

4–10 March 2007

Spot prices for the week averaged between \$36/MWh in Queensland and South Australia and \$50/MWh in Tasmania.

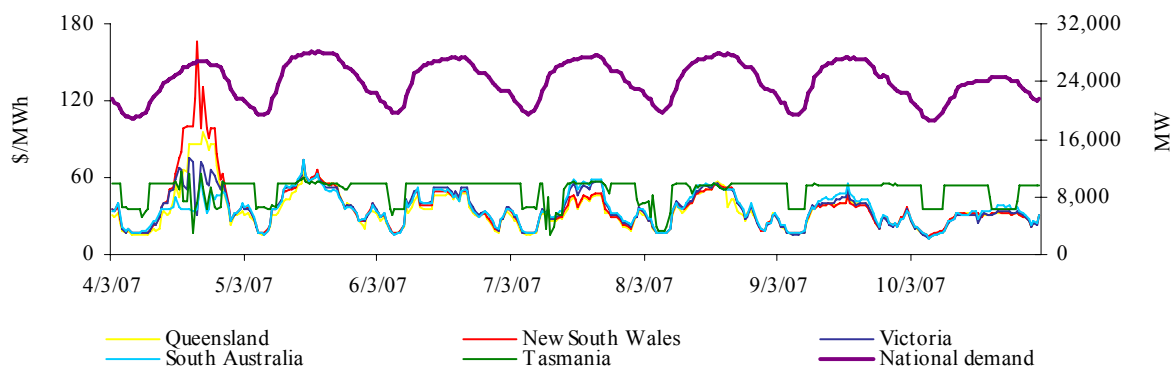
Turnover in the energy market was \$152 million. The total cost of ancillary services for the week was \$267 000, or 0.2 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 77 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 around a fifth all trading intervals across the market. These variations were most frequent in South Australia, occurring in over forty per cent 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	36	39	37	36	50
Previous week	46	59	55	51	46
Same quarter last year	39	46	53	58	33
Financial year to date	35	40	46	50	42
% change from previous week *	▼22%	▼34%	▼34%	▼29%	▲9%
% change from same quarter last year **	▼8%	▼15%	▼31%	▼37%	▲51%
% change from year to date ***	▲1%	▼21%	▲18%	▲6%	▼40%

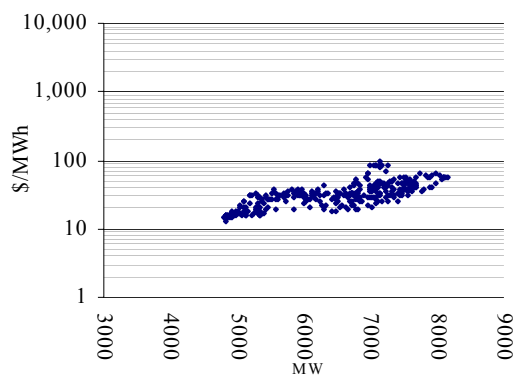
\*The percentage change between last week's average spot price and the average price for the previous week.

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

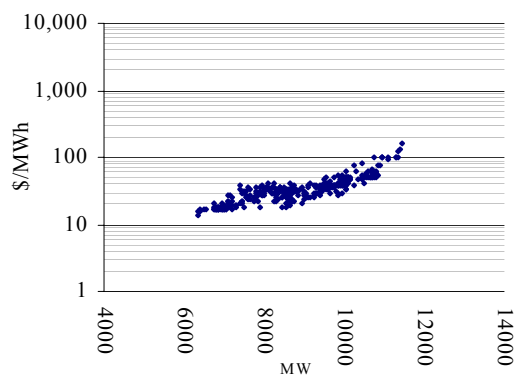
\*\*\*The percentage change between the average spot price for the current financial year to date and the average spot price over the similar period for the previous financial year.

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

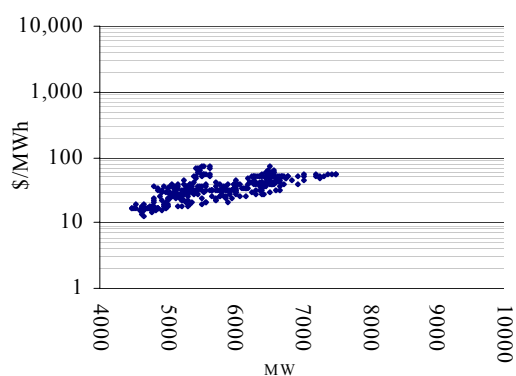
**Figure 3: Queensland**



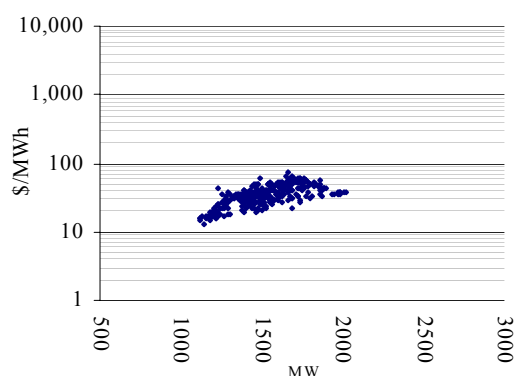
**Figure 4: New South Wales**



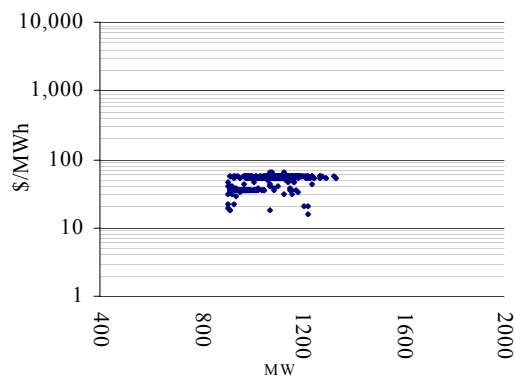
**Figure 5: Victoria**



**Figure 6: South Australia**



**Figure 7: Tasmania**



The maximum spot prices for the week ranged from \$64/MWh in Tasmania to \$165/MWh in New South Wales. 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	0.65	0.67	0.67	0.65	0.03
Previous week	0.74	0.76	0.65	0.70	0.41
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>

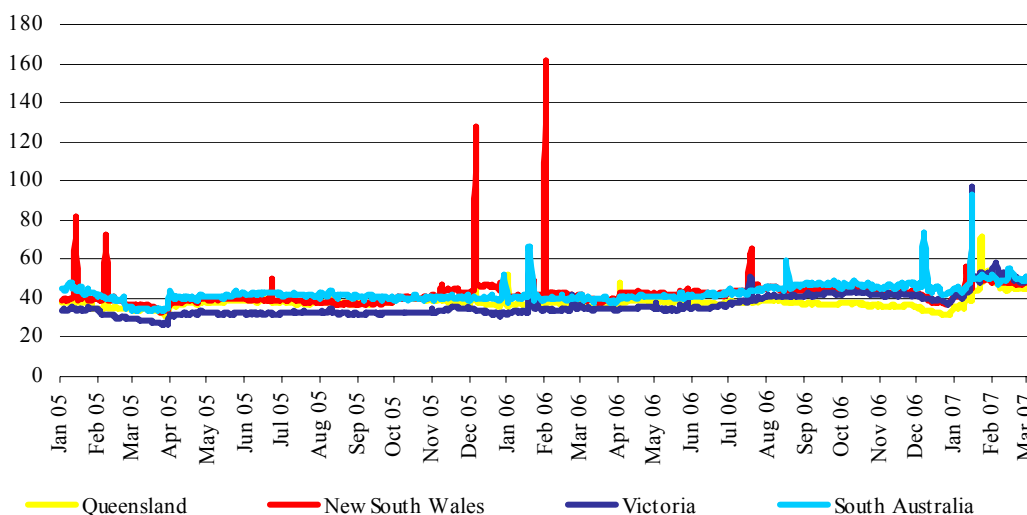
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)\* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2005.

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

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	46.11	46.76	46.67	47.91	47.86
New South Wales	48.01	47.99	47.68	48.20	48.15
Victoria	48.20	49.60	50.21	49.20	48.40
South Australia	46.67	47.77	49.28	49.09	49.58

\* 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**

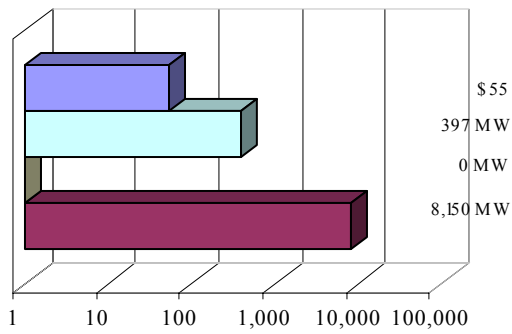


## Reserve

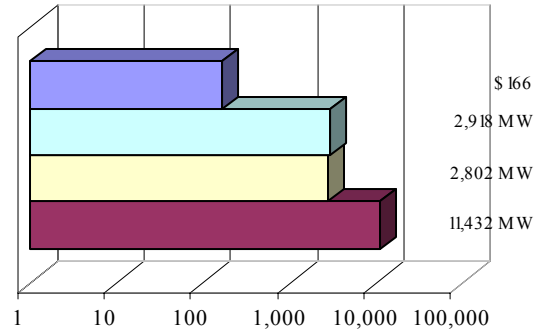
There were no low reserves forecast.

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

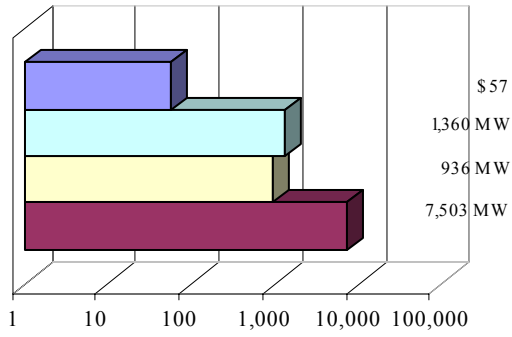
**Figure 11: Queensland**



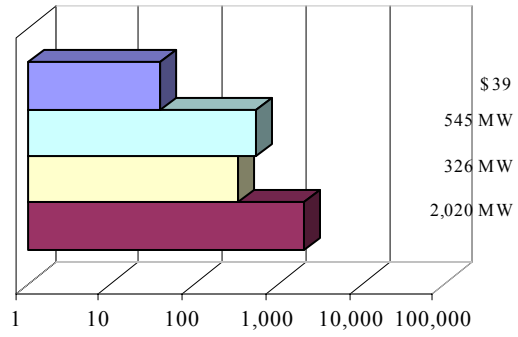
**Figure 12: New South Wales**



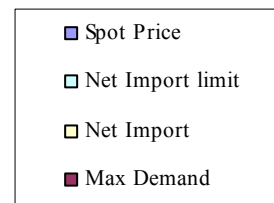
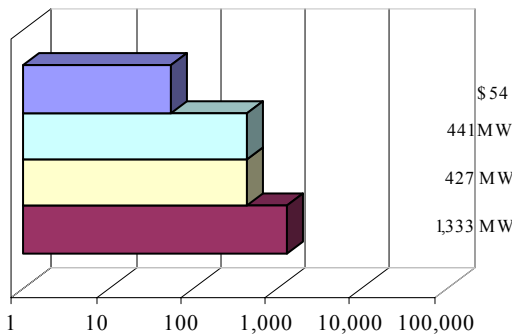
**Figure 13: Victoria**



**Figure 14: South Australia**



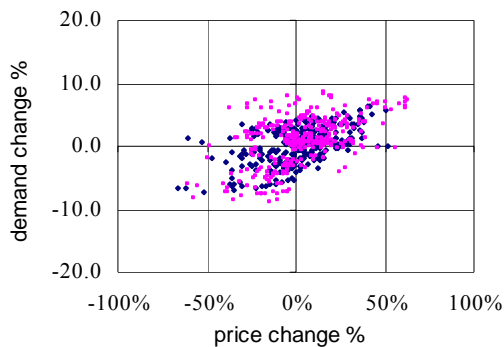
**Figure 15: Tasmania**



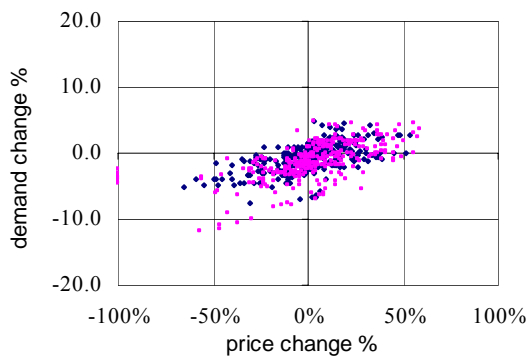
## Price variations

There were 77 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.

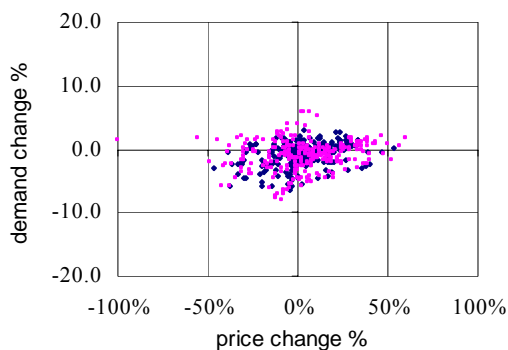
**Figure 16: Queensland**



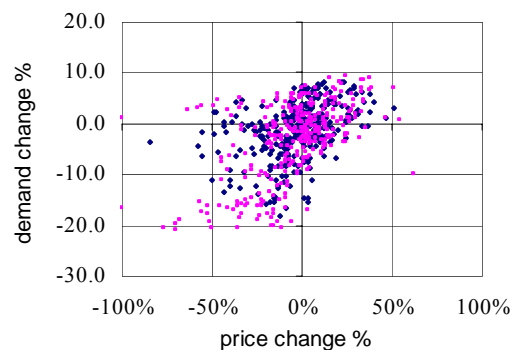
**Figure 17: New South Wales**



**Figure 18: Victoria**



**Figure 19: South Australia**



**Figure 20: Tasmania**

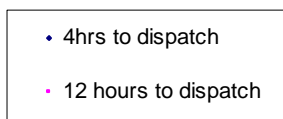
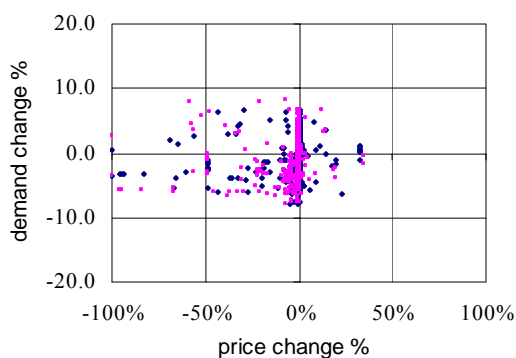
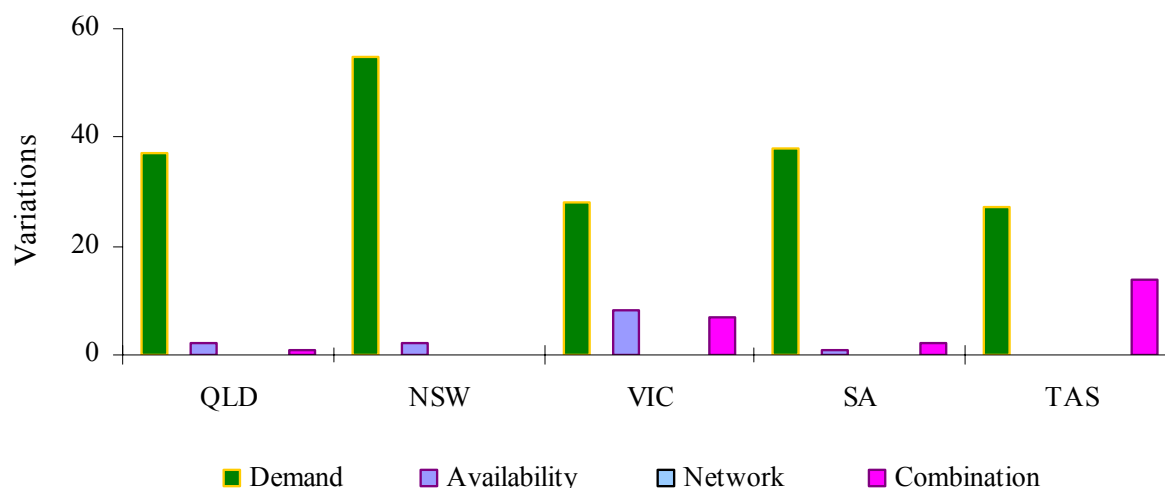


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

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



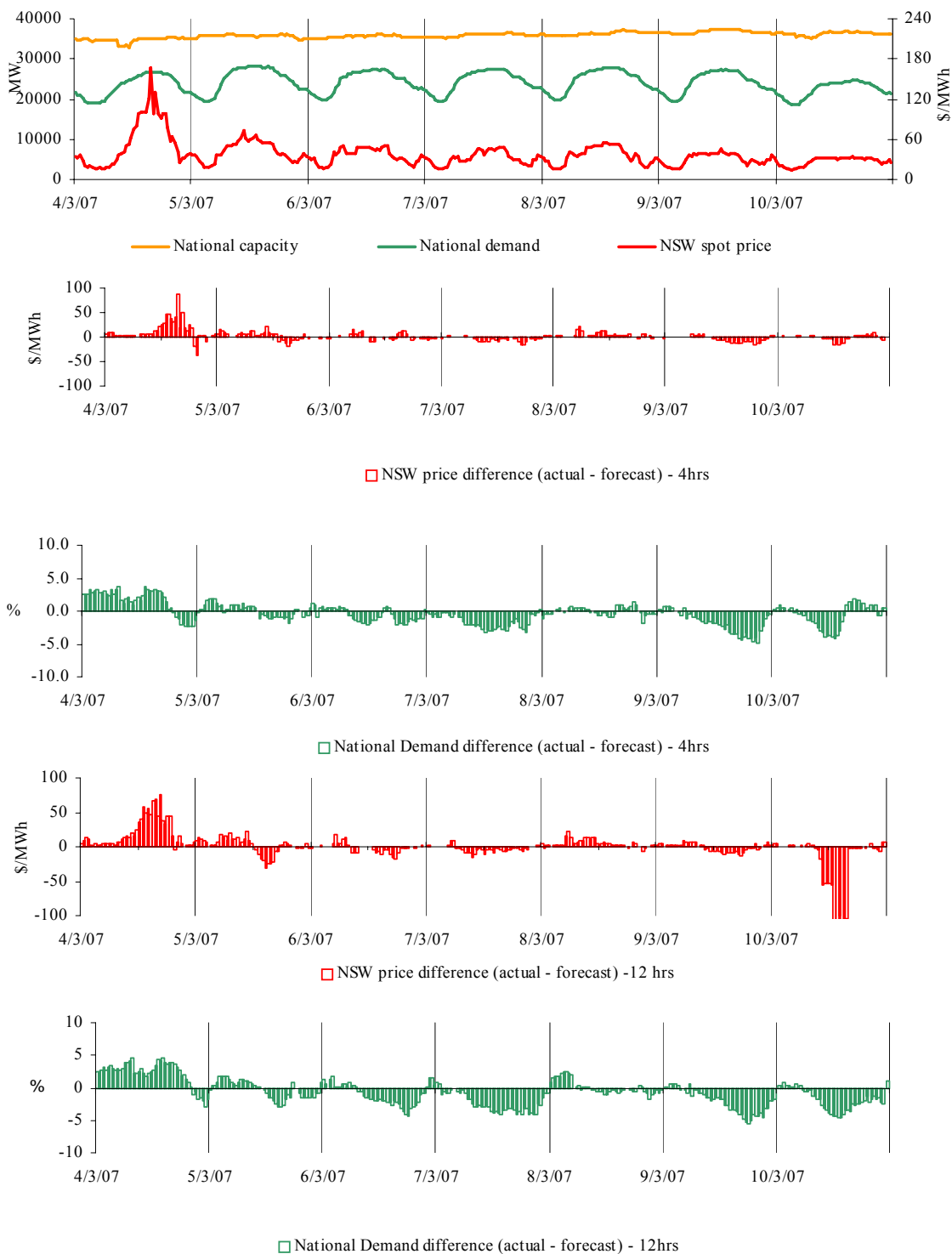
### Price and demand

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.

Spot prices 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.

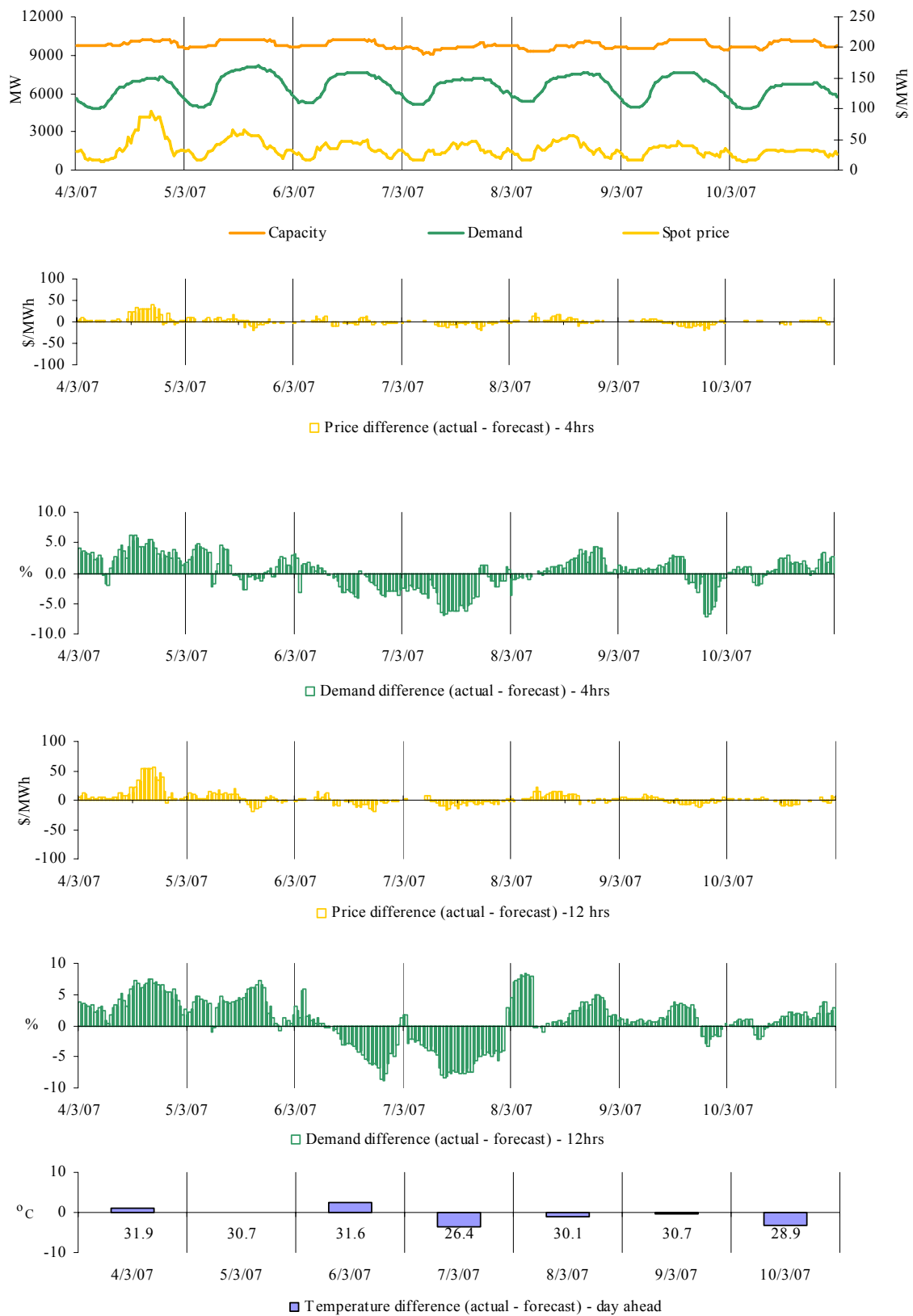
Figures 22-26: National market outcomes



There was no occasion where spot prices were nationally aligned and the New South Wales price<sup>1</sup> was greater than three times the New South Wales weekly average price of \$39/MWh.

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

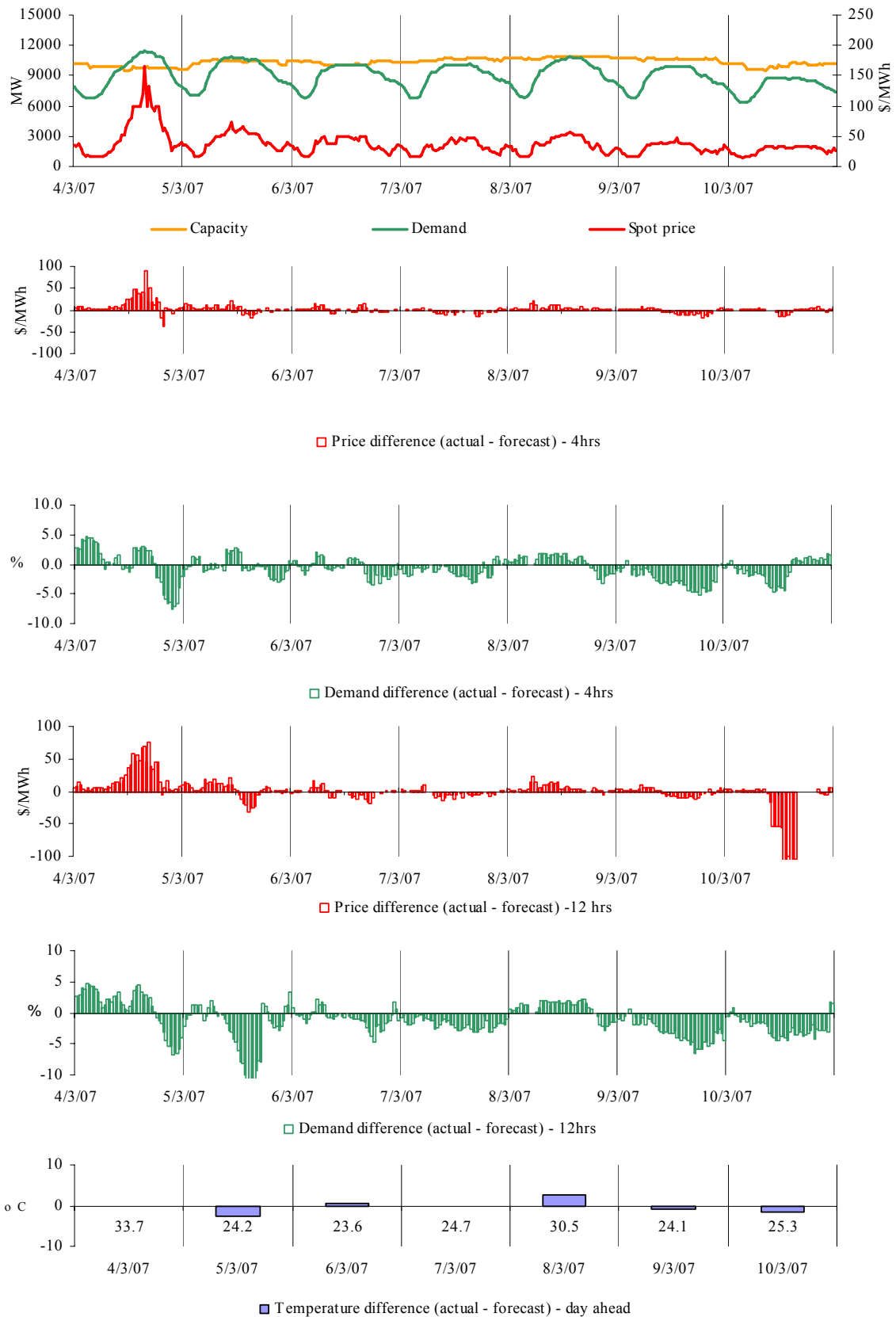
**Figures 27-32: Queensland actual spot price, demand and forecast differences**



There was no occasion in Queensland where the spot price was greater than three times the weekly average price of \$36/MWh.



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



There were three occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of \$39/MWh.

### Sunday, 4 March

<b>3:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	121.17	79.05	53.91
Demand (MW)	11358	11020	11029
Available capacity (MW)	9834	10023	10552
<b>4:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	165.83	76.99	96.19
Demand (MW)	11432	11104	11106
Available capacity (MW)	9834	9918	10552
<b>5:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	131.01	80.00	54.79
Demand (MW)	11382	11108	11120
Available capacity (MW)	9767	9918	10343

Conditions at the time saw demand at near record-levels for a Sunday and up to 330 MW higher than forecast four and twelve hours ahead. Available capacity was up to 720 MW lower than forecast twelve hours ahead and 300 MW lower four hours ahead.

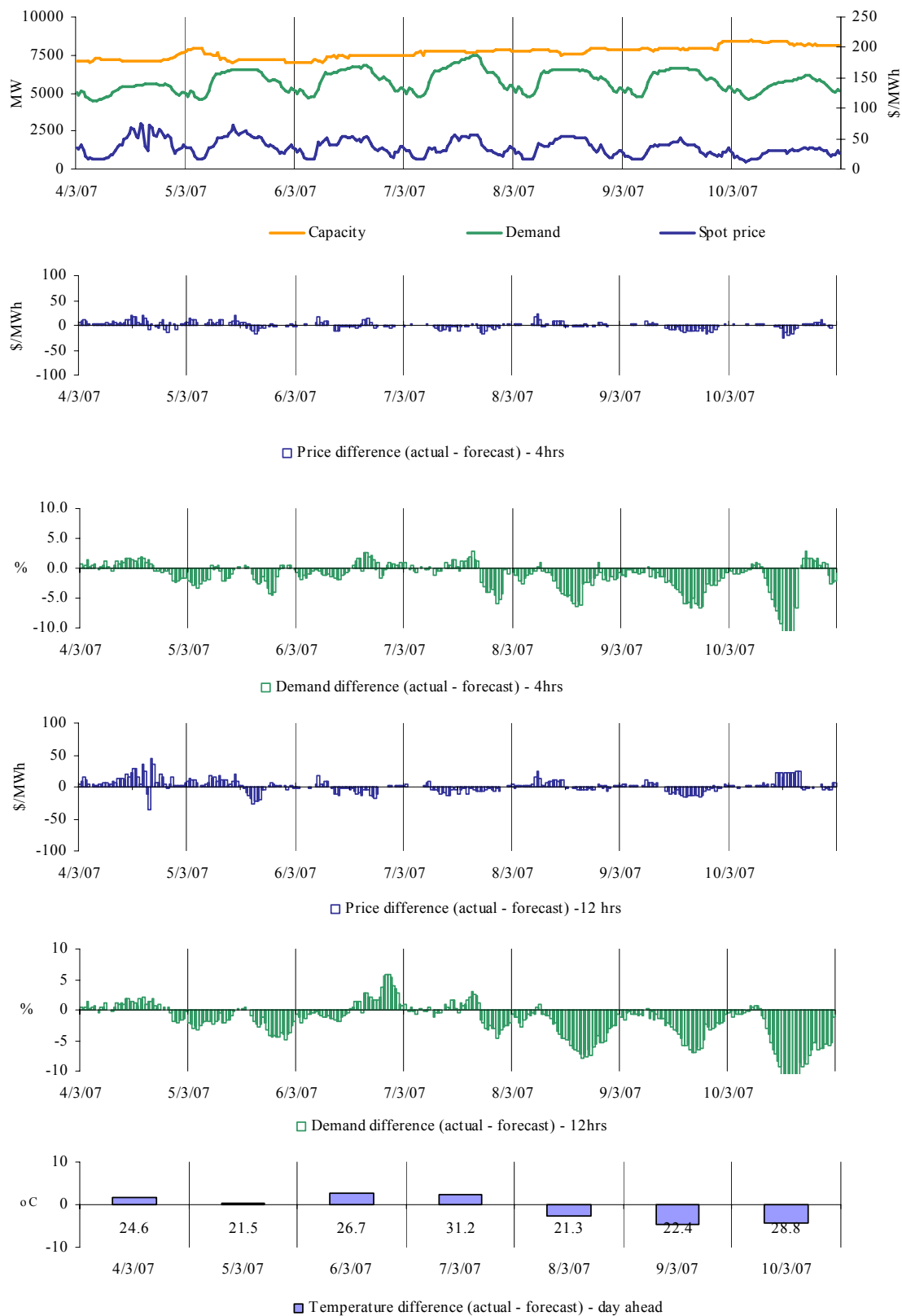
Flows on the Snowy to New South Wales interconnector were limited to 1800 MW, around 1200 MW short of the nominal import capability. The limit was close to forecast and impacted by reduced generation at Upper Tumut in the Snowy region. Upper Tumut was available for dispatch, at higher prices, if required. The constraint setting the limit was part of the Constraint Support Contracts and Constraint Support Pricing trial (CSC/CSP).

At 3.39 am Macquarie Generation's 535 MW Liddell unit two tripped from 410 MW. The unit was initially expected to return to service at midday. A second rebid at 9.41 am extended the outage with the unit ultimately returning at around midnight. At 11.11 am Liddell unit four's capacity was reduced by 105 MW, with 50 MW of this capacity priced at less than \$20/MWh - the rebid reason given was "FF DP limit". This reason relates to pressure limits in the flue gas filtering system. In response to these two reductions in availability, Macquarie Generation rebid capacity across its Bayswater portfolio, shifting a total of 520 MW from prices above \$9000/MWh to below \$30/MWh. The rebid reasons given were "Adjustment due to LD2" and "Adjustment to LD4".

At 4.34 pm Delta Electricity reduced available capacity at Vales Point unit five by 110 MW. The rebid reason given was "Condensate temp::capacity limit change"

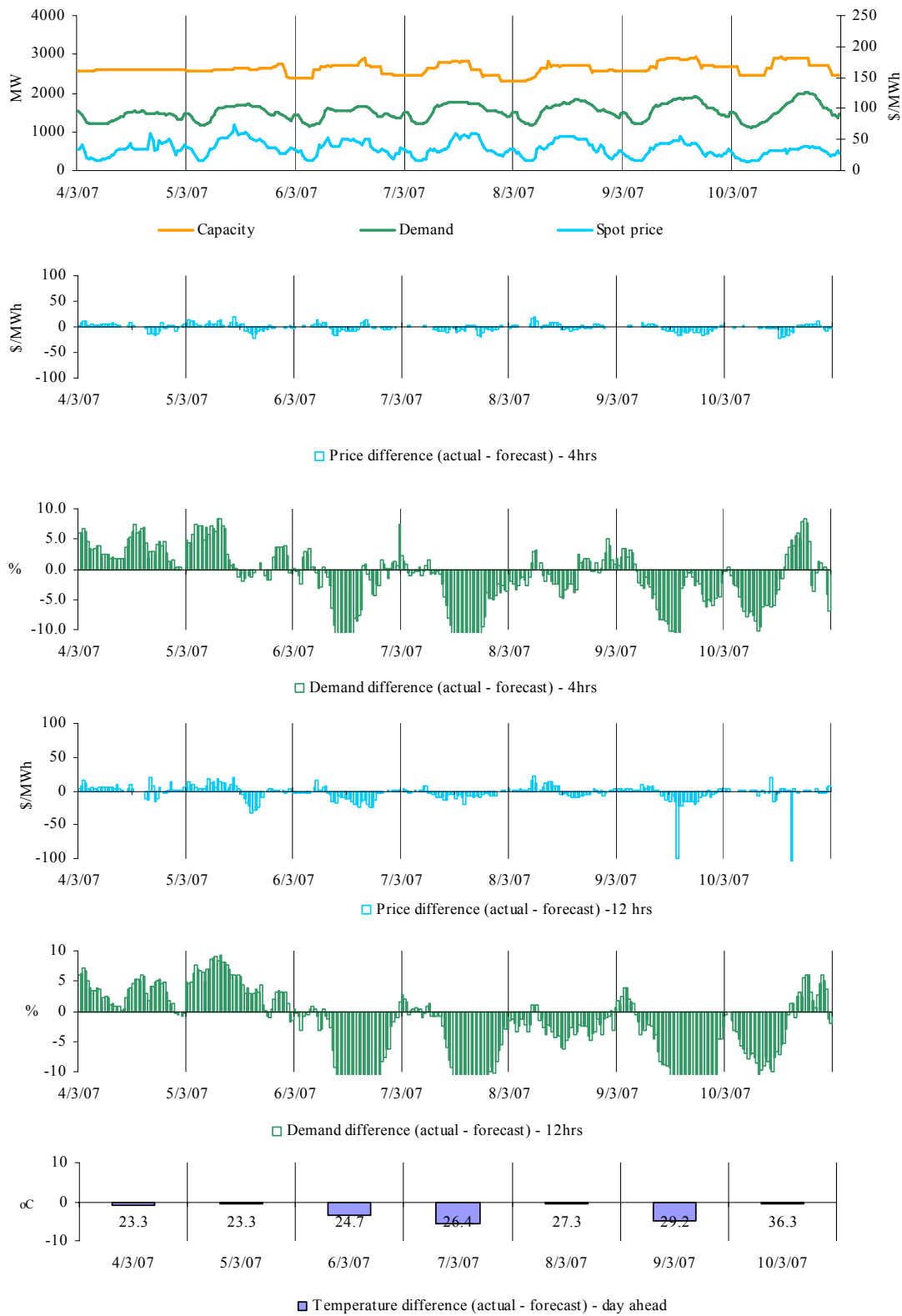
There was no other significant rebidding.

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



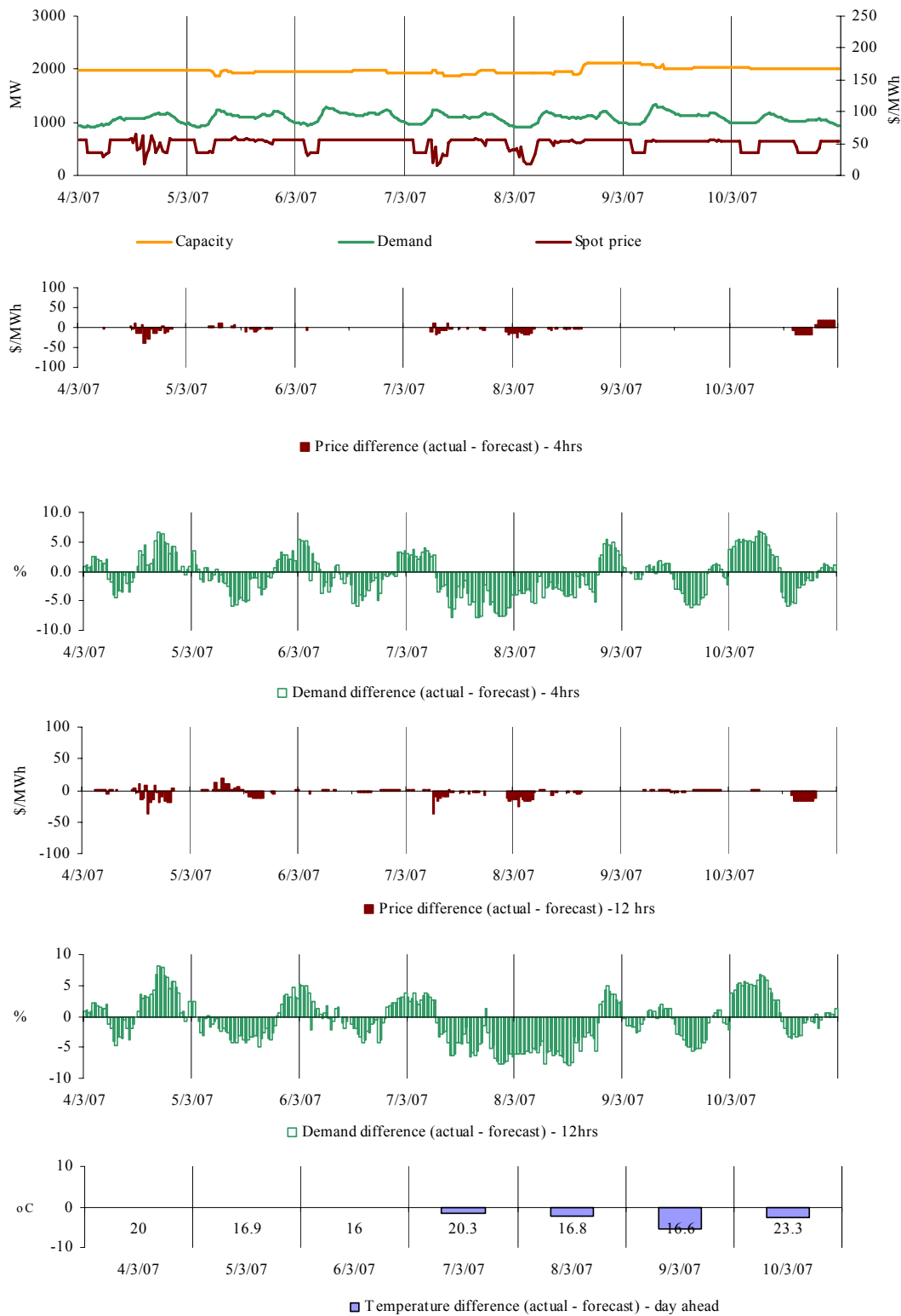
There was no occasion in Victoria where the spot price was greater than three times the weekly average price of \$37MWh.

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



There was no occasion in South Australia where the spot price was greater than three times the weekly average price of \$36/MWh.

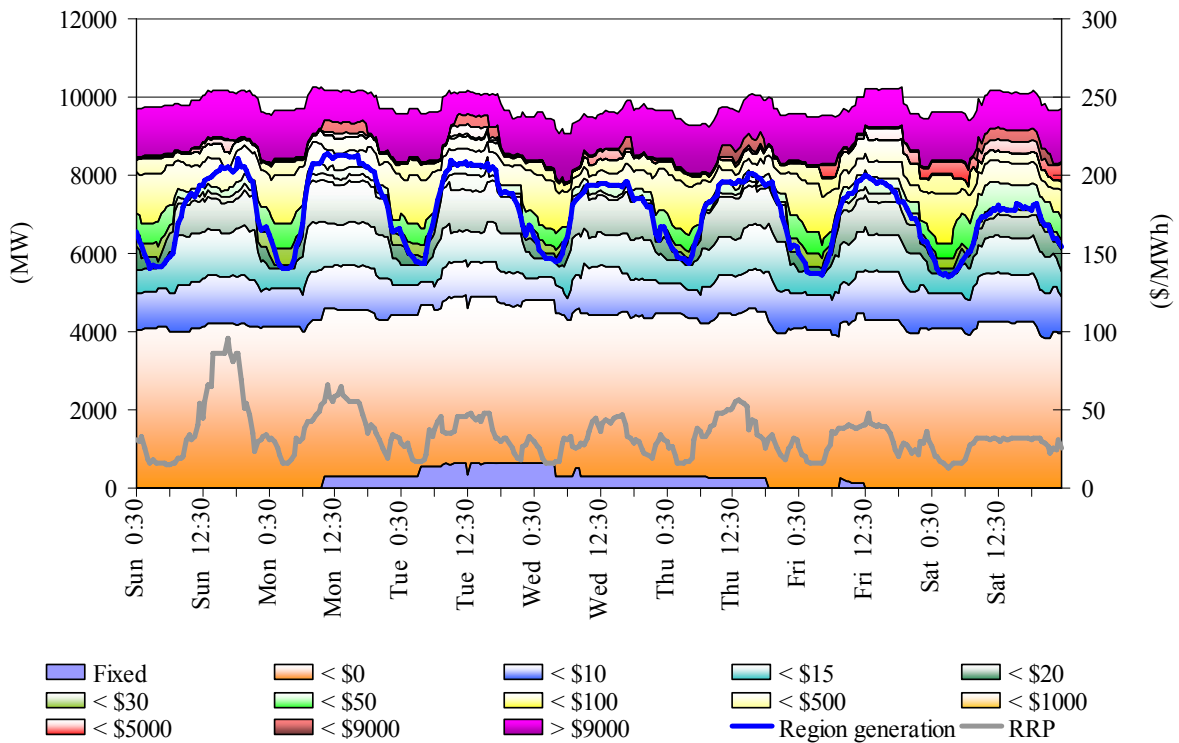
**Figures 51-56: Tasmania actual spot price, demand and forecast differences**



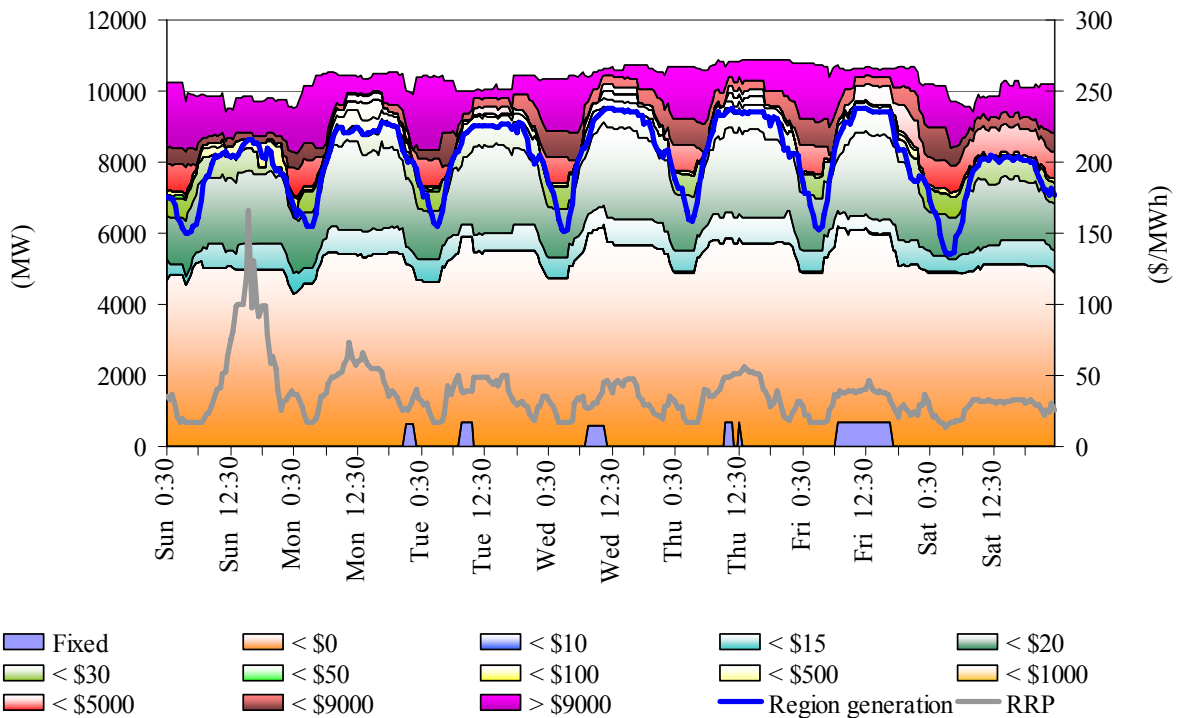
There was no occasion where the spot price in Tasmania was greater than three times the weekly average price of \$50/MWh.

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.

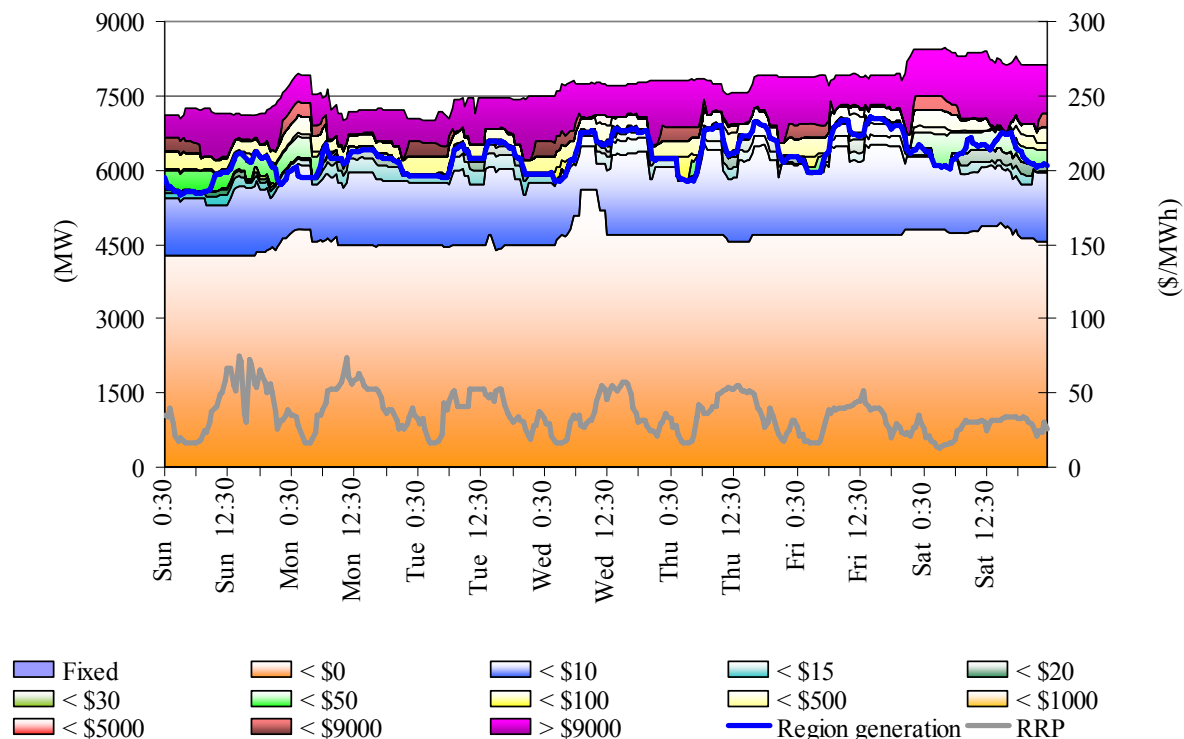
**Figure 57: Queensland closing bid prices, dispatched generation and spot price**



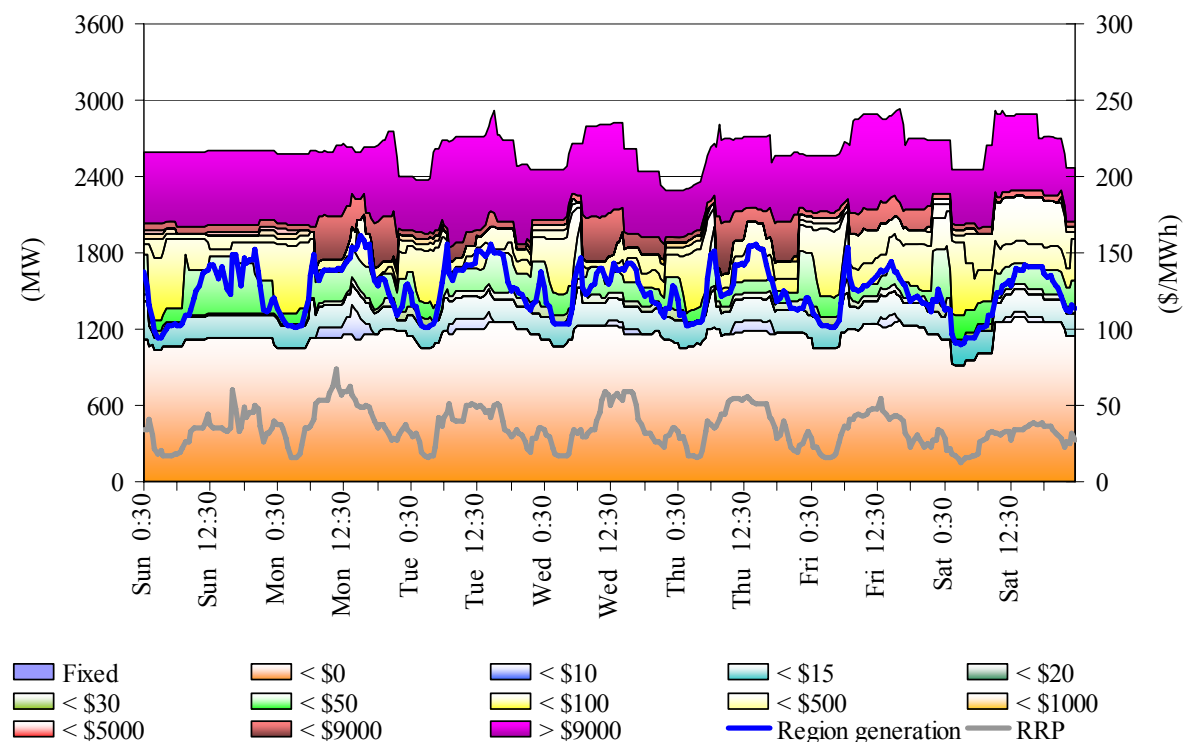
**Figure 58: New South Wales closing bid prices, dispatched generation and spot price**



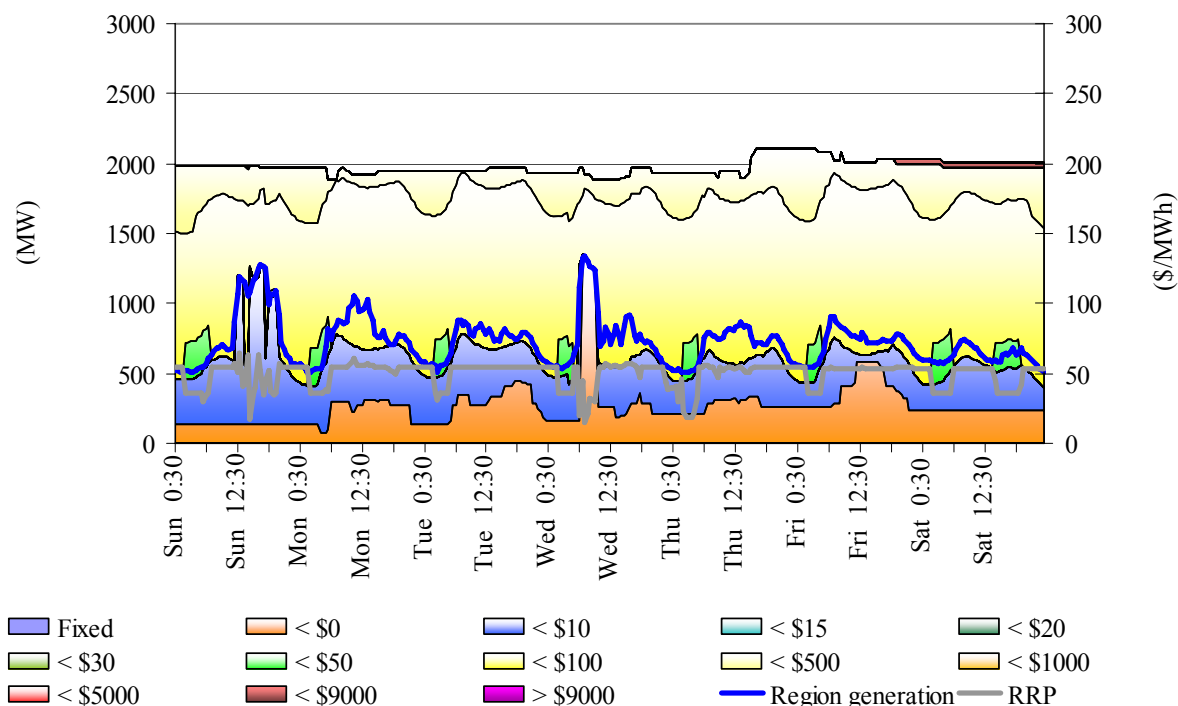
**Figure 59: Victoria closing bid prices, dispatched generation and spot price**



**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 \$149 000 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)	0.46	0.22	0.74	1.77	0.26	0.62	1.35	0.75
Previous week (\$/MW)	0.43	0.23	0.94	2.15	0.16	0.22	0.67	0.93
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$17	\$7	\$38	\$31	\$1	\$8	\$38	\$9
% of energy market	0.01%	0.01%	0.03%	0.02%	0.01%	0.01%	0.03%	0.01%

The total cost of ancillary services in Tasmania for the week was \$118 000 or 1.3 per cent of the total turnover in the energy market in Tasmania. On Sunday, the requirement for lower and raise services in Tasmania was fluctuating with changes in the direction of flow across Basslink. This occurred over an eight hour period from midday with prices increasing to as high as \$160/MW in the lower 6 second market. A similar scenario occurred on Wednesday, with the price of lower 6 second services in Tasmania increasing to \$2000/MW for four five-minute dispatch intervals from 6.35 am. 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)	1.67	0.64	0.87	1.76	35.38	0.47	0.52	0.66
Previous week (\$/MW)	2.43	0.50	0.84	1.84	30.42	0.95	0.66	0.84
Last quarter (\$/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost (\$1000s)	\$9	\$9	\$13	\$15	\$65	\$1	\$1	\$5
% of energy market	0.10%	0.10%	0.14%	0.16%	0.72%	0.02%	0.01%	0.06%

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

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

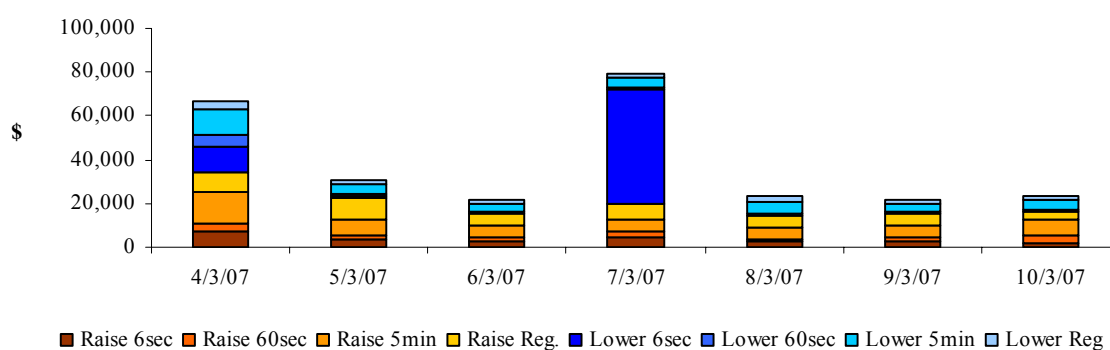
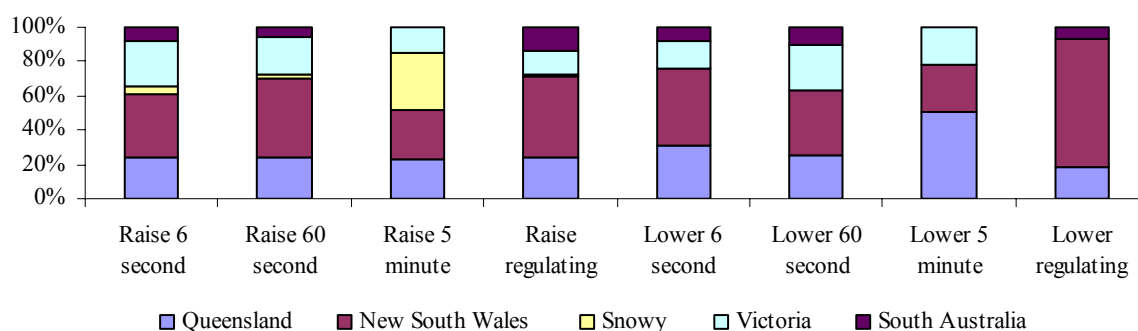


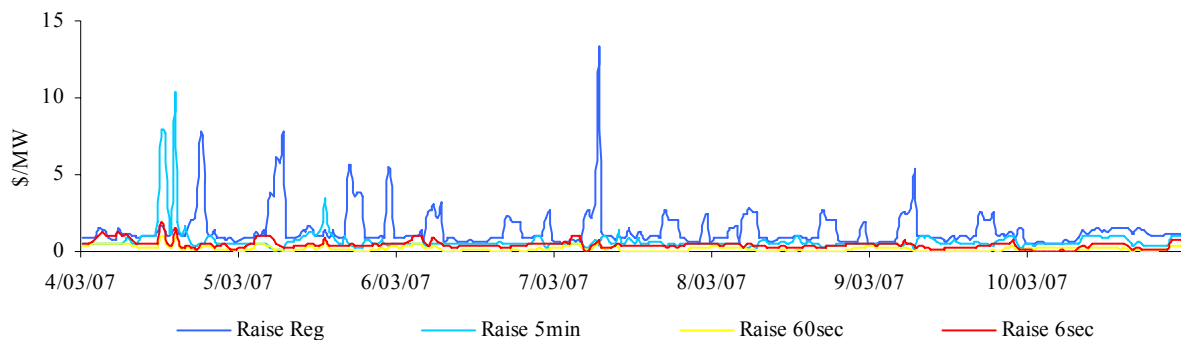
Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

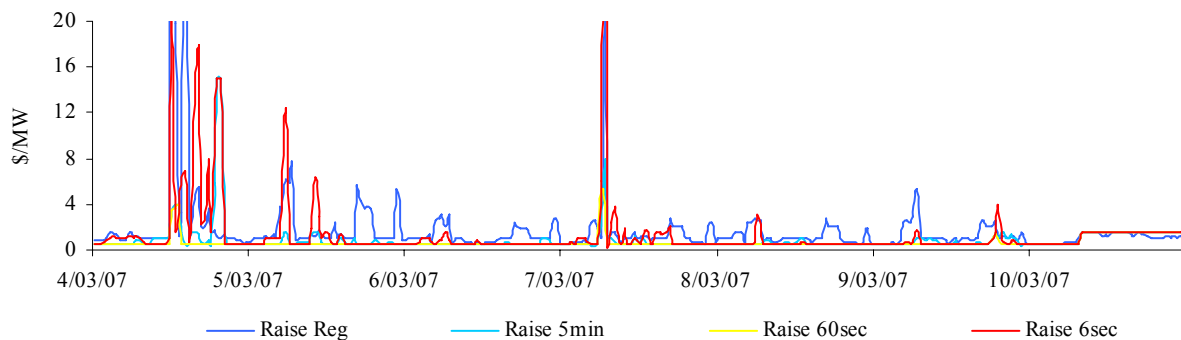


Figures 66 and 67 show 30-minute prices for each frequency control ancillary service throughout the week.

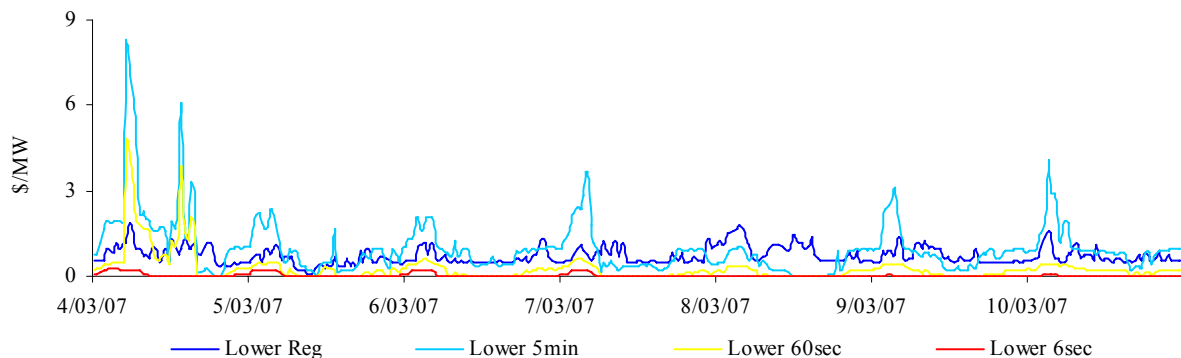
**Figure 66: prices for raise services**



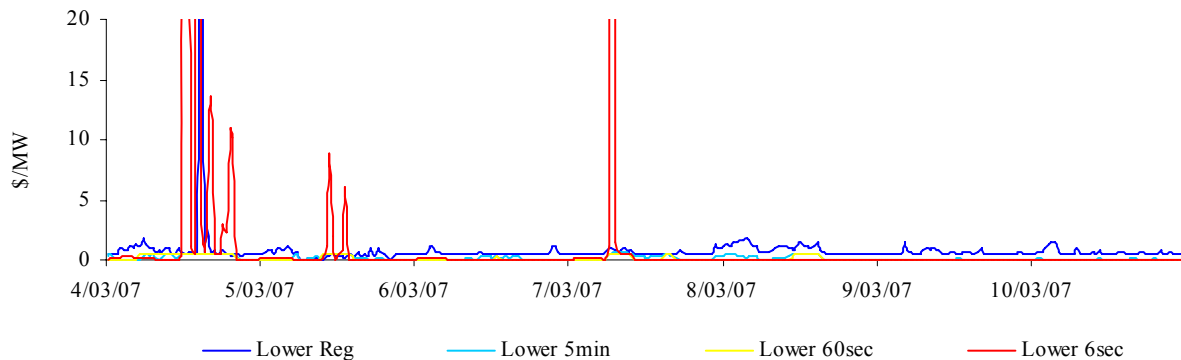
**Figure 66A: prices for raise services – Tasmania**



**Figure 67: prices for lower services**

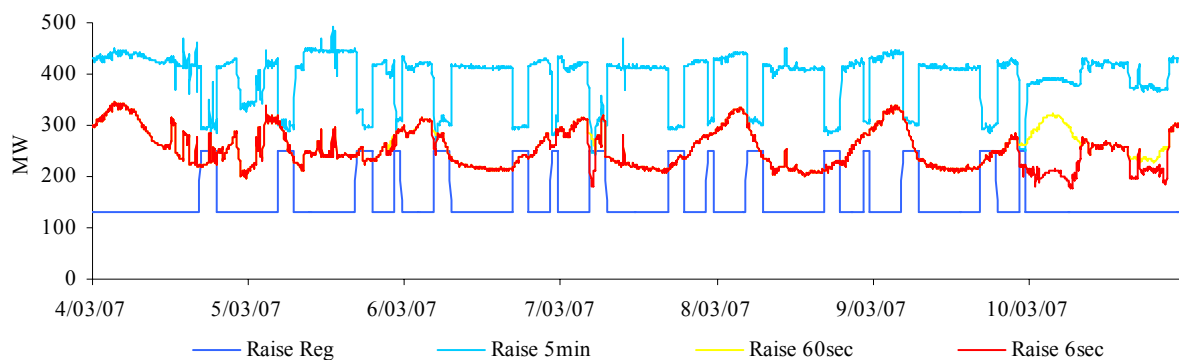


**Figure 67A: prices for lower services – Tasmania**

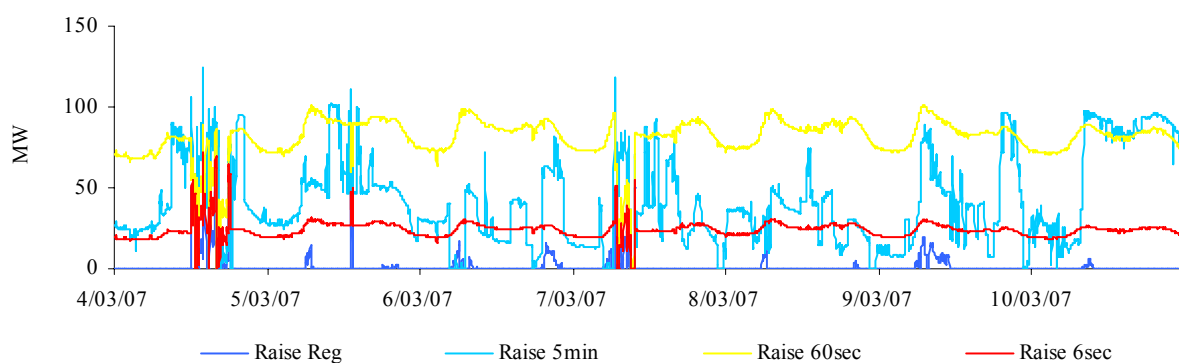


Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

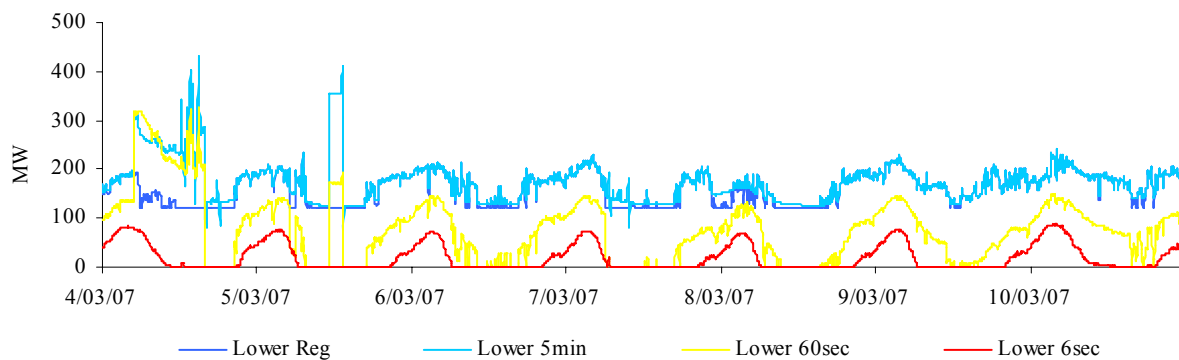
**Figure 68: raise requirements**



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



**Figure 69: lower requirements**



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

