

Market analysis



AUSTRALIAN ENERGY
REGULATOR

13 AUGUST – 19 AUGUST 2006

Spot prices for the week averaged between \$23/MWh in Queensland and \$37/MWh in South Australia with prices generally aligned across the mainland regions.

Turnover in the energy market was \$105 million. The total cost of ancillary services for the week was \$185 000, or 0.2 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 35, or 10 per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 13 per cent of all trading intervals across the market. These variations were most frequent in South Australia, occurring in a quarter 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

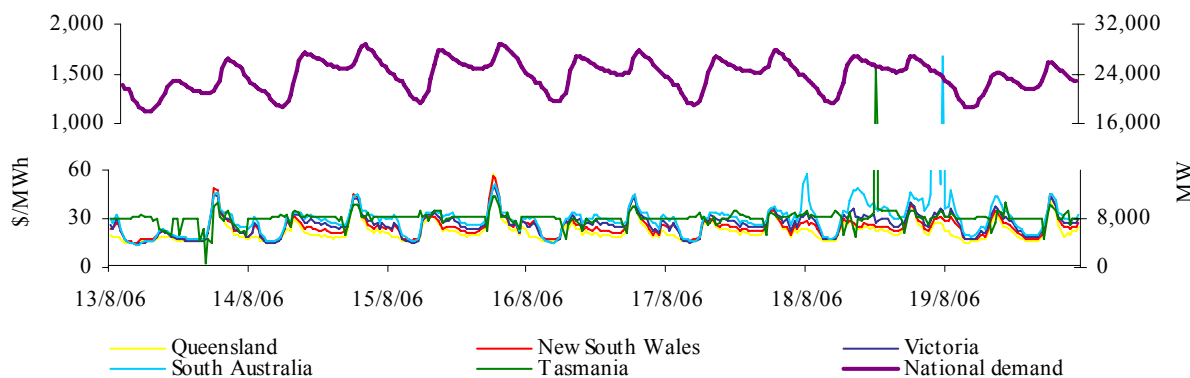


Figure 2: volume weighted average spot price for energy market (\$/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	23	25	27	37	35
Previous week	28	32	34	40	37
Same quarter last year	22	29	30	34	100
Financial year 2005 - 06	31	43	36	44	59
% change from previous week*	▼18%	▼21%	▼21%	▼6%	▼6%
% change from same quarter last year**	▲6%	▼11%	▼10%	▲10%	▼65%

*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.

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

Figure 3: Queensland

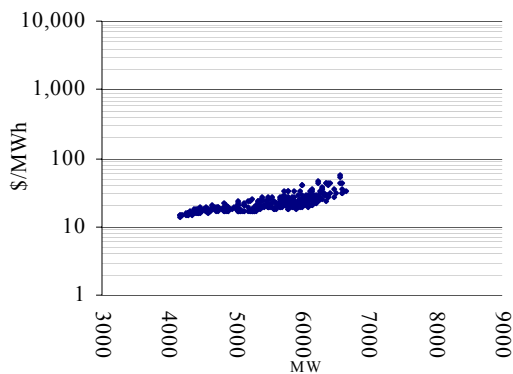


Figure 4: New South Wales

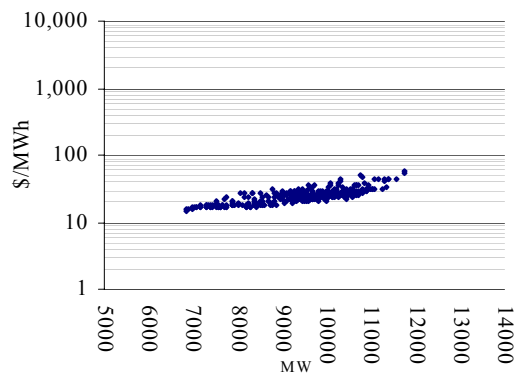


Figure 5: Victoria

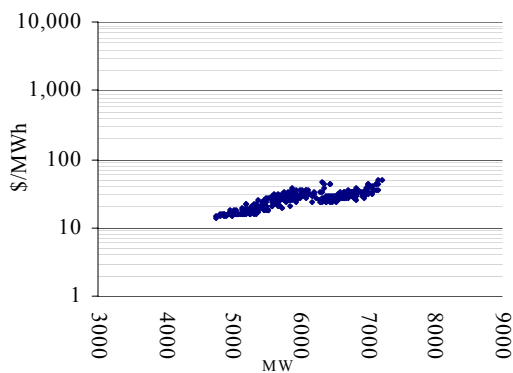


Figure 6: South Australia

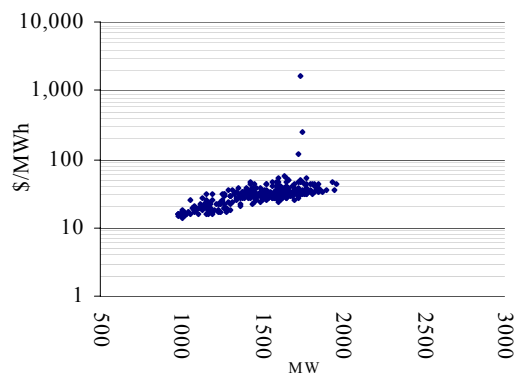
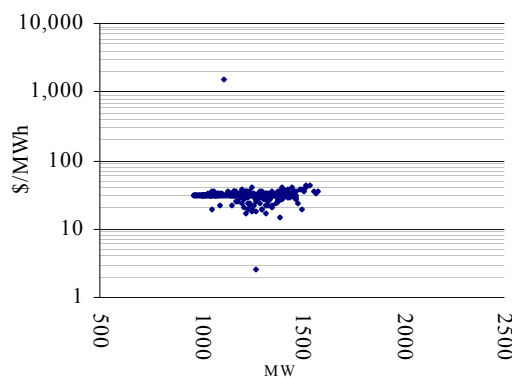


Figure 7: Tasmania



Maximum spot prices for the week were \$58/MWh in Queensland, \$57/MWh in New South Wales and \$50/MWh in Victoria, all occurring 6.30 pm on Tuesday. In South Australia, a maximum spot price of \$1671/MWh occurred at midnight on Friday. In Tasmania, a maximum spot price of \$1546/MWh occurred at 12.30 pm on Friday. 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	0.46	0.36	0.30	0.44	0.26
Previous week	0.77	0.73	0.58	0.58	0.46
Same quarter last year	0.64	0.86	0.86	0.83	0.81

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

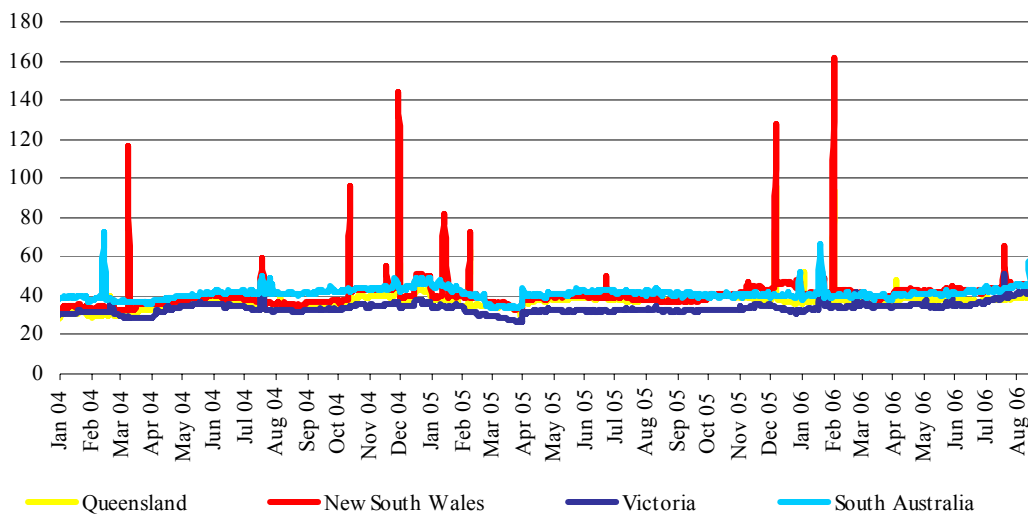
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	38.80	38.88	37.69	37.89	37.82
New South Wales	44.35	44.94	43.83	43.55	43.69
Victoria	41.03	41.77	41.00	40.70	41.14
South Australia	44.95	45.24	44.43	45.62	58.97

* 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 no low reserve conditions forecast.

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

Figure 11: Queensland

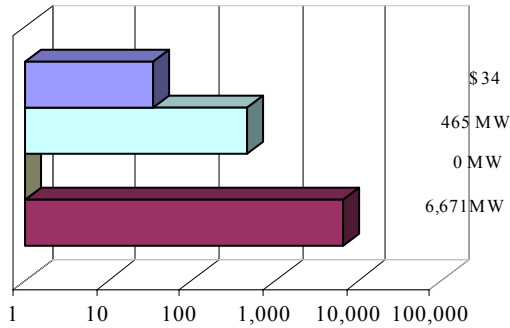


Figure 12: New South Wales

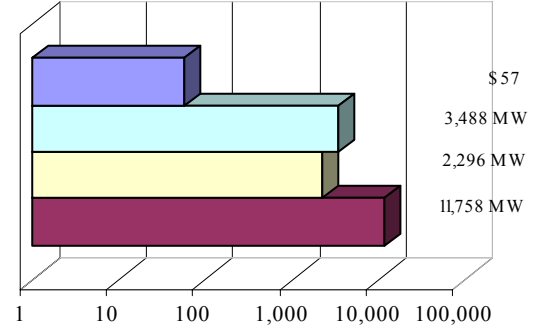


Figure 13: Victoria

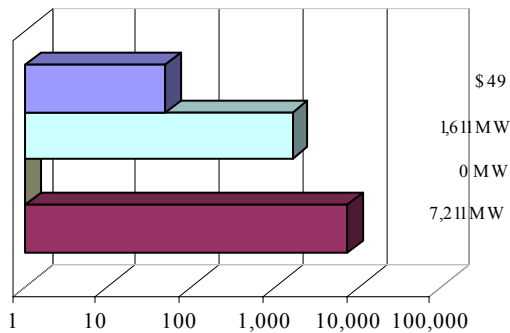


Figure 14: South Australia

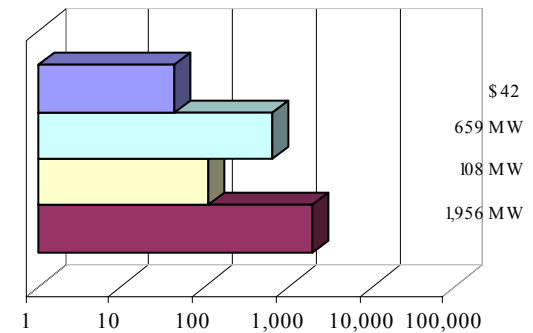
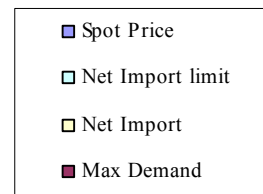
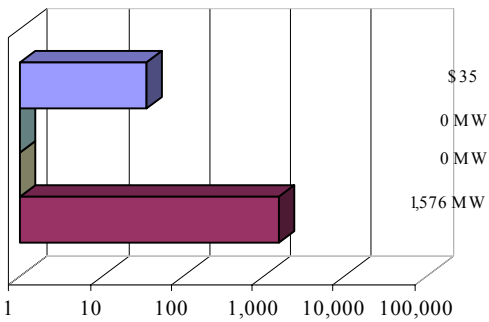


Figure 15: Tasmania



Price variations

There were 35 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

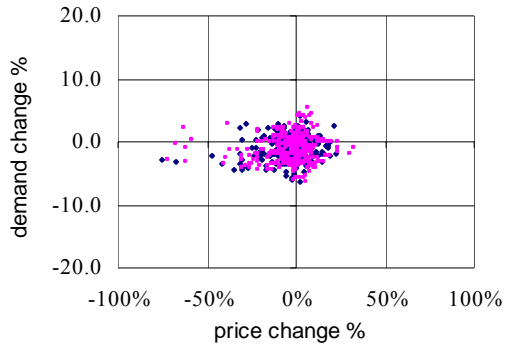


Figure 17: New South Wales

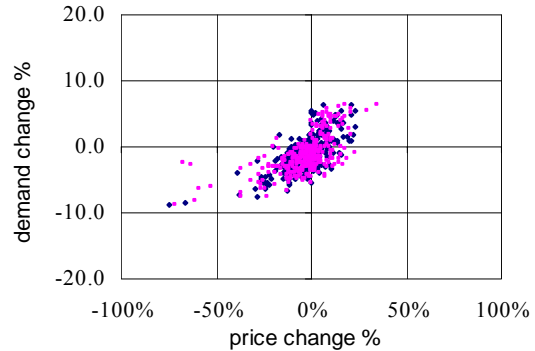


Figure 18: Victoria

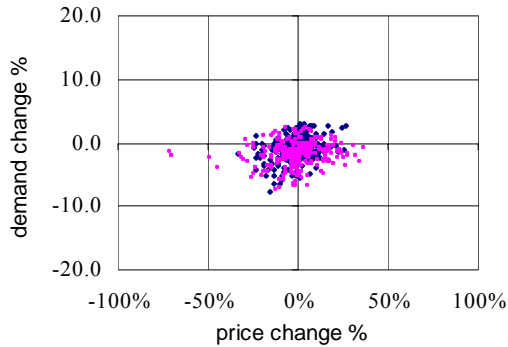


Figure 19: South Australia



Figure 20: Tasmania

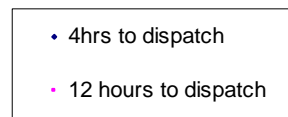
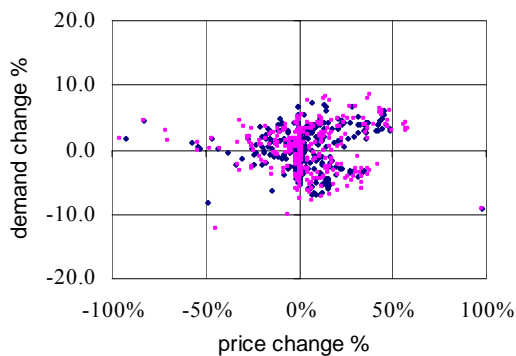
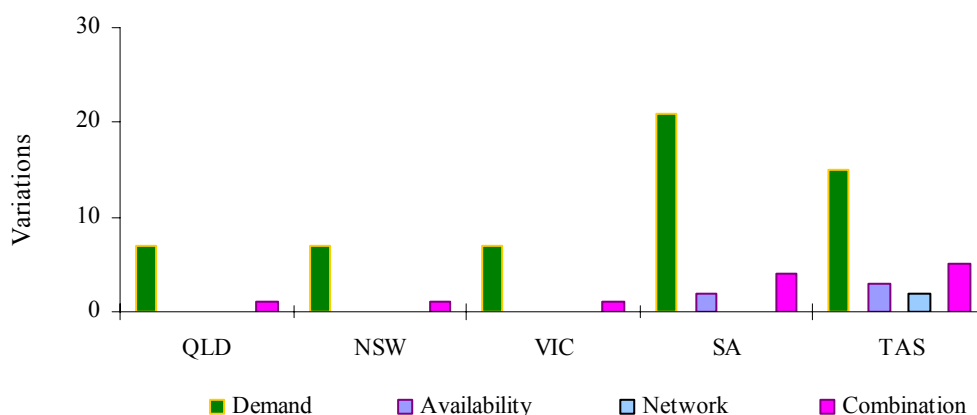


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

Figure 21: reasons for variations between forecast and actual prices



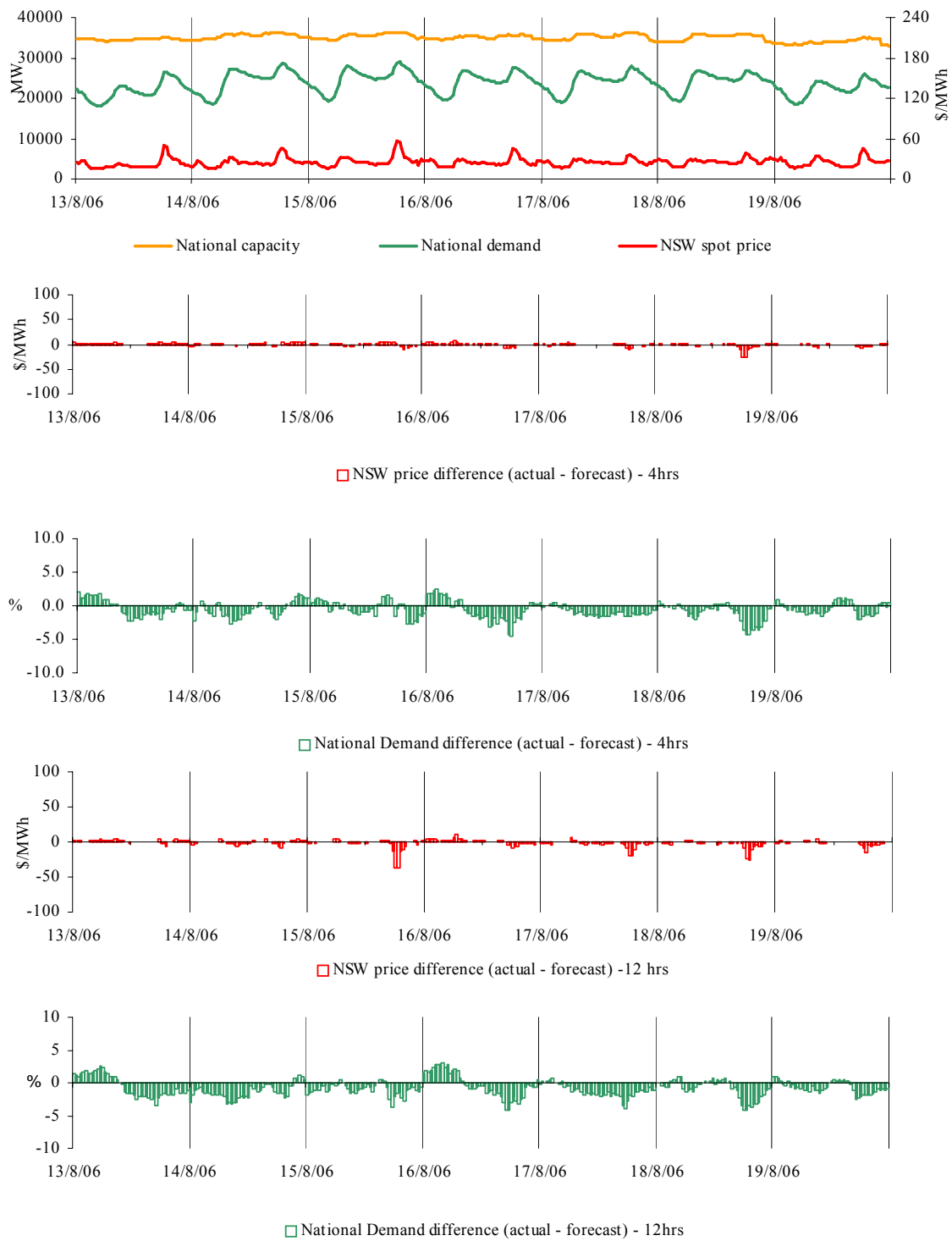
Price and demand

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

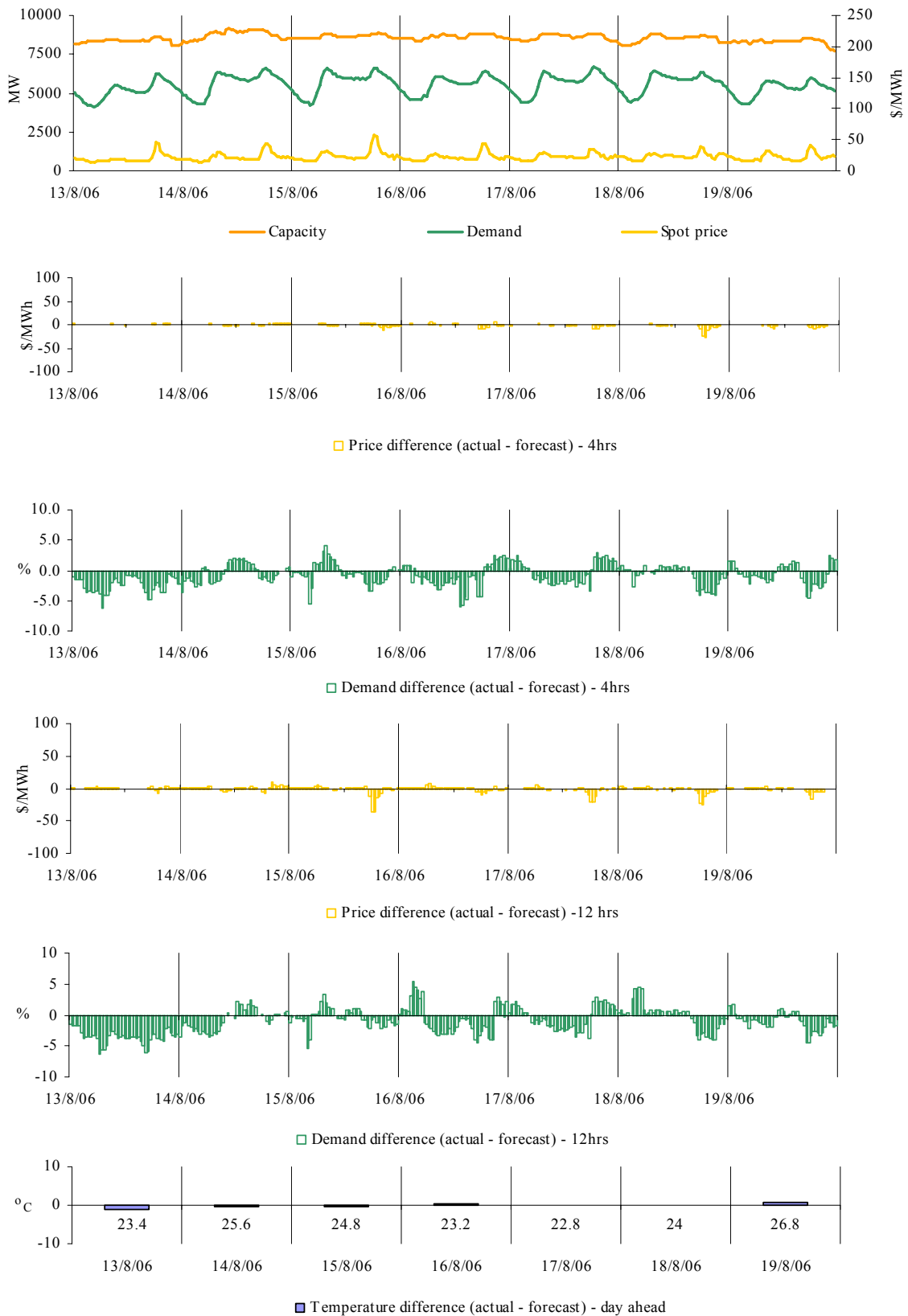


National market outcomes

There was no occasion where spot prices were generally aligned nationally and the New South Wales price¹ was greater than three times the New South Wales weekly average price of \$25/MWh.

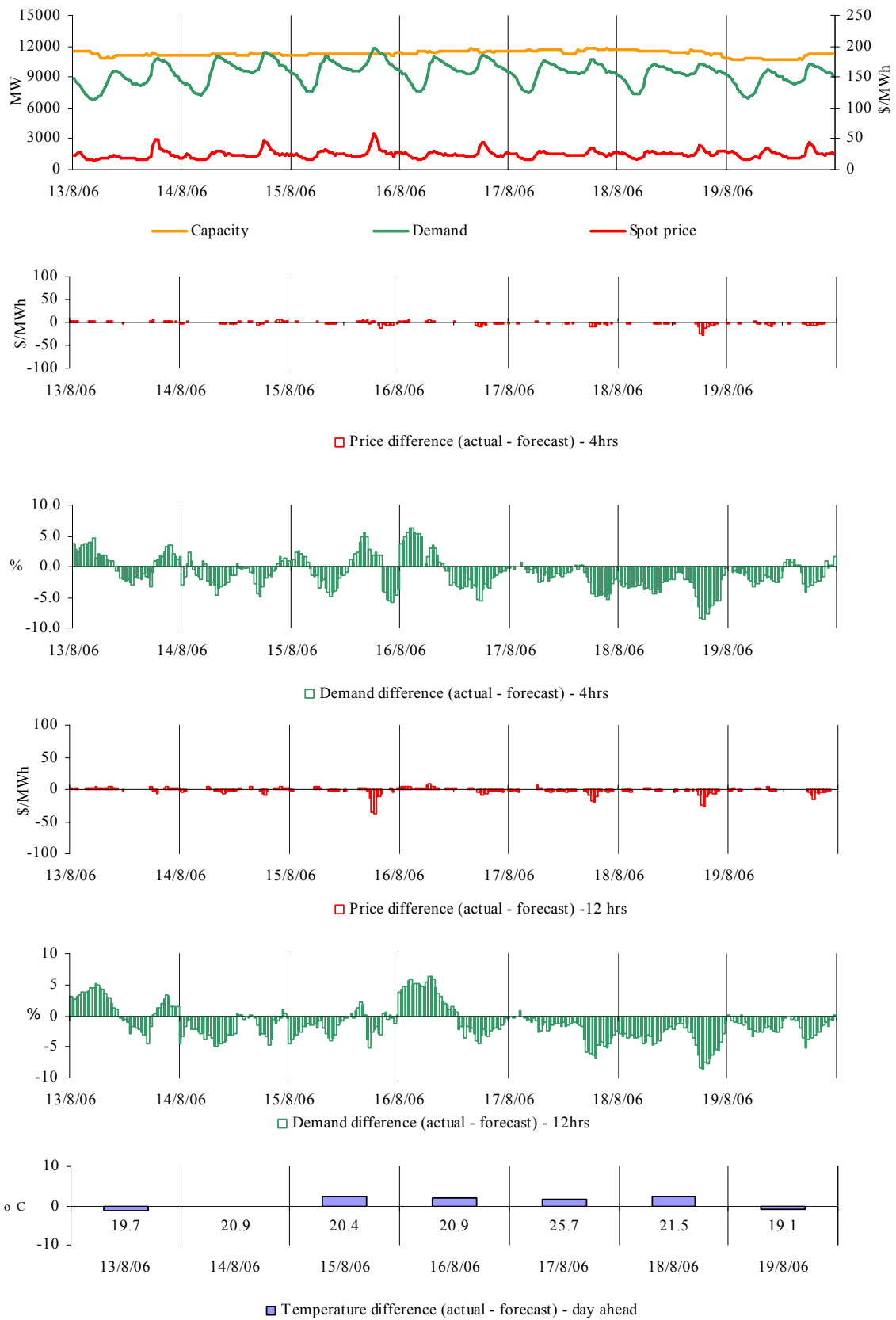
¹ The New South Wales spot price has been used to represent a pseudo national price under these conditions.

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



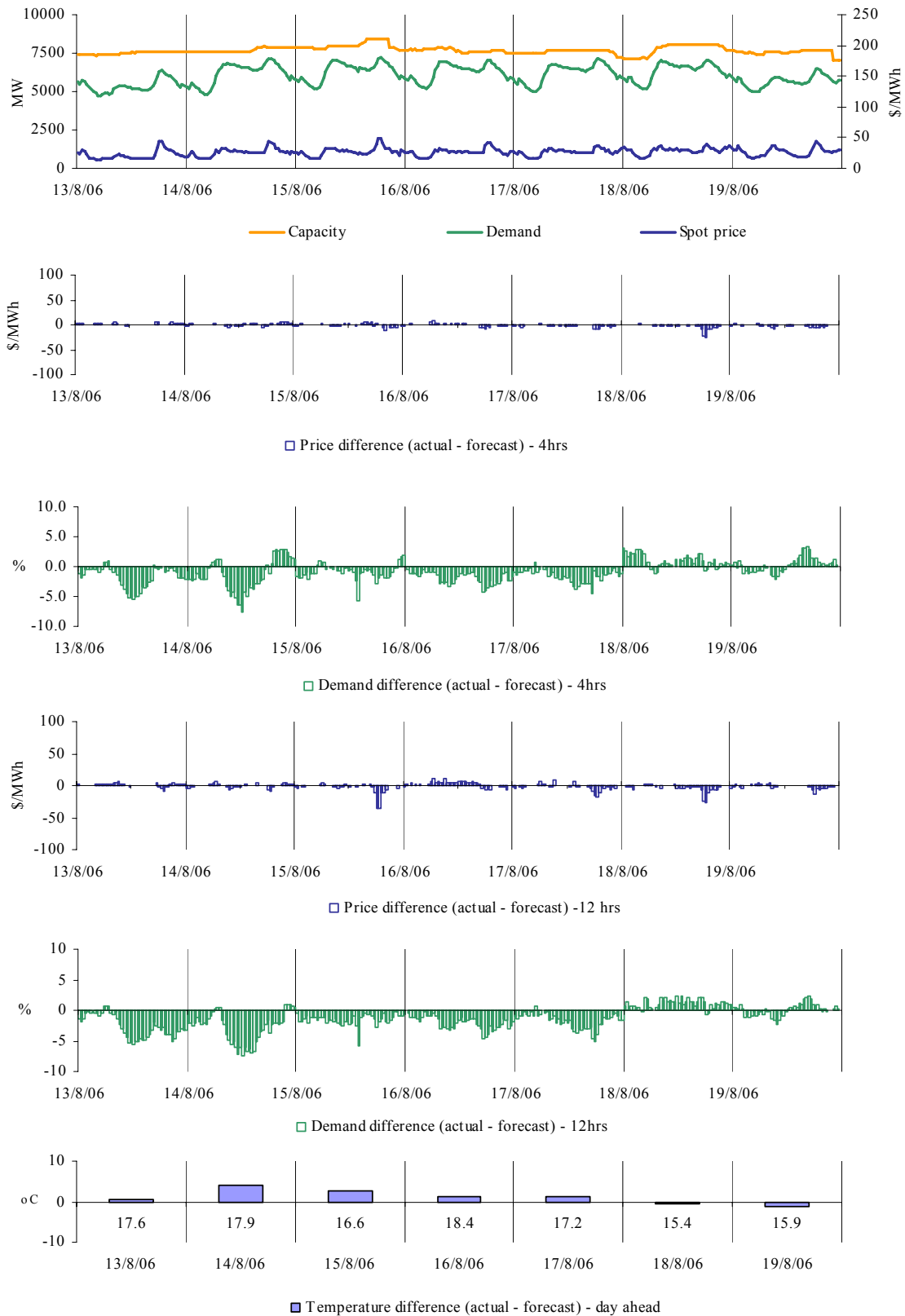
There was no occasion where the spot price in Queensland was greater than three times the weekly average price of \$23/MWh.

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



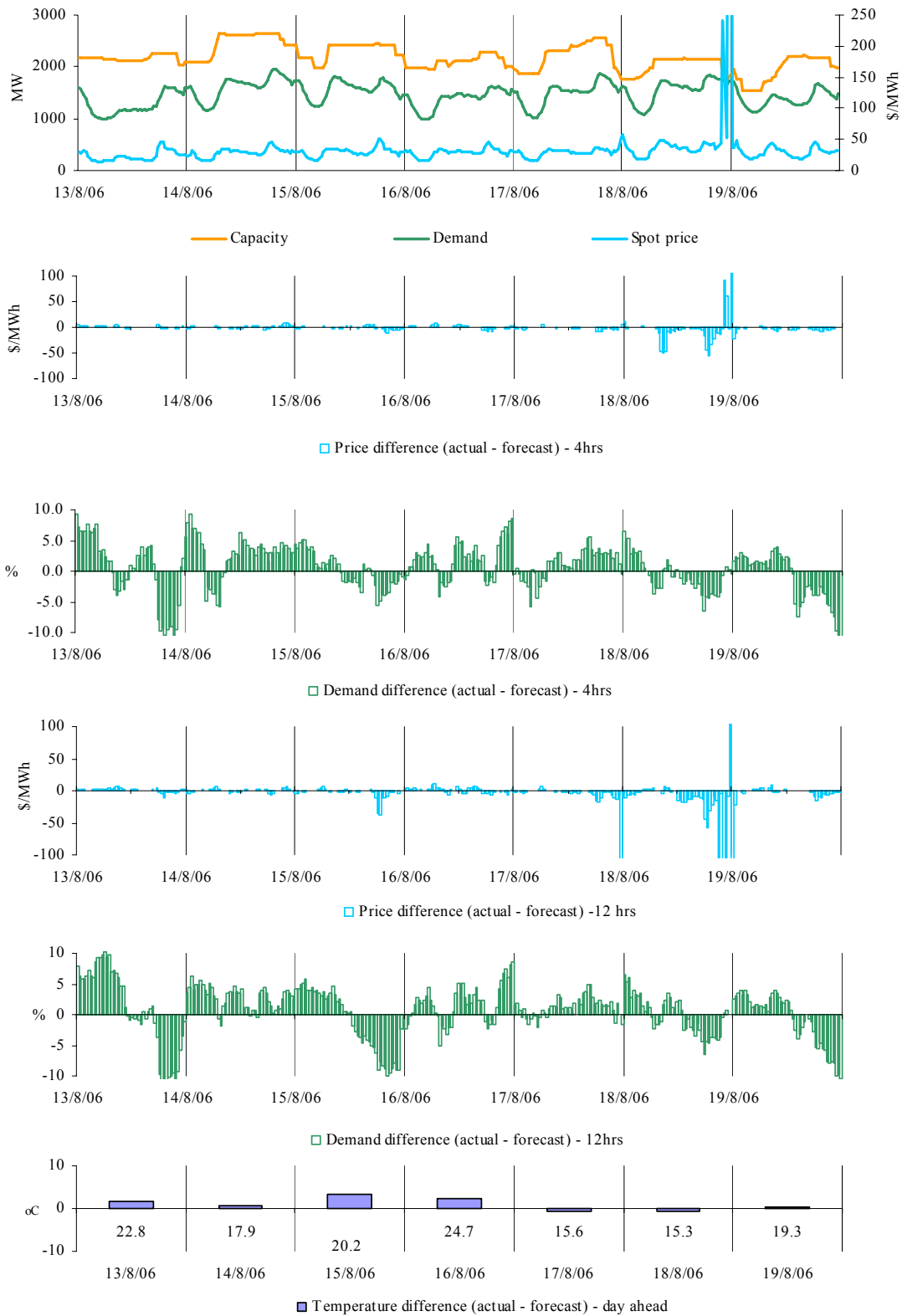
There was no occasion where the spot price in New South Wales was greater than three times the weekly average price of \$25/MWh.

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 \$27/MWh.

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



There were three occasions where the spot price in South Australia was greater than three times the weekly average price of \$37/MWh.

Friday, 18 August

10:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	240.88	150.00	699.96
Demand (MW)	1746	1746	1743
Available capacity (MW)	1768	1768	1768
11:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	119.56	58.88	274.01
Demand (MW)	1723	1713	1713
Available capacity (MW)	1768	1768	1768
Midnight	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1670.82	274.01	699.96
Demand (MW)	1744	1751	1744
Available capacity (MW)	1828	1768	1768

Conditions at the time saw demand and available capacity in South Australia close to forecast. A tight supply curve during this period saw as little as 57 MW of capacity priced between \$30/MWh and \$9000/MWh. Small deviations from the forecast conditions at times had significant impacts on the price. Flows from Victoria across the Murraylink and Heywood interconnectors were at the combined limit of 680 MW.

Between 10 pm and 10.30 pm there was a reduction in available capacity of around 400 MW across Torrens Island and Hallett. This was as part of day-ahead offers.

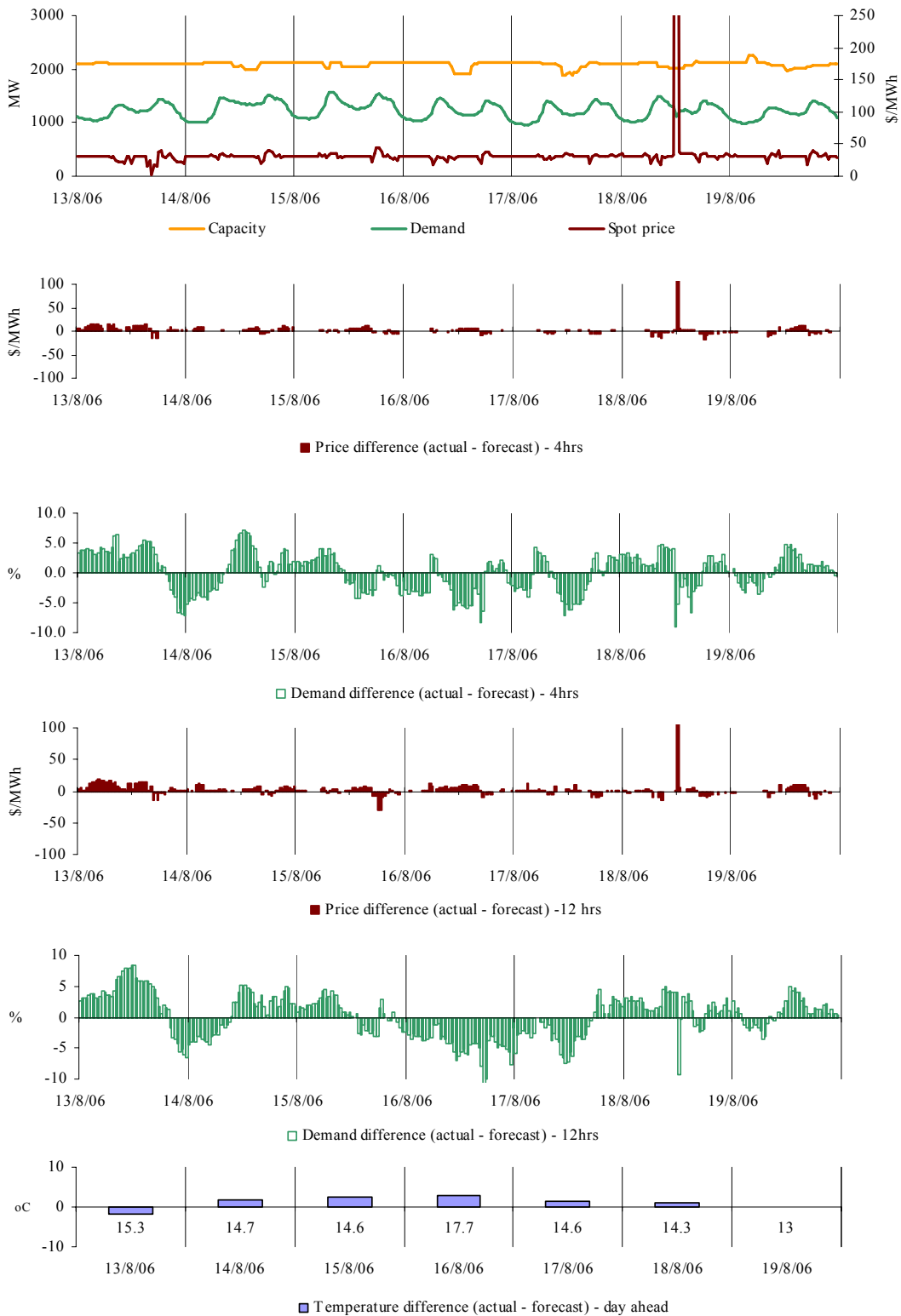
From 11.30 pm over two dispatch intervals, demand increased by around 130 MW. This saw the price increase from \$53/MWh to \$150/MWh and then to \$9600/MWh at 11.45 pm, coincident with two rebids.

At 11.38 pm effective from 11.45 pm, International Power reduced the availability of Dry Creek unit three by 48 MW, most of which was priced at \$700/MWh. The unit was committed at 11.35 pm by the market systems with a target of 15 MW, in accordance with its fast start inflexibility profile. The rebid reason given was “Avoiding uneconomic dispatch”.

At the same time, NRG Flinders rebid 33 MW of capacity at Osborne from prices of \$150/MWh to \$3700/MWh. The rebid reason given was “Avoid cycling of plant”.

There was no other significant rebidding.

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



There was one occasion where the spot price in Tasmania was greater than three times the weekly average price of \$35/MWh.

Friday, 18 August

12:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1546.30	31.66	34.46
Demand (MW)	1118	1220	1221
Available capacity (MW)	2017	2017	2017

Conditions at the time saw demand and available capacity in Tasmania close to forecast four hours ahead.

Two unplanned outages of Basslink occurred during the day. At 8.04 am, Basslink tripped whilst exporting 100 MW northwards and remained out of service for one hour. At 11.56 am, the interconnection was again lost, this time while importing 300 MW into Tasmania. The loss of the interconnection also led to a requirement for locally sourced ancillary services. The price in Tasmania increased from \$30/MWh at midday to \$9000/MWh at 12.05 pm. This energy price was accompanied by a Tasmanian lower 6 second price of \$2242/MW. The Frequency Control System Protection Scheme operated as required, tripping around 200 MW of load in Tasmania. Basslink was returned to service at 12.31 pm.

There was no significant rebidding.

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

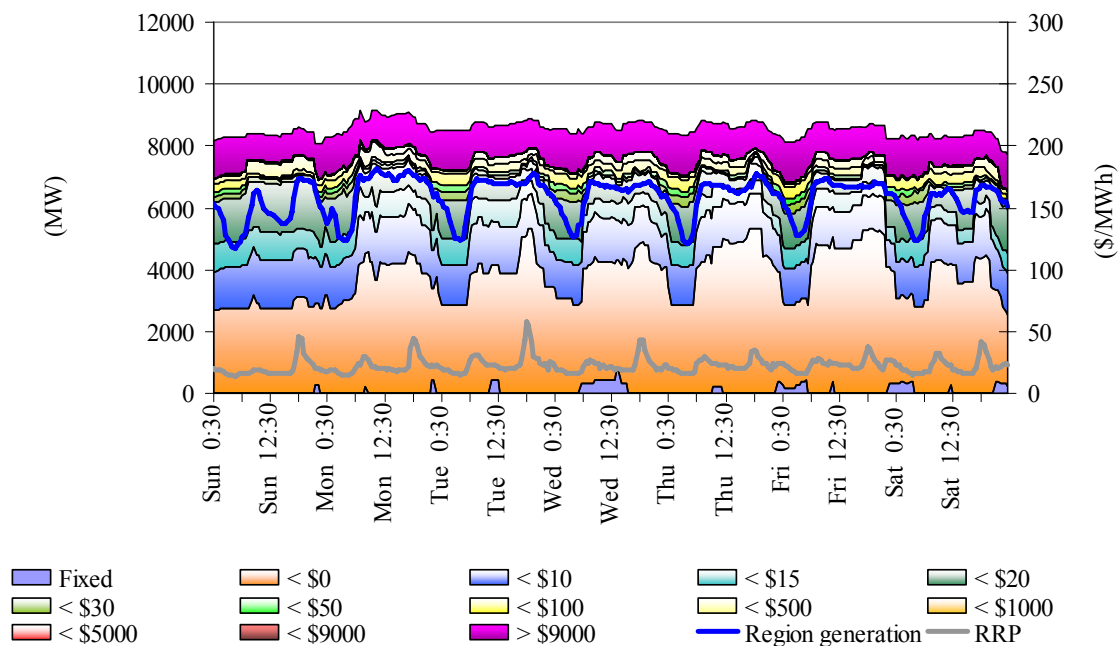


Figure 58: New South Wales closing bid prices, dispatched generation and spot price

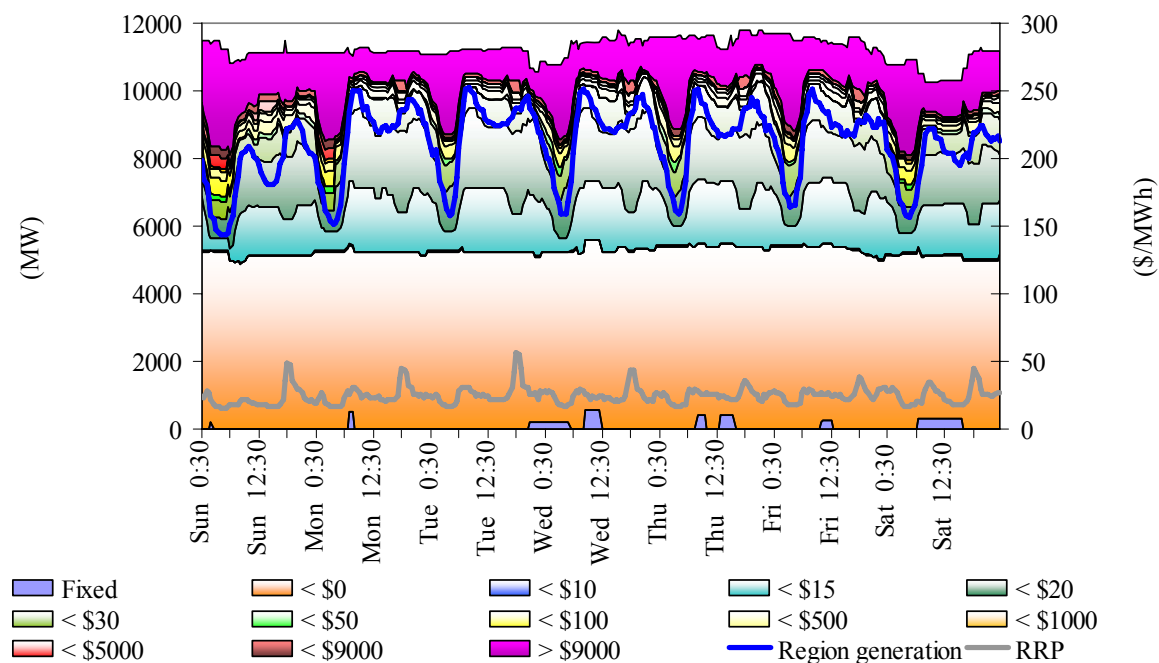


Figure 59: Victoria closing bid prices, dispatched generation and spot price

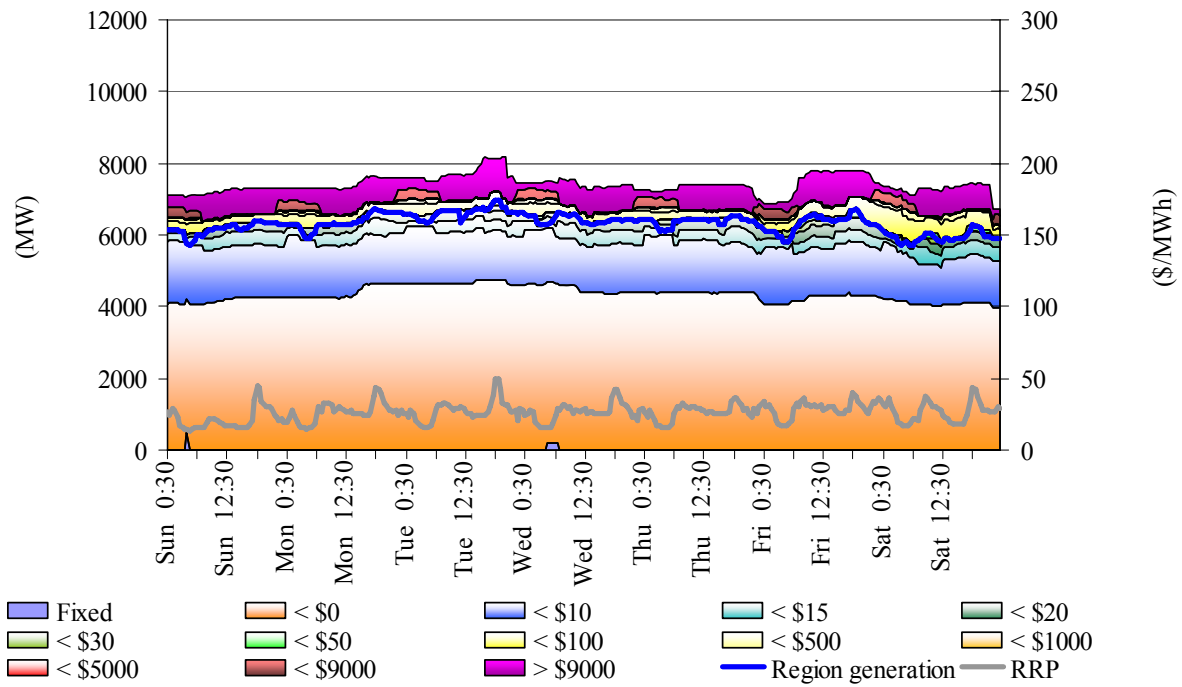


Figure 60: South Australia closing bid prices, dispatched generation and spot price

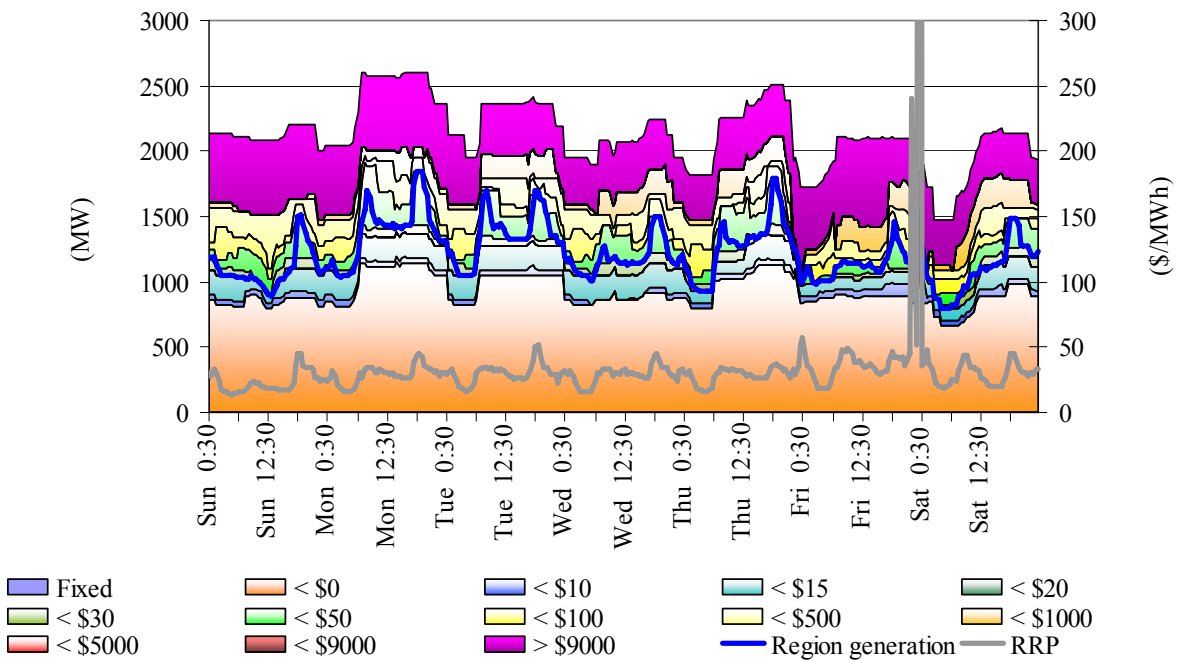
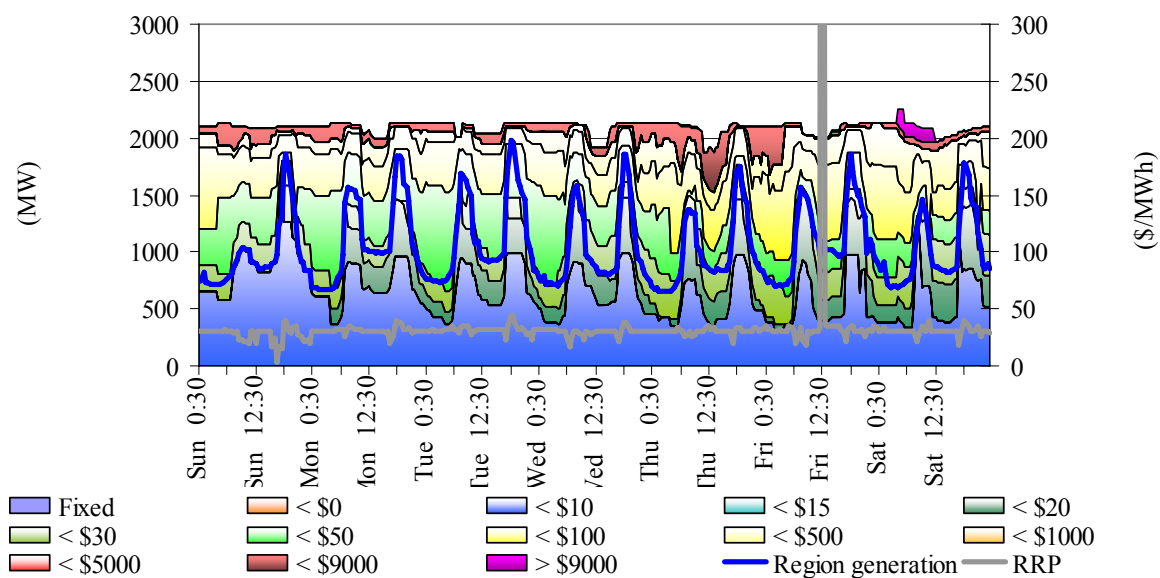


Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was \$103 000 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)	0.67	0.10	0.46	1.39	0.10	0.05	0.26	0.86
Previous week (\$/MW)	0.51	0.08	0.52	1.54	0.05	1.18	0.88	0.92
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$25	\$3	\$23	\$32	\$0	\$0	\$5	\$13
% of energy market	0.03%	0.01%	0.02%	0.03%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was \$83 000 or 1.2 per cent of the total turnover in the energy market in Tasmania. Following the trip of BassLink on Friday at midday, the lower 6 second price in Tasmania increased from the global price of zero to \$2242/MW at 12.05pm. 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)	2.61	0.42	1.64	2.12	3.88	0.29	0.58	0.81
Previous week (\$/MW)	1.70	0.17	1.61	2.62	0.23	0.60	0.81	0.87
Last quarter (\$/MW)	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost (\$1000s)	\$12	\$5	\$25	\$7	\$20	\$3	\$5	\$4
% of energy market	0.17%	0.07%	0.35%	0.10%	0.28%	0.04%	0.08%	0.06%

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

Figure 64: daily frequency control ancillary service costs

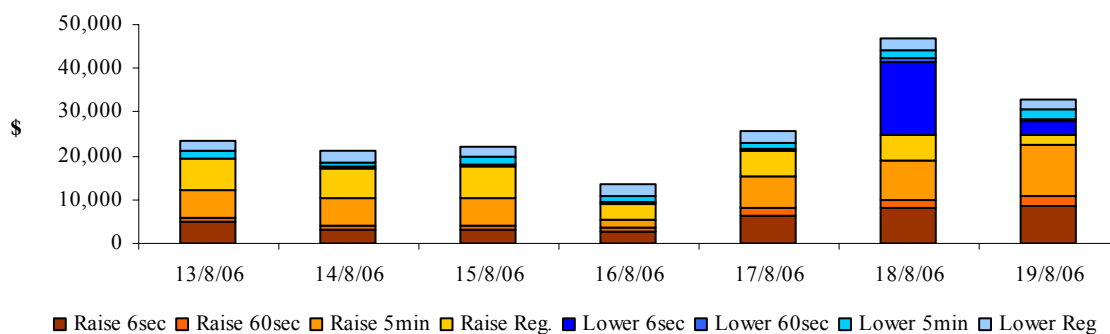
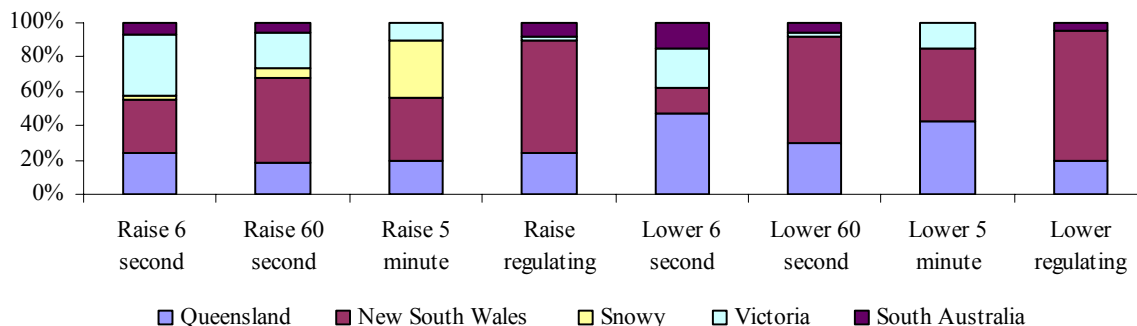


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

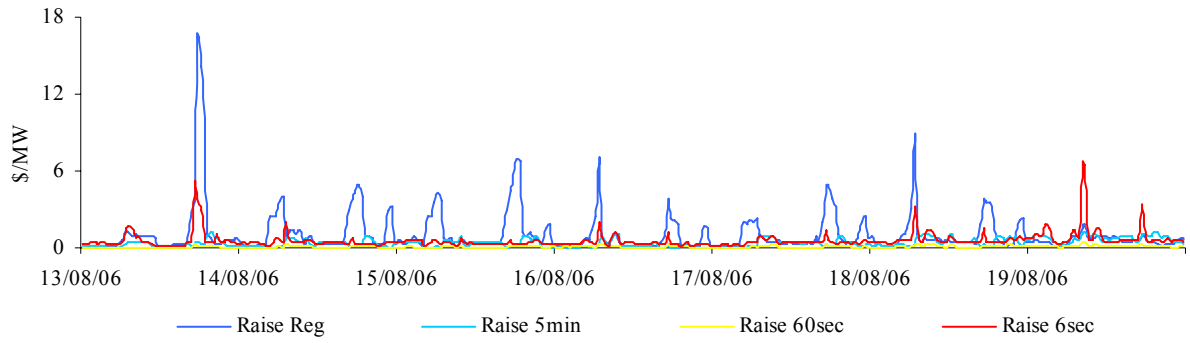


Figure 66A: prices for raise services – Tasmania

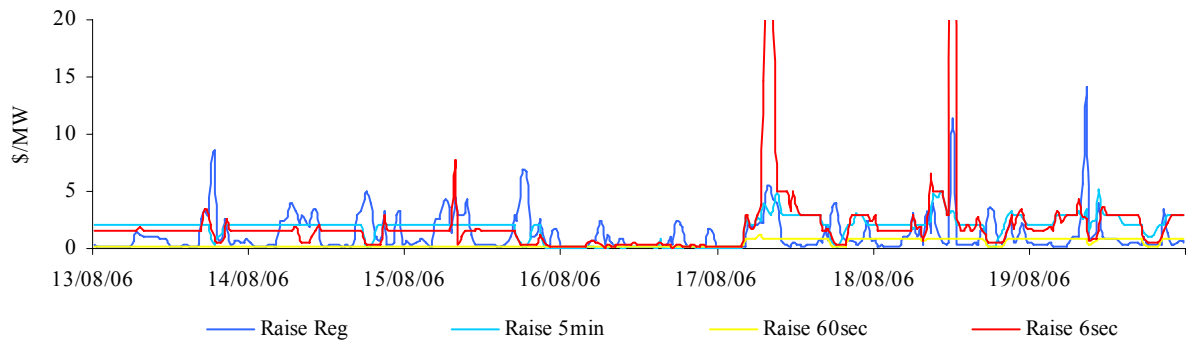


Figure 67: prices for lower services

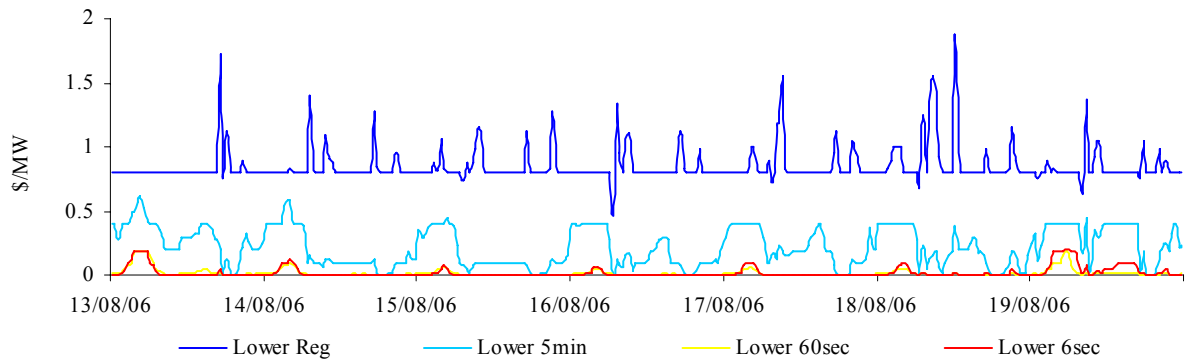
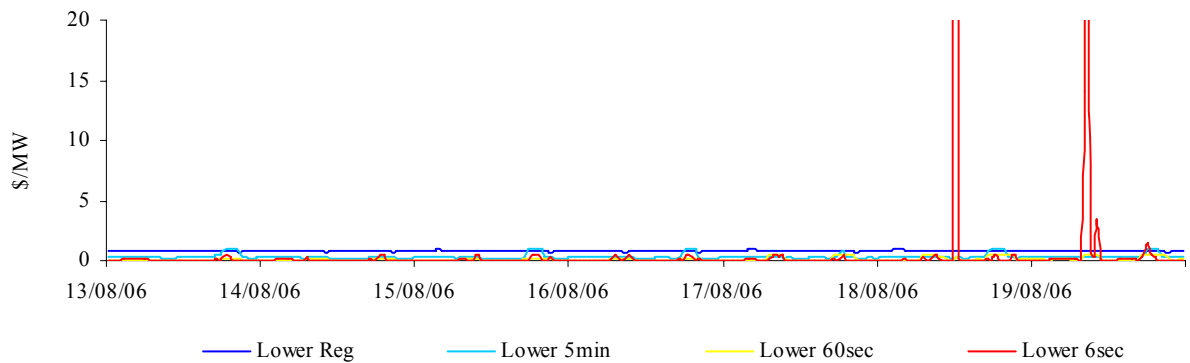


Figure 67A: prices for lower services – Tasmania



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

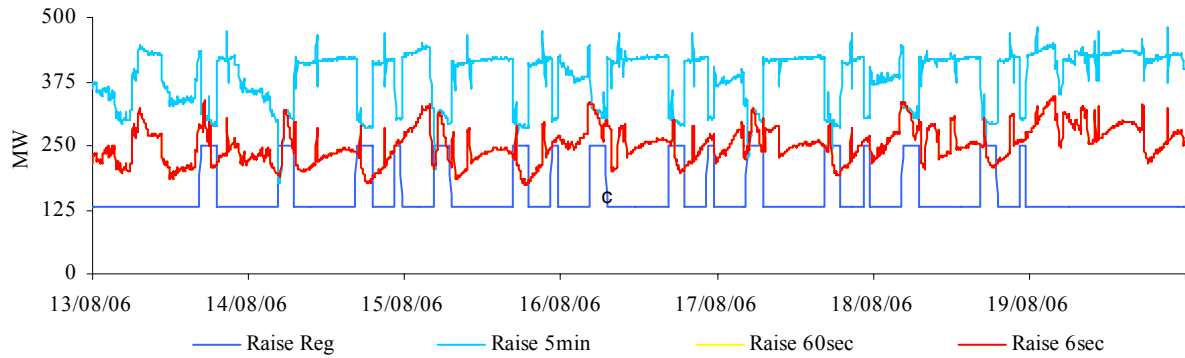


Figure 68A: raise requirements – Tasmania

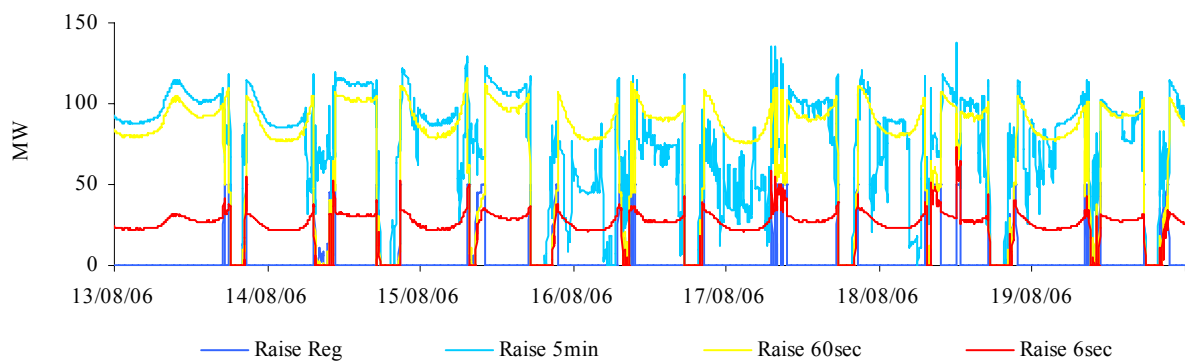


Figure 69: lower requirements

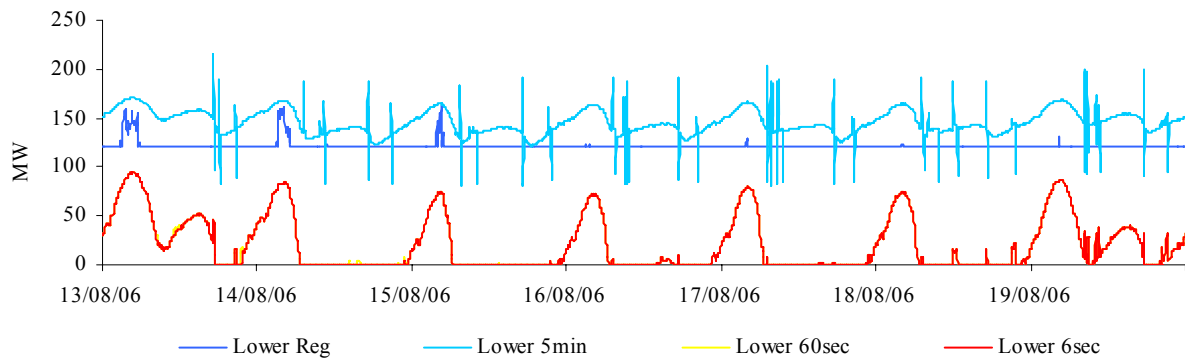


Figure 69A: lower requirements – Tasmania

