

25 February–3 March 2007

Spot prices for the week averaged between \$46/MWh in Queensland and \$59/MWh in New South Wales.

Turnover in the energy market was \$221 million. The total cost of ancillary services for the week was \$298 000, or 0.1 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 131 or forty per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in around a fifth all trading intervals across the market. These variations were most frequent in South Australia, occurring in over a third 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

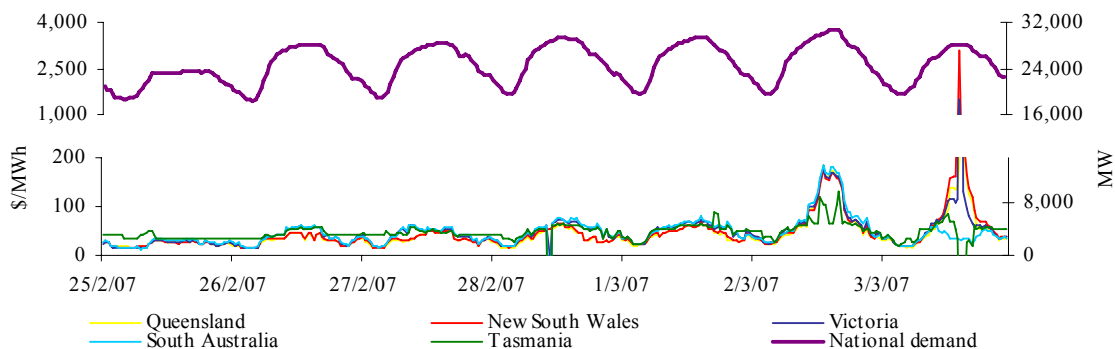


Figure 2: volume weighted average spot price for energy market (\$/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	46	59	55	51	46
Previous week	50	61	68	77	71
Same quarter last year	39	46	53	58	33
Financial year to date	35	40	47	51	42
% change from previous week *	▼7%	▼2%	▼19%	▼33%	▼36%
% change from same quarter last year **	▲19%	▲30%	▲4%	▼11%	▲39%
% change from year to date ***	0%	▼22%	▲17%	▲6%	▼41%

*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

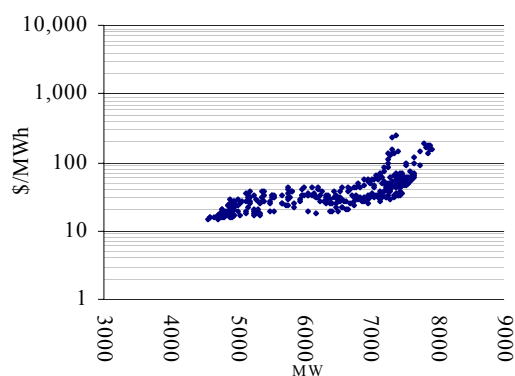


Figure 4: New South Wales

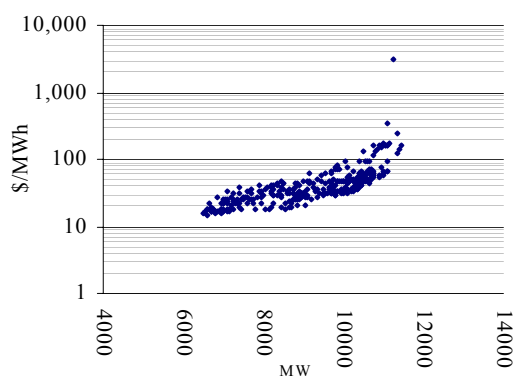


Figure 5: Victoria

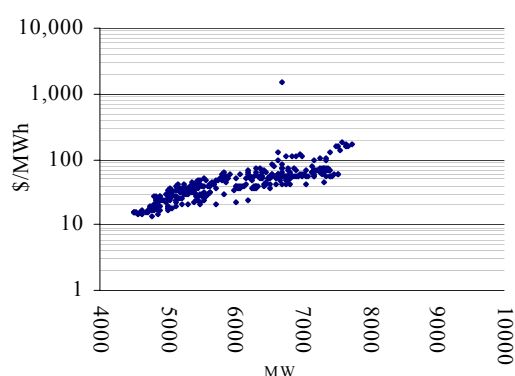


Figure 6: South Australia

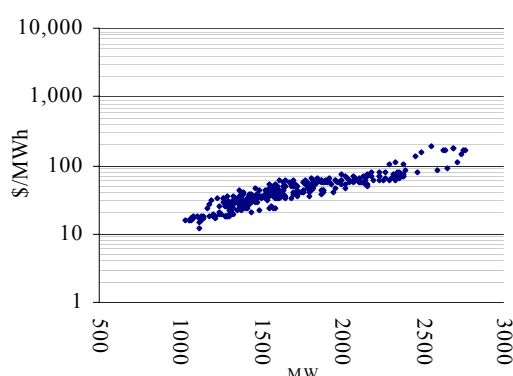
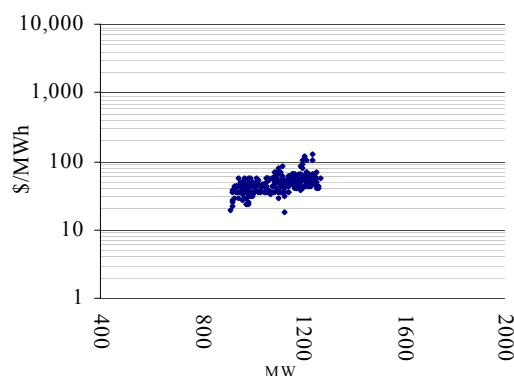


Figure 7: Tasmania



At 11 am on Wednesday negative spot prices of \$-303/MWh, \$-133/MWh and \$-6/MWh occurred in Tasmania, South Australia and Victoria respectively. This occurred following a manifestly incorrect input into the dispatch algorithm which resulted in a five-minute dispatch price spike at 10.40 am. The manifestly incorrect input was correctly identified by NEMMCO and, as required by the Rules, the incorrect price was replaced with the price for the previous interval. The price spike, however led to a significant market response with a number of generators rebidding into lower prices, which drove the price to below zero.

On Saturday between 2.40 pm and 3.05 pm a number of five-minute dispatch prices as low as \$-998/MWh occurred in Tasmania as exports were limited across Basslink. A rebid by Hydro Tasmania which shifted capacity into negative prices also contributed.

The maximum spot prices for the week ranged from \$128/MWh in Tasmania to \$3104/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	0.74	0.76	0.65	0.70	0.41
Previous week	2.18	2.35	2.08	1.59	0.62
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>

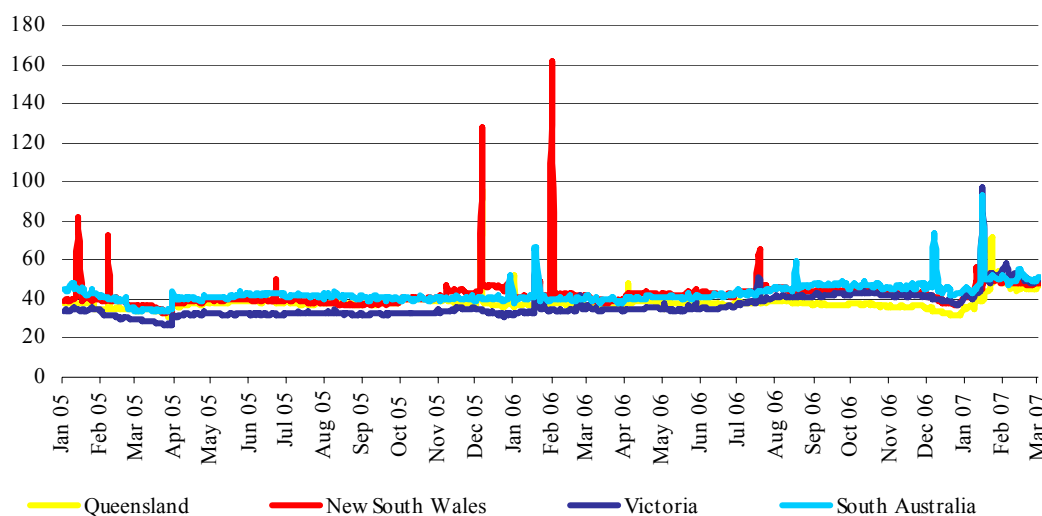
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2005.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	44.85	45.17	45.52	45.39	46.83
New South Wales	46.94	47.70	48.02	47.90	47.72
Victoria	48.42	48.82	49.23	49.56	49.74
South Australia	49.05	49.60	49.66	49.26	51.23

* 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 for Thursday and Friday in South Australia.

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

Figure 11: Queensland

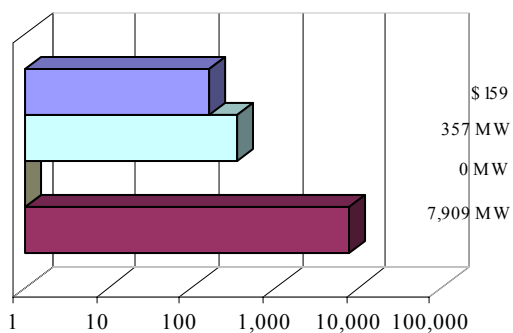


Figure 12: New South Wales

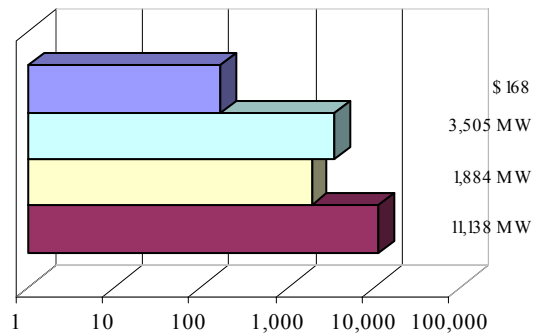


Figure 13: Victoria

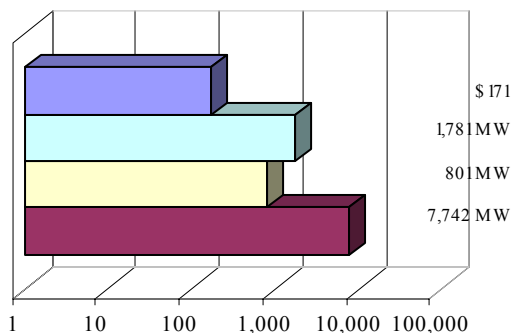


Figure 14: South Australia

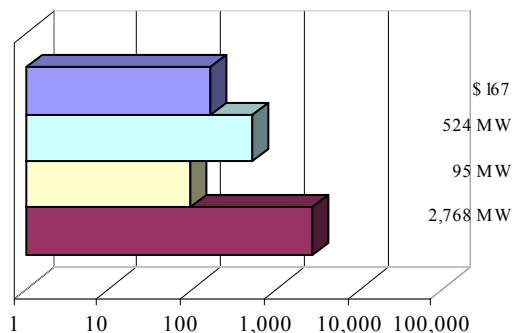
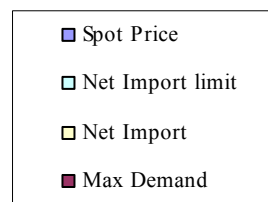
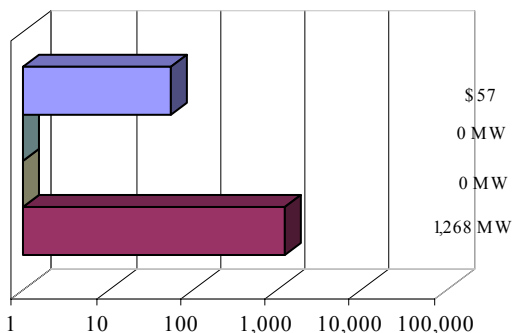


Figure 15: Tasmania



Price variations

There were 131 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

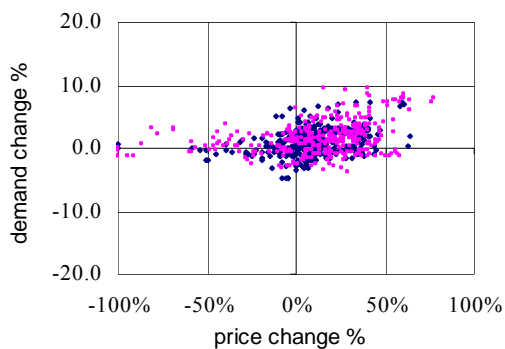


Figure 17: New South Wales

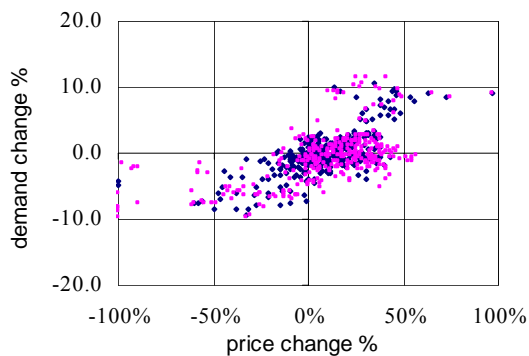


Figure 18: Victoria

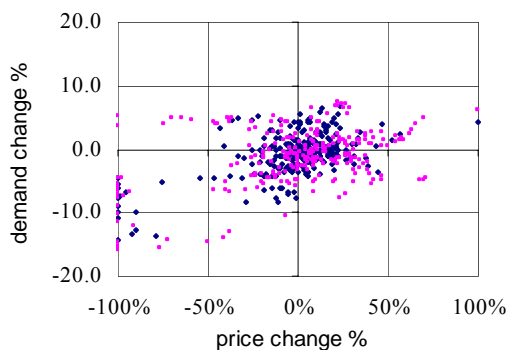


Figure 19: South Australia

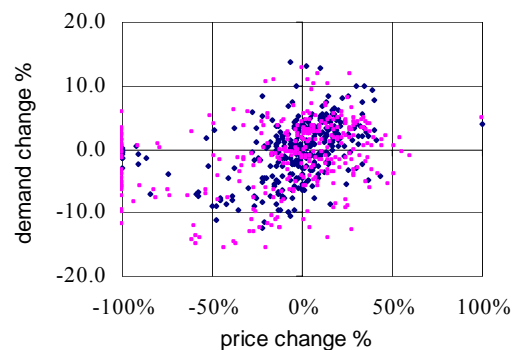


Figure 20: Tasmania

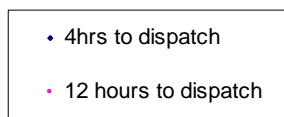
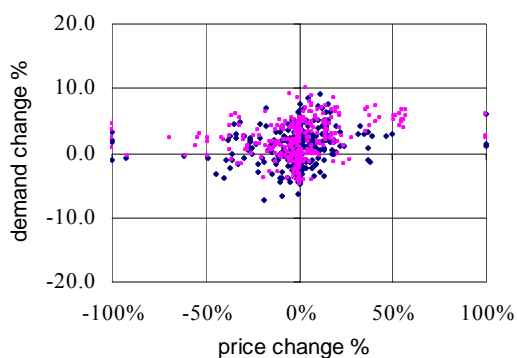
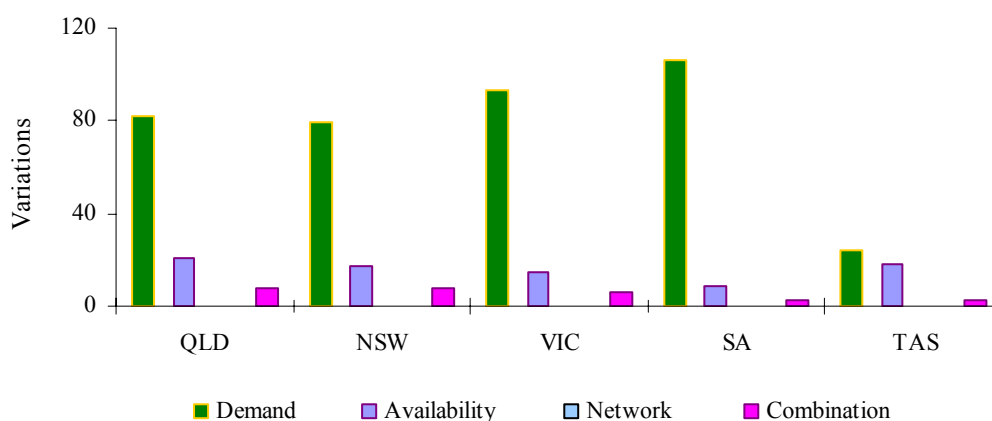


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

Figure 21: reasons for variations between forecast and actual prices



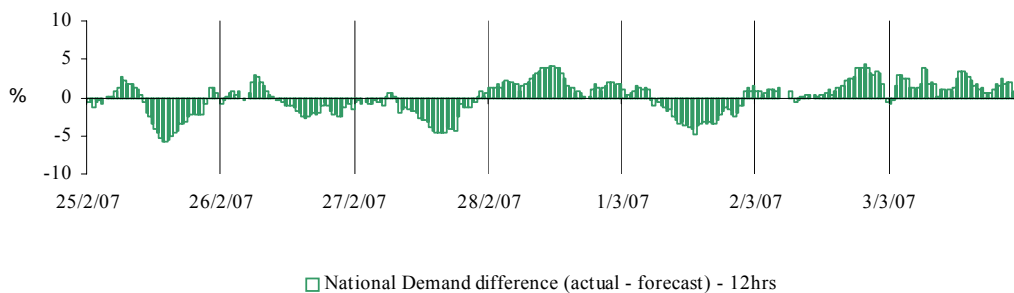
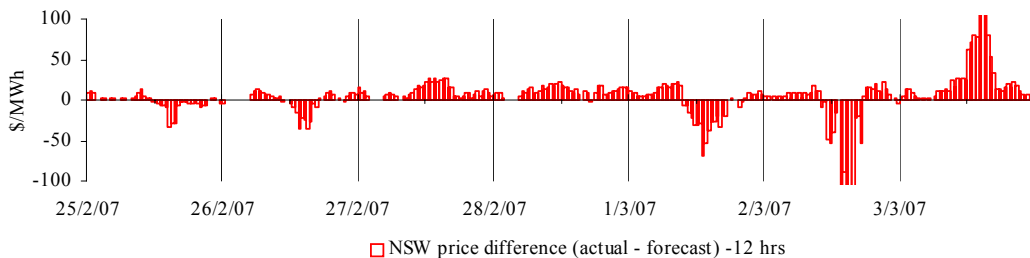
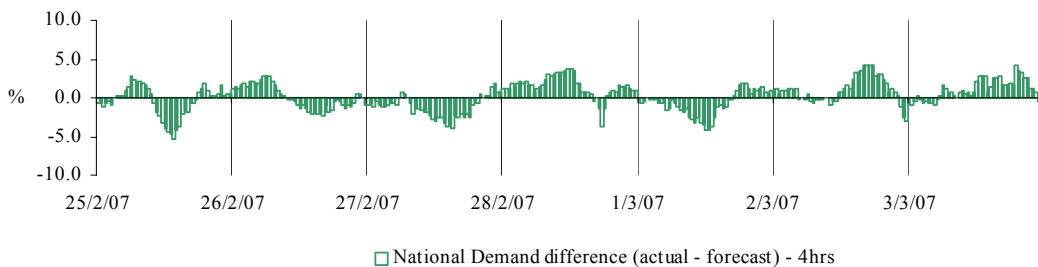
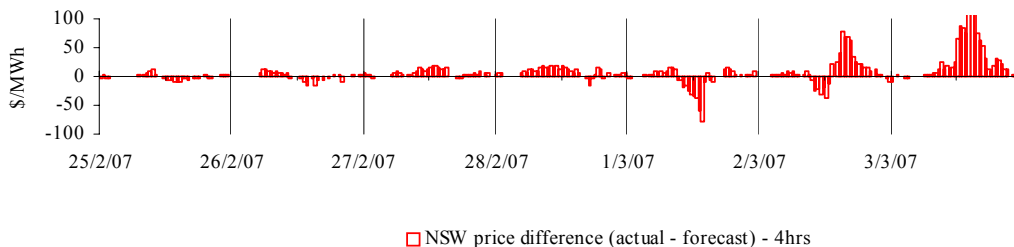
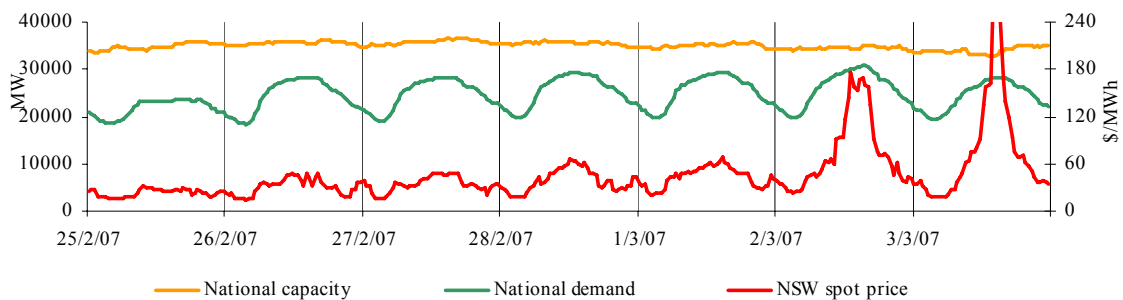
Price and demand

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 eight occasions where spot prices were nationally aligned and prices were generally greater than three times the weekly average price in New South Wales. The national demand and available capacity, together with the New South Wales price¹ is shown below.

Friday, 2 March

1:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	143.71	156.28	158.92
Demand (MW)	29 831	29 518	29 672
Available capacity (MW)	34 602	34 692	35 065
1:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	176.85	156.11	176.45
Demand (MW)	30 174	29 717	29 867
Available capacity (MW)	34 383	34 711	35 254
2:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	157.51	157.14	302.63
Demand (MW)	30 178	29 835	30 091
Available capacity (MW)	34 149	34 672	35 203
2:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	153.87	130.12	243.15
Demand (MW)	30 394	29 693	30 173
Available capacity (MW)	34 338	34 779	35 529
3:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	166.57	125.92	315.57
Demand (MW)	30 624	29 657	30 252
Available capacity (MW)	34 380	34 723	35 509
3:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	168.42	91.82	322.37
Demand (MW)	30 702	29 709	30 336
Available capacity (MW)	34 874	34 936	35 725
4:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	159.53	91.86	315.53
Demand (MW)	30 734	29 640	30 255
Available capacity (MW)	34 907	34 975	35 725
4:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	158.60	89.66	180.91
Demand (MW)	30 645	29 338	29 994
Available capacity (MW)	34 955	34 971	35 642

Conditions at the time saw demand as much as 1300 MW higher than forecast four hours ahead and at close to record levels. Prices were close to those forecast four hours ahead and aligned across the mainland.

Between 6.30 am and 7.30 am Origin Energy rebid 157 MW of capacity across it Ladbroke and Quarantine units from prices above \$9000/MWh to zero. The rebid reason was “Est change in PDS”.

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

At 7.41 am TRUenergy rebid 160 MW across Yallourn units two and four from prices above \$9500/MWh to below \$5/MWh. The rebid reason given was “PD cond::price/vol trade-off”.

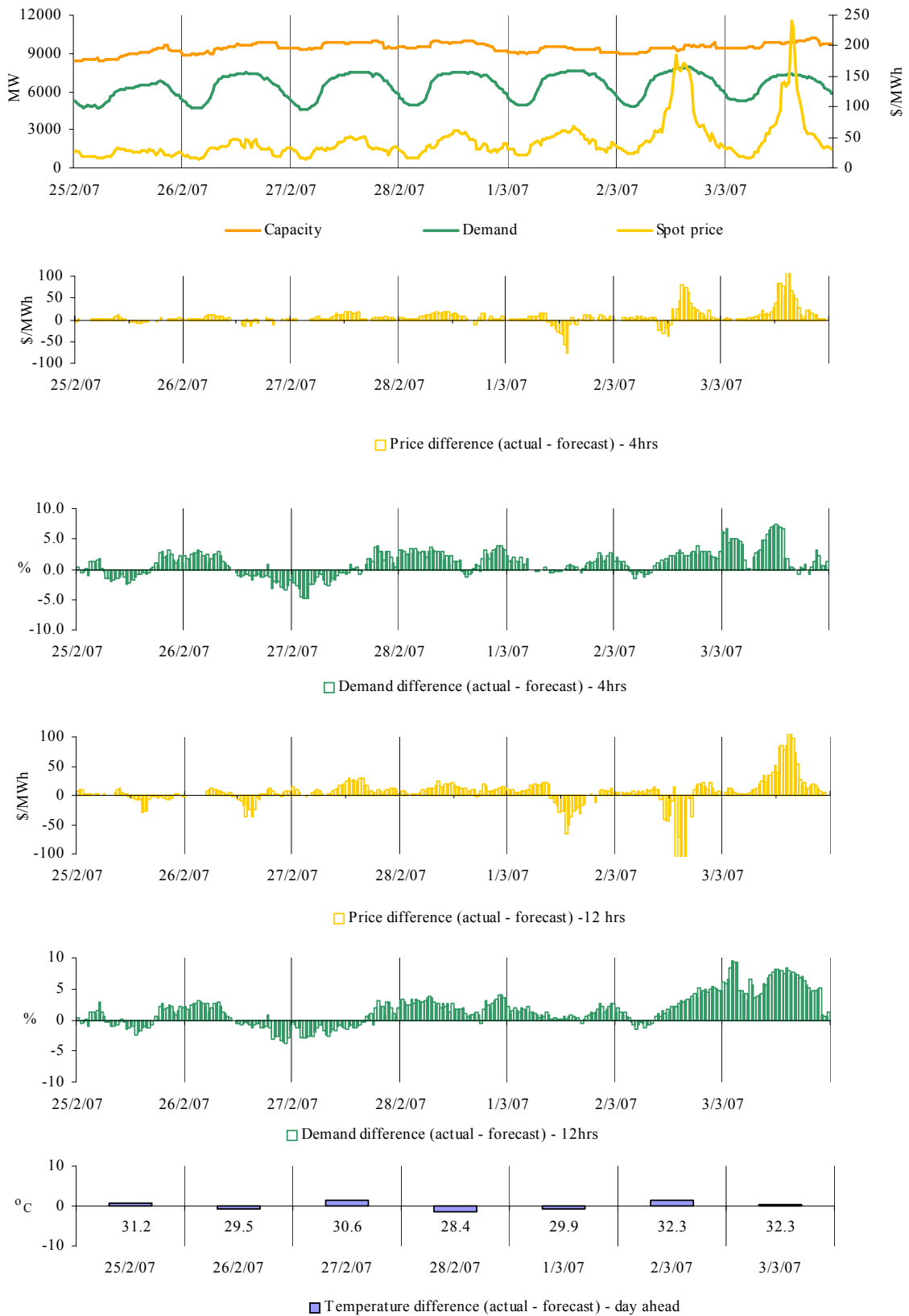
From 8.19 am Tarong Energy delayed the return of Tarong North following a forced two day outage. This reduced the available capacity by 440 MW, all of which was priced under \$15/MWh.

At 8.30 am AGL Hydro rebid 145 MW at Somerton and 160 MW at Hallett from prices above \$9000/MWh to zero. The rebid reason given was “Forecast price change:: forecast price change”.

Rebidding around midday, scheduled the return of LYMMCO’s Loy Yang A unit three following a two day unplanned outage for 4.30 pm. At 3.05 pm, the unit returned to service. As much as 500 MW of capacity was made available during this period, all priced at less than \$20/MWh.

There was no other significant rebidding.

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



There were 13 occasions in Queensland where the spot price was greater than three times the weekly average price of \$46/MWh. Eight of these occurred when prices were generally aligned across all regions and are detailed in the national market outcomes section. The remaining five occasions are presented below.

Saturday, 3 March

1:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	139.73	55.15	55.12
Demand (MW)	7317	6809	6736
Available capacity (MW)	9812	9994	10293
2:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	141.00	83.97	55.12
Demand (MW)	7400	7261	6776
Available capacity (MW)	9816	9876	10291
3:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	240.53	86.08	55.13
Demand (MW)	7378	7247	6800
Available capacity (MW)	9861	9908	10236
3:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	230.78	86.09	55.13
Demand (MW)	7324	7291	6790
Available capacity (MW)	9896	9938	10236
4:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	152.84	86.08	55.13
Demand (MW)	7335	7304	6769
Available capacity (MW)	9915	9970	10236

Conditions at the time saw demand up to 500 MW higher than forecast four hours ahead.

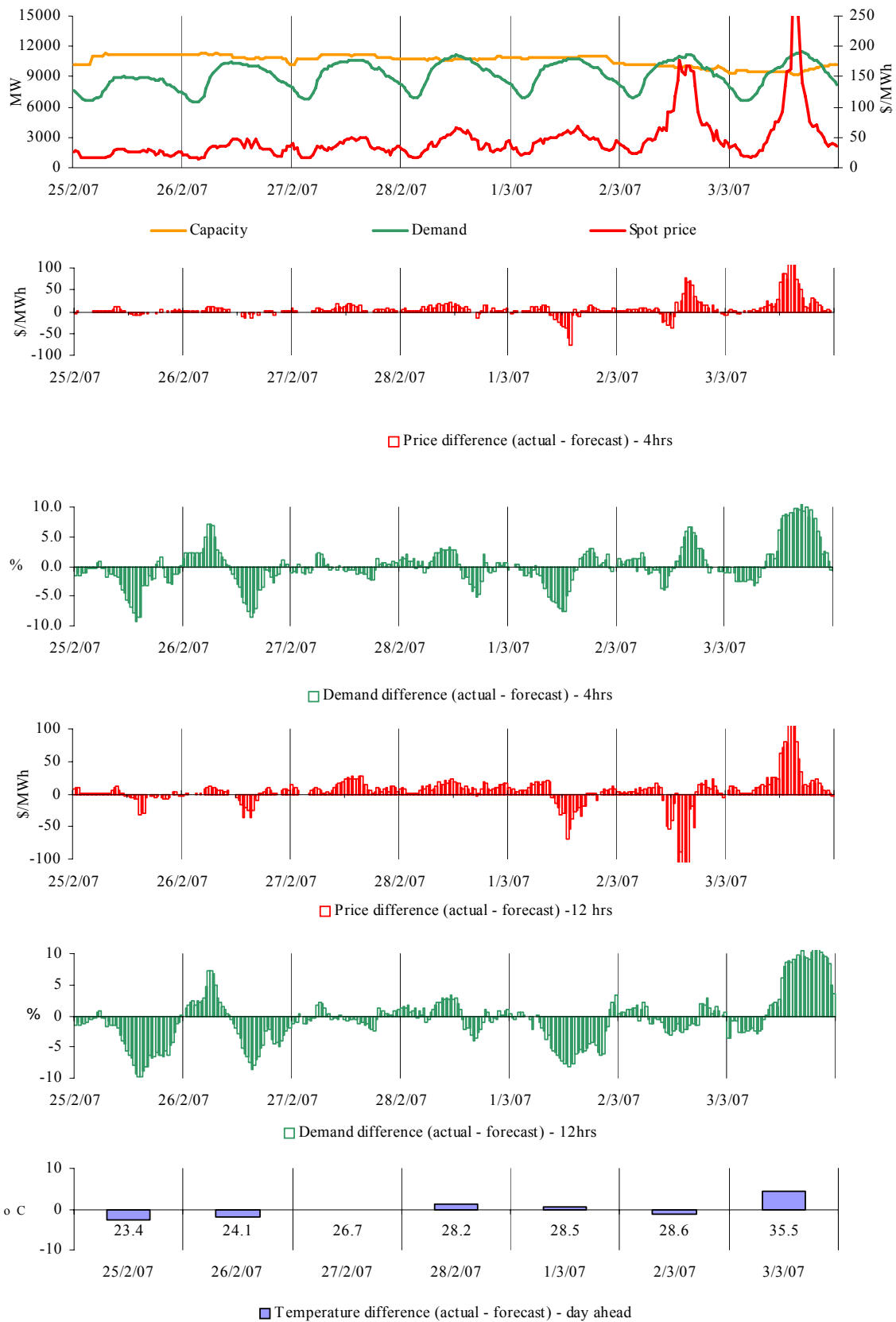
Over two rebids in the morning, Enertrade reduced the availability of Gladstone unit six by 280 MW. The unit was due to return to service in the morning after a three day outage but was delayed until the evening.

At 12.15 pm Stanwell Corporation rebid 200 MW of capacity across its Stanwell units from prices below \$55/MWh to above \$130/MWh. The rebid reason given was “Manage transmission constraint”.

From 2.22 pm, effective at 2.30 pm, Enertrade rebid as much as 230 MW of capacity across its Gladstone units from prices below \$135/MWh to above \$270/MWh, with most of this capacity re-priced to around \$4000/MWh. The rebid reason given was “Material change in market conditions::change MW distrib.”

There was no other significant rebidding.

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 \$59/MWh.

Saturday, 3 March

2:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	337.85	91.39	87.06
Demand (MW)	11 121	10 165	10 163
Available capacity (MW)	9229	9447	9494
3:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	3104.14	92.64	87.55
Demand (MW)	11 258	10 244	10 242
Available capacity (MW)	9214	9447	9494
3:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	248.84	92.33	87.51
Demand (MW)	11 342	10 304	10 304
Available capacity (MW)	9224	9449	9494

Conditions at the time saw demand around 1000 MW higher than forecast four and twelve hours ahead.

The previous night Macquarie Generation postponed the return to service of Liddell unit four, reducing available capacity by 515 MW. As a consequence 480 MW of capacity across Bayswater was rebid from prices above \$9000/MWh to below \$30/MWh.

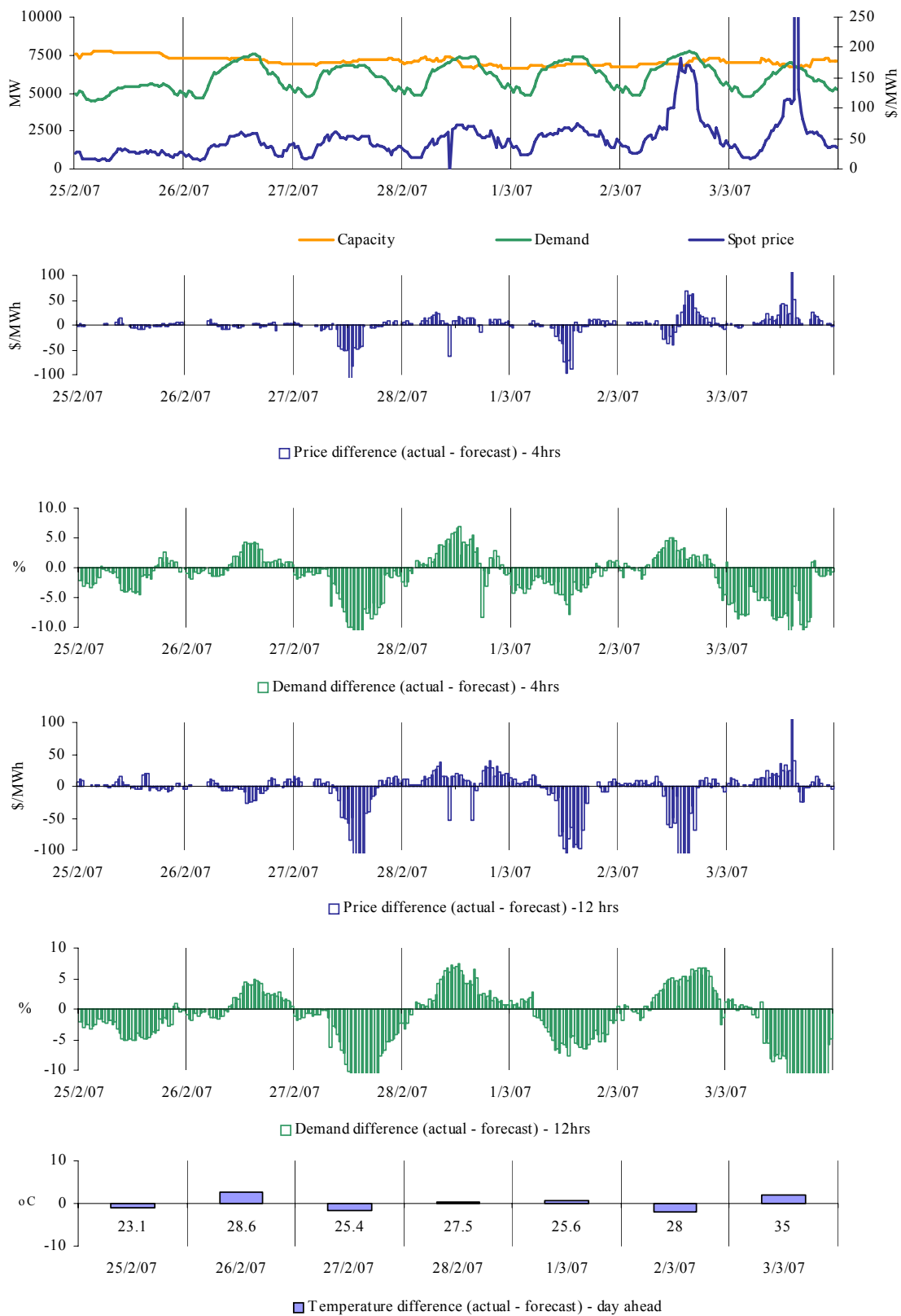
Rebidding the previous night by Eraring Energy reduced the availability of Eraring unit one by 460 MW, the rebid reason given was “primary air heater problem”. Following this, 180 MW of capacity was rebid into prices below \$20/MWh across the other Eraring units.

Over two rebids at 1.34 pm and 1.40 pm, Delta Electricity rebid 110 MW of capacity across its Wallerawang and Mount Piper units from prices above \$9000/MWh to below \$100/MWh. The rebids reasons given were “Change in sensitivities::band shift” and “Spot price change::band shift”.

At 2.33 pm effective from 2.40 pm, Snowy Hydro rebid 1100 MW of capacity at Murray from prices below \$150/MWh to \$450/MWh and \$10 000/MWh. The rebid reason given was “Manage dam levels:reallocate gen”. At 2.40 pm the five-minute dispatch price in New South Wales increased to \$8000/MWh. The AER understands that the intention of Snowy Hydro’s rebid at 2.33 pm was to reduce generation at Murray and Upper Tumut, by increasing the availability and shifting capacity into lower prices at Tumut 3. The bid did not, however, increase the availability of Tumut 3 power station, which had been unavailable because of maintenance. At 2.41 pm, effective 2.50 pm, a total of 260 MW of capacity at Upper Tumut was rebid into prices of less than \$150/MWh. At 2.47 pm, effective 2.55 pm, the availability of Tumut 3 was increased from zero to 1160 MW, with 800 MW of this capacity priced at zero. The rebid reasons given for both rebids was “Prices higher than forecast:bandshift down”. The AER understands that steps have been taken by Snowy Hydro to avert a reoccurrence of such a rebidding error in future.

There was no other significant rebidding.

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



There were four occasions in Victoria where the spot price was greater than three times the weekly average price of \$55/MWh. Three of these occurred when prices were generally aligned across all regions and are detailed in the national market outcomes section. The remaining occasion is presented below.

Saturday, 3 March

3:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1483.18	87.97	89.94
Demand (MW)	6707	7357	7670
Available capacity (MW)	6722	7407	7710

Conditions at the time saw demand and available capacity around 700 MW lower than forecast four hours ahead.

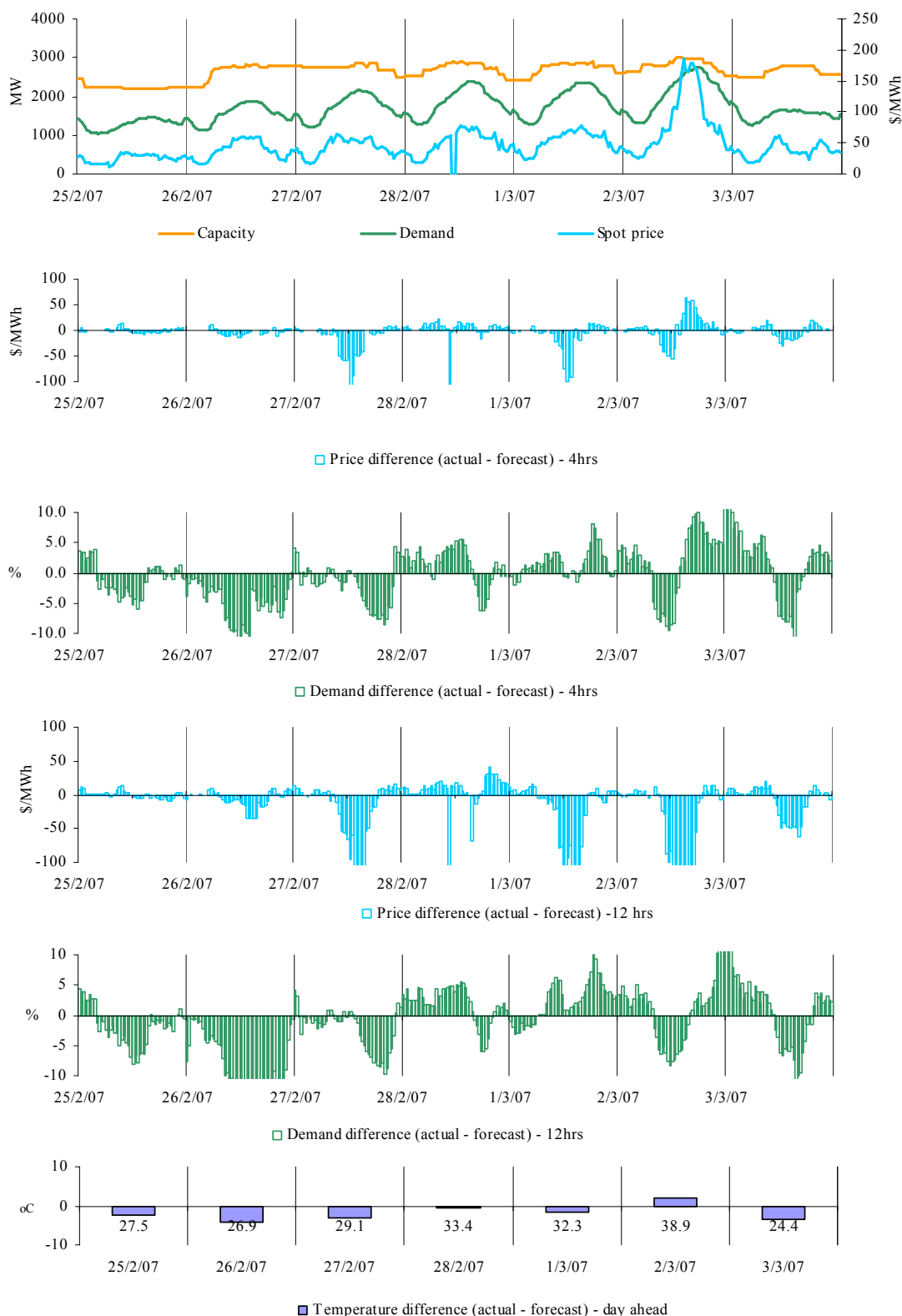
At 8.50 am, International Power’s Hazelwood unit five reduced its availability by 205 MW to zero. All of this capacity was priced below \$20/MWh. The rebid reason given was “Revised unit off-time 08:50”.

From 7.17 am, Ecogen Energy delayed the commitment of Newport which was expected to have returned from 7 am. The unit eventually commenced generation at 5.30 pm. These rebids reduced the available capacity by 510 MW, all of which was priced under \$150/MWh. The rebid reasons included “Unavailable due to plant failure” and “Initial offer”.

At 2.40 pm, the five-minute dispatch price reached \$3928/MWh. This is detailed in the New South Wales section.

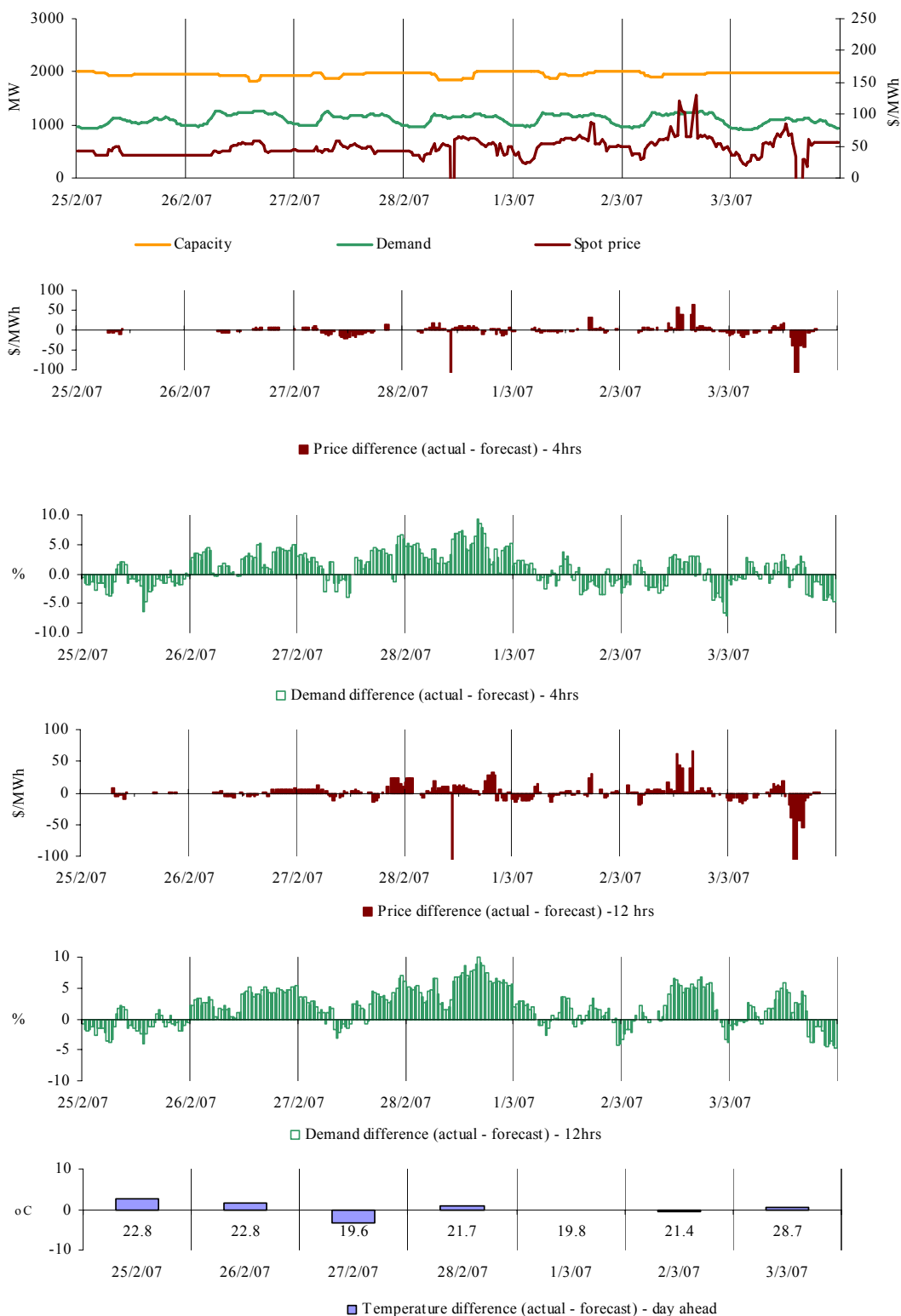
There was no other significant rebidding.

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



There were eight occasions in South Australia where the spot price was greater than three times the weekly average price of \$51/MWh. All of these occurred when prices were generally aligned across all regions and are detailed in the national market outcomes section.

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 \$46/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

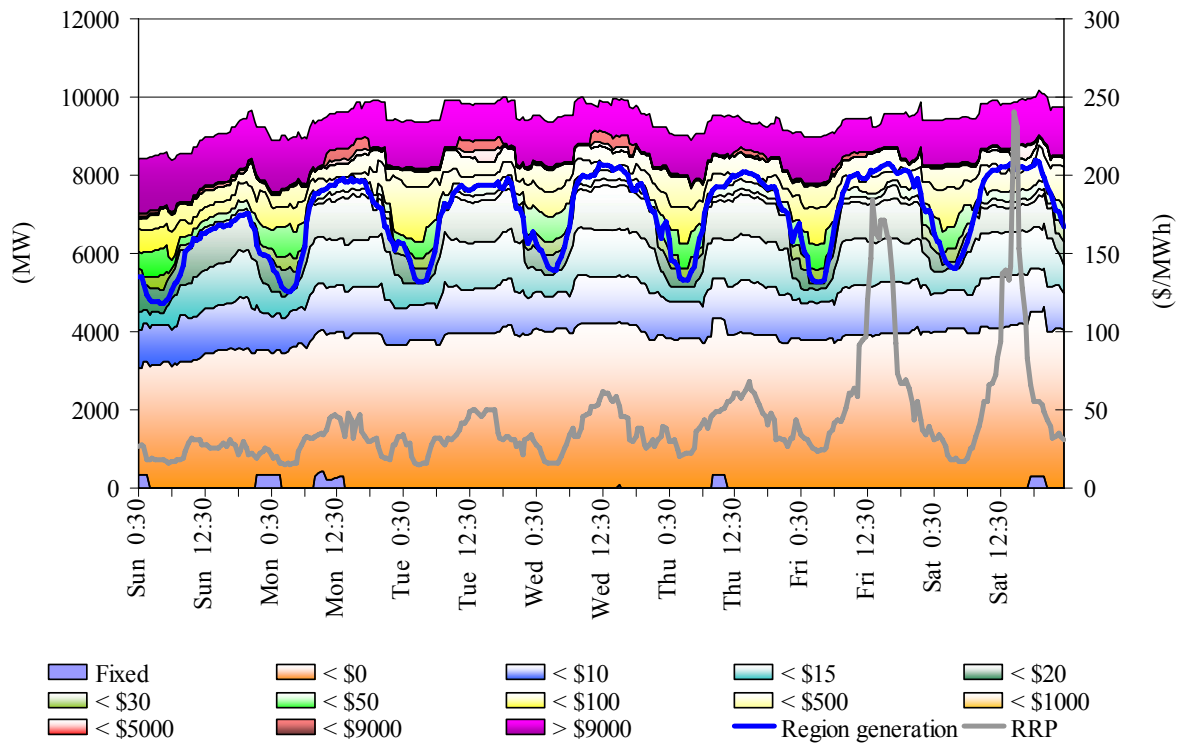


Figure 58: New South Wales closing bid prices, dispatched generation and spot price

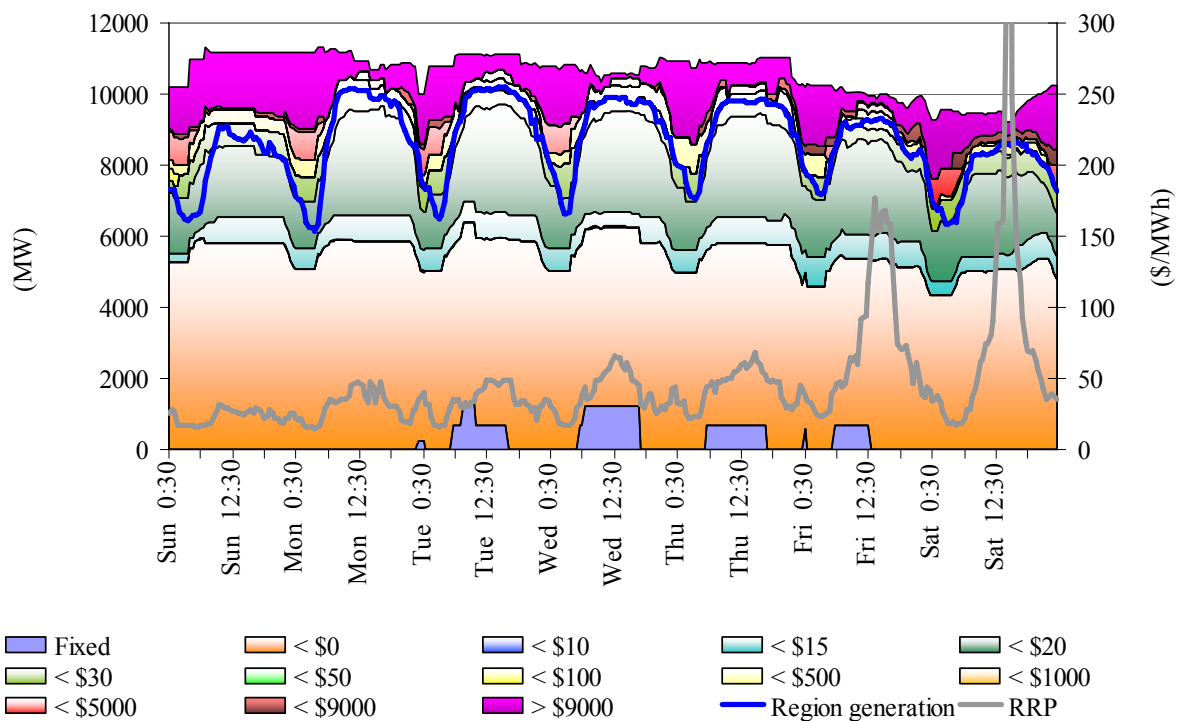


Figure 59: Victoria closing bid prices, dispatched generation and spot price

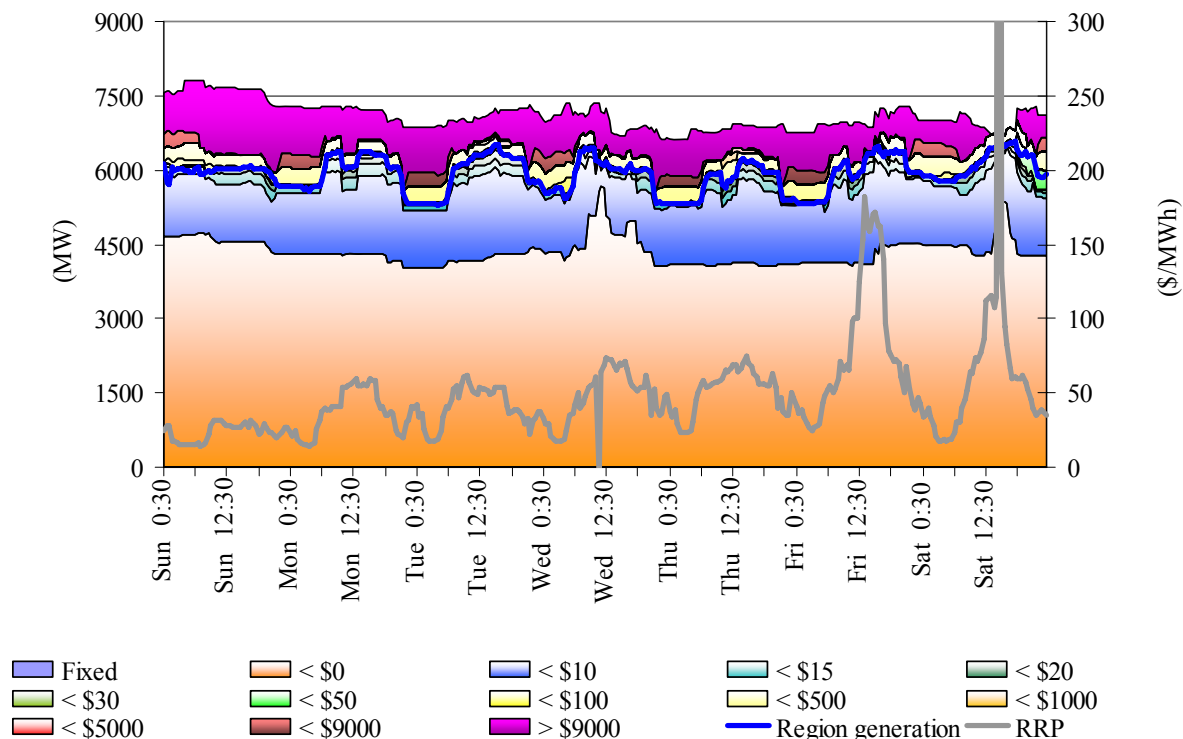


Figure 60: South Australia closing bid prices, dispatched generation and spot price

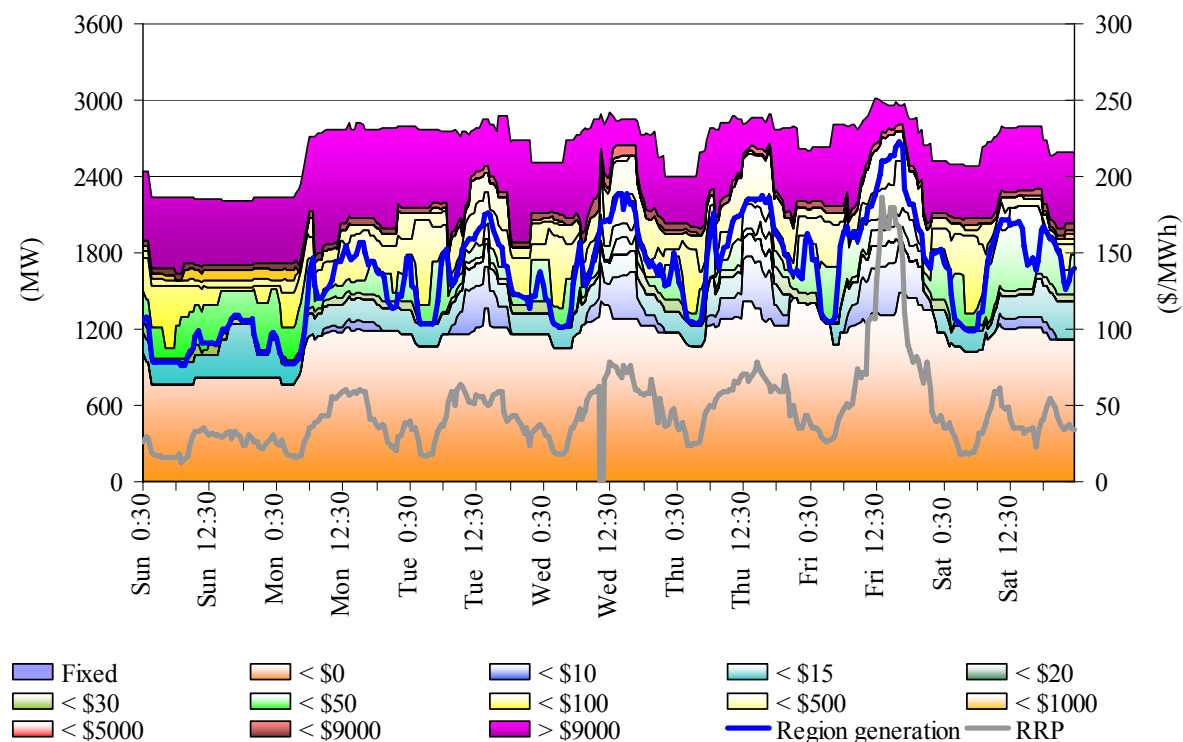
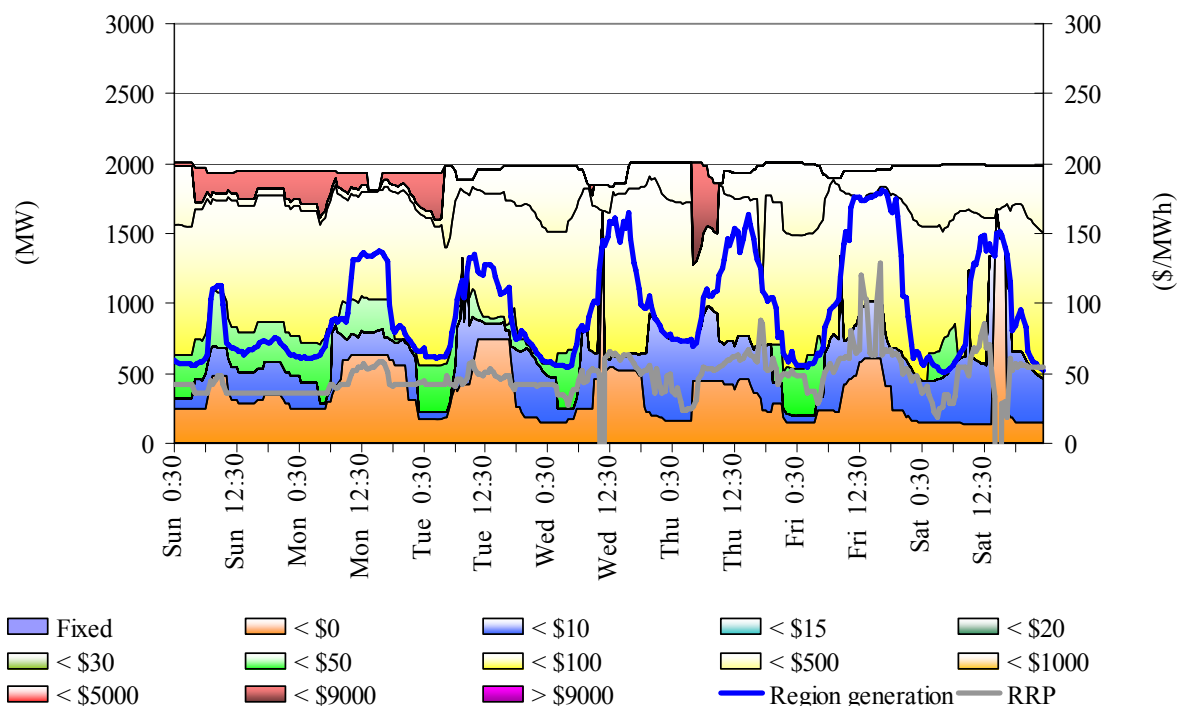


Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was \$ 143 000 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)	0.43	0.23	0.94	2.15	0.16	0.22	0.67	0.93
Previous week (\$/MW)	0.49	0.28	1.10	2.42	0.10	0.07	0.41	0.81
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$16	\$8	\$51	\$41	\$1	\$1	\$12	\$13
% of energy market	0.01%	0.01%	0.02%	0.02%	0.01%	0.01%	0.01%	0.01%

The total cost of ancillary services in Tasmania for the week was \$155 000 or 1.8 per cent of the total turnover in the energy market in Tasmania. On Saturday afternoon, co-optimisation between the energy and lower 6 second frequency control markets led to an increase in the price for both energy and lower 6 second services. Five-minute dispatch energy prices peaked at \$8165/MWh with lower 6 second prices reaching \$2162/MW. 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)	2.43	0.50	0.84	1.84	30.42	0.95	0.66	0.84
Previous week (\$/MW)	26.37	0.52	0.71	1.70	5.12	1.12	0.73	0.59
Last quarter (\$/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost (\$1000s)	\$9	\$5	\$10	\$14	\$93	\$11	\$7	\$5
% of energy market	0.11%	0.06%	0.12%	0.16%	1.10%	0.13%	0.09%	0.06%

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

Figure 64: daily frequency control ancillary service cost

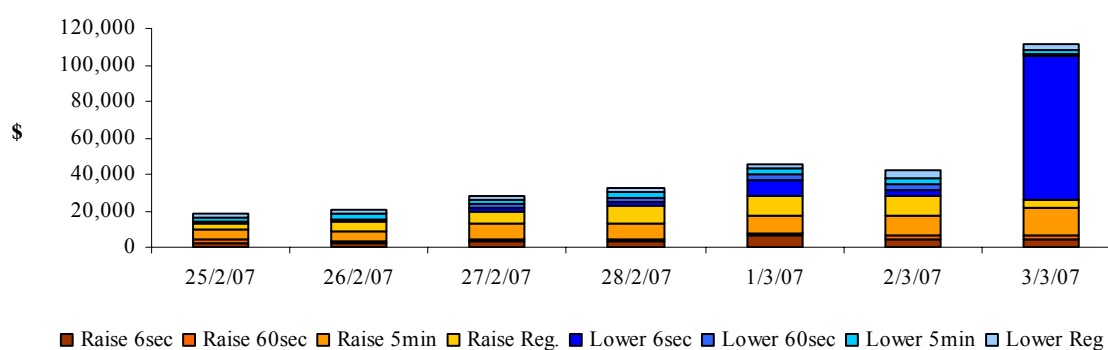
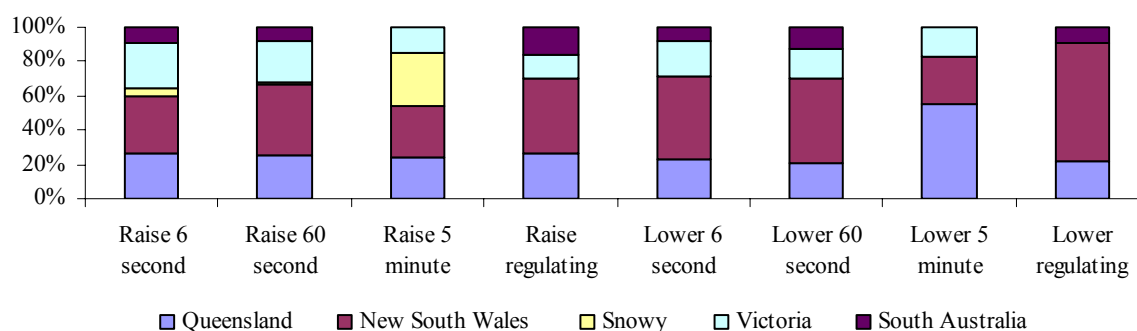


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

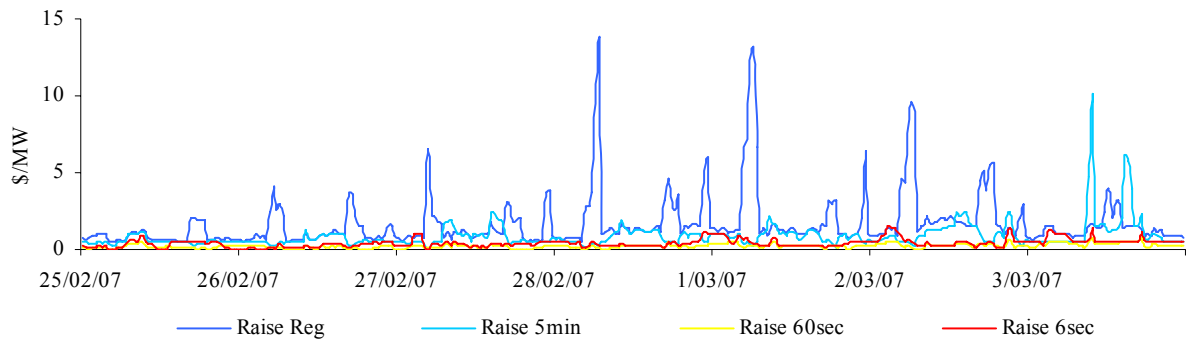


Figure 66A: prices for raise services – Tasmania

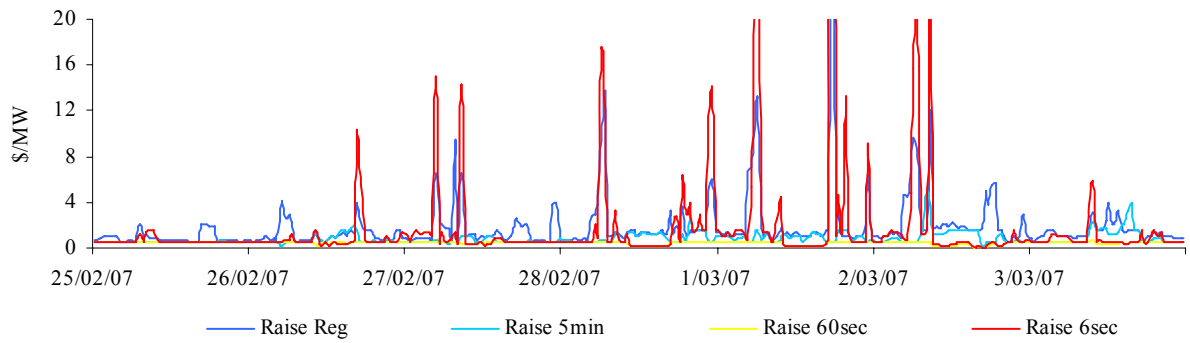


Figure 67: prices for lower services

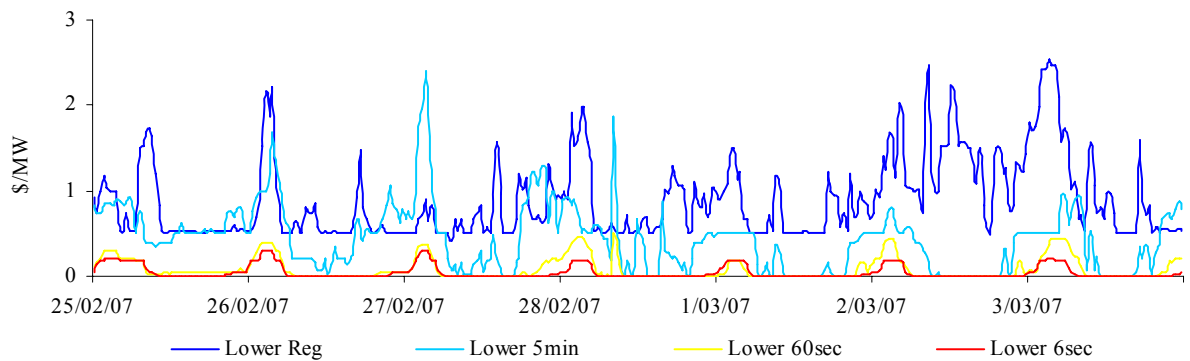
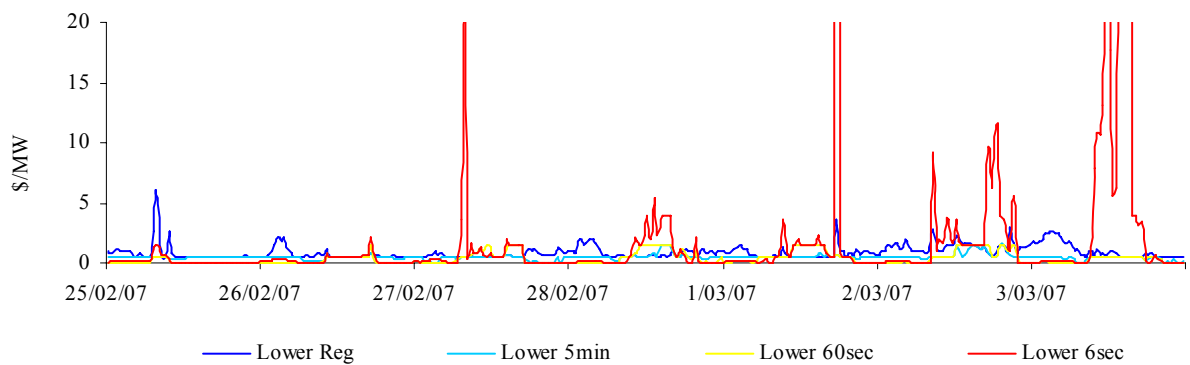


Figure 67A: prices for lower services – Tasmania



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

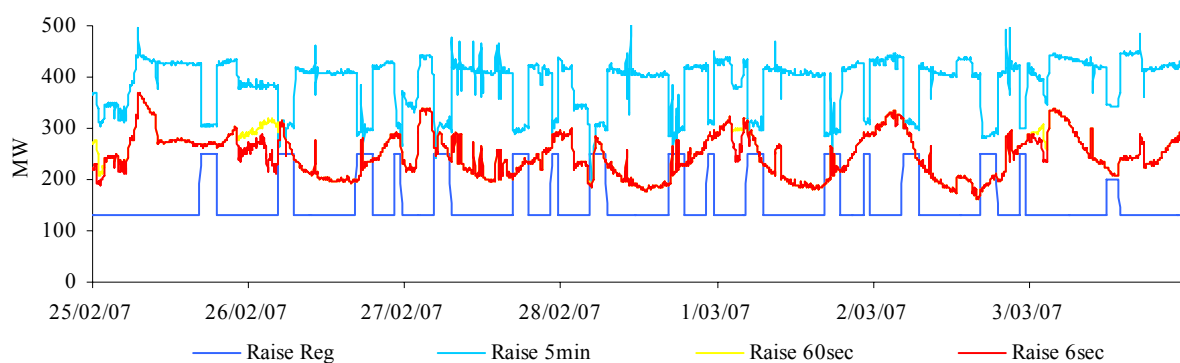


Figure 68A: raise requirements – Tasmania

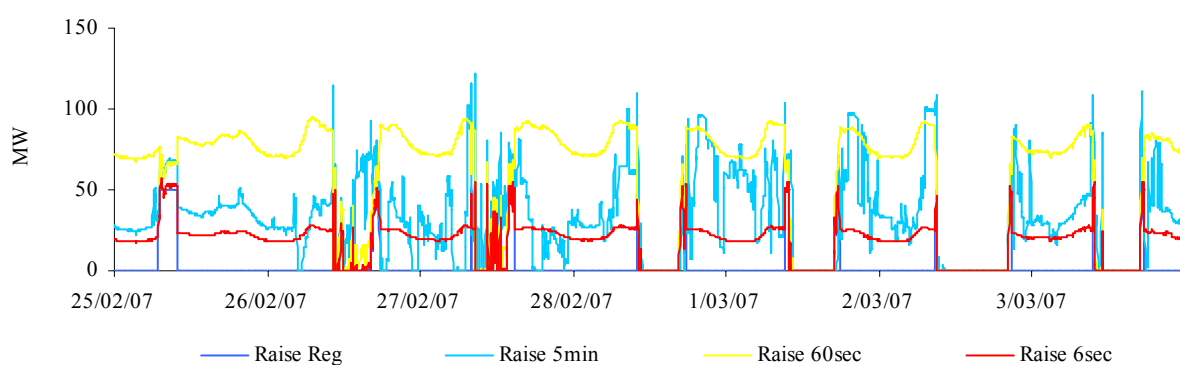


Figure 69: lower requirements

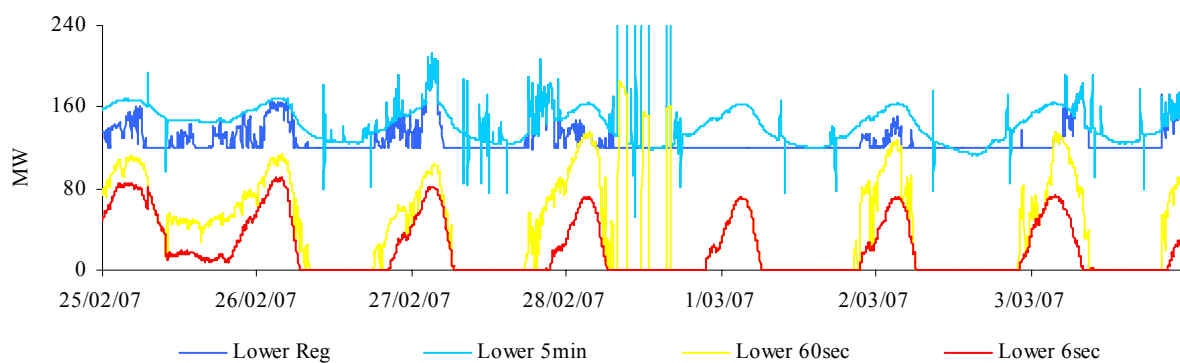


Figure 69A: lower requirements – Tasmania

