Market analysis

AUSTRALIAN ENERGY REGULATOR

6–12 May 2007

Spot prices for the week averaged between $60/MWh in South Australia and $77/MWh in Tasmania.

Turnover in the energy market was $264 million. The total cost of ancillary services for the week was $634 000, or 0.2 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 201 or 60 per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 11 per cent of all trading intervals across the market. These variations were most frequent in South Australia occurring in over 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 and for the previous financial year.

Figure 1: national demand and spot prices

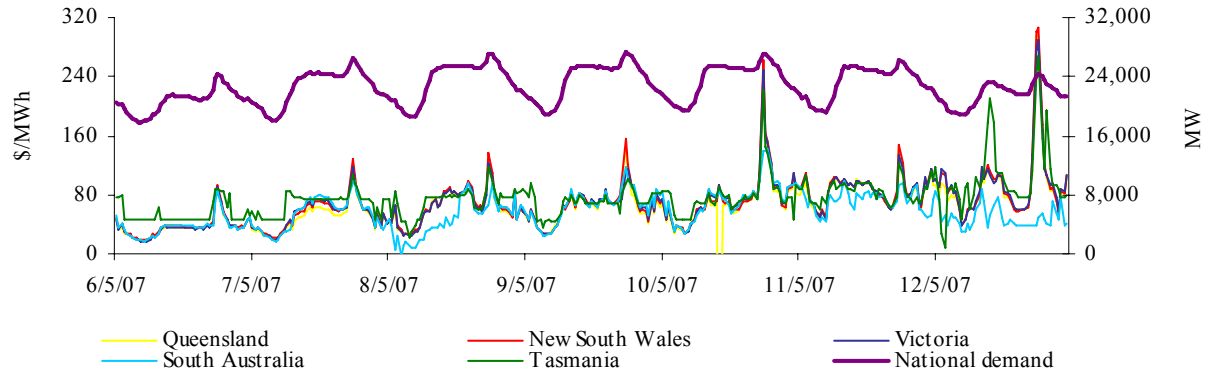


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	66	71	70	60	77
Previous week	63	67	65	66	71
Same quarter last year	25	28	30	38	38
Financial year to date	42	46	51	53	47
% change from previous week *	▲5%	▲7%	▲8%	▼10%	▲9%
% change from same quarter last year **	▲169%	▲158%	▲135%	▲57%	▲105%
% change from year to date ***	▲30%	▲2%	▲39%	▲20%	▼25%

*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

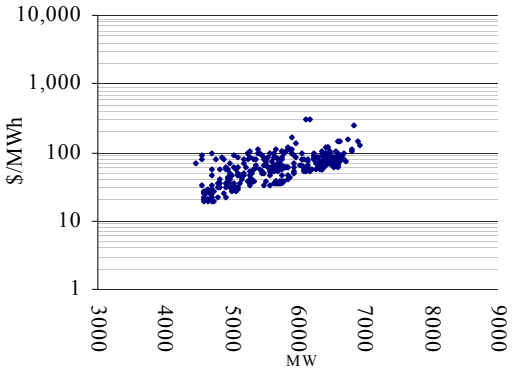


Figure 4: New South Wales

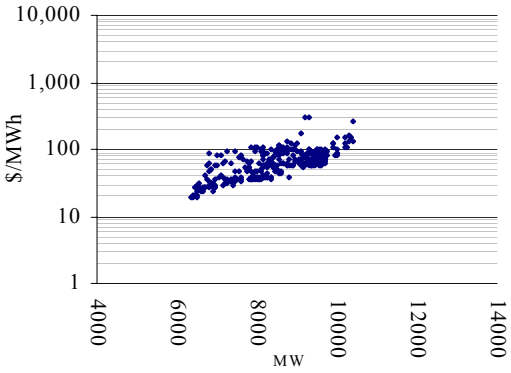


Figure 5: Victoria

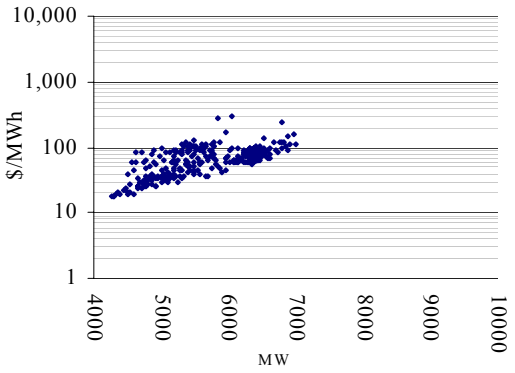


Figure 6: South Australia

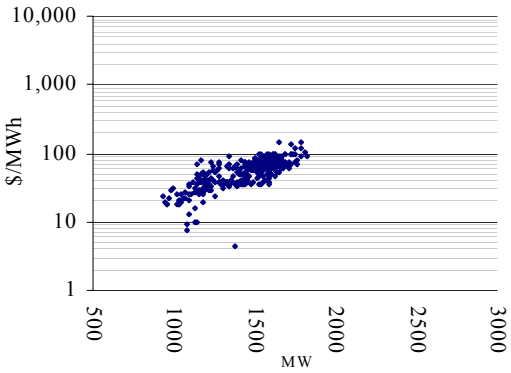
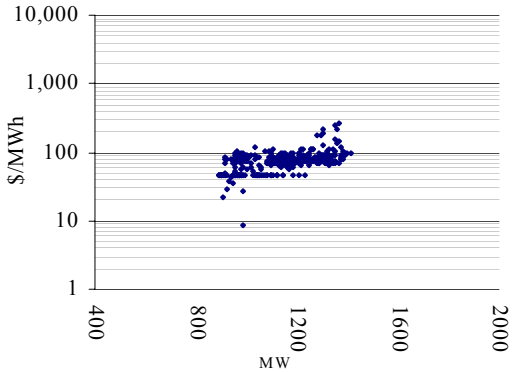


Figure 7: Tasmania



The maximum spot prices for the week ranged from $143/MWh in South Australia to $307/MWh in New South Wales. Prices reached $-1000/MWh for two five-minute dispatch intervals in Queensland on Thursday morning - NEMMCO is currently investigating the cause. 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	0.60	0.54	0.48	0.54	0.31
Previous week	0.45	0.43	0.37	0.36	0.24
Same quarter last year	1.07	0.96	0.96	0.94	0.29

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

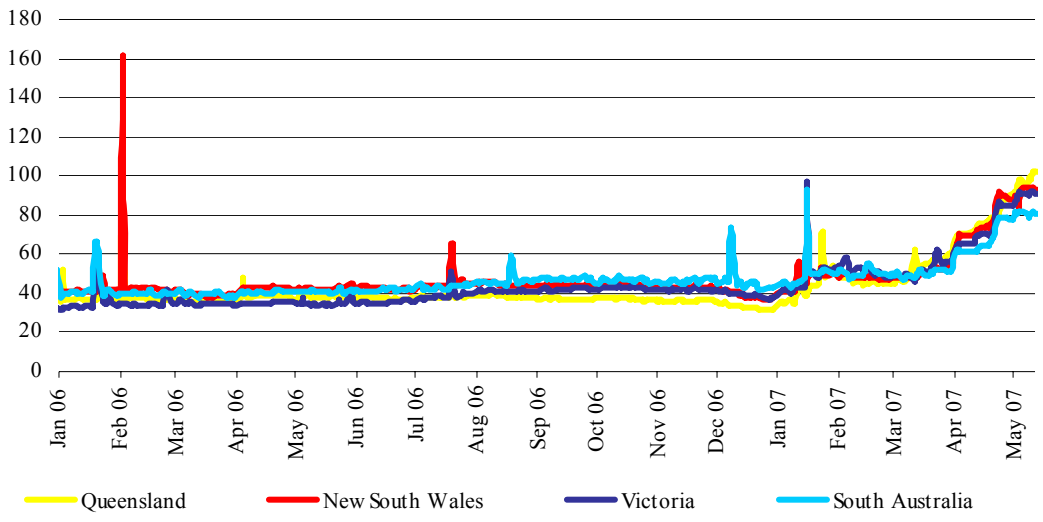
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2005.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	94.76	99.06	97.94	102.16	102.54
New South Wales	94.05	92.85	93.12	93.83	93.35
Victoria	90.94	89.88	91.90	91.58	90.88
South Australia	80.70	78.36	80.37	81.31	81.13

* The 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
The WEPI applies for working days only.

Figure 10: d-cyphaTrade WEPI



Reserve

There were no low reserves forecast.

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

Figure 11: Queensland

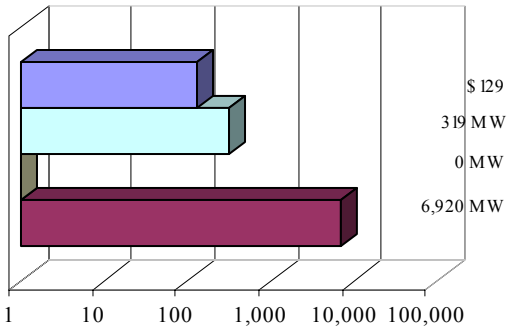


Figure 12: New South Wales

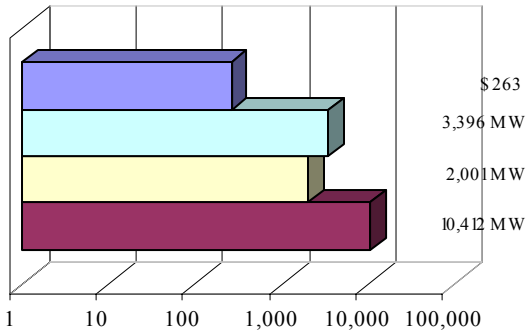


Figure 13: Victoria

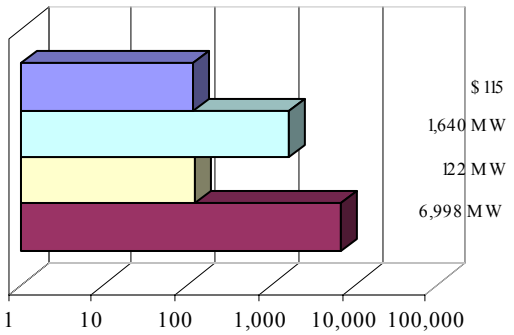


Figure 14: South Australia

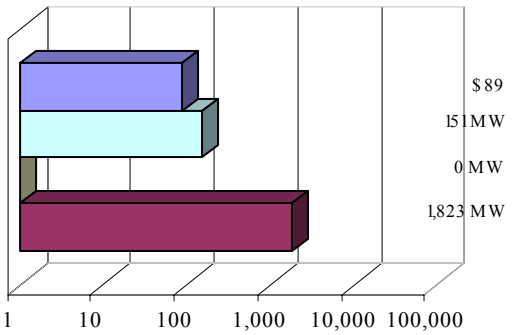
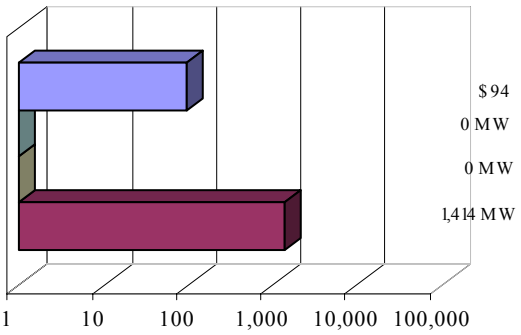


Figure 15: Tasmania



Price variations

There were 206 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

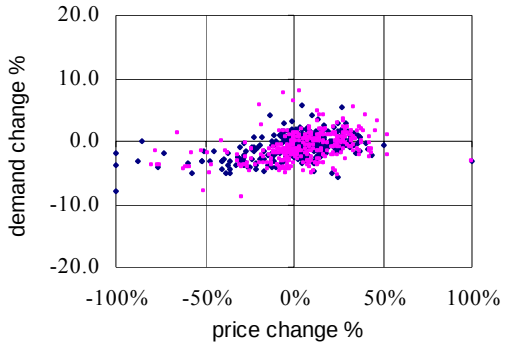


Figure 17: New South Wales

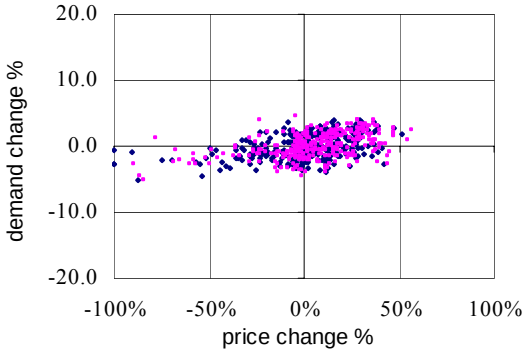


Figure 18: Victoria

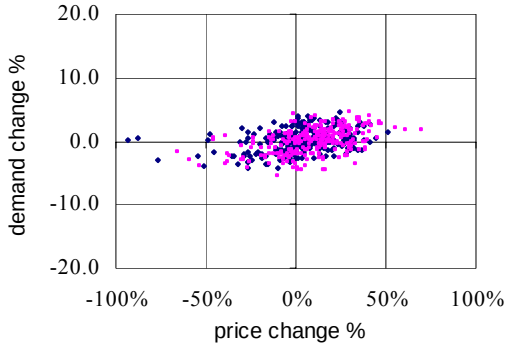


Figure 19: South Australia

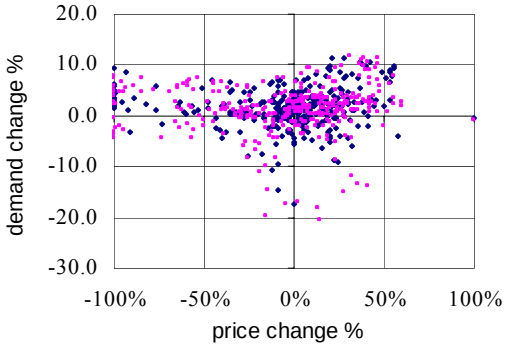


Figure 20: Tasmania

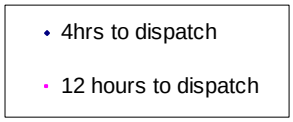
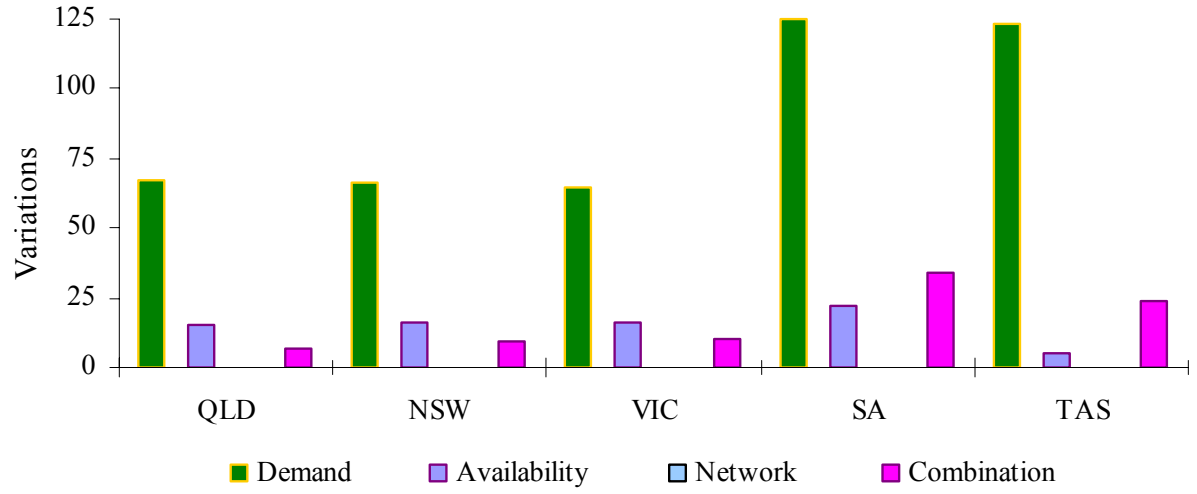


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

Figure 21: reasons for variations between forecast and actual prices



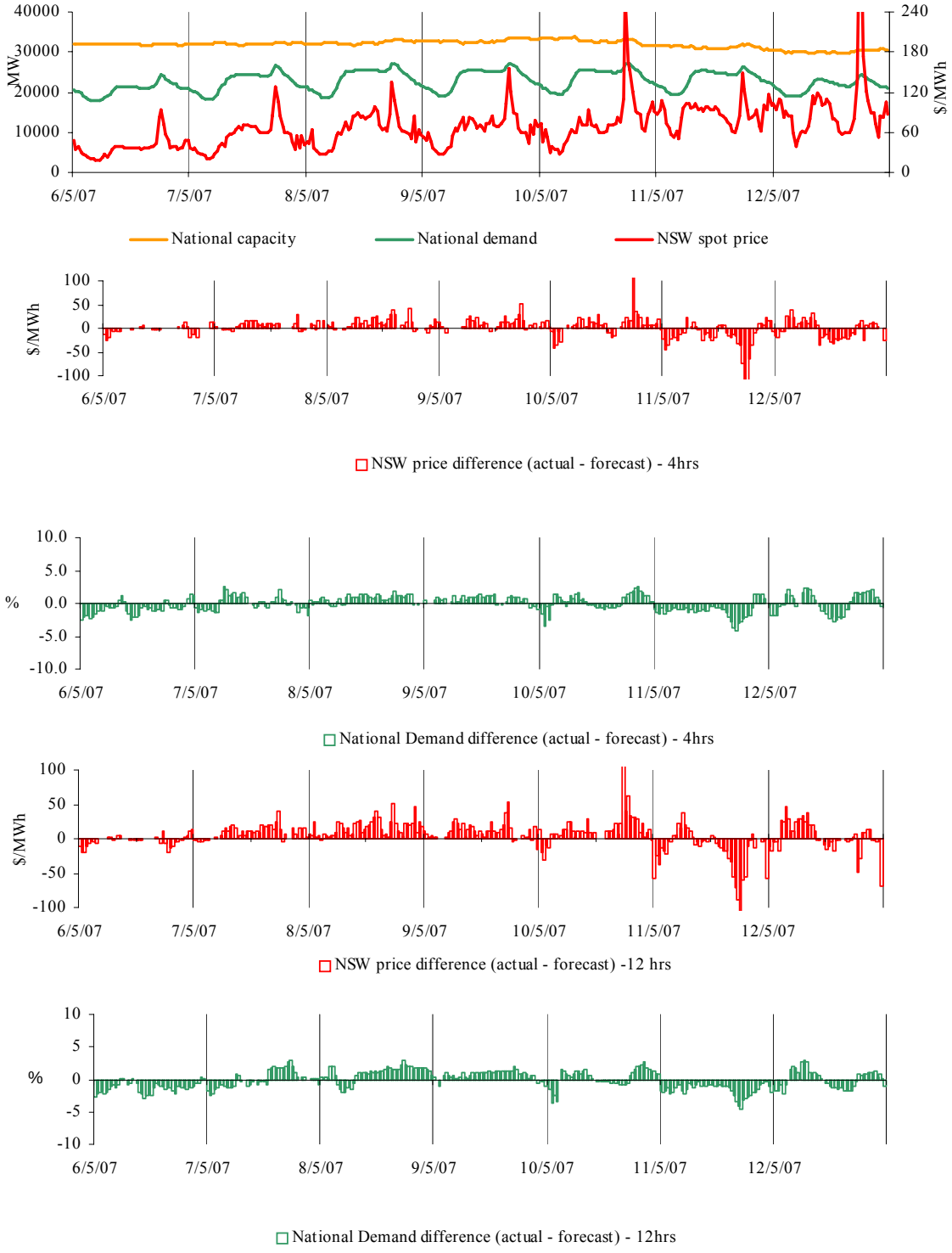
Price and demand

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.

Spot prices 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 market outcomes



There were three occasions where spot prices were nationally aligned and the New South Wales price[1] was greater than three times the New South Wales weekly average price of $71/MWh. The national demand and available capacity, together with the New South Wales price is shown below.

Thursday, 10 May

6:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	262.69	126.96	156.00
Demand (MW)	27 113	26 878	26 963
Available capacity (MW)	33 199	33 521	33 904

Conditions at the time saw demand close to those forecast four and twelve hours ahead.

At 8.00 am LYMMCO shut down Loy Yang A unit two, reducing the available capacity priced below $50/MWh by 520 MW. The rebid reason given was "Unit outage at 8:00". The unit returned to service early Sunday morning.

From 9.27 am, over several rebids, Callide Power Trading reduced the available capacity at Callide unit four by 300 MW. All of this capacity was priced at less than $30/MWh. The rebid reasons given were "Boiler limitations" and "Plant failure". The unit was shutdown at around 8.30 pm.

At 12.09 pm Delta Electricity increased the available capacity at Mount Piper unit one by 210 MW. All of this capacity was priced at less than $60/MWh. The rebid reason given was "Testing::Capacity limit change". A further rebid was made for the unit at 2.11 pm, which shifted this capacity to above $9000/MWh. The rebid reason given was "Turbine vibration::Band shift".

At 4.01 pm Macquarie Generation rebid 150 MW across Bayswater units one, two and three from prices below $150/MWh to above $240/MWh. The rebid reason given was "Load expected to vary from forecast".

At 3.40 pm, International Power's Hazelwood unit seven tripped from 190 MW. The unit returned to service from around 5.30 pm, resuming full output by around 7 pm. The rebid reasons given included "Unit tripped on excitation protection" and "Unit RTS" (or unit return to service).

At 5:55 pm Eraring energy rebid 240 MW of capacity at Shoalhaven from prices above $305/MWh to below $45/MWh. The rebid reason given was "Shoalhaven rebid to be dispatched before Eraring @ 17:39"

There was no other significant rebidding.

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

Saturday, 12 May

6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	301.32	296.07	300.00
Demand (MW)	24 116	23 909	24 187
Available capacity (MW)	30 445	30 450	31 015
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	306.58	295.64	300.00
Demand (MW)	24 461	24 080	24 269
Available capacity (MW)	30 455	30 476	31 031

Conditions at the time saw demand and price close to those forecast four and twelve hours ahead.

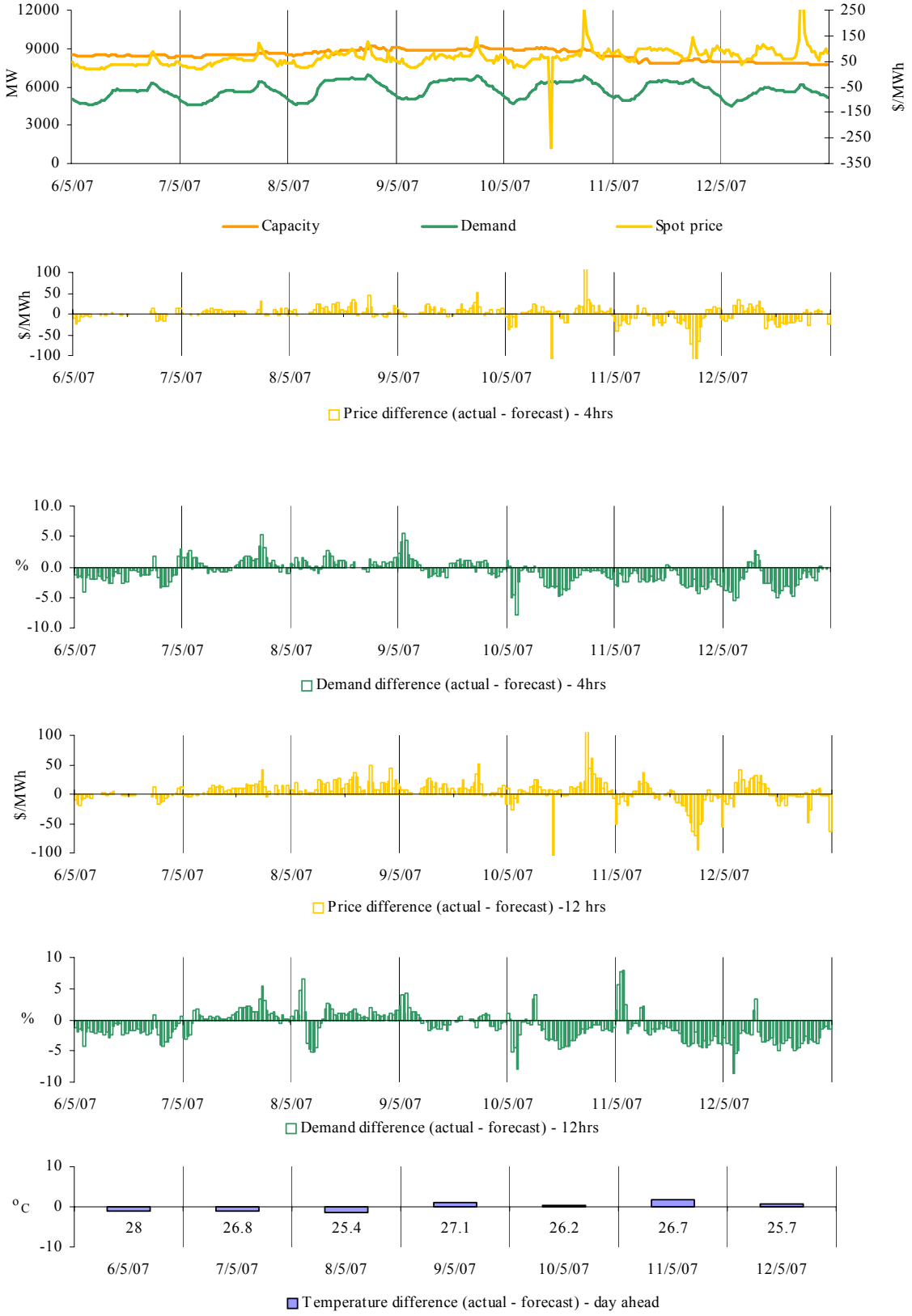
A rebid at 1.47 pm by Southern Hydro increased available capacity at Somerton by 37 MW, and shifted 150 MW of capacity from prices around $9000/MWh to zero. The rebid reason given was “Portfolio optimisation::changed energy band”.

At 5.12 pm Delta Electricity reduced capacity at Munmorah unit three by 100 MW, all priced below $20/MWh. The rebid reason given was “Condenser leak::capacity limit change”.

At 5.26 pm, Tarong Energy rebid 140 MW of capacity across Tarong units two and three, from prices below $290/MWh to above $9000/MWh. The rebid reason given was “Water management::Volume profile change”.

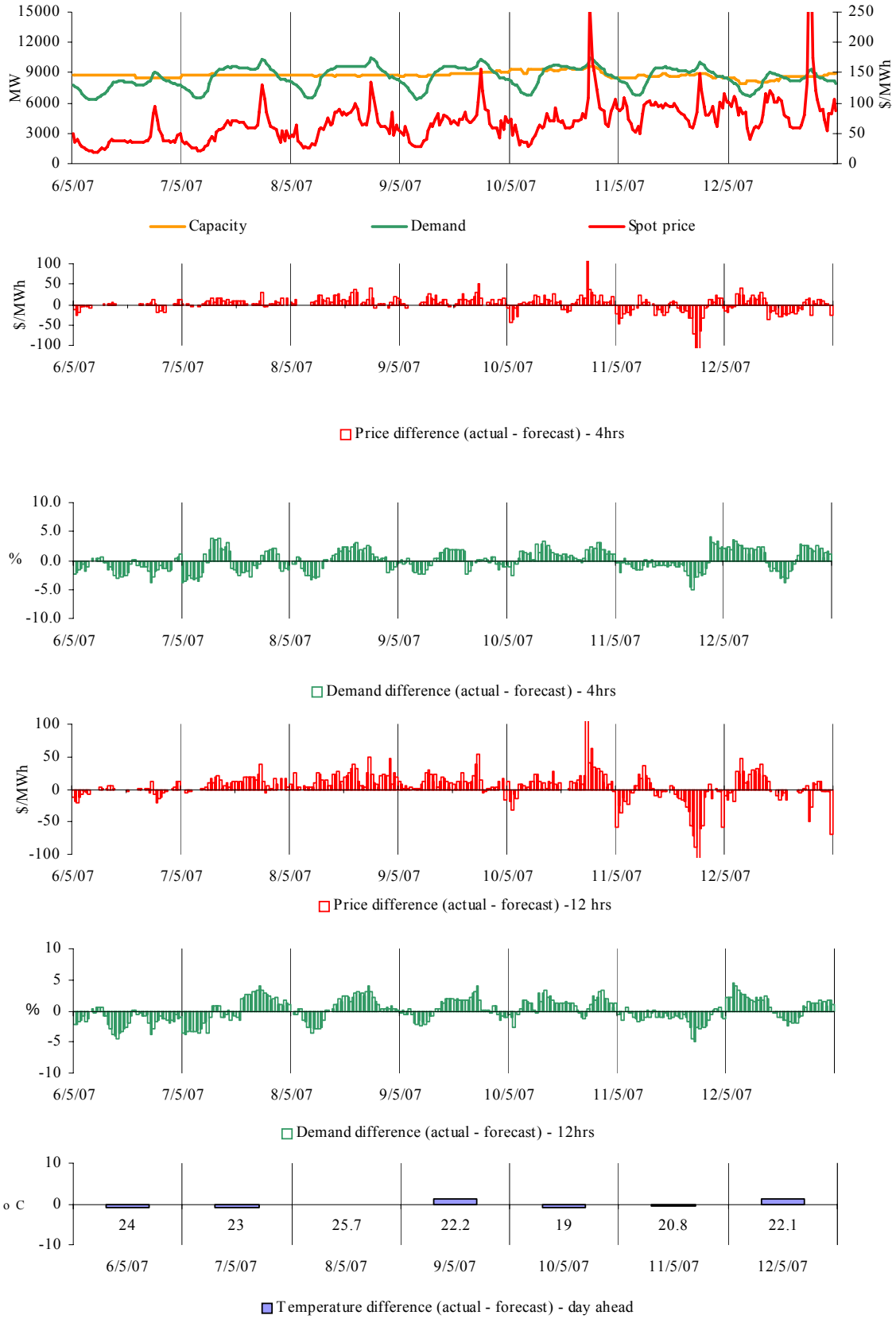
There was no other significant rebidding.

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



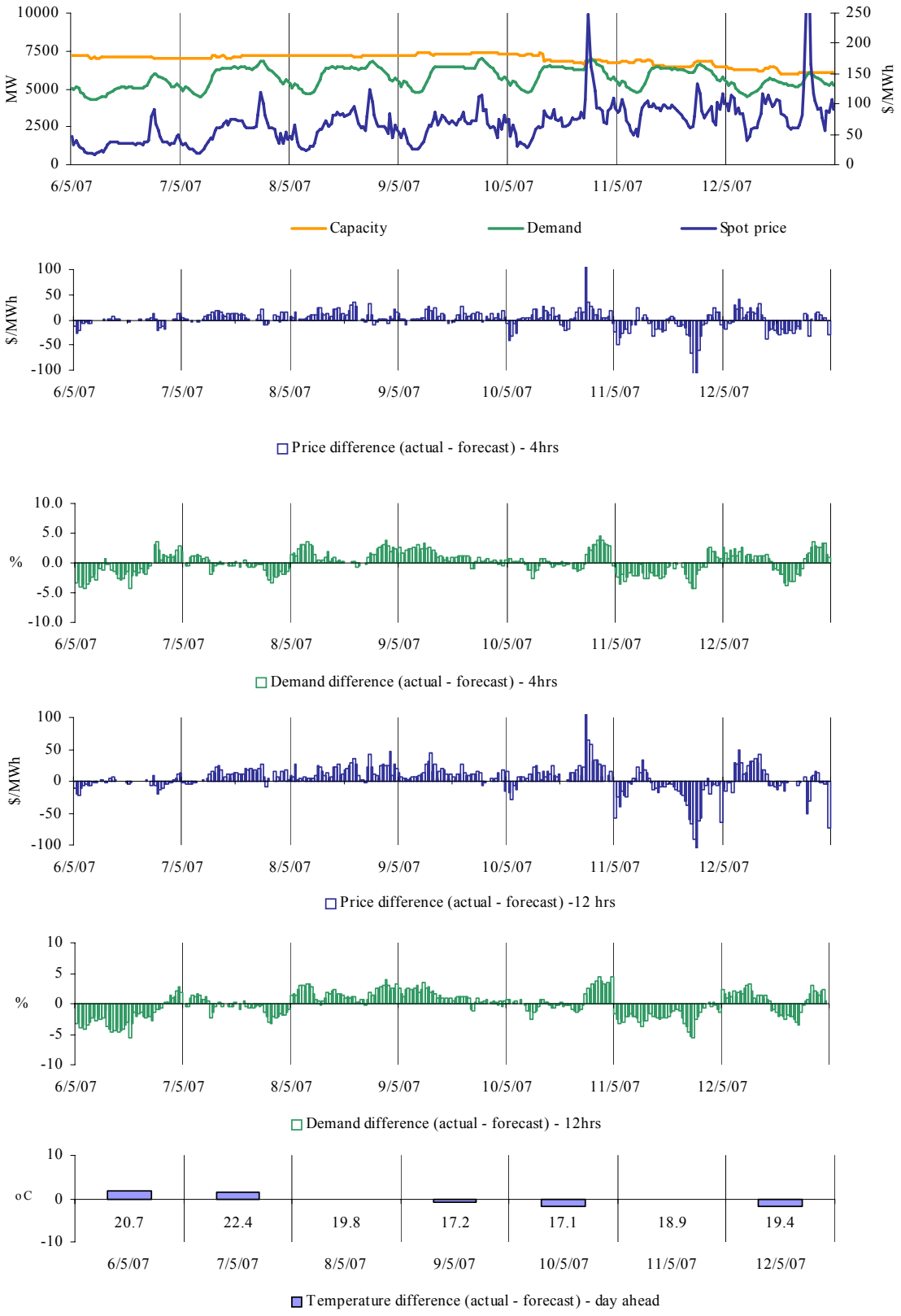
There were three occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of $66/MWh. At the time, prices were aligned across the market. The circumstances of these events are detailed under the national market outcomes section.

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



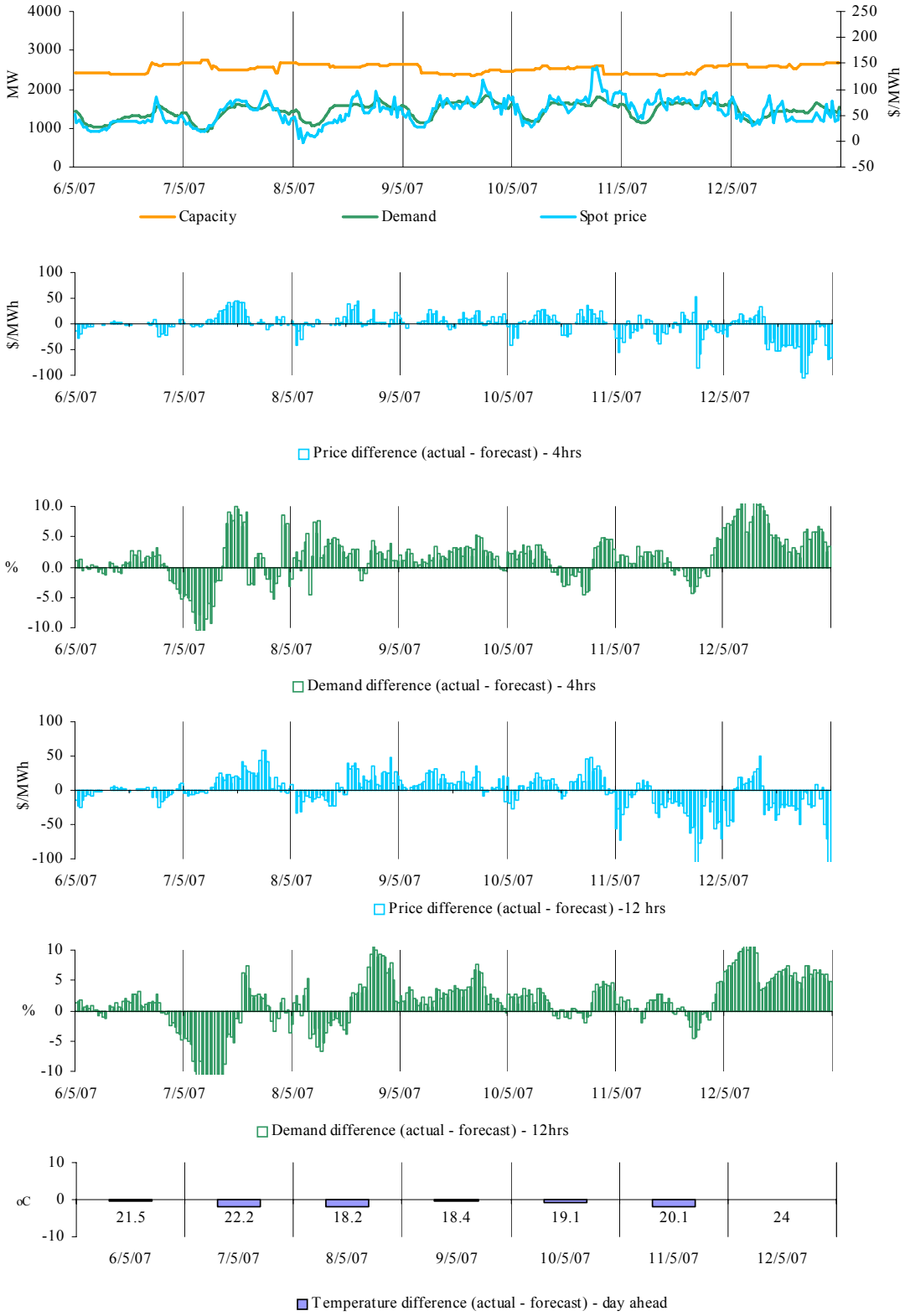
There were three occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of $71/MWh. At the time, prices were aligned across the market. The circumstances of these events are detailed under the national market outcomes section.

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



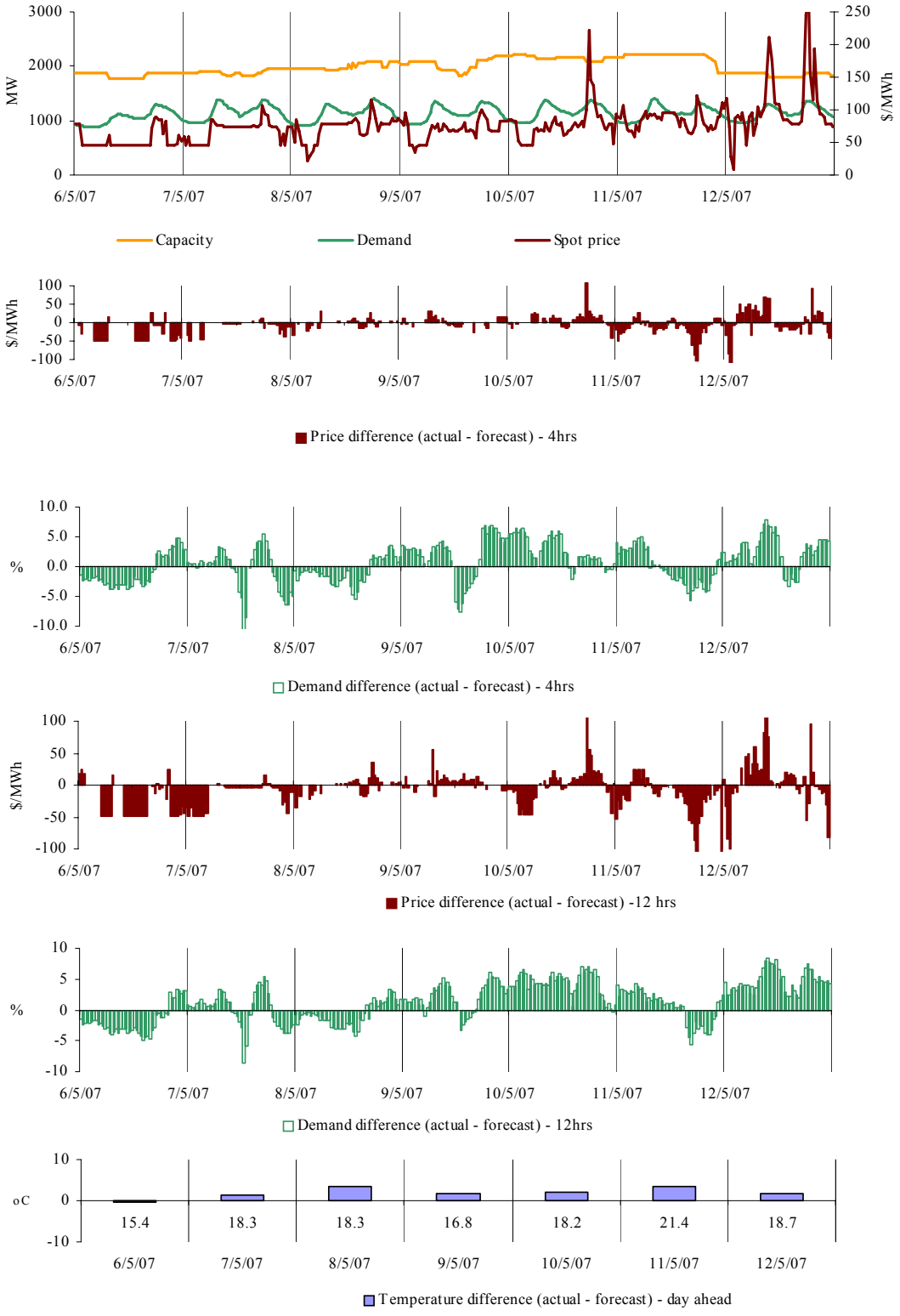
There were three occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of $70/MWh. At the time, prices were aligned across the market. The circumstances of these events are detailed under the national market outcomes section.

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



There was no occasion in South Australia where the spot price was greater than three times the weekly average price of $60/MWh.

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



There were two occasions in Tasmania where the spot price was greater than three times the weekly average price of $77/MWh. At the time, prices were aligned across the market. The circumstances of these events are detailed under the national market outcomes section.

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

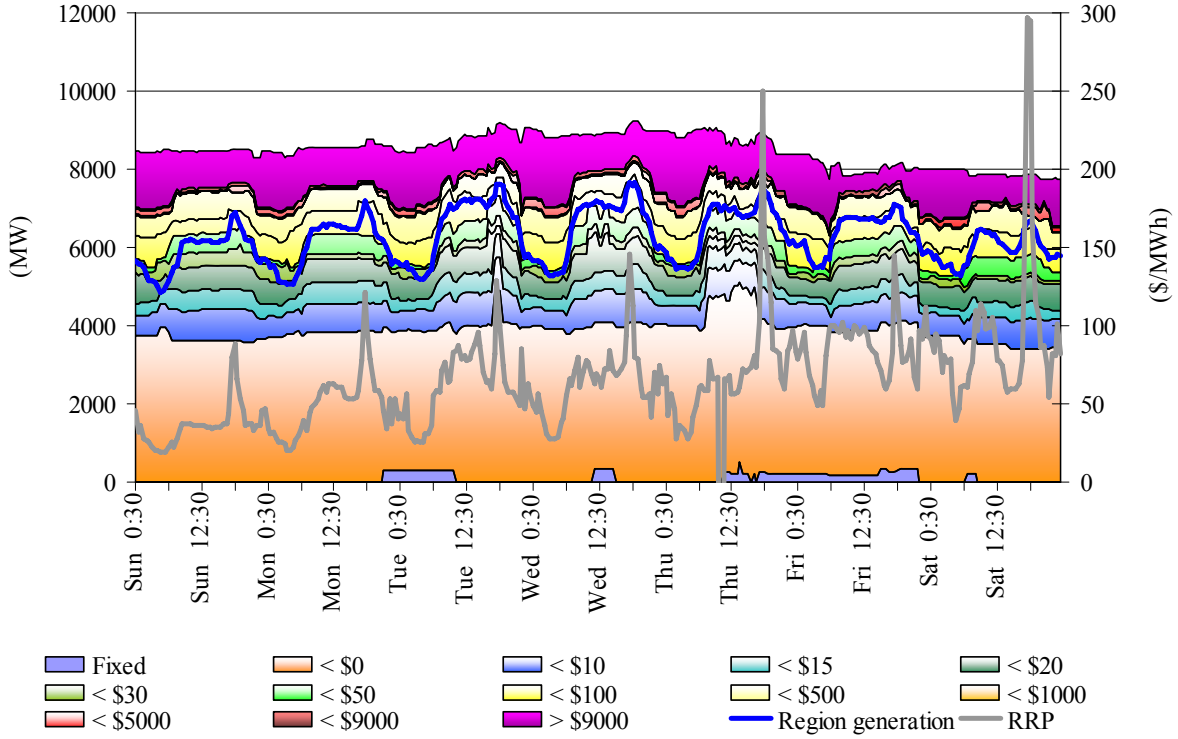


Figure 58: New South Wales closing bid prices, dispatched generation and spot price

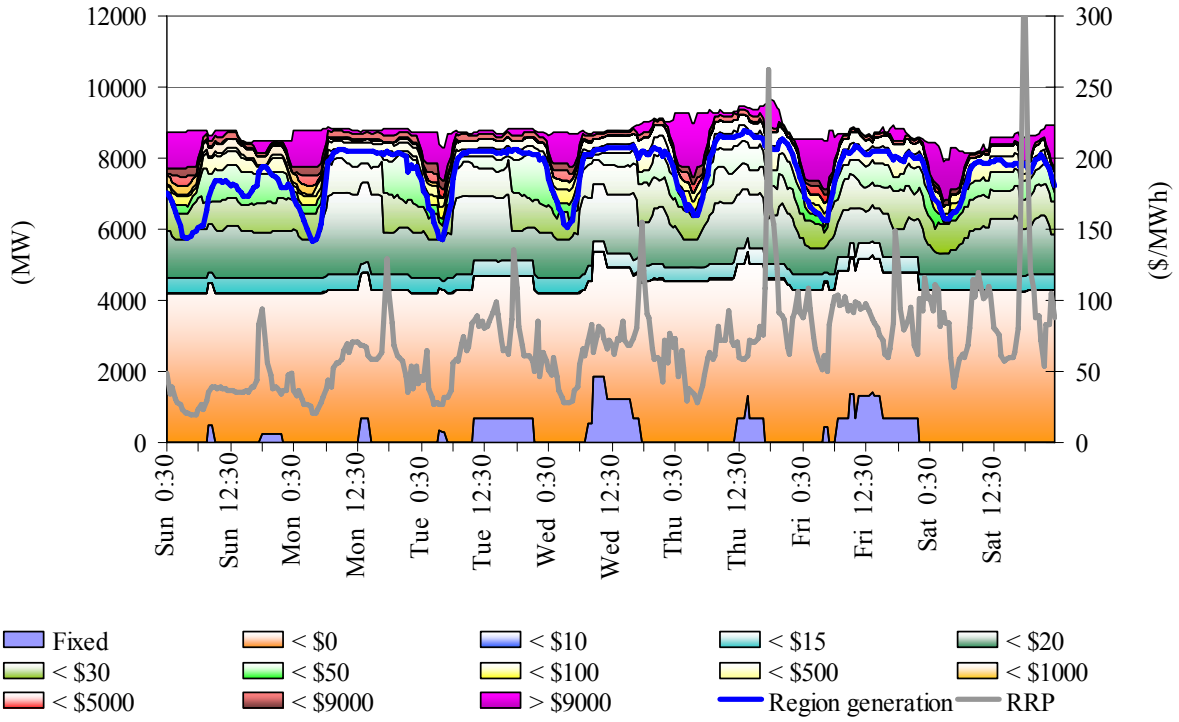


Figure 59: Victoria closing bid prices, dispatched generation and spot price

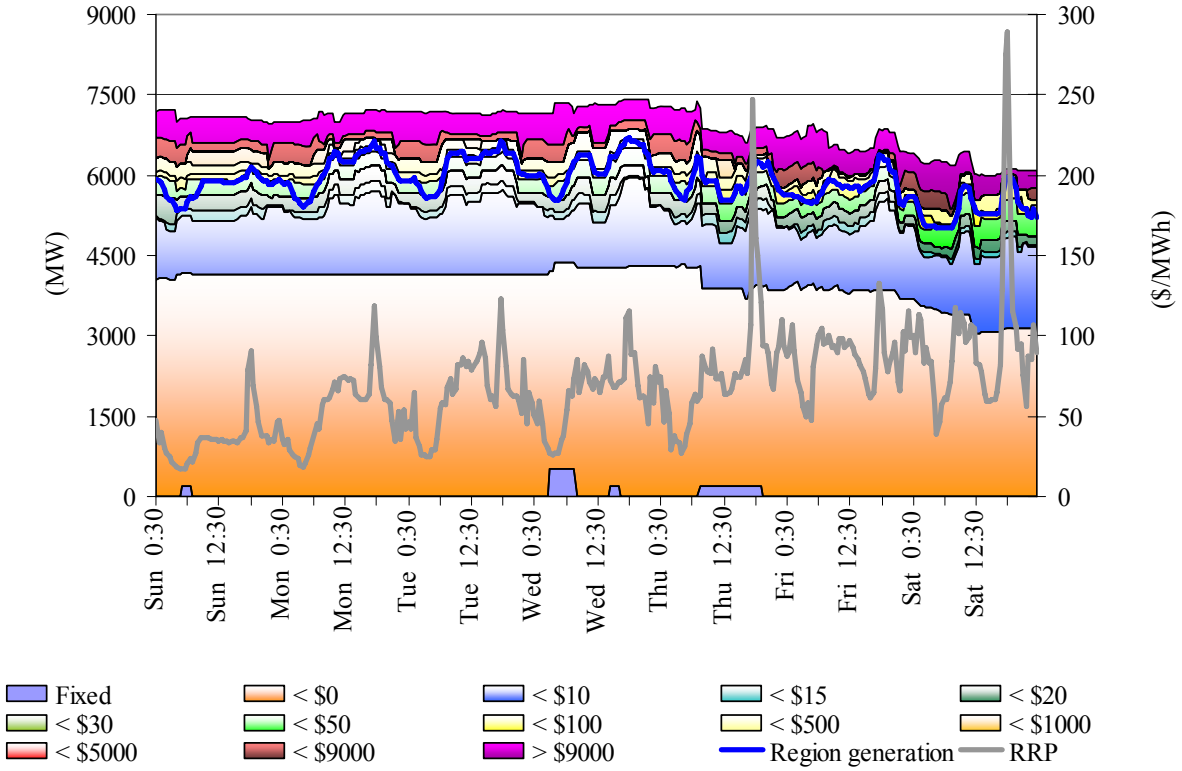


Figure 60: South Australia closing bid prices, dispatched generation and spot price

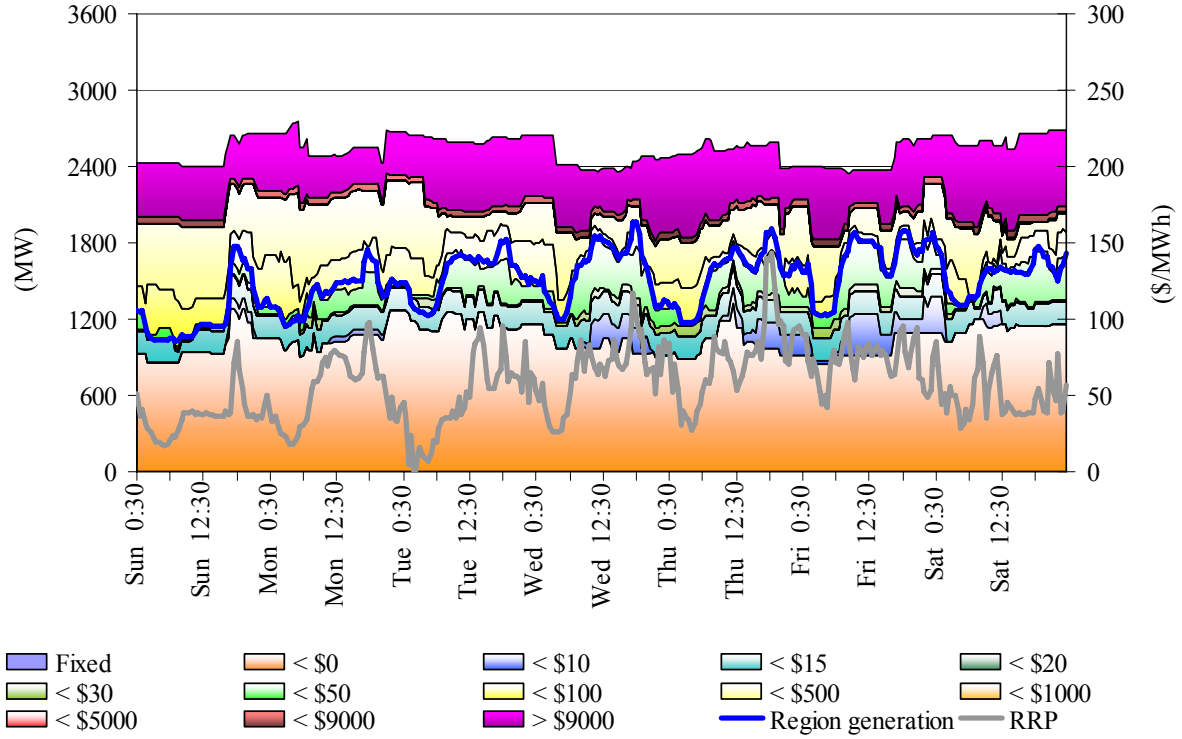
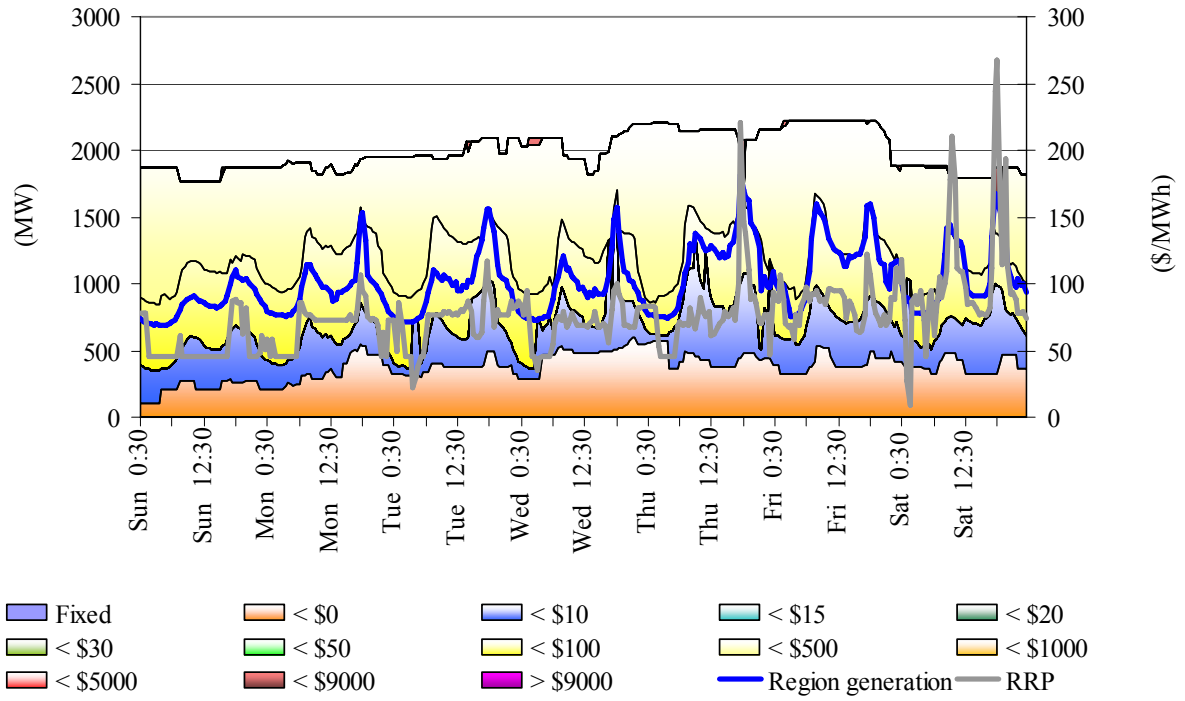


Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $447 000 or 0.2 per cent of 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 ($/MW)	4.09	0.64	1.65	5.11	0.09	0.02	0.20	1.25
Previous week ($/MW)	1.19	0.34	1.62	3.69	0.10	0.03	0.12	1.76
Last quarter ($/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	$192	$25	$101	$105	$0	$0	$4	$20
% of energy market	0.08%	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 $187 000 or 1.3 per cent of the turnover in the energy market in Tasmania. 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 ($/MW)	13.05	1.94	2.82	4.60	0.07	1.68	1.84	1.51
Previous week ($/MW)	11.47	1.95	3.75	4.90	9.96	1.97	0.80	1.84
Last quarter ($/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost ($1000s)	$52	$25	$31	$26	$0	$25	$20	$7
% of energy market	0.35%	0.17%	0.21%	0.18%	0.01%	0.17%	0.14%	0.05%

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

Figure 64: daily frequency control ancillary service cost

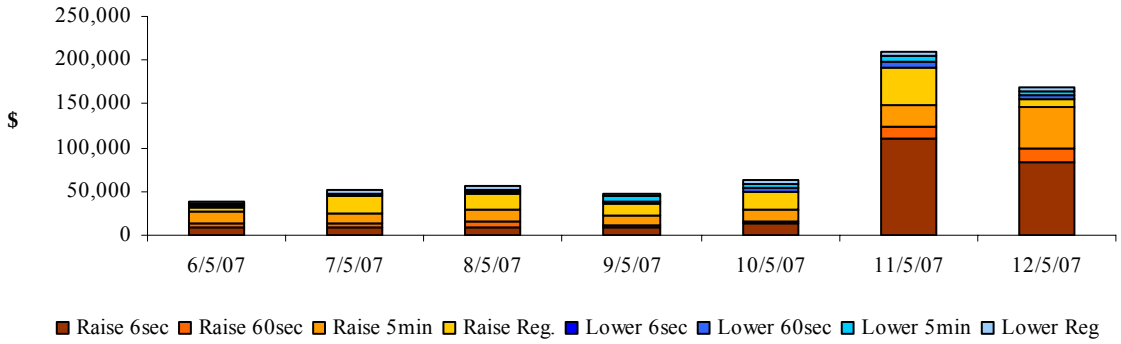
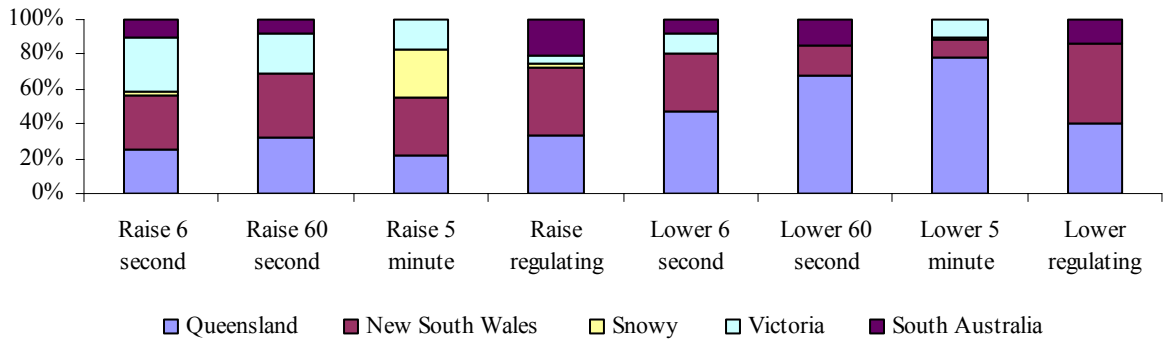


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

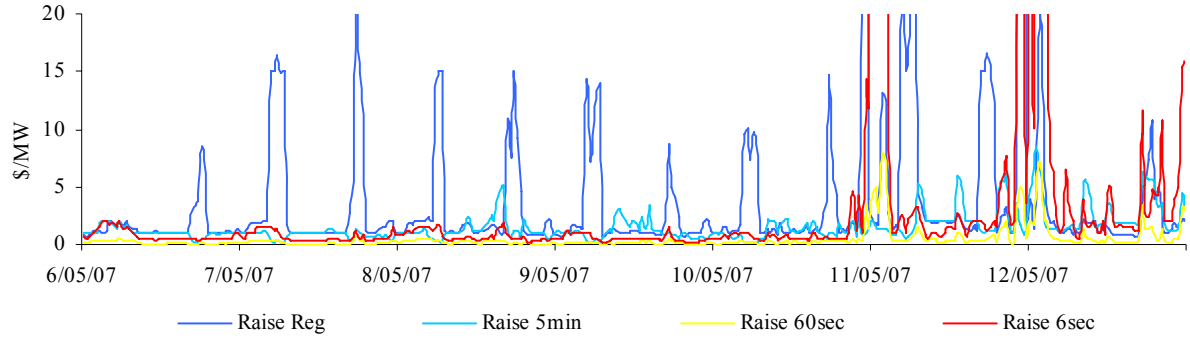


Figure 66A: prices for raise services – Tasmania

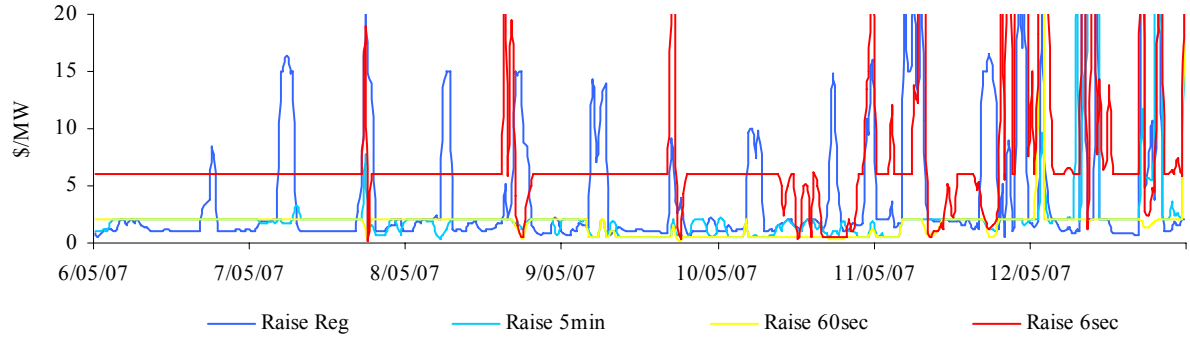


Figure 67: prices for lower services

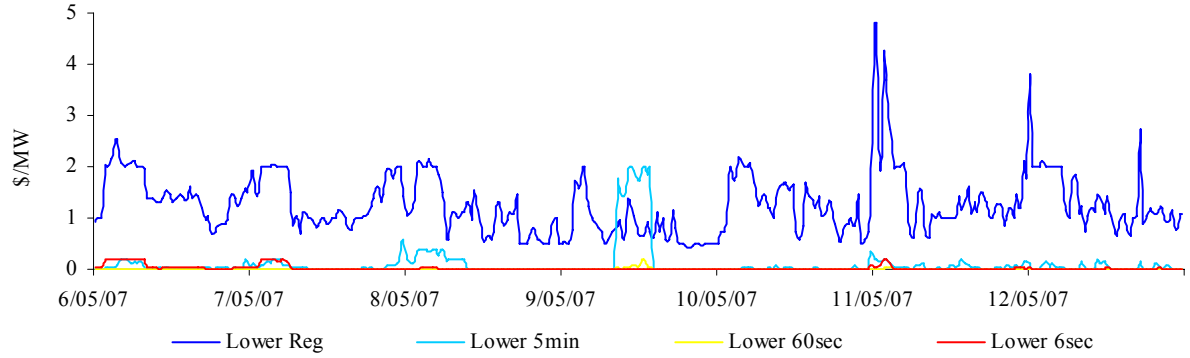
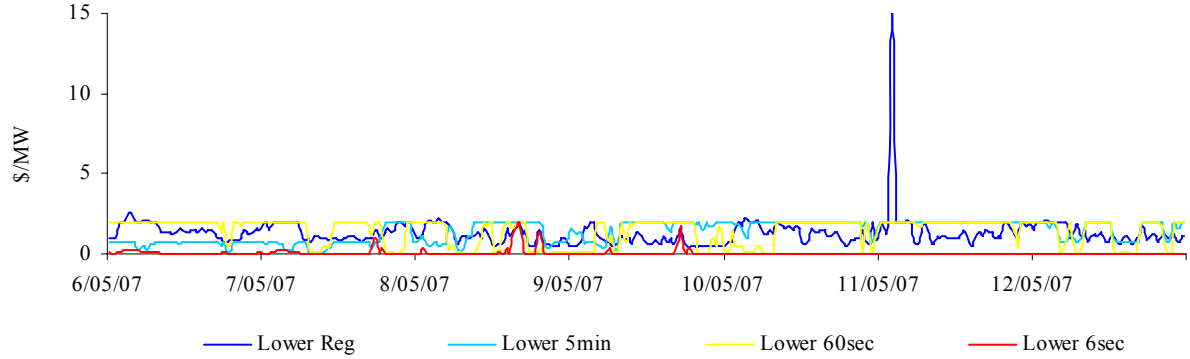


Figure 67A: prices for lower services – Tasmania



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

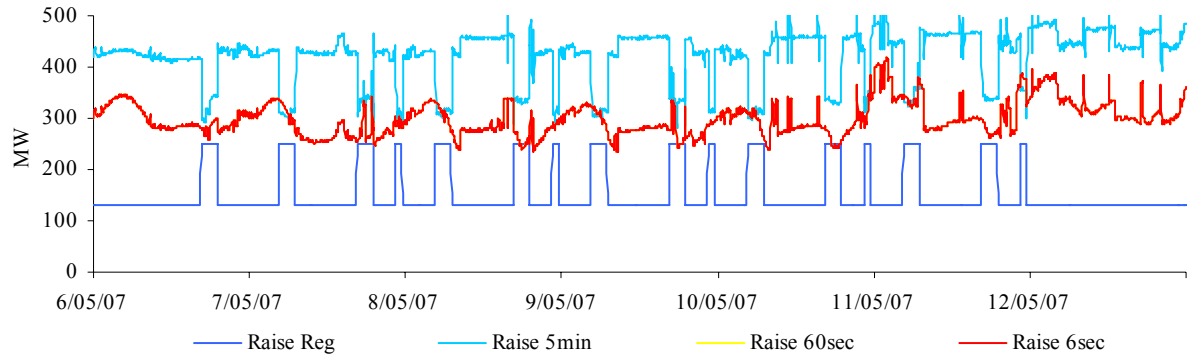


Figure 68A: raise requirements – Tasmania

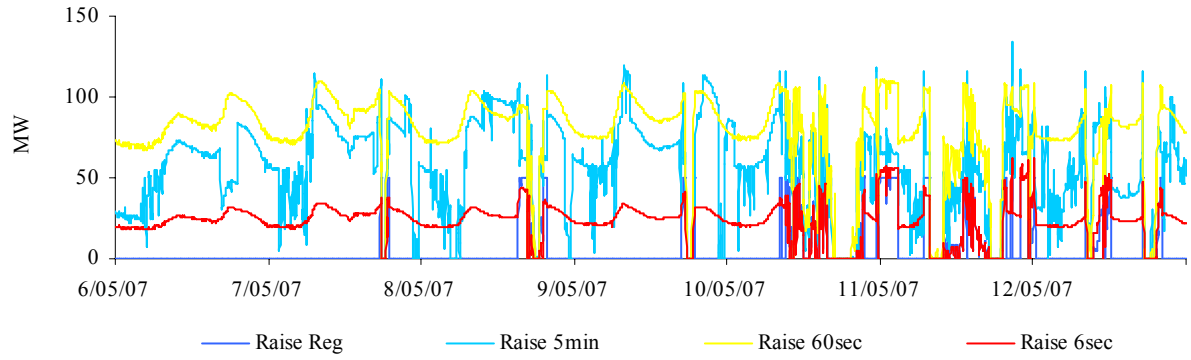


Figure 69: lower requirements

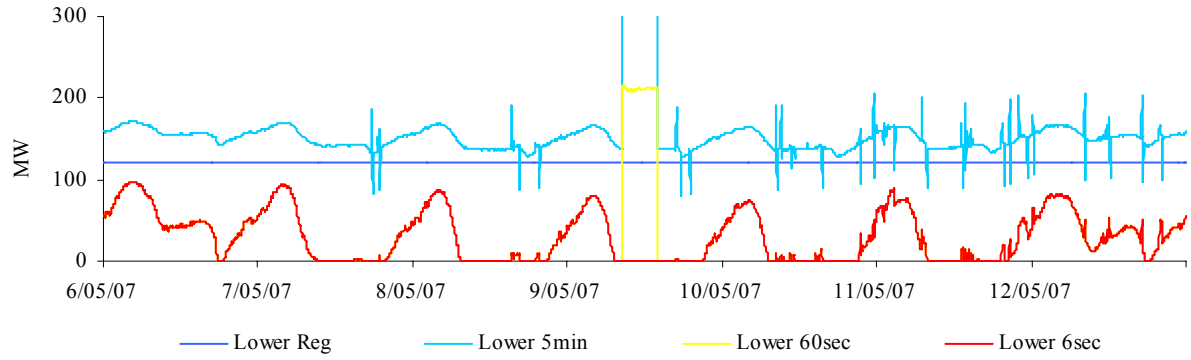
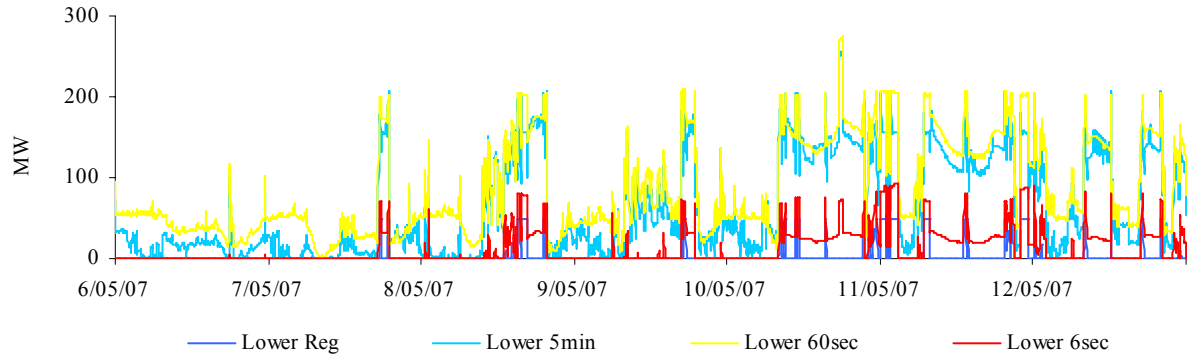


Figure 69A: lower requirements – Tasmania



Australian Energy Regulator
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