Market analysis

AUSTRALIAN ENERGY REGULATOR

4–10 February 2007

Spot prices for the week averaged between $40/MWh in Queensland and $54/MWh in South Australia. A new record national demand of 31 800 MW occurred on Monday.

Turnover in the energy market was $180 million. The total cost of ancillary services for the week was $350 000, or 0.2 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 119 or a third of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in around a quarter all trading intervals across the market. These variations were most frequent in South Australia, occurring in almost a half 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

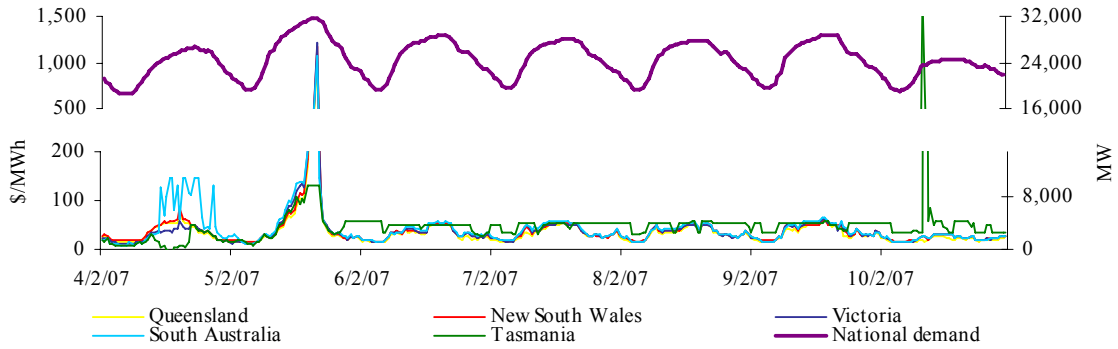


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	40	44	46	54	50
Previous week	64	43	37	43	39
Same quarter last year	39	46	53	58	33
Financial year to date	34	38	45	49	41
% change from previous week *	▼38%	▲2%	▲24%	▲24%	▲29%
% change from same quarter last year **	▲2%	▼4%	▼14%	▼7%	▲53%
% change from year to date ***	▼5%	▼29%	▲28%	▲1%	▼46%

*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

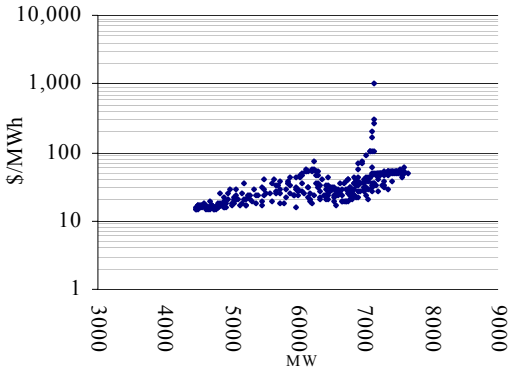


Figure 4: New South Wales

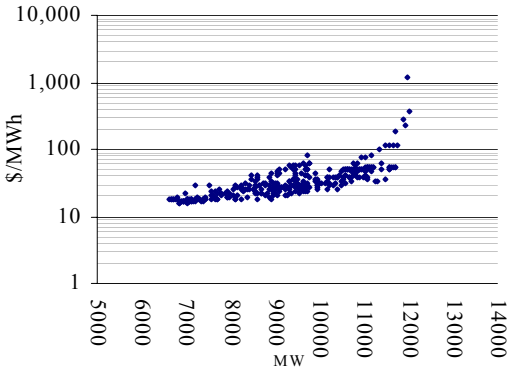


Figure 5: Victoria

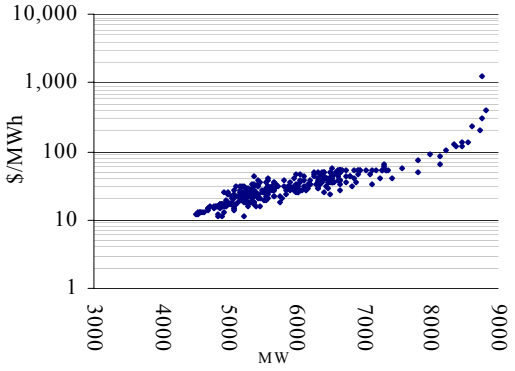


Figure 6: South Australia

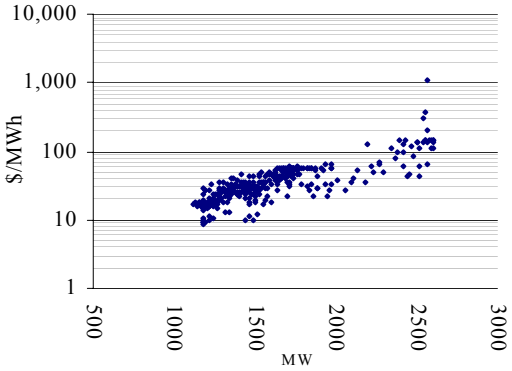
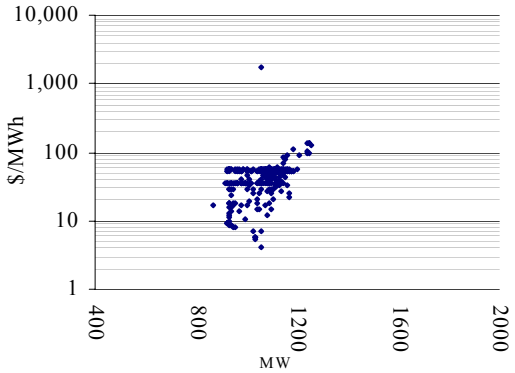


Figure 7: Tasmania



The maximum spot prices for the week across the mainland ranged from $1004/MWh in Queensland to $1220/MWh in Victoria, all occurring at 4 pm on Monday. National demand on the day peaked at a new record. Tasmania had a maximum spot price of $1696/MWh on Saturday following a 190 MW step reduction in import capability across Basslink. 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	0.72	0.65	0.64	0.66	0.34
Previous week	4.02	0.71	0.70	0.66	0.39
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

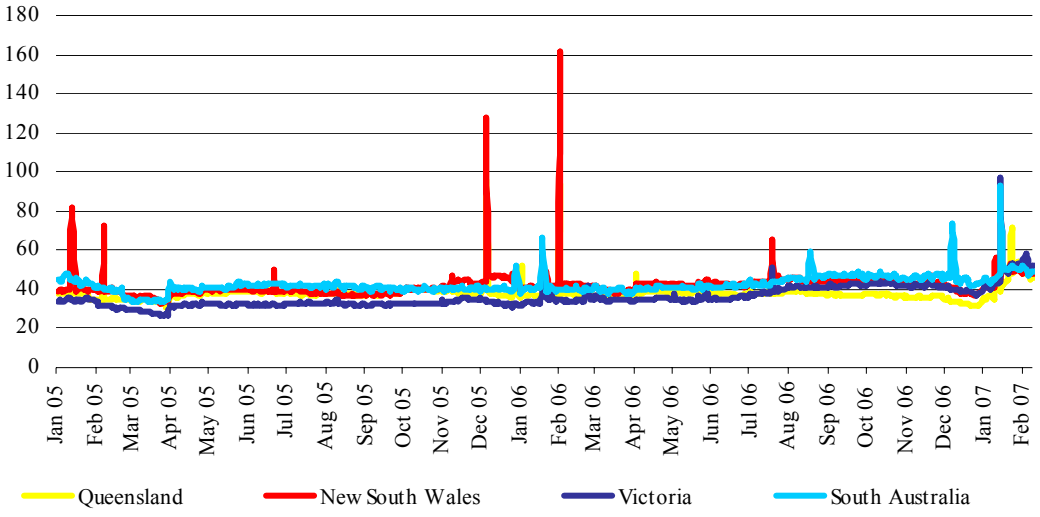
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2005.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	48.45	49.25	48.87	44.74	45.68
New South Wales	49.98	49.65	47.69	47.79	48.31
Victoria	58.44	51.03	50.81	50.50	52.04
South Australia	49.76	47.42	47.81	47.84	48.87

* 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

Low reserves were forecast for South Australia for Monday 5 February, which were removed following a market response.

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

Figure 11: Queensland

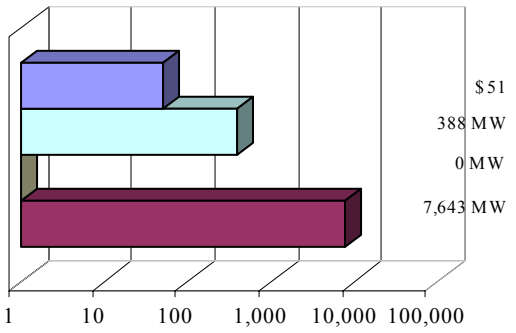


Figure 12: New South Wales

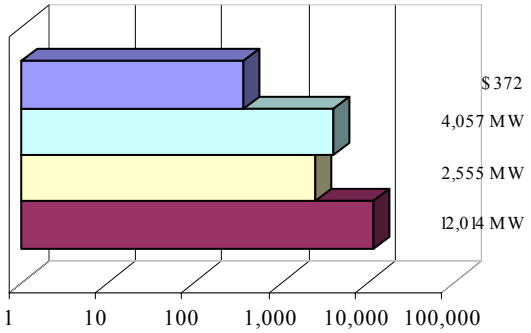


Figure 13: Victoria

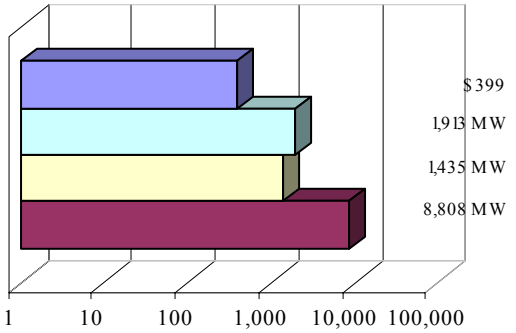


Figure 14: South Australia

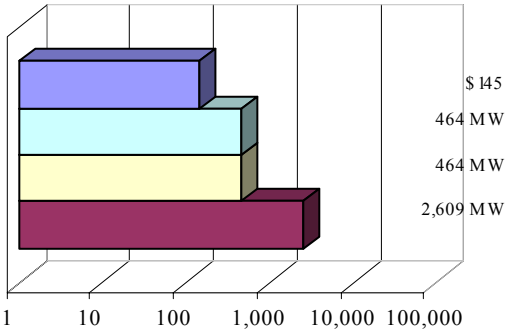
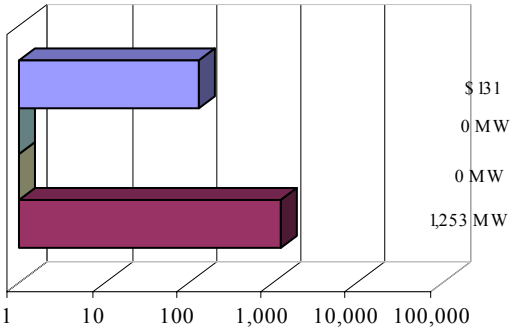


Figure 15: Tasmania



Price variations

There were 119 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

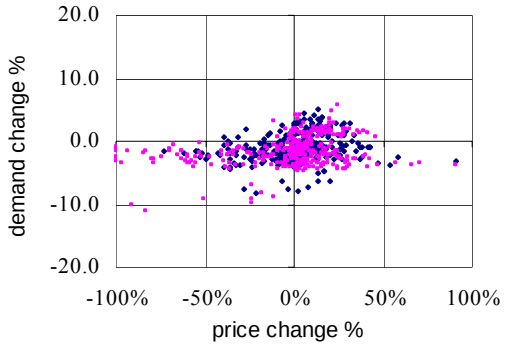


Figure 17: New South Wales

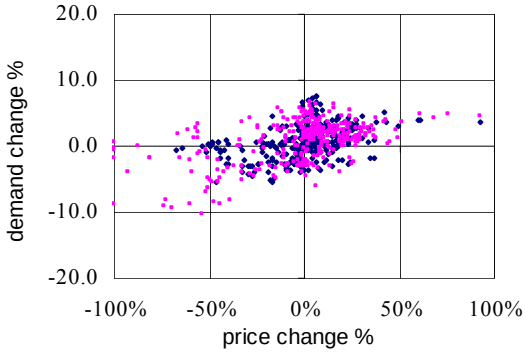


Figure 18: Victoria

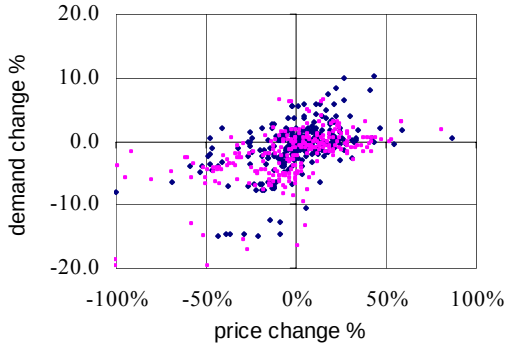


Figure 19: South Australia

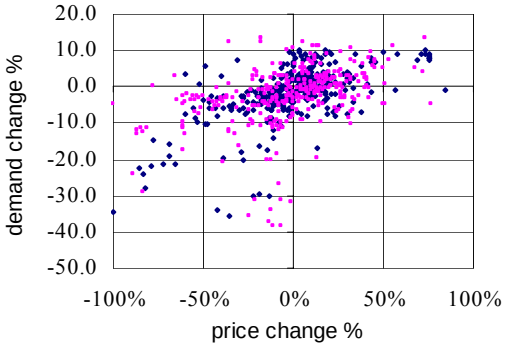


Figure 20: Tasmania

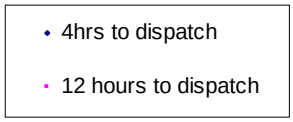
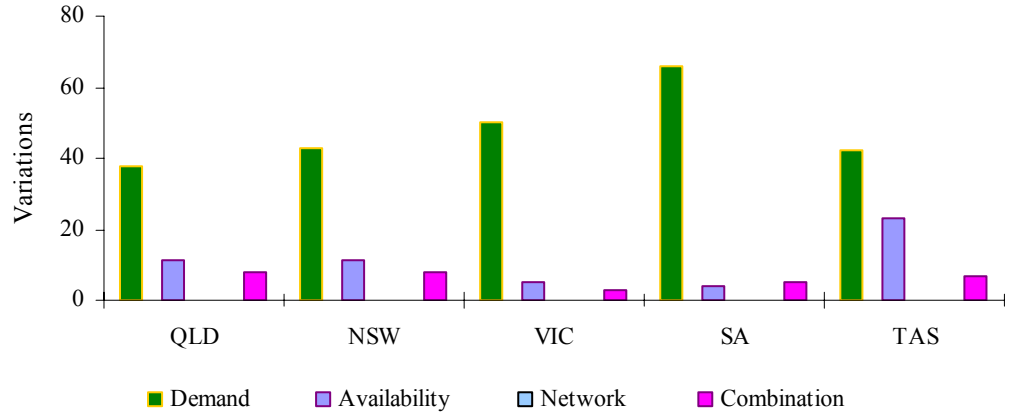


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

Figure 21: reasons for variations between forecast and actual prices



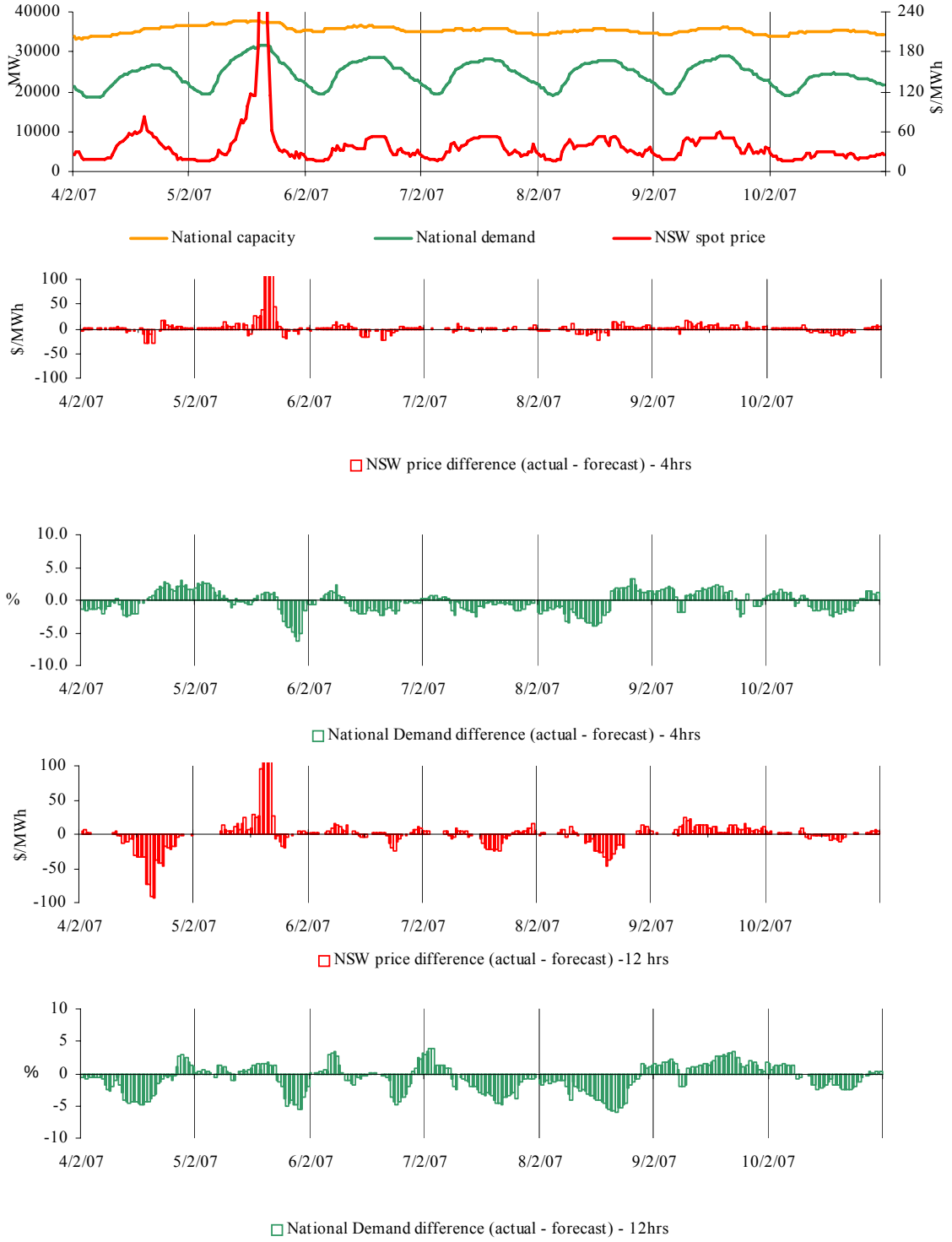
Price and demand

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 five occasions where spot prices were aligned across the mainland and the New South Wales price[1] was greater than three times the New South Wales weekly average price of $44/MWh.

Monday, 5 February

2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	186.01	147.46	90.40
Demand (MW)	31 408	31 139	30 961
Available capacity (MW)	37 607	38 011	38 545
3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	290.03	146.48	90.91
Demand (MW)	31 583	31 238	31 082
Available capacity (MW)	37 553	37 987	38 545
3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	372.41	149.86	91.43
Demand (MW)	31 796	31 390	31 227
Available capacity (MW)	37 518	38 458	38 543
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1181.72	91.90	91.41
Demand (MW)	31 714	31 420	31 326
Available capacity (MW)	37 521	38 143	38 543
4:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	225.43	87.79	88.97
Demand (MW)	31 462	31 196	31 140
Available capacity (MW)	37 523	38 102	38 543

Conditions at the time saw demand close to forecast four and 12 hours ahead with national demand reaching a new high of 31 796 MW during the 3.30 pm trading interval. Available capacity was almost 900 MW lower than forecast four hours ahead.

Prices were aligned across the mainland, with maximum exports from Tasmania of up to 594 MW.

From 8.34 am, Origin Energy shifted as much as 200 MW of capacity from prices above $9000/MWh into prices of zero across its Queensland and South Australian generators. The rebid reasons given were “Change in PDS” and “Unit return change in PDS”.

From 9 am Snowy Hydro made a number of rebids that shifted 360 MW of capacity across its portfolio from prices below $100/MWh into prices of $450/MWh and above $9000/MWh. The rebid reasons included “NSW demand lower than exptd:bandshift up”, “Prices lower than exptd:bandshift up” and “Contractual change:bandshift down”.

From 9.34 am Eraring Energy reduced the availability of Eraring unit one by 480 MW. All of this capacity was priced below $30/MWh. The rebid reason given was “Condenser back pressure high”. The unit did not return to full capacity until 13 February.

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

From 10.30 am over a number of rebids AGL Hydro shifted up to 320 MW of capacity across its portfolio in Victoria and South Australia into lower prices, mostly from prices above $9000/MWh into prices of less than $100/MWh. The rebid reasons given included "Predispatch – Forecast price change::increase", "Portfolio optimisation::water value" and Capacity adj ambient Temp::changed MW availability".

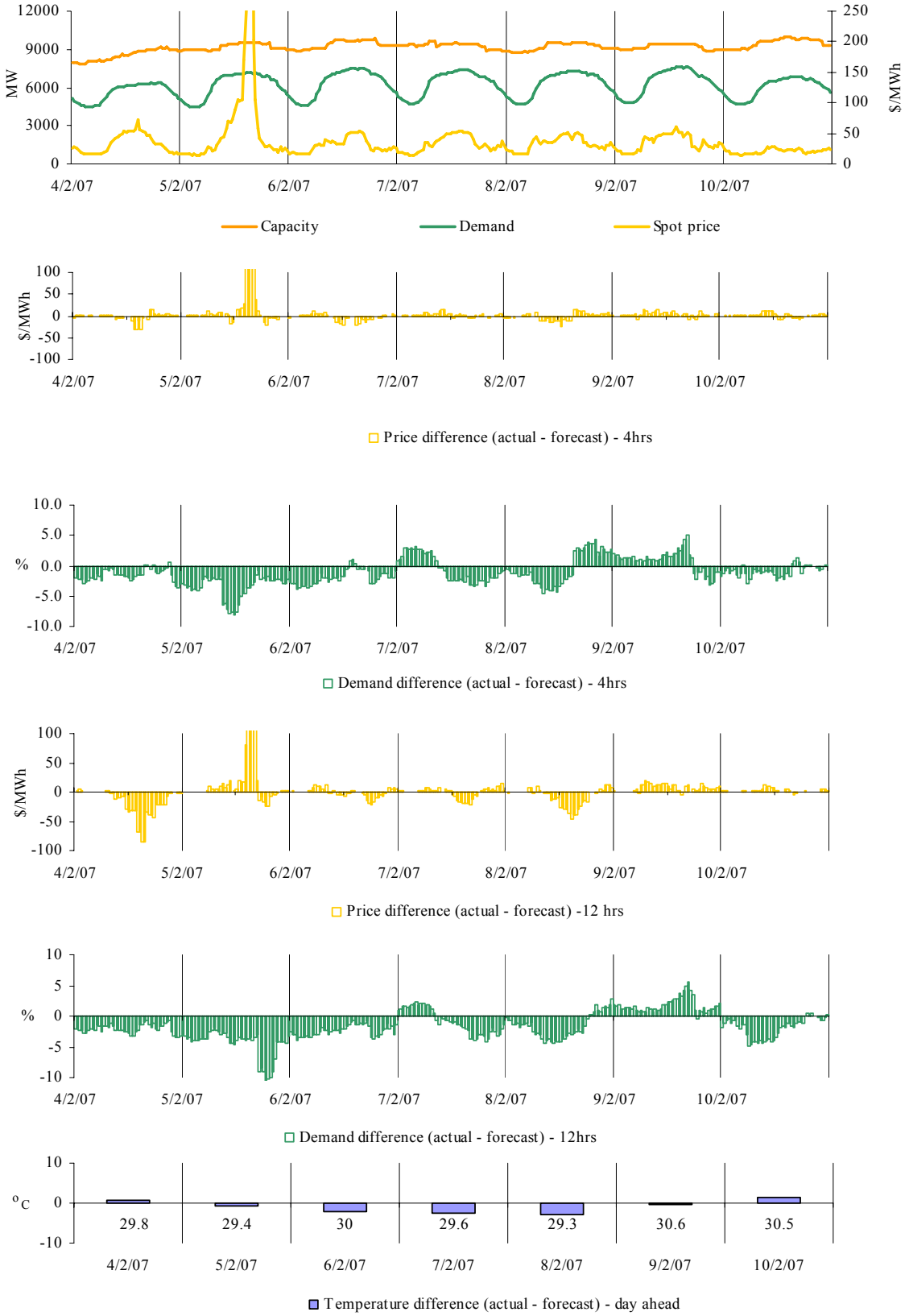
Over a number of rebids at around 10.45 am, Delta Electricity shifted 240 MW of capacity at Mount Piper and Wallerawang from prices below $25/MWh to above $9000/MWh. The rebid was effective for the trading intervals ending between 12.30 pm and 3.30 pm. A further rebid at 3.10 pm shifted 320 MW from prices below $30/MWh into prices above $9000/MWh. The rebid reason was "Spot price differs to forecast::band shift." A rebid at 2.36 pm reduced the availability of Vales Point unit 6 by 60 MW. All of this capacity was priced below $20/MWh. The reason given was "Condensate temperature::Capacity limit change".

At 11.04 am TRUenergy reduced the availability at Torrens Island B unit two by 140 MW. The reason given was "Plant conditions-adj to unit commitment". At 3.49pm, 230 MW of capacity across Torrens Island was shifted into prices below $150/MWh, with 150 MW shifted from above $9000/MWh and 80 MW from above $290 MW . The reason given was "Market conditions-gen response to 5/30 prices".

Through its initial offer, Macquarie Generation had priced 590 MW of capacity above $5000/MWh. At 3.19 pm a further 280 MW of capacity at Bayswater was shifted from prices below $20/MWh and $570/MWh to above $9000/MWh. The rebid reason given was "Load expected to vary from forecast".

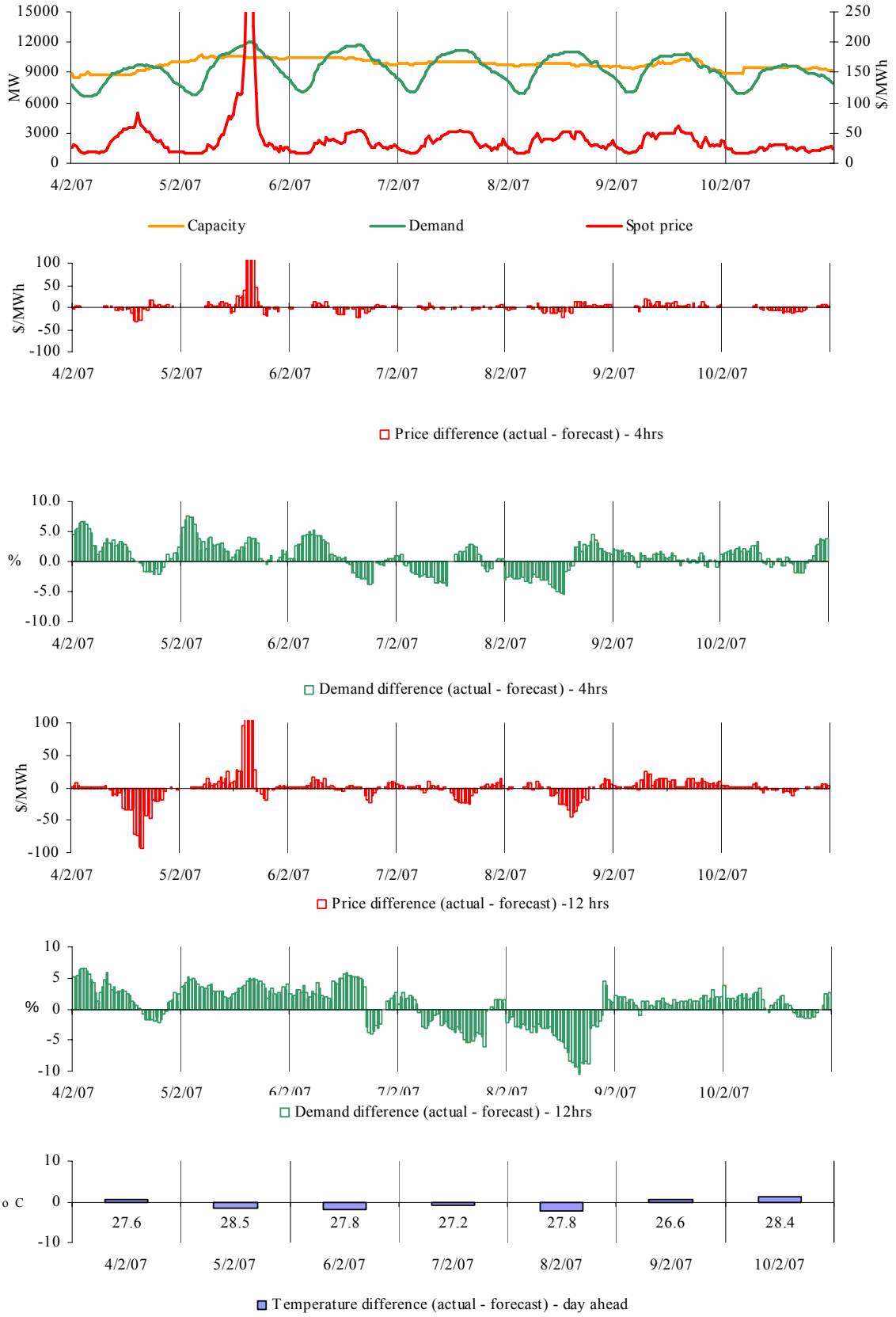
There was no other significant rebidding.

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



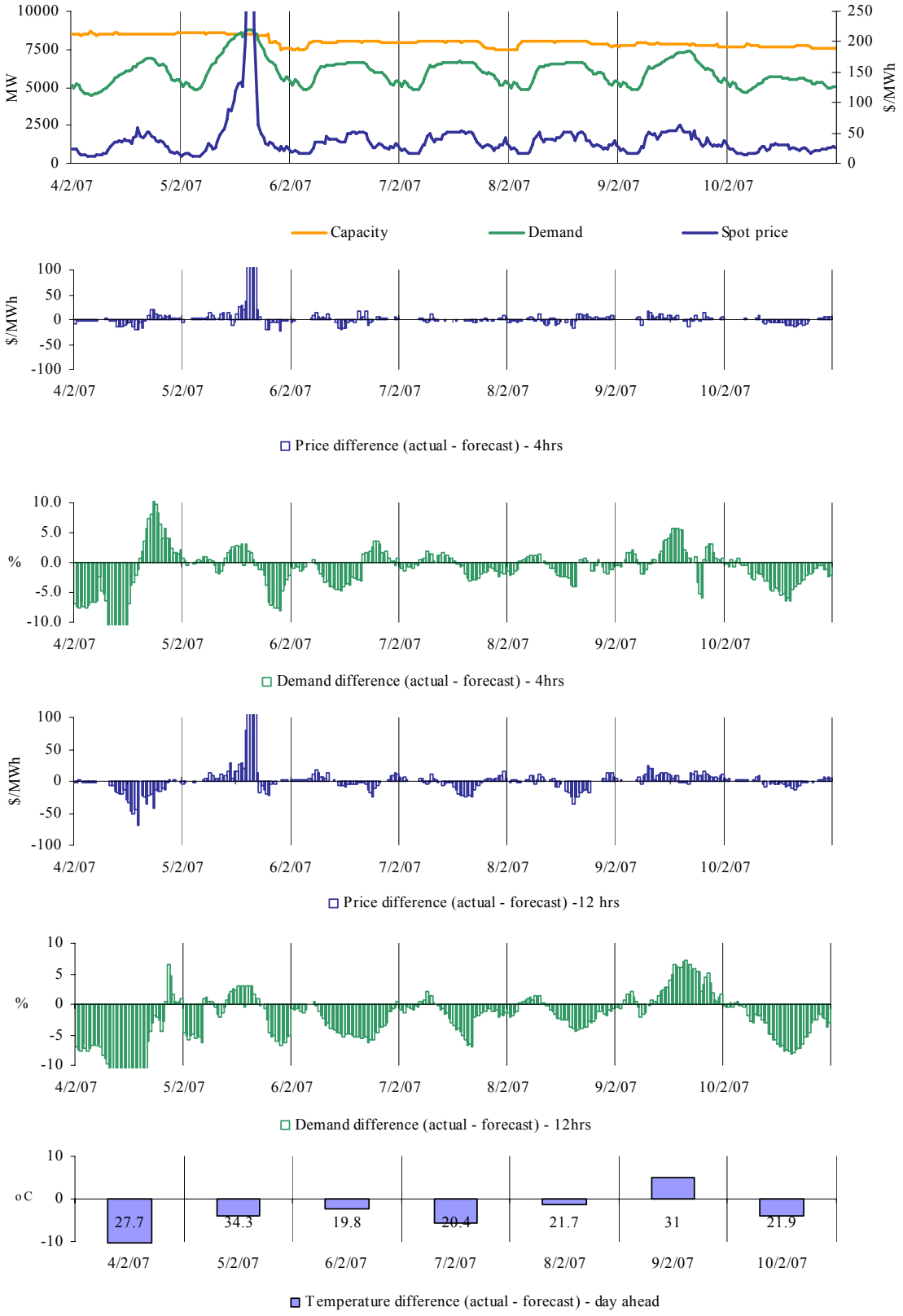
There were five occasions in Queensland where the spot price was greater than three times the weekly average price of $40/MWh. At the time, prices were aligned across the mainland. The circumstances of these events are detailed under the national market outcomes section.

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



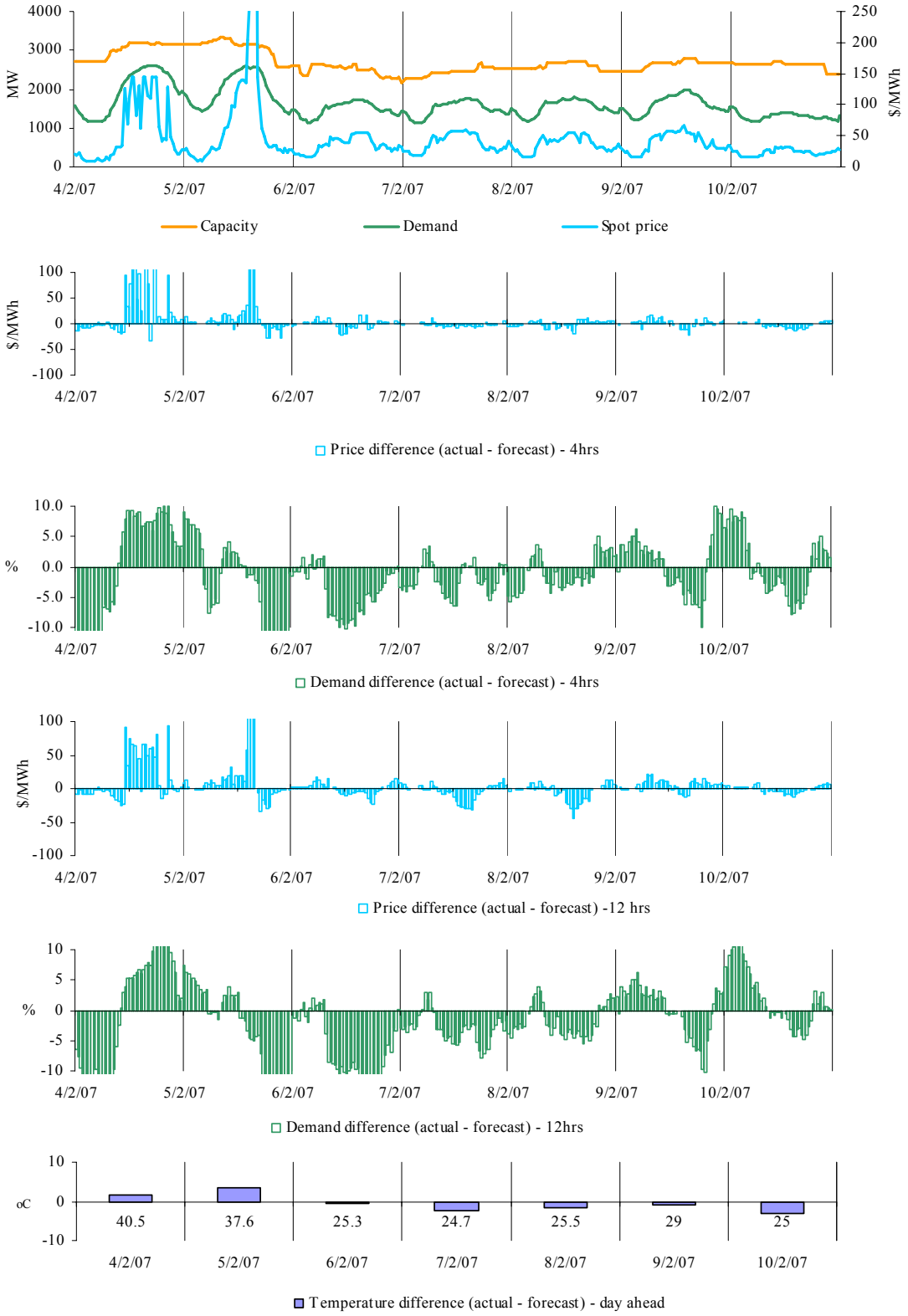
There were five occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of $44/MWh. At the time, prices were aligned across the mainland. The circumstances of these events are detailed under the national market outcomes section.

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



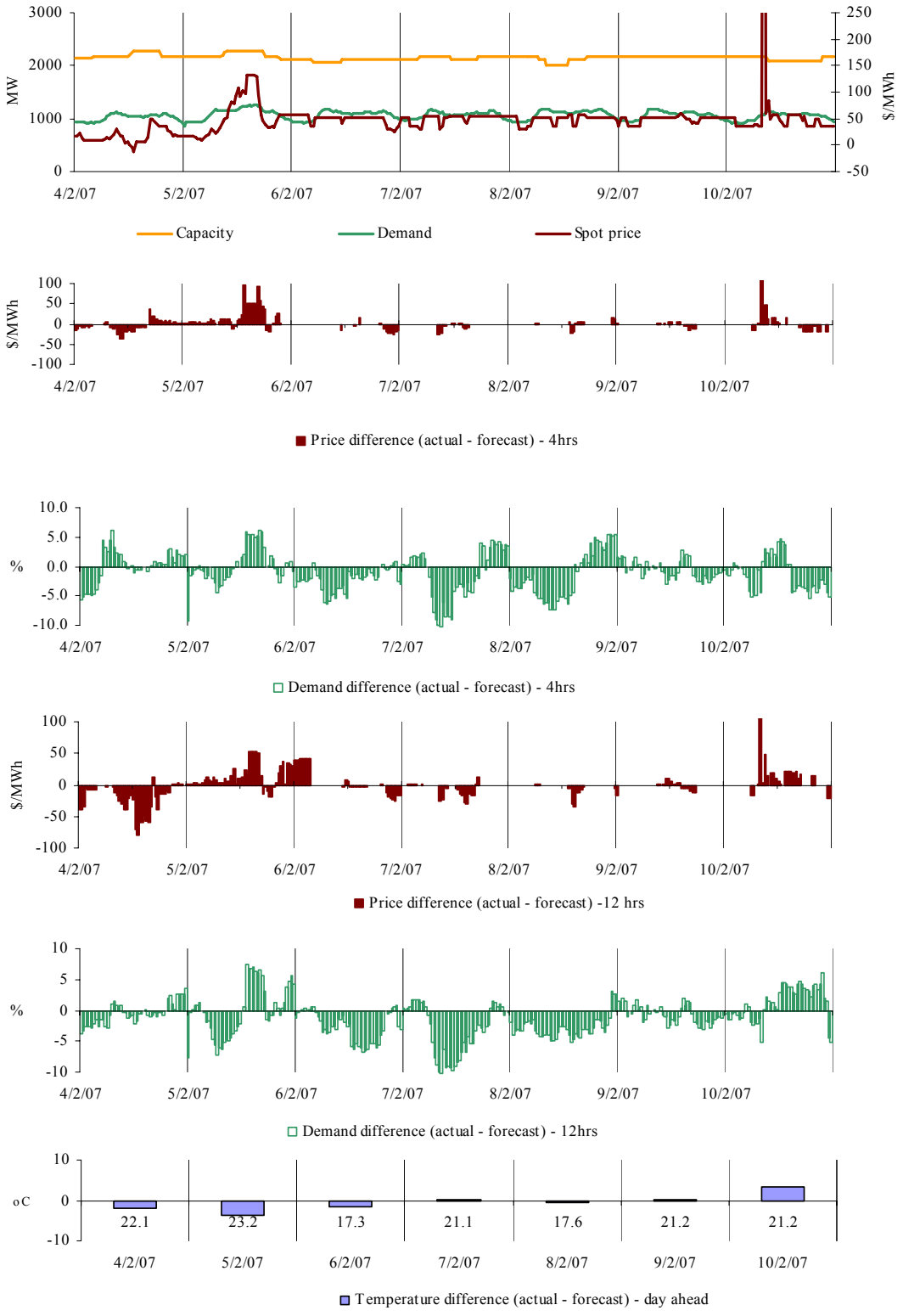
There were five occasions in Victoria where the spot price was greater than three times the weekly average price of $46/MWh. At the time, prices were aligned across the mainland. The circumstances of these events are detailed under the national market outcomes section.

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



There were four occasions in South Australia where the spot price was greater than three times the weekly average price of $54/MWh. At the time, prices were aligned across the mainland. The circumstances of these events are detailed under the national market outcomes section.

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



There was one occasion where the spot price in Tasmania was greater than three times the weekly average price of $50MWh.

Saturday, 10 February

8:30 am	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	1696.43	35.72	35.72
Demand (MW)	1060	1108	1115
Available capacity (MW)	2177	2177	2177

Conditions at the time saw demand and available capacity close to forecast. There was a five minute price spike of $10 000/MWh at 8.10 am following a 190 MW step reduction in import capability, reducing imports from the mainland to 210 MW. This was driven by a step reduction in the availability of services, for one dispatch interval, that facilitate transfers across Basslink.

There was no significant rebidding.

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

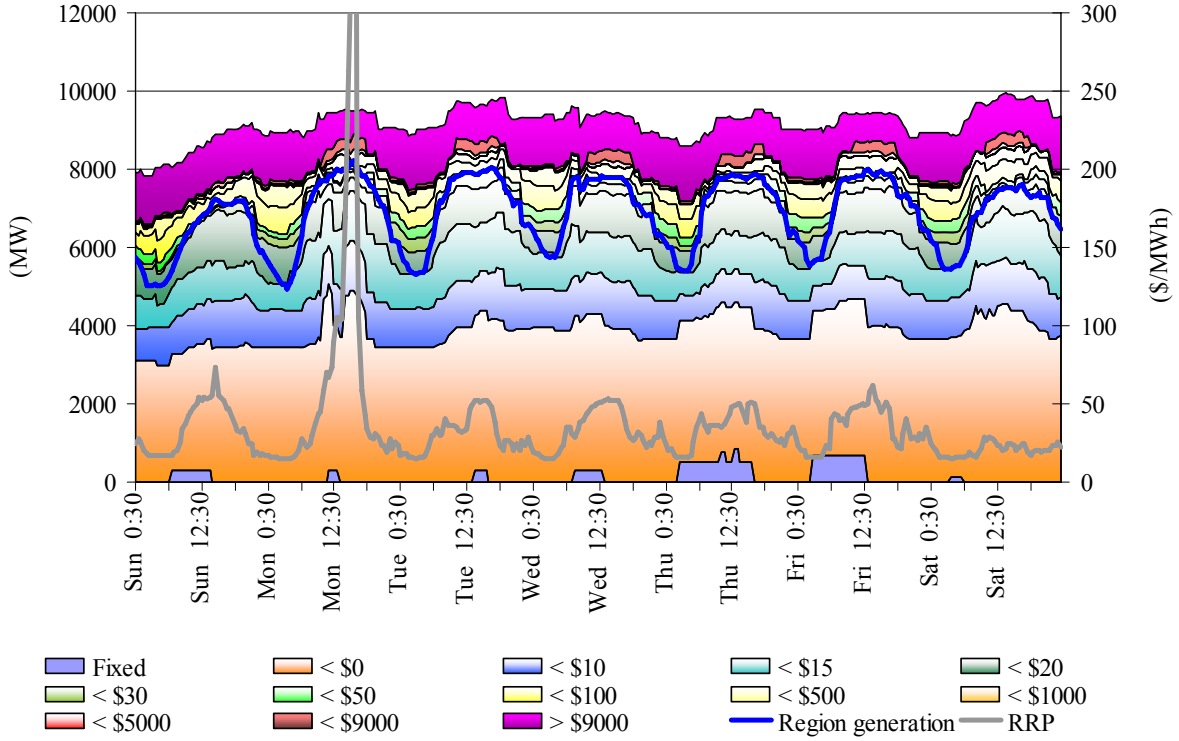


Figure 58: New South Wales closing bid prices, dispatched generation and spot price

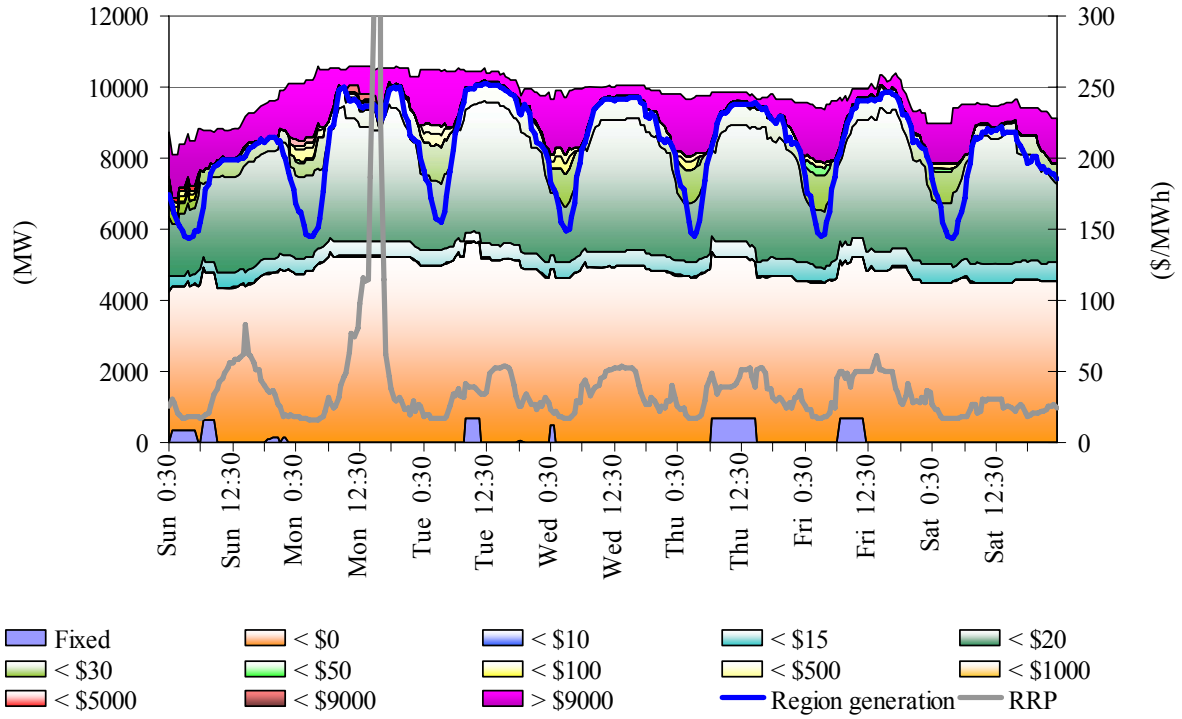


Figure 59: Victoria closing bid prices, dispatched generation and spot price

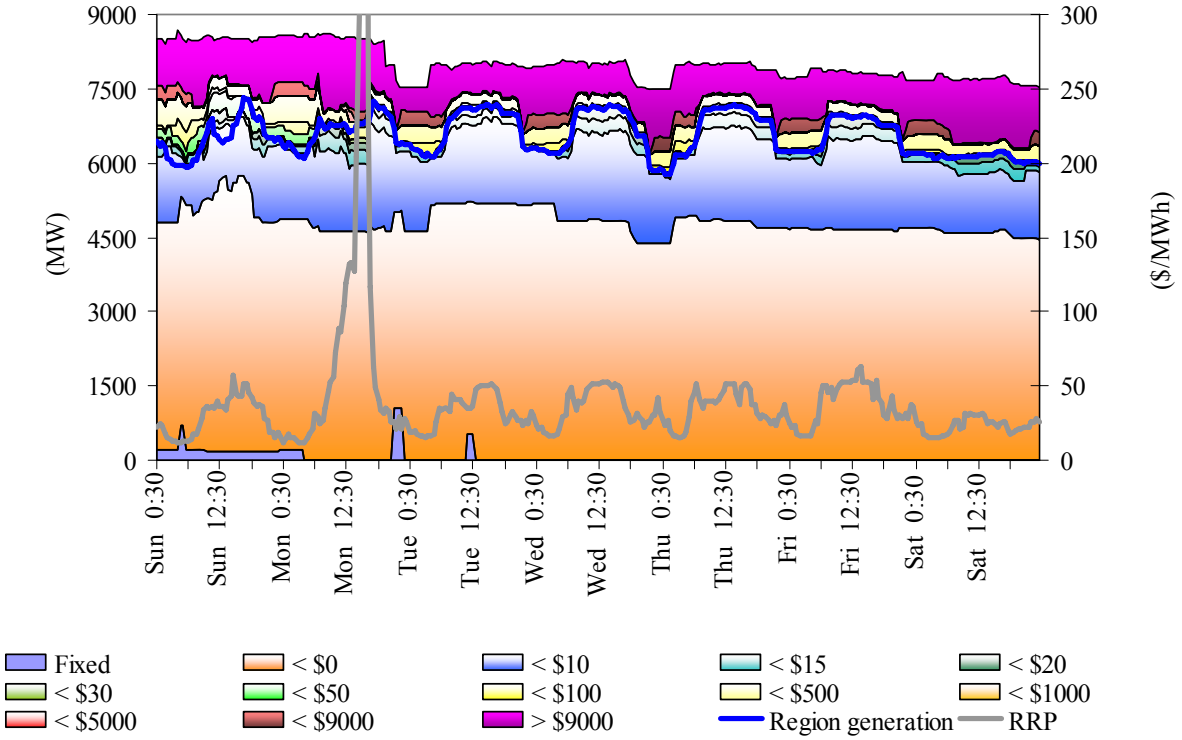


Figure 60: South Australia closing bid prices, dispatched generation and spot price

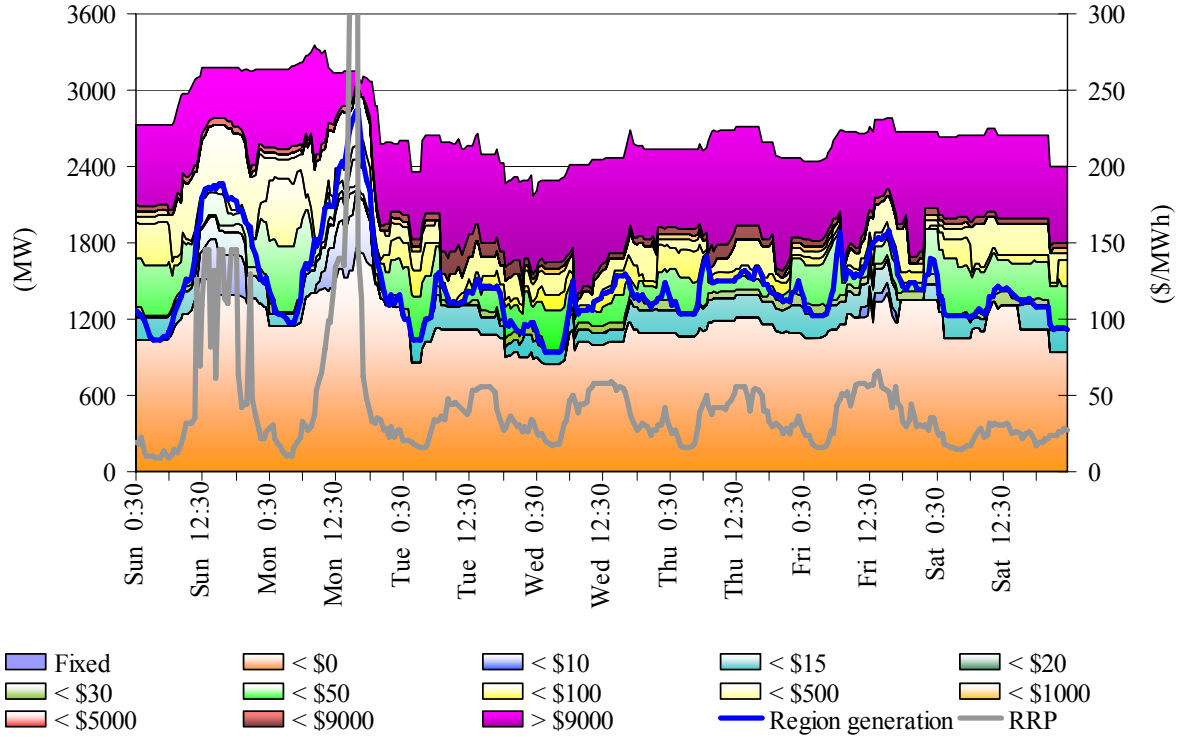
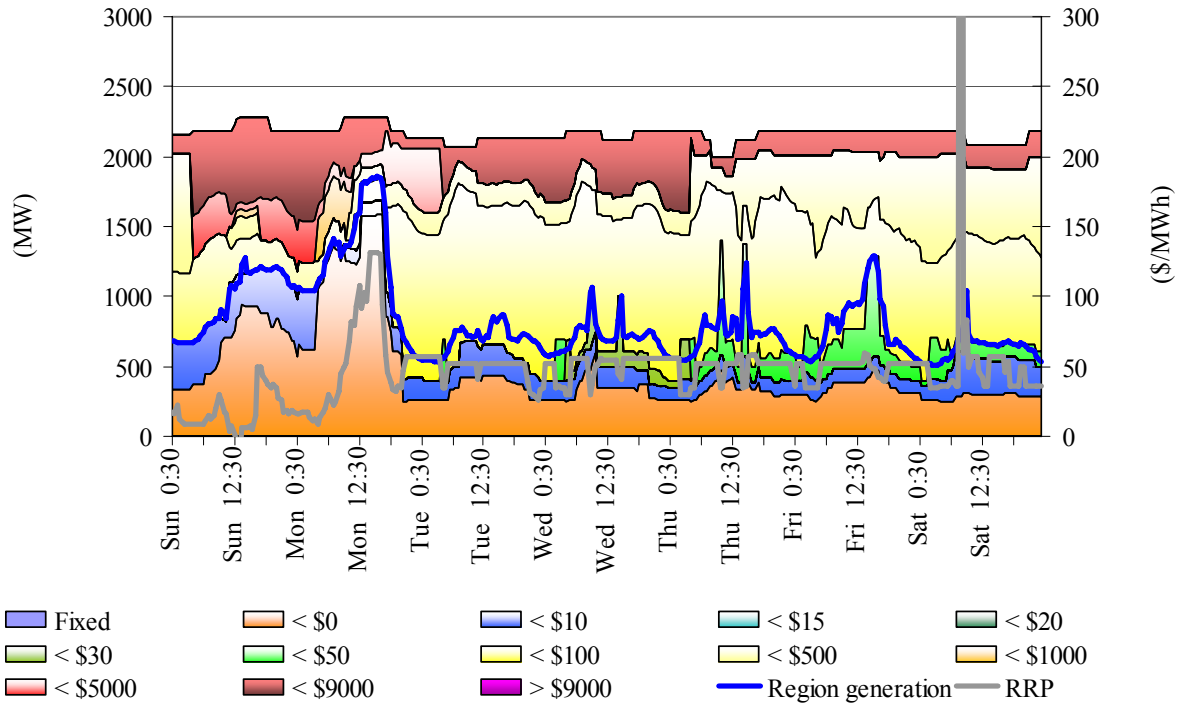


Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was 211 000 or 0.1 per cent of the energy market. The prices for the raise 5 minute service increased on Monday, driven by the record national demand and increased generation dispatch that reduced the availability of this service. 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 ($/MW)	0.40	0.22	1.66	3.10	0.39	0.23	0.96	1.13
Previous week ($/MW)	0.32	0.18	2.35	1.87	0.04	0.22	0.68	0.84
Last quarter ($/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	$16	$7	$93	$56	$0	$2	$23	$14
% of energy market	0.01%	0.01%	0.05%	0.03%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was $141 000 or 1.6 per cent of the total turnover in the energy market in Tasmania. On Saturday, following a step reduction in imports across Basslink for one dispatch interval, the requirement for and price of the raise 6 second service increased, with the cost for that service totalling $82 000 for that single five minute interval. 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 ($/MW)	19.35	0.51	0.74	2.34	0.20	1.05	0.81	1.33
Previous week ($/MW)	1.19	0.59	0.79	1.70	0.16	0.69	0.68	0.69
Last quarter ($/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost ($1000s)	$84	$6	$9	$18	$1	$7	$5	$11
% of energy market	0.94%	0.06%	0.10%	0.20%	0.01%	0.08%	0.05%	0.12%

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

Figure 64: daily frequency control ancillary service cost

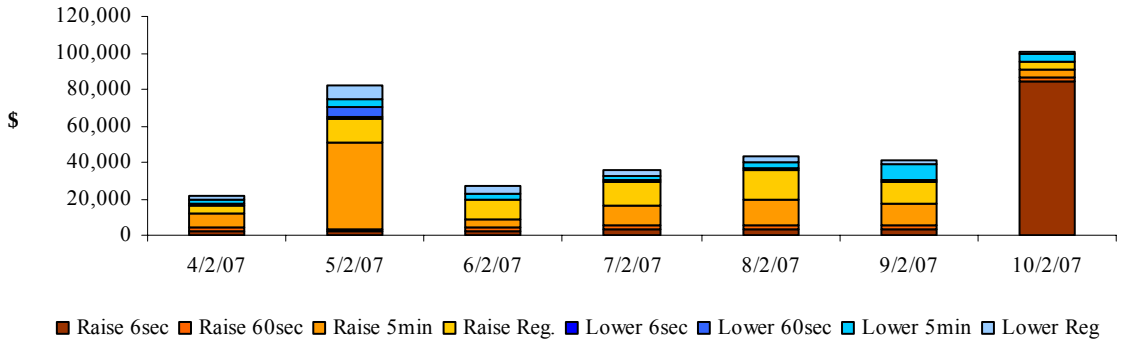
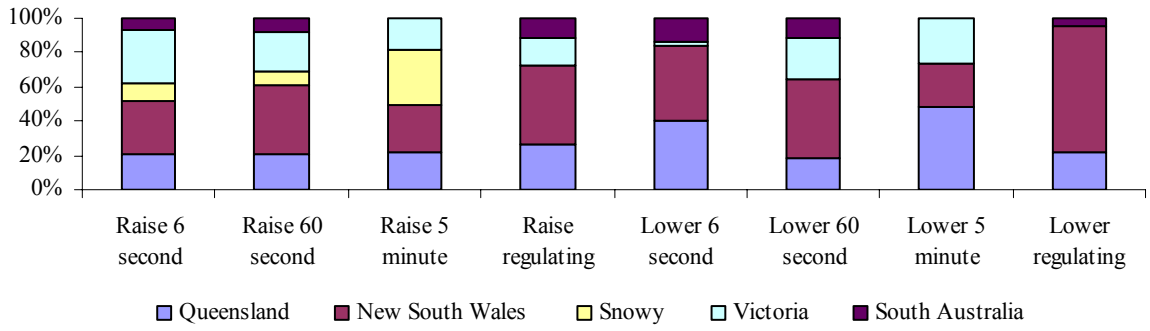


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

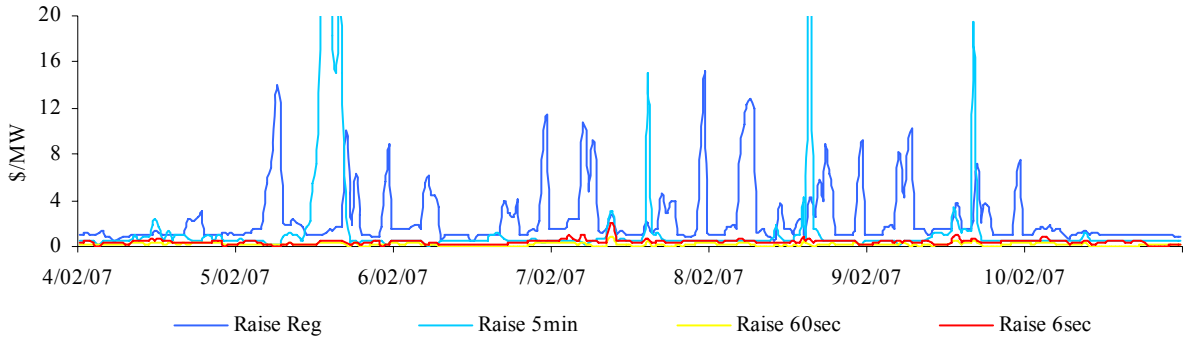


Figure 66A: prices for raise services – Tasmania

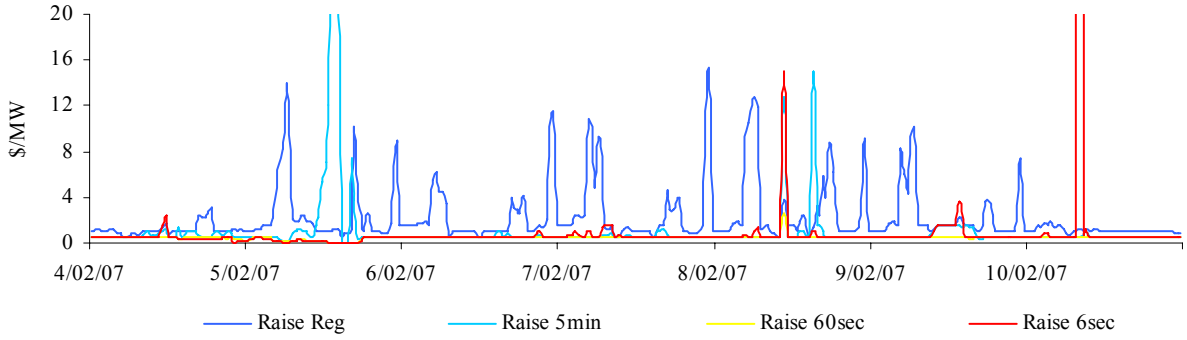


Figure 67: prices for lower services

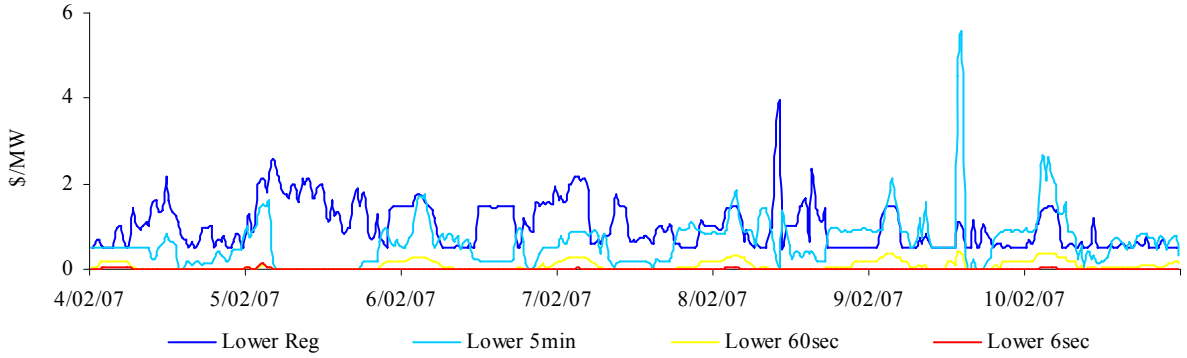
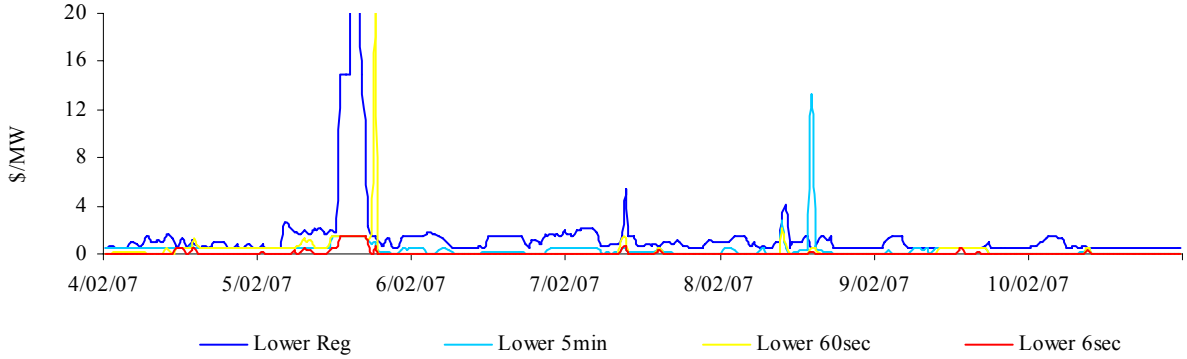


Figure 67A: prices for lower services – Tasmania



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

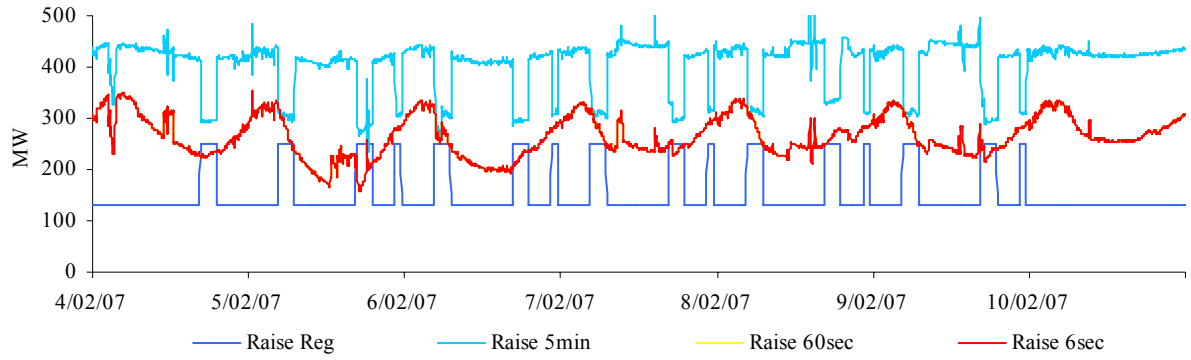


Figure 68A: raise requirements – Tasmania

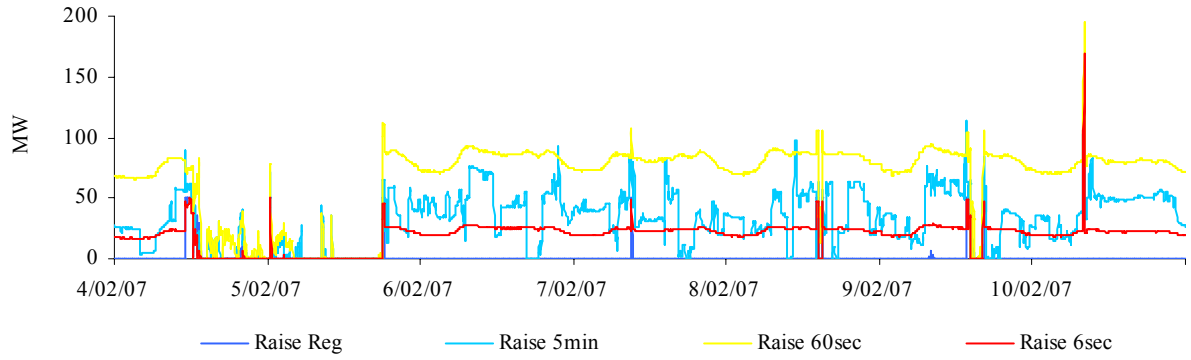


Figure 69: lower requirements

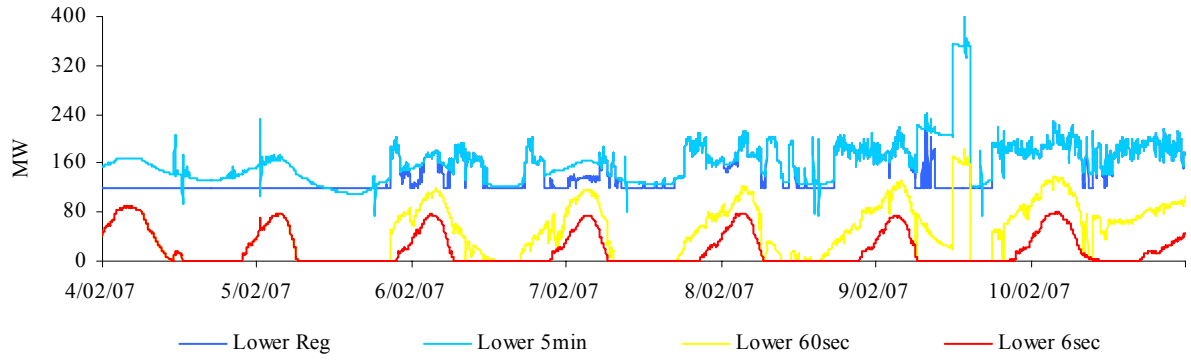
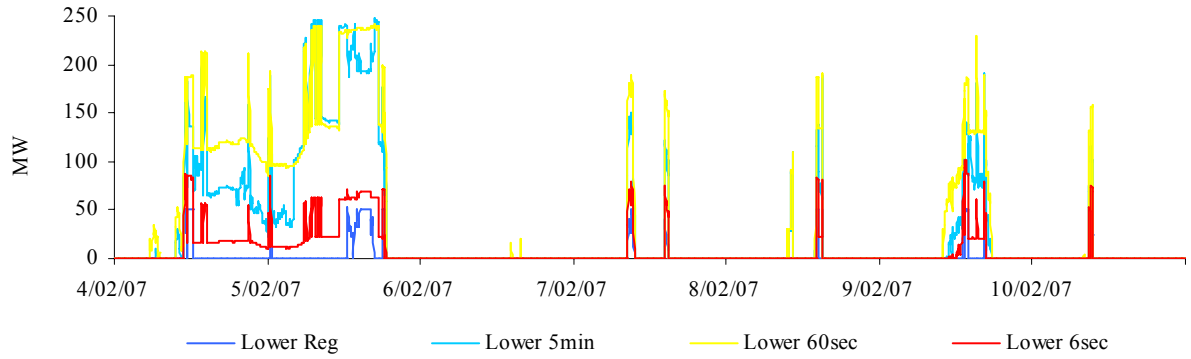


Figure 69A: lower requirements – Tasmania



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