Market analysis

AUSTRALIAN ENERGY REGULATOR

14 MAY – 20 MAY 2006

Spot prices were aligned across the market for around 90 per cent of the time, averaging between $18/MWh in Queensland and $29/MWh in Tasmania for the week.

Turnover in the energy market was $80 million. The total cost of ancillary services for the week, including Tasmania, was $584 000, or 0.7 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 38, or around 11 per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 12 per cent of all trading intervals across the market. These variations were most frequent in South Australia, occurring in a third 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

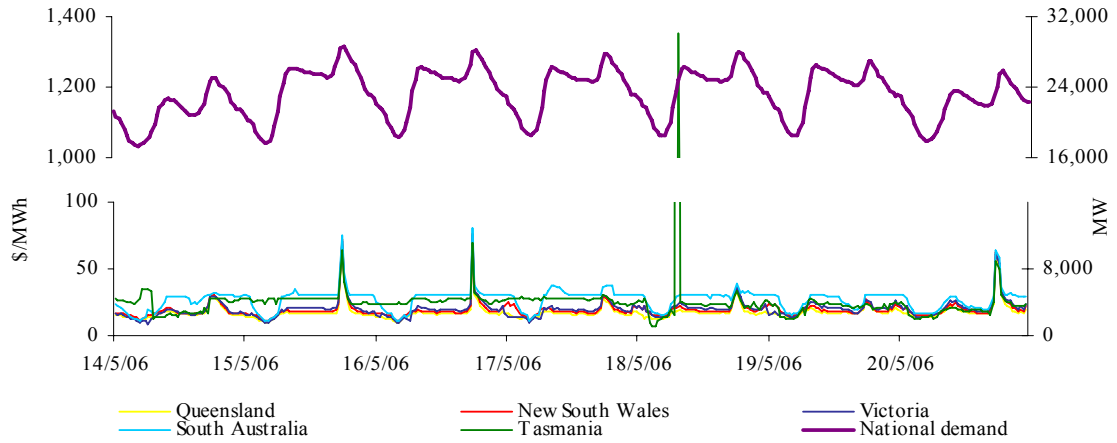


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	18	20	20	28	29
Previous week	21	23	26	47	27
Same quarter last year	23	28	27	36	-
Financial year to date	32	44	36	44	61
% change from previous week*	▼16%	▼16%	▼22%	▼41%	▲5%
% change from same quarter last year**	▼22%	▼30%	▼25%	▼21%	-
% change from year to date***	▲1%	▼7%	▲23%	▲10%	-

*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.

Figure 3: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.22	0.26	0.30	0.09	0.21
Previous week	0.39	0.39	0.52	0.41	0.48
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

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

Figure 4: Queensland

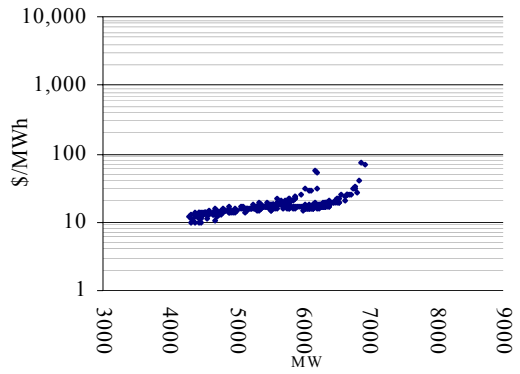


Figure 5: New South Wales

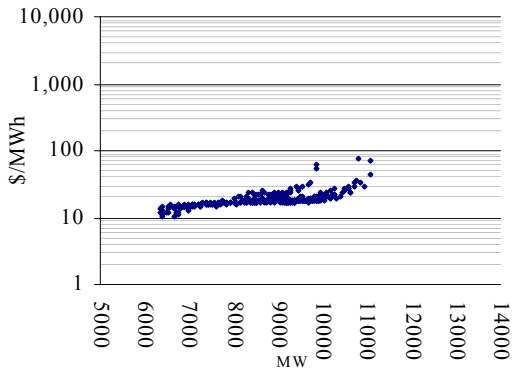


Figure 6: Victoria

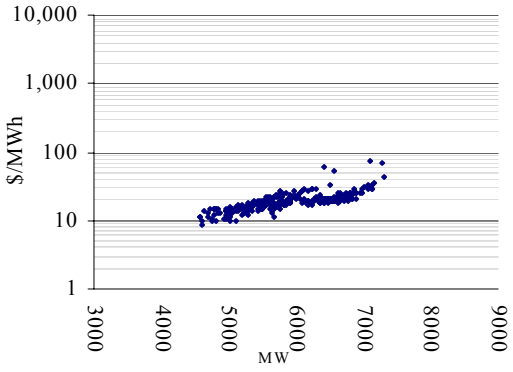


Figure 7: South Australia

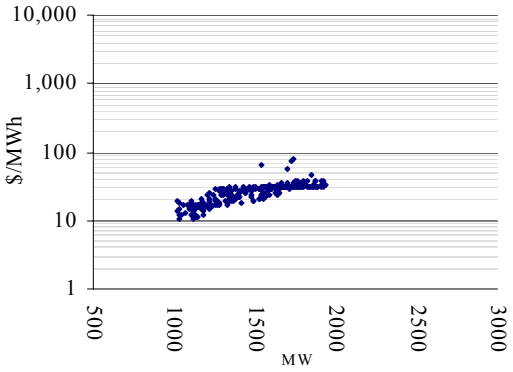
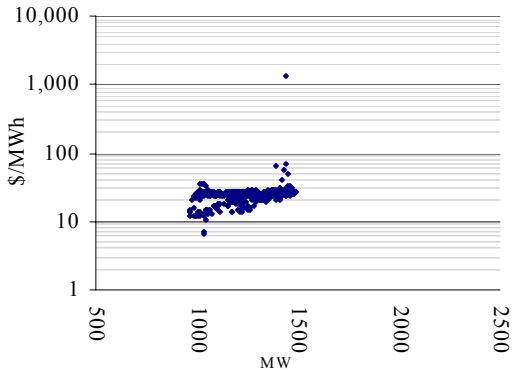


Figure 8: Tasmania



Maximum spot prices for the week were $72/MWh in Queensland, $77/MWh in New South Wales, $75/MWh in Victoria and $81/MWh in South Australia all occurring at 6 pm on Tuesday. In Tasmania the maximum spot price reached $1351/MWh on Thursday at 7.30 am.

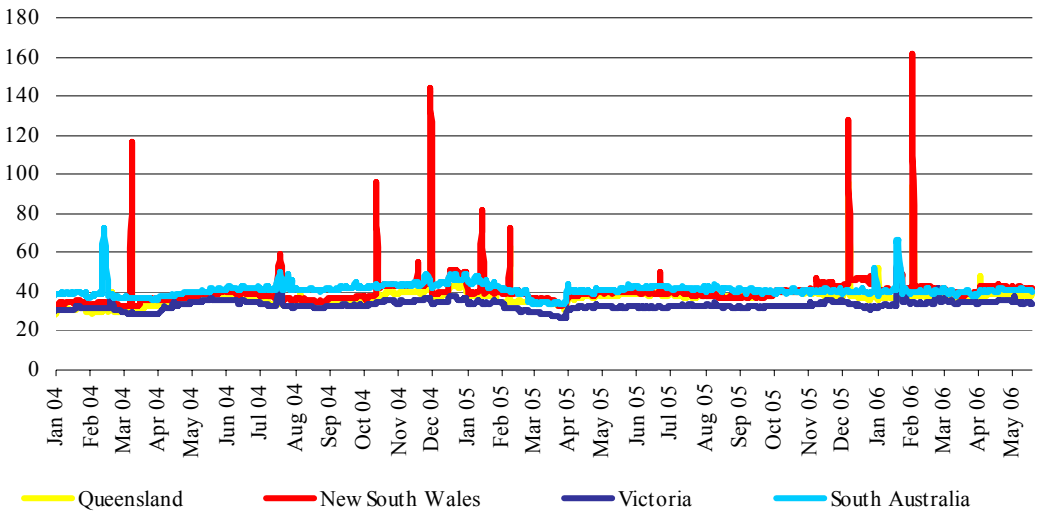
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	37.67	37.70	37.49	37.81	38.60
New South Wales	42.15	42.42	41.87	41.92	41.93
Victoria	34.32	34.42	34.12	34.34	34.04
South Australia	40.72	40.80	40.91	40.69	40.27

* 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

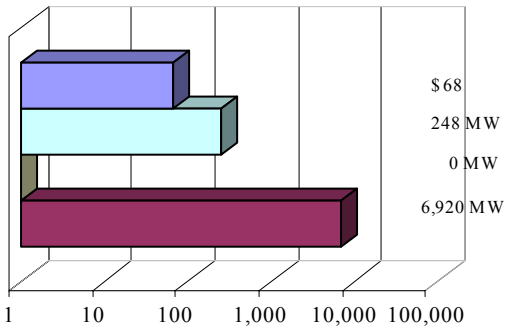


Figure 12: New South Wales

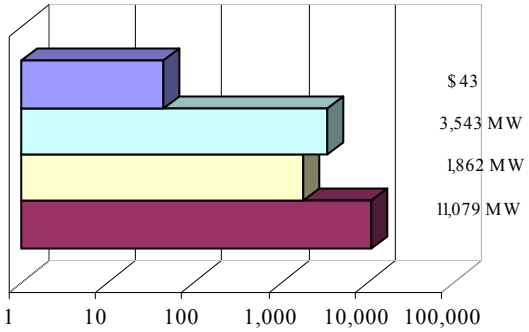


Figure 13: Victoria

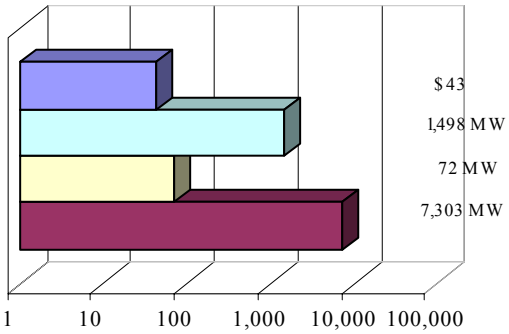


Figure 14: South Australia

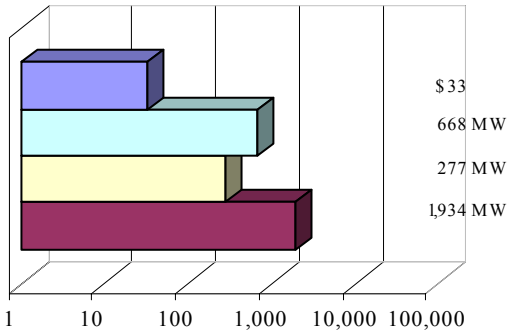
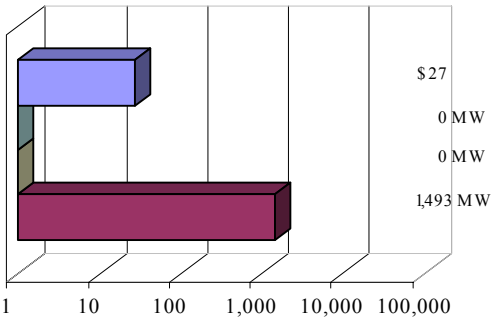


Figure 15: Tasmania



Price variations

There were 38 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

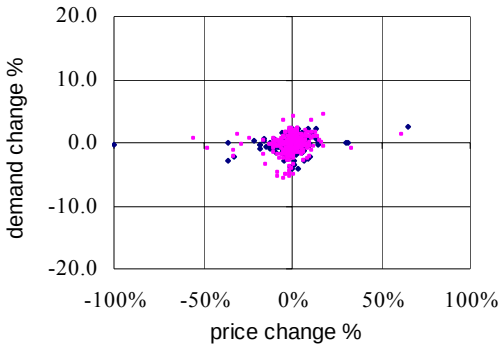


Figure 17: New South Wales

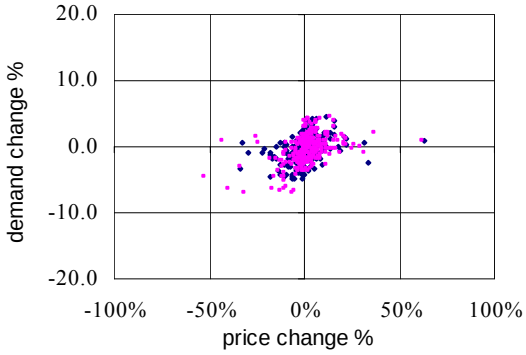


Figure 18: Victoria

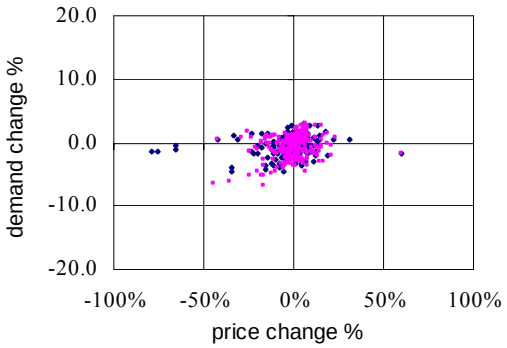


Figure 19: South Australia

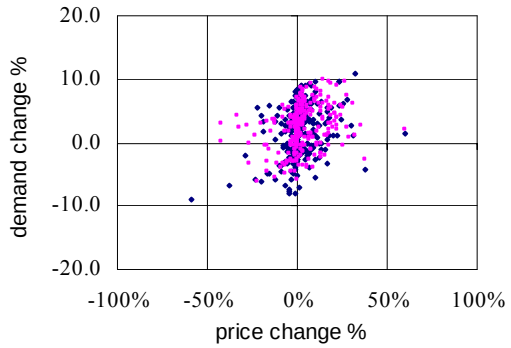
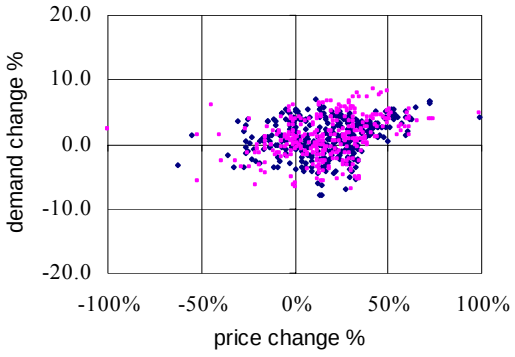


Figure 20: Tasmania



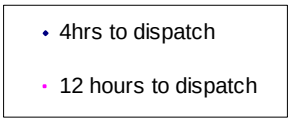
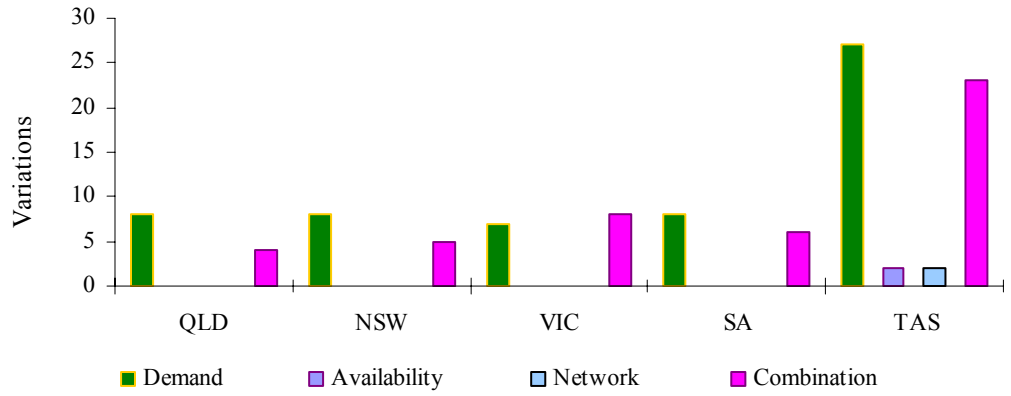


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

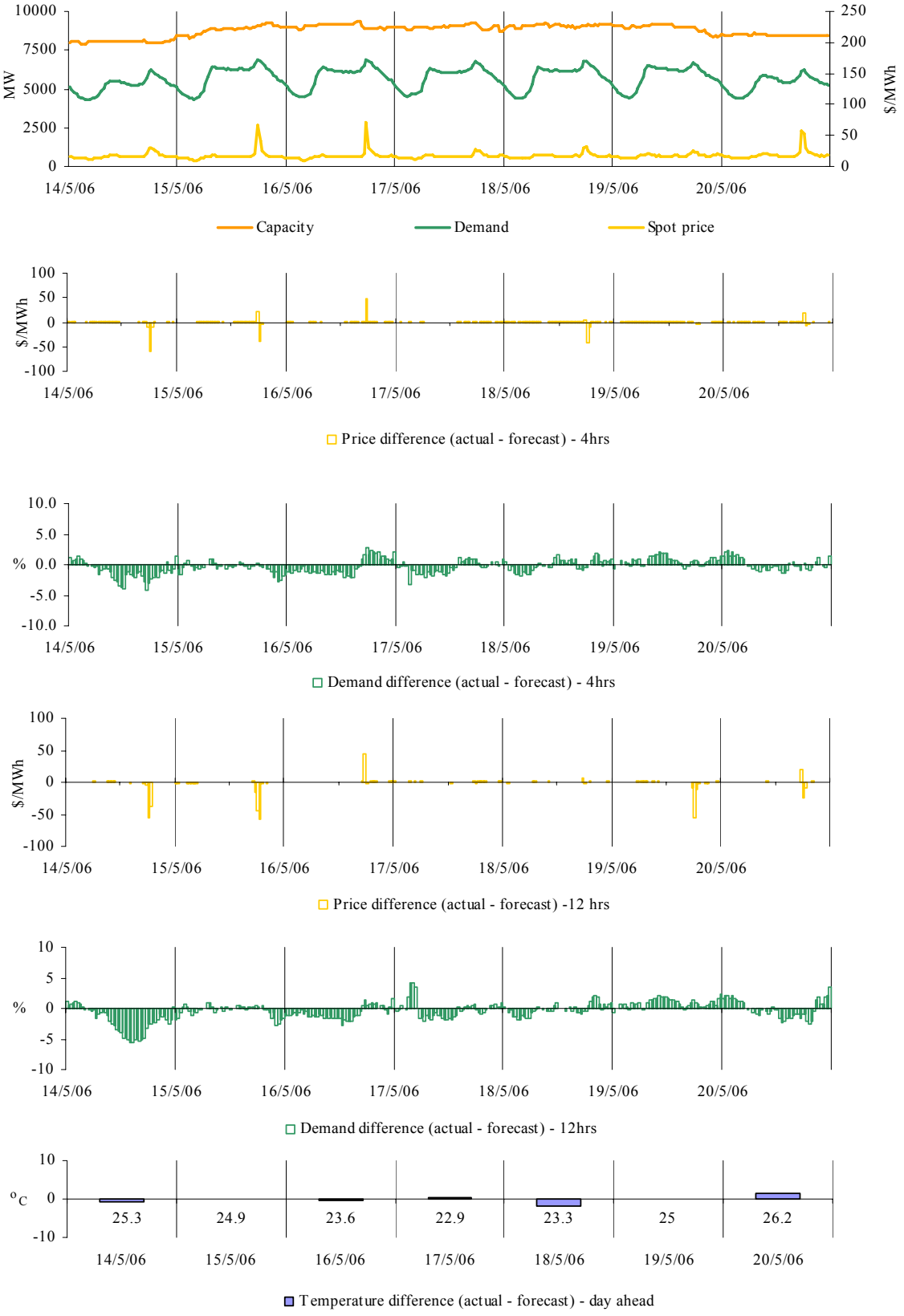
Figure 21: reasons for variations between forecast and actual prices



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 3 occasions where the spot price in Queensland was greater than three times the weekly average price of $18/MWh.

Monday, 15 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	67.53	46.43	83.58
Demand (MW)	6920	6911	6883
Available capacity (MW)	9063	9007	9173

Conditions at the time saw demand and available capacity close to that forecast 4 hours ahead. Prices were aligned across the mainland.

Over two rebids at 8.30 am and 3.14 pm, Tarong Energy shifted 200 MW of capacity at Tarong from prices above $200/MWh to around $75/MWh. At 8.30 am, most of the 200 MW of capacity was shifted to prices of less than $40/MWh before being shifted to $75/MWh at 3.14 pm. The rebids reasons given were "Latest predispatch update::adjust profile" and "Change in pds::change in MW distribution".

There was no other significant rebidding.

Tuesday, 16 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	71.86	25.34	27.19
Demand (MW)	6877	6694	6789
Available capacity (MW)	8909	9173	9221

Conditions at the time saw demand around 180 MW higher than that forecast 4 hours ahead. Available capacity was 260 MW lower on the same basis. Prices were aligned across the mainland.

At 4.32 pm Enertrade rebid the available capacity of Gladstone unit six from 280 MW to zero following a unit trip. All of this capacity was priced at less than $81/MWh. The rebid reason given was "rearrangement – outage::change MW distrib."

At 5.22 pm, CS Energy shifted 80 MW of capacity across Swanbank B from prices of less than $50/MWh to around $100/MWh. The rebid reason given was "Swan B rearrangement change in market con". This rebid reversed a change to CS Energy's portfolio made at 8.48 am.

The new 470 MW Braemar power station commenced commissioning the first of its three units on 10 May. Unit 1 reached its full output of 160 MW for the first time on 15 May. The unit, which was scheduled to shutdown from around 5.30 pm, was shutdown around one hour early. The rebid reason given was "Commissioning".

There was no other significant rebidding.

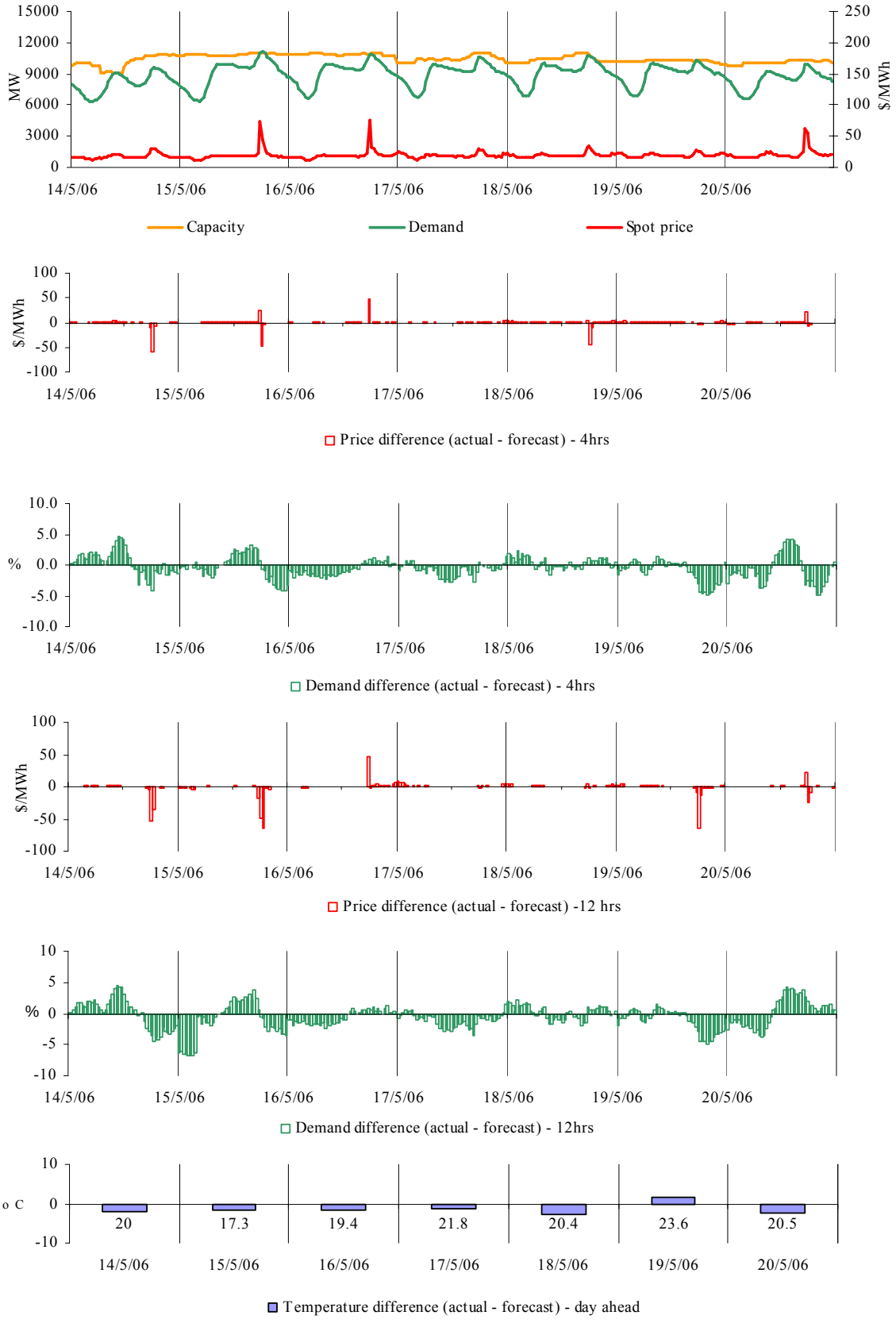
Saturday, 20 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	58.09	40.19	38.79
Demand (MW)	6181	6187	6235
Available capacity (MW)	8474	8474	8504

Conditions at the time saw demand and availability close to forecast with prices aligned across the mainland.

There was no significant rebidding.

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



There were 3 occasions where the spot price in New South Wales was greater than three times the weekly average price of $20/MWh.

Monday, 15 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	72.60	49.38	90.14
Demand (MW)	11074	11005	11000
Available capacity (MW)	11003	11040	10905

Conditions at the time saw demand and available capacity close to forecast with prices aligned across the mainland.

There was no significant rebidding.

Tuesday, 16 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	76.55	28.25	29.15
Demand (MW)	10814	10713	10719
Available capacity (MW)	10917	11050	11062

Conditions at the time saw demand and available capacity close to forecast with prices aligned across the mainland. There was no capacity priced between $30/MWh and $1000/MWh.

There was no significant rebidding.

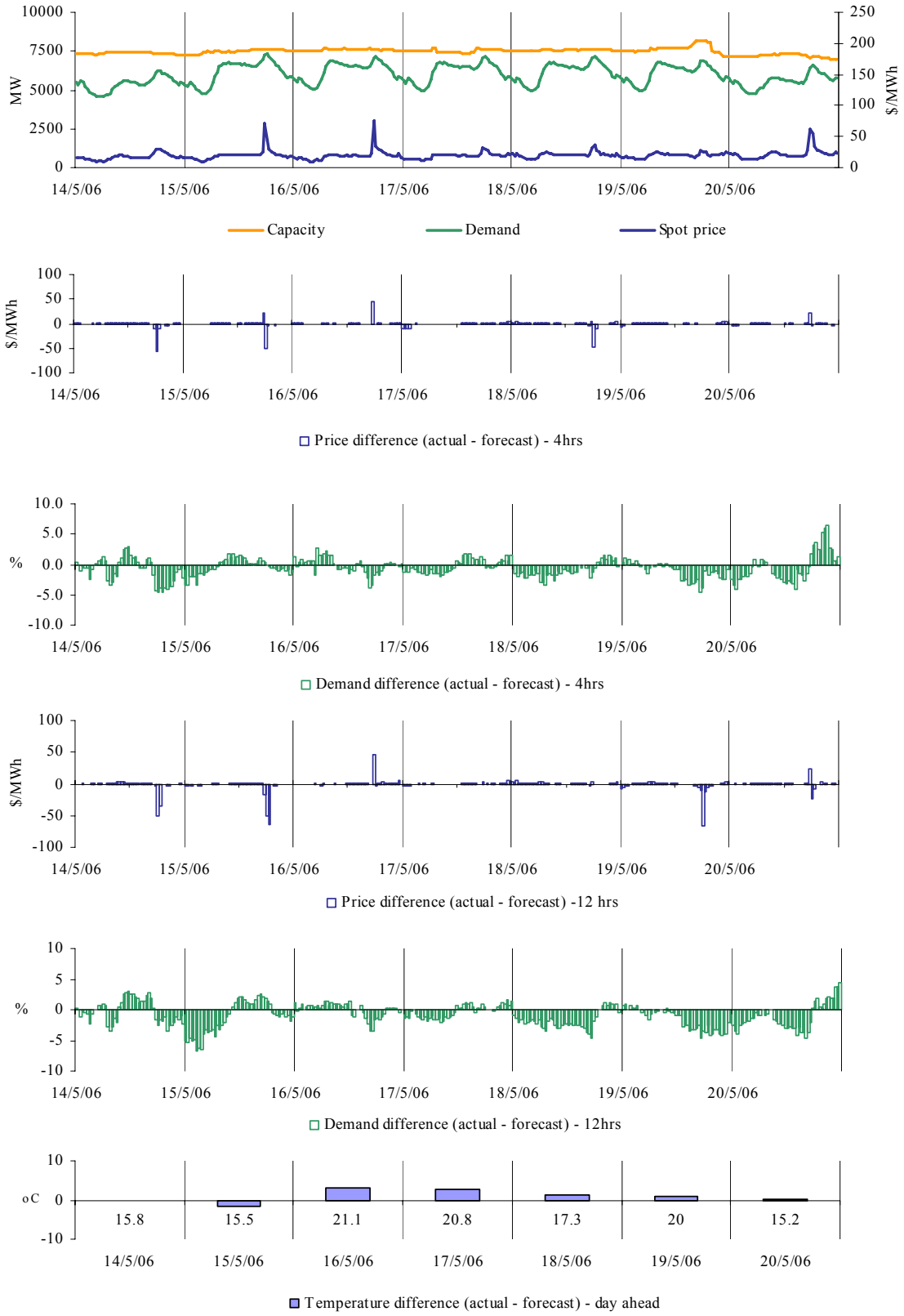
Saturday, 20 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	62.01	41.31	38.99
Demand (MW)	9850	10091	9651
Available capacity (MW)	10268	10328	10328

Conditions at the time saw demand in New South Wales 240 MW lower than forecast 4 hours ahead with prices aligned across the market.

There was no significant rebidding.

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



There were 3 occasions where the spot price in Victoria was greater than three times the weekly average price of $20/MWh.

Monday, 15 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	70.75	49.13	88.61
Demand (MW)	7264	7236	7134
Available capacity (MW)	7628	7442	7512

Conditions at the time saw demand and available capacity close to forecast with prices aligned across the mainland.

There was no significant rebidding.

Tuesday, 16 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	75.42	30.34	30.11
Demand (MW)	7092	7218	7210
Available capacity (MW)	7615	7610	7635

Conditions at the time saw demand and available capacity close to forecast with prices aligned across the mainland.

There was no significant rebidding.

Saturday, 20 May

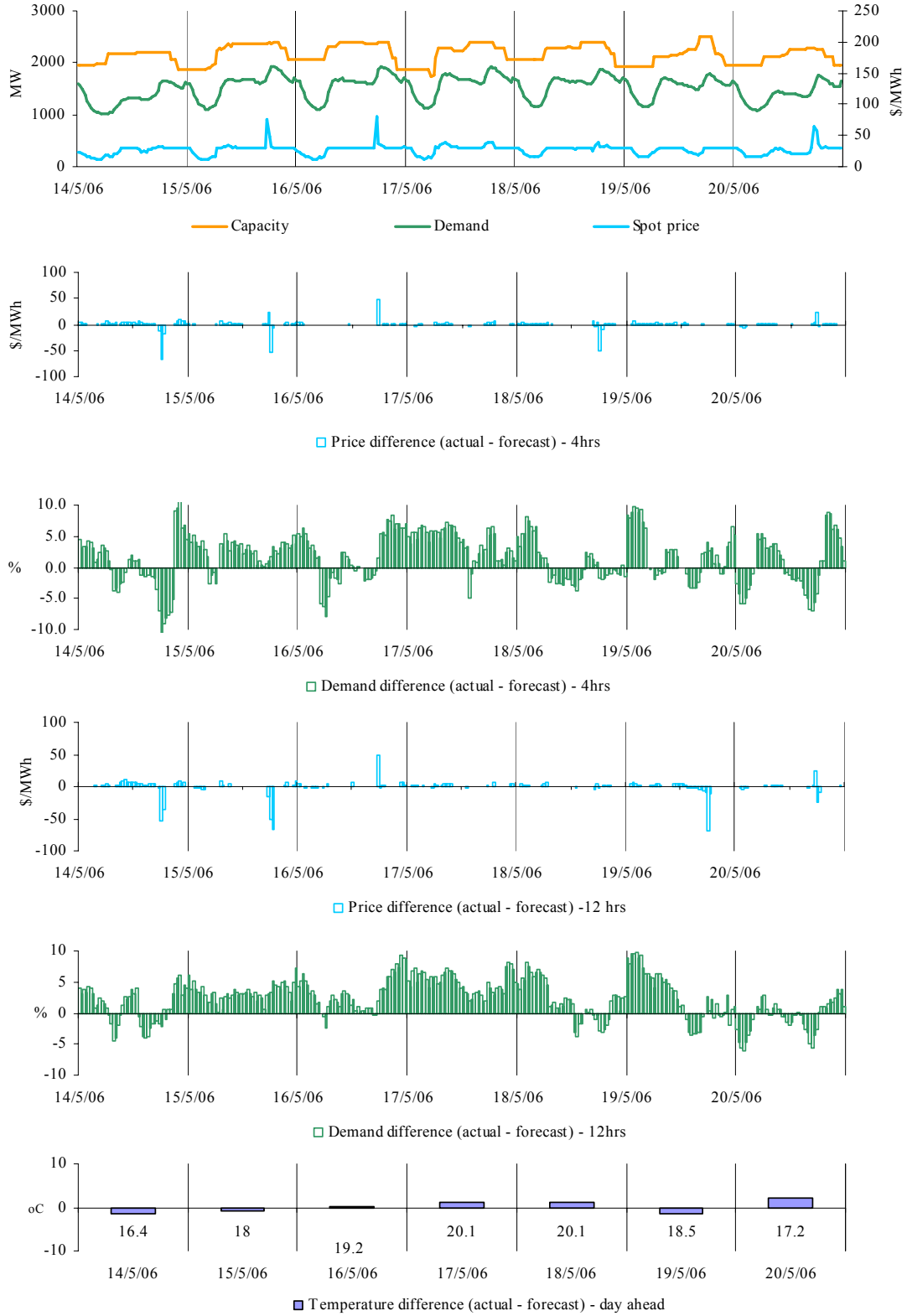
6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	60.78	38.20	38.20
Demand (MW)	6427	6310	6414
Available capacity (MW)	7048	7165	7160

Conditions at the time saw demand in Victoria 120 MW higher than forecast with available capacity 115 MW lower than forecast 4 hours ahead. Prices were aligned across the market.

At 5.40 pm Ecogen Energy reduced the available capacity across Jeeralang by around 100 MW. This capacity was priced below $44/MWh. The rebid reason given was “Adj to unit commitment due to plant limitations”.

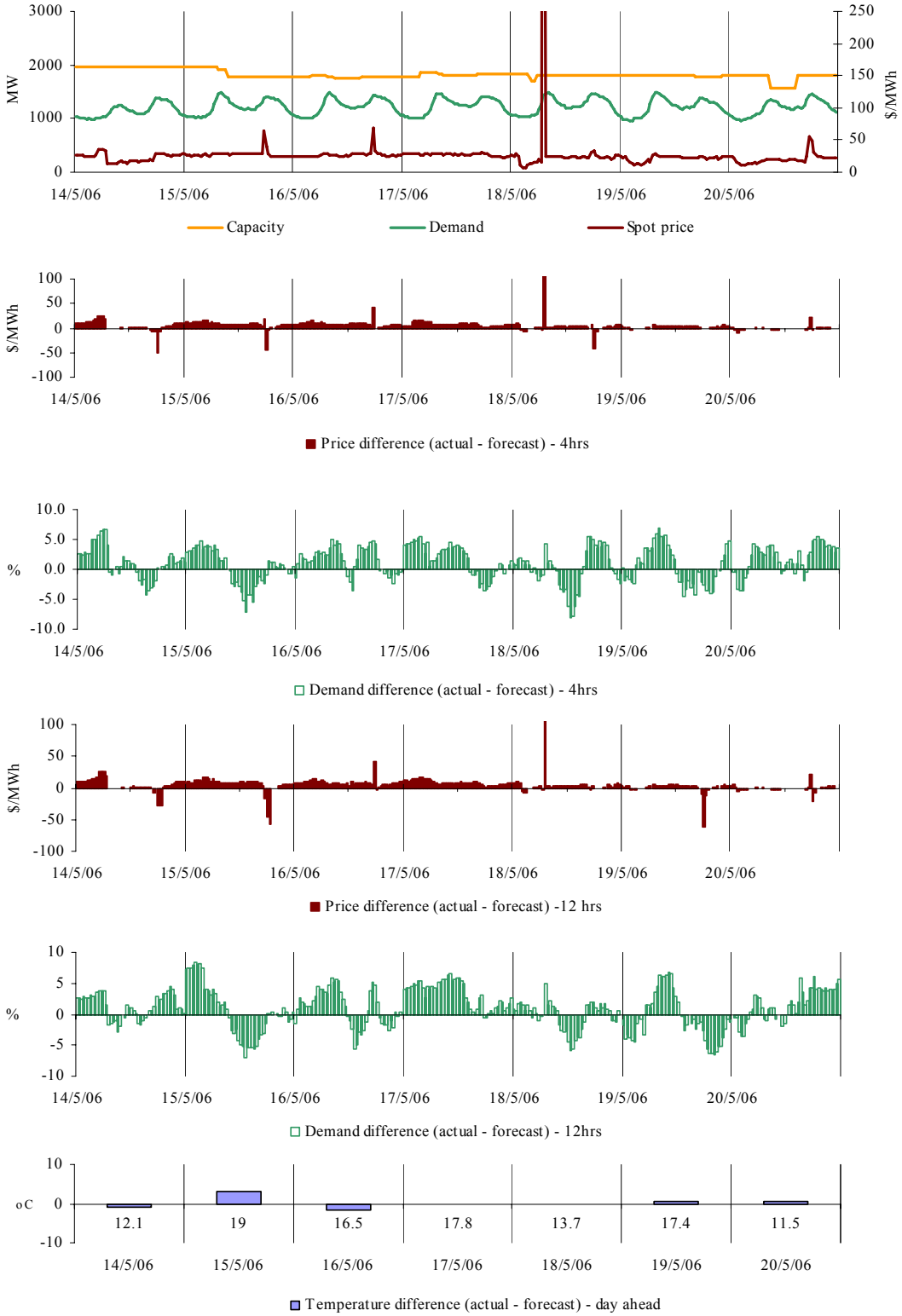
There was no significant rebidding.

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 $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 $29/MWh.

Thursday, 18 May

7:30 am	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	1350.52	21.05	20.31
Demand (MW)	1444	1383	1373
Available capacity (MW)	1810	1810	1810

Conditions at the time saw demand and availability close to forecast.

At 7.09 am, Hydro Tasmania rebid around 300 MW of capacity from prices between $10/MWh and $20/MWh to $2/MWh. A further 55 MW of capacity was rebid from slightly higher prices to above $7400/MWh. The rebid reason given was "Co-optimising FCAS and energy". This rebid was effective from 7.20 am.

Generation at Gordon and Poatina became trapped[1] in the provision of raise 6 second frequency control services at 7.30 am. This removed 200 MW of capacity priced at less than $60/MWh at those two stations. As a result, there was no capacity in the energy market available between $2/MWh and $8000/MWh in Tasmania. At the same time Basslink capability was reduced to zero by NEMMCO for 20 minutes due to SCADA issues, preventing imports from the mainland.

The combined effect of reduced availability and imports and an increase in demand in Tasmania by 80 MW saw the 5-minute dispatch price rise from $22/MWh at 7.25 am to $8000/MWh at 7.30 am. The price returned to around $24/MWh the following dispatch interval.

There was no other significant rebidding.

[1] When trapped, a generator will find its energy output limited by at least one of its ancillary service offers.

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

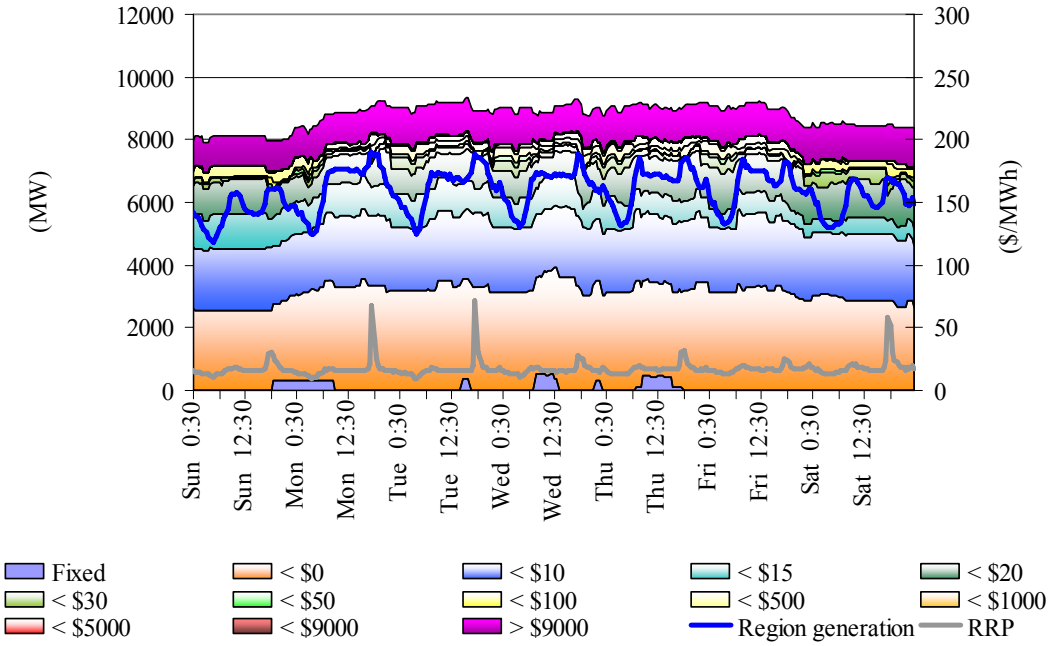


Figure 53: New South Wales closing bid prices, dispatched generation and spot price

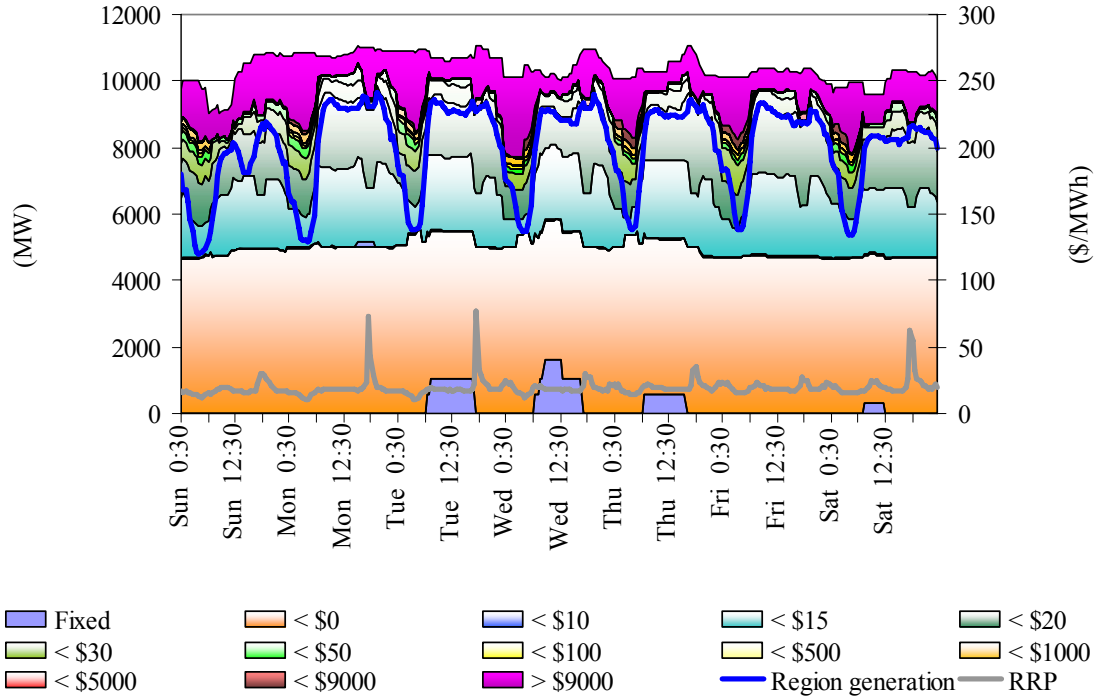


Figure 54: Victoria closing bid prices, dispatched generation and spot price

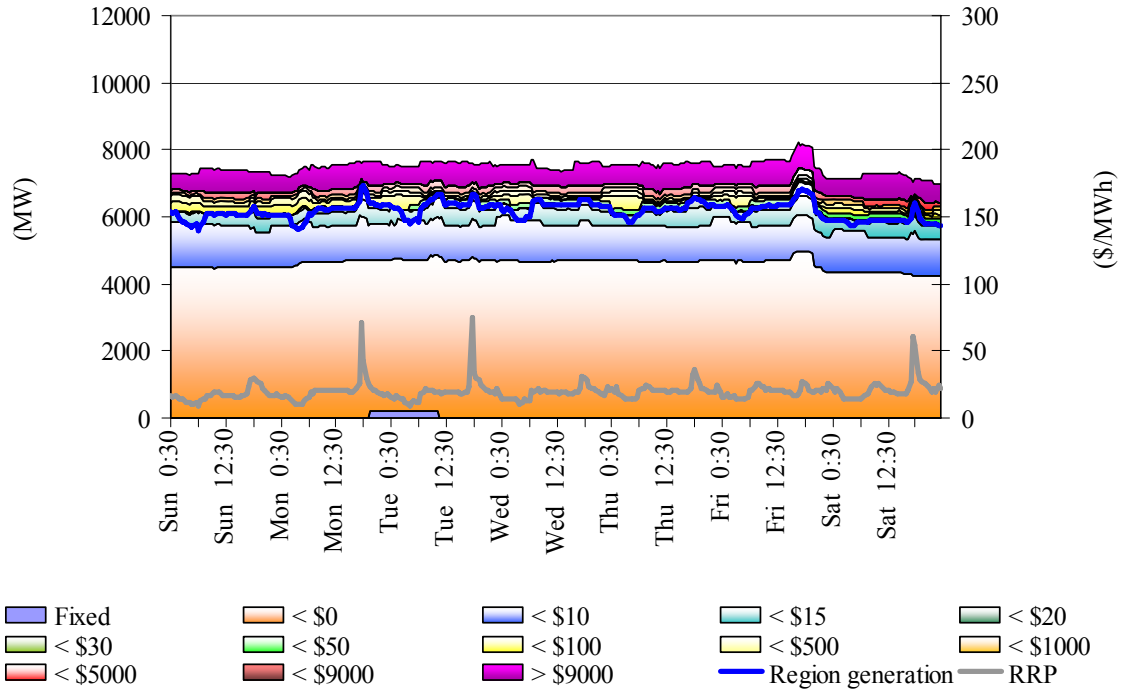


Figure 55: South Australia closing bid prices, dispatched generation and spot price

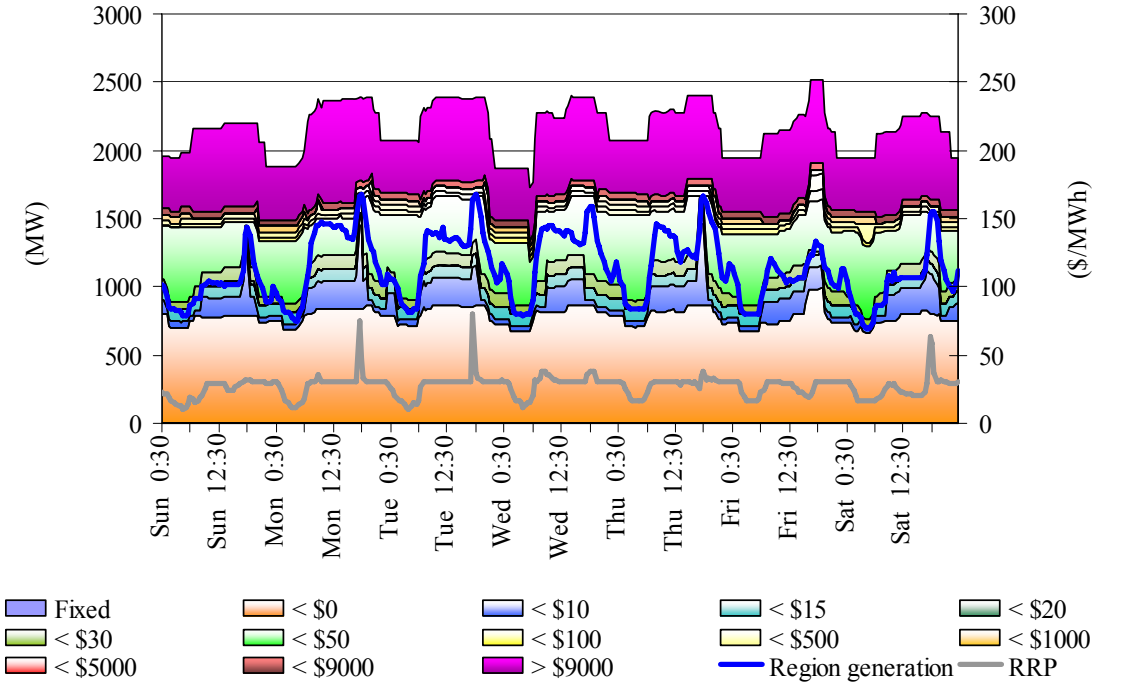
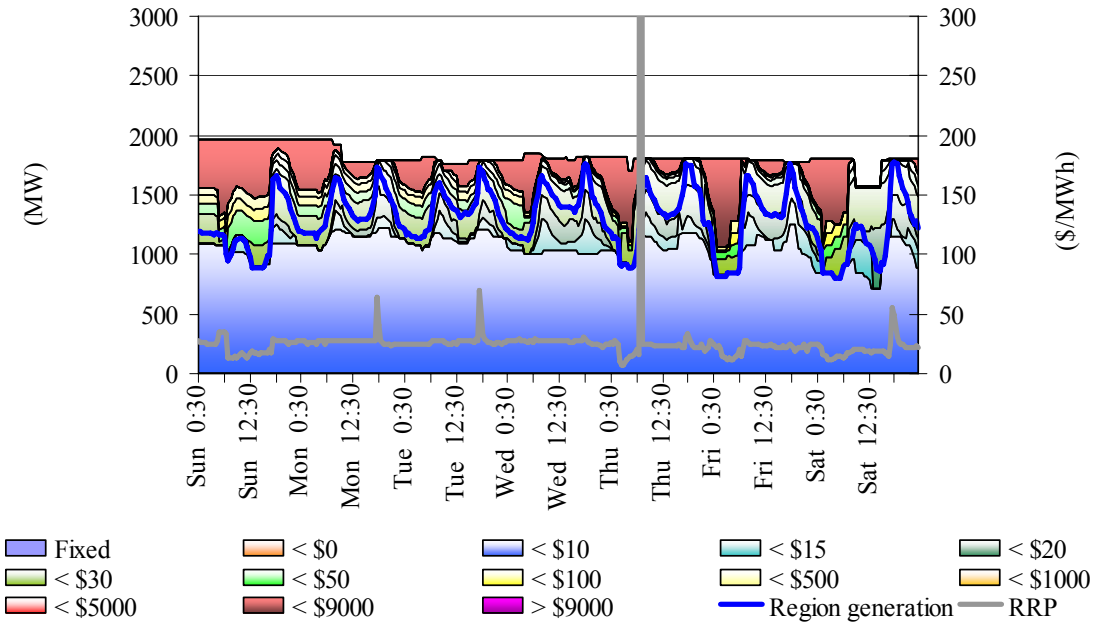


Figure 56: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $378 000 or 0.5 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 regions. An ongoing planned network outage in Victoria, during the first half of the week, saw an increased requirement for some lower services.

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	0.84	0.19	0.90	0.84	0.14	1.57	6.00	0.51
Previous week	1.00	0.24	1.51	0.98	0.14	1.29	5.12	0.34
Last quarter	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	33	7	55	16	0.4	32	228	7
% of energy market	0.05%	0.01%	0.07%	0.02%	0.01%	0.04%	0.31%	0.01%

The total cost of ancillary services in Tasmania for the week was $206 000 or 3.5 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	2.27	1.14	2.23	0.73	3.51	2.59	4.69	0.38
Previous week	3.32	1.23	5.04	1.03	65.19	1.24	2.43	0.30
Last quarter	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost ($1000s)	3	4	15	3	20	70	88	3
% of energy market	0.05%	0.07%	0.26%	0.05%	0.33%	1.18%	1.49%	0.06%

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

Figure 59: daily frequency control ancillary service costs

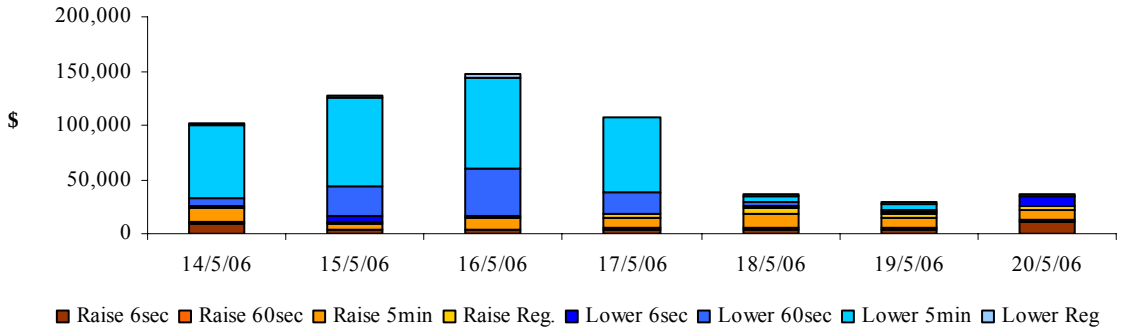
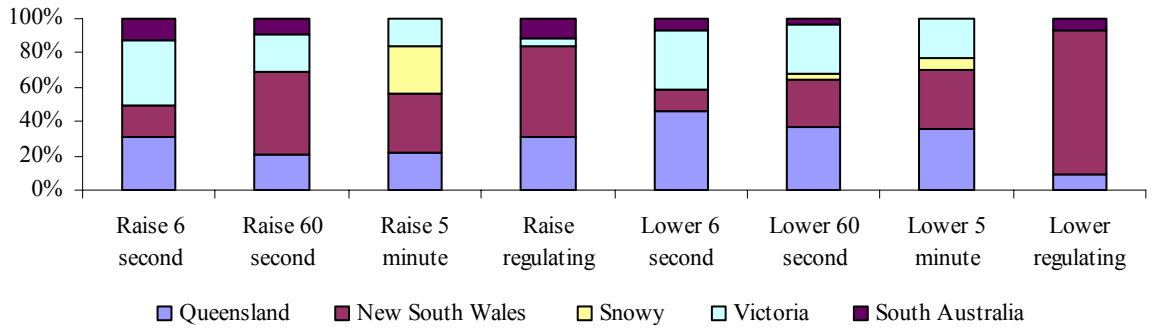


Figure 60 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

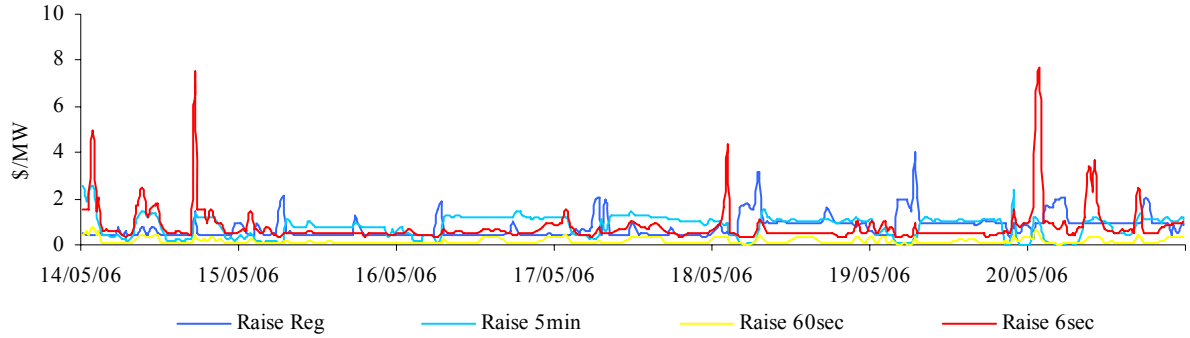


Figure 61A: prices for raise services - Tasmania

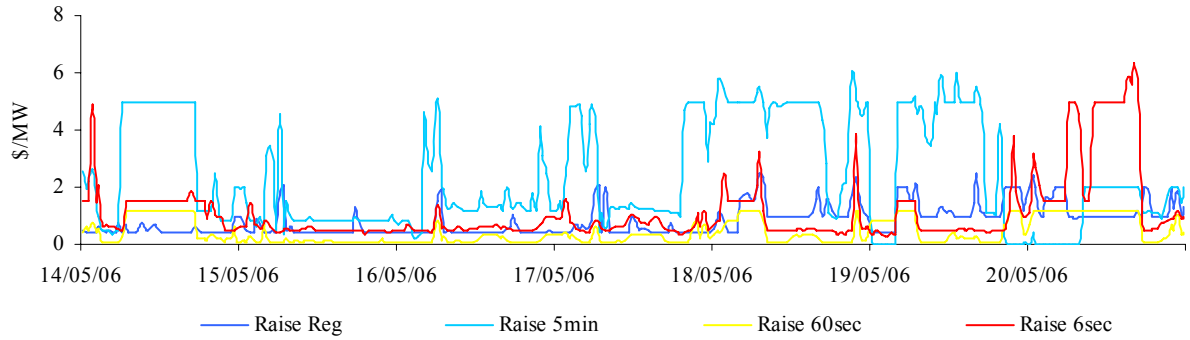


Figure 62: prices for lower services

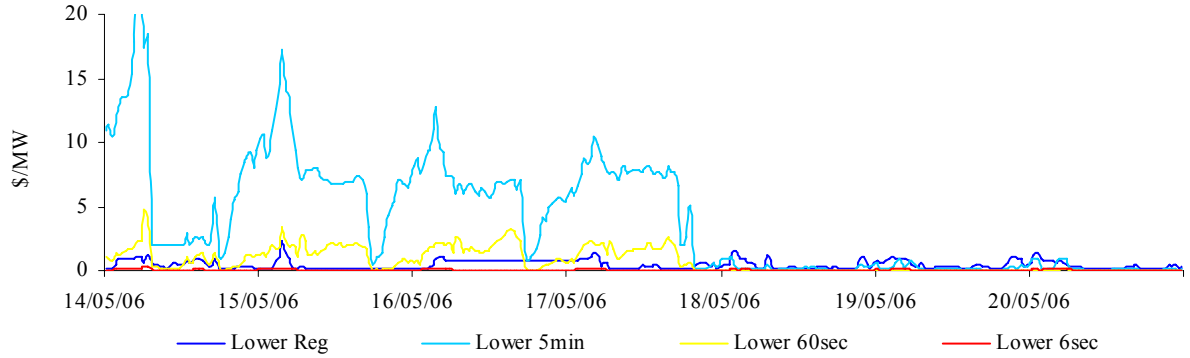
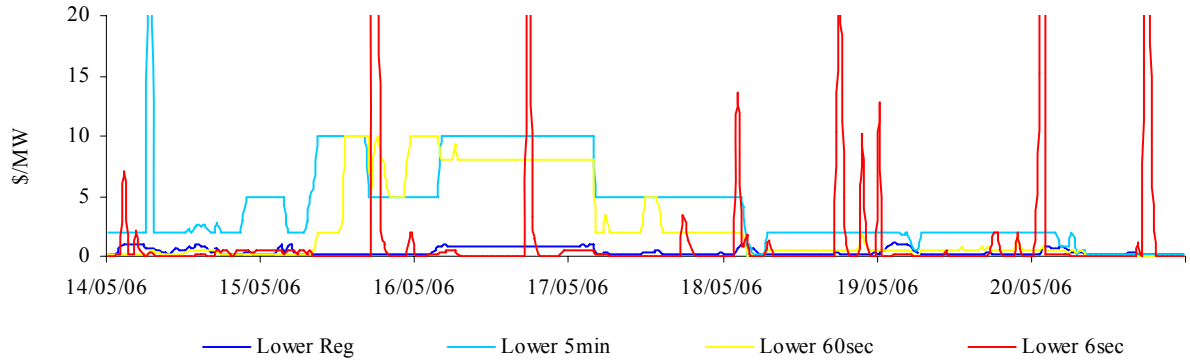


Figure 62A: prices for lower services – Tasmania



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

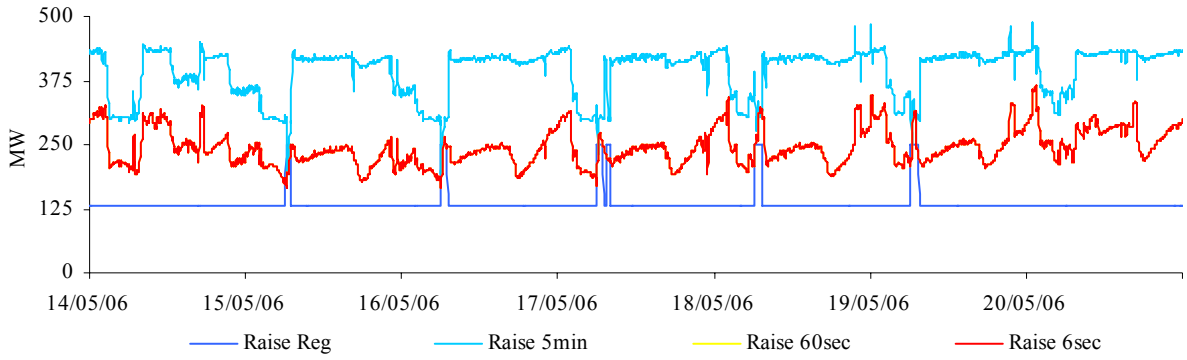


Figure 63A: raise requirements - Tasmania

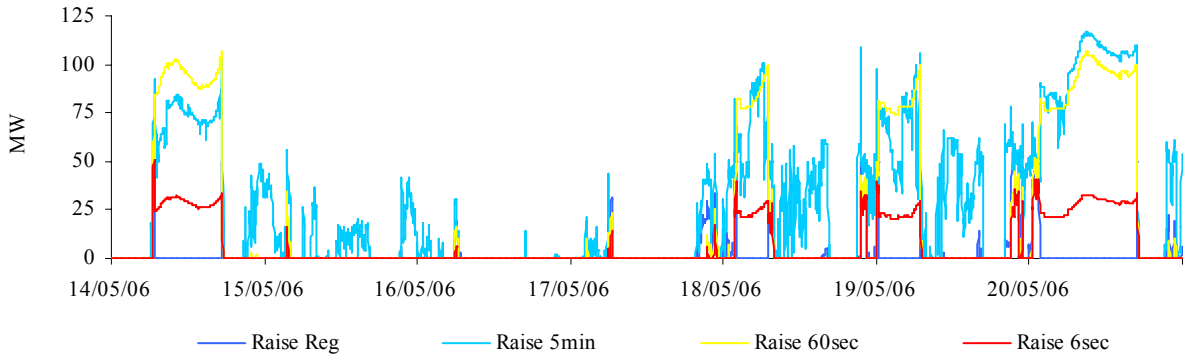


Figure 64: lower requirements

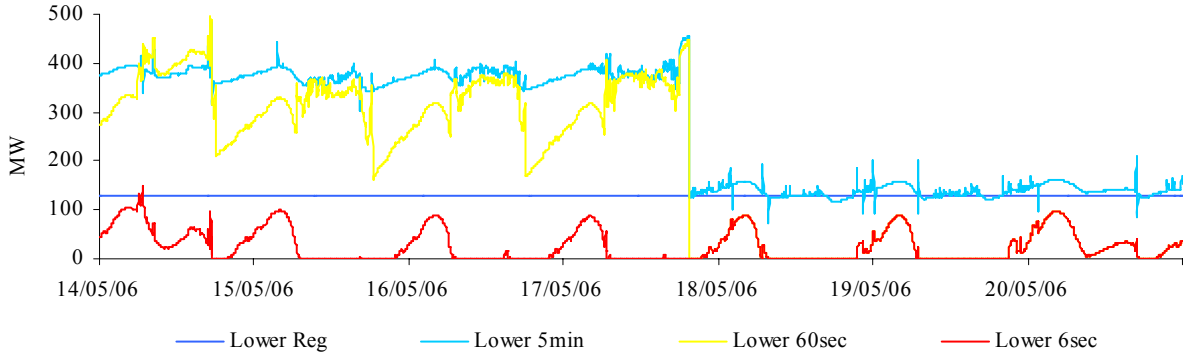
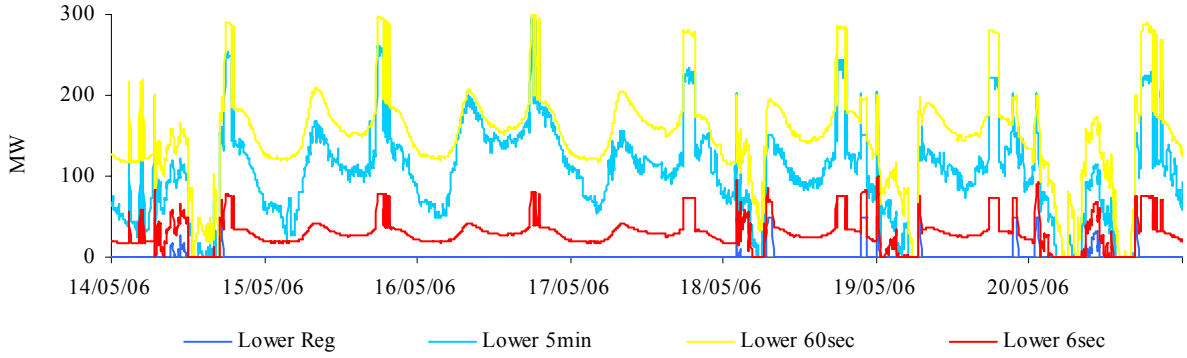


Figure 64A: lower requirements - Tasmania



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