

10–16 December 2006

Spot prices for the week averaged between \$23/MWh in New South Wales and \$40/MWh in Tasmania.

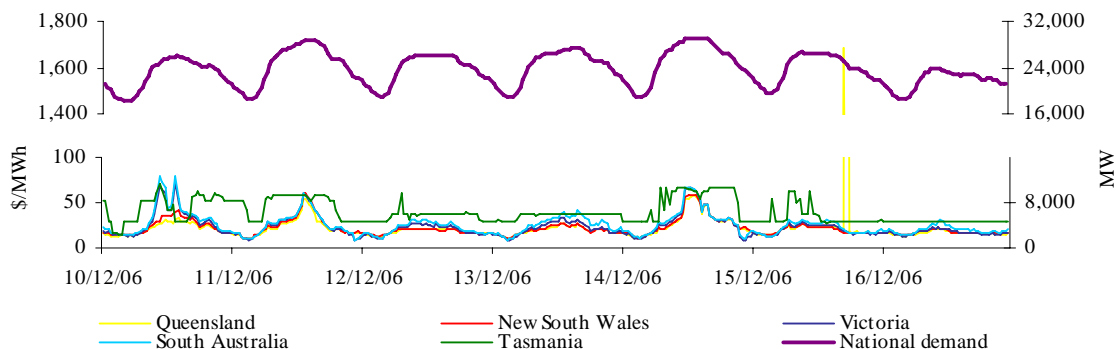
Turnover in the energy market was \$101 million. The total cost of ancillary services for the week was \$151 000, or 0.2 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 118, or a third of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 22 per cent of all trading intervals across the market. These variations were most frequent in South Australia, occurring in more than half 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	23	24	27	40
Previous week	21	24	30	109	38
Same quarter last year	39	73	32	47	63
Financial year to date	25	34	35	42	40
% change from previous week*	▲32%	▼6%	▼18%	▼75%	▲4%
% change from same quarter last year**	▼31%	▼69%	▼25%	▼43%	▼37%
% change from year to date***	▼17%	▼29%	▲22%	▲18%	▼53%

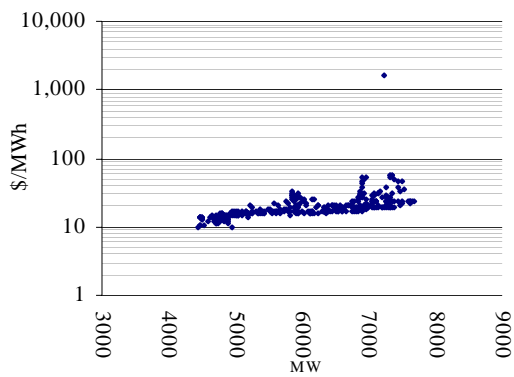
\*The percentage change between last week's average spot price and the average price for the previous week.

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

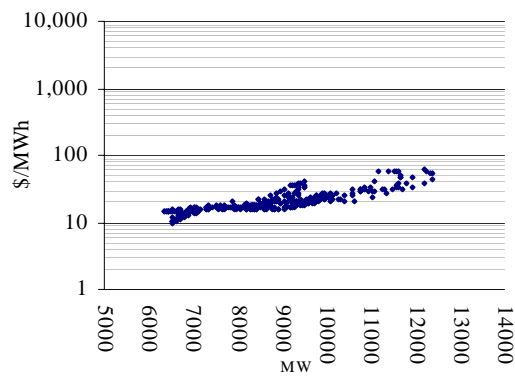
\*\*\*The percentage change between the average spot price for the current financial year to date and the average spot price over the similar period for the previous financial year.

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

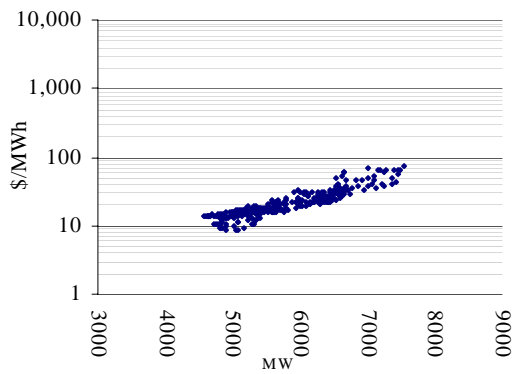
**Figure 3: Queensland**



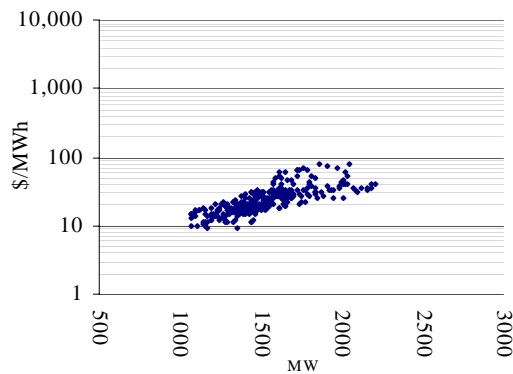
**Figure 4: New South Wales**



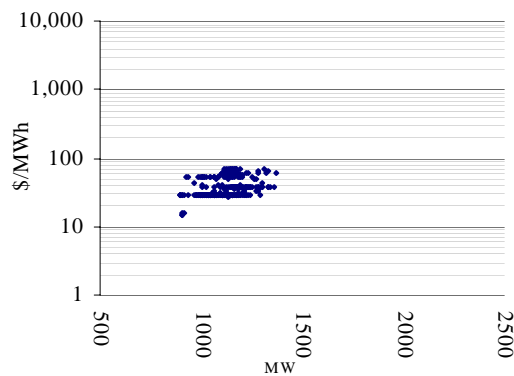
**Figure 5: Victoria**



**Figure 6: South Australia**



**Figure 7: Tasmania**



The maximum spot prices for the week ranged from \$60/MWh in New South Wales to \$1682/MWh in Queensland. Figure 8 compares the weekly price volatility index with the averages for the previous week and the same quarter last year.

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

	QLD	NSW	VIC	SA	TAS
Last week	0.72	0.76	0.74	0.73	0.86
Previous week	0.49	0.60	0.66	2.91	0.61
Same quarter last year	1.12	1.03	0.83	0.76	0.61

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

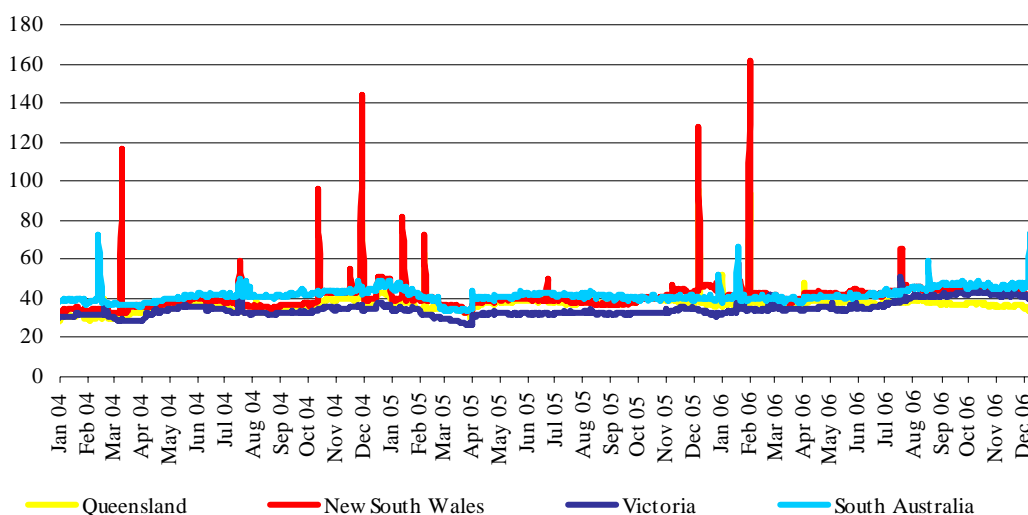
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)\* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

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

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	34.12	34.11	33.82	33.22	33.01
New South Wales	41.13	39.45	39.16	39.85	38.05
Victoria	40.12	39.43	39.40	39.78	38.50
South Australia	44.44	45.55	46.36	44.45	43.09

\* 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**

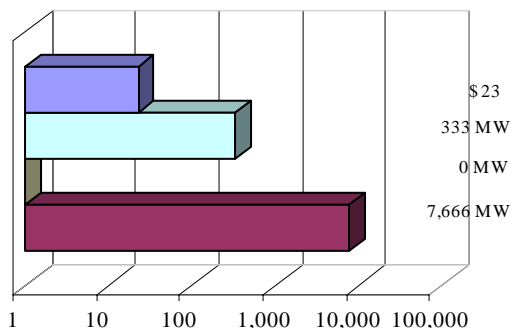


## Reserve

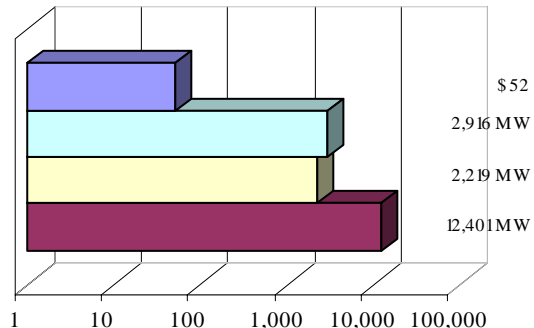
There were low reserves forecast for Wednesday in South Australia, which were resolved following a participant response.

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

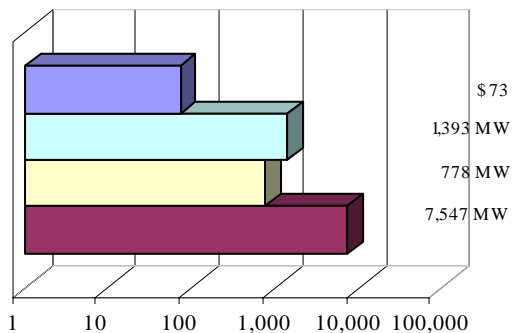
**Figure 11: Queensland**



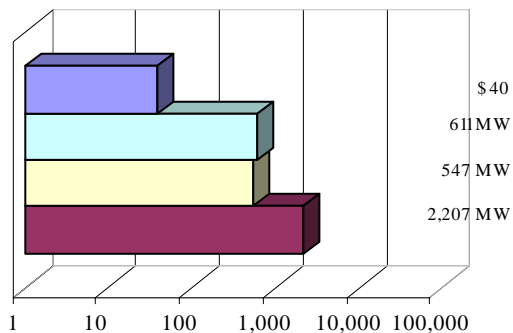
**Figure 12: New South Wales**



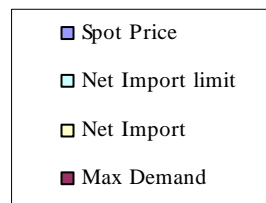
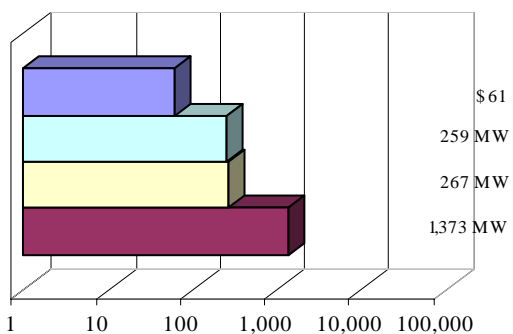
**Figure 13: Victoria**



**Figure 14: South Australia**



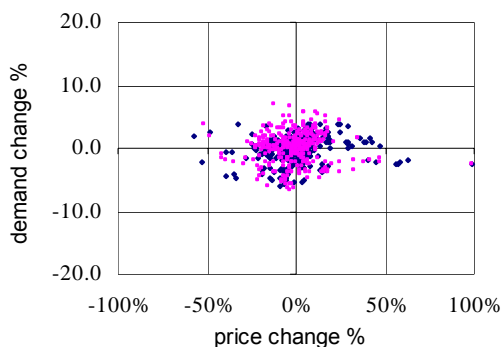
**Figure 15: Tasmania**



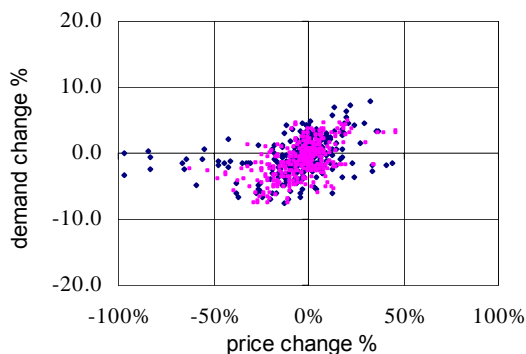
## Price variations

There were 118 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.

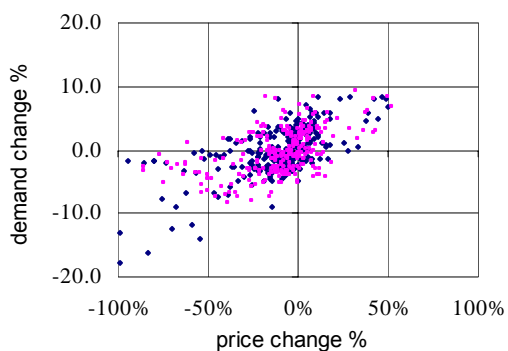
*Figure 16: Queensland*



*Figure 17: New South Wales*



*Figure 18: Victoria*



*Figure 19: South Australia*



*Figure 20: Tasmania*

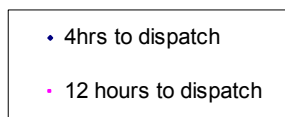
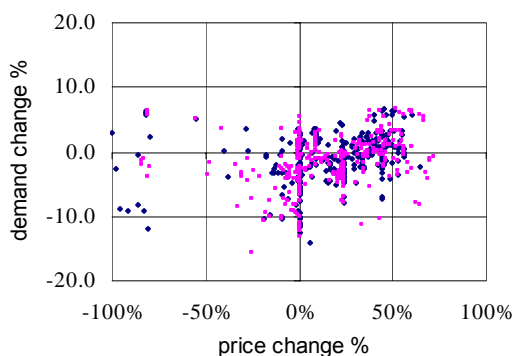
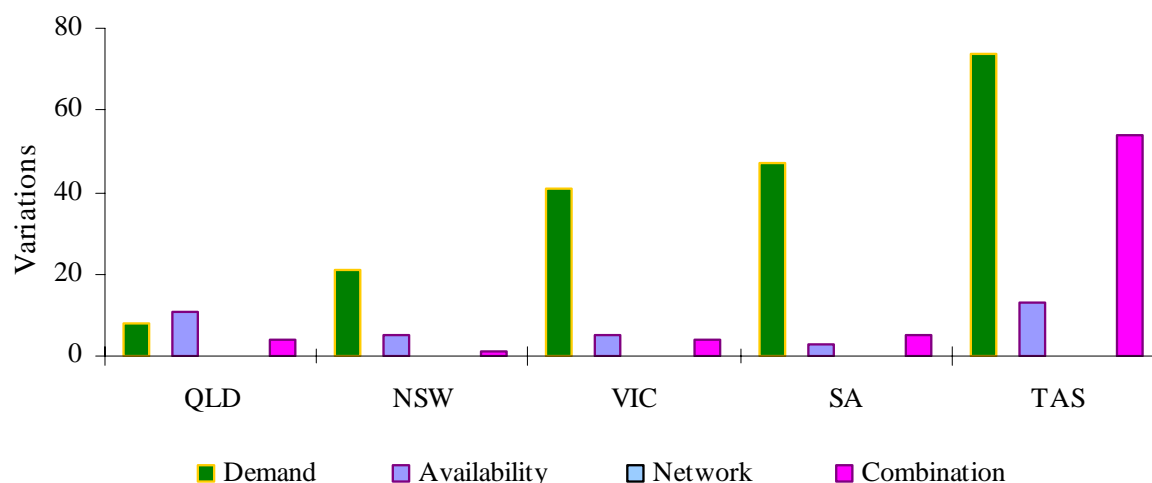


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

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



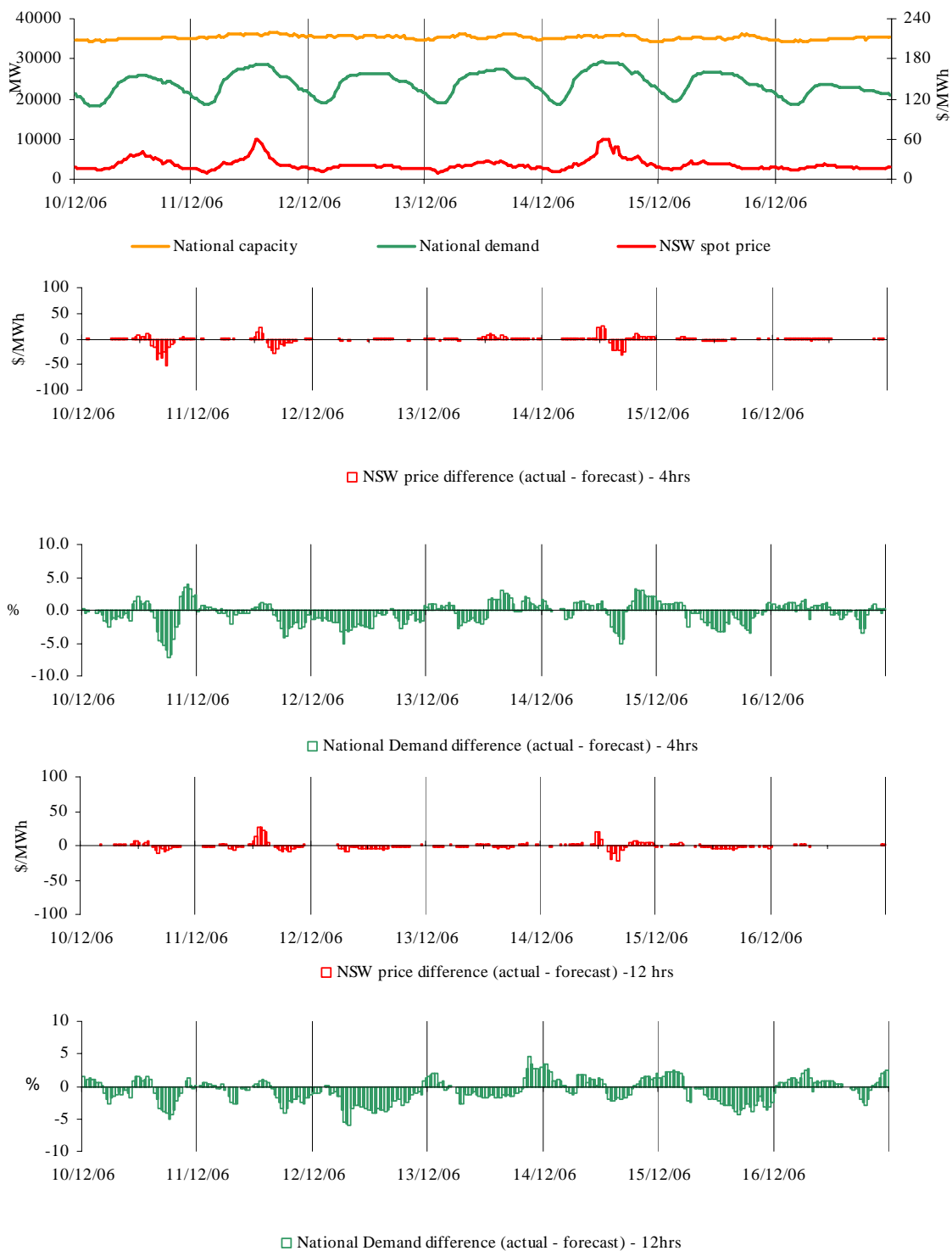
### Price and demand

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.

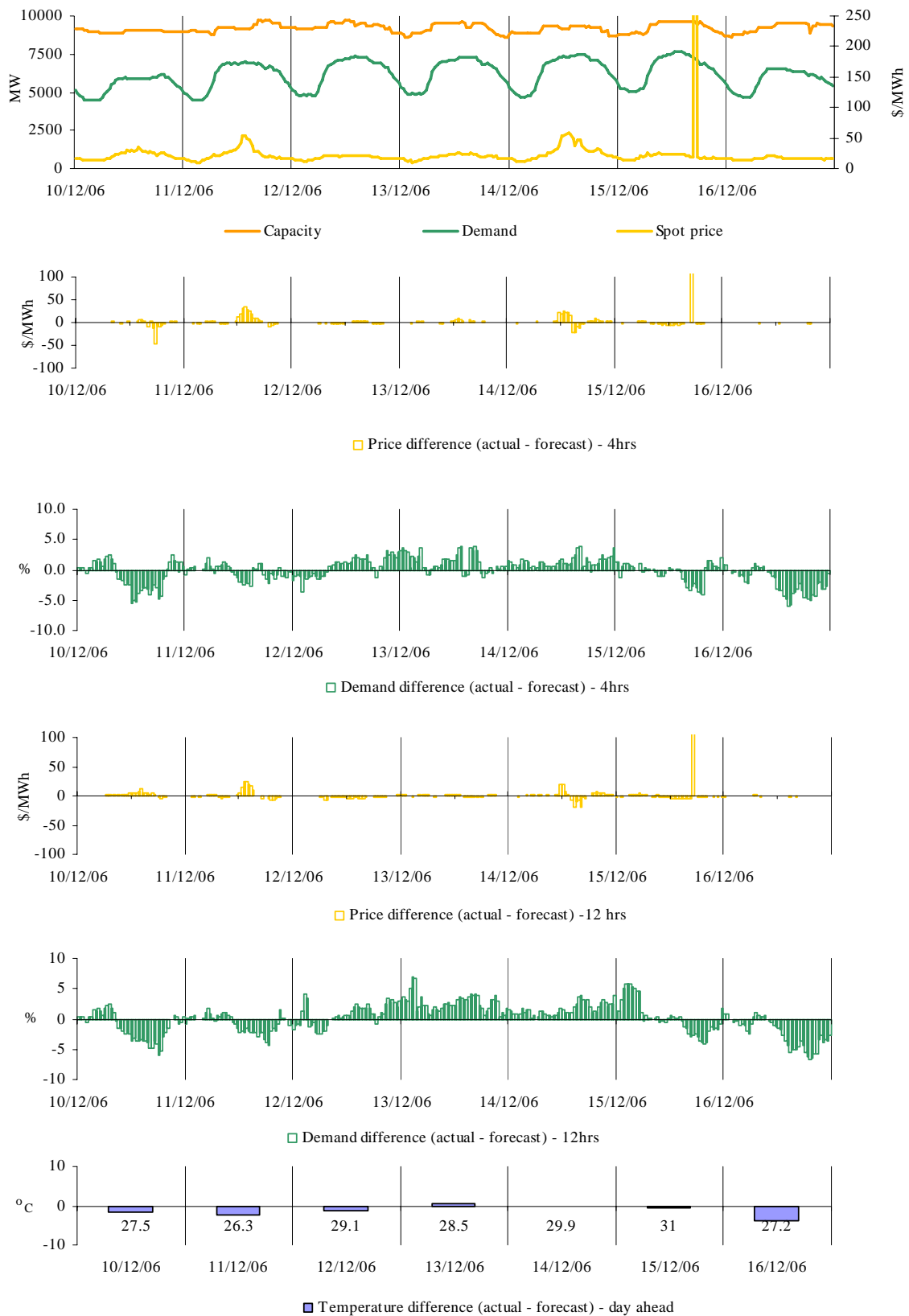
**Figures 22-26: National market outcomes**



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 \$23/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 one occasion where the spot price in Queensland was greater than three times the weekly average price of \$27/MWh.

### Friday, 15 December

<b>5:30 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1682.29	19.84	20.73
Demand (MW)	7228	7419	7421
Available capacity (MW)	9633	9643	9653

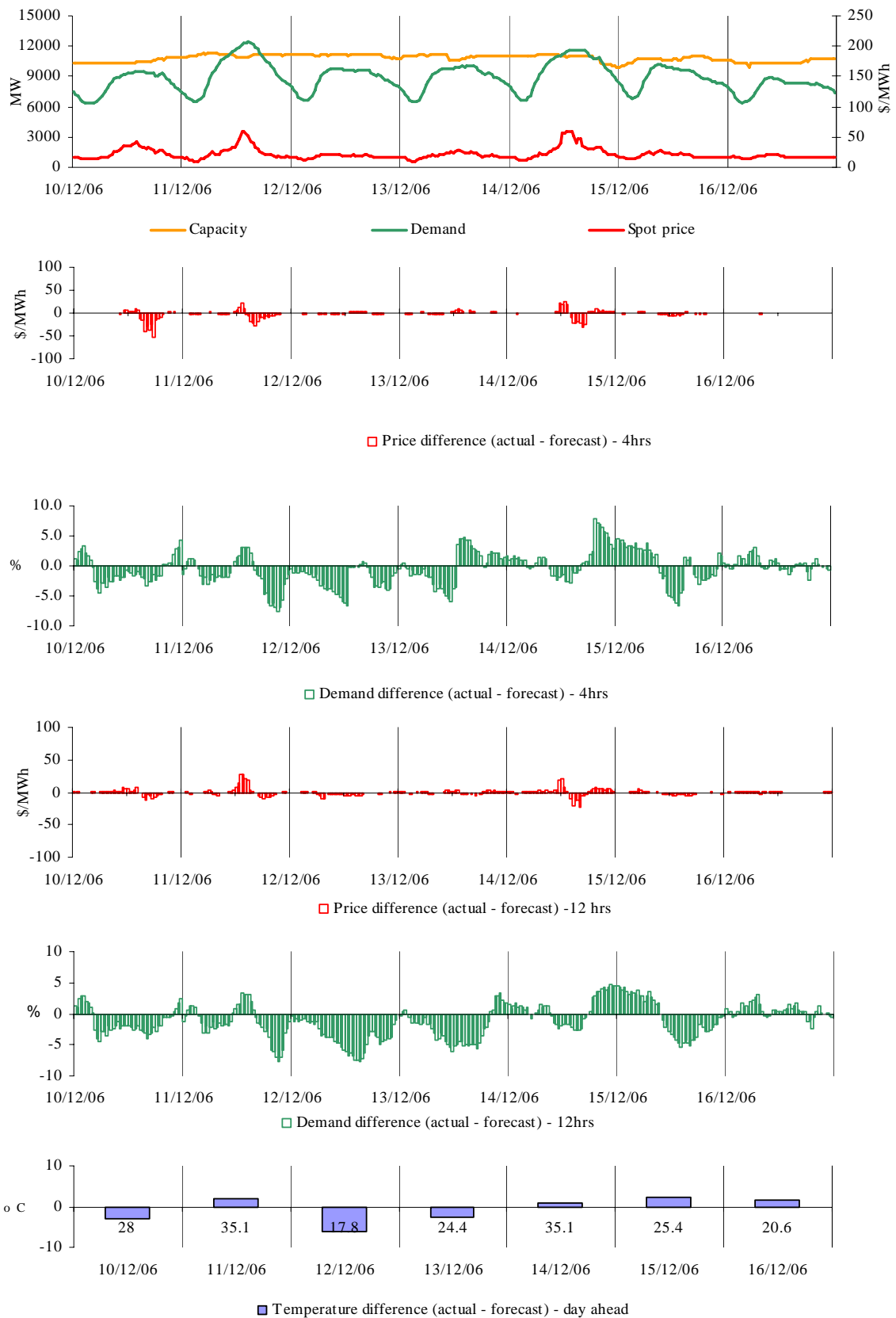
Conditions at the time saw demand close to forecast four hours ahead.

At 5.30 pm, the 5-minute price in Queensland spiked from \$19/MWh to \$10 000/MWh. Following advice from Powerlink of storm activity affecting the Queensland to South Wales interconnector, NEMMCO reclassified the coincident loss of both circuits between Braemar and Tarong as a credible contingency. A constraint was invoked to manage this reclassification, which took effect from 5.30 pm and forced flow across the interconnector counter price into New South Wales. This constraint caused a step change in the export limit by more than 800 MW from 330 MW north to 485 MW south, forcing flows southwards. As a result, the dispatch of Queensland generation was increased by 300 MW which saw all available capacity either fully dispatched or ramp rate limited. Four fast start units were given instructions to start. The constraint was violated by more than 200 MW.

Price dropped to \$35/MWh at 5.35 pm.

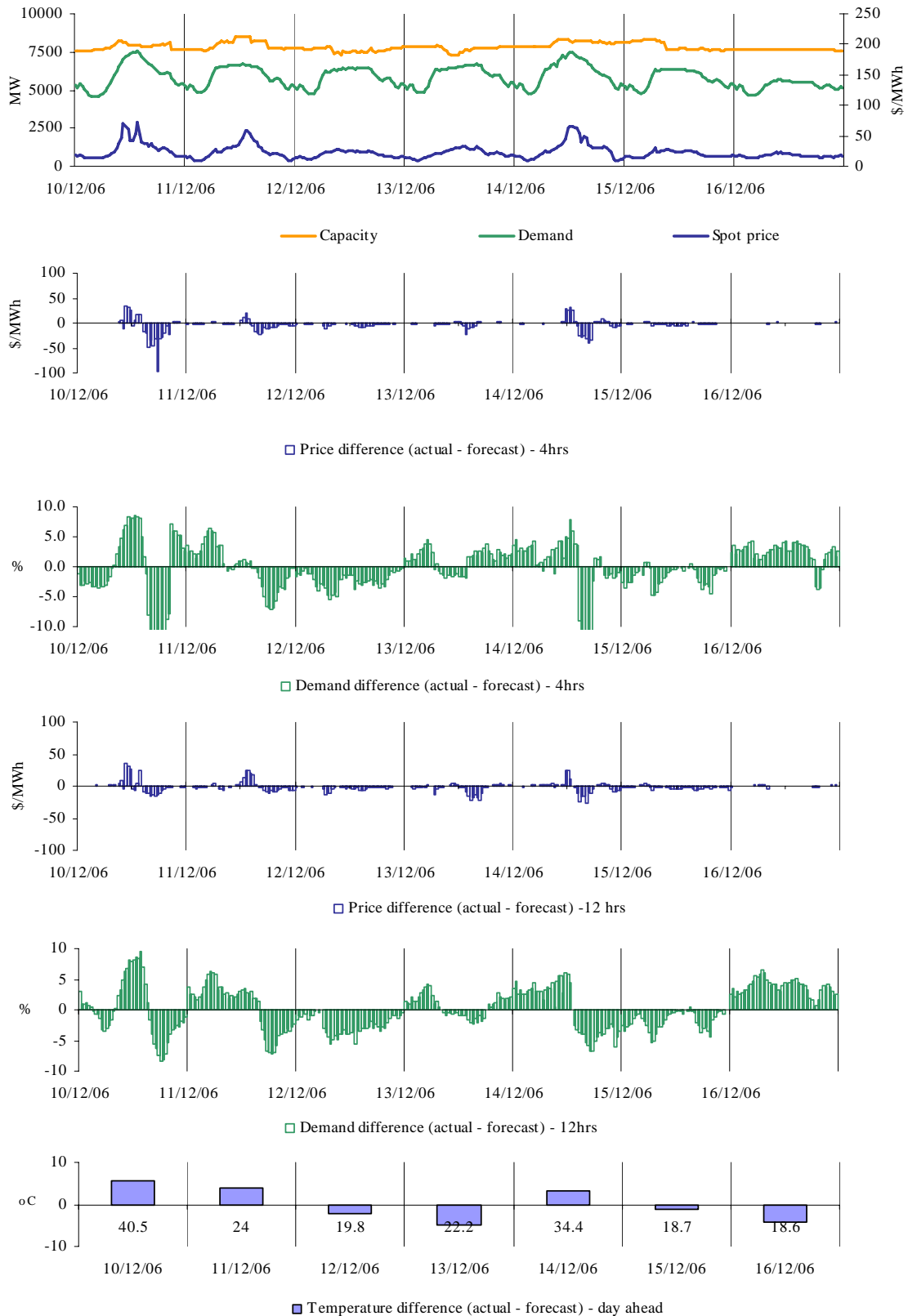
There was no significant rebidding.

**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 weekly average price of \$23/MWh.

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



There was one occasion where the spot price in Victoria was greater than three times the weekly average price of \$24/MWh.

### **Sunday, 10 December**

<b>2:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	73.18	56.04	49.64
Demand (MW)	7547	6940	6835
Available capacity (MW)	7940	8221	8237

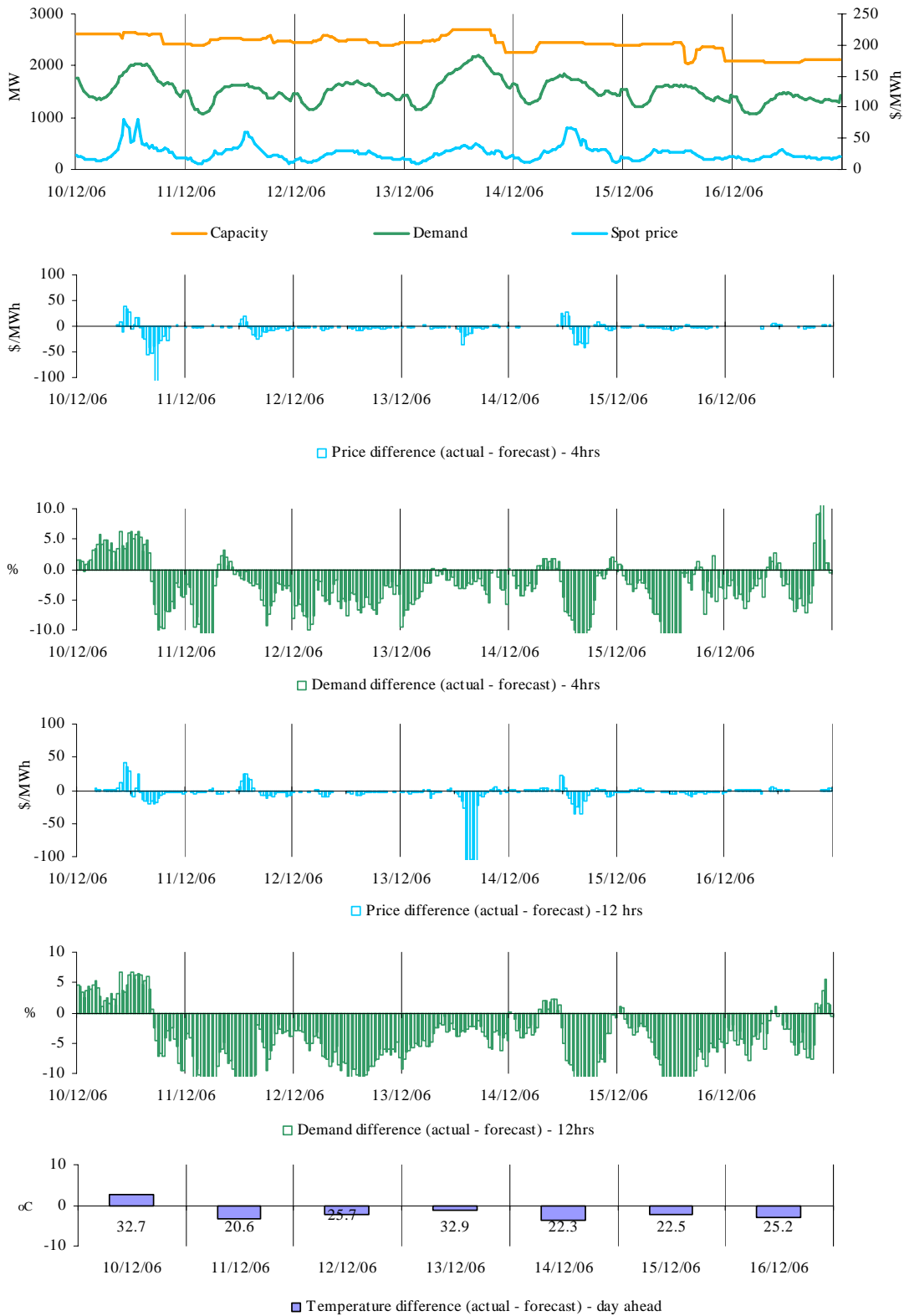
Conditions at the time saw demand 600 MW higher than forecast four hours ahead and available capacity 280 MW lower than forecast four hours ahead. The temperature exceeded 40°C in Melbourne. A cool change arrived at 2 pm, which reduced demand for the remainder of the day.

Over a series of rebids from around 9 am, TRUenergy reduced the availability of Yallourn power station by 245 MW. All of this capacity was priced below \$10/MWh. The reason given was “Vacuum limit::reduce availability”.

Over a number of rebids from 10.57 am AGL Hydro shifted 236 MW of capacity into prices of less than \$10/MWh. Most of this capacity was previously priced above \$100/MWh. The rebid reasons given included “Predispatch – Forecast price change::higher”, “Price change in market::adjust running time” and “Price change in market::changed energy band”.

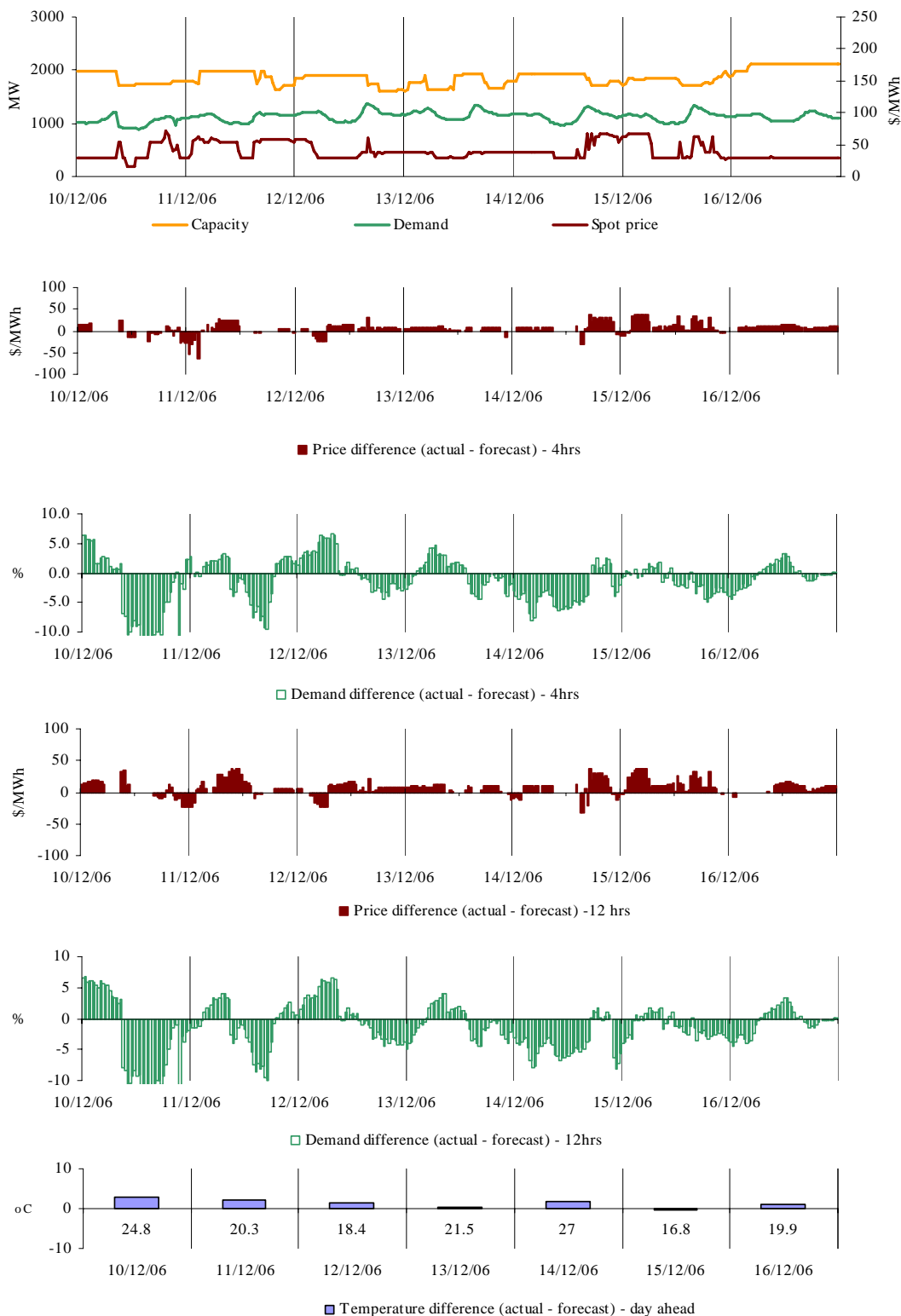
There was no other significant rebidding.

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



There was no occasion where the spot price in South Australia was greater than three times the weekly average price of \$27/MWh.

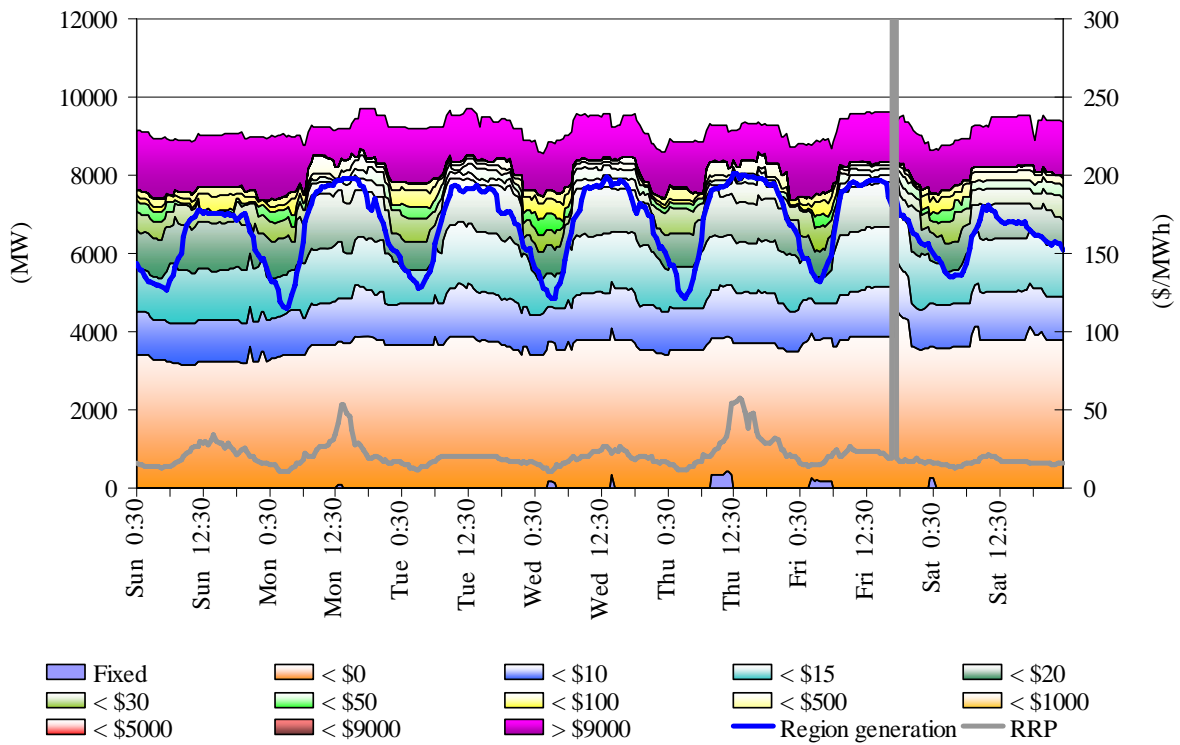
**Figures 51-56: Tasmania actual spot price, demand and forecast differences**



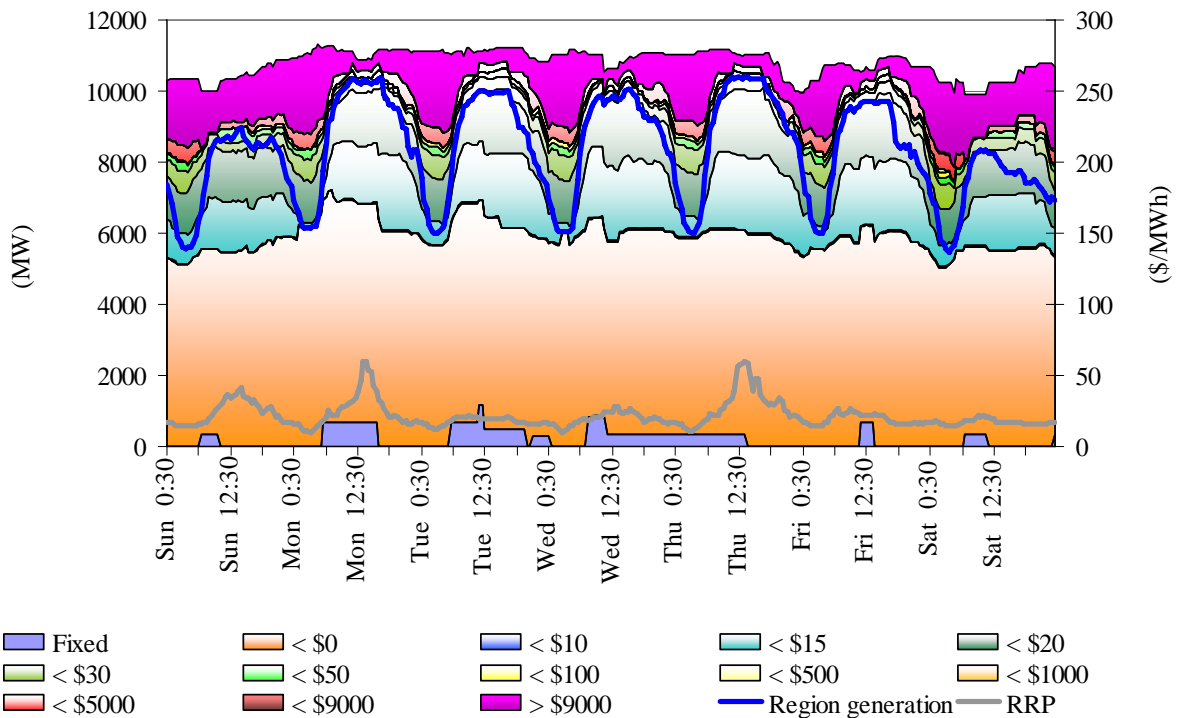
There was no occasion where the spot price in Tasmania was greater than three times the weekly average price of \$40/MWh.

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.

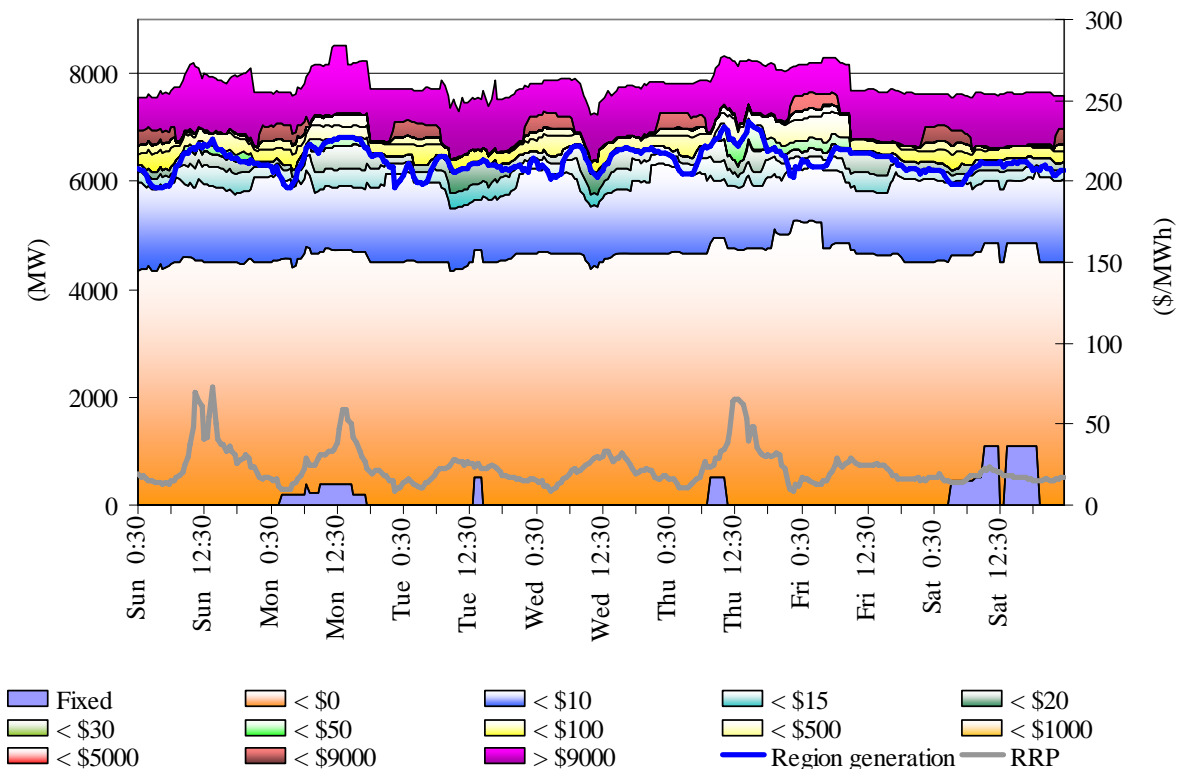
**Figure 57: Queensland closing bid prices, dispatched generation and spot price**



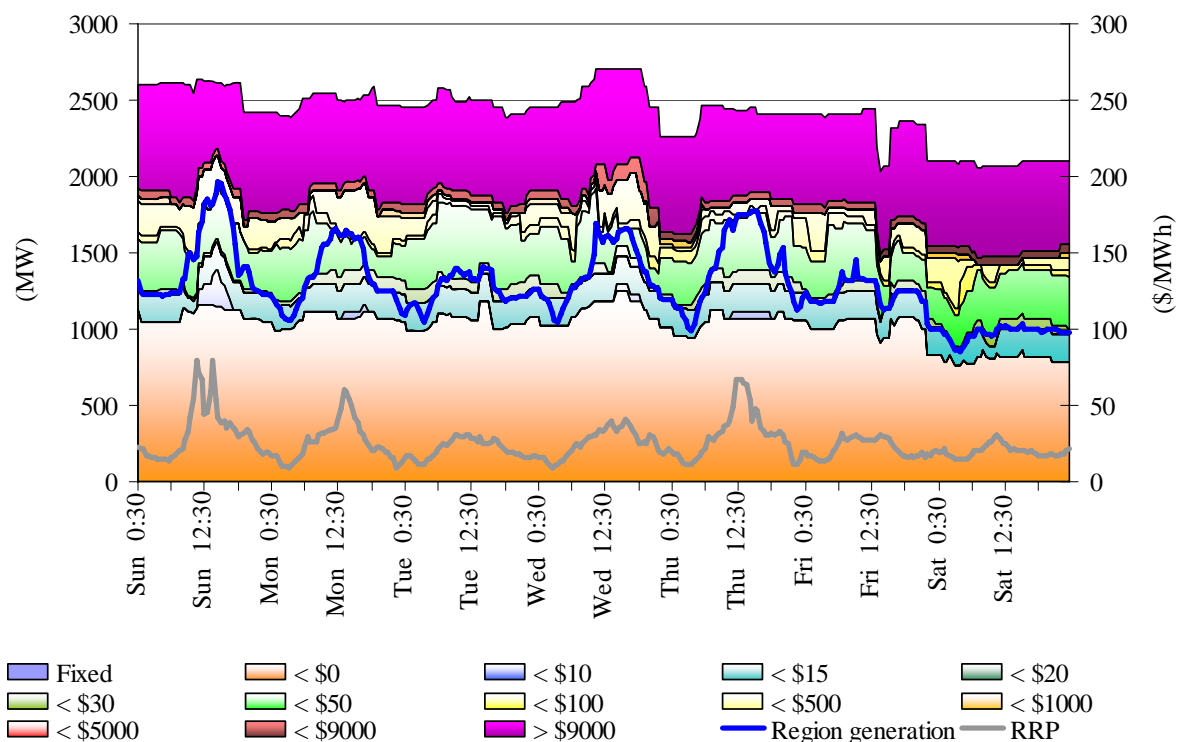
**Figure 58: New South Wales closing bid prices, dispatched generation and spot price**



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

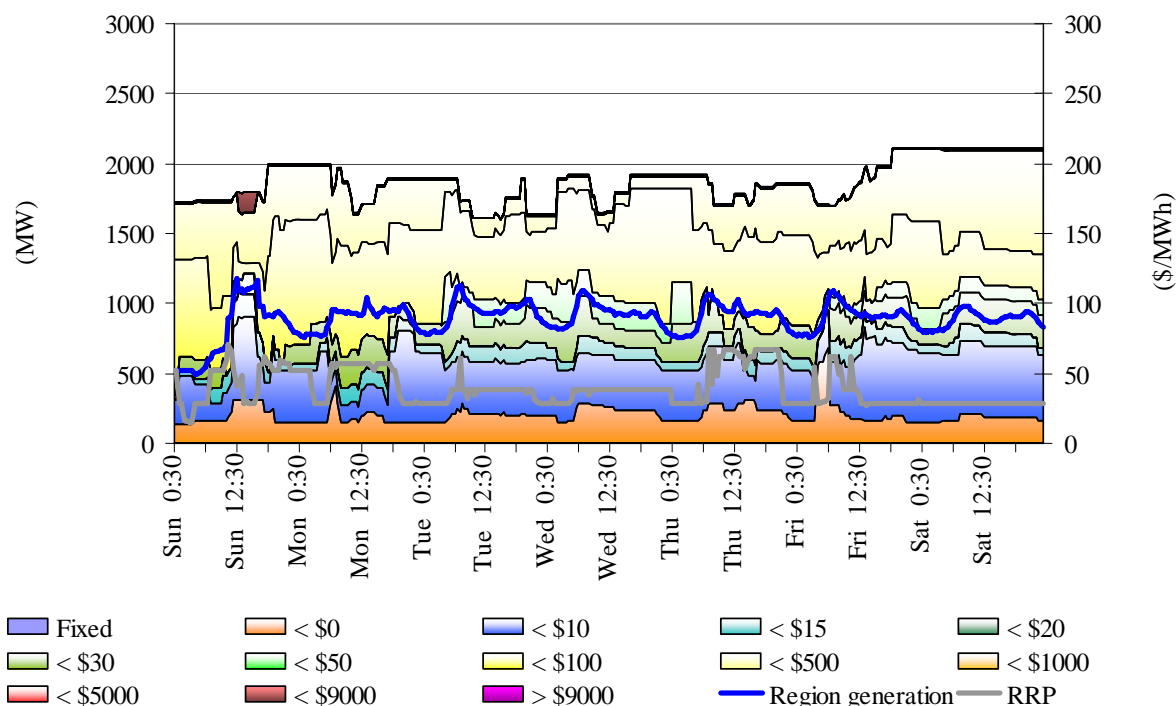


**Figure 60: South Australia closing bid prices, dispatched generation and spot price**





**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 \$90 000 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)	0.18	0.07	0.50	1.61	0.04	0.07	0.26	0.91
Previous week (\$/MW)	0.24	0.09	0.56	2.09	0.08	0.24	0.66	0.99
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$6	\$2	\$25	\$38	\$0	\$0	\$6	\$12
% of energy market	0.01%	0.01%	0.03%	0.04%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was \$61 000 or 1 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)	1.79	0.80	2.05	2.52	0.03	0.11	0.47	0.91
Previous week (\$/MW)	3.89	0.80	2.01	4.04	0.13	0.19	1.27	1.05
Last quarter (\$/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost (\$1000s)	\$8	\$11	\$28	\$5	\$0	\$0	\$2	\$7
% of energy market	0.10%	0.15%	0.37%	0.07%	0.01%	0.01%	0.02%	0.09%

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

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

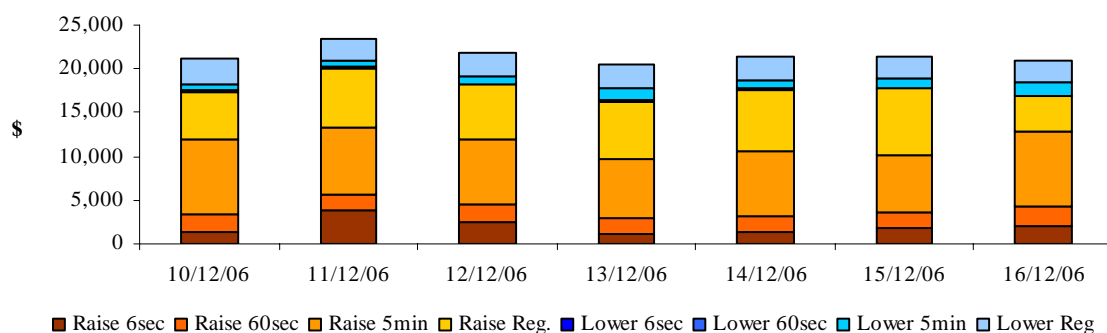
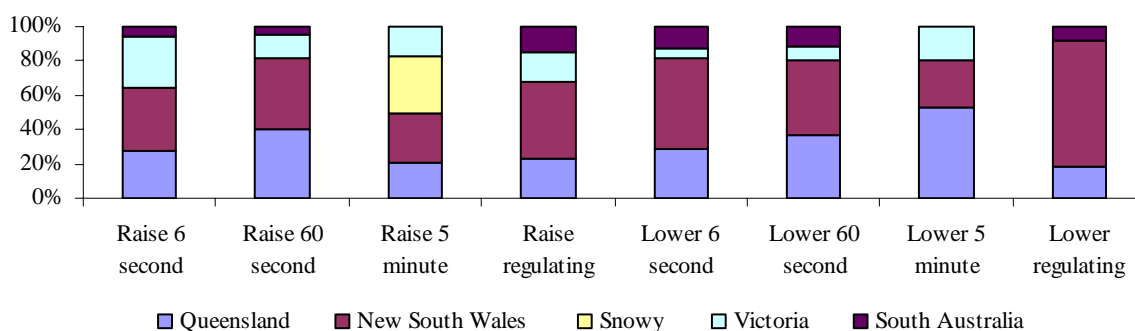


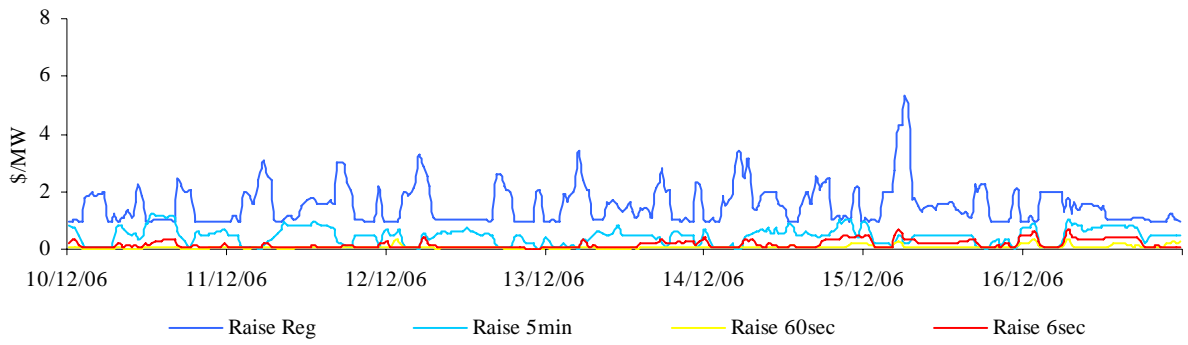
Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

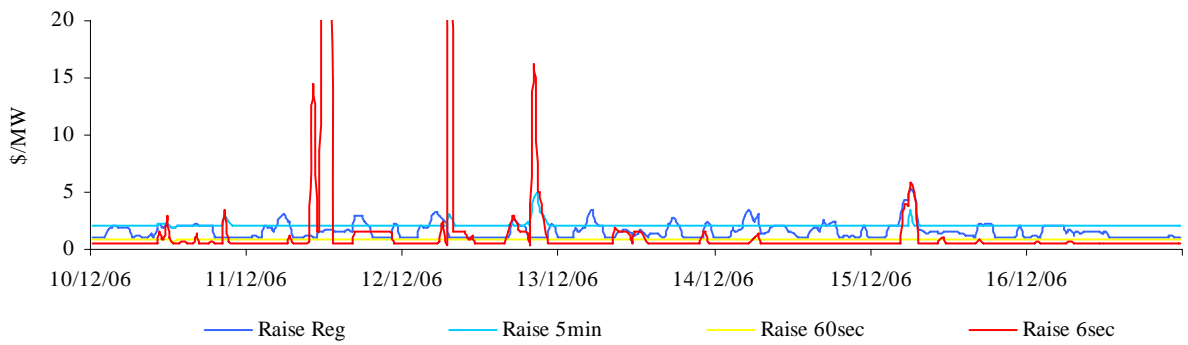


Figures 66 and 67 show 30-minute prices for each frequency control ancillary service throughout the week.

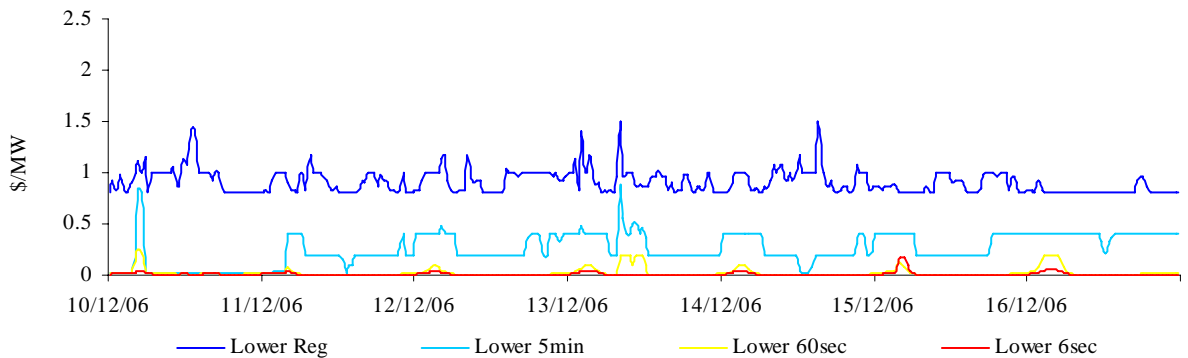
**Figure 66: prices for raise services**



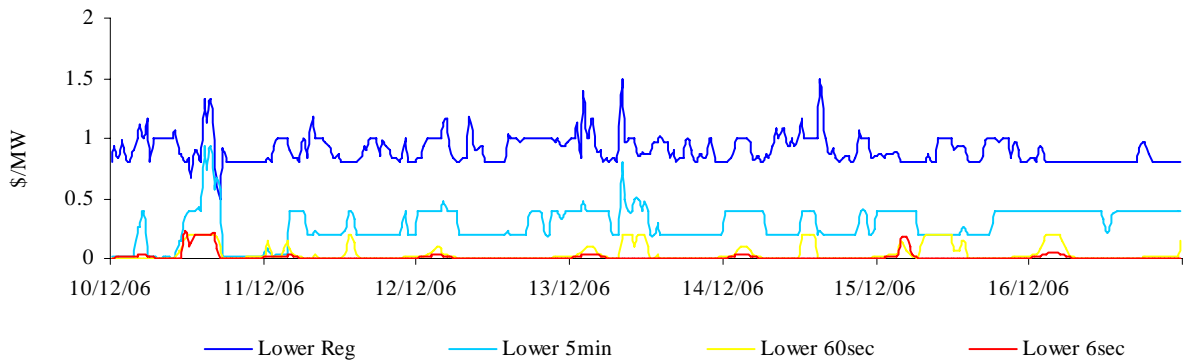
**Figure 66A: prices for raise services – Tasmania**



**Figure 67: prices for lower services**

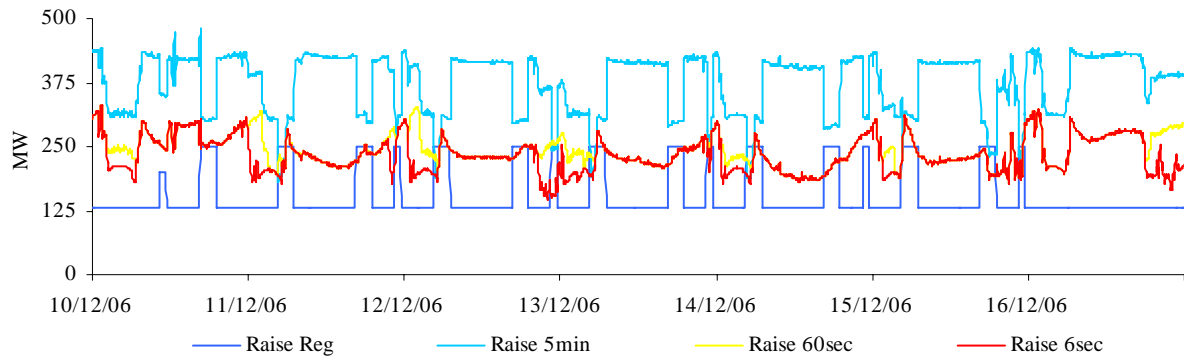


**Figure 67A: prices for lower services – Tasmania**

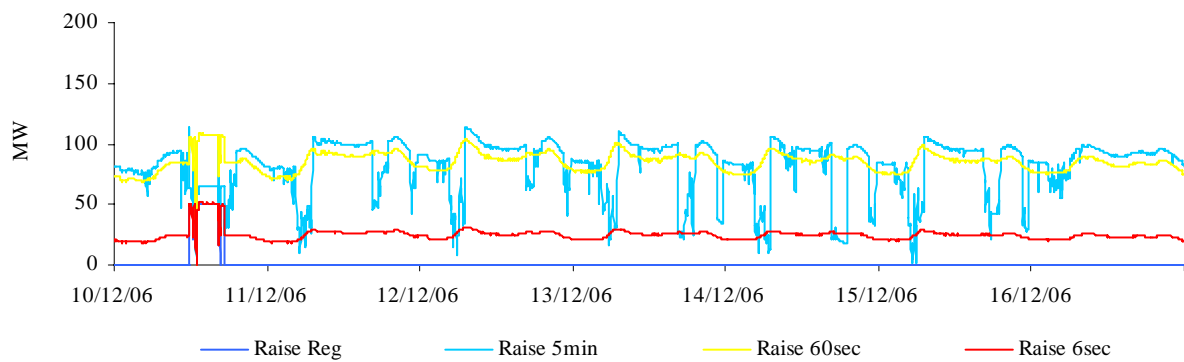


Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

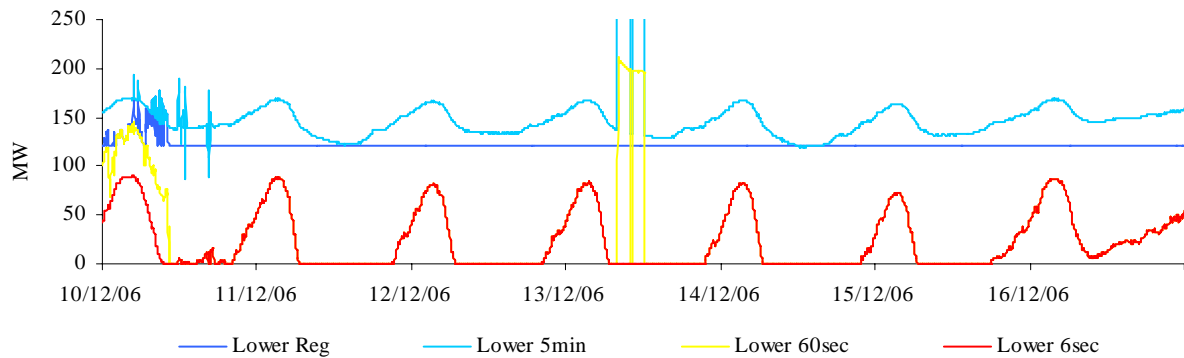
**Figure 68: raise requirements**



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



**Figure 69: lower requirements**



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

