Market analysis

AUSTRALIAN ENERGY REGULATOR

9 JULY – 15 JULY 2006

Spot prices for the week averaged between $26/MWh in Queensland and $52/MWh in South Australia. These prices were consistent with the previous week.

Turnover in the energy market was $167 million. The total cost of ancillary services for the week was $558 000, or 0.3 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 58, or a fifth of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 12 per cent of all trading intervals across the market. These variations were most frequent in South Australia, occurring in around a quarter of all trading intervals.

Energy prices

Figure 1 sets out the 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.

Figure 1: national demand and spot prices

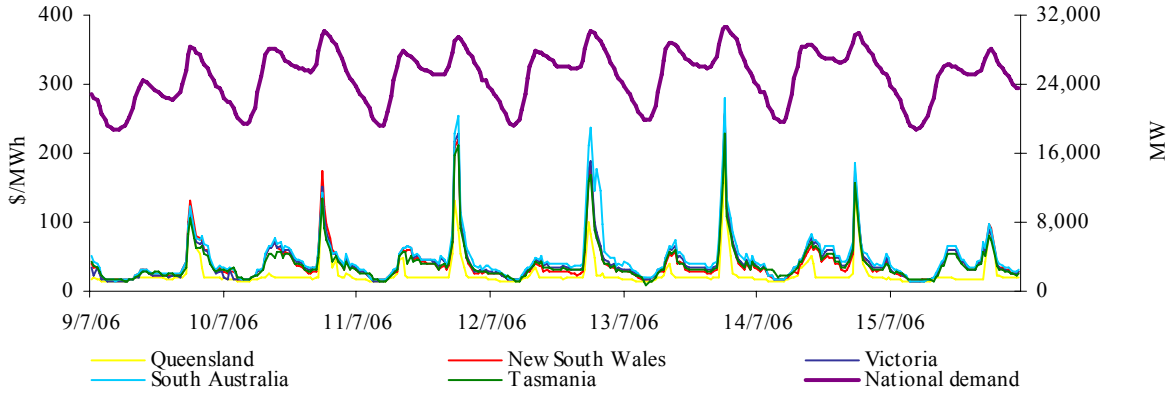


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	26	43	45	52	42
Previous week	24	39	39	49	45
Same quarter last year	22	29	30	34	100
Financial year 2005 - 06	31	43	36	44	59
% change from previous week*	▲8%	▲10%	▲16%	▲5%	▼7%
% change from same quarter last year**	▲21%	▲50%	▲50%	▲52%	-
% change from 2004 - 05	▲3%	▼5%	▲25%	▲12%	-

*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.

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

Figure 3: Queensland

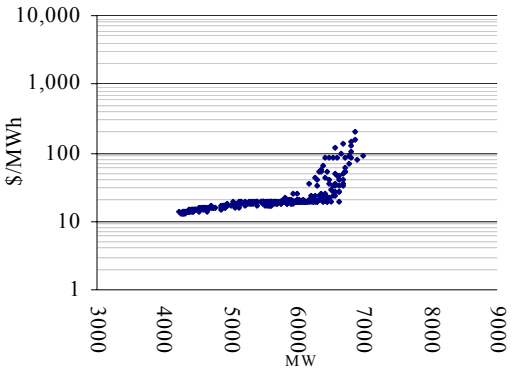


Figure 4: New South Wales

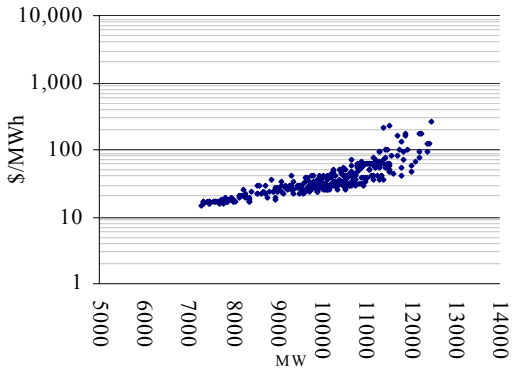


Figure 5: Victoria

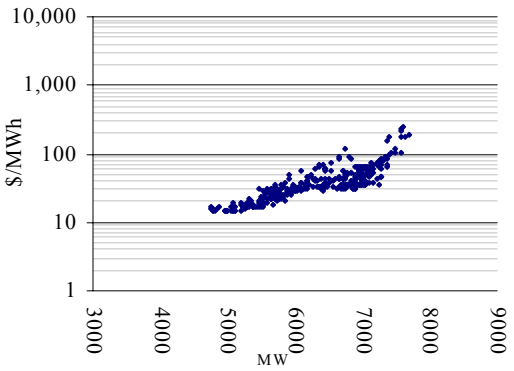


Figure 6: South Australia

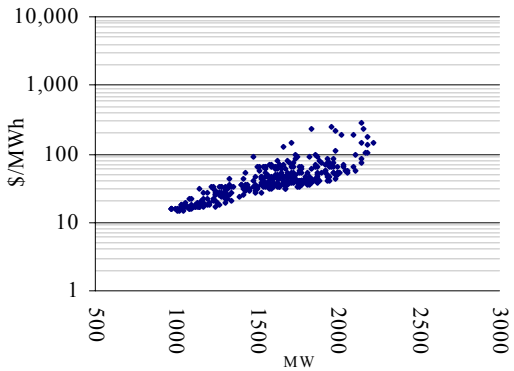
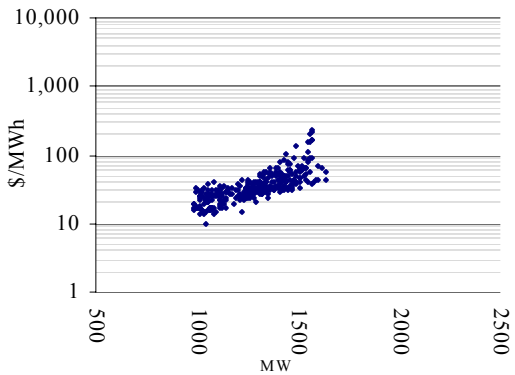


Figure 7: Tasmania



Maximum spot prices for the week were $203/MWh in Queensland, $258/MWh in New South Wales, $254/MWh in Victoria, $281/MWh in South Australia and $228/MWh in Tasmania, all occurring on Thursday during the evening peak. Figure 8 compares the weekly price volatility index with the averages for the previous week and the same quarter last year.

Figure 8: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	1.43	1.02	0.86	0.97	0.82
Previous week	0.66	1.02	0.90	0.96	0.84
Same quarter last year	0.64	0.86	0.86	0.83	0.81

A definition of the price volatility index is available on the AER website.
http://www.aer.gov.au/content/index.phtml/tag/MarketSnapshotLongTermAnalysis

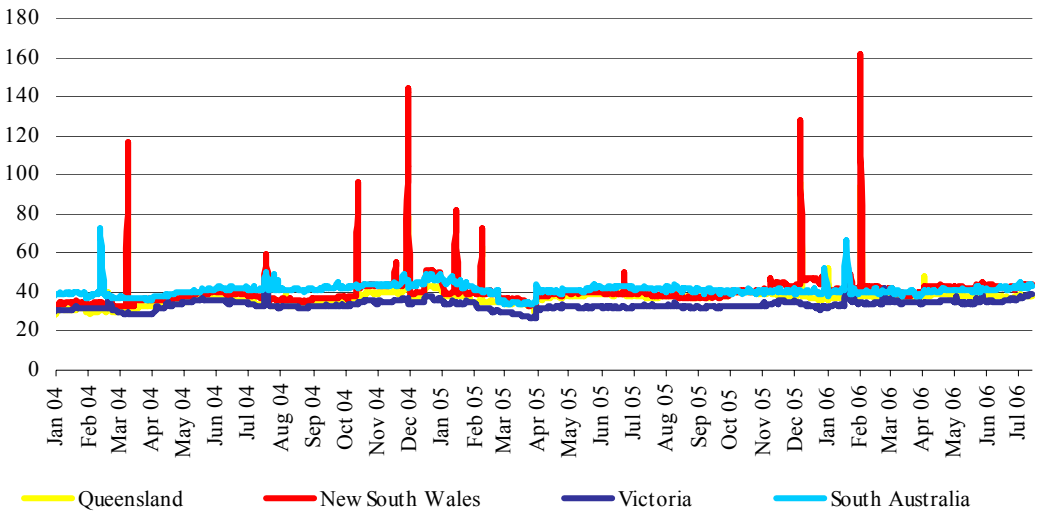
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2004.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	37.90	37.71	37.73	38.20	38.32
New South Wales	43.87	43.27	43.38	43.69	43.75
Victoria	37.91	38.26	38.55	38.80	38.43
South Australia	41.71	43.05	43.83	43.56	42.94

* 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

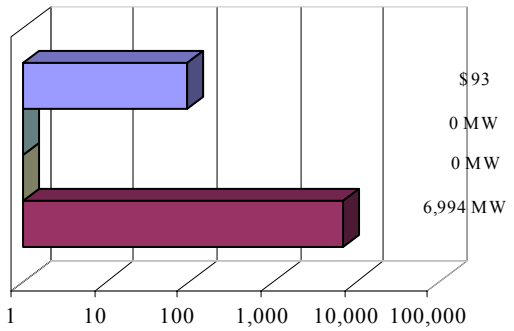


Figure 12: New South Wales

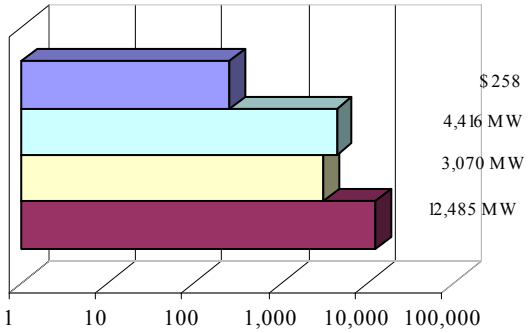


Figure 13: Victoria

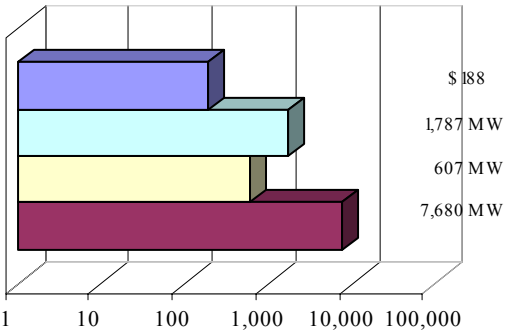


Figure 14: South Australia

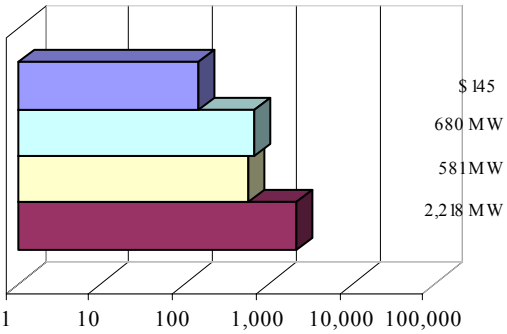
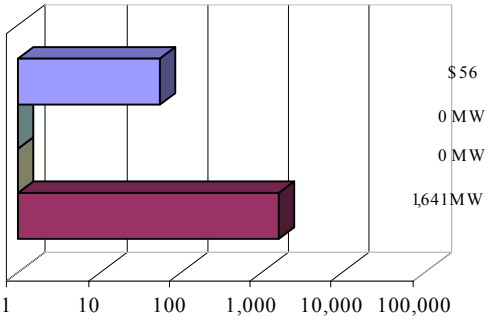


Figure 15: Tasmania



Price variations

There were 58 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

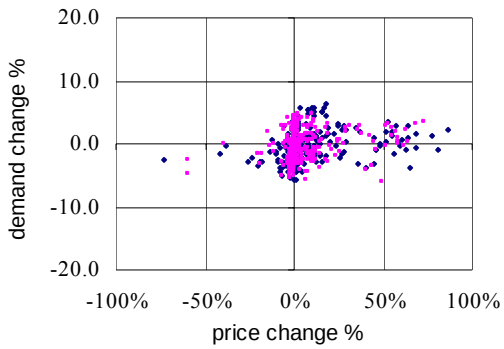


Figure 17: New South Wales

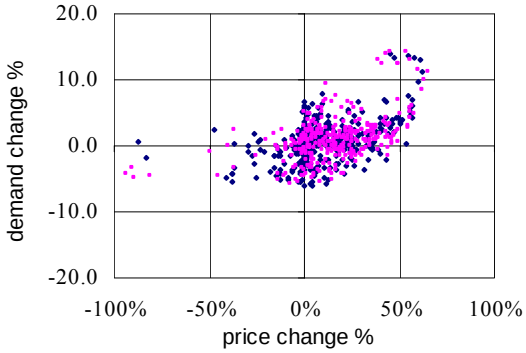


Figure 18: Victoria

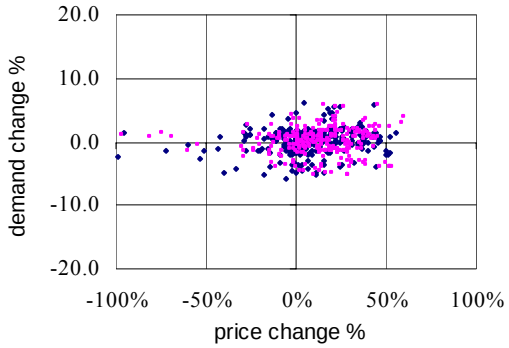


Figure 19: South Australia

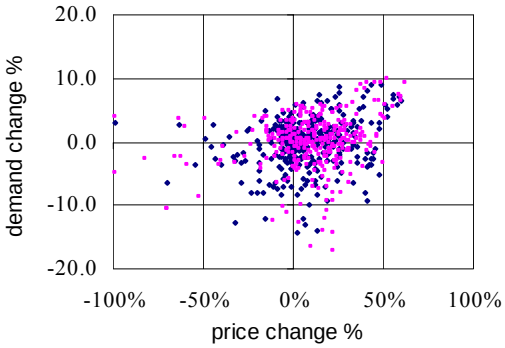
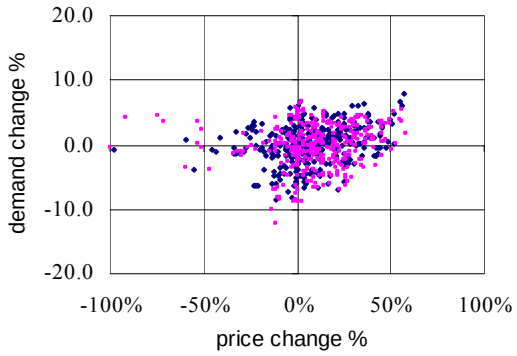


Figure 20: Tasmania



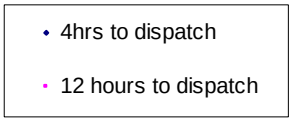
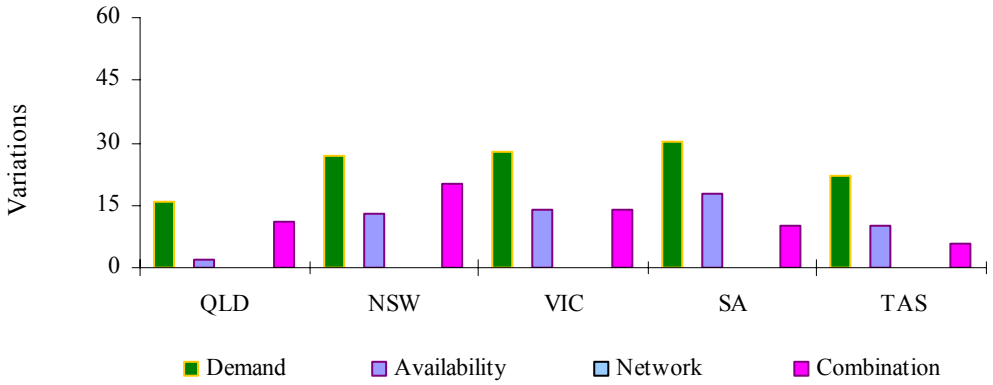


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

Figure 21: reasons for variations between forecast and actual prices



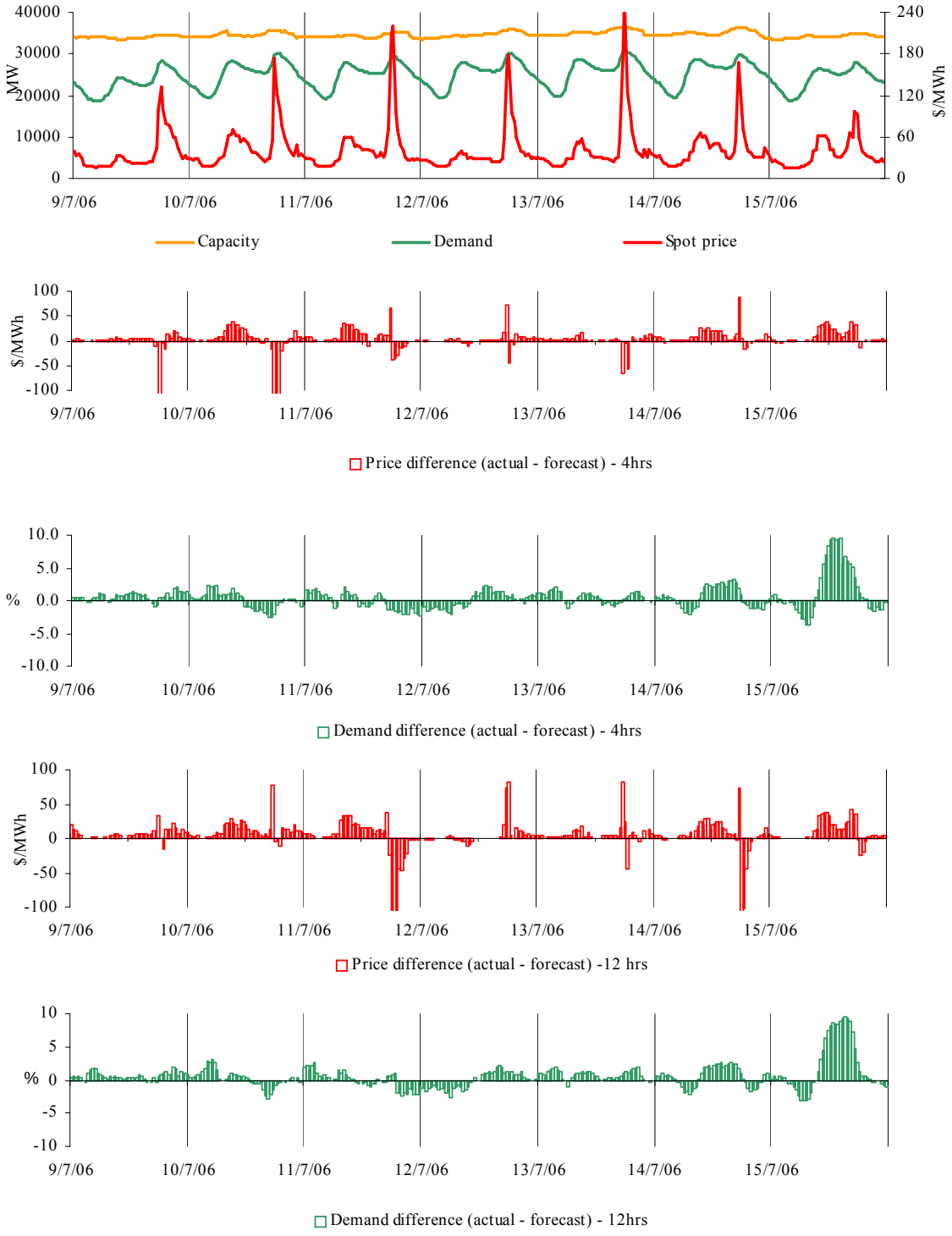
Price and demand

Figures 22 – 56 set out details of spot prices and demand on a national and regional basis. They include the actual spot price, actual demand and variation from forecasts made 4 and 12 hours ahead of dispatch.

The regions within the national market are regularly aligned, with conditions in one region reflected across all others. The national market outcomes section highlights pricing events that occurred when spot prices were generally aligned across all regions of the national electricity market – the New South Wales spot price has been used to represent a pseudo national price under these conditions.

On a regional basis the differences between the maximum temperature and the temperature forecast at around 6.00 pm the day before are also included. In each section, the occurrences of all prices for the week greater than three times the average have been presented. The price forecast is compared to the demand and availability forecasts made 4 and 12 hours ahead, with significant changes to these forecasts explained.

Figures 22-26: National actual spot price, demand and forecast differences



There were nine occasions where spot prices were generally aligned nationally and the New South Wales price[1] was greater than three times the New South Wales weekly average price of $43/MWh. Queensland was separated from the rest of the market for some of the time but prices in Queensland followed the rest of the market.

Sunday, 9 July

6:30 pm	Actual	4 hr forecast	12 hr forecast
NSW price ($/MWh)	132.02	246.72	98.23
National demand (MW)	28268	28159	28100
Available capacity (MW)	34427	34540	34955

Conditions at the time saw national demand and price close to forecast.

At 6.58 am, TRUenergy's Yallourn unit three tripped, reducing available capacity from 380 MW to zero. The rebid reason given was "Plant conditions::Capacity limit". This capacity was priced at less than $10/MWh.

At 5.30 pm, an increase of the limit on flows south from Queensland saw an extra 100 MW exported to New South Wales. Prices across most the mainland were subsequently reduced.

There were no other significant rebidding.

Monday, 10 July

6:00 pm	Actual	4 hr forecast	12 hr forecast
NSW price ($/MWh)	173.71	318.88	96.96
National demand (MW)	29691	30325	30133
Available capacity (MW)	35580	36086	36258

Conditions at the time saw demand 600 MW and available capacity 500 MW lower than forecast four hours ahead.

From early morning International Power made a series of rebids reducing the available capacity at Hazelwood by more than 200 MW. All of this capacity was priced at less than $20/MWh. The rebid reasons included "recently advised plant conditions", "mill limit", firing plant limit" and "updating expected availability levels".

Over the course of the day Macquirie Generation reduced the available capacity at Liddell units one and four by a total of 405 MW. Delays in the return of unit one from a two month outage accounted for most of this reduction and was priced at less than zero. The rebid reasons related to revised starting times for unit one and fabric filter limits for unit two.

At 1.32 pm the commissioning of Braemar unit three saw its available capacity reduced from 154 MW to zero.

Between 5.40 pm and 5.55 pm TRU Energy shifted 390 MW of capacity at Torrens Island from prices above $290/MWh to below $60/MWh. The reason given was "Market conditions-gen response to PD".

[1] The New South Wales spot price has been used to represent a pseudo national price under these conditions.

There was no other significant rebidding.

Tuesday, 11 July

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
NSW price ($/MWh)	209.98	144.02	234.77
National demand (MW)	29100	29498	28904
Available capacity (MW)	34928	35513	35427
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
NSW price ($/MWh)	221.21	260.52	655.89
National demand (MW)	29482	29852	29266
Available capacity (MW)	35137	35555	35403

Conditions at the time saw price, demand and available capacity close to forecast.

A short notice network outage within Queensland constrained off as much as 250 MW of capacity in central Queensland, with a number of affected participants shifting around 2000 MW of capacity into prices of less than zero.

At around 7.30 am International Power's Hazelwood unit four was taken offline for an uplanned outage. The unit was scheduled to return to service by 4 pm, however, delays in the return of the unit, saw 120 MW of available capacity removed for the evening peak at 5.23 pm. The rebid reason given was "revised synch time".

Over two rebids at around 3 pm, NRG Flinders reduced the available capacity at Playford by 100 MW. All of this capacity was priced at less than zero. The rebid reasons given were "Boiler on" and "Playford coming off expected RTS tomorrow".

At 5.28 pm Hydro Tasmania reduced by 77 MW the available capacity, priced below $30/MWh, at Mackintosh, also as a result of a delay in the unit's return to service.

There was no other significant rebidding.

Wednesday, 12 July

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
NSW price ($/MWh)	166.52	93.46	93.05
National demand (MW)	29643	29441	29281
Available capacity (MW)	35654	35678	36477
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
NSW price ($/MWh)	178.60	222.08	95.84
National demand (MW)	30084	29948	29811
Available capacity (MW)	35796	35665	36465

Conditions at the time saw demand and available capacity close to forecast.

At 3.08 pm International Power's reduced the available capacity at Pelican Point by 240 MW, 180 MW of this capacity was priced at less than $100/MWh. The rebid reason given was "Unit trip".

At 5.09 pm Macquarie Generation shifted 160 MW of capacity at Bayswater from prices under $30/MWh to above $240/MWh. The rebid reason given was "Sensitivities have changed".

There was no other significant rebidding.

Thursday, 13 July

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
NSW price ($/MWh)	175.61	240.30	92.67
National demand (MW)	30296	30193	29969
Available capacity (MW)	36259	36210	36354
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
NSW price ($/MWh)	257.55	262.89	233.74
National demand (MW)	30732	30612	30372
Available capacity (MW)	36207	36249	36216

Conditions at the time saw demand and available capacity close to forecast.

At 8 am, forecast export capability from Queensland across DirectLink interconnector for the evening peak was reduced by more than 200 MW. These forecast limits remained until around 5.30 pm, with the actual limits allowing exports of around 180 MW.

At 5.11 pm Macquarie Generation shifted 320 MW of capacity at Bayswater from prices below $55/MWh to prices above $240/MWh. The rebid reason given was "Sensitivities have changed".

There was no other significant rebidding.

Friday, 14 July

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
NSW price ($/MWh)	167.07	77.94	92.78
National demand (MW)	29794	29511	29495
Available capacity (MW)	36351	36427	36125

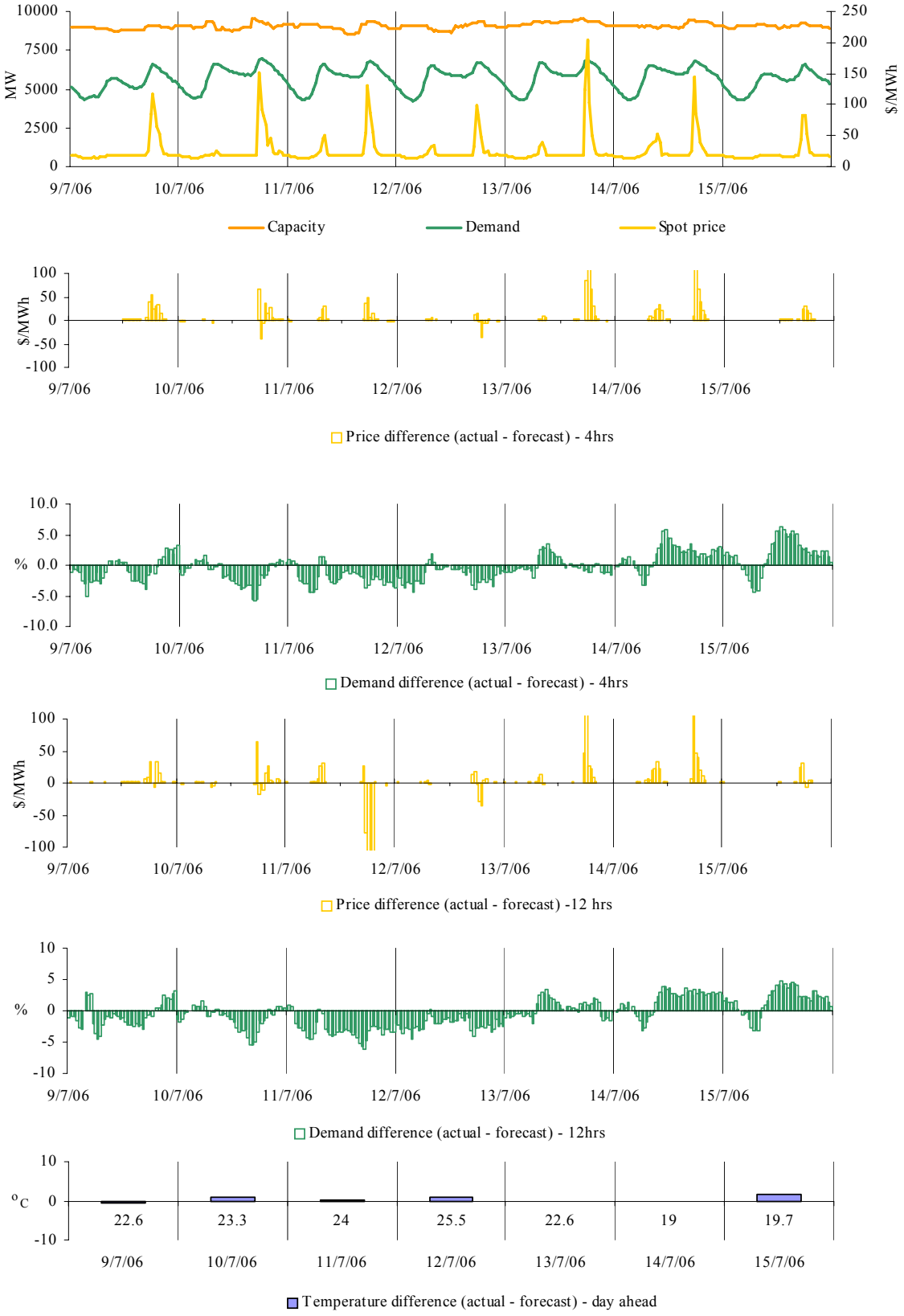
Conditions at the time saw demand around 300 MW higher than forecast and available capacity close to forecast four hours ahead. Prices were higher than forecast and aligned across the market for most of this period.

At 5.13 pm, LYMMCO shifted 190 MW of capcity at Loy Yang A from prices of less than $20/MWh to prices around $90/MWh. The rebid reason given was "Portfolio optimisation".

At 5.26 pm, Macquarie Generation shifted 400 MW of capacity from prices of less than $20/MWh into prices of more than $9000/MWh. The rebid reason given was "Sensitivities have changed".

There was no other significant rebidding.

Figures 27-32: Queensland actual spot price, demand and forecast differences



There were 17 occasions where the spot price in Queensland was greater than three times the weekly average price of $26/MWh. Nine of these occurred when prices were aligned nationally and are detailed in the national market section. The remaining eight occurred when the spot price in Queensland was greater than three times the weekly average price of $26/MWh and the prices were aligned nationally, but were less than three times the weekly average price in the other regions.

Sunday, 9 July

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	85.70	46.03	76.50
Demand (MW)	6408	6476	6458
Available capacity (MW)	9047	9114	9149
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	84.12	60.04	83.72
Demand (MW)	6495	6578	6558
Available capacity (MW)	9077	9117	9152

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

At 5.30 pm, an increase in the limit on flows south from Queensland saw an extra 100 MW of exported to New South Wales. Prices in Queensland subsequently increased.

There was no significant rebidding.

Monday, 10 July

6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	92.50	130.85	110.96
Demand (MW)	6994	7102	7103
Available capacity (MW)	9364	9433	9462
7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	81.43	86.09	83.82
Demand (MW)	6912	7052	7060
Available capacity (MW)	9284	9434	9466

Conditions at the time saw price, demand and available capacity close to forecast. Queensland was exporting more than 1100 MW with prices reaching $173/MWh in New South Wales.

There was no other significant rebidding.

Thursday, 13 July

7:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	103.93	38.50	77.00
Demand (MW)	6802	6877	6758
Available capacity (MW)	9389	9402	9412

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

Queensland was exporting more than 950 MW across the New South Wales to Queensland interconnector and around 120 MW across the DirectLink interconnector. Exports across DirectLink were almost 200 MW higher than the forecasts, which were showing imports into Queensland of around 80 MW for the eventing peak.

There was no significant rebidding.

Friday, July 14

6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	85.44	19.09	38.50
Demand (MW)	6806	6716	6624
Available capacity (MW)	9338	9523	9474

Conditions at the time saw demand close to forecast four hours ahead. Available capacity was around 200 MW lower than forecast on the same basis. Commissioning tests at Braemar power station accounted for most of this reduction.

Queensland was exporting more than 1000 MW across the New South Wales to Queensland interconnector and around 110 MW across the DirectLink interconnector. Exports across the DirectLink interconnector were almost 150 MW higher than the forecasts, which were showing imports into Queensland of around 40 MW for the evening peak.

There was no other significant rebidding.

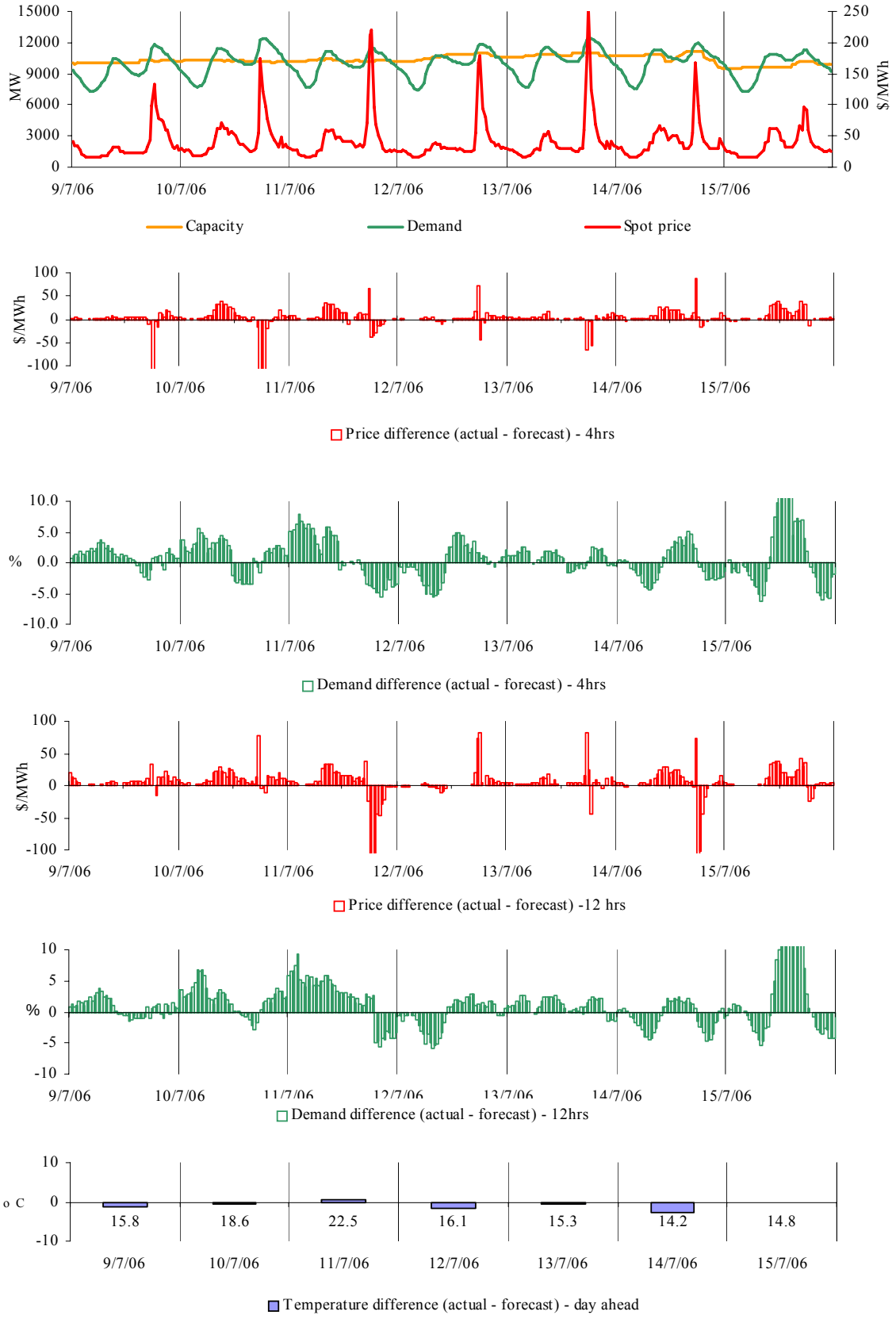
Saturday, July 15

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	83.57	54.24	53.23
Demand (MW)	6535	6371	6392
Available capacity (MW)	9225	9225	9225
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	81.95	61.33	80.69
Demand (MW)	6586	6407	6443
Available capacity (MW)	9220	9227	9227

Conditions at the time saw demand slightly higher than forecast four hours ahead with available capacity close to forecast. Prices were aligned across the mainland.

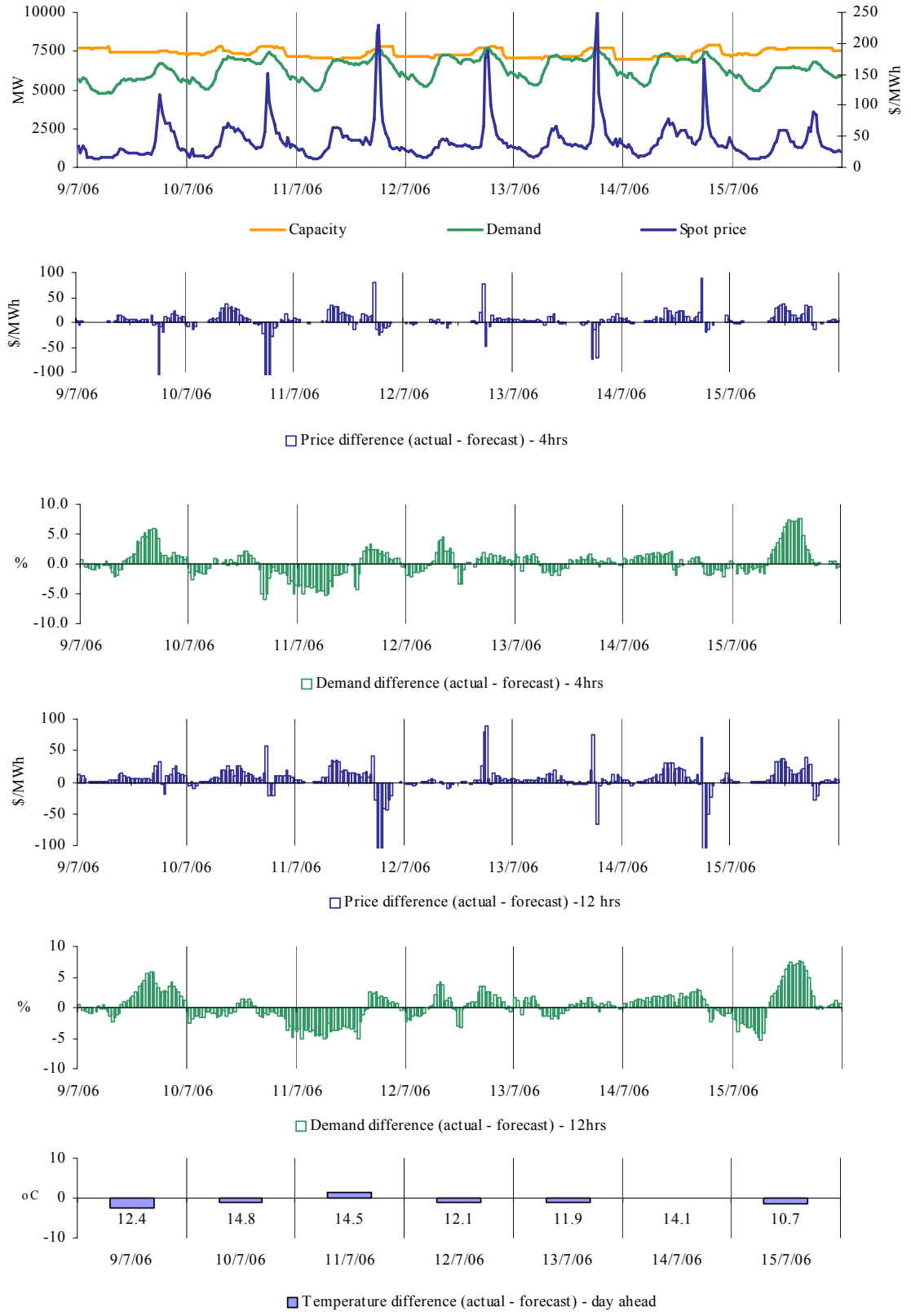
Over two rebids at 12.38 pm and 3.38 pm, CS Energy shifted a total of 120 MW of capacity from prices of less than $50/MWh to prices around $80/MWh. The rebid reason given for both rebids was "Portfolio optimisation changed predispatch".
There was no other significant rebidding.

Figures 33-38 New South Wales actual spot price, demand and forecast differences



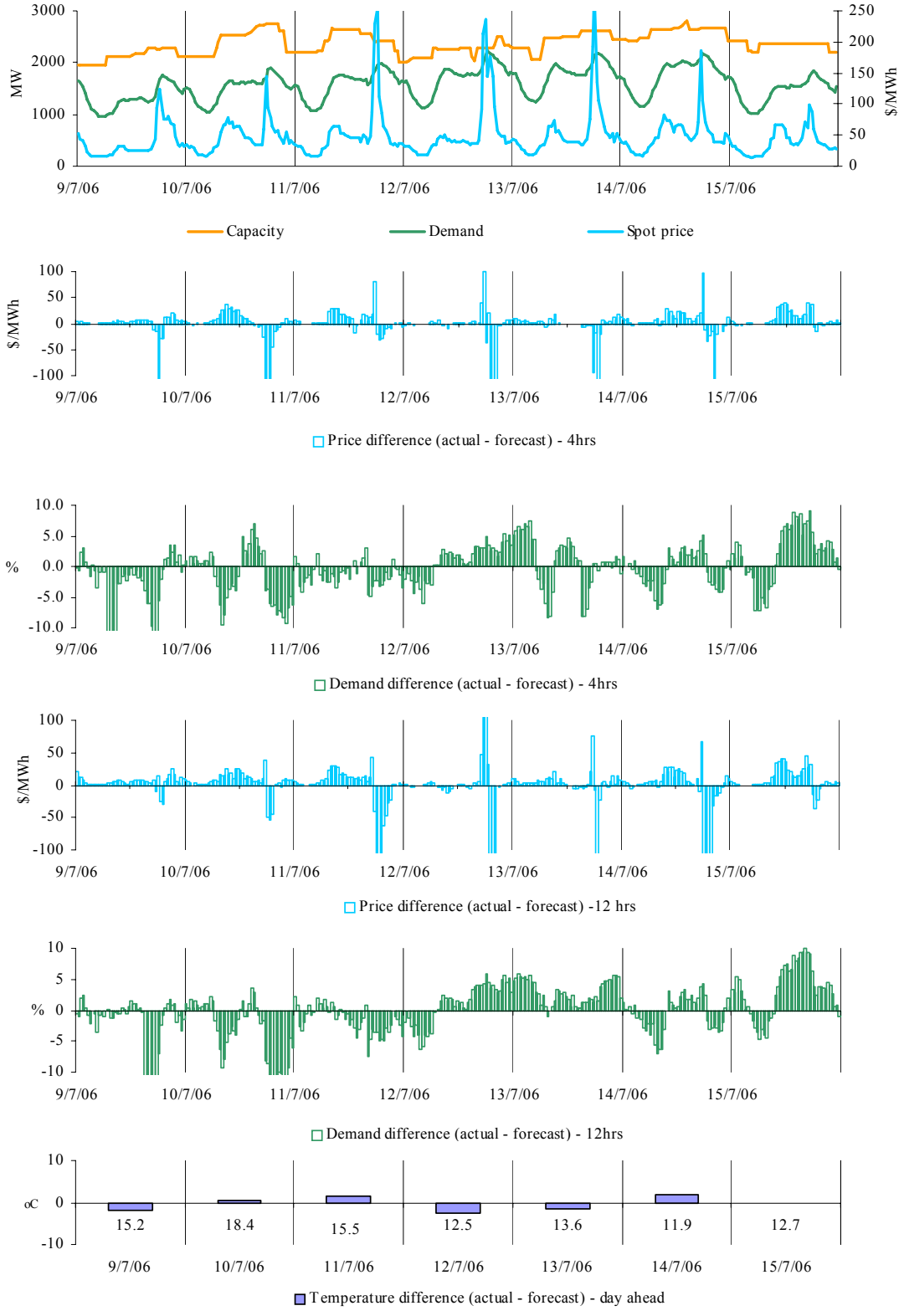
There were nine occasions where the spot price in New South Wales was greater than three times the weekly average price of $43/MWh. These prices all occurred with prices aligned across the market and are detailed under the national analysis section above.

Figures 39-44: Victoria actual spot price, demand and forecast differences



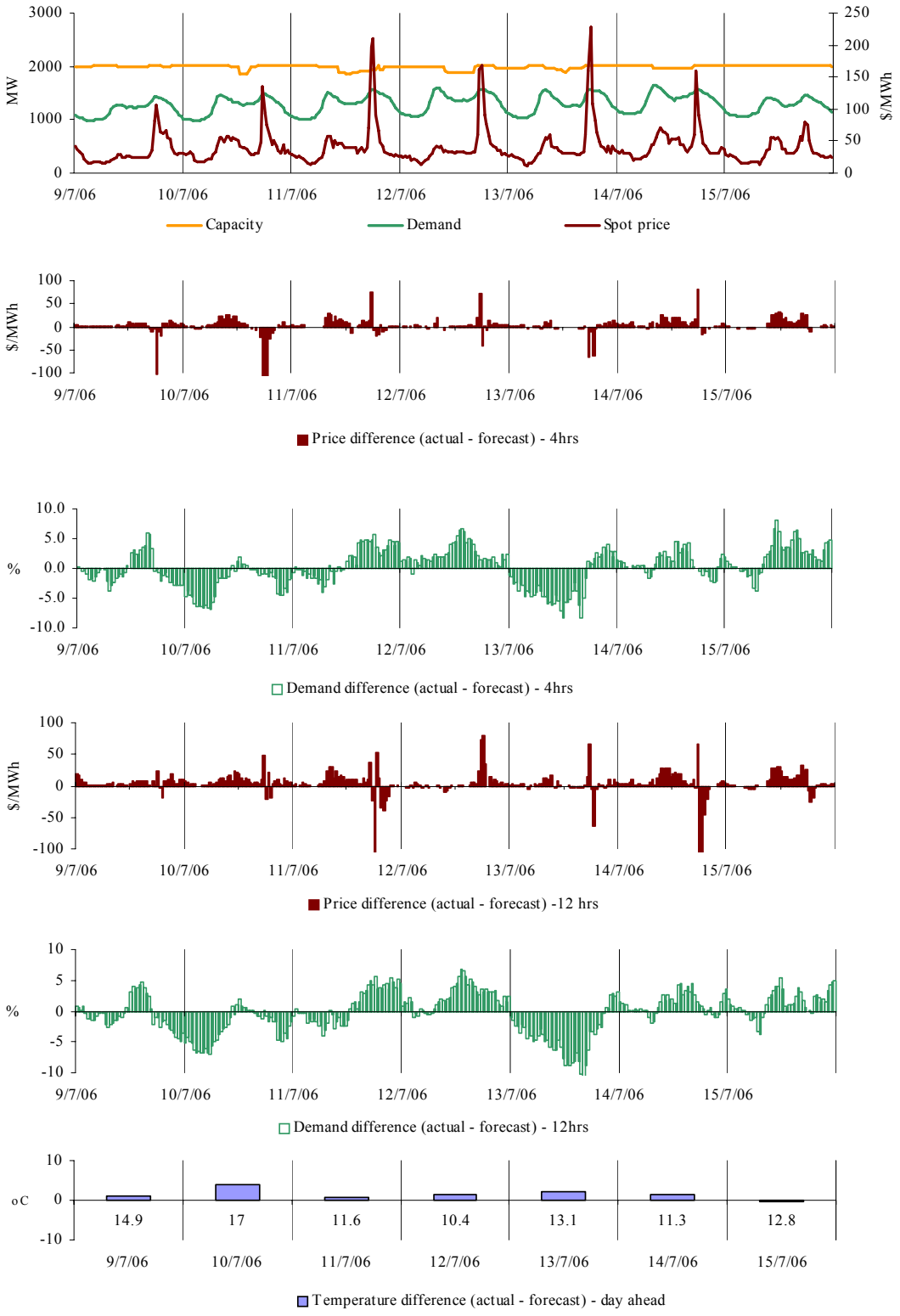
There were eight occasions where the spot price in Victoria was greater than three times the weekly average price of $45/MWh. These prices all occurred with prices aligned across the market and are detailed under the national analysis section above.

Figures 45-50: South Australia actual spot price, demand and forecast differences



There were three occasions where the spot price in South Australia was greater than three times the weekly average price of $52/MWh. These prices all occurred with prices aligned across the market and are detailed under the national analysis section above.

Figures 51-56: Tasmania actual spot price, demand and forecast differences



There were eight occasions where the spot price in Tasmania was greater than three times the weekly average price of $42/MWh. These prices all occurred with prices aligned across the market and are detailed under the national analysis section above.

Figures 57 – 61 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.

Figure 57: Queensland closing bid prices, dispatched generation and spot price

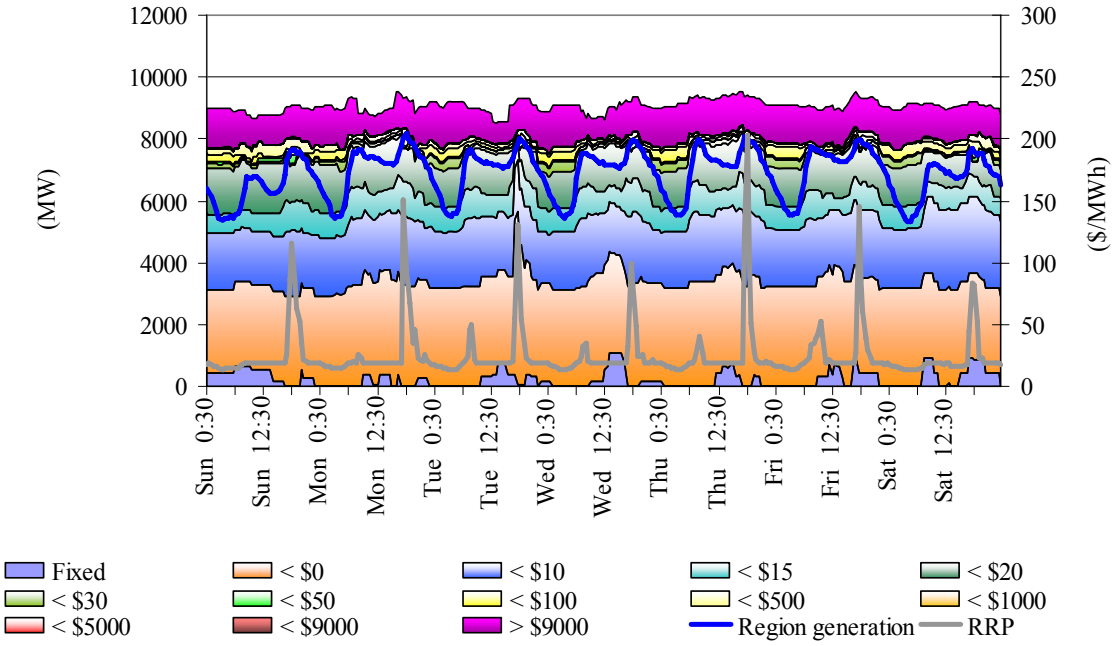


Figure 58: New South Wales closing bid prices, dispatched generation and spot price

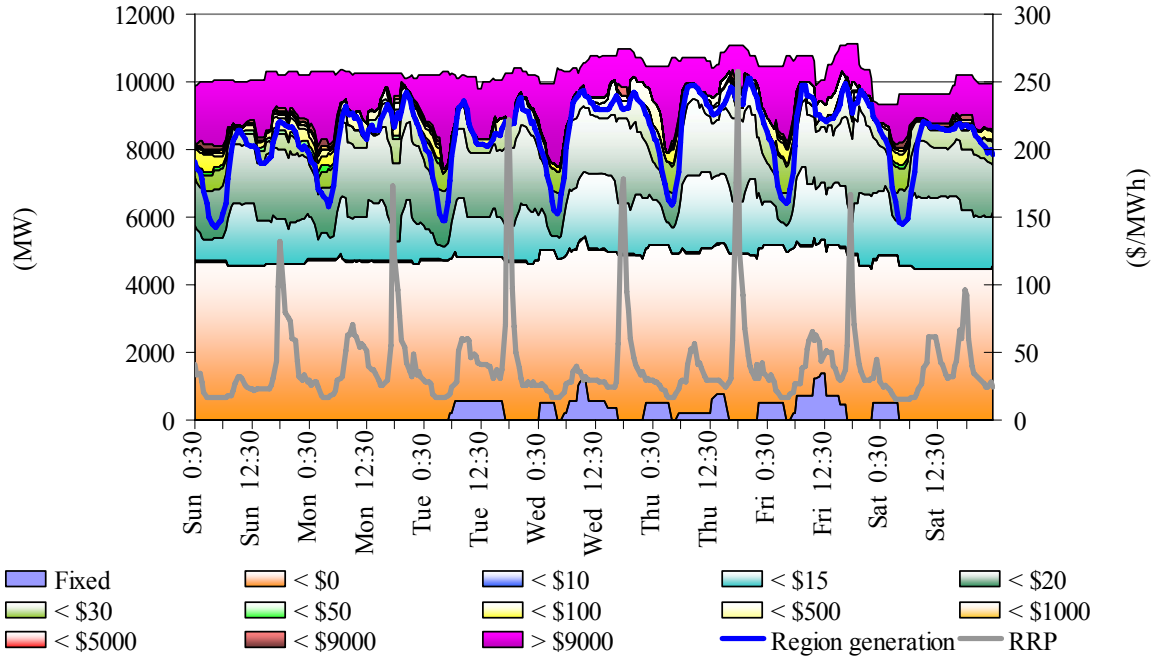


Figure 59: Victoria closing bid prices, dispatched generation and spot price

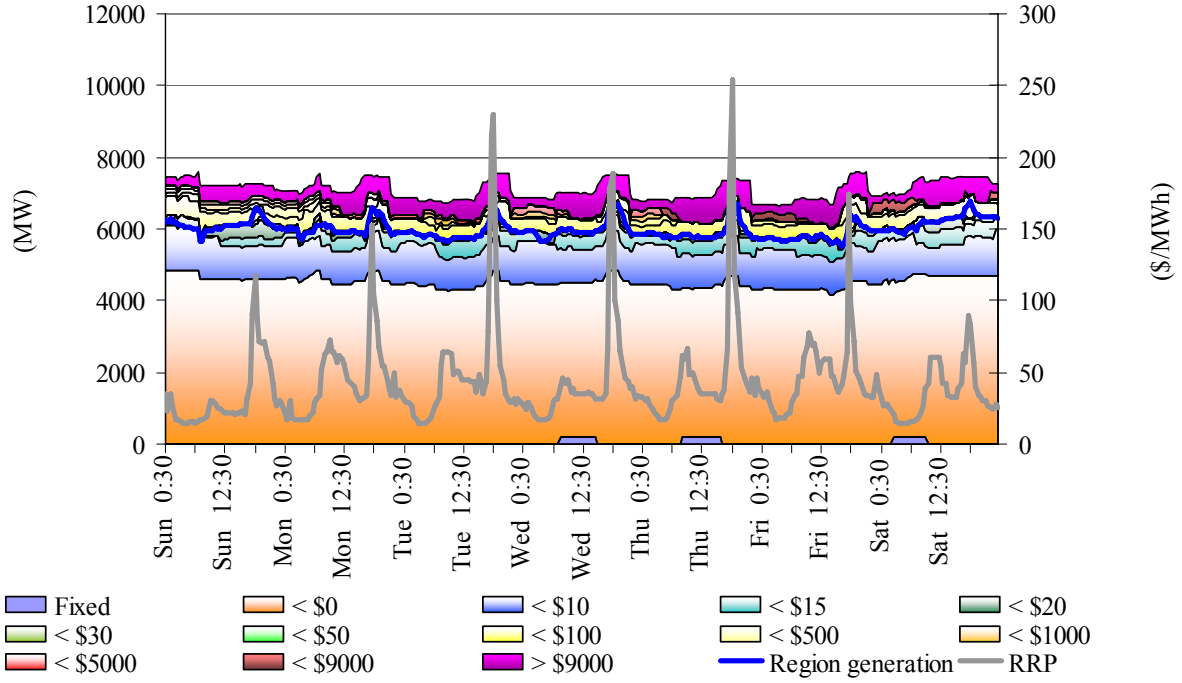


Figure 60: South Australia closing bid prices, dispatched generation and spot price

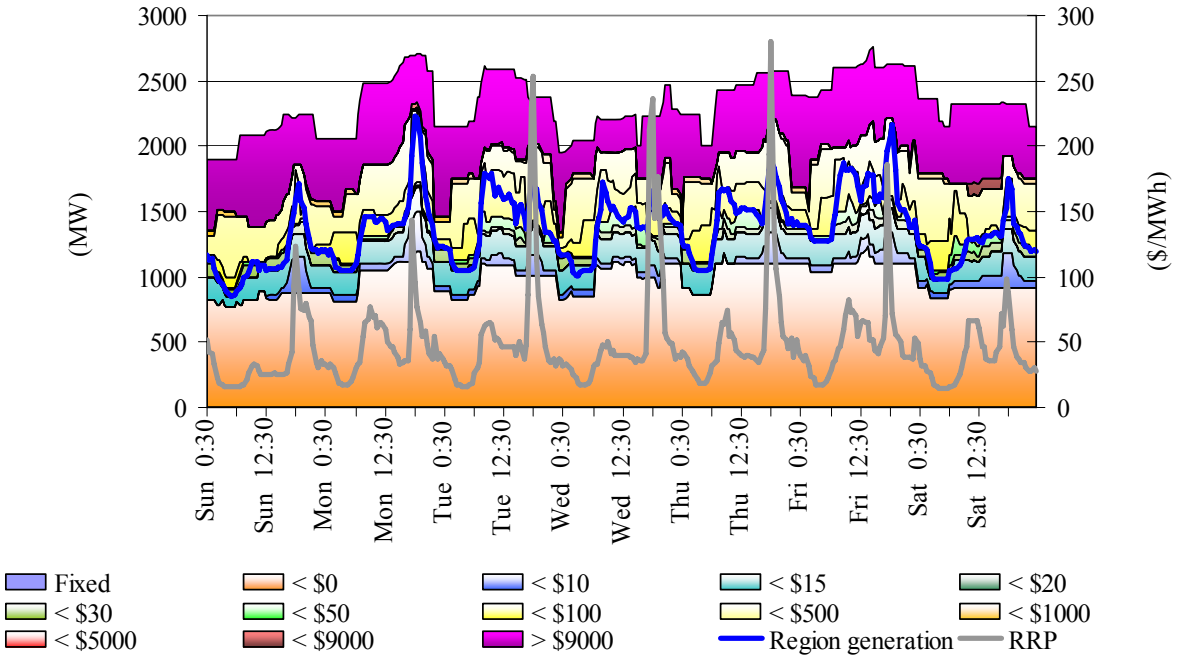
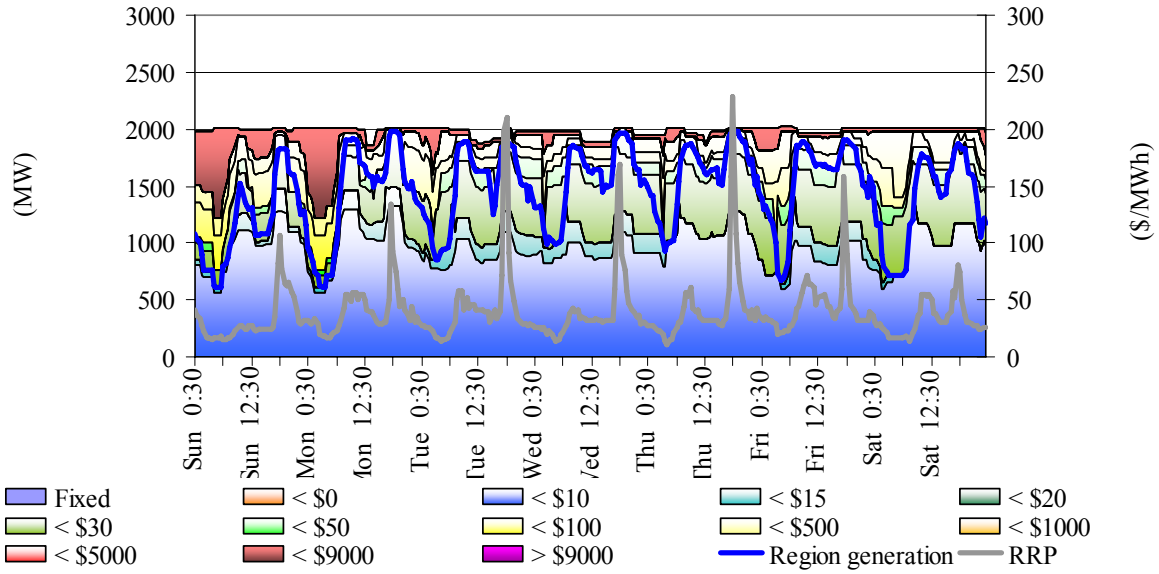


Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $196 000 or 0.1 per cent of the total turnover in the energy market. Figure 62 summarises the volume weighted average prices and costs for the eight frequency control ancillary services across the mainland.

Figure 62: 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 ($/MW)	0.76	0.15	1.07	2.89	0.16	0.21	0.55	0.96
Previous week ($/MW)	0.68	0.14	0.96	3.04	0.15	0.21	0.50	0.95
Last quarter ($/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	$31	$6	$68	$71	$0	$0	$5	$14
% of energy market	0.02%	0.01%	0.04%	0.04%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was $362 000 or 4 per cent of the total turnover in the energy market in Tasmania. The lower 6 second ancillary service market accounted for around $327 000 or 90 per cent of the total. Figure 63 summarises for Tasmania the prices and costs for the eight frequency control ancillary services.

Figure 63: 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 ($/MW)	1.18	0.27	1.41	2.67	41.49	0.06	0.41	0.85
Previous week ($/MW)	2.98	0.19	5.41	8.48	25.15	0.06	0.40	0.84
Last quarter ($/MW)	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost ($1000s)	2.71	1.25	8.34	4.06	327.23	1.85	11.56	4.72
% of energy market	0.03%	0.01%	0.09%	0.05%	3.63%	0.02%	0.13%	0.05%

Figure 64 shows the daily breakdown of cost for each frequency control ancillary service.

Figure 64: daily frequency control ancillary service costs

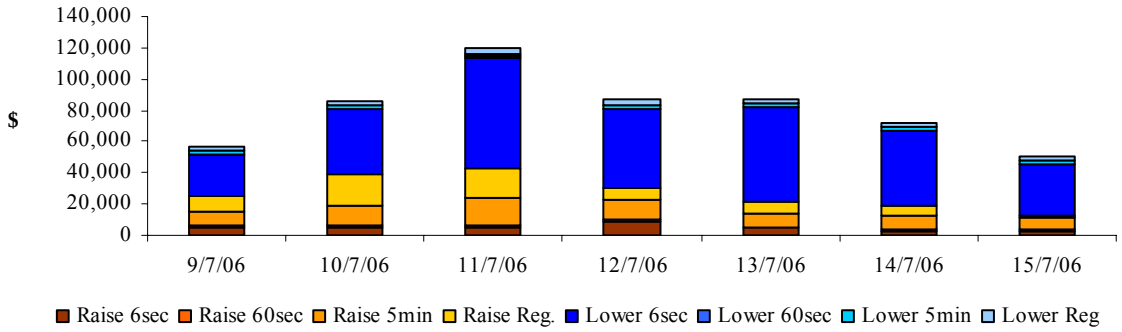
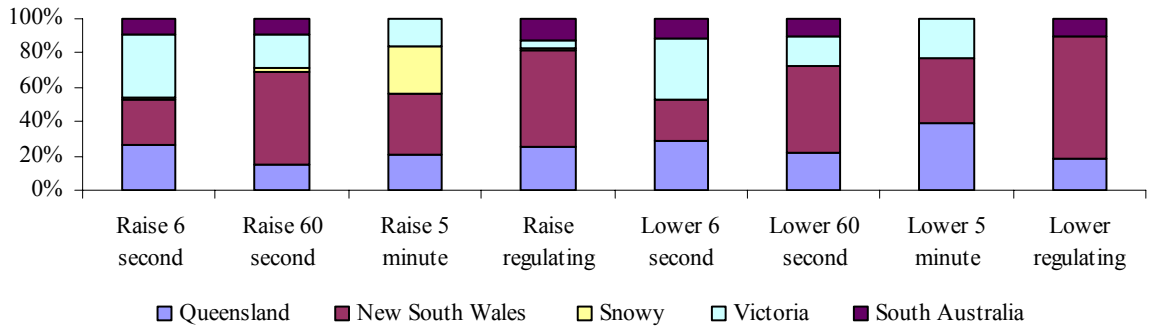


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

Figure 65: regional participation in ancillary services on the mainland



Figures 66 and 67 show 30-minute prices for each frequency control ancillary service throughout the week.

Figure 66: prices for raise services

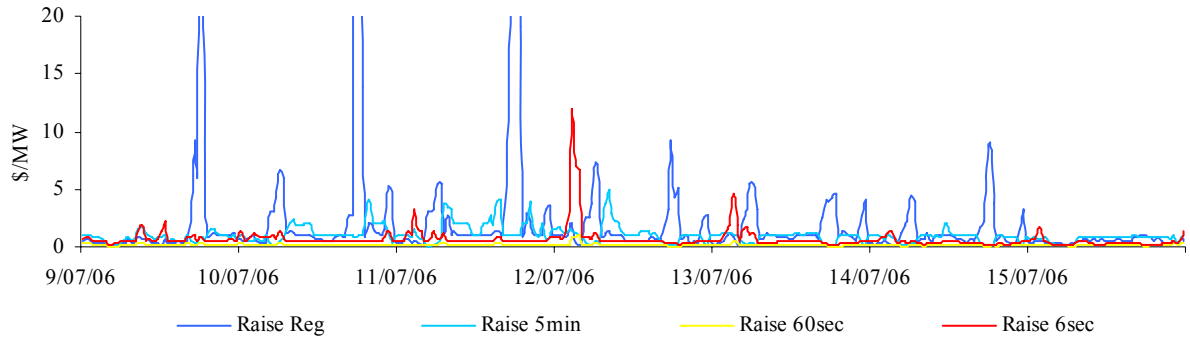


Figure 66A: prices for raise services - Tasmania

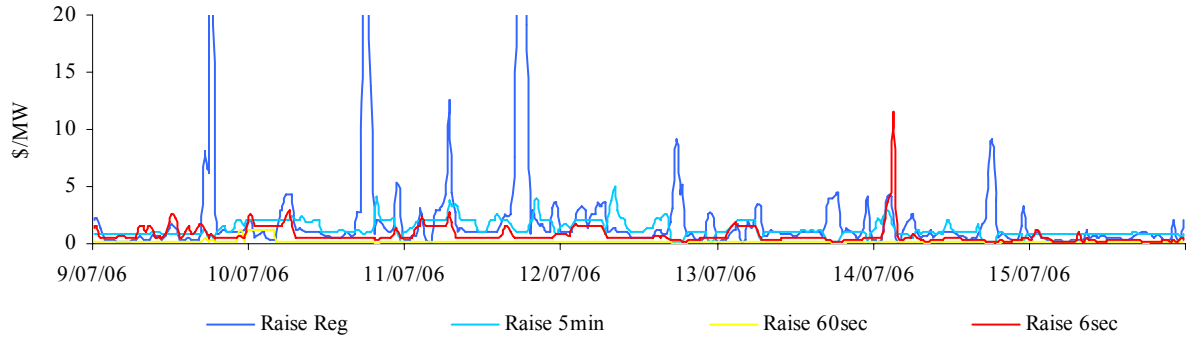


Figure 67: prices for lower services

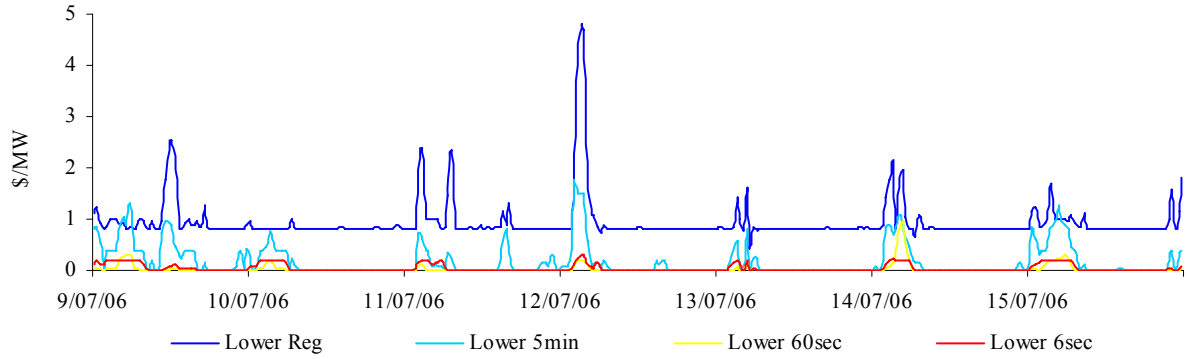
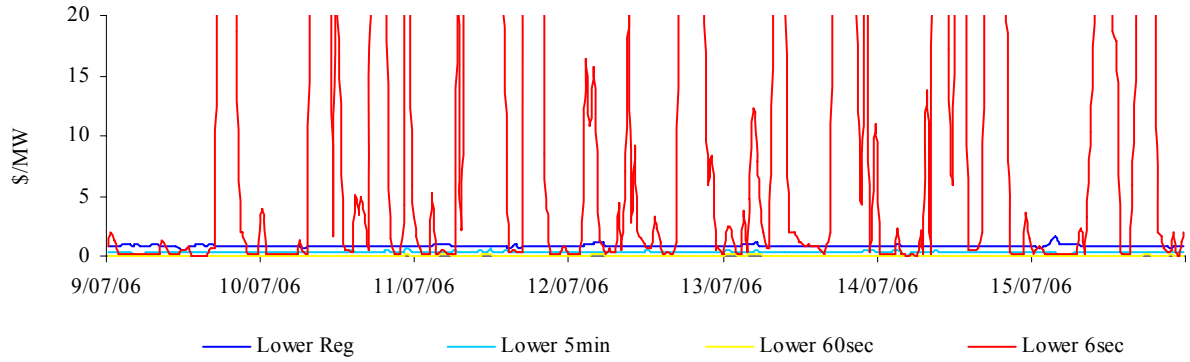


Figure 67A: prices for lower services – Tasmania



Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

Figure 68: raise requirements

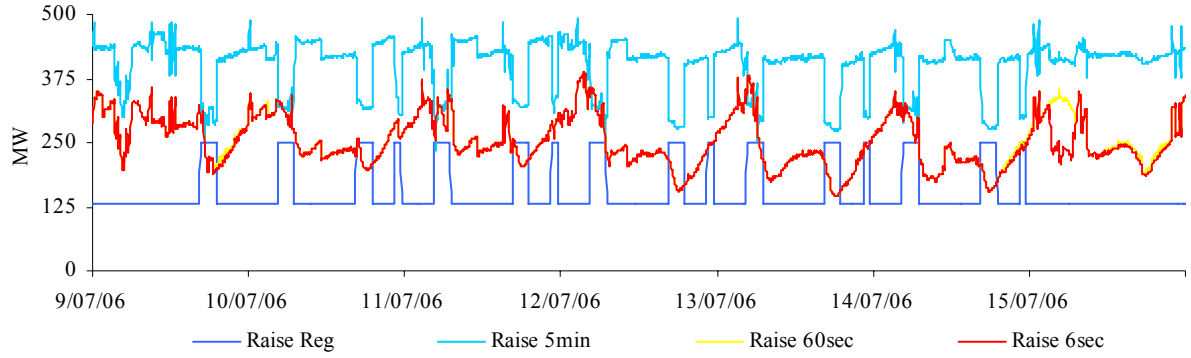


Figure 68A: raise requirements - Tasmania

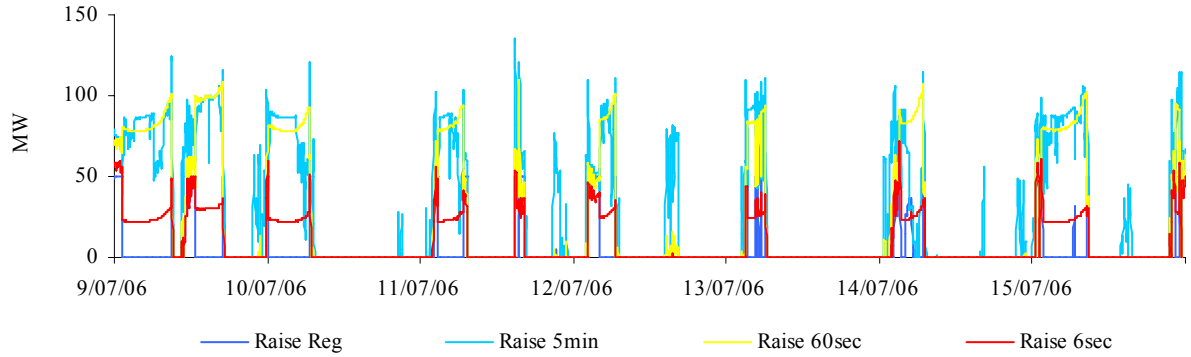


Figure 69: lower requirements

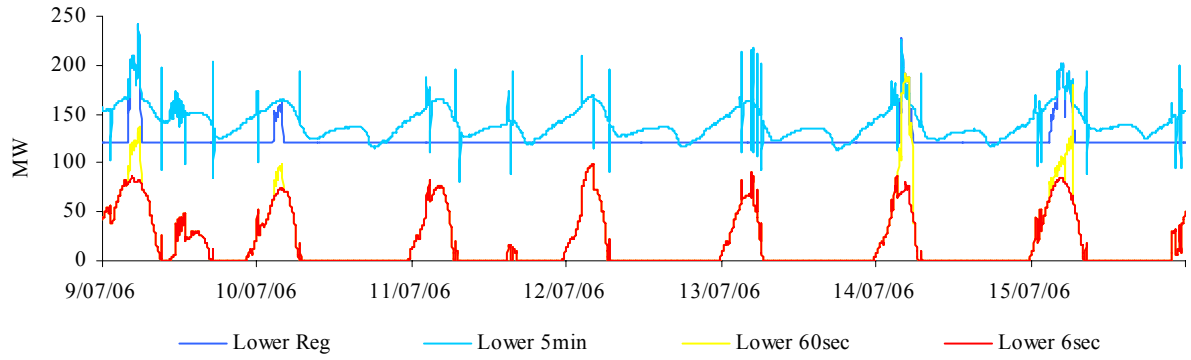
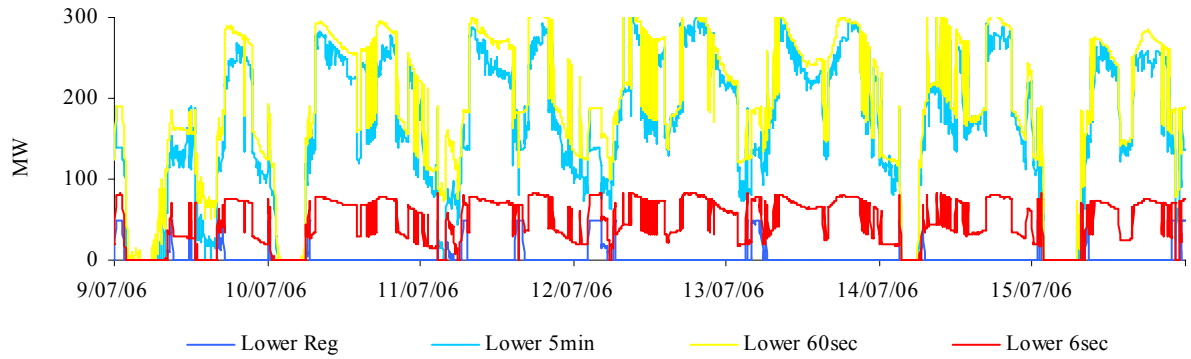


Figure 69A: lower requirements - Tasmania



Australian Energy Regulator
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