Market analysis

AUSTRALIAN ENERGY REGULATOR

13 – 19 NOVEMBER 2005

High demand in South Australia on Thursday and only 40MW of capacity priced between $30/MWh and $9 000/MWh saw five-minute prices exceed $9 000/MWh on four separate occasions. As a result the average price in South Australia increased to $54/MWh.

Average prices for the week fell compared to the previous week to $19/MWh in Queensland and $22/MWh in New South Wales and Victoria.

Turnover in the energy market for the mainland was $91 million. The total cost of ancillary services for the week was around $1 million or one per cent of turnover.

The average spot price in Tasmania was $58/MWh, down slightly on the previous week. The turnover for the week was approximately $10 million. The cost of ancillary services was around $110 000 or one per cent of turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 51, or 15 per cent, of trading intervals, with demand forecast error the main contributor. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in around 20 per cent of all trading intervals across the market. These variations were most frequent in South Australia occurring in around half of all trading intervals.

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	19	22	22	54	58
Previous week	28	223	62	35	61
Same quarter last year	48	90	38	54	
Financial year to date	23	43	30	35	92
% change from previous week	▼33%	▼90%	▼64%	▲52%	▼5%
% change from same quarter last year	▼61%	▼76%	▼42%	-	
% change from year to date	▼33%	▼2%	▼8%	▼8%	

Figure 2: national demand and spot prices

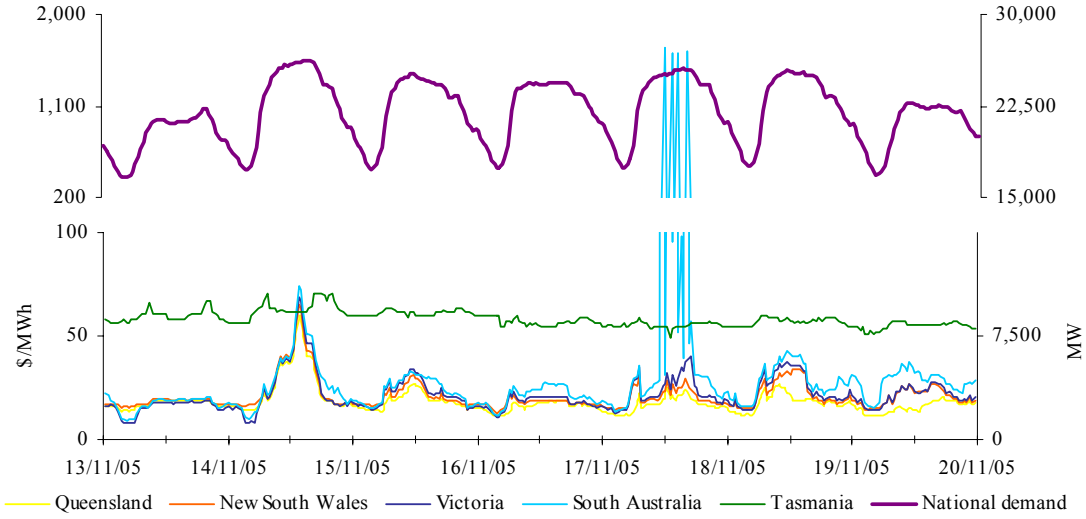


Figure 3: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.51	0.79	0.86	0.75	0.15
Previous week	1.08	1.11	0.72	0.58	0.18
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

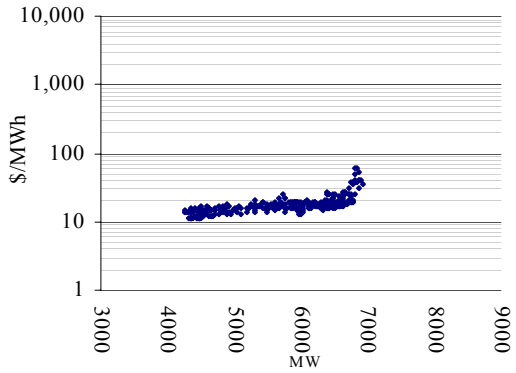


Figure 5: New South Wales

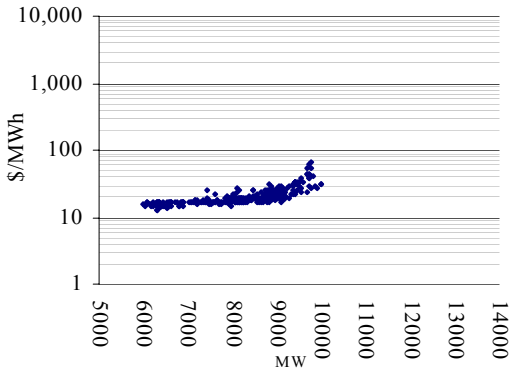


Figure 6: Victoria

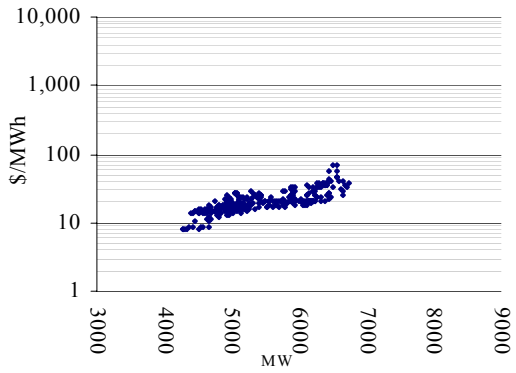


Figure 7: South Australia

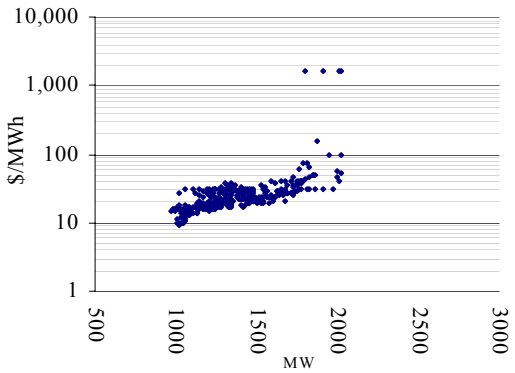
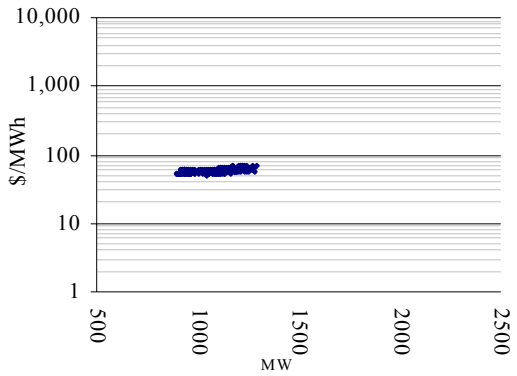


Figure 8: Tasmania



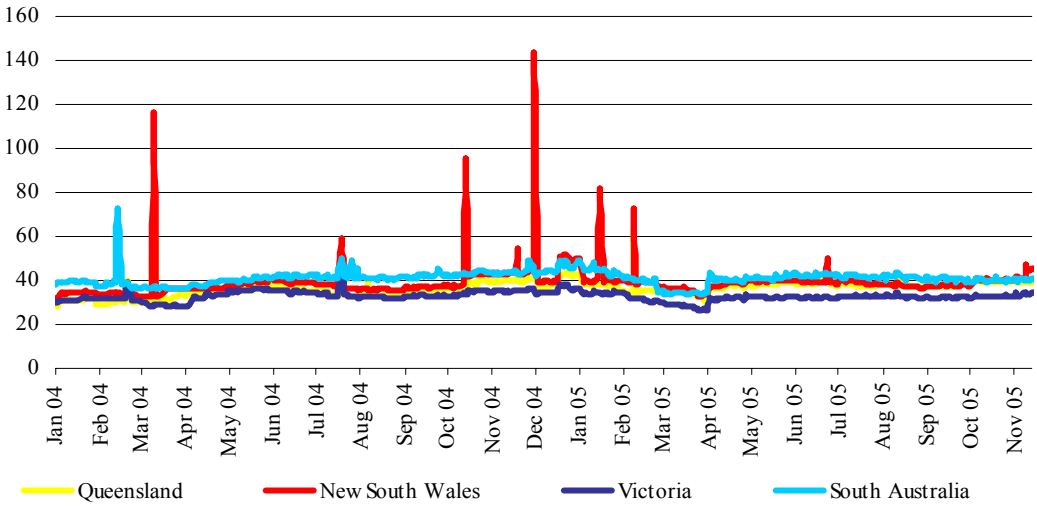
Maximum spot prices for the week were $60/MWh in Queensland, $65/MWh in New South Wales, $69/MWh in Victoria, $1 672/MWh in South Australia, and $71/MWh in Tasmania.

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	38.91	38.87	38.27	38.43	38.15
New South Wales	45.09	45.01	43.96	44.08	44.28
Victoria	34.53	34.14	34.29	35.56	35.46
South Australia	40.77	40.18	41.08	41.69	40.82

Figure 10: d-cyphaTrade WEPI



Reserve

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

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

Figure 11: Queensland

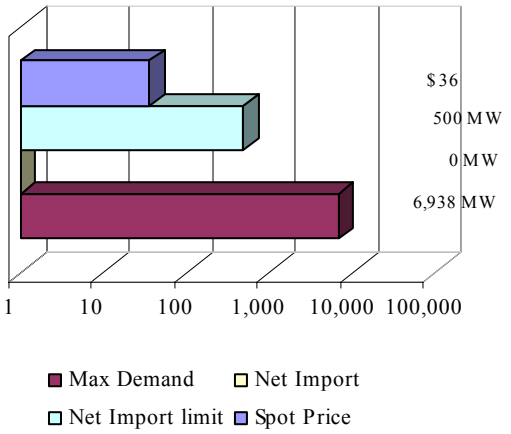


Figure 12: New South Wales

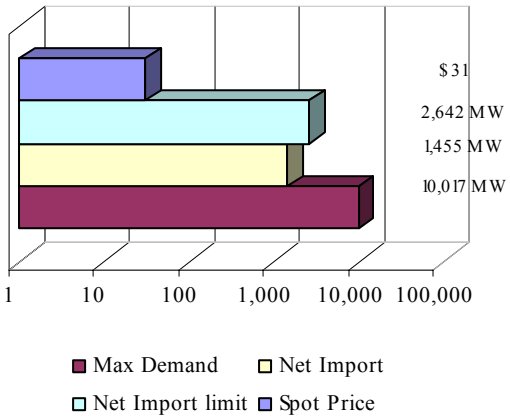


Figure 13: Victoria

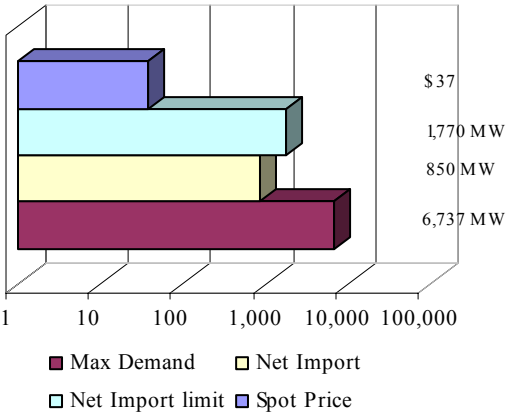
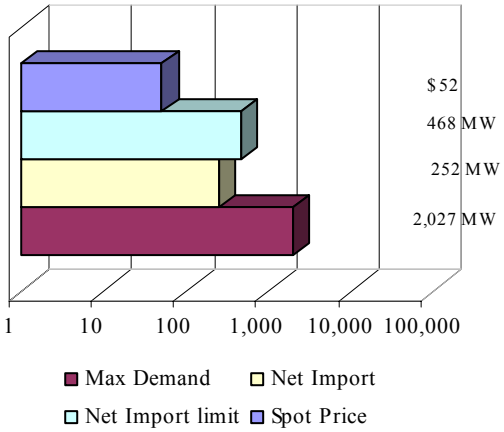


Figure 14: South Australia



In Tasmania, demand reached a maximum of 1 294MW at 7.30am on Monday, 14 November. The spot price at the time was $71/MWh.

Price variations

There were 51 trading intervals where actual prices significantly varied from forecasts made 4 and 12 hours ahead of dispatch. Figures 15 to 19 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 15: Queensland

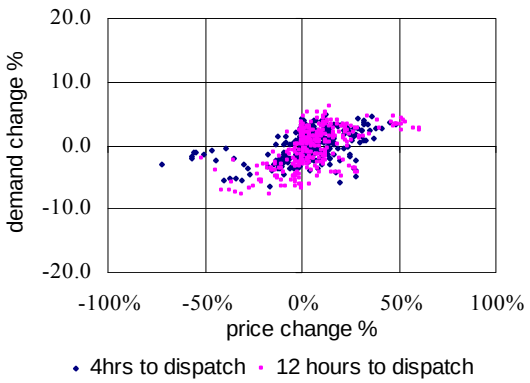


Figure 16: New South Wales

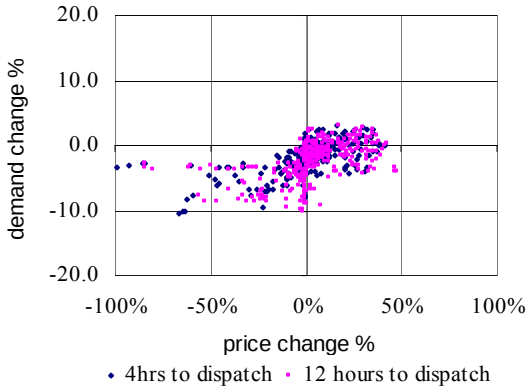


Figure 17: Victoria

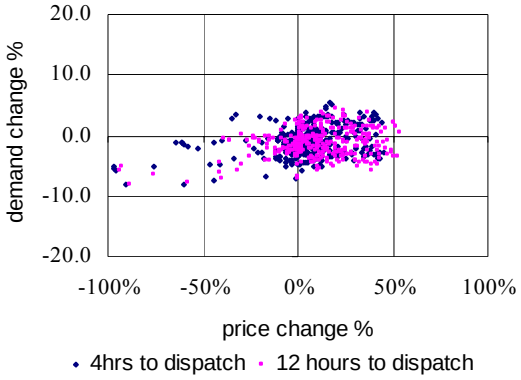


Figure 18: South Australia

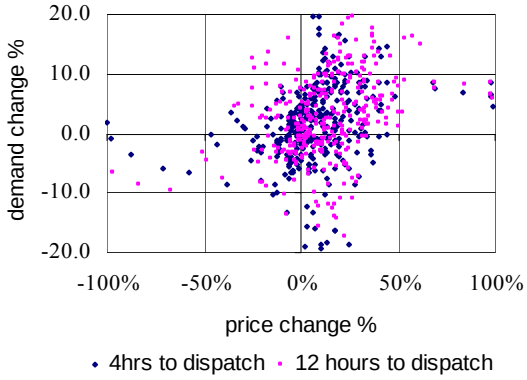


Figure 19: Tasmania

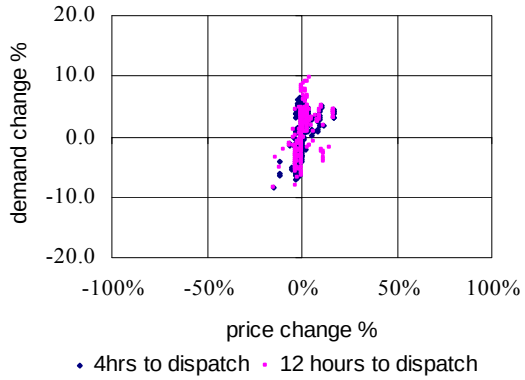
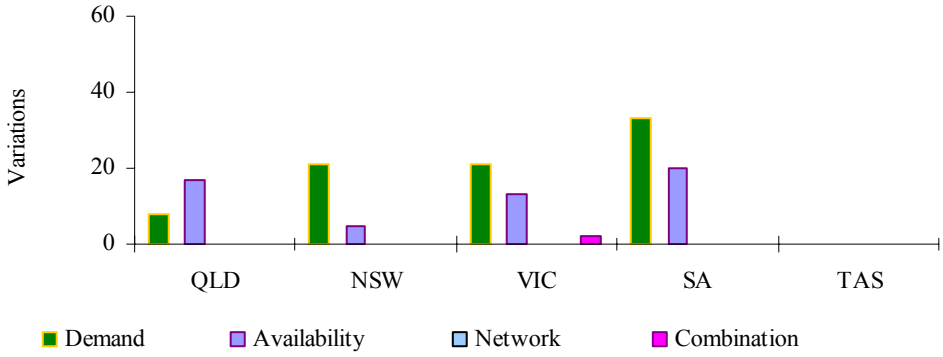


Figure 20 summarises the number and most probable reason for variations between forecast and actual prices.

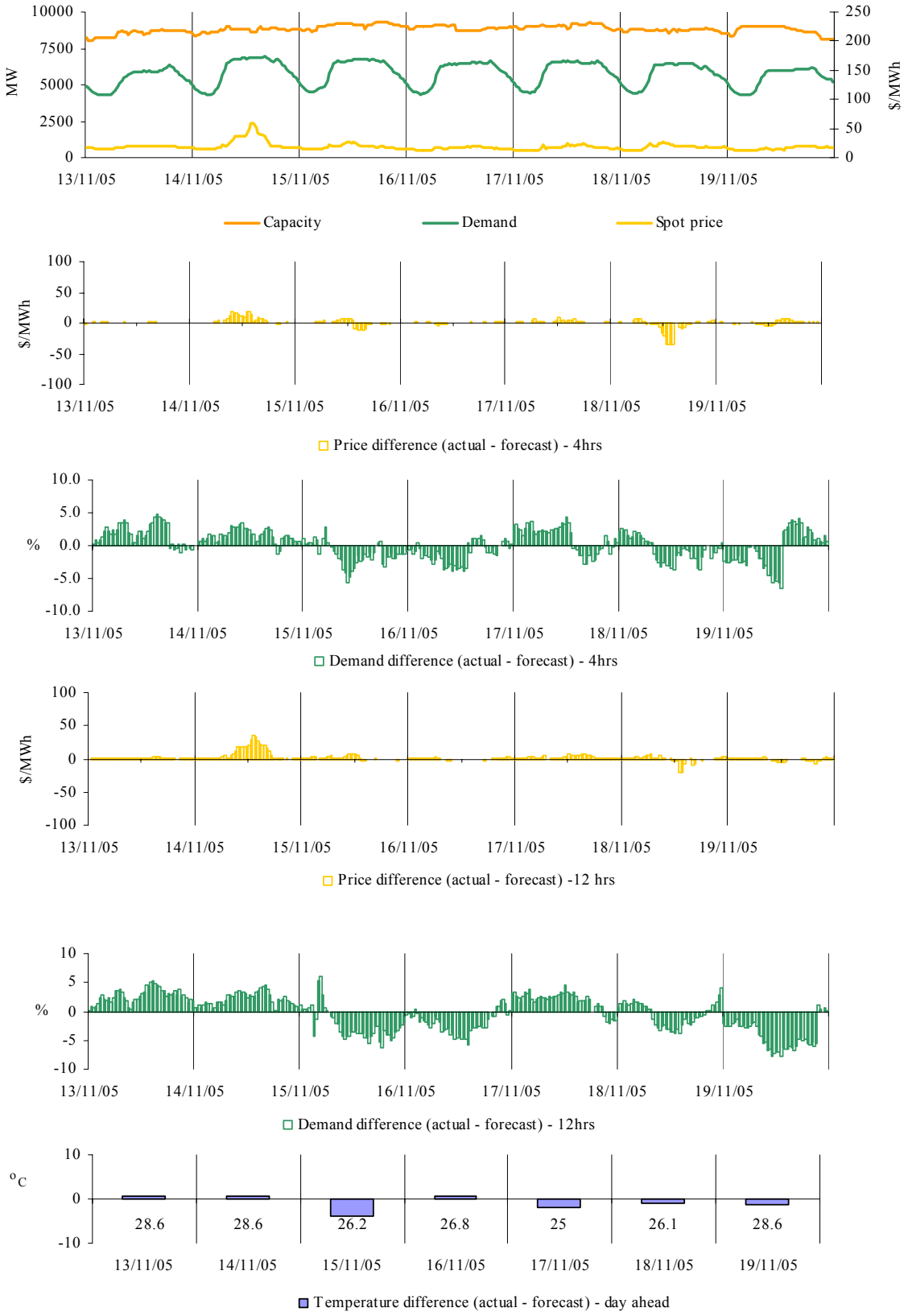
Figure 20: reasons for variations between forecast and actual prices



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



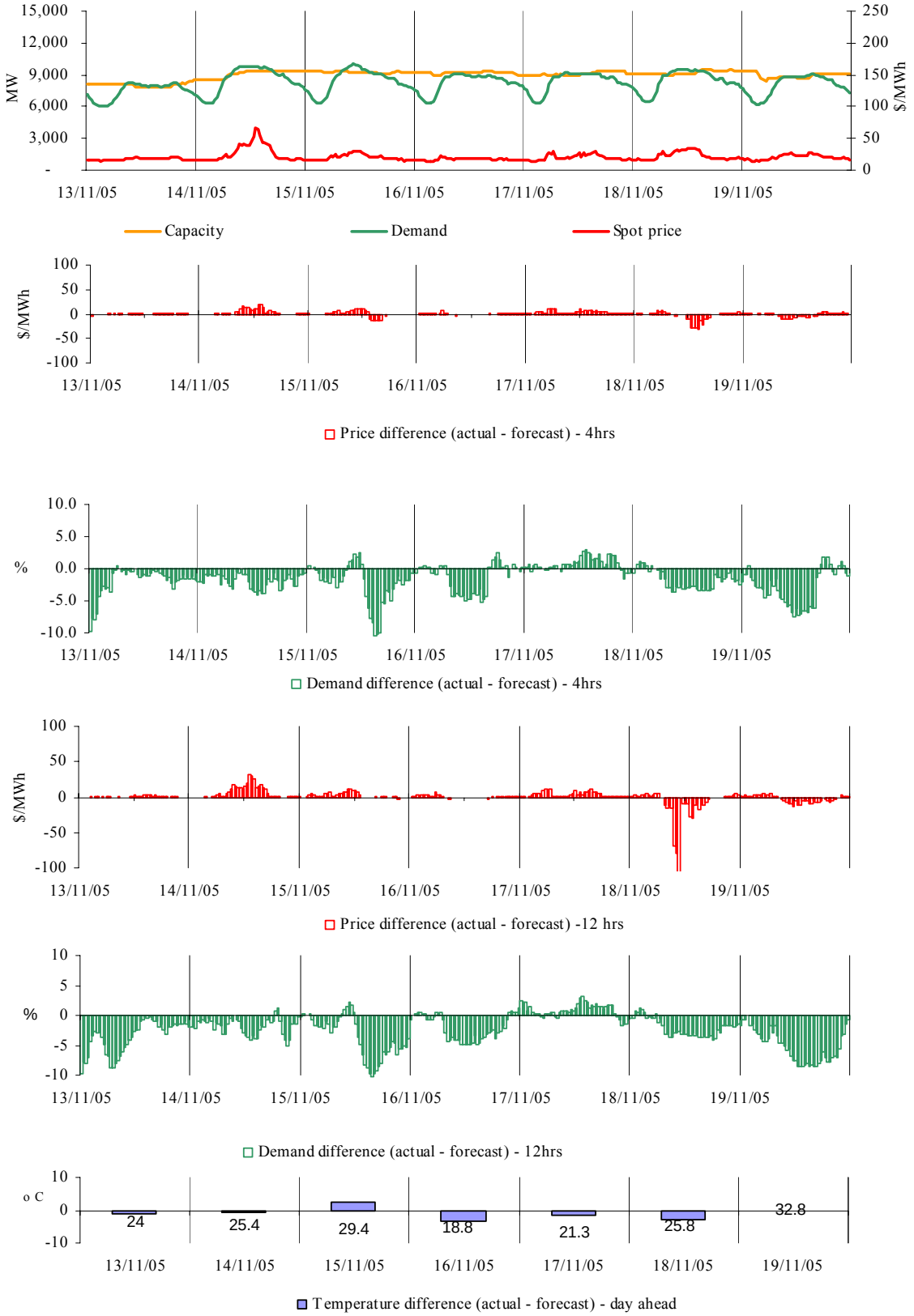
There were 2 occasions in Queensland where the spot price was greater than three times the weekly average price of $19/MWh. These both occurred on Monday afternoon.

Monday, 14 November

1:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	59.95	41.77	23.70
Demand (MW)	6 824	6 792	6 655
Available capacity (MW)	8 603	8 612	9 057
2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	59.57	40.72	25.20
Demand (MW)	6 840	6 797	6 661
Available capacity (MW)	8 600	8 612	9 057

Conditions at the time saw demand close to forecast, with prices aligned across the market. From around 7 am, Millmerran Energy Trader reduced the availability of Millmerran unit 1 by 115MW. The rebid reason given was "Coal issues". At around 8 am the unit was shut down from around 300 MW. The rebid reason given was "Unit trip". There was no other significant rebidding

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



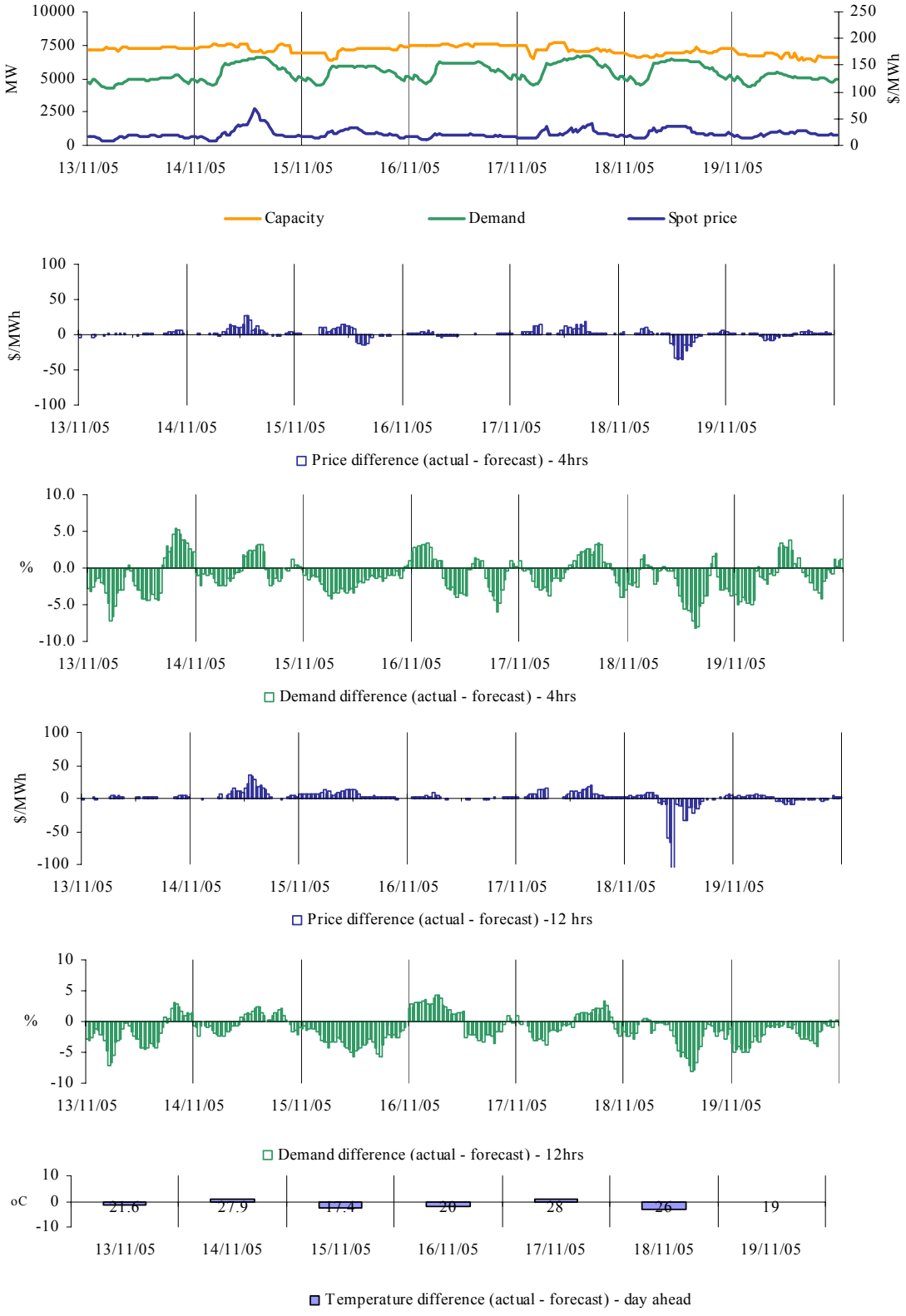
There was 1 occasion in New South Wales where the spot price was greater than three times the weekly average price of $22/MWh. This occurred on Monday afternoon.

Monday, 14 November

1:30 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	65.37	44.96	34.27
Demand (MW)	9 758	10 159	10 163
Available capacity (MW)	9 352	9 478	9 603

Conditions at the time saw demand 400 MW lower than forecast four hours to dispatch. Prices at the time were aligned across the mainland. There was no significant rebidding. Across the market almost 1 000MW of capacity priced at less than $20/MWh was made unavailable at short notice as a result of unit trips in both Queensland and Victoria.

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



There were 2 occasions in Victoria where the spot price was greater than three times the weekly average price of $22/MWh. These occurred on Monday afternoon.

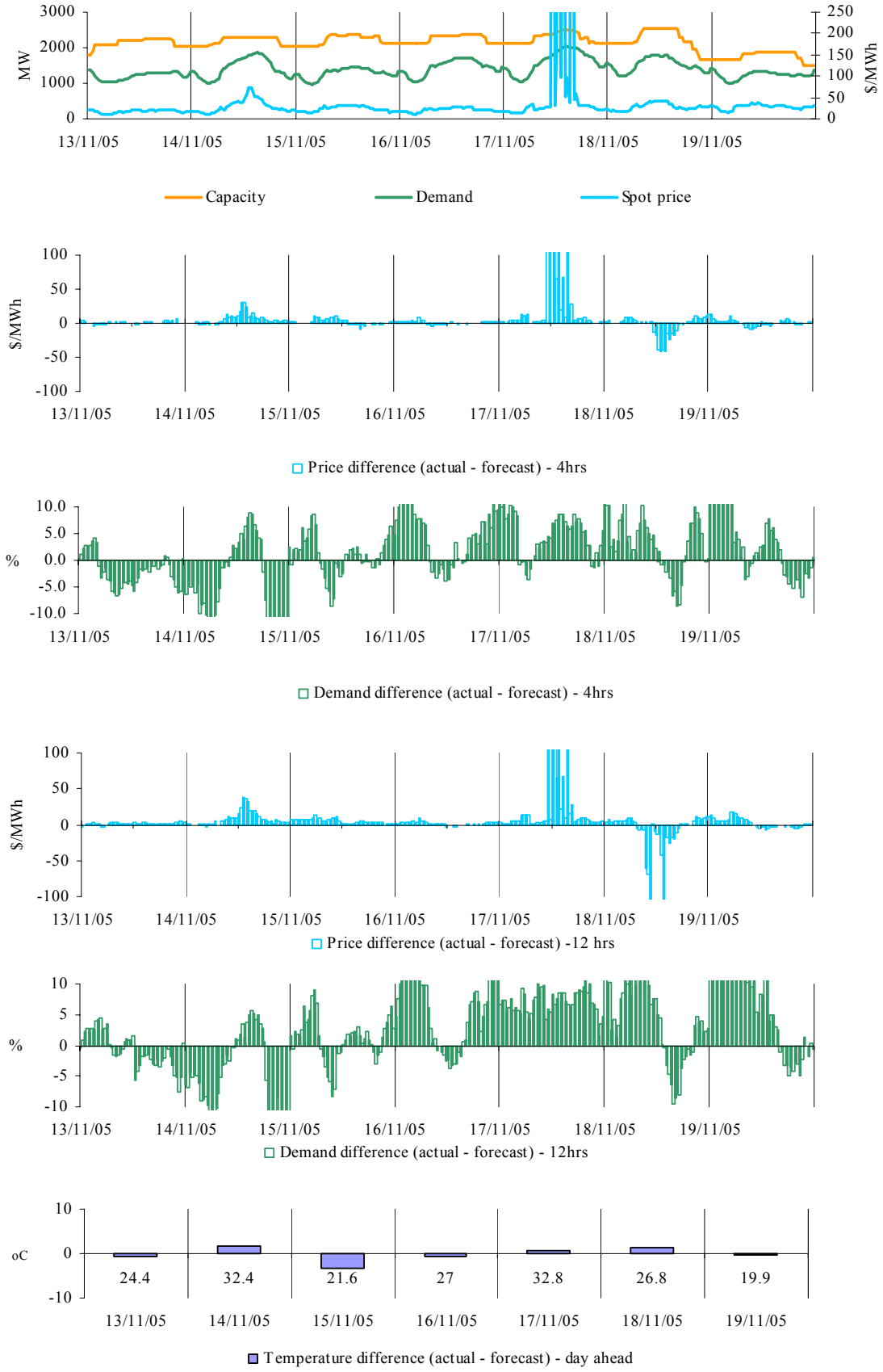
Monday, 14 November

1:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	68.71	41.79	33.36
Demand (MW)	6,507	6,346	6,406
Available capacity (MW)	7,045	7,628	7,749
2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	67.16	41.10	33.34
Demand (MW)	6550	6349	6406
Available capacity (MW)	7046	7563	7749

Conditions at the time saw demand as much as 200MW higher than forecast four hours to dispatch. Prices at the time were aligned across the market. At around 12.10 pm Loy Yang A unit 1 shut down from 580 MW. The rebid reason given was "Unit trip".

There was no other significant rebidding.

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



There were 4 occasions in South Australia where the spot price was greater than three times the weekly average price of $54/MWh. These occurred on Thursday afternoon.

Thursday, 17 November

11:30 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1671.41	24.33	24.34
Demand (MW)	1 798	1 717	1 693
Available capacity (MW)	2 388	2 414	2 422
1:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1619.64	27.30	27.30
Demand (MW)	1 915	1 789	1 789
Available capacity (MW)	2 474	2 486	2 494
2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1621.08	29.80	30.01
Demand (MW)	2 017	1 844	1 844
Available capacity (MW)	2 504	2 483	2 494
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1636.56	30.90	30.90
Demand (MW)	2 006	1 878	1 875
Available capacity (MW)	2 497	2 351	2 374

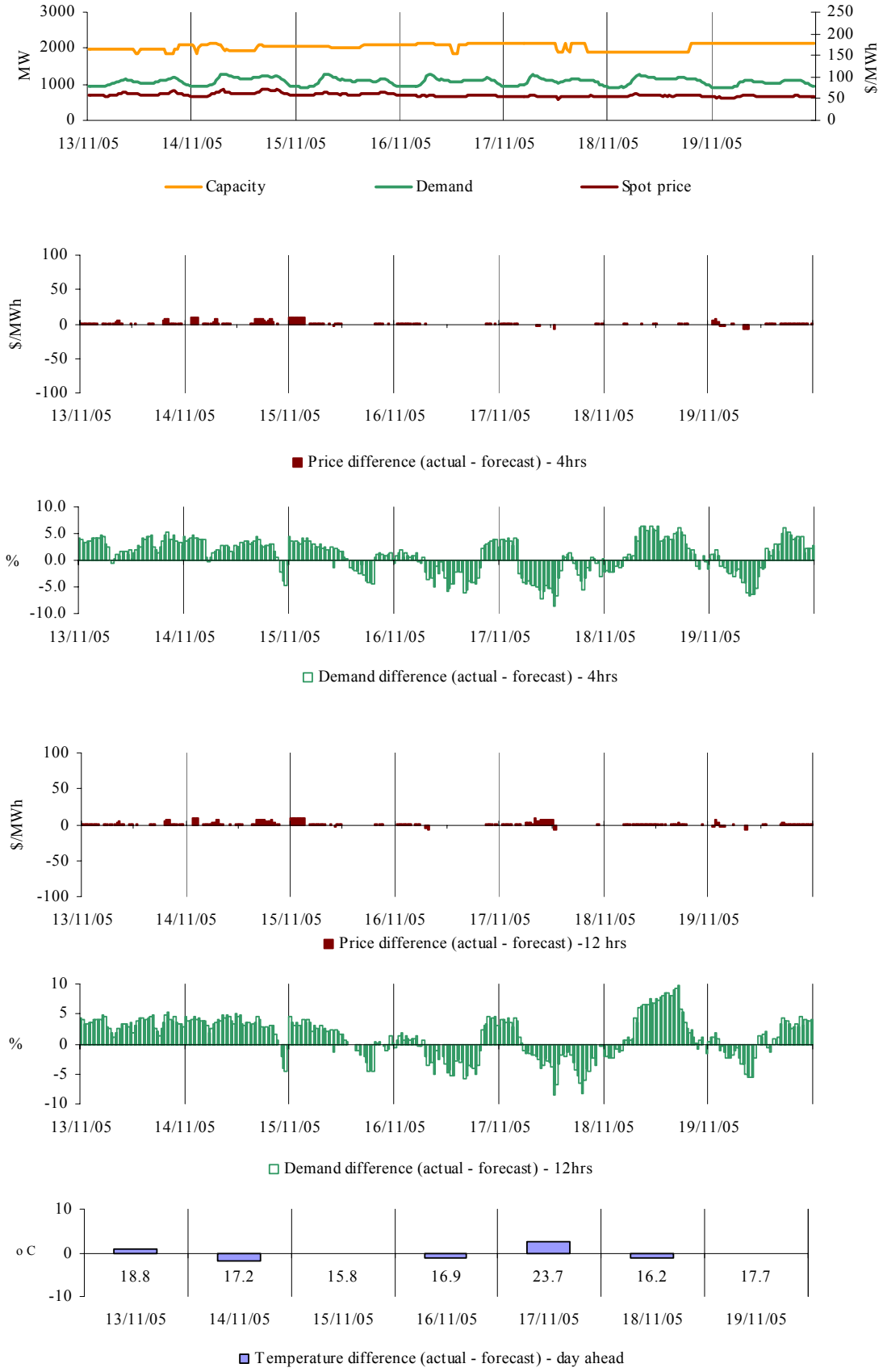
Conditions at the times saw demand as much as 170MW higher than forecast and above 2 000MW for the first time since August. There was only 40MW of capacity within South Australia priced between $30/MWh and $9 000/MWh - all at Torrens Island. As a result, small increases in demand led to 5-minute dispatch prices above $9,000/MWh on four separate occasions. These price spikes occurred at 11.10am, 12.35pm, 1.35pm and 3.35pm.

The limit on flows across MurrayLink into South Australia was consistently around 40MW lower than forecast. Limits on the Heywood interconnector were as forecast at 460MW.

Following the price spike at 11.10am, TRU Energy rebid 380MW, or more than half, of its capacity from prices greater than $9 000/MWh to below zero for the remainder of the trading interval. The rebid reasons given were "Market conditions – 5/30 minute settlement conditions" and "Plant test – unit online for testing redist MW". Similar rebids at 12.32pm and 1.32pm followed the price spikes at 12.35pm, 1.35pm. These rebids shifted as much as 460MW of its capacity to prices below zero. The rebid reason given was "Market conditions – 5/30 minute settlement conditions." These rebids were effective for the remainder of the trading interval.

At 11.22am, effective immediately, International Power rebid 57MW of capacity at Pelican Point from prices around $30/MWh to below zero. The rebid reason given was "Prices below SA PD". At 11.52am, 57MW of capacity was shifted from prices around $30/MWh to $150/MWh. The rebid reason given was "Change in PD level". This capacity was rebid into negative prices following the 12.35pm and 1.35pm price spikes, effective for the remainder of the trading interval. The rebid reasons given were "Ambient limit" and "SA price below PD level".

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



There were no occasions in Tasmania where the spot price was greater than three times the weekly average price of $58/MWh.

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

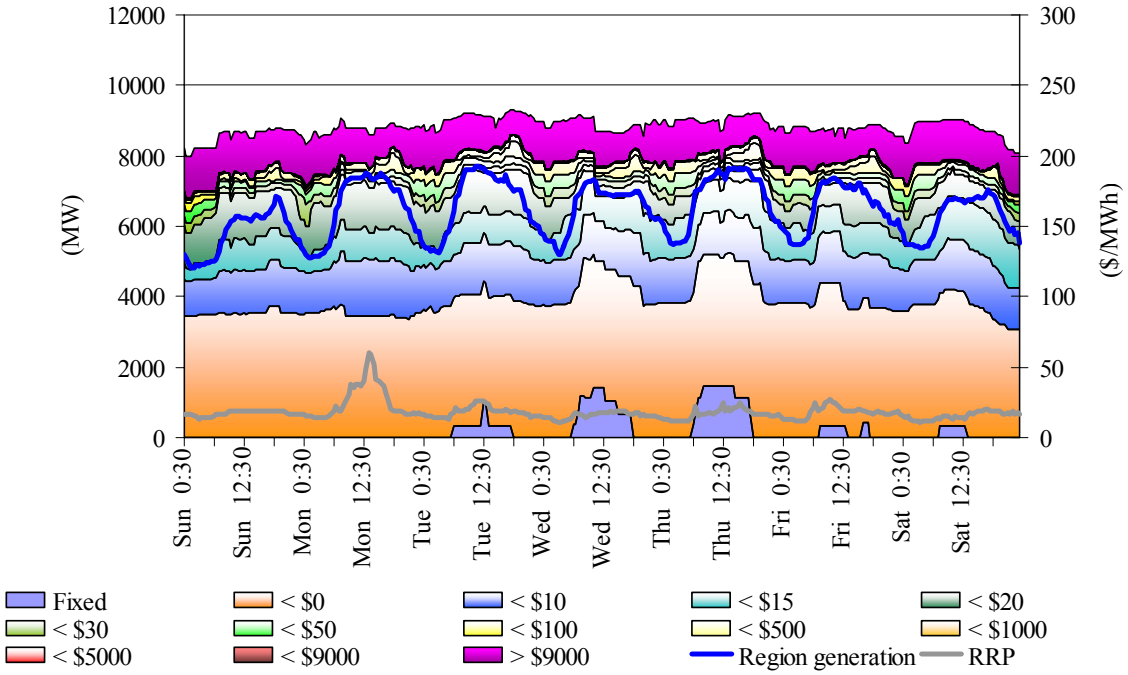


Figure 52: New South Wales closing bid prices, dispatched generation and spot price

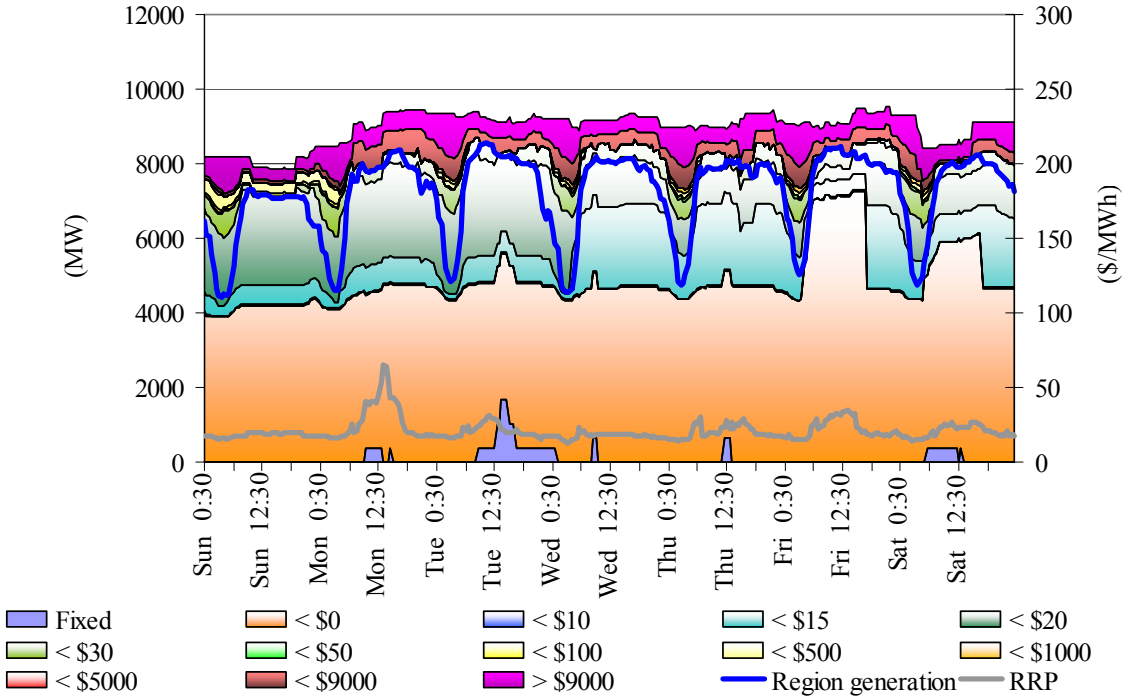


Figure 53: Victoria closing bid prices, dispatched generation and spot price

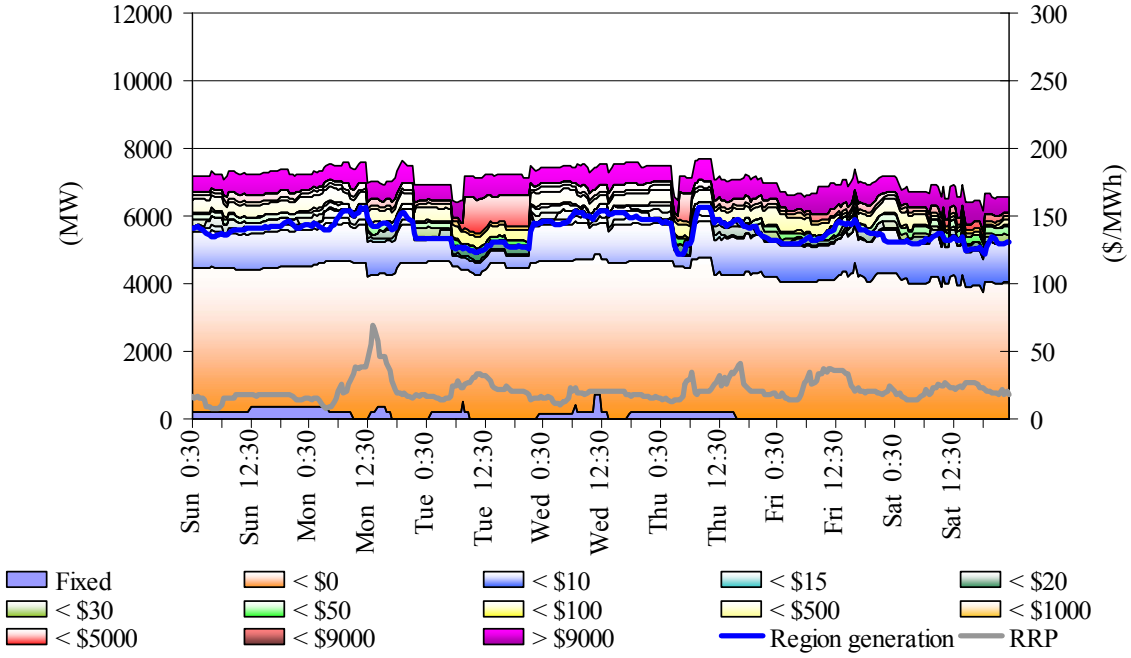


Figure 54: South Australia closing bid prices, dispatched generation and spot price

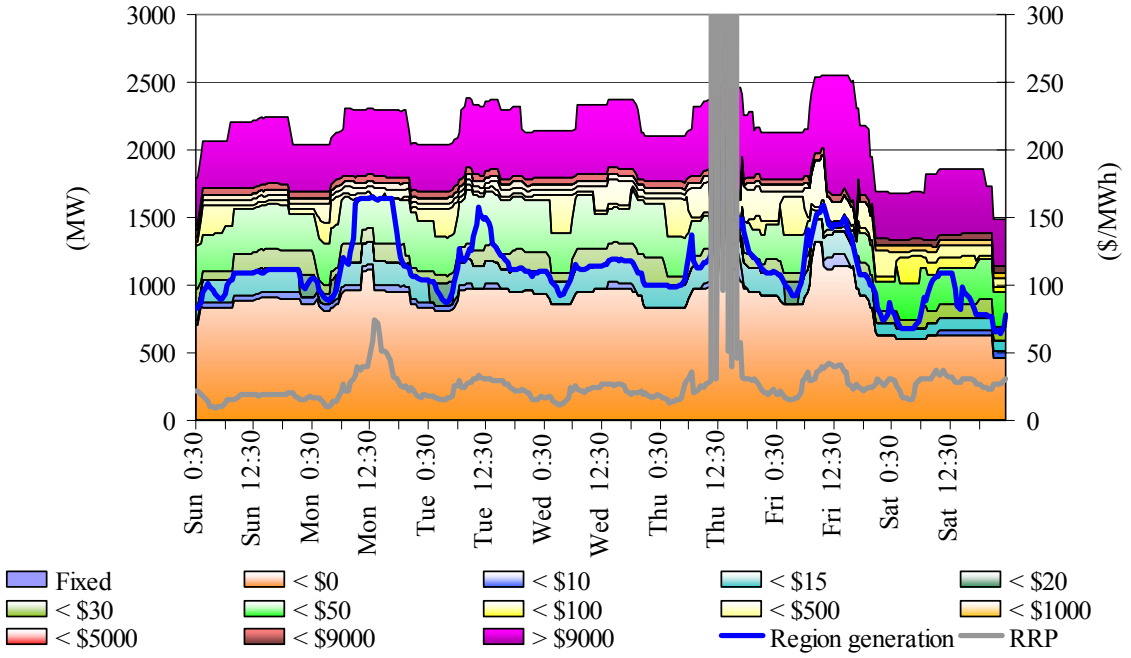
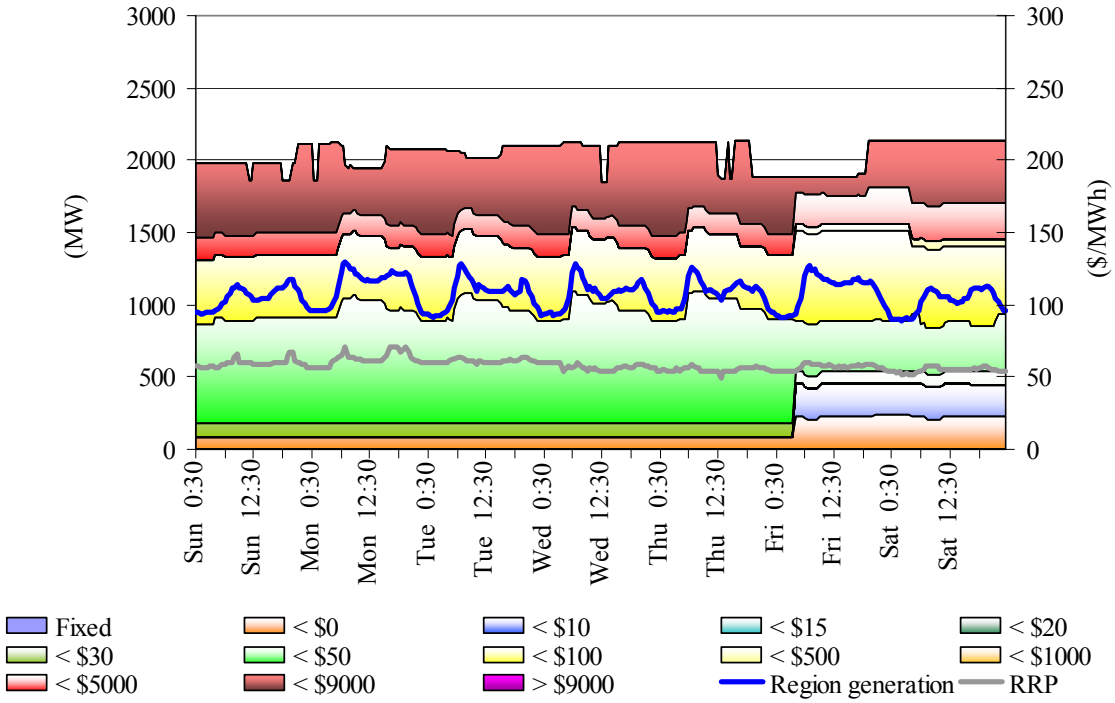


Figure 55: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was around $1 million or one per cent of the total turnover in the energy market. An outage in Victoria on Monday increased the requirement for lower 5-minute contingency services for the remainder of the week. This outage was first notified the previous Friday. The outage is expected to continue until 28 November. The additional requirement for lower 5-minute services, increased the cost for that service from $1 000 the previous week to $422 000. 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	2.70	0.74	1.17	1.67	0.31	2.45	7.53	2.10
Previous week	1.41	0.70	1.14	1.13	0.26	0.31	1.74	2.29
Last quarter	1.62	0.91	1.00	1.36	0.20	0.64	2.29	1.56
Market Cost ($1000s)	$146	$40	$81	$37	$3	$104	$422	$46
% of energy market	0.18%	0.05%	0.10%	0.05%	0.00%	0.13%	0.52%	0.06%

The total cost of ancillary services in Tasmania for the week was around $120 000 or one per cent of the total turnover in the energy market in Tasmania. Figure 57 summarises for Tasmania the prices and costs for the eight frequency control ancillary services.

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	1.11	1.05	1.05	1.06	1.07	1.05	1.05	1.05
Previous week	1.06	1.05	1.05	1.05	1.07	1.06	1.06	1.06
Last quarter	19.40	1.05	1.14	2.25	6.25	1.06	1.06	1.26
Market Cost ($1000s)	10	10	10	9	14	31	26	9
% of energy market	0.10	0.10	0.09	0.08	0.13	0.30	0.25	0.08

Figure 58 shows the daily breakdown of cost for each frequency control ancillary service, and highlights the additional costs resulting from the network outage.

Figure 58: daily frequency control ancillary service costs

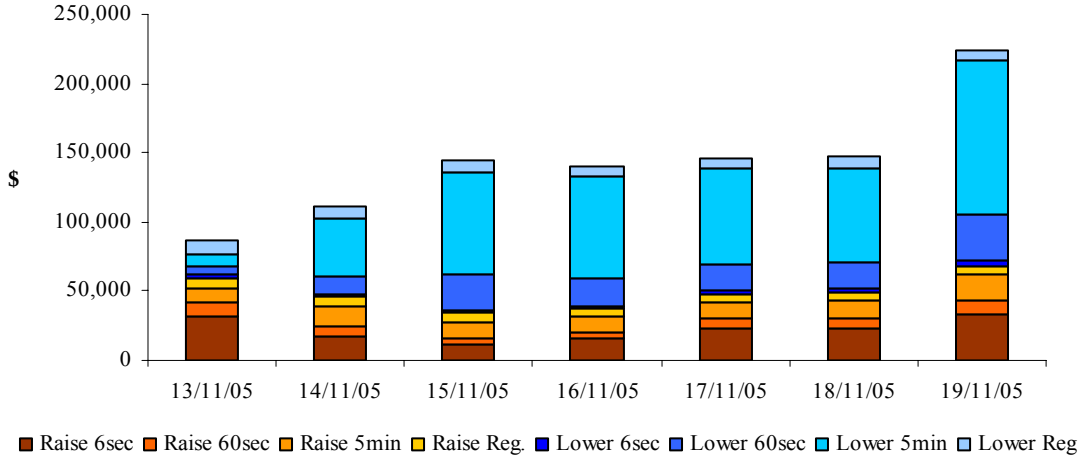
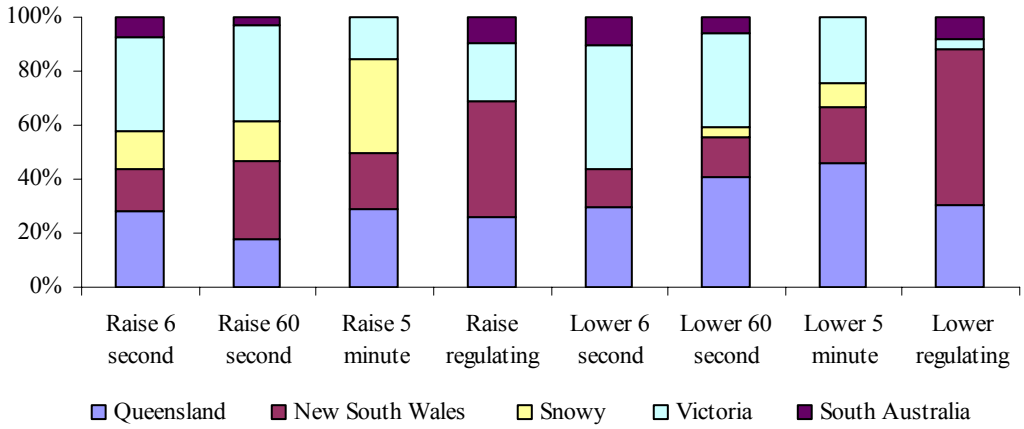


Figure 59 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

Figure 59: regional participation in ancillary services on the mainland



Figures 60 and 61 show 30-minute prices for each frequency control ancillary service throughout the week.

Figure 60: prices for raise services

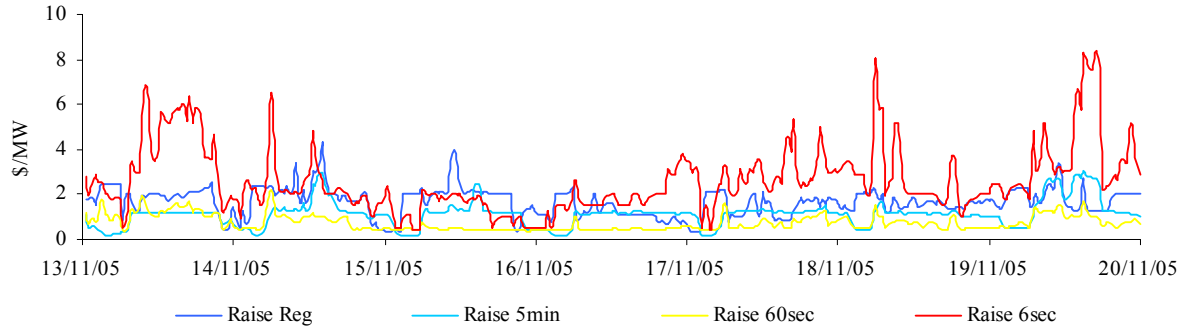


Figure 60A: prices for raise services - Tasmania

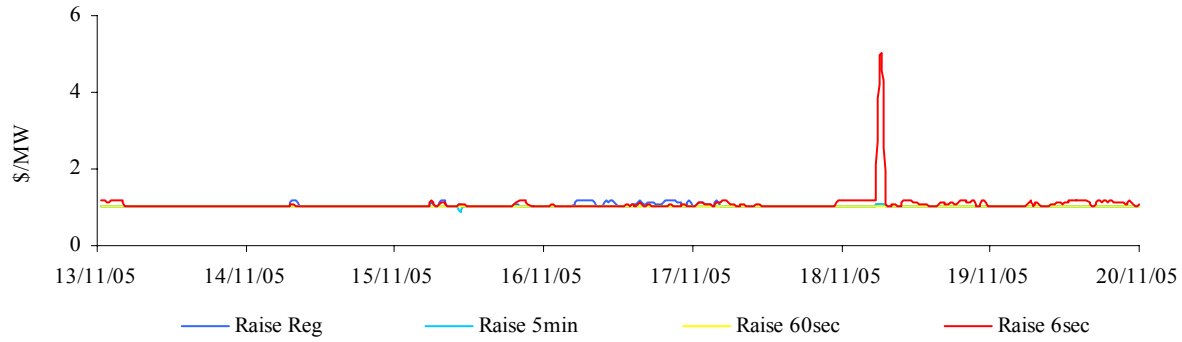


Figure 61: prices for lower services

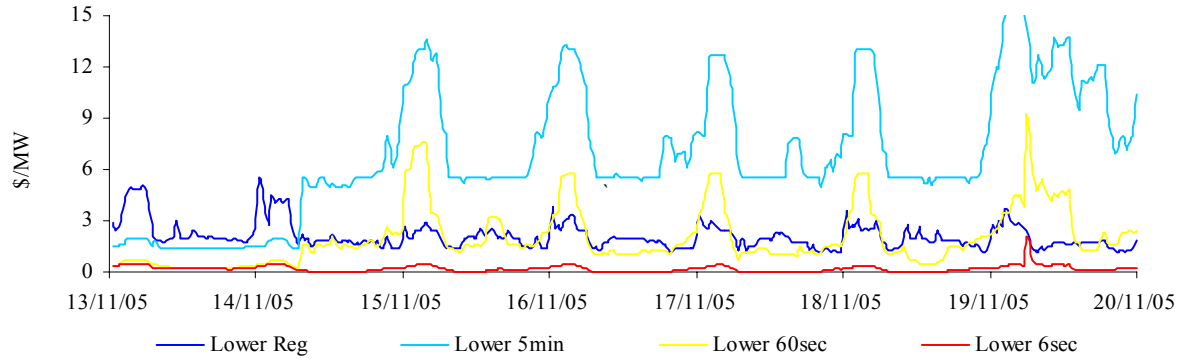
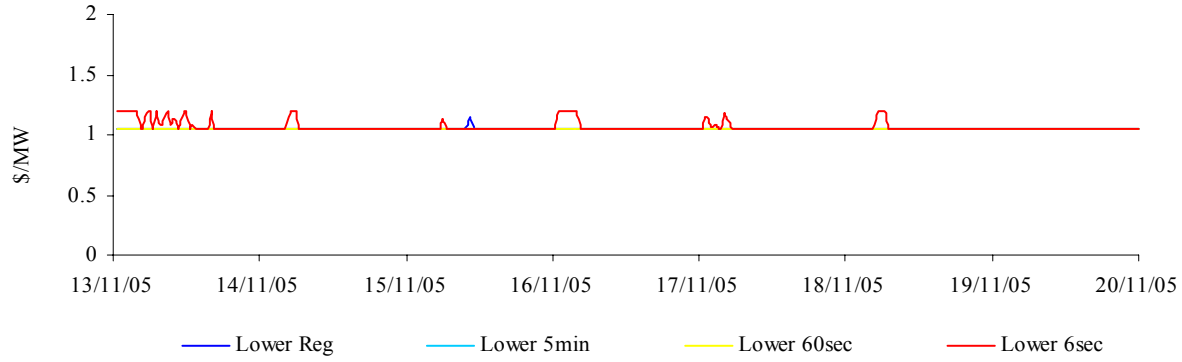


Figure 61A: prices for lower services - Tasmania



Figures 62 and 63 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

Figure 62: raise requirements

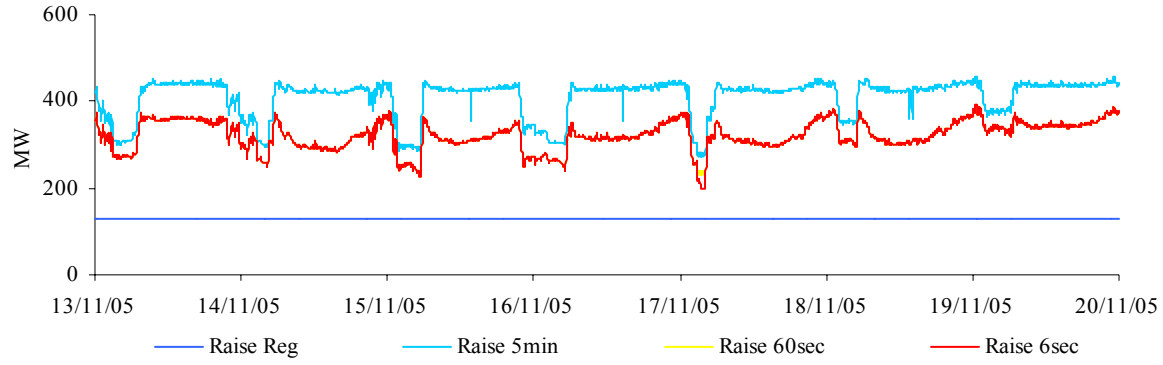


Figure 62A: raise requirements - Tasmania

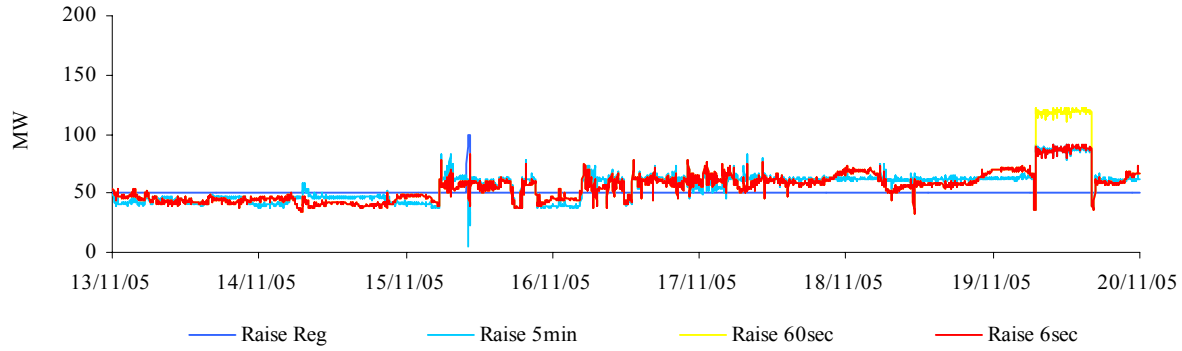


Figure 63: lower requirements

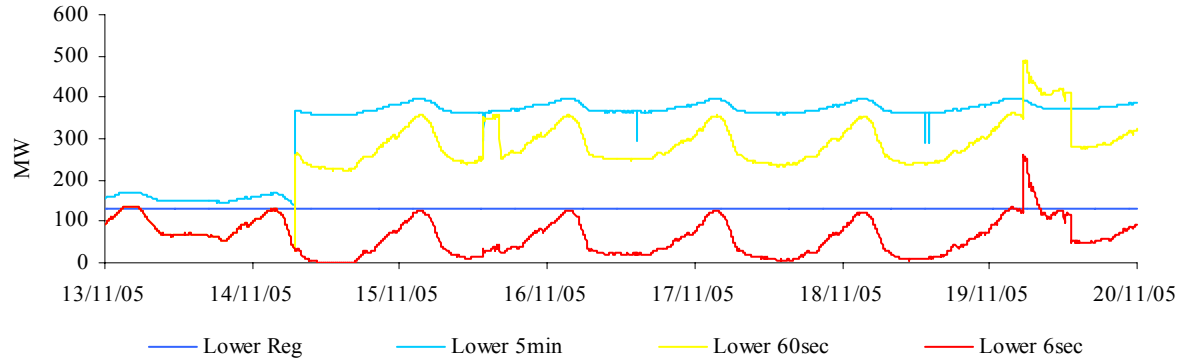
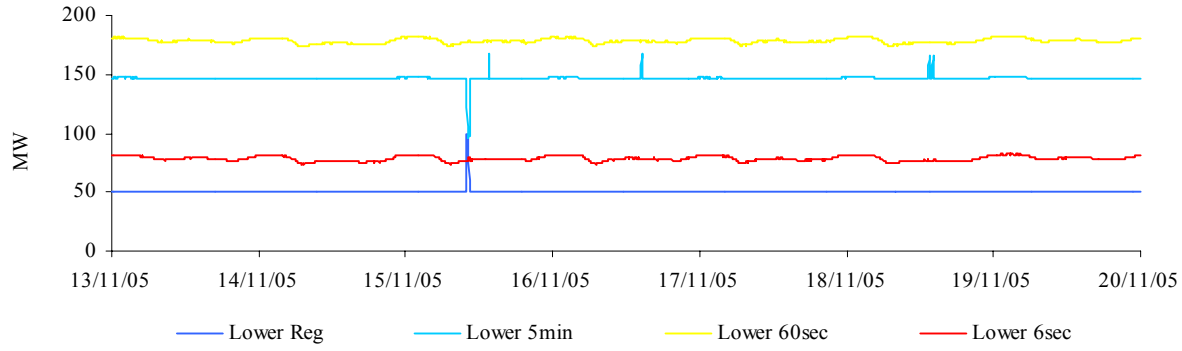


Figure 63A: lower requirements - Tasmania



Australian Energy Regulator
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