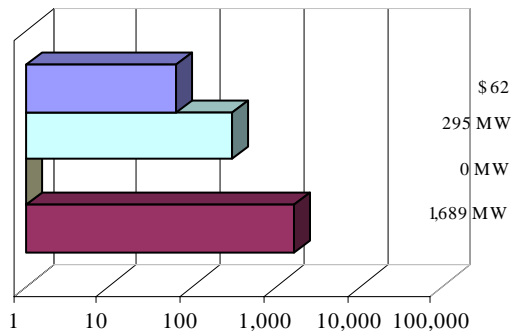
**Figure 12: New South Wales**



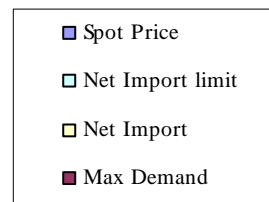
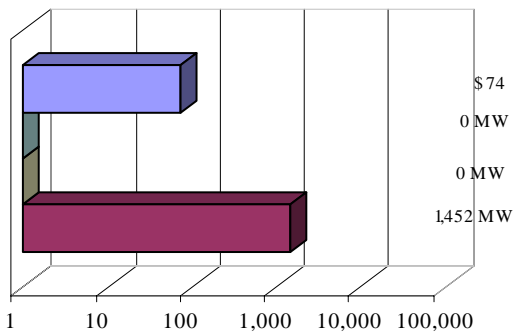
**Figure 13: Victoria**



**Figure 14: South Australia**



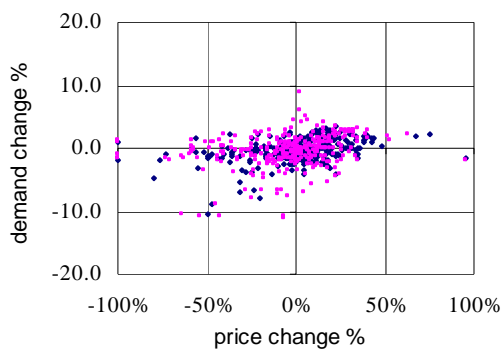
**Figure 15: Tasmania**



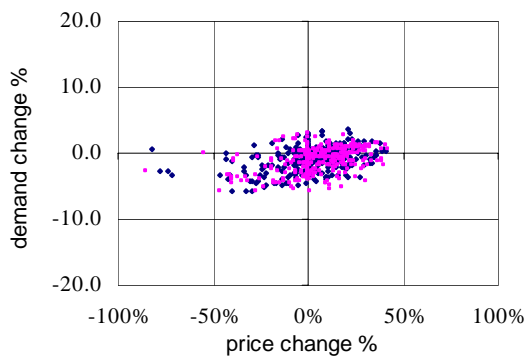
## Price variations

There were 86 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 against 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.

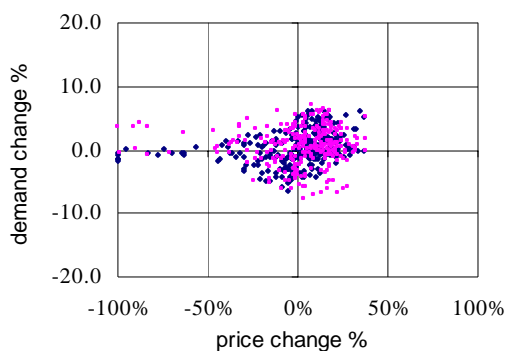
**Figure 16: Queensland**



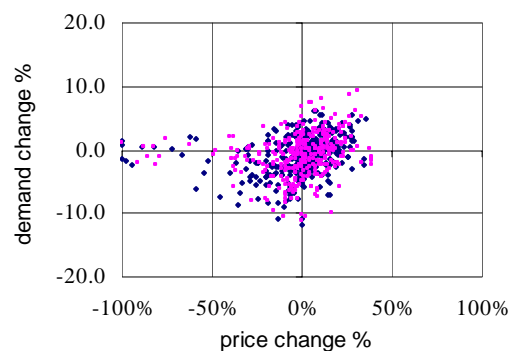
**Figure 17: New South Wales**



**Figure 18: Victoria**



**Figure 19: South Australia**



**Figure 20: Tasmania**

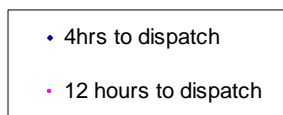
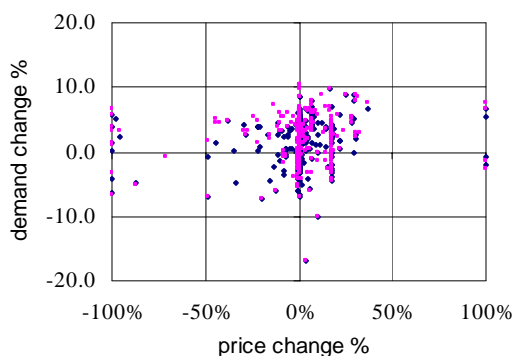
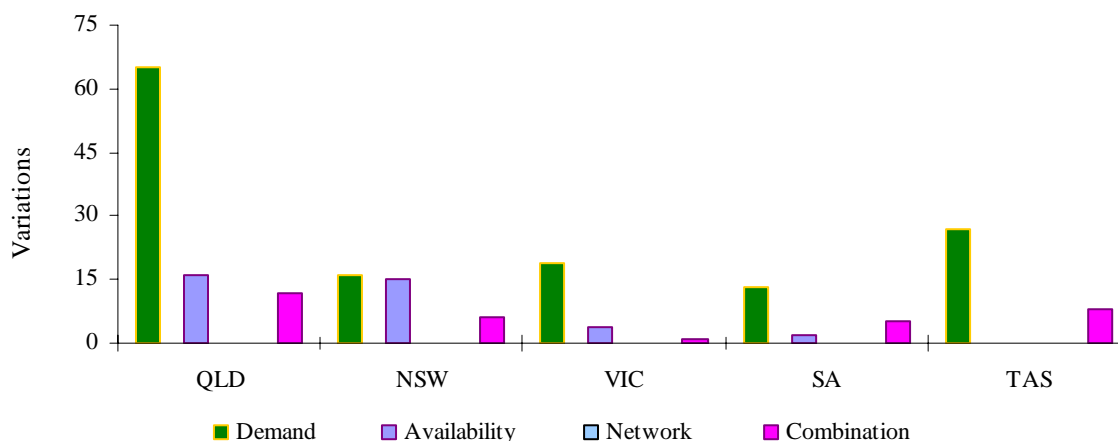


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

**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.

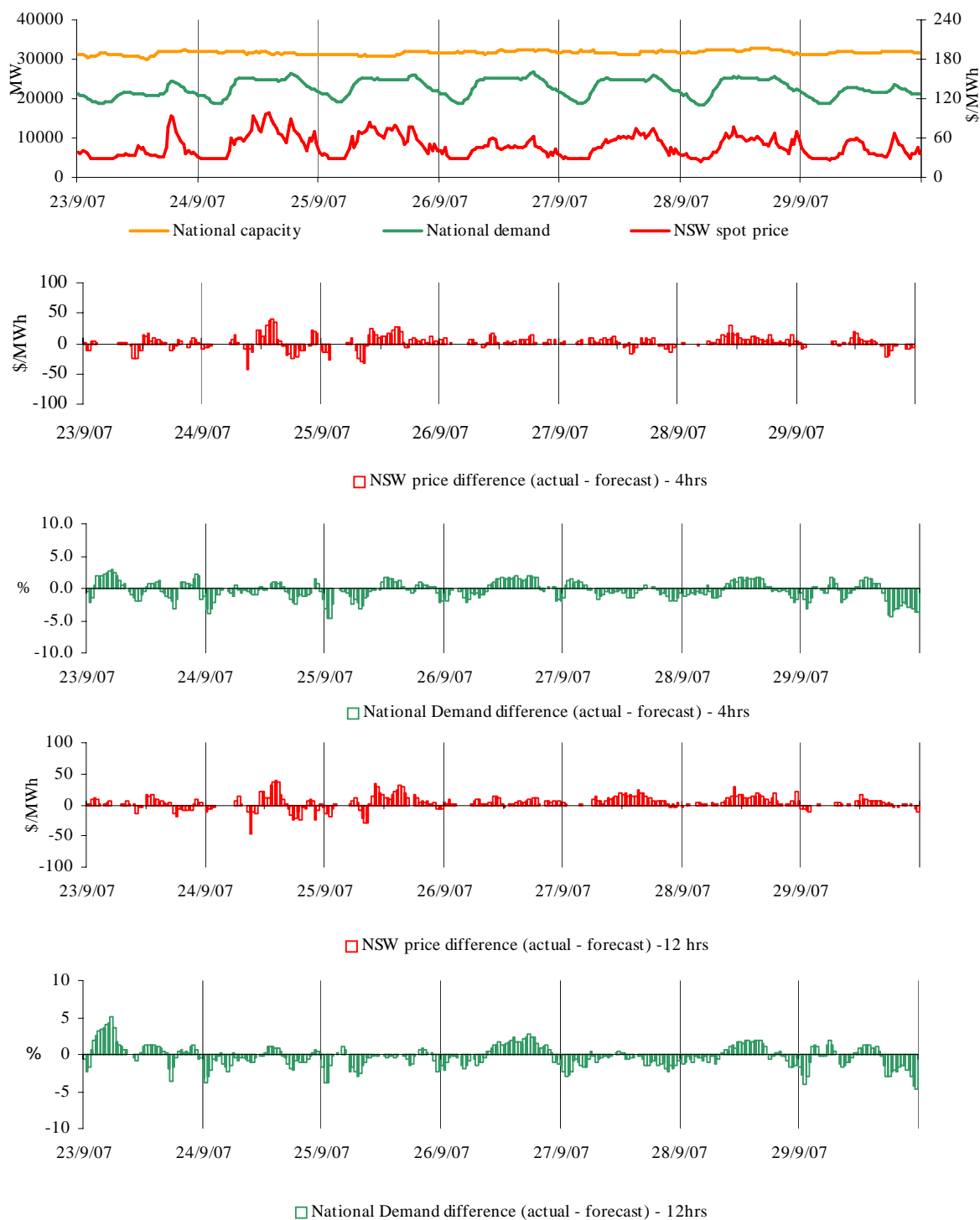
On a regional basis the differences between the maximum temperature and the temperature forecast at around 6.00 pm the day before are also included.

In each section, all prices for the week greater than three times the average have been presented. This threshold is used to filter the material price outcomes for the week. The actual price, demand and generator availability is compared with the forecasts made 4 and 12 hours ahead, with significant changes to these forecasts explained.

## National Market

Spot prices within the national market are regularly aligned with conditions in one region reflected across all others. Figures 22-26 shows 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 as a proxy national price under these conditions as New South Wales is located in the centre of the NEM.

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

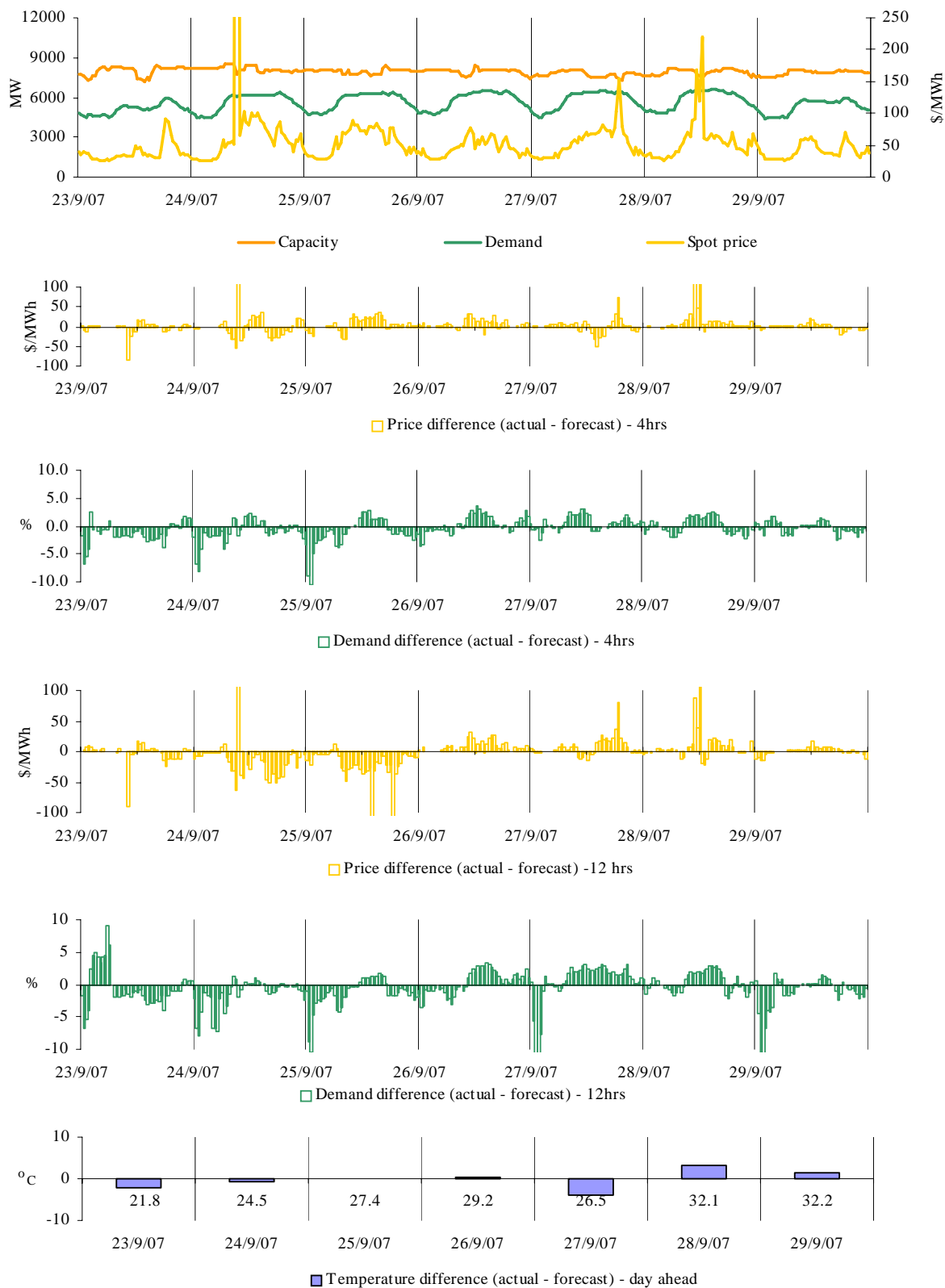


There were no occasions where the spot prices aligned nationally and the New South Wales price was greater than three times the New South Wales weekly average price of \$49/MWh.

## Queensland

Figures 27-32 show spot market prices in Queensland over the week along with actual demand and differences between actual and forecast demand and prices.

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





There were two occasions where the spot prices in Queensland were greater than three times the Queensland weekly average price of \$57/MWh.

### Monday, 24 September

<b>10:00 am</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1710.58	80.35	80.35
Demand (MW)	6072	6176	6185
Available capacity (MW)	7722	8076	8091

Conditions at the time saw demand close to that forecast and available capacity 350 MW below that forecast four hours ahead.

At 9.35 am CS Energy reduced capacity at Kogan Creek by 780 MW to zero for a load rejection test. Exports to New South Wales across QNI reduced by 420 MW, but limited ramp rate capability in Queensland led to a violation of constraints and the five-minute dispatch price spiked at \$10 000/MWh.

There was no other significant rebidding.

### Friday, 28 September

<b>12:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	218.67	55.14	80.35
Demand (MW)	6504	6367	6369
Available capacity (MW)	7492	8038	7898

Conditions at the time saw demand 140 MW higher and available capacity 550 MW lower than that forecast four hours ahead.

Flows into Queensland from New South Wales were limited to around 90 MW due to network outages between Millmerran and Middle Ridge in Queensland and around Lismore in New South Wales.

At 10.51 am CS Energy reduced the availability of Swanbank E by 220 MW to zero - all of this capacity was priced below zero. The unit had been undergoing commissioning tests.

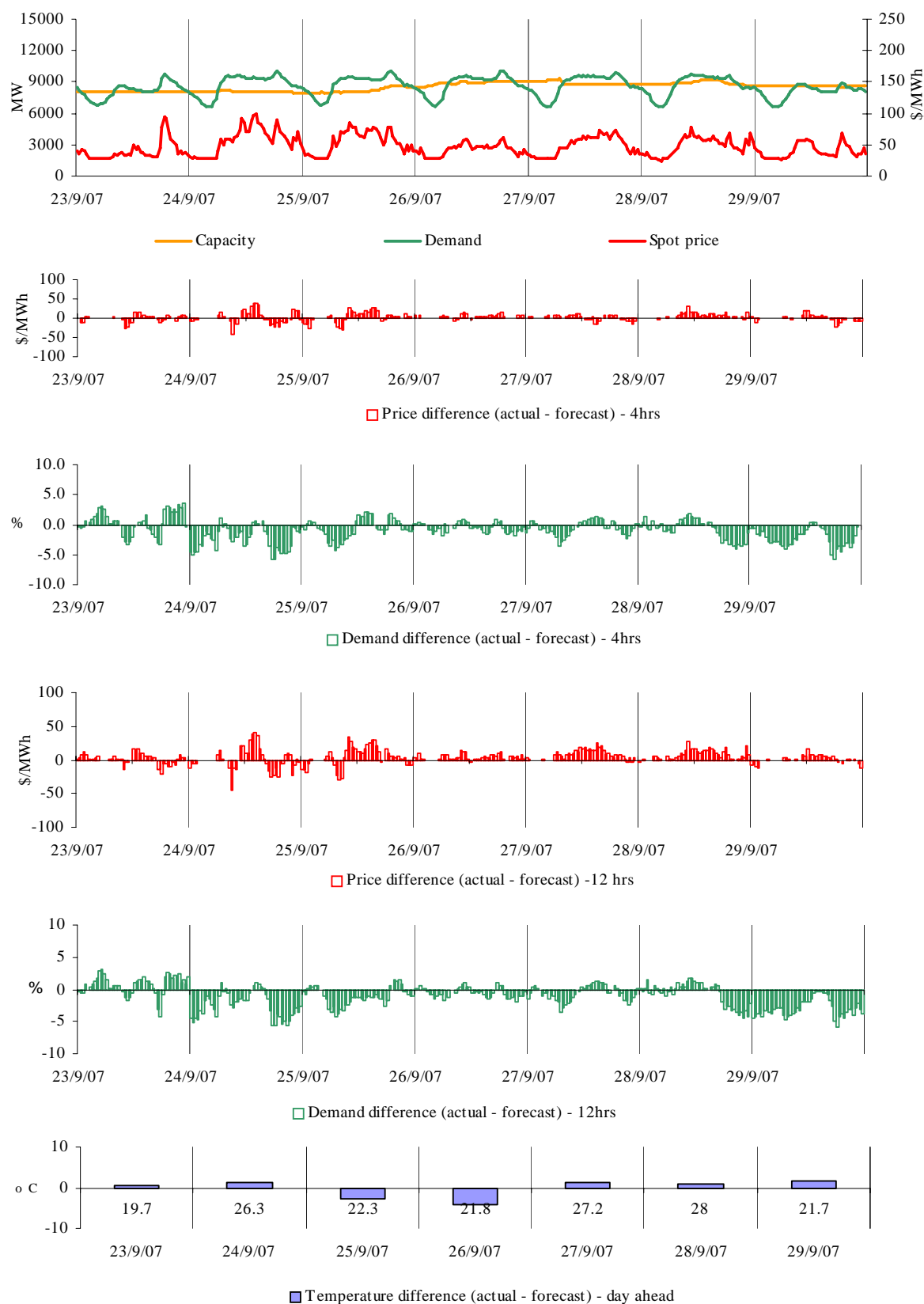
At 11.58 am Tarong Energy reduced the availability of Tarong unit three by 150 MW. The reason given was "T3 mill problems continuing::adjust availability". A further rebid at 12.16 pm saw 200 MW of capacity at Wivenhoe unit one shifted from prices above \$450/MWh to below \$90/MWh. The reason given was "Cover contract position::volume profile change".

There was no other significant rebidding.

## New South Wales

Figures 33-38 show spot market prices in New South Wales over the week along with actual demand and differences between actual and forecast demand and prices.

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

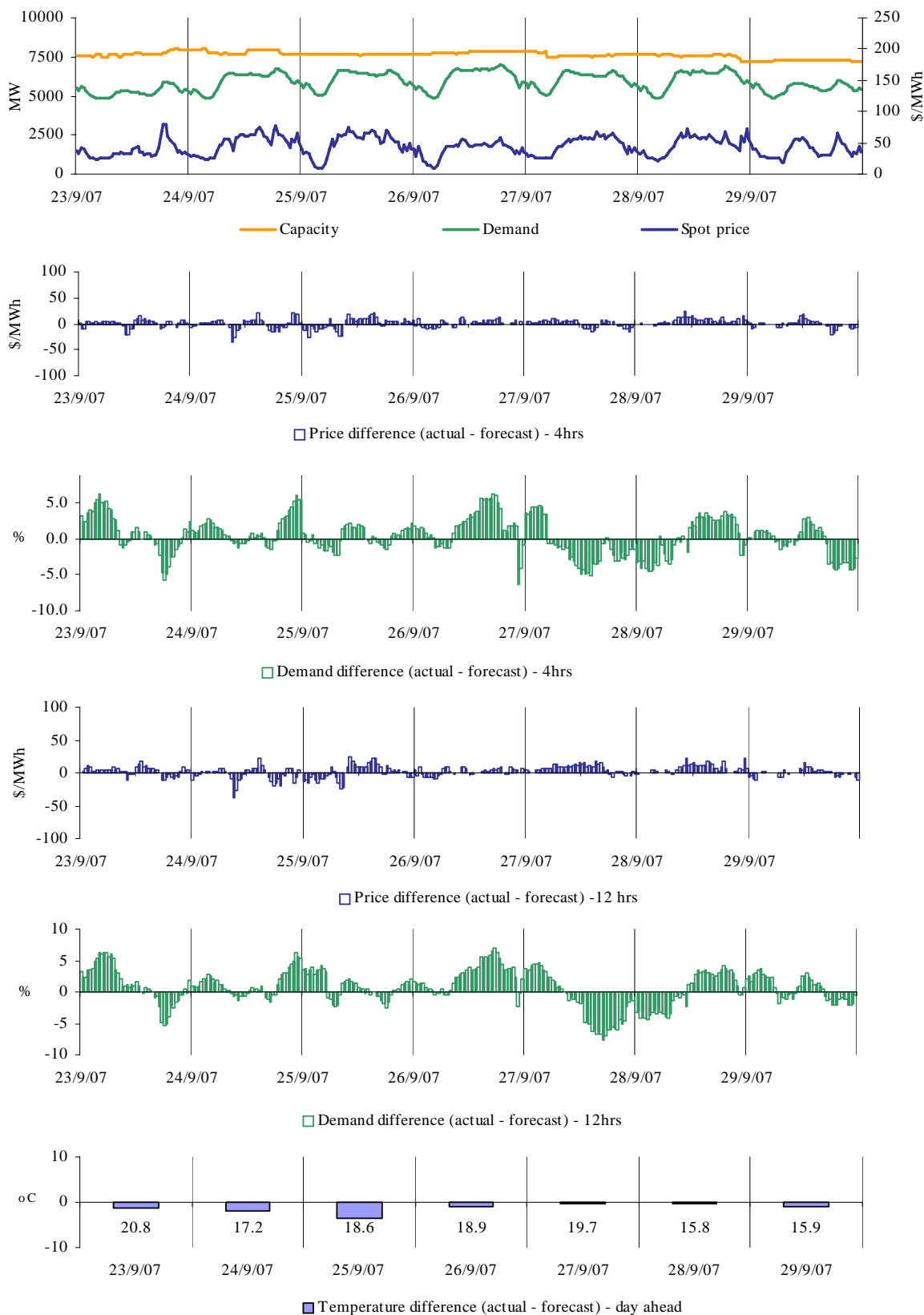


There were no occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of \$49/MWh.

## Victoria

Figures 39-44 show spot market prices in Victoria over the week along with actual demand and differences between actual and forecast demand and prices.

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

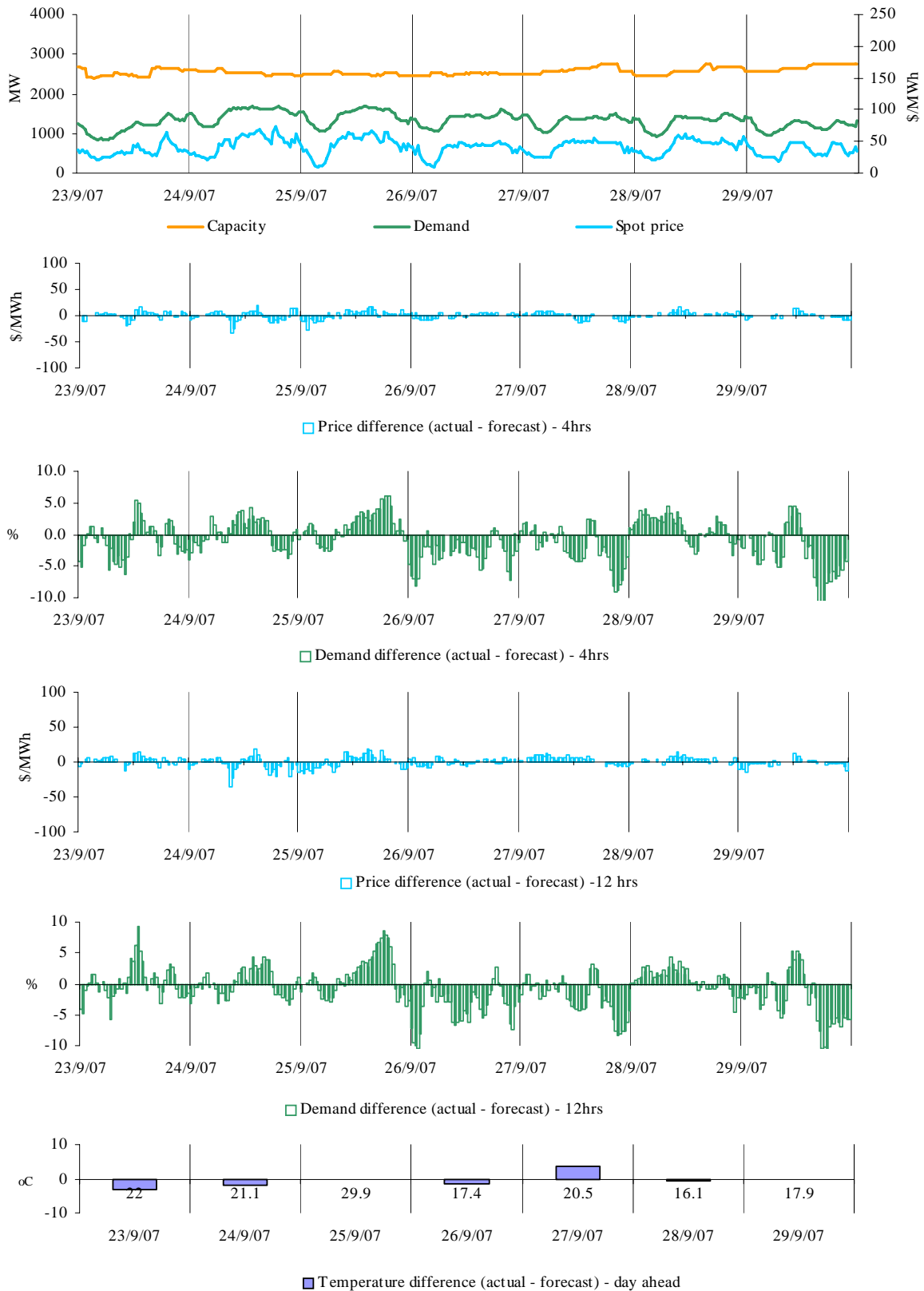


There were no occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of \$45/MWh.

## South Australia

Figures 45-50 show spot market prices in South Australia over the week along with actual demand and differences between actual and forecast demand and prices.

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

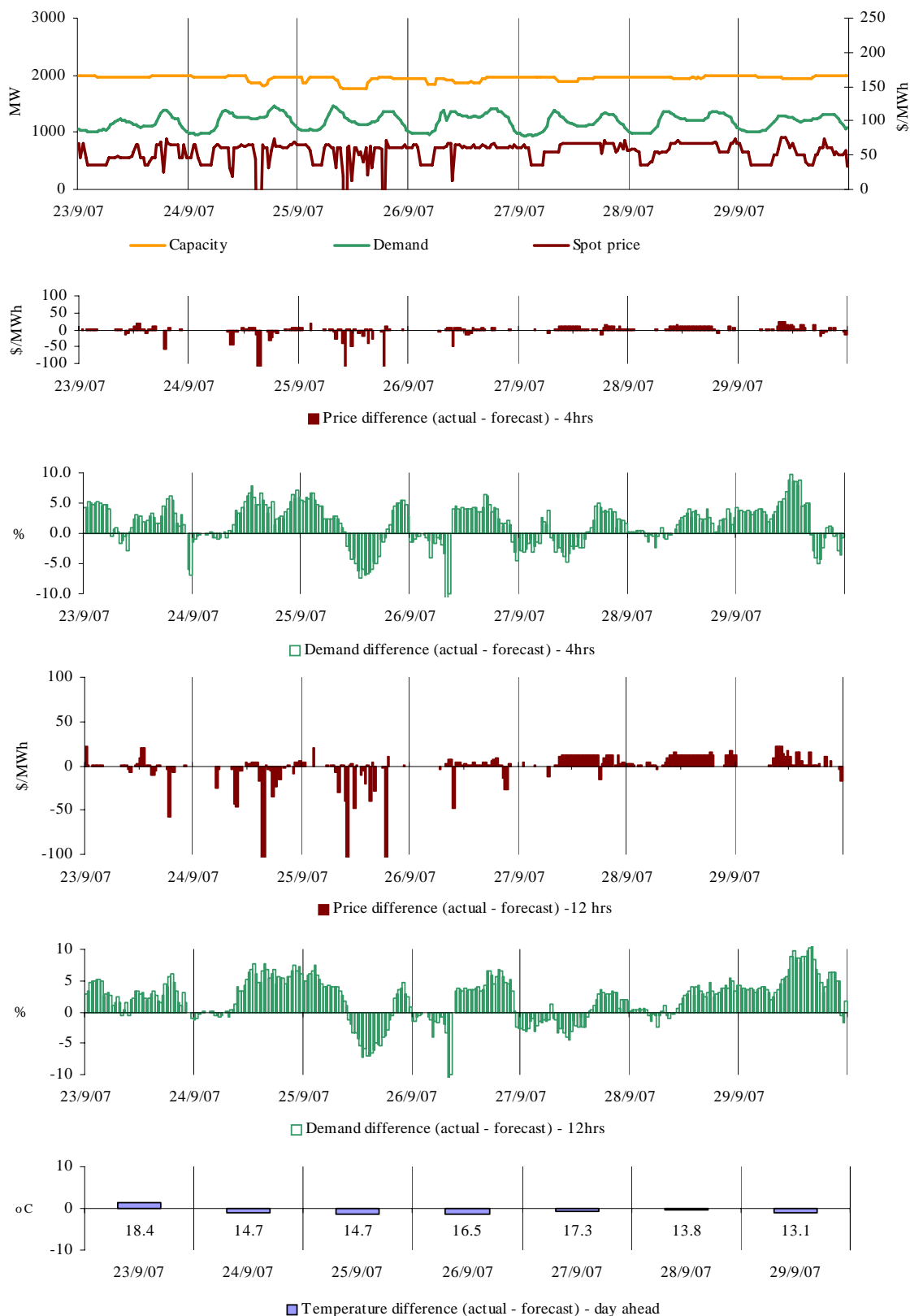


There were no occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of \$42/MWh.

## Tasmania

Figures 51-56 show spot market prices in Tasmania over the week along with actual demand and differences between actual and forecast demand and prices.

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

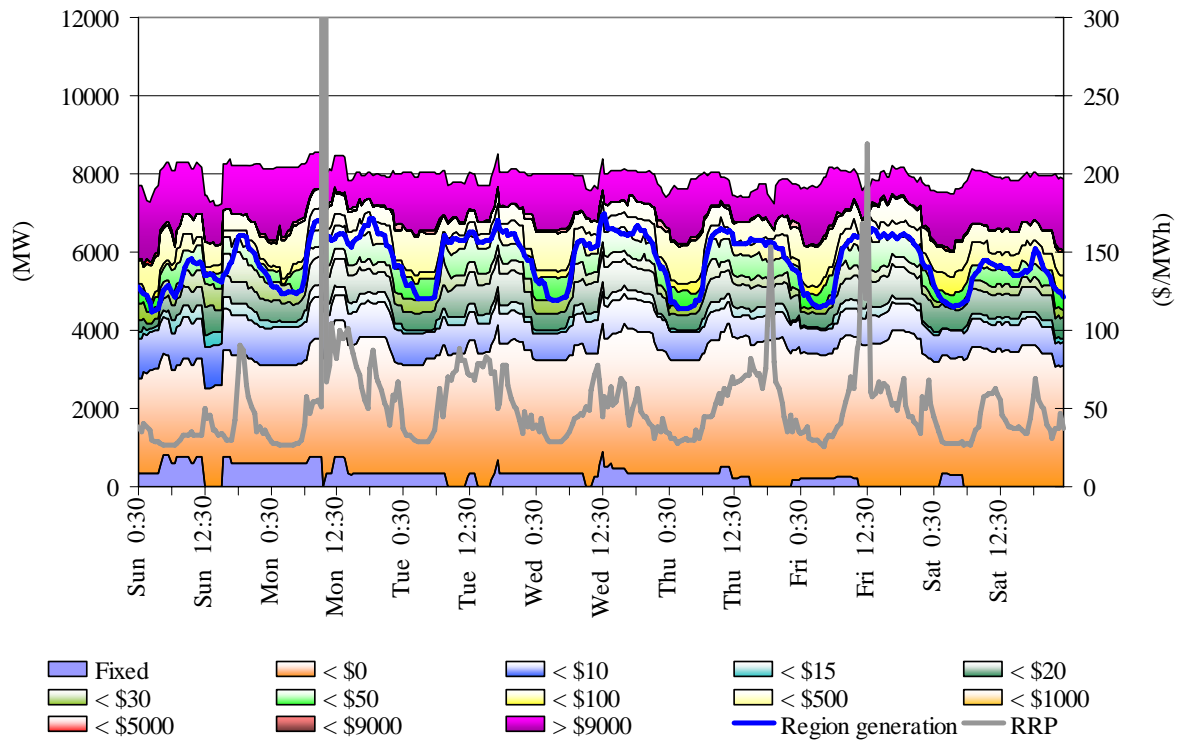


There were no occasions where the spot price in Tasmania was greater than three times the Tasmania weekly average price of \$52/MWh.

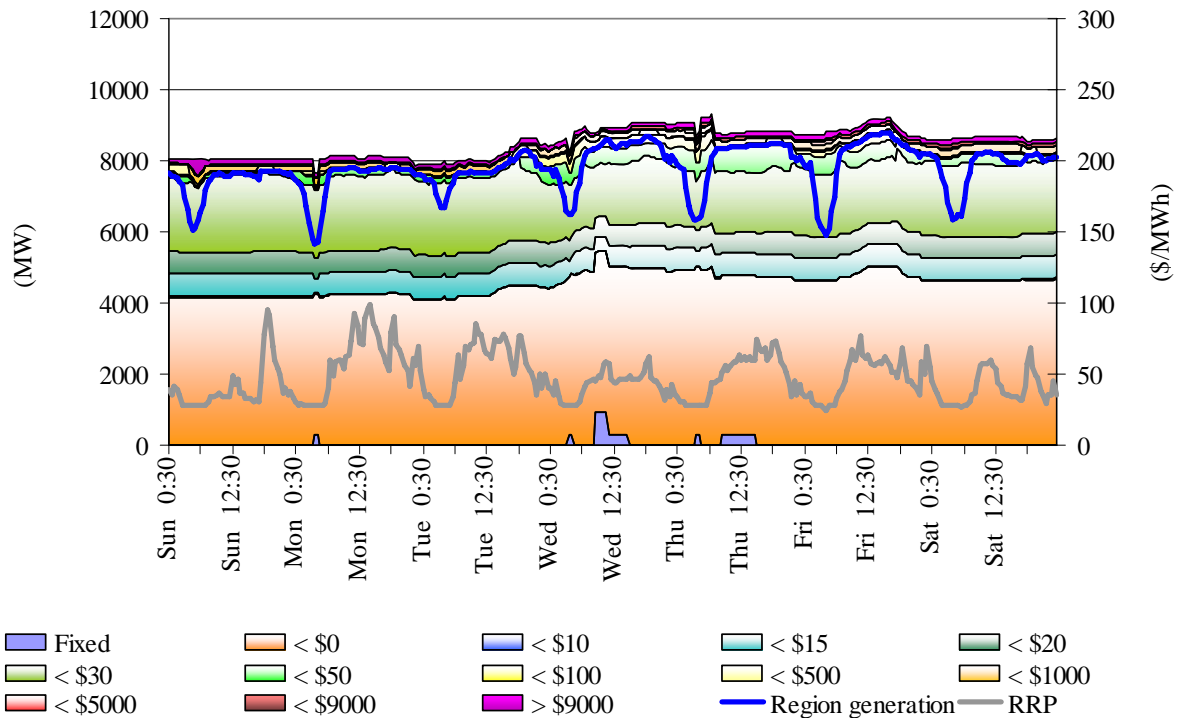
## Bidding patterns

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.

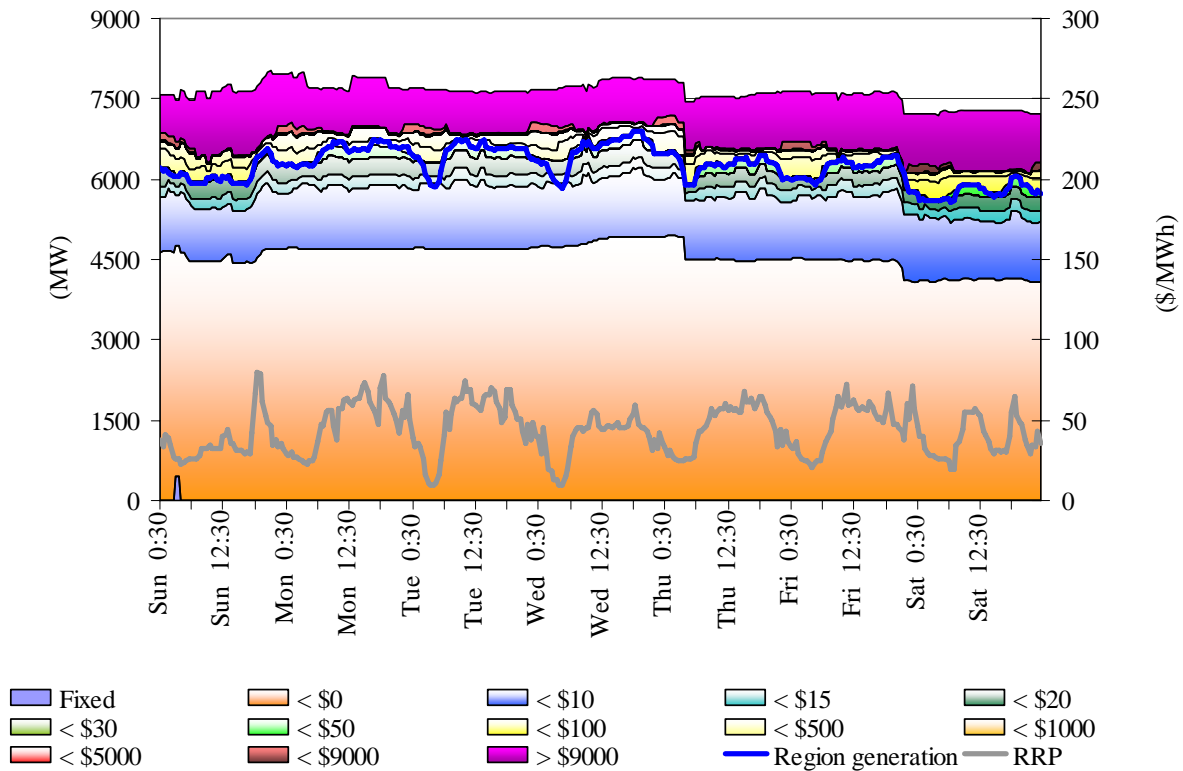
**Figure 57: Queensland closing bid prices, dispatched generation and spot price**



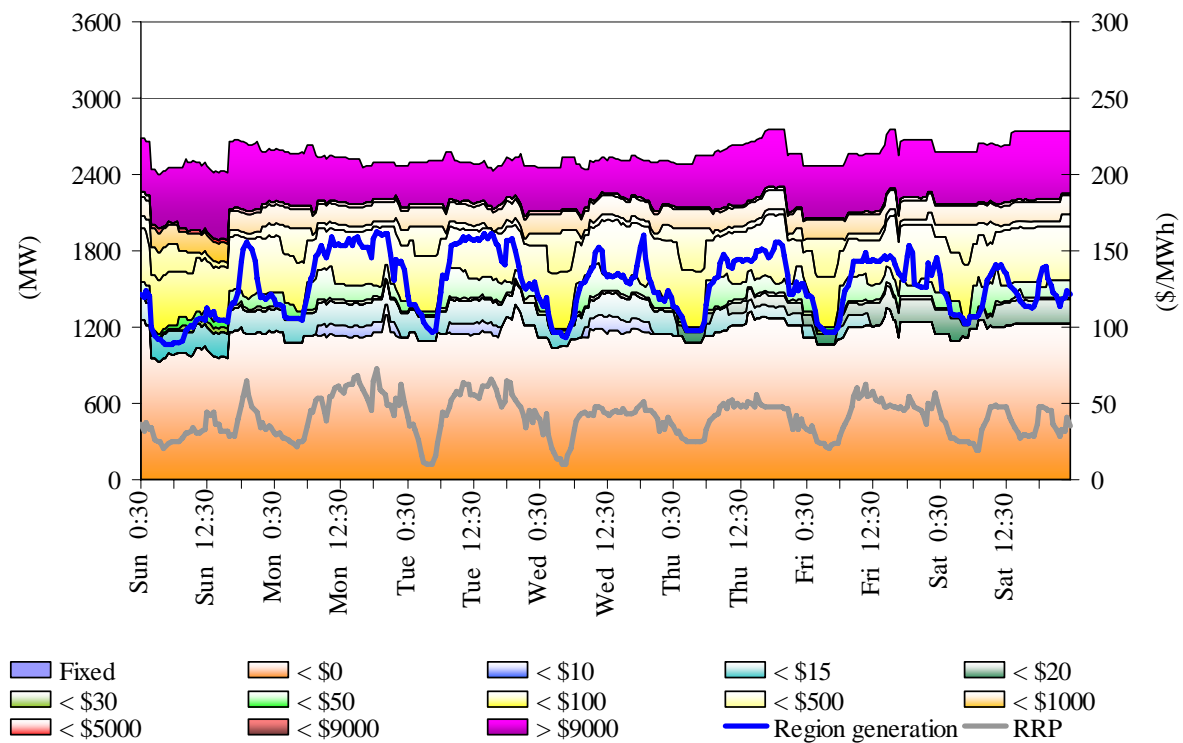
**Figure 58: New South Wales closing bid prices, dispatched generation and spot price**



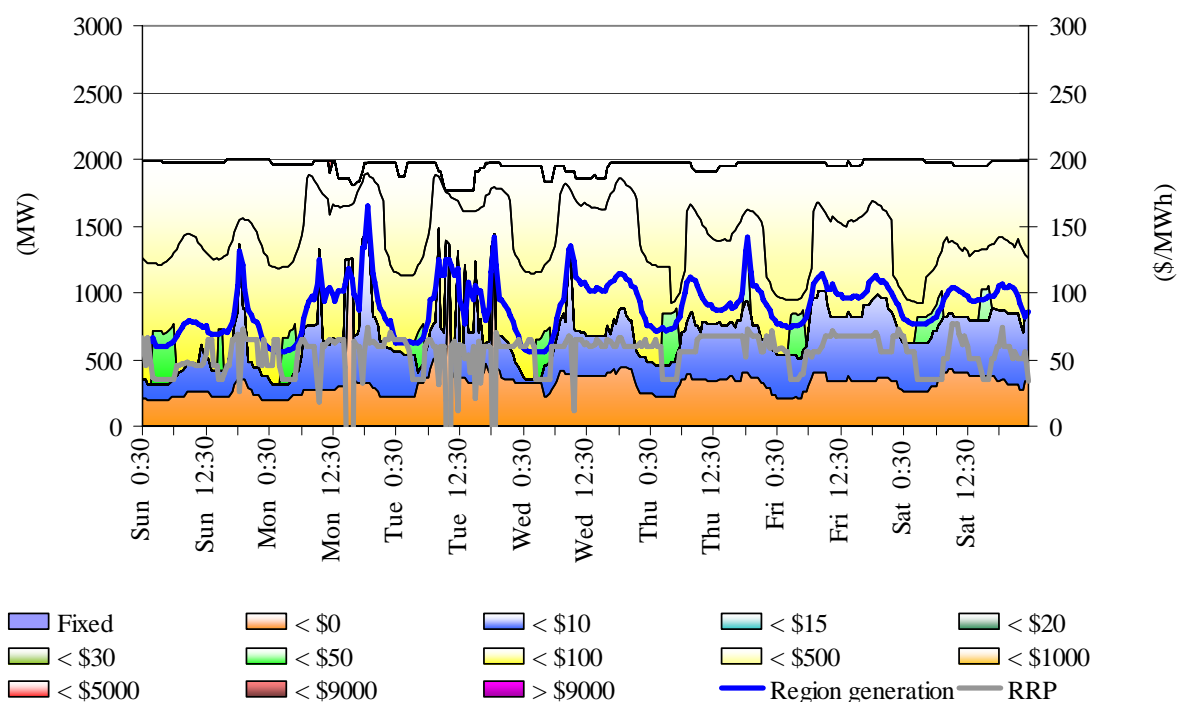
**Figure 59: Victoria closing bid prices, dispatched generation and spot price**



**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 \$738 000 or 0.4 per cent of turnover in 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)	5.74	1.02	4.40	5.58	0.05	0.13	0.46	1.84
Previous week (\$/MW)	5.13	0.92	4.30	7.27	0.07	0.13	0.98	2.11
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$270	\$38	\$270	\$119	\$0	\$1	\$11	\$29
% of energy market	0.15%	0.02%	0.15%	0.07%	0.01%	0.01%	0.01%	0.02%

The total cost of ancillary services in Tasmania for the week was \$273 000 or 3 per cent of the turnover in the Tasmanian energy market. 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)	11.31	1.99	9.97	5.20	25.34	1.92	0.88	1.83
Previous week (\$/MW)	9.82	1.96	8.83	6.43	82.02	1.99	1.02	1.80
Last quarter (\$/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost (\$1000s)	\$64	\$31	\$116	\$30	\$17	\$4	\$2	\$9
% of energy market	0.62%	0.30%	1.12%	0.29%	0.16%	0.04%	0.02%	0.09%

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

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

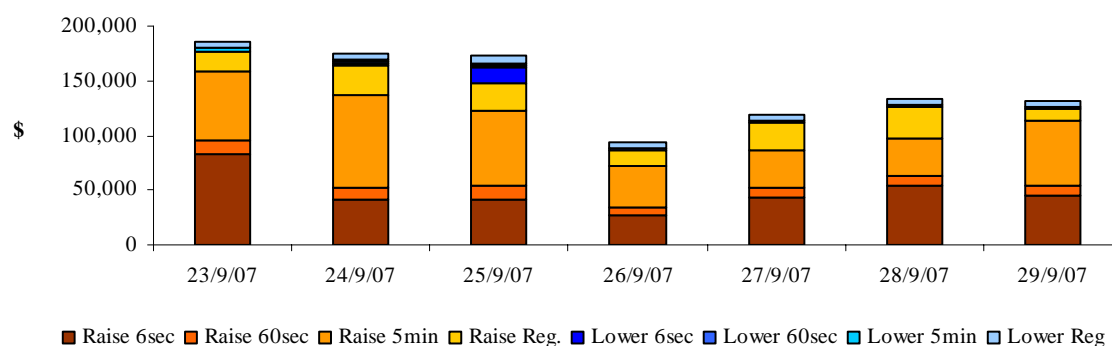
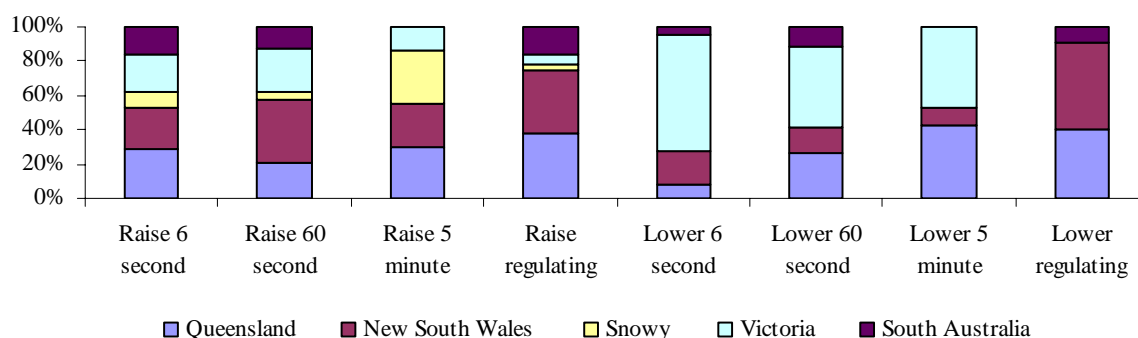


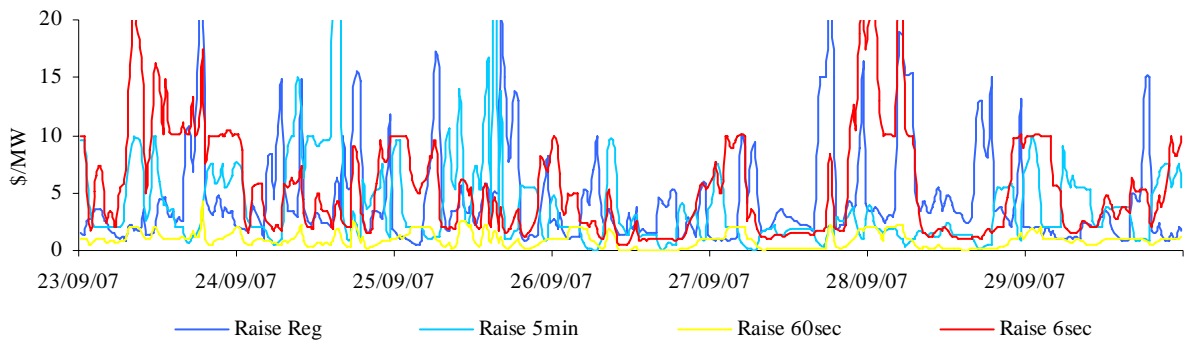
Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

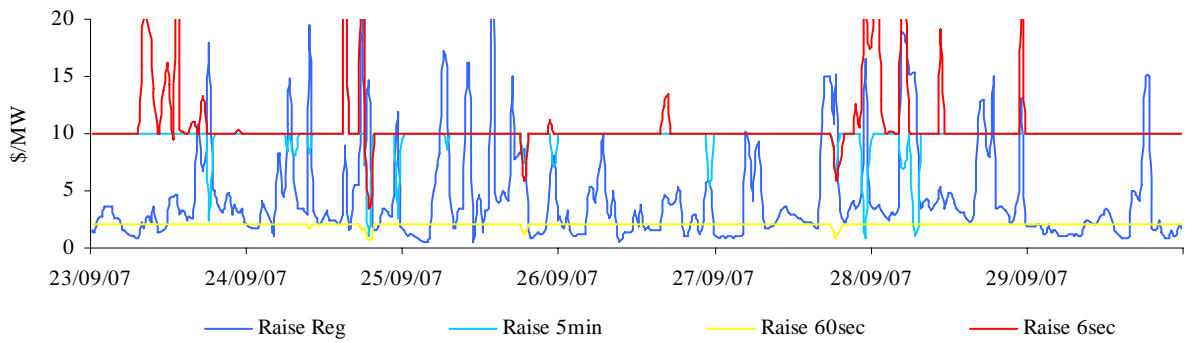


Figures 66 and 67 show 30-minute prices for each frequency control ancillary service throughout the week.

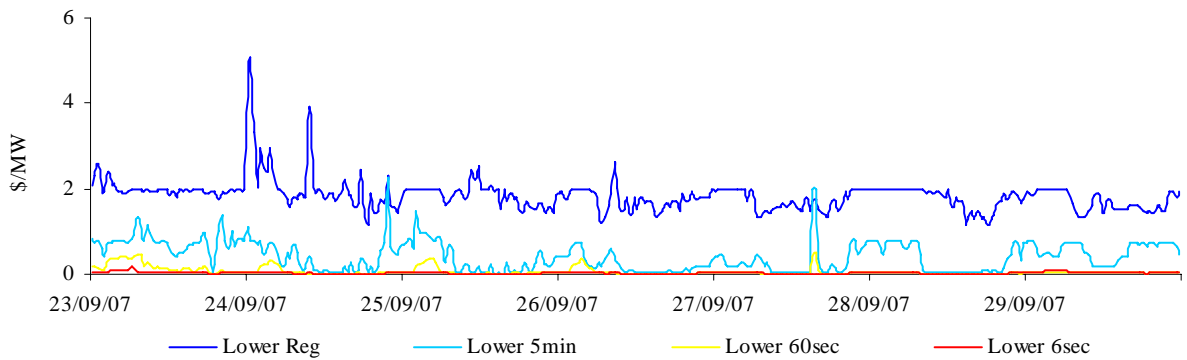
**Figure 66: prices for raise services**



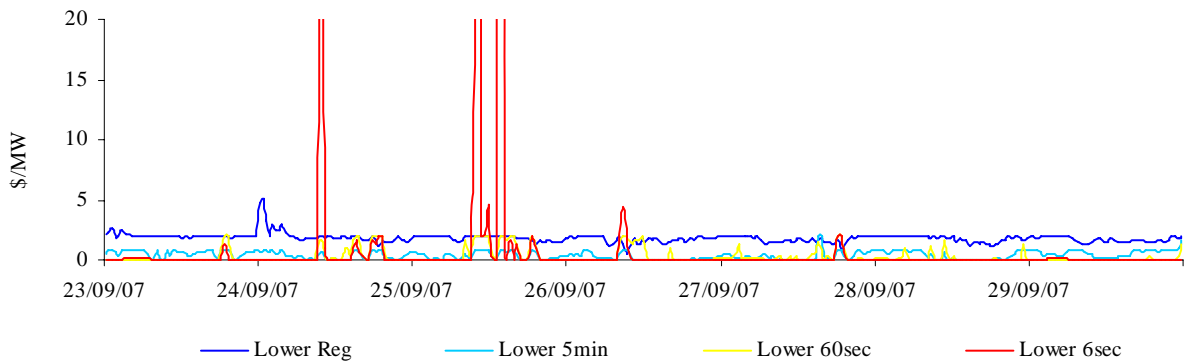
**Figure 66A: prices for raise services – Tasmania**



**Figure 67: prices for lower services**

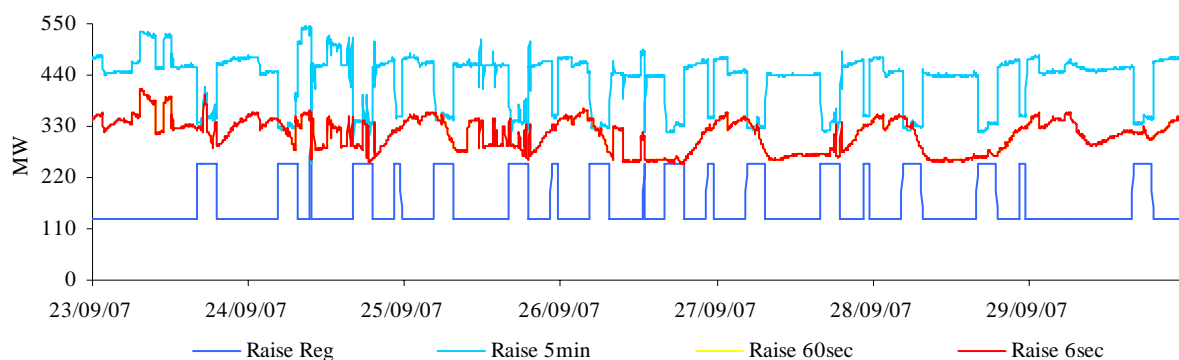


**Figure 67A: prices for lower services – Tasmania**

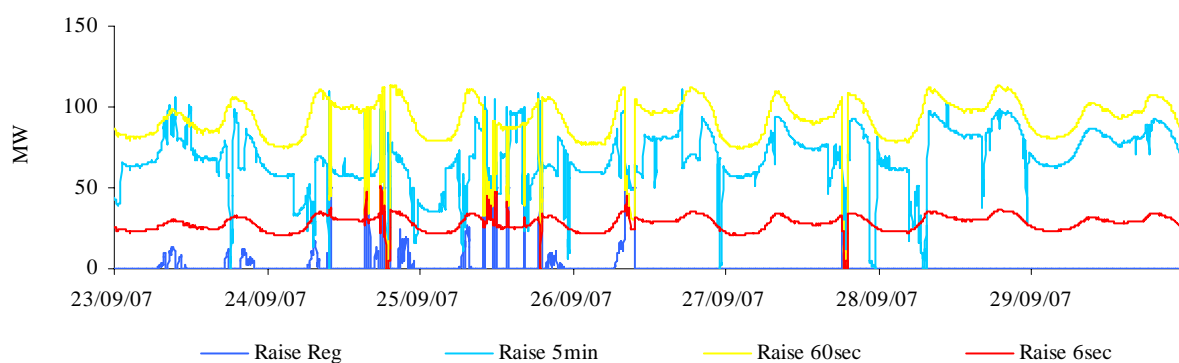


Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

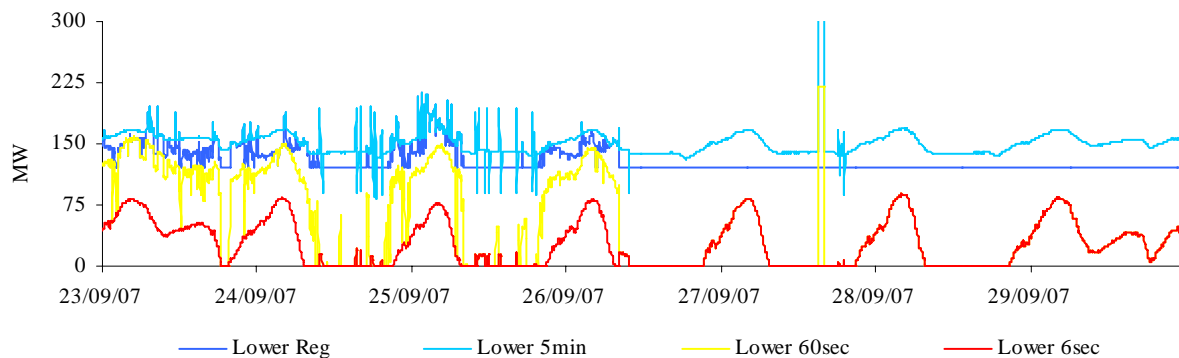
**Figure 68: raise requirements**



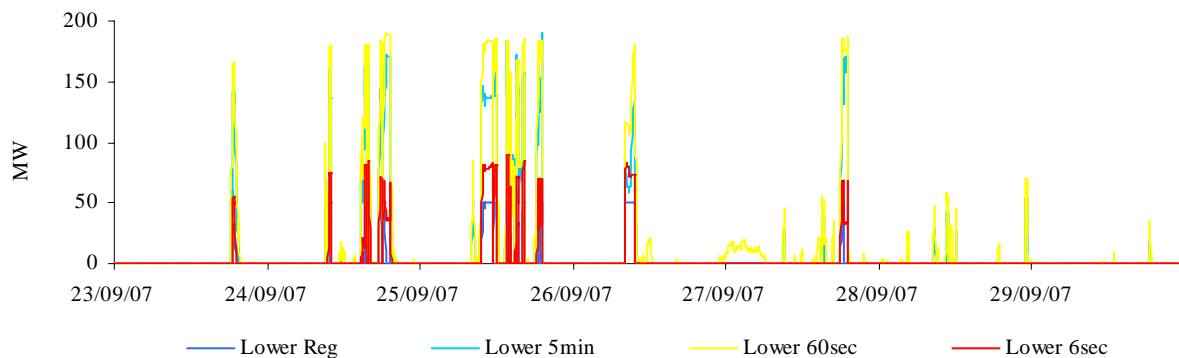
**Figure 68A: raise requirements – Tasmania**



**Figure 69: lower requirements**



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



**Australian Energy Regulator**

**October 2007**