Market analysis

AUSTRALIAN ENERGY REGULATOR

26 MARCH – 01 APRIL 2006

Mild weather conditions led to average spot prices for the week of between $17/MWh in Queensland and $31/MWh in Tasmania.

At around 7pm on Saturday, the operational commissioning tests for Basslink were successfully completed and flows across the interconnector ceased.

Turnover in the energy market was $79 million. The total cost of ancillary services for the week, including Tasmania, was around $260 000, or 0.3 per cent, of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 14, or around 4 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 fifth of all trading intervals across the market. These variations were most frequent in South Australia occurring in around 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

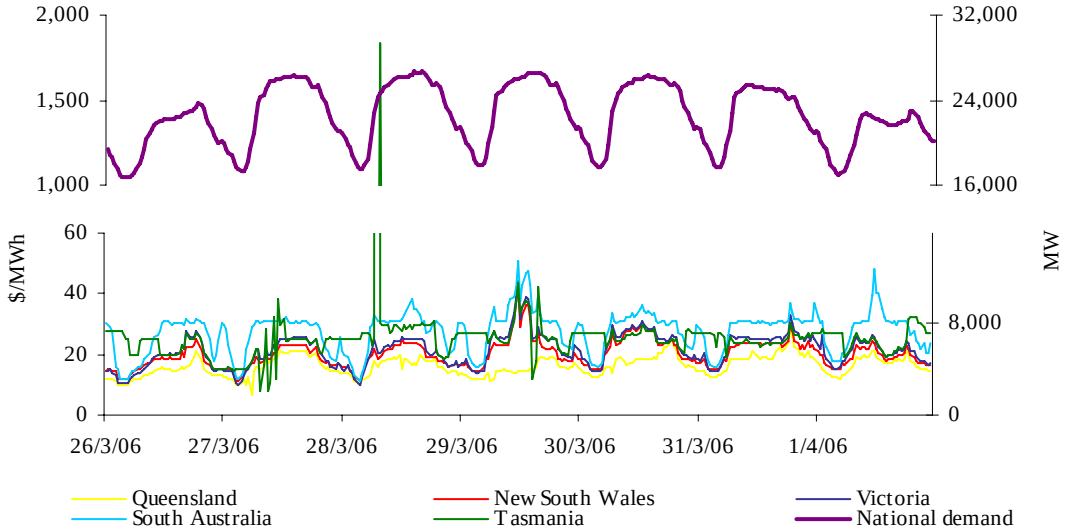


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	17	21	22	28	31
Previous week	16	21	24	40	29
March quarter last year	25	35	22	31	-
Financial year to date	33	48	38	46	67
% change from previous week	▲6%	▼4%	▼7%	▼30%	▲7%
% change from same quarter last year	▼33%	▼42%	▼1%	▼10%	-
% change from year to date	▲2%	▼6%	▲30%	▲13%	-

Figure 3: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.34	0.40	0.35	0.25	0.33
Previous week	0.35	0.41	0.45	0.32	0.66
Same quarter last year	0.73	0.74	0.78	0.70	-

Figures 4 to 8 show the weekly correlation between spot price and demand.

Figure 4: Queensland

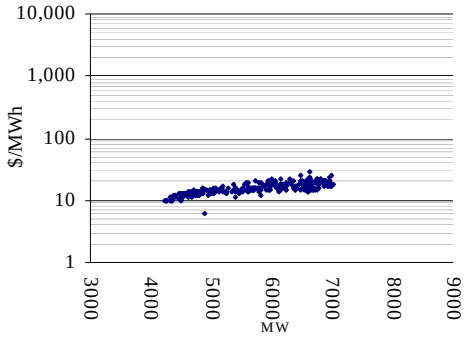


Figure 5: New South Wales

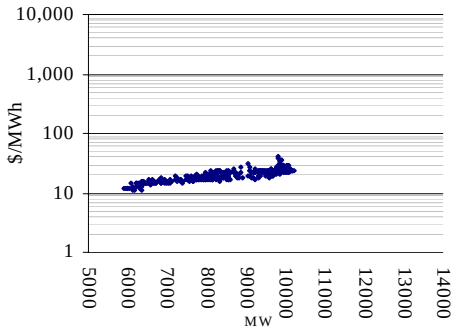


Figure 6: Victoria

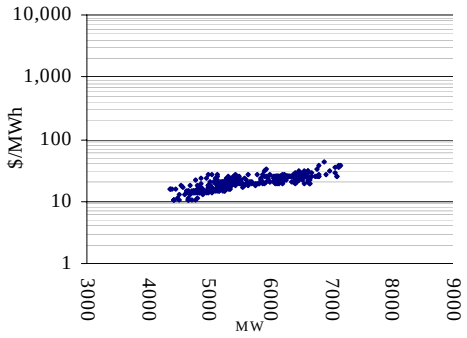


Figure 7: South Australia

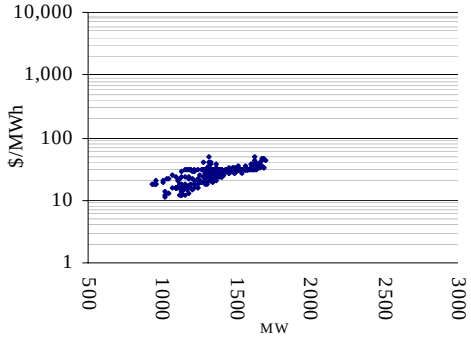
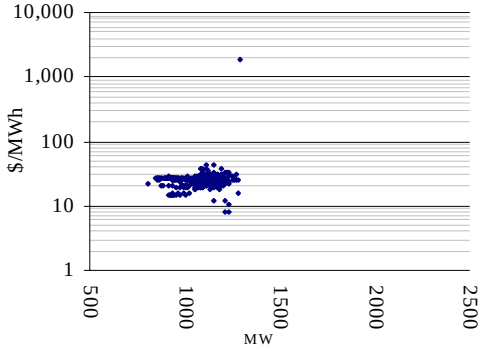


Figure 8: Tasmania



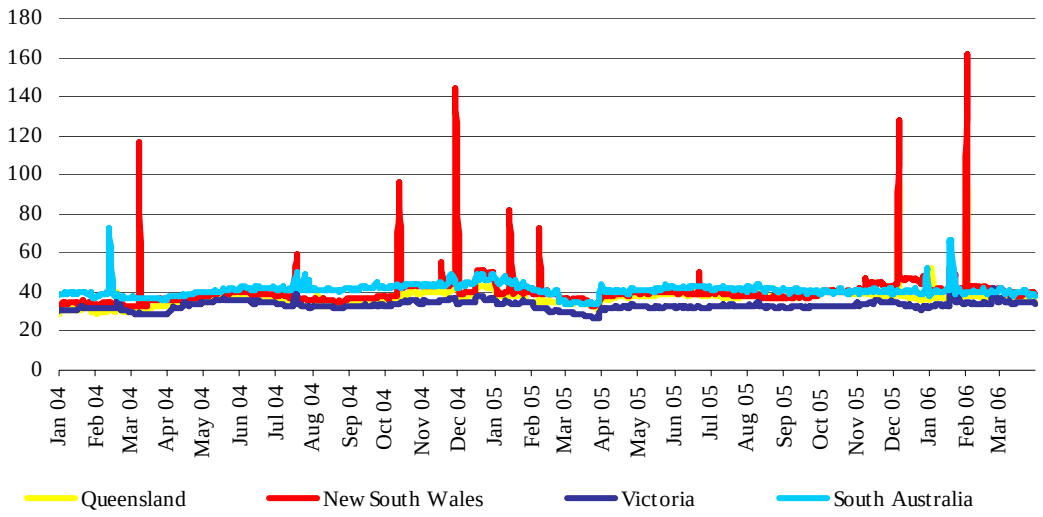
Maximum spot prices across the mainland ranged from $29/MWh in Queensland to $50/MWh in South Australia. In Tasmania, the spot price reached $1832/MWh at 7.30am on Tuesday morning when the transfer capability of Basslink was rapidly reduced for a planned network outage.

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	35.57	35.53	35.47	34.51	34.43
New South Wales	39.00	39.51	39.24	39.62	39.33
Victoria	34.73	34.85	34.97	34.76	33.84
South Australia	38.21	38.77	39.09	38.36	37.77

Figure 10: d-cyphaTrade WEPI



Reserve

There were no low reserve conditions forecast for the week.

Figures 11 to 15 show spot price, net imports and limits at the time of weekly maximum demand.

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

Figure 11: Queensland

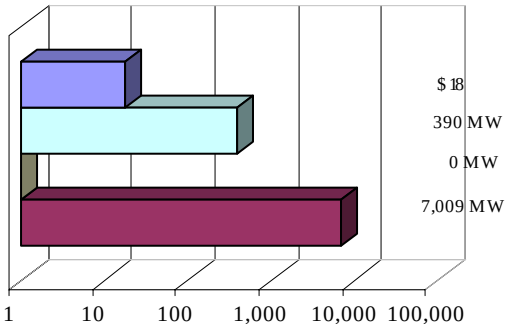


Figure 12: New South Wales

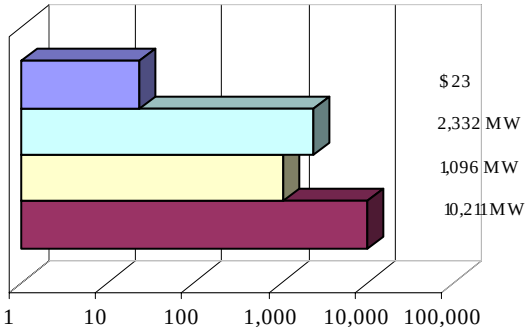


Figure 13: Victoria

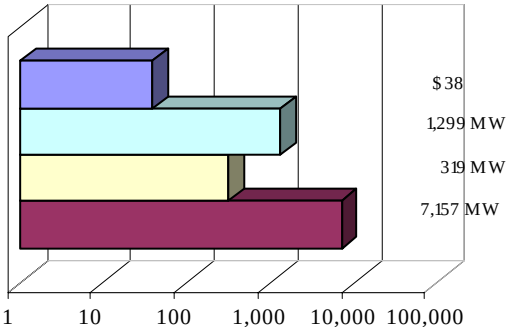


Figure 14: South Australia

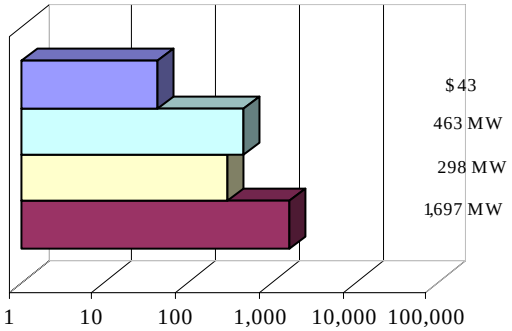
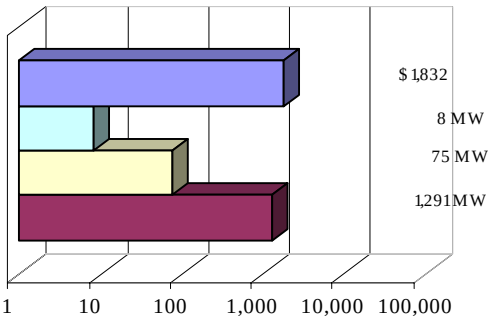
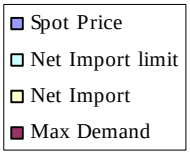


Figure 15: Tasmania





Price variations

There were 14 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 correlation 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

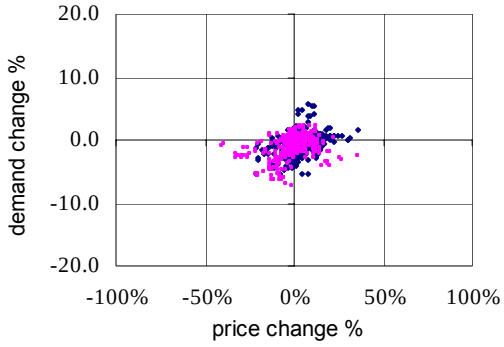


Figure 17: New South Wales

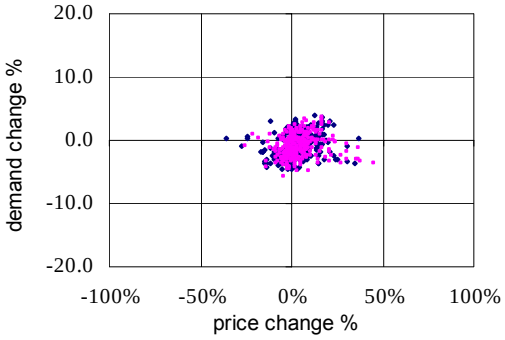


Figure 18: Victoria

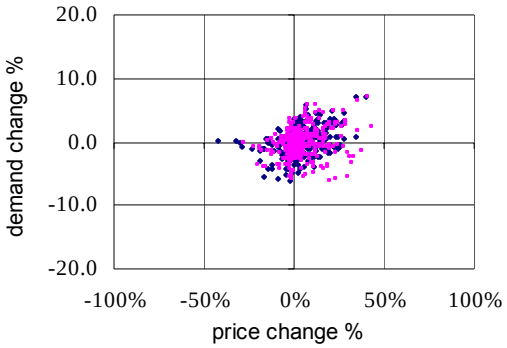


Figure 19: South Australia

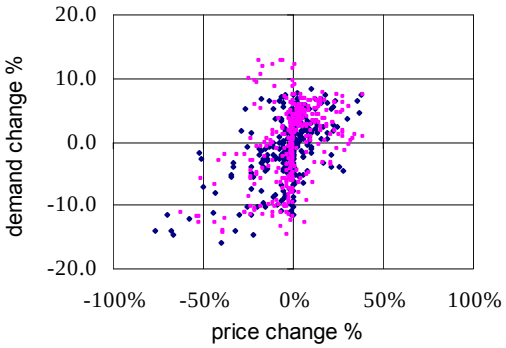
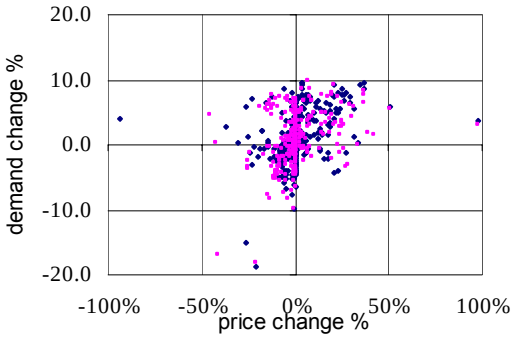


Figure 20: Tasmania



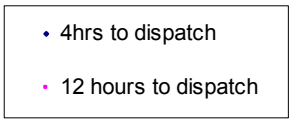
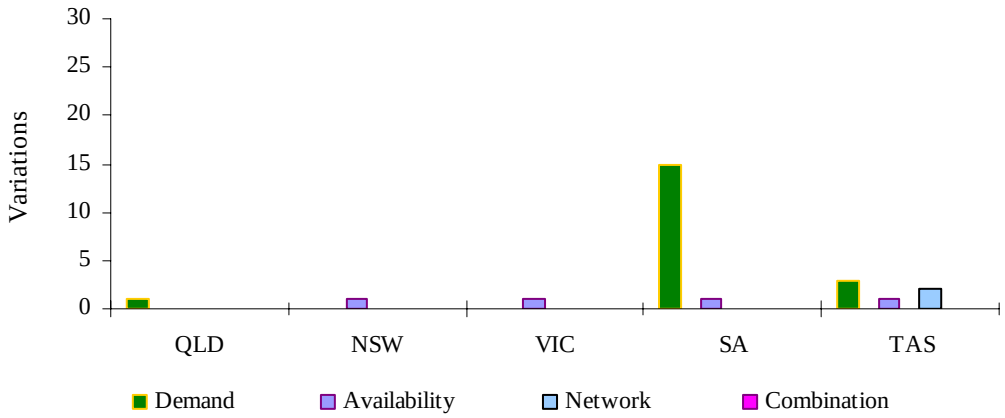


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

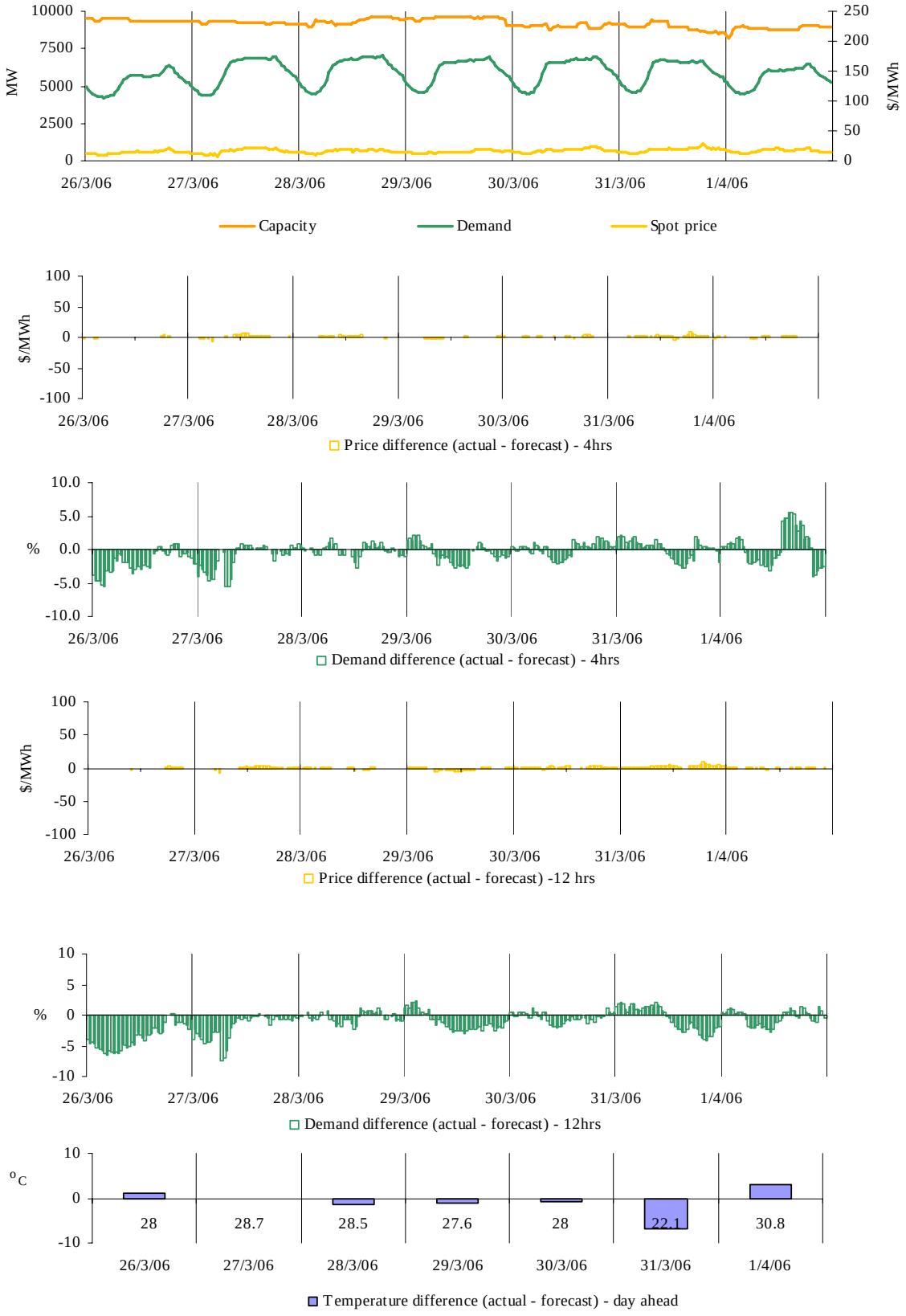
Figure 21: reasons for variations between forecast and actual prices



Price and demand

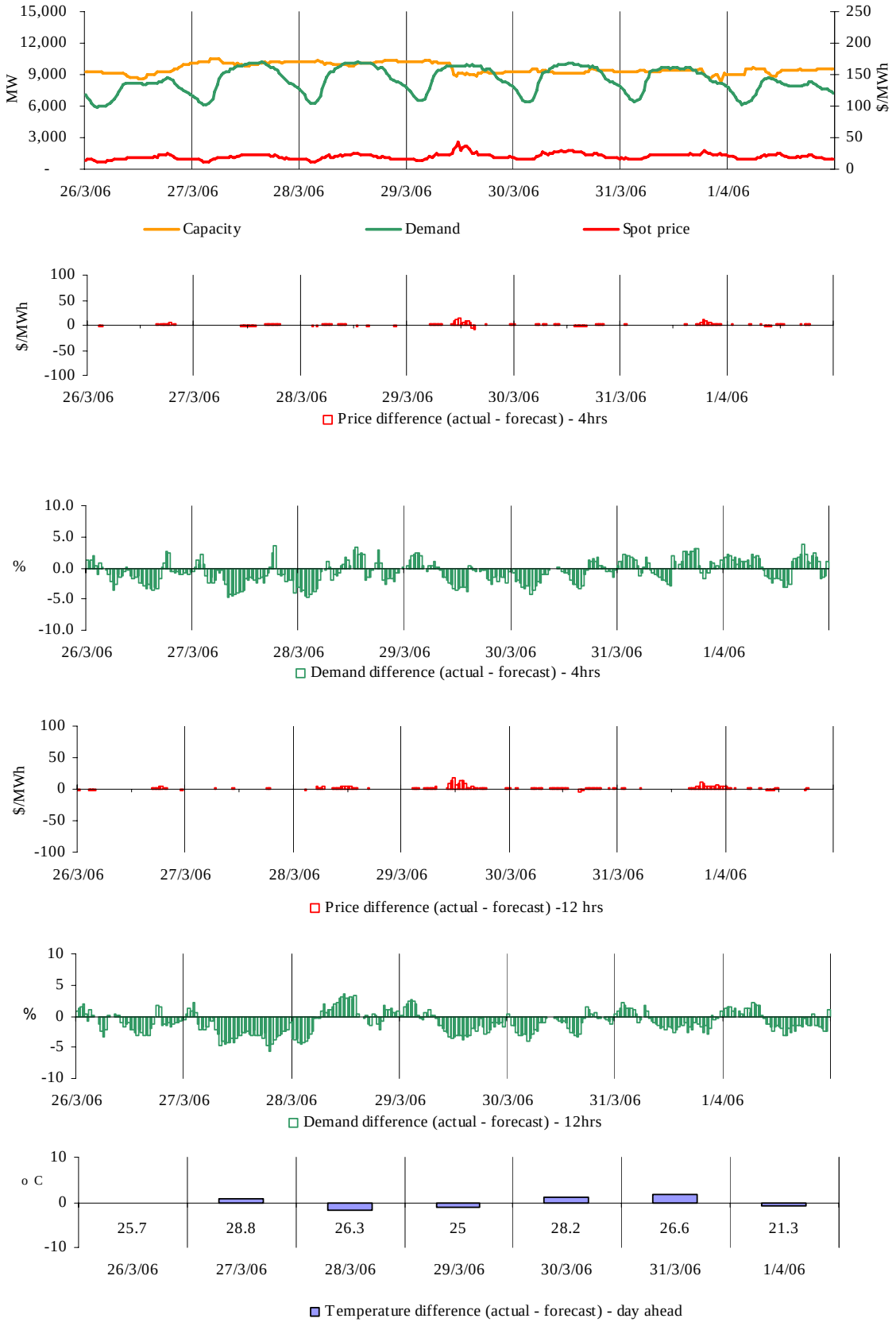
Figures 22 - 51 set out details of spot prices and demand on a regional basis. They include the actual spot price, actual demand outcomes and variation from forecasts made 4 and 12 hours ahead of dispatch on a daily basis. The differences between the maximum temperature and the temperature forecast at 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



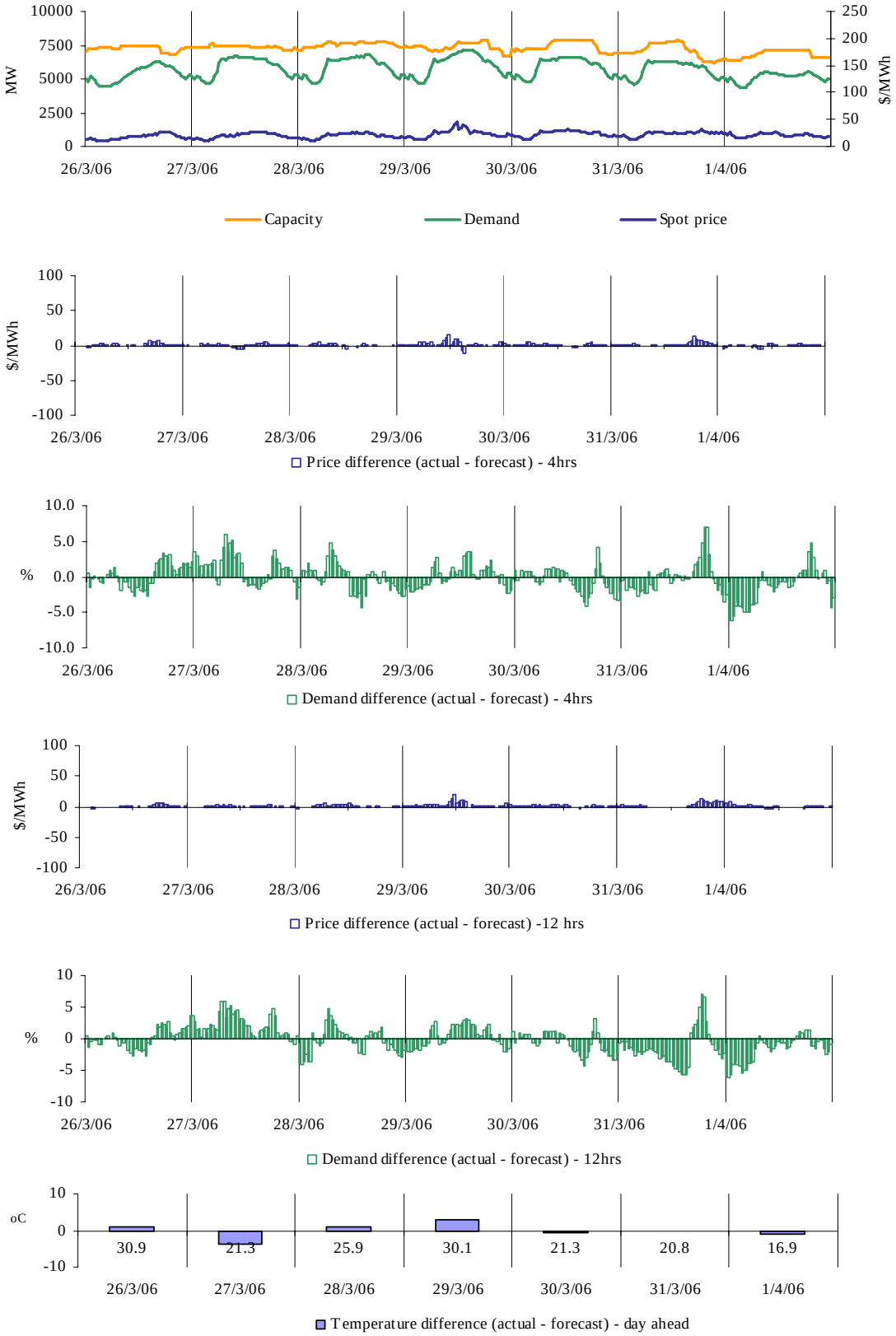
There was no occasion in Queensland where the spot price was greater than three times the weekly average price of $17/MWh.

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



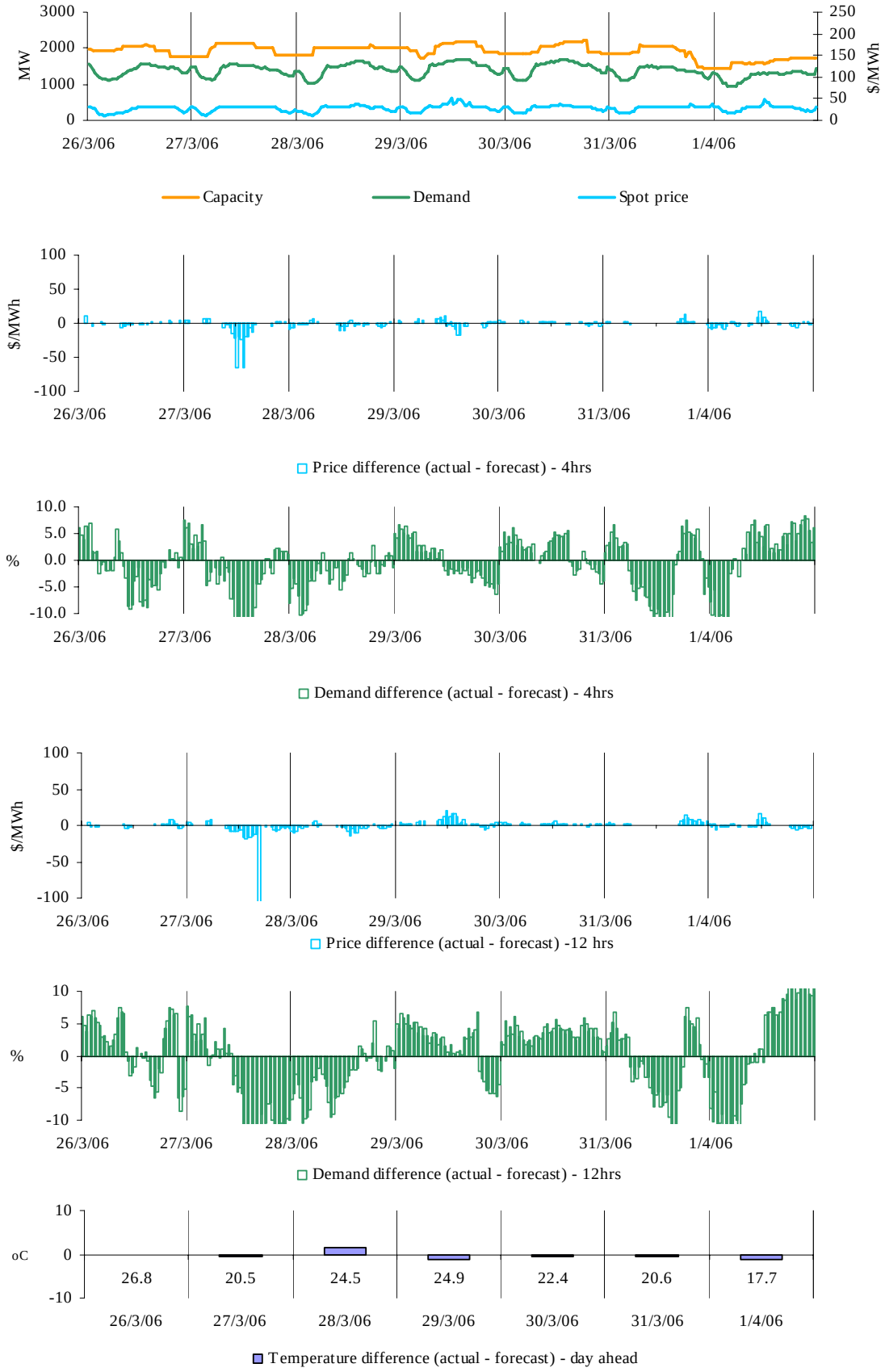
There was no occasion in New South Wales where the spot price was greater than three times the weekly average price of $21/MWh.

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



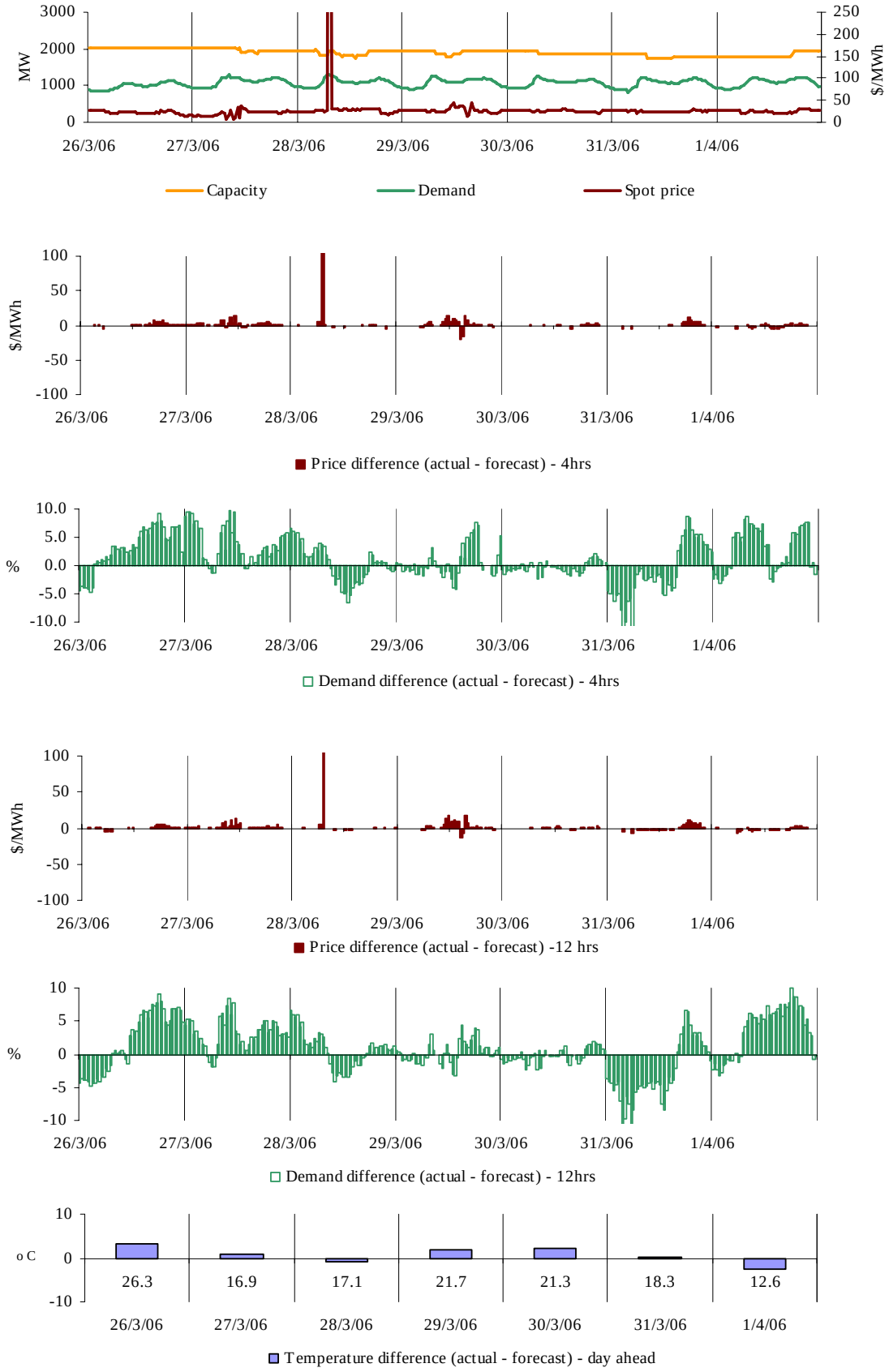
There was no occasion in Victoria where the spot price was greater than three times the weekly average price of $22/MWh.

Figures 40-45: South Australia actual spot price, demand and forecast differences



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

Figures 46-51: 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 $31/MWh. This occurred on Tuesday morning.

Tuesday, 28 March

7:30 am	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	1831.67	30.28	30.63
Demand (MW)	1291	1242	1252
Available capacity (MW)	1957	1988	1988

Conditions at the time saw demand and capacity close to 4 and 12 hour forecast, with demand at its highest level for the week.

At 7am the Basslink interconnector was flowing southwards at its limit of 196MW. At 7.05 am a scheduled outage of Basslink commenced. This outage was reflected in a zero offer for the Basslink MSNP (from the initial offer the previous day), and a zero capability for the link as a result of a network outage in Victoria, notified through the market systems from around 8pm the previous evening. In addition to these constraints, the rate of change of Basslink is limited to 200 MW per 5-minute dispatch interval, and the "no-go" zone[1] restricted the ability of the interconnector to move to less than 50MW flow. The actual metered flow for the 7.05am dispatch interval was 226MW, which led to the violation of three of the four constraints mentioned: the zero Basslink offer; the zero network capability; and the "no-go" zone constraint. The rate of change constraint was not violated, leading to a target on the interconnector of 26 MW.

The step reduction in imports into Tasmania across Basslink led to an increase in the requirement for local generation and a significant increase in the requirement for local ancillary services. This saw a number of generators ramped up at their maximum energy rate of change, and a number of generators trapped in the provision of ancillary services. The combination of these factors led to a shortfall in the availability of generation in Tasmania to meet this change in imports, the violation of the optimising algorithm's supply demand balance constraint and a price of $10 000/MWh.

NEMMCO have stated that the 200 MW ramp rate on Basslink will be reviewed as more experience is gained. On this occasion, a lower ramp rate would have seen the price transition smoothly from around $19/MWh before the outage to around $30/MWh during the outage as forecast.

[1] The "no-go" zone is the capability of Basslink to flow into or out of Tasmania by up to 50 MW. The physical characteristics of the interconnector require a one dispatch interval delay before passing through this ±50 MW band.

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

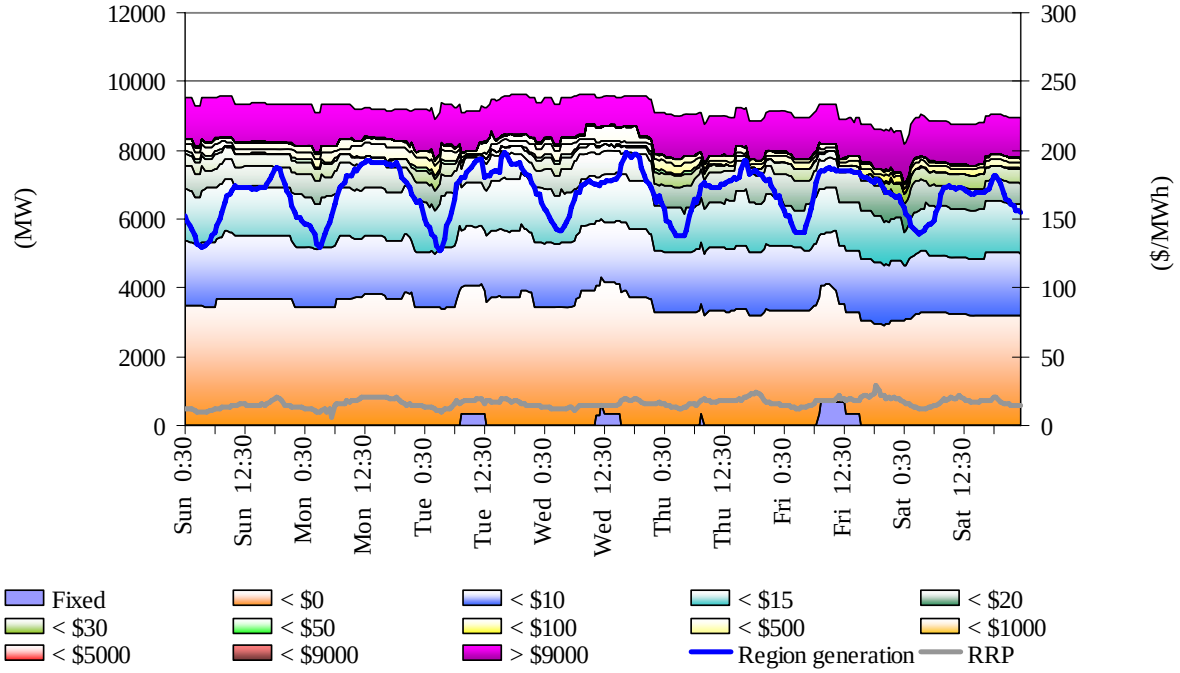


Figure 53: New South Wales closing bid prices, dispatched generation and spot price

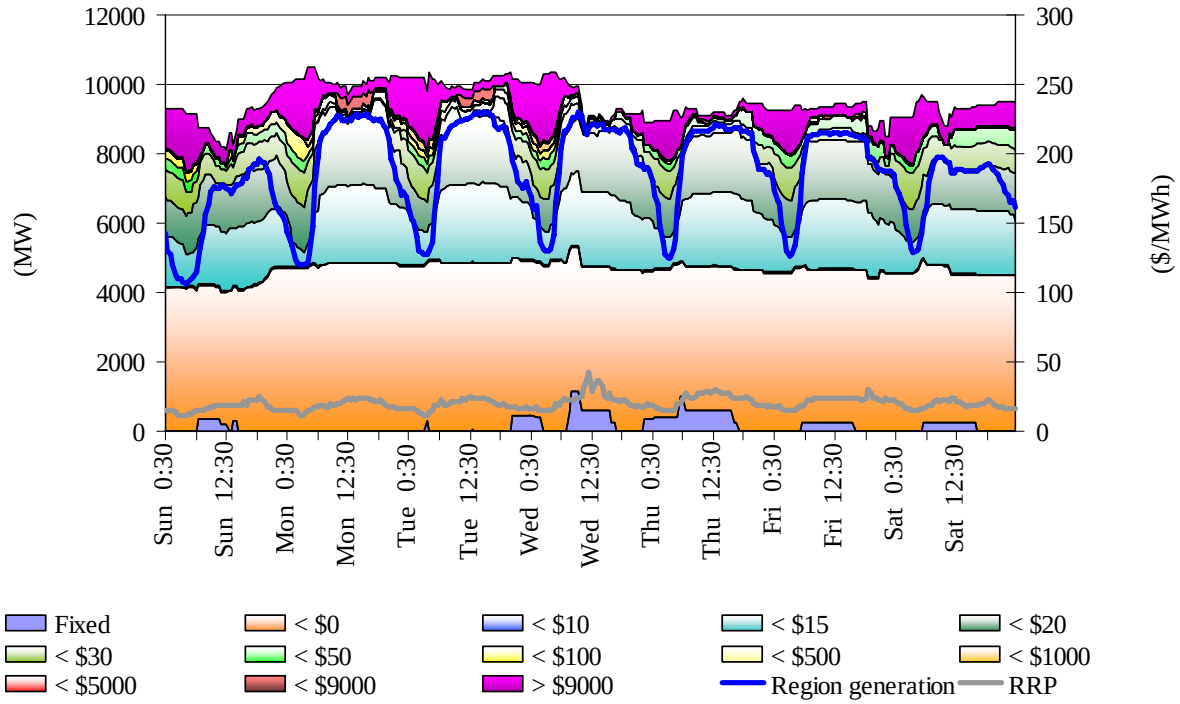


Figure 54: Victoria closing bid prices, dispatched generation and spot price

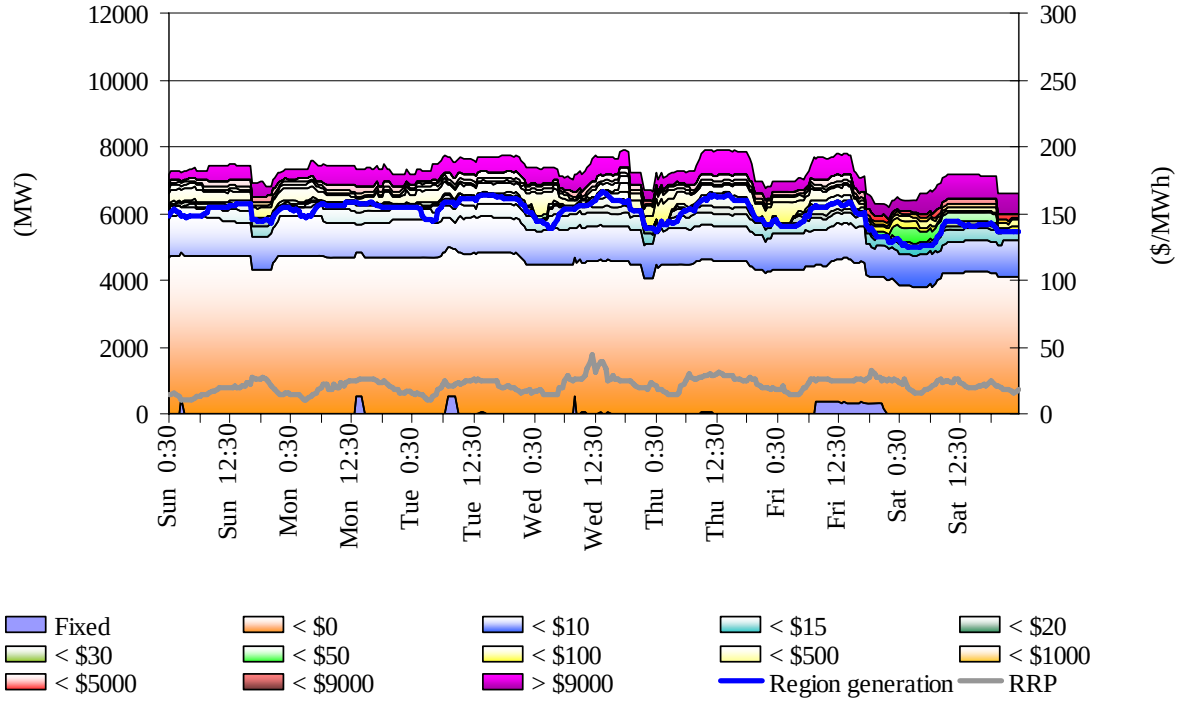


Figure 55: South Australia closing bid prices, dispatched generation and spot price

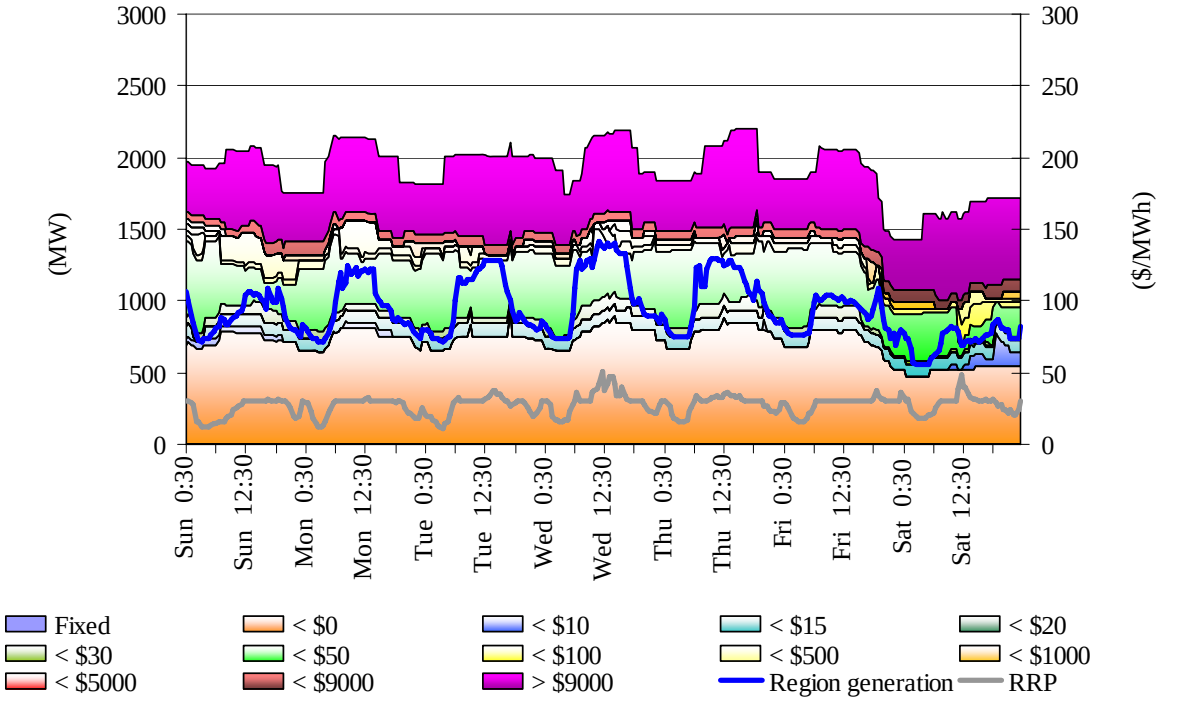
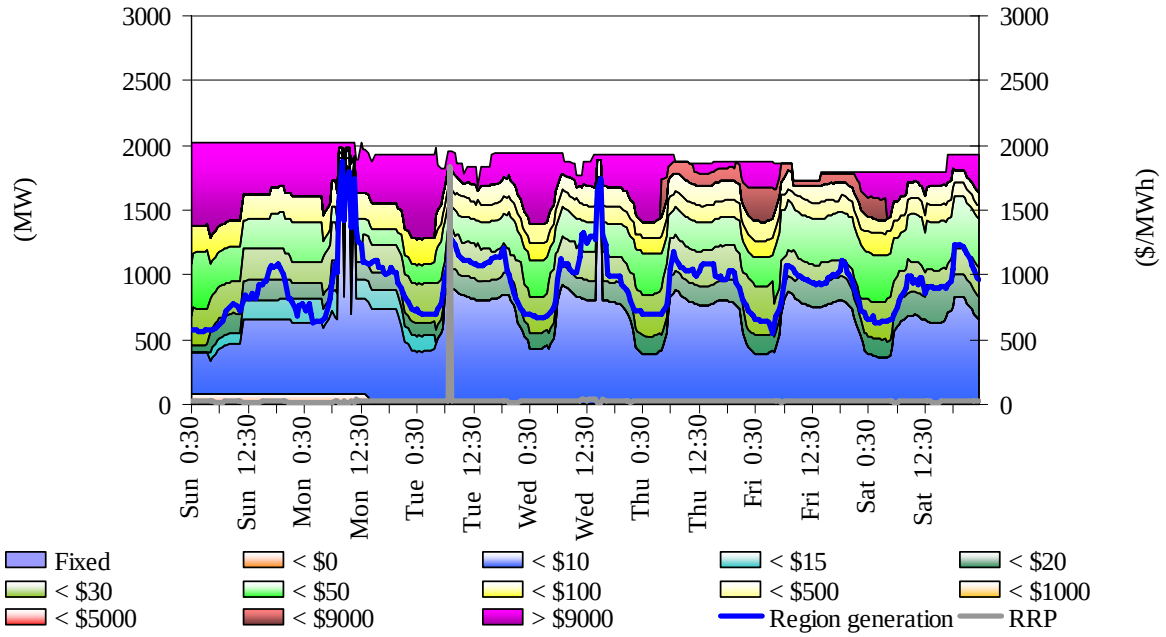


Figure 56: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $151 000 or 0.2 per cent of the total turnover in the energy market on the mainland. Figure 57 summarises the volume weighted average prices and costs for the eight frequency control ancillary services across the mainland regions.

Figure 57: frequency control ancillary service prices and costs

	Raise 6 sec	Raise 60 sec	Raise 5 min	Raise reg	Lower 6 sec	Lower 60 sec	Lower 5 min	Lower reg
Last week	0.74	0.33	0.83	1.40	0.18	0.19	0.40	1.40
Previous week	0.58	0.37	1.00	0.77	0.17	0.73	1.20	1.11
Last quarter	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	33	13	48	31	1	1	5	20
% of energy market	0.04%	0.02%	0.07%	0.04%	0.00%	0.00%	0.01%	0.03%

The total cost of ancillary services in Tasmania for the week was $108 000 or 2 per cent of the total turnover in the energy market in Tasmania. 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	1.16	0.80	5.04	2.16	1.73	0.01	0.01	0.42
Previous week	1.04	0.80	5.03	2.05	77.21	0.01	0.01	0.41
Last quarter	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost ($1000s)	6	10	64	7	16	0	0	4
% of energy market	0.11%	0.17%	1.14%	0.12%	0.28%	0.00%	0.00%	0.08%

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

Figure 59: daily frequency control ancillary service costs

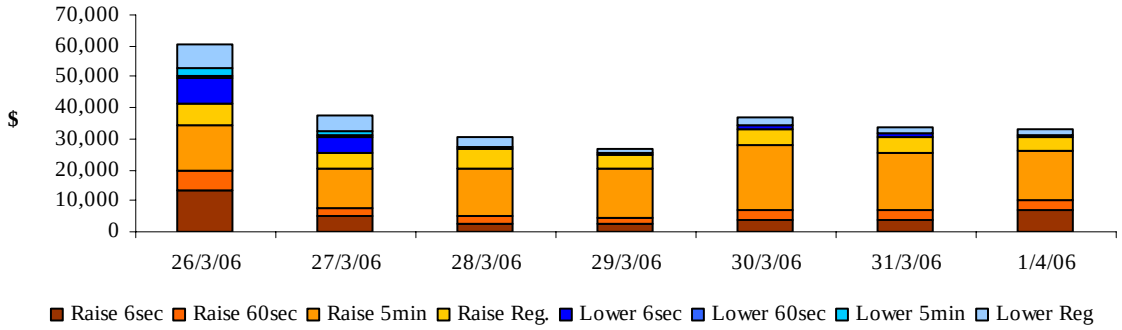
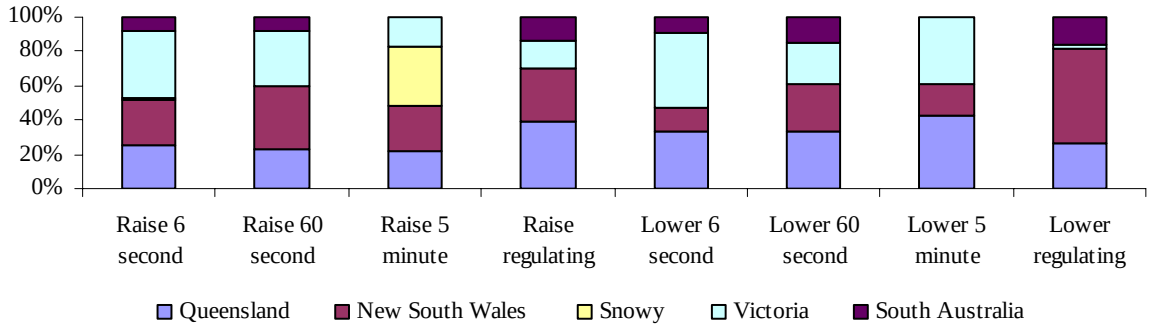


Figure 60 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

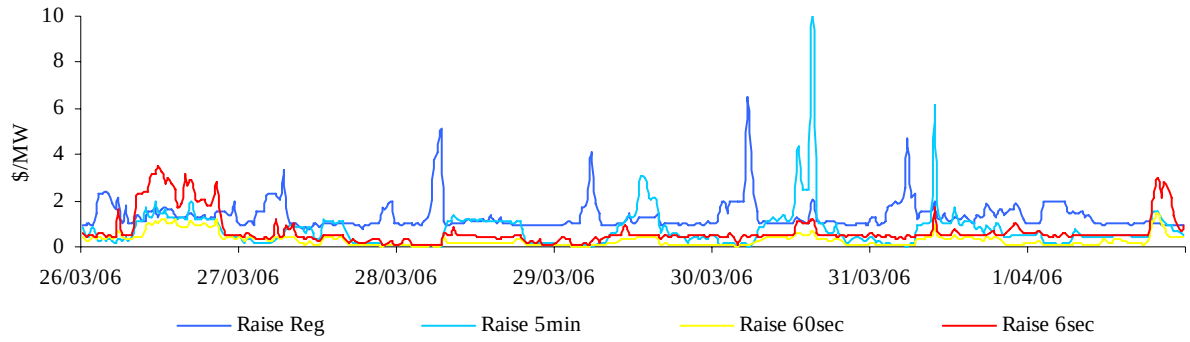


Figure 61A: prices for raise services - Tasmania

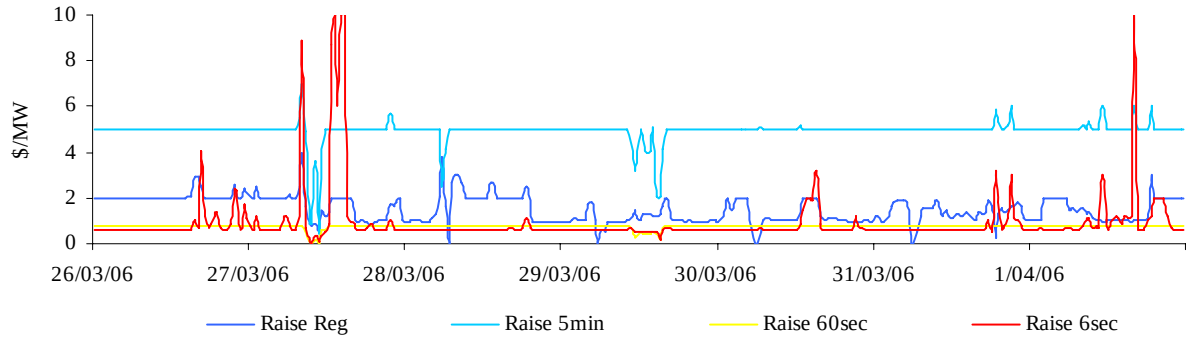


Figure 62: prices for lower services

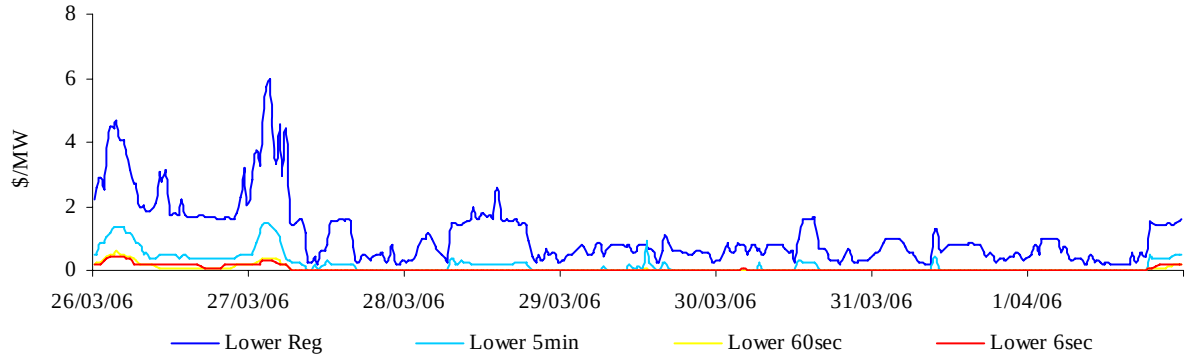
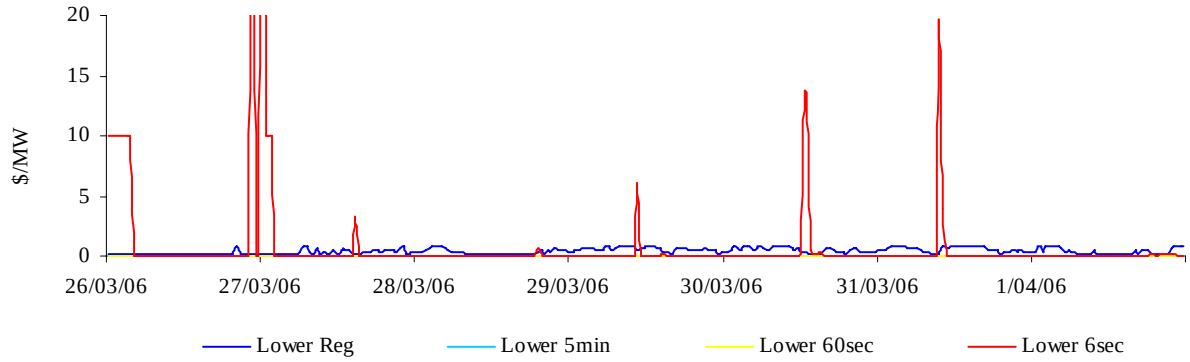


Figure 62A: prices for lower services - Tasmania



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

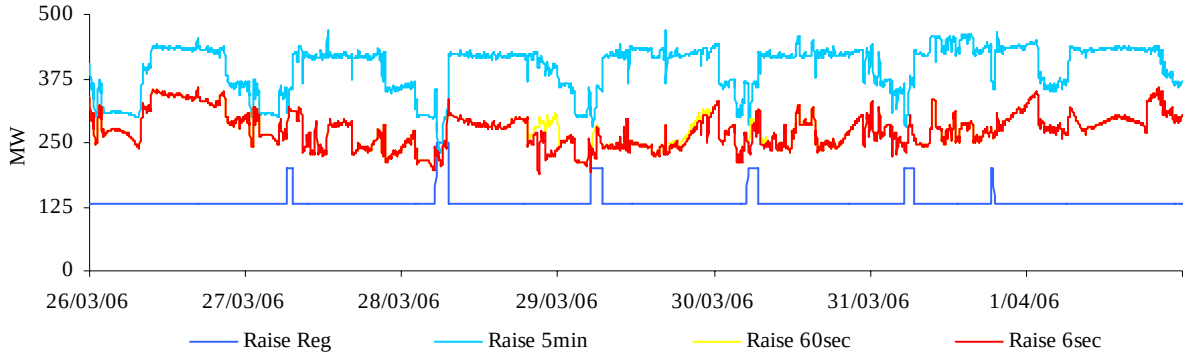


Figure 63A: raise requirements - Tasmania

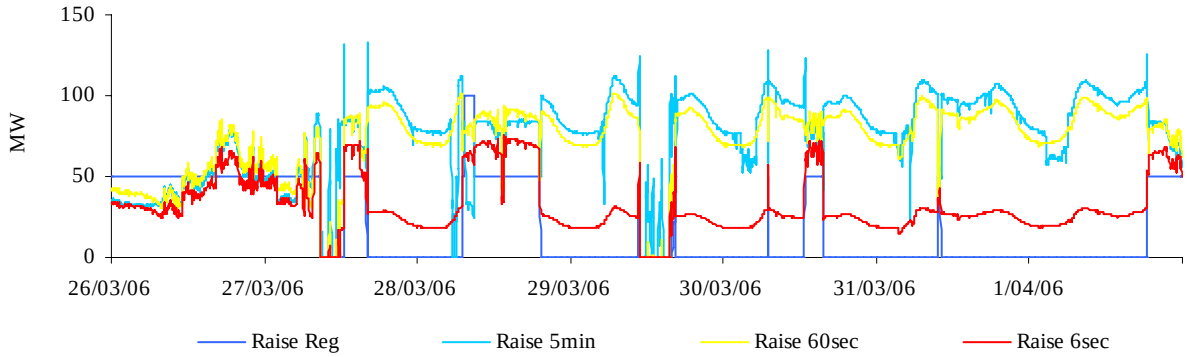


Figure 64: lower requirements

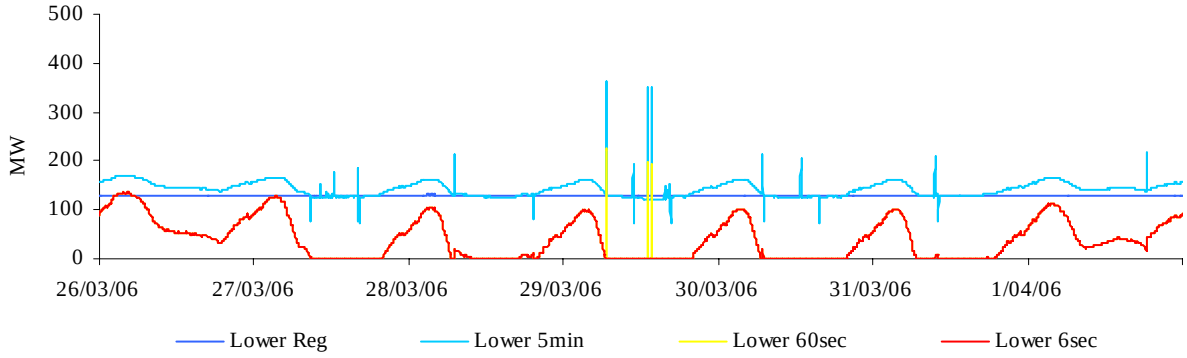
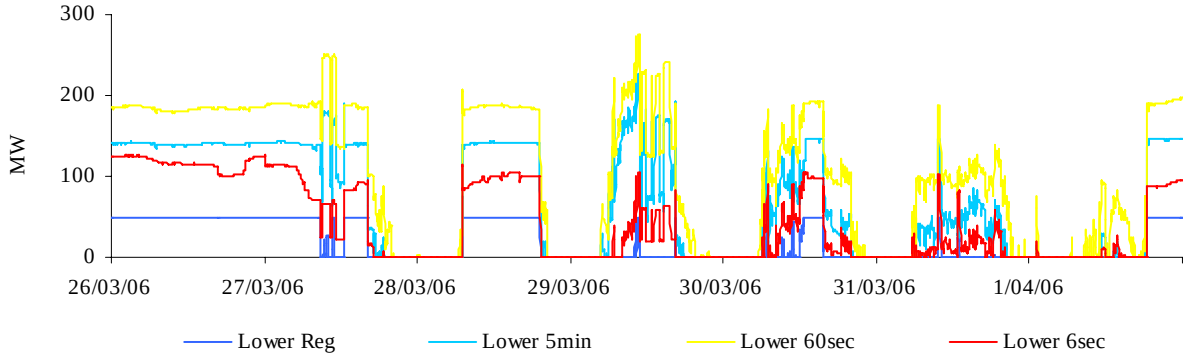


Figure 64A: lower requirements - Tasmania



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