Market analysis

2 APRIL – 8 APRIL 2006

Spot prices for the week averaged between $22/MWh in New South Wales and $37/MWh in Queensland. Prices were consistent with the previous week in all regions except Queensland, where average prices more than doubled following higher than expected demand and rebidding on Tuesday.

Turnover in the energy market was $104 million. The total cost of ancillary services for the week, including Tasmania, was around $350 000, or 0.3 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 43 or around 13 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 15 per cent of all trading intervals across the market. These variations were most frequent in South Australia occurring in almost two thirds of all trading intervals.

Energy prices

Figure 1 sets out 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 financial year to date. Figure 3 compares the weekly price volatility index with the averages for the previous week and the same quarter last year.

Figure 1: national demand and spot prices

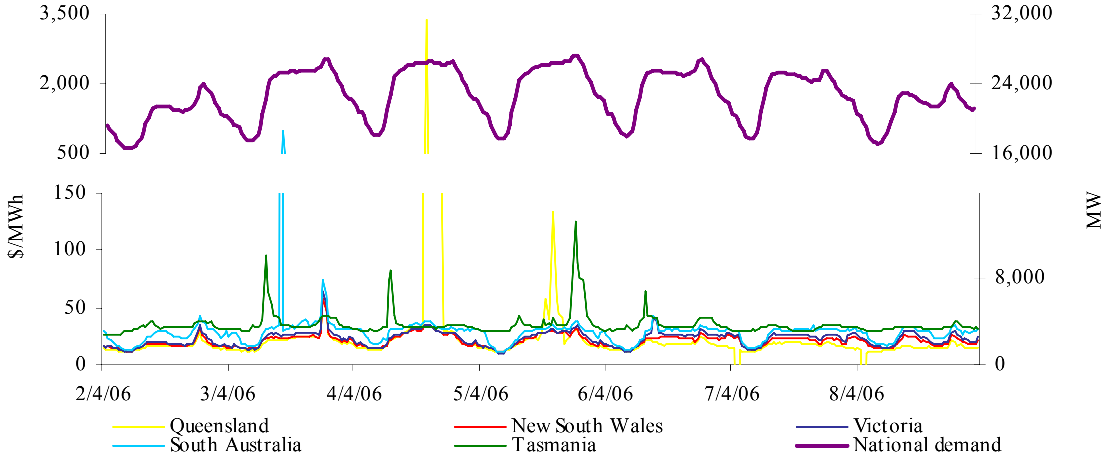


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	37	22	23	32	35
Previous week	17	21	22	28	31
Same quarter last year	23	28	27	36	-
Financial year to date	34	48	38	46	66
% change from previous week*	▲126%	▲5%	▲6%	▲13%	▲13%
% change from same quarter last year**	▲63%	▼24%	▼14%	▼11%	-
% change from year to date***	▲3%	▼6%	▲28%	▲13%	-

*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.

Figure 3: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.74	0.36	0.33	0.21	0.27
Previous week	0.34	0.40	0.35	0.25	0.33
Same quarter last year	0.73	0.74	0.78	0.70	-

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

Figure 4: Queensland

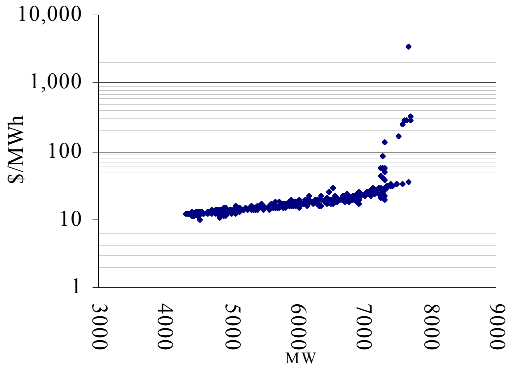


Figure 5: New South Wales

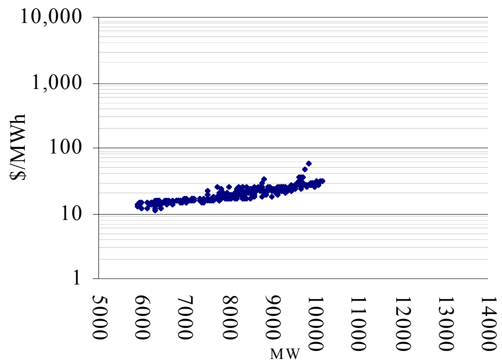


Figure 6: Victoria

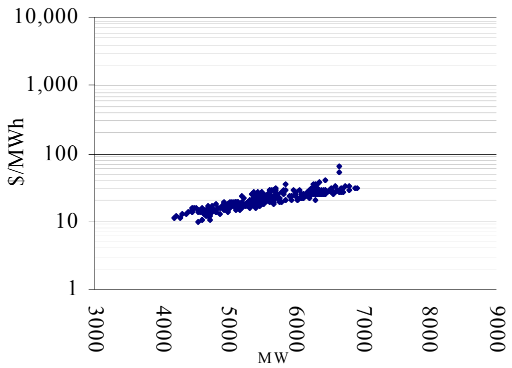


Figure 7: South Australia

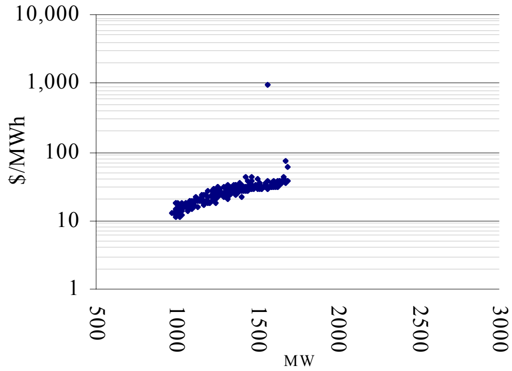
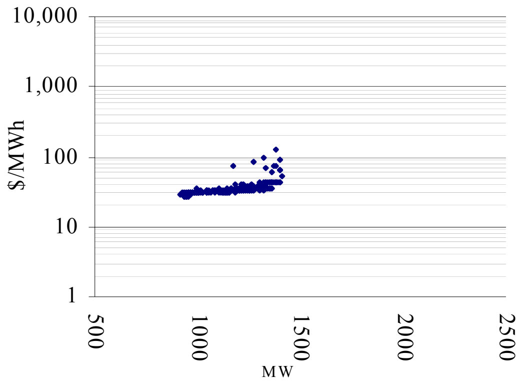


Figure 8: Tasmania



Maximum spot prices reached $58/MWh in New South Wales, $65/MWh in Victoria and $126/MWh in Tasmania, all occurring during the evening peaks. The maximum price in Queensland was $3359/MWh as a result of higher than expected demand, lower than forecast capacity and rebidding into higher prices. The maximum price in South Australia of $967/MWh occurred following a step reduction of the Victoria to South Australia (Heywood) interconnector to 250 MW for two 5-min dispatch intervals on Monday. The reduction was the result of a short duration network outage.

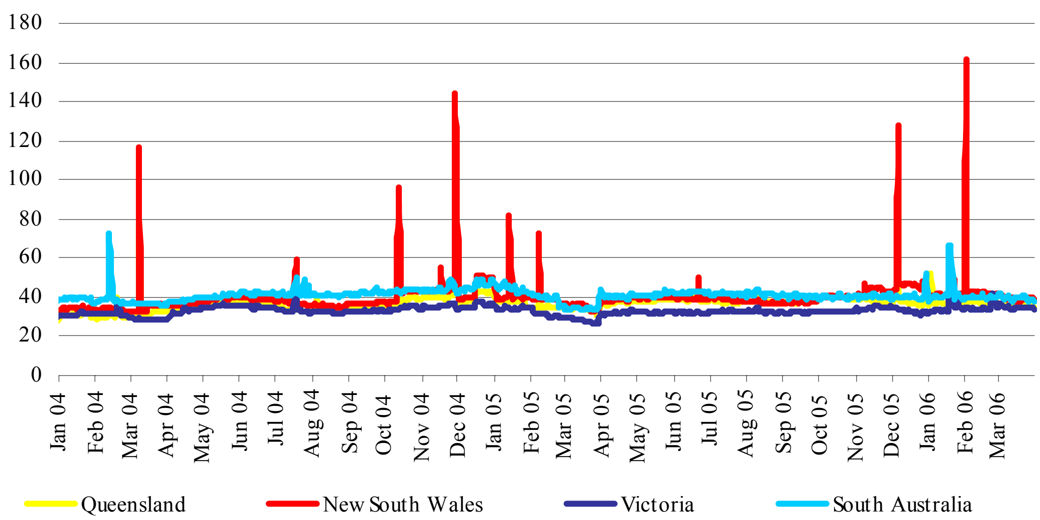
At 1.30 am on Friday and Saturday morning the spot price in Queensland fell to $-156/MWh. On both occasions this occurred as a result of a step reduction in export capability with maximum exports southwards and falling demand, leading to a $-1000/MWh five-minute dispatch price.

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	38.01	47.99	38.54	38.39	38.09
New South Wales	42.38	42.80	42.82	42.53	42.94
Victoria	34.51	34.45	34.43	34.56	34.40
South Australia	41.07	41.05	40.12	40.84	41.00

Figure 10: d-cyphaTrade WEPI



Reserve

There was no low reserve conditions forecast.

A direction was issued in Tasmania for around 45 minutes on Tuesday following a SCADA failure. The generator was directed to provide frequency control.

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

Figure 11: Queensland

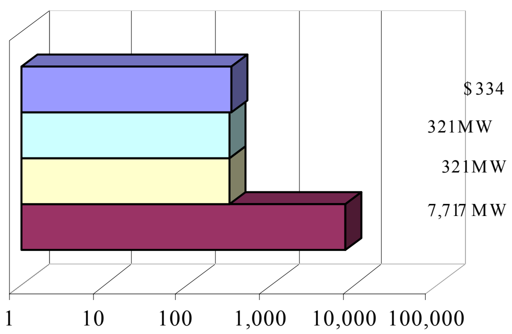


Figure 12: New South Wales

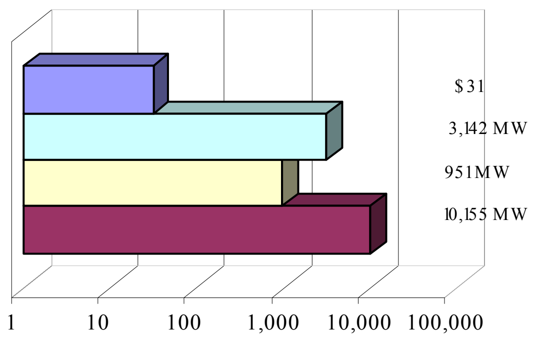


Figure 13: Victoria

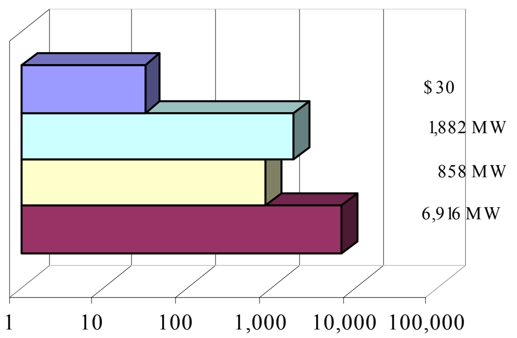


Figure 14: South Australia

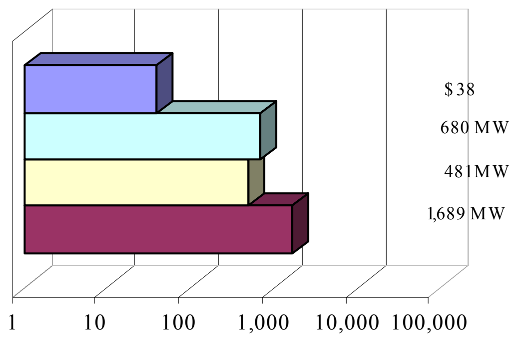
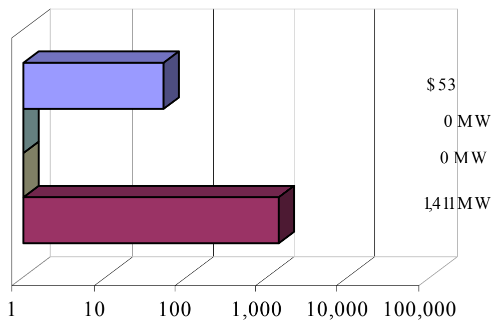
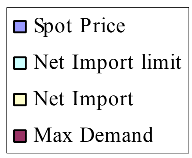


Figure 15: Tasmania





Price variations

There were 43 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 correlation 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

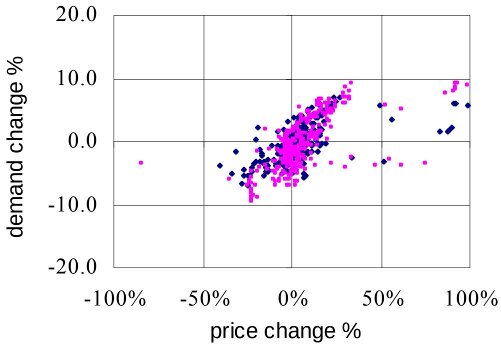


Figure 17: New South Wales

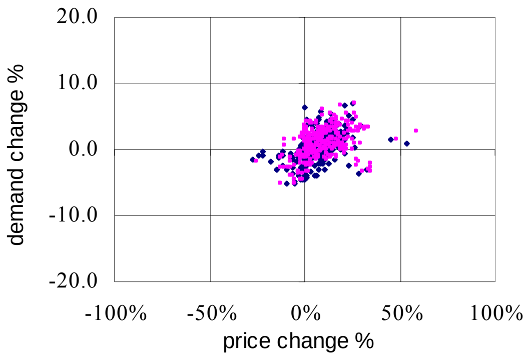


Figure 18: Victoria

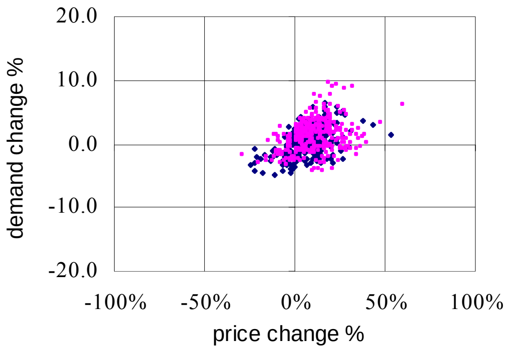


Figure 19: South Australia

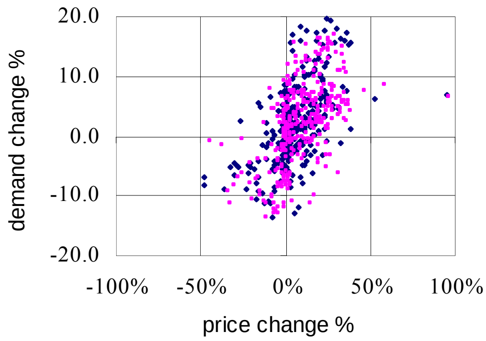
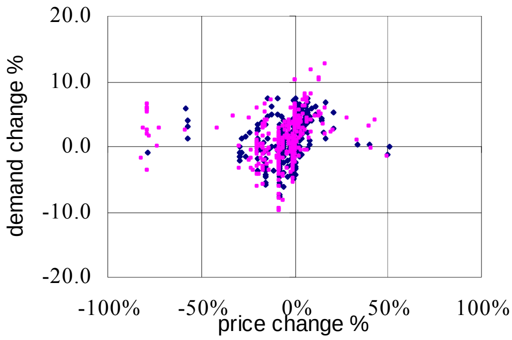


Figure 20: Tasmania



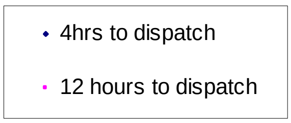


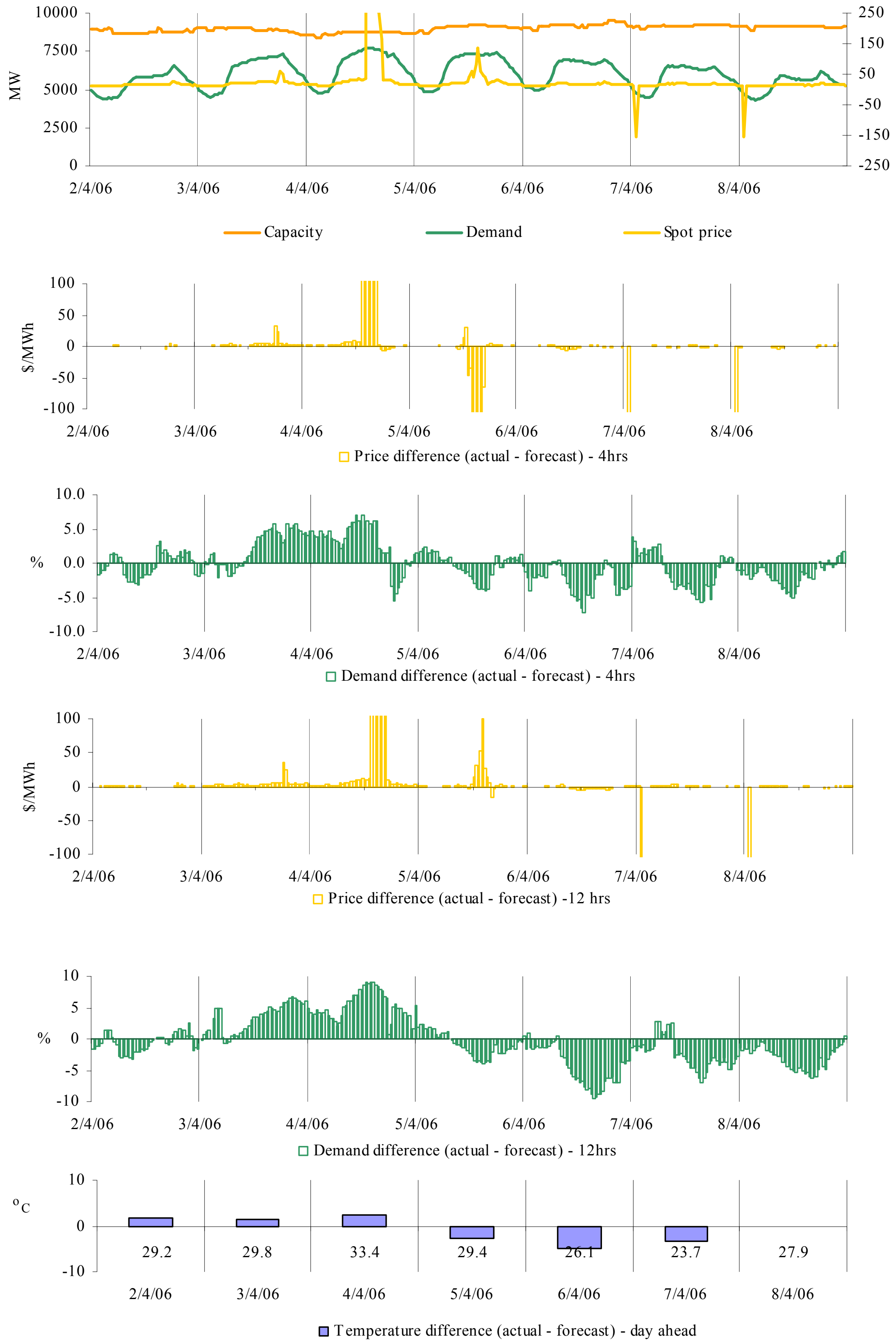
Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

Figure 21: reasons for variations between forecast and actual prices

Price and demand

Figures 22 - 51 set out details of spot prices and demand on a regional basis. They include the actual spot price, actual demand 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 52 - 56 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 22-27: Queensland actual spot price, demand and forecast differences



There were 8 occasions in Queensland where the spot price was greater than three times the weekly average price of $37/MWh. These occurred on Tuesday and Wednesday.

Tuesday, 4 April

2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	3359.47	28.11	23.35
Demand (MW)	7672	7242	6998
Available capacity (MW)	8747	8742	8823
2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	333.91	25.64	22.84
Demand (MW)	7717	7243	7009
Available capacity (MW)	8772	8802	8893
3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	291.20	25.09	22.69
Demand (MW)	7700	7224	6999
Available capacity (MW)	8777	8882	8973
3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	288.43	30.49	22.36
Demand (MW)	7658	7490	6994
Available capacity (MW)	8770	8732	9063
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	279.26	30.28	21.62
Demand (MW)	7632	7484	6992
Available capacity (MW)	8752	8727	9153
4:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	251.06	29.70	21.86
Demand (MW)	7590	7473	6985
Available capacity (MW)	8742	8797	9183
5:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	165.35	28.77	21.59
Demand (MW)	7523	7409	6953
Available capacity (MW)	8749	8877	9183

Conditions at the time saw demand higher than forecast by as much as 700 MW reaching 7700MW, the highest demand since February. Available capacity was as much as 430 MW lower than forecast 12 hours prior to dispatch with 360 MW of capacity at Callide B shutdown the previous evening as a result of boiler ashing issues. The return of the unit was delayed a number of times, finally returning early Wednesday.

Between 12.10 pm and 2.55 pm, a short notice network re-configuration saw the network limit between Tarong and Brisbane (the Tarong cutset) reduced by around 150 MW (as notified through a market notice at 3.30 pm). The constraint did not, however, bind. Just prior to 2 pm, flows from New South Wales across QNI were constrained at around 400 MW (which was close to forecast) with the 5-minute price reaching 10,000/MWh for two dispatch intervals.

Between 12.30 pm and 2 pm Tarong Energy rebid as much as 150 MW of capacity at Tarong from prices less than $15/MWh to above $280/MWh. The rebid reasons given were “F change in PD::optimize portfolio”, “F change in PD::adjust profile” and “F material change in PD::portfolio optimisation”.

At 1.15 pm Millmerran Energy Trader shifted 135 MW of capacity at Millmerran from prices less than zero to above $9000/MWh, the rebid reason given was "financial optimisation – changed predispatch".

From 1 pm, Callide Power Trading shifted 100 MW of capacity at CallideC from prices of less than $15/MWh to above $9000/MWh. The rebid reason given was "financial optimisation – changed predispatch".

At 3 pm Callide Power Trading shifted 210 MW of capacity at CallideC from $10/MWh to below zero, the rebid reason given was "portfolio rearrangement".

Around 2 pm Stanwell Corporation shifted 72 MW of capacity at Stanwell from less than $15/MWh to $80/MWh, the rebid reasons given were "manage interconnector flows", "revised unit capabilities" and "RRP grt predisp".

There was no other significant rebidding.

Wednesday, 5 April

2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	133.61	290.42	33.64
Demand (MW)	7308	7572	7564
Available capacity (MW)	9206	9142	9158

Conditions at the time saw demand around 260 MW lower than forecast. Actual capacity was closely aligned to that forecast.

At 9.21 am Millmerran Energy rebid 165 MW of capacity at Millmerran from prices of less than zero to above $9000/MWh, the rebid reason given was "financial optimisation".

At 9.46 am Callide Power Trading rebid 130 MW of capacity at CallideC from prices below $15/MWh to above $9000/MWh, the rebid reason given was "financial optimisation".

At 10.05 am Stanwell Corporation rebid 170 MW of capacity at Stanwell from prices below $15/MWh to above $80/MWh, the rebid reason given was "revised predispatch 09:45".

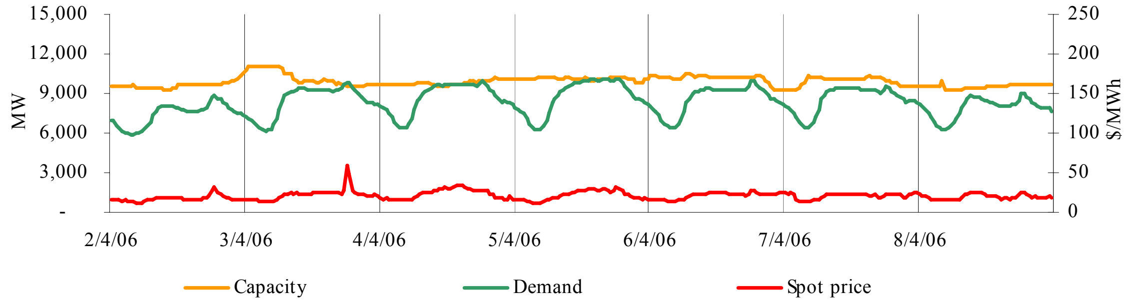
From 11 am NEMMCO restricted flows across the QNI and Terranora interconnectors to zero to manage the accumulation of negative settlement residues. These constraints remained in place until around 5pm.

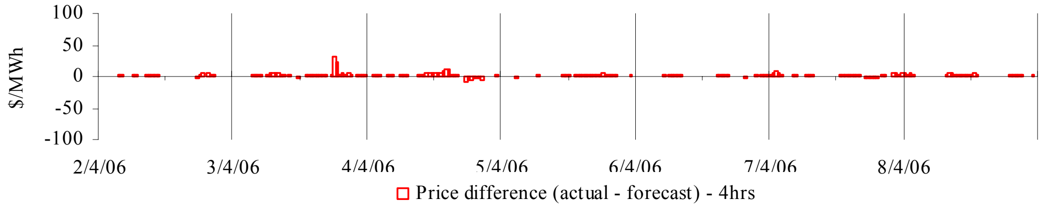
At 2.30 pm Enertrade shifted 155 MW of capacity at Gladstone from $81/MWh to above $280/MWh, the rebid reason given was "portfolio rearrangement::change MW distribution.

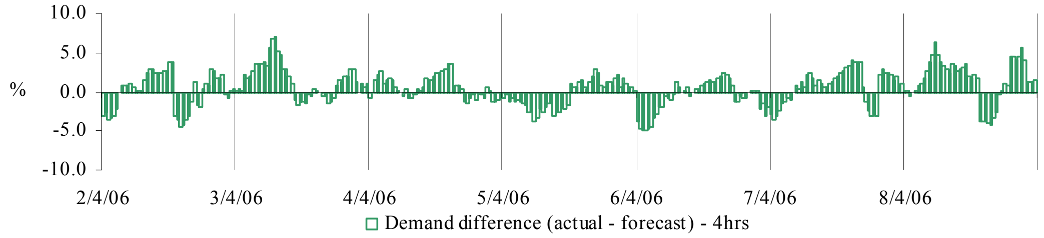
From 1.30 pm Tarong Energy shifted as much as 150 MW of capacity across Wivenhoe and Tarong from prices above $250/MWh to less than $35/MWh. The rebid reasons given were "P Manage plant limits::Adj profile", "N Latest prd::optimise portfolio", "N latest prd::bandshift; prevent cycling" and "N latest prd::cover position".

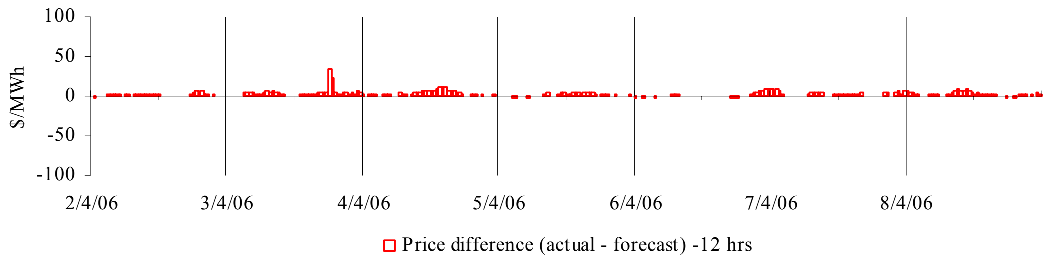
There was no other significant rebidding.

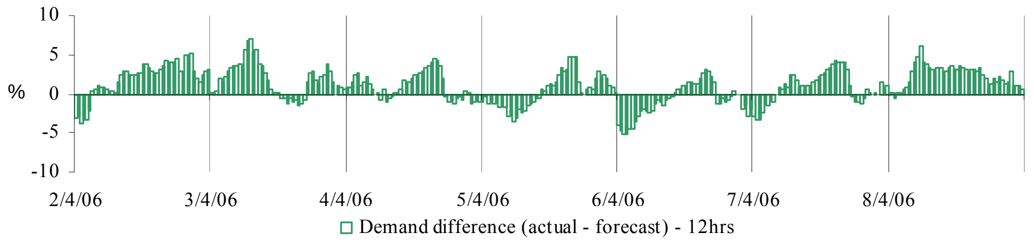
Figures 28-33 New South Wales actual spot price, demand and forecast differences

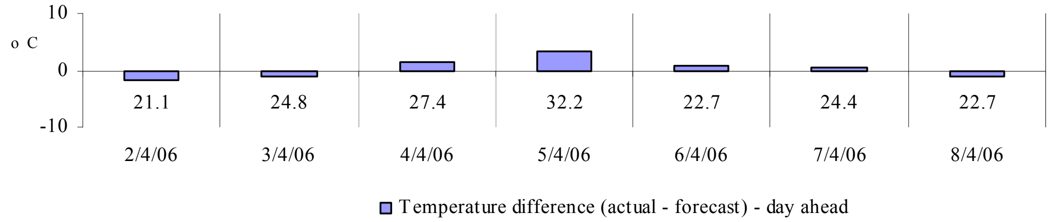






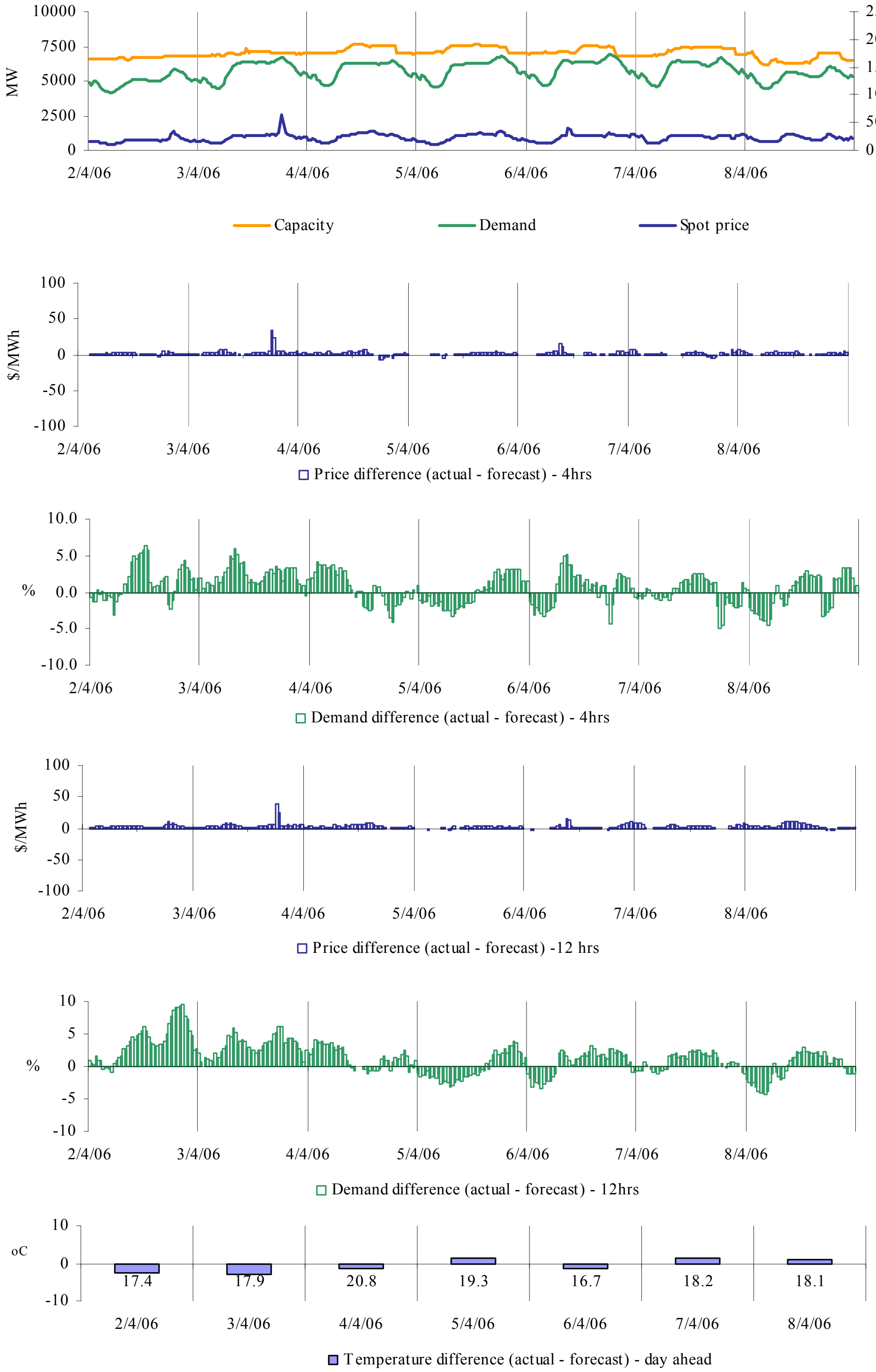






There was no occasion in New South Wales where the spot price was greater than three times the weekly average price of $22/MWh.

Figures 34-39: Victoria actual spot price, demand and forecast differences



There was no occasion in Victoria where the spot price was greater than three times the weekly average price of $23/MWh.

Figures 40-45: South Australia actual spot price, demand and forecast differences

There was one occasion in South Australia where the spot price was greater than three times the weekly average price of $32/MWh. This occurred on Monday morning.

Monday, 3 April

10:30 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	967.09	42.31	38.87
Demand (MW)	1566	1456	1464
Available capacity (MW)	2019	2019	2019

Conditions at the time saw demand 100 MW higher than forecast. Available capacity was as forecast. A 30-minute planned network outage of a Heywood-Moorabool 500KV line, which reduces the capability of the Victoria to South Australia interconnector, was scheduled to commence from 10am. This outage was included in the forecast systems from the previous Wednesday. In readiness for the network outage, the export limit from Victoria to South Australia was reduced from 460 MW to 250 MW in one 5-minute dispatch interval. The 5 minute dispatch price spiked from $32/MWh to $4998/MWh at 10.05am. This price was first forecast an hour earlier.

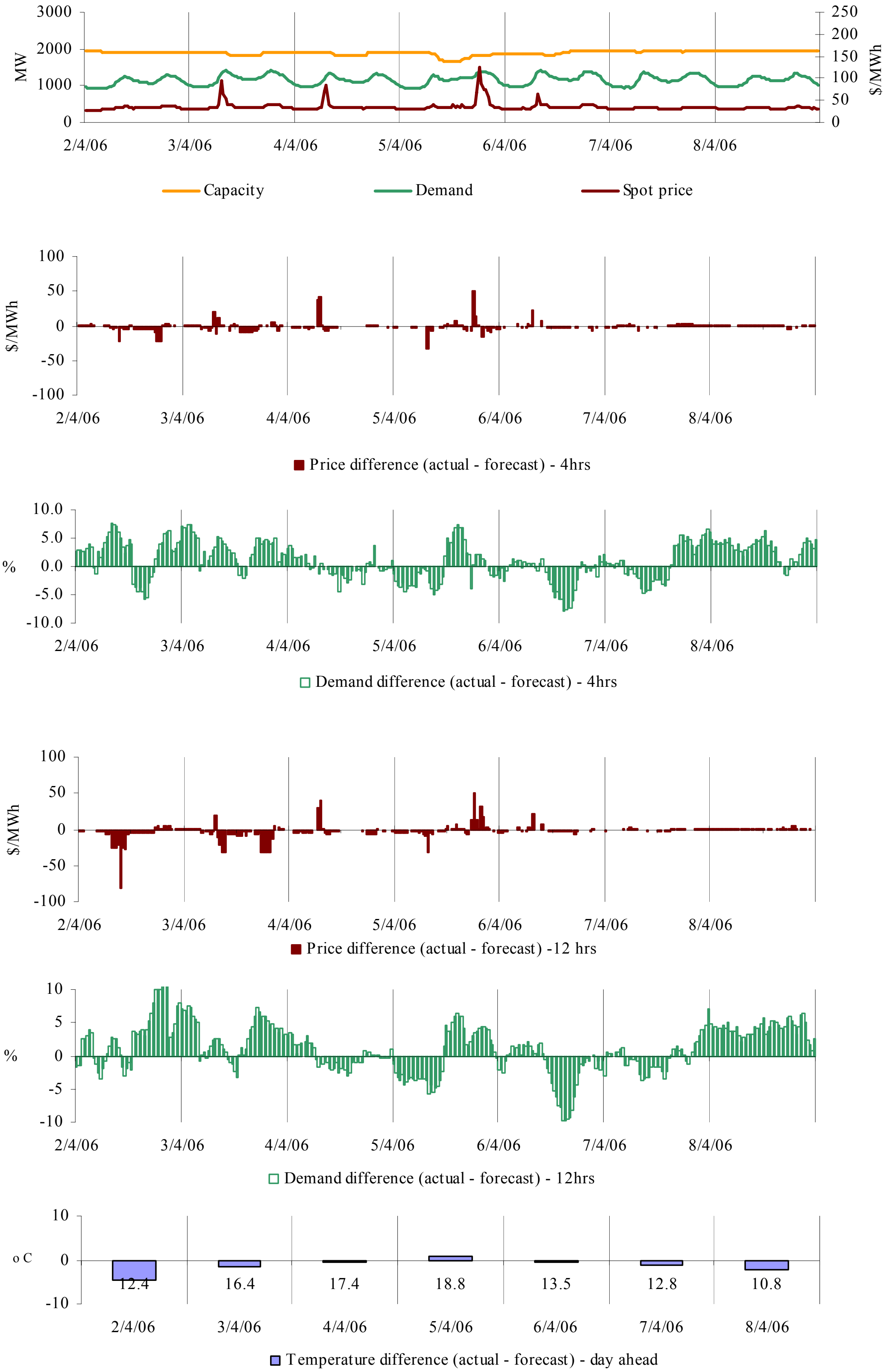
The import capability was not ramped down, which is the usual practice to minimise the market impacts for planned network outages.

Following the price spike, International Power rebid 144 MW of capacity at Dry Creek priced at $1000/MWh to zero. The rebid reasons given were "band adjustment due to change in forecast price 09:12", "response to pd10:04" and "change in actual price10:17".

Similarly at 10.07am TRUenergy shifted 416 MW of capacity at Torrens Island B from prices of around $40/MWh to zero. A further 70 MW of capacity at Torrens Island A was shifted from prices of almost $60/MWh to the price floor of $-1000/MWh. The rebid reasons given were "plant failure-capacity change due to plant ok@9:54" and "market_5/30 settlement issues @ 10:05".

There was no other significant rebidding.

Figures 46-51: 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 $35/MWh. This occurred on Wednesday evening.

Wednesday, 5 April

6:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	126.09	75.00	75.00
Demand (MW)	1386	1381	1344
Available capacity (MW)	1819	1819	1819

Conditions at the time saw demand and available capacity close to forecast. A five-minute price spike in the raise 6 second frequency control ancillary service to $500/MW at 6.30 pm, was reflected in the energy price, which also spiked to $295/MWh. There was no raise 6 second capacity priced between $1/MW and $500/MW.

There was no significant rebidding.

Figure 52: Queensland closing bid prices, dispatched generation and spot price

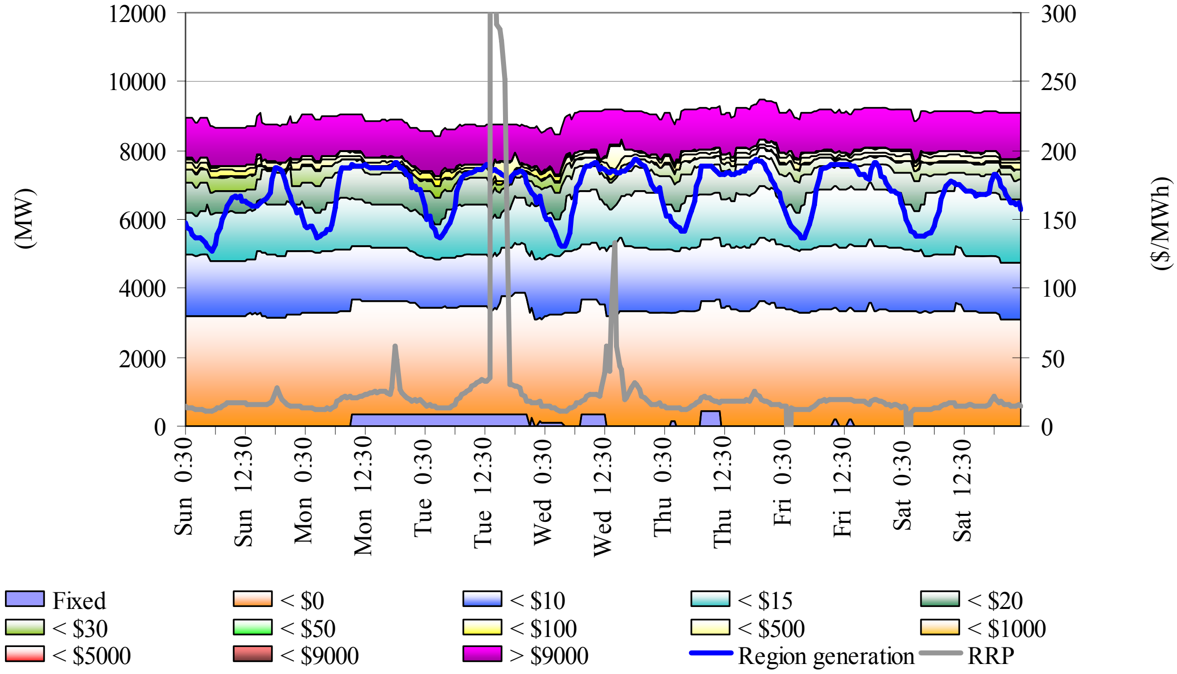


Figure 53: New South Wales closing bid prices, dispatched generation and spot price

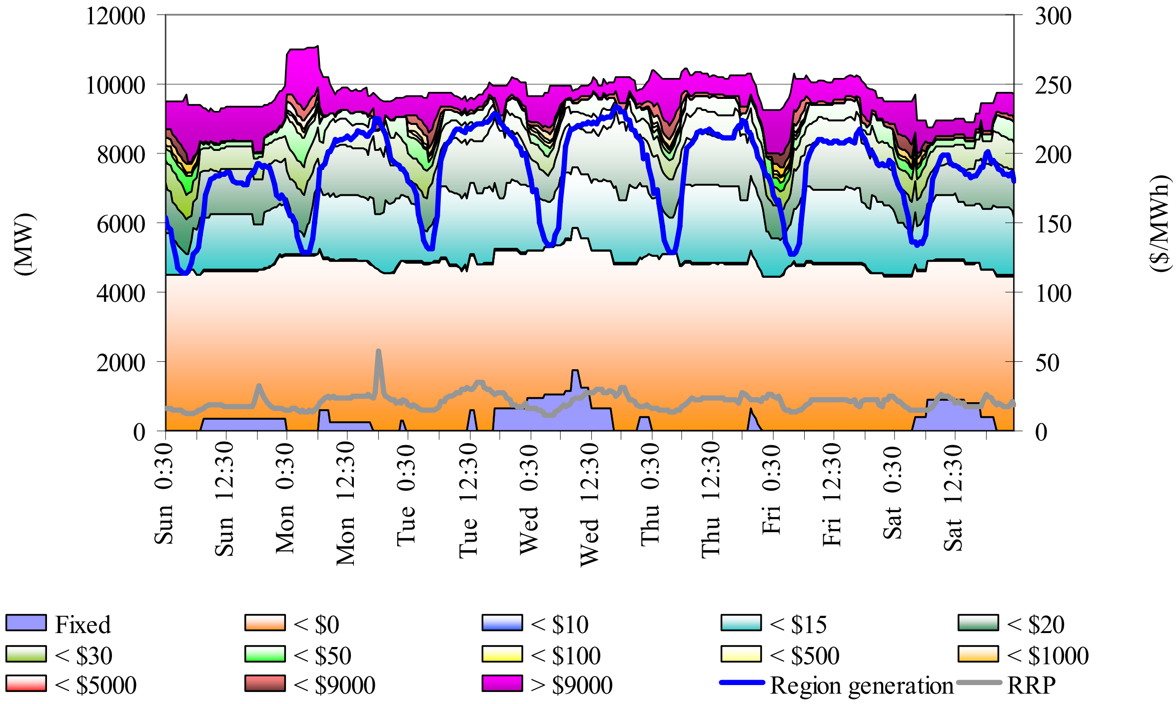


Figure 54: Victoria closing bid prices, dispatched generation and spot price

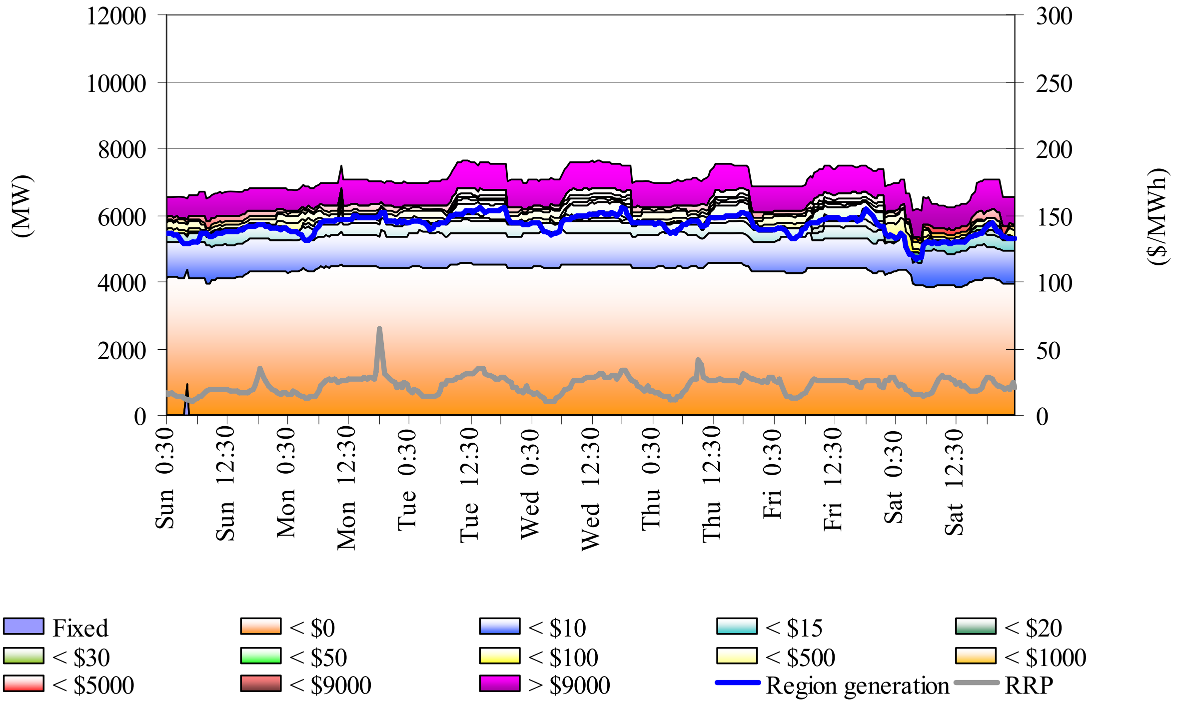


Figure 55: South Australia closing bid prices, dispatched generation and spot price

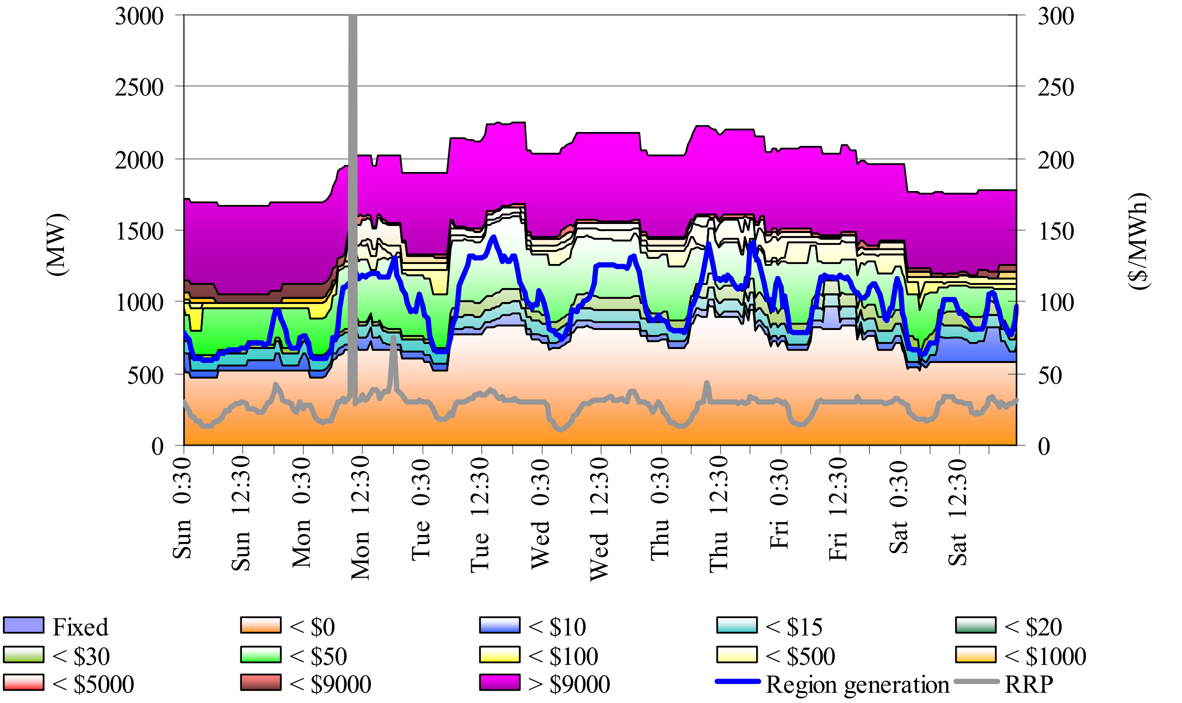
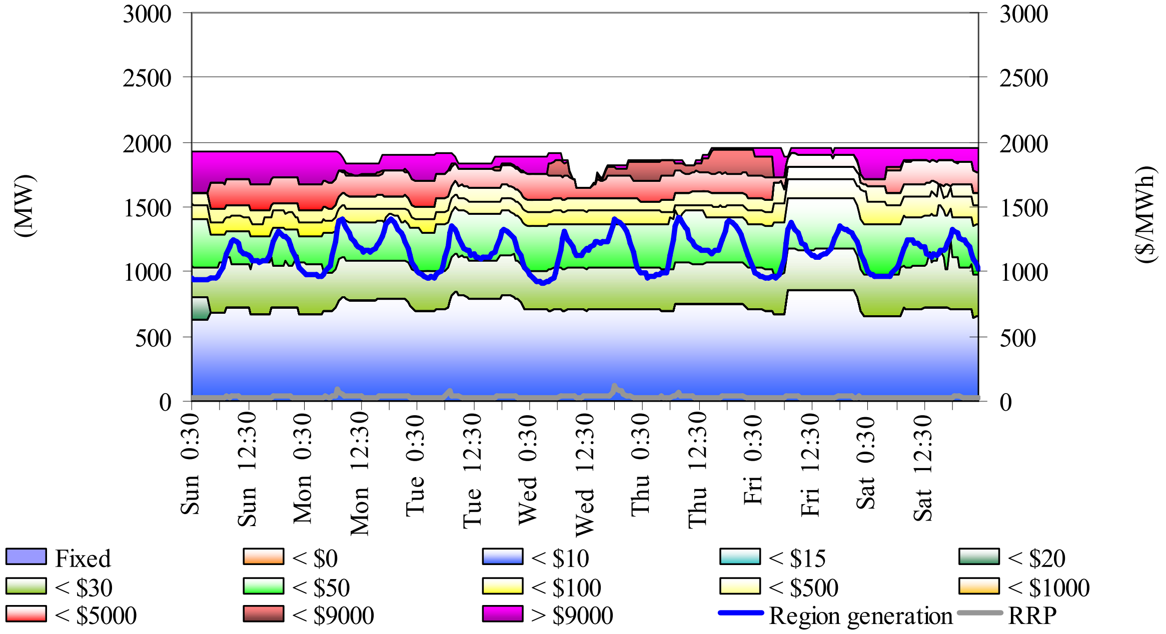


Figure 56: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $319 000 or 0.3 per cent of the total turnover in the energy market on the mainland. Figure 57 summarises the volume weighted average prices and costs for the eight frequency control ancillary services across the interconnected regions.

Figure 57: frequency control ancillary service prices and costs - 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	1.52	0.72	1.56	1.58	0.21	0.29	0.65	1.83
Previous week	0.74	0.33	0.83	1.40	0.18	0.19	0.40	1.40
Last quarter	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	80	38	106	35	2	3	16	40
% of energy market	0.08%	0.04%	0.11%	0.04%	0.00%	0.00%	0.02%	0.04%

The total cost of ancillary services in Tasmania for the week was $34 000 or 0.5 per cent of the total turnover in the energy market in Tasmania. Figure 58 summarises for Tasmania the prices and costs for the eight frequency control ancillary services.

Figure 58: 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	2.11	0.12	0.23	0.17	0.26	0.10	0.10	0.11
Previous week	1.16	0.80	5.04	2.16	1.73	0.01	0.01	0.42
Last quarter	7.89	1.05	1.05	1.58	4.43	1.06	1.06	1.97
Market Cost ($1000s)	18	1	3	1	4	3	2	1
% of energy market	0.27%	0.02%	0.04%	0.02%	0.06%	0.05%	0.04%	0.01%

Figure 59 shows the daily breakdown of cost for each frequency control ancillary service.

Figure 59: daily frequency control ancillary service costs

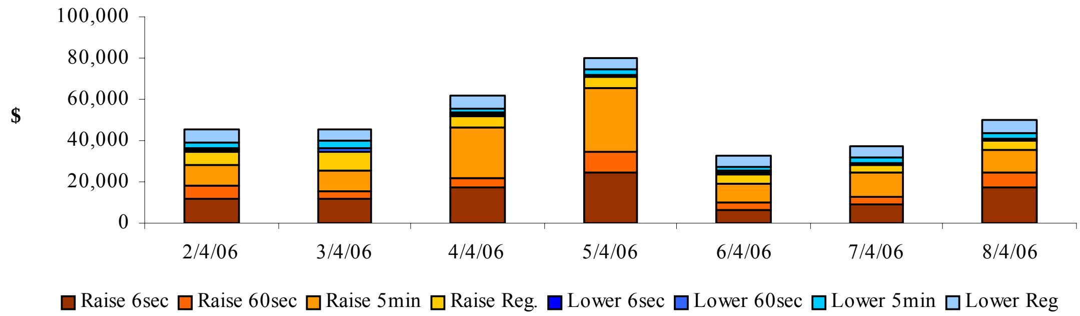
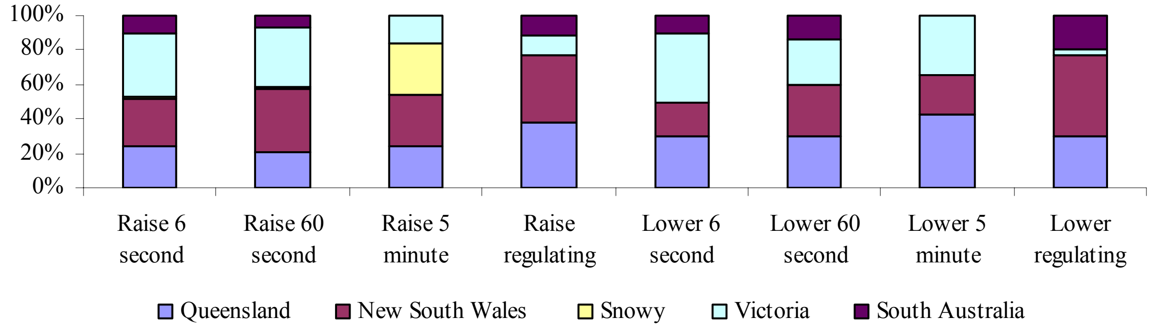


Figure 60 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

Figure 60: regional participation in ancillary services on the mainland



Figures 61 and 62 show 30-minute prices for each frequency control ancillary service throughout the week.

Figure 61: prices for raise services

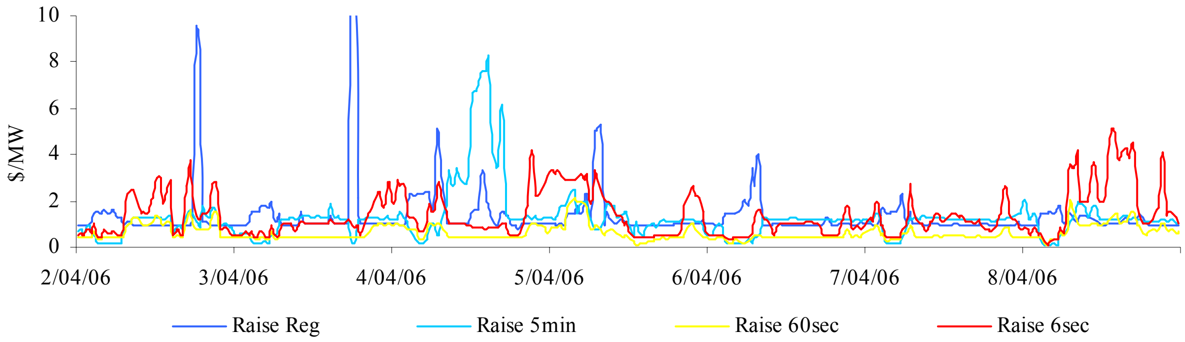


Figure 61A: prices for raise services - Tasmania

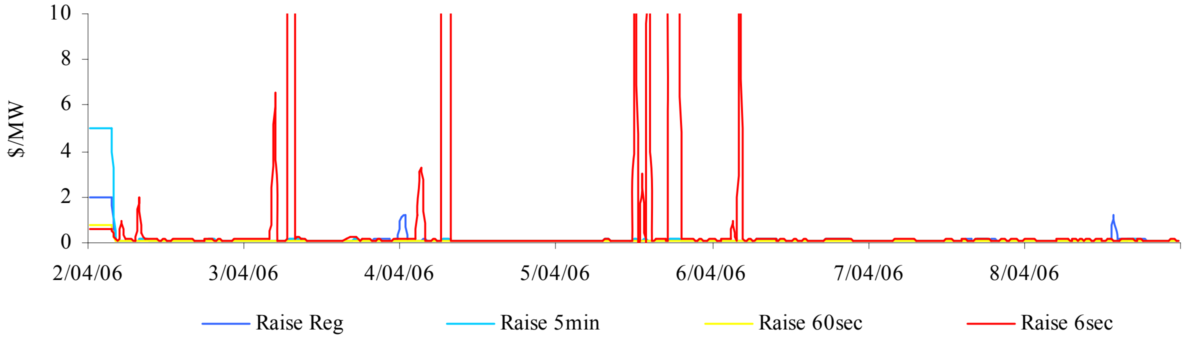


Figure 62: prices for lower services

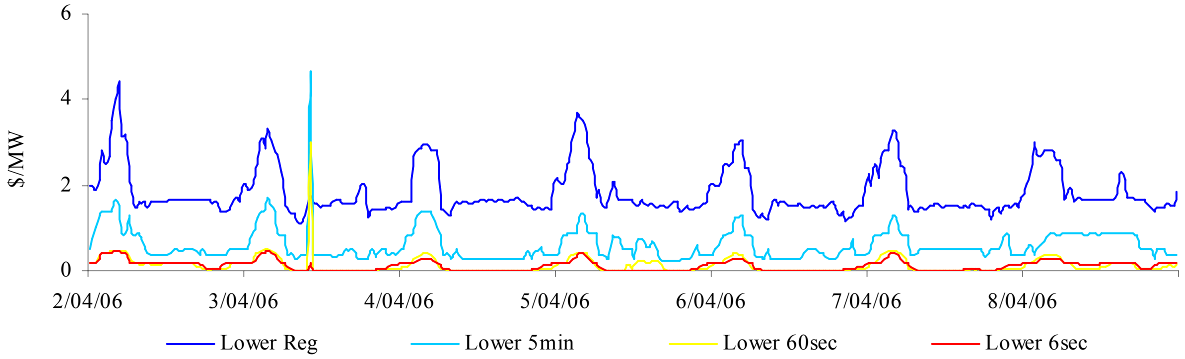
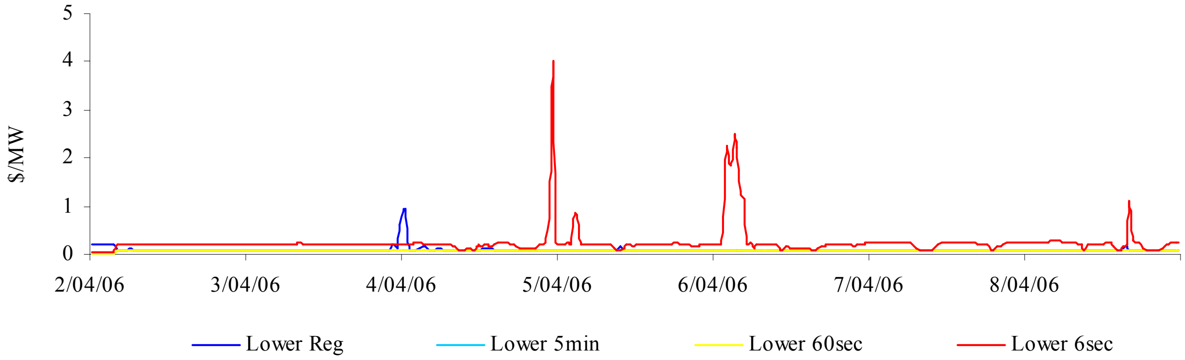


Figure 62A: prices for lower services - Tasmania



Figures 63 and 64 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

Figure 63: raise requirements

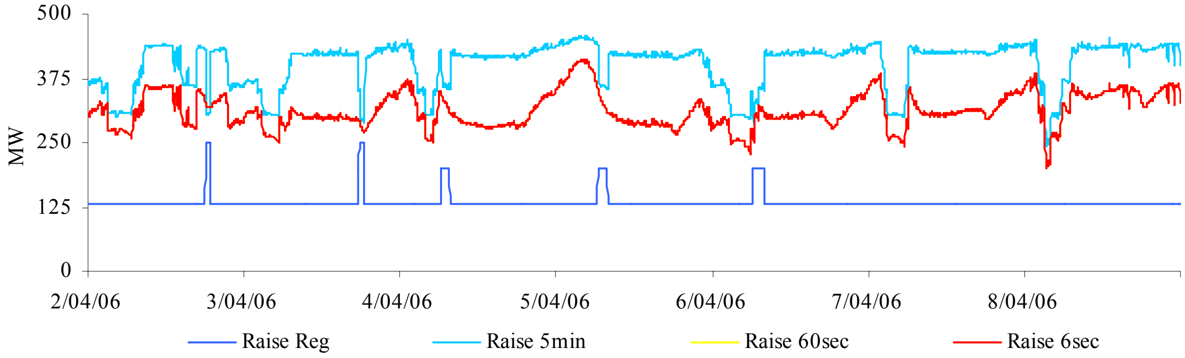


Figure 63A: raise requirements - Tasmania

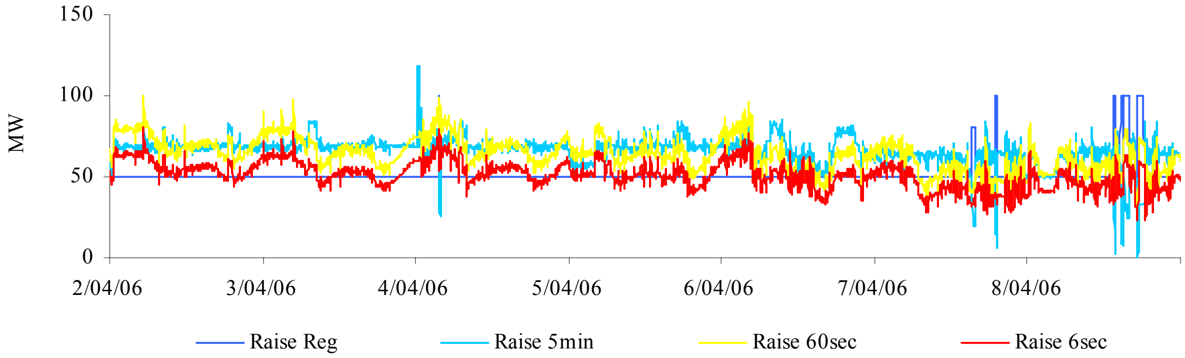


Figure 64: lower requirements

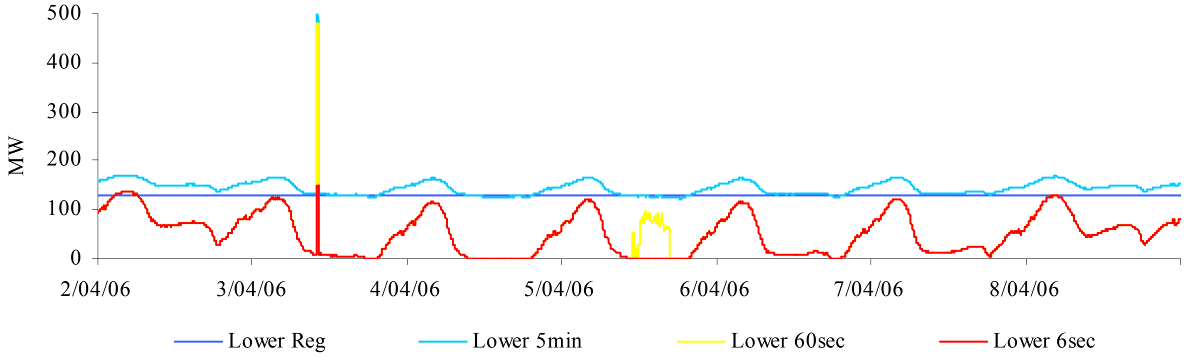
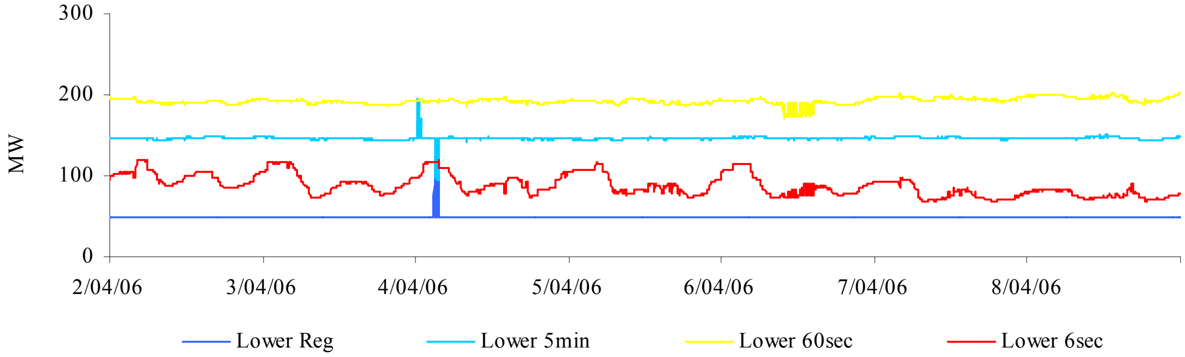


Figure 64A: lower requirements - Tasmania



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