

9 – 15 OCTOBER 2005

Average spot prices for the week across the mainland ranged from \$23/MWh in Queensland to \$29/MWh in South Australia. Turnover in the energy market for the mainland was \$88 million, with a total cost of ancillary services for the week of around \$400 000 or 0.5 per cent of turnover.

A failure of Transend's monitoring systems in Tasmania on Tuesday saw NEMMCO issue directions to Hydro Tasmania to maintain security and a number of \$10 000 five minute prices for both energy and ancillary services. On Wednesday, a planned network outage and limited availability of frequency control ancillary services led to similar prices for energy and ancillary services. As a result of these events, the average spot price in Tasmania increased to \$136/MWh compared to \$72/MWh the previous week. Turnover in Tasmania for the week more than doubled to \$26 million. The cost of ancillary services increased five-fold to around \$870 000. The majority of this cost is funded by Tasmanian generators.

Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 21 per cent of trading intervals across the market. These variations were most frequent in South Australia and Tasmania, occurring in around two thirds and one third of trading intervals, respectively. Significant variations between forecast and actual prices occurred in 17, or 5 per cent, of trading intervals. Demand variations were the main contributor.

Energy prices

Figure 1 compares the volume weighted average price with the averages for the previous week, the same quarter last year and for the financial year to date. Figure 2 sets out national demand and spot prices in each region for each trading interval. Figure 3 compares the weekly price volatility index with the averages for the previous week and the same quarter last year.

Figure 1: volume weighted average spot price for energy market (\$/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	23	25	25	29	136
Previous week	24	26	26	32	73
Same quarter last year	27	31	28	36	-
Financial year to date	22	28	29	33	100
% change from previous week	▼ 4%	▼ 2%	▼ 1%	▼ 9%	▲ 86%
% change from same quarter last year	▼ 12%	▼ 19%	▼ 10%	▼ 20%	-
% change from year to date	▼ 32%	▼ 35%	▼ 8%	▼ 11%	-

Figure 2: national demand and spot prices

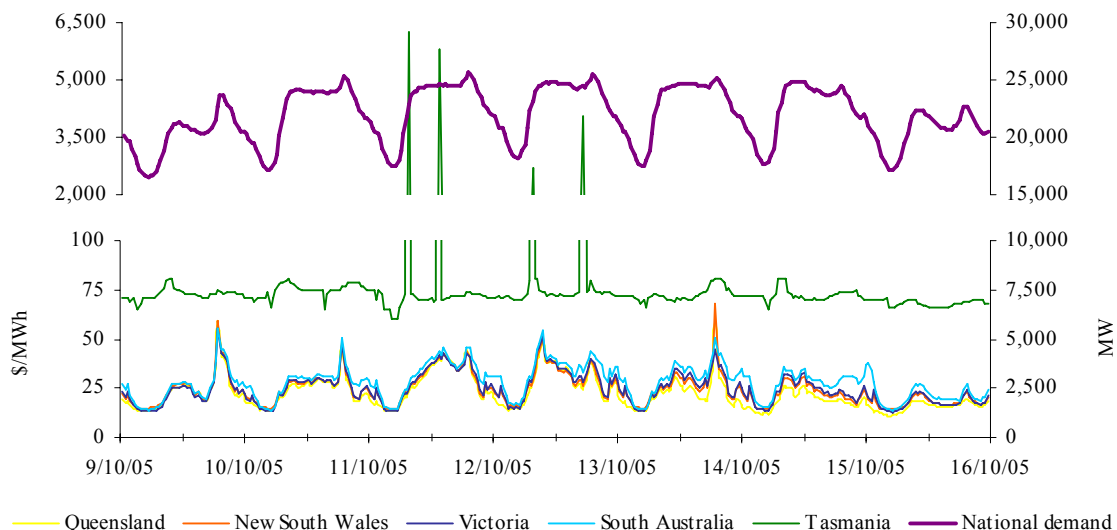


Figure 3: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.75	0.58	0.56	0.39	0.12
Previous week	0.82	0.79	0.74	0.71	0.11
Same quarter last year	1.13	1.23	0.96	0.77	-

Figures 4 to 8 show the weekly correlation between spot price and demand.

Figure 4: Queensland

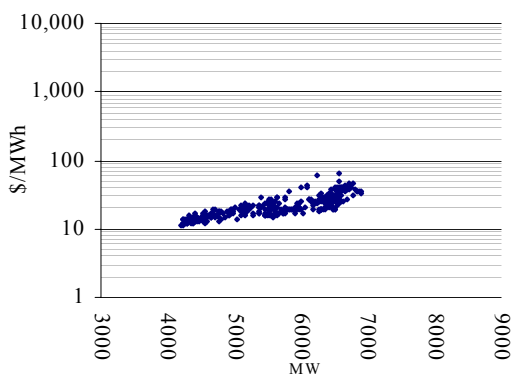


Figure 5: New South Wales

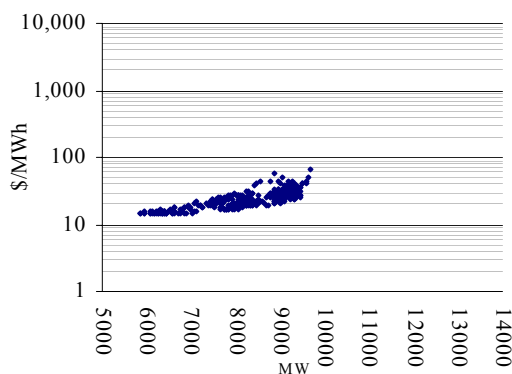


Figure 6: Victoria

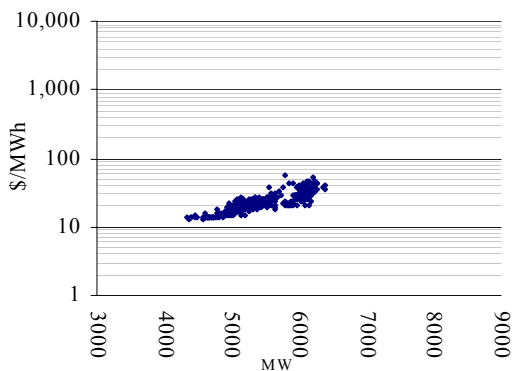


Figure 7: South Australia

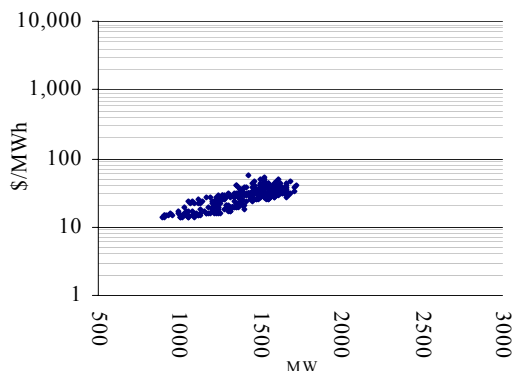
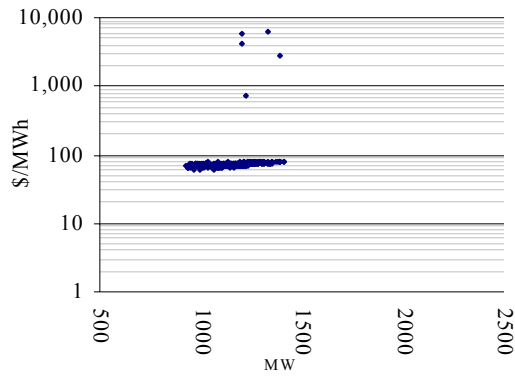


Figure 8: Tasmania



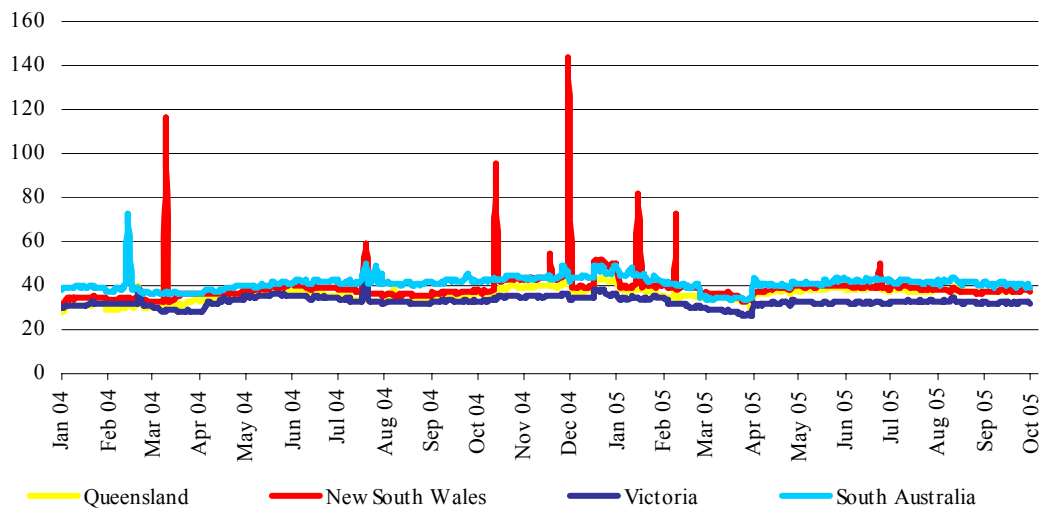
Maximum spot prices for the mainland ranged from \$68/MWh in New South Wales to \$55/MWh in Victoria and South Australia. In Tasmania, the maximum spot price for the week was \$6 691/MWh on Tuesday morning.

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 2004.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	39.49	39.79	40.06	39.77	39.55
New South Wales	40.30	40.54	40.37	40.46	40.24
Victoria	32.80	33.04	32.96	32.65	32.69
South Australia	39.69	39.97	39.91	38.81	39.88

Figure 10: d-cyphaTrade WEPI



Reserve

There were no low reserve conditions forecast throughout the week. Figures 11 to 14 show spot price, net imports and limits at the time of weekly maximum demand.

NEMMCO directed Hydro Tasmania to maintain frequency on two occasions on Tuesday.

Figures 11 to 14: spot price, net import and limit at time of weekly maximum demand

Figure 11: Queensland

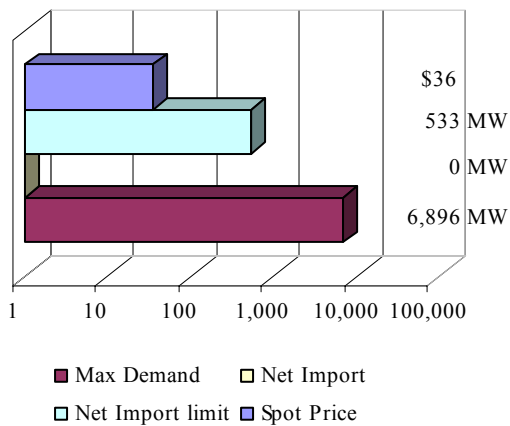


Figure 12: New South Wales

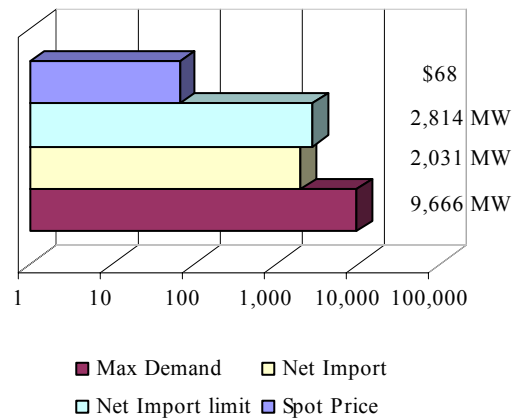


Figure 13: Victoria

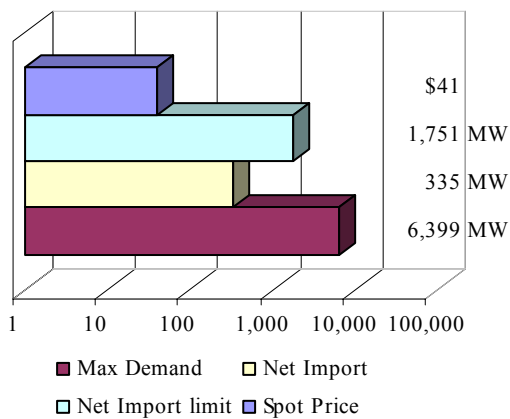
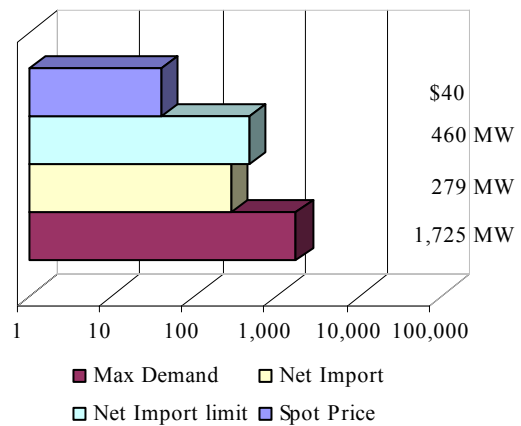


Figure 14: South Australia



In Tasmania, demand reached a maximum of 1 412MW at 7.30am on Friday. The spot price at the time was \$81/MWh.

Price variations

There were 17 trading intervals where actual prices significantly varied from forecasts made 4 and 12 hours ahead of dispatch. Figures 15 to 18 set out the correlation between the actual price and demand and those forecast. The information is presented in terms of the percentage difference from actual. Price differences beyond 200 per cent have been capped.

Figure 15: Queensland

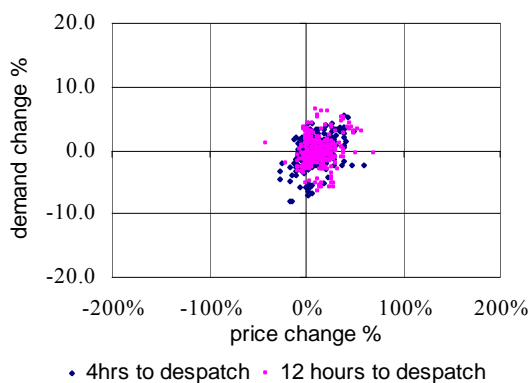


Figure 16: New South Wales

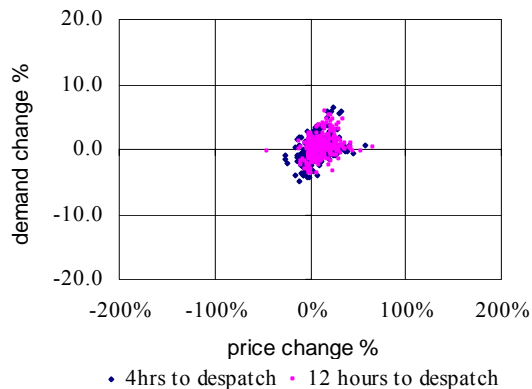


Figure 17: Victoria

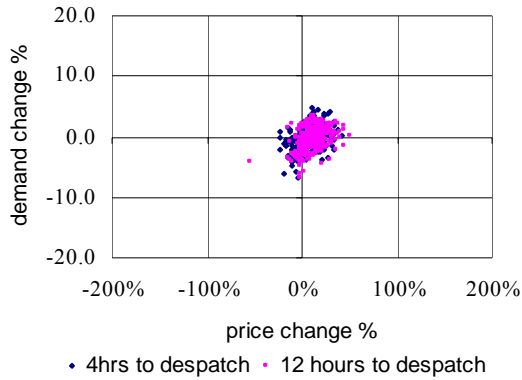


Figure 18: South Australia

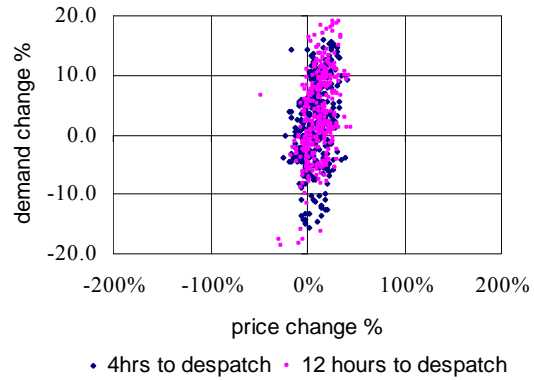


Figure 19: Tasmania

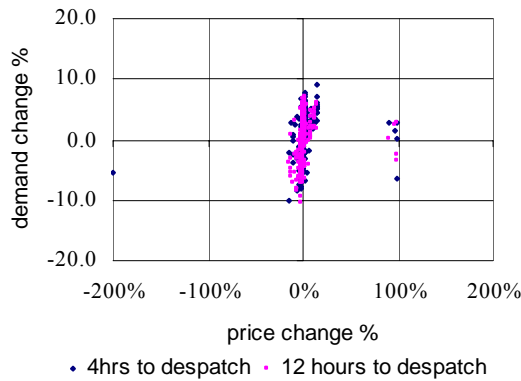
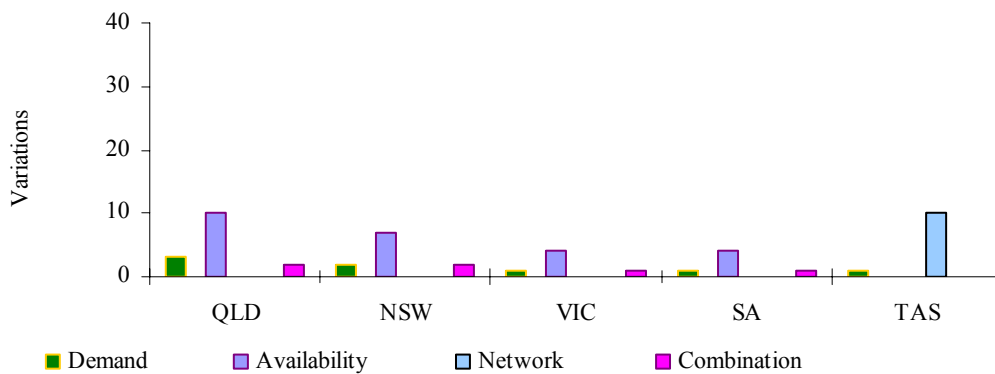


Figure 20 summarises the number and most probable reason for variations between forecast and actual prices.

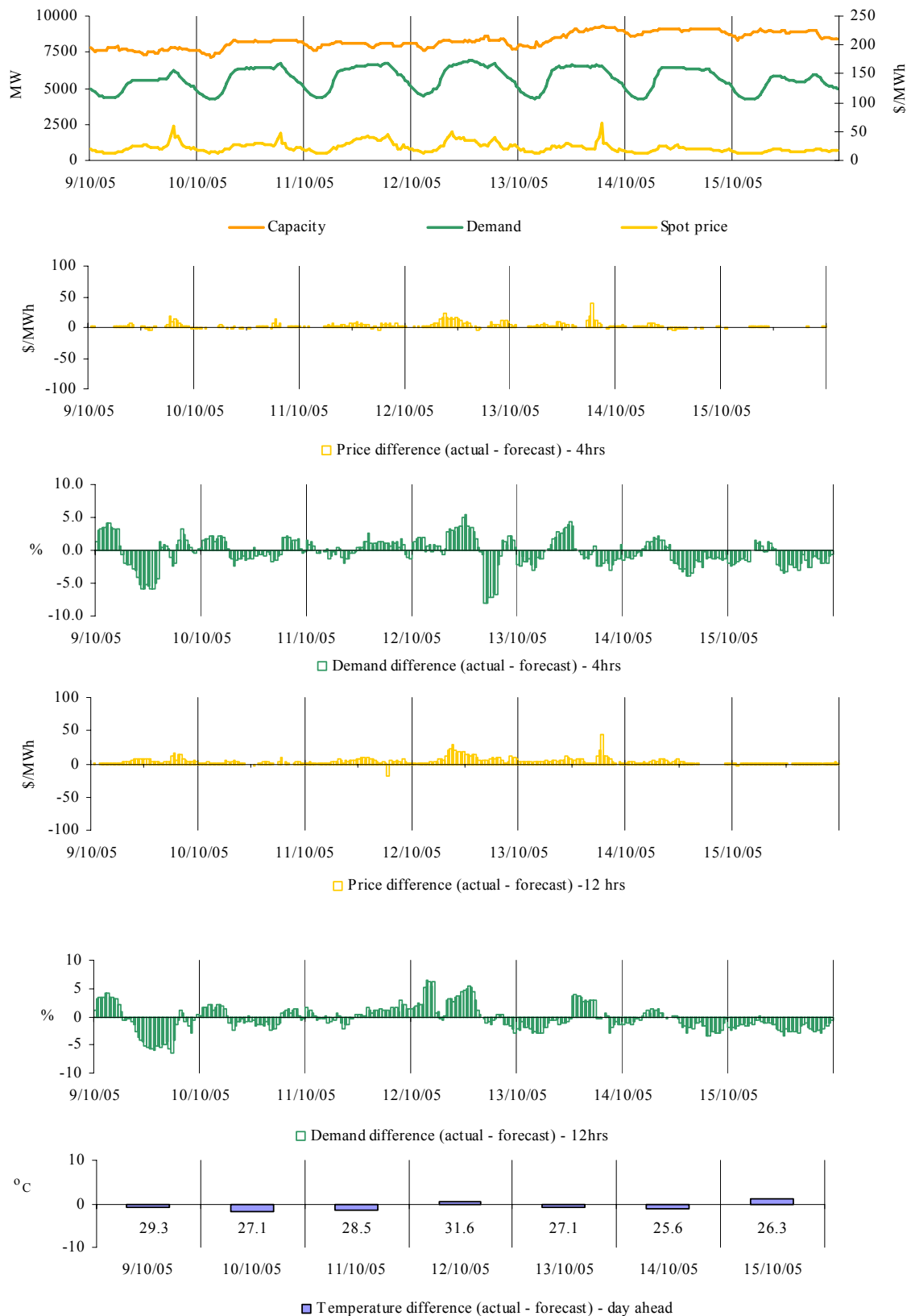
Figure 20: reasons for variations between forecast and actual prices



Price and demand

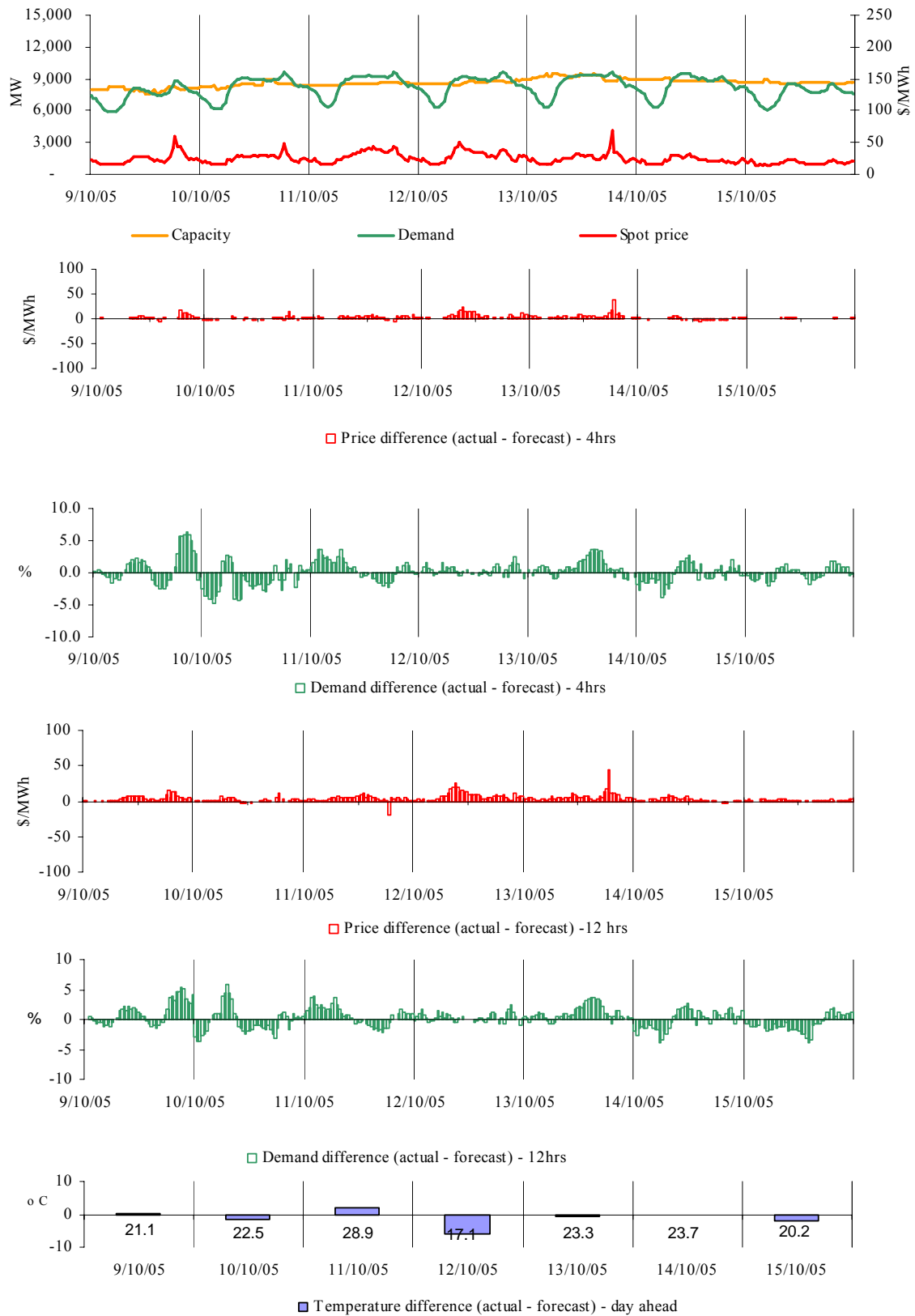
Figures 21 - 50 set out details of spot prices and demand on a regional basis. They include the actual spot price, actual demand outcomes and variation from forecasts made 4 and 12 hours ahead of dispatch on a daily basis. The differences between the maximum temperature and the temperature forecast at around 6.00 pm the day before are also included. Figures 51 - 55 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.

Figures 21-26: Queensland actual spot price, demand and forecast differences



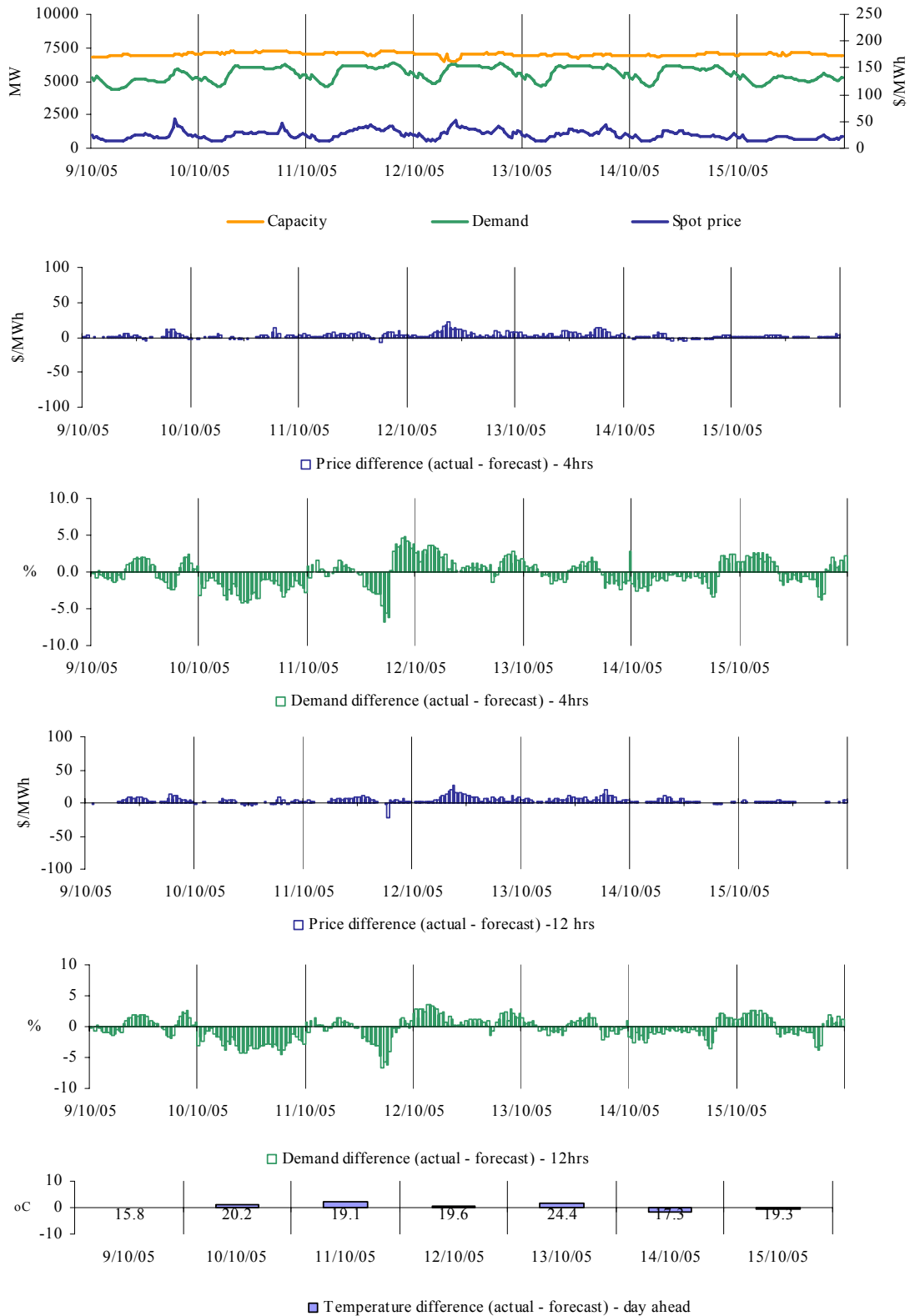
There were no occasions in Queensland where the spot price was greater than three times the weekly average price of \$23/MWh.

Figures 27-32 New South Wales actual spot price, demand and forecast differences



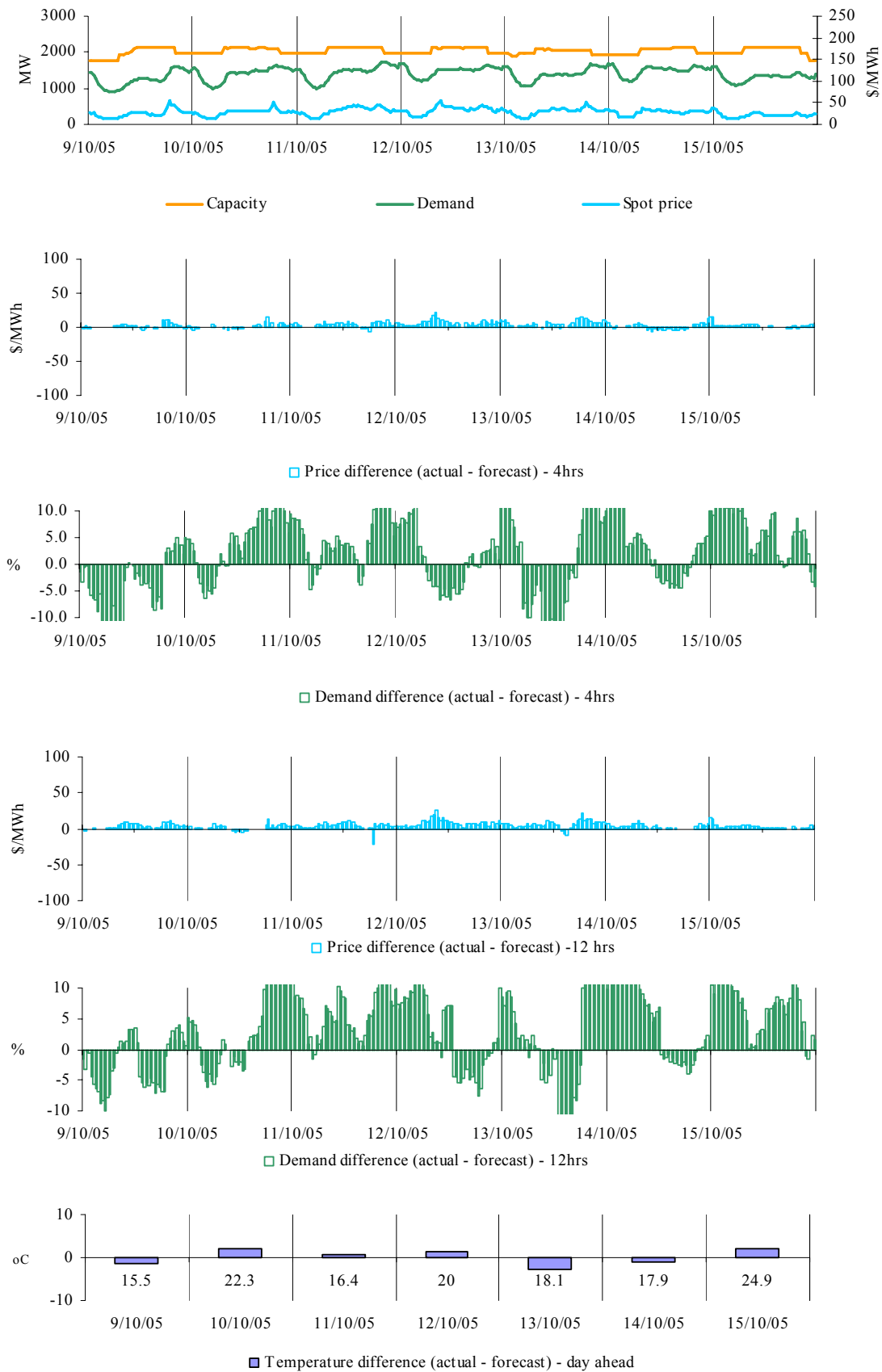
There were no occasions in New South Wales where the spot price was greater than three times the weekly average price of \$25/MWh.

Figures 33-38: Victoria actual spot price, demand and forecast differences



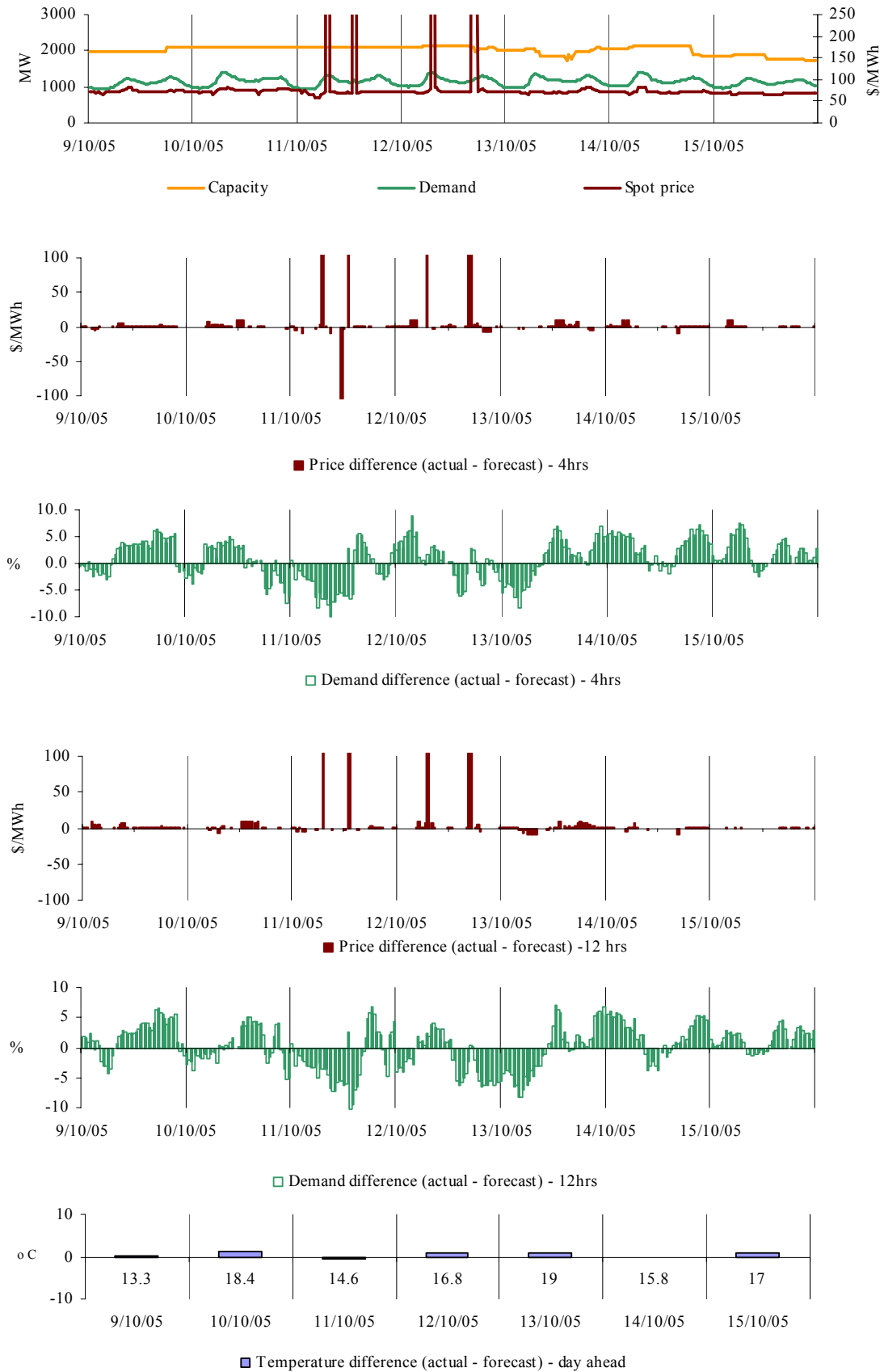
There were no occasions in Victoria where the spot price was greater than three times the weekly average price of \$26/MWh.

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



There were no occasions in South Australia where the spot price was greater than three times the weekly average price of \$29/MWh.

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



There were five occasions in Tasmania where the spot price was greater than three times the weekly average price of \$136/MWh.

Tuesday, 11 October

7:30 am	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	6 253.72	73.50	73.50
Demand (MW)	1 332	1 419	1 379
Available capacity (MW)	2 099	2 099	2 099
1:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	5 781.04	71.50	71.50
Demand (MW)	1 201	1 169	1 169
Available capacity (MW)	2 099	2 099	2 099

Problems with line ratings led to prices above \$5,000/MWh at 7.30am and 1.30pm. Prices at other times were not affected by these problems.

At around 7.10am a failure of Transend's SCADA system saw the correct network ratings replaced with ratings close to zero across Tasmania. This led to step changes to and violations of around 40 network constraints¹ across the region. The constraint violations continued until 7.30am when the ratings were replaced. Five minute dispatch prices were capped at \$10,000/MWh between 7.15am and 7.30am. Price revisions the next day reduced two of those prices to around \$8 500/MWh.

From 1.10pm similar rating and constraint issues occurred following a planned changeover of operational systems. Five minute dispatch prices were capped at \$10,000/MWh between 1.20 pm and 1.30 pm.

On each occasion, prices were set by a combination of energy and ancillary services offers from almost every Tasmanian unit. NEMMCO directed a generator from 7.16 am to 7.55 am and 1.22 pm to 1.45 pm to manage frequency.

Wednesday, 12 October

7:30 am	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	2720.67	80.50	80.50
Demand (MW)	1 388	1 366	1 356
Available capacity (MW)	2 132	2 132	2 132
5:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	4039.42	71.50	73.50
Demand (MW)	1 208	1 207	1 237
Available capacity (MW)	2 076	2 132	2 132
5:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	734.37	69.50	71.50
Demand (MW)	1 224	1 191	1 221
Available capacity (MW)	1 978	2 132	2 132

Conditions at the time saw demand close to forecast. A planned network outage restricted Bastyan, Reece and Tribute from providing raise 6 second services, whilst increasing the requirement for the service to cover the loss of these same units. The varying start and end times of the outage combined with the dispatch of these units led to increased ancillary services requirements at the beginning and end of the outage. These higher requirements were not met at times, whilst tradeoffs between the raise 6 second service and energy saw 5 minute energy prices peak at \$8,000/MWh.

At 5pm, Bell Bay unit 1 rebid its availability from 118MW to zero. All of this capacity was priced at less than zero. The rebid reason given was "HSCS Rebid – Plant failure". There was no other significant rebidding.

¹ Constraints are used to represent network limitations in the market model.

Figure 51: Queensland closing bid prices, dispatched generation and spot price

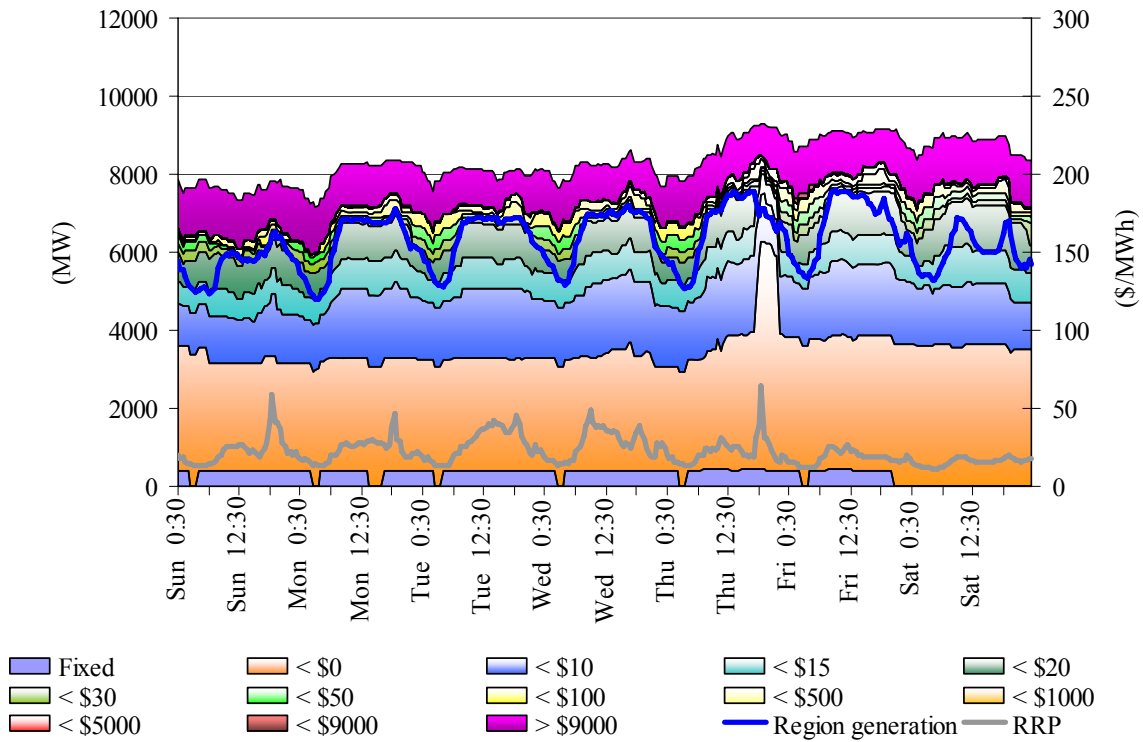


Figure 52: New South Wales closing bid prices, dispatched generation and spot price

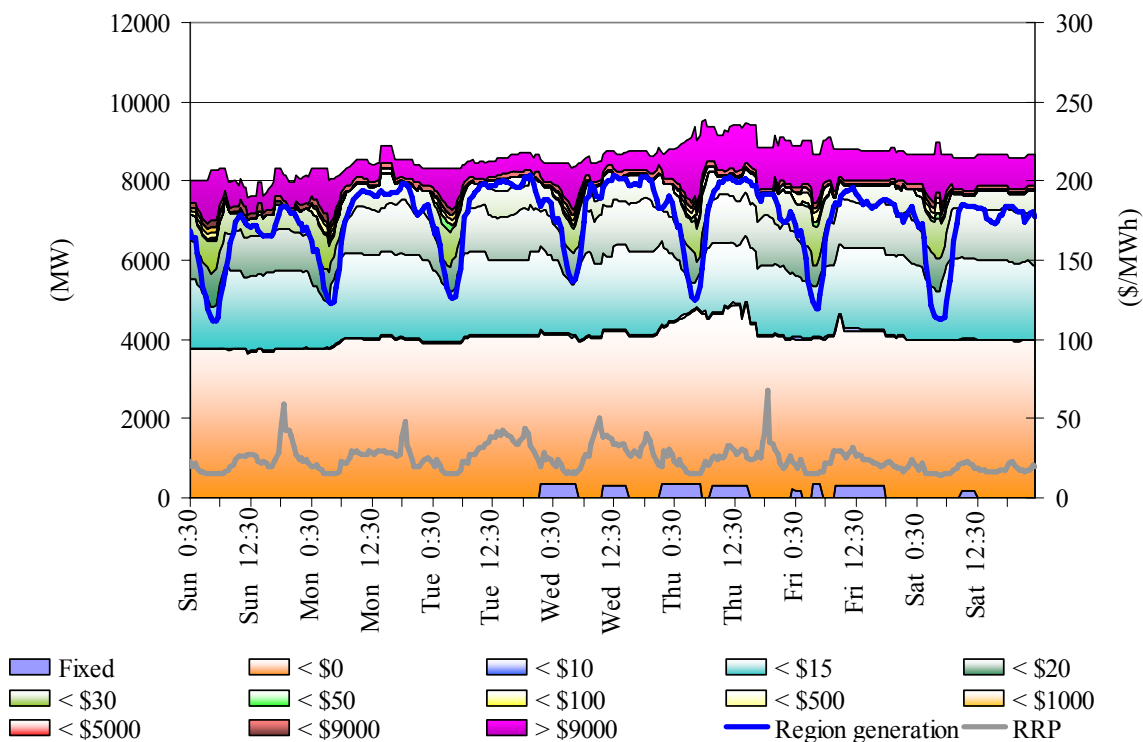


Figure 53: Victoria closing bid prices, dispatched generation and spot price

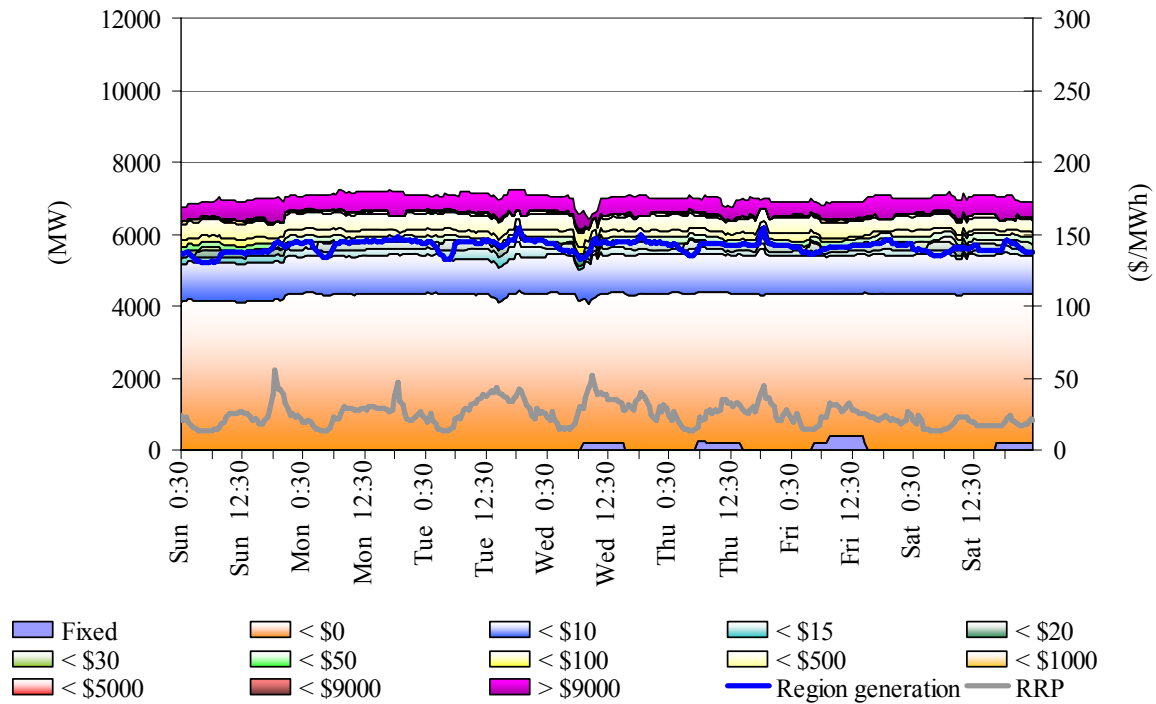


Figure 54: South Australia closing bid prices, dispatched generation and spot price

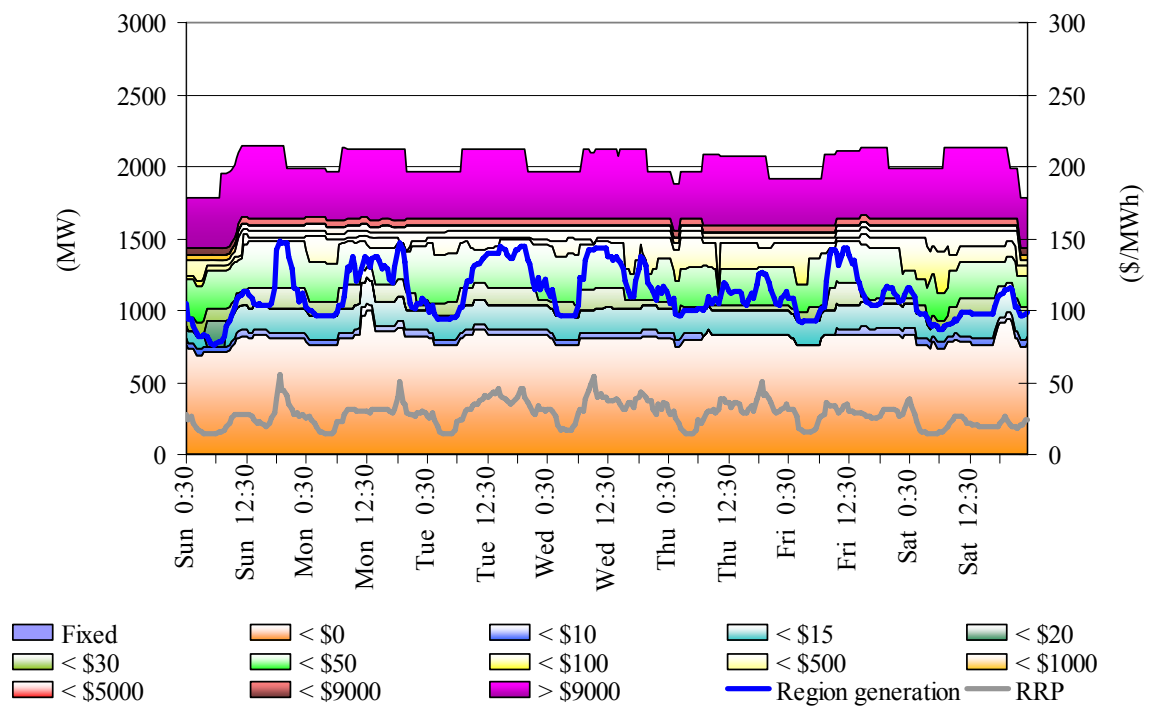
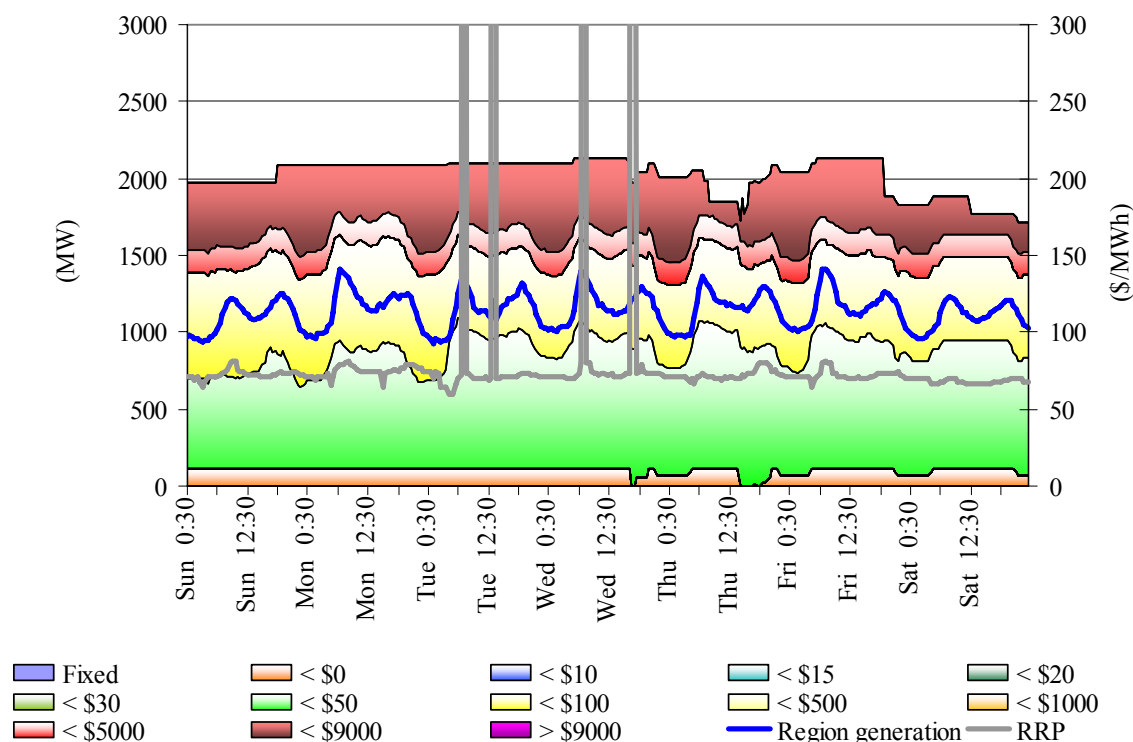


Figure 55: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was \$403 000 or 0.5 per cent of the total turnover in the energy market. Figure 56 summarises the volume weighted average prices and costs for the eight frequency control ancillary services across the interconnected regions.

Figure 56: frequency control ancillary service prices and costs

	Raise 6 sec	Raise 60 sec	Raise 5 min	Raise reg	Lower 6 sec	Lower 60 sec	Lower 5 min	Lower reg
Last week (\$)	2.37	1.03	1.18	1.98	0.24	0.35	1.57	1.90
Previous week(\$)	2.56	1.24	1.23	1.71	0.32	2.77	5.17	1.76
Last Quarter(\$)	1.62	0.91	1.00	1.36	0.20	0.64	2.29	1.56
Market Cost (\$1000s)	133	58	83	43	2	3	39	41
% of energy market	0.15	0.07	0.10	0.05	0.00	0.00	0.04	0.05

In Tasmania, ancillary service costs totalled \$866 000 or 3.3 per cent of turnover. This represents a five-fold increase from the previous week. On Tuesday there was insufficient plant available to supply the requirements for raise and lower regulation services. As a result prices reached \$10,000/MW at 7.55am and 8am.

A planned network outage between Farrell and Sheffield on Wednesday led to increased requirements for raise 6 second services. At times the requirement could not be met with prices reaching \$10,000/MW. Figure 57 summarises the ancillary service outcomes in Tasmania.

Figure 57: 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 (\$)	61.43	1.05	1.05	7.82	2.21	1.07	1.06	11.50
Previous week(\$)	2.20	1.05	1.05	1.05	2.13	1.08	1.07	1.05
Last Quarter(\$)	19.40	1.05	1.14	2.25	6.25	1.06	1.06	1.26
Market Cost (\$1000s)	596	11	11	66	29	32	26	96
% of energy market	2.29	0.04	0.04	0.25	0.11	0.12	0.10	0.37

Figure 58 shows the daily breakdown of cost for each frequency control ancillary service.

Figure 58: daily frequency control ancillary service costs

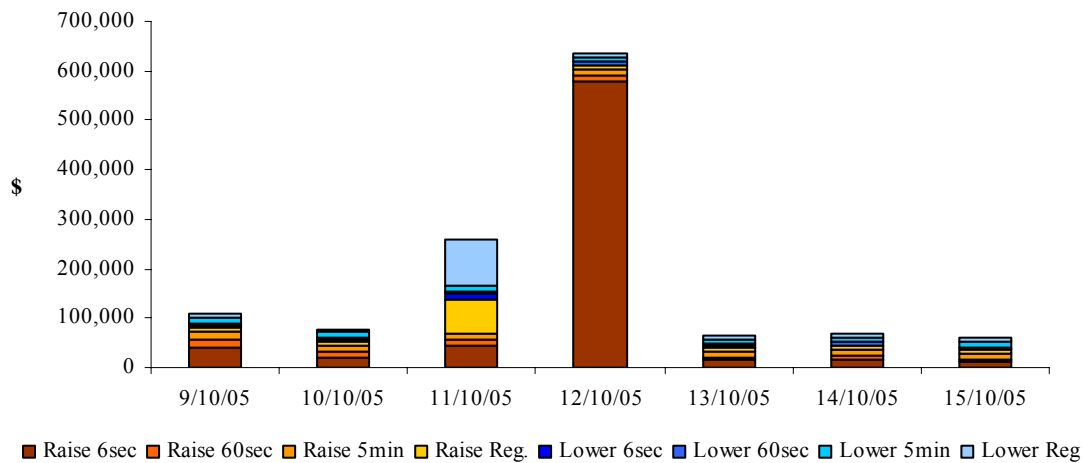
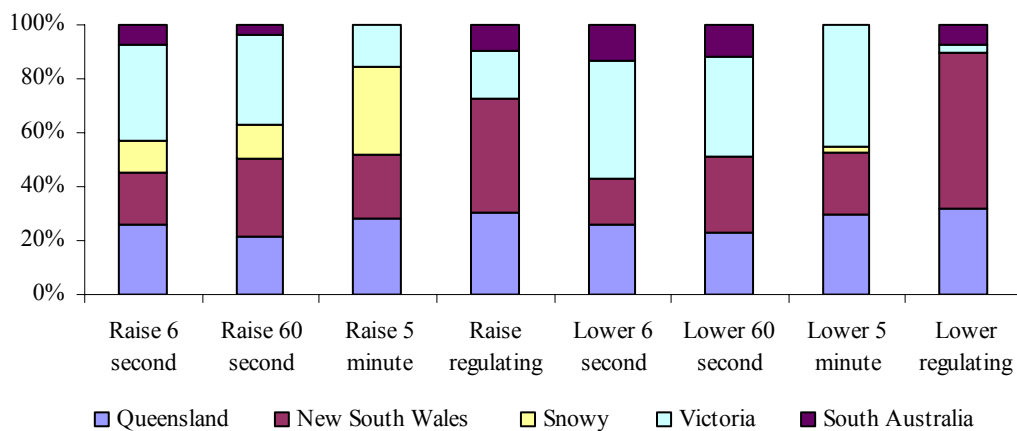


Figure 59 shows the regional weekly participation in each of the ancillary service markets on the mainland.

Figure 59: regional participation in ancillary services on the mainland



Figures 60 and 61 show 30-minute prices for each of the ancillary services.

Figure 60: prices for raise services

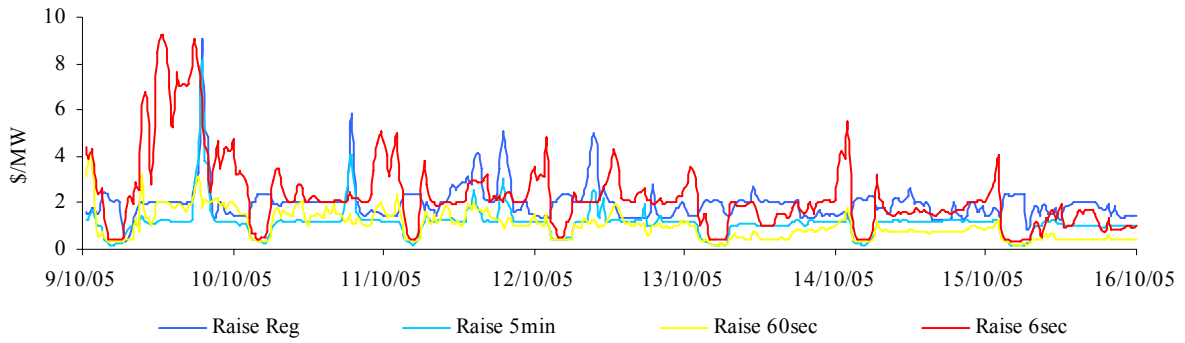


Figure 60A: prices for raise services - Tasmania

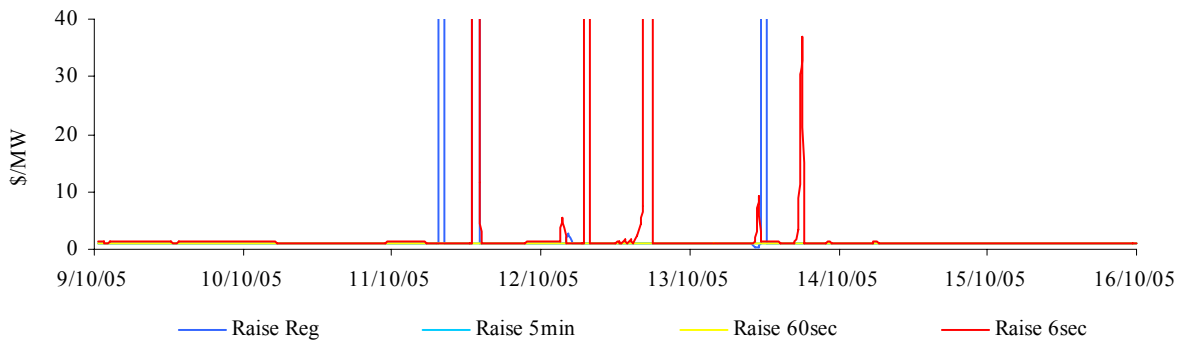


Figure 61: prices for lower services

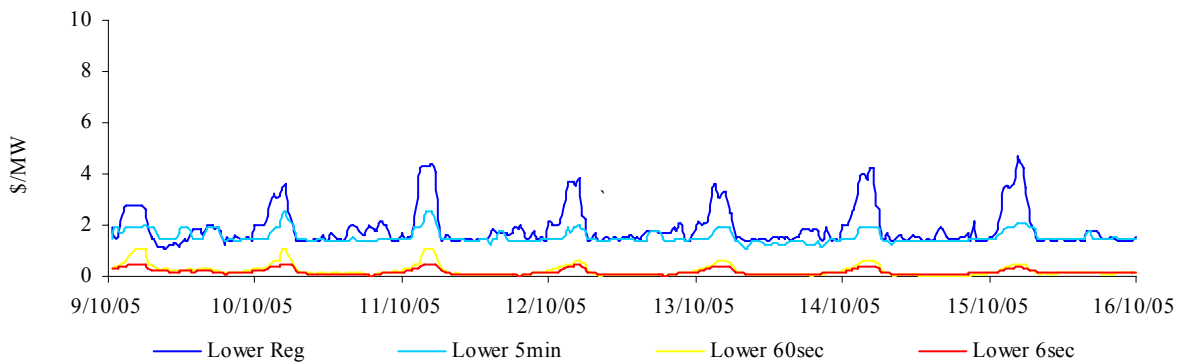
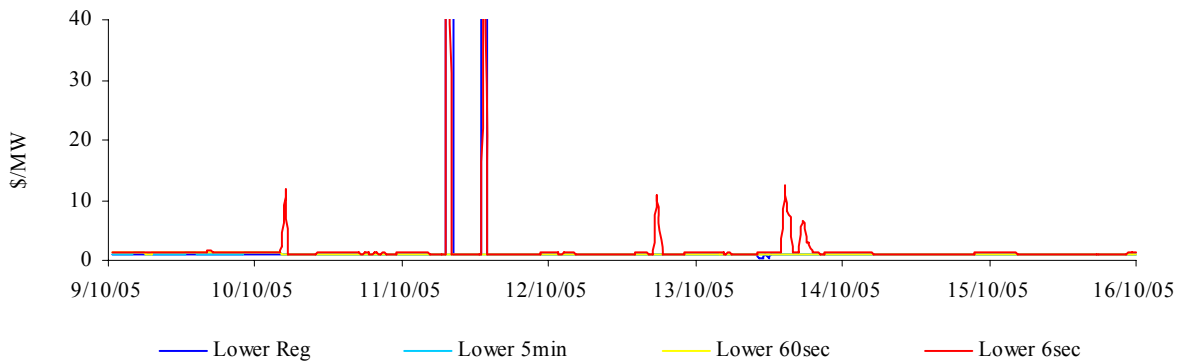


Figure 61A: prices for lower services - Tasmania



Figures 62 and 63 present for both raise and lower services the requirement for each service over the week.

Figure 62: raise requirements

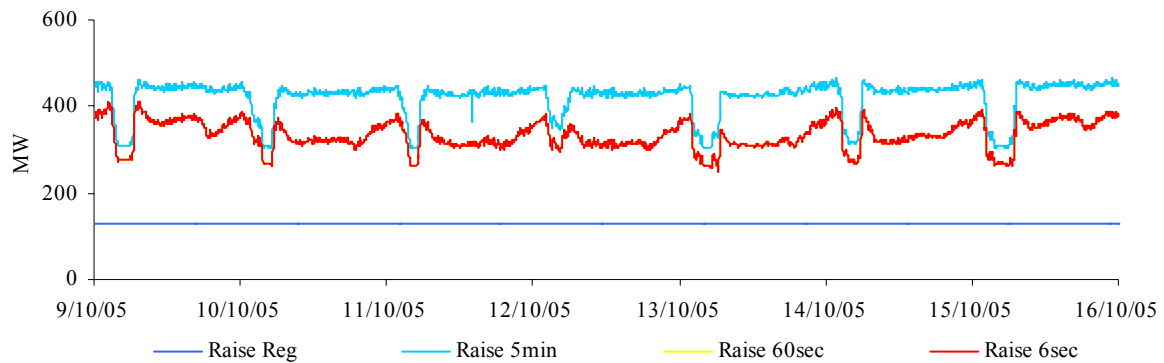


Figure 62A: raise requirements - Tasmania

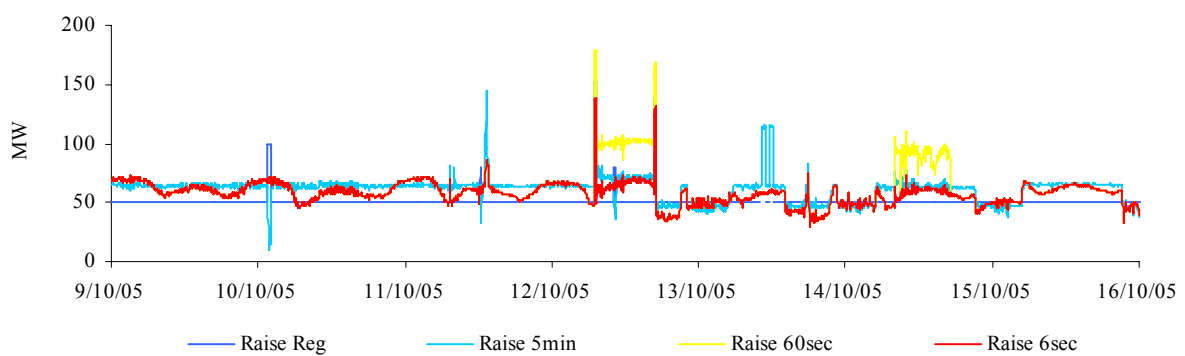


Figure 63: lower requirements

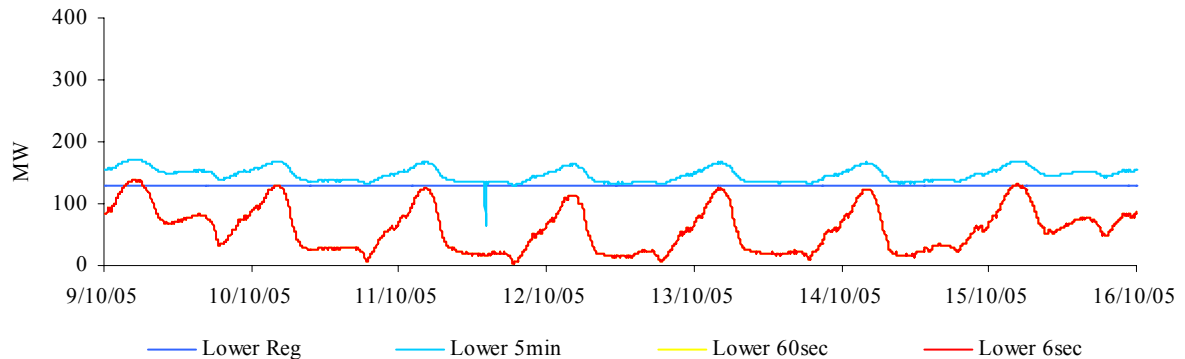


Figure 63A: lower requirements - Tasmania

