

# Market analysis



30 JULY – 5 AUGUST 2006

Spot prices for the week averaged between \$27/MWh in Queensland and \$49/MWh in South Australia. These prices were similar to the previous week except in South Australia where average prices rose by 20 per cent.

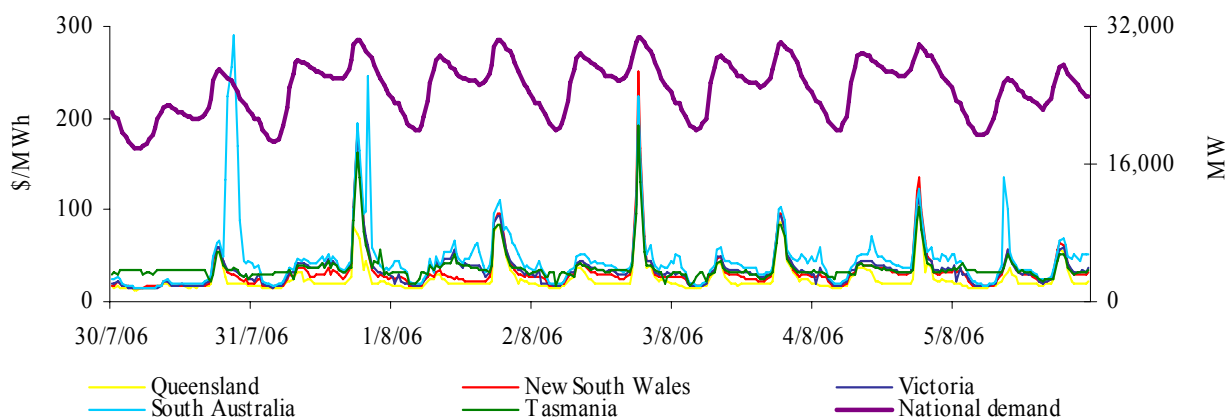
Turnover in the energy market was \$146 million. The total cost of ancillary services for the week was \$188 000, or 0.13 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 71, or 21 per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 15 per cent of all trading intervals across the market. These variations were most frequent in Tasmania, occurring in around a quarter 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)**

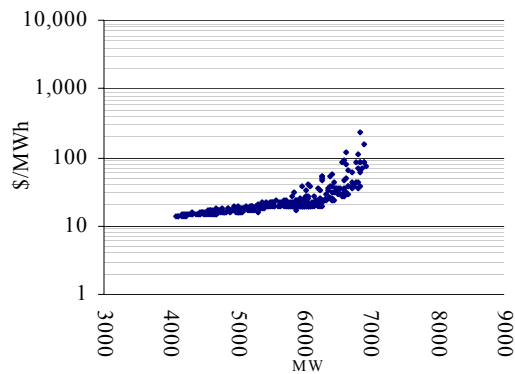
	QLD	NSW	VIC	SA	TAS
Last week	27	35	37	49	38
Previous week	28	35	37	41	40
Same quarter last year	22	29	30	34	100
Financial year 2005 - 06	31	43	36	44	59
% change from previous week*	▼4%	-	▼1%	▲20%	▼3%
% change from same quarter last year**	▲24%	▲24%	▲25%	▲46%	▼61%

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

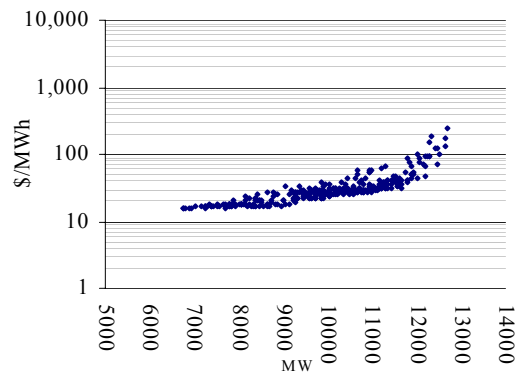
\*\*The percentage change between last week's average spot price and the average price for the same quarter last year.

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

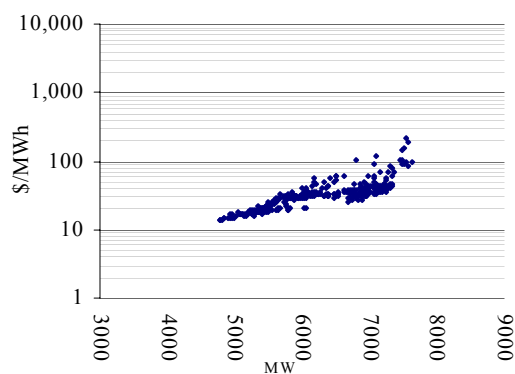
**Figure 3: Queensland**



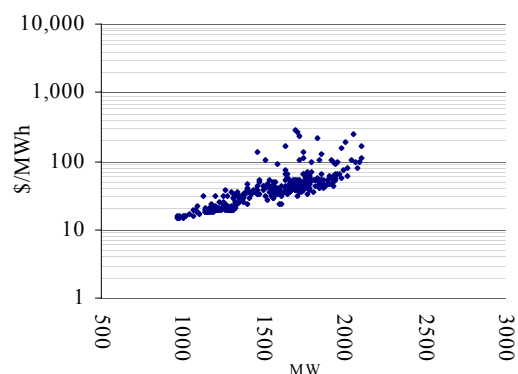
**Figure 4: New South Wales**



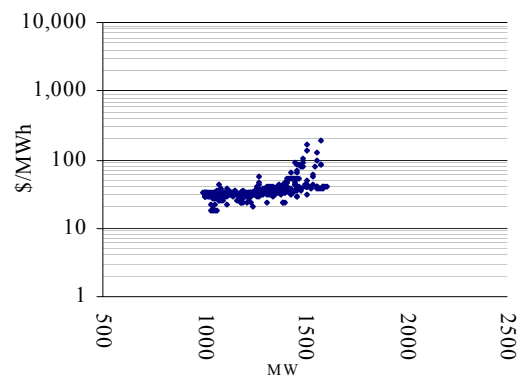
**Figure 5: Victoria**



**Figure 6: South Australia**



**Figure 7: Tasmania**



Maximum spot prices for the week were \$224/MWh in Queensland, \$251/MWh in New South Wales, \$215/MWh in Victoria and \$191/MWh in Tasmania, all occurring 6.30 pm on Monday. South Australia recorded a maximum price of \$289/MWh at 9.30 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	1.09	1.14	0.77	0.82	0.63
Previous week	0.94	0.67	0.58	0.51	0.59
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>

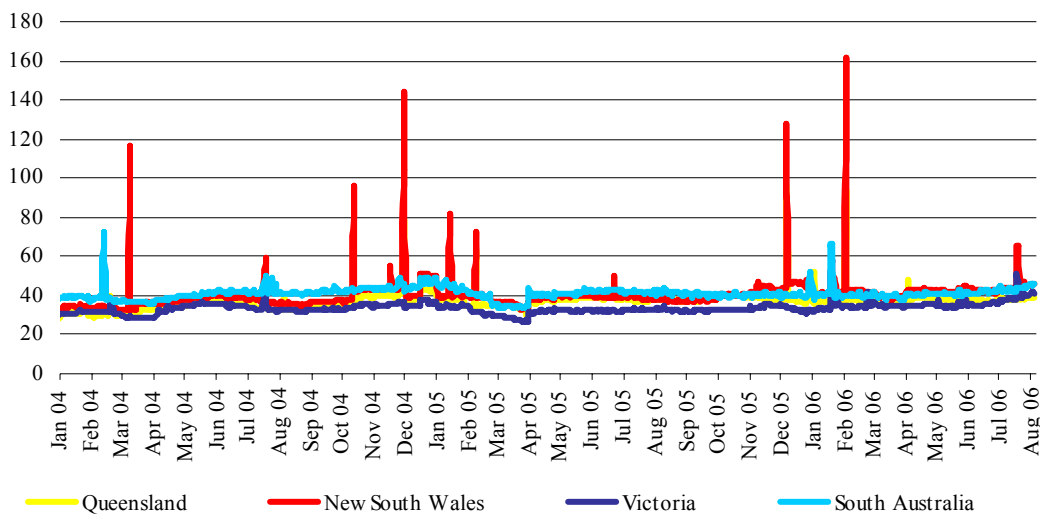
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)\* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

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

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	38.63	38.63	39.09	38.62	38.86
New South Wales	45.34	45.33	46.18	45.36	46.27
Victoria	41.47	41.37	41.63	41.52	41.38
South Australia	45.56	45.54	44.50	45.60	46.21

\* 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**

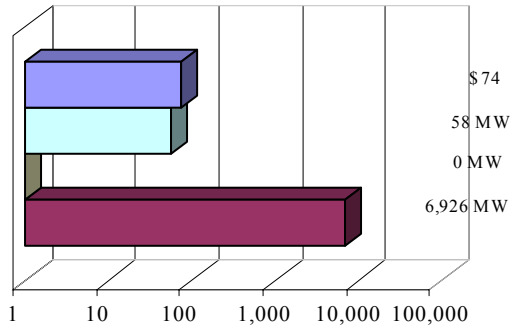


## Reserve

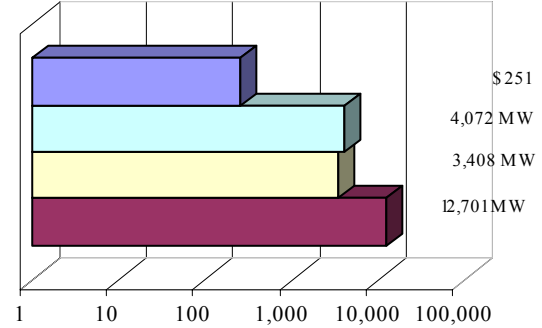
There were no low reserve conditions forecast.

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

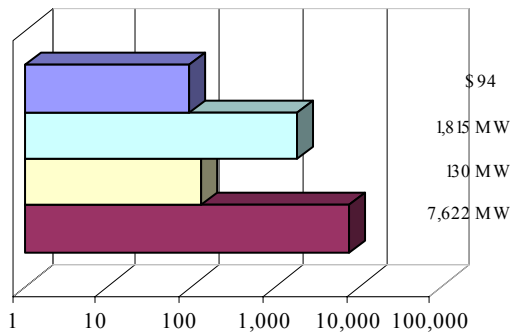
**Figure 11: Queensland**



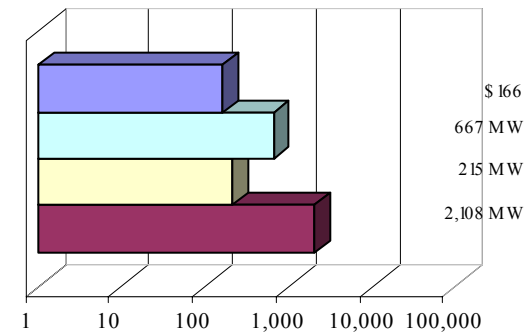
**Figure 12: New South Wales**



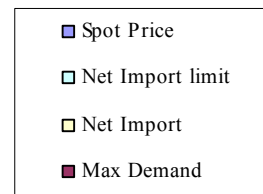
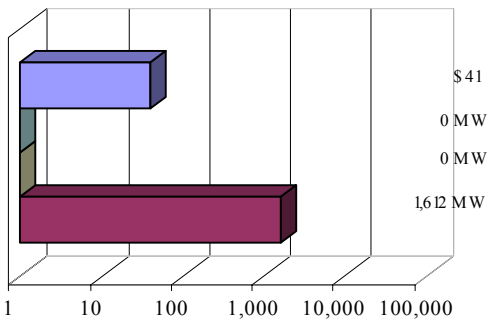
**Figure 13: Victoria**



**Figure 14: South Australia**



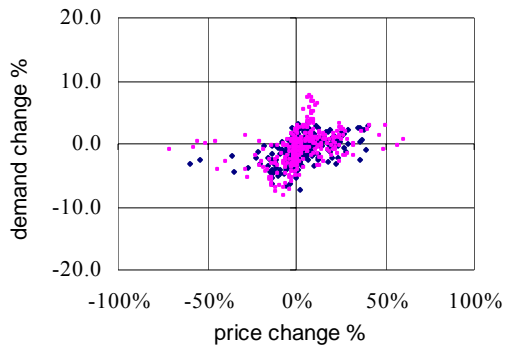
**Figure 15: Tasmania**



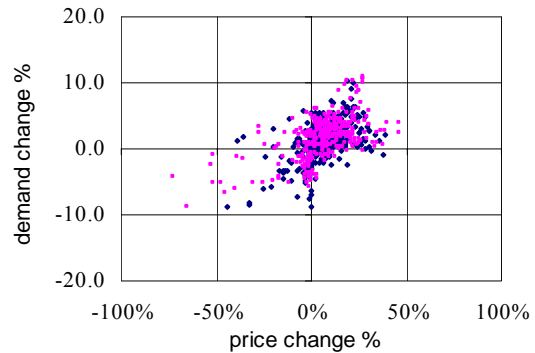
## Price variations

There were 71 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.

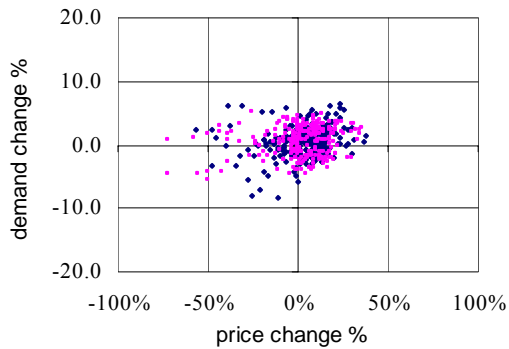
**Figure 16: Queensland**



**Figure 17: New South Wales**



**Figure 18: Victoria**



**Figure 19: South Australia**



**Figure 20: Tasmania**

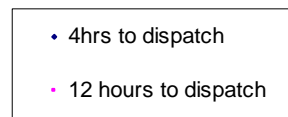
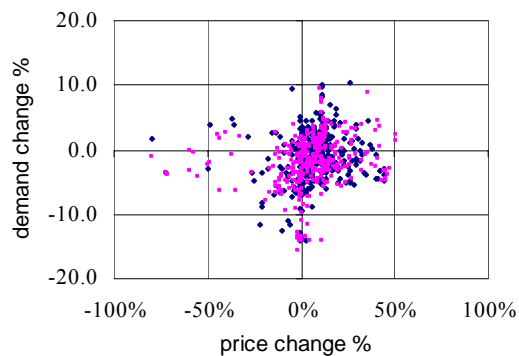
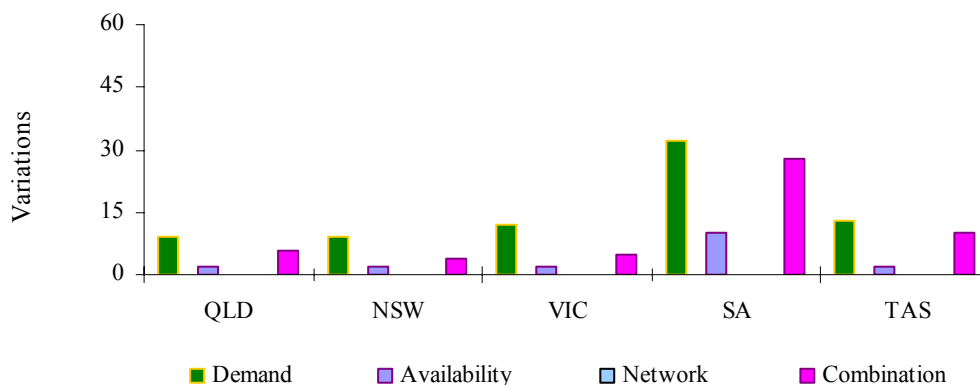


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

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



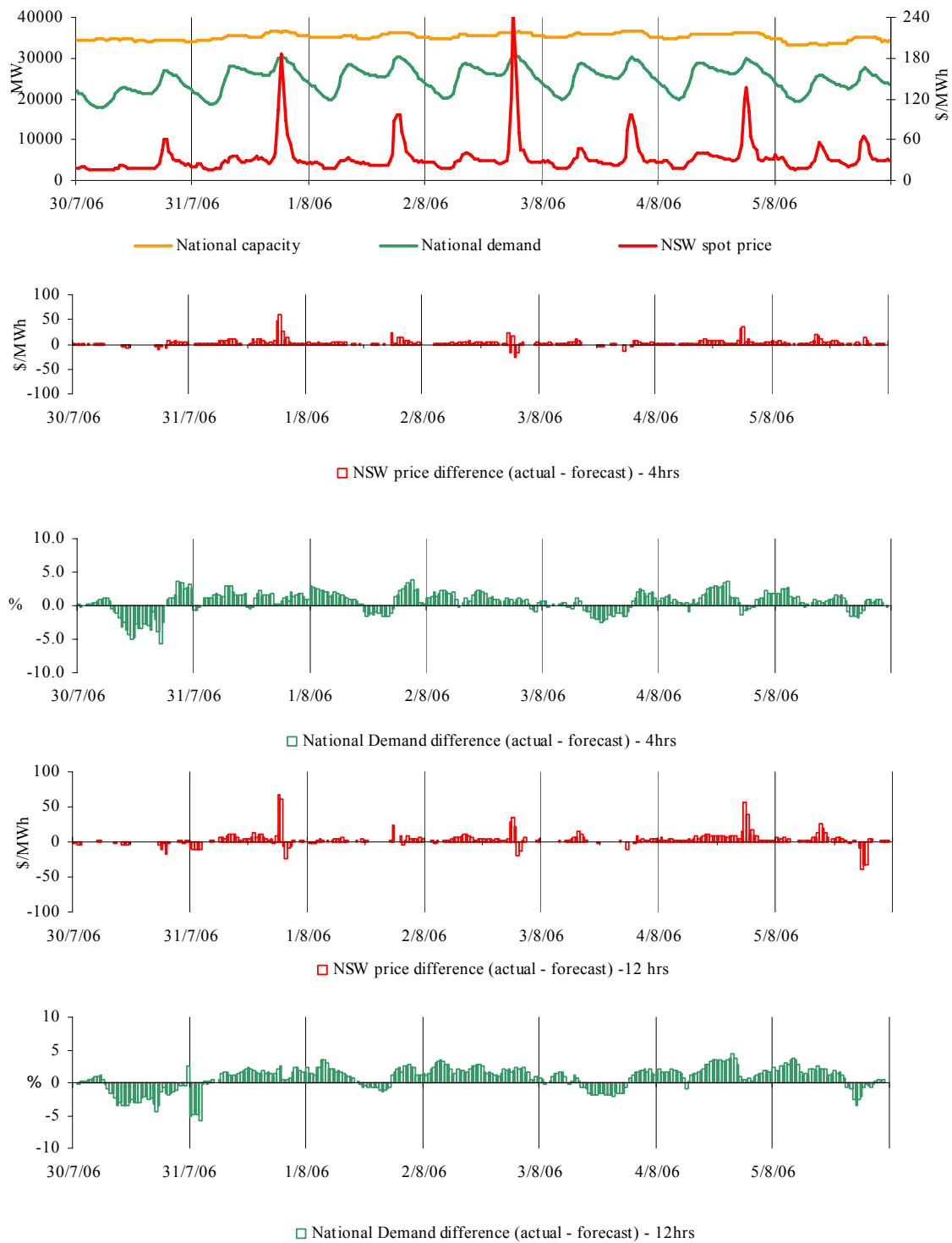
### Price and demand

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 seven 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 \$35/MWh. While the 5-minute price in Queensland did separate from the rest of the market at times, spot prices generally followed those in other regions. These occasions are incorporated into the national market outcomes.

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

## Monday, 31 July

<b>6:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	186.93	138.66	118.55
National demand (MW)	30449	30261	29816
National capacity (MW)	36369	36639	36050
<b>7:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	153.71	93.91	92.29
National demand (MW)	30344	29981	29539
National capacity (MW)	36538	36639	36050

Conditions at the time saw national demand up to 360 MW higher than forecast four hours ahead.

At 5.09 pm Macquarie Generation rebid 240 MW of capacity at Bayswater from prices below \$85/MWh to above \$240/MWh. The rebid reason given was “Demand expected to vary from forecast”.

At 5.38 pm Callide Power Trading reduced the availability of Callide C unit 4 by 208 MW. All of this capacity was priced below \$15/MWh. The rebid reason given was “Coal route problems”. This capacity was returned an hour later.

Over two rebids, an hour before dispatch, Tarong Energy shifted 490 MW of capacity at Wivenhoe from prices above \$290/MWh to below \$85/MWh. The rebid reason given was “Latest PRD::Adj. profile”.

There was no other significant rebidding.

## Wednesday, 2 August

<b>6:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	121.16	98.36	93.65
National demand (MW)	30060	29819	29454
National capacity (MW)	36361	36234	36363
<b>6:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	250.70	267.87	215.13
National demand (MW)	30600	30457	30114
National capacity (MW)	36400	36449	36353
<b>7:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	167.49	149.76	144.98
National demand (MW)	30649	30357	30045
National capacity (MW)	36397	36449	36343

Conditions at the time saw national demand up to 300 MW higher than forecast four hours ahead. Available capacity and spot price was close to forecast four hours ahead.

Over several rebids from 3 pm TRUenergy shifted 310 MW of capacity at Torrens Island from prices above \$280/MWh to below \$60/MWh. The rebid reason given was “Market conditions-gen response to PD conditions”.

At 3.18 pm Macquarie Generation rebid 280 MW of capacity across its portfolio from prices below \$90/MWh to above \$6500/MWh. The rebid reason given was “Sensitivities have changed”.



At 3.58 pm LYMMCO rebid 230 MW of capacity at Loy Yang A from prices below \$35/MWh to above \$4100/MWh. The rebid reason given was “Change in PD at 3:33”.

Within two hours of dispatch Ecogen Energy rebid 120 MW of capacity at Jeeralang from prices above \$9000/MWh to less than \$5/MWh. A further 160 MW of capacity at Newport was rebid from prices above \$135/MWh to below \$50/MWh. The rebid reasons given were “Band adj due to market conditions” and “Adj to unit commitment due to PD conditions”.

At 5.42 pm Tarong Energy rebid 120 MW of capacity at Wivenhoe unit one from above \$290/MWh to below \$60/MWh. The rebid reasons given was “Latest PRD::Prevent unit cycling;Adj. profile”.

There was no other significant rebidding.

### Friday, 4 August

<b>6:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	119.89	87.00	64.29
National demand (MW)	29133	29343	29031
National capacity (MW)	36225	36253	36141
<b>6:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	135.75	99.82	96.65
National demand (MW)	29777	29958	29644
National capacity (MW)	36274	36259	36165

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

At 2.59 pm LYMMCO rebid 355 MW of capacity across its portfolio from prices below \$45/MWh to above \$4100/MWh. The rebid reason given was “Demand expected to exceed forecast at 14:55”.

At 4.38 pm TRUenergy rebid 140 MW of capacity at Torrens Island from prices below \$60/MWh to above \$280/MWh. The rebid reason given was “Market conditions-gen response to PD conditions”.

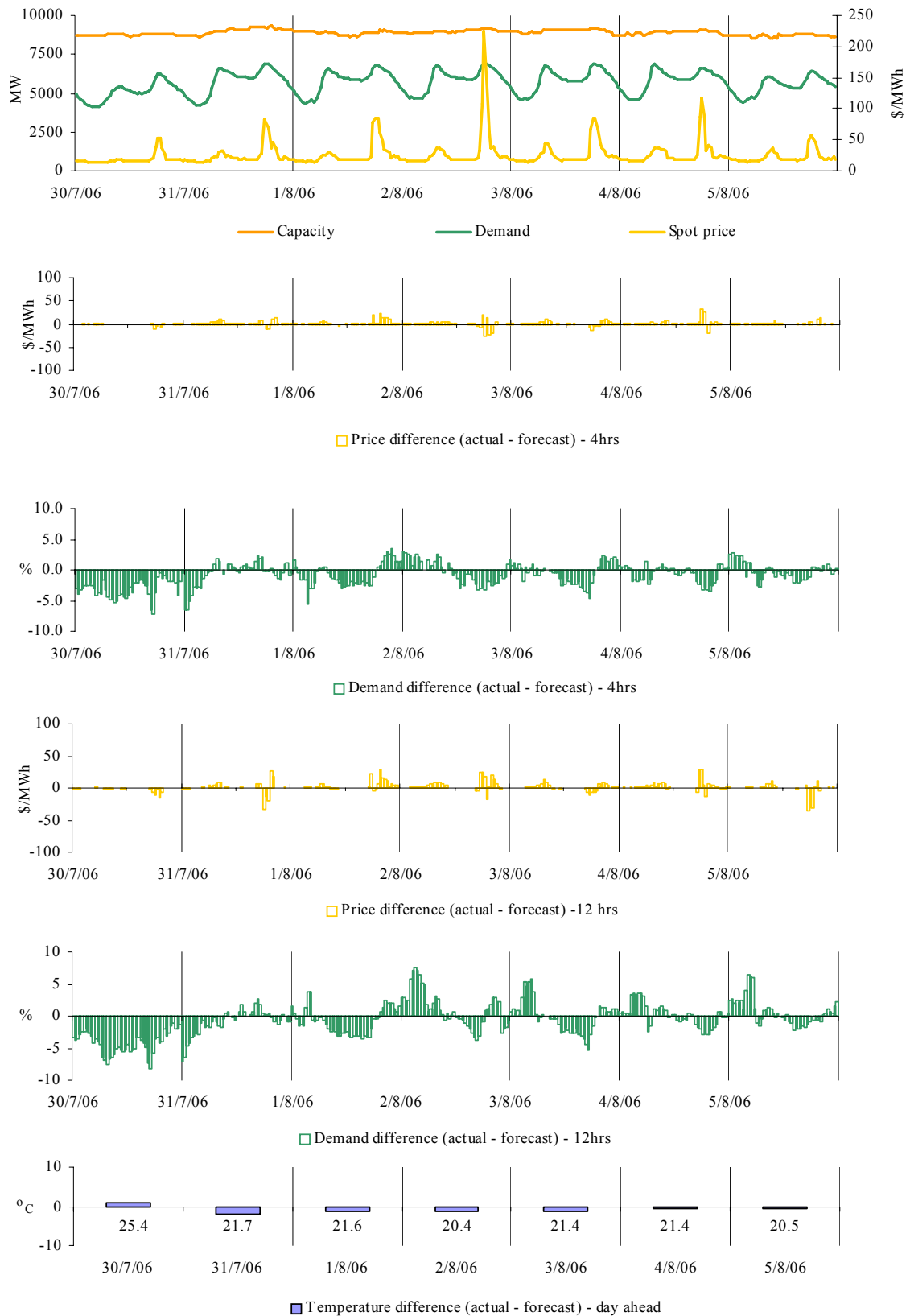
At 5.11 pm Ecogen Energy rebid 110 MW of capacity at Newport from prices below \$50/MWh to above \$270/MWh. The rebid reason given was “Band adj due to Queensland constrained”.

At 5.22 pm AGL Hydro rebid 163 MW of capacity at Somerton from prices above \$9400/MWh to zero, committing this plant. The rebid reason given was “Predispatch: 5 min prices-higher than expected 5 min prices”.

At 5.31 pm Macquarie Generation rebid 400 MW of capacity at Bayswater from prices below \$85/MWh to above \$9300/MWh. At the same time a further 80 MW of capacity at Liddell was shifted from prices below \$90/MWh to above \$4600/MWh. On both occasions the rebid reason given was “Load expected to vary from forecast”.

There was no other significant rebidding.

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



There were 11 occasions where the spot price in Queensland was greater than three times the weekly average price of \$27/MWh. Five of these occurred when prices were generally aligned across all regions and are detailed in the national market outcomes section. The remaining six occasions are presented below.

### Monday, 31 July

<b>6:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	82.01	83.60	82.25
Demand (MW)	6889	6911	6854
Available capacity (MW)	9226	9263	9237

Conditions at the time saw demand, available capacity and spot price in Queensland close to forecast. The Queensland price was separated from the rest of the market, with flows from Queensland to New South Wales constrained at a combined limit across the interconnectors of around 1150 MW.

There was no significant rebidding.

### Tuesday, 1 August

<b>6:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	84.66	83.41	88.57
Demand (MW)	6825	6819	6857
Available capacity (MW)	8906	9110	9487
<b>7:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	84.30	83.55	87.40
Demand (MW)	6793	6768	6826
Available capacity (MW)	8939	9100	9487

Conditions at the time saw demand, available capacity and spot price in Queensland close to forecast. Prices were aligned across the market.

There was no significant rebidding.

### Thursday, 3 August

<b>6:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	85.24	89.79	91.85
Demand (MW)	6847	6913	6955
Available capacity (MW)	9131	9096	9096
<b>7:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	85.40	88.21	91.20
Demand (MW)	6898	6895	6920
Available capacity (MW)	9130	9096	9096

Conditions at the time saw demand, available capacity and spot price in Queensland close to forecast, with spot prices aligned across the market.

There was no significant rebidding.

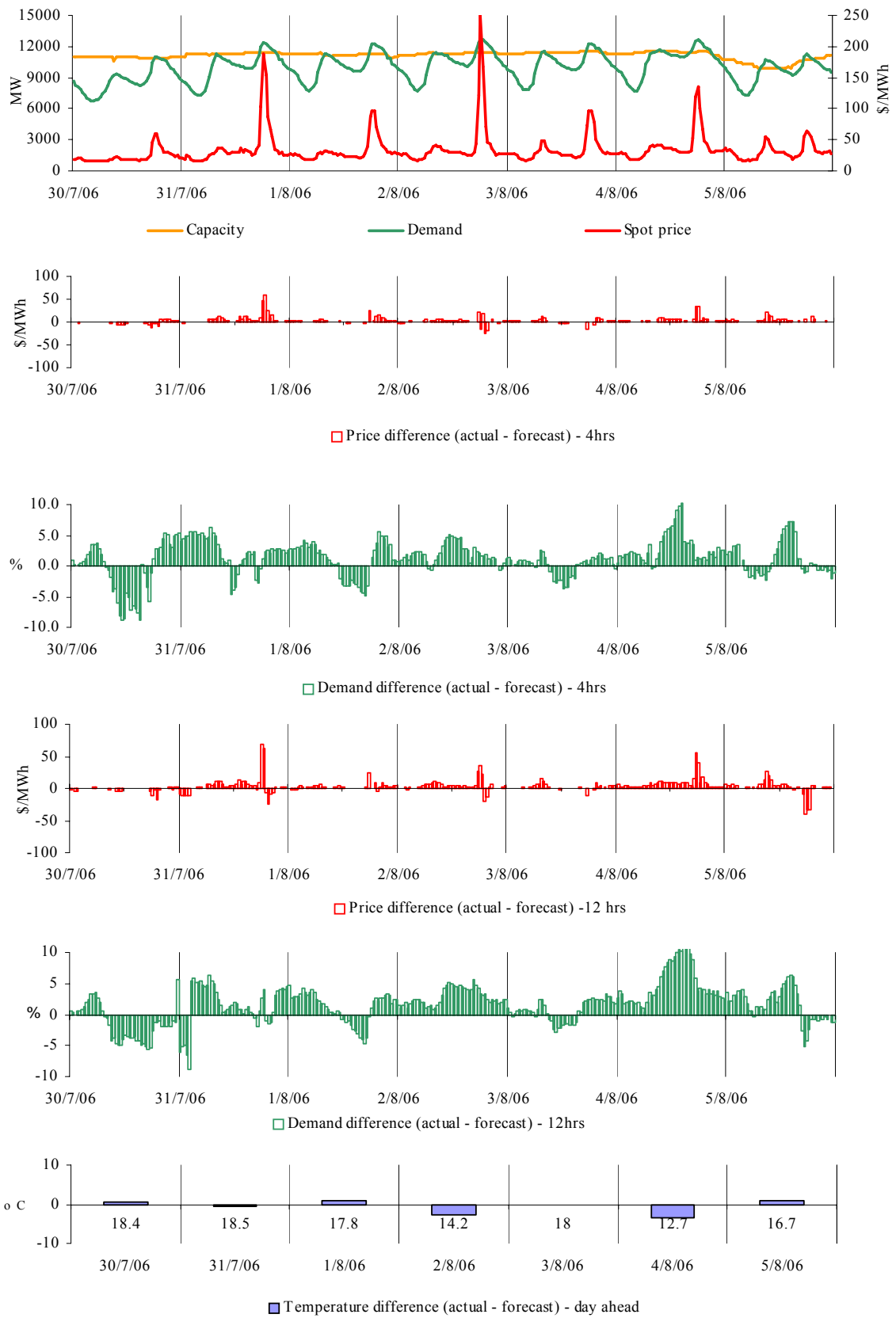
## Friday, 4 August

<b>7:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	87.53	89.16	83.60
Demand (MW)	6611	6802	6782
Available capacity (MW)	9065	9030	8976

Conditions at the time saw demand, available capacity and spot price in Queensland close to forecast. Prices were aligned across the market.

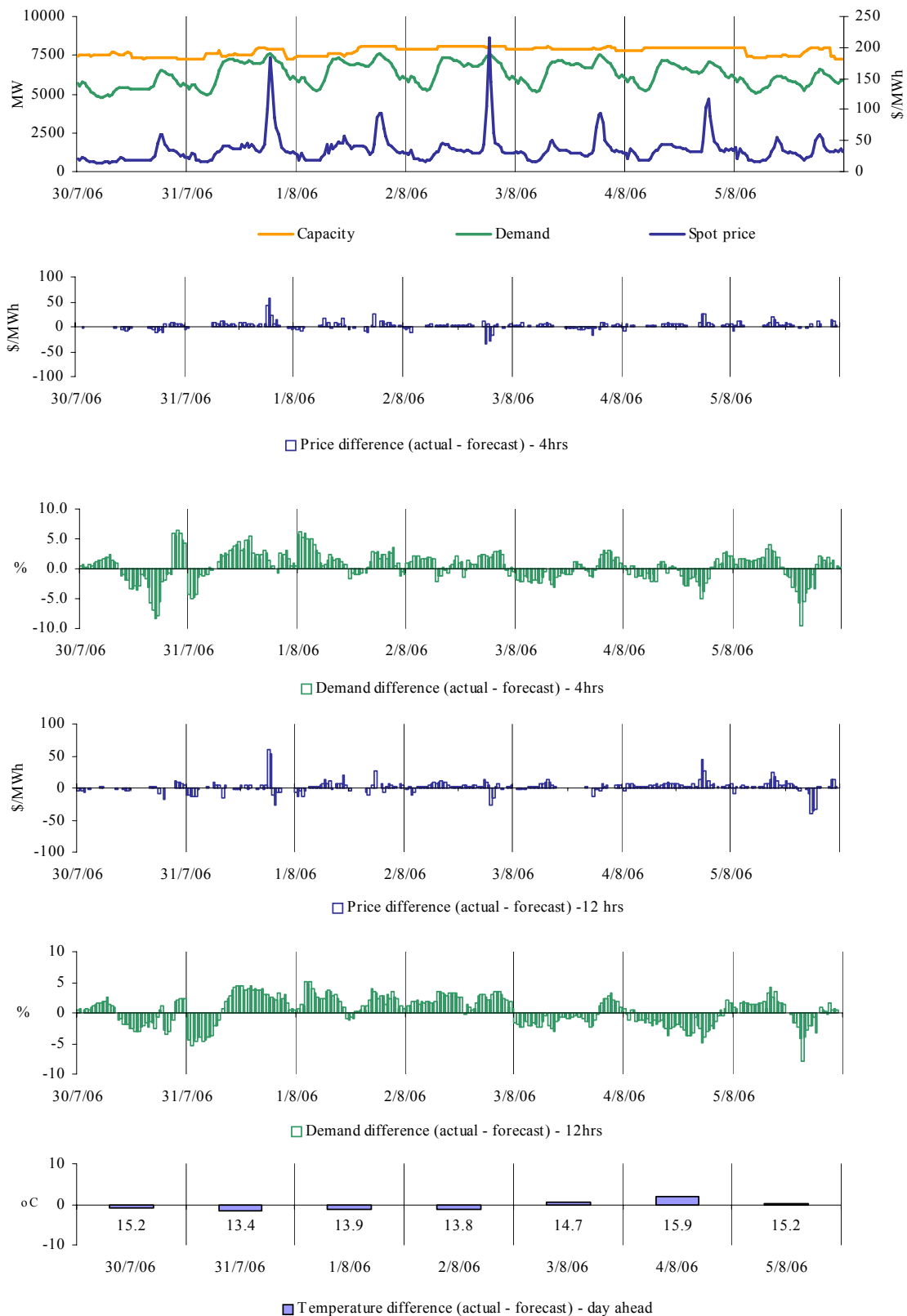
There was no significant rebidding.

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



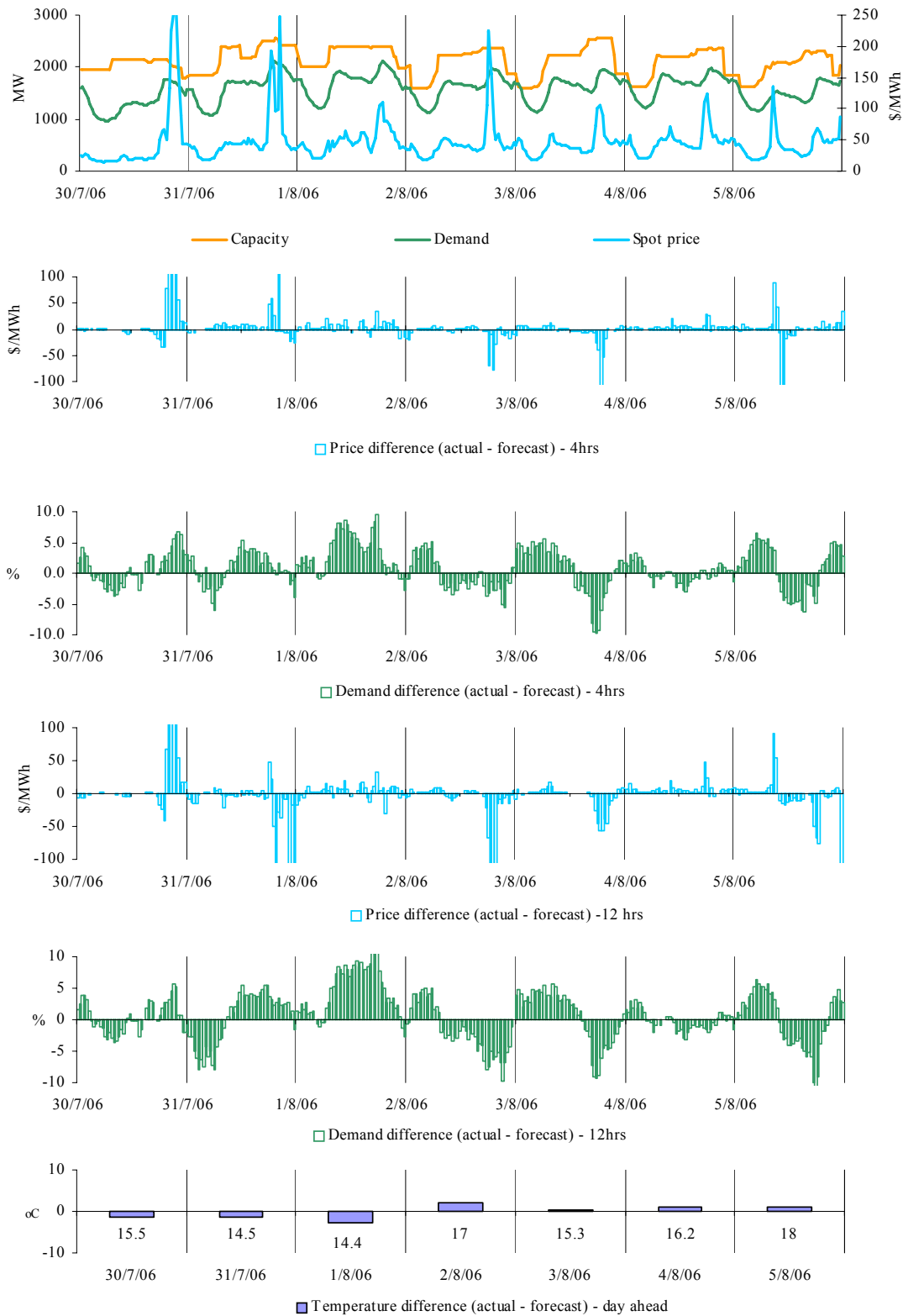
There were seven occasions where the spot price in New South Wales was greater than three times the weekly average price of \$35/MWh. These prices all occurred with prices aligned across the market and are detailed under the national market outcomes section.

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



There were five occasions where the spot price in Victoria was greater than three times the weekly average price of \$37/MWh. These prices all occurred with prices 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 nine occasions where the spot price in South Australia was greater than three times the weekly average price of \$49/MWh. Four of these occurred when spot prices were generally aligned across all regions and are detailed in the national market outcomes section. The remaining five occasions are presented below.

### Sunday, 30 July

<b>8:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	224.67	53.64	54.00
Demand (MW)	1723	1666	1667
Available capacity (MW)	2048	2158	2135
<b>9:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	256.83	43.24	49.04
Demand (MW)	1711	1636	1635
Available capacity (MW)	2008	2158	2135
<b>9:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	289.00	46.00	46.00
Demand (MW)	1700	1605	1602
Available capacity (MW)	2005	2028	2135
<b>10:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	170.69	39.35	34.97
Demand (MW)	1644	1542	1559
Available capacity (MW)	1985	2028	2135

Conditions at the time saw demand in South Australia around 100 MW higher than forecast.

At 4.36 pm, NRG Flinders reduced the availability of Northern Power Station by 130 MW. The rebid reason given was "Change in NPS2 loading to a precip maintenance @1637".

During this period, flows from Victoria across the Murraylink and Heywood interconnectors were at the combined limit of 680 MW. There was no capacity in South Australia priced between \$95/MWh and \$270/MWh and no other significant rebidding.

### Monday, 31 July

<b>8:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	246.78	68.30	274.01
Demand (MW)	2064	2031	1992
Available capacity (MW)	2420	2540	2425

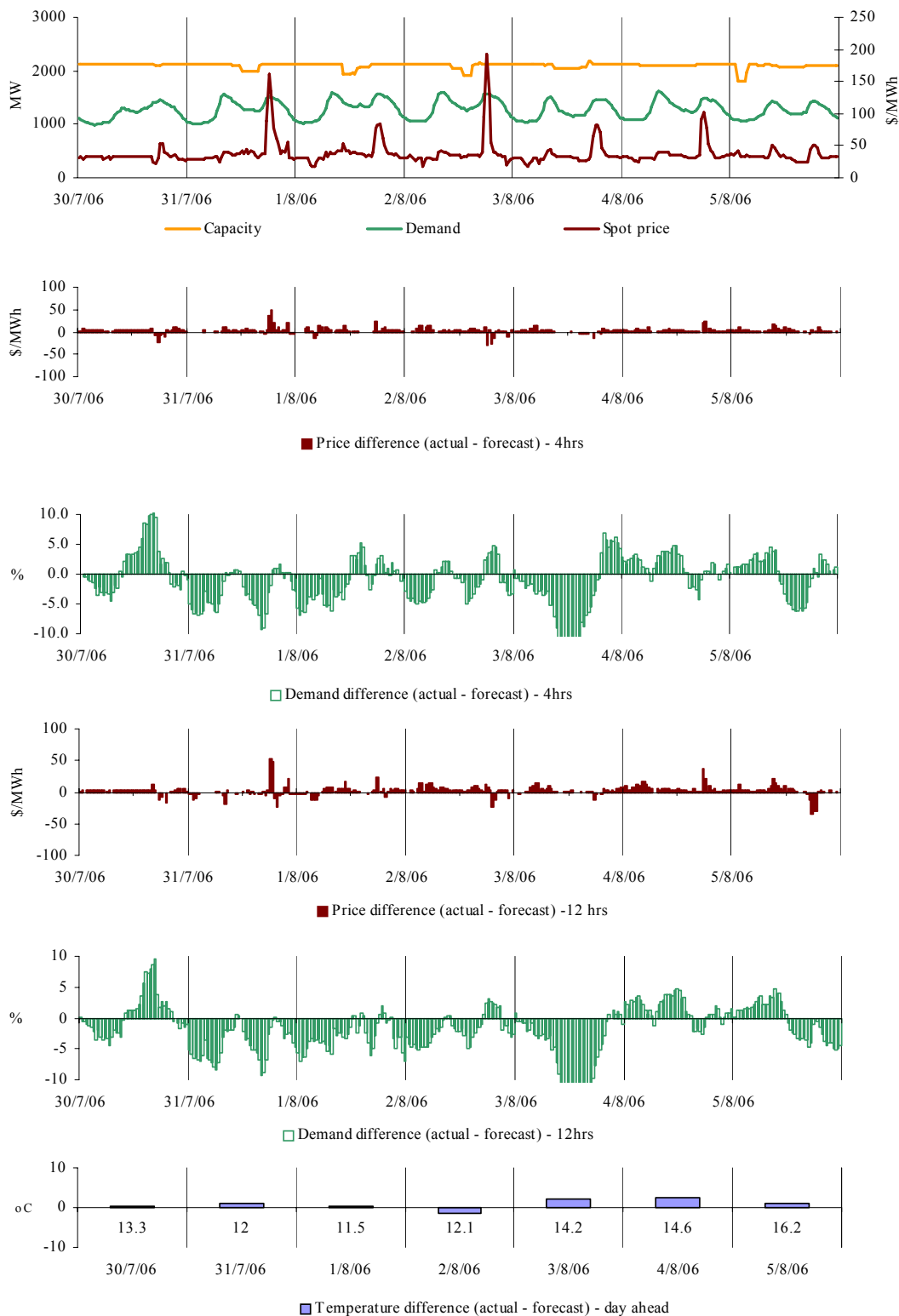
Conditions at the time saw demand and available capacity in South Australia close to forecast.

During this period, flows from Victoria across the Murraylink and Heywood interconnectors were at the combined limit of 680 MW. There was no capacity in South Australia priced between \$35/MWh and \$275/MWh.

There was no significant rebidding.



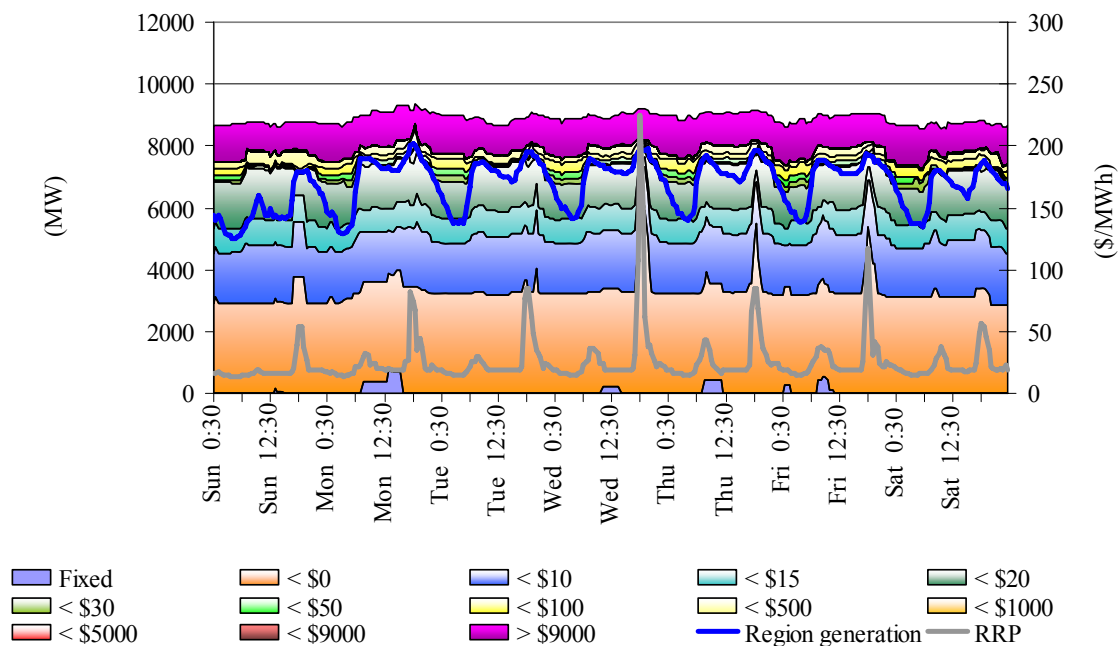
**Figures 51-56: Tasmania actual spot price, demand and forecast differences**



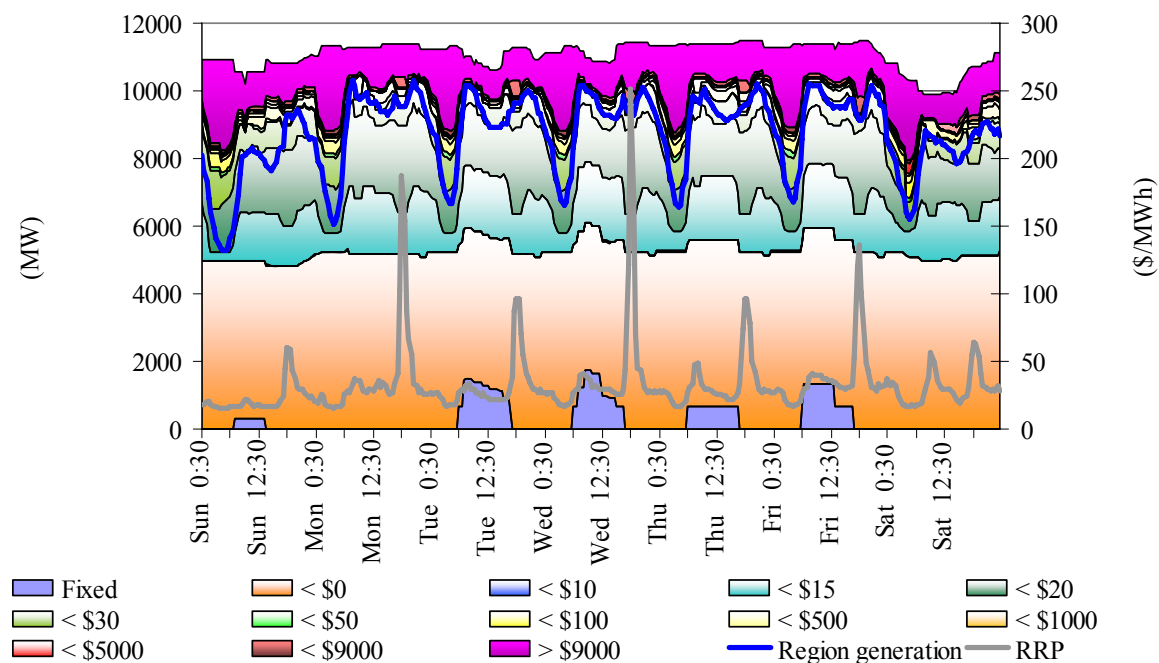
There were four occasions where the spot price in Tasmania was greater than three times the weekly average price of \$38/MWh. These prices all occurred with prices aligned across the market and are detailed under the national market outcomes section.

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.

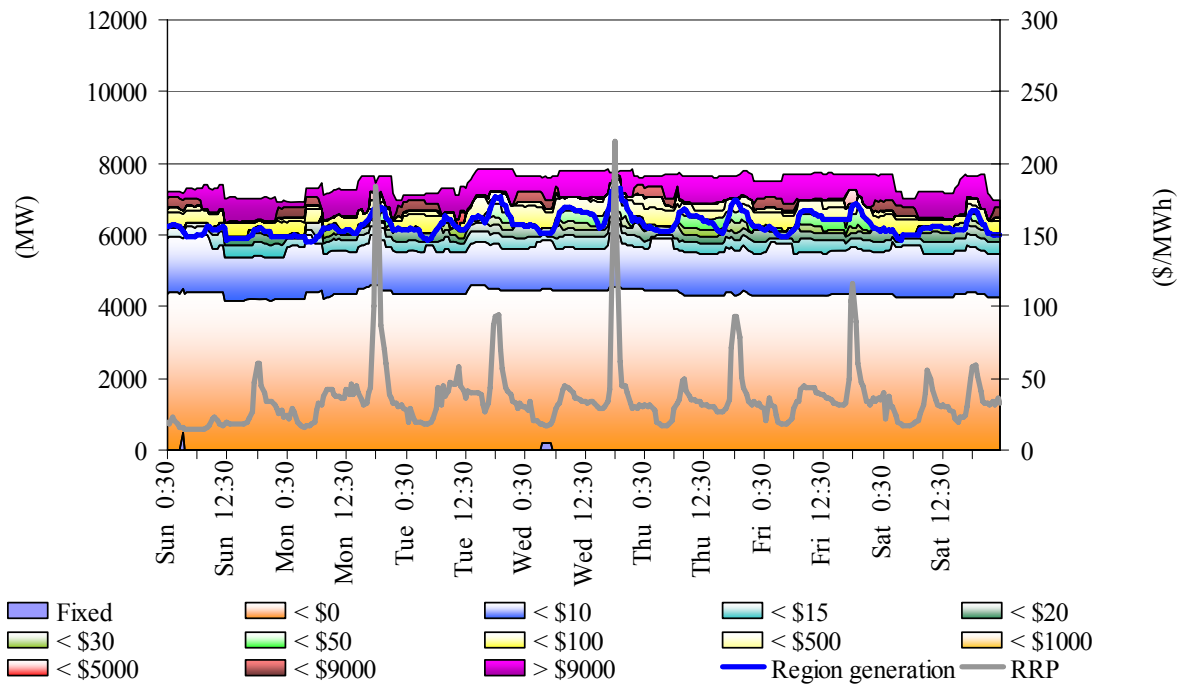
**Figure 57: Queensland closing bid prices, dispatched generation and spot price**



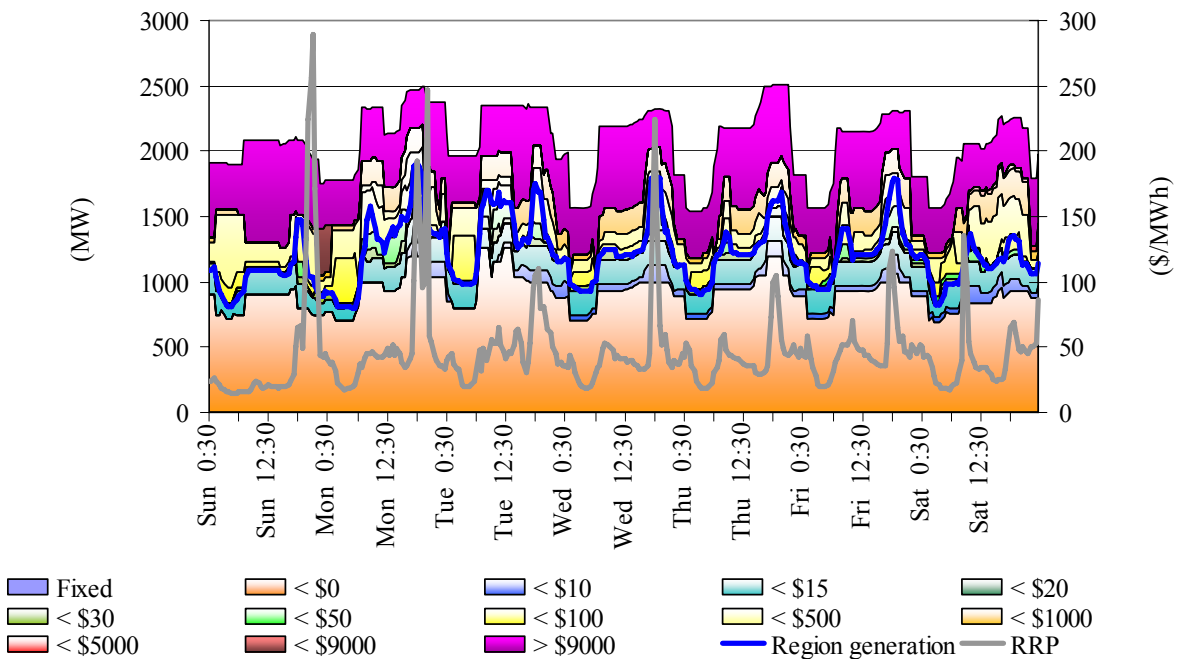
**Figure 58: New South Wales closing bid prices, dispatched generation and spot price**



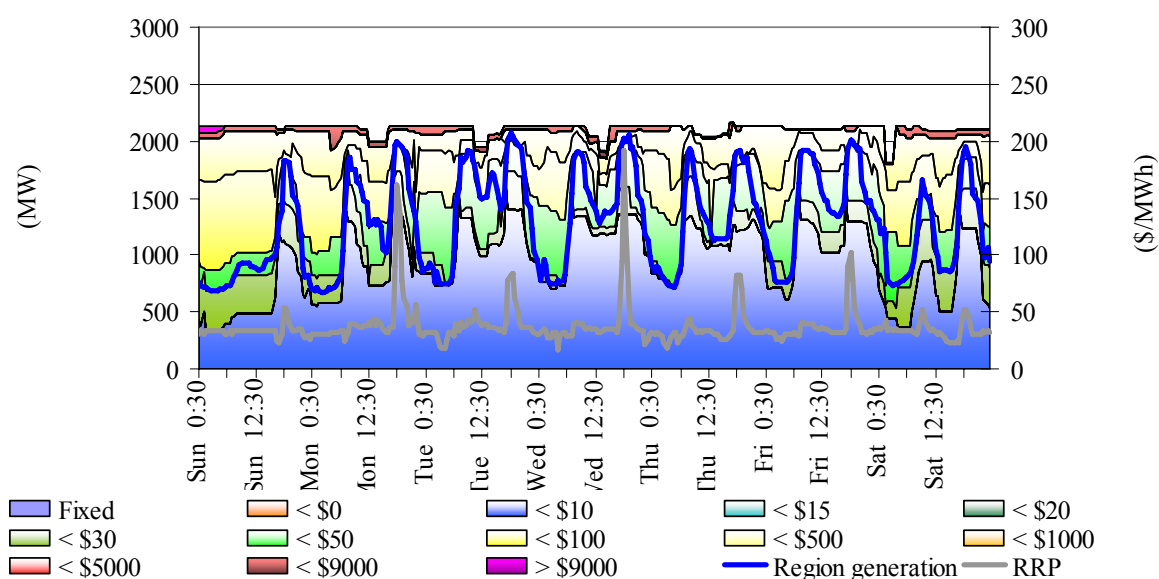
**Figure 59: Victoria closing bid prices, dispatched generation and spot price**



**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 \$123 000 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)	0.57	0.10	0.70	1.60	0.12	0.03	0.29	0.92
Previous week (\$/MW)	0.47	0.10	0.58	2.01	0.15	0.09	0.32	0.88
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	22	4	40	39	0.1	0	4	14
% of energy market	0.02%	0.01%	0.03%	0.03%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was \$65 000 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)	3.92	0.21	2.10	3.43	0.30	0.24	0.64	0.86
Previous week (\$/MW)	3.49	0.16	1.64	2.33	5.92	0.15	0.61	0.86
Last quarter (\$/MW)	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost (\$1000s)	12	2	20	7	2	5	12	5
% of energy market	0.15%	0.02%	0.25%	0.09%	0.03%	0.07%	0.15%	0.06%

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

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

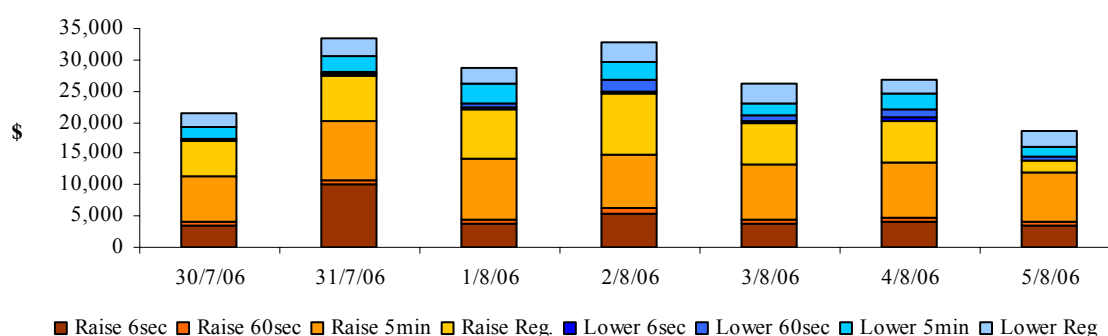
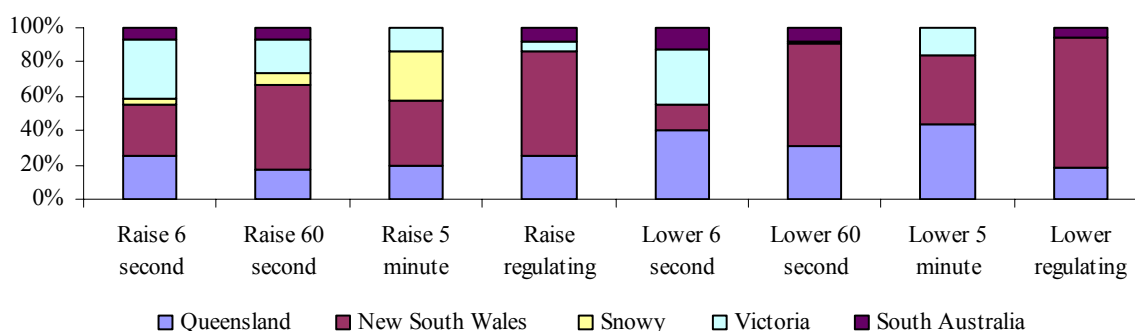


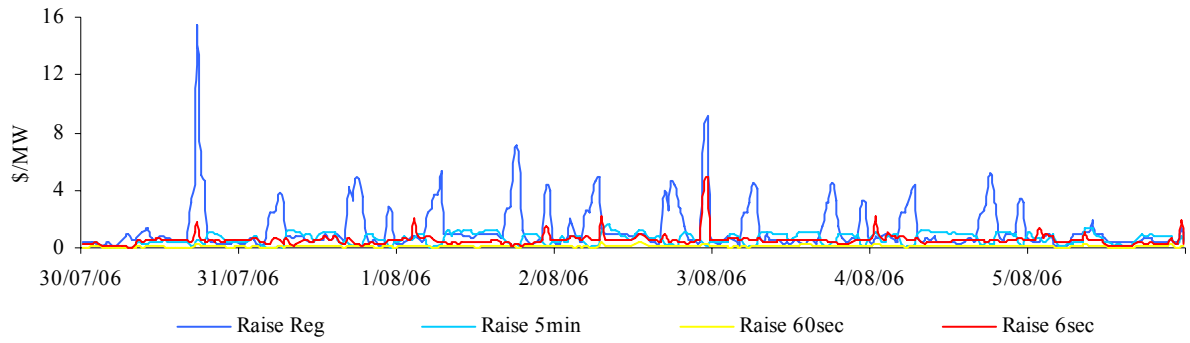
Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

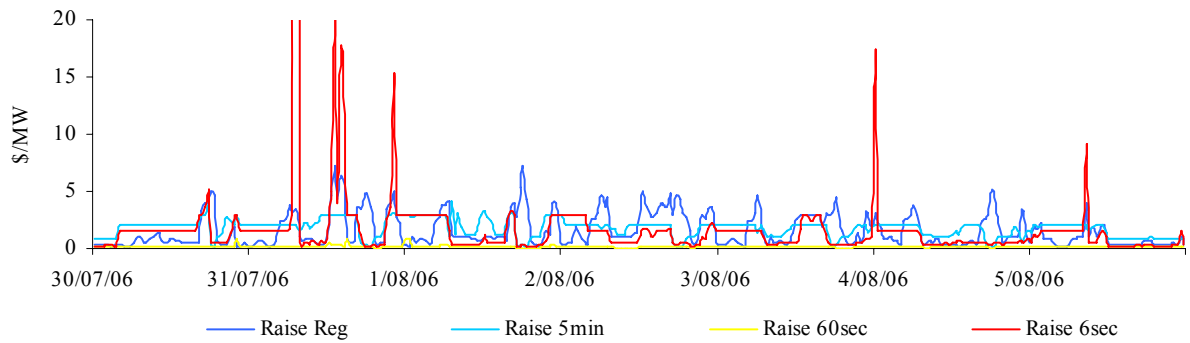


Figures 66 and 67 show 30-minute prices for each frequency control ancillary service throughout the week.

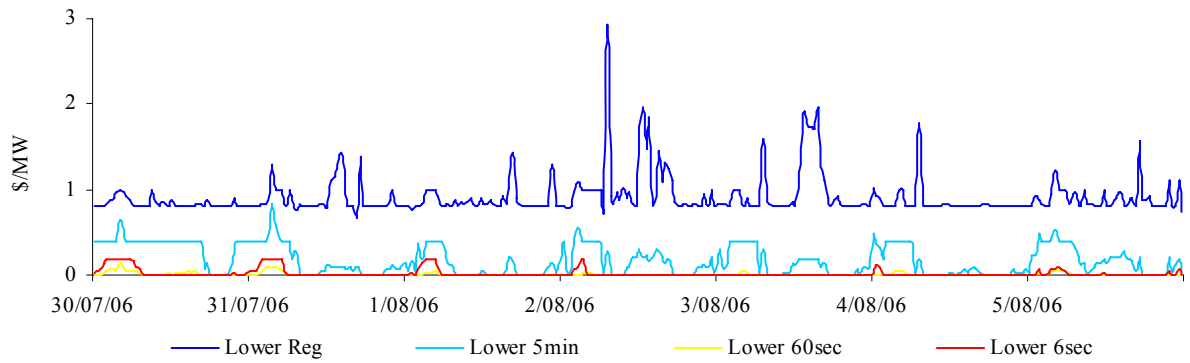
**Figure 66: prices for raise services**



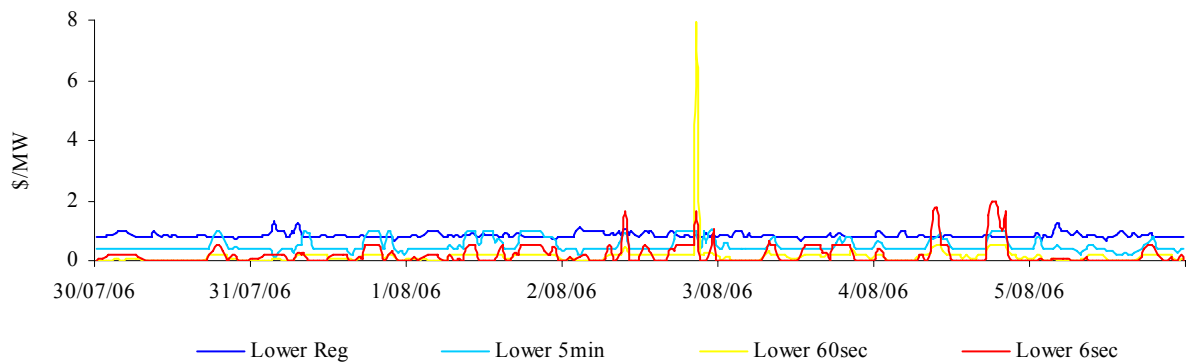
**Figure 66A: prices for raise services – Tasmania**



**Figure 67: prices for lower services**

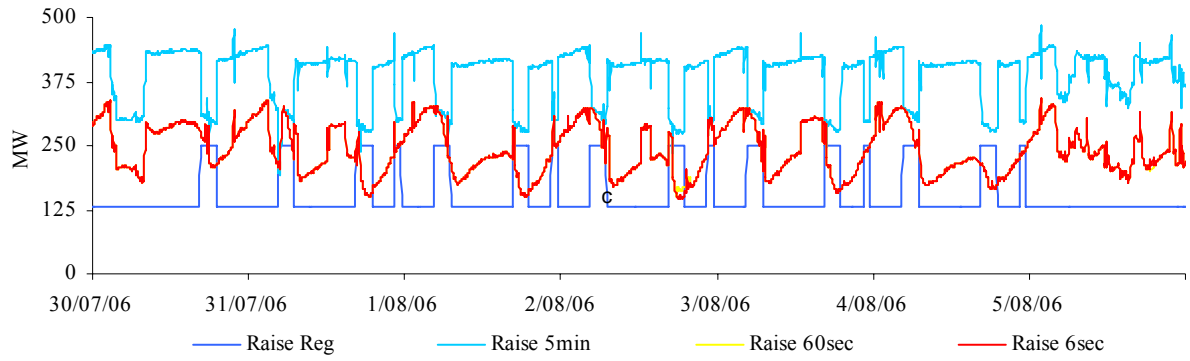


**Figure 67A: prices for lower services – Tasmania**

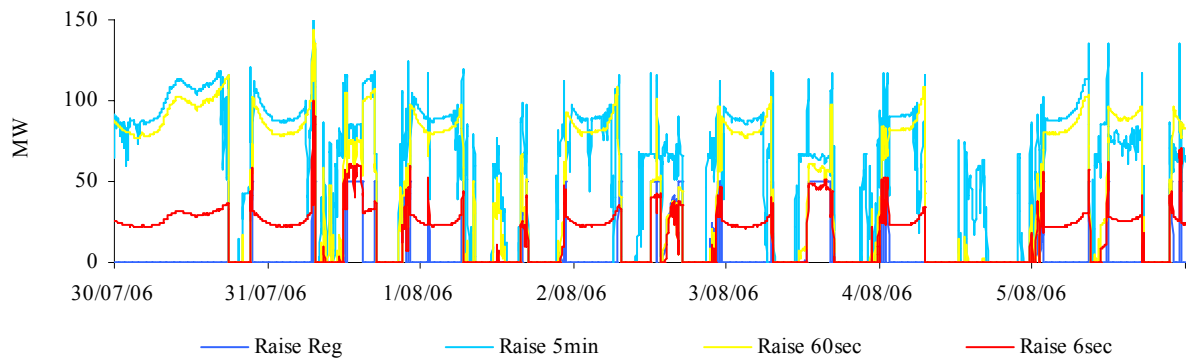


Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

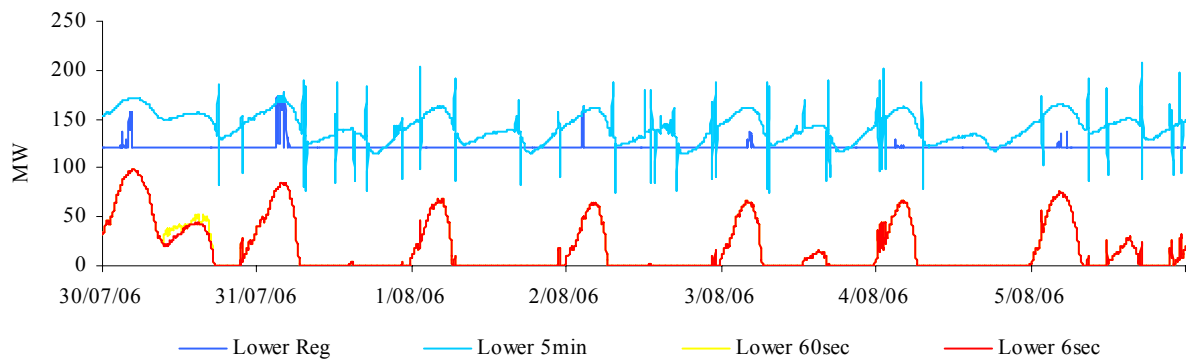
**Figure 68: raise requirements**



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



**Figure 69: lower requirements**



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

