Market analysis

AUSTRALIAN ENERGY REGULATOR

28 MAY – 3 JUNE 2006

Spot prices for the week were aligned across the market for around 80 per cent of the time, averaging between $40/MWh in Queensland and $46/MWh in South Australia. Winter conditions saw the combined national market demand approach winter record levels, with peak demand consistently higher than forecast by an average of almost 1900 MW or six per cent.

Turnover in the energy market was $174 million. The total cost of ancillary services for the week, including Tasmania, was $400 000, or 0.2 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 68, or around 20 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 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

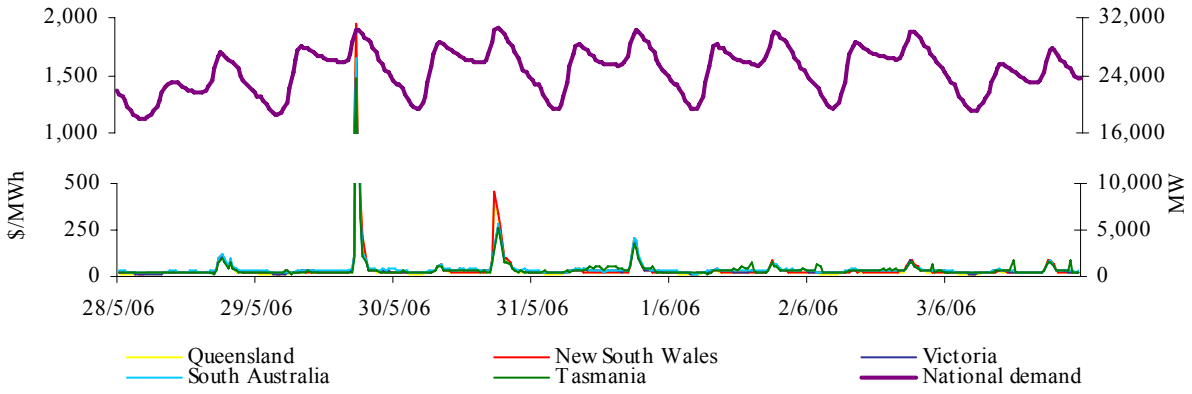


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	40	44	41	46	41
Previous week	25	28	40	53	58
Same quarter last year	23	28	27	36	-
Financial year to date	32	44	36	44	61
% change from previous week*	▲57%	▲55%	▲2%	▼13%	▼29%
% change from same quarter last year**	▲74%	▲54%	▲50%	▲31%	-
% change from year to date***	▲3%	▼4%	▲23%	▲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

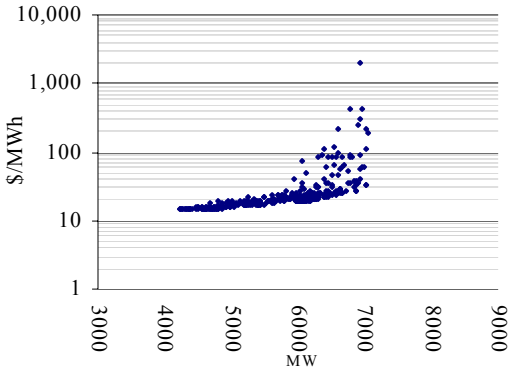


Figure 4: New South Wales

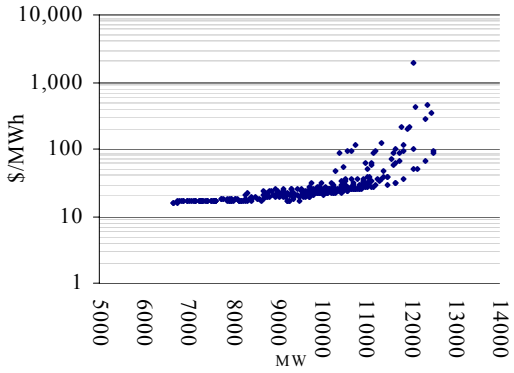


Figure 5: Victoria

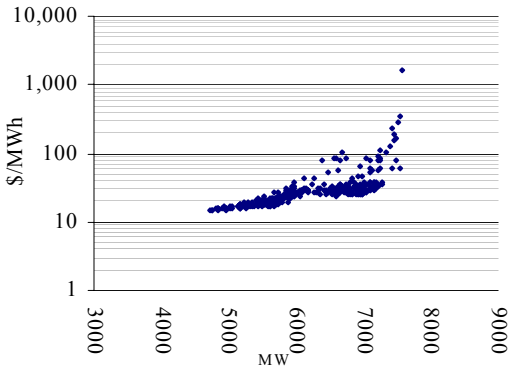


Figure 6: South Australia

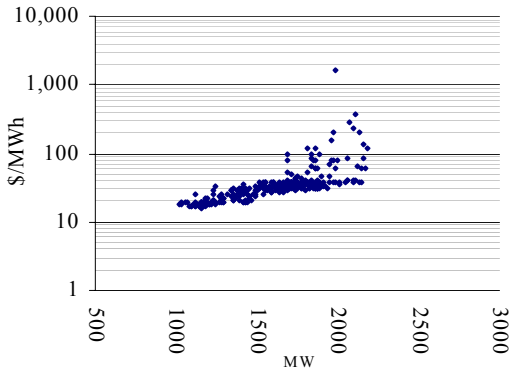
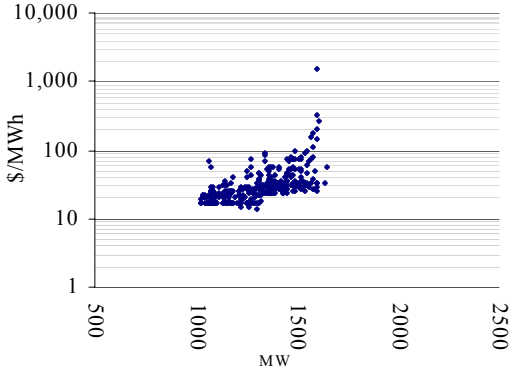


Figure 7: Tasmania



Maximum spot prices for the week were $1943/MWh in Queensland, $1955/MWh in New South Wales, $1617/MWh in Victoria, $1650/MWh in South Australia and $1480/MWh in Tasmania, all at 6 pm on Monday.

Figure 8: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	1.81	1.50	1.09	0.86	1.01
Previous week	0.59	0.51	0.47	0.78	0.40
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

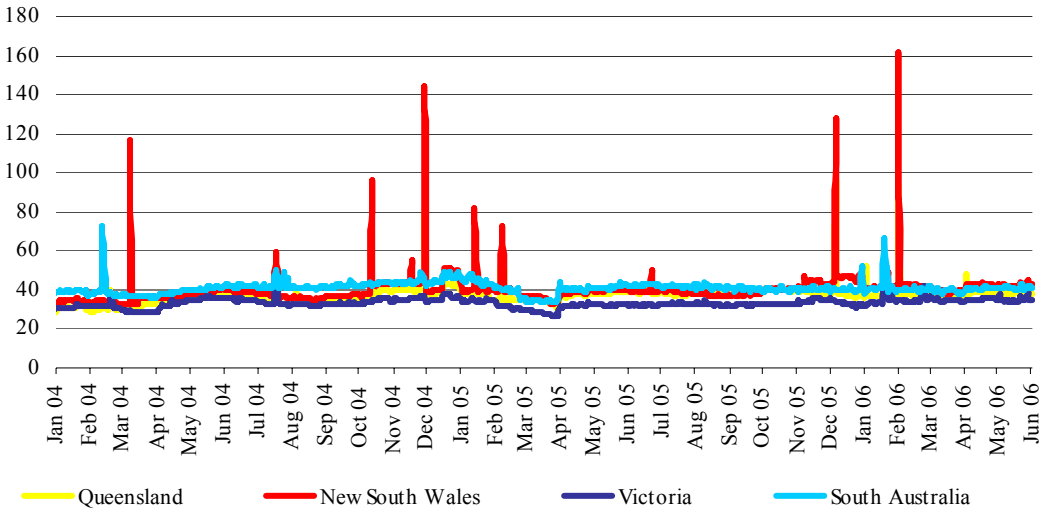
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	38.45	38.52	38.66	38.29	38.07
New South Wales	45.08	44.45	42.74	42.53	43.19
Victoria	38.54	35.53	35.01	34.72	34.58
South Australia	41.74	41.20	41.08	41.76	40.77

* 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

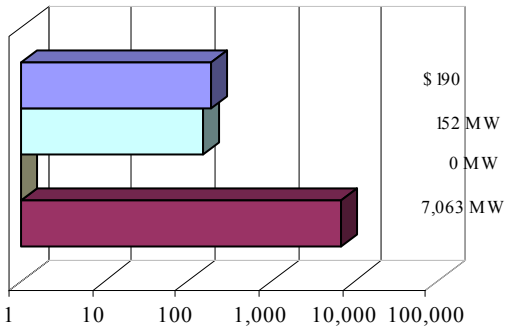


Figure 12: New South Wales

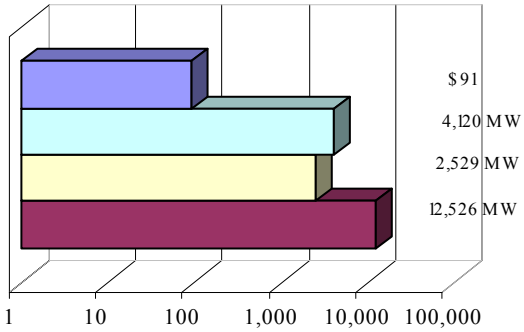


Figure 13: Victoria

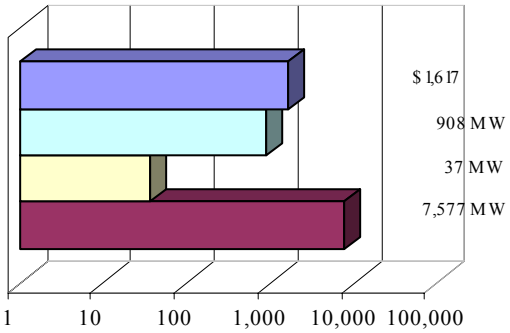


Figure 14: South Australia

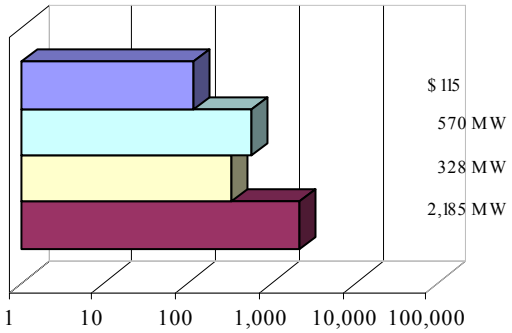
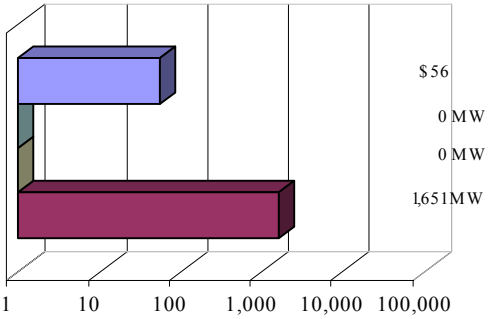


Figure 15: Tasmania



Price variations

There were 68 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

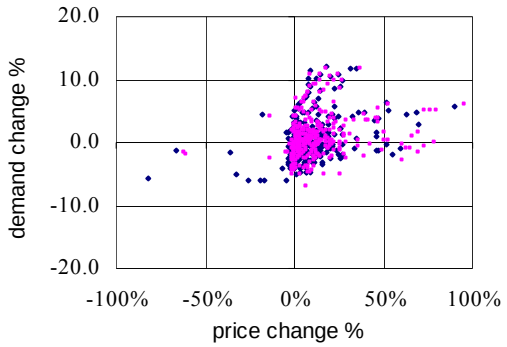


Figure 17: New South Wales

Figure 18: Victoria

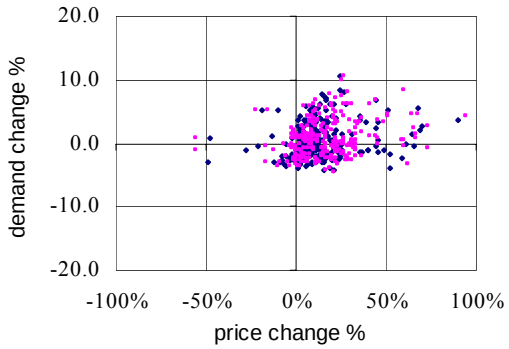


Figure 19: South Australia

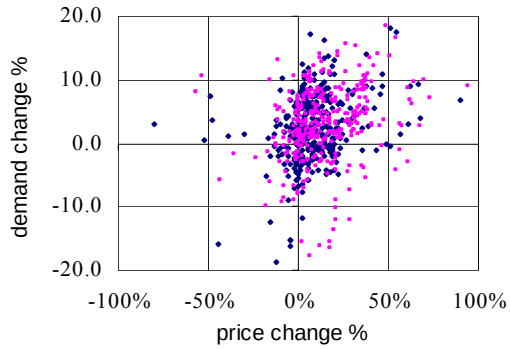
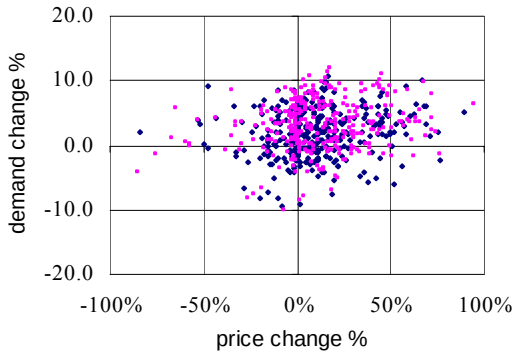


Figure 20: Tasmania



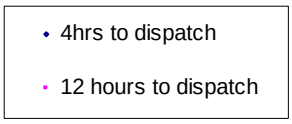
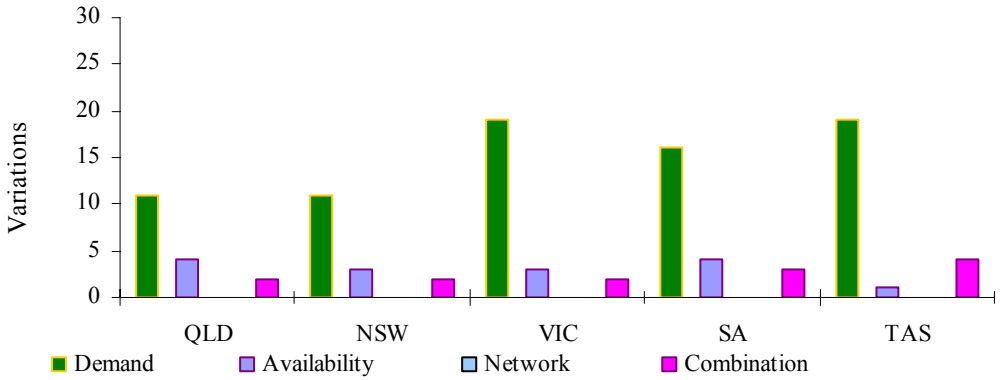


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

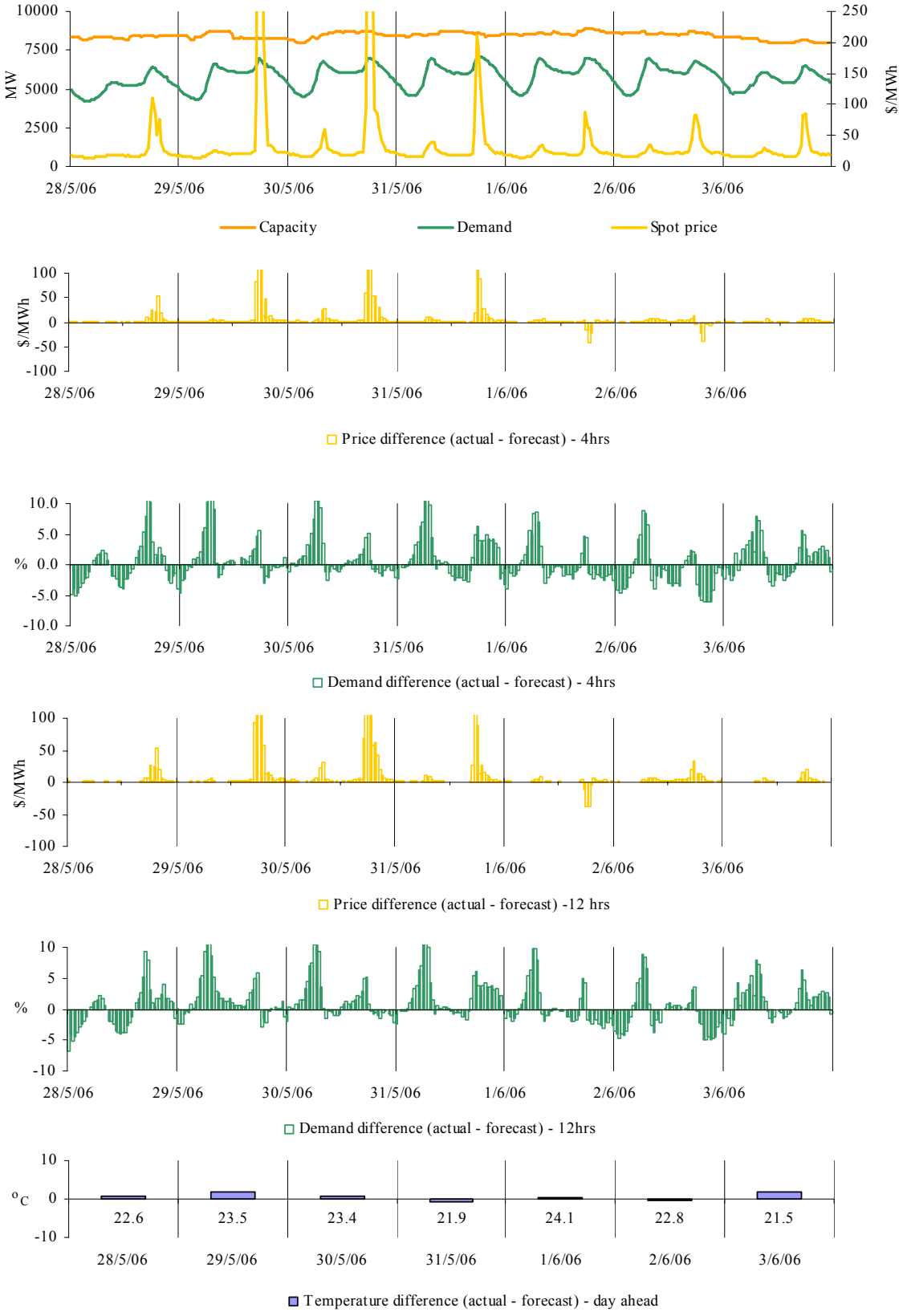
Figure 21: reasons for variations between forecast and actual prices



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 eight occasions where the spot price in Queensland was greater than three times the weekly average price of $40/MWh.

Monday, 29 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1943.47	202.00	83.55
Demand (MW)	6933	6543	6525
Available capacity (MW)	8301	8305	8746
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	418.03	202.00	88.11
Demand (MW)	6789	6819	6793
Available capacity (MW)	8277	8306	8747
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	214.26	202.00	83.55
Demand (MW)	6610	6815	6799
Available capacity (MW)	8273	8307	8748

Conditions at the time saw demand in Queensland as much as 400 MW higher than forecast four hours ahead. Nationally, demand was as much as 2100 MW higher than forecast on the same basis, with prices aligned across the market.

At 11.46 am, unit two at Millmerran tripped, reducing its available capacity by 430 MW. All of this capacity was priced at less than $5/MWh.

At 5.32 pm, Stanwell Corporation shifted 180 MW of capacity at Stanwell from prices below $200/MWh to $278/MWh and $9275/MWh. The rebid reason given was “RRP greater than pre dispatch”.

There was no other significant rebidding.

Tuesday, 30 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	425.76	202.00	100.34
Demand (MW)	6955	6603	6591
Available capacity (MW)	8730	8746	8728
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	311.38	202.00	105.13
Demand (MW)	6929	6886	6865
Available capacity (MW)	8739	8734	8729
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	255.87	200.93	100.95
Demand (MW)	6888	6931	6913
Available capacity (MW)	8740	8655	8585

Conditions at the time saw demand in Queensland as much as 350 MW higher than forecast four hours ahead. Nationally, demand at 6 pm was around 1900 MW higher than forecast on the same basis, with prices aligned across the market from 6.10 pm.

At 2.37 pm Enertrade shifted 185 MW of capacity across Gladstone and Oakey from prices of $190/MWh to $282/MWh. The rebid reason given was "Material change in market conditions::change MW distrib".

There was no other significant rebidding.

Wednesday, 31 May

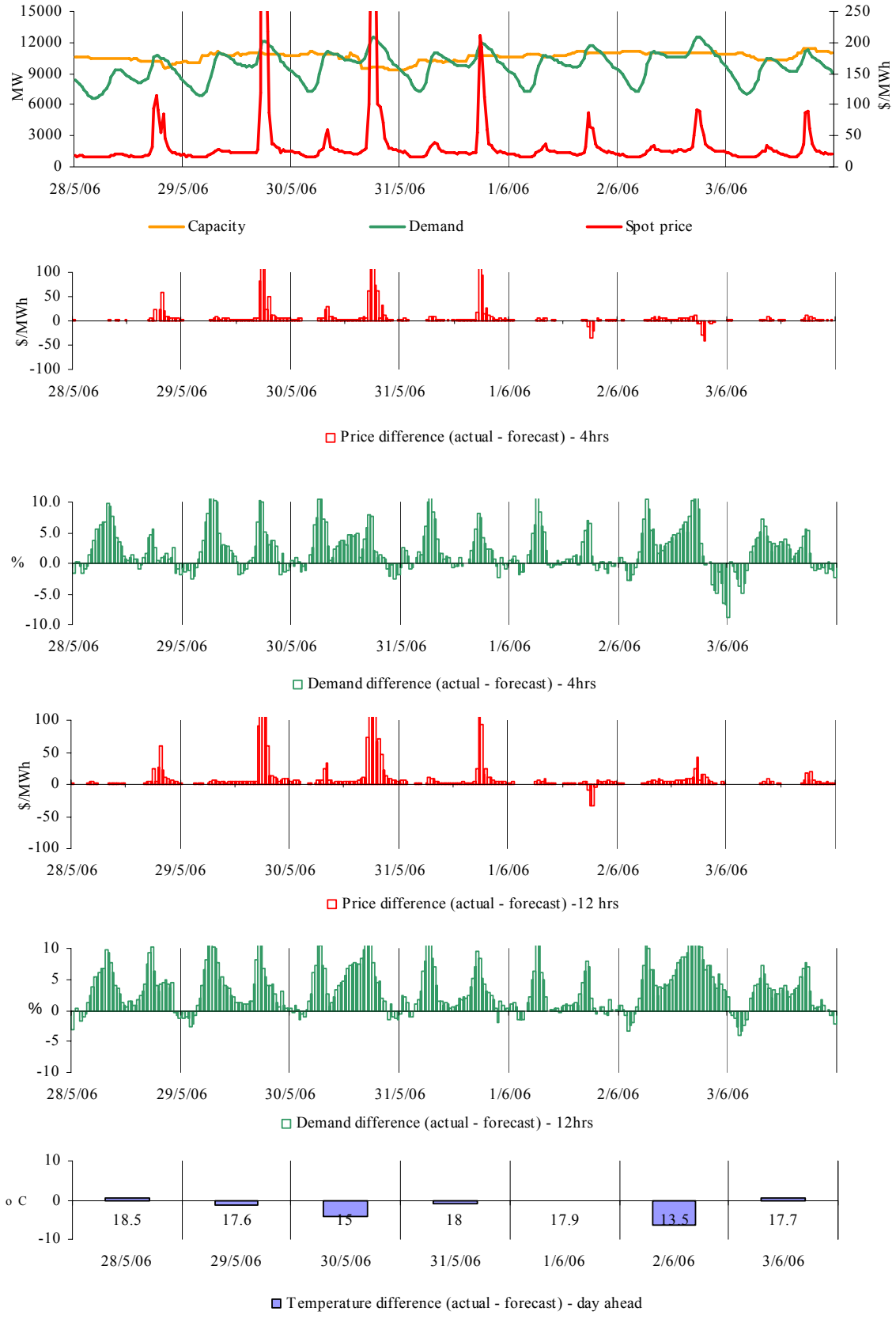
6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	210.68	101.04	99.82
Demand (MW)	7024	6585	6600
Available capacity (MW)	8581	8678	8666
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	190.25	100.96	100.78
Demand (MW)	7063	6792	6801
Available capacity (MW)	8583	8682	8662

Conditions at the time saw demand in Queensland as much as 450 MW higher than forecast four hours ahead. Nationally, demand was as much as 2100 MW higher than forecast, with prices aligned across the market.

The ongoing commissioning of the new Braemar power station saw unit 1 reduce its available capacity by 150 MW from 4.42 pm. The unit remained offline for the rest of the evening.

There was no other significant rebidding.

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



There were eight occasions where the spot price in New South Wales was greater than three times the weekly average price of $44/MWh.

Monday, 29 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1955.08	189.34	85.90
Demand (MW)	12045	10840	10698
Available capacity (MW)	11065	11190	11256
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	436.81	194.77	92.64
Demand (MW)	12109	11487	11289
Available capacity (MW)	10872	11190	11256
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	218.96	196.39	85.93
Demand (MW)	11988	11426	11332
Available capacity (MW)	10881	11190	11256

Conditions at the time saw demand in New South Wales as much as 1200 MW higher than forecast four hours ahead. Nationally, demand was as much as 2100 MW higher than forecast on the same basis, with prices aligned across the market.

Following the return of Vales Point unit six from an unplanned overnight outage, Delta Electricity operated the unit to a fixed loading level of around 250 MW for the day. Rebids, made over the course of the day, which extended the period of fixed loading, led to a 400 MW reduction in the available capacity over the evening peak, of which 250 MW was priced below $20/MWh. The rebid reason given was “Dust::fixed load change”.

There was no other significant rebidding.

Tuesday, 30 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	455.40	208.25	98.77
Demand (MW)	12397	11455	10830
Available capacity (MW)	9626	11180	11480
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	339.41	206.69	102.74
Demand (MW)	12458	12189	11511
Available capacity (MW)	9633	11180	11480
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	272.74	198.34	99.47
Demand (MW)	12343	12121	11683
Available capacity (MW)	9670	10665	11480

Conditions at the time saw demand in New South Wales as much as 900 MW higher than forecast four hours ahead. Nationally, demand was as much as 1900 MW higher than forecast on the same basis, with prices aligned across the market from 6.10 pm.

Available capacity was up to 1550 MW lower than forecast four hours ahead, although most of this capacity was priced above $9000/MWh.

Over 40 minutes from 2.28 pm, Macquarie Generation shutdown one Bayswater unit and one Liddell unit, resulting in a combined loss of around 1200 MW of capacity. Prior to this, Macquarie Generation had offered around 1200 MW of capacity across its portfolio priced above $9000/MWh during the evening peak. Most of this high priced capacity was shifted into prices of less than $30/MWh following the loss of the units. The total dispatch across Macquarie Generation's portfolio was little changed from the forecasts made prior to these rebids. The rebid reasons given were "Unit trip" and "Boiler tube leak".

At 3 pm Delta Electricity reduced the availability across both Vales Point units by around 400 MW for the evening peak. Half of this capacity was priced at less than $20/MWh. The rebid reasons given were "Plant condition::Capacity limit and bandshift change" and "Dust emission::capacity change".

There was no other significant rebidding.

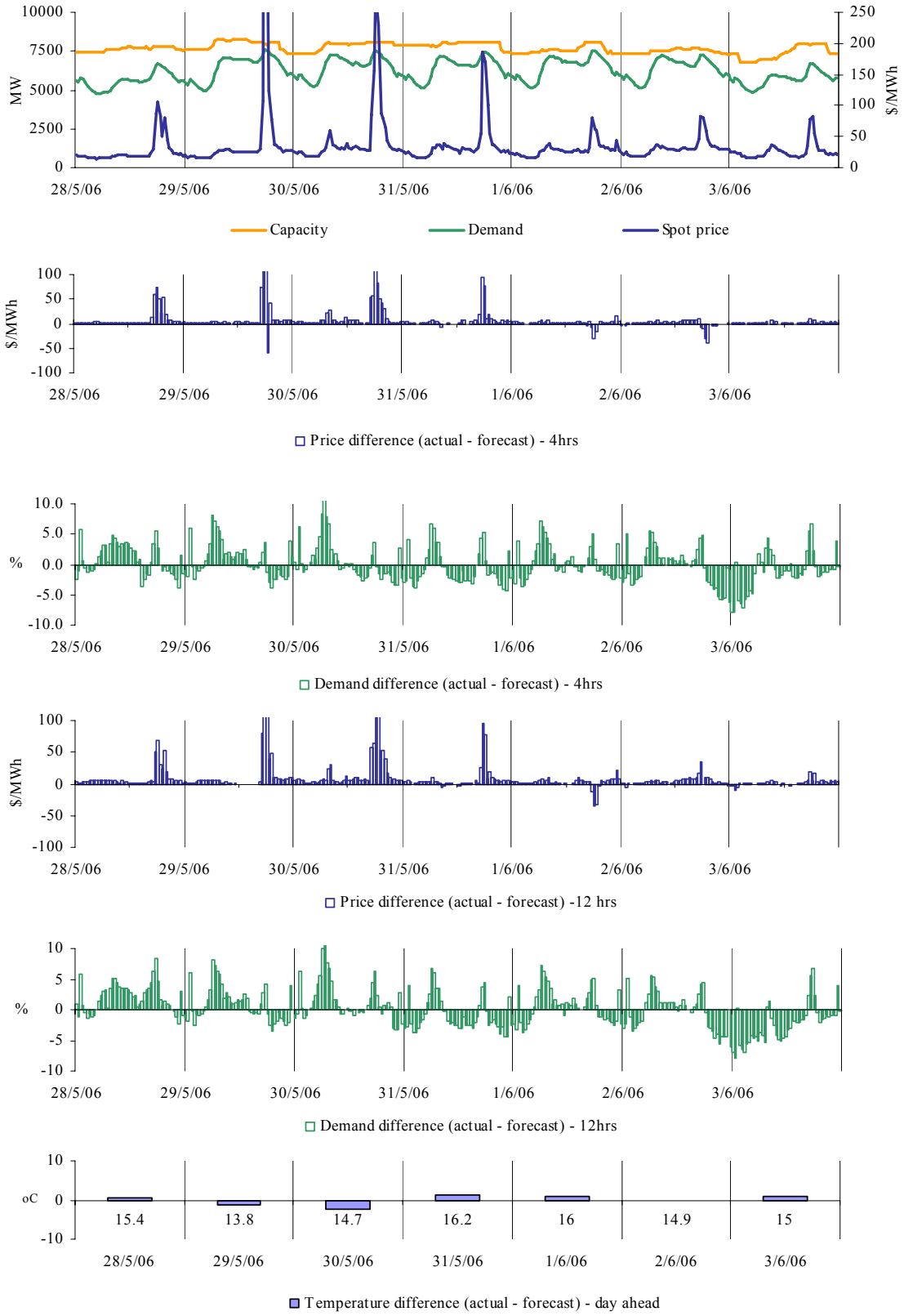
Wednesday, 31 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	211.39	99.52	98.26
Demand (MW)	11798	10915	10807
Available capacity (MW)	10765	10965	10965
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	192.71	99.50	98.84
Demand (MW)	11937	11444	11319
Available capacity (MW)	10765	10875	10965

Conditions at the time saw demand in New South Wales up to 900 MW higher than forecast. Nationally, demand was as much as 2100 MW higher than 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 eight occasions where the spot price in Victoria was greater than three times the weekly average price of $41/MWh.

Monday, 29 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1616.84	168.86	85.62
Demand (MW)	7577	7293	7256
Available capacity (MW)	7995	8264	8274
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	350.92	180.72	94.36
Demand (MW)	7542	7633	7595
Available capacity (MW)	7903	8224	8274
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	124.55	185.12	85.49
Demand (MW)	7394	7619	7587
Available capacity (MW)	8068	8064	8289

Conditions at the time saw demand in Victoria up to 300 MW higher than forecast four hours ahead. Nationally, demand was as much as 2100 MW higher than forecast on the same basis, with prices aligned across the market.

From 1.51 pm, International Power reduced the availability of Hazelwood unit four by 200 MW. All of this capacity was priced below $20/MWh. The rebid reasons given were "Boiler leak" and "Unit economiser leak-shutdown profile".

There was no other significant rebidding.

Tuesday, 30 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	155.48	99.52	91.69
Demand (MW)	7469	7191	7007
Available capacity (MW)	8067	8029	8044
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	280.24	154.28	95.77
Demand (MW)	7529	7563	7355
Available capacity (MW)	8045	8029	8044
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	228.51	146.76	91.70
Demand (MW)	7424	7535	7393
Available capacity (MW)	8078	8034	8034

Conditions at the time saw demand in Victoria as much as 300 MW higher than forecast four hours ahead. Nationally, demand was as much as 1900 MW higher than forecast on the same basis, with prices aligned across the market from 6.10 pm.

There was no significant rebidding.

Wednesday, 31 May

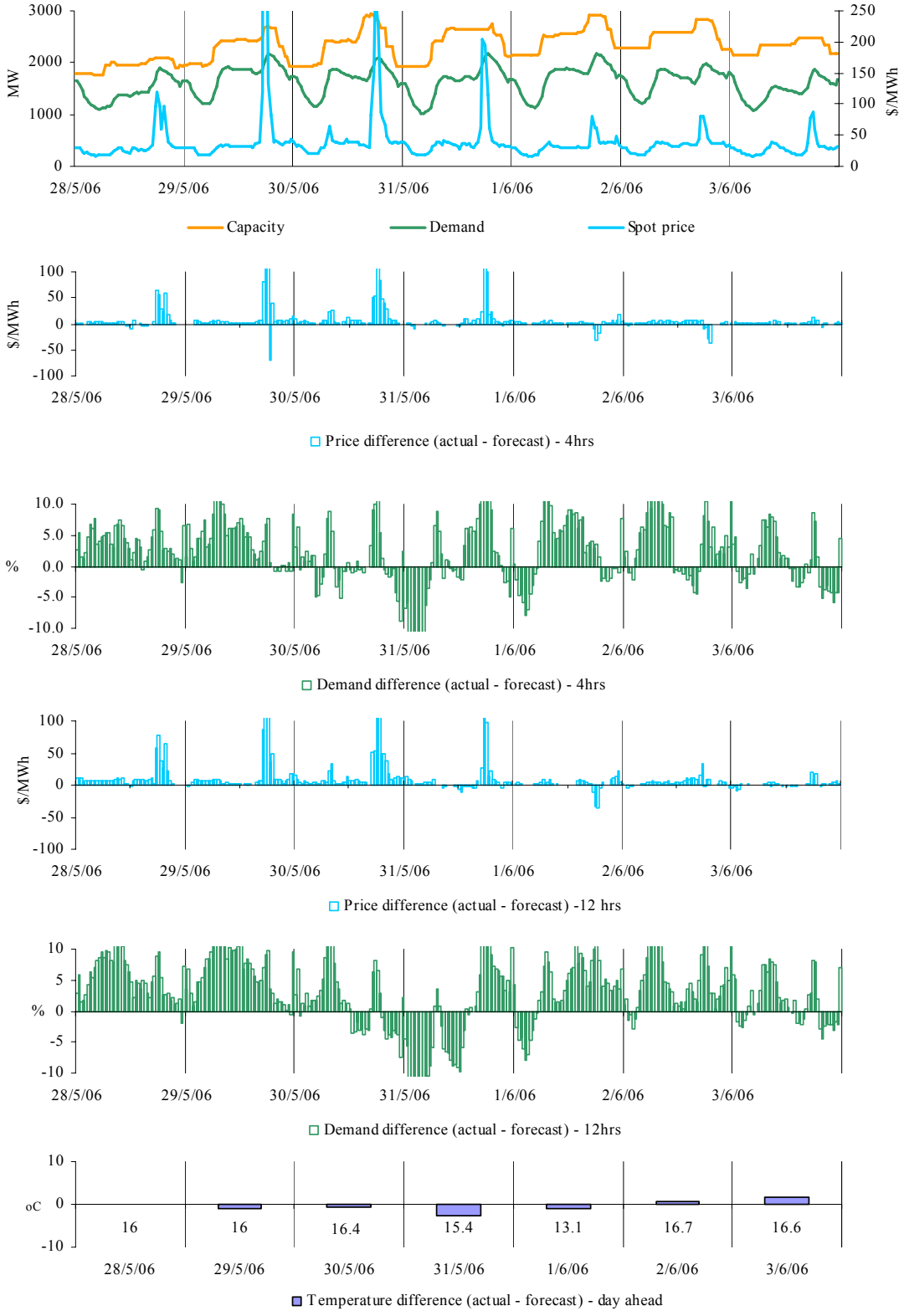
6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	186.40	91.83	90.79
Demand (MW)	7453	7063	7127
Available capacity (MW)	8054	8019	8269
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	169.41	92.81	92.26
Demand (MW)	7471	7436	7483
Available capacity (MW)	8056	8049	8269

Conditions at the time saw demand in Victoria around 400 MW higher than forecast four hours ahead. Nationally, demand was as much as 2100 MW higher than forecast on the same basis, with prices aligned across the market.

At 9.43 am, International Power reduced the availability of Hazelwood unit 4 by 220 MW following delays in the return of the unit following an unplanned outage on Monday. The rebid reason given was "RTS time delayed". The unit eventually returned to service on Friday.

There was no other significant rebidding.

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



There were seven occasions where the spot price in South Australia was greater than three times the weekly average price of $46/MWh.

Monday, 29 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1650.08	173.65	92.54
Demand (MW)	1982	1848	1801
Available capacity (MW)	2675	2671	2431
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	361.74	196.01	107.35
Demand (MW)	2114	1952	1907
Available capacity (MW)	2687	2671	2431

Conditions at the time saw demand in South Australia around 150 MW higher than forecast four hours ahead. Nationally, demand was as much as 2100 MW higher than forecast on the same basis, with prices aligned across the market. There was no significant rebidding.

Tuesday, 30 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	150.35	96.00	96.46
Demand (MW)	1960	1764	1798
Available capacity (MW)	2924	2941	2544
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	277.26	148.69	104.95
Demand (MW)	2077	1855	1940
Available capacity (MW)	2837	2941	2544
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	227.79	144.99	98.87
Demand (MW)	2093	1980	2033
Available capacity (MW)	2817	2941	2604

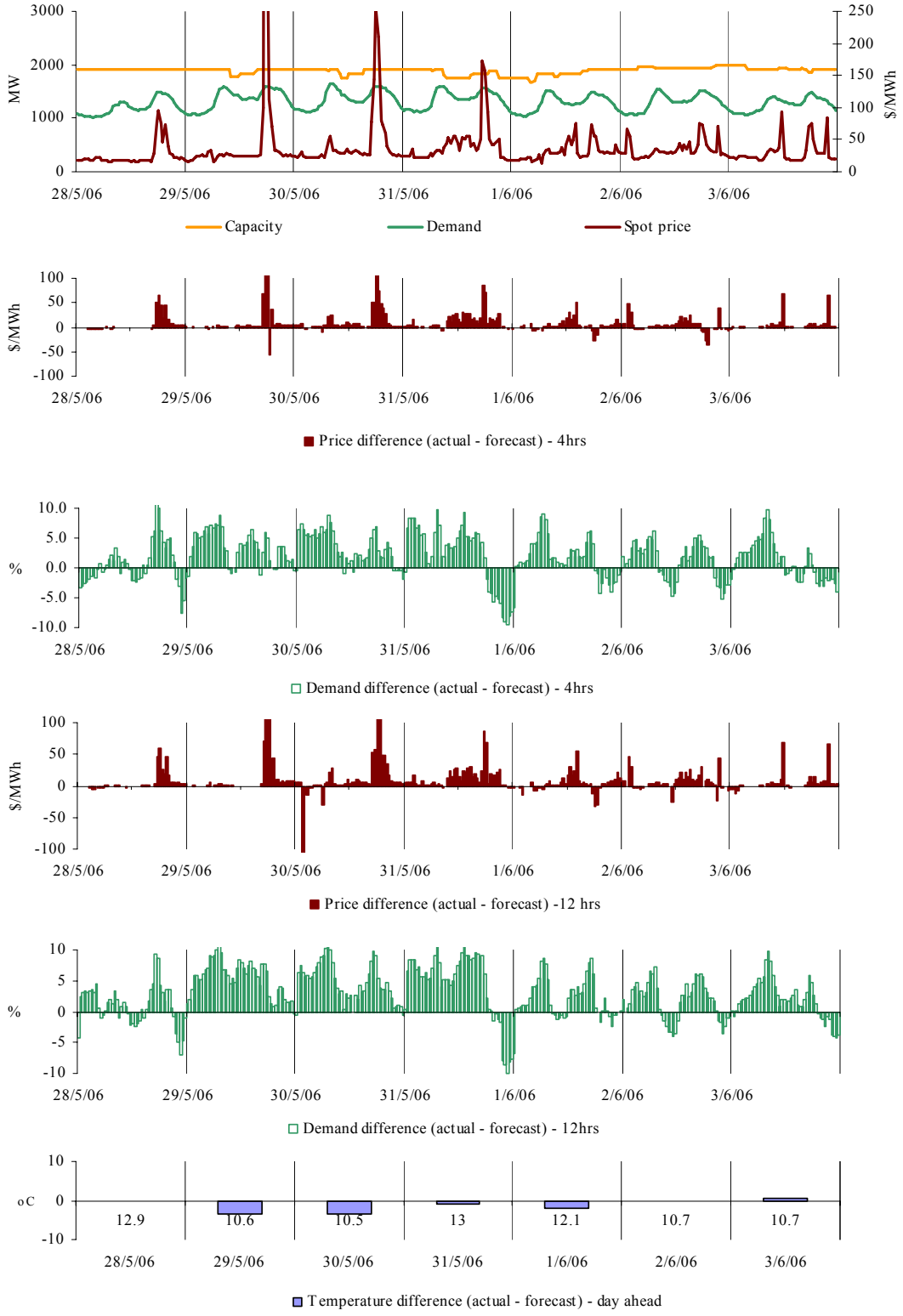
Conditions at the time saw demand in South Australia as much as 200 MW higher than forecast four hours ahead. Nationally, demand was as much as 1900 MW higher than forecast on the same basis, with prices aligned across the market from 6.10 pm. There was no significant rebidding.

Wednesday, 31 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	205.19	92.39	93.26
Demand (MW)	1977	1634	1650
Available capacity (MW)	2632	2632	2427
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	195.89	96.00	99.19
Demand (MW)	2132	1743	1741
Available capacity (MW)	2632	2632	2427

Conditions at the time saw demand in South Australia almost 400 MW higher than forecast four hours ahead. Nationally, demand was as much as 2100 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 seven occasions where the spot price in Tasmania was greater than three times the weekly average price of $41/MWh.

Monday, 29 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1480.44	155.56	79.71
Demand (MW)	1604	1524	1500
Available capacity (MW)	1922	1922	1922
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	320.28	166.49	87.85
Demand (MW)	1600	1579	1563
Available capacity (MW)	1922	1922	1922

Conditions at the time saw demand and available capacity close to forecast four hours ahead. Nationally, demand was as much as 2100 MW higher than forecast on the same basis, with prices aligned across the market. There was no significant rebidding.

Tuesday, 30 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	142.95	92.41	84.69
Demand (MW)	1598	1490	1454
Available capacity (MW)	1922	1922	1922
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	256.80	143.26	88.69
Demand (MW)	1604	1557	1516
Available capacity (MW)	1922	1922	1922
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	209.22	135.91	84.92
Demand (MW)	1598	1567	1536
Available capacity (MW)	1922	1922	1922

Conditions at the time saw demand in Tasmania as much as 100 MW higher than forecast four hours ahead. Nationally, demand was as much as 1900 MW higher than forecast on the same basis, with prices aligned across the market. There was no significant rebidding.

Wednesday, 31 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	172.36	86.19	85.21
Demand (MW)	1575	1549	1478
Available capacity (MW)	1836	1836	1836
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	156.14	86.41	86.82
Demand (MW)	1567	1597	1532
Available capacity (MW)	1836	1836	1836

Conditions at the time saw demand in Tasmania close to forecast four hours ahead. Nationally, demand was as much as 2100 MW higher than forecast on the same basis, with prices were aligned across the market. There was no significant rebidding.

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

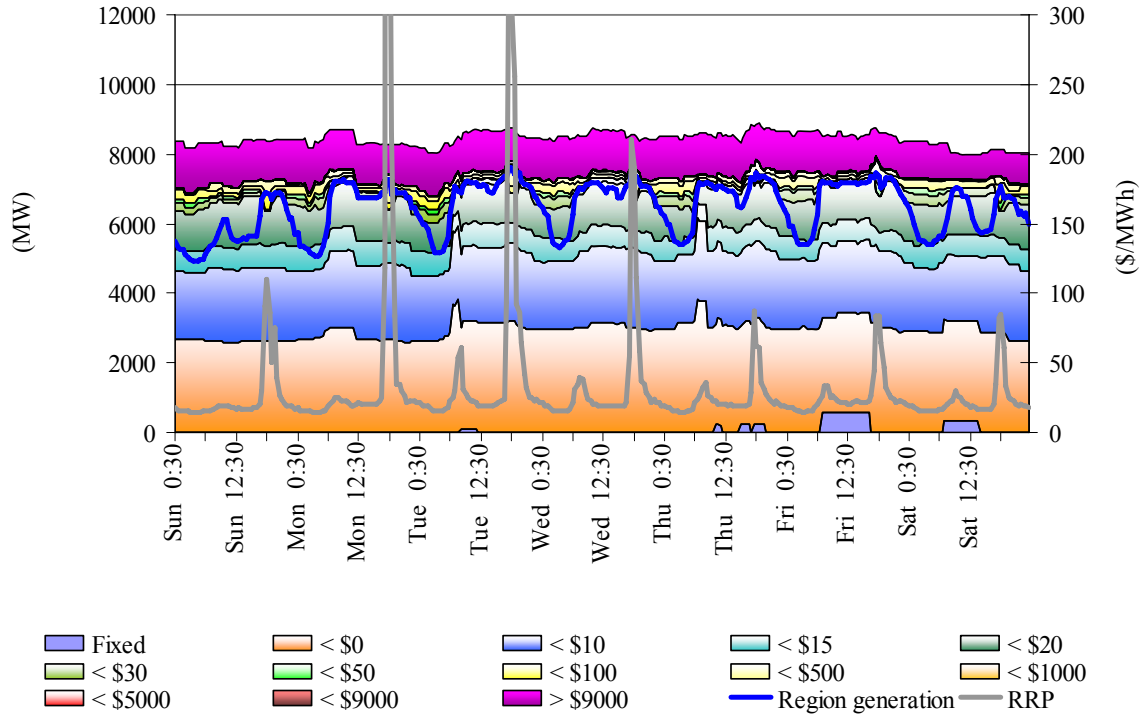


Figure 53: New South Wales closing bid prices, dispatched generation and spot price

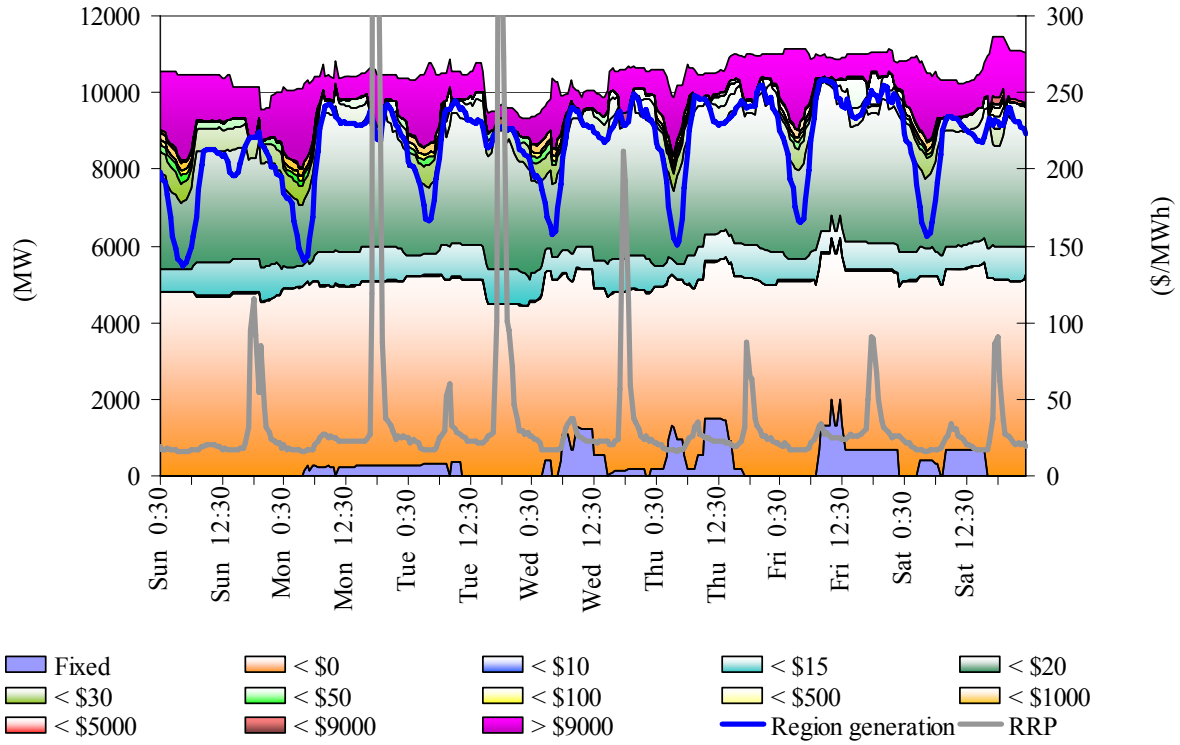


Figure 54: Victoria closing bid prices, dispatched generation and spot price

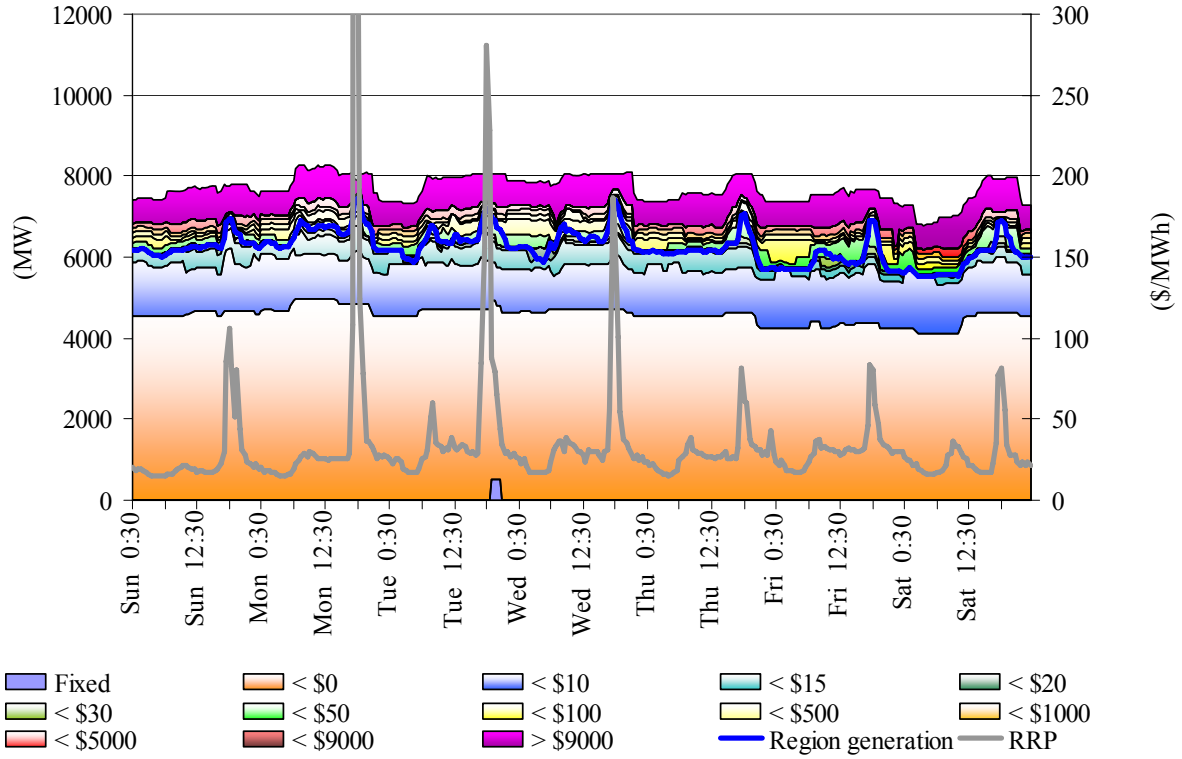


Figure 55: South Australia closing bid prices, dispatched generation and spot price

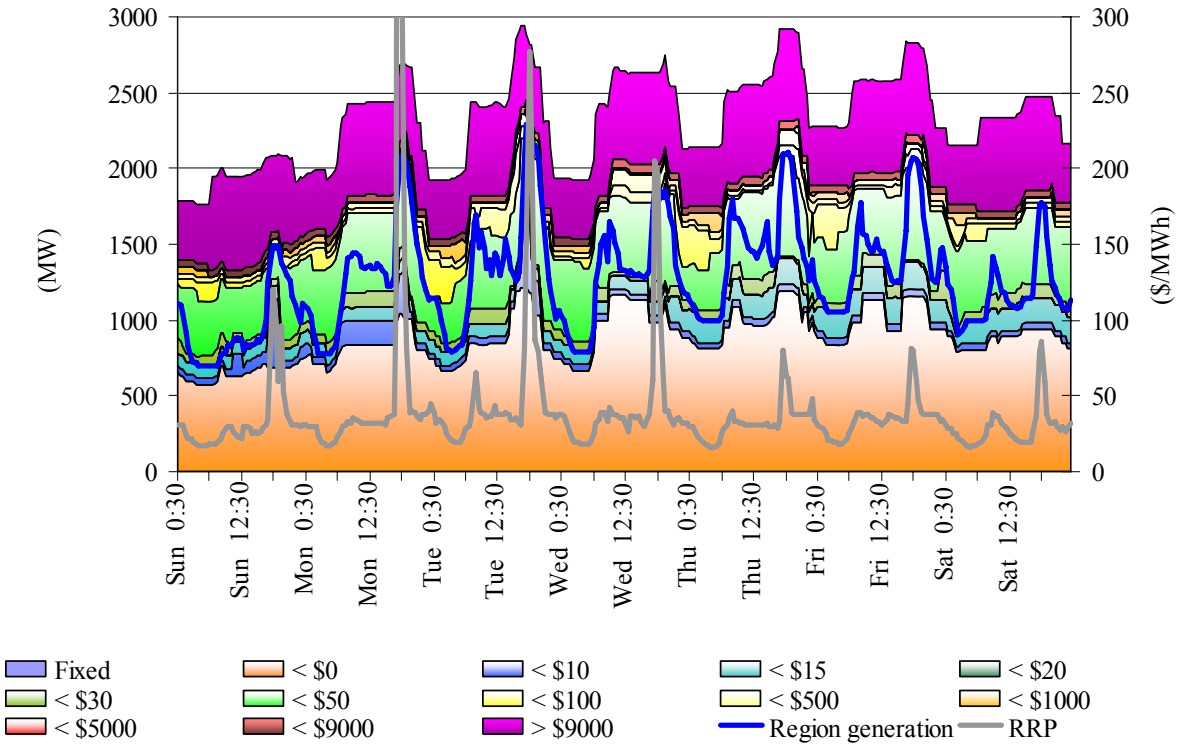
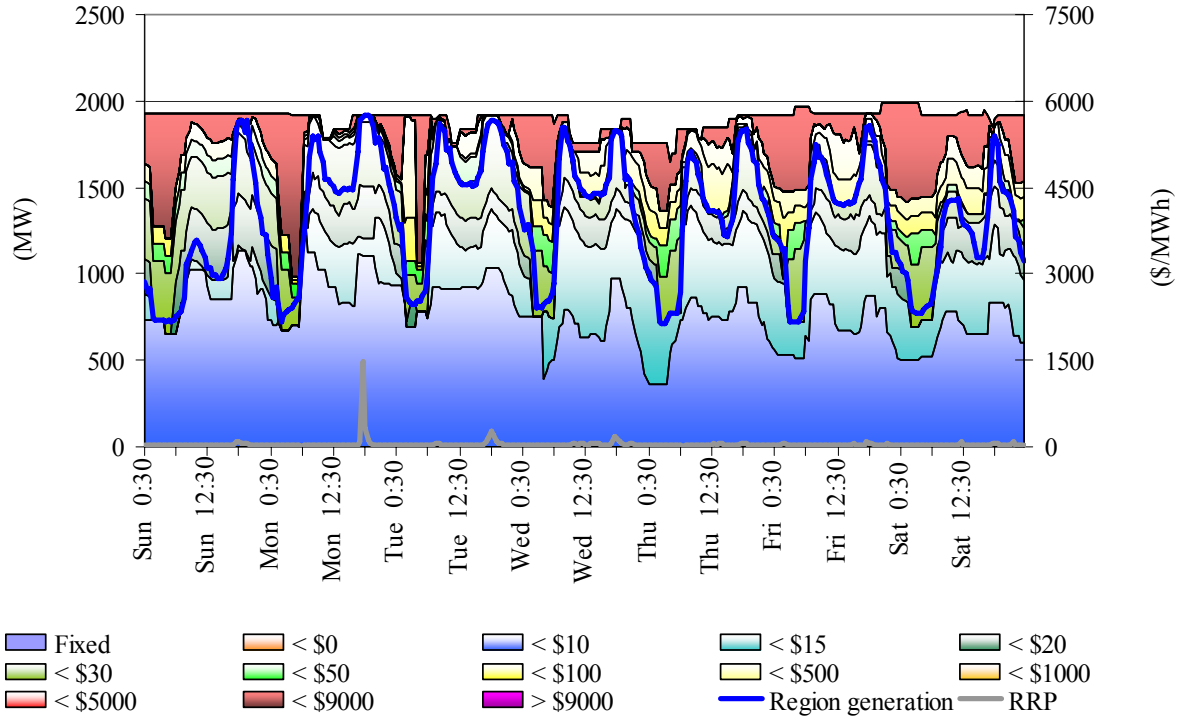


Figure 56: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $147 000 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	0.74	0.14	0.70	2.76	0.14	0.12	0.17	0.96
Previous week	1.11	0.18	0.95	1.91	0.14	0.10	0.21	0.85
Last quarter	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	28	5	40	55	0.4	0	2	15
% of energy market	0.74	0.14	0.70	2.76	0.14	0.12	0.17	0.96

The total cost of ancillary services in Tasmania for the week was $251 000 or 3 per cent of the total turnover in the energy market in Tasmania. High prices occurred on Monday and Tuesday for lower 6 second services coincident with the high energy prices at the time and exports from 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	5.33	0.44	0.72	5.11	29.13	0.19	0.38	0.84
Previous week	8.27	2.26	21.53	2.02	41.48	0.38	1.34	0.61
Last quarter	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost ($1000s)	28	4	11	17	173	5	8	5
% of energy market	0.31	0.04	0.12	0.19	1.91	0.05	0.09	0.06

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

Figure 59: daily frequency control ancillary service costs

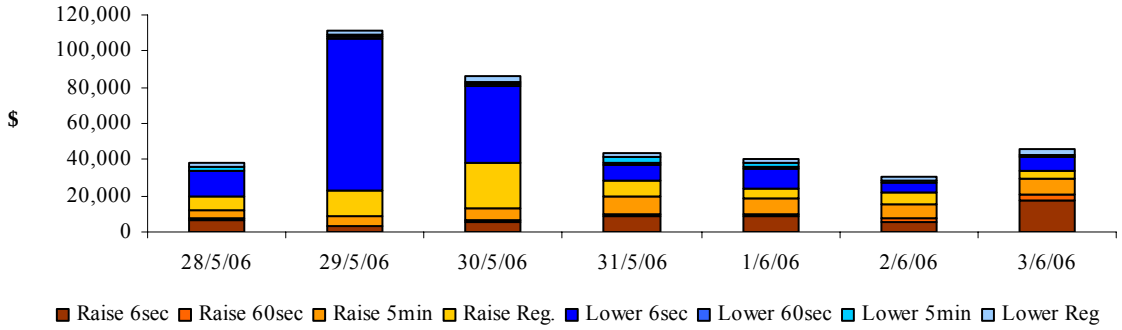
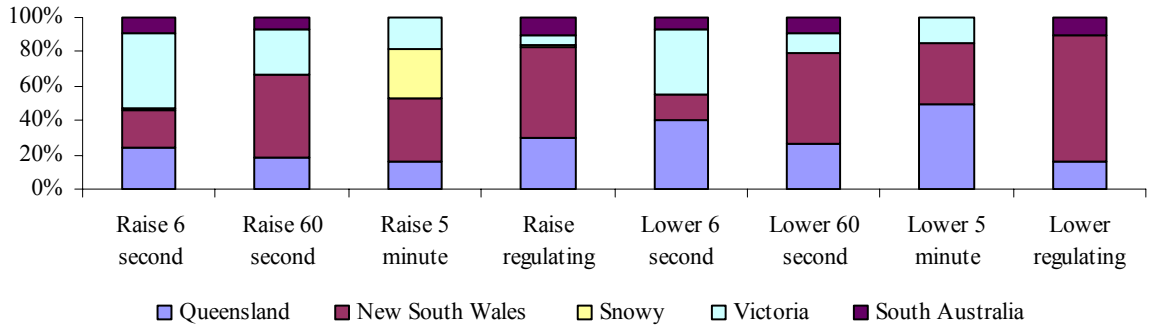


Figure 60 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

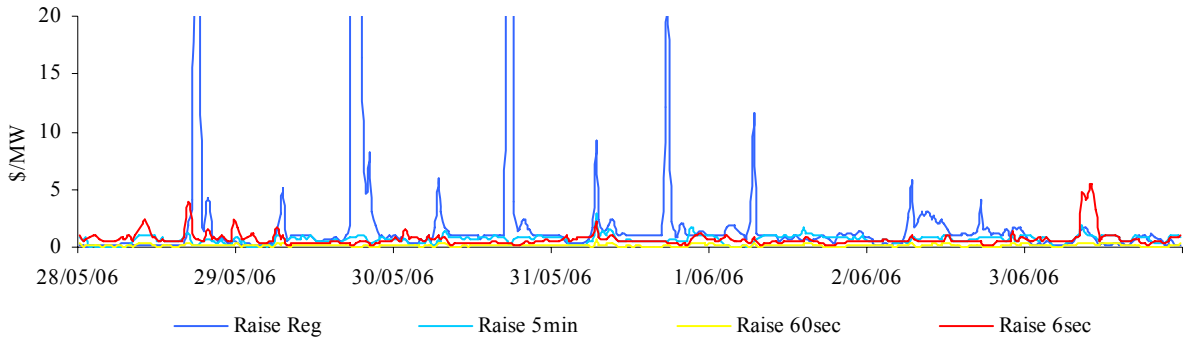


Figure 61A: prices for raise services - Tasmania

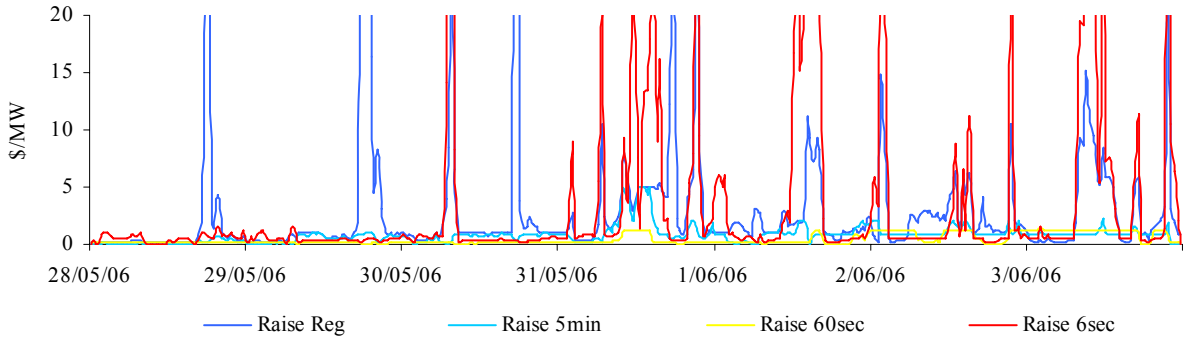


Figure 62: prices for lower services

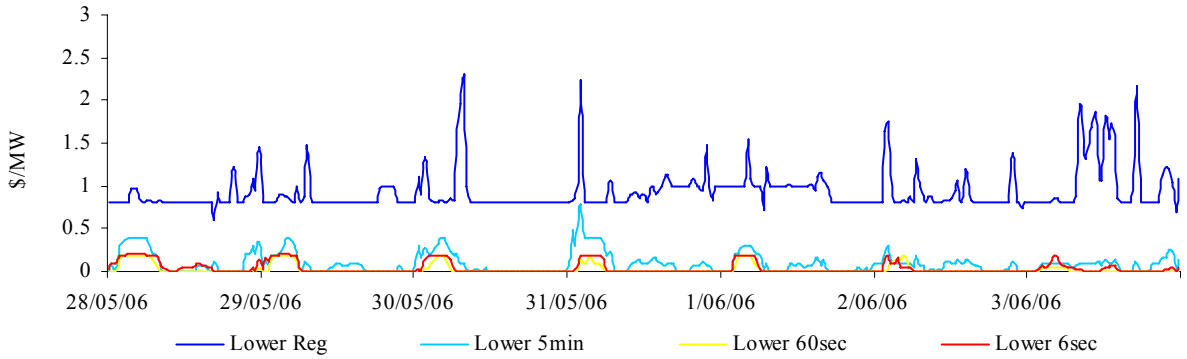
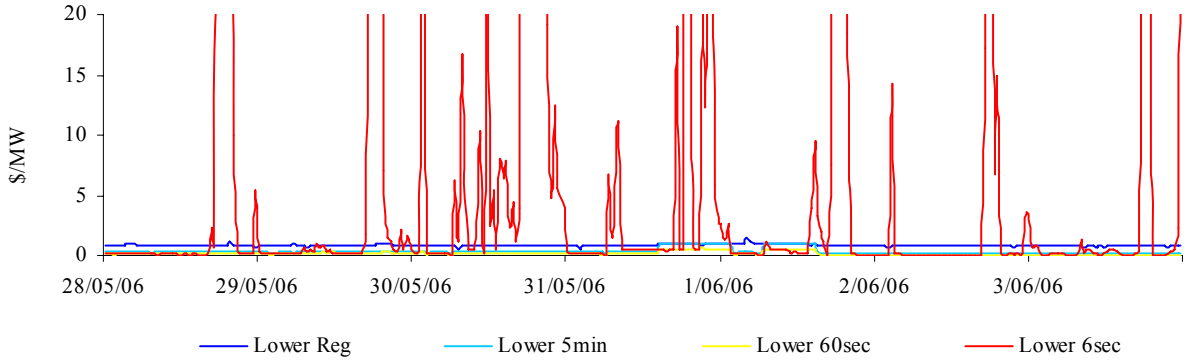


Figure 62A: prices for lower services – Tasmania



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

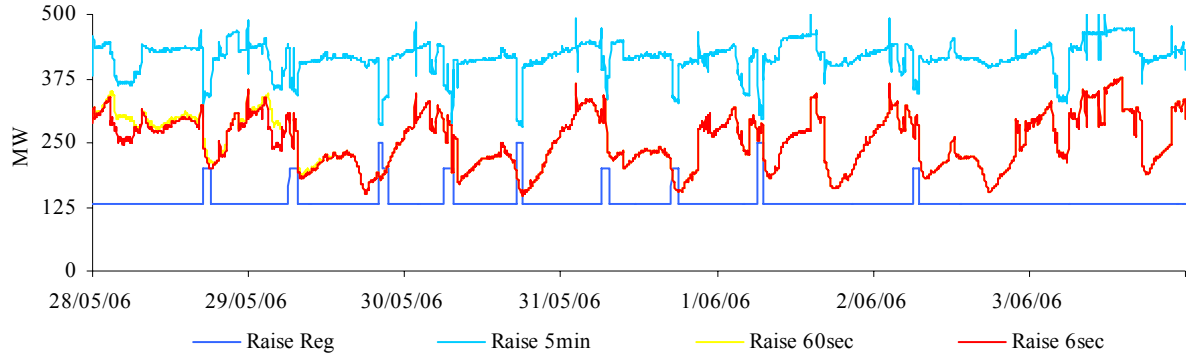


Figure 63A: raise requirements - Tasmania

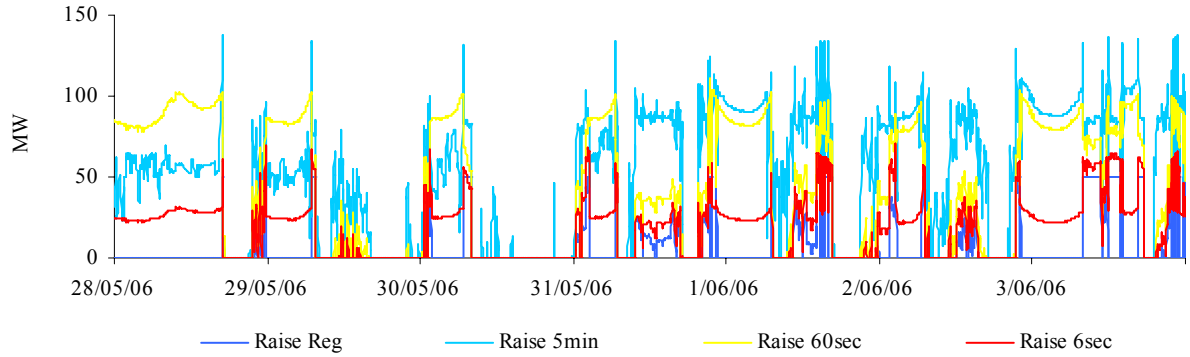


Figure 64: lower requirements

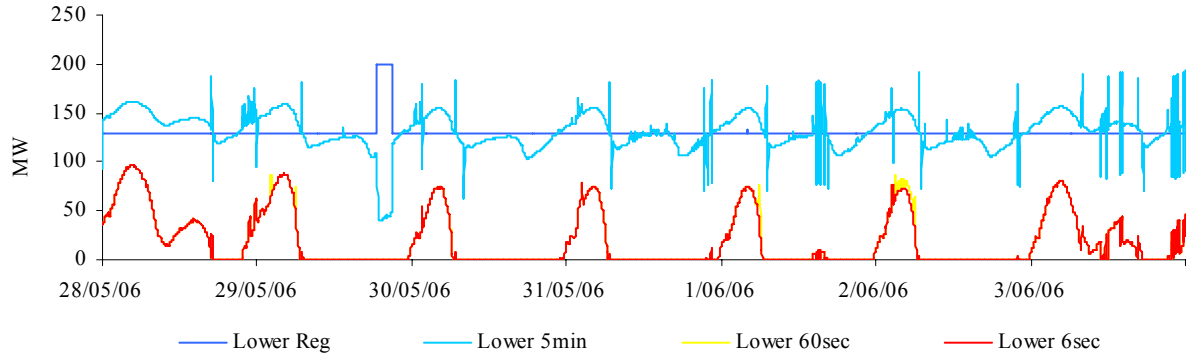
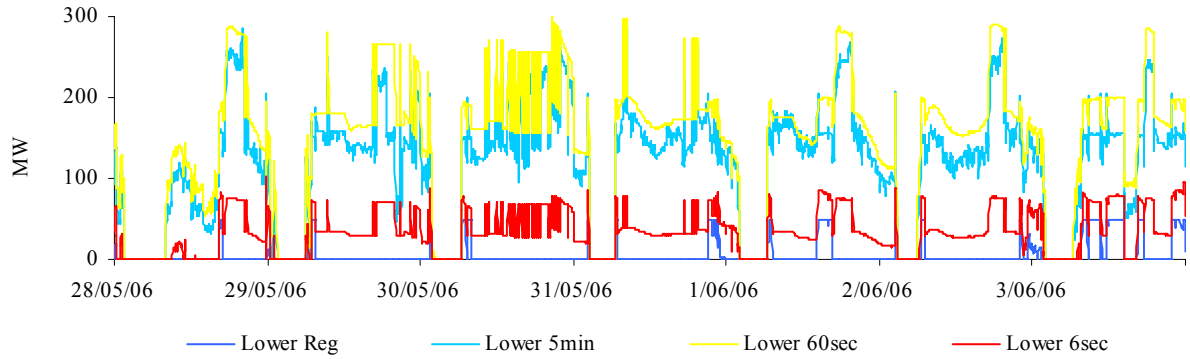


Figure 64A: lower requirements - Tasmania



Australian Energy Regulator
June 2006