Market analysis

AUSTRALIAN ENERGY REGULATOR

3–9 December 2006

Spot prices for the week averaged between $21/MWh in Queensland and $109/MWh in South Australia. Temperatures in excess of 40°C on Friday and Saturday in South Australia saw demand at near record levels and prices of up to $4431/MWh on Friday.

Turnover in the energy market was $125 million. The total cost of ancillary services for the week was $197 000, or 0.2 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 108, or 32 per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 18 per cent of all trading intervals across the market. These variations were most frequent in South Australia, 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

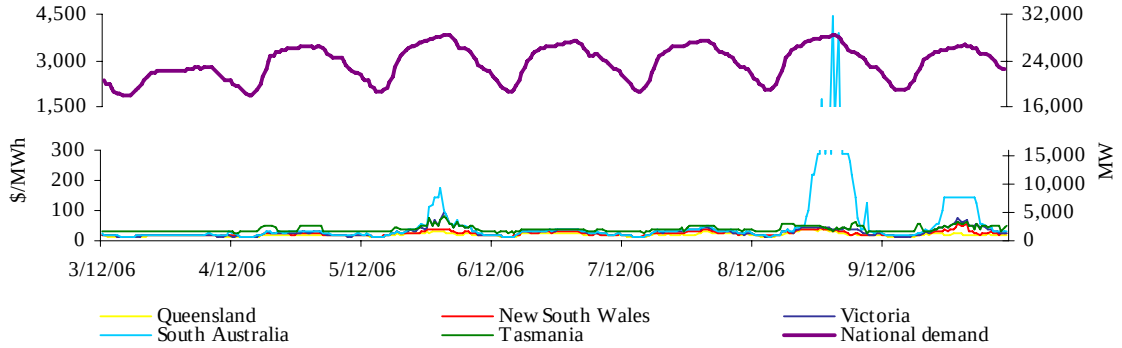


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	21	24	30	109	38
Previous week	30	31	31	44	43
Same quarter last year	39	73	32	47	63
Financial year to date	25	35	36	43	40
% change from previous week*	▼30%	▼22%	▼5%	▲145%	▼12%
% change from same quarter last year**	▼48%	▼66%	▼8%	▲133%	▼39%
% change from year to date***	▼19%	▼30%	▲22%	▲21%	▼54%

*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

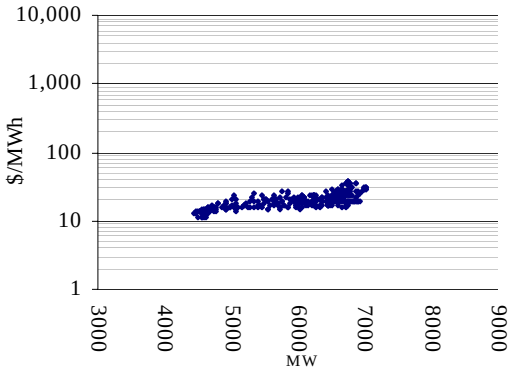


Figure 4: New South Wales

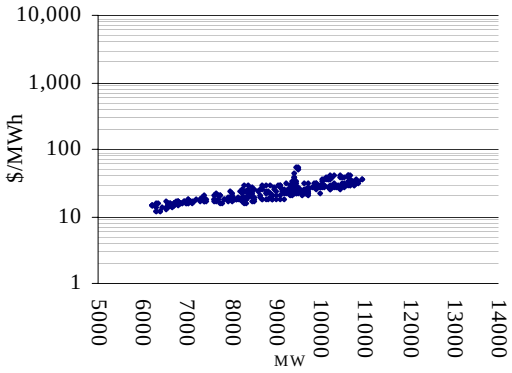


Figure 5: Victoria

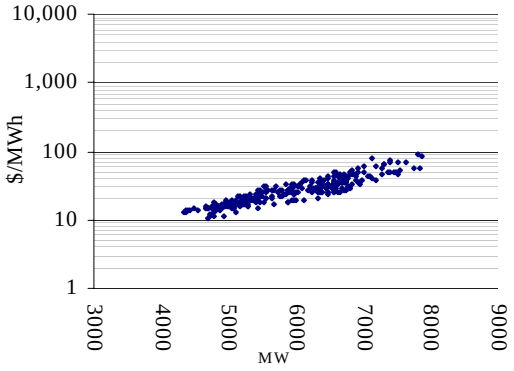


Figure 6: South Australia

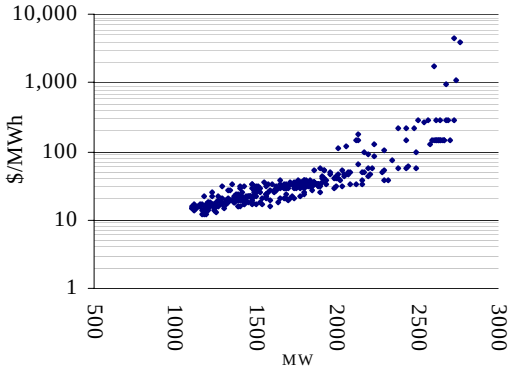
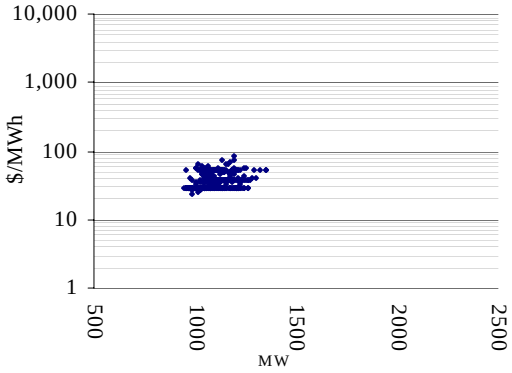


Figure 7: Tasmania



The maximum spot prices for the week ranged from $37/MWh in Queensland to $4431/MWh in South Australia. 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	0.49	0.60	0.66	2.91	0.61
Previous week	0.83	0.77	0.71	0.99	0.38
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

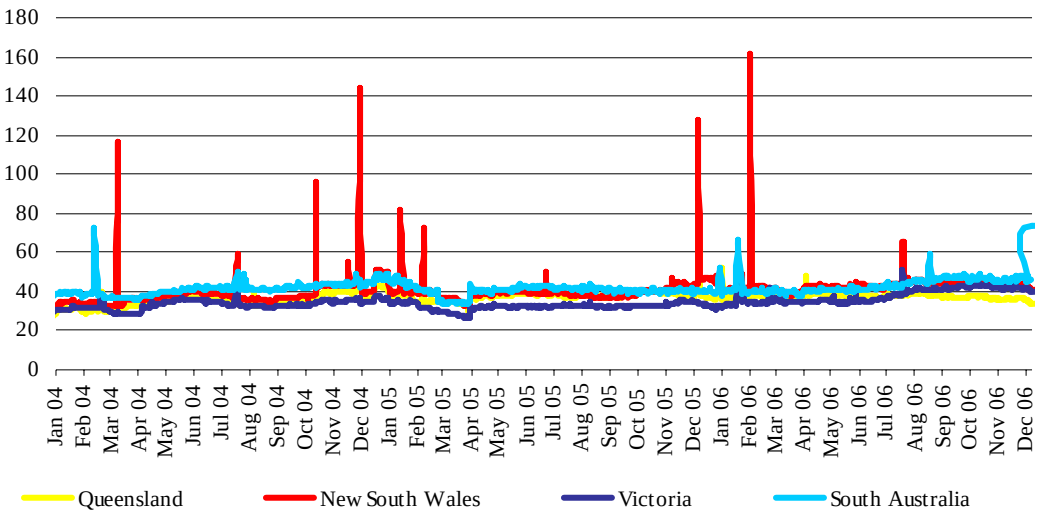
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	35.17	35.37	35.05	34.10	34.10
New South Wales	40.99	41.75	41.60	41.06	40.80
Victoria	40.86	41.99	40.41	40.26	40.39
South Australia	46.51	47.66	46.17	46.17	73.81

* 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

Figure 10: d-cyphaTrade WEPI



Reserve

There were three periods of low reserves forecast for the week in South Australia. On Tuesday afternoon, NEMMCO forecast low reserves for Thursday and Friday afternoon. A participant response resulted in adequate reserves for Thursday, with further minor reserve shortfalls forecast on Saturday at 1.20 pm for that afternoon.

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

Figure 11: Queensland

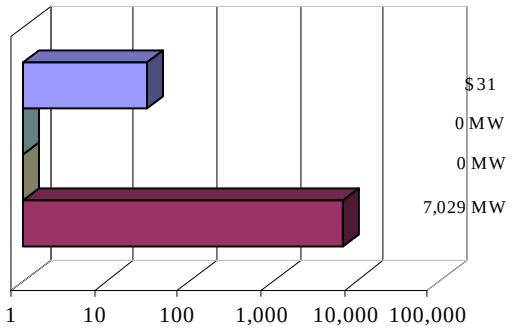


Figure 12: New South Wales

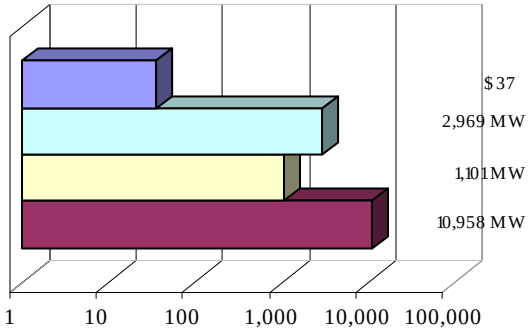


Figure 13: Victoria

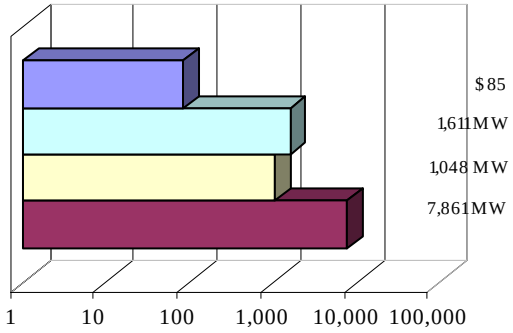


Figure 14: South Australia

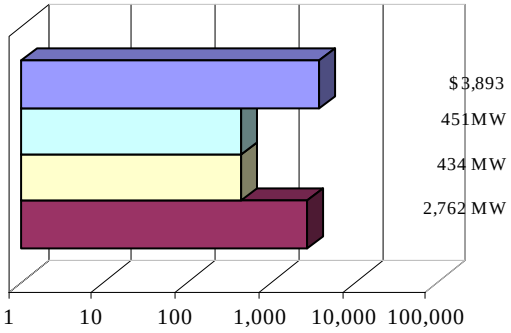
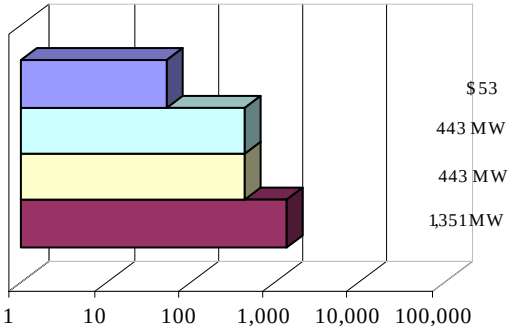


Figure 15: Tasmania



Price variations

There were 108 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

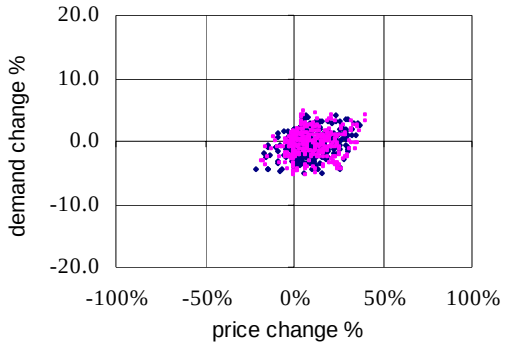


Figure 17: New South Wales

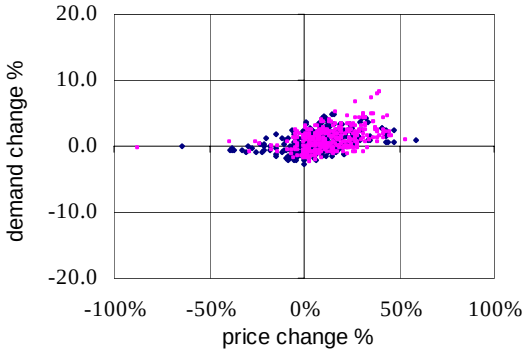


Figure 18: Victoria

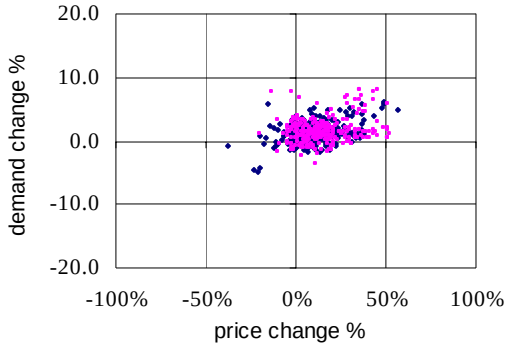


Figure 19: South Australia

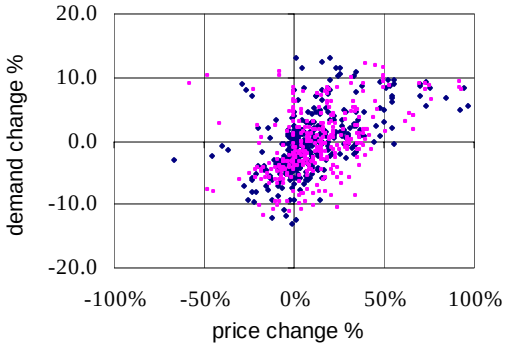
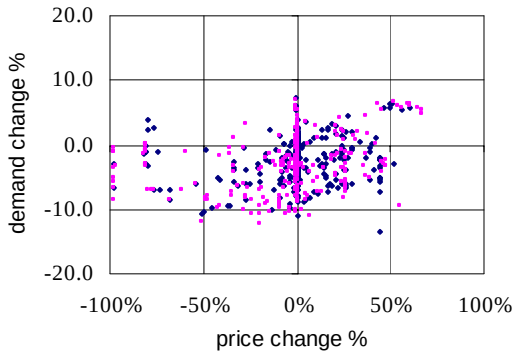


Figure 20: Tasmania



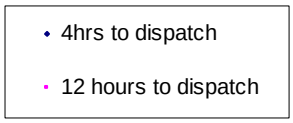
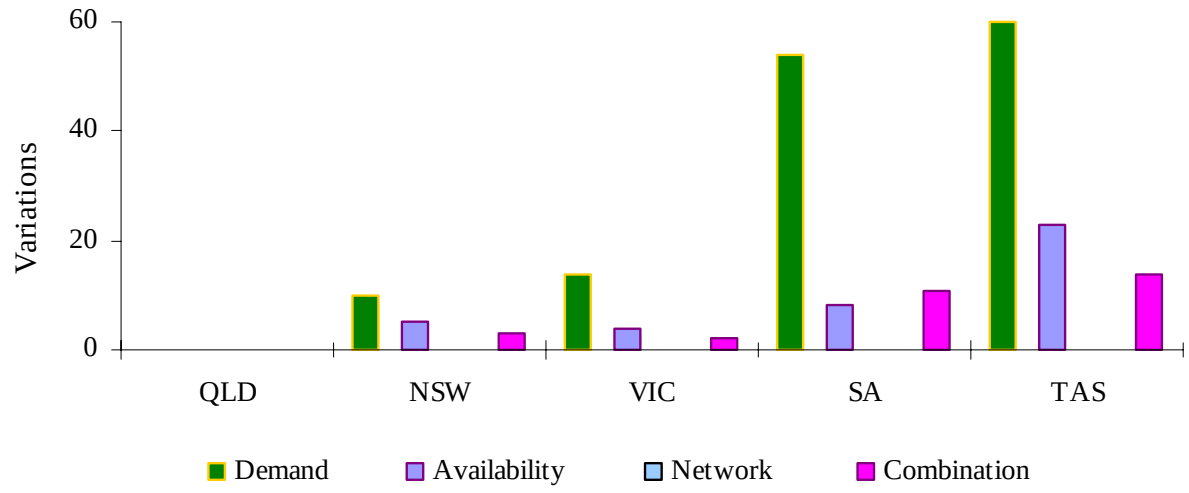


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

Figure 21: reasons for variations between forecast and actual prices



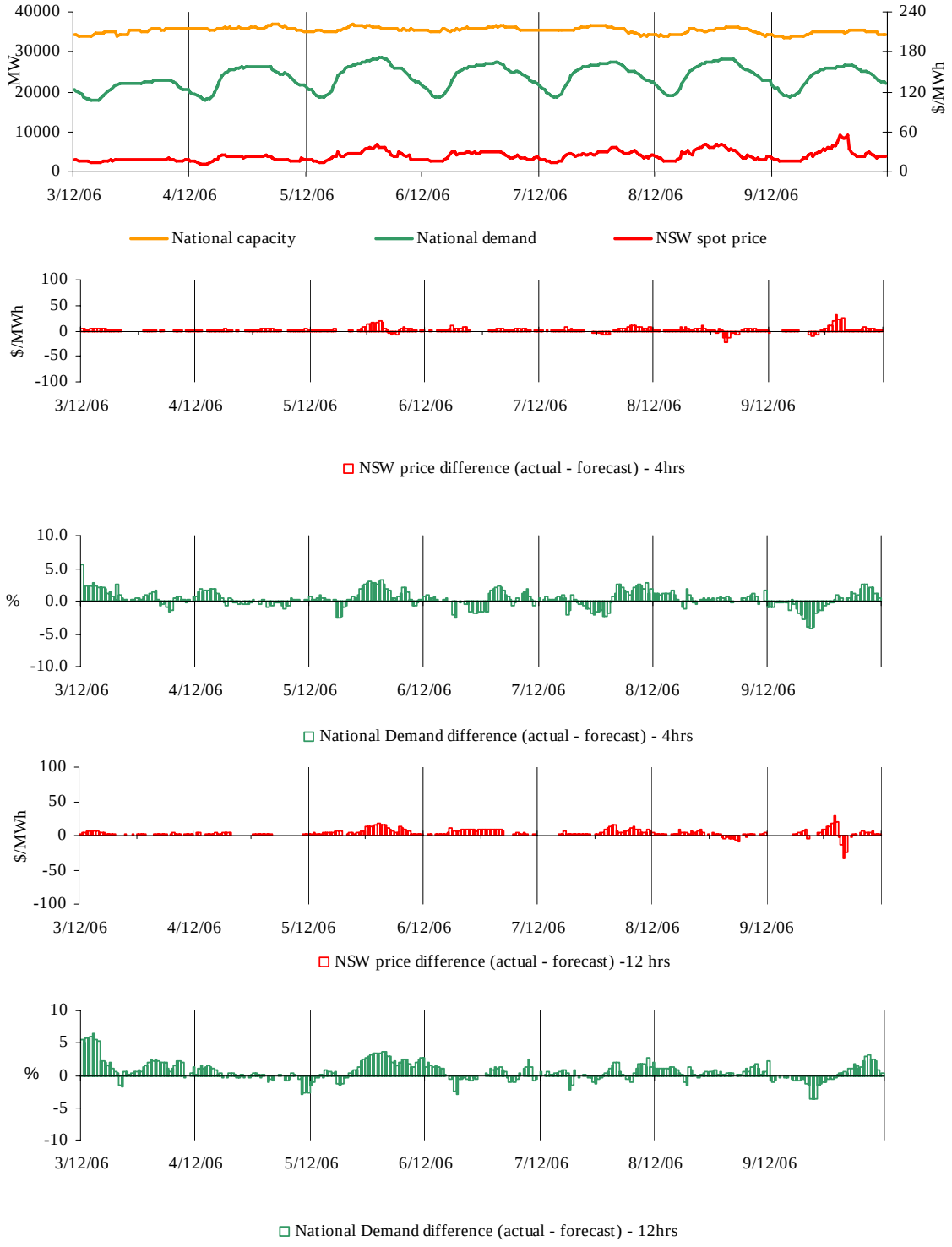
Price and demand

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.

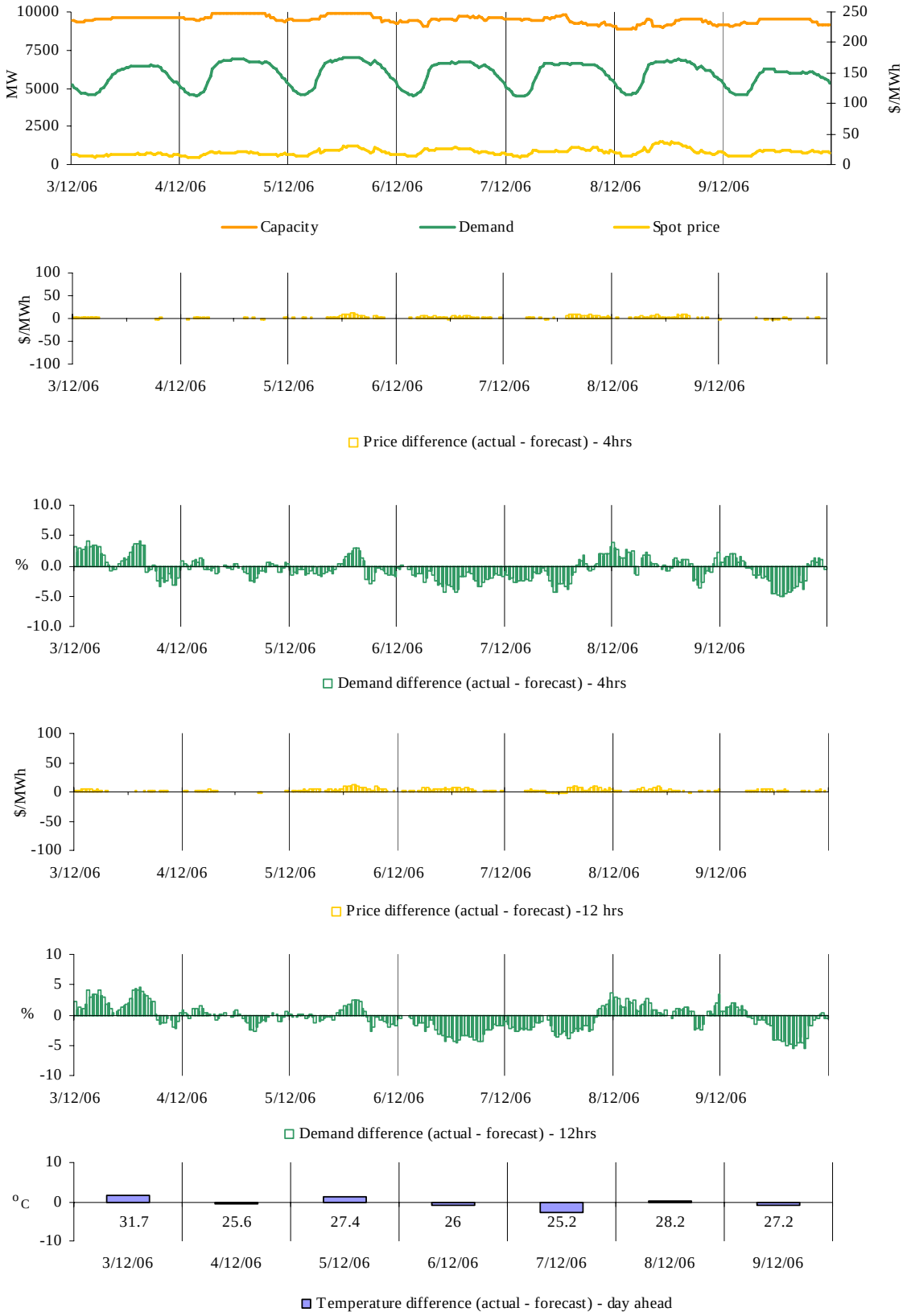
Figures 22-26: National market outcomes



There was no occasion where spot prices were nationally aligned and the New South Wales price[1] was greater than three times the New South Wales weekly average price of $24/MWh.

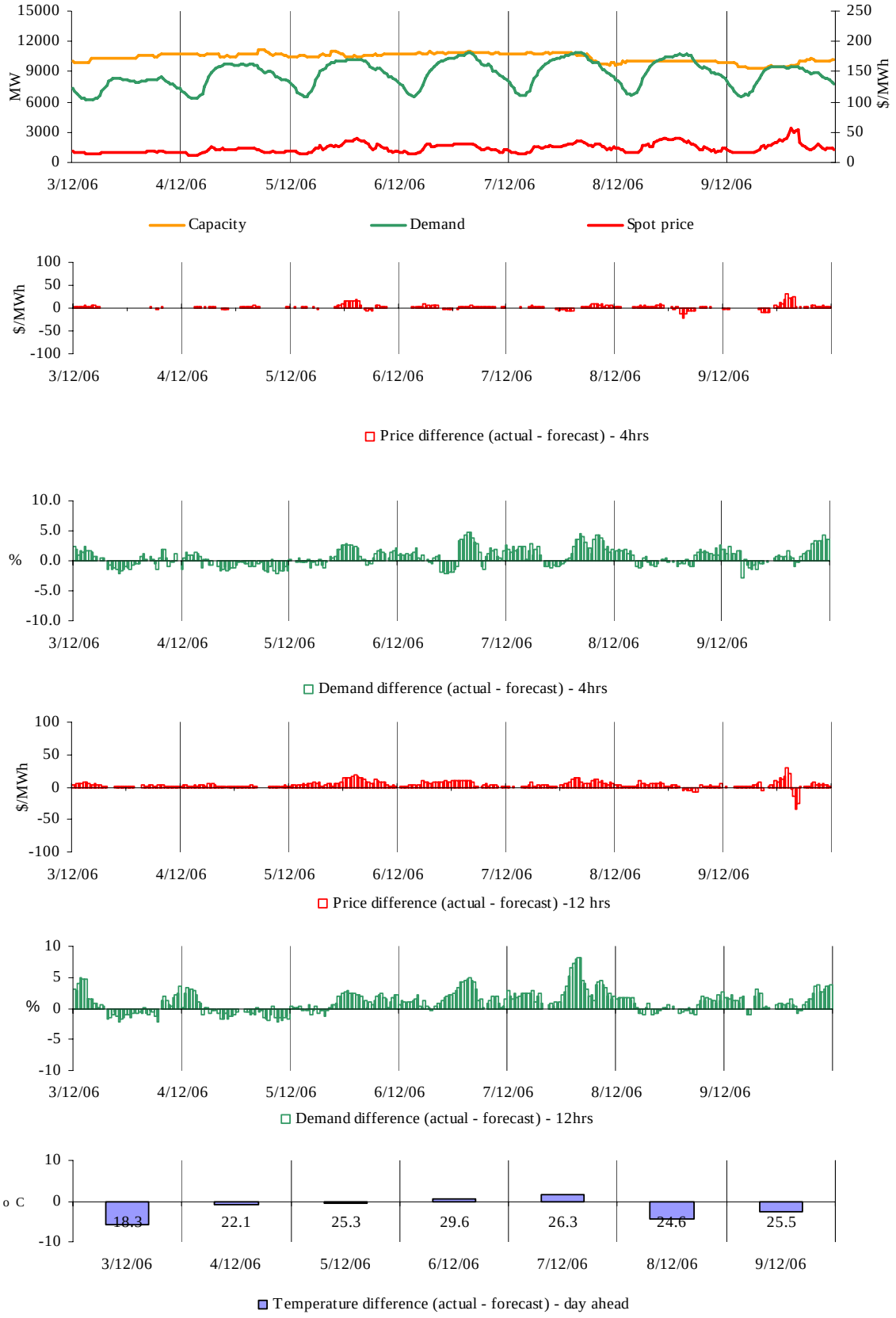
[1] The New South Wales spot price has been used to represent a pseudo national price under these conditions.

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



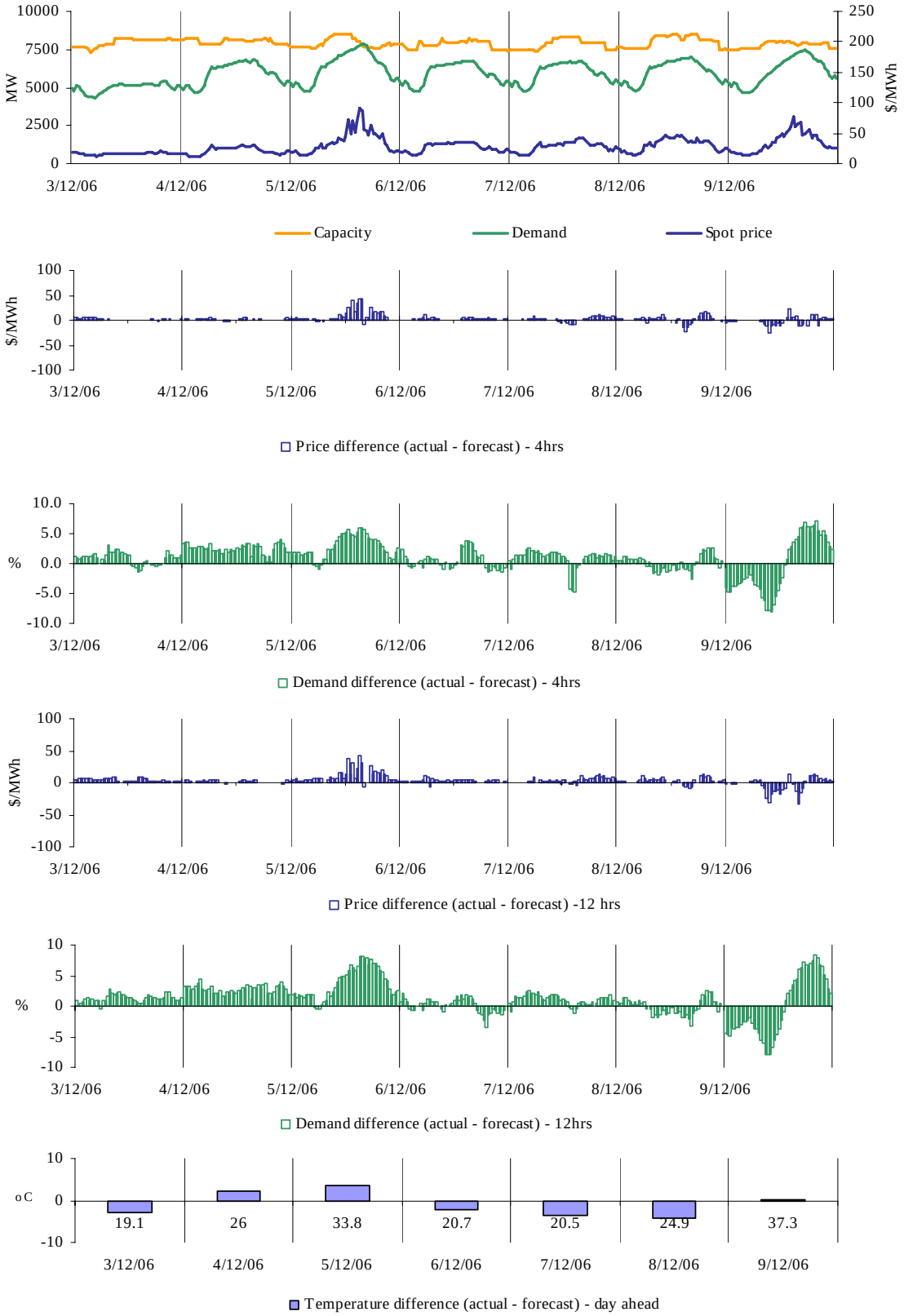
There was no occasion where the spot price in Queensland was greater than three times the weekly average price of $21/MWh.

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 $24/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 $30/MWh.

Tuesday, 5 December

3:30 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	90.88	46.71	49.70
Demand (MW)	7799	7330	7173
Available capacity (MW)	8044	8493	8472

Conditions at the time saw demand 470 MW higher than forecast four hours ahead and available capacity 450 MW lower than forecast four hours ahead.

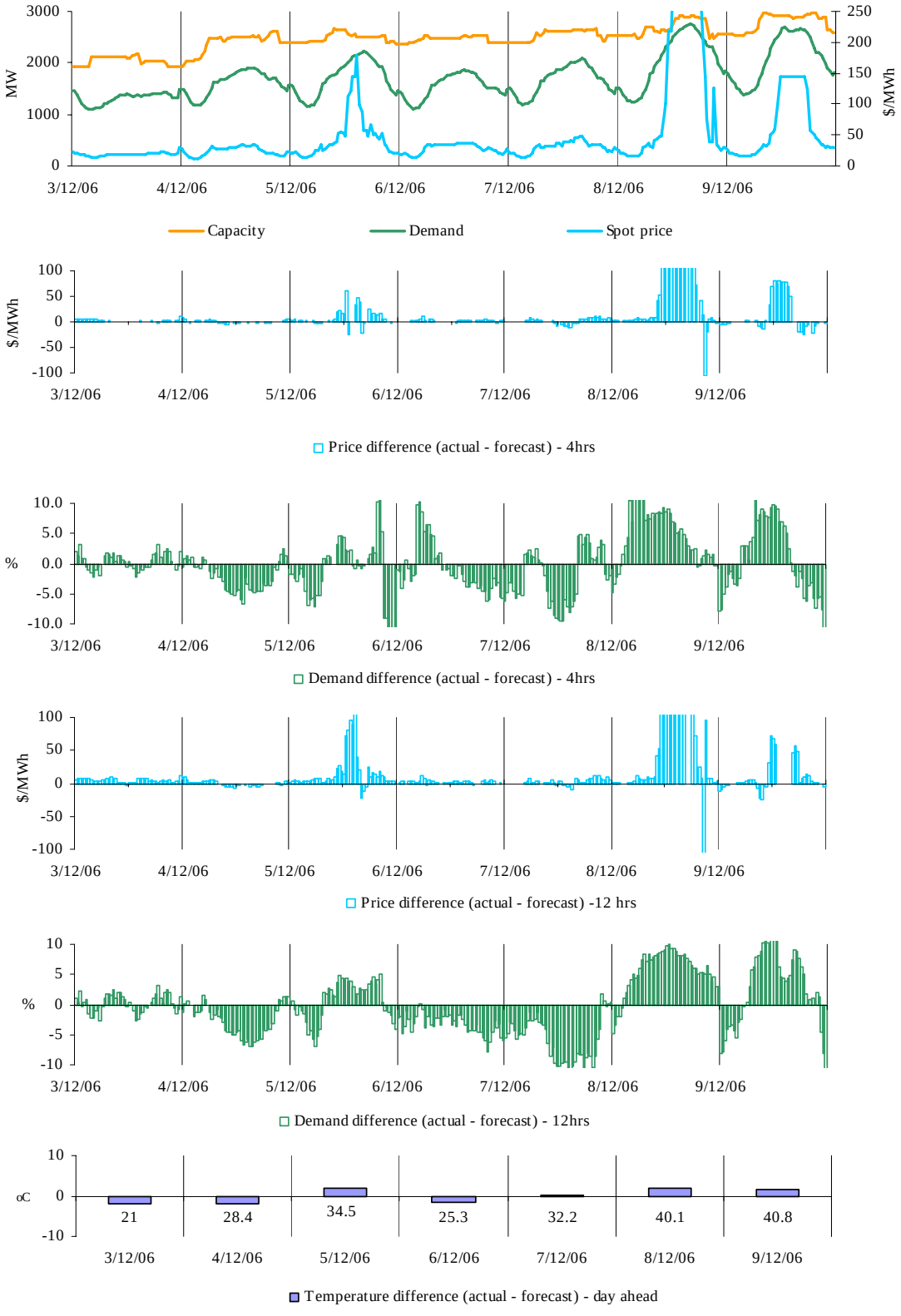
Coal problems at Loy Yang resulted in the output of both Loy Yang A and B being reduced for much of the day.

From 8.30 am LYMMCO began shifting capacity into higher prices. For 3.30 pm, a total of 502 MW of capacity had been shifted from prices below $20/MWh to above $220/MWh. The rebid reason given was “Coal conservation”. Over two rebids between 1 pm and 2 pm International Power reduced capacity at its Loy Yang B units by 217 MW. The rebid reason given was “Plant conditions adjusting capacity due to coal shortfall”.

At 2.31 pm Snowy Hydro reduced the availability of Laverton North by 177 MW and shifted 75 MW of capacity priced at zero to above $9000/MWh. The rebid reason given was “Plant commissioning”.

There was no other significant rebidding.

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



There were five occasions where the spot price in South Australia was greater than three times the weekly average price of $109/MWh.

Friday, 8 December

1:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1740.83	88.23	145.00
Demand (MW)	2606	2389	2361
Available capacity (MW)	2872	2976	2894
2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	951.18	145.00	289.00
Demand (MW)	2683	2503	2443
Available capacity (MW)	2906	2942	2894
3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	4430.63	145.00	289.00
Demand (MW)	2730	2583	2511
Available capacity (MW)	2897	2938	2894
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1074.00	289.00	289.00
Demand (MW)	2742	2587	2521
Available capacity (MW)	2894	2938	2894
4:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	3893.27	289.00	289.00
Demand (MW)	2762	2629	2534
Available capacity (MW)	2904	2921	2894

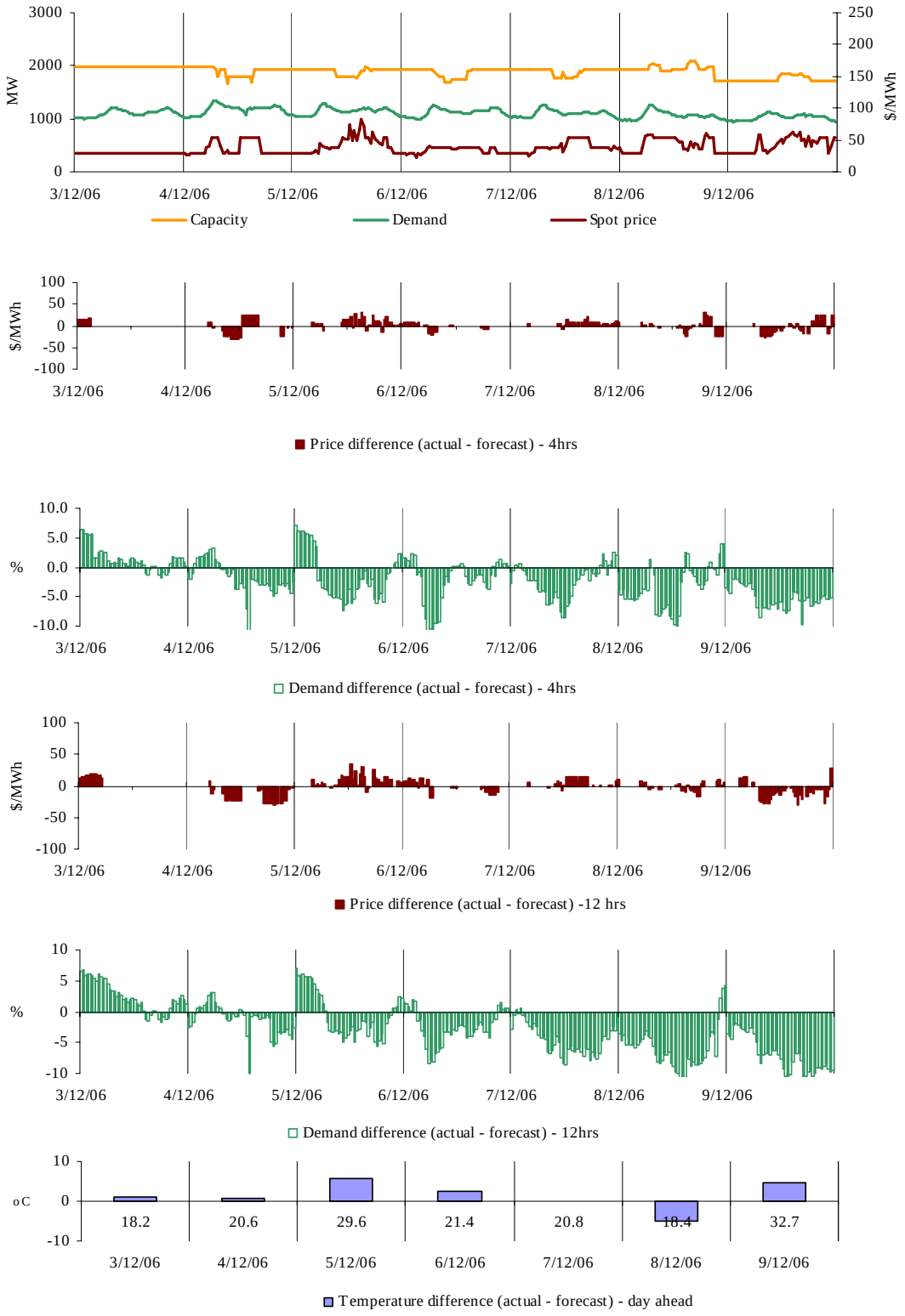
Conditions at the time saw demand as much as 220 MW higher than forecast four hours ahead. It was the highest recorded demand since January and was within 110 MW of the record. There was little to no capacity priced between $300/MWh and $9000/MWh.

An outage in Victoria reduced the capability for imports across the Murraylink interconnector to close to zero and at times led to counter priced flows into Victoria. This outage commenced 1 December. Notification of the need to take the outage was first received through the network outage scheduler on 23 November. The outage was completed later in the evening, five days ahead of schedule.

Over a number of rebids from 7.52 am, up to 160 MW of capacity at Hallett power station was rebid into lower prices to commit the station from 11 am. At 1.57 pm, 38 MW of capacity was shifted from prices of zero to close to $8000/MWh. The rebid reason given was “Plant testing / commissioning::unit availabl”. 25 MW of this capacity was rebid to lower prices at 3.12 pm, effective 3.20 pm with the rebid reason “Price change in market::Portfolio optimisation”.

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

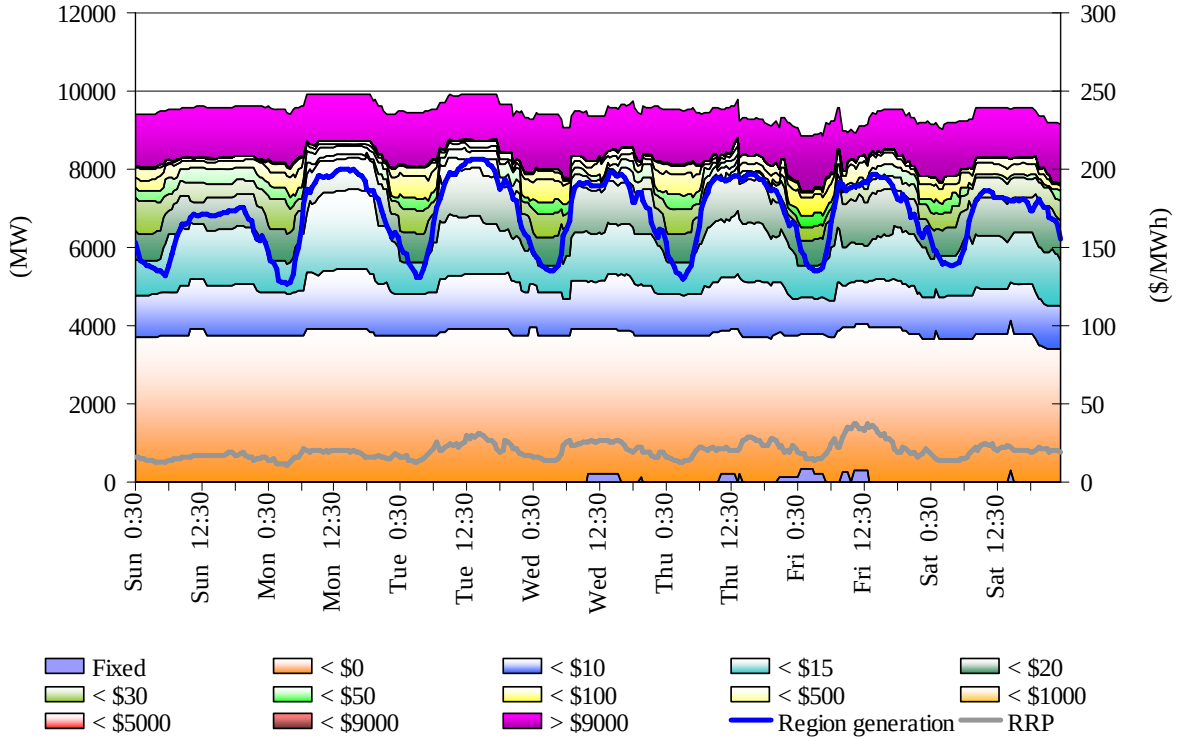


Figure 58: New South Wales closing bid prices, dispatched generation and spot price

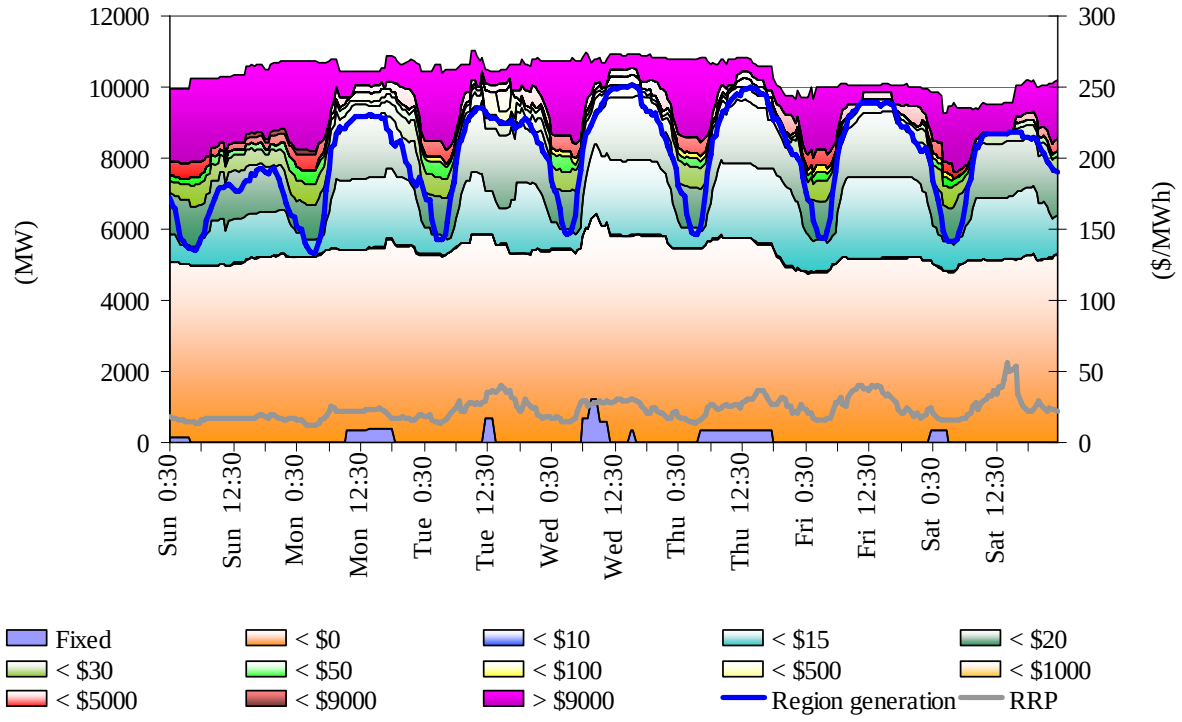


Figure 59: Victoria closing bid prices, dispatched generation and spot price

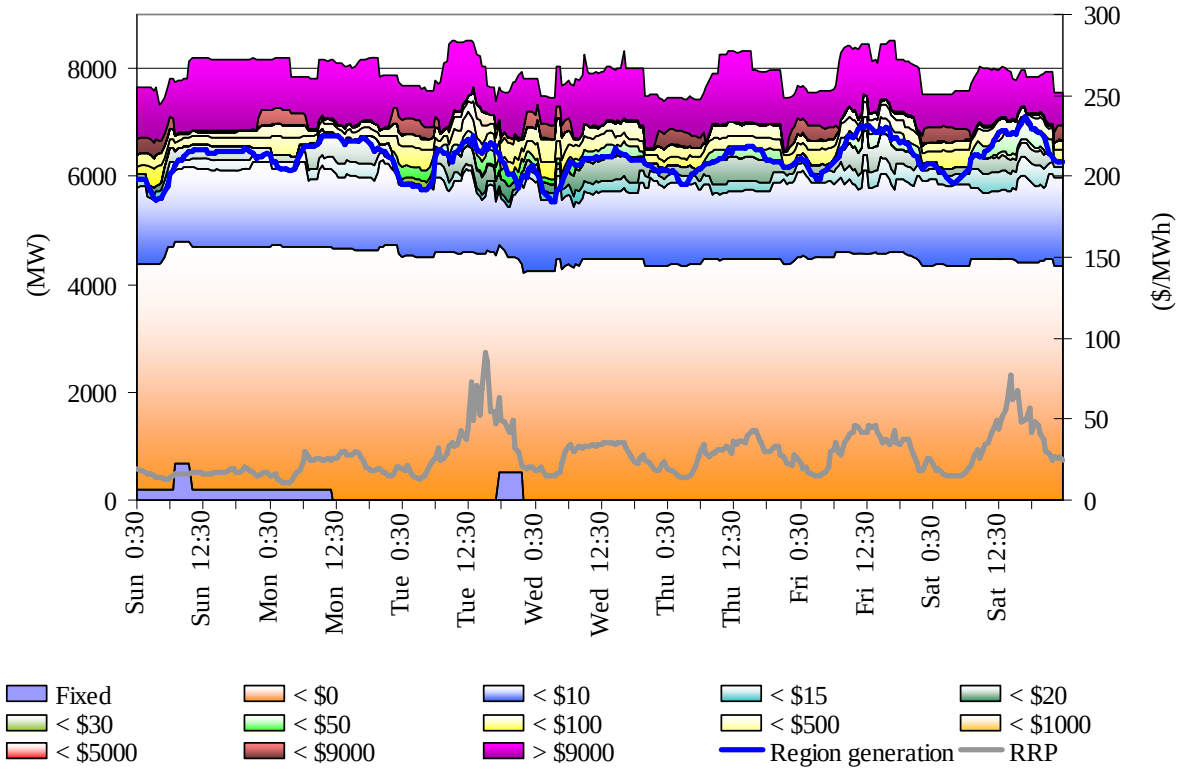


Figure 60: South Australia closing bid prices, dispatched generation and spot price

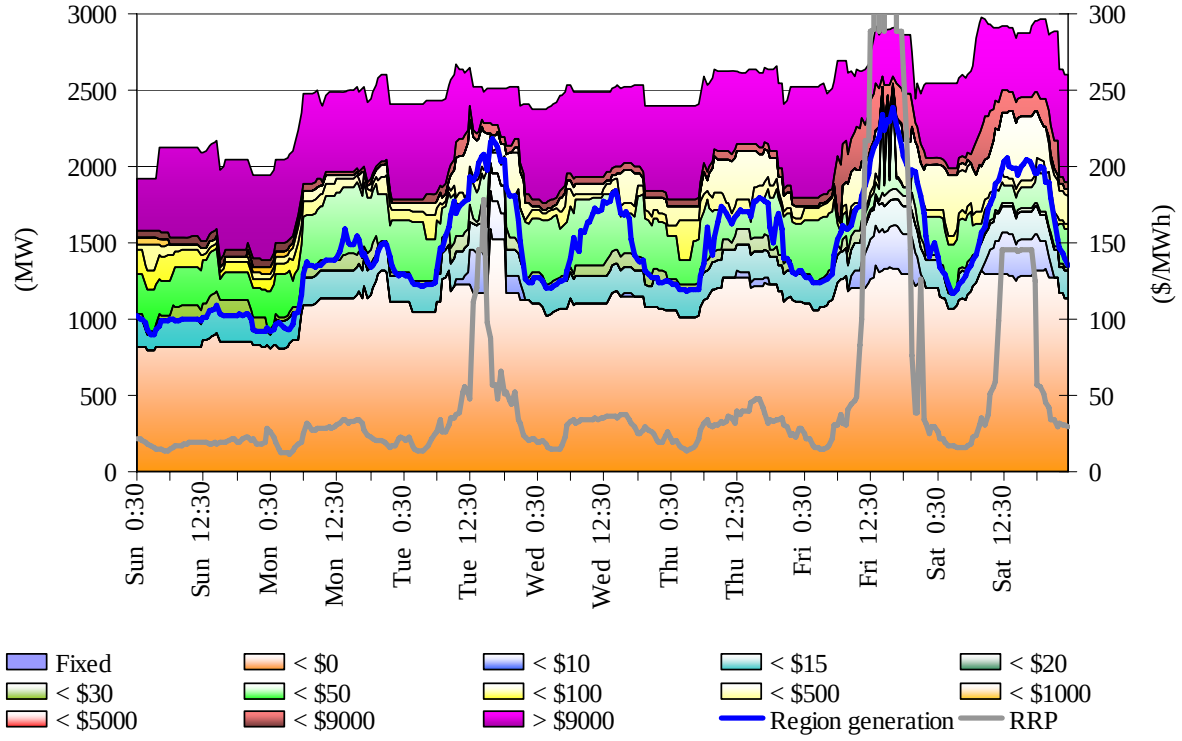
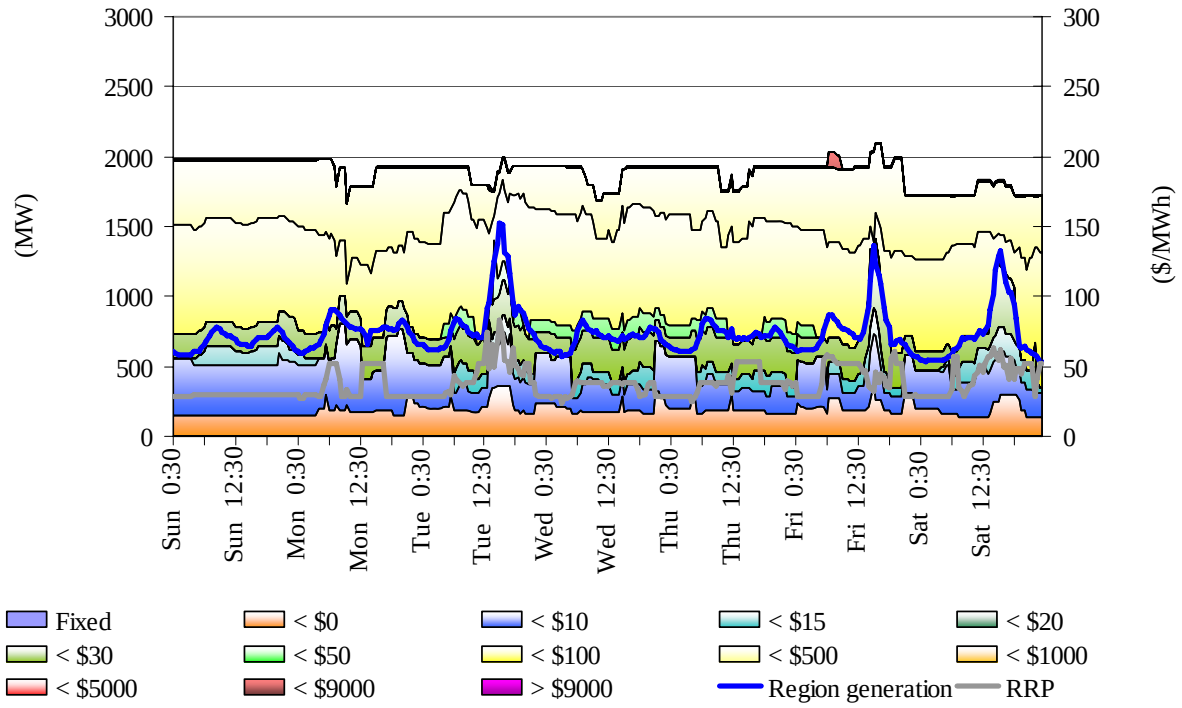


Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $124 000 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 ($/MW)	0.24	0.09	0.56	2.09	0.08	0.24	0.66	0.99
Previous week ($/MW)	0.35	0.13	1.23	2.61	1.25	0.42	0.89	1.05
Last quarter ($/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	$9	$3	$29	$49	$0	$3	$17	$14
% of energy market	0.01%	0.01%	0.02%	0.04%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was $73 000 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 ($/MW)	3.89	0.80	2.01	4.04	0.13	0.19	1.27	1.05
Previous week ($/MW)	10.17	0.67	1.43	3.02	0.11	0.19	0.45	1.04
Last quarter ($/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost ($1000s)	$16	$11	$26	$11	$0	$0	$3	$6
% of energy market	0.23%	0.16%	0.36%	0.15%	0.01%	0.01%	0.04%	0.09%

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

Figure 64: daily frequency control ancillary service cost

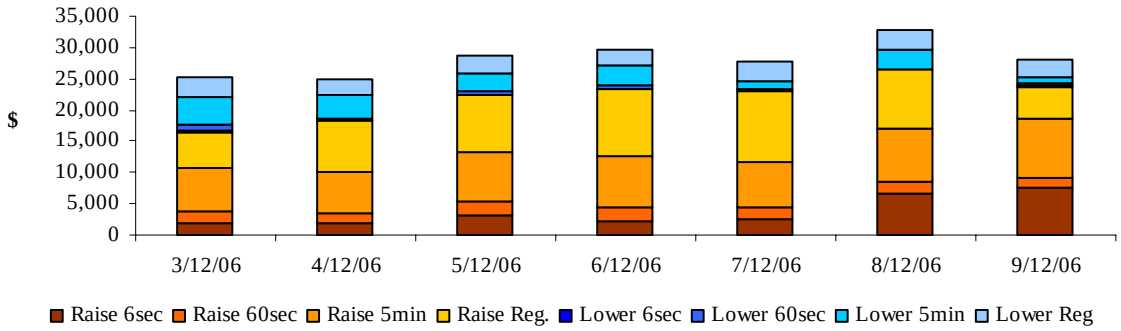
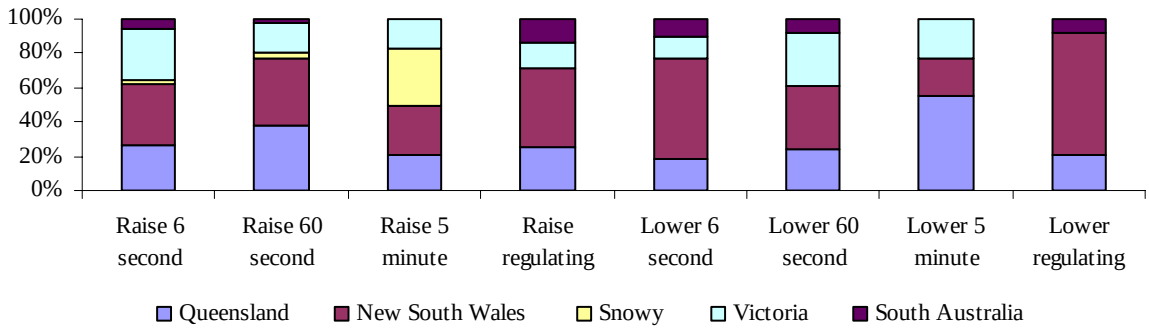


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

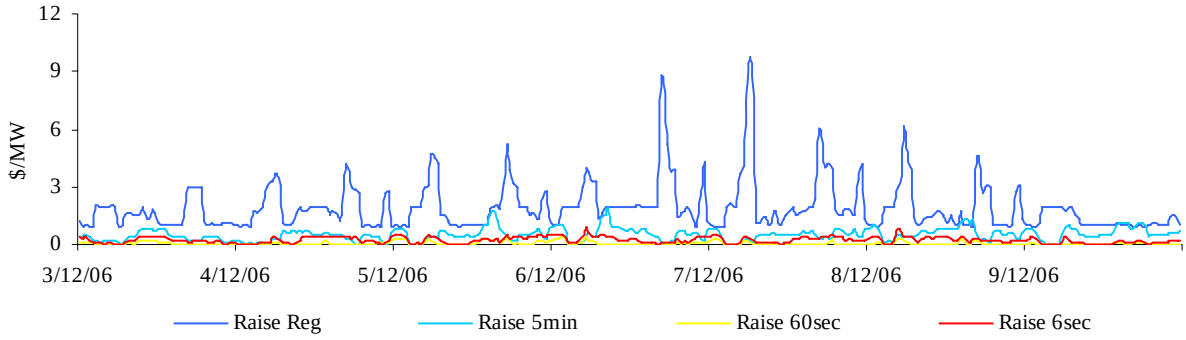


Figure 66A: prices for raise services – Tasmania

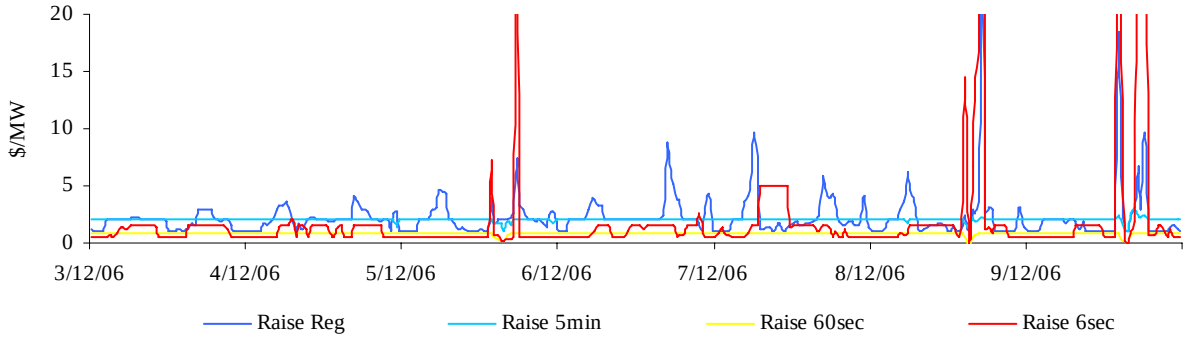


Figure 67: prices for lower services

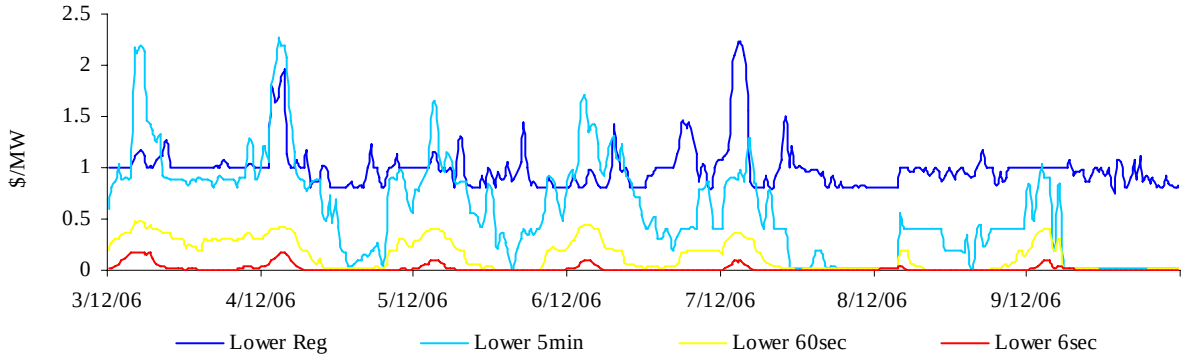
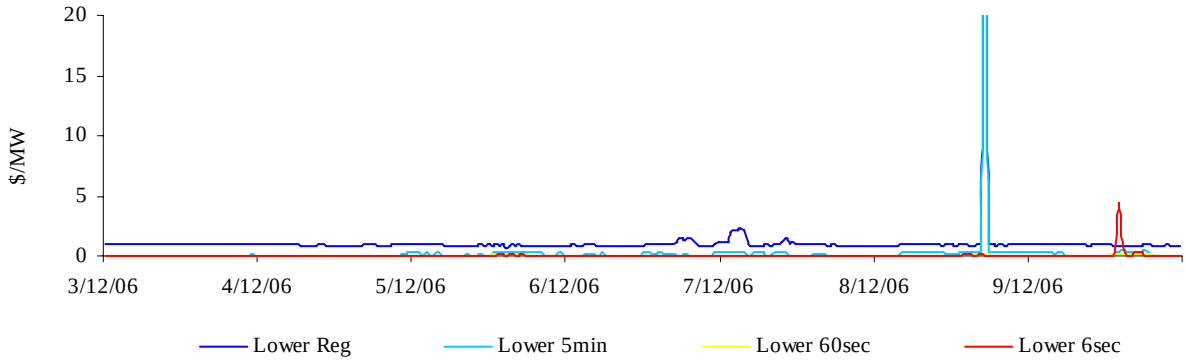


Figure 67A: prices for lower services – Tasmania



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

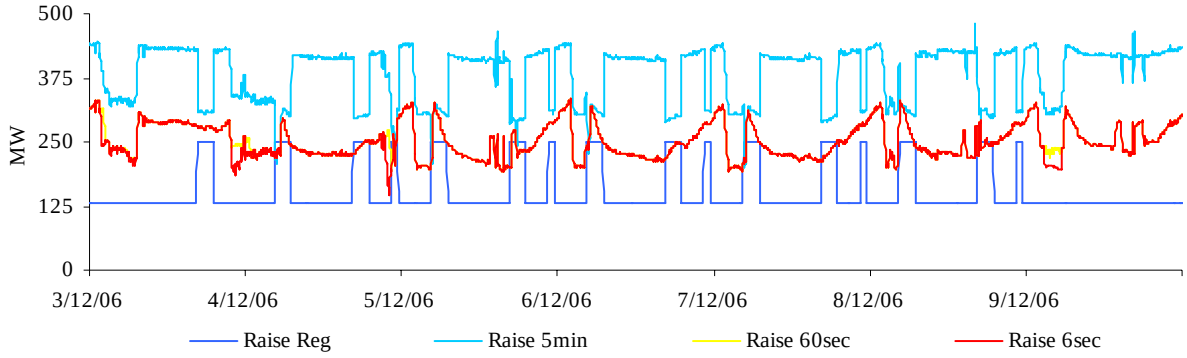


Figure 68A: raise requirements – Tasmania

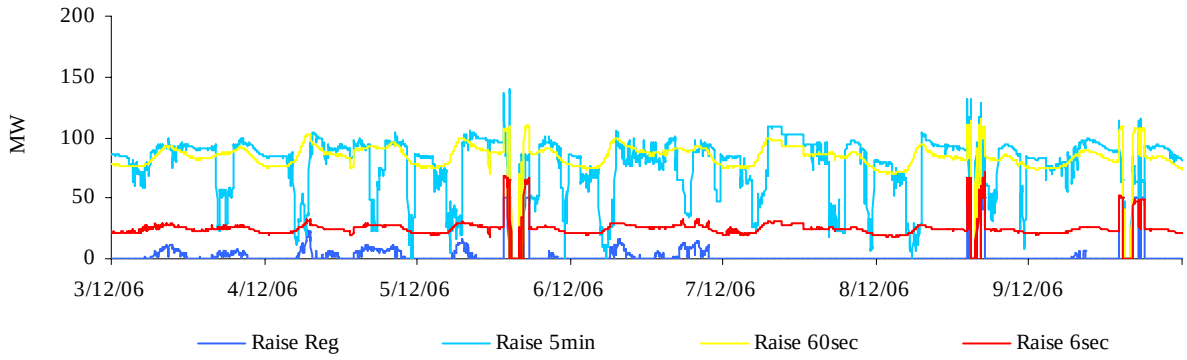


Figure 69: lower requirements

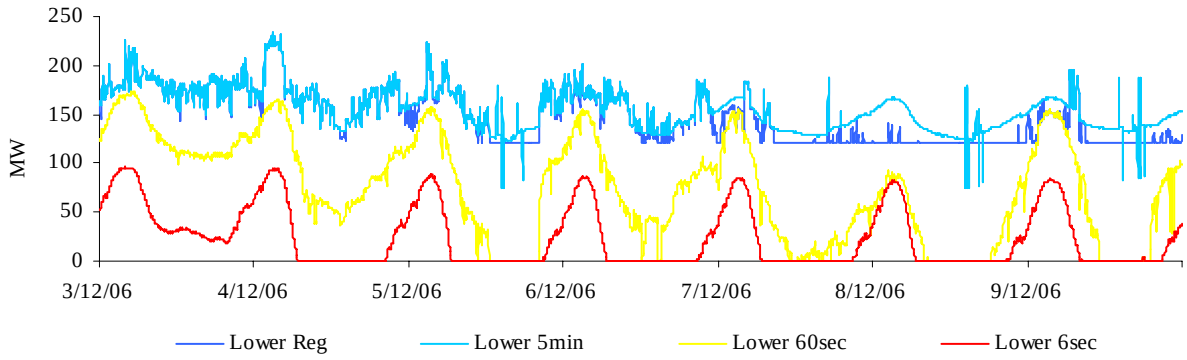
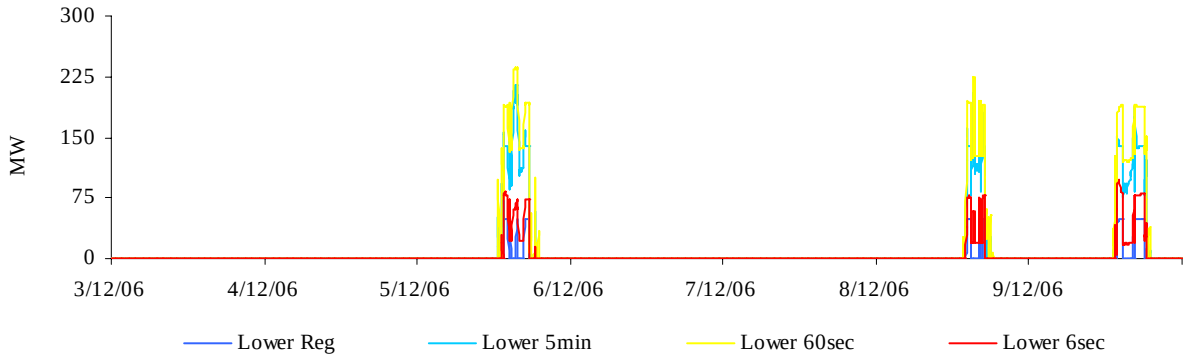


Figure 69A: lower requirements – Tasmania



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