

11–17 March 2007

Spot prices for the week averaged between \$42/MWh in New South Wales and \$75/MWh in South Australia. Queensland reached a new record demand of 8594 MW on Monday, exceeding the previous highest by around 200 MW.

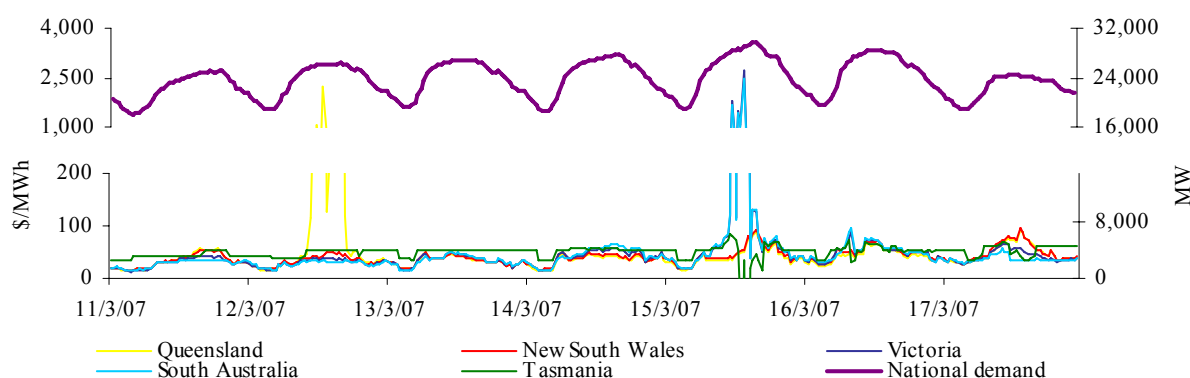
Turnover in the energy market was \$230 million. The total cost of ancillary services for the week was \$233 000, or 0.1 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 79 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 third all trading intervals across the market. These variations were most frequent in South Australia, occurring in two thirds 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	65	42	72	75	48
Previous week	36	39	37	36	50
Same quarter last year	38	45	53	57	33
Financial year to date	36	40	47	51	42
% change from previous week *	▲83%	▲7%	▲97%	▲108%	▼3%
% change from same quarter last year **	▲70%	▼8%	▲37%	▲32%	▲46%
% change from year to date ***	▲5%	▼20%	▲21%	▲9%	▼39%

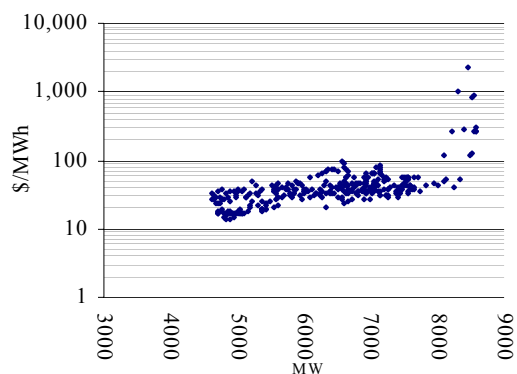
\*The percentage change between last week's average spot price and the average price for the previous week.

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

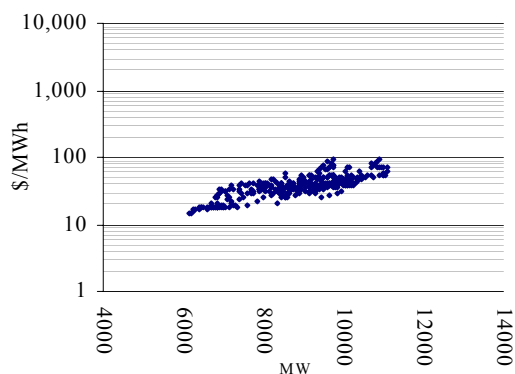
\*\*\*The percentage change between the average spot price for the current financial year to date and the average spot price over the similar period for the previous financial year.

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

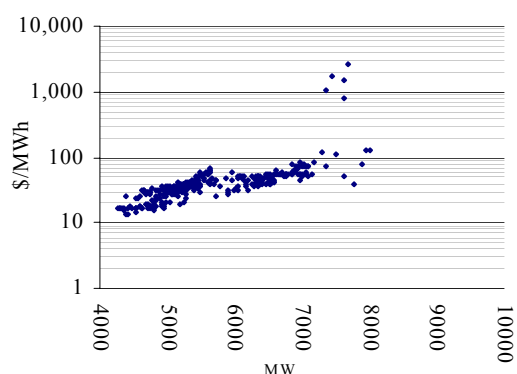
**Figure 3: Queensland**



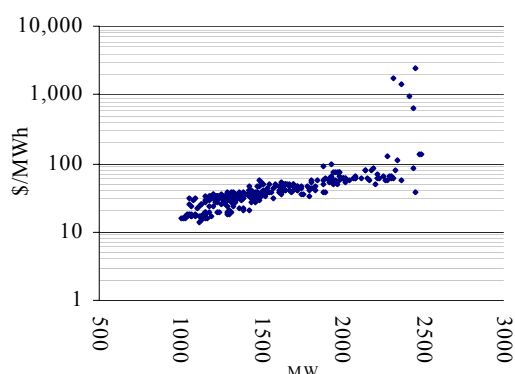
**Figure 4: New South Wales**



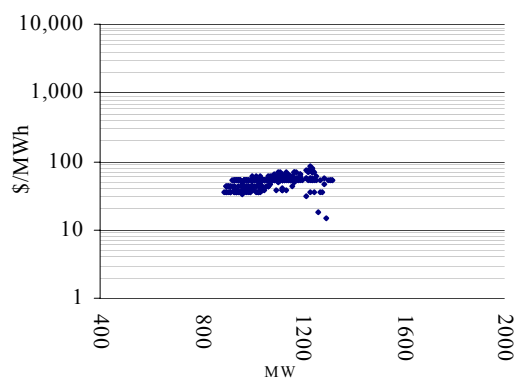
**Figure 5: Victoria**



**Figure 6: South Australia**



**Figure 7: Tasmania**



The maximum spot price for the week was \$83/MWh in Tasmania and \$96/MWh in New South Wales. The spot price in Queensland reached \$2232/MWh on Monday and around \$2500/MWh in Victoria and South Australia on Thursday as high demand coincided with limited import capability as a result of planned network outages. Figure 8 compares the weekly price volatility index with the averages for the previous week and the same quarter last year.

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

	QLD	NSW	VIC	SA	TAS
Last week	0.77	0.55	0.92	0.94	0.14
Previous week	0.65	0.67	0.67	0.65	0.03
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>

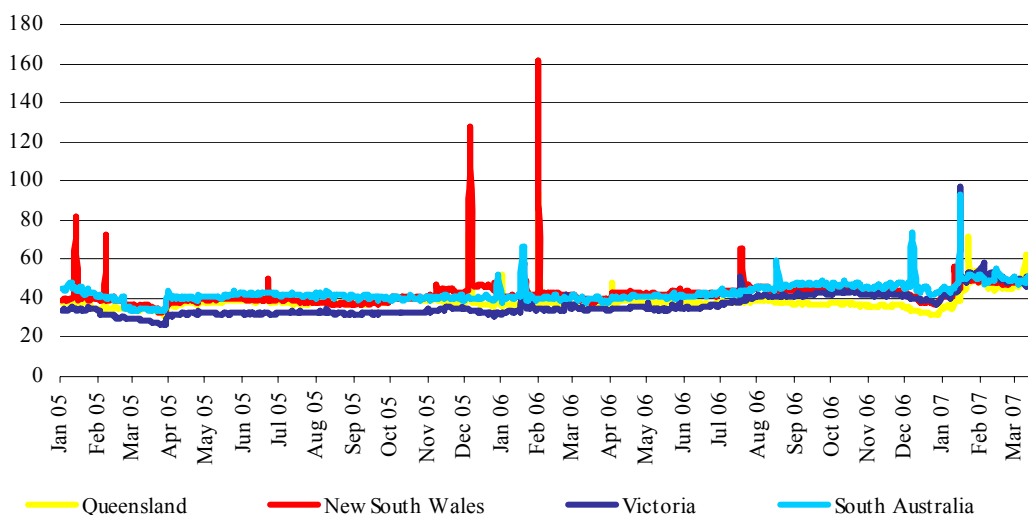
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)\* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2005.

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

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	61.94	49.26	52.02	53.92	54.49
New South Wales	48.49	47.84	48.73	50.89	51.22
Victoria	46.20	49.95	50.76	52.29	51.87
South Australia	47.67	49.70	51.36	51.72	50.53

\* 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**

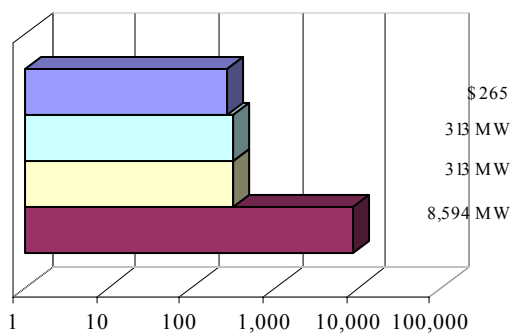


## Reserve

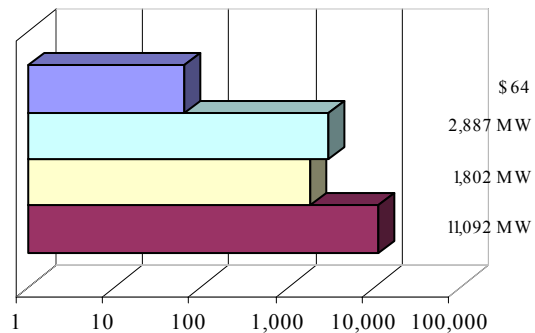
There were no low reserves forecast.

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

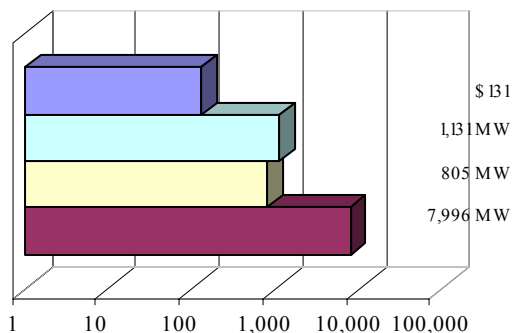
**Figure 11: Queensland**



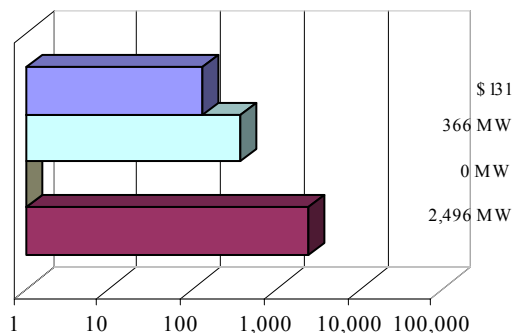
**Figure 12: New South Wales**



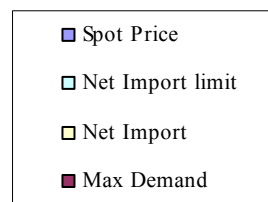
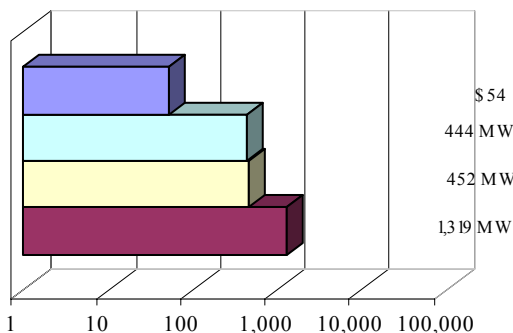
**Figure 13: Victoria**



**Figure 14: South Australia**



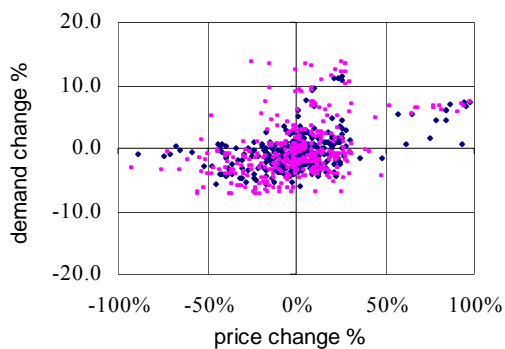
**Figure 15: Tasmania**



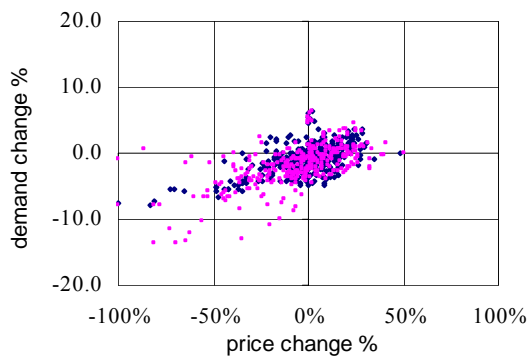
## Price variations

There were 79 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.

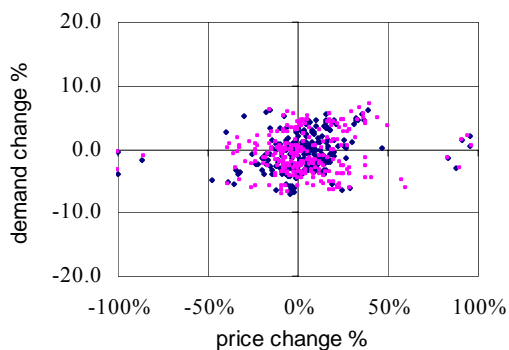
**Figure 16: Queensland**



**Figure 17: New South Wales**



**Figure 18: Victoria**



**Figure 19: South Australia**



**Figure 20: Tasmania**

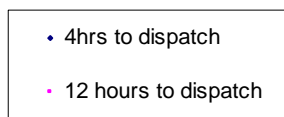
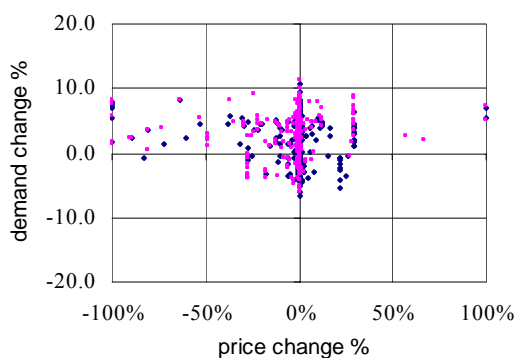
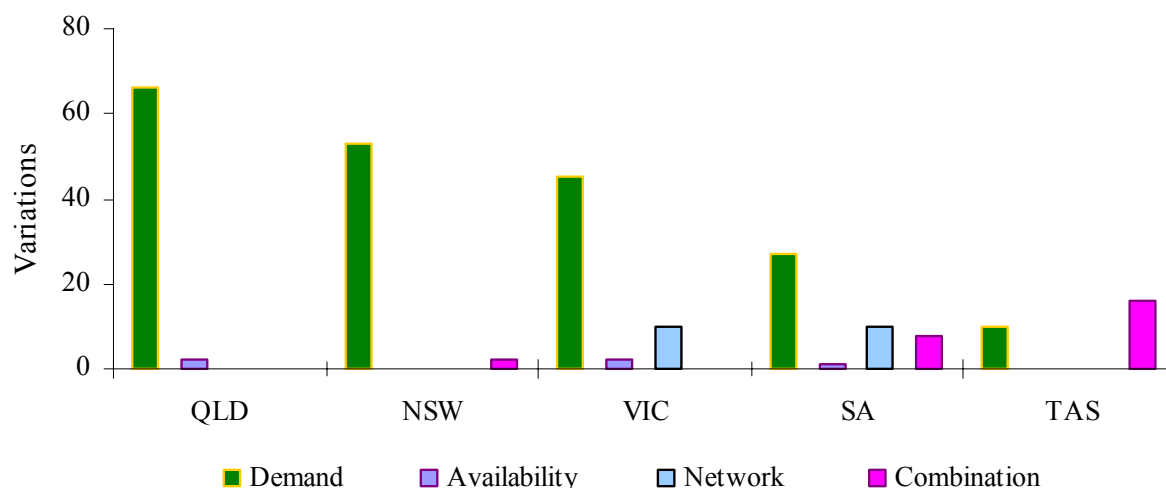


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

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



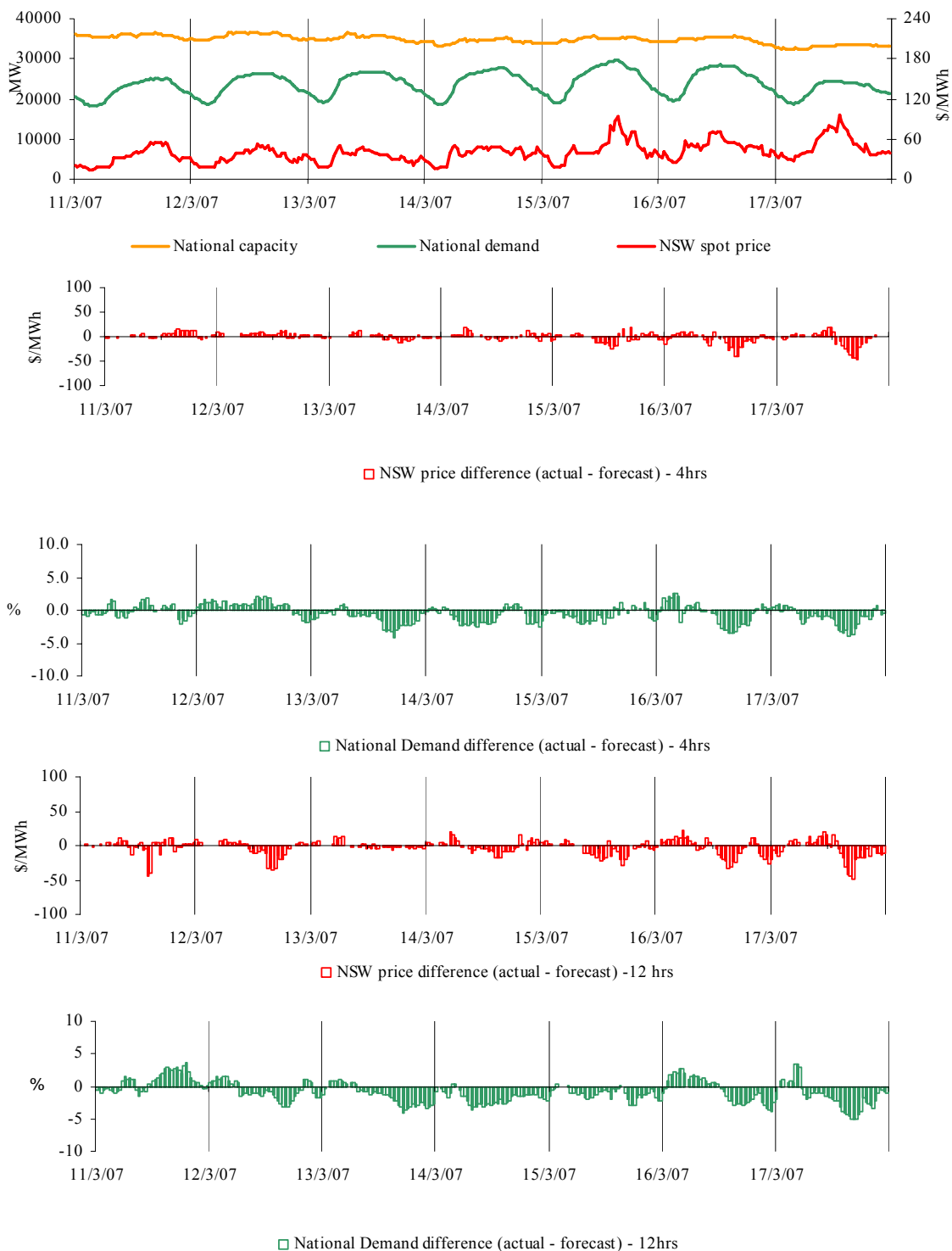
### Price and demand

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.

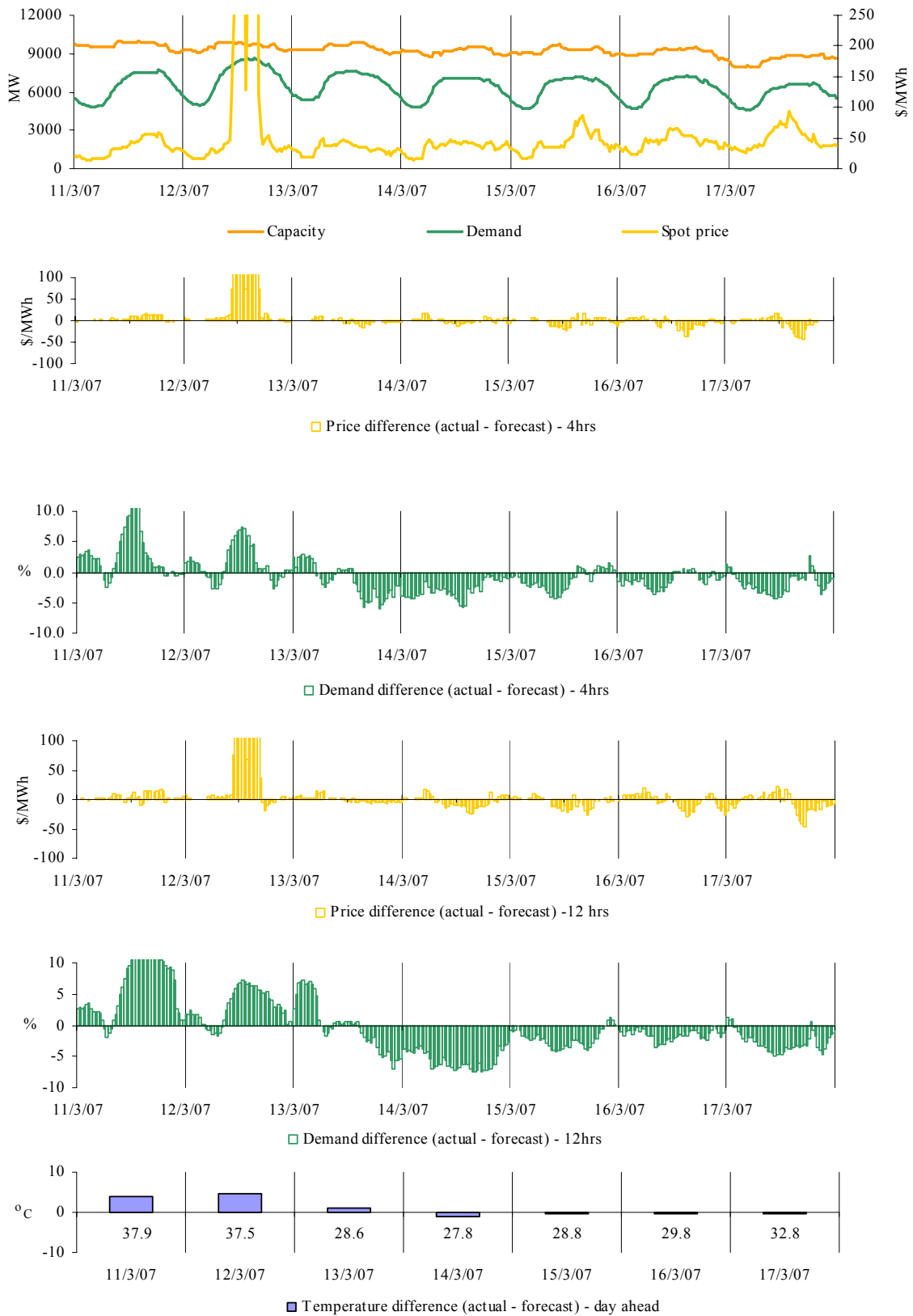
Figures 22-26: National market outcomes



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 \$42/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 were ten occasions in Queensland where the spot price was greater than three times the weekly average price of \$65/MWh.

### Monday, 12 March

<b>11:30 am</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	263.98	40.13	48.52
Demand (MW)	8215	7722	7730
Available capacity (MW)	9871	9965	9976
<b>12:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1046.82	41.71	54.91
Demand (MW)	8315	7763	7771
Available capacity (MW)	9747	9961	9975
<b>12:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	289.79	40.01	55.15
Demand (MW)	8389	7813	7821
Available capacity (MW)	9858	9952	9974
<b>1:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	2231.58	42.11	56.66
Demand (MW)	8474	7850	7856
Available capacity (MW)	9818	9953	9973
<b>1:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	834.11	42.40	58.36
Demand (MW)	8505	7896	7904
Available capacity (MW)	9746	9945	9972
<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	266.02	43.33	59.16
Demand (MW)	8593	8073	8017
Available capacity (MW)	9696	9927	9970
<b>3:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	293.91	45.43	65.82
Demand (MW)	8573	8202	8023
Available capacity (MW)	9679	9922	9970
<b>3:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	265.24	55.14	83.44
Demand (MW)	8545	8160	8013
Available capacity (MW)	9708	9877	9970
<b>4:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	265.23	65.82	86.31
Demand (MW)	8594	8466	8060
Available capacity (MW)	9708	9863	9970
<b>4:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	890.62	55.15	83.93
Demand (MW)	8558	8502	8070
Available capacity (MW)	9726	9853	9970

Conditions at the time saw demand up to 620 MW higher than forecast, and reaching a new record of 8594 MW at 4 pm, which is around 200 MW higher than the previous record.

An outage of network equipment at Armidale until around 1.30 pm, limited total imports into Queensland to as low as 100 MW across both interconnectors.

At 10.48 am Enertrade rebid 200 MW of capacity at Gladstone from prices below \$85/MWh to above \$270/MWh. The rebid reason given was “Inter/intra connector constraint::change MW distrib.”

From 11.26 am Origin Energy rebid 150 MW of capacity at Roma and Mount Stuart from prices above \$9000/MWh to below \$10/MWh. The rebid reason given was “Change in PD”

At 11.45 am Callide Power Trading rebid 92 MW of capacity at Callide C from prices below \$30/MWh to above \$9000/MWh. The rebid reason given was “Optimis dec change MW dist”.

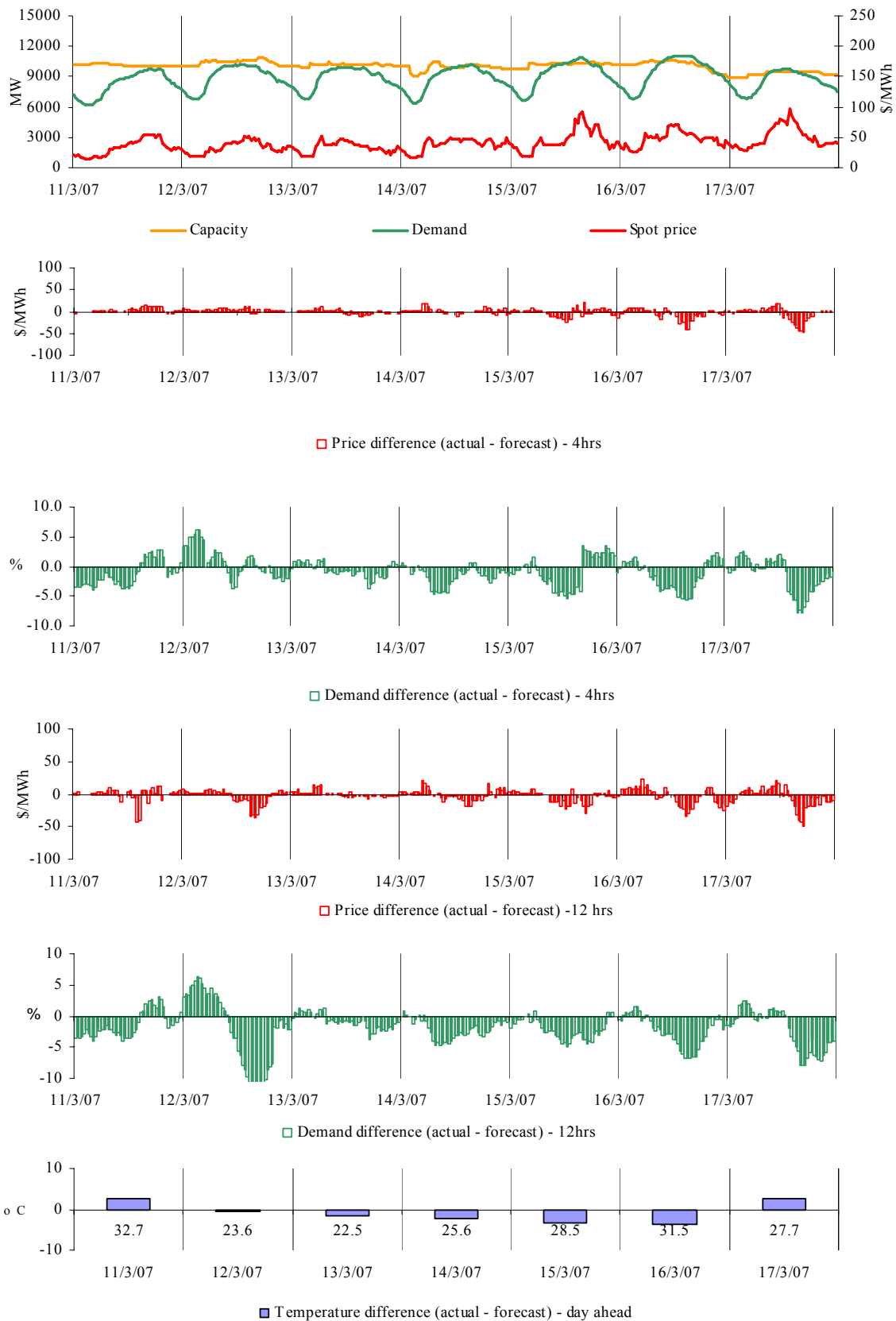
At 11.54 am Tarong Energy rebid 180 MW of capacity priced below \$125/MWh and 70 MW priced below \$300/MWh at Wivenhoe to prices above \$9000/MWh. The rebid reason given was “Portfolio optimisation::volume profile change”. At 1.04 pm, 180 MW of this capacity was rebid to below \$60/MWh, committing the unit. The rebid reason given was “Cover contract position::volume profile change”.

From 12.52 pm Stanwell Corporation rebid 200 MW of capacity across its Stanwell units from prices below \$135/MWh to above \$3700/MWh. The rebid reason given was “Changed predispatch”.

Over a number of rebids throughout the day the Millmerran Energy Trader reduced the availability of its units by 108 MW. This capacity had been priced at less than \$10/MWh. The reason given was “changed plant conditions”

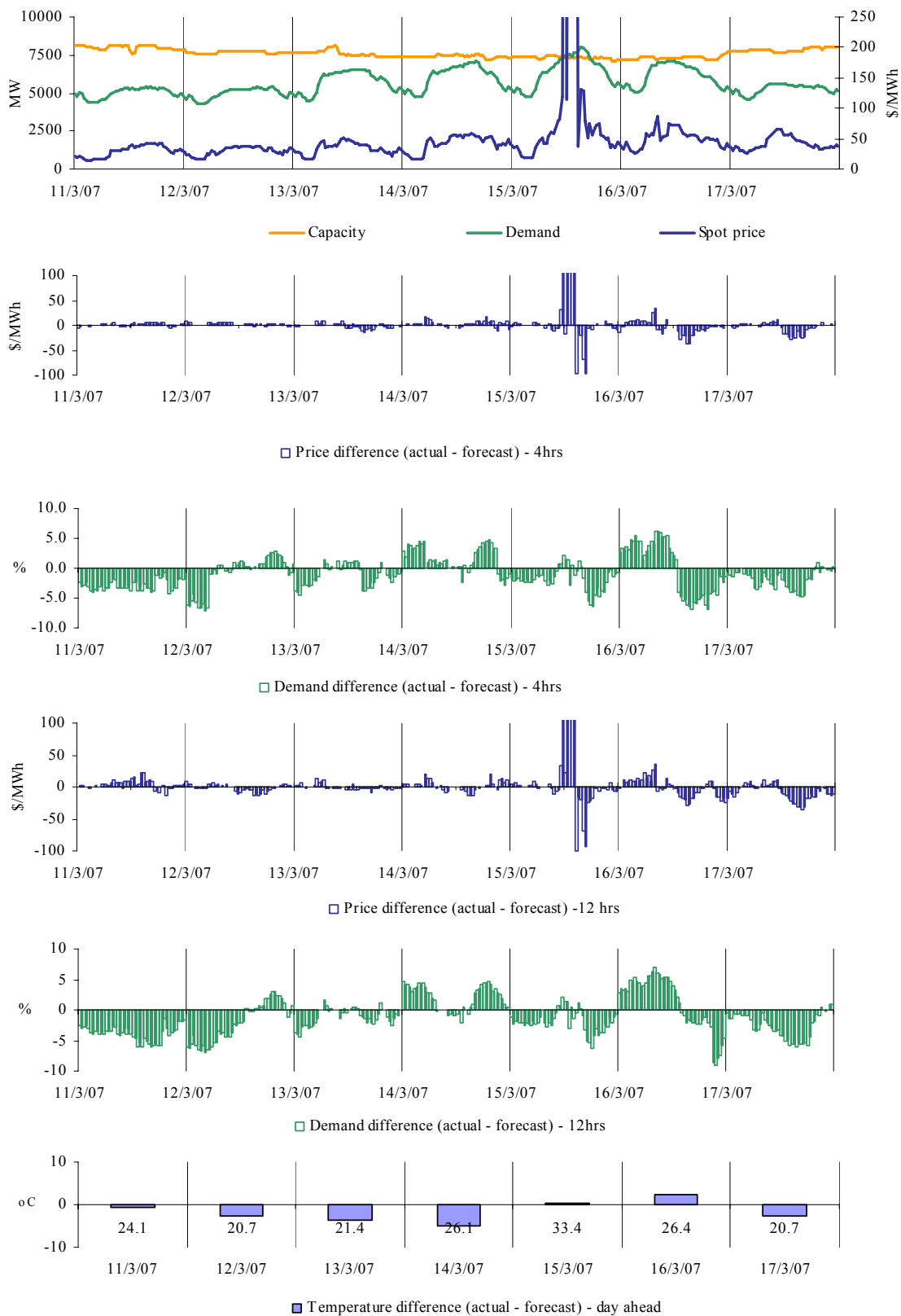
There was no other significant rebidding.

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



There was no occasion where the spot price in New South Wales was greater than three times the New South Wales weekly average price of \$42/MWh.

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



There were five occasions in Victoria where the spot price was greater than three times the weekly average price of \$72/MWh.

### Thursday, 15 March

<b>12:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1784.82	86.57	91.45
Demand (MW)	7451	7298	7299
Available capacity (MW)	7248	7495	7499
<b>1:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1490.58	135.43	138.19
Demand (MW)	7613	7511	7510
Available capacity (MW)	7298	7486	7499
<b>1:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1071.64	132.33	102.56
Demand (MW)	7349	7562	7565
Available capacity (MW)	7360	7478	7499
<b>2:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	2702.50	133.67	102.94
Demand (MW)	7696	7659	7661
Available capacity (MW)	7285	7473	7499
<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	814.55	134.20	133.71
Demand (MW)	7634	7732	7733
Available capacity (MW)	7350	7455	7499

Conditions at the time saw demand close to that forecast four and twelve hours ahead. Demand was high in both Victoria and South Australia, with prices aligned in those regions.

At 10.19 am AGL Hydro committed its Somerton unit at 112 MW, priced at zero. The rebid reason given was “Forecast price change::forecast price change”.

At 11.32 am TRUenergy rebid 180 MW of capacity at Torrens Island from prices below \$300/MWh to above \$9800/MWh. The rebid reason given was “Market conditions-gen response to 5/30 PD conditions”.

A planned outage of network equipment at Dederang, in north east Victoria, limited the flow across the Snowy to Victoria interconnector to around 200 MW up to midday. The constraint managing this outage was also restricting some generation in the Latrobe Valley and constraining on AGL Hydro generators.

At the same time, a planned network outage between Ballarat and Moorabool was forcing flow into Victoria across the Murraylink and Snowy to Victoria interconnectors, and also constraining on the AGL Hydro generators.

From 11 am AGL Hydro made a series of rebids reducing capacity at McKay to zero between 11.30 am and midday and West Kiewa for the 12 pm and 12.05 pm dispatch intervals. The rebid reason given was “Forecast price change::forecast price change”.

The reduction in availability at West Kiewa, first effective at midday, led to the constraint managing the Ballarat to Moorabool network outage to violate. The 5-minute price at midday increased to \$10 000/MWh. In response to the price, demand was reduced by 120 MW by Vicpower Trading for 20 minutes. At 12.55 pm the 5-minute price reached \$8604/MWh when the network constraint was violated for a second time. This was immediately followed

by a 250 MW reduction in demand, as load managed by Vicpower Trading again responded to the price. As a result, the 5-minute price dropped to \$4/MWh.

From 1 pm, generators in Victoria and South Australia shifted capacity into prices below zero. TRUenergy's Torrens Island in South Australia shifted over 600 MW of capacity into prices of zero for just the 1 pm 5-minute interval, with International Power's Hazelwood and Loy Yang B units in Victoria moving around 650 MW into prices below zero immediately after.

These lower prices saw flows from Tasmania reduce by 400 MW to 200 MW over two 5-minute intervals.

A rebid at 1.02 pm, effective at 1.10 pm, by AGL Hydro reduced the availability of West Kiewa and McKay by 100 MW resulting in the Ballarat to Moorabool outage constraint violating for the third time. The 5-minute price rose above \$7300/MWh. The Snowy to Victoria interconnector limit reduced by 200 MW with flows on Basslink increasing by the same amount. The availability rebid was then reversed and flows from Tasmania again reduced.

Generators in South Australia and Victoria shifted more capacity into prices of less than zero. A total of 2000 MW of capacity had now been shifted down, further reducing flows from Tasmania.

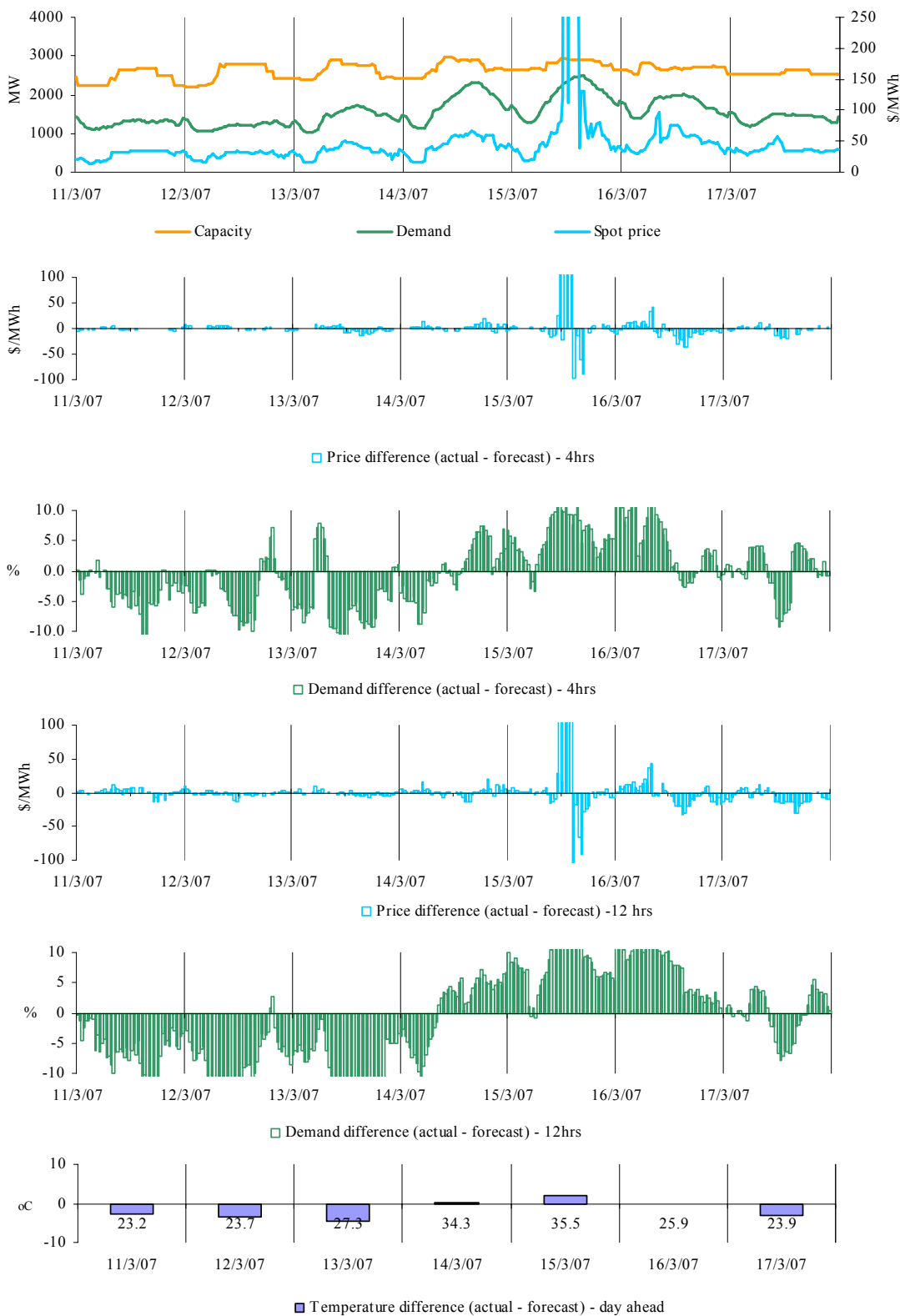
At 1.30 pm, Hydro Tasmania shifted almost 1300 MW of capacity into prices of less than zero. The 5-minute price in all three regions fell to \$-1000/MWh.

At 1.33 pm AGL Hydro again reduced the availability at McKay. At 1.55pm the Ballarat to Moorabool outage constraint violating for a further three dispatch intervals. The 5-minute prices for these dispatch periods were above \$7000/MWh. Responses by participants across the three regions pushed the price down below zero, remaining there from 2.15 pm until the end of the trading interval.

Around 2.15 pm the constraint related to the network outage at Dederang was revoked.

There was no other significant rebidding.

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



There were five occasions in South Australia where the spot price was greater than three times the weekly average price of \$75/MWh.

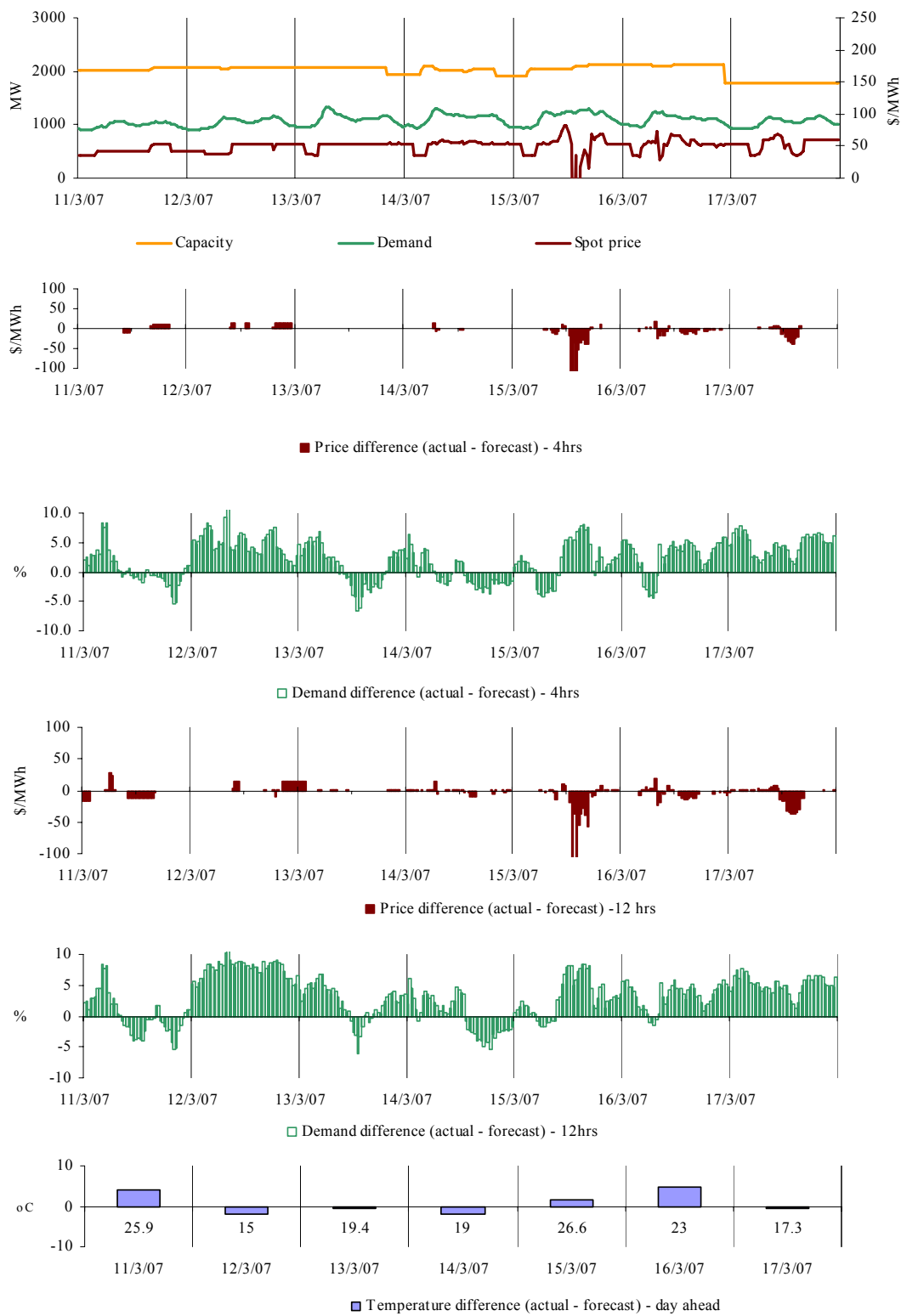
**Thursday, 15 March**

<b>12:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1692.49	93.83	99.81
Demand (MW)	2319	2059	2010
Available capacity (MW)	2923	2969	2975
<b>1:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1419.86	139.01	145.00
Demand (MW)	2369	2135	2089
Available capacity (MW)	2905	2969	2975
<b>1:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	975.65	134.32	111.17
Demand (MW)	2413	2159	2148
Available capacity (MW)	2902	2950	2975
<b>2:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	2494.39	134.88	112.16
Demand (MW)	2455	2225	2167
Available capacity (MW)	2904	2922	2975
<b>2:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	653.25	134.66	145.00
Demand (MW)	2445	2220	2165
Available capacity (MW)	2898	2930	2975

Conditions at the time saw demand at high levels and as much as 250 MW higher than forecast four hours ahead and prices aligned with Victoria. A description of the circumstances at the time can be found in the Victoria section.



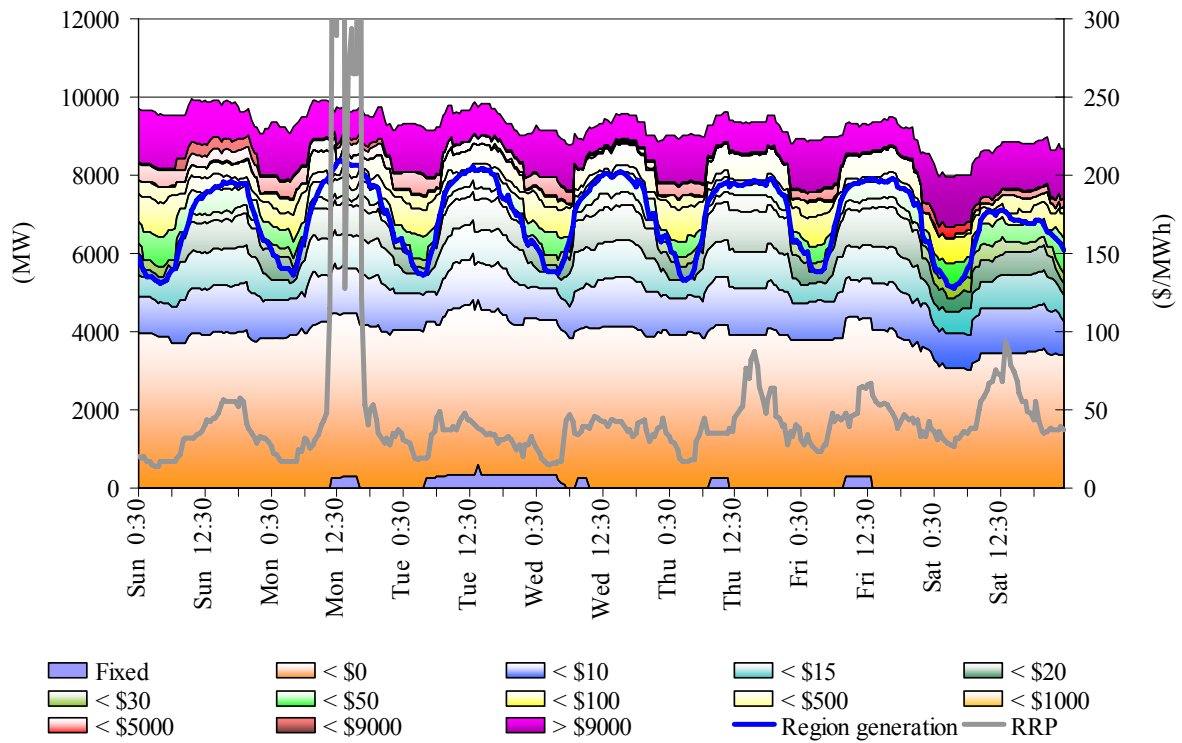
**Figures 51-56: Tasmania actual spot price, demand and forecast differences**



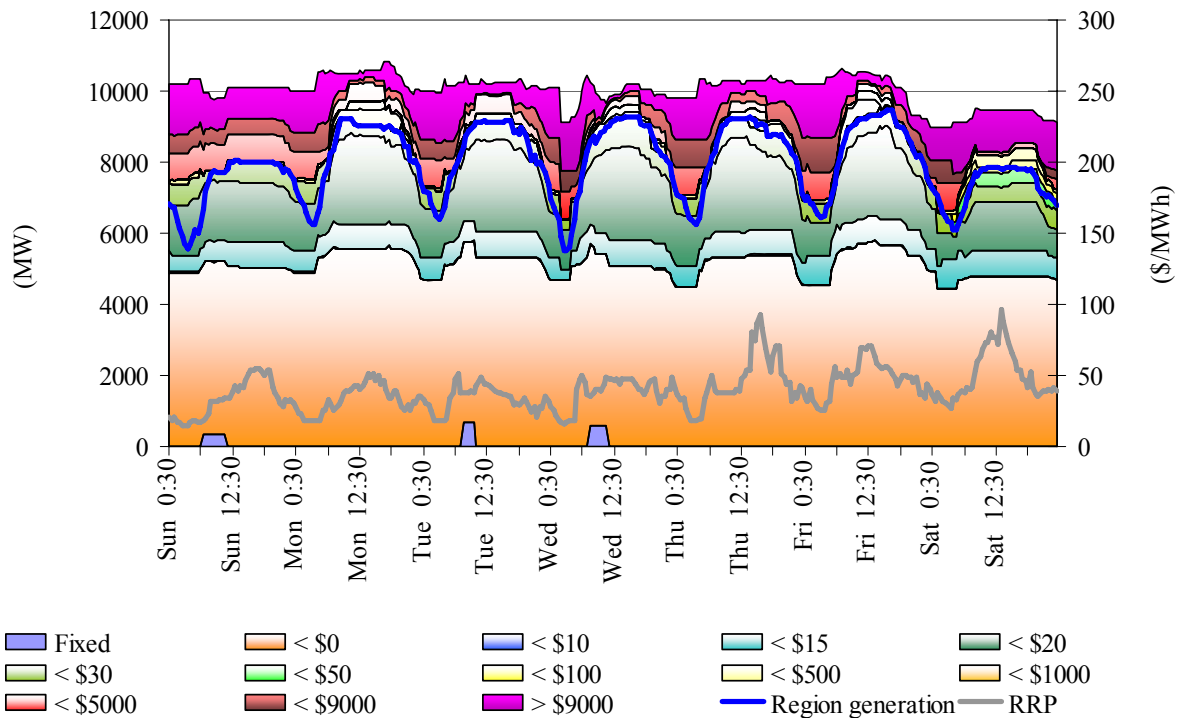
There was no occasion where the spot price in Tasmania was greater than three times the weekly average price of \$48/MWh.

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.

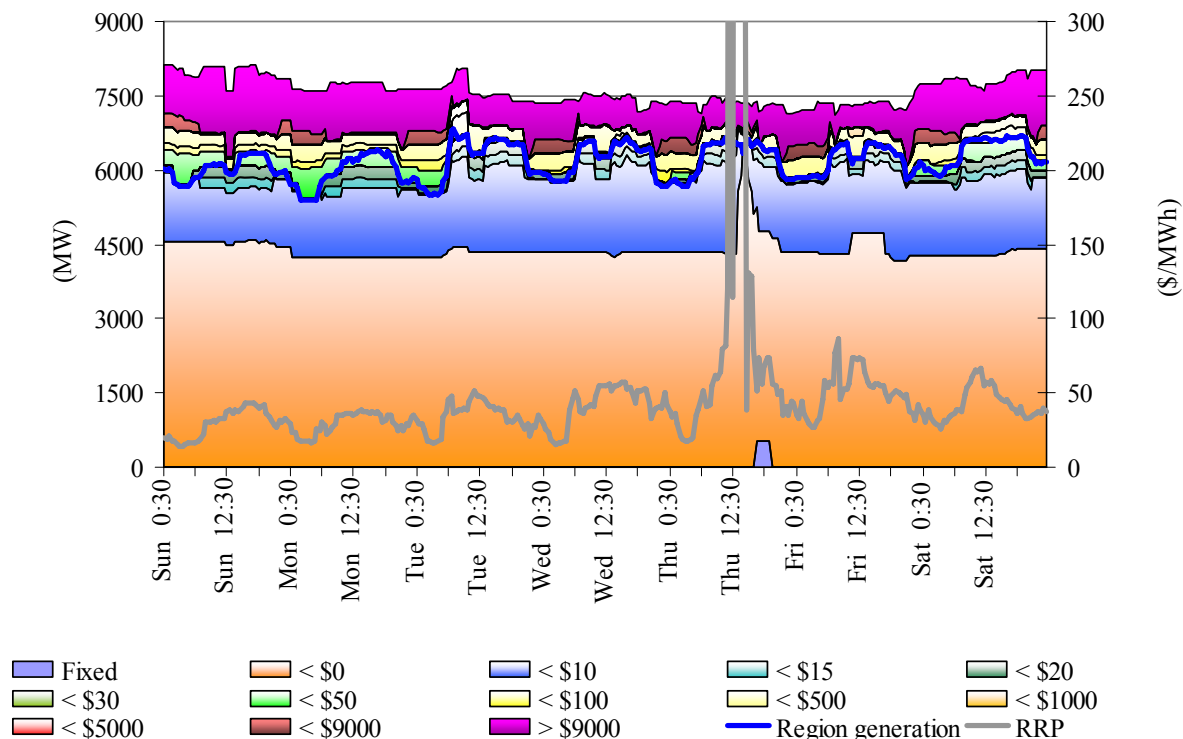
**Figure 57: Queensland closing bid prices, dispatched generation and spot price**



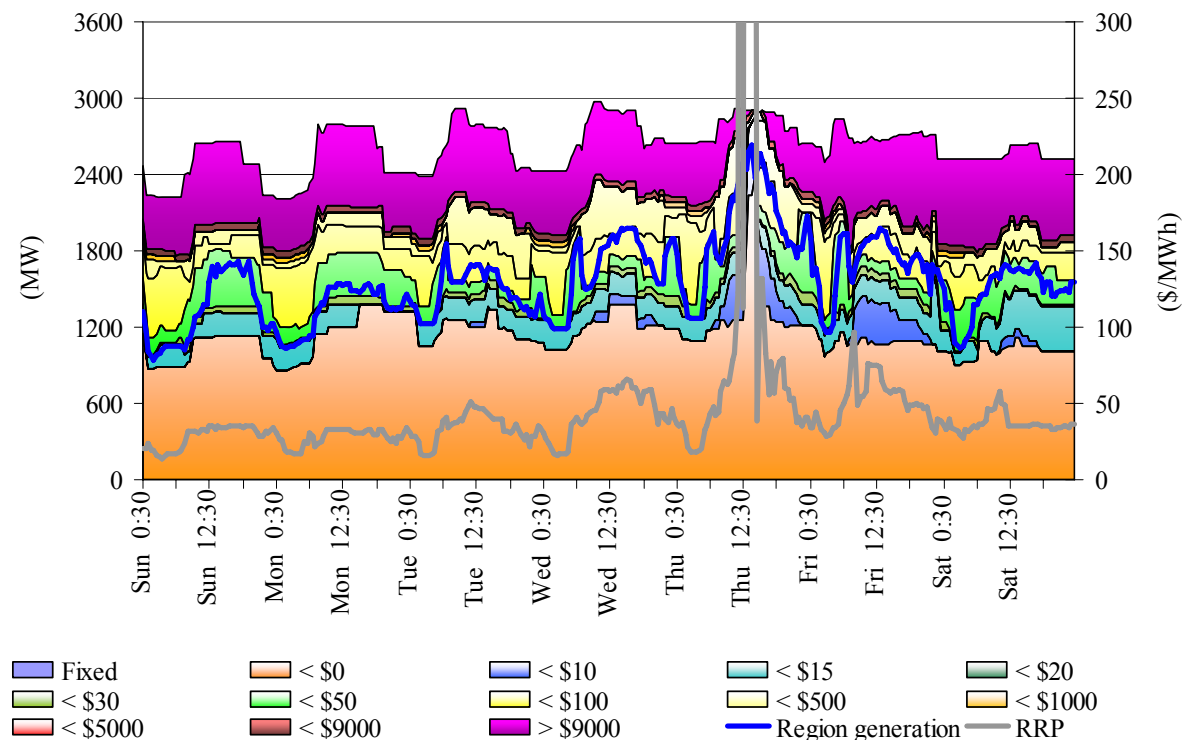
**Figure 58: New South Wales closing bid prices, dispatched generation and spot price**



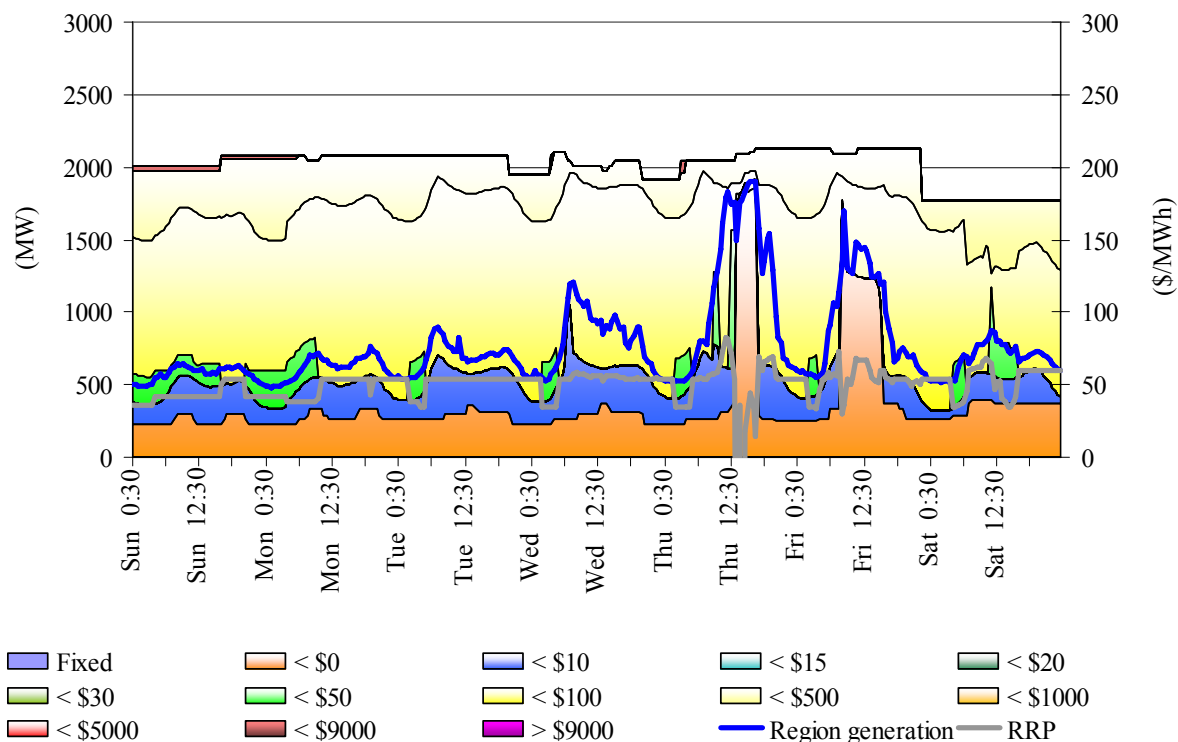
**Figure 59: Victoria closing bid prices, dispatched generation and spot price**



**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 \$167 000 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)	0.52	0.23	0.86	1.96	0.04	0.58	1.29	1.03
Previous week (\$/MW)	0.46	0.22	0.74	1.77	0.26	0.62	1.35	0.75
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$20	\$7	\$48	\$40	\$0	\$7	\$31	\$14
% of energy market	0.01%	0.01%	0.02%	0.02%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was \$66 000 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)	2.33	1.30	1.59	1.93	0.10	0.71	0.66	0.88
Previous week (\$/MW)	1.67	0.64	0.87	1.76	35.38	0.47	0.52	0.66
Last quarter (\$/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost (\$1000s)	\$9	\$17	\$16	\$11	\$0	\$4	\$3	\$6
% of energy market	0.10%	0.19%	0.19%	0.12%	0.01%	0.05%	0.04%	0.06%

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

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

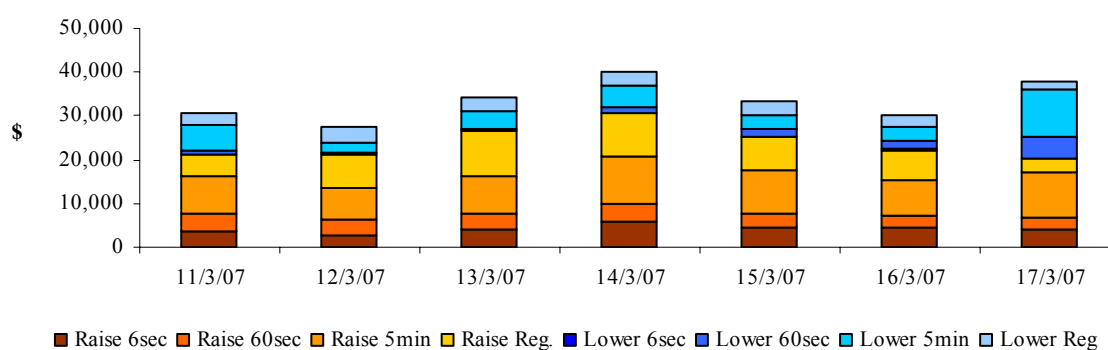
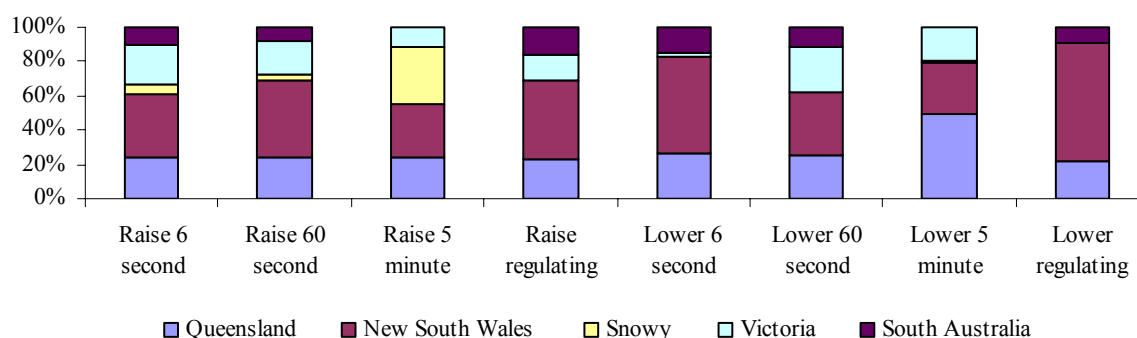


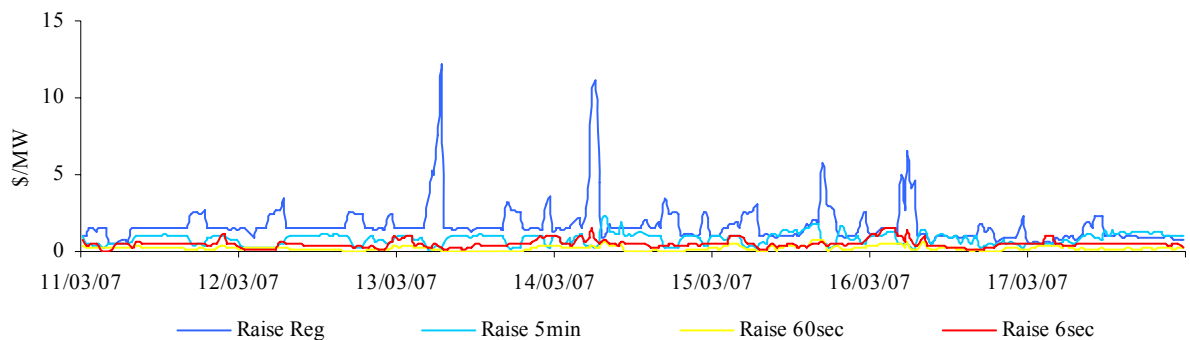
Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

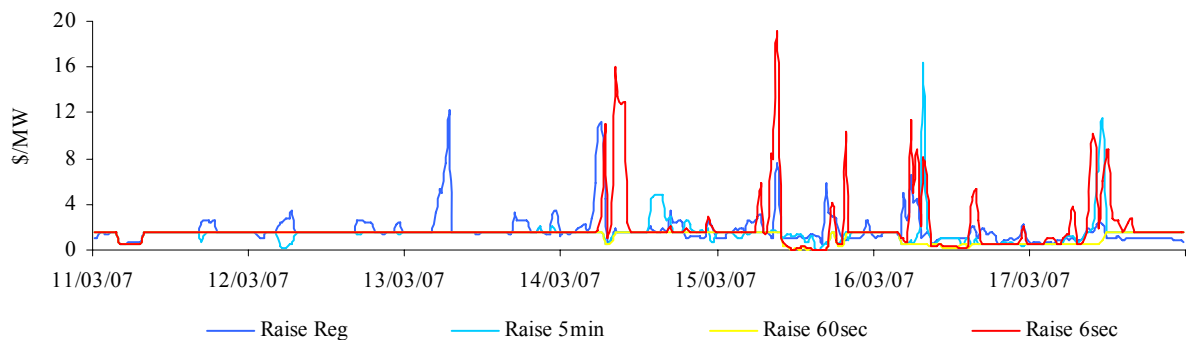


Figures 66 and 67 show 30-minute prices for each frequency control ancillary service throughout the week.

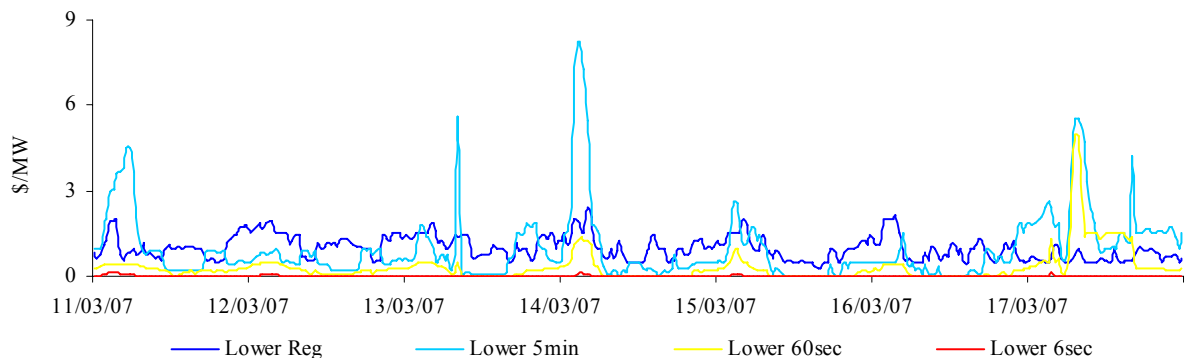
**Figure 66: prices for raise services**



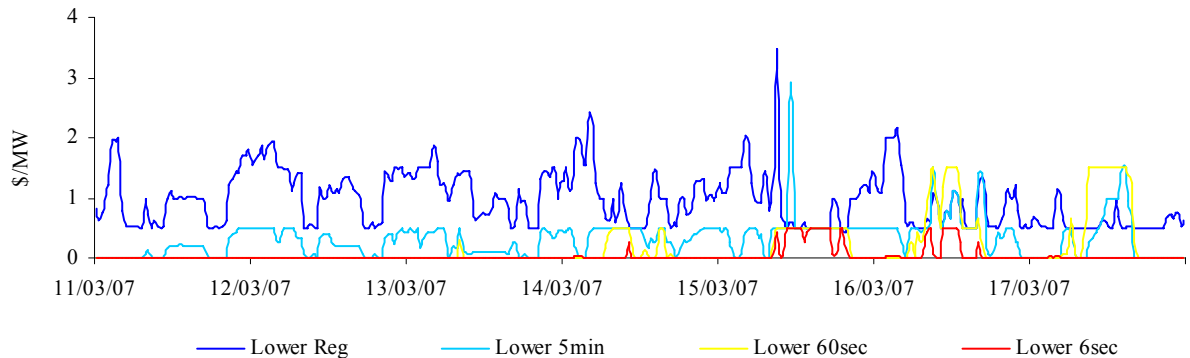
**Figure 66A: prices for raise services – Tasmania**



**Figure 67: prices for lower services**

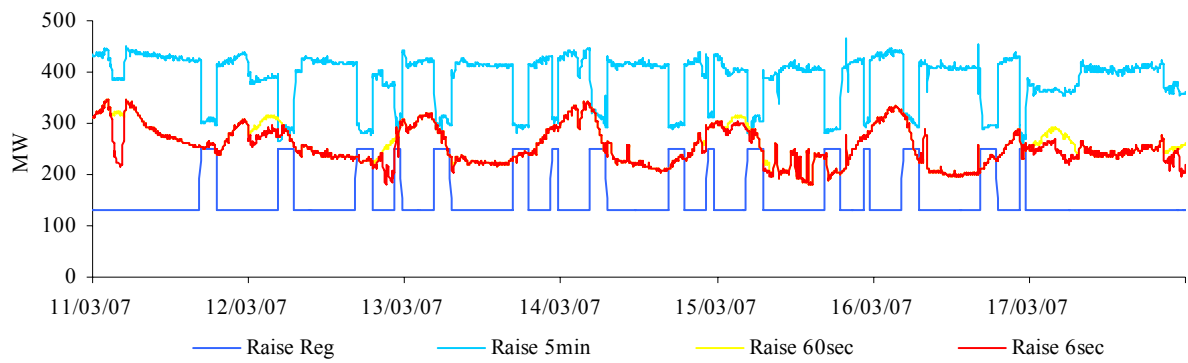


**Figure 67A: prices for lower services – Tasmania**

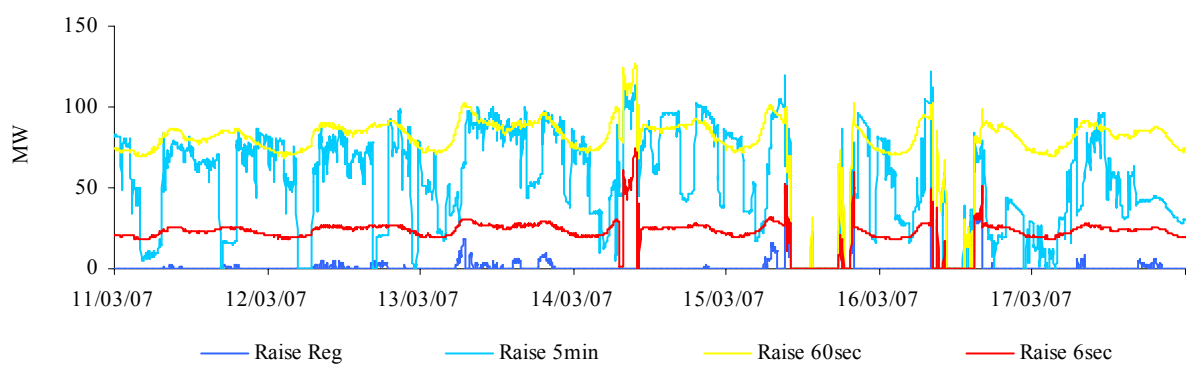


Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

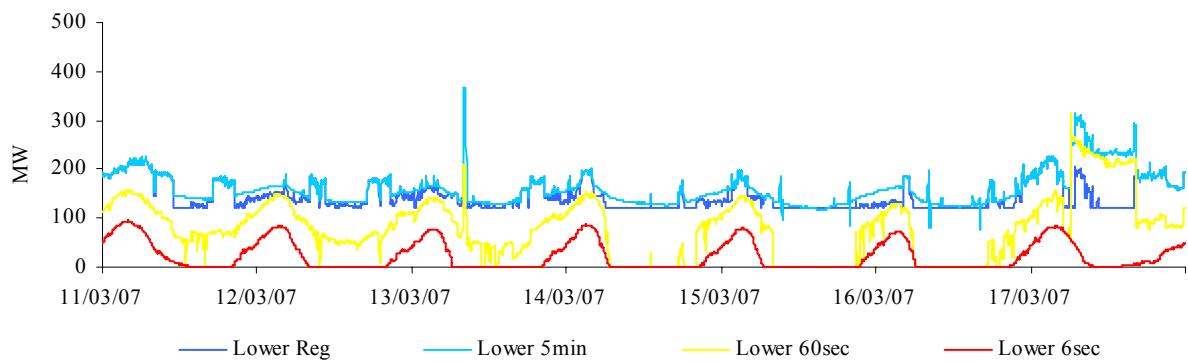
**Figure 68: raise requirements**



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



**Figure 69: lower requirements**



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

