Market analysis

AUSTRALIAN ENERGY REGULATOR

15–21 April 2007

Spot prices for the week averaged across the southern regions between $76/MWh in Victoria and $79/MWh in South Australia. Prices in Queensland and New South Wales averaged $105/MWh and $109/MWh respectively. High prices resulted on Thursday and Friday in New South Wales and Queensland following the simultaneous loss of two 500 MW units in New South Wales. Both units returned to service by Saturday.

Turnover in the energy market was $364 million. The total cost of ancillary services for the week was $673 000, or 0.1 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 195 or 58 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 fifth of all trading intervals across the market. These variations were most frequent in South Australia and Tasmania, occurring in a half and a third all trading intervals respectively.

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

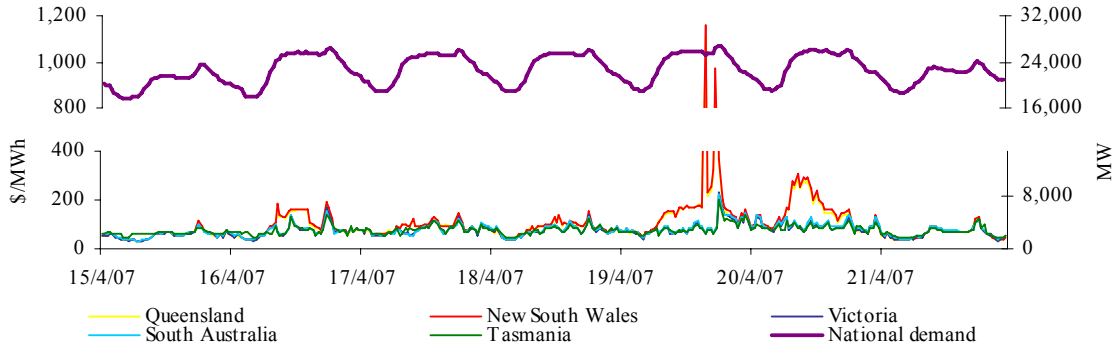


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	105	109	76	79	77
Previous week	60	63	57	63	65
Same quarter last year	25	28	30	38	38
Financial year to date	40	44	49	52	45
% change from previous week *	▲74%	▲72%	▲33%	▲26%	▲20%
% change from same quarter last year **	▲324%	▲295%	▲155%	▲109%	▲106%
% change from year to date ***	▲21%	▼6%	▲32%	▲16%	▼31%

*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

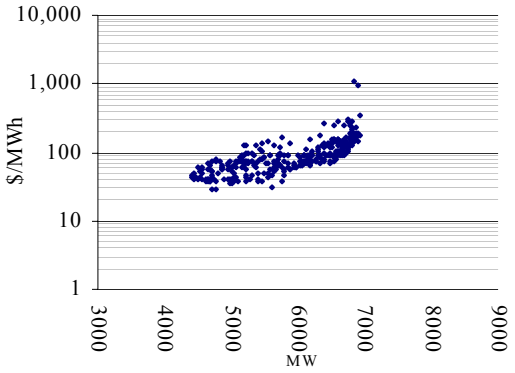


Figure 4: New South Wales

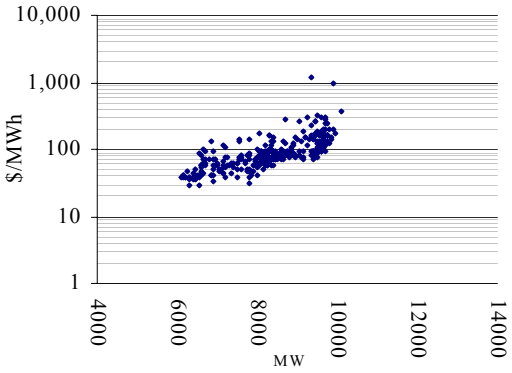


Figure 5: Victoria

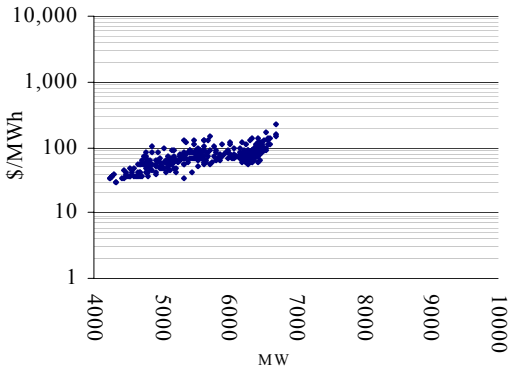


Figure 6: South Australia

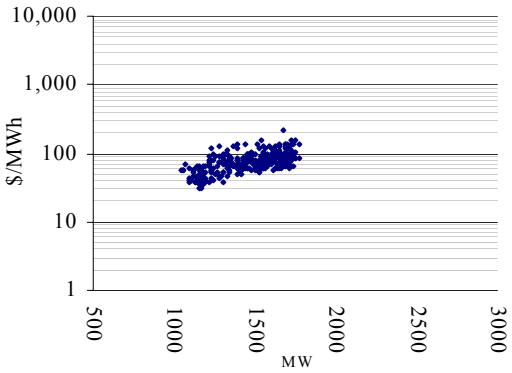
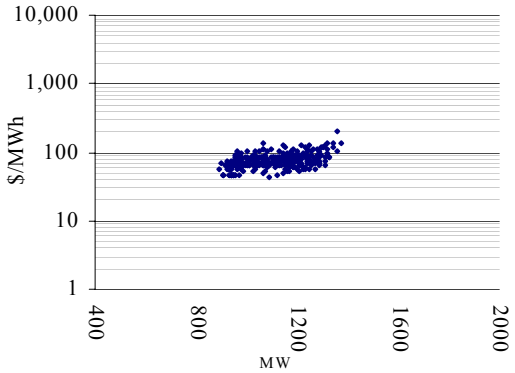


Figure 7: Tasmania



The maximum spot prices for the week ranged from $202/MWh in Tasmania to $1161/MWh in New South Wales. 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	0.97	0.95	0.57	0.59	0.47
Previous week	0.57	0.51	0.55	0.55	0.36
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

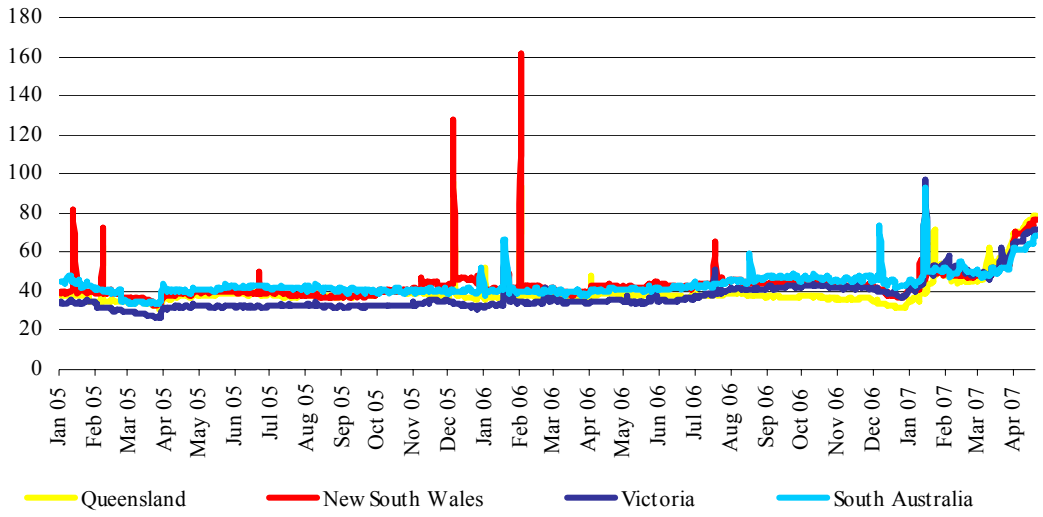
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2005.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	76.13	76.92	76.34	79.04	79.00
New South Wales	73.62	74.51	73.41	75.67	77.16
Victoria	70.10	70.67	69.46	69.96	71.57
South Australia	64.20	64.40	64.68	66.63	68.82

* 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 low reserves forecast in South Australia for Monday, Tuesday and Wednesday. All were removed ahead of time following a market response.

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

Figure 11: Queensland

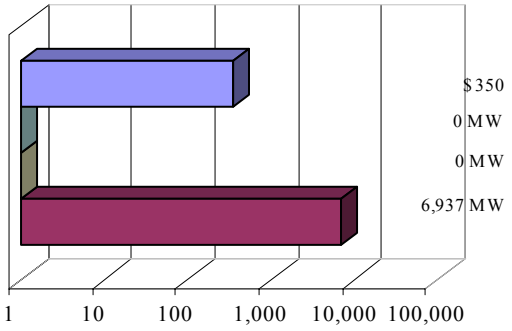


Figure 12: New South Wales

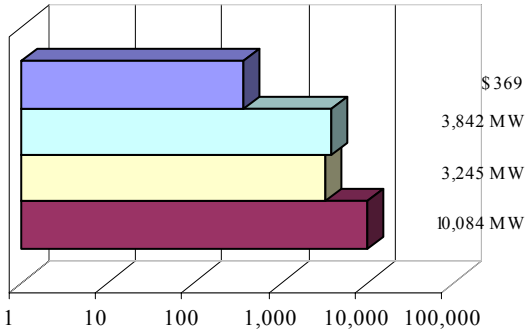


Figure 13: Victoria

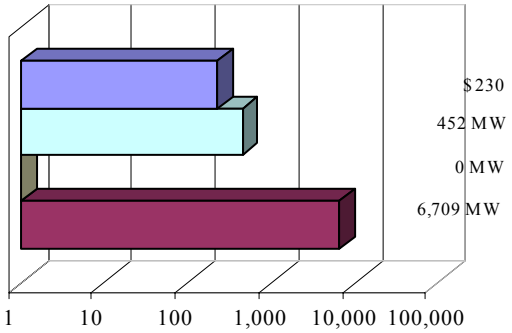


Figure 14: South Australia

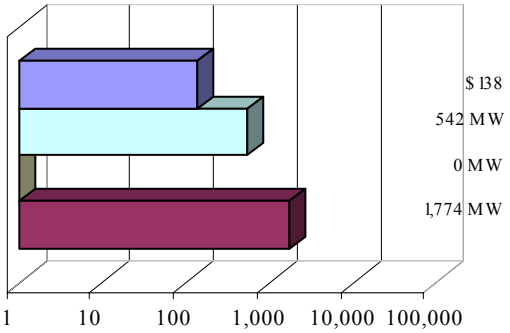
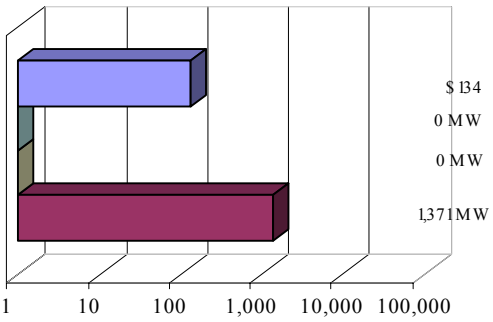


Figure 15: Tasmania



Price variations

There were 195 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

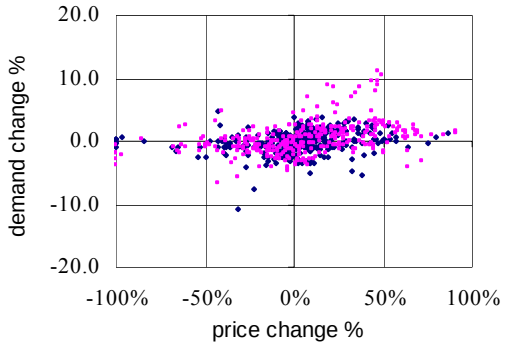


Figure 17: New South Wales

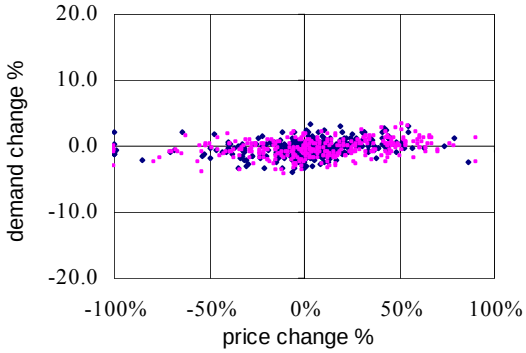


Figure 18: Victoria

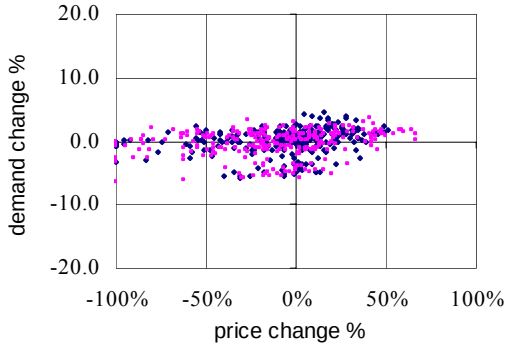


Figure 19: South Australia

Figure 20: Tasmania

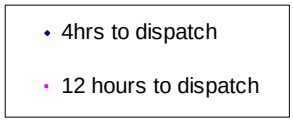
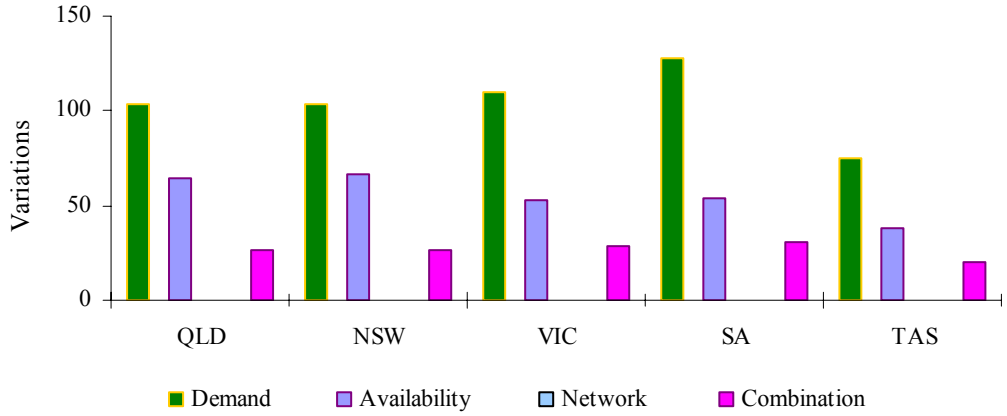


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

Figure 21: reasons for variations between forecast and actual prices



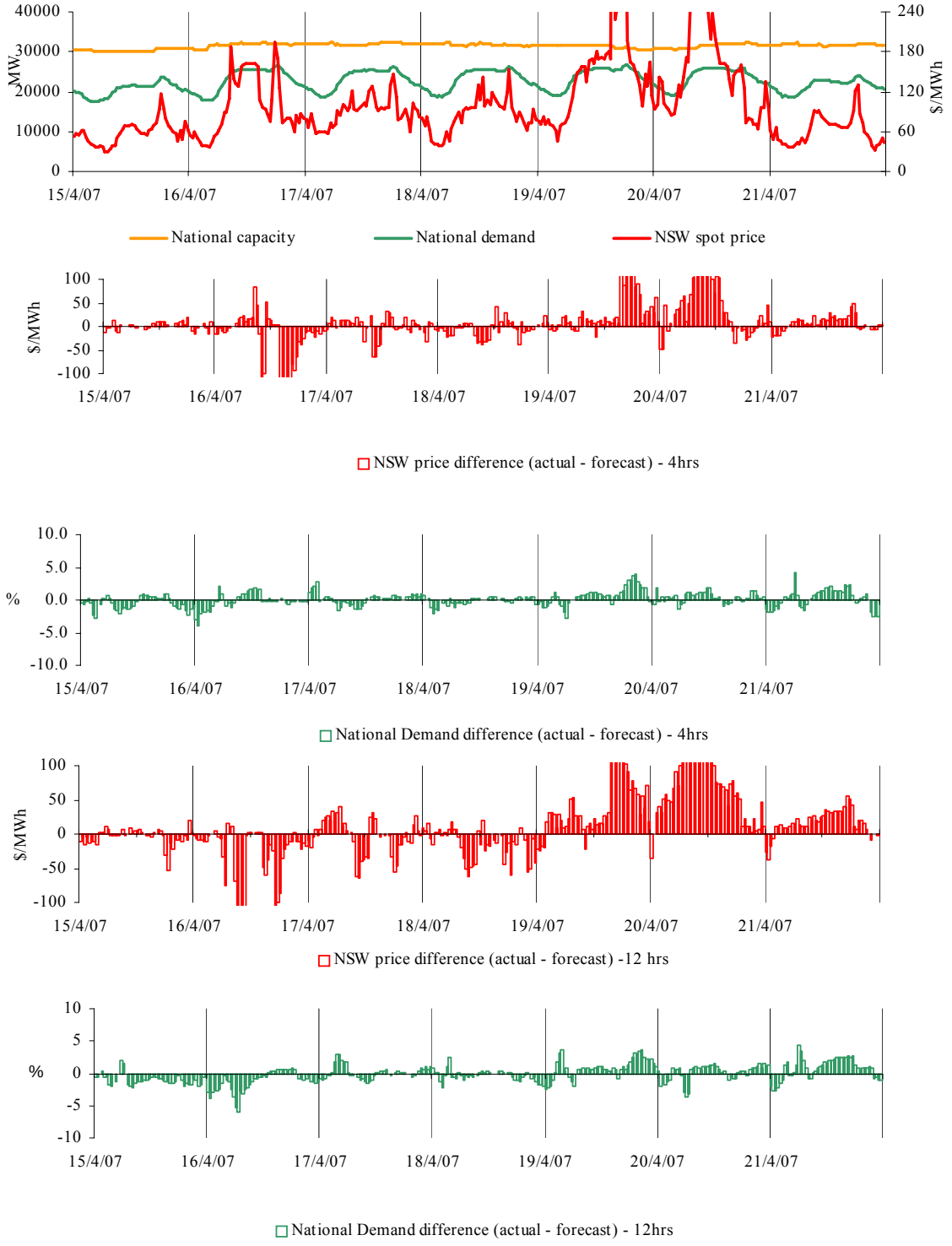
Price and demand

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.

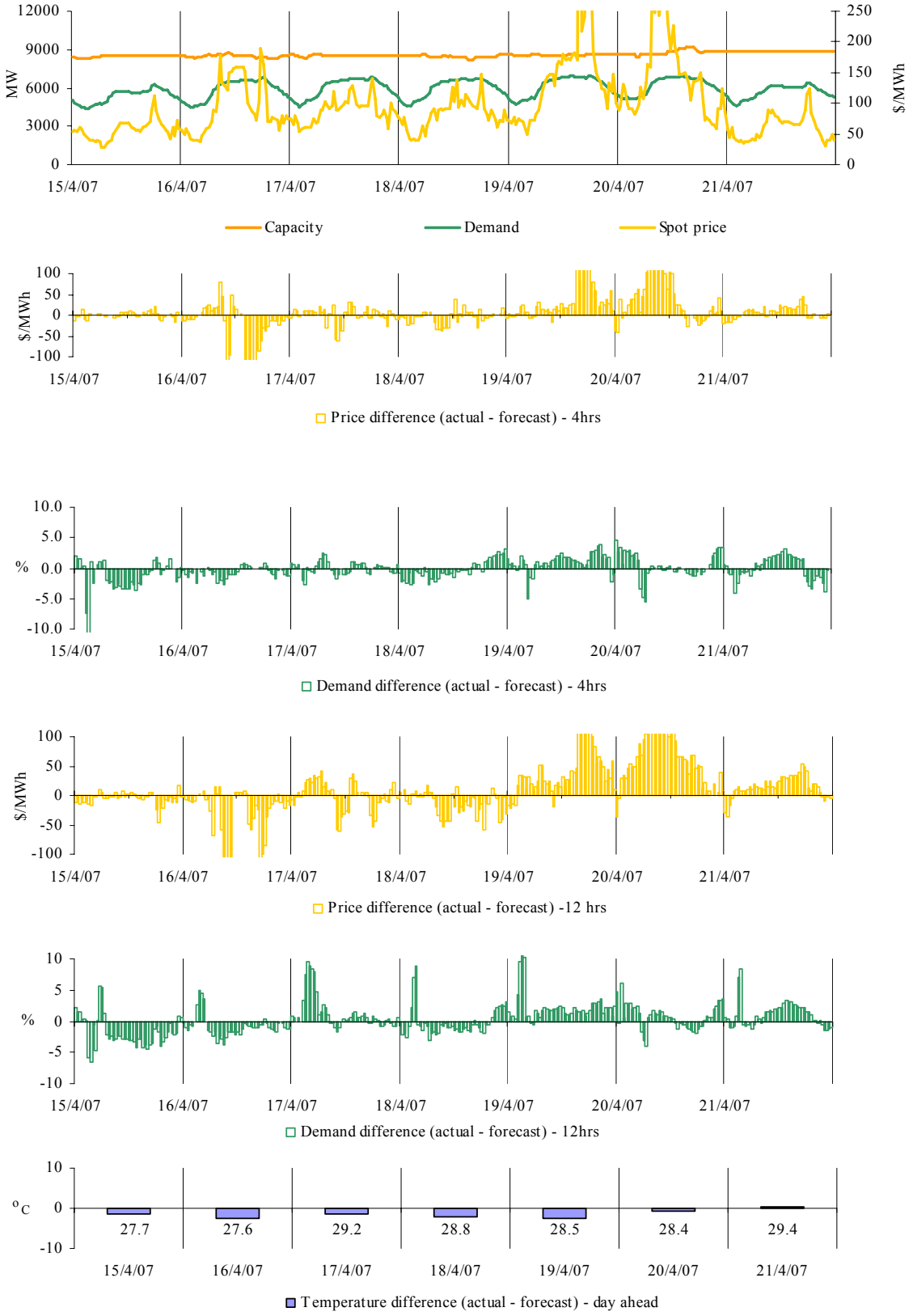
Figures 22-26: National market outcomes



There was no occasion 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 $109/MWh.

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

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 $105/MWh. These all occurred on Thursday afternoon.

Thursday, 19 April

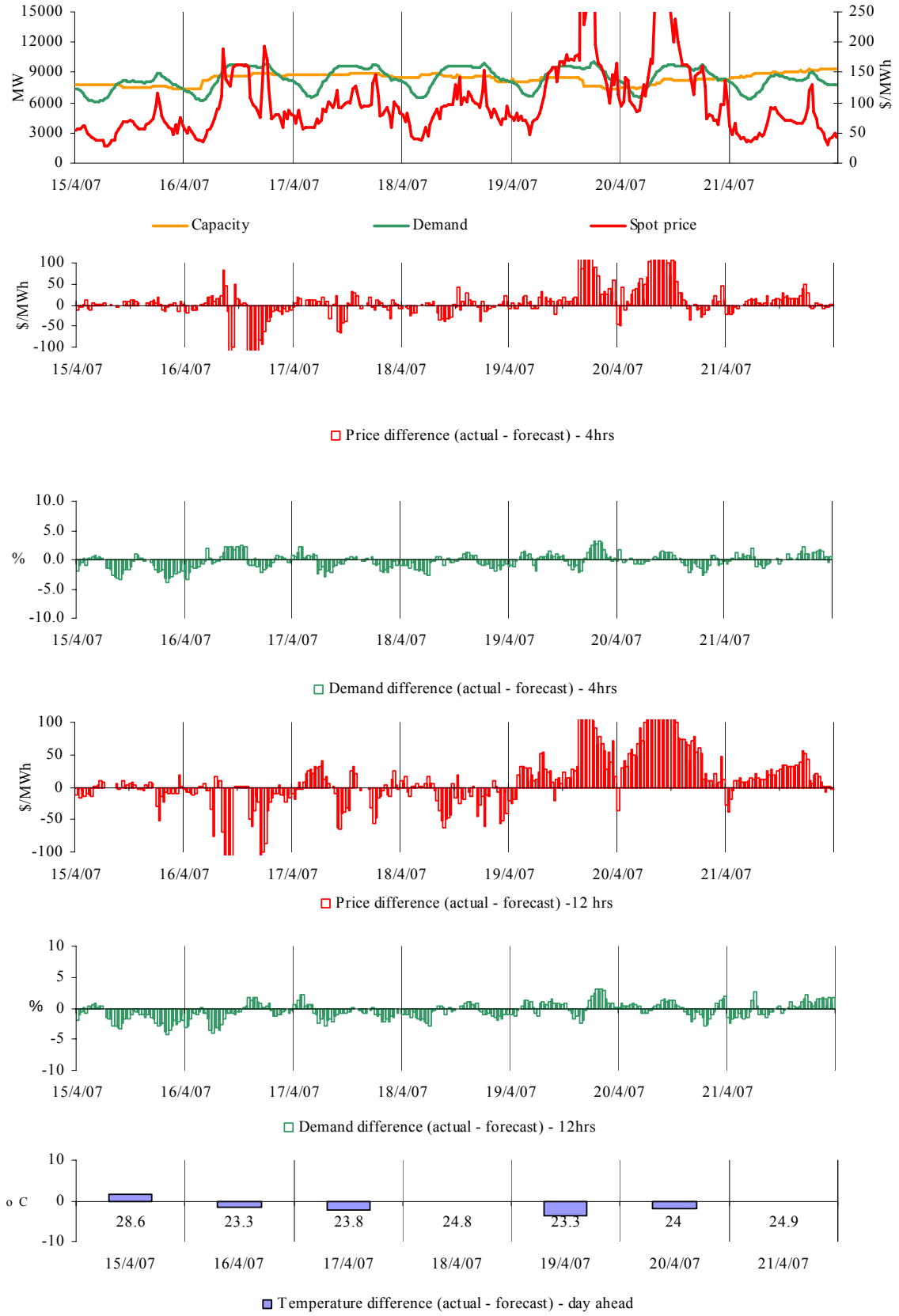
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1109.52	148.35	105.31
Demand (MW)	6839	6760	6739
Available capacity (MW)	8536	8553	9022
6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	923.04	190.43	86.93
Demand (MW)	6912	6864	6829
Available capacity (MW)	8621	8557	9024
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	350.15	156.54	134.98
Demand (MW)	6937	6853	6819
Available capacity (MW)	8649	8548	9025

Conditions at the time saw demand close to forecast 4 and 12 hours ahead. The spot price in Queensland reflected conditions in New South Wales following the simultaneous loss of two generators in that region.

At around 8.30 am, the return of Tarong North power station was delayed until the following day, effectively removing 450 MW of capacity. The unit was returning from a week-long outage.

There was no other significant rebidding.

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



There were four occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of $109/MWh. These all occurred on Thursday afternoon.

Thursday, 19 April

4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1161.42	156.99	115.39
Demand (MW)	9339	9552	9558
Available capacity (MW)	8150	8480	8643
5:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	326.82	158.00	74.20
Demand (MW)	9517	9492	9499
Available capacity (MW)	7660	8480	8643
6:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	973.23	200.00	97.23
Demand (MW)	9896	9773	9764
Available capacity (MW)	7660	8480	8643
6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	368.84	165.62	152.13
Demand (MW)	10084	9882	9880
Available capacity (MW)	7660	8480	8643

Conditions at the time saw demand close to forecast 4 and 12 hours ahead.

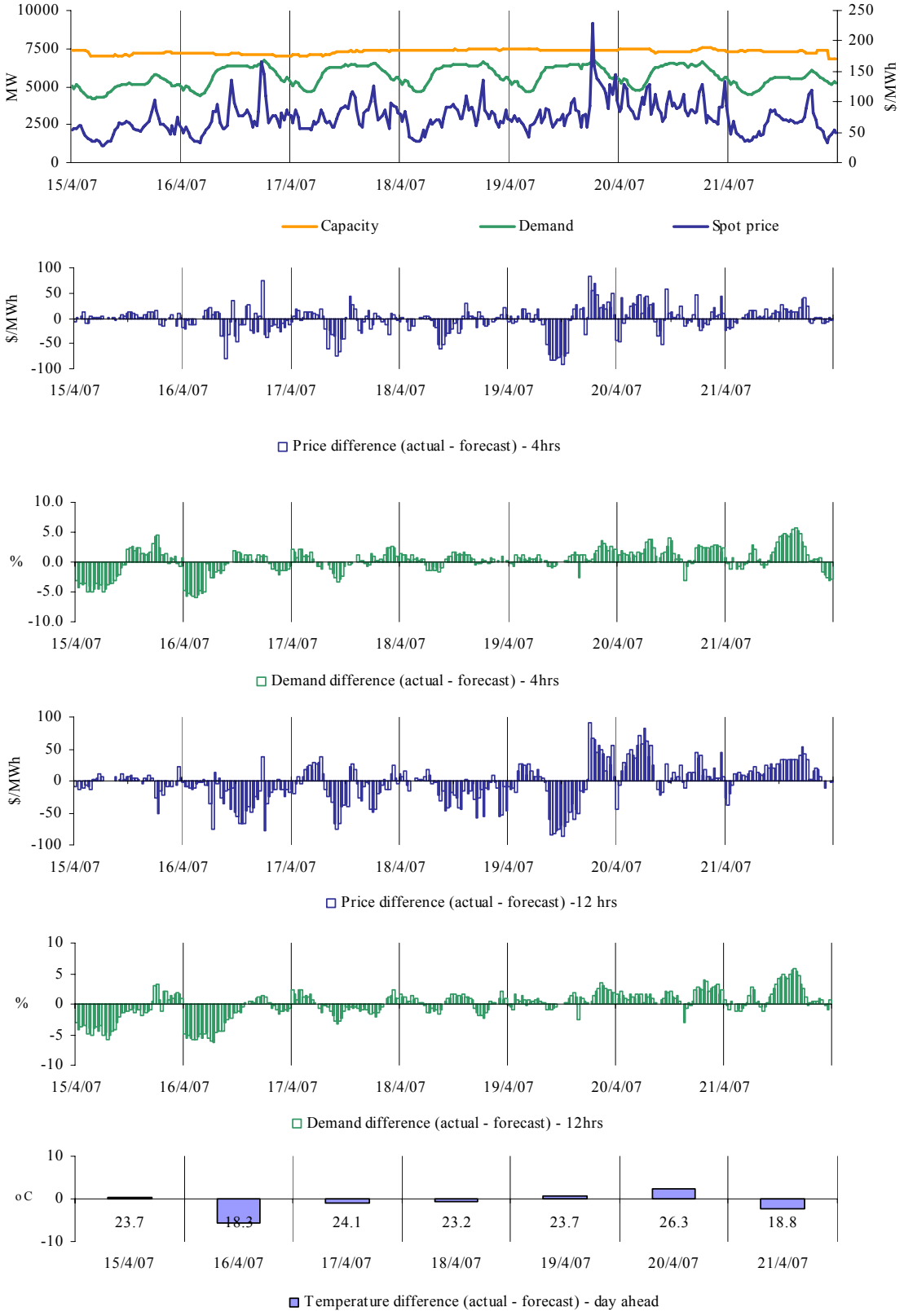
At around 3.40 pm both of Delta Electricity's Wallerawang units tripped simultaneously from a combined output of 760 MW. Rebids at 3.45 pm, first effective from 3.55 pm, removed 760 MW of capacity priced at less than $30/MWh. The rebid reason given was "Unit trip".

Following this rebid, the five-minute price increased to $5769/MWh for a single dispatch interval at 3.55 pm, before dropping to around $240/MWh, or $80/MWh higher than immediately prior to the loss of the units.

A combination of reduced capacity at lower prices and increasing demand saw a second five-minute price spike to $4231/MWh at 5.45 pm.

There was no other significant rebidding.

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



There was one occasion where the spot price in Victoria was greater than three times the Victoria weekly average price of $76/MWh. This occurred at 6.30 pm on Thursday evening.

Thursday, 19 April

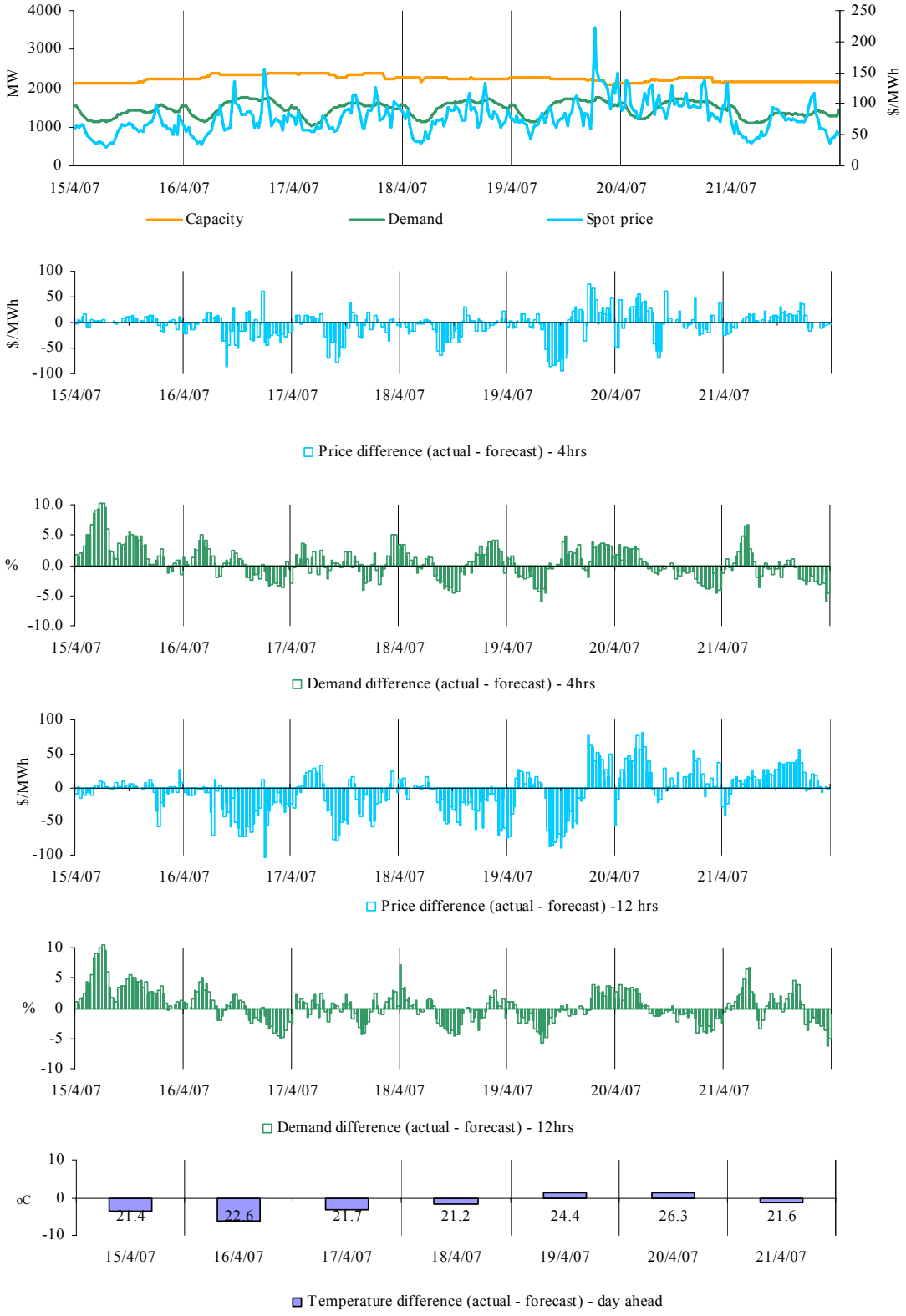
6:30 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	230.08	145.87	139.90
Demand (MW)	6709	6707	6713
Available capacity (MW)	7376	7376	7463

Conditions at the time saw demand close to forecast 4 and 12 hours ahead.

The five-minute dispatch price increased from around $150/MWh to $280/MWh at 6.15 pm as prices in Victoria aligned with those in New South Wales. A rebid by Snowy Hydro reduced the level of generation on the Victorian side of the Snowy region by 100 MW, reducing flows across the Snowy to New South Wales interconnector. The rebid reason given was “Prices higher than expected:Re-aloc gen”.

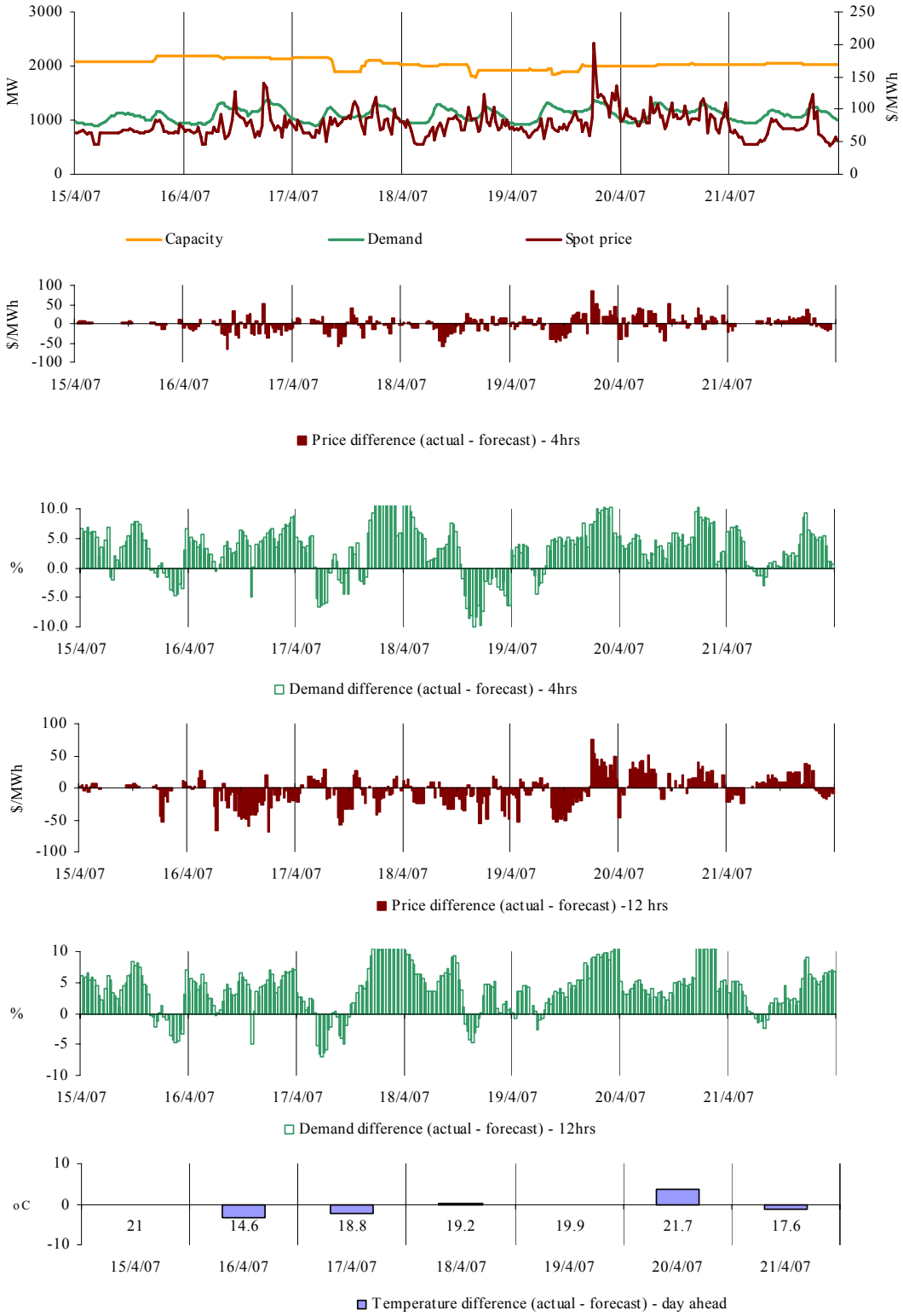
There was no other significant rebidding.

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 $79/MWh.

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



There was no occasion where the spot price in Tasmania was greater than three times the weekly average price of $77/MWh.

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

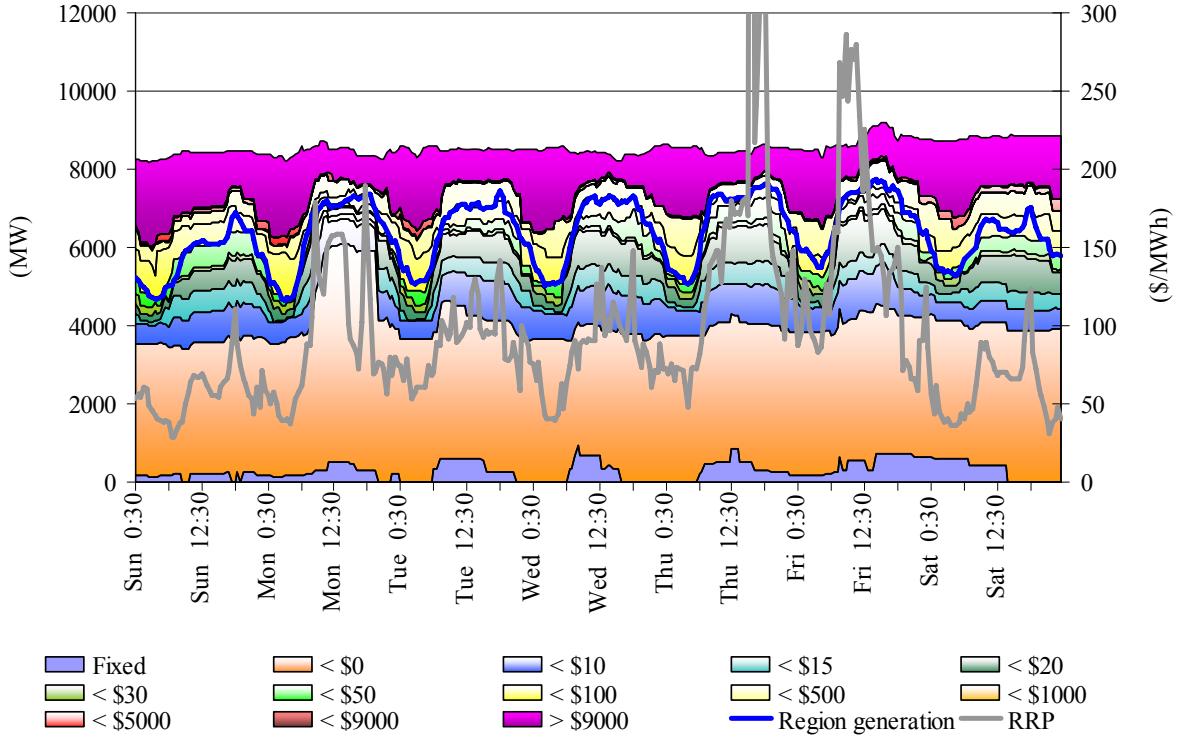


Figure 58: New South Wales closing bid prices, dispatched generation and spot price

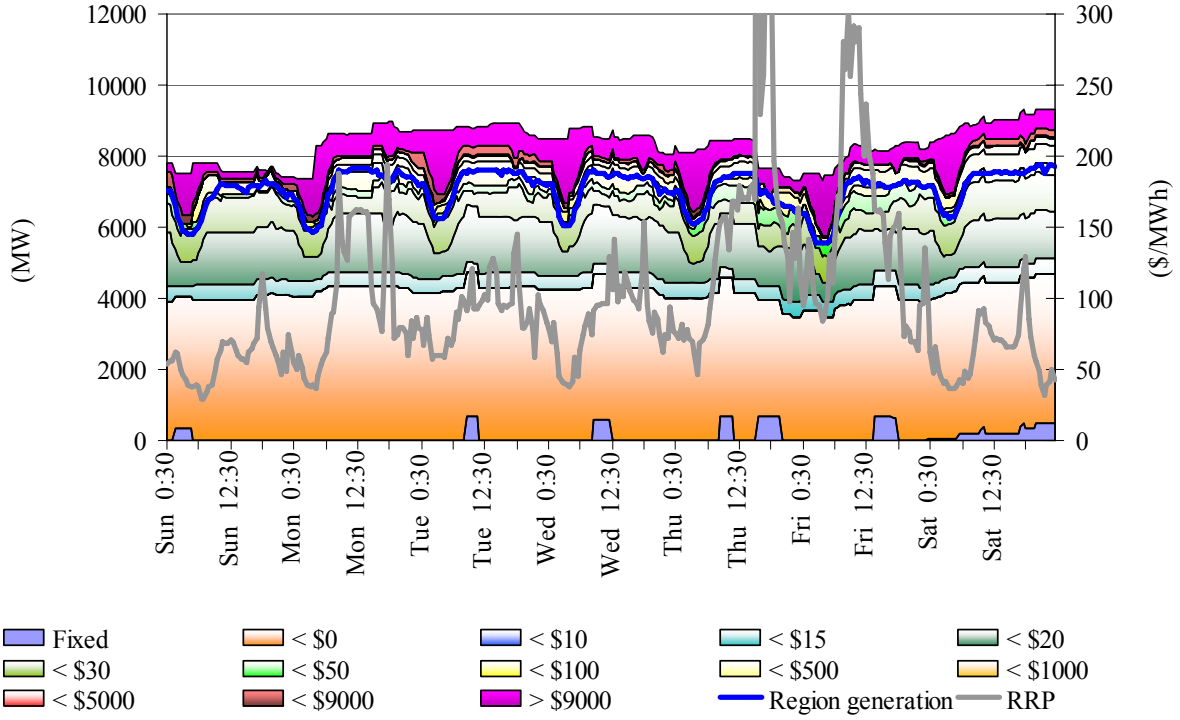


Figure 59: Victoria closing bid prices, dispatched generation and spot price

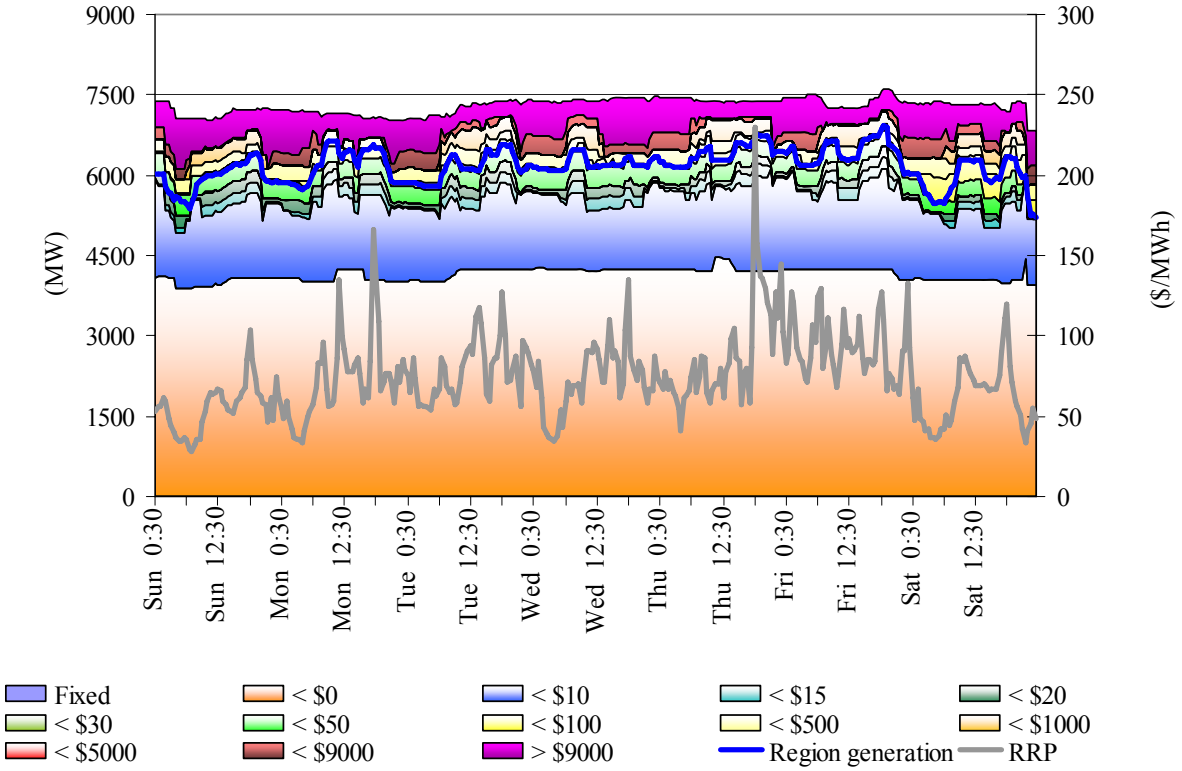


Figure 60: South Australia closing bid prices, dispatched generation and spot price

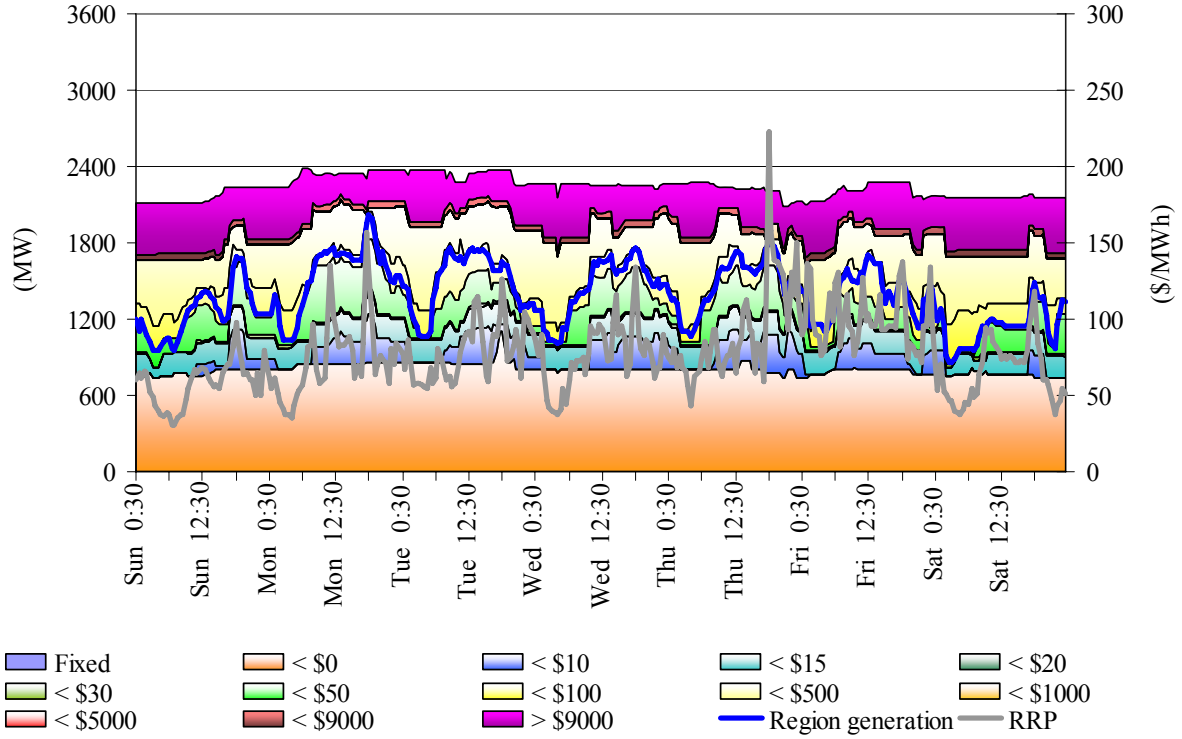
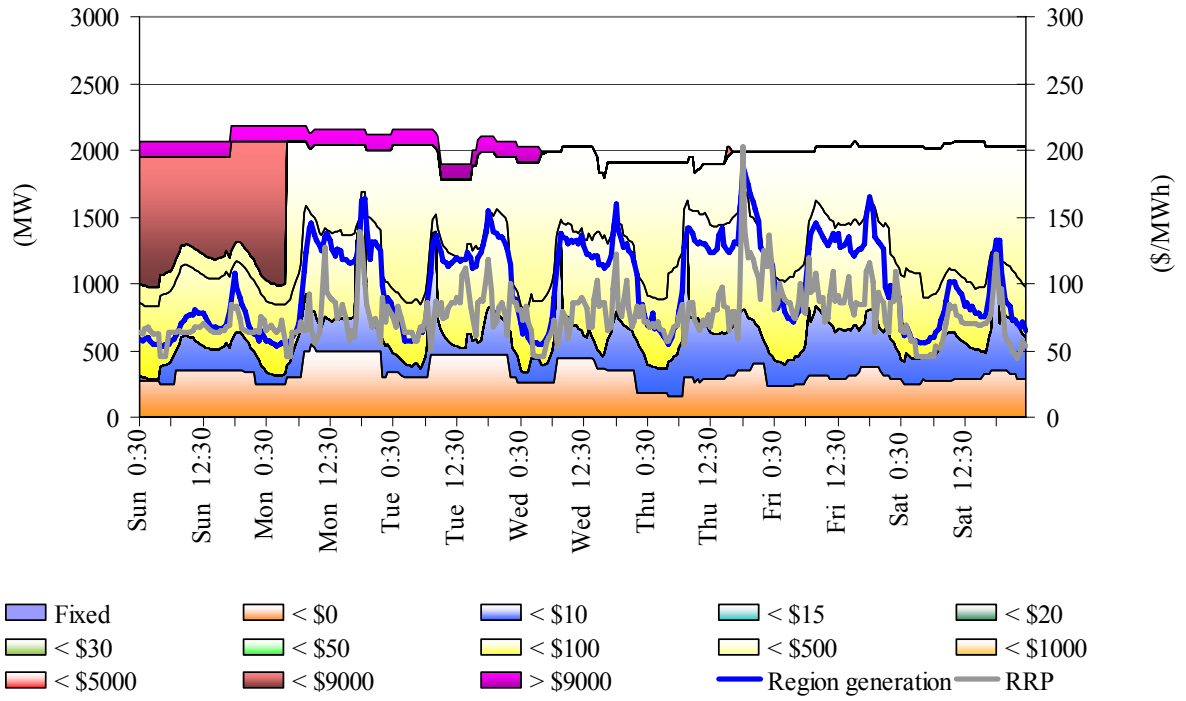


Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $454 000 or 0.1 per cent of 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 ($/MW)	3.06	0.68	1.62	6.62	0.09	0.21	0.57	1.55
Previous week ($/MW)	2.90	0.56	1.67	4.31	0.21	0.43	1.51	1.43
Last quarter ($/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	$147	$29	$101	$139	$0	$1	$12	$25
% of energy market	0.04%	0.01%	0.03%	0.04%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was $219 000 or 1.5 per cent of the total 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 ($/MW)	21.21	1.87	2.96	6.77	1.78	1.90	0.78	1.54
Previous week ($/MW)	9.16	1.95	2.14	4.32	8.12	0.53	0.57	1.44
Last quarter ($/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost ($1000s)	$76	$19	$29	$37	$12	$29	$10	$7
% of energy market	0.53%	0.13%	0.20%	0.26%	0.08%	0.20%	0.07%	0.05%

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

Figure 64: daily frequency control ancillary service cost

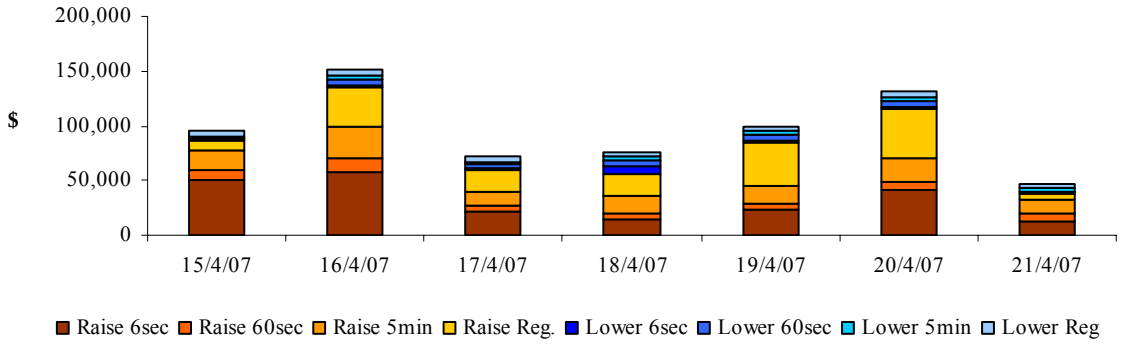
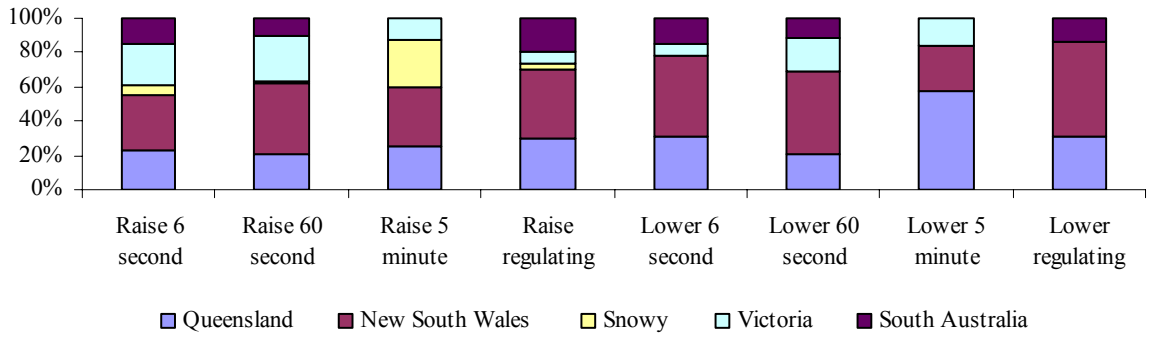


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

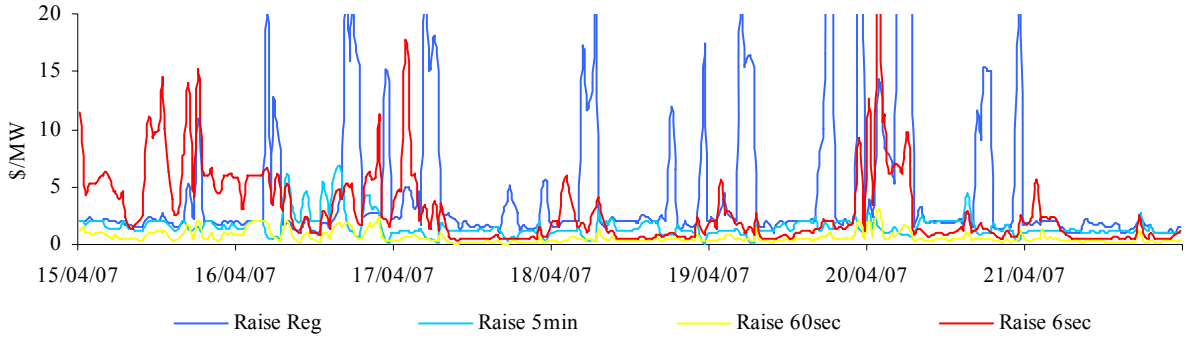


Figure 66A: prices for raise services – Tasmania

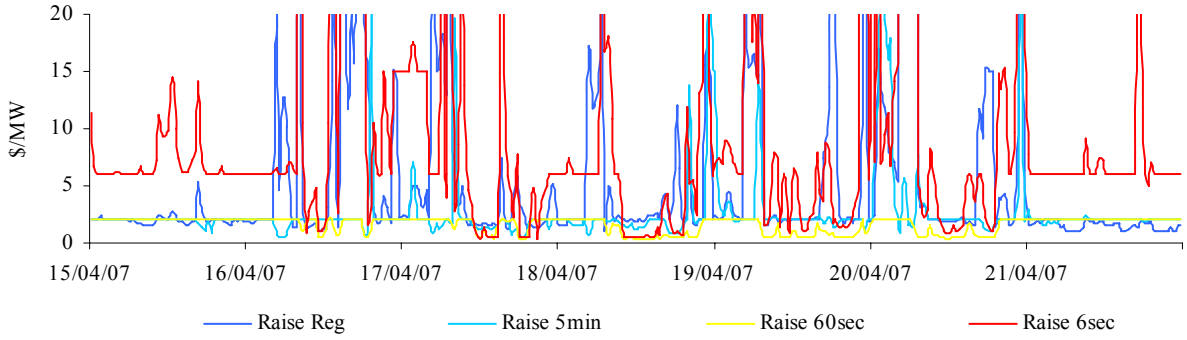


Figure 67: prices for lower services

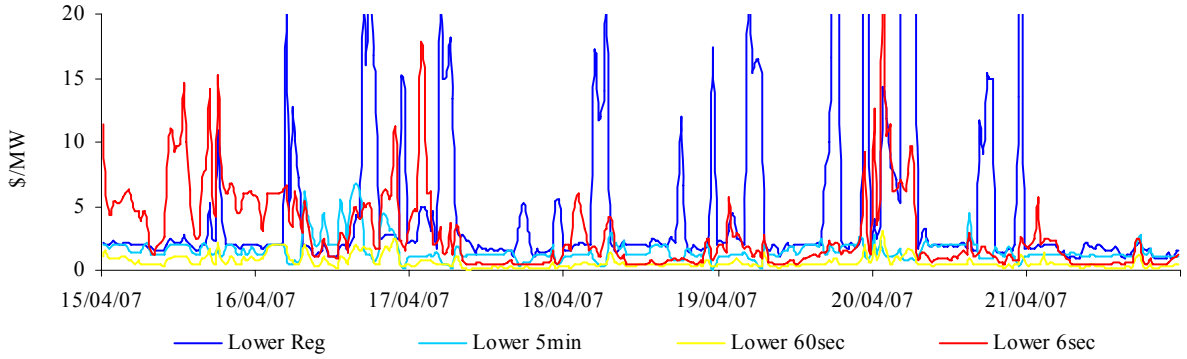
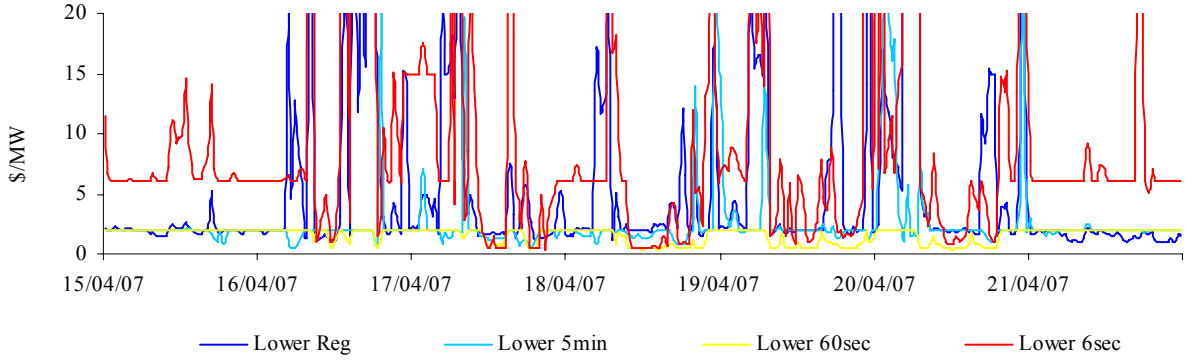


Figure 67A: prices for lower services – Tasmania



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

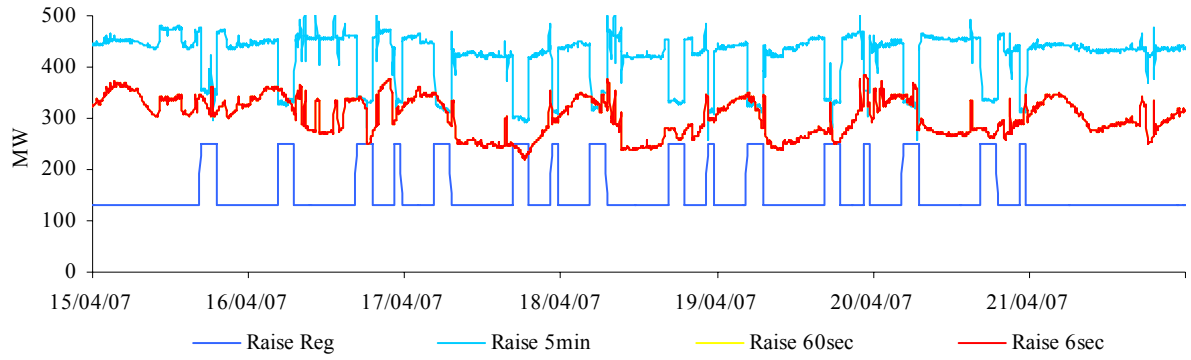


Figure 68A: raise requirements – Tasmania

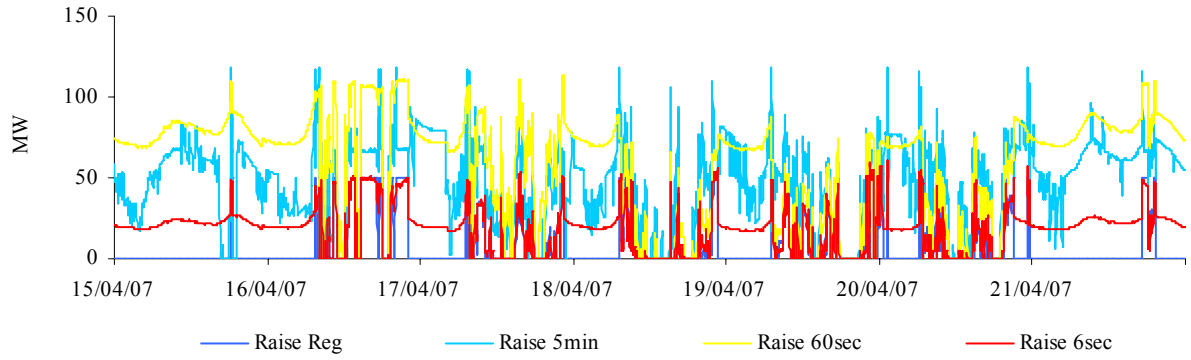


Figure 69: lower requirements

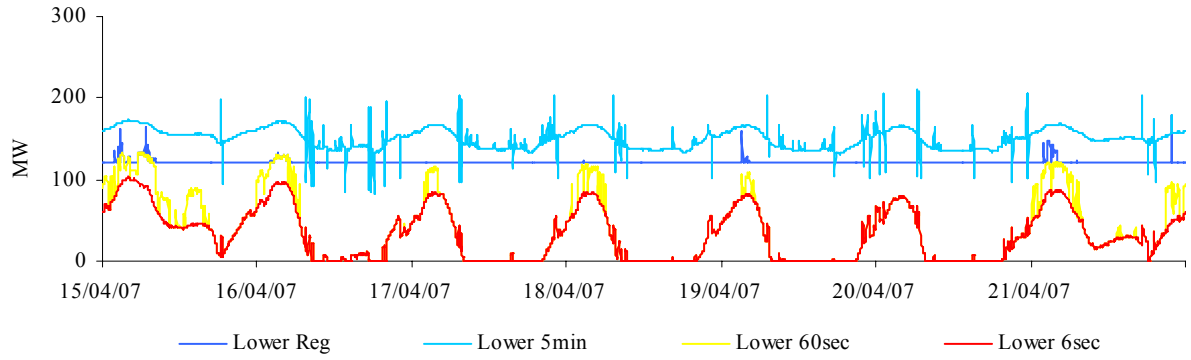
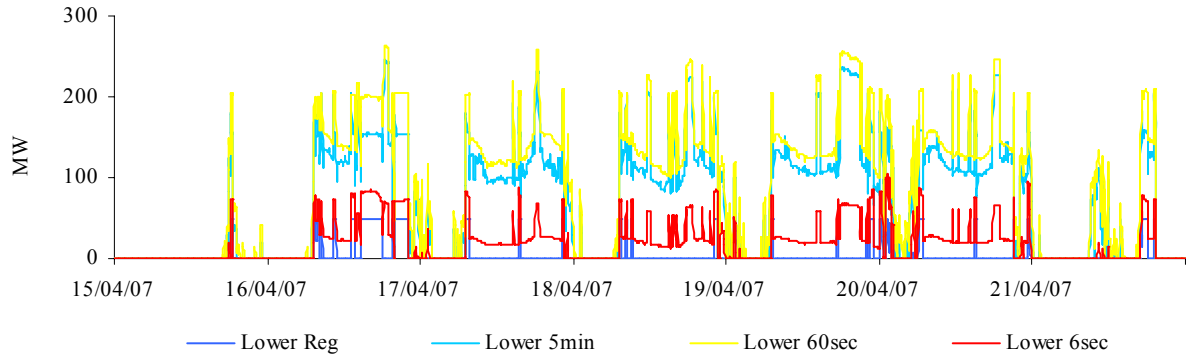


Figure 69A: lower requirements – Tasmania



Australian Energy Regulator
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