Market analysis

AUSTRALIAN ENERGY REGULATOR

11 JUNE – 17 JUNE 2006

Spot prices for the week averaged between $23/MWh in Queensland and $44/MWh in South Australia. Prices in Queensland diverged from the rest of the market as a result of an increase in low priced capacity in Queensland and reductions in export capability into New South Wales.

Turnover in the energy market was $144 million. The total cost of ancillary services for the week, including Tasmania, was $270 000, or 0.2 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 55, or around 16 per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in a third of all trading intervals across the market. These variations were most frequent in South Australia, occurring in over a half of all trading intervals.

Energy prices

Figure 1 sets out 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 financial year to date. Figure 3 compares the weekly price volatility index with the averages for the previous week and the same quarter last year.

Figure 1: national demand and spot prices

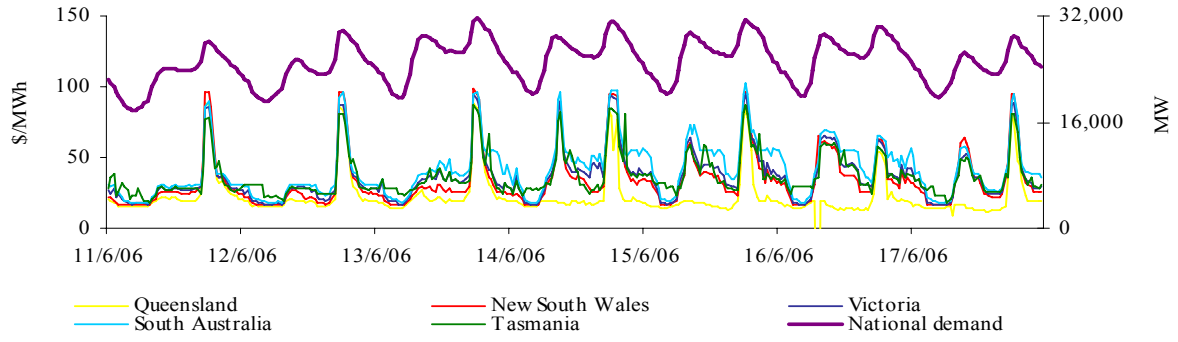


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	23	36	38	44	38
Previous week	27	30	33	39	42
Same quarter last year	23	28	27	36	-
Financial year to date	32	43	36	44	60
% change from previous week*	▼12%	▲18%	▲16%	▲15%	▼10%
% change from same quarter last year**	▲2%	▲26%	▲41%	▲24%	-
% change from year to date***	▲3%	▼5%	▲25%	▲11%	-

*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

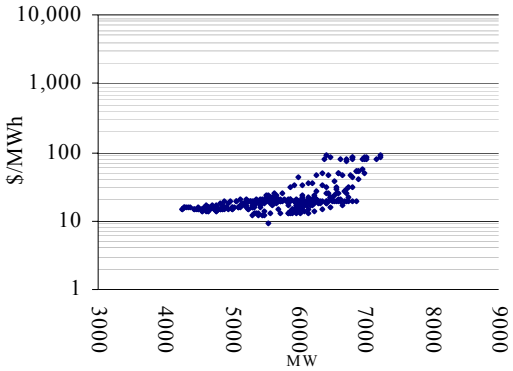


Figure 4: New South Wales

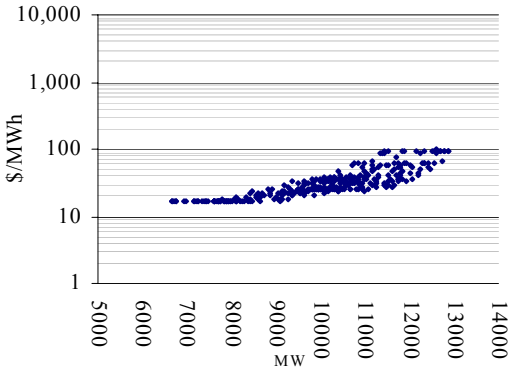


Figure 5: Victoria

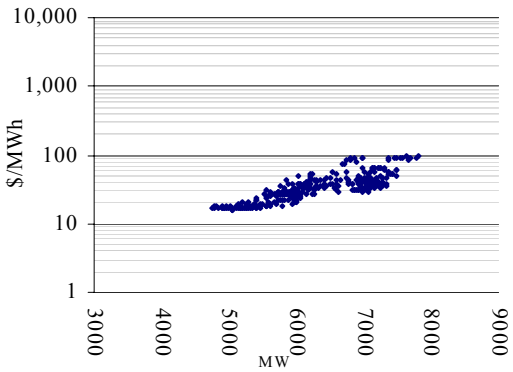


Figure 6: South Australia

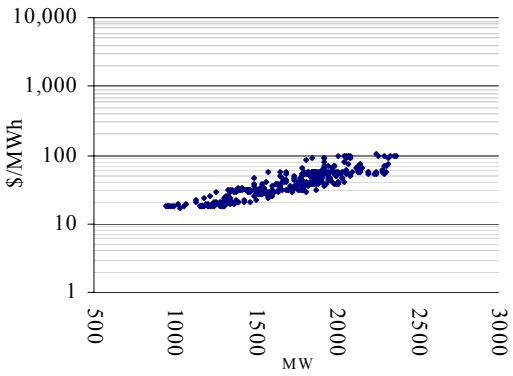
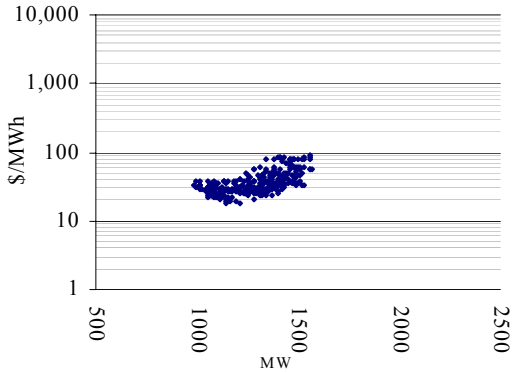


Figure 7: Tasmania



Maximum spot prices for the week were $88/MWh in Queensland, $98/MWh in New South Wales and $88/MWh in Tasmania, all occurring at 6 pm on Tuesday. The maximum spot price reached $95/MWh in Victoria and $102/MWh in South Australia at 6.30 pm on Thursday.

On Friday, Queensland recorded a spot price of $-150/MWh following a change on the rating of the 82 line between Liddell and Tomago in New South Wales. This change in rating reduced Queensland exports into New South Wales by almost 600 MW in one 5-minute dispatch interval leading to a $-1000/MWh dispatch price at 7.10 am.

Figure 8: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	1.65	1.09	0.87	0.75	0.88
Previous week	0.79	0.50	0.40	0.46	0.76
Same quarter last year	0.73	0.74	0.78	0.70	-

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

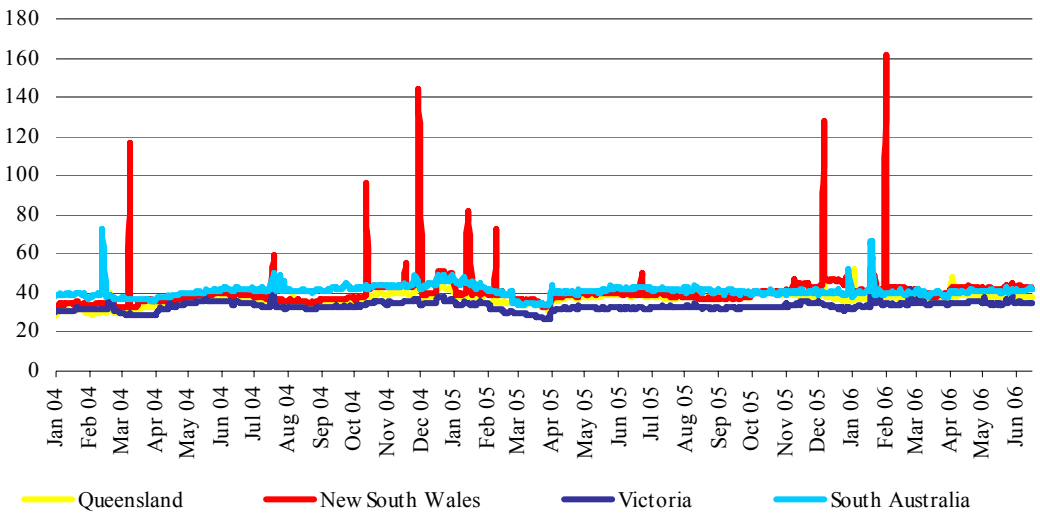
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	N/A	38.22	37.67	37.59	37.55
New South Wales	N/A	43.20	43.13	42.97	42.08
Victoria	N/A	34.94	35.21	35.14	34.92
South Australia	N/A	41.92	42.46	42.40	41.51

* 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

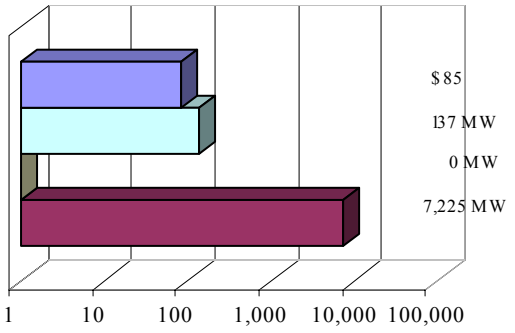


Figure 12: New South Wales

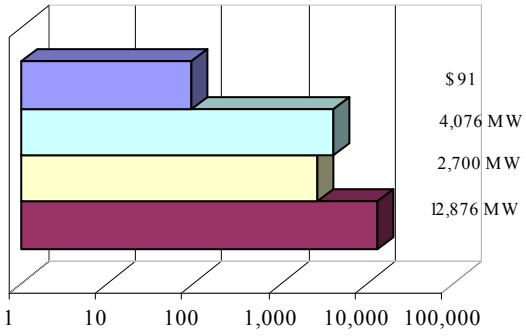


Figure 13: Victoria

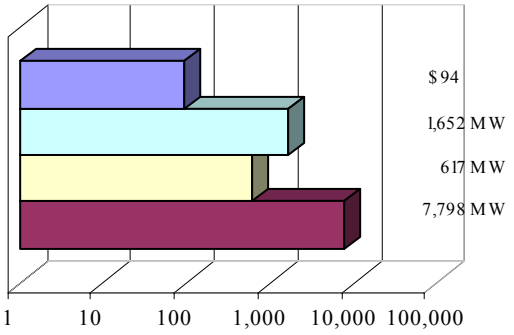


Figure 14: South Australia

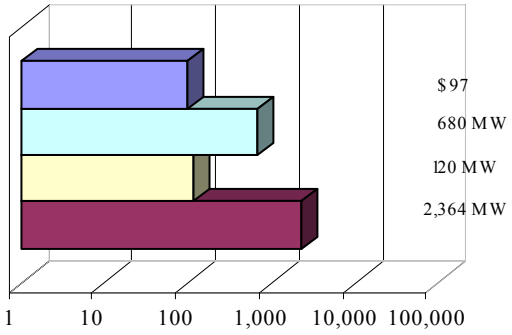
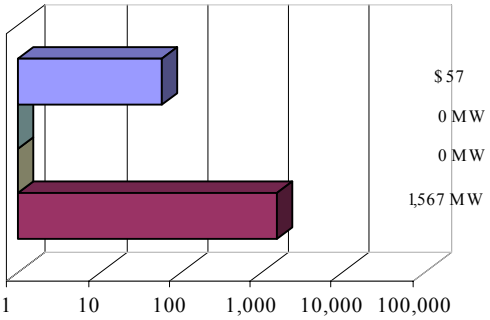


Figure 15: Tasmania



Price variations

There were 55 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

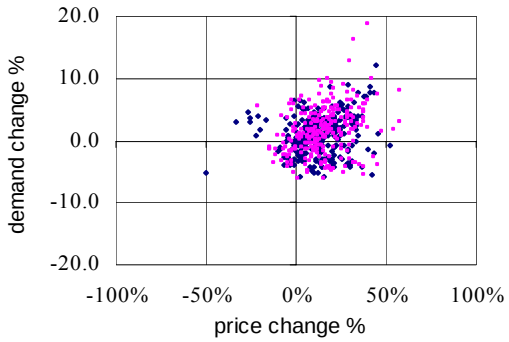


Figure 19: South Australia

Figure 20: Tasmania

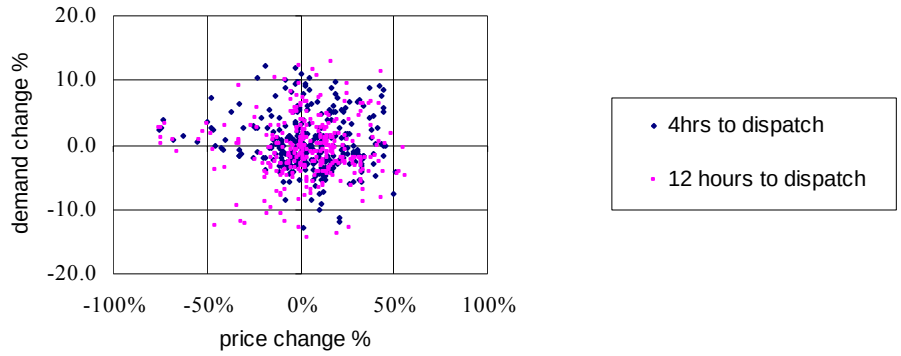
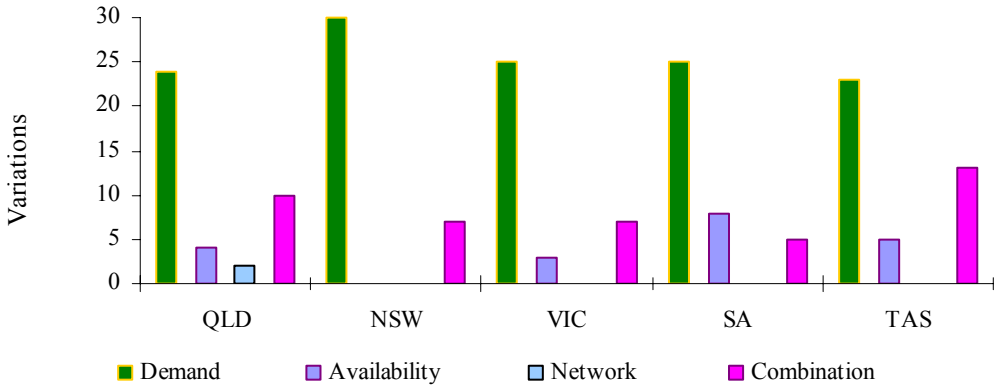


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

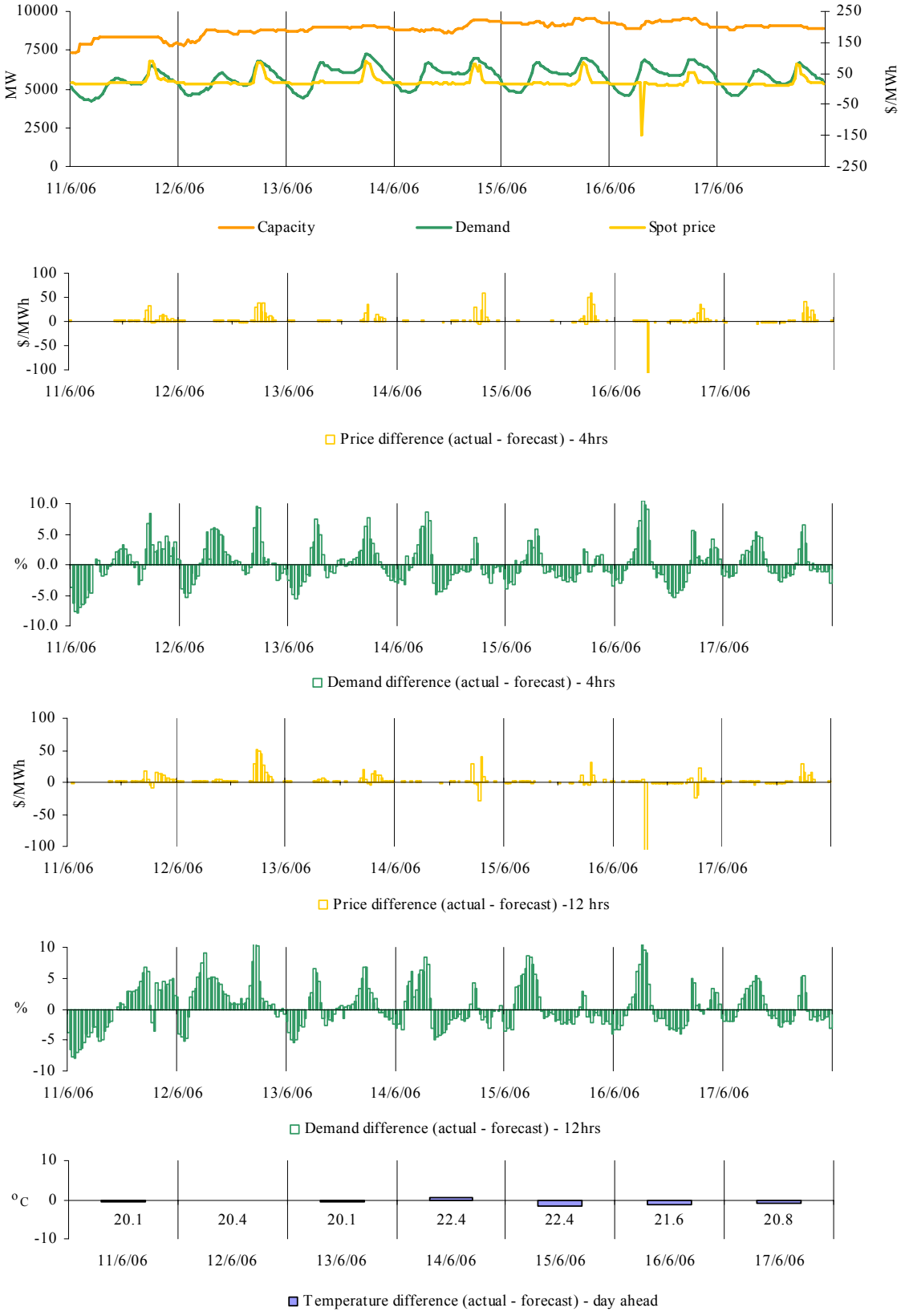
Figure 21: reasons for variations between forecast and actual prices



Price and demand

Figures 22 – 51 set out details of spot prices and demand on a regional basis. They include the actual spot price, actual demand outcomes and variation from forecasts made 4 and 12 hours ahead of dispatch on a daily basis. The differences between the maximum temperature and the temperature forecast at around 6.00 pm the day before are also included. Figures 52 – 56 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.

Figures 22-27: Queensland actual spot price, demand and forecast differences



There were 17 occasions where the spot price in Queensland was greater than three times the weekly average price of $23/MWh.

Sunday, 11 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	88.10	56.25	83.55
Demand (MW)	6424	5887	6028
Available capacity (MW)	8338	8548	8745
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	87.37	90.01	91.30
Demand (MW)	6479	6264	6445
Available capacity (MW)	8340	8340	8747
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	79.16	83.55	88.85
Demand (MW)	6400	6273	6542
Available capacity (MW)	8341	8341	8748

Conditions at the time saw demand in Queensland around 550 MW higher than forecast four hours ahead. National demand was as much as 1800 MW higher than forecast on the same basis.

Delays in the return of Callide Power's Callide C unit four from a one month outage, saw around 400 MW less available capacity than forecast earlier in the day. All of this capacity was priced below $15/MWh. The rebid reasons given included "Unit RTS" or unit return to service.

There was no other significant rebidding.

Monday, 12 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	85.59	47.12	34.10
Demand (MW)	6799	6170	6103
Available capacity (MW)	8754	8807	8820
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	83.55	62.47	35.33
Demand (MW)	6818	6572	6510
Available capacity (MW)	8814	8809	8822
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	78.37	40.97	34.53
Demand (MW)	6731	6653	6613
Available capacity (MW)	8815	8810	8823

Conditions at the time saw demand in Queensland as much as 600 MW higher than forecast four hours ahead. Nationally, demand was as much as 2500 MW higher than forecast on the same basis, with prices aligned across the market.

There was no significant rebidding.

Tuesday, 13 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	88.39	53.27	83.88
Demand (MW)	7217	6661	6730
Available capacity (MW)	9062	9033	9038
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	84.54	83.53	85.99
Demand (MW)	7225	6917	6976
Available capacity (MW)	9076	9036	9050
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	80.41	79.56	85.00
Demand (MW)	7184	6933	6988
Available capacity (MW)	9070	9035	9056

Conditions at the time saw demand in Queensland as much as 550 MW higher than forecast four hours ahead. Nationally, demand was as much as 2900 MW, or 10 per cent, higher than forecast on the same basis, with prices aligned across the market.

There was no significant rebidding.

Wednesday, 14 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	81.74	85.00	84.87
Demand (MW)	7004	6753	6771
Available capacity (MW)	9442	9566	9526
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	79.94	85.00	85.00
Demand (MW)	7014	7017	7004
Available capacity (MW)	9445	9612	9572
7:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	77.52	18.67	38.00
Demand (MW)	6824	6938	6936
Available capacity (MW)	9454	9580	9567

Conditions at the time saw demand in Queensland close to forecast. Prices were close to forecast at 6 pm and 6.30 pm and were aligned across the market throughout this period.

For the 7.30 pm trading interval, a rebid by Tarong Energy at 6.49 pm, shifted 155 MW of capacity at Wivenhoe from a price of $39/MWh to prices above $79/MWh. The rebid reason given was “Change in PD::Adjust profile”.

There was no other significant rebidding.

Thursday, 15 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	77.86	82.63	82.11
Demand (MW)	6960	6819	6811
Available capacity (MW)	9434	9673	9708
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	83.55	35.00	84.97
Demand (MW)	7016	7102	7098
Available capacity (MW)	9433	9675	9710
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	77.97	19.20	81.33
Demand (MW)	6993	7076	7083
Available capacity (MW)	9505	9576	9611

Conditions at the time saw demand in Queensland close to forecast four hours ahead. Exports from Queensland into New South Wales were around 200 MW higher than forecast on the same basis, with the limit on flows south around 400 MW higher than forecast.

There was no significant rebidding.

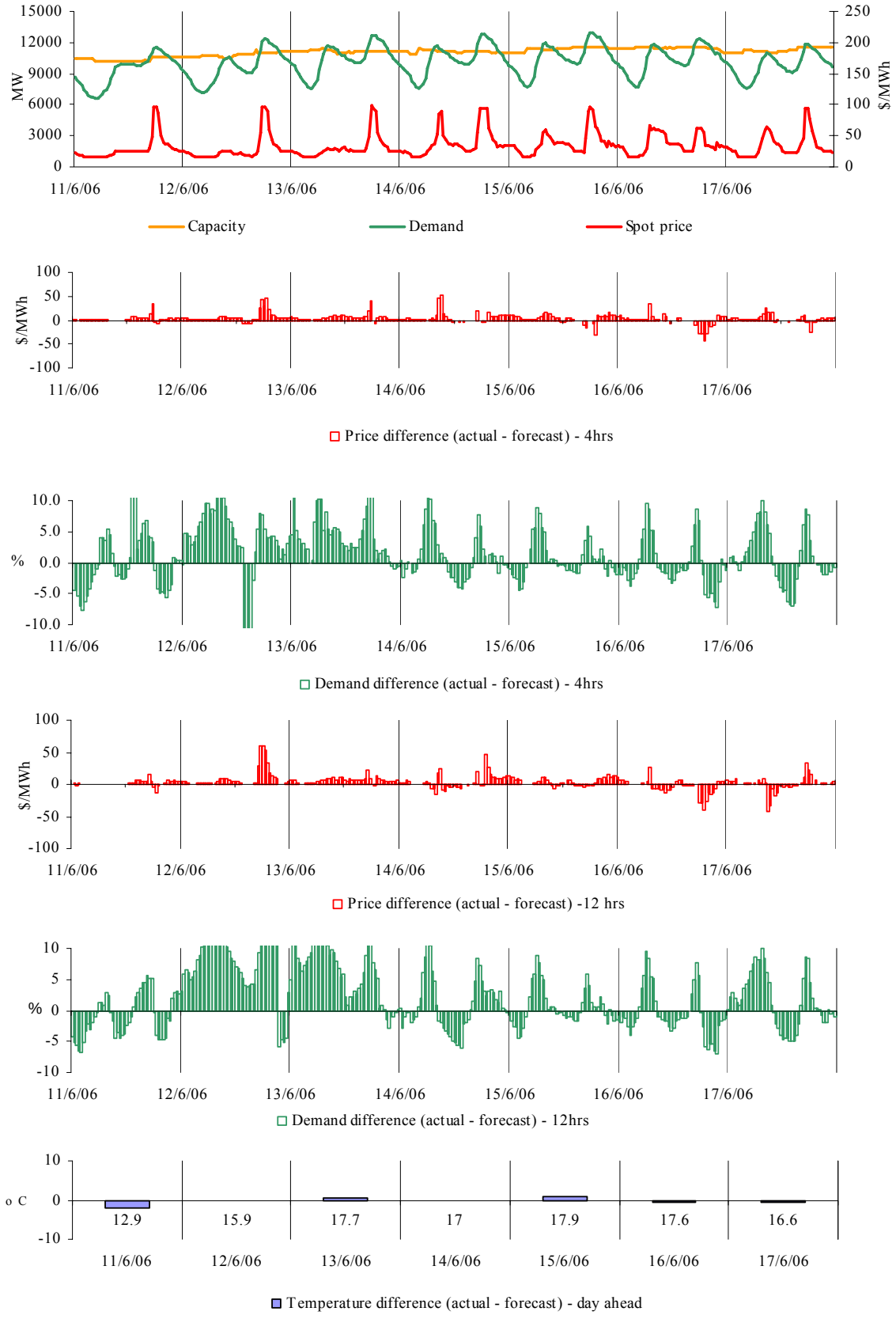
Saturday, 17 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	79.96	40.19	50.06
Demand (MW)	6643	6207	6287
Available capacity (MW)	9102	9107	9354
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	76.07	48.00	60.04
Demand (MW)	6723	6489	6546
Available capacity (MW)	9104	9109	9356

Conditions at the time saw demand in Queensland 450 MW higher than forecast four hours ahead. Nationally, demand was around 1900 MW higher than forecast, with prices aligned across the market.

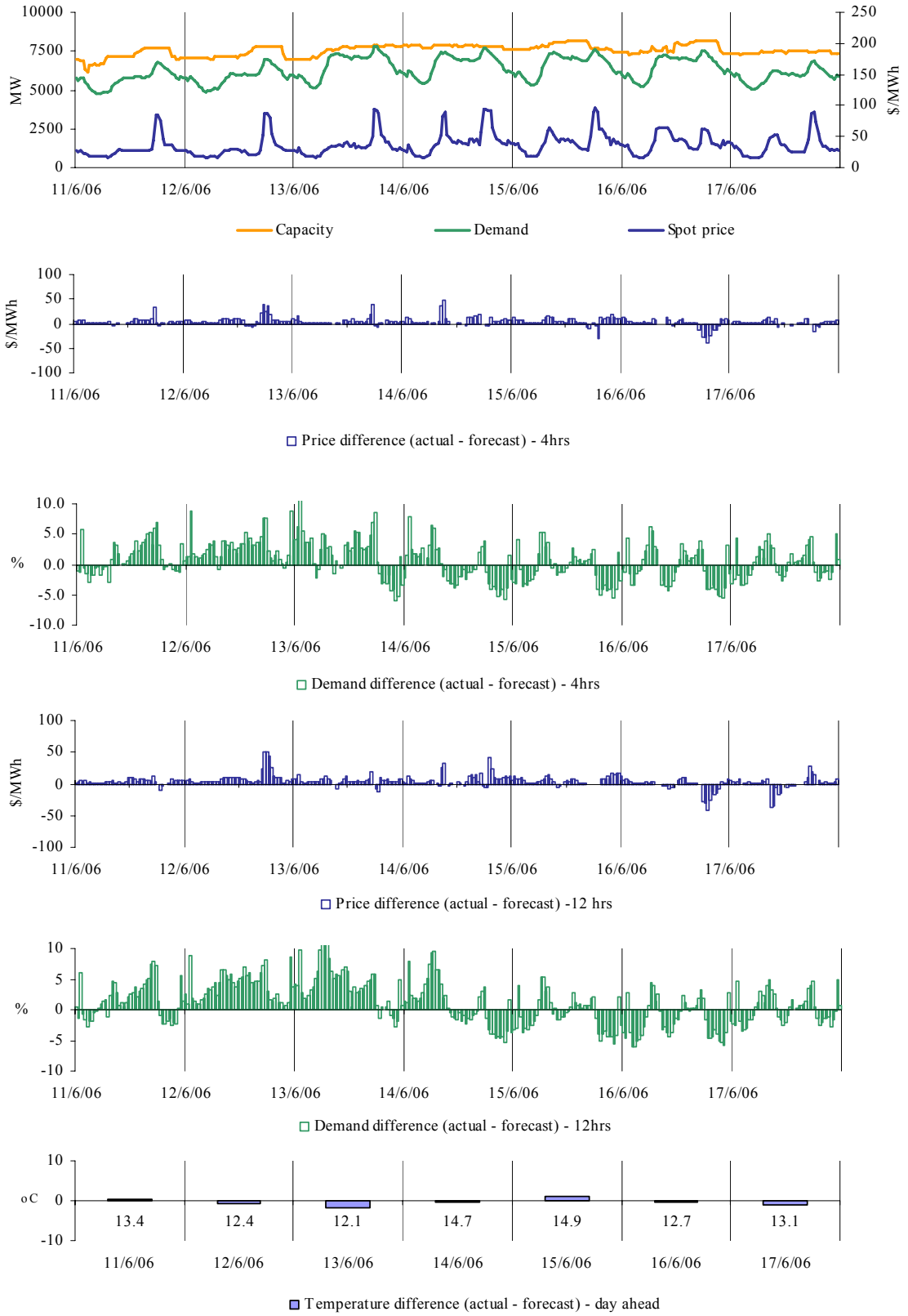
There was no significant rebidding.

Figures 28-33 New South Wales actual spot price, demand and forecast differences



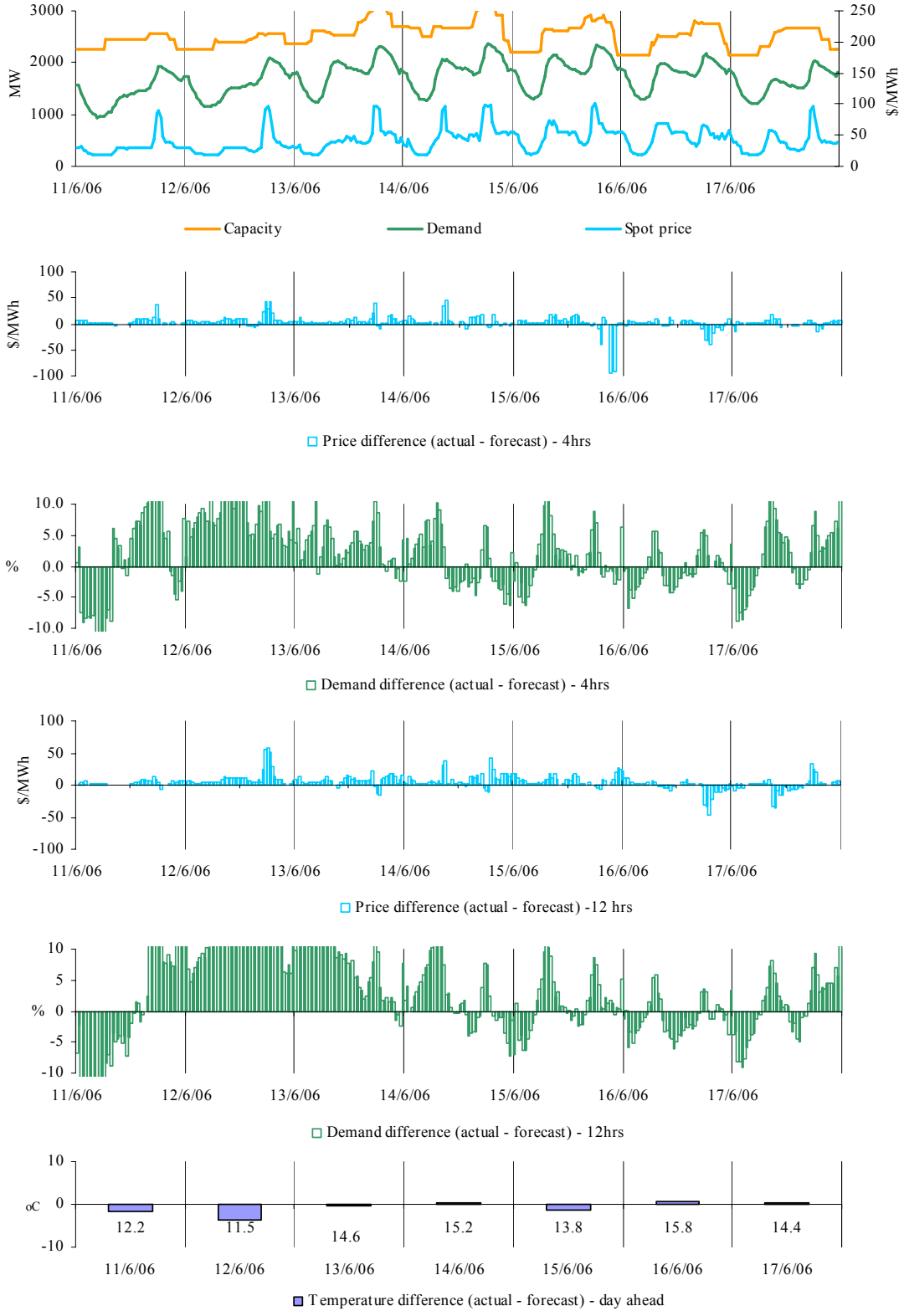
There was no occasion where the spot price in New South Wales was greater than three times the weekly average price of $36/MWh.

Figures 34-39: Victoria actual spot price, demand and forecast differences



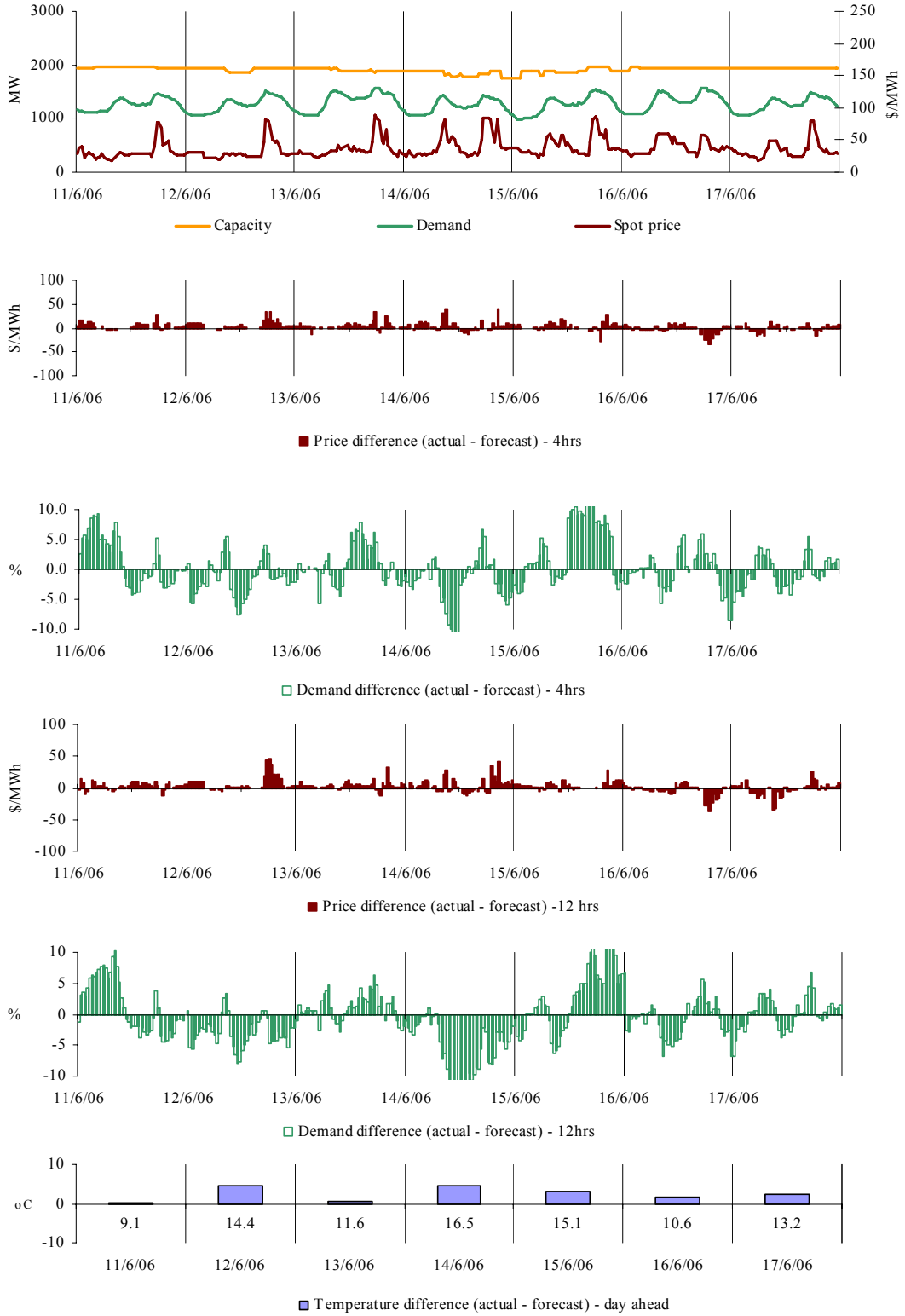
There was no occasion where the spot price in Victoria was greater than three times the weekly average price of $38/MWh.

Figures 40-45: 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 $44/MWh.

Figures 46-51: 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.

Figure 52: Queensland closing bid prices, dispatched generation and spot price

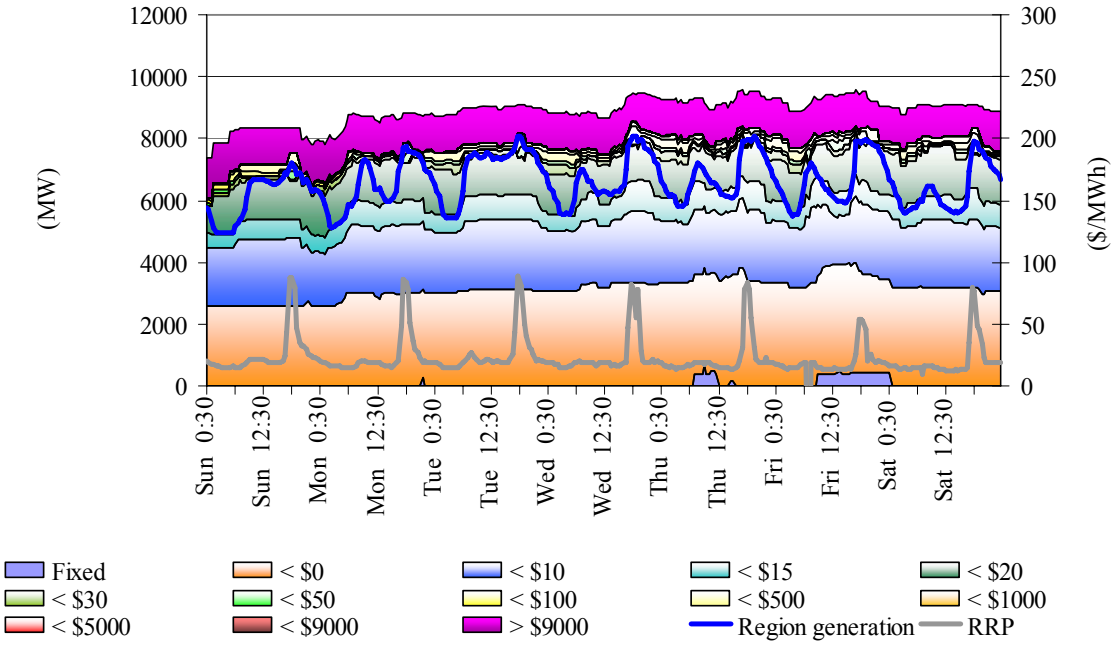


Figure 53: New South Wales closing bid prices, dispatched generation and spot price

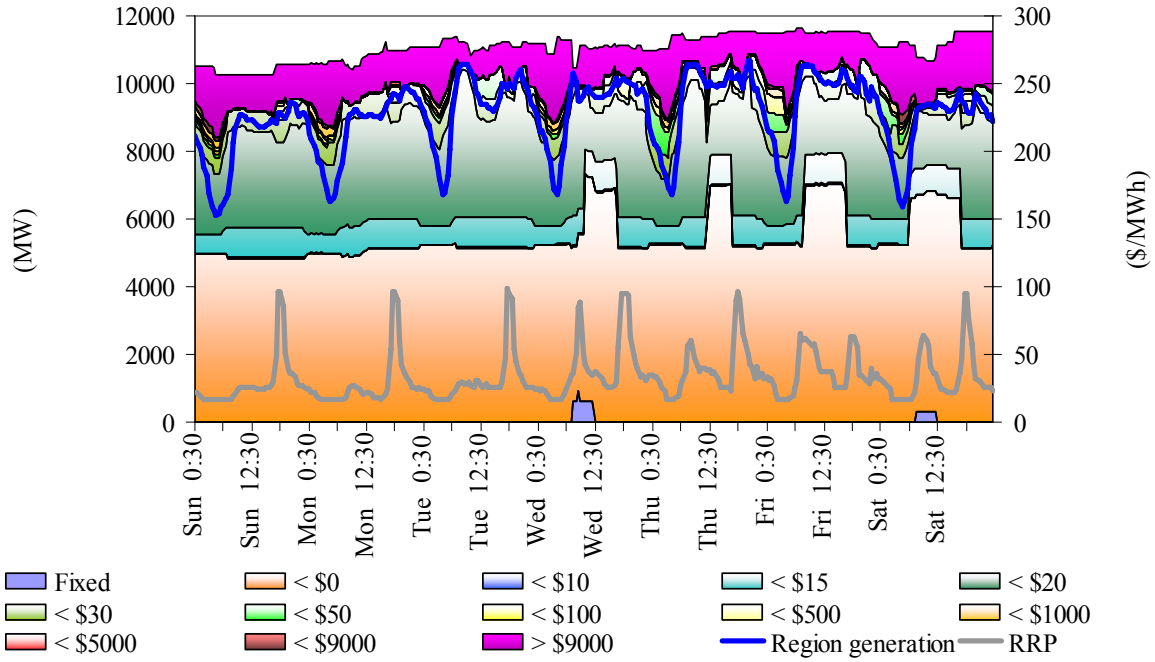


Figure 54: Victoria closing bid prices, dispatched generation and spot price

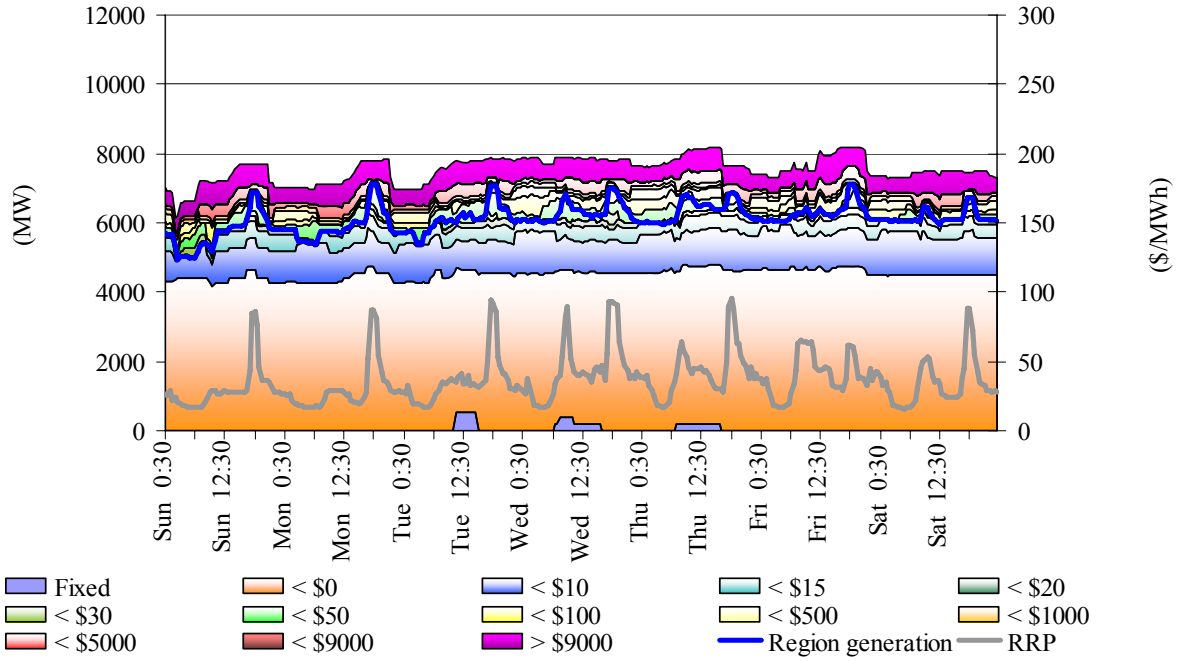


Figure 55: South Australia closing bid prices, dispatched generation and spot price

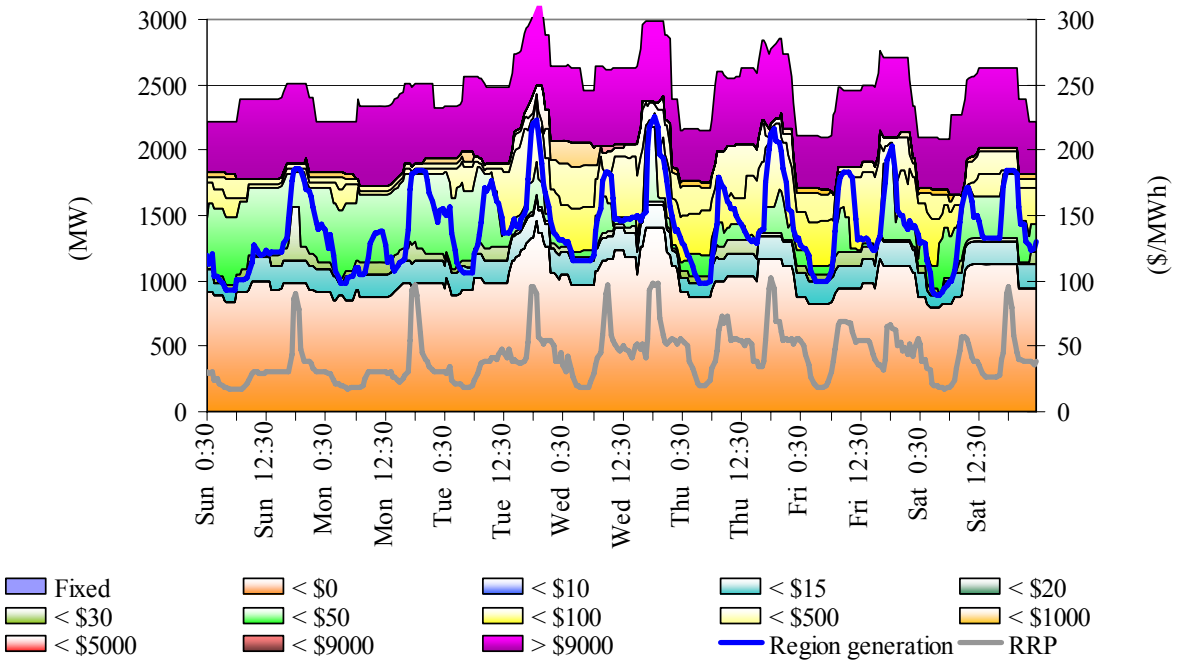
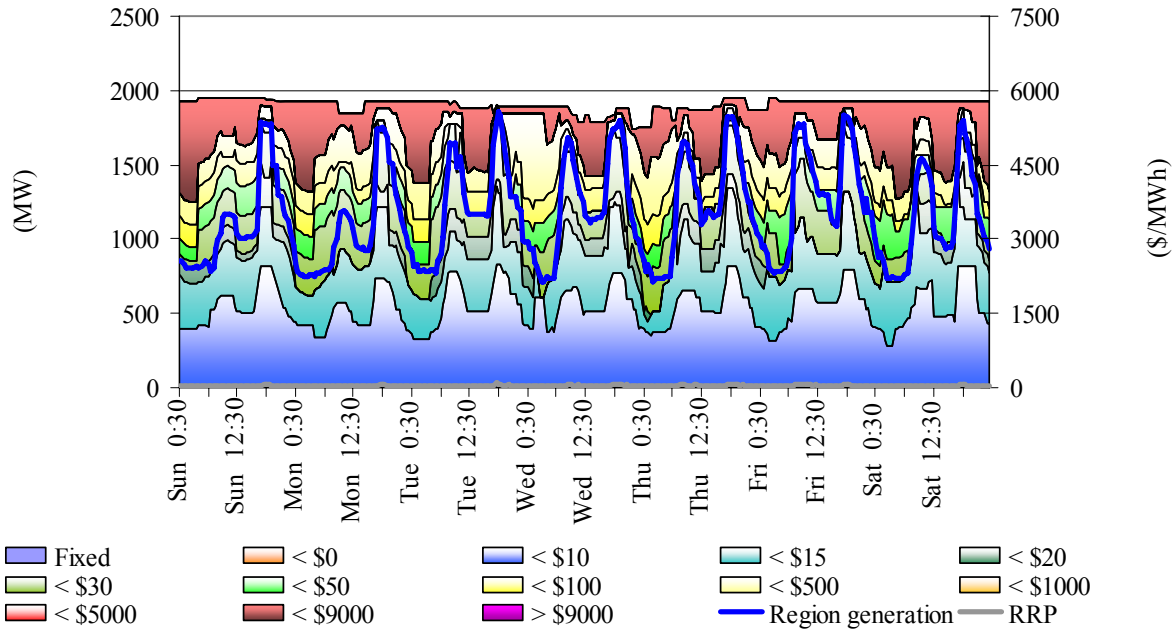


Figure 56: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $91 000 or 0.1 per cent of the total turnover in the energy market. Figure 57 summarises the volume weighted average prices and costs for the eight frequency control ancillary services across the mainland.

Figure 57: frequency control ancillary service average 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 ($/MWh)	0.50	0.09	0.59	0.97	0.15	0.05	0.26	0.87
Previous week ($/MWh)	0.66	0.13	0.72	1.08	0.15	0.06	0.20	0.96
Last quarter ($/MWh)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	19	3	33	20	0.4	0.1	3	14
% of energy market	0.01%	0.01%	0.02%	0.01%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was $175 000 or 2.2 per cent of the total turnover in the energy market in Tasmania. High prices occurred for lower 6 second services in Tasmania throughout the week, particularly on Wednesday. Figure 58 summarises for Tasmania the prices and costs for the eight frequency control ancillary services.

Figure 58: 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 ($/MWh)	3.28	0.32	0.69	2.36	32.15	0.05	0.40	0.81
Previous week ($/MWh)	16.61	0.21	1.26	12.94	15.60	0.05	0.37	0.82
Last quarter ($/MWh)	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost ($1000s)	19	4	12	7	122	1	6	5
% of energy market	0.23	0.05	0.14	0.09	1.50	0.01	0.07	0.06

Figure 59 shows the daily breakdown of cost for each frequency control ancillary service.

Figure 59: daily frequency control ancillary service costs

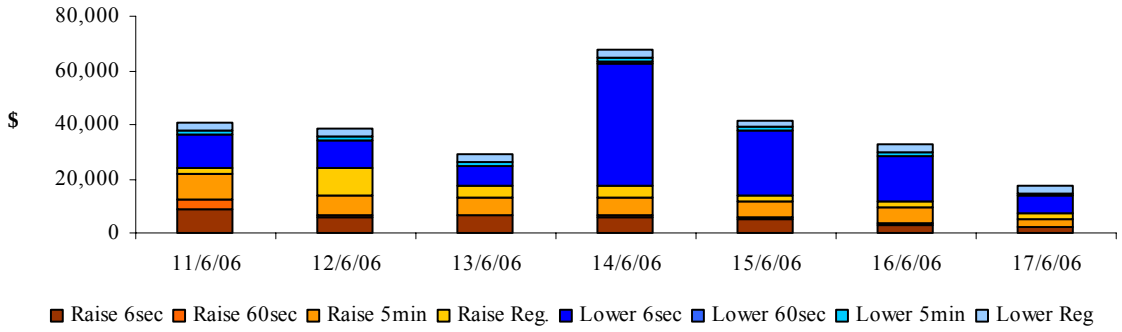
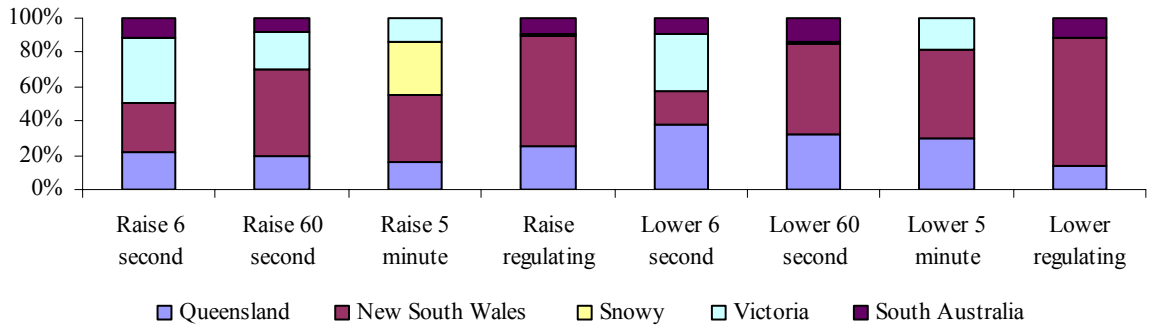


Figure 60 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

Figure 60: regional participation in ancillary services on the mainland



Figures 61 and 62 show 30-minute prices for each frequency control ancillary service throughout the week.

Figure 61: prices for raise services

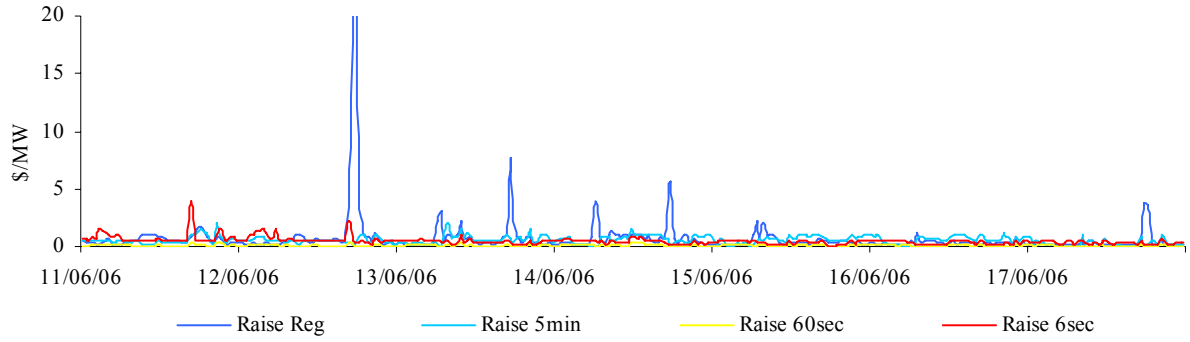


Figure 61A: prices for raise services - Tasmania

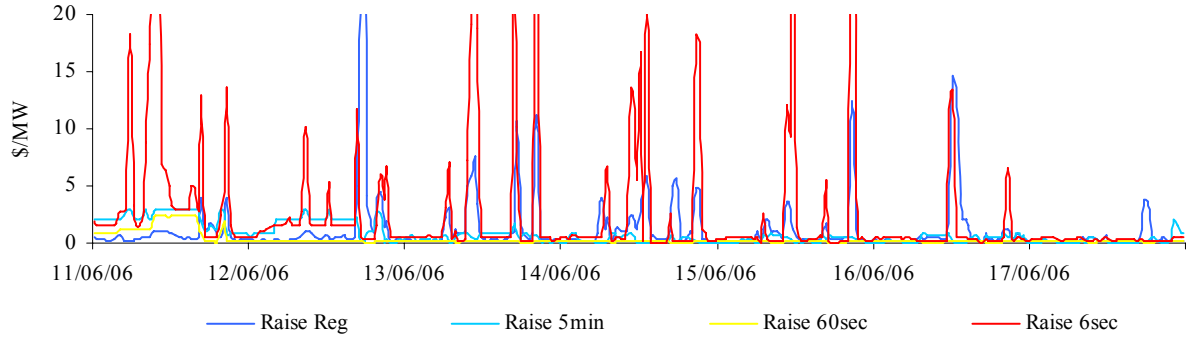


Figure 62: prices for lower services

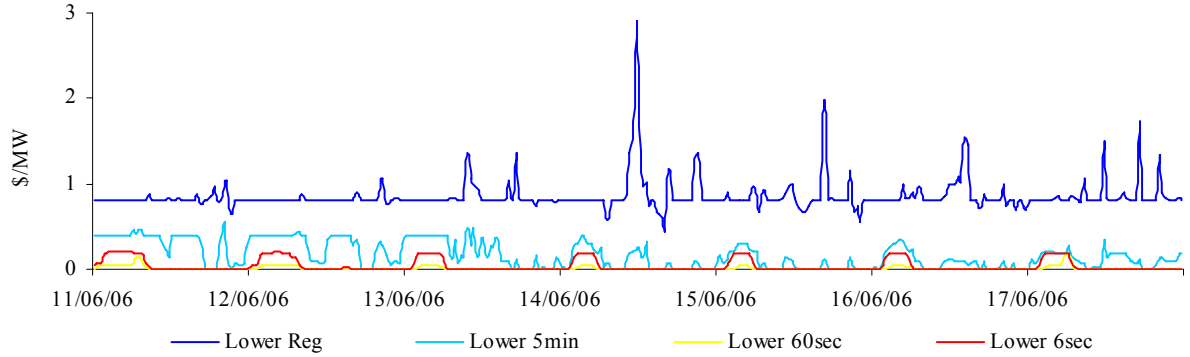
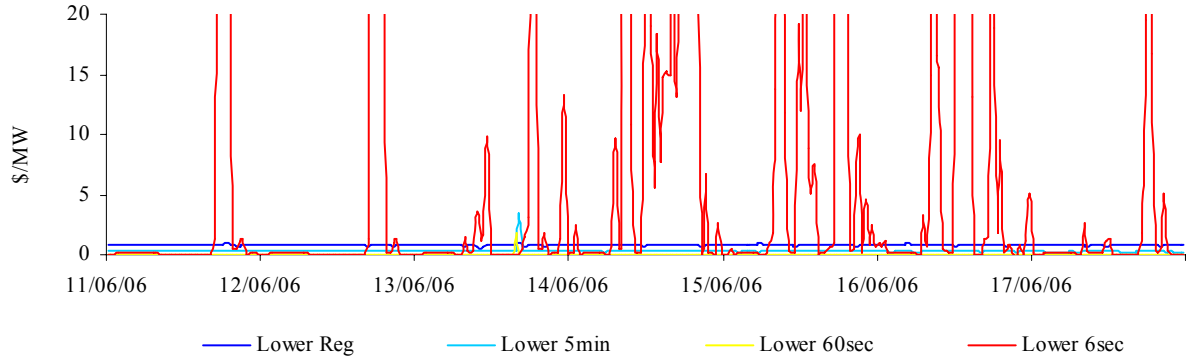


Figure 62A: prices for lower services – Tasmania



Figures 63 and 64 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

Figure 63: raise requirements

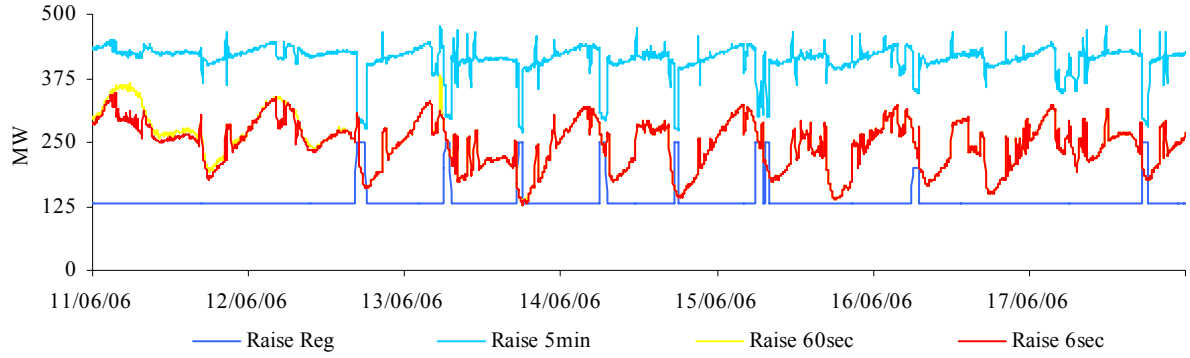


Figure 63A: raise requirements - Tasmania

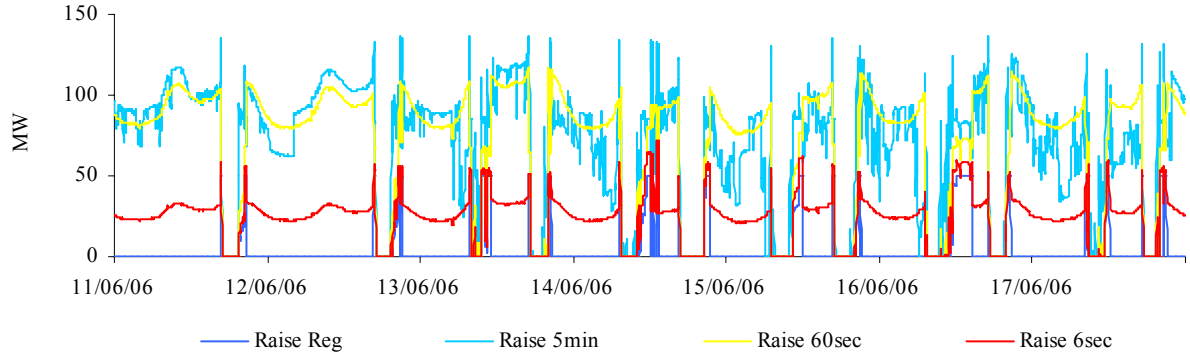


Figure 64: lower requirements

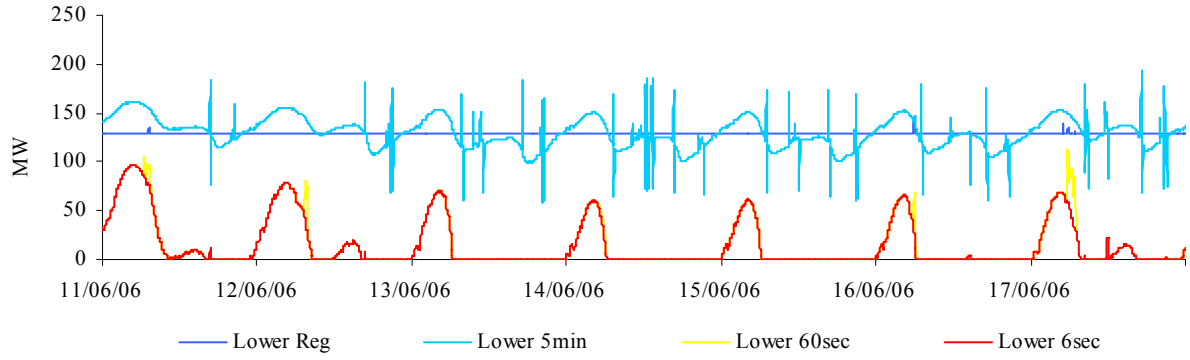
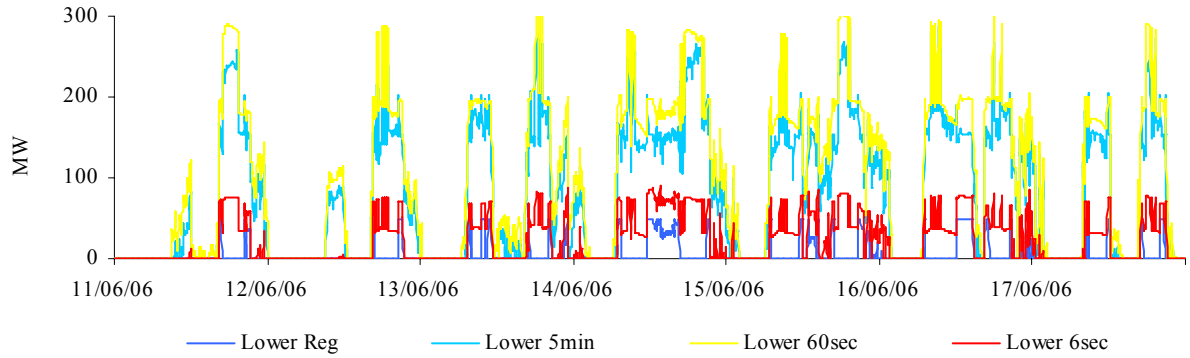


Figure 64A: lower requirements - Tasmania



Australian Energy Regulator
June 2006