Market analysis

AUSTRALIAN ENERGY REGULATOR

4 JUNE – 10 JUNE 2006

Spot prices for the week were aligned across the market for around three quarters of the time, averaging between $27/MWh in Queensland and $42/MWh in Tasmania. Across the mainland these prices represented a reduction of around a quarter from the previous week following an increase in the amount of capacity offered at prices of less than $40/MWh.

National demand reached 31 700 MW on Monday 5 June – a new record. The previous highest summer demand was 31 100 MW, recorded on 23 January 2006, with the previous winter record of 31 200 MW on 23 June 2005.

Turnover in the energy market was $132 million. The total cost of ancillary services for the week, including Tasmania, was $336 000, or 0.25 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 52, or around 15 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 quarter of all trading intervals across the market. These variations were most frequent in South Australia, occurring in 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

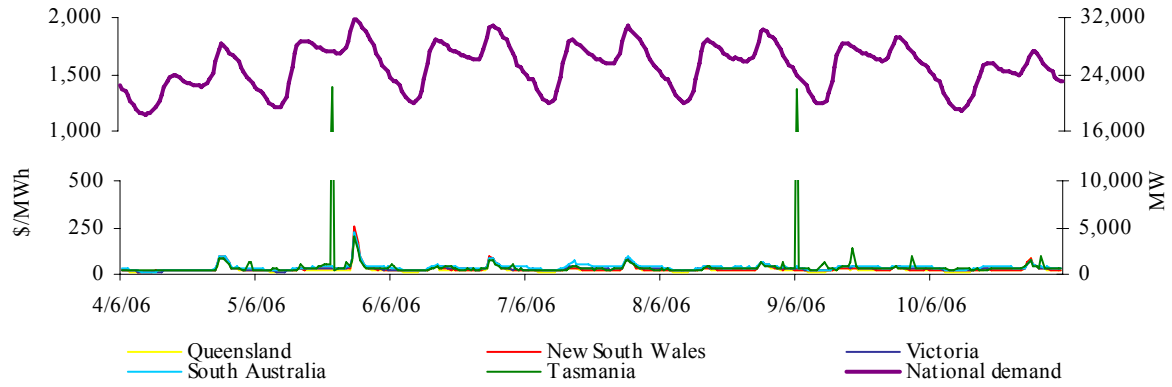


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	27	30	33	39	42
Previous week	40	44	41	46	41
Same quarter last year	23	28	27	36	-
Financial year to date	32	44	36	44	60
% change from previous week*	▼33%	▼30%	▼19%	▼17%	▲2%
% change from same quarter last year**	▲16%	▲7%	▲22%	▲8%	-
% change from year to date***	▲3%	▼6%	▲24%	▲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.

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

Figure 3: Queensland

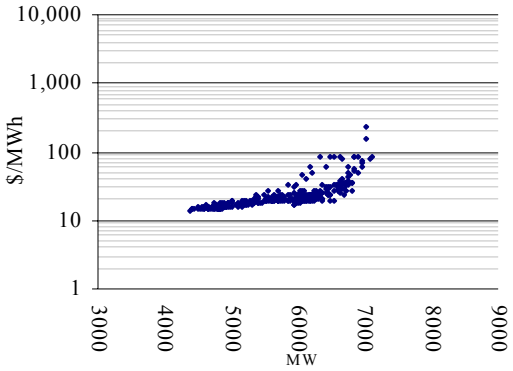


Figure 4: New South Wales

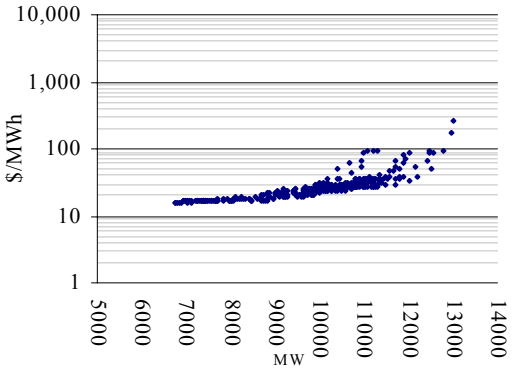


Figure 5: Victoria

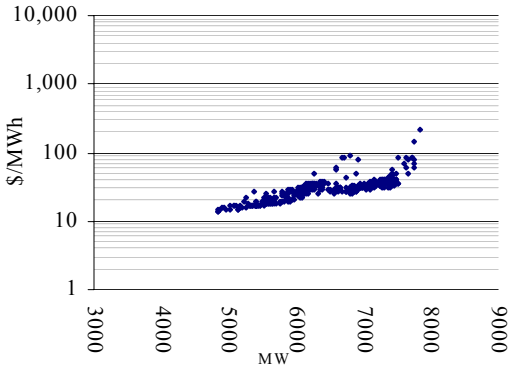


Figure 6: South Australia

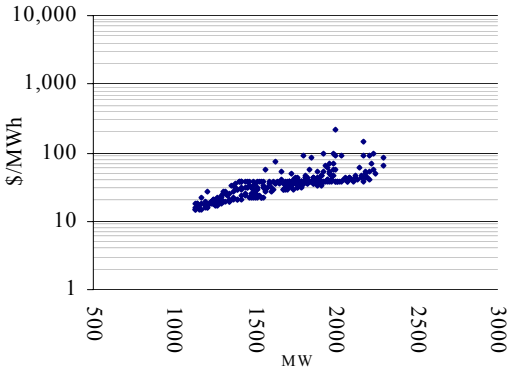
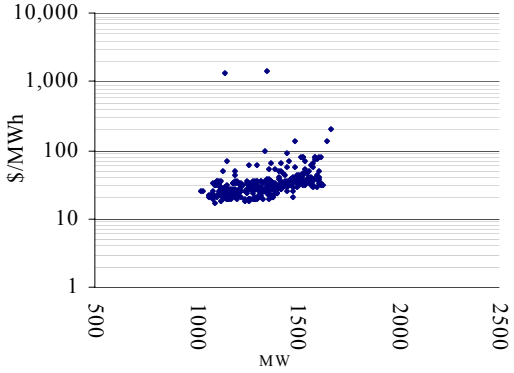


Figure 7: Tasmania



Maximum spot prices for the week were $233/MWh in Queensland, $258/MWh in New South Wales, $222/MWh in Victoria and $223/MWh in South Australia at 6 pm on Monday. In Tasmania the maximum spot price reached $1388/MWh at 2 pm on Monday.

Figure 8: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.79	0.50	0.40	0.46	0.76
Previous week	1.81	1.50	1.09	0.86	1.01
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

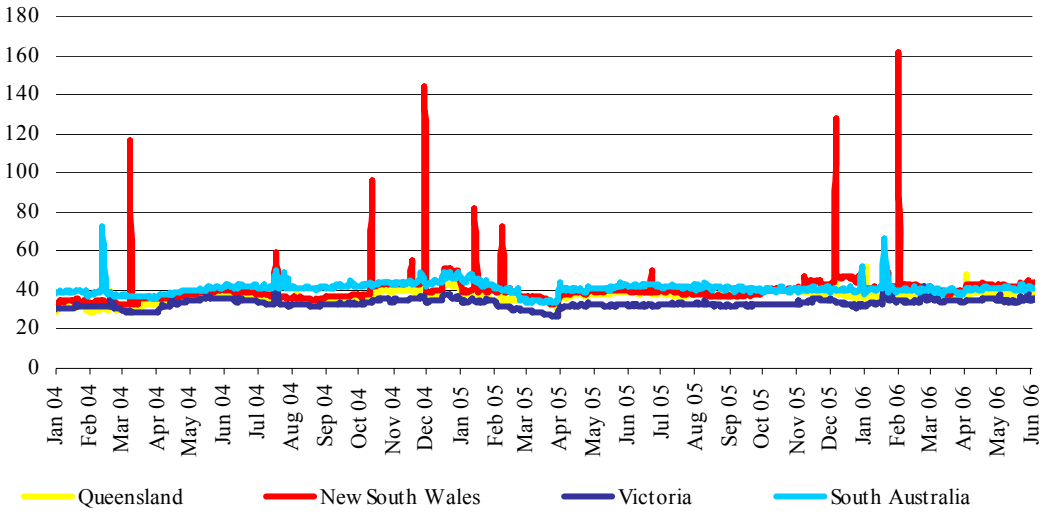
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	38.13	38.25	38.31	38.40	38.29
New South Wales	44.05	43.42	42.66	42.60	42.67
Victoria	35.55	35.01	34.82	34.74	34.47
South Australia	41.12	41.19	41.10	41.21	40.98

* 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

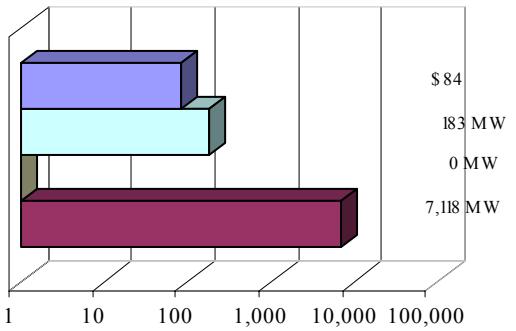


Figure 12: New South Wales

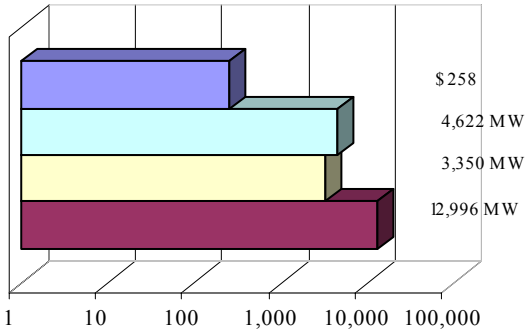


Figure 13: Victoria

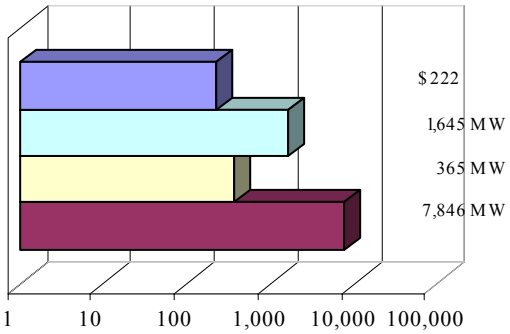


Figure 14: South Australia

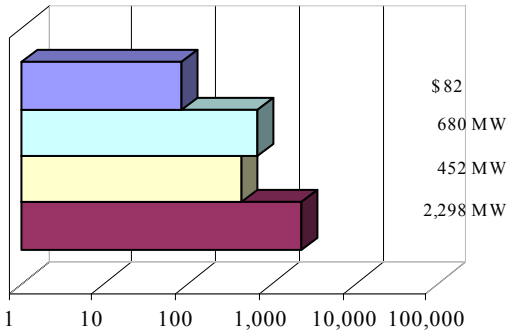
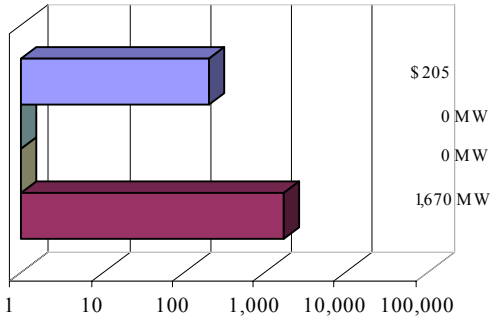


Figure 15: Tasmania



Price variations

There were 52 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

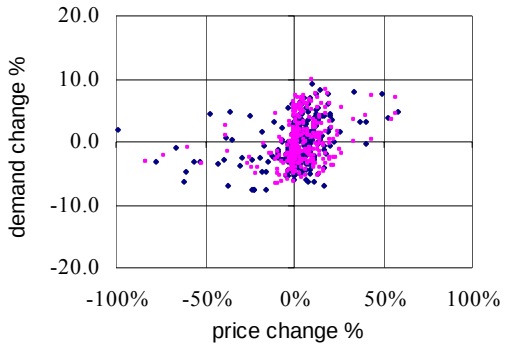


Figure 17: New South Wales

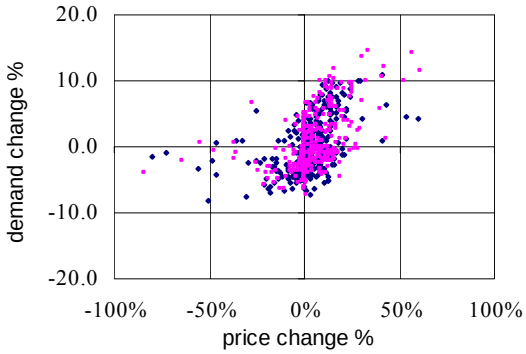


Figure 18: Victoria

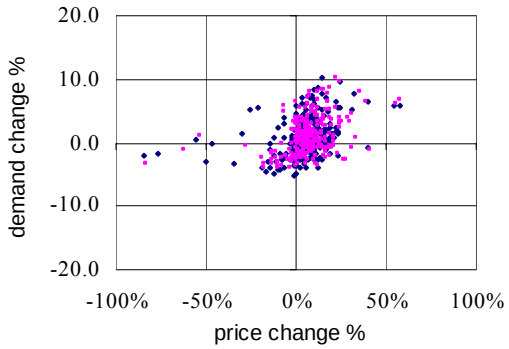


Figure 19: South Australia

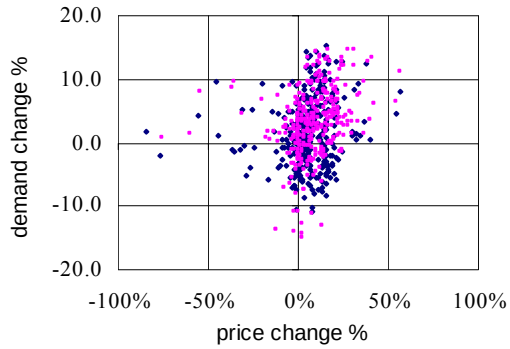


Figure 20: Tasmania

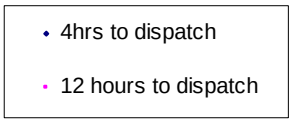
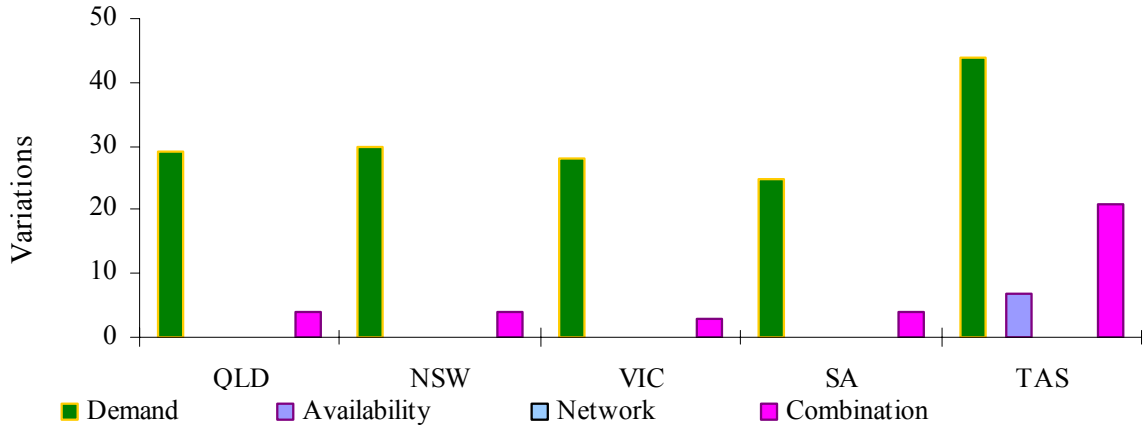


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

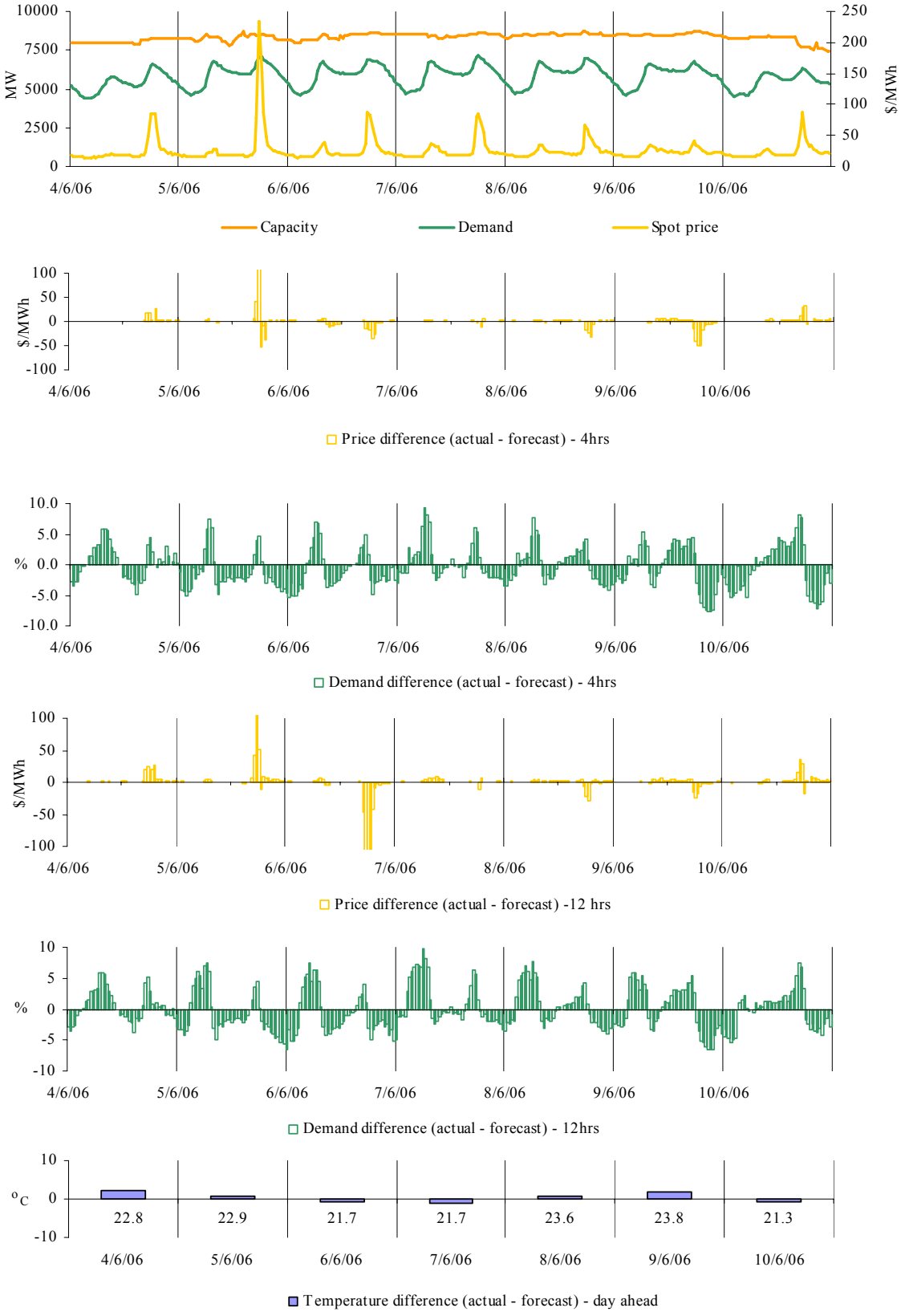
Figure 21: reasons for variations between forecast and actual prices



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 11 occasions where the spot price in Queensland was greater than three times the weekly average price of $27/MWh.

Sunday, 4 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	84.83	68.00	61.48
Demand (MW)	6472	6185	6132
Available capacity (MW)	8291	8291	8291
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	85.25	83.55	83.55
Demand (MW)	6617	6484	6430
Available capacity (MW)	8292	8292	8292
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	84.55	83.53	63.57
Demand (MW)	6548	6549	6494
Available capacity (MW)	8293	8293	8293

Conditions at the time saw demand in Queensland as much as 300 MW higher than forecast four hours ahead. Nationally, demand for 6 pm was more than 2200 MW higher than forecast on the same basis, with prices aligned across the market.

There was no significant rebidding.

Monday, 5 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	233.26	96.44	99.27
Demand (MW)	7033	6707	6722
Available capacity (MW)	8466	8861	8596
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	150.48	203.64	99.53
Demand (MW)	7029	7002	7026
Available capacity (MW)	8528	8862	8598
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	86.21	93.64	97.20
Demand (MW)	6909	7027	7049
Available capacity (MW)	8564	8513	8599

Conditions at the time saw demand in Queensland as much as 300 MW higher than forecast four hours ahead. Nationally, demand at 6 pm was around 1650 MW higher than forecast on the same basis, with prices aligned across the market.

From 3.05 pm, Tarong Energy shifted as much as 200 MW of capacity at Tarong from prices of $200/MWh to prices around $75/MWh, and 260 MW of capacity at Wivenhoe from prices of above $9000/MWh to prices less than $100/MWh. The rebid reasons given were "F Change in PDS::Adjust profile".

At 5.44 pm, Stanwell Corp. shifted 125 MW of capacity from prices of less than $80/MWh to prices around $275/MWh. The rebid reason given was "RRP grt pre disp di 17:40" or price greater than pre-dispatch forecasts for dispatch interval ending 17:40.

There was no other significant rebidding.

Tuesday, 6 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	87.10	103.10	709.86
Demand (MW)	6846	6730	6778
Available capacity (MW)	8570	8591	8349
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	83.55	99.87	4297.01
Demand (MW)	6845	7023	7064
Available capacity (MW)	8607	8606	8351

Conditions at the time saw demand in Queensland close to forecast. Nationally, demand was close to forecast, with prices aligned across the market and close to forecast four hours to dispatch.

There was no significant rebidding.

Wednesday, 7 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	80.79	83.53	80.00
Demand (MW)	7074	6697	6681
Available capacity (MW)	8577	8599	8682
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	83.79	83.55	83.55
Demand (MW)	7118	7035	7016
Available capacity (MW)	8589	8596	8684

Conditions at the time saw demand in Queensland as much as 400 MW higher than forecast fours hours ahead. Prices were close to forecast and aligned across the market.

There was no significant rebidding.

Saturday, 10 June

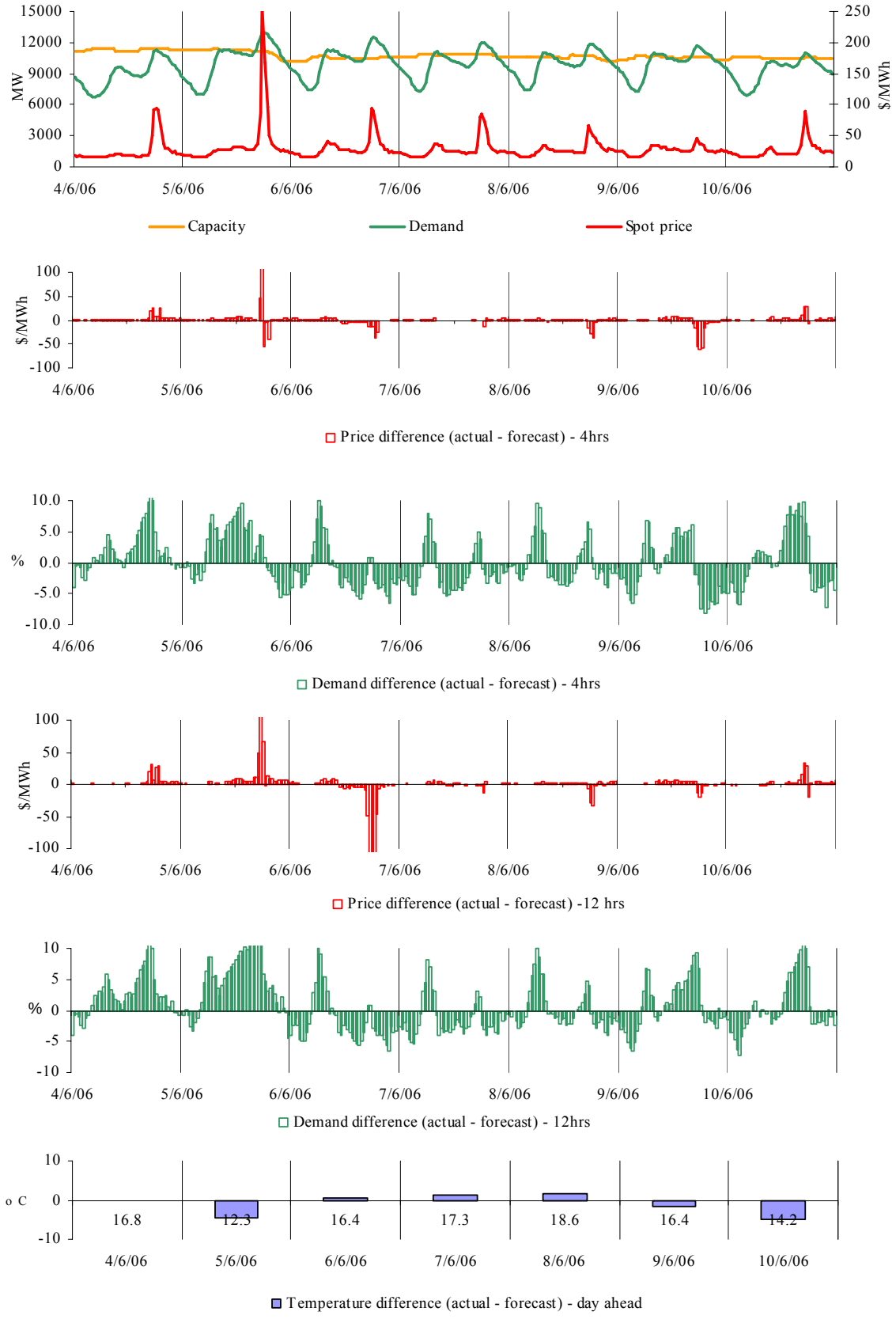
6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	87.31	55.22	57.39
Demand (MW)	6316	6117	6102
Available capacity (MW)	7719	8404	8419

Conditions at the time saw demand in Queensland 200 MW higher than forecast four hours ahead. Nationally, demand was around 1400 MW higher than forecast, with prices aligned across the market.

At 4.32 pm, Enertrade reduced the availability of Gladstone power station by 650 MW with a further reduction of 40 MW at 5.08 pm. Most of this capacity was priced at less than $20/MWh. The rebid reasons given were “Plant problem::Change availability” and “Revise outage::Change avail”.

There was no other significant rebidding.

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



There were seven occasions where the spot price in New South Wales was greater than three times the weekly average price of $30/MWh.

Sunday, 4 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	92.58	66.56	61.98
Demand (MW)	11090	9973	9980
Available capacity (MW)	11448	11448	11448
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	93.19	86.03	87.37
Demand (MW)	11282	10728	10725
Available capacity (MW)	11448	11448	11448
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	92.19	84.86	64.62
Demand (MW)	11198	10984	10891
Available capacity (MW)	11448	11448	11448

Conditions at the time saw demand in New South Wales as much as 1000 MW higher than forecast four hours ahead. Nationally, demand for 6 pm was more than 2200 MW higher than forecast on the same basis, with prices aligned across the market.

There was no significant rebidding.

Monday, 5 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	258.05	102.67	100.00
Demand (MW)	12996	12446	11494
Available capacity (MW)	11140	11255	11480
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	167.84	223.43	100.25
Demand (MW)	12984	12866	12227
Available capacity (MW)	11140	11255	11480
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	96.58	100.45	99.39
Demand (MW)	12782	12886	12193
Available capacity (MW)	11083	11255	11480

Conditions at the time saw demand in New South Wales as much as 550 MW higher than forecast four hours ahead. Nationally, demand at 6 pm was around 1650 MW higher than forecast on the same basis, with prices aligned across the market.

At 4.59 pm, Macquarie Generation shifted 400 MW of capacity from prices of less than $20/MWh to prices above $9000/MWh. The rebid reason given was “NEMMCO 5 min PD load forecast has increased”.

There was no other significant rebidding.

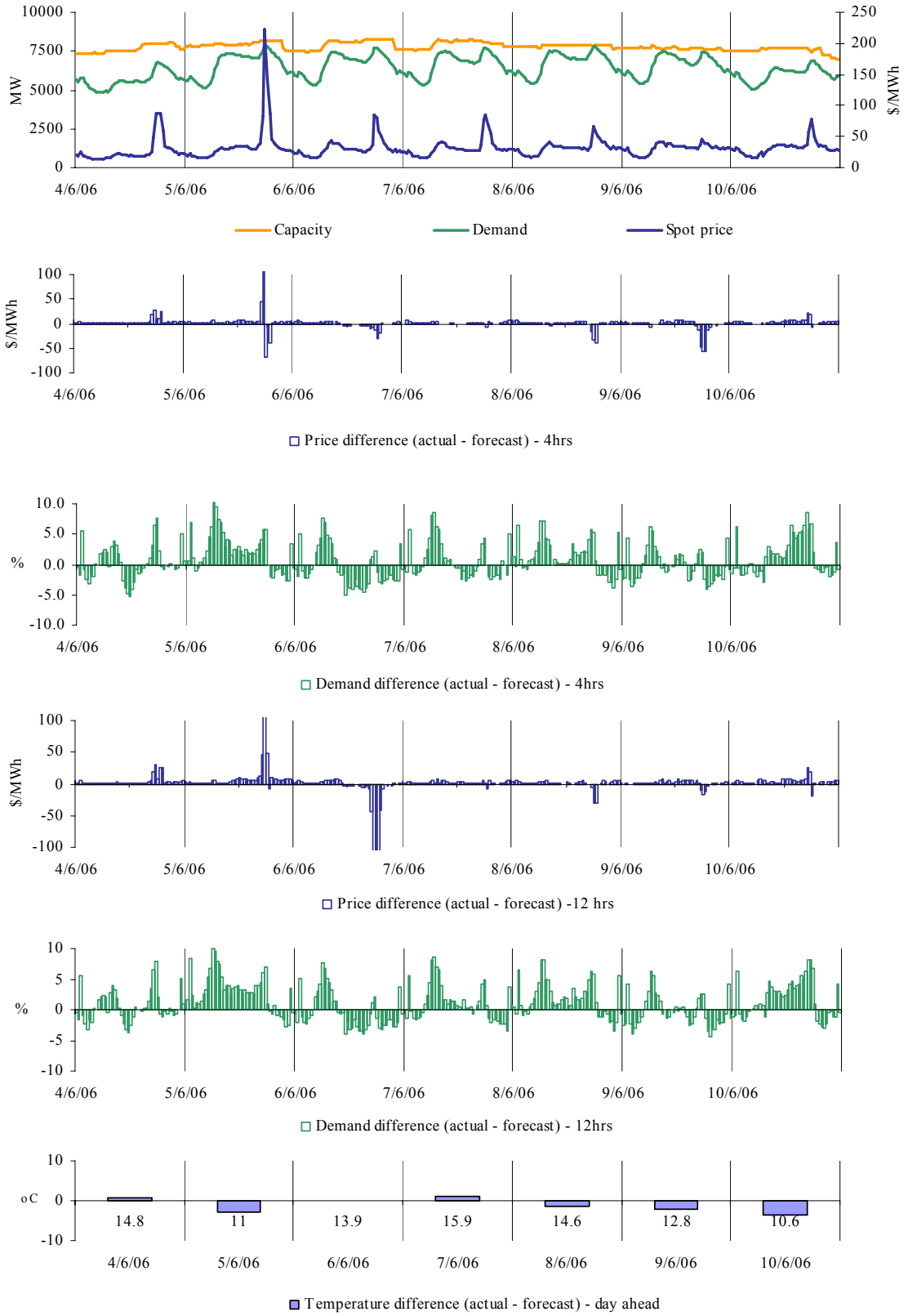
Tuesday, 6 June

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	93.08	105.77	738.51
Demand (MW)	12451	12346	12350
Available capacity (MW)	10500	10590	10850

Conditions at the time saw demand in New South Wales close to forecast. Nationally, demand was close to forecast, with prices aligned across the market.

There was no significant rebidding.

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



There were two occasions where the spot price in Victoria was greater than three times the weekly average price of $33/MWh.

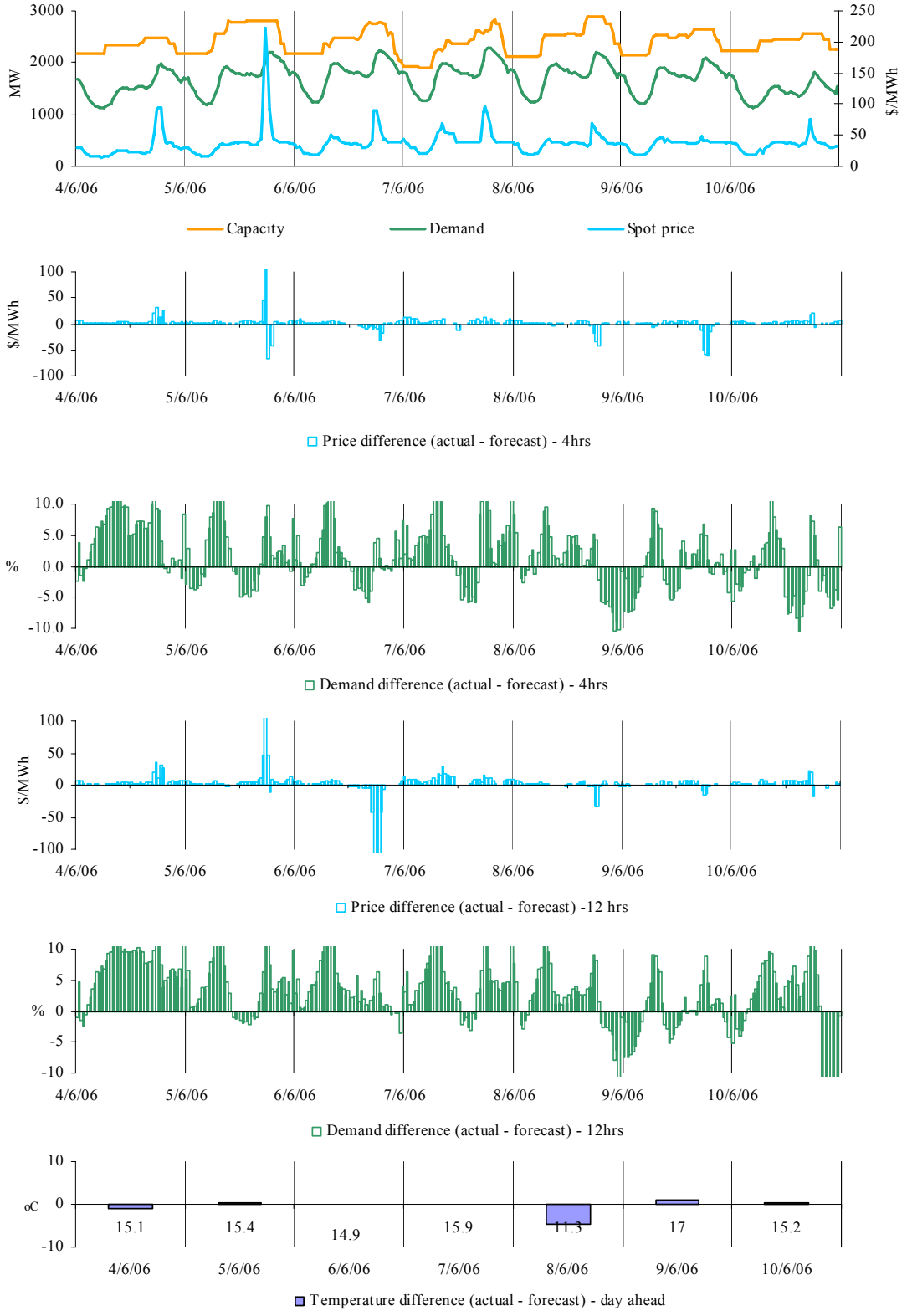
Monday, 5 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	221.87	93.64	93.54
Demand (MW)	7846	7387	7305
Available capacity (MW)	8135	8225	8230
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	143.05	209.92	94.93
Demand (MW)	7767	7772	7697
Available capacity (MW)	8147	8185	8230

Conditions at the time saw demand in Victoria as much as 450 MW higher than forecast four hours ahead. Nationally, demand at 6 pm was around 1650 MW higher than forecast on the same basis, with prices aligned across the market.

There was no significant rebidding.

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



There were two occasions where the spot price in South Australia was greater than three times the weekly average price of $39/MWh.

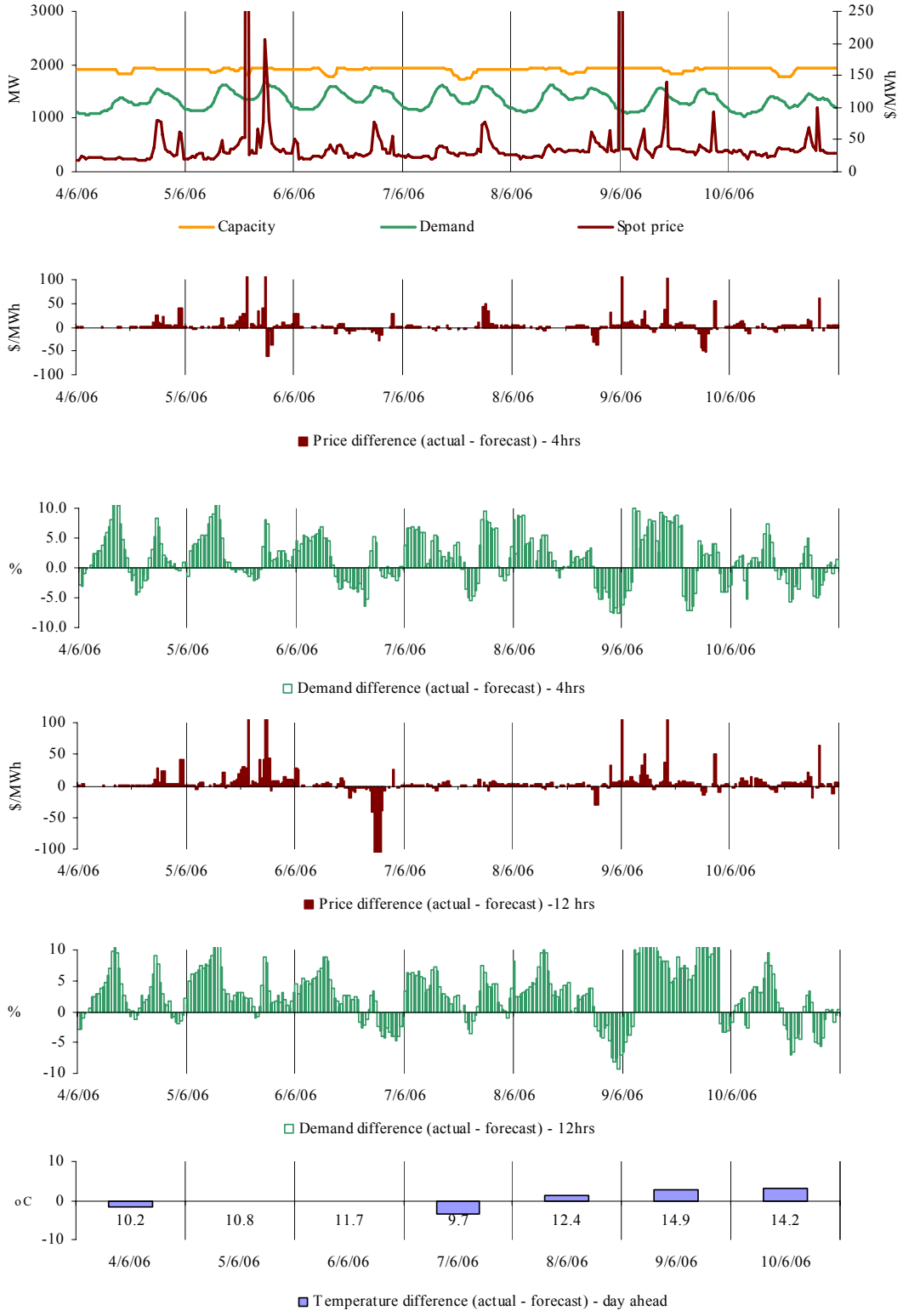
Monday, June 5

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	222.57	95.57	96.99
Demand (MW)	1996	1836	1772
Available capacity (MW)	2795	2795	2553
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	149.10	217.35	103.03
Demand (MW)	2173	1962	1910
Available capacity (MW)	2815	2795	2553

Conditions at the time saw demand in South Australia as much as 200 MW higher than forecast four hours ahead. Nationally, demand at 6 pm was around 1650 MW higher than forecast on the same basis, with prices aligned across the market.

There was no significant rebidding.

Figures 46-51: Tasmania actual spot price, demand and forecast differences



There were five occasions where the spot price in Tasmania was greater than three times the weekly average price of $42/MWh.

Monday, 5 June

2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1388.45	29.28	24.76
Demand (MW)	1352	1372	1331
Available capacity (MW)	1798	1908	1908

Conditions at the time saw demand close to forecast.

The energy price in Tasmania increased from $54/MWh at 1.30 pm to $8000/MWh at 1.35 pm. This increase coincided with increases in the price of raise 6 second contingency service and the raise regulation services in Tasmania. These services increased to $10 000/MWh and $5185/MWh respectively.

A forecast 130 MW reduction in the availability of Gordon occurred at 1.35 am. The Energy target at John Butters was reduced by 30 MW to increase its dispatch in the raise 6 second frequency control ancillary service market by 11 MW. At the time, BassLink was exporting north, at the border of the no-go zone. Exports could not be reduced to cover the reduction in generation, leading to an increase of around 160 MW across the other generators in Tasmania. The low availability of ramp rates available within the region led to the energy market price in Tasmania spiking from $54/MWh to $8000/MWh at 1.35 pm before falling $223/MWh and $34/MWh over the proceeding intervals.

BassLink was forecast to be flowing south, into Tasmania by as much as 200 MW leading up to this time.

There was no significant rebidding.

Monday, 5 June

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	205.26	86.95	87.08
Demand (MW)	1670	1547	1538
Available capacity (MW)	1933	1908	1908
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	131.86	194.41	88.14
Demand (MW)	1645	1600	1591
Available capacity (MW)	1933	1908	1908

Conditions at the time saw demand in Tasmania as much as 100 MW higher than forecast four hours ahead. Nationally, demand at 6 pm was around 1650 MW higher than forecast on the same basis, with prices aligned across the market.

There was no significant rebidding.

Friday, 9 June

12:30 am	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	1362.08	26.30	28.20
Demand (MW)	1145	1216	1219
Available capacity (MW)	1933	1933	1908

Conditions at the time saw demand in Tasmania close to forecast.

A combination of a fluctuation in demand, a reduction in import capability from the mainland and insufficient ramp rates in Tasmania saw the 5-minute price spike from $35/MWh to $8000/MWh at 12.15 am, before returning to $35/MWh the next dispatch interval.

There was no significant rebidding.

Friday, 9 June

10:30 am	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	138.91	34.65	34.68
Demand (MW)	1489	1373	1383
Available capacity (MW)	1897	1897	1897

Conditions at the time saw demand in Tasmania more than 100 MW higher than forecast four hours ahead.

A forecast step change in the offer profiles of generation in Tasmania saw a reduction of almost 300 MW of capacity priced at less than $50/MWh from 10.05 am. A shortage of FCAS within Tasmania saw flows on BassLink continue counter-price into Victoria for most of the trading interval. Prices for raise 6 second in Tasmania increased to around $125/MW during this period.

There was no significant rebidding.

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

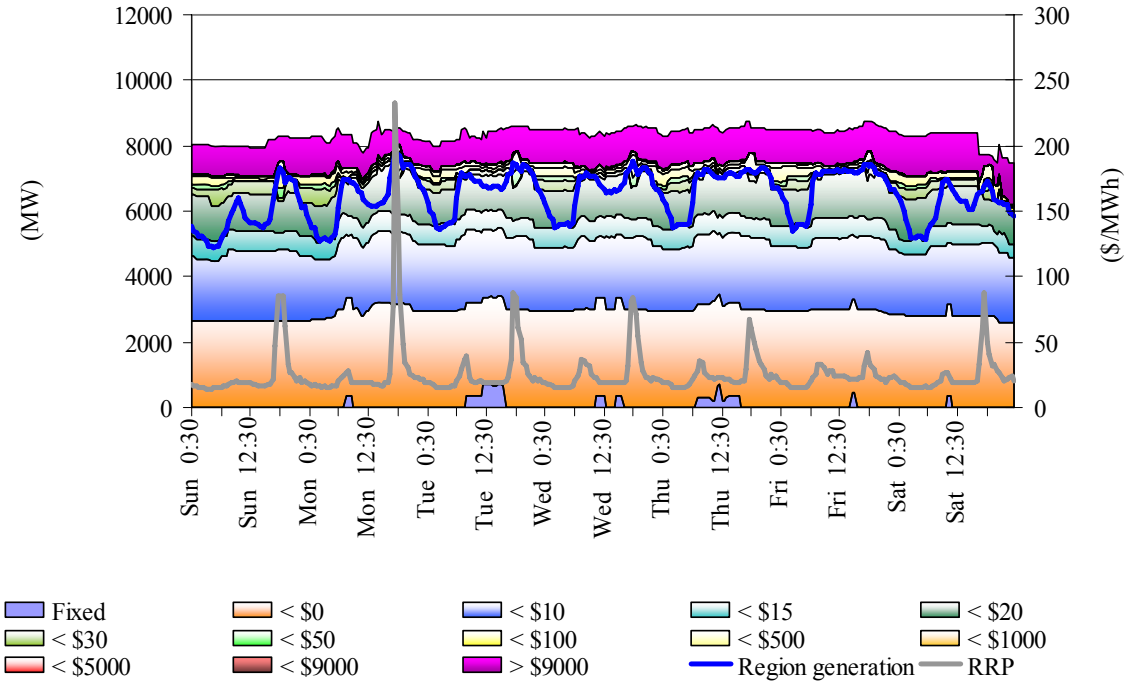


Figure 53: New South Wales closing bid prices, dispatched generation and spot price

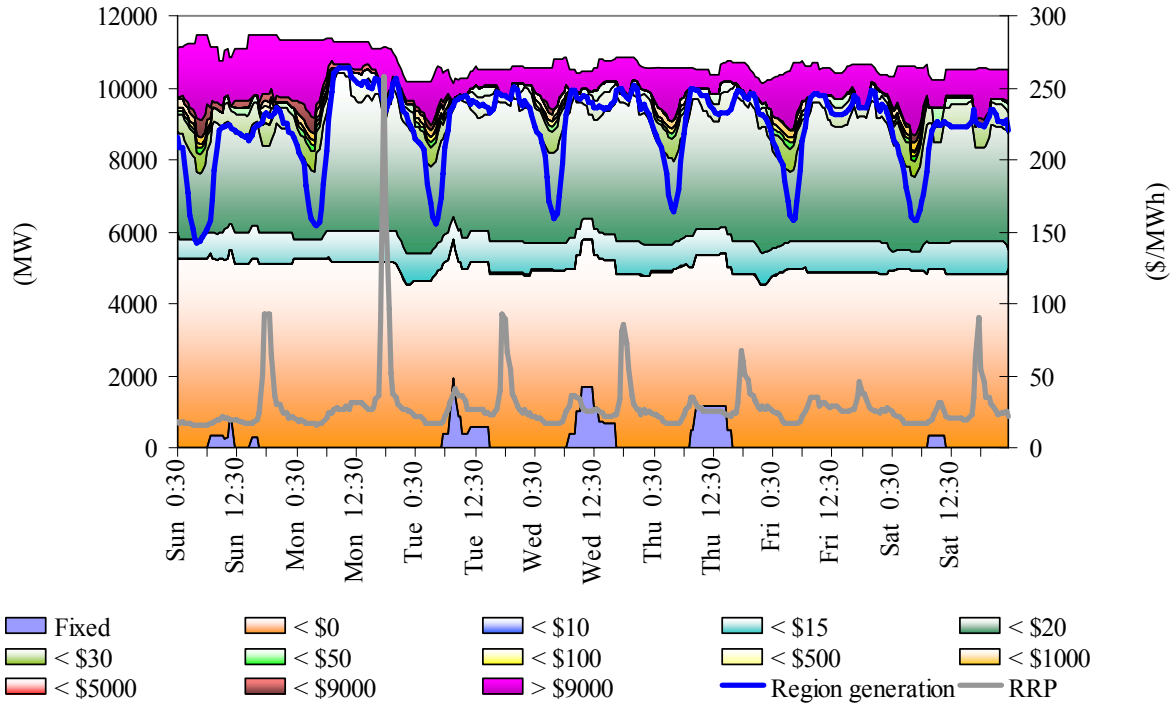


Figure 54: Victoria closing bid prices, dispatched generation and spot price

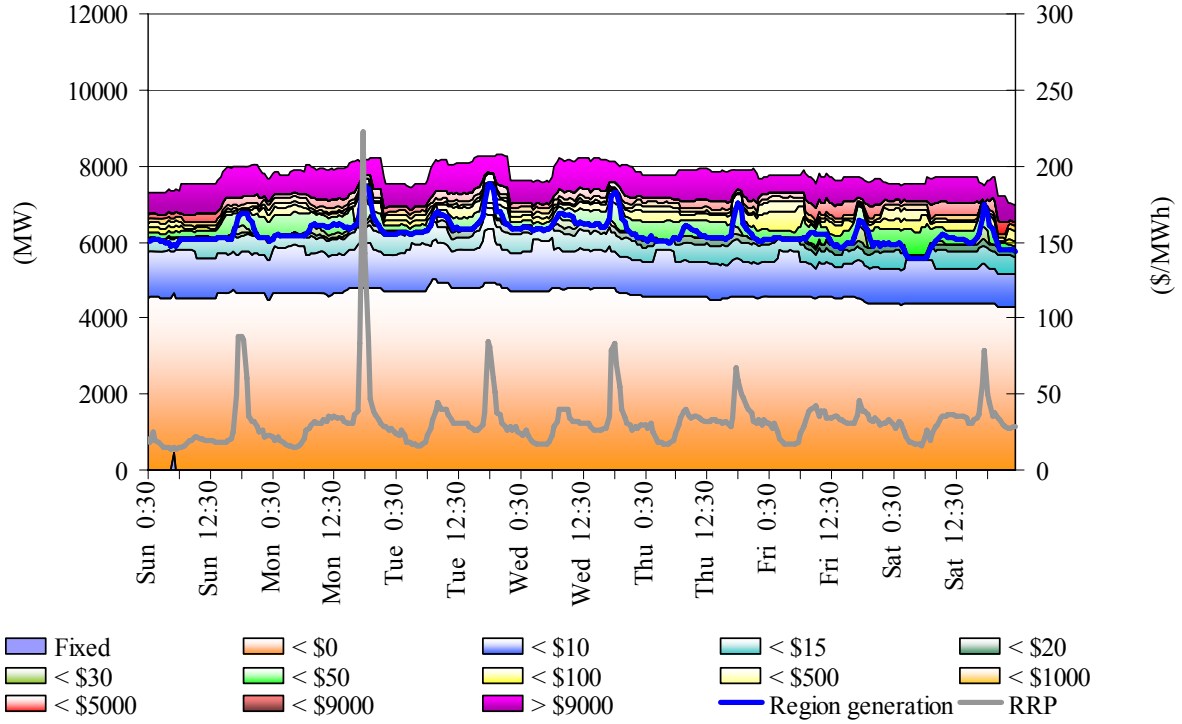


Figure 55: South Australia closing bid prices, dispatched generation and spot price

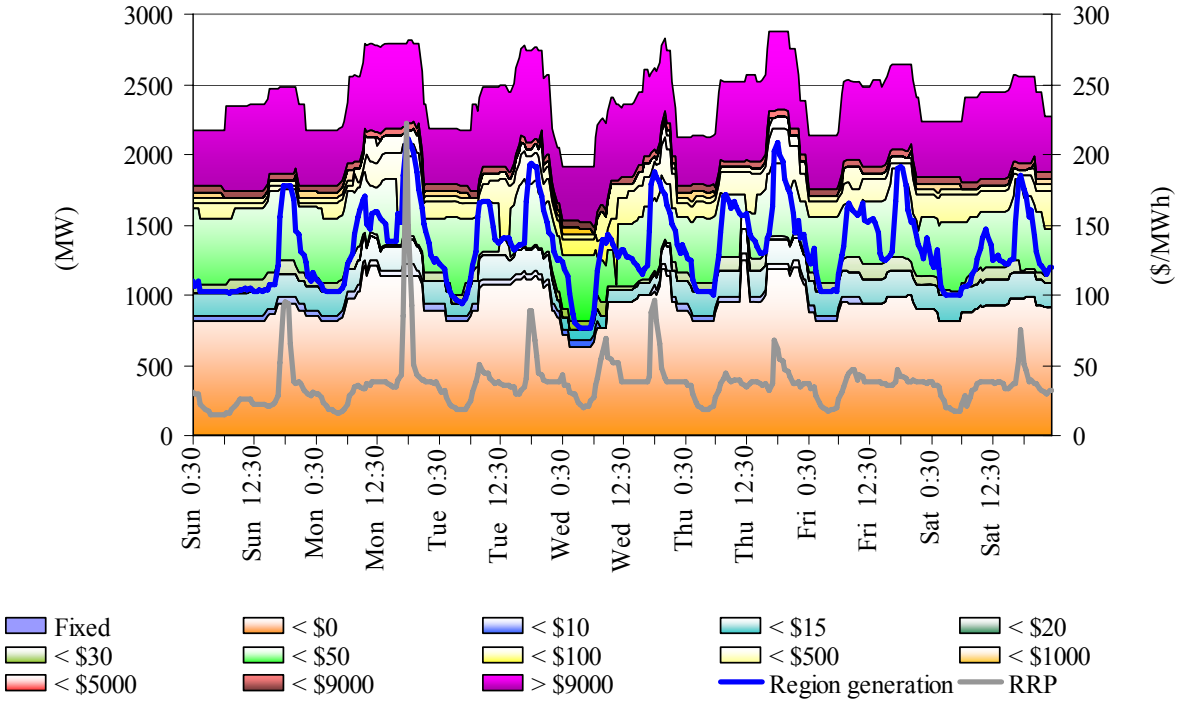
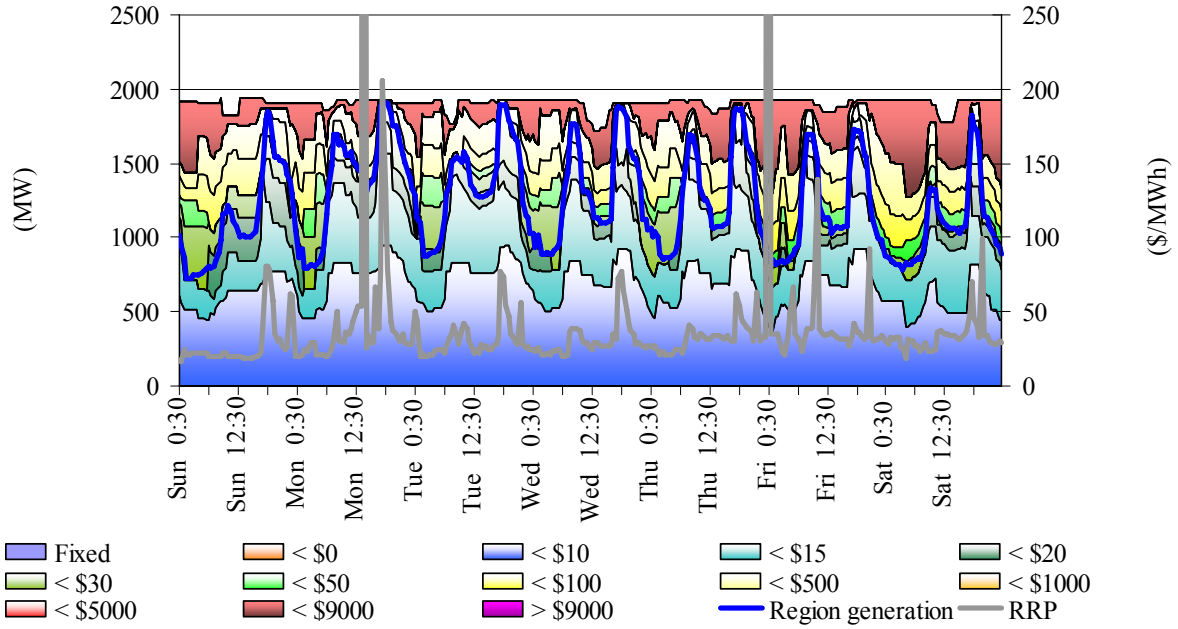


Figure 56: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $110 000 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 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	0.66	0.13	0.72	1.08	0.15	0.06	0.20	0.96
Previous week	0.74	0.14	0.70	2.76	0.14	0.12	0.17	0.96
Last quarter	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	25	4	40	22	0.3	0	3	15
% of energy market	0.02%	0.00%	0.03%	0.02%	0.00%	0.00%	0.00%	0.01%

The total cost of ancillary services in Tasmania for the week was $225 000 or 2.4 per cent of the total turnover in the energy market in Tasmania. Prices on Monday reached as high as $10 000/MW for the raise 6 second service and $5185/MW for the raise regulation service coincident with the high energy prices at the time. Almost 60 per cent of the total cost for these services occurred over half an hour. 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	16.61	0.21	1.26	12.94	15.60	0.05	0.37	0.82
Previous week	5.33	0.44	0.72	5.11	29.13	0.19	0.38	0.84
Last quarter	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost ($1000s)	90	3	21	34	66	1	5	6
% of energy market	0.95	0.03	0.22	0.36	0.70	0.01	0.06	0.06

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

Figure 59: daily frequency control ancillary service costs

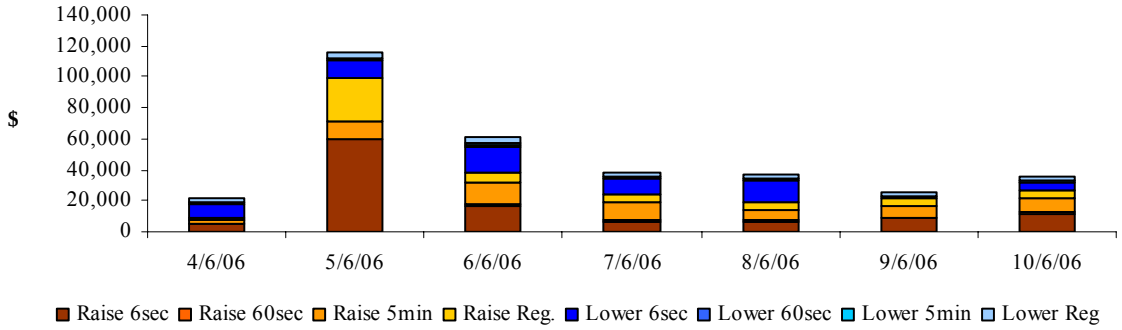
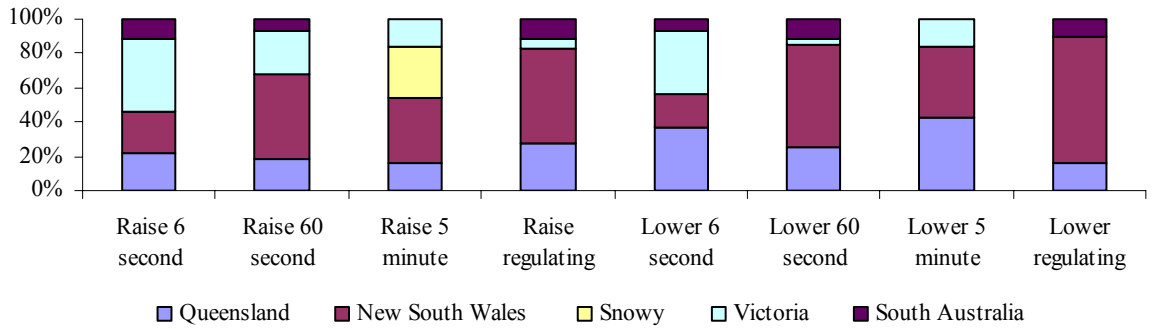


Figure 60 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

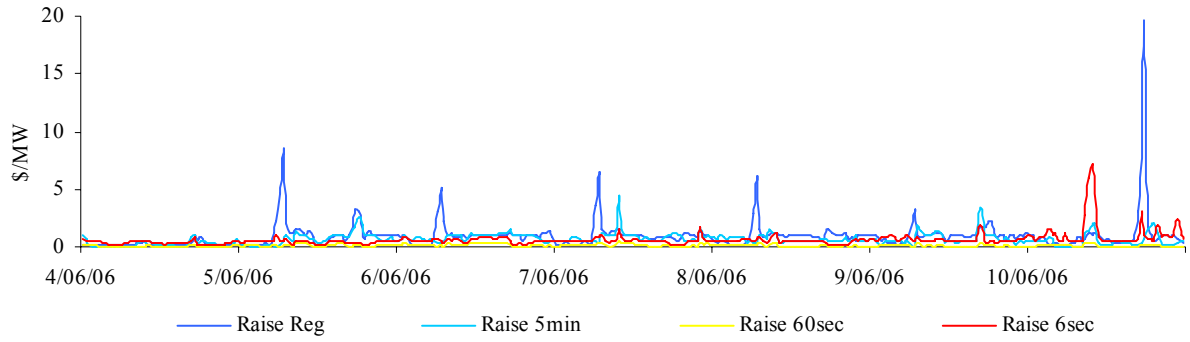


Figure 61A: prices for raise services - Tasmania

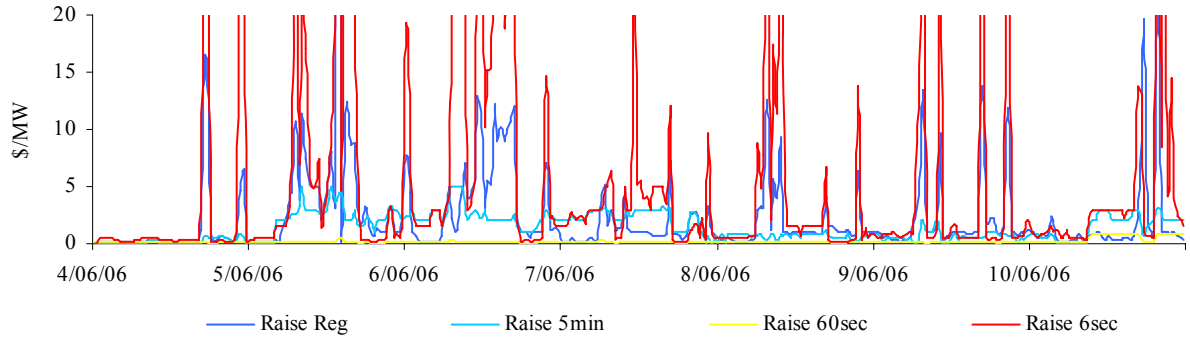


Figure 62: prices for lower services

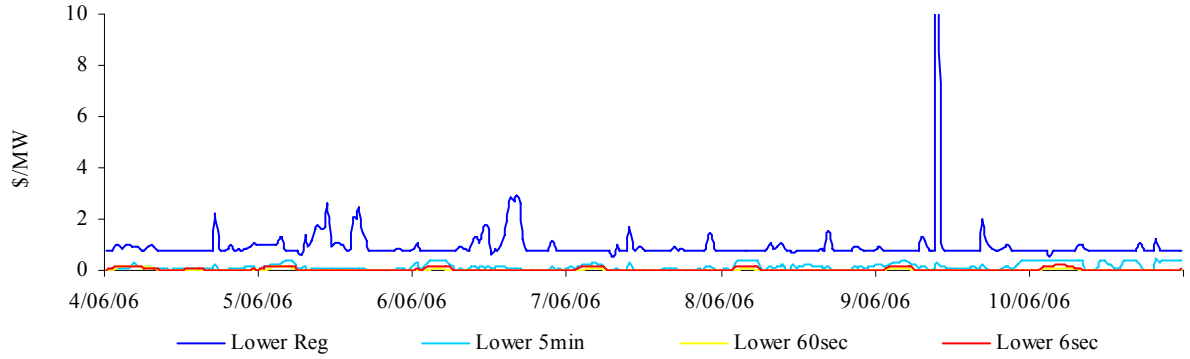
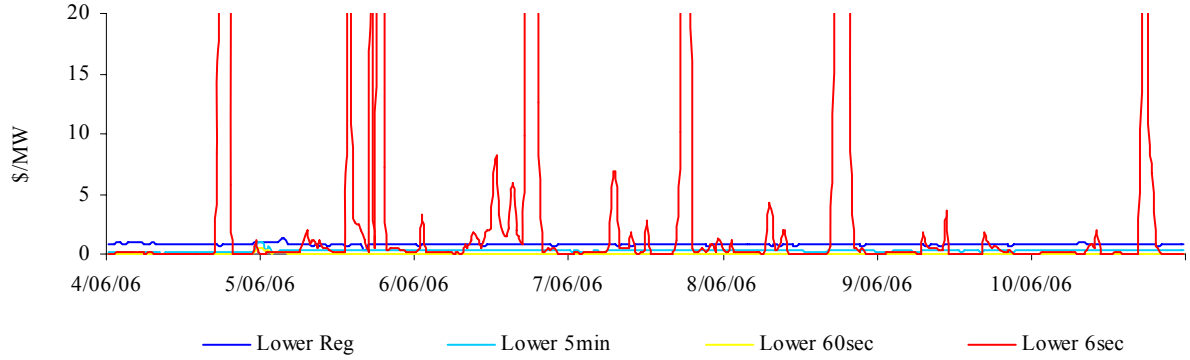


Figure 62A: prices for lower services – Tasmania



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

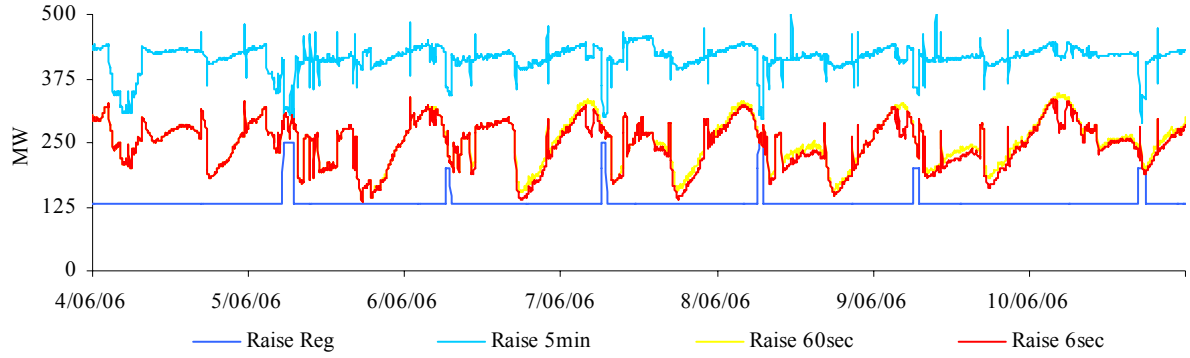


Figure 63A: raise requirements - Tasmania

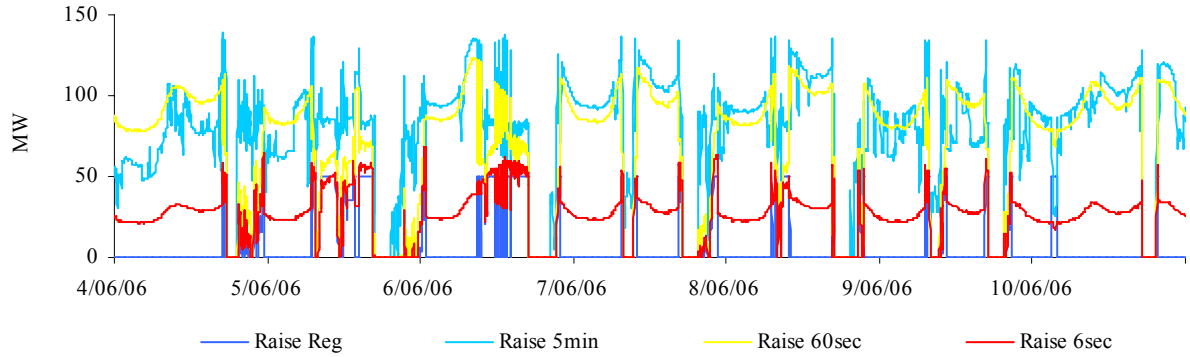


Figure 64: lower requirements

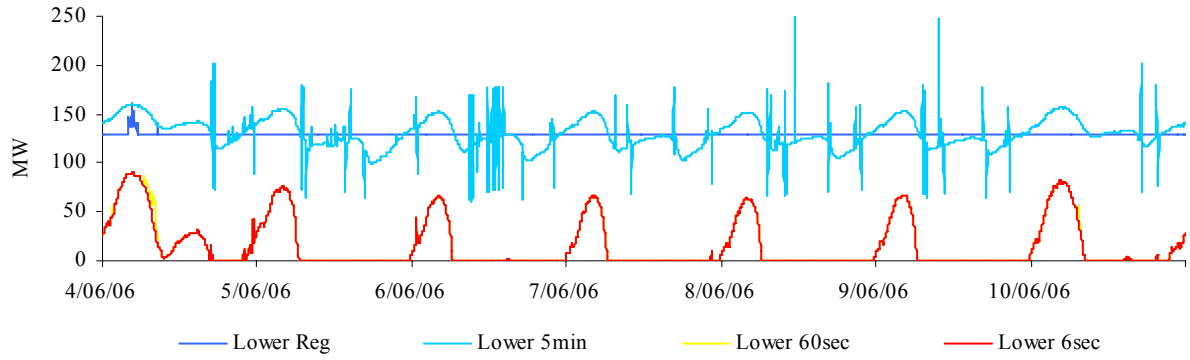
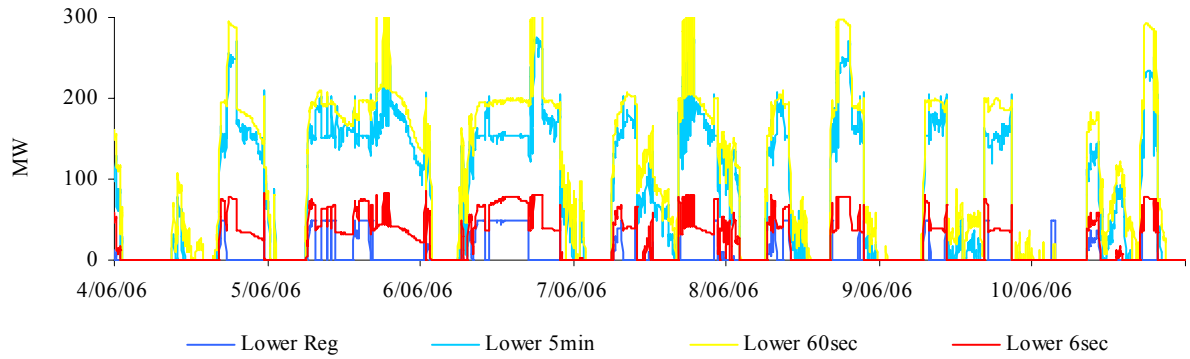


Figure 64A: lower requirements - Tasmania



Australian Energy Regulator
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