

14 Jan 2007 – 20 Jan 2007

Spot prices for the week averaged between \$39/MWh in Tasmania and \$321/MWh in Victoria. High temperatures across the board saw national demand reach record levels.

On Tuesday afternoon a new record demand in Victoria of more than 9000 MW occurred, which together with demand in South Australia at near record levels saw spot prices exceed \$5000/MWh in both regions. At 3.02 pm market time<sup>1</sup> bushfires in the vicinity of the fully loaded Snowy to Victoria interconnector caused it to open, which led to the interruption of 2600 MW of Victorian customer load. Following the loss of the interconnector the price in South Australia rose to close to the price cap, Victoria's price fell to zero before rising to the cap and the price in Tasmania fell to -\$1000/MWh. Restoration of customers commenced at 3.49 pm, and all supply was restored by around 6 pm. The AER will be issuing a separate report into the events of that day.

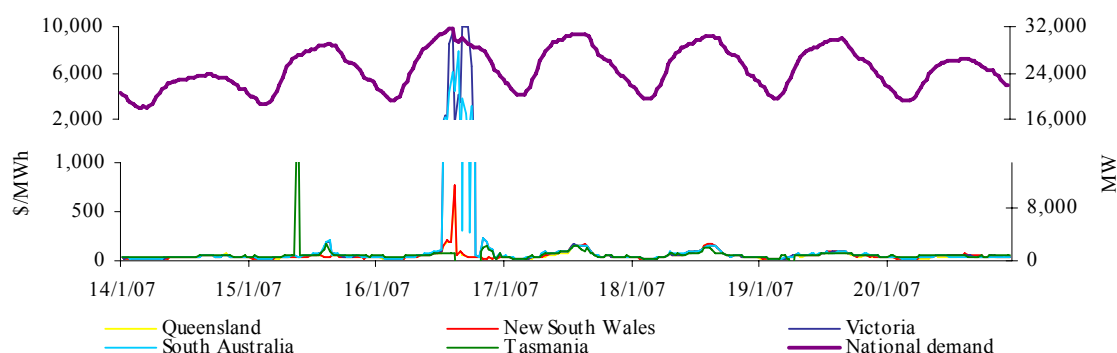
Turnover in the energy market was \$554 million, with two thirds of that accruing on Tuesday. The total cost of ancillary services for the week was \$20 million, with 99 per cent of that accruing on Tuesday.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 207 or two thirds of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in around a quarter all trading intervals across the market.

## 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**



<sup>1</sup> 3.02 pm market time is equivalent to 4.02 pm eastern summer time.

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

	QLD	NSW	VIC	SA	TAS
Last week	53	57	321	238	39
Previous week	105	125	60	44	48
Same quarter last year	39	46	53	58	33
Financial year to date	28	37	45	49	40
% change from previous week *	▼50%	▼54%	▲438%	▲444%	▼18%
% change from same quarter last year **	▲36%	▲24%	▲505%	▲313%	▲19%
% change from year to date ***	▼7%	▼22%	▲37%	▲10%	▼49%

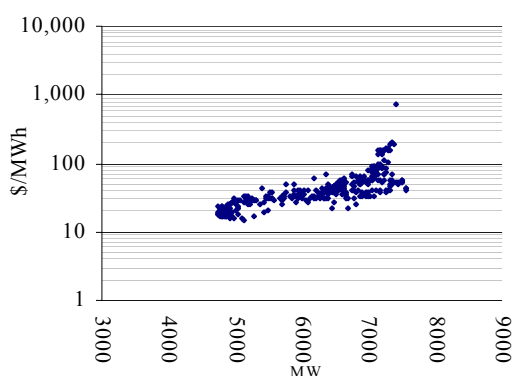
\*The percentage change between last week's average spot price and the average price for the previous week.

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

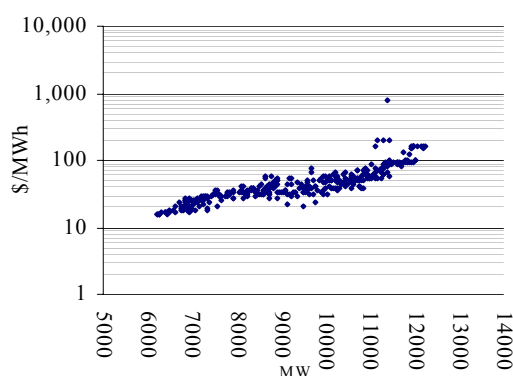
\*\*\*The percentage change between the average spot price for the current financial year to date and the average spot price over the similar period for the previous financial year.

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

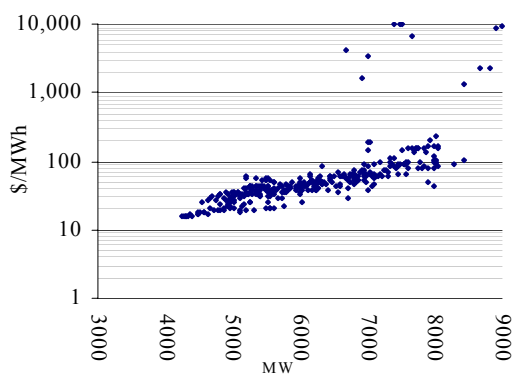
**Figure 3: Queensland**



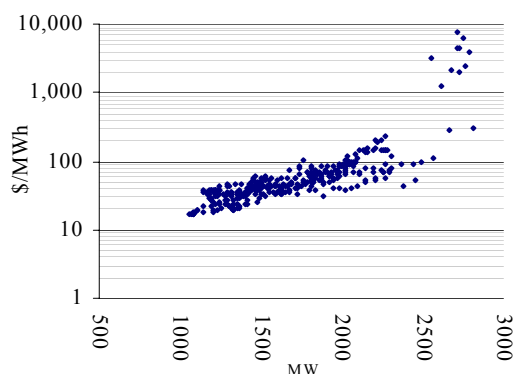
**Figure 4: New South Wales**



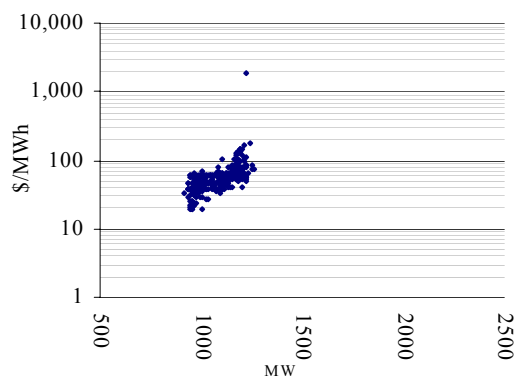
**Figure 5: Victoria**



**Figure 6: South Australia**



**Figure 7: Tasmania**



The maximum spot prices for the mainland for the week occurred on Tuesday and ranged from \$736/MWh in Queensland to \$10 000/MWh in Victoria. In Tasmania the maximum price of \$1800/MWh occurred on Monday morning following a rapid reduction in imports from the mainland. 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	1.17	1.28	1.78	1.45	0.89
Previous week	3.51	3.23	1.61	1.41	0.60
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>

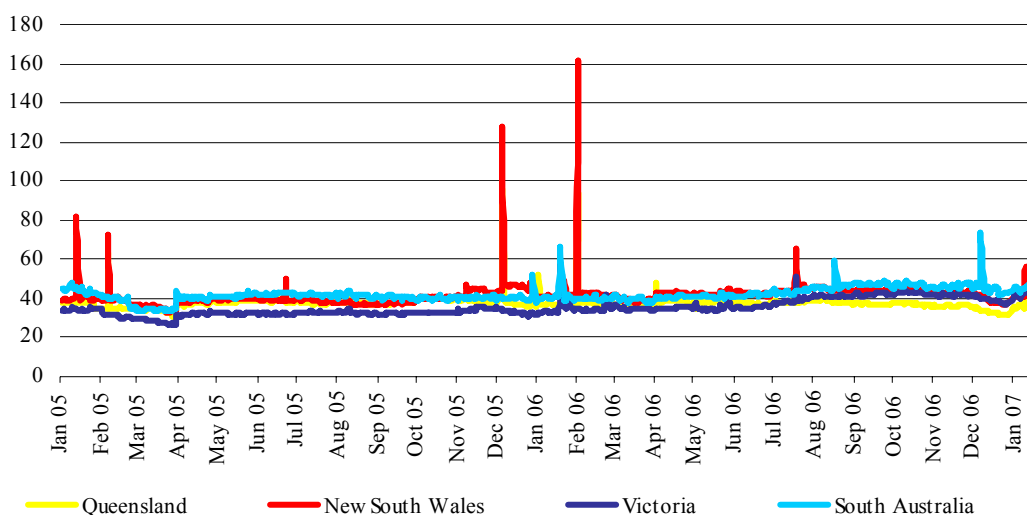
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)\* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2005.

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

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	39.22	39.05	41.68	43.79	43.77
New South Wales	45.08	46.62	49.17	50.30	49.72
Victoria	44.34	97.13	50.67	51.01	51.54
South Australia	47.78	92.78	53.38	50.41	50.43

\* 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**

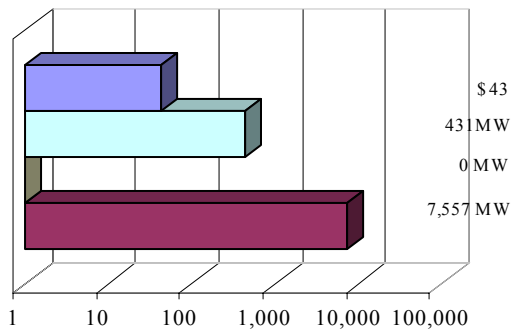


## Reserve

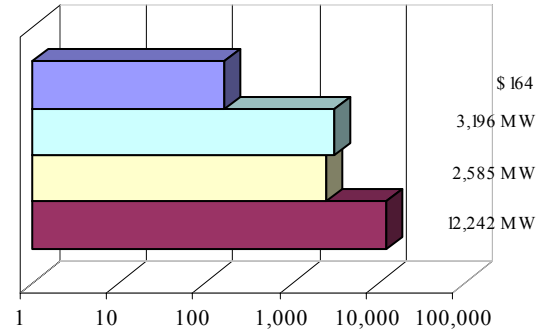
No low reserves were forecast.

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

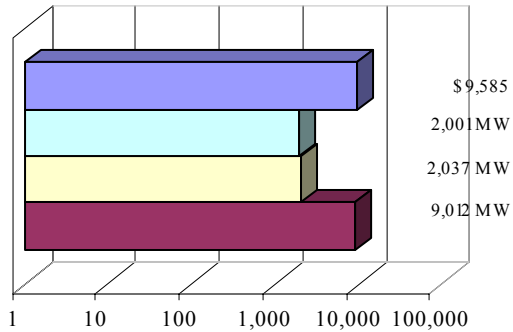
**Figure 11: Queensland**



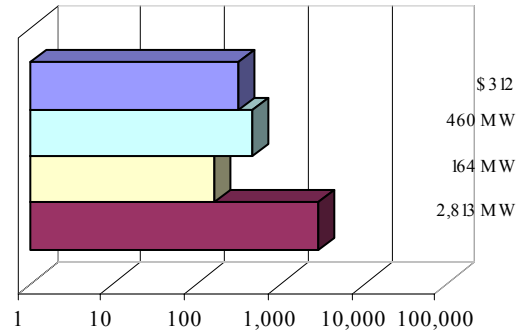
**Figure 12: New South Wales**



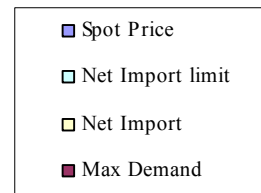
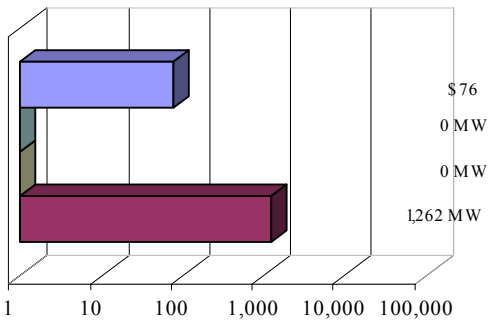
**Figure 13: Victoria**



**Figure 14: South Australia**



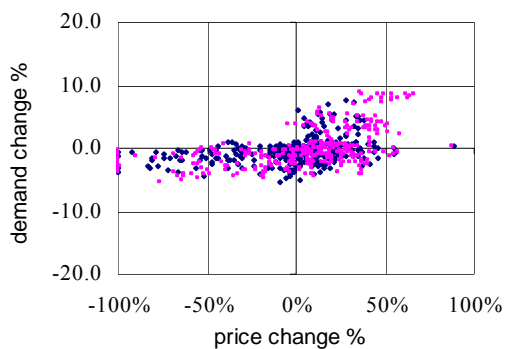
**Figure 15: Tasmania**



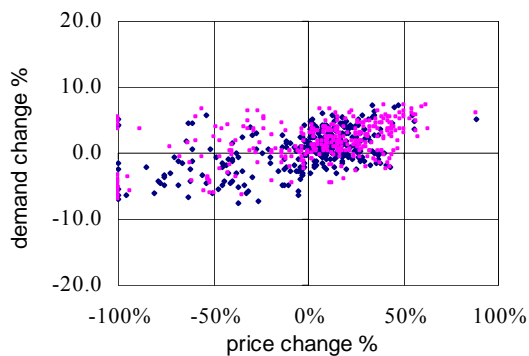
## Price variations

There were 207 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.

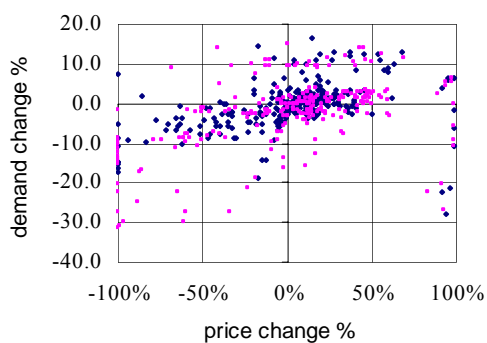
*Figure 16: Queensland*



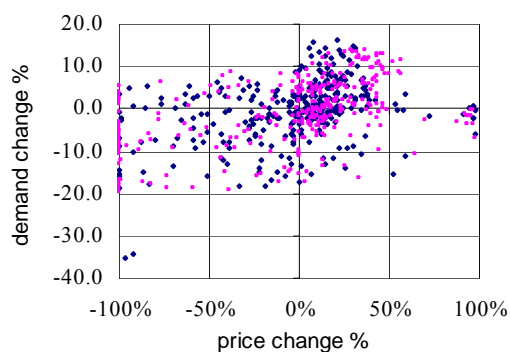
*Figure 17: New South Wales*



*Figure 18: Victoria*



*Figure 19: South Australia*



*Figure 20: Tasmania*

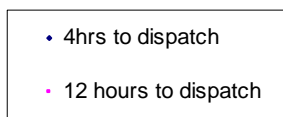
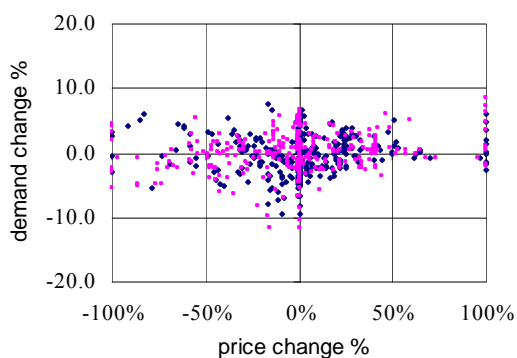
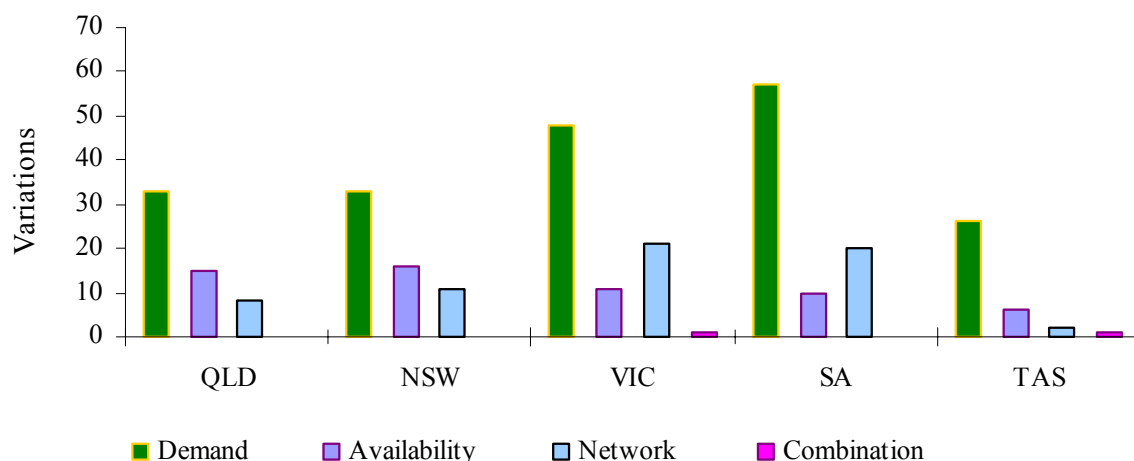


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

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



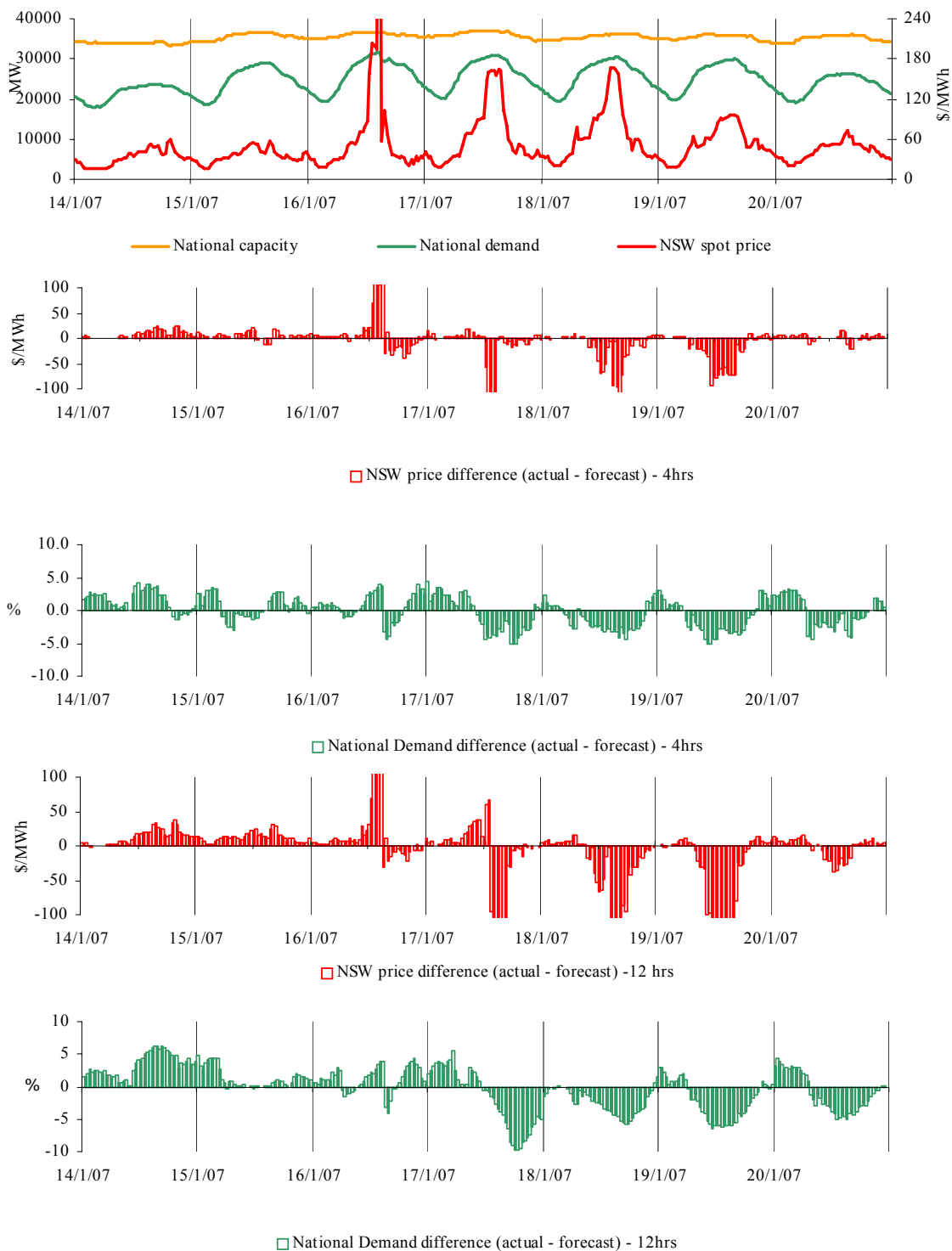
### Price and demand

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.

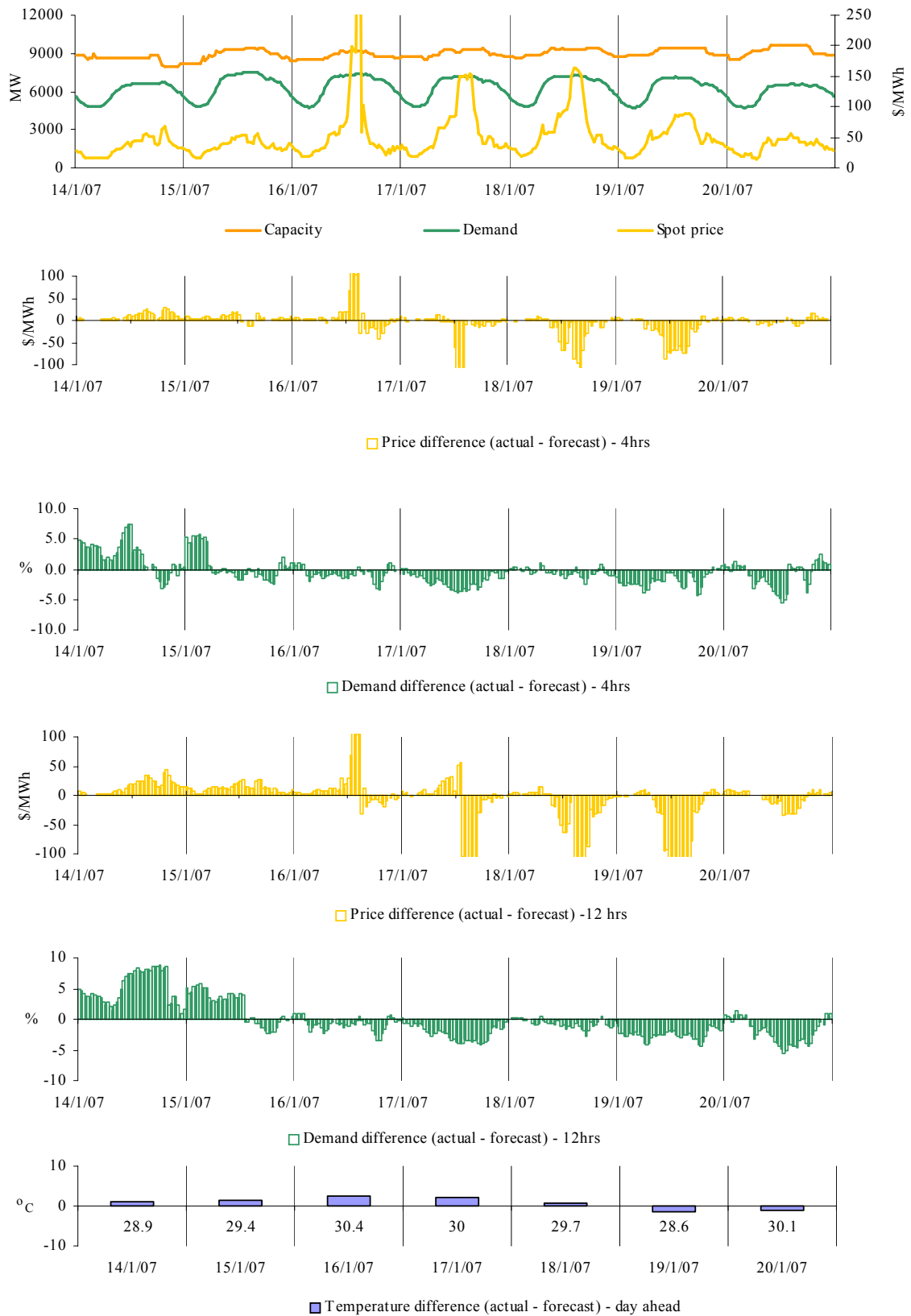
Figures 22-26: National market outcomes



There were no occasions where spot prices were nationally aligned and the New South Wales price<sup>2</sup> was greater than three times the New South Wales weekly average price of \$57/MWh.

<sup>2</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 six occasions where the spot price in Queensland was greater than three times the weekly average price of \$53/MWh.

### Tuesday, 16 January

<b>1:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	198.50	86.11	84.60
Demand (MW)	7344	7401	7401
Available capacity (MW)	9154	9359	9456
<b>2:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	191.76	85.35	85.56
Demand (MW)	7331	7402	7402
Available capacity (MW)	9154	9359	9392
<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	189.71	85.32	84.89
Demand (MW)	7388	7398	7398
Available capacity (MW)	9152	9355	9392
<b>3:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	736.24	85.48	88.16
Demand (MW)	7408	7378	7377
Available capacity (MW)	9173	9355	9392

Conditions at the time saw demand close to forecast 4 hours ahead. Prices were higher than forecast and following the record high demand conditions in Victoria.

At 11.44 am Tarong Energy reduced the capacity of Tarong unit two by 220 MW during the return of the unit to service following a one day outage. The majority of this capacity was priced below \$20/MWh. The rebid reason given was “T2 sets and emissions:red cap extd”.

From 12.45 pm Stanwell Corporation shifted as much as 240 MW of capacity at Stanwell from prices below \$60/MWh to above \$270/MWh, with the majority priced above \$9000/MWh. The rebid reasons given included: “Manage transmission constraint” and “Changed predispatch”.

At 12.54 pm Origin shifted 190 MW of capacity at Mount Stuart from \$10 000/MWh to below \$185/MWh. The rebid reason given was “Change in PDS”.

There was no other significant rebidding.

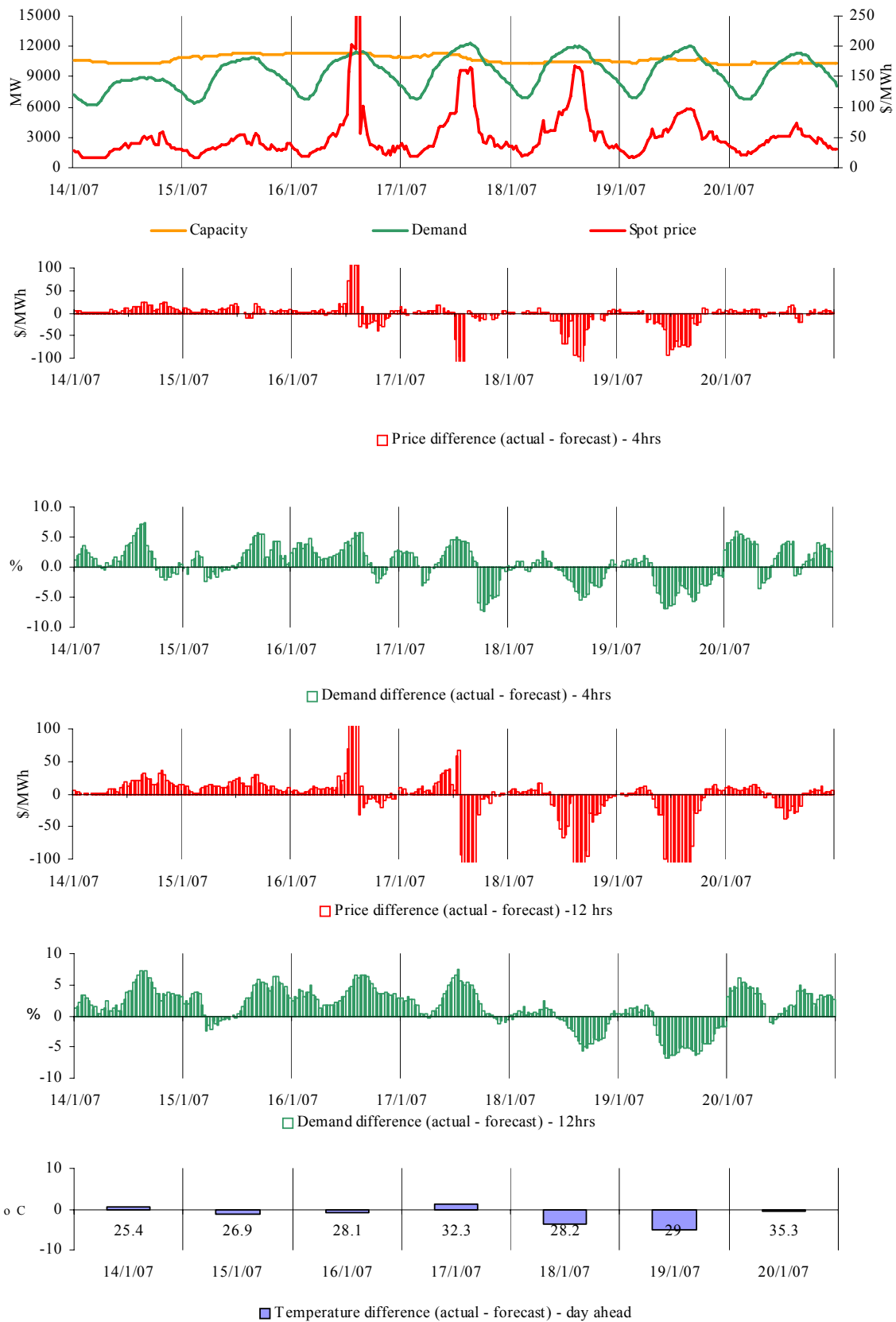
### Thursday, 18 January

<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	164.55	167.91	165.40
Demand (MW)	7248	7306	7341
Available capacity (MW)	9338	9352	9426
<b>3:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	162.92	249.40	6795.39
Demand (MW)	7277	7294	7329
Available capacity (MW)	9338	9356	9426

Conditions at the time saw demand and price below that forecast four and 12 hours ahead. Prices were aligned across the mainland in dispatch and predispatch. National demand reached 31 400 MW, which is around 1300 MW higher than the four hour ahead forecast.

There was no significant rebidding.

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



There were four occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of \$57/MWh.

### **Tuesday, 16 January**

<b>1:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	202.36	88.78	87.92
Demand (MW)	11187	10778	10659
Available capacity (MW)	11295	11325	11355
<b>2:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	198.70	88.21	88.43
Demand (MW)	11307	10767	10653
Available capacity (MW)	11268	11330	11355
<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	195.37	88.18	88.23
Demand (MW)	11421	10780	10672
Available capacity (MW)	11280	11350	11375
<b>3:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	763.97	88.89	89.22
Demand (MW)	11388	10792	10684
Available capacity (MW)	11293	11350	11375

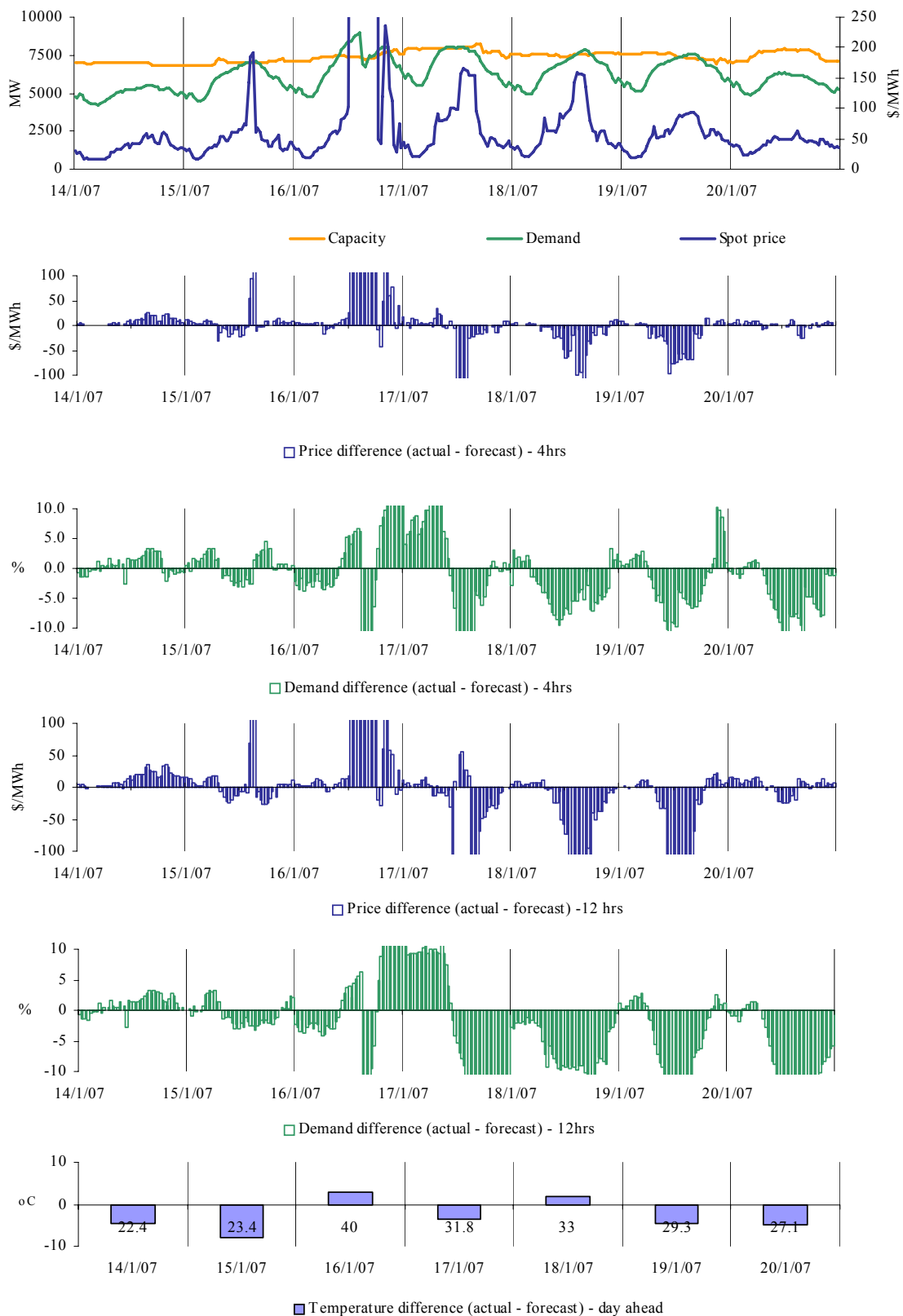
Conditions at the time saw demand higher than forecast with prices following the record high demand conditions in Victoria.

At 2.24 pm Macquarie Generation shifted 320 MW of capacity across its Bayswater units from prices of less than \$85/MWh and a further 160 MW of capacity from prices below \$600/MWh to above \$9000/MWh. The rebid reason given was “Load expected to vary from forecast”.

At 2.50 pm Eraring Energy shifted 100 MW of capacity across its Eraring units from prices below \$30/MWh to above \$7000/MWh. The rebid reason given was “Demand higher than expected”.

There was no other significant rebidding.

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



There were 12 occasions where the spot price in Victoria was greater than three times the weekly average price of \$321/MWh.

## Tuesday, 16 January

<b>1:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1292.96	103.66	130.80
Demand (MW)	8439	8099	8252
Available capacity (MW)	7363	7460	7546
<b>1:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	2250.22	104.29	133.03
Demand (MW)	8683	8189	8298
Available capacity (MW)	7380	7445	7546
<b>2:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	2205.56	105.45	135.29
Demand (MW)	8810	8262	8357
Available capacity (MW)	7391	7465	7536
<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	8598.99	106.05	239.66
Demand (MW)	8922	8331	8424
Available capacity (MW)	7358	7461	7522
<b>3:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	9585.48	135.32	278.74
Demand (MW)	9012	8455	8443
Available capacity (MW)	7343	7453	7522
<b>3:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1653.89	136.07	281.82
Demand (MW)	6913	8452	8466
Available capacity (MW)	7332	7435	7522
<b>4:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	4173.27	242.35	284.92
Demand (MW)	6685	8550	8481
Available capacity (MW)	7178	7445	7532
<b>4:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	3502.92	138.34	287.99
Demand (MW)	6997	8505	8427
Available capacity (MW)	7181	7388	7532
<b>5:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	10 000.00	103.22	101.15
Demand (MW)	7511	8335	8320
Available capacity (MW)	7344	7370	7482
<b>5:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	10 000.00	77.47	81.67
Demand (MW)	7384	8164	8084
Available capacity (MW)	7309	7354	7482

## Tuesday, 16 January (continued)

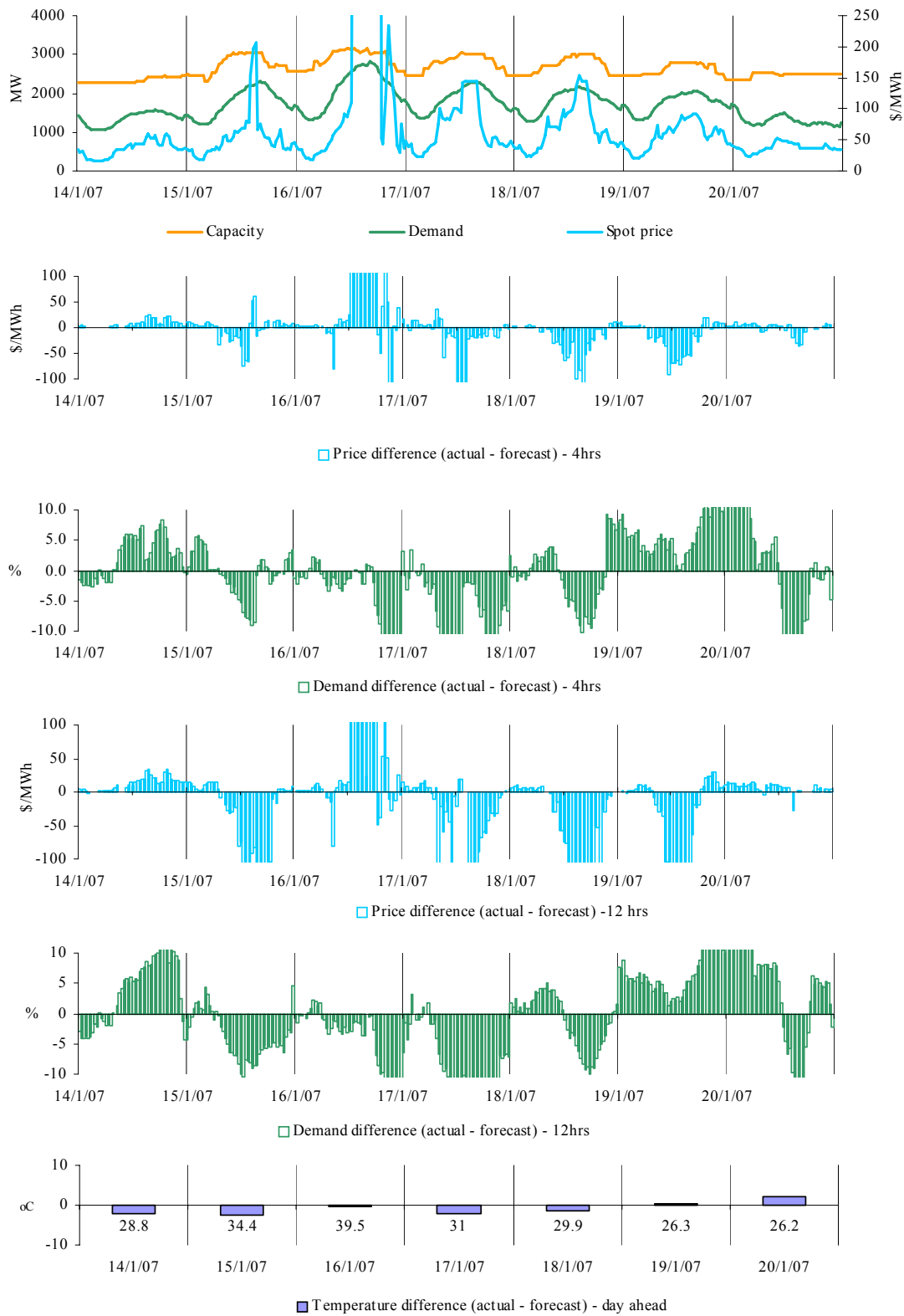
<b>6:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	10 000.00	72.72	74.14
Demand (MW)	7482	7966	7909
Available capacity (MW)	7287	7397	7482
<b>6:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	6500.00	72.31	72.53
Demand (MW)	7666	7805	7680
Available capacity (MW)	7398	7384	7482

Conditions at the time saw demand almost 600 MW higher than forecast four and 12 hours ahead. Extreme temperatures in Victoria led to a record demand, surpassing the previous record by around 300 MW.

At around 3 pm bushfires in the vicinity of the fully loaded Snowy to Victoria interconnector caused it to open, which led to the loss of supply to 2600 MW of Victorian customer load. NEMMCO intervened setting the price to VoLL for two hours from 4.25 pm to 6.20 pm.

The AER is preparing a pricing report into the events of the day as required under clause 3.13.7 of the National Electricity Rules. The AER will also investigate this event to determine whether registered participants and NEMMCO complied with the Rules.

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



There were 10 occasions where the spot price in South Australia was greater than three times the weekly average price of \$238/MWh.

## Tuesday, 16 January

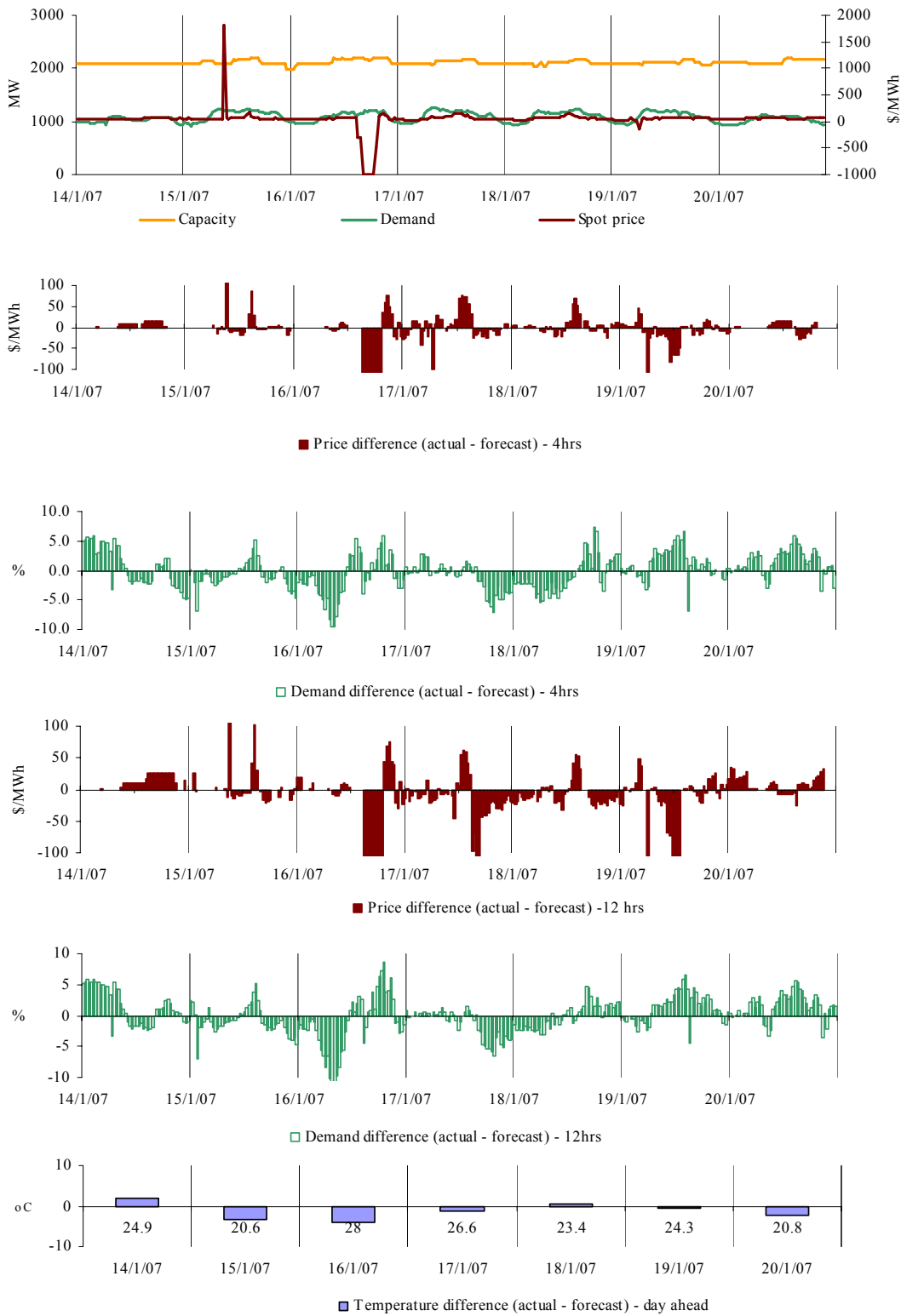
<b>1:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1220.73	110.08	145.07
Demand (MW)	2617	2653	2694
Available capacity (MW)	3143	3195	3195
<b>1:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	2112.22	110.09	145.07
Demand (MW)	2680	2680	2721
Available capacity (MW)	3107	3183	3195
<b>2:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1983.63	112.51	145.07
Demand (MW)	2726	2721	2760
Available capacity (MW)	3071	3183	3195
<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	4336.99	114.37	250.00
Demand (MW)	2733	2737	2777
Available capacity (MW)	3060	3169	3195
<b>3:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	6048.52	145.07	289.14
Demand (MW)	2750	2762	2800
Available capacity (MW)	3089	3163	3195
<b>3:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	4450.37	145.07	289.14
Demand (MW)	2711	2772	2811
Available capacity (MW)	3118	3152	3195
<b>4:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	7813.10	250.00	289.14
Demand (MW)	2719	2783	2816
Available capacity (MW)	3141	3155	3195
<b>5:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	3826.80	111.28	113.33
Demand (MW)	2794	2772	2808
Available capacity (MW)	3009	3247	3195
<b>5:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	2412.17	83.57	94.15
Demand (MW)	2768	2752	2781
Available capacity (MW)	3028	3263	3195
<b>6:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	3119.65	80.71	85.13
Demand (MW)	2553	2700	2731
Available capacity (MW)	3056	3103	3075

Conditions at the time saw demand close to that forecast and at near record levels due to the extreme temperatures. Prices were following the conditions in Victoria which experienced record demand. Maximum exports from South Australia across the Heywood interconnector of up to 300 MW during this period saw generation dispatch in South Australia exceed 3000 MW for the first time ever.

The AER is preparing a pricing report as required under clause 3.13.7 of the National Electricity Rules.



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



There were 15 occasions where the spot price in Tasmania was greater than three times the weekly average price of \$39/MWh.

### Monday, 15 January

<b>9:30 am</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1819.53	55.90	70.30
Demand (MW)	1219	1227	1229
Available capacity (MW)	2101	2101	2101

Conditions at the time saw demand and available capacity close to forecast. There was a 5 minute price of \$10 000/MWh at 9.25 am following a 355 MW step reduction in import capability from the mainland. This reduced import capability was driven by a telecommunication systems glitch.

There was no significant rebidding

### Monday, 15 January

<b>3:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	172.18	85.30	70.30
Demand (MW)	1243	1179	1180
Available capacity (MW)	2182	2092	2101

Conditions at the time saw demand around 65 MW higher than forecast four hours ahead and almost 100 MW higher than forecast at the beginning of the trading interval. Prices at the time were aligned with Victoria and South Australia with exports across Basslink reaching 550 MW.

There was no significant rebidding.

### Tuesday, 16 January

<b>8:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	137.85	79.09	70.33
Demand (MW)	1183	1169	1136
Available capacity (MW)	2205	2205	2097
<b>9:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	160.14	83.19	85.16
Demand (MW)	1208	1167	1134
Available capacity (MW)	2205	2169	2097
<b>9:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	118.08	70.32	73.86
Demand (MW)	1177	1146	1147
Available capacity (MW)	2205	2169	2097

Earlier in the day Victoria recorded a new record demand, prior to the loss of the Victoria to Snowy interconnector which saw 2600 MW of customer load interrupted. The price in Tasmania dropped to the market floor price (\$-1000/MWh) as a result of rebidding and reduced exports into Victoria for more than four hours. The price recovered from 8 pm and remained above \$100/MWh and generally aligned with that in Victoria and South Australia.

## Wednesday, 17 January

<b>1:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	139.94	70.36	85.36
Demand (MW)	1190	1190	1191
Available capacity (MW)	2145	2145	2097
<b>1:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	147.91	70.36	85.36
Demand (MW)	1196	1188	1189
Available capacity (MW)	2145	2145	2097
<b>2:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	144.61	70.30	85.38
Demand (MW)	1204	1185	1187
Available capacity (MW)	2145	2145	2097
<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	141.94	70.30	100.15
Demand (MW)	1196	1184	1187
Available capacity (MW)	2145	2145	2097
<b>3:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	124.86	70.30	102.16
Demand (MW)	1189	1183	1187
Available capacity (MW)	2169	2169	2097
<b>4:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	133.72	157.75	201.57
Demand (MW)	1198	1190	1196
Available capacity (MW)	2169	2169	2097

Conditions at the time saw demand close to forecast and prices generally aligned with the mainland.

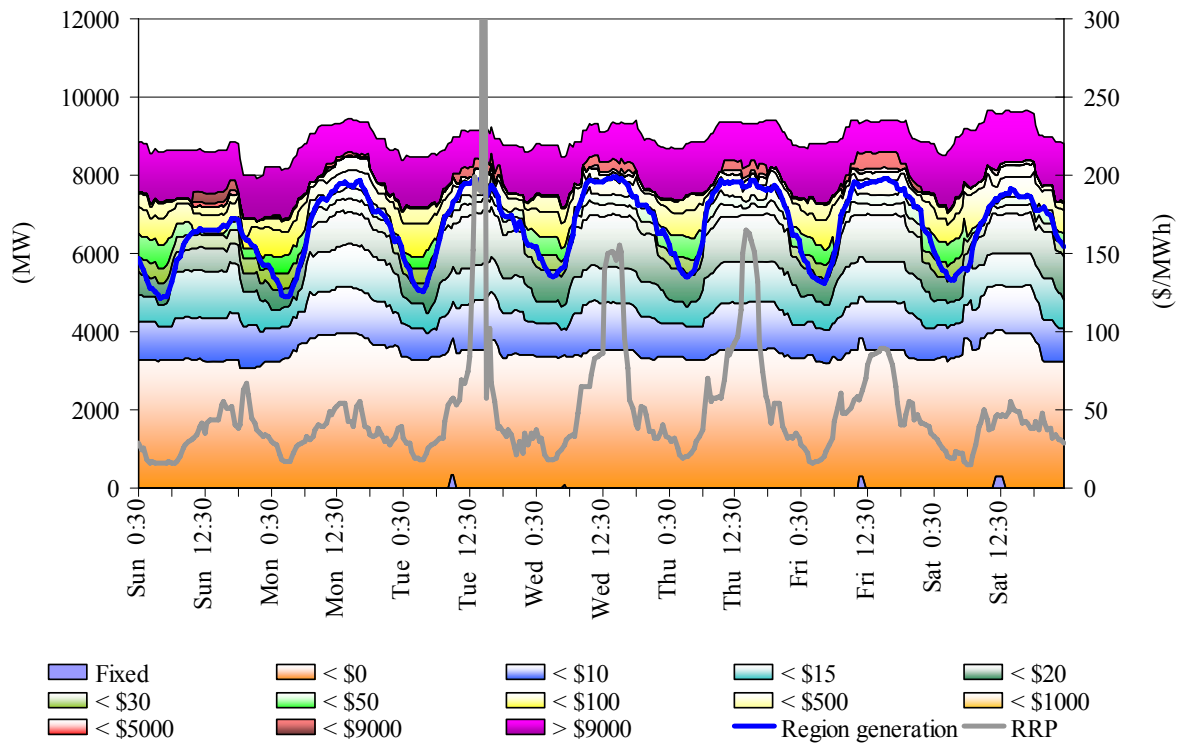
## Thursday, 18 January

<b>2:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	126.80	70.77	85.36
Demand (MW)	1174	1186	1184
Available capacity (MW)	2116	2116	2044
<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	140.22	70.62	85.36
Demand (MW)	1189	1190	1188
Available capacity (MW)	2116	2116	2044
<b>3:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	139.07	85.36	85.36
Demand (MW)	1196	1191	1190
Available capacity (MW)	2139	2139	2067
<b>3:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	118.34	85.36	85.36
Demand (MW)	1205	1194	1193
Available capacity (MW)	2139	2139	2067

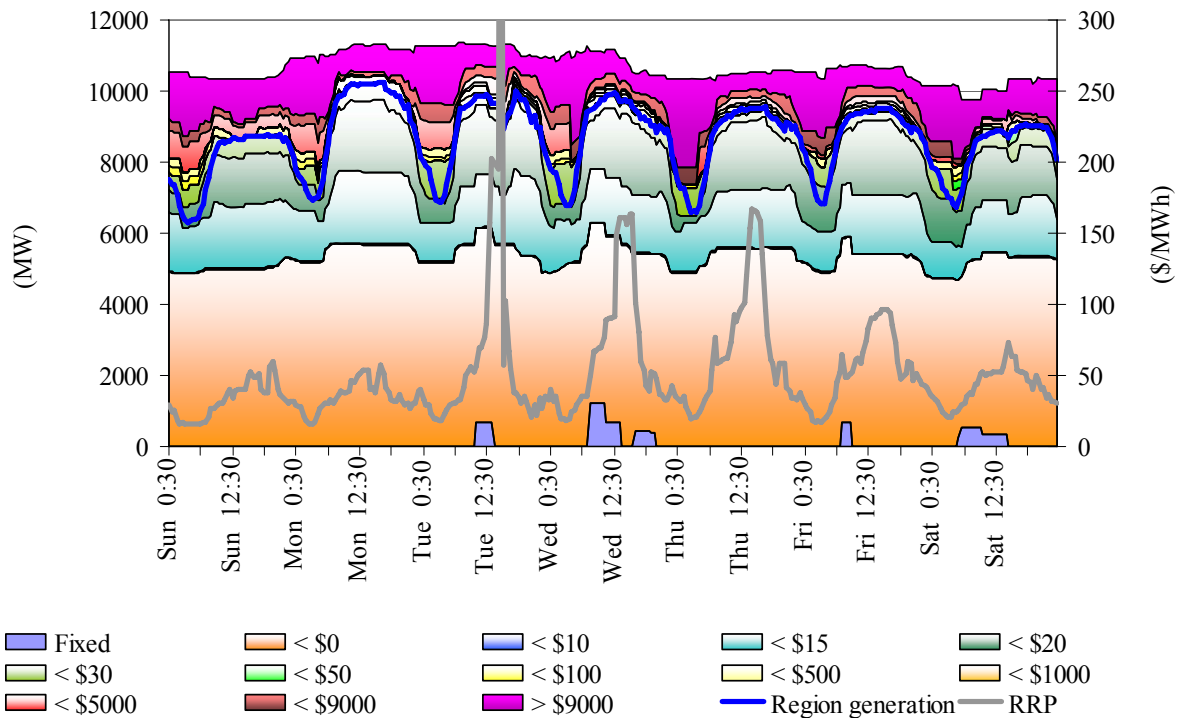
Conditions at the time saw demand close to forecast with prices generally aligned with the mainland. National demand reached 31 400 MW, which is around 1300 MW higher than the four hour ahead forecast.

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.

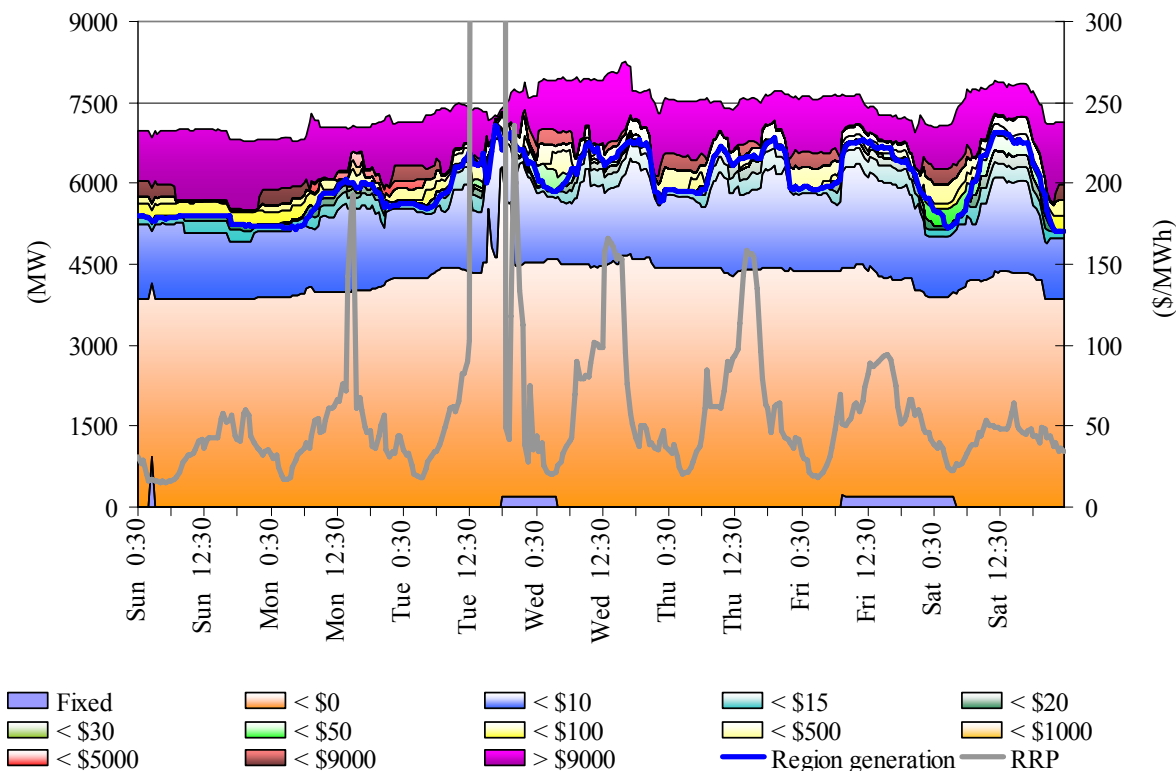
**Figure 57: Queensland closing bid prices, dispatched generation and spot price**



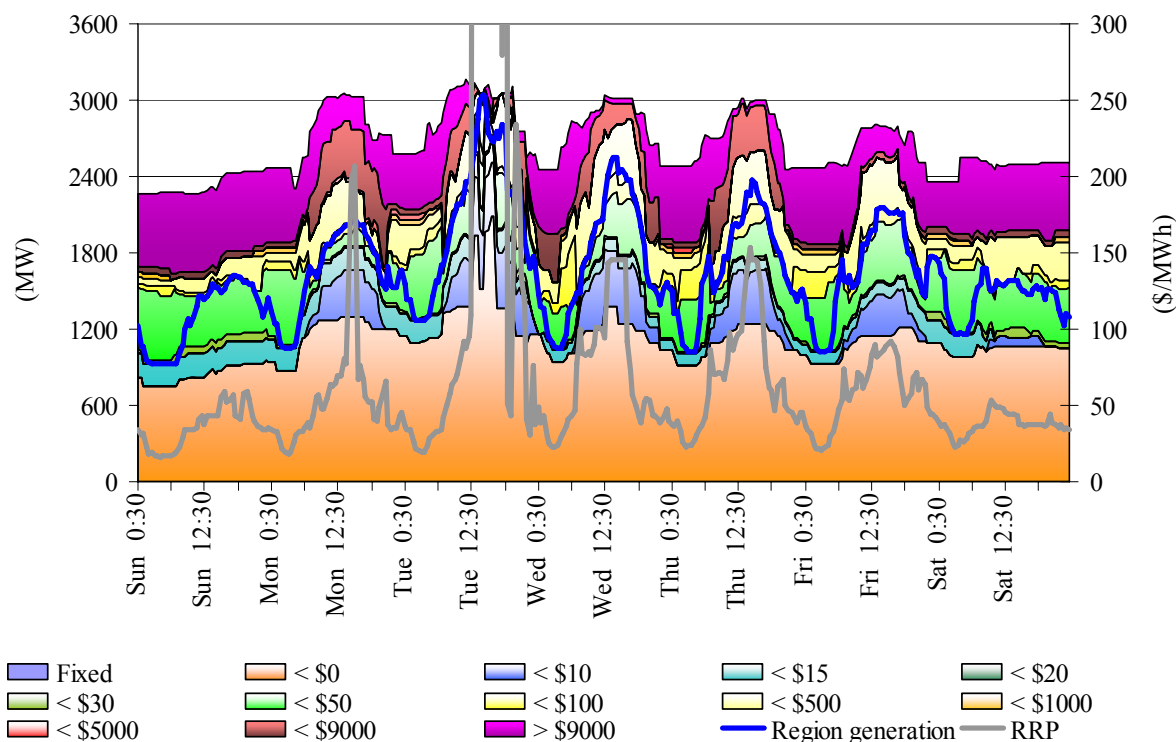
**Figure 58: New South Wales closing bid prices, dispatched generation and spot price**



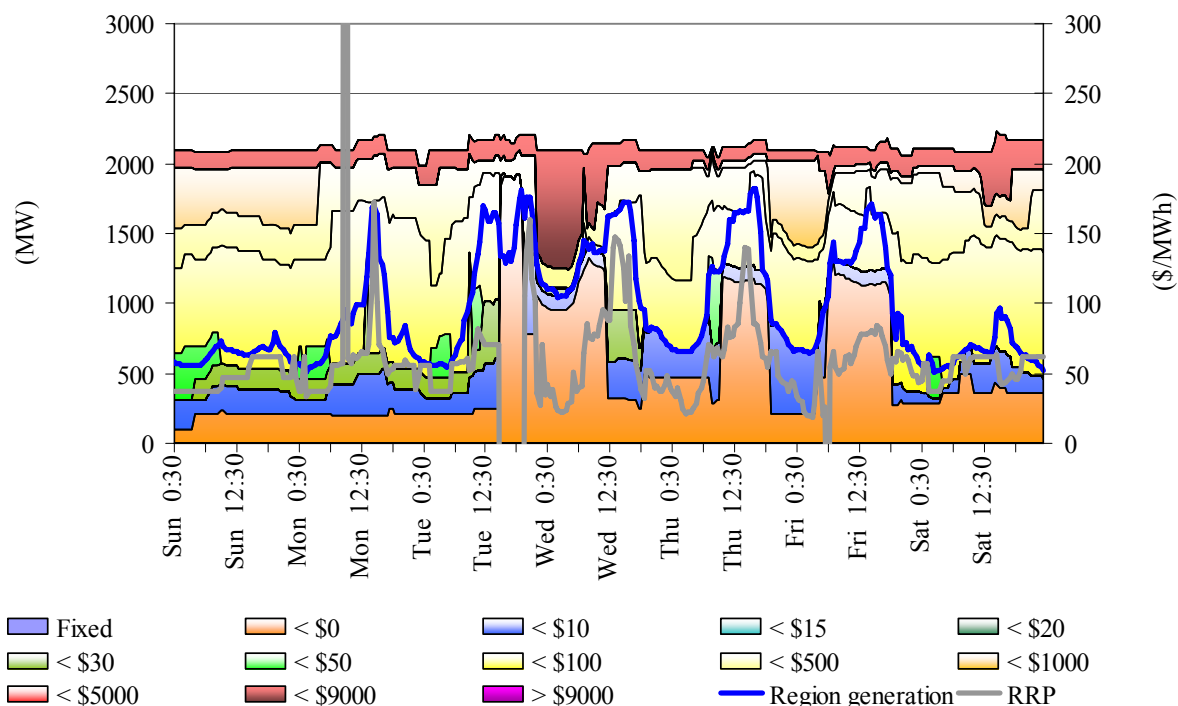
**Figure 59: Victoria closing bid prices, dispatched generation and spot price**



**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 \$18.5 million or 3.7 per cent of the energy market. Almost all of this accumulated on Tuesday as a result of the loss of the Victoria to Snowy interconnector. 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)	113.48	124.69	113.52	61.00	3.70	0.97	104.50	31.72
Previous week (\$/MW)	0.61	0.25	3.31	1.96	21.33	0.39	4.12	1.22
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$4,410	\$4,143	\$6,510	\$1,000	\$8	\$8	\$2,046	\$543
% of energy market	0.81%	0.76%	1.19%	0.18%	0.01%	0.01%	0.37%	0.10%

The total cost of ancillary services in Tasmania for the week was \$1.5 million or 22 per cent of the total turnover in the energy market in Tasmania. Almost all of this cost occurred on Tuesday due to the events in Victoria. 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)	269.62	1.96	66.36	3.57	0.86	0.58	0.59	2.07
Previous week (\$/MW)	1.42	1.00	1.02	1.65	3.34	2.25	0.59	1.15
Last quarter (\$/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost (\$1000s)	\$876	\$21	\$615	\$36	\$5	\$7	\$7	\$8
% of energy market	12.24%	0.29%	8.59%	0.50%	0.07%	0.10%	0.09%	0.11%

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

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

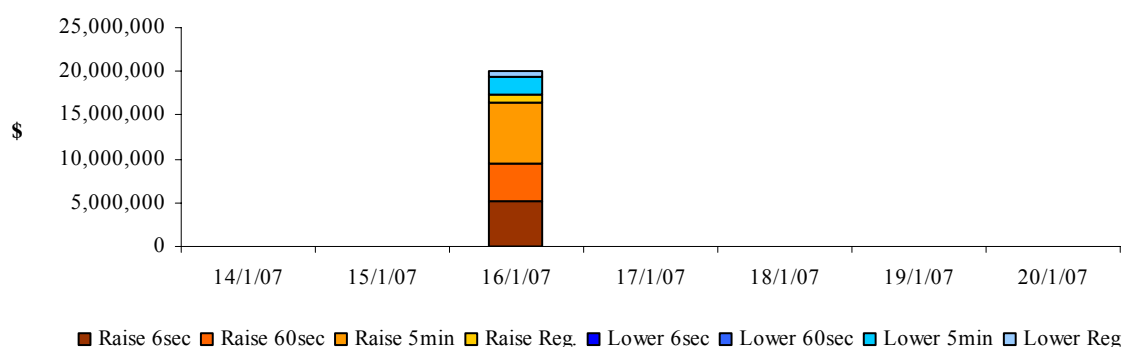
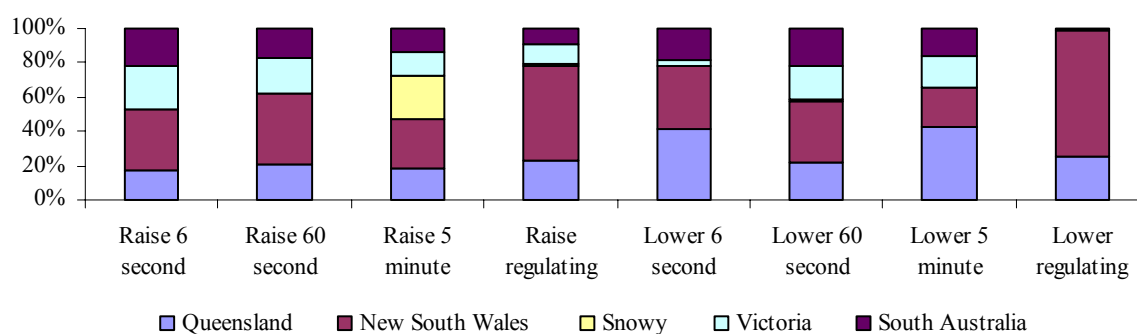


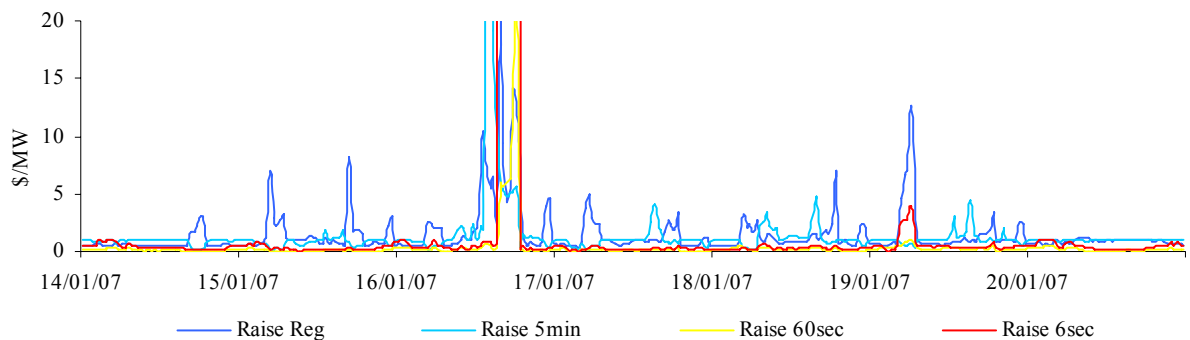
Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

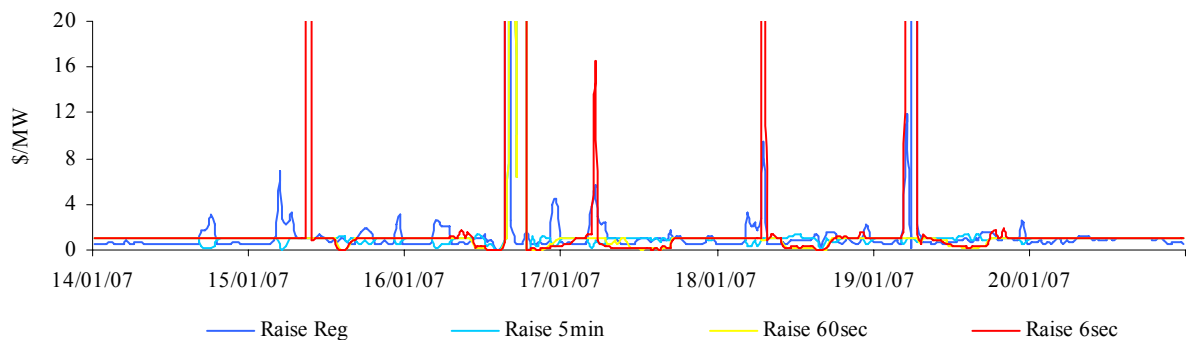


Figures 66 and 67 show 30-minute prices for each frequency control ancillary service throughout the week.

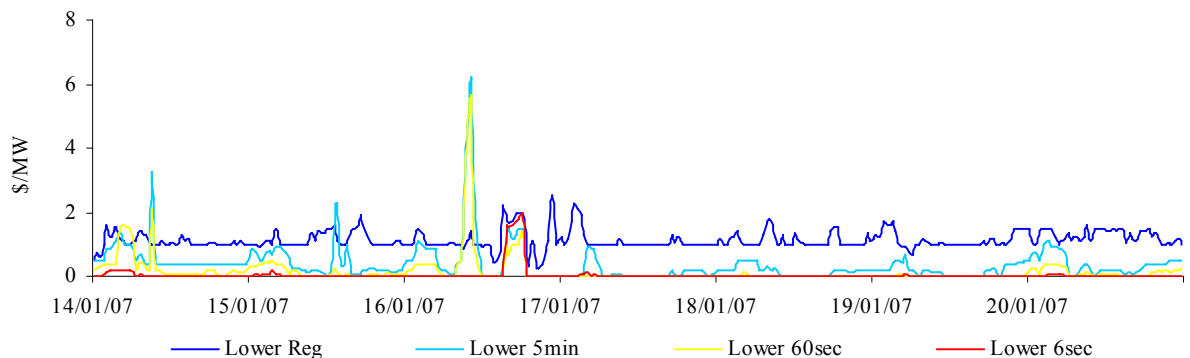
**Figure 66: prices for raise services**



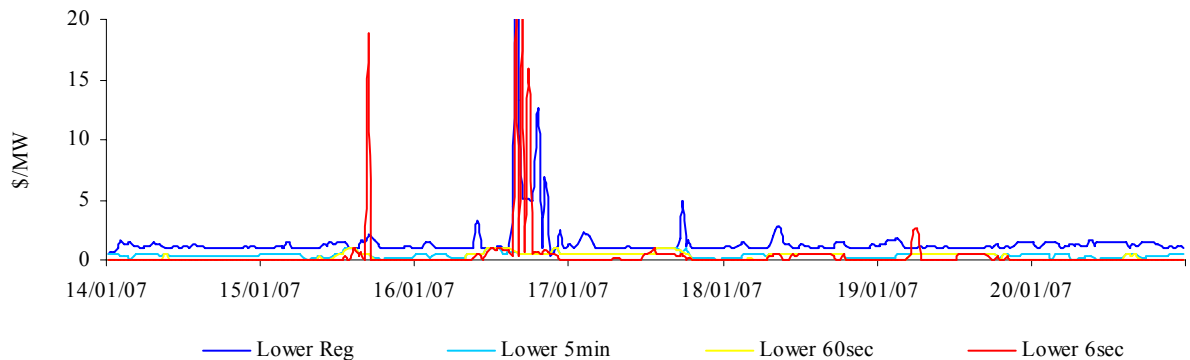
**Figure 66A: prices for raise services – Tasmania**



**Figure 67: prices for lower services**



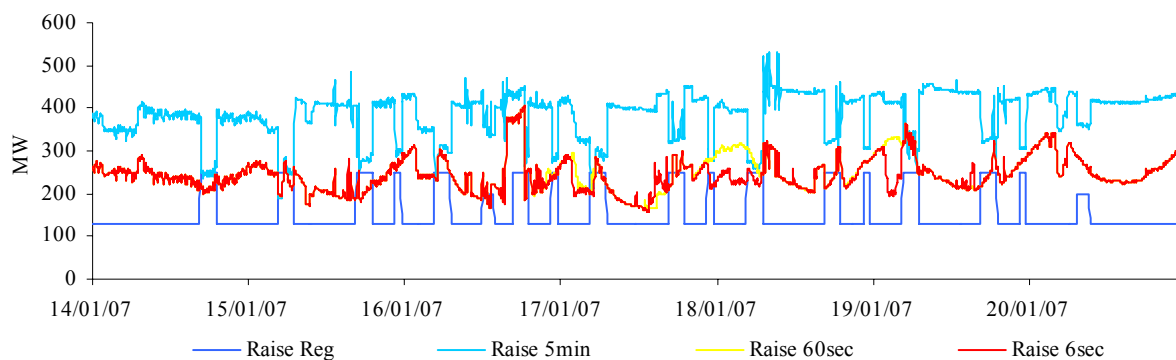
**Figure 67A: prices for lower services – Tasmania**



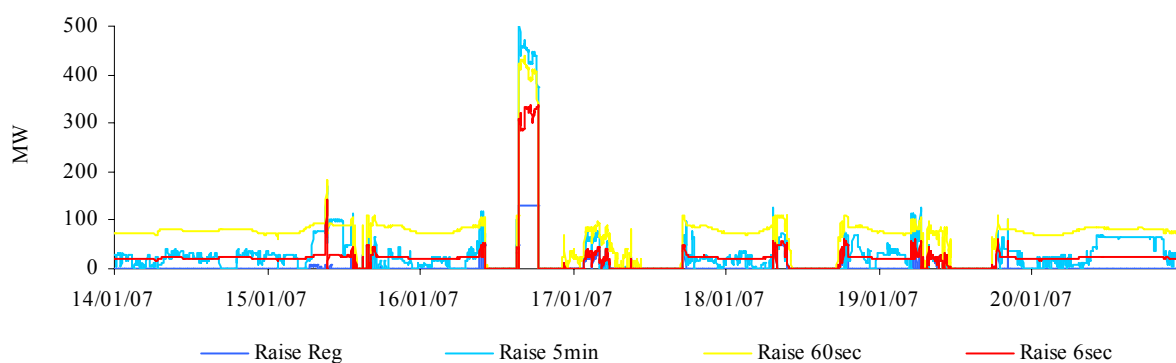


Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

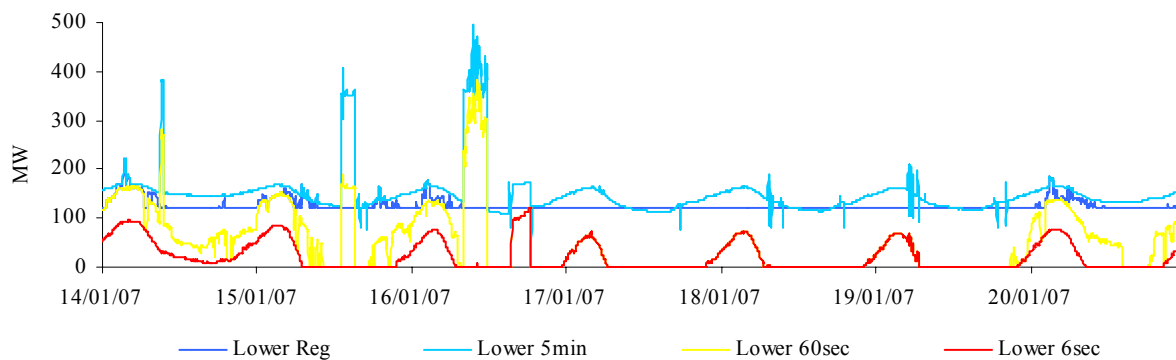
**Figure 68: raise requirements**



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



**Figure 69: lower requirements**



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

