

2 December – 8 December 2007

Summary

Spot prices for the week averaged between \$56/MWh in South Australia and \$81/MWh in Victoria.

Turnover in the energy market in the week ended 8 December was \$283 million. The total cost of ancillary services for the week was \$1.6 million or 0.6 per cent of energy market turnover. Additional local services as a result of network outages and lightning contributed to around \$700 000 of the total.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 146, or 43 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 quarter of all trading intervals across the market. These variations were most frequent in South Australia, occurring in 40 per cent 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

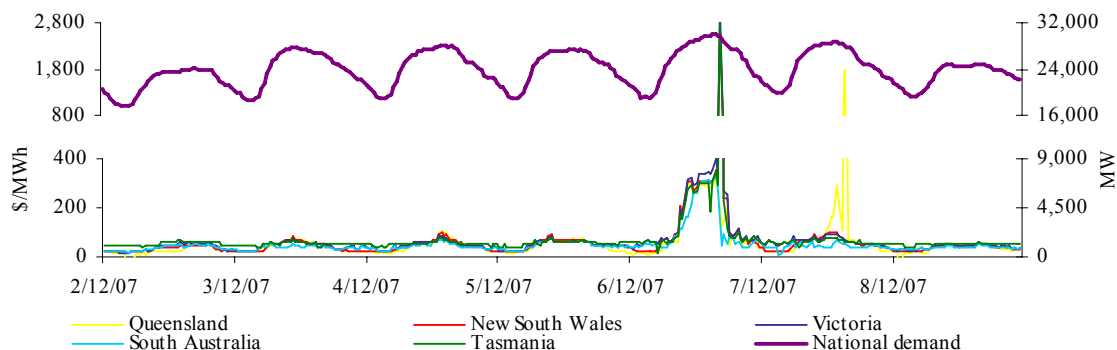


Figure 2: volume weighted average spot price for energy market (\$/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	62	72	81	56	75
Previous week	34	38	41	42	49
Same quarter last year	23	27	29	40	37
Financial year to date	59	53	54	54	57
% change from previous week*	▲ 83%	▲ 89%	▲ 100%	▲ 36%	▲ 52%
% change from same quarter last year**	▲ 169%	▲ 161%	▲ 180%	▲ 41%	▲ 104%
% change from year to date***	▲ 136%	▲ 52%	▲ 51%	▲ 26%	▲ 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

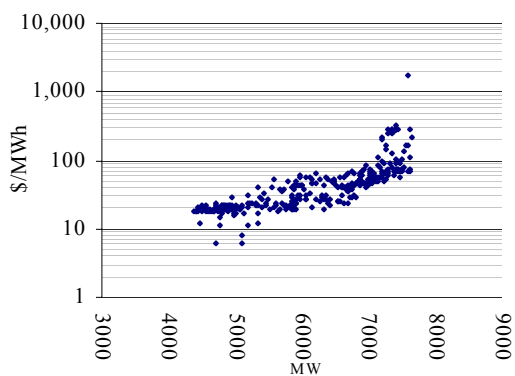


Figure 4: New South Wales

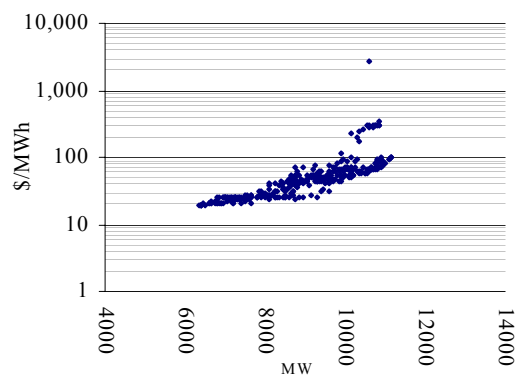


Figure 5: Victoria

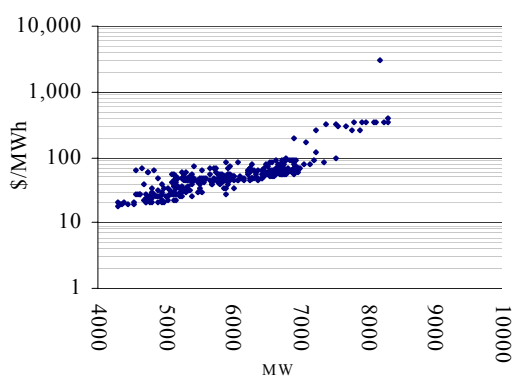


Figure 6: South Australia

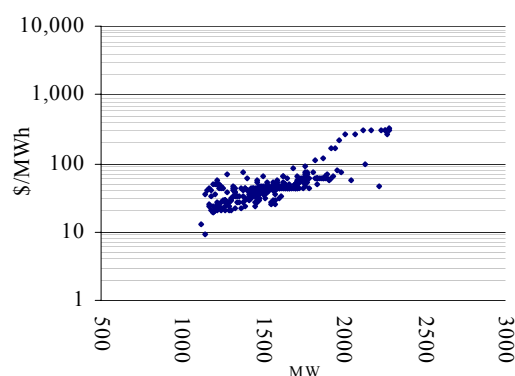
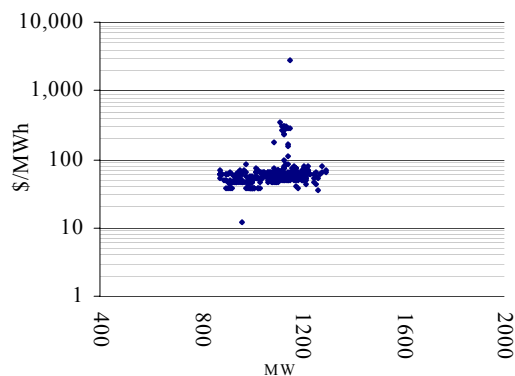


Figure 7: Tasmania



Maximum spot prices for the week were between \$329/MWh in South Australia and \$3119/MWh in Victoria. 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	2.11	0.87	0.75	0.67	0.56
Previous week	0.60	0.50	0.41	0.48	0.13
Same quarter last year	0.79	0.78	0.78	0.75	0.70

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

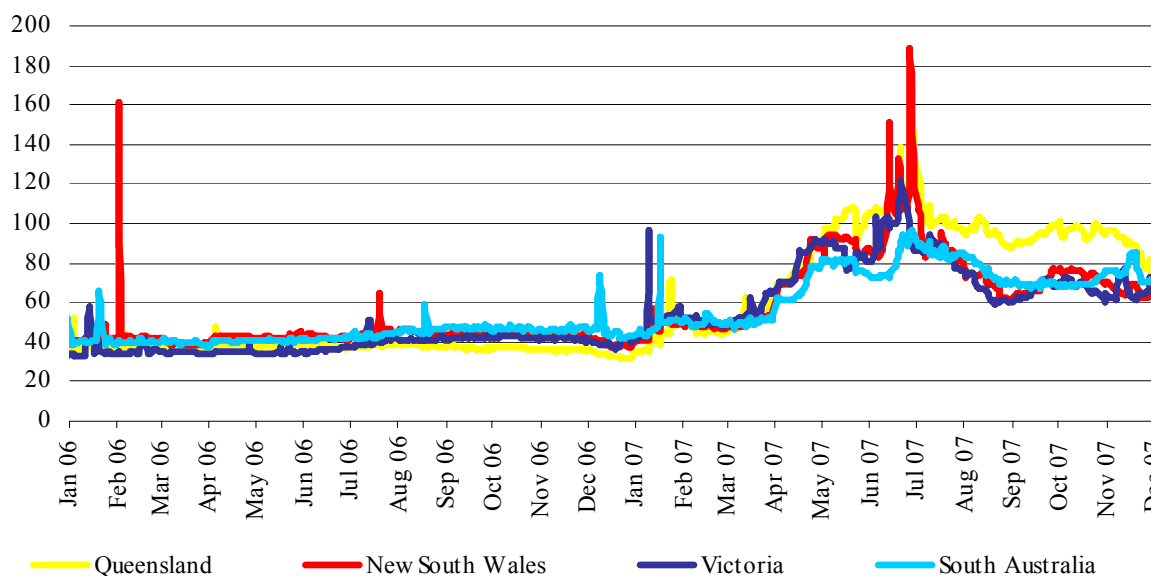
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2006.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	79.42	80.88	80.35	81.86	82.39
New South Wales	65.60	66.26	66.39	68.54	68.39
Victoria	64.78	65.52	66.20	72.82	66.82
South Australia	68.97	69.65	70.09	71.19	69.54

* 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



Reserves

Low reserves were forecast in Victoria on Thursday morning for Thursday afternoon.

Imports at time of maximum demand

Figures 11 to 15 show spot price, net imports and limits at the time of weekly maximum demand.

Figure 11: Queensland

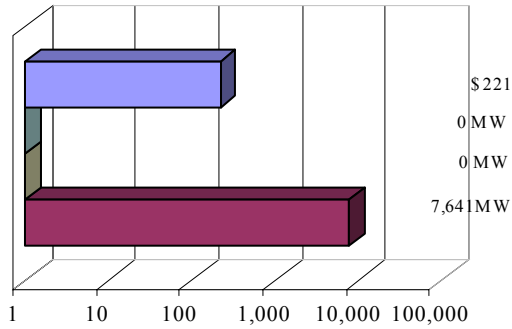


Figure 12: New South Wales

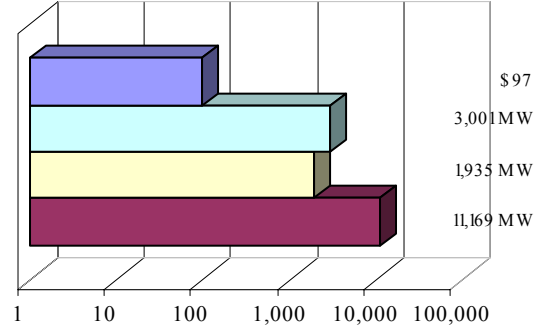


Figure 13: Victoria

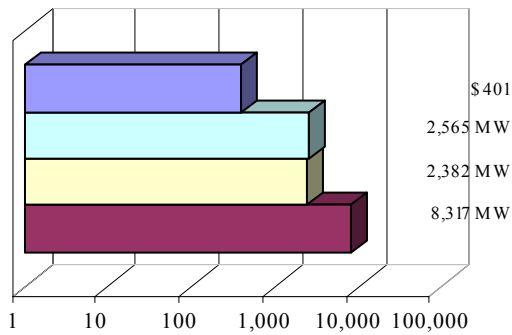


Figure 14: South Australia

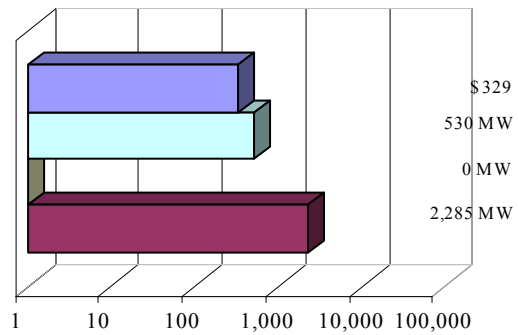
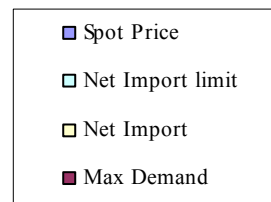
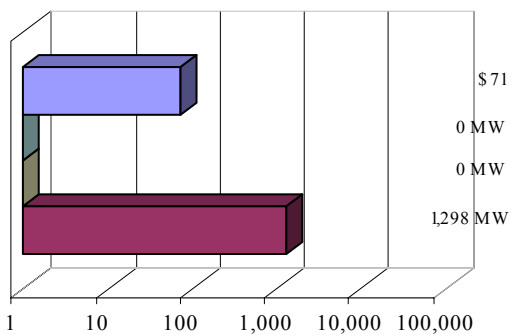


Figure 15: Tasmania



Price variations

There were 146 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 against 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

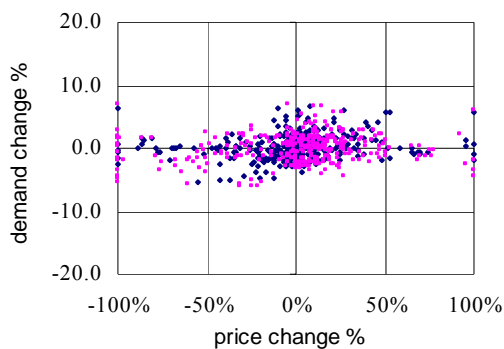


Figure 17: New South Wales

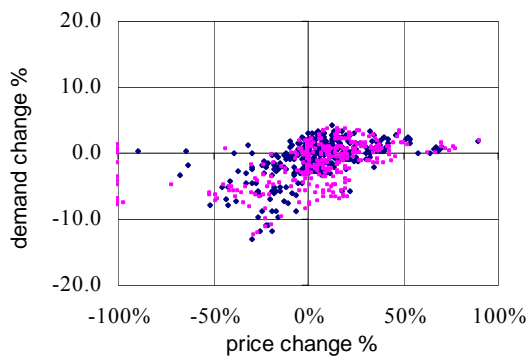


Figure 18: Victoria

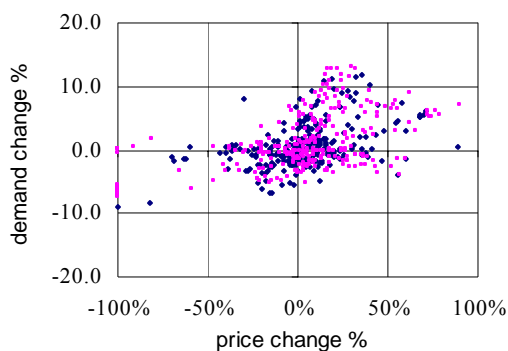


Figure 19: South Australia

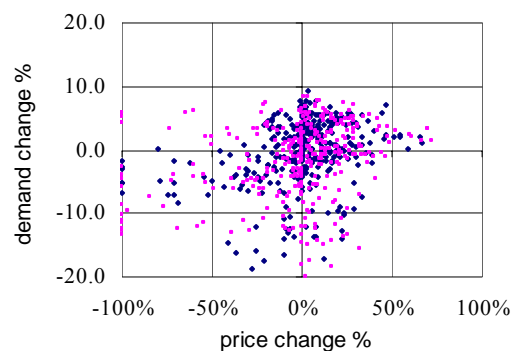


Figure 20: Tasmania

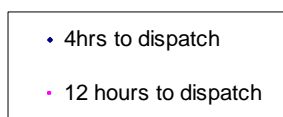
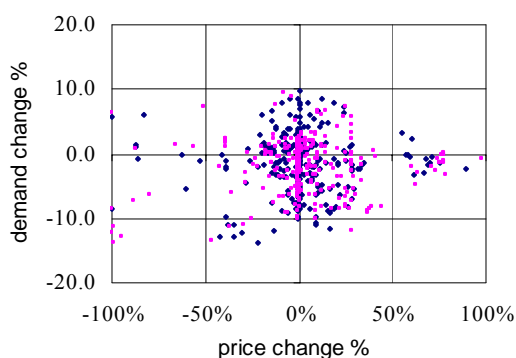
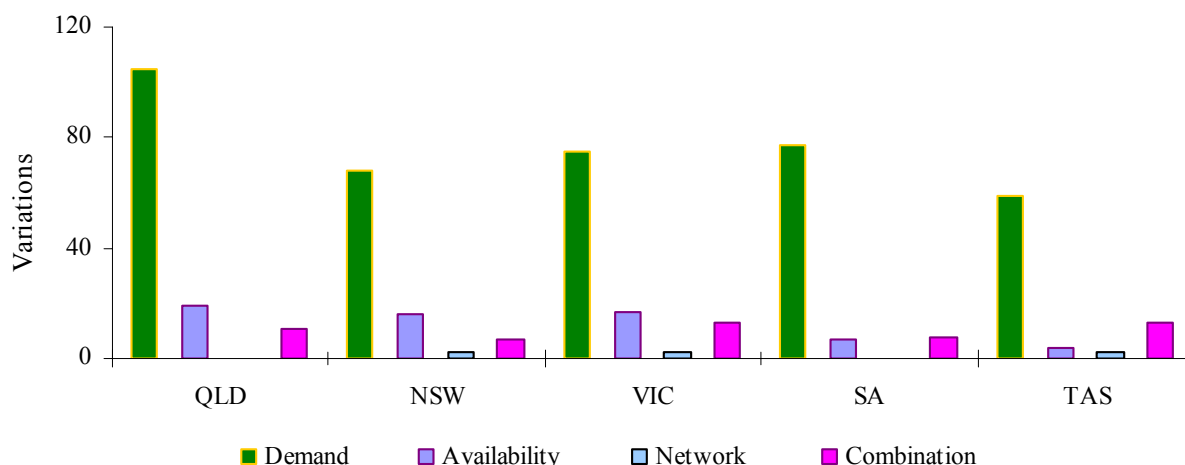


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

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.

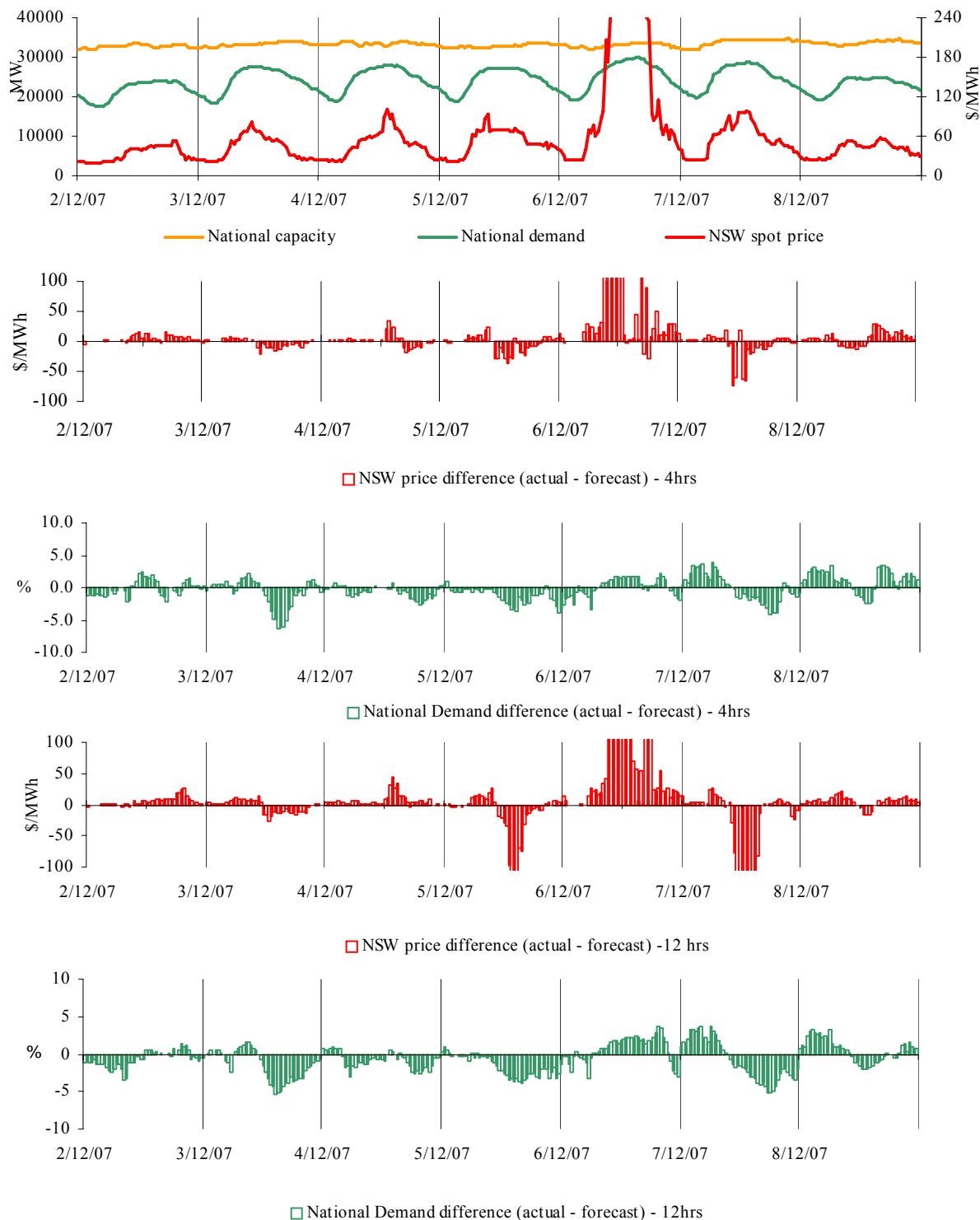
On a regional basis the differences between the maximum temperature and the temperature forecast at around 6.00 pm the day before are also included.

In each section, all prices for the week greater than three times the average have been presented. This threshold is used to filter the material price outcomes for the week. The actual price, demand and generator availability is compared with the forecasts made 4 and 12 hours ahead, with significant changes to these forecasts explained.

National Market

Spot prices within the national market are regularly aligned with conditions in one region reflected across all others. Figures 22-26 shows 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 as a proxy national price under these conditions as New South Wales is located in the centre of the NEM.

Figures 22-26: National market outcomes



There were 16 occasions on Thursday where the spot price aligned nationally and the New South Wales price was greater than three times the New South Wales weekly average price of \$72/MWh.

Thursday, 6 December

10:30 am	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	258.69	81.52	66.23
Demand (MW)	28 096	27 728	27 681
Available capacity (MW)	32 987	32 837	33 899
11:00 am	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	305.64	91.83	66.56
Demand (MW)	28 428	27 950	27 911
Available capacity (MW)	33 030	32 876	33 905
11:30 am	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	306.82	91.74	72.24
Demand (MW)	28 614	28 106	28 113
Available capacity (MW)	33 160	33 100	34 094
12:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	272.25	91.65	73.27
Demand (MW)	28 698	28 259	28 289
Available capacity (MW)	33 043	33 139	34 115
12:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	281.34	92.93	82.52
Demand (MW)	28 963	28 452	28 440
Available capacity (MW)	33 198	33 308	33 863
1:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	307.30	142.24	91.51
Demand (MW)	29 180	28 728	28 602
Available capacity (MW)	33 140	33 331	33 783
1:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	306.49	294.69	144.83
Demand (MW)	29 407	28 926	28 787
Available capacity (MW)	33 160	33 397	33 788
2:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	306.70	308.68	154.62
Demand (MW)	29 595	29 105	28 964
Available capacity (MW)	33 282	33 123	33 863
2:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	305.12	302.96	235.95
Demand (MW)	29 747	29 266	29 089
Available capacity (MW)	33 415	33 638	34 157
3:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	306.28	302.82	250.39
Demand (MW)	29 778	29 303	29 198
Available capacity (MW)	33 459	33 625	34 124
3:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	308.88	302.81	301.29
Demand (MW)	30 023	29 487	29 269
Available capacity (MW)	33 517	33 659	33 644
4:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	355.38	310.44	301.20
Demand (MW)	29 998	29 883	29 317
Available capacity (MW)	33 555	33 691	33 734
4:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	298.26	296.19	297.70
Demand (MW)	29 762	29 814	29 231
Available capacity (MW)	33 671	33 823	34 158

Thursday, 6 December (cont.)

5:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	2737.19	293.06	257.06
Demand (MW)	29 559	29 493	28 966
Available capacity (MW)	33 538	33 780	34 090
5:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	241.91	261.75	238.84
Demand (MW)	28 827	28 945	28 414
Available capacity (MW)	33 440	33 780	33 891
6:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	235.64	146.42	128.60
Demand (MW)	28 357	28 282	27 850
Available capacity (MW)	33 456	33 537	33 955

Conditions at the time saw demand around 500 MW higher than forecast 12 hours ahead. Forecasts were updated around midday bringing them into line with actual demand. Available capacity was up to 900 MW lower than forecast 12 hours ahead.

Prices of between \$100/MWh and \$350/MWh were forecast for the afternoon from the first predispach run the previous day. From midnight, prices were forecast to reach around \$300/MWh during the afternoon peak period. Actual prices increased to \$300/MWh from 9.30 am, around four hours earlier than forecast.

At 2.48 am International Power's Loy Yang B unit one tripped from 525 MW. The unit remained offline until 8 pm the following day. This capacity was priced below \$10/MWh.

At 4.49 am TRUenergy delayed the return to service of Yallourn unit four, reducing availability by 200 MW. All of this capacity was priced below zero.

From 5.36 am, over several rebids Macquarie Generation reduced the availability of Bayswater unit one and Liddell units three and four by 185 MW. The majority of this capacity was priced below \$70/MWh. The reasons given were "PA Bus pressure", "FF limit" and RTS- Match bid to unit capability".

At 8.38 am CS Energy rebid 250 MW of capacity at Kogan Creek from prices below \$10/MWh to above \$275/MWh. The reason given was "Manage QNI constraint".

Over two rebids at 9.37 am and 10.06 am Stanwell Corporation rebid 160 MW of capacity at Gladstone from prices below \$70/MWh to above \$9000/MWh. The reasons given were "Rebid to match output/avail:change avail/MW distrib" and "Portfolio optimisation::change MW distrib".

At 1.23 pm Delta Electricity delayed the return to service of unit five at Vales Point, reducing its availability by 280 MW to zero, all priced below zero.

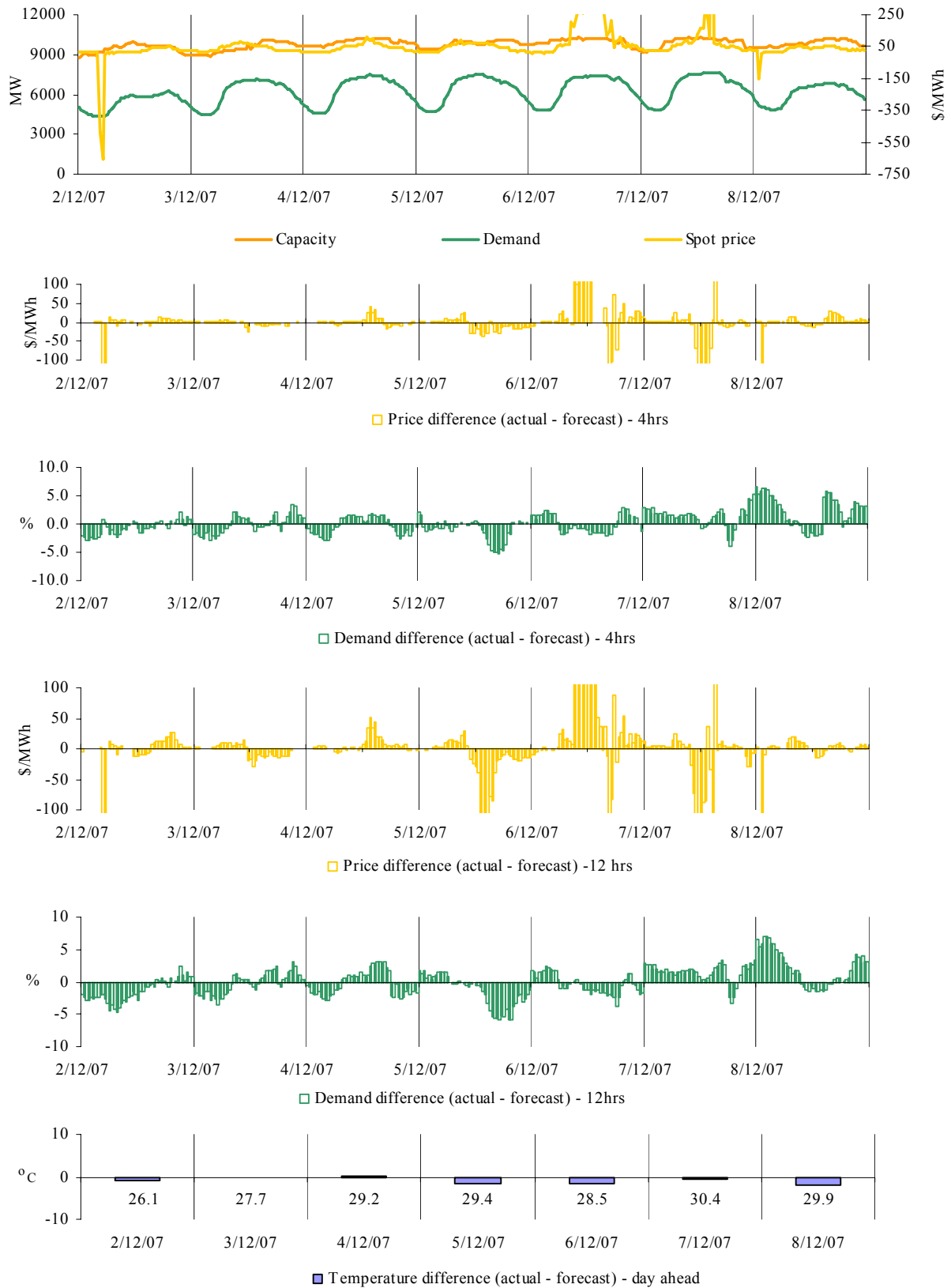
At 4.30 pm, the loss of the Tailem Bend to Tungillo and Tailem Bend to Cherry Gardens lines in South Australia were reclassified as credible contingencies due to lightning in the vicinity. At 4.40 pm the loss of the Armidale to Dumaresq lines in New South Wales were also reclassified due to lightning. Constraints to manage these reclassifications restricted flows across Heywood (360 MW change in limit into Victoria) and QNI (400 MW change in limit into New South Wales) interconnectors resulting in the five minute price in New South Wales, Victoria, Snowy and Tasmania exceeding \$7400/MWh for two dispatch intervals at 4.45 pm and 4.50 pm As a consequence, the spot price for 5 y6pm reached \$3119/MWh in Victoria and \$2737/MWh in New South Wales.

There was no other significant rebidding.

Queensland

Figures 27-32 show spot market prices in Queensland over the week along with actual demand and differences between actual and forecast demand and prices.

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



There were 18 occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of \$62/MWh. Fourteen of these occurred when prices were generally aligned across all regions and this is detailed in the national market outcomes section. The remaining four occasions are presented below.

Thursday, 6 December

9:30 am	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	206.33	70.95	61.85
Demand (MW)	7187	7198	7171
Available capacity (MW)	10 157	10 262	10 402

Prices were generally aligned across the market with the events of the day described in the national section.

Friday, 7 December

2:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	289.73	8026.26	254.1
Demand (MW)	7634	7663	7597
Available capacity (MW)	10 249	10 270	10 473
2:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	220.56	289.38	253.89
Demand (MW)	7641	7629	7567
Available capacity (MW)	10 249	10 270	10 533
3:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1760.79	82.51	139.8
Demand (MW)	7592	7485	7433
Available capacity (MW)	10 240	10 277	10 573

Conditions at the time saw demand and available capacity close to that forecast four and twelve hours ahead.

The spot price for the 2 pm and 2.30 pm trading intervals was below those forecast four hours ahead.

At 9.03 am CS Energy rebid 76 MW of capacity at Swanbank E from prices below \$240/MWh to above \$5900/MWh. The reason given was “Swan_E change market conditions”. At 9.41 am Origin Energy rebid 288 MW of capacity at Mount Stuart from prices above \$9000/MWh to below \$305/MWh. The reason given was “Change in PDS”. The forecast price then returned to previous levels.

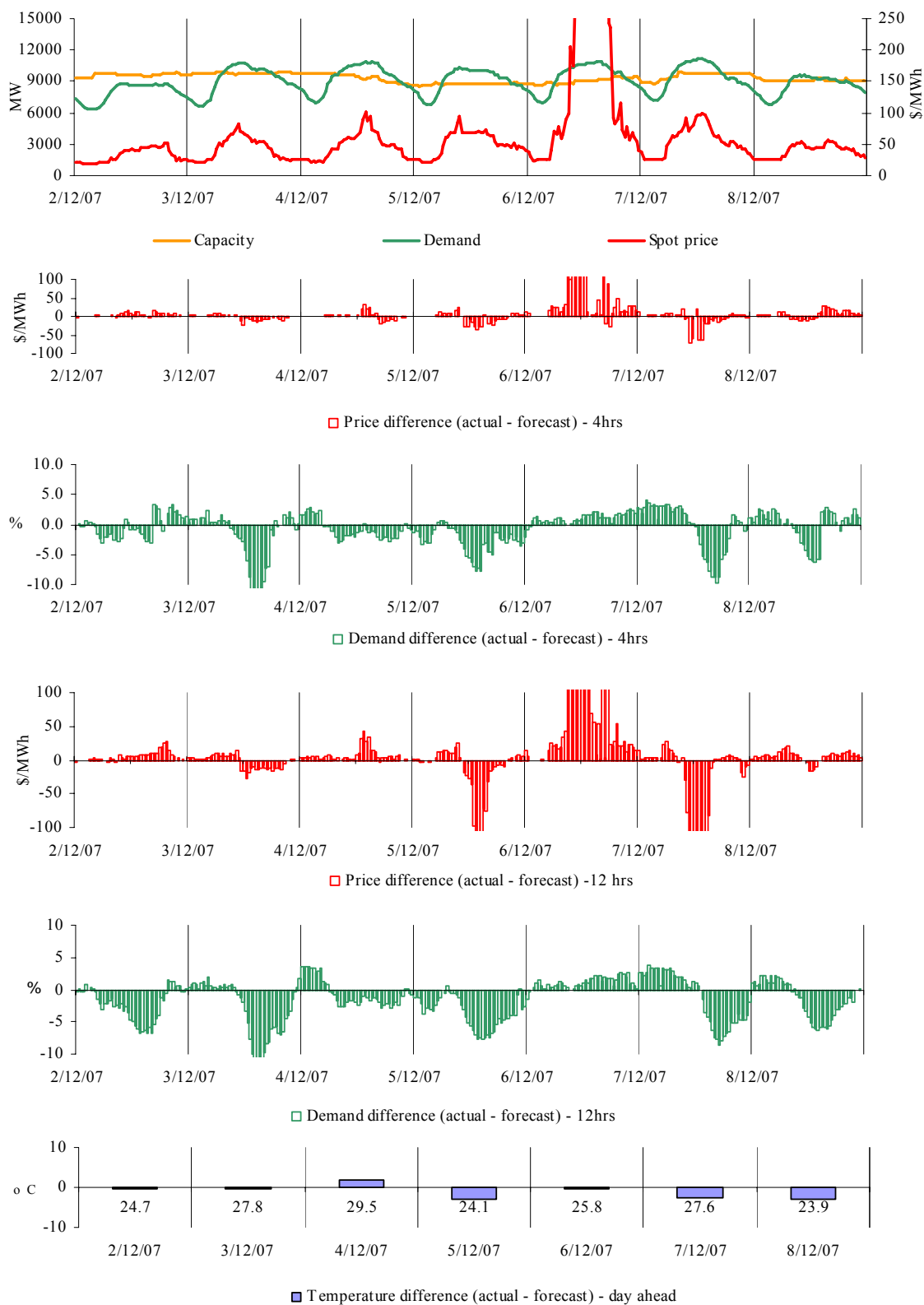
At 3.20 pm the loss of the Eraring to Kemps Creek lines in New South Wales was reclassified as a credible contingency and constraints were invoked. At 3.25 pm the constraint was violated and the five minute price in Queensland increased to \$10 000/MWh. The export limit forcing flow into New South Wales changed from 167 MW at 3.20 pm to 890 MW at 3.25 pm and then to 370 MW at 3.30 pm, with prices returning to previous levels.

There was no other significant rebidding.

New South Wales

Figures 33-38 show spot market prices in New South Wales over the week along with actual demand and differences between actual and forecast demand and prices.

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

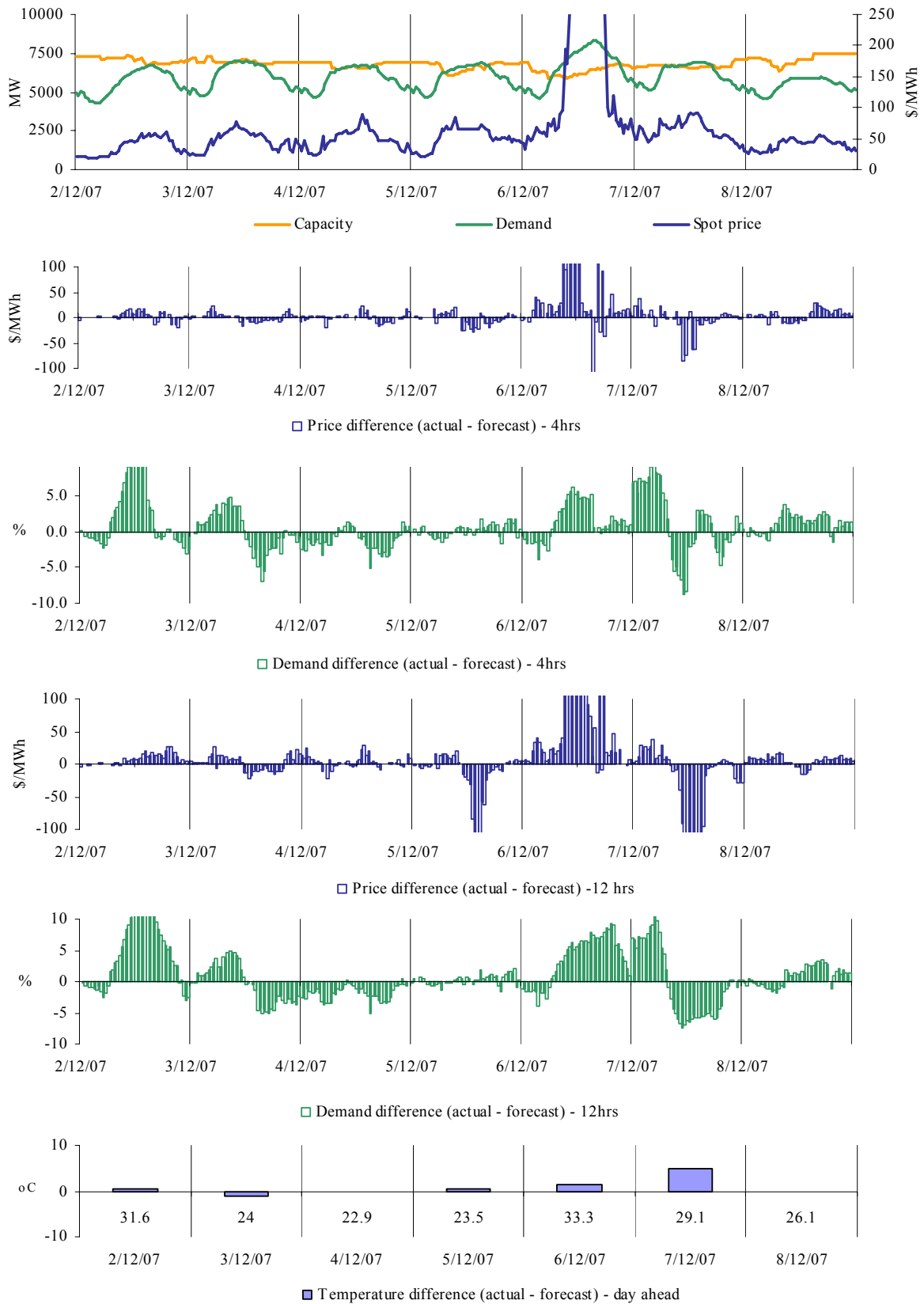


There were 16 occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of \$72/MWh. These occurred when prices were generally aligned across all regions and is detailed in the national market outcomes section.

Victoria

Figures 39-44 show spot market prices in Victoria over the week along with actual demand and differences between actual and forecast demand and prices.

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

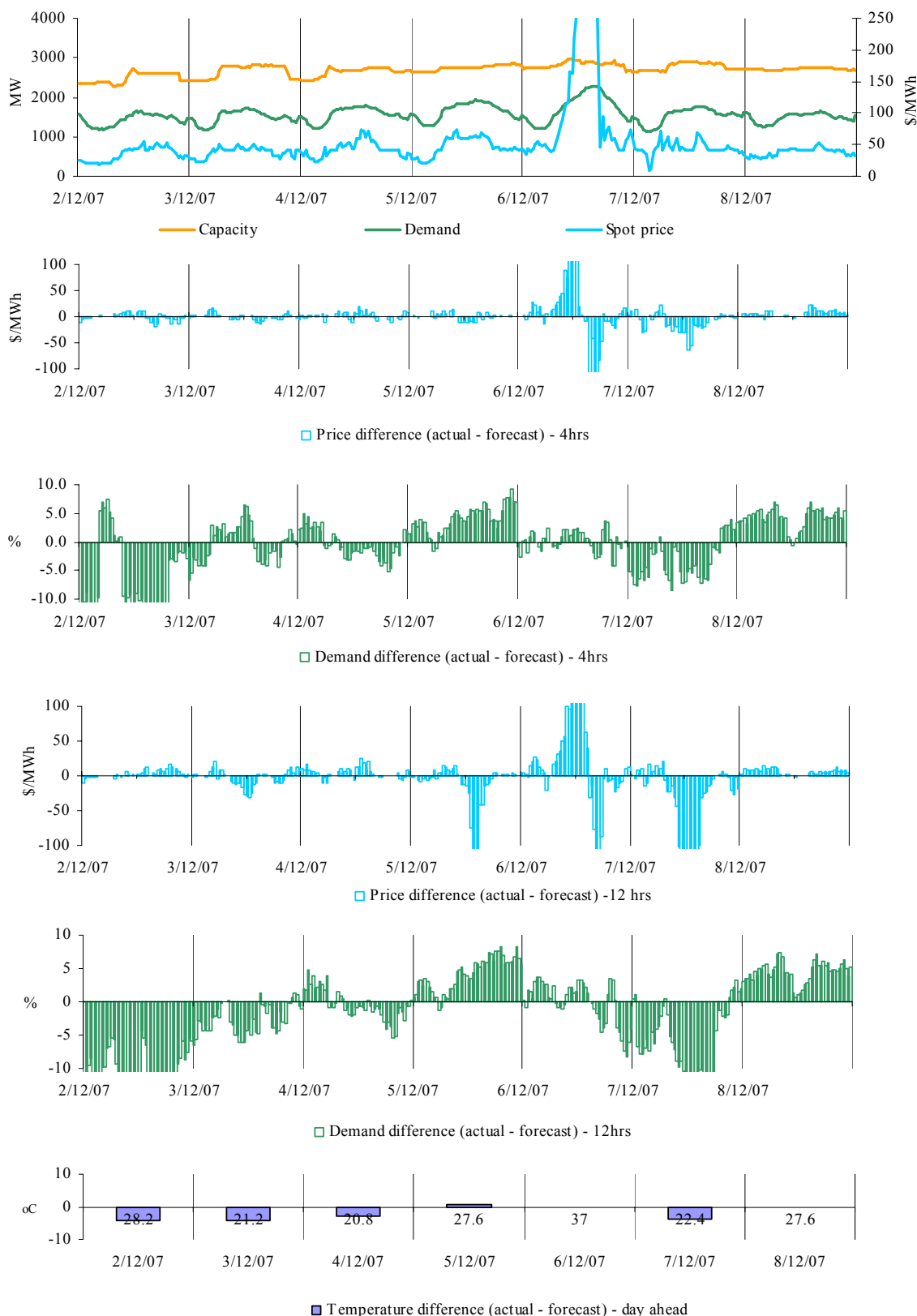


There were 16 occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of \$81/MWh. These occurred when prices were generally aligned across all regions and is detailed in the national market outcomes section.

South Australia

Figures 45-50 show spot market prices in South Australia over the week along with actual demand and differences between actual and forecast demand and prices.

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

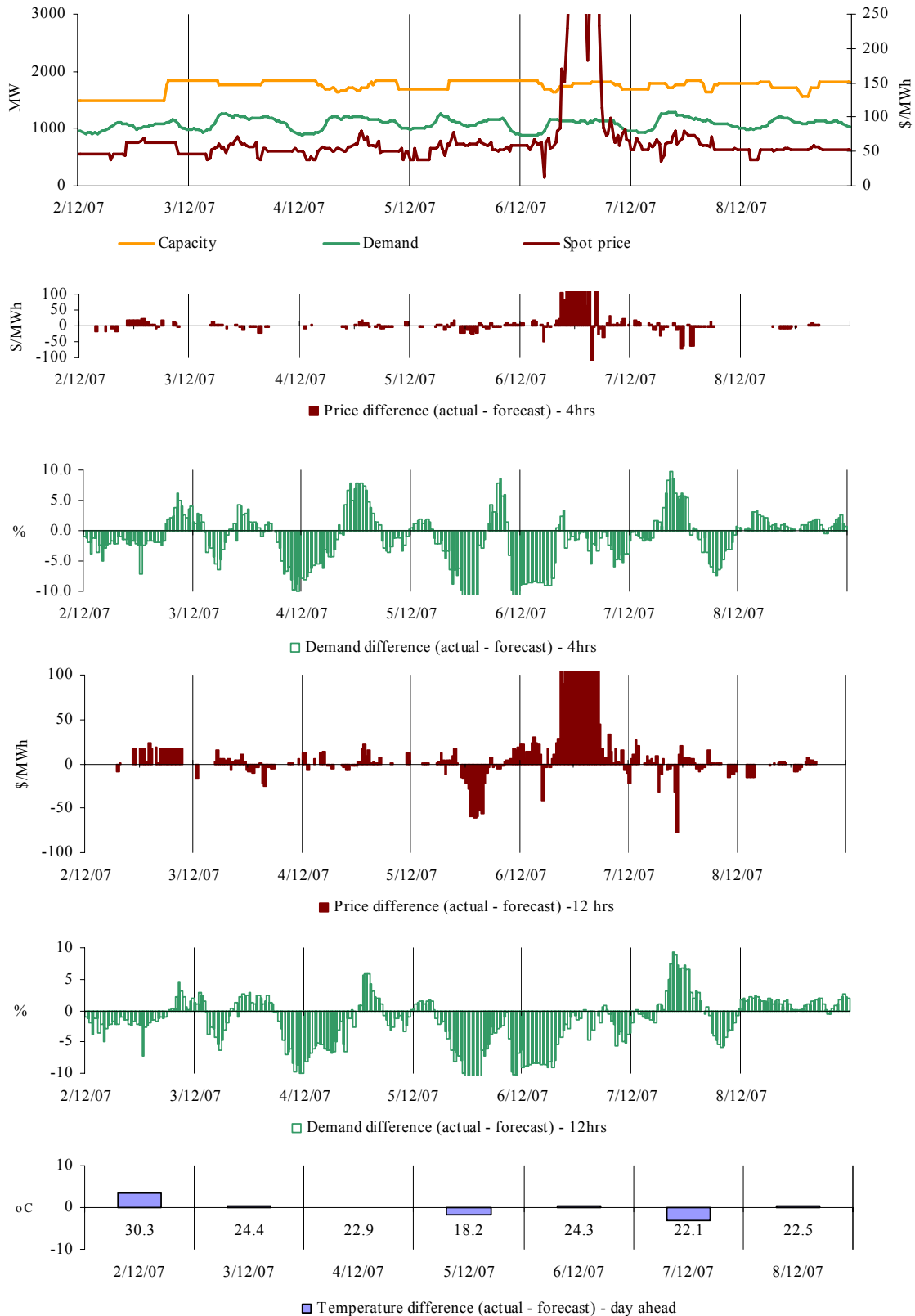


There were 11 occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of \$56/MWh. These occurred when prices were generally aligned across all regions and is detailed in the national market outcomes section.

Tasmania

Figures 51-56 show spot market prices in Tasmania over the week along with actual demand and differences between actual and forecast demand and prices.

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



There were 14 occasions where the spot price in Tasmania was greater than three times the Tasmania weekly average price of \$75/MWh. These occurred when prices were generally aligned across all regions and this is detailed in the national market outcomes section.

Bidding patterns

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

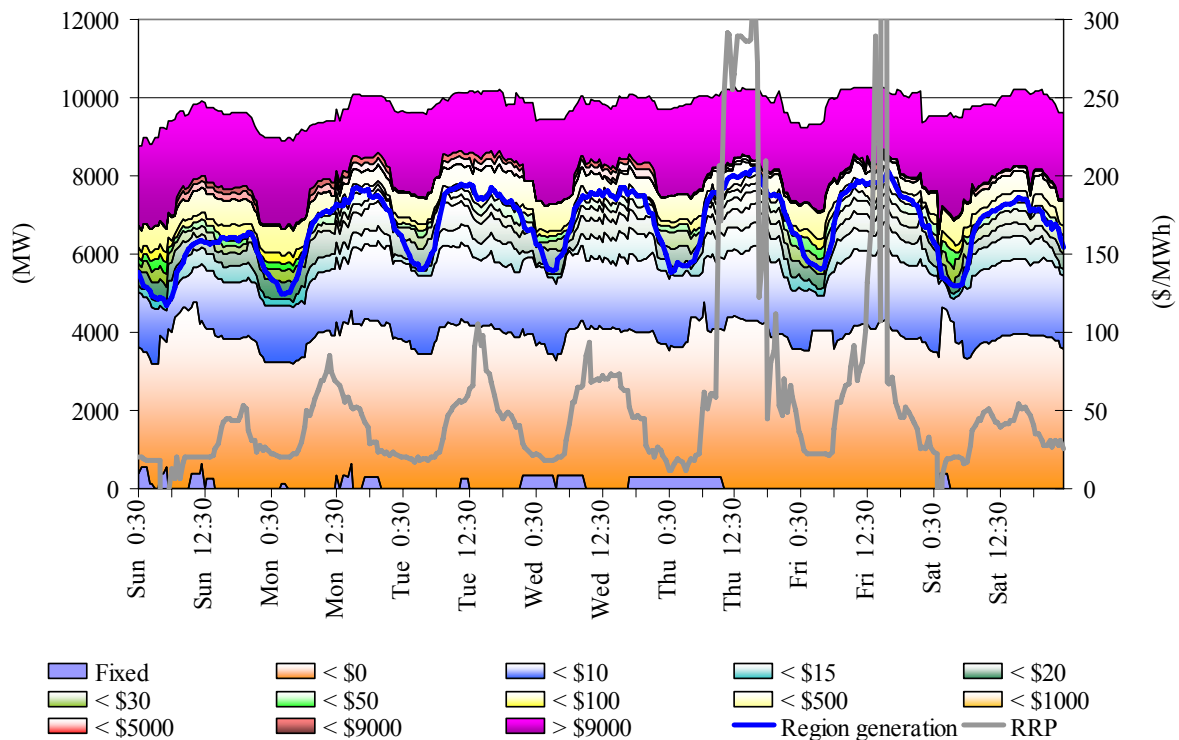


Figure 58: New South Wales closing bid prices, dispatched generation and spot price

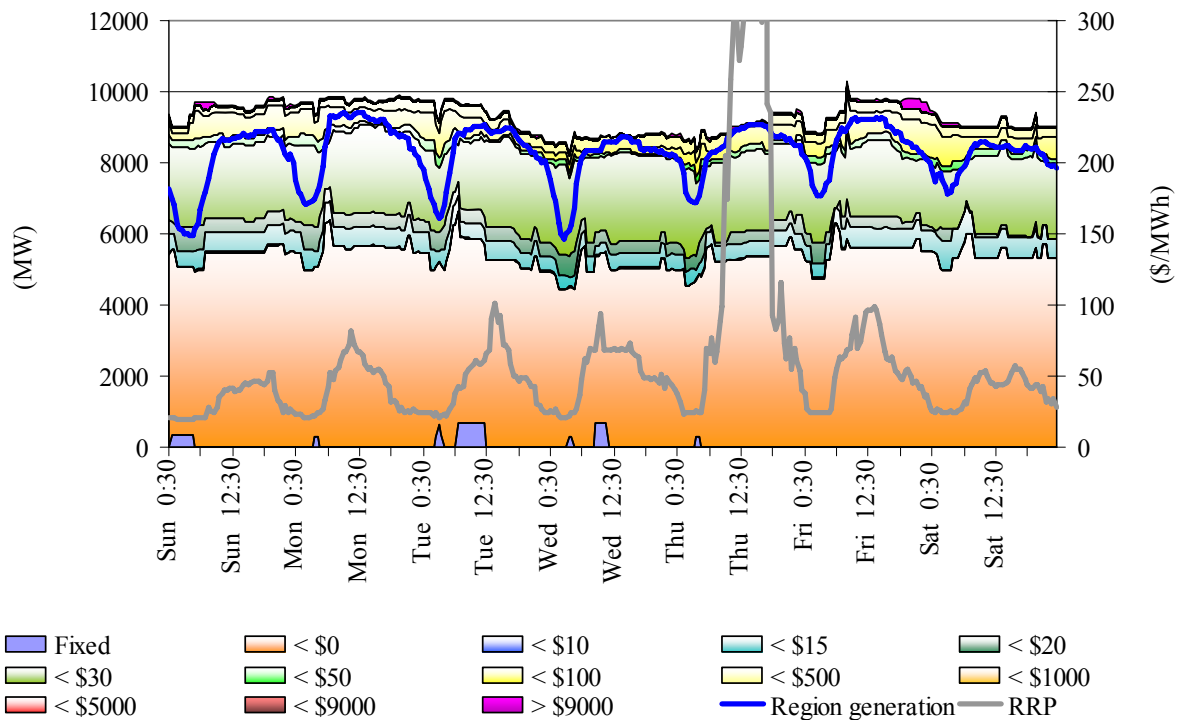


Figure 59: Victoria closing bid prices, dispatched generation and spot price

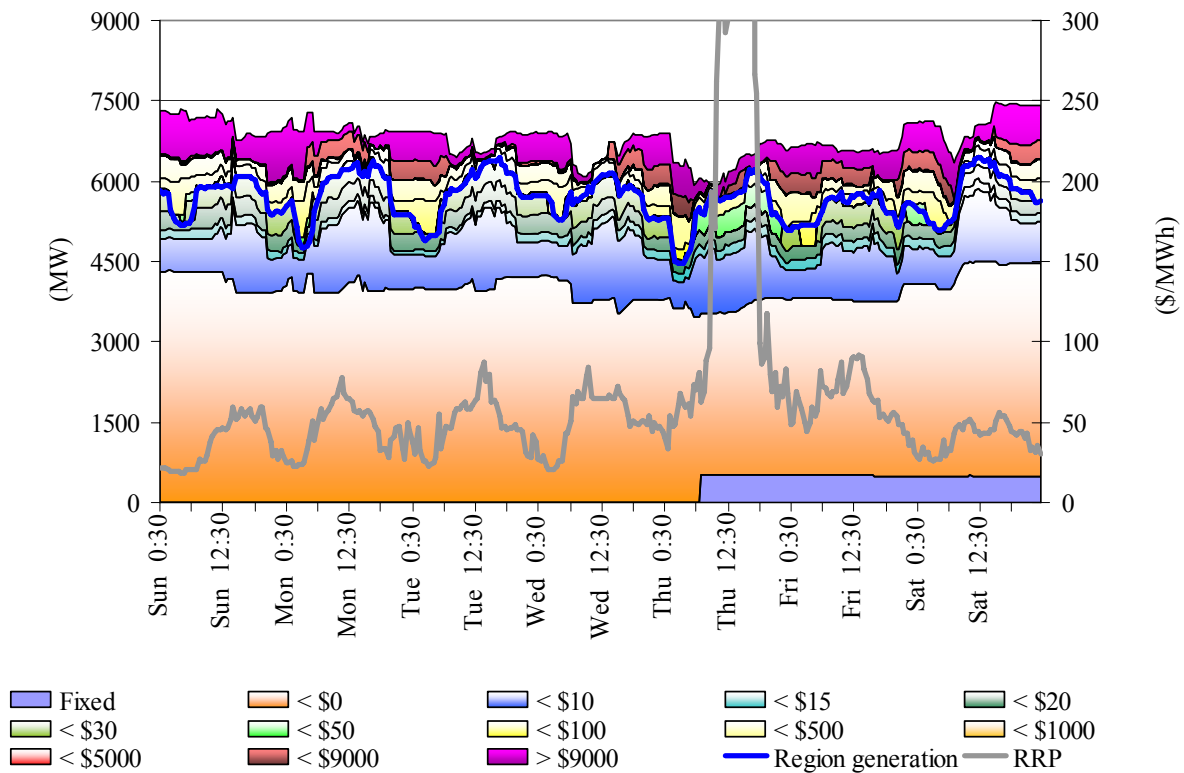


Figure 60: South Australia closing bid prices, dispatched generation and spot price

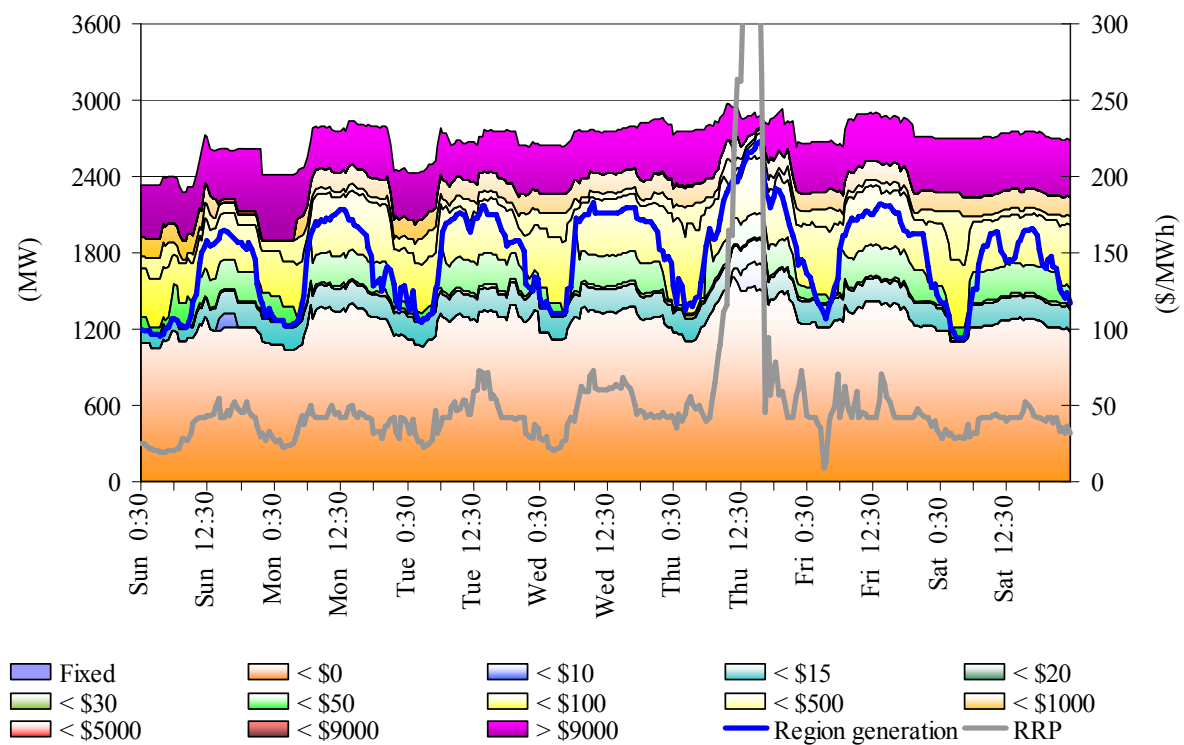
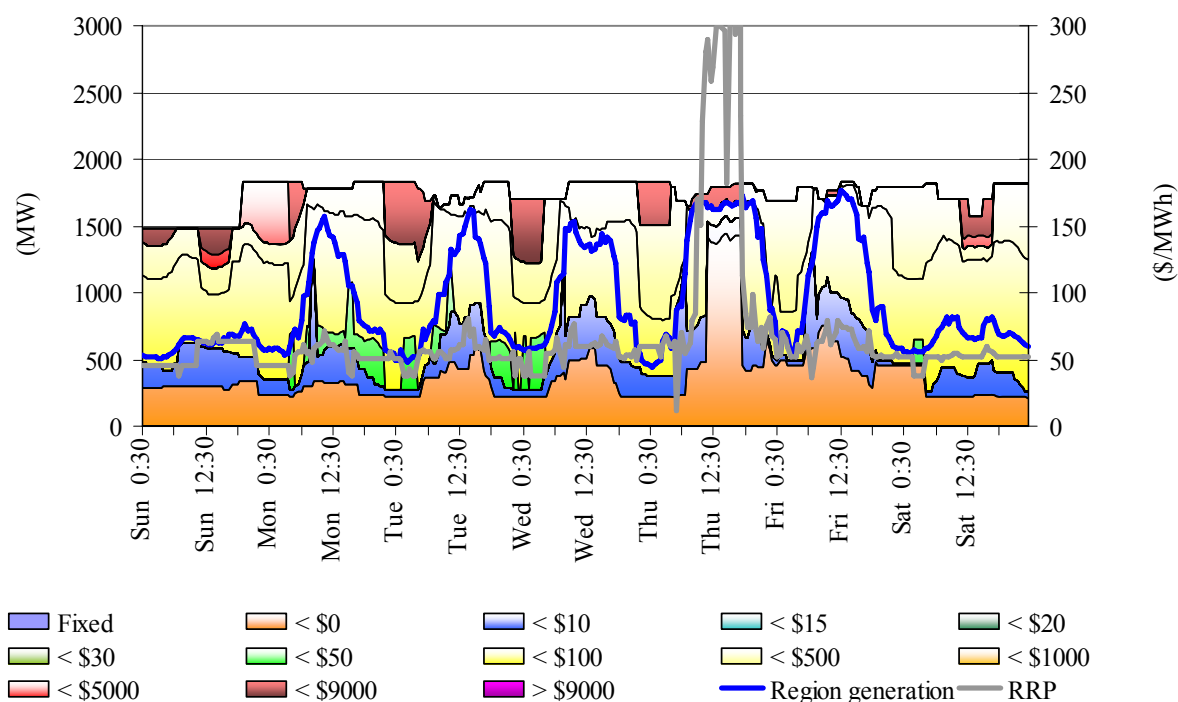


Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was \$1.3 million or 0.5 per cent of turnover in the energy market. On Tuesday between 11.25 am and 11.50 am, an urgent outage of the Cherry Gardens to Tailem Bend line in South Australia occurred. The outage required lower contingency frequency control services to be sourced locally in South Australia. Subsequently, the increased requirement led to an increased price, approaching \$10 000/MWh for lower five minute services. The cost of these services totalled around \$400 000.

On Thursday afternoon, lightning led to the reclassification of the loss of the double circuit Armidale to Dumaresq lines in New South Wales. The reclassification of these lines required lower contingency frequency control services to be sourced locally in Queensland. The increased local requirement led to an increased price for lower 6 second, approaching \$7500/MW. The cost of these services totalled around \$300 000.

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)	4.31	1.17	3.74	1.98	40.23	1.32	21.22	1.24
Previous week (\$/MW)	6.01	0.85	6.35	2.69	0.28	0.45	1.18	1.54
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$216	\$50	\$237	\$48	\$295	\$15	\$409	\$20
% of energy market	0.08%	0.02%	0.09%	0.02%	0.11%	0.01%	0.15%	0.01%

The total cost of ancillary services in Tasmania for the week was \$293 000 or 2 per cent of the turnover in the Tasmanian energy market. 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)	30.10	5.57	7.78	2.80	0.92	1.97	1.81	1.29
Previous week (\$/MW)	17.67	1.65	9.64	2.64	1.19	0.18	0.92	1.08
Last quarter (\$/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost (\$1000s)	\$93	\$64	\$92	\$8	\$1	\$16	\$13	\$5
% of energy market	0.68%	0.47%	0.67%	0.06%	0.01%	0.12%	0.10%	0.04%

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

Figure 64: daily frequency control ancillary service cost

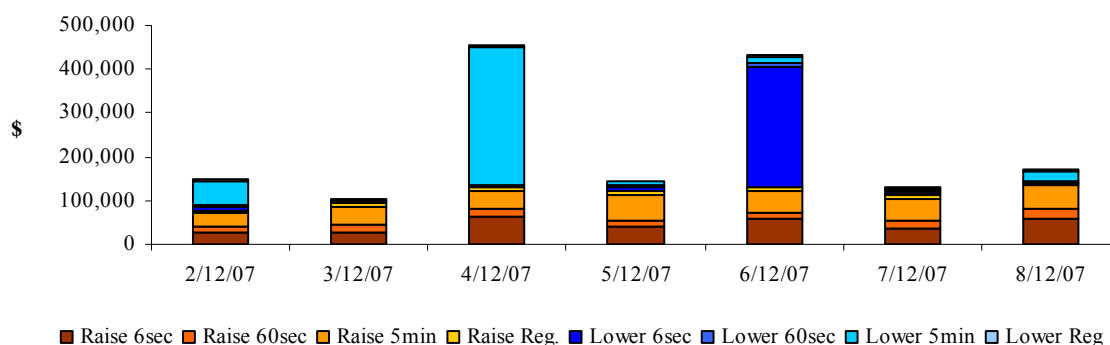
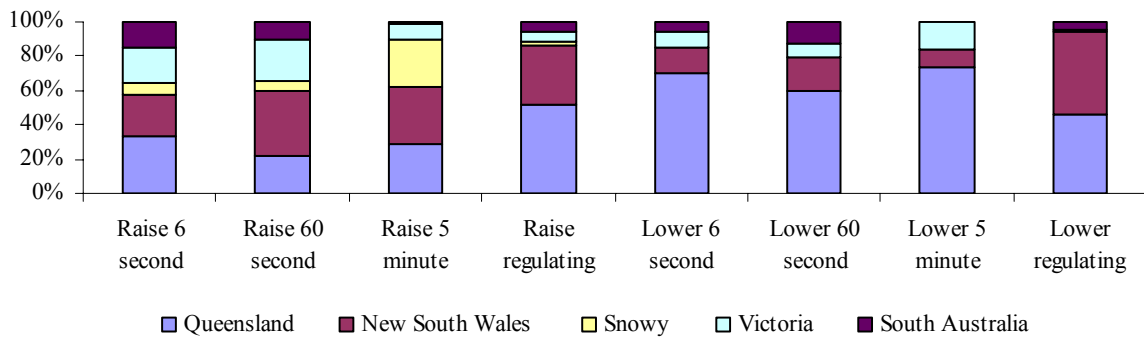


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

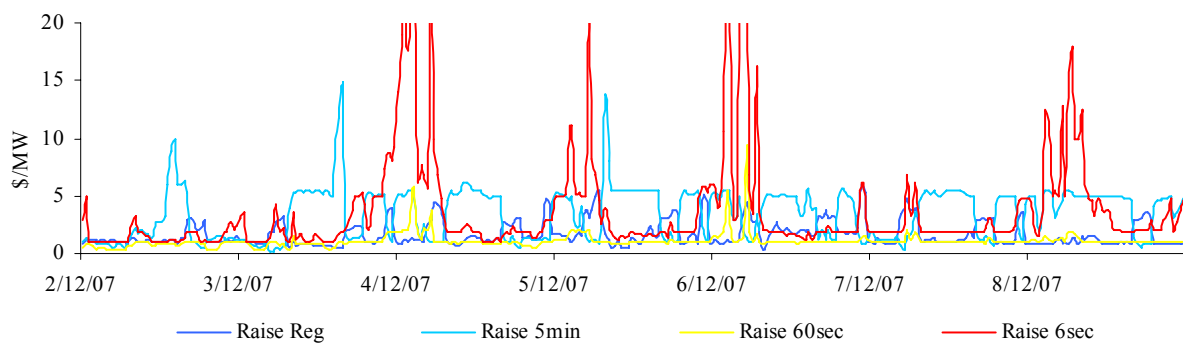


Figure 66A: prices for raise services – Tasmania

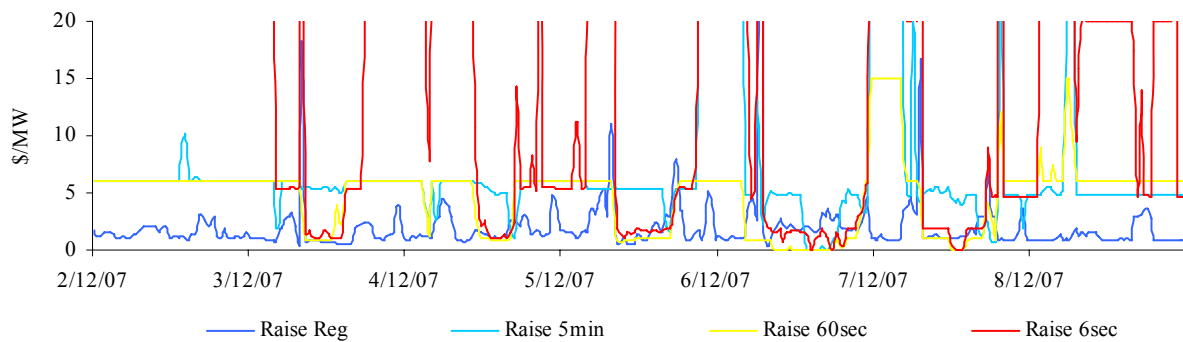


Figure 67: prices for lower services

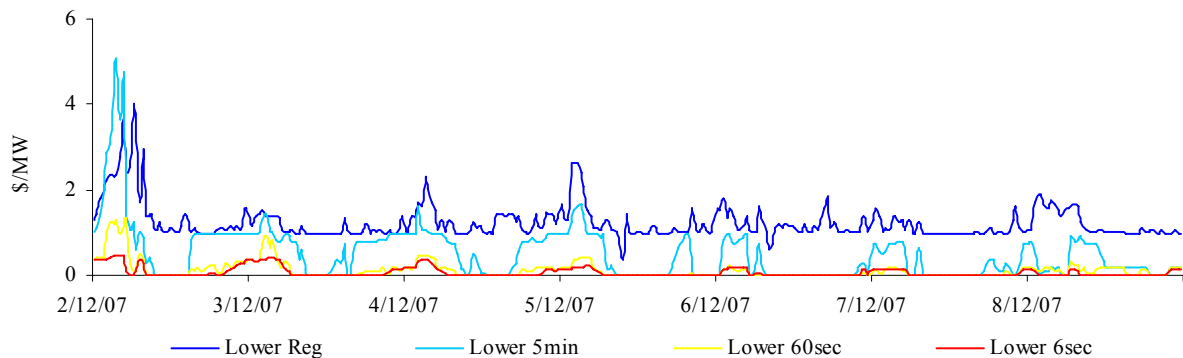
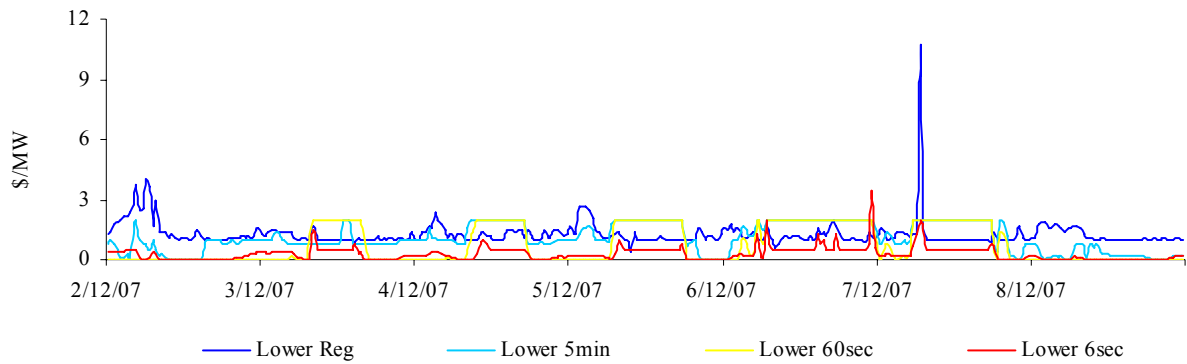


Figure 67A: prices for lower services – Tasmania



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

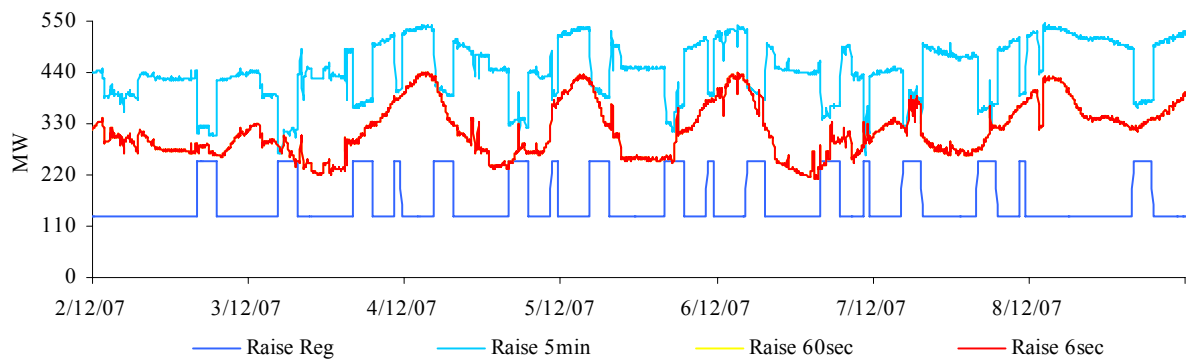


Figure 68A: raise requirements – Tasmania

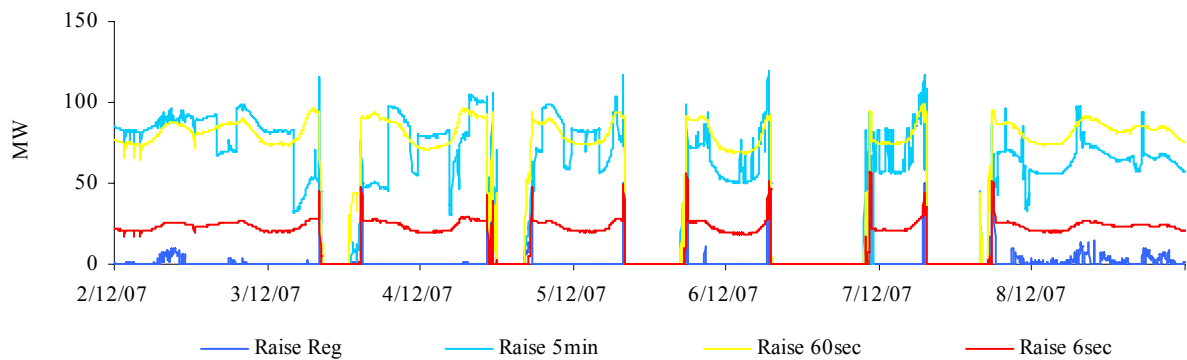


Figure 69: lower requirements

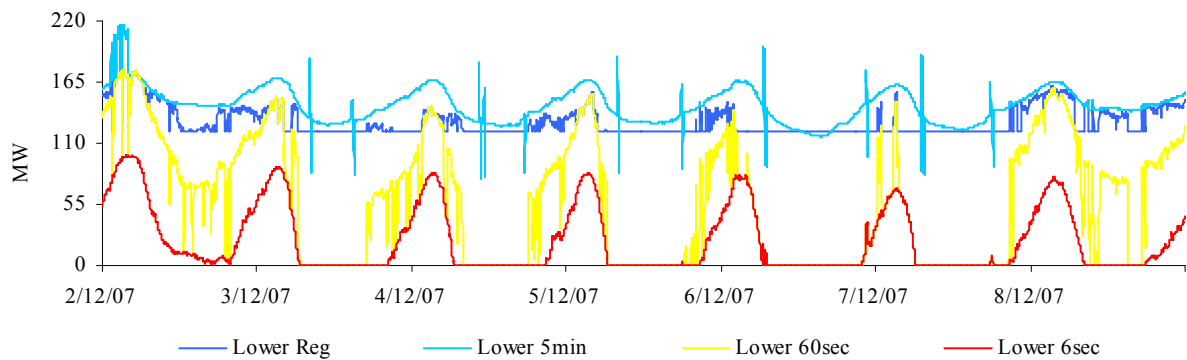
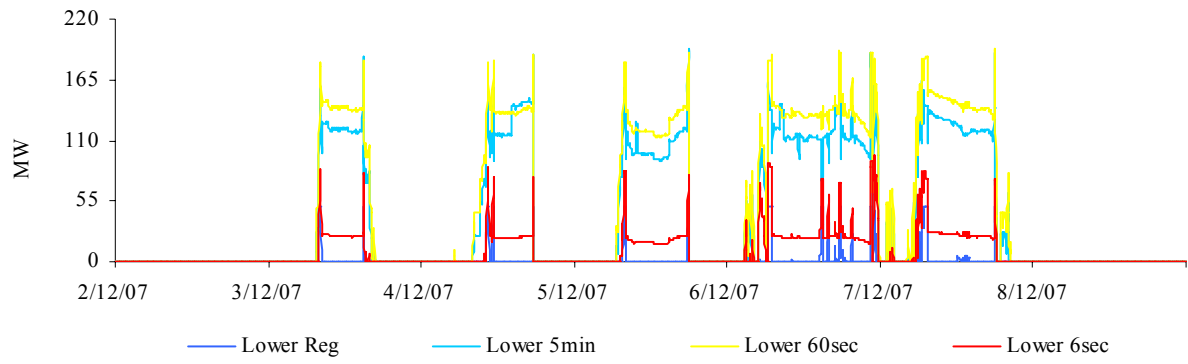


Figure 69A: lower requirements – Tasmania



Australian Energy Regulator

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