Market analysis

AUSTRALIAN ENERGY REGULATOR

21 MAY – 27 MAY 2006

Spot prices for the week averaged between $25/MWh in Queensland and $58/MWh in Tasmania, an increase of more than 40 per cent in all regions compared to the previous week Increased demand across the market, including the highest demand in New South Wales since summer, and a reduction in low priced capacity in Queensland contributed.

At 8 am on Tuesday 23 May the spot price in Tasmania reached $6509/MWh. This was followed by the loss of around 210 MW of generation, and the interruption to 240 MW of industrial load. High prices occurred in South Australia and Victoria at the same time. A separate report detailing the significant contributing factors that resulted in the spot price exceeding $5000/MWh on that day will be published in accordance with clause 3.13.7 of the Rules.

Turnover in the energy market was $136 million. The total cost of ancillary services for the week, including Tasmania, was $815 000, or 0.6 per cent of energy market turnover. Two events in Tasmania contribute almost $700,000 to the cost of ancillary services for the week.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 31, or around 9 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 two thirds 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

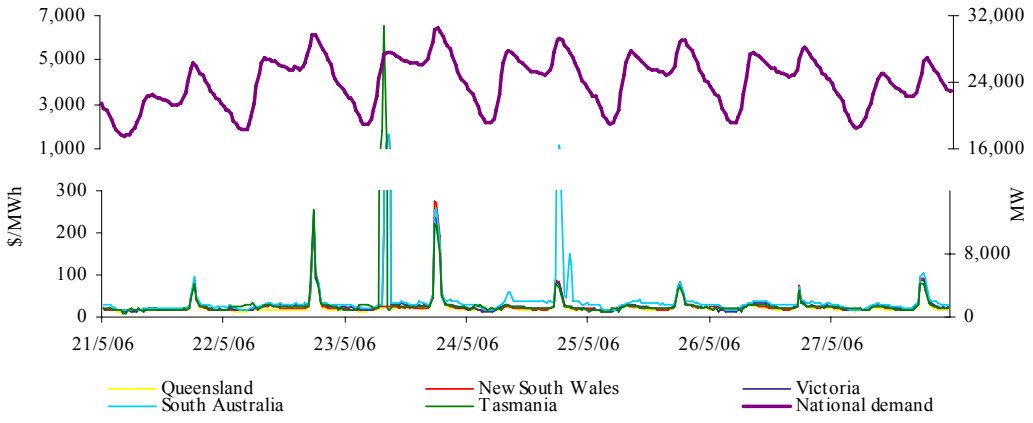


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	25	28	40	53	58
Previous week	18	20	20	28	29
Same quarter last year	23	28	27	36	-
Financial year to date	32	44	36	44	61
% change from previous week*	▲42%	▲42%	▲96%	▲89%	▲100%
% change from same quarter last year**	▲10%	0%	▲47%	▲50%	-
% change from year to date***	▲1%	▼7%	▲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.

Figure 3: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.59	0.51	0.47	0.78	0.40
Previous week	0.22	0.26	0.30	0.09	0.21
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

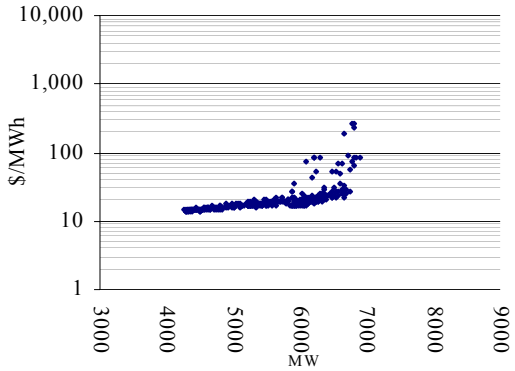


Figure 5: New South Wales

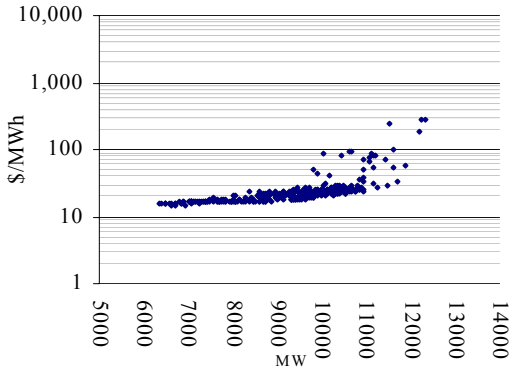


Figure 6: Victoria

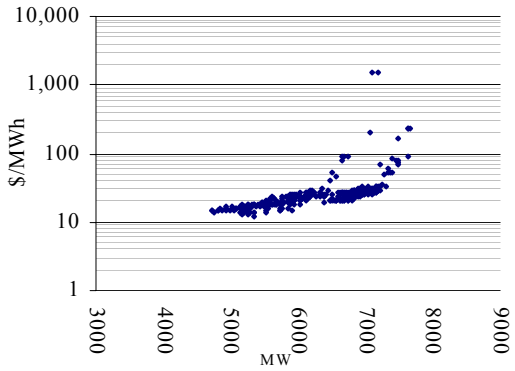


Figure 7: South Australia

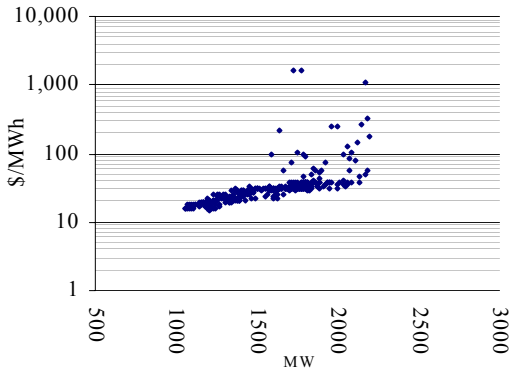
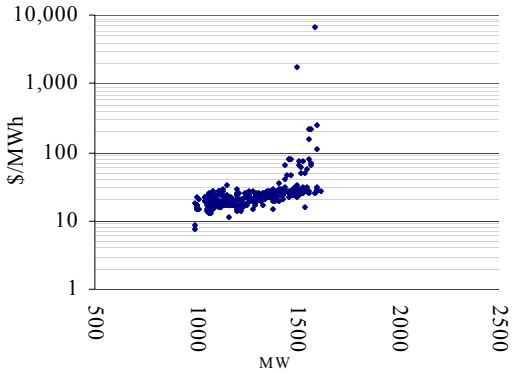


Figure 8: Tasmania



Maximum spot prices for the week were $267/MWh in Queensland and $274/MWh in New South Wales both occurring on Tuesday evening. The maximum spot price for the week in Tasmania of $6509/MWh occurred at 8 am on Tuesday morning. The prices in Victoria and South Australia reached $1560/MWh and $1668/MWh respectively, immediately after the high price in Tasmania.

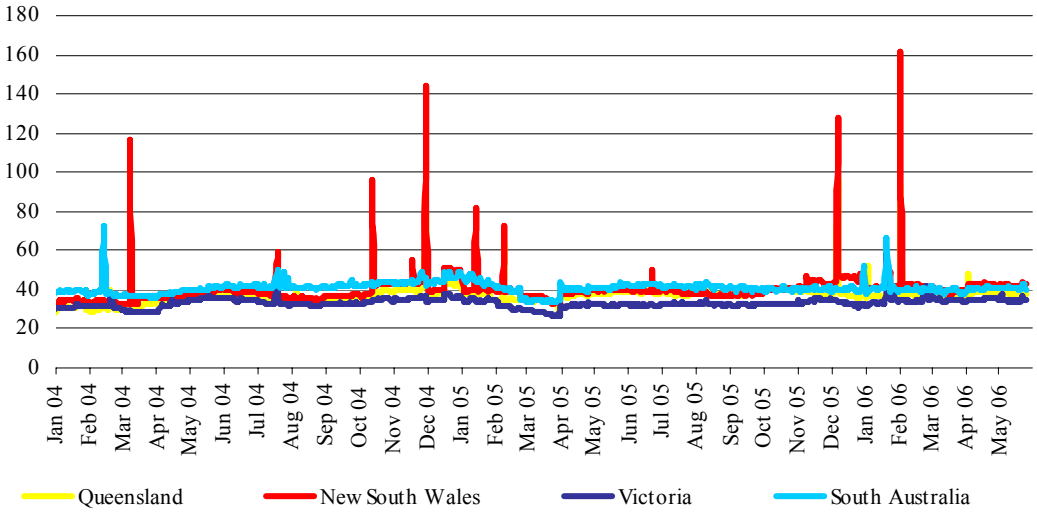
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	38.15	38.40	38.39	38.46	38.31
New South Wales	42.64	44.48	42.73	42.72	42.69
Victoria	35.00	37.27	34.59	34.54	34.37
South Australia	41.37	41.75	42.49	40.86	40.24

* 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. Basslink was directed to flow from Victoria to Tasmania on Tuesday between 7.50 am and 9.20 am.

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

Figure 11: Queensland

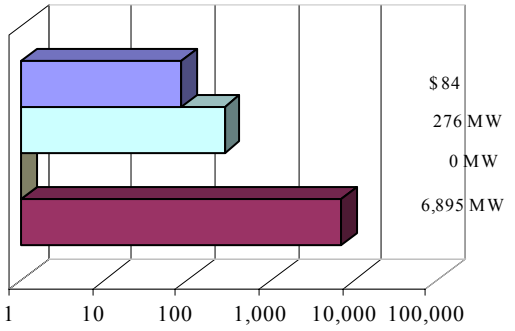


Figure 12: New South Wales

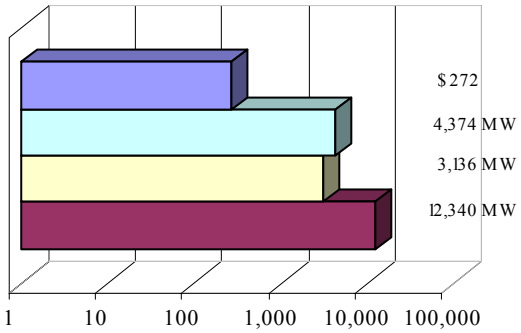


Figure 13: Victoria

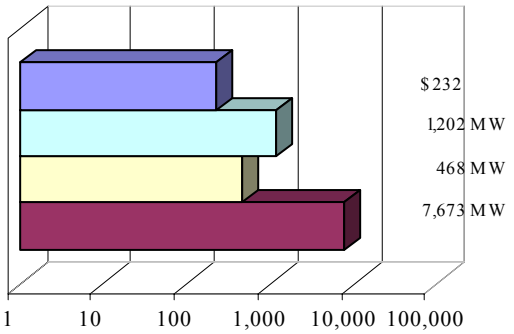


Figure 14: South Australia

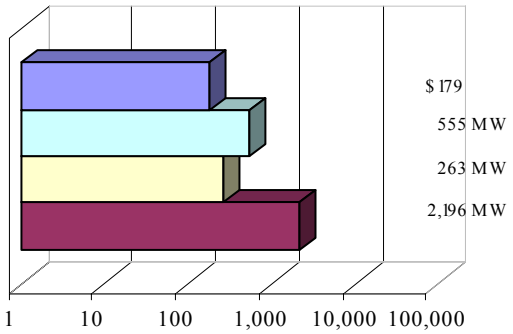
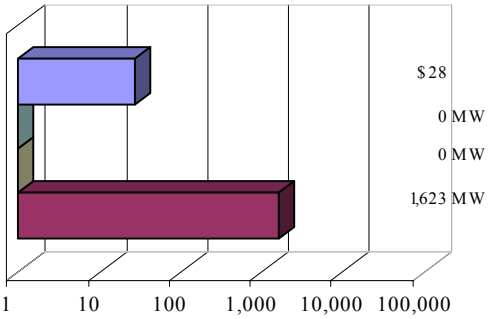


Figure 15: Tasmania



Price variations

There were 31 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

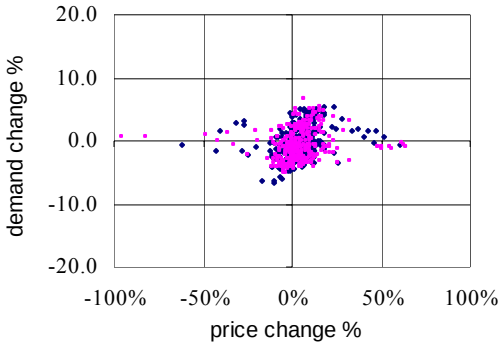


Figure 17: New South Wales

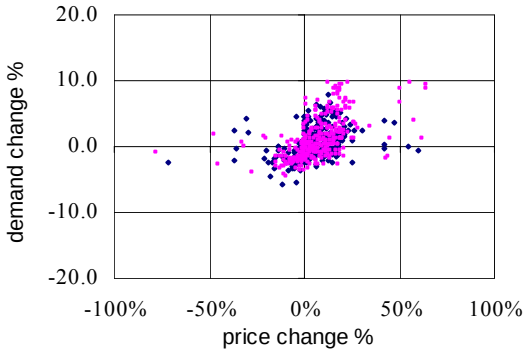


Figure 18: Victoria

Figure 19: South Australia

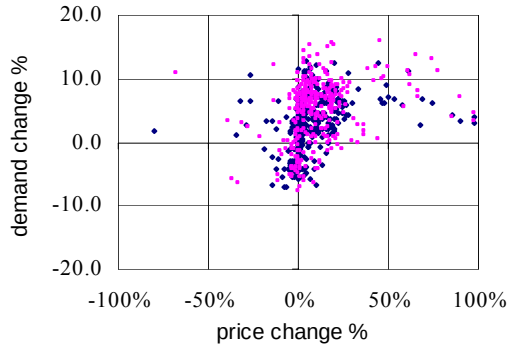


Figure 20: Tasmania

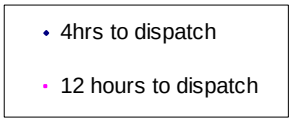
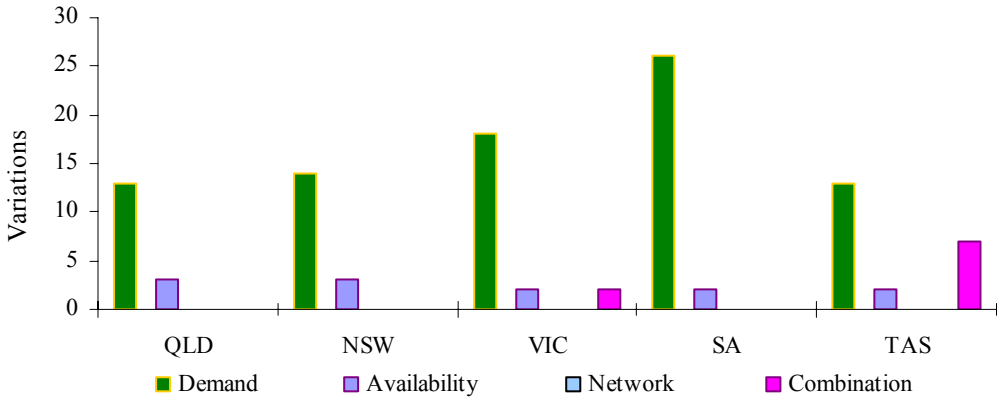


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

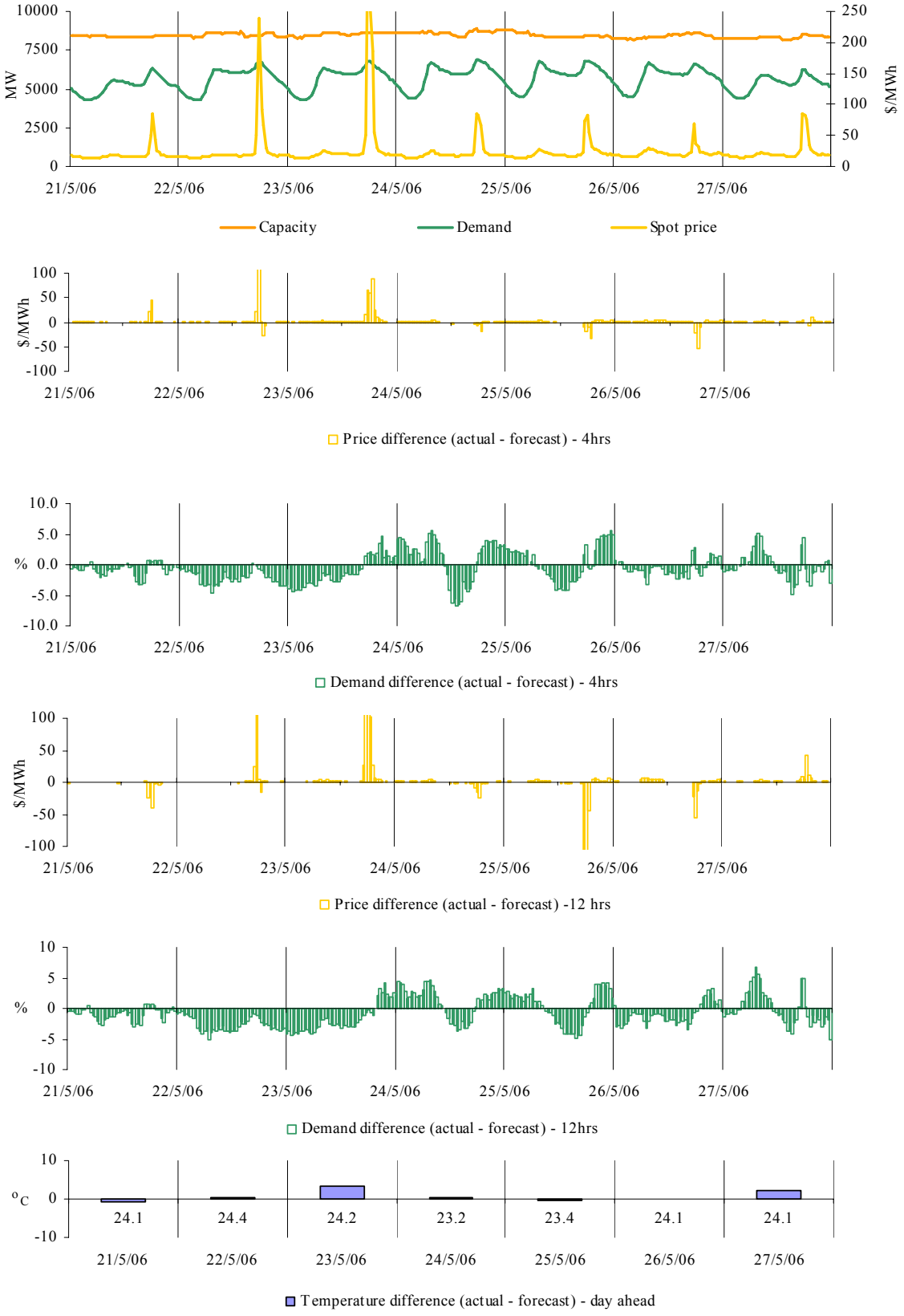
Figure 21: reasons for variations between forecast and actual prices



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 12 occasions where the spot price in Queensland was greater than three times the weekly average price of $25/MWh.

Sunday, 21 May

6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	83.80	40.19	83.58
Demand (MW)	6288	6256	6259
Available capacity (MW)	8392	8392	8392

Conditions at the time saw demand and available capacity close to forecast four hours ahead. Prices were aligned across the market and close to forecast 12 hours ahead.

There was no significant rebidding.

Monday, 22 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	237.56	93.58	85.33
Demand (MW)	6816	6858	6888
Available capacity (MW)	8449	8762	8797
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	92.77	90.86	87.83
Demand (MW)	6715	6773	6830
Available capacity (MW)	8456	8773	8798

Conditions at the time saw demand close to forecast four hours ahead. Available capacity was 320 MW lower than forecast four hours ahead. Prices were aligned across the market and close to forecast at 6.30 pm.

At 2.09 pm, unit one at Stanwell tripped, reducing its available capacity by 360 MW. Most of this capacity was priced below $17/MWh during this period.

There was no other significant rebidding.

Tuesday, 23 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	267.04	202.00	99.58
Demand (MW)	6784	6660	6829
Available capacity (MW)	8614	8704	8614
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	260.47	202.00	99.07
Demand (MW)	6803	6655	6820
Available capacity (MW)	8615	8705	8615
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	186.87	98.87	85.02
Demand (MW)	6649	6538	6703
Available capacity (MW)	8616	8716	8616

Conditions at the time saw demand around 120 MW higher than forecast four hours ahead. Prices were aligned across the market. Nationally, demand was around 900 MW higher than forecast four hours ahead.

At 1.08 pm, Stanwell Corp. shifted 200 MW of capacity at Stanwell from prices of less than $16/MWh to above $250/MWh for the evening peak. The rebid reason given was "Sensitivities have changed, optimise dispatch".

There was no other significant rebidding.

Wednesday, 24 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	84.85	91.39	94.60
Demand (MW)	6835	6802	6815
Available capacity (MW)	8869	8806	8711
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	83.55	89.05	100.00
Demand (MW)	6895	6769	6783
Available capacity (MW)	8708	8862	8712

Conditions at the time saw demand and available capacity close to forecast four hours ahead. Prices were close to forecast and aligned across the market.

There was no significant rebidding.

Thursday, 25 May

6:30 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	83.59	93.56	202.00
Demand (MW)	6805	6836	6848
Available capacity (MW)	8448	8438	8433

Conditions at the time saw demand and available capacity close to forecast four hours ahead. Prices were close to forecast four hours ahead and aligned across the market.

There was no significant rebidding.

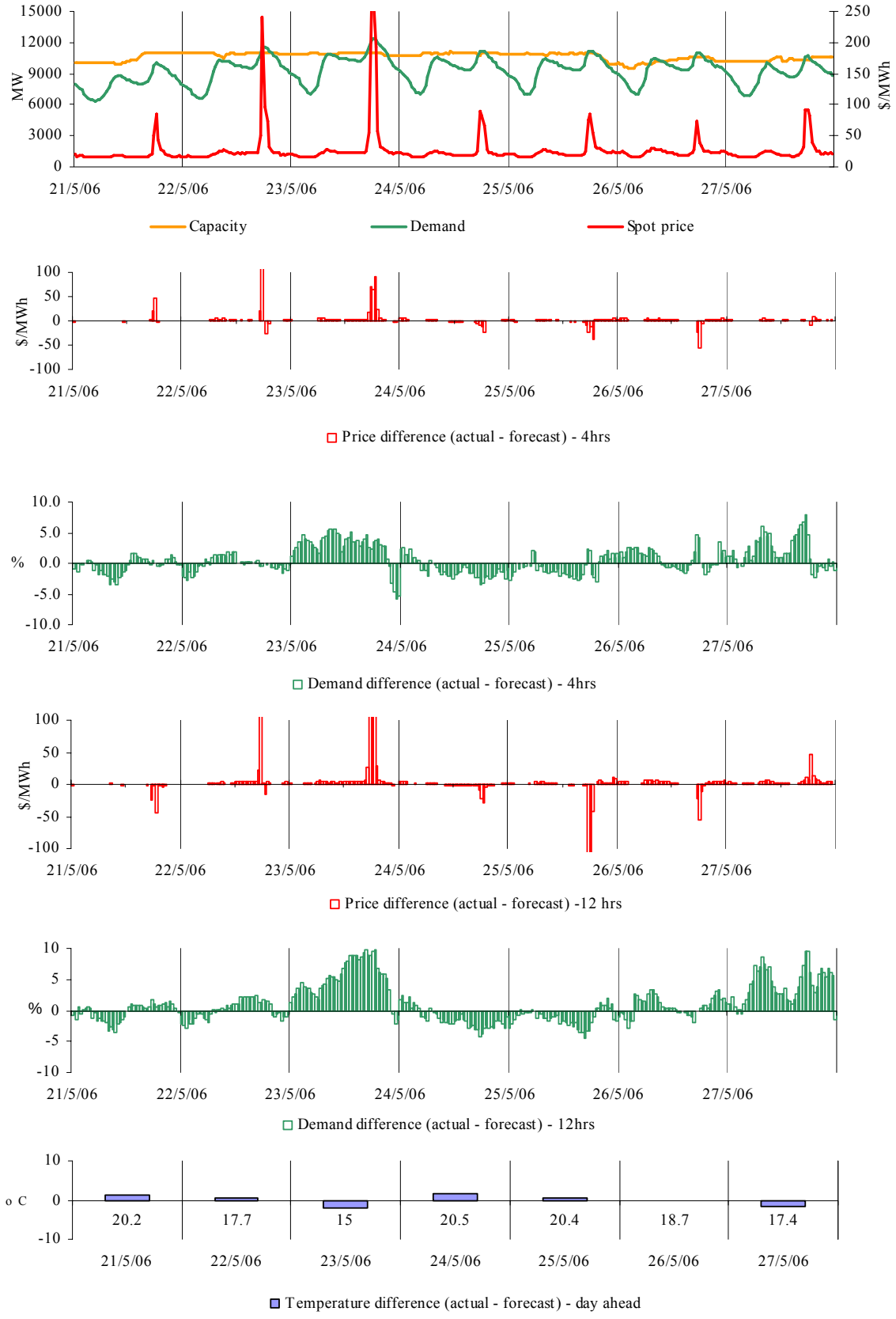
Saturday, 27 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	83.97	85.08	75.82
Demand (MW)	6208	5936	5899
Available capacity (MW)	8506	8248	8252
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	83.66	85.72	79.96
Demand (MW)	6202	6247	6189
Available capacity (MW)	8507	8249	8253
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	76.35	83.97	33.61
Demand (MW)	6100	6275	6186
Available capacity (MW)	8508	8250	8254

Conditions at the time saw demand close to forecast four hours ahead. Prices were close to forecast and aligned across the market.

There was no significant rebidding.

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



There were nine occasions where the spot price in New South Wales was greater than three times the weekly average price of $28/MWh.

Sunday, 21 May

6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	85.90	38.77	88.86
Demand (MW)	10030	10019	9924
Available capacity (MW)	11028	11028	10328

Conditions at the time saw demand and available capacity close to forecast four hours ahead. Prices were aligned across the market.

At 8.36 am, Delta Electricity committed 700 MW of capacity at Mount Piper. Most of this capacity was priced below $20/MWh. The rebid reason given was "Return to service". Price forecasts across the market reduced by around $40/MWh over the evening peak following this rebid. Nationally, demand was around 350 MW higher than forecast four hours ahead resulting in prices higher than forecast.

There was no available capacity in New South Wales priced between $50/MWh and $5000/MWh.

There was no significant rebidding.

Monday, 22 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	241.28	97.70	90.28
Demand (MW)	11546	11603	11389
Available capacity (MW)	11050	11060	11060
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	97.26	97.14	94.43
Demand (MW)	11605	11608	11411
Available capacity (MW)	11040	11060	11060

Conditions at the time saw demand and available capacity close to forecast four hours ahead. Prices were close to forecast and aligned across the market at 6.30 pm. Nationally, demand was around 550 MW higher than forecast four hours ahead.

There was no significant rebidding.

Tuesday, 23 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	274.36	202.76	97.21
Demand (MW)	12257	11959	11174
Available capacity (MW)	11041	11041	11040
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	272.41	207.30	97.16
Demand (MW)	12340	11912	11175
Available capacity (MW)	11041	11041	11040
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	191.93	100.09	84.91
Demand (MW)	12216	11774	11027
Available capacity (MW)	11041	11041	11040

Conditions at the time saw demand up to 440 MW higher than forecast four hours ahead. Prices were aligned across the market. Nationally, demand was around 900 MW higher than forecast four hours ahead.

There was no significant rebidding.

Wednesday, 24 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	88.44	96.16	98.09
Demand (MW)	11109	11503	11585
Available capacity (MW)	10787	10970	11037

Conditions at the time saw demand 400 MW lower than forecast four hours ahead. Prices were close to forecast and aligned across the market.

At 5.13 pm Eraring Energy reduced the available capacity across Eraring unit 1 and 2 by 180 MW. Around 120 MW of this capacity was priced below $30/MWh. The rebid reason given was “High backend temperatures”.

There was no other significant rebidding.

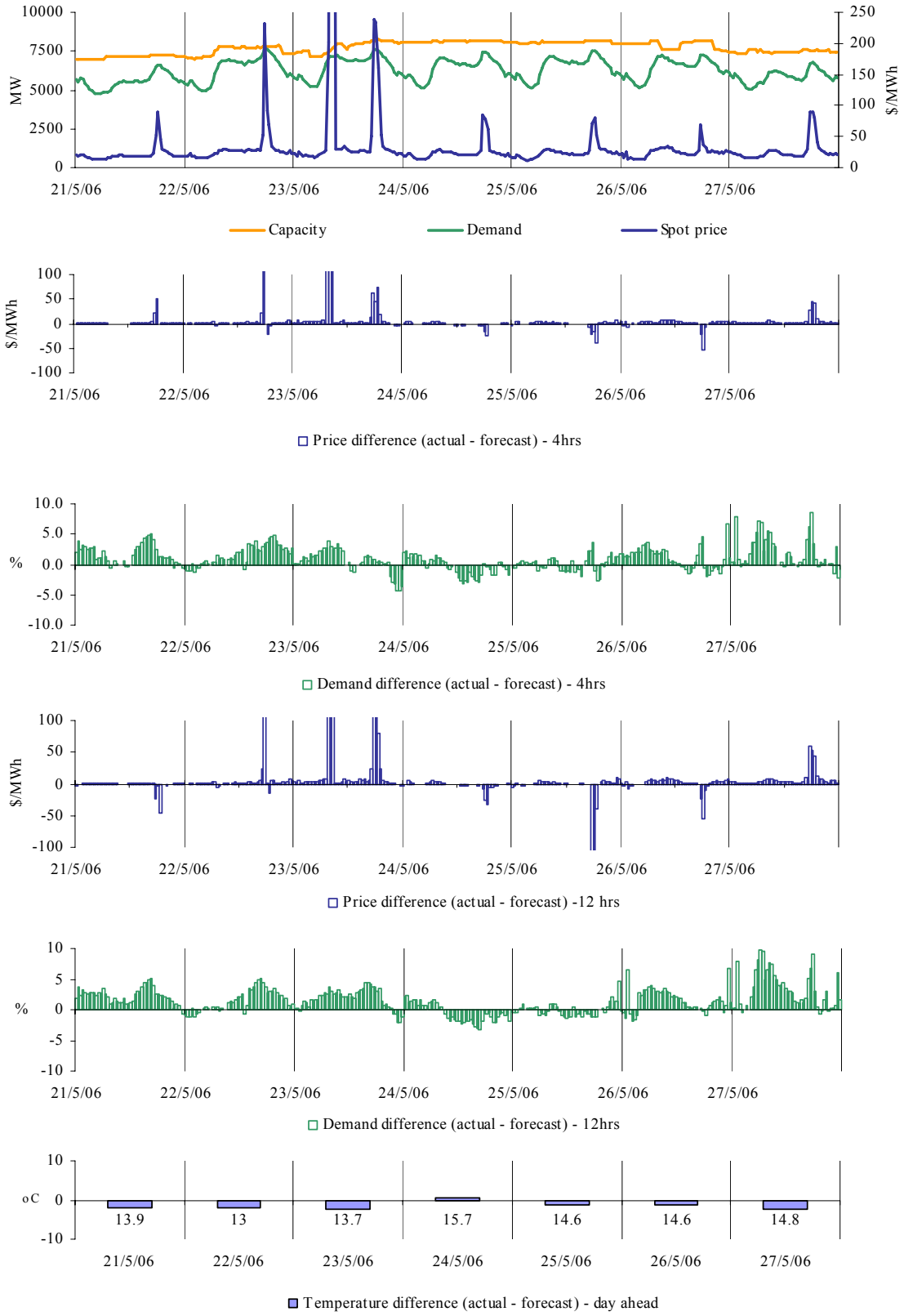
Saturday, 27 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	92.65	92.77	81.07
Demand (MW)	10626	10139	9602
Available capacity (MW)	10389	10544	10544
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	92.44	93.23	86.13
Demand (MW)	10690	10607	10046
Available capacity (MW)	10389	10399	10544

Conditions at the time saw demand, at 6 pm, 500 MW higher than forecast four hours ahead. Available capacity was close to forecast four hours ahead. Prices were close to forecast and aligned across the market.

There was no significant rebidding.

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



There were seven occasions where the spot price in Victoria was greater than three times the weekly average price of $40/MWh.

Monday, 22 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	231.97	92.40	86.00
Demand (MW)	7673	7406	7391
Available capacity (MW)	7788	7749	8139

Conditions at the time saw demand 270 MW higher than forecast four hours ahead. Prices were aligned across the market.

There was no significant rebidding.

Tuesday, 23 May

8:00 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	202.56	27.94	26.17
Demand (MW)	7059	6784	6794
Available capacity (MW)	7476	7638	7658
8:30 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1559.80	29.31	27.80
Demand (MW)	7188	6974	6964
Available capacity (MW)	7546	7503	7658
9:00 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1554.27	26.66	27.52
Demand (MW)	7112	6944	6938
Available capacity (MW)	7675	7888	7658

Extreme conditions in Tasmania were reflected into Victoria and South Australia from around 8 am. Counter price flows as high as 350 MW were forced south from Victoria into Tasmania as a result of the direction to Basslink.

There was around 350 MW of capacity in Victoria priced between $50/MWh and $5000/MWh. Most of this capacity was offline fast start plant. The Victoria to Snowy interconnector was operating at its limit of 900 MW.

TRU Energy reduced the available capacity at Yallourn unit 1 over the morning as a result of delays in the units return to service following a three day outage. After a number of false starts, which began the previous evening, the unit returned to full availability around 6 pm. The rebid reasons given were “Delayed RTS::Capacity change” and “Plant conditions::Adjust unit comm”.

There was no other significant rebidding.

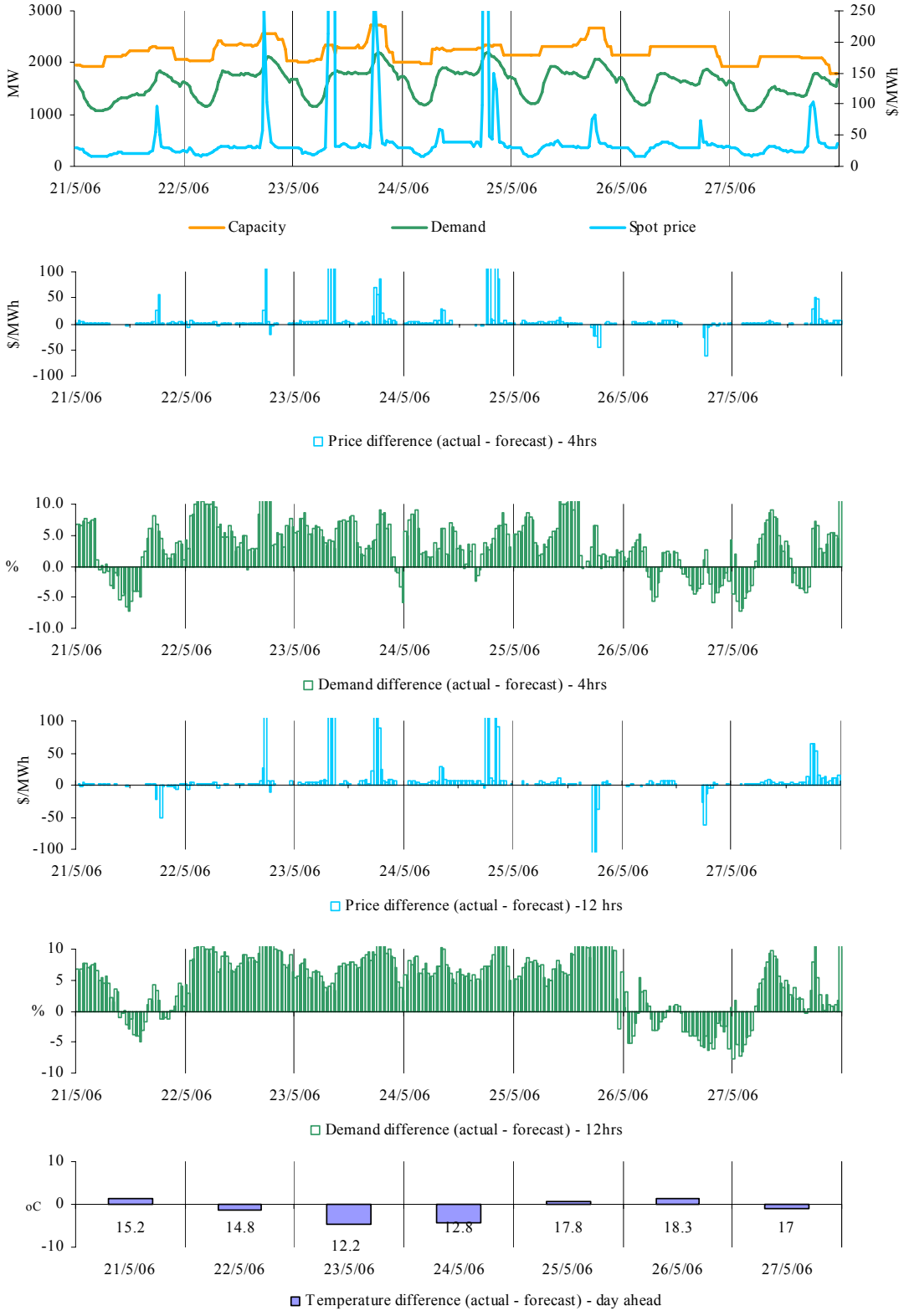
Tuesday, 23 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	238.47	177.22	91.23
Demand (MW)	7625	7558	7344
Available capacity (MW)	8151	8144	8124
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	233.10	187.49	92.70
Demand (MW)	7640	7607	7401
Available capacity (MW)	8207	8154	8134
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	161.69	88.08	81.49
Demand (MW)	7490	7444	7231
Available capacity (MW)	8225	8154	8134

Conditions at the time saw demand close to forecast four hours ahead with prices aligned across the market. Nationally, demand was around 900 MW higher than forecast four hours ahead.

There was no significant rebidding.

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



There were nine occasions where the spot price in South Australia was greater than three times the weekly average price of $53/MWh.

Monday, 22 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	249.72	95.90	87.01
Demand (MW)	1955	1736	1684
Available capacity (MW)	2569	2339	2379

Conditions at the time saw demand almost 200 MW higher than that forecast four hours ahead. Prices were aligned across the market.

There was no significant rebidding.

Tuesday, 23 May

8:00 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	212.60	30.70	30.16
Demand (MW)	1641	1570	1576
Available capacity (MW)	2330	2330	2330
8:30 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1668.47	31.37	30.70
Demand (MW)	1729	1659	1651
Available capacity (MW)	2330	2330	2330
9:00 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1654.02	30.70	30.70
Demand (MW)	1778	1726	1718
Available capacity (MW)	2335	2330	2330

Extreme conditions in Tasmania were reflected into Victoria and South Australia from around 8 am. Counter price flows as high as 350 MW were forced south from Victoria into Tasmania.

At times, there was no capacity in South Australia priced between $30/MWh and $9000/MWh.

There was no significant rebidding.

Tuesday, 23 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	255.59	184.65	96.58
Demand (MW)	2003	1915	1820
Available capacity (MW)	2731	2487	2397
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	258.61	202.50	100.67
Demand (MW)	2149	2001	1910
Available capacity (MW)	2731	2457	2397

7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	179.22	92.15	89.38
Demand (MW)	2196	1998	1935
Available capacity (MW)	2731	2691	2397

Conditions at the time saw demand up to 200 MW higher than forecast with prices aligned across the market. Nationally, demand was around 900 MW higher than forecast four hours ahead.

There was no significant rebidding.

Wednesday, 24 May

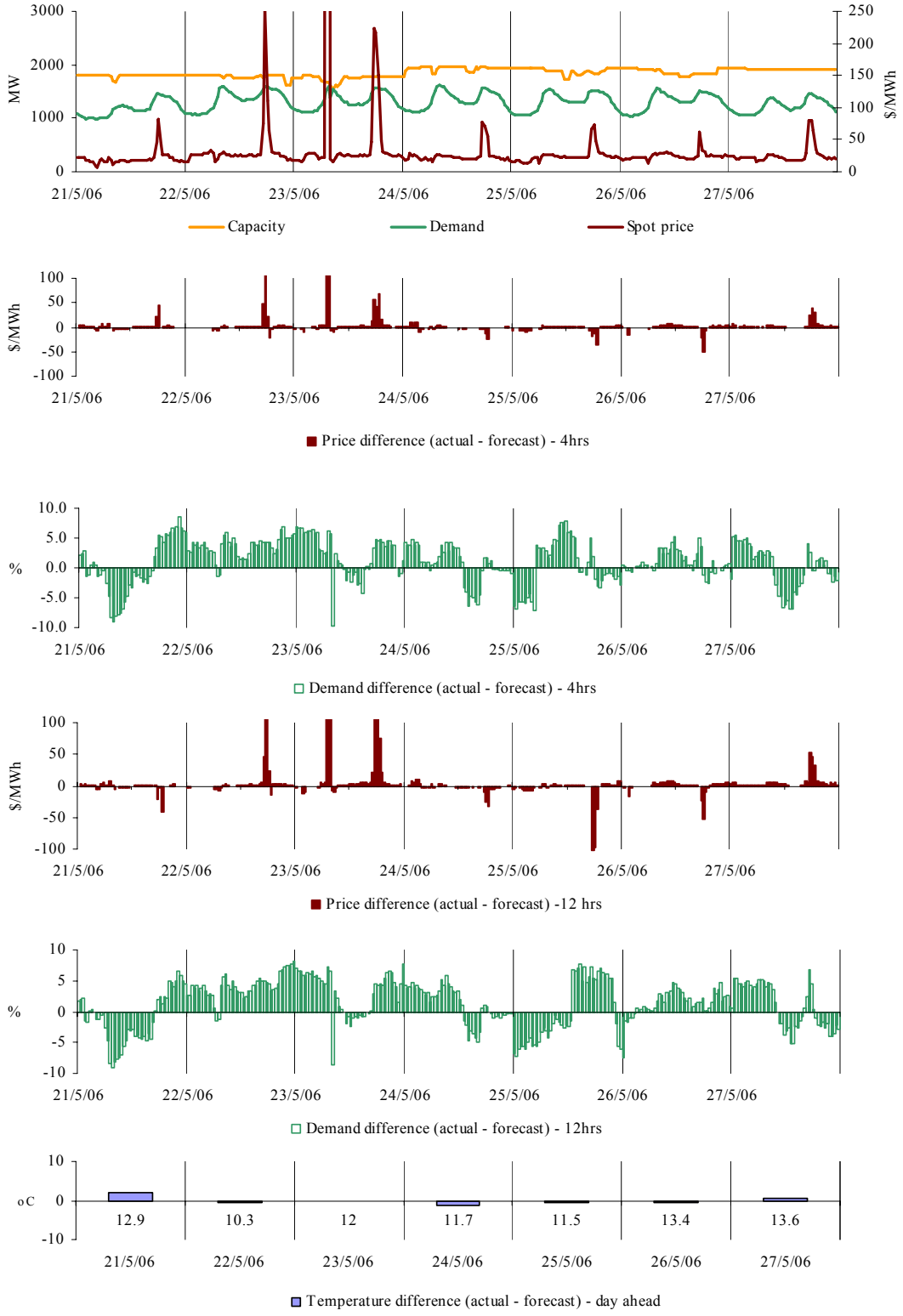
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1122.29	107.16	117.05
Demand (MW)	2168	2099	2013
Available capacity (MW)	2328	2331	2362
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	319.41	104.16	107.23
Demand (MW)	2188	2132	2030
Available capacity (MW)	2348	2285	2362

Conditions at the time saw demand slightly higher than forecast four hours ahead. Planned network outages in South Australia and Victoria reduced the combined import capability across the Heywood and Murraylink interconnectors to as low as 400 MW which was close to forecast.

At 6.18 pm, effective from 6.25 pm, International Power shifted a total 76 MW of capacity at Pelican Point from prices of $30/MWh to $999/MWh and $4999/MWh. The rebid reason given was “Change in price forecast”. The 5-minute price increased to $4999/MWh for one 5-minute dispatch interval at the same time. This price was set by Pelican Point.

There was no other significant rebidding.

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



There were 5 occasions where the spot price in Tasmania was greater than three times the weekly average price of $58/MWh.

Monday, 22 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	253.47	86.73	80.28
Demand (MW)	1595	1525	1518
Available capacity (MW)	1790	1795	1795

Conditions at the time saw demand 70 MW higher than forecast four hours ahead. Prices were aligned across the market.

There was no significant rebidding.

Tuesday, 23 May

7:30 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1753.89	24.40	19.97
Demand (MW)	1500	1409	1391
Available capacity (MW)	1671	1785	1785
8:00 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	6509.09	26.64	25.24
Demand (MW)	1593	1501	1489
Available capacity (MW)	1671	1785	1785

In accordance with clause 3.13.7 of the Rules, the AER will prepare a report, detailing the circumstances of this event.

Tuesday, 23 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	222.35	164.56	84.71
Demand (MW)	1558	1486	1489
Available capacity (MW)	1785	1785	1785
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	217.42	174.56	86.31
Demand (MW)	1566	1494	1499
Available capacity (MW)	1785	1785	1785

Conditions at the time saw demand slightly higher than forecast four hours ahead. Prices were aligned across the market. Nationally, demand was around 900 MW higher than forecast four hours ahead.

There was no significant rebidding.

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

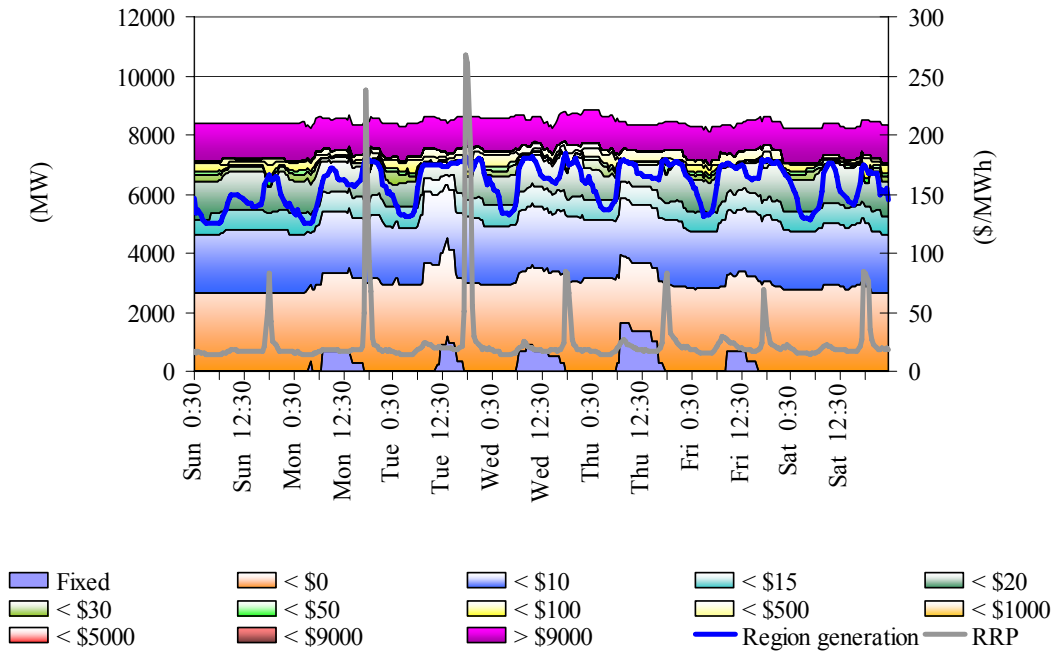


Figure 53: New South Wales closing bid prices, dispatched generation and spot price

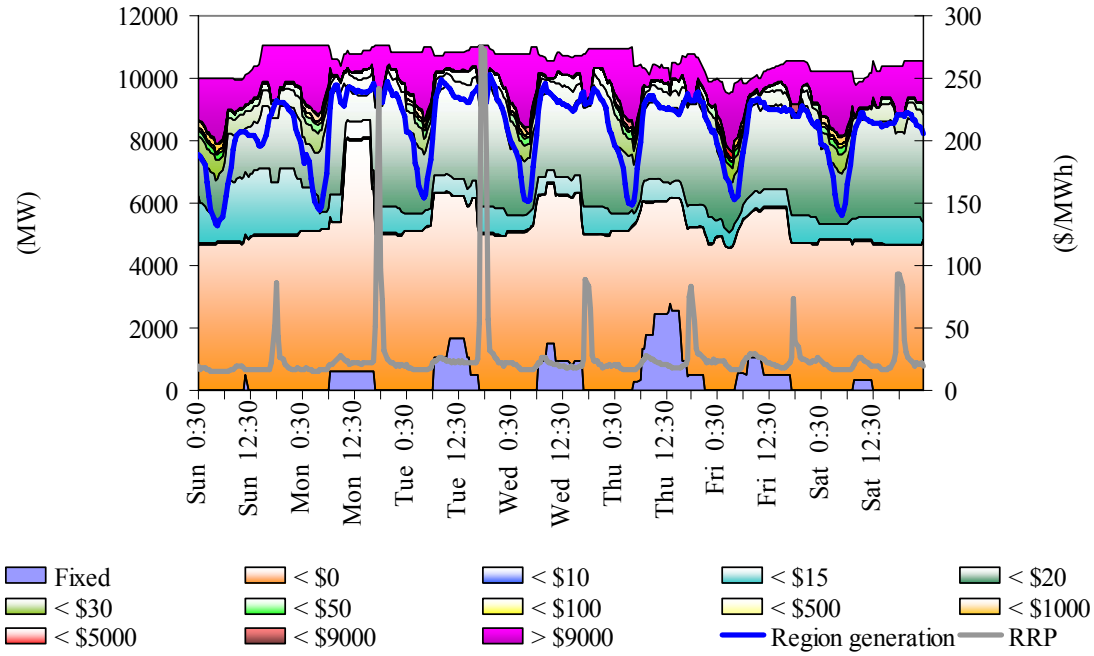


Figure 54: Victoria closing bid prices, dispatched generation and spot price

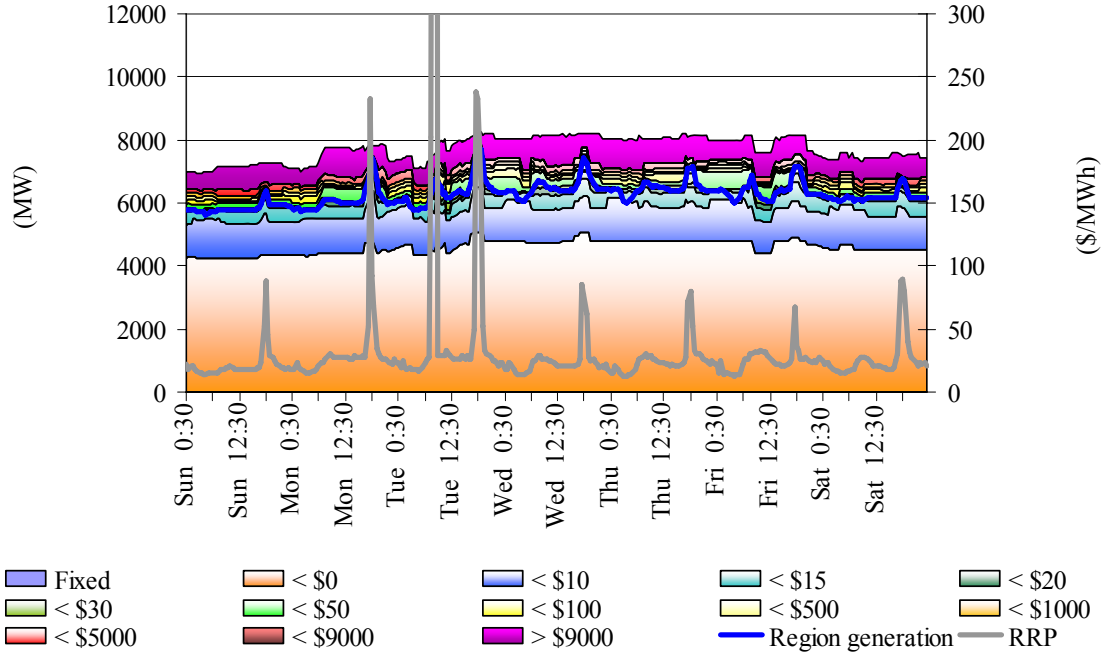


Figure 55: South Australia closing bid prices, dispatched generation and spot price

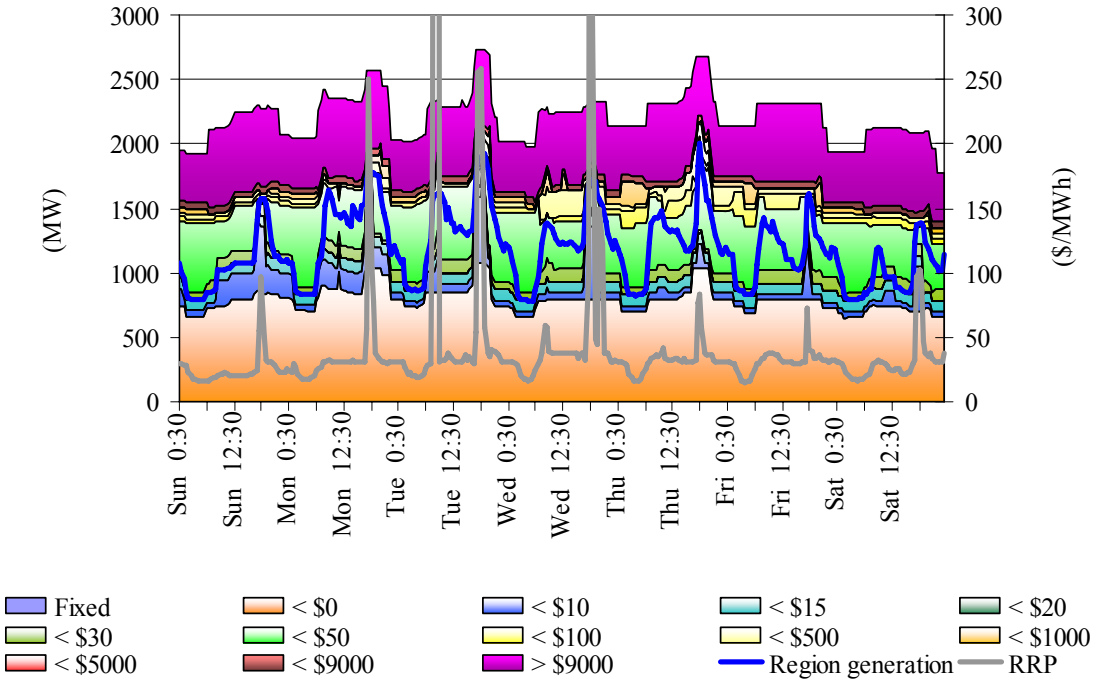
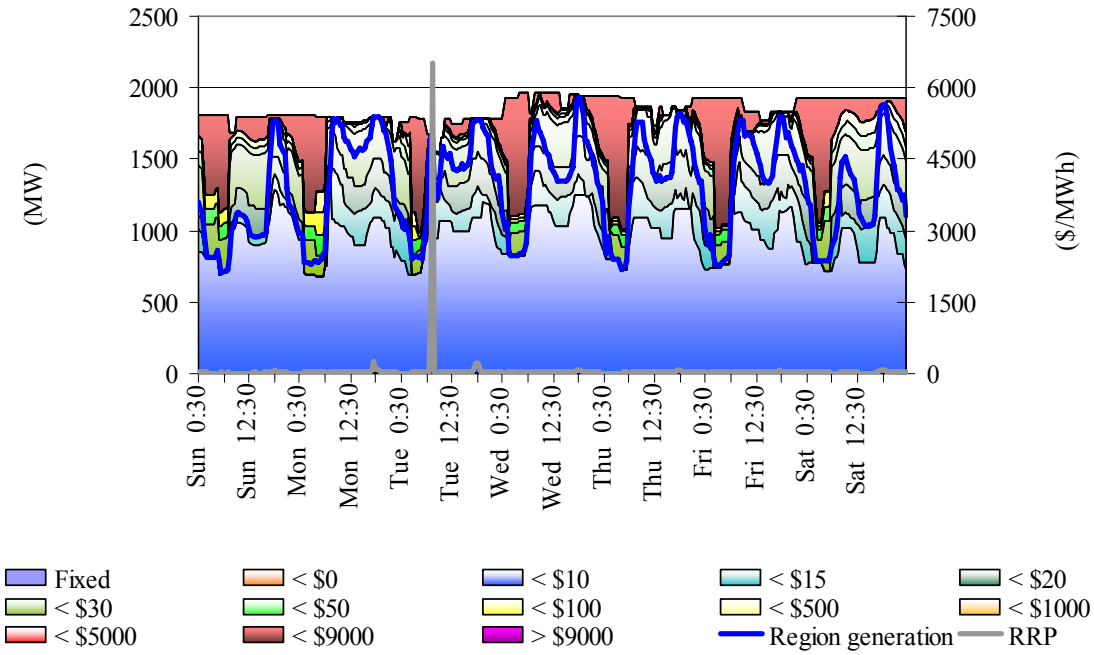


Figure 56: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $155 000 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	1.11	0.18	0.95	1.91	0.14	0.10	0.21	0.85
Previous week	0.84	0.19	0.90	0.84	0.14	1.57	6.00	0.51
Last quarter	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	42	7	54	35	0.4	0.1	3	13
% of energy market	0.03%	0.01%	0.04%	0.03%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was $659 000 or 5 per cent of the total turnover in the energy market in Tasmania. At times on Tuesday the requirements for raise regulation and some of the raise contingency services were not met, leading to $10 000/MW prices for those services.

On Saturday morning, a spike in the requirement for lower 6 second services in Tasmania occurred as BassLink flows changed from north to south. This increase in the requirement, from 20 MW to 95 MW, saw the price for this service increase to $10 000/MW for 3 dispatch intervals. Figure 58 summarises the prices and costs for the eight frequency control ancillary services for Tasmania.

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	8.27	2.26	21.53	2.02	41.48	0.38	1.34	0.61
Previous week	2.27	1.14	2.23	0.73	3.51	2.59	4.69	0.38
Last quarter	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost ($1000s)	47	18	287	11	256	9	27	4
% of energy market	0.37%	0.14%	2.28%	0.09%	2.04%	0.07%	0.22%	0.03%

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

Figure 59: daily frequency control ancillary service costs

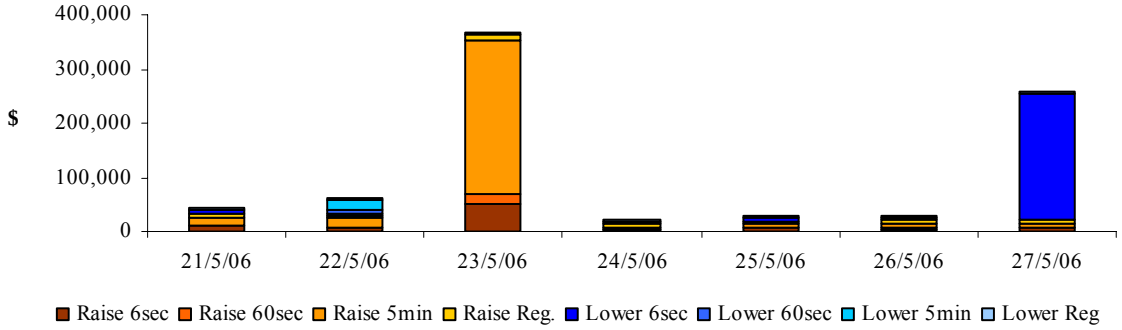
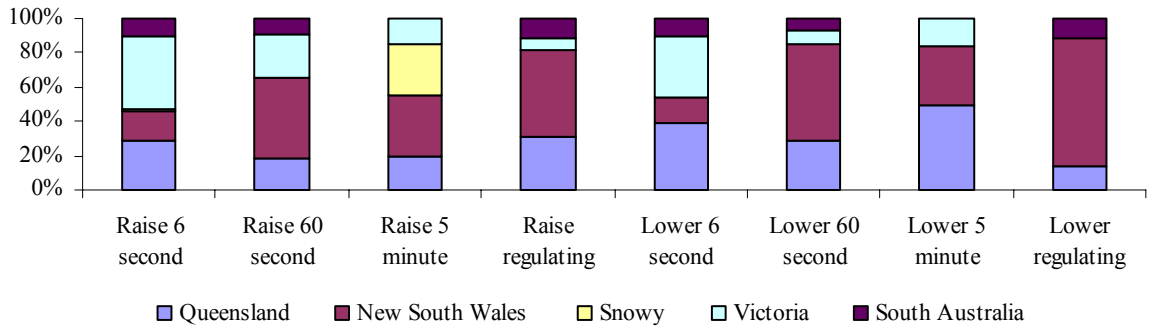


Figure 60 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

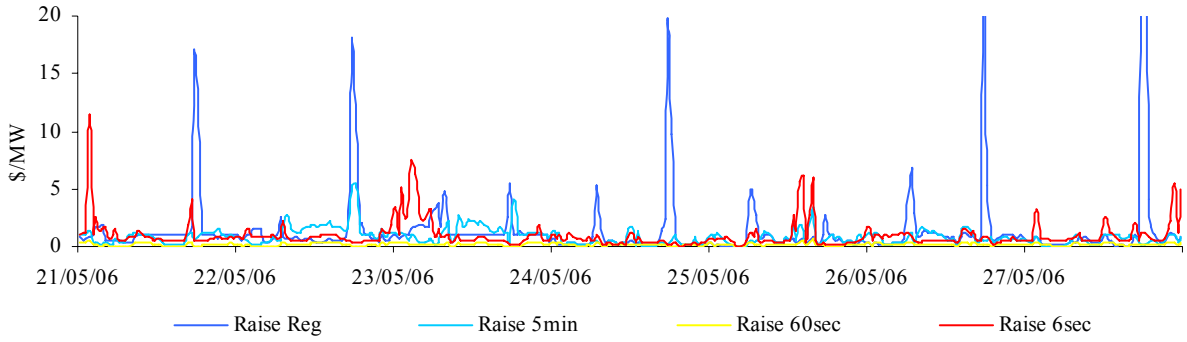


Figure 61A: prices for raise services - Tasmania

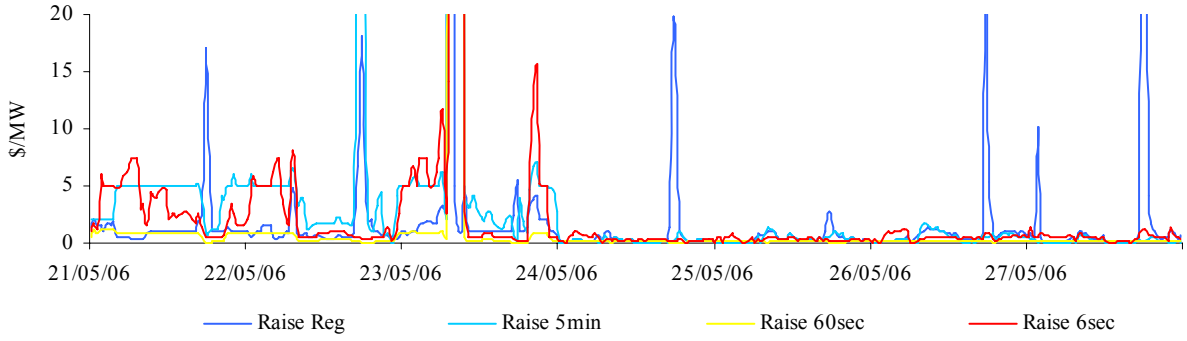


Figure 62: prices for lower services

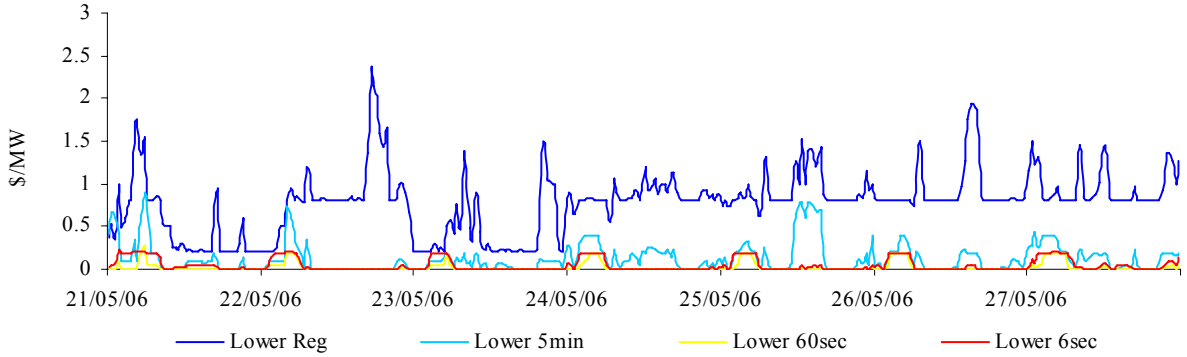
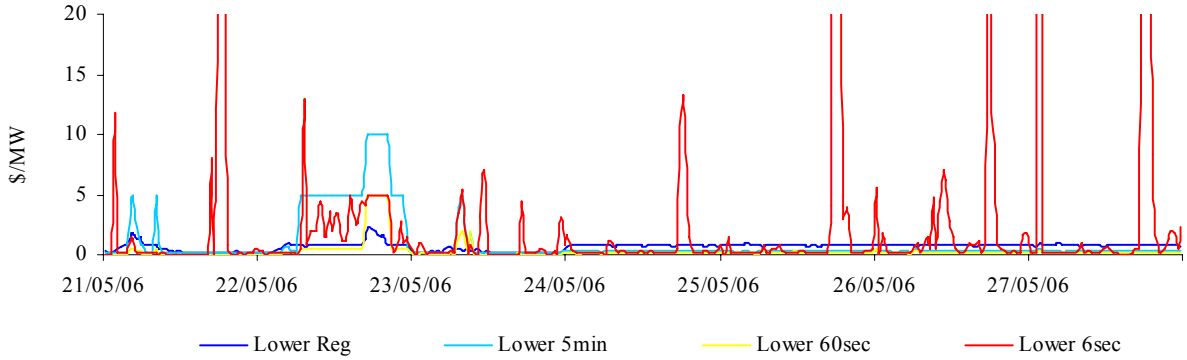


Figure 62A: prices for lower services - Tasmania



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

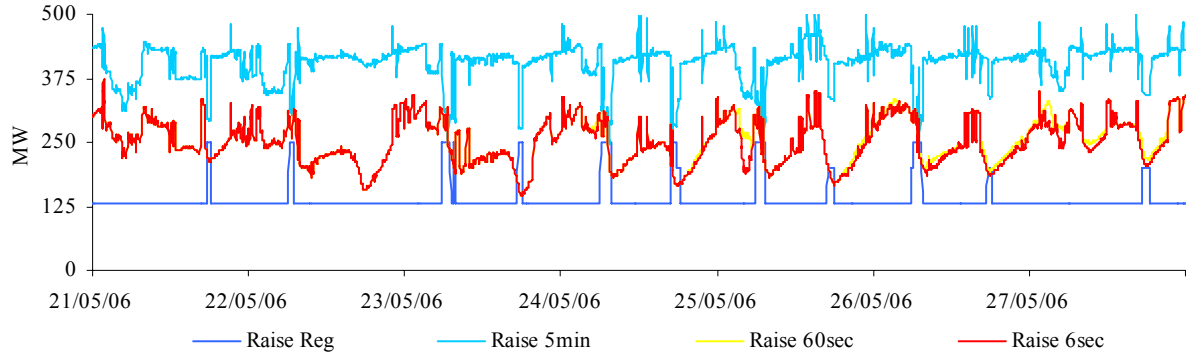


Figure 63A: raise requirements - Tasmania

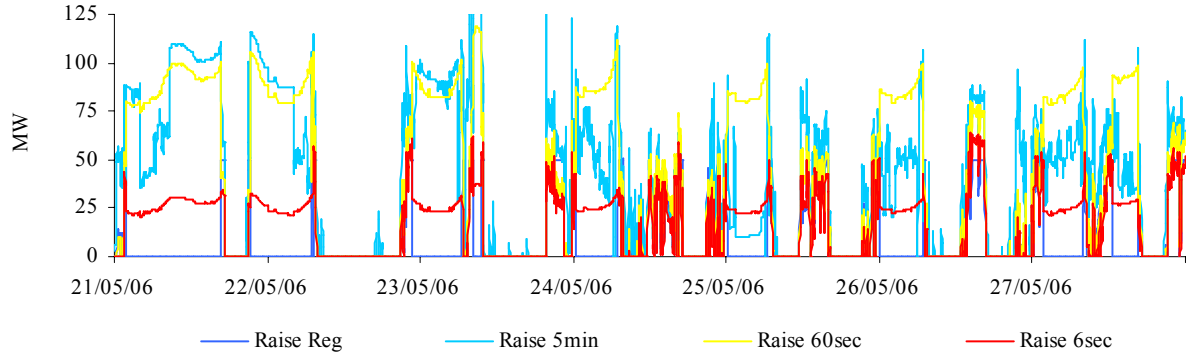


Figure 64: lower requirements

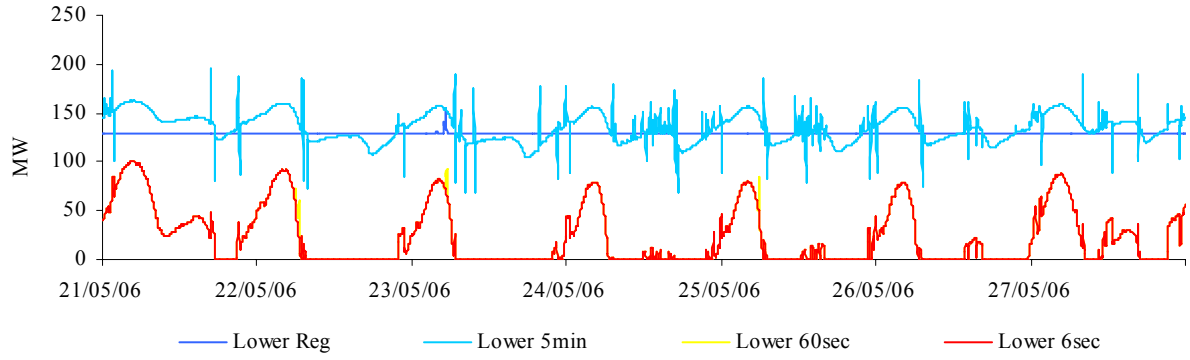
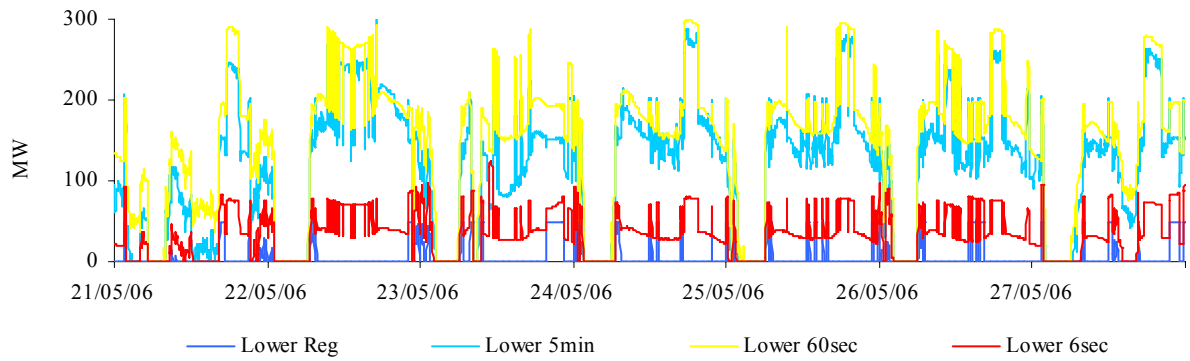


Figure 64A: lower requirements - Tasmania



Australian Energy Regulator
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