

5–11 November 2006

Spot prices for the week averaged between \$22/MWh in Queensland and \$38/MWh in Tasmania and South Australia.

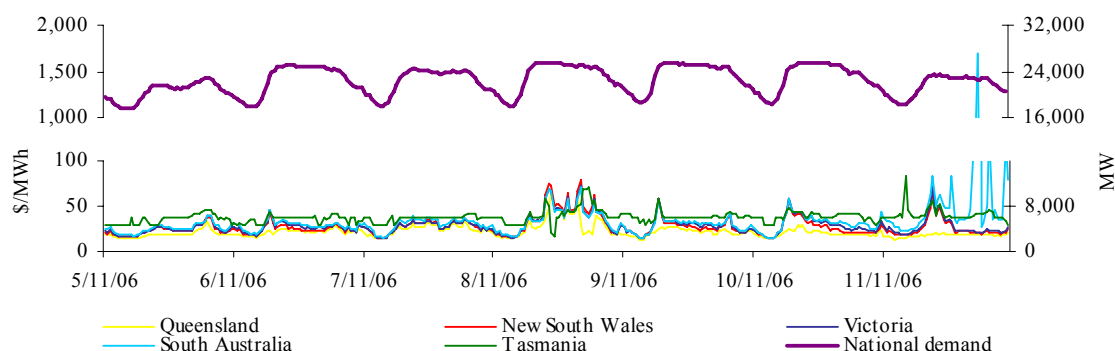
Turnover in the energy market was \$105 million. The total cost of ancillary services for the week was \$343 000, or 0.3 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 46, or 15 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 40 per cent of all trading intervals.

## Energy prices

Figure 1 sets out the national demand and spot prices in each region for each trading interval. Figure 2 compares the volume weighted average price with the averages for the previous week, the same quarter last year and for the previous financial year.

**Figure 1: national demand and spot prices**



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

	QLD	NSW	VIC	SA	TAS
Last week	22	28	29	38	38
Previous week	21	25	28	30	36
Same quarter last year	39	73	32	47	63
Financial year to date	24	35	36	40	40
% change from previous week*	▲ 9%	▲ 13%	▲ 5%	▲ 27%	▲ 5%
% change from same quarter last year**	▼ 43%	▼ 61%	▼ 9%	▼ 18%	▼ 39%
% change from year to date***	▲ 5%	▼ 20%	▲ 18%	▲ 18%	▼ 57%

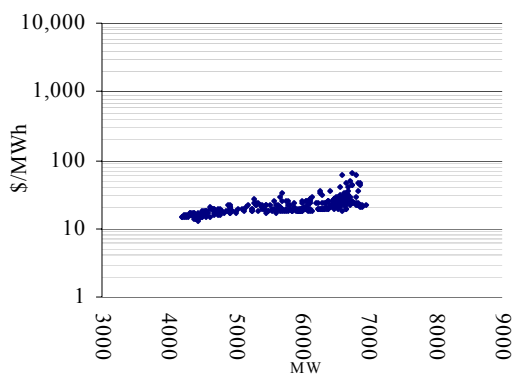
\*The percentage change between last week's average spot price and the average price for the previous week.

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

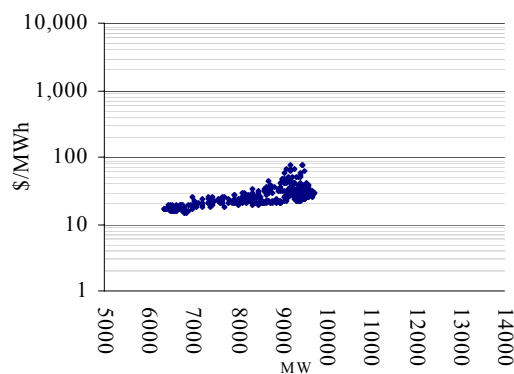
\*\*\*The percentage change between the average spot price for the current financial year to date and the average spot price over the similar period for the previous financial year.

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

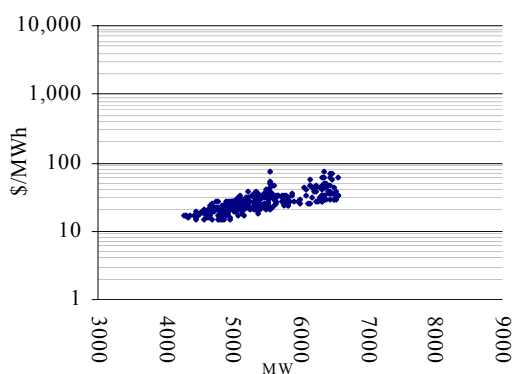
**Figure 3: Queensland**



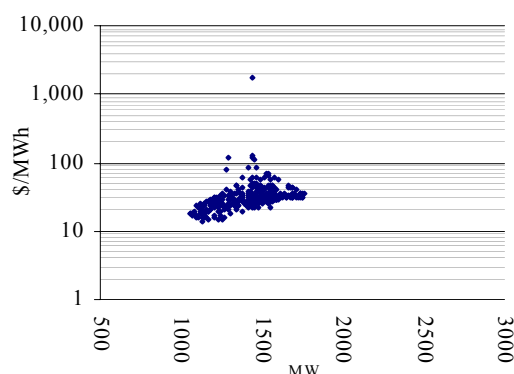
**Figure 4: New South Wales**



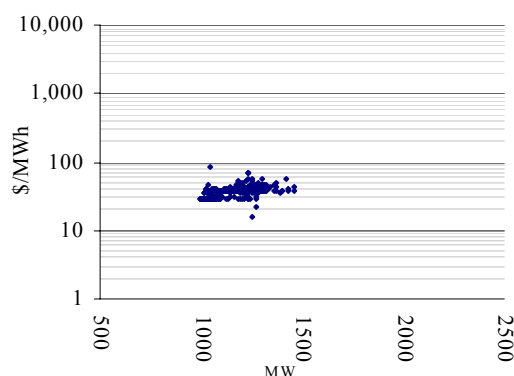
**Figure 5: Victoria**



**Figure 6: South Australia**



**Figure 7: Tasmania**



The maximum spot prices for the week ranged from \$66/MWh in Queensland to \$88/MWh in Tasmania. In South Australia the spot price reached \$1687/MWh on Saturday evening, when a combination of lightning near the Heywood interconnector and reduced generation capacity saw the price spike to \$10 000/MWh for one five-minute dispatch interval. 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	0.50	0.71	0.61	0.50	0.19
Previous week	0.33	0.44	0.52	0.48	0.10
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>

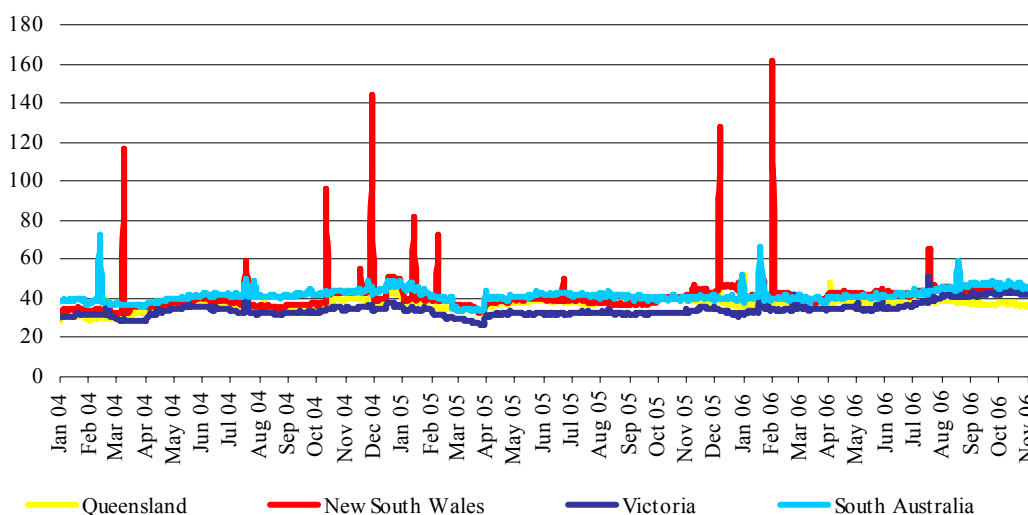
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)\* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

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

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	36.07	36.03	36.21	36.10	35.78
New South Wales	42.82	42.62	42.77	43.01	42.79
Victoria	40.90	40.92	43.17	42.43	42.19
South Australia	45.41	45.85	46.16	46.67	46.69

\* 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**

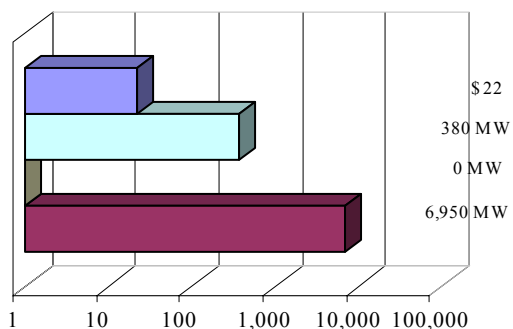


## Reserve

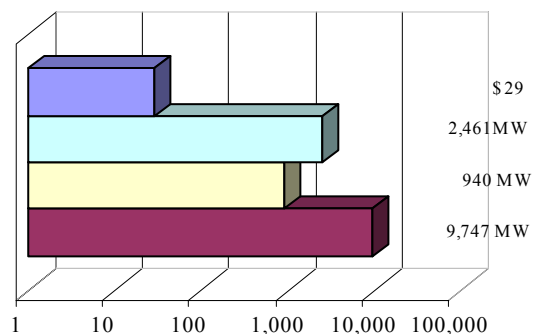
There was no low reserve conditions forecast.

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

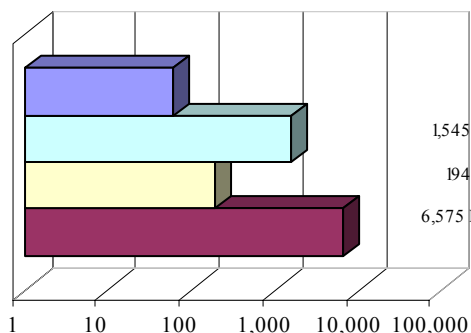
**Figure 11: Queensland**



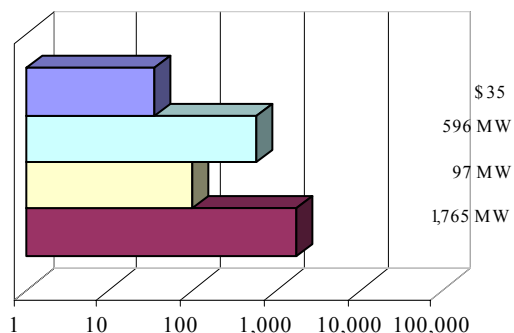
**Figure 12: New South Wales**



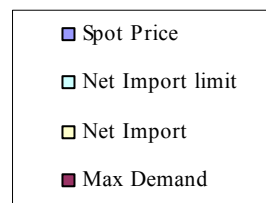
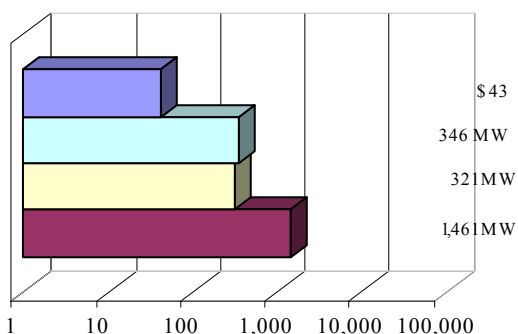
**Figure 13: Victoria**



**Figure 14: South Australia**



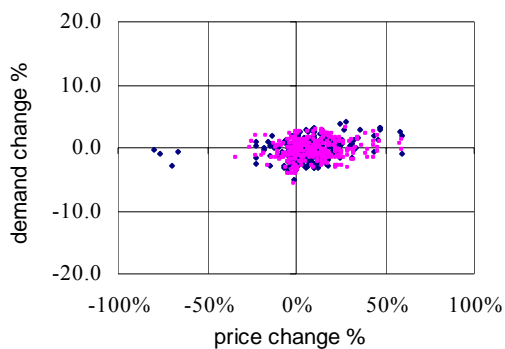
**Figure 15: Tasmania**



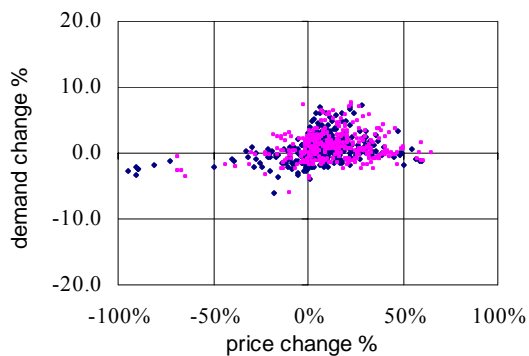
## Price variations

There were 46 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.

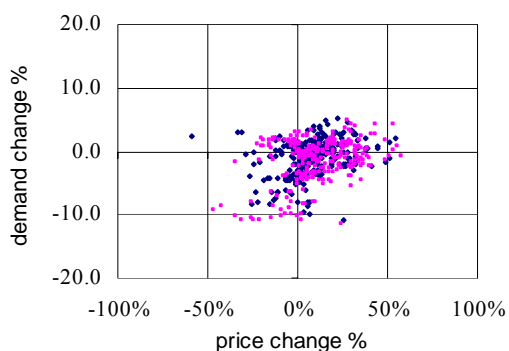
**Figure 16: Queensland**



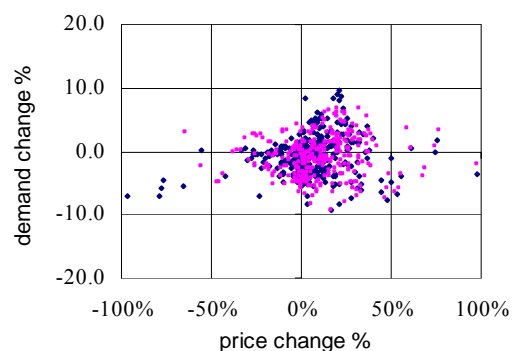
**Figure 17: New South Wales**



**Figure 18: Victoria**



**Figure 19: South Australia**



**Figure 20: Tasmania**

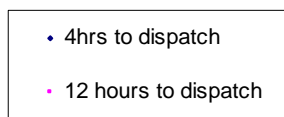
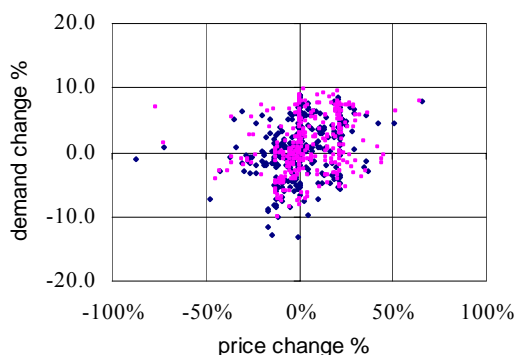
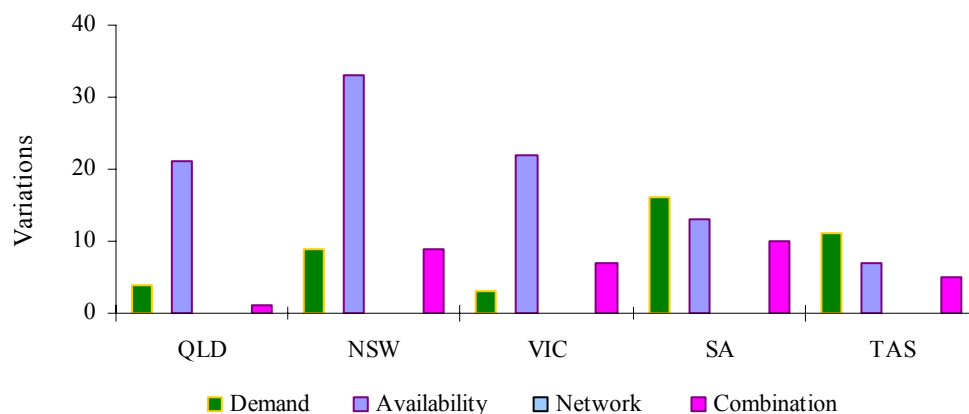


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

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



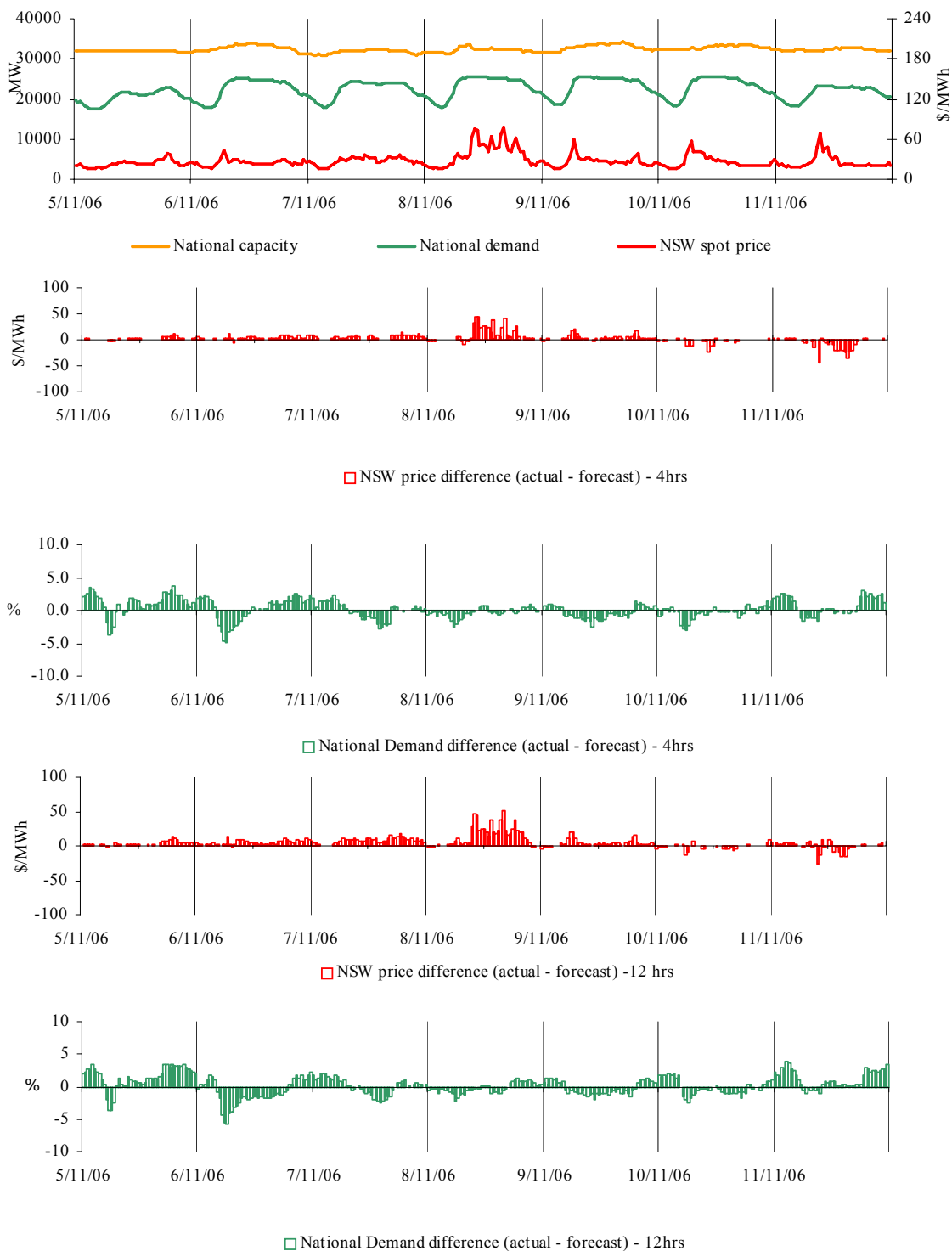
### Price and demand

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.

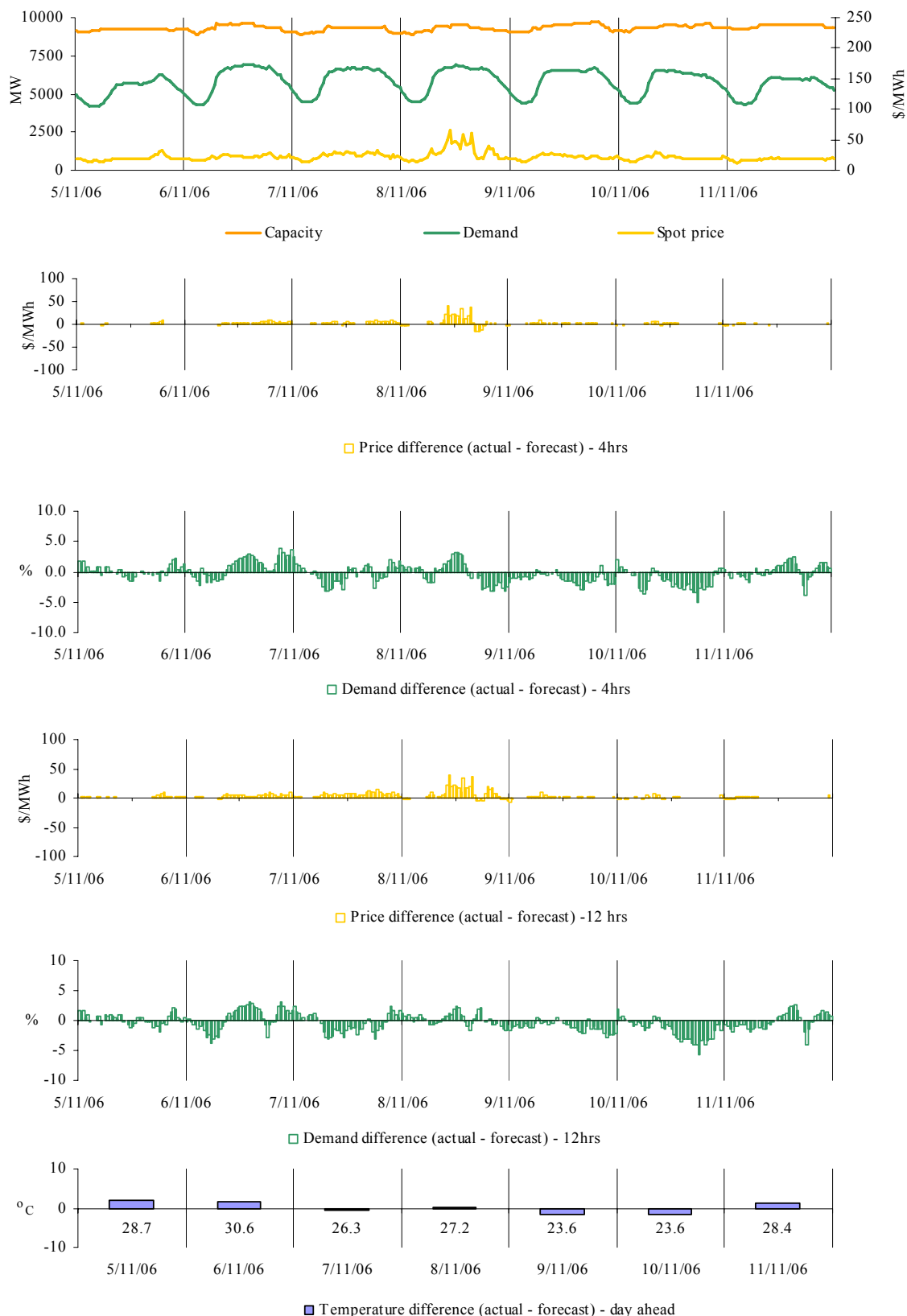
Figures 22-26: National market outcomes



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 \$28/MWh.

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

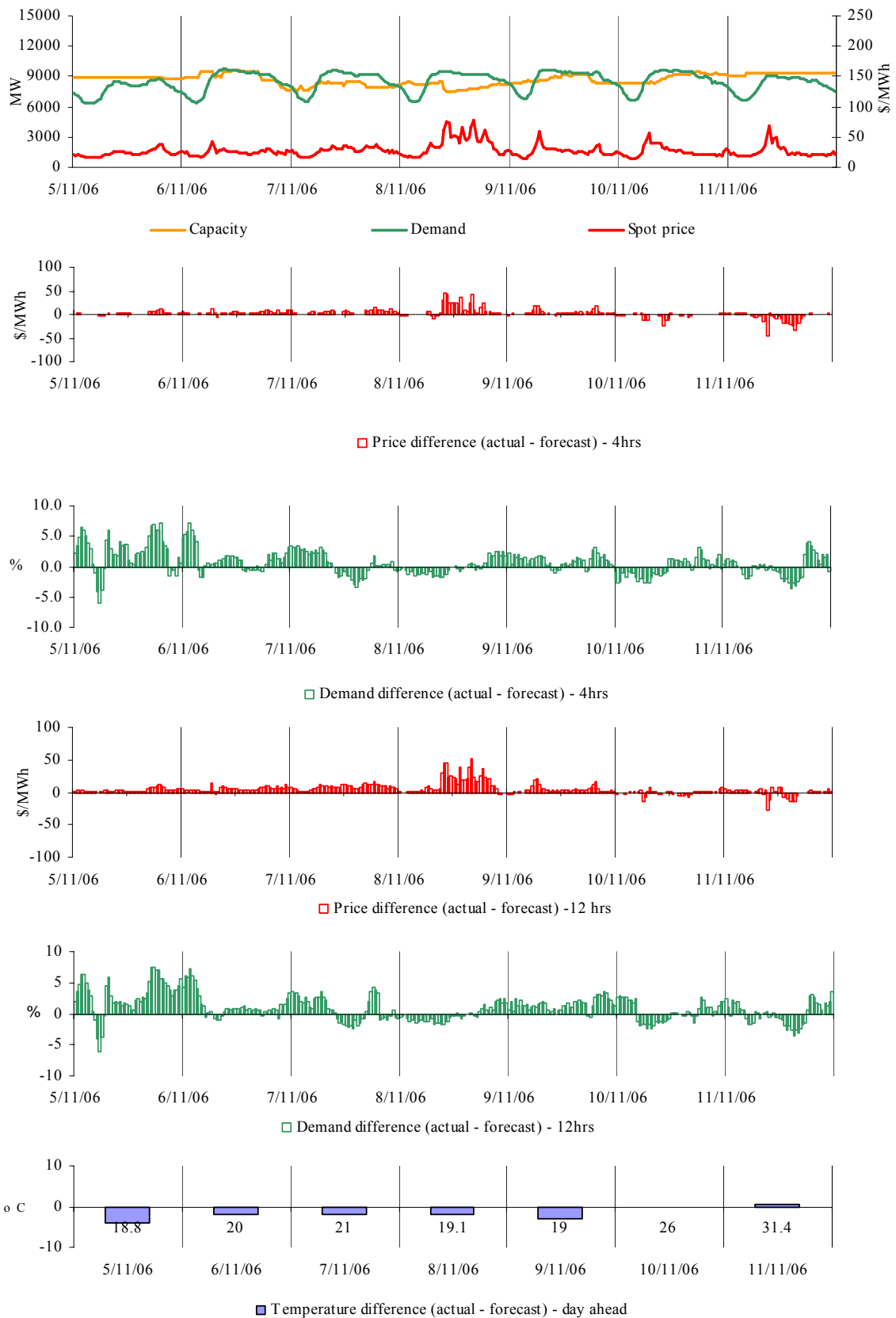
**Figures 27-32: Queensland actual spot price, demand and forecast differences**



There was no occasion where the spot price in Queensland was greater than three times the weekly average price of \$22/MWh.

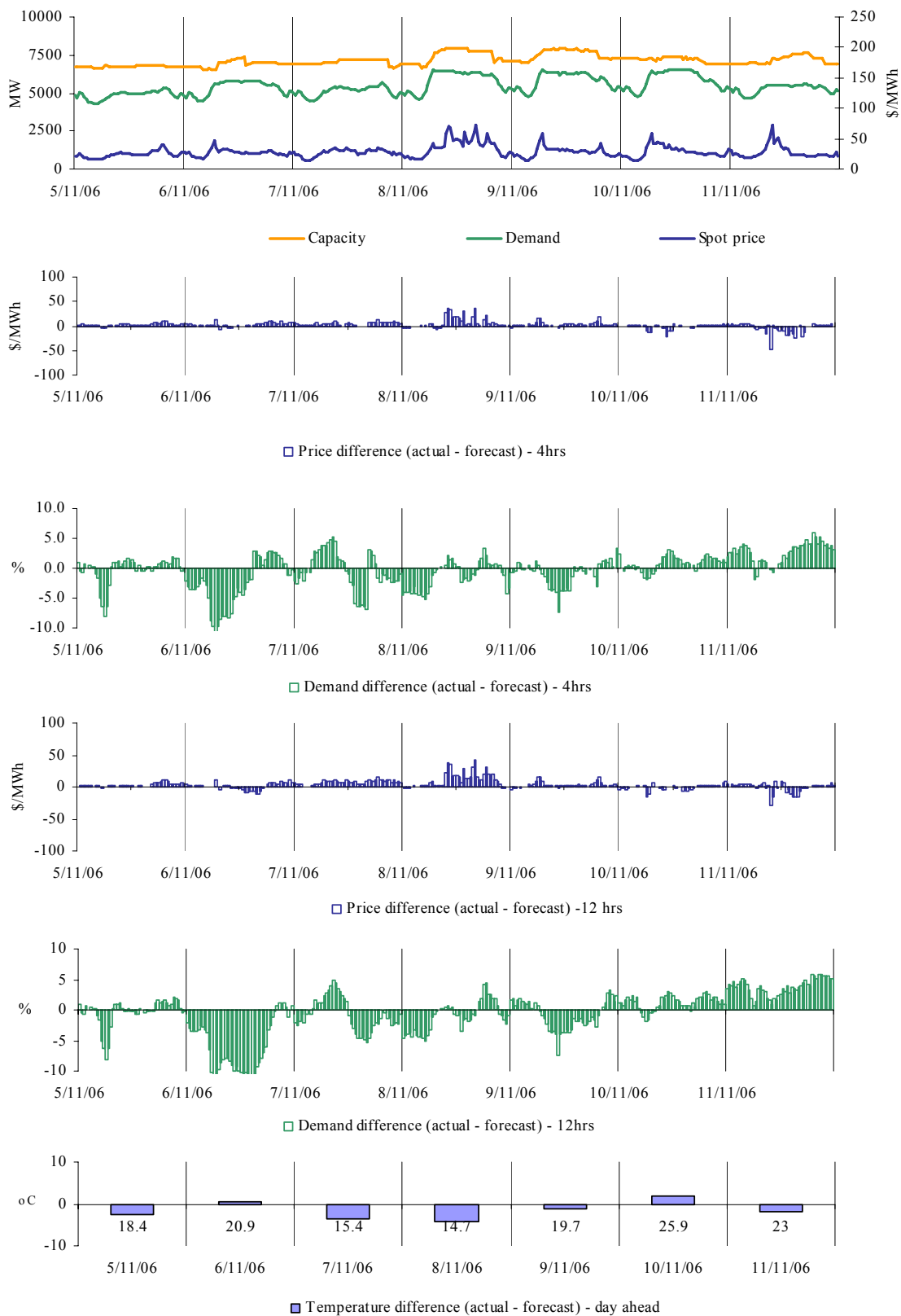


**Figures 33-38 New South Wales actual spot price, demand and forecast differences**



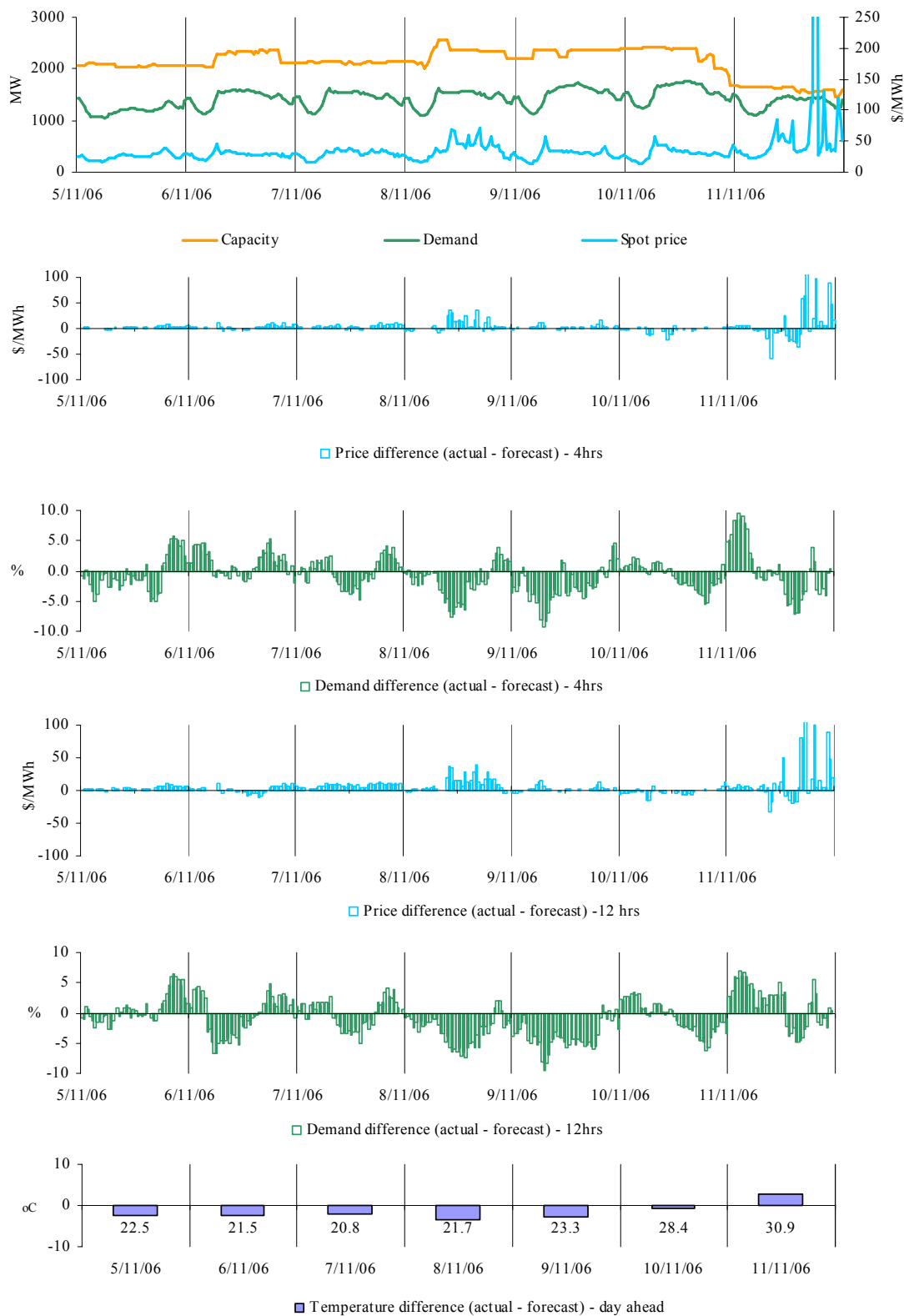
There was no occasion where the spot price in New South Wales was greater than three times the weekly average price of \$28/MWh.

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



There was no occasion where the spot price in Victoria was greater than three times the weekly average price of \$29/MWh.

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



There were four occasions where the spot price in South Australia was greater than three times the weekly average price of \$38/MWh.

### Saturday, 11 November

<b>5:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	118.07	59.03	37.74
Demand (MW)	1443	1513	1501
Available capacity (MW)	1550	1644	1643
<b>6:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	1687.35	33.29	34.00
Demand (MW)	1441	1492	1472
Available capacity (MW)	1577	1637	1643
<b>8:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	130.21	31.74	31.00
Demand (MW)	1440	1416	1393
Available capacity (MW)	1596	1611	1643
<b>11:00 pm</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Price (\$/MWh)	120.09	31.00	31.00
Demand (MW)	1290	1293	1279
Available capacity (MW)	1466	1473	1643

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

There was around 430 MW less capacity in South Australia priced at less than zero on this day compared to the previous Saturday. On Friday night, Flinders Power shutdown 260 MW at Northern power station and International Power shutdown Pelican Point. Both generators had run the previous Saturday and were both available for much of the week. Figure 60 highlights the reduction in available capacity in South Australia.

Lightning in the vicinity of the Victoria to South Australia interconnector led to the reclassification of the loss of the interconnector as a single credible contingency from around 1 pm. As a result, flows on the interconnector were limited to less than 250 MW, and at times to less than 100 MW. The reclassification was initially forecast to last until 4 pm, but was extended a number of times until 3 am the following day.

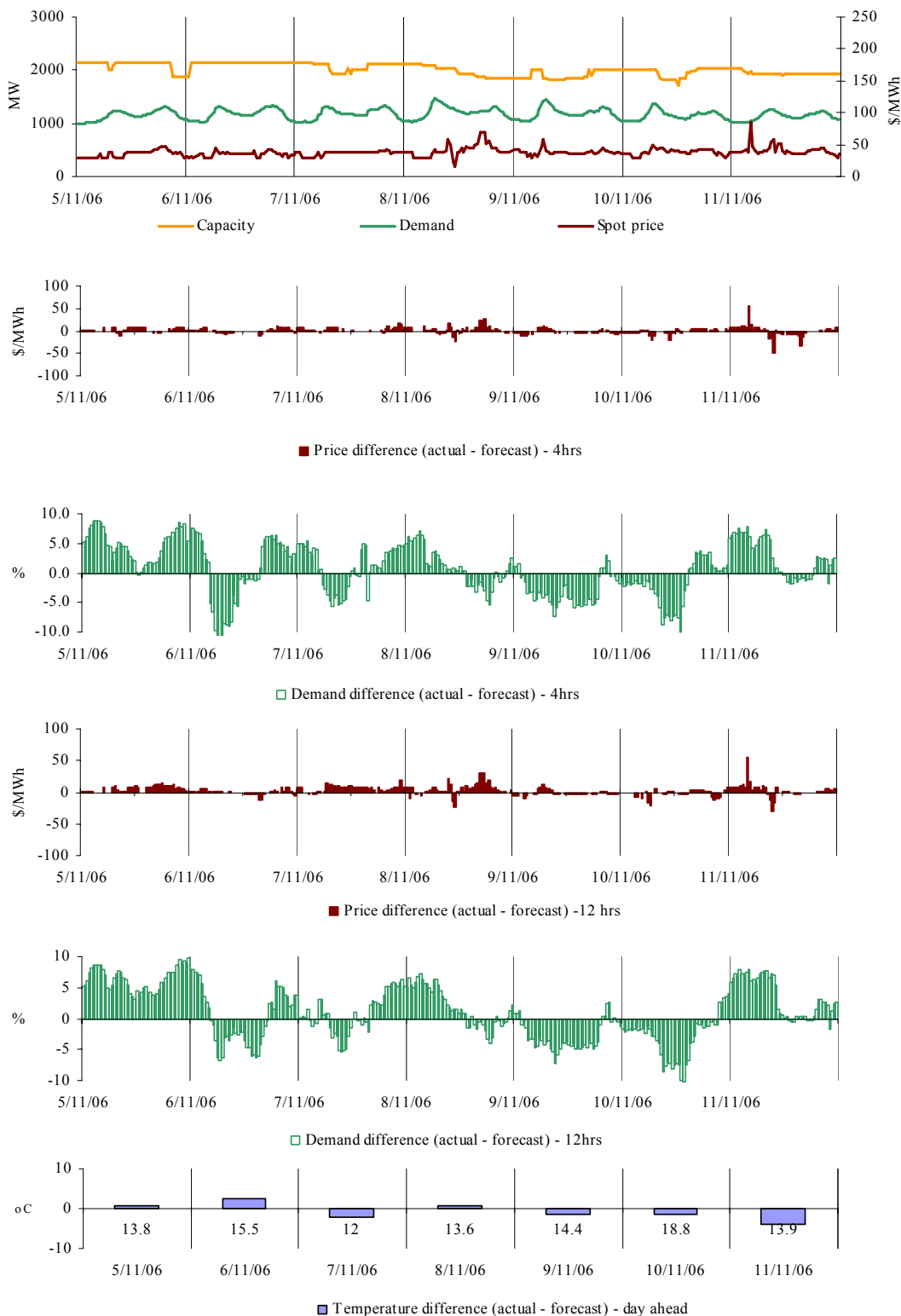
For much of the day there was little capacity priced between \$30/MWh and \$150/MWh.

At 5.14 pm, TRU energy rebid 280 MW of capacity from prices between \$30/MWh and \$300/MWh to less than zero for the remainder of the 5.30 pm trading interval. At 5.28 pm this rebid was extended into the 6 pm trading interval. The rebid reasons given were “Market conditions – Gen response to 5MPD conditions” and “Plant conditions-Adj to capacity”. Following this rebid, there was only 40 MW of capacity priced between \$11/MWh and \$9000/MWh in South Australia for the 6 pm trading interval.

Over a number of bids from around 1 pm, two of International Power’s Dry Creek units were initially committed and then the runtime extended, by rebidding capacity from prices close to the price cap to around zero. At 5.35 pm, these units and Origin Energy’s Ladbroke unit one were scheduled to shutdown. The combined impact of these three units bids saw 135 MW of capacity priced around zero, priced out of the market. The dispatch price subsequently increased to \$9999.96/MWh. The generators were responding to information published by NEMMCO on the availability of the interconnectors at the time, which was varying frequently.

There was no other significant rebidding.

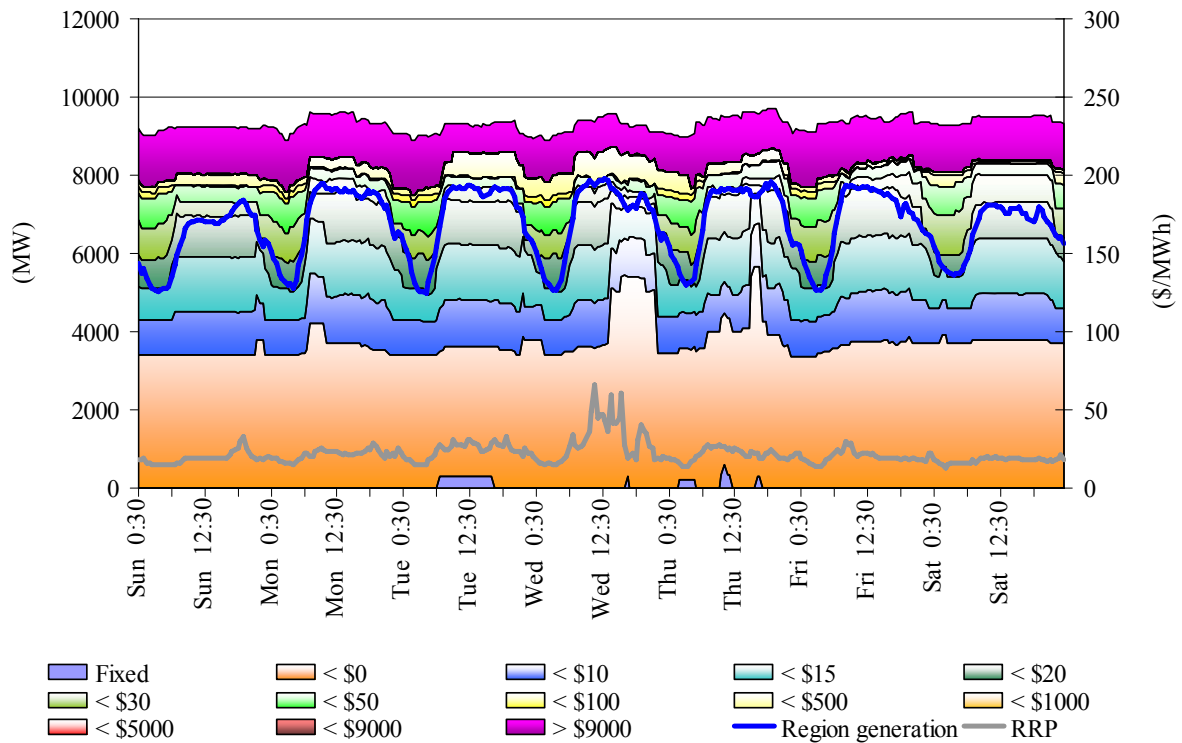
**Figures 51-56: Tasmania actual spot price, demand and forecast differences**



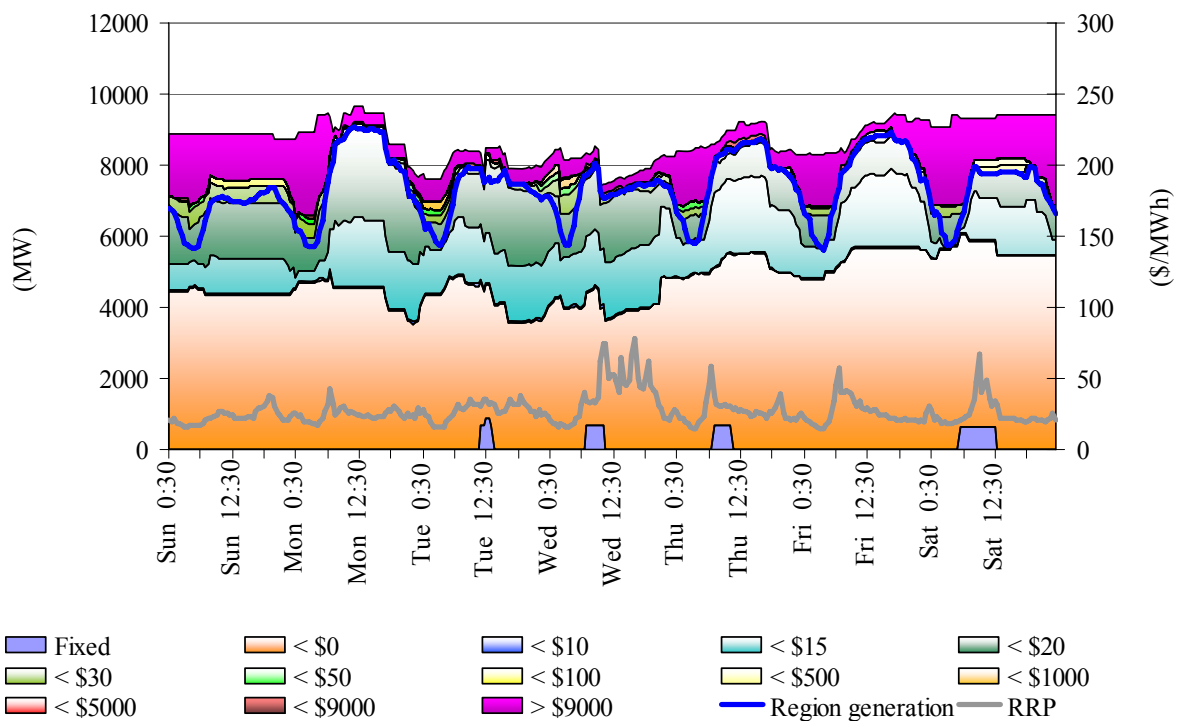
There was no occasion where the spot price in Tasmania was greater than three times the weekly average price of \$38/MWh.

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.

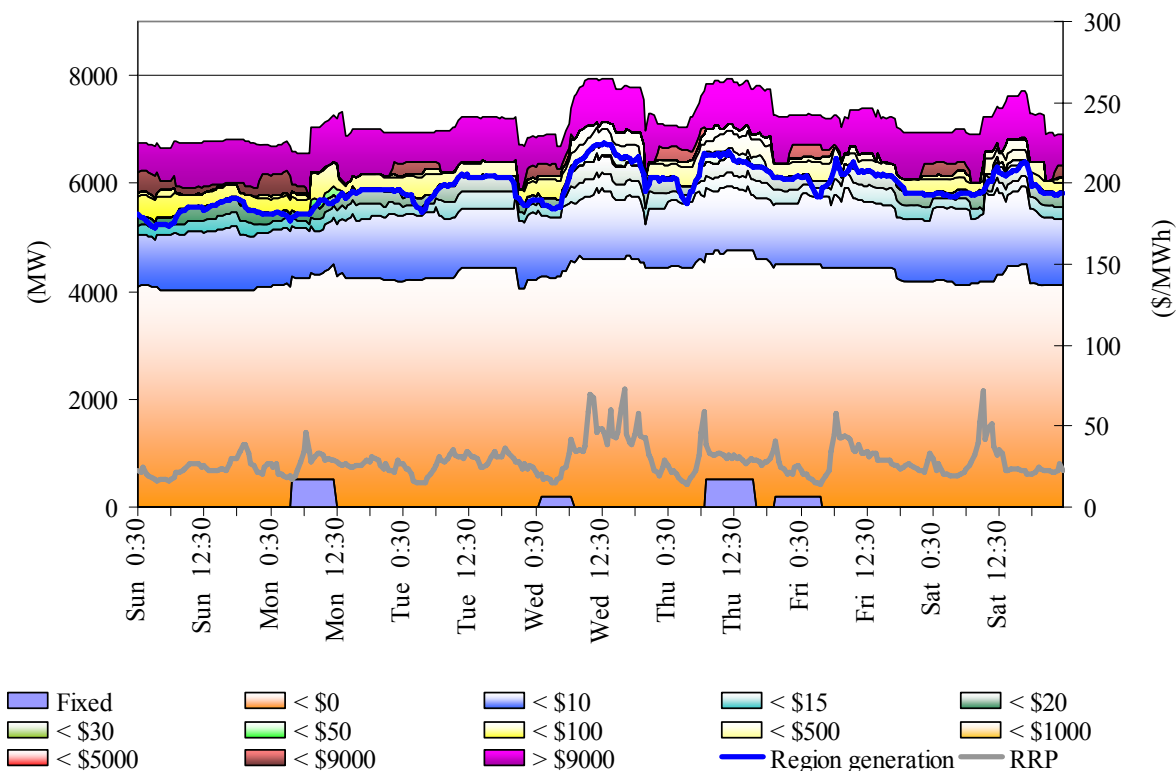
**Figure 57: Queensland closing bid prices, dispatched generation and spot price**



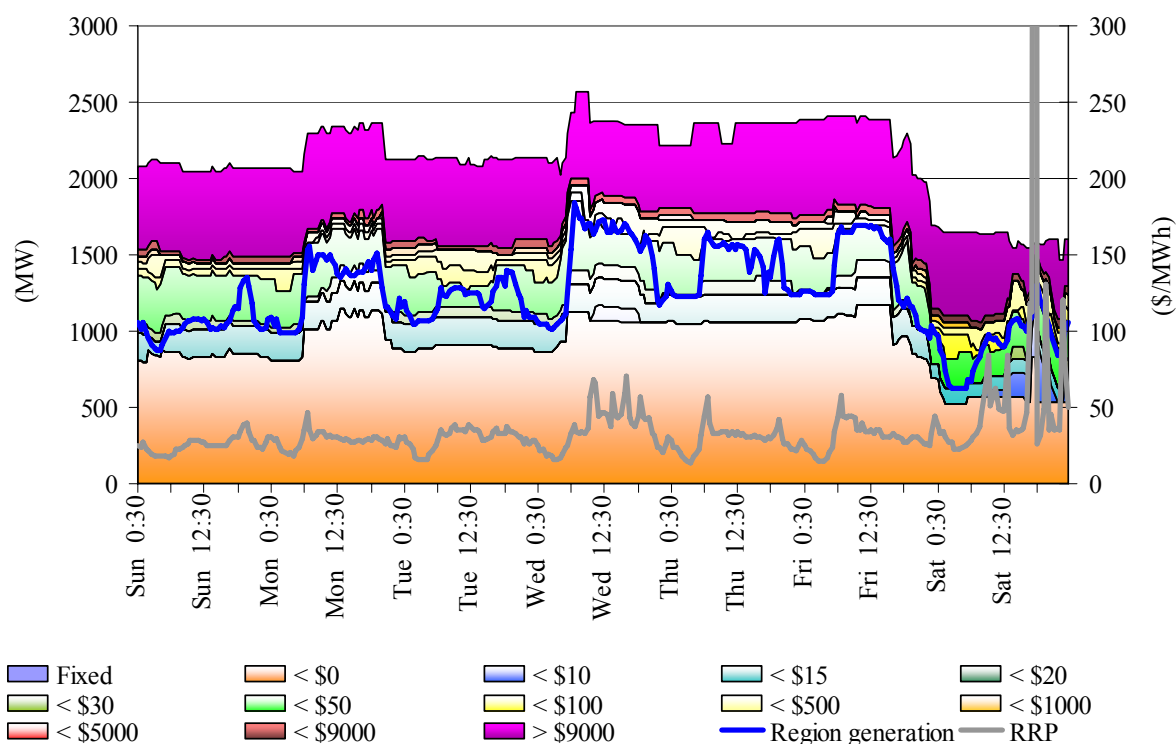
**Figure 58: New South Wales closing bid prices, dispatched generation and spot price**



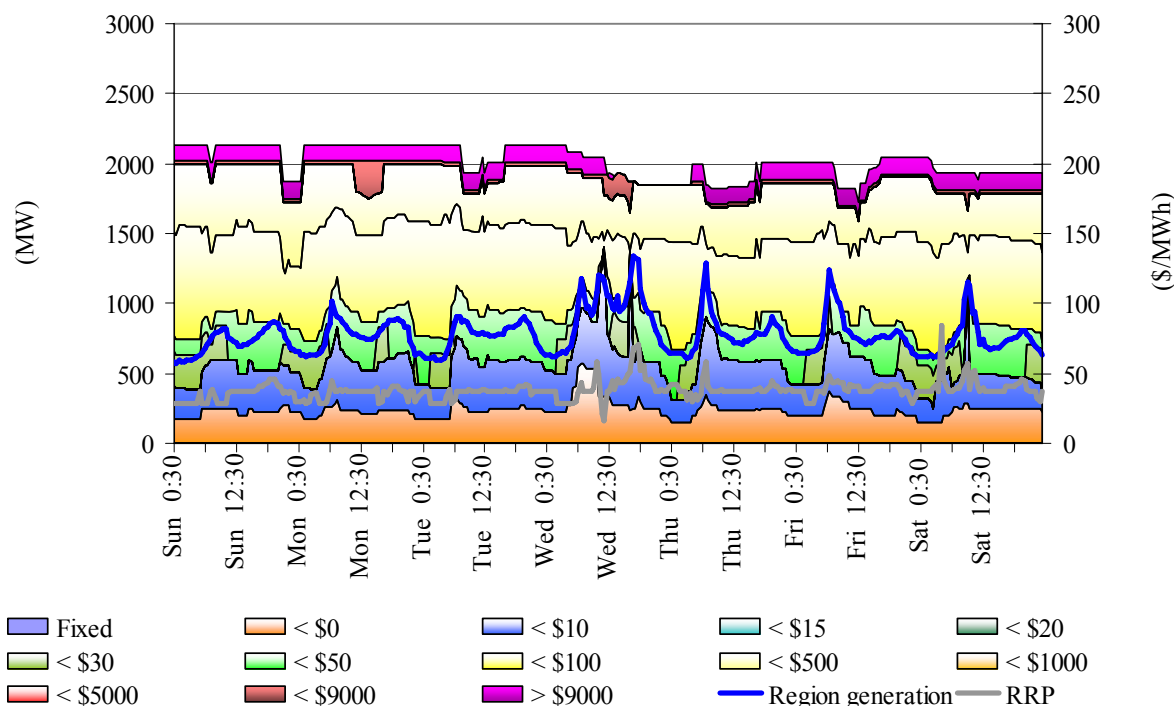
**Figure 59: Victoria closing bid prices, dispatched generation and spot price**



**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 \$254 000 or 0.3 per cent of the energy market. Locally sourced lower services were required in Queensland on Wednesday following the reclassification of a non credible contingency event caused by storm activity, affecting QNI. The cost for locally sourced ancillary services was around \$22 000 during this event. 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)	0.88	0.16	1.54	3.24	2.29	0.41	0.93	1.05
Previous week (\$/MW)	0.63	0.12	0.64	2.41	0.22	0.20	0.52	1.00
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$39	\$6	\$89	\$67	\$8	\$6	\$27	\$13
% of energy market	0.04%	0.01%	0.09%	0.07%	0.01%	0.01%	0.03%	0.01%

The total cost of ancillary services in Tasmania for the week was \$89 000 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)	3.45	0.76	2.47	3.80	0.06	0.08	0.40	0.94
Previous week (\$/MW)	1.15	0.81	2.15	3.85	0.10	0.07	0.40	0.98
Last quarter (\$/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost (\$1000s)	\$18	\$11	\$32	\$20	\$0	\$0	\$0	\$8
% of energy market	0.24%	0.15%	0.42%	0.26%	0.01%	0.01%	0.01%	0.10%

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

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

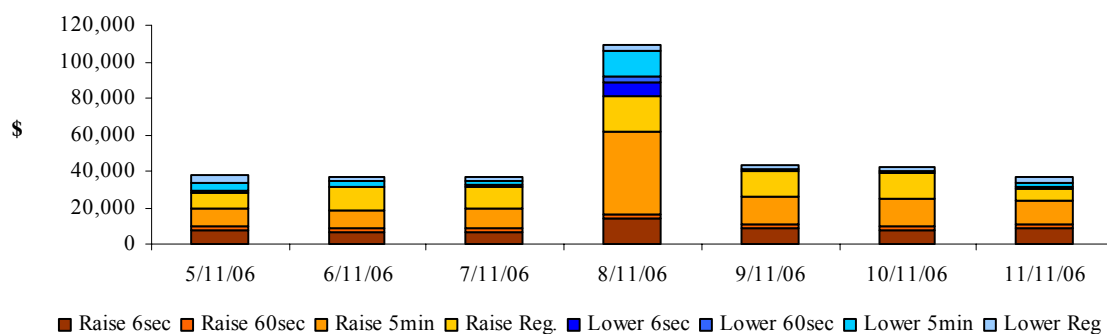
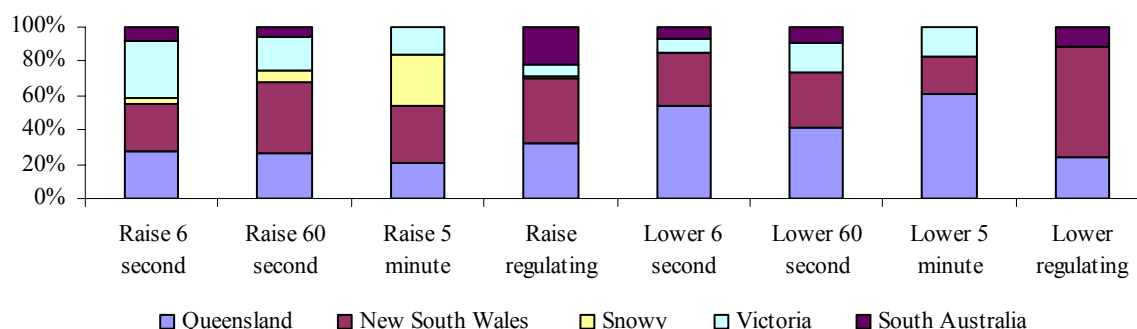


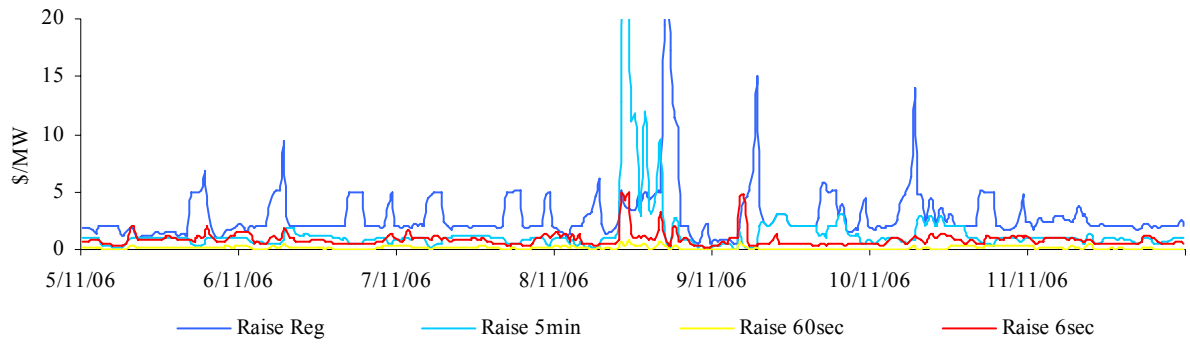
Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

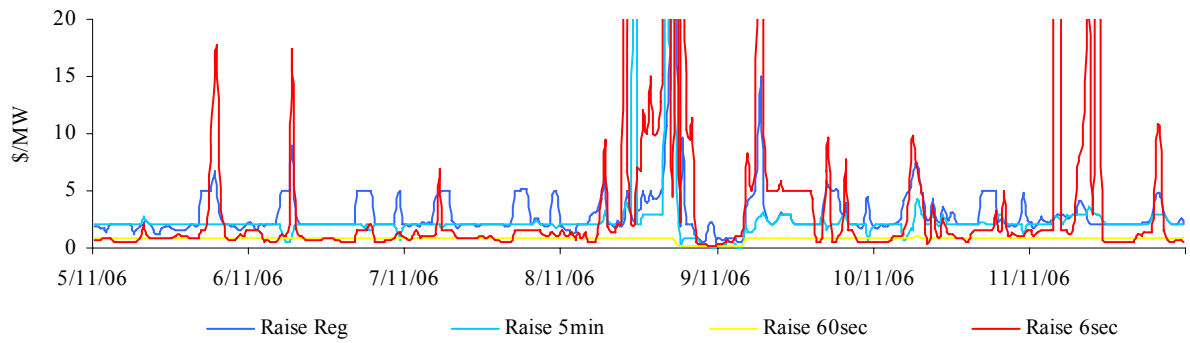


Figures 66 and 67 show 30-minute prices for each frequency control ancillary service throughout the week.

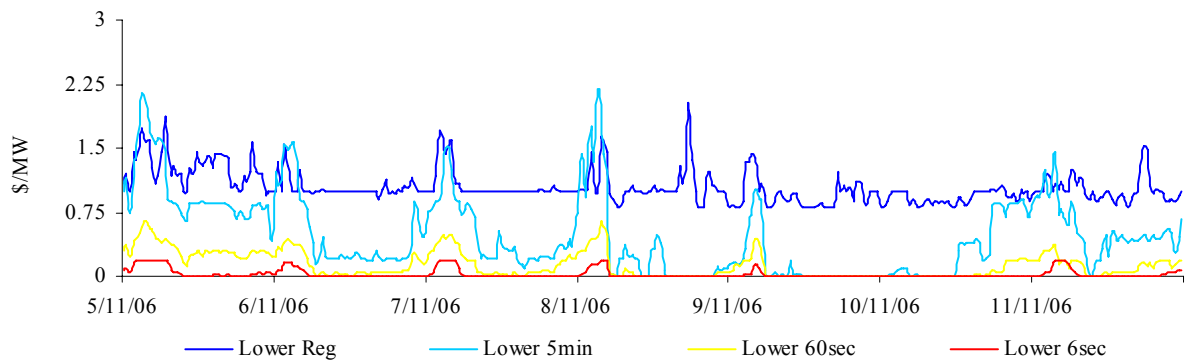
**Figure 66: prices for raise services**



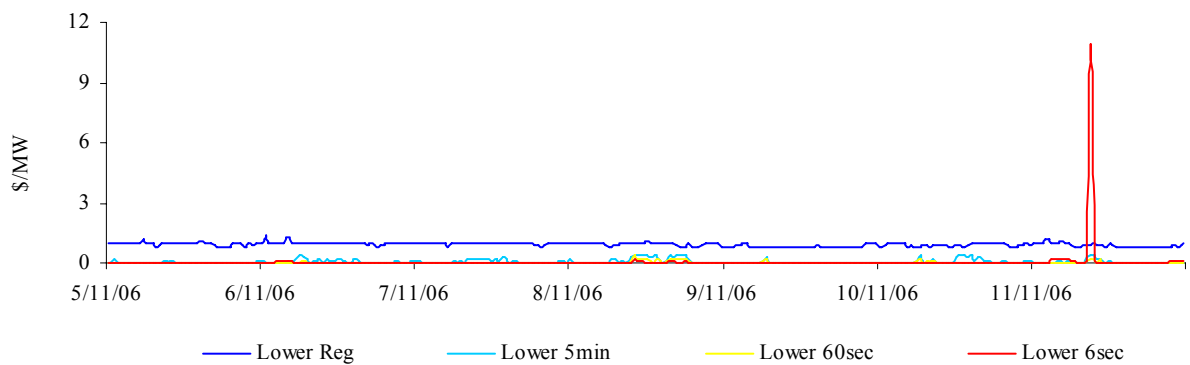
**Figure 66A: prices for raise services – Tasmania**



**Figure 67: prices for lower services**

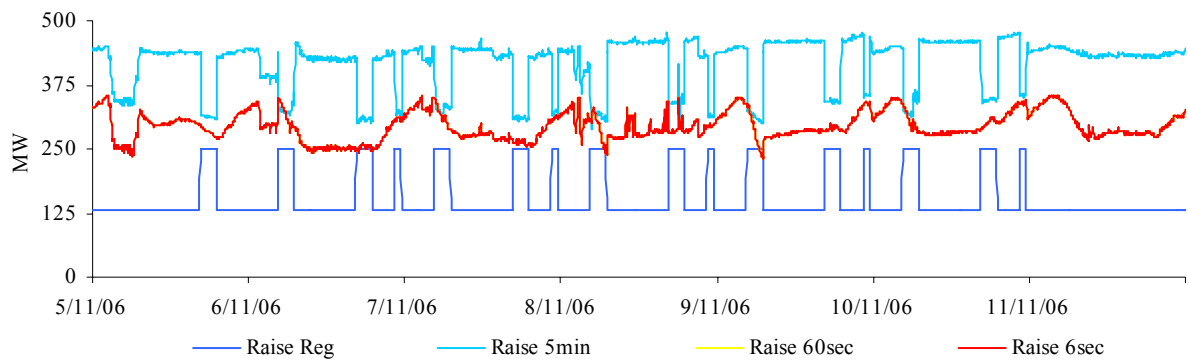


**Figure 67A: prices for lower services – Tasmania**

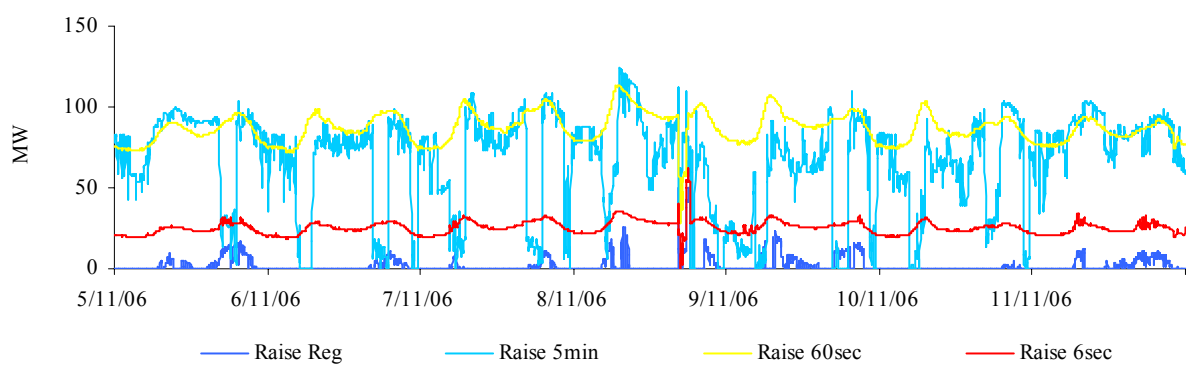


Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

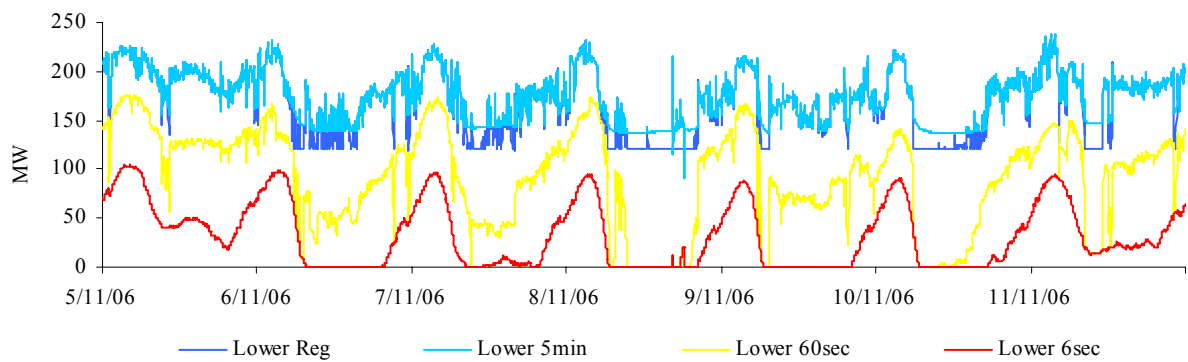
**Figure 68: raise requirements**



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



**Figure 69: lower requirements**



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

