

11 November – 17 November 2007

Summary

Spot prices for the week averaged around \$35/MWh in Queensland and New South Wales and \$47/MWh in Tasmania.

Early Tuesday morning the Yallourn open cut coal mine in the Latrobe Valley collapsed, leading to a reduction in output from the power station by around 800 MW for the remainder of the week. This reduction in capacity combined with near record demand in South Australia later in the week led to average prices of around \$63/MWh there and in Victoria. This represents a doubling of prices compared to the previous week.

Turnover in the energy market in the week ended 17 November was \$179 million. The total cost of ancillary services for the week was \$2 million or 1 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 53, or 16 per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 17 per cent of all trading intervals across the market. These variations were most frequent in South Australia, occurring in over a third of all trading intervals.

Energy prices

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

Figure 1: national demand and spot prices

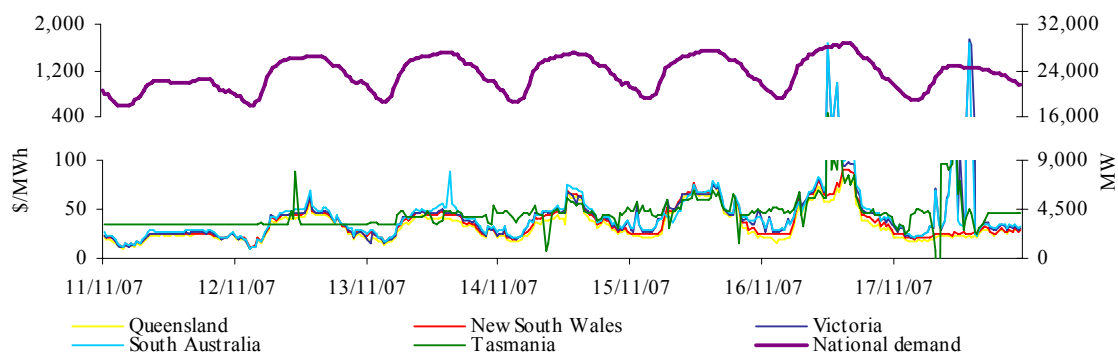


Figure 2: volume weighted average spot price for energy market (\$/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	35	38	63	64	47
Previous week	120	29	30	32	37
Same quarter last year	23	27	29	40	37
Financial year to date	61	53	54	54	56
% change from previous week*	▼71%	▲31%	▲109%	▲100%	▲27%
% change from same quarter last year**	▲50%	▲38%	▲118%	▲59%	▲28%
% change from year to date***	▲151%	▲53%	▲51%	▲39%	▲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

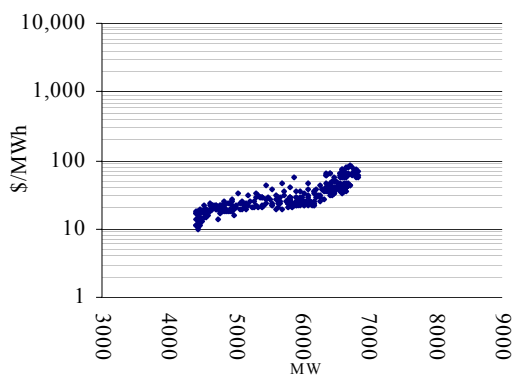


Figure 4: New South Wales

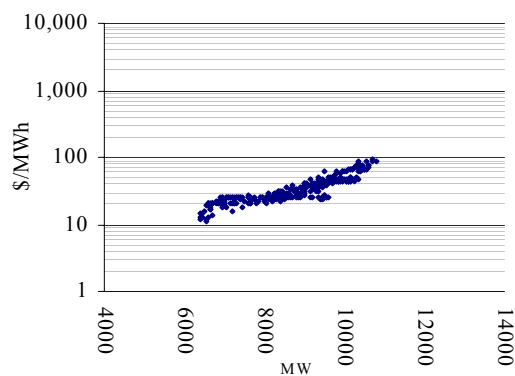


Figure 5: Victoria

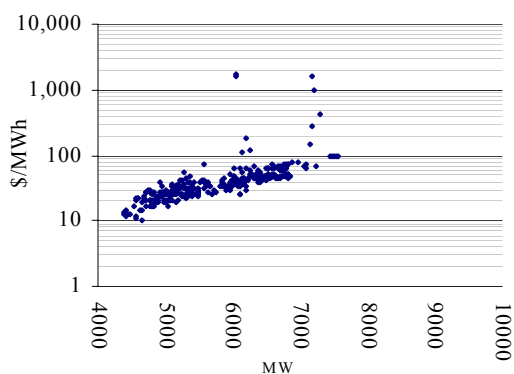


Figure 6: South Australia

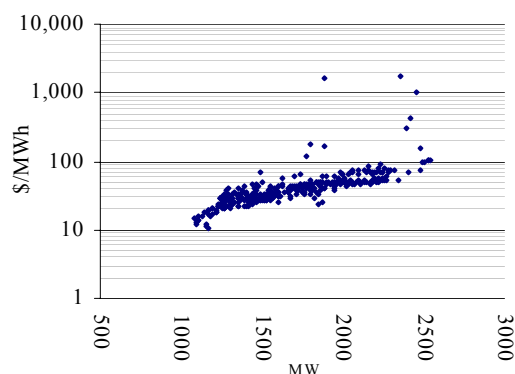
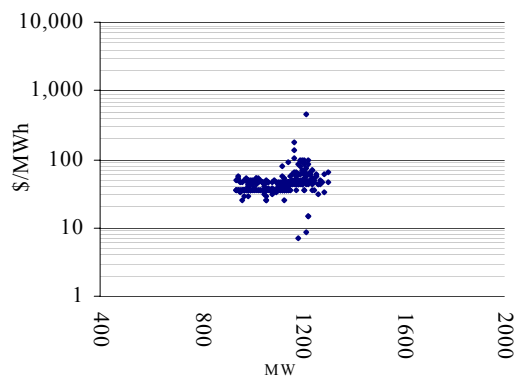


Figure 7: Tasmania



Maximum spot prices for the week were between \$82/MWh in Queensland and \$1689/MWh in South Australia. Figure 8 compares the weekly price volatility index with the averages for the previous week and the same quarter last year.

Figure 8: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.83	0.75	0.67	0.72	0.60
Previous week	0.34	0.37	0.45	0.40	0.28
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>

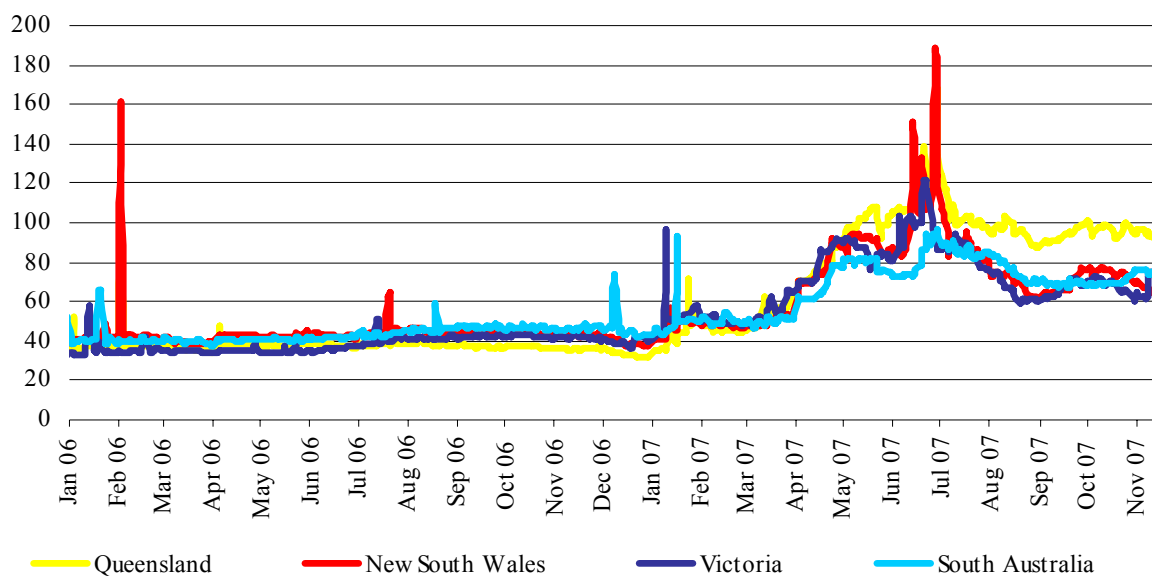
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2006.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	92.06	90.55	89.84	90.77	89.79
New South Wales	64.78	63.79	64.66	69.51	69.82
Victoria	62.57	61.27	63.71	72.18	75.22
South Australia	75.87	75.16	78.74	82.33	84.56

* 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

No low reserve conditions were forecast.

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

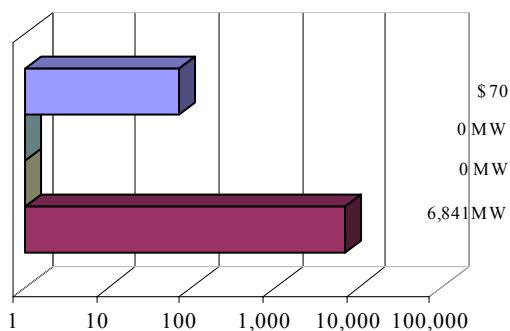


Figure 12: New South Wales

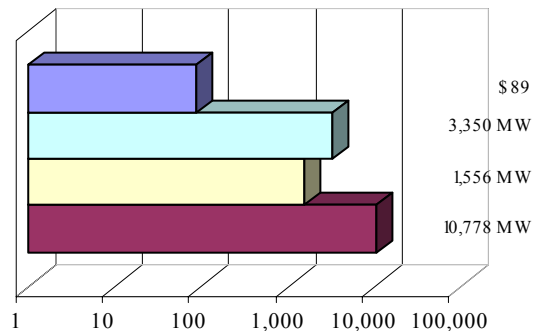


Figure 13: Victoria

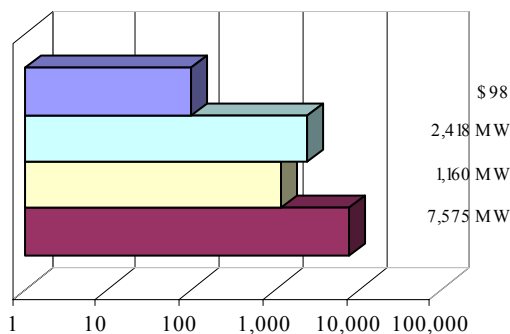


Figure 14: South Australia

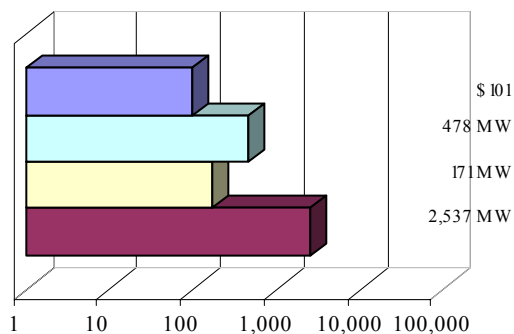
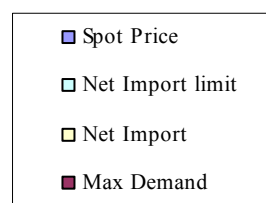
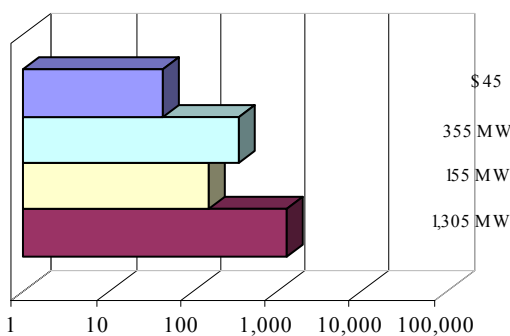


Figure 15: Tasmania



Price variations

There were 53 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

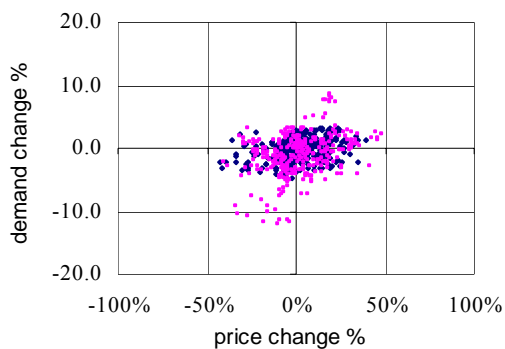


Figure 17: New South Wales

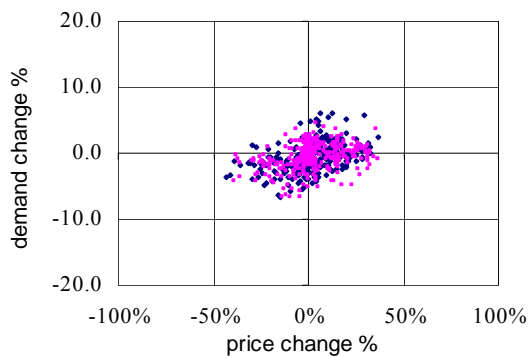


Figure 18: Victoria

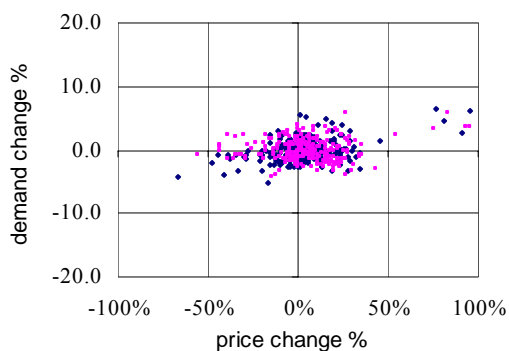


Figure 19: South Australia

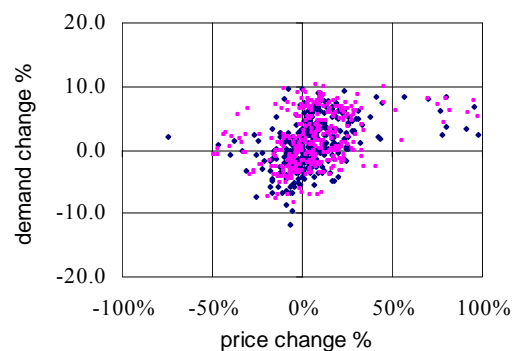


Figure 20: Tasmania

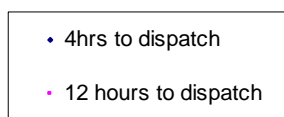
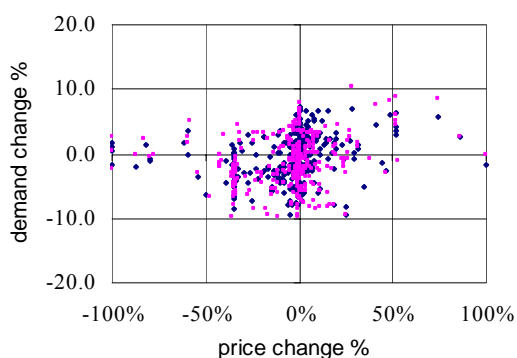
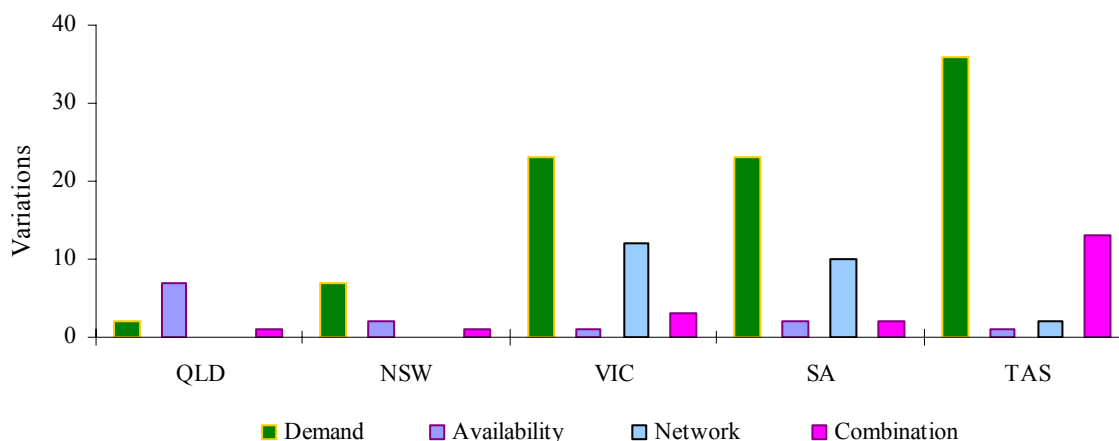


Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

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.

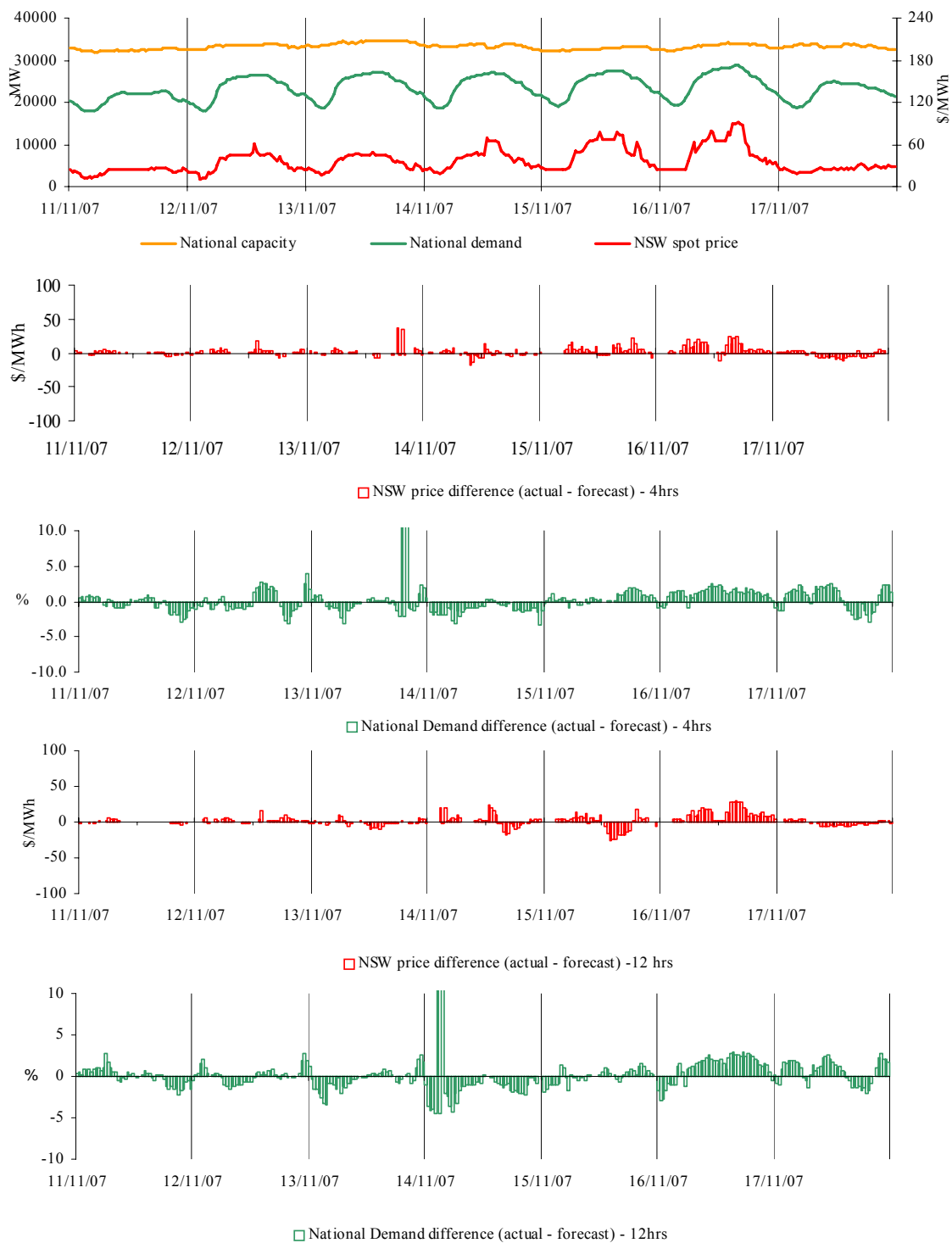
On a regional basis the differences between the maximum temperature and the temperature forecast at around 6.00 pm the day before are also included.

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

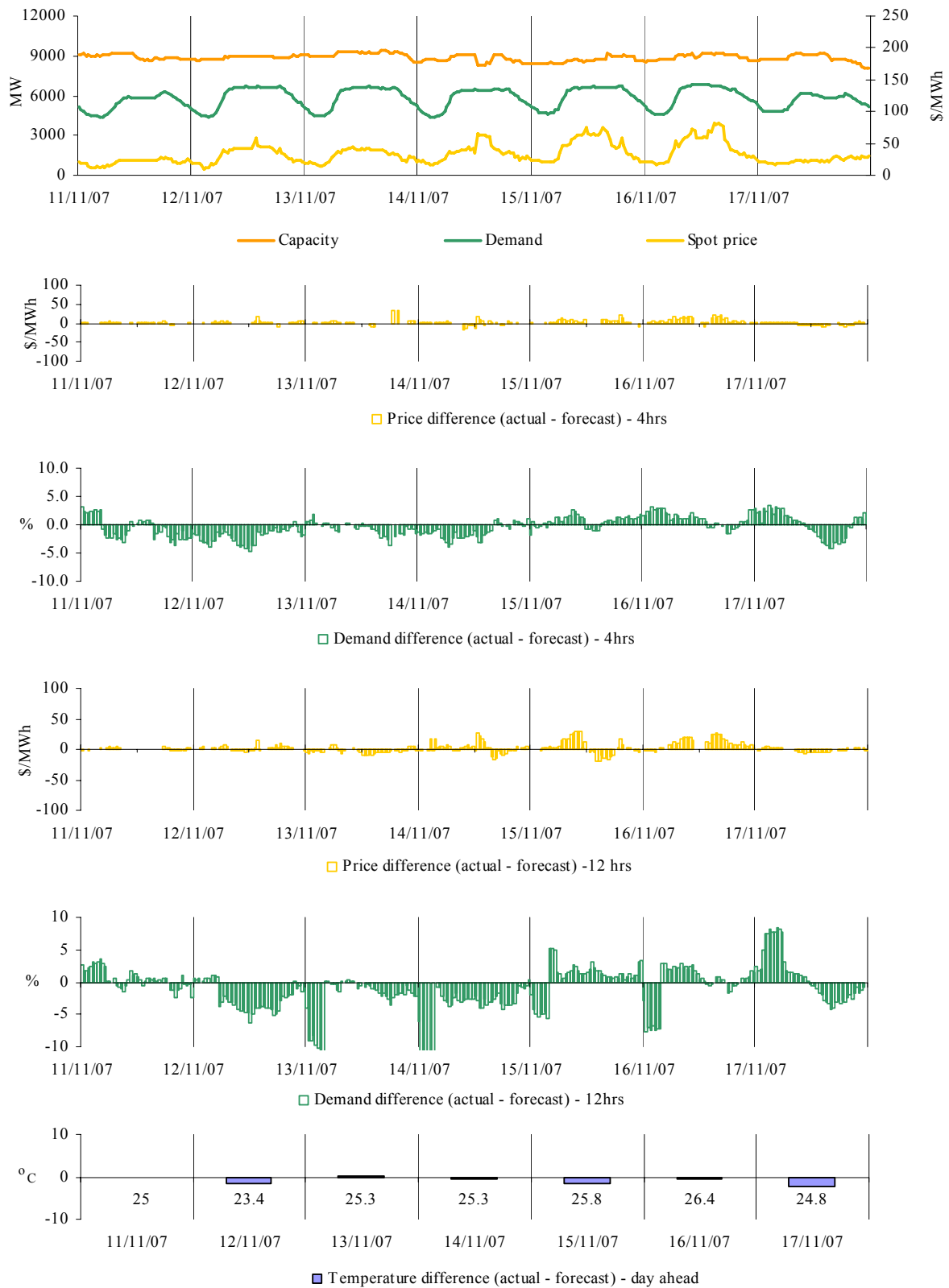


There was no occasion where the spot prices aligned nationally and the New South Wales price was greater than three times the New South Wales weekly average price of \$38/MWh.

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

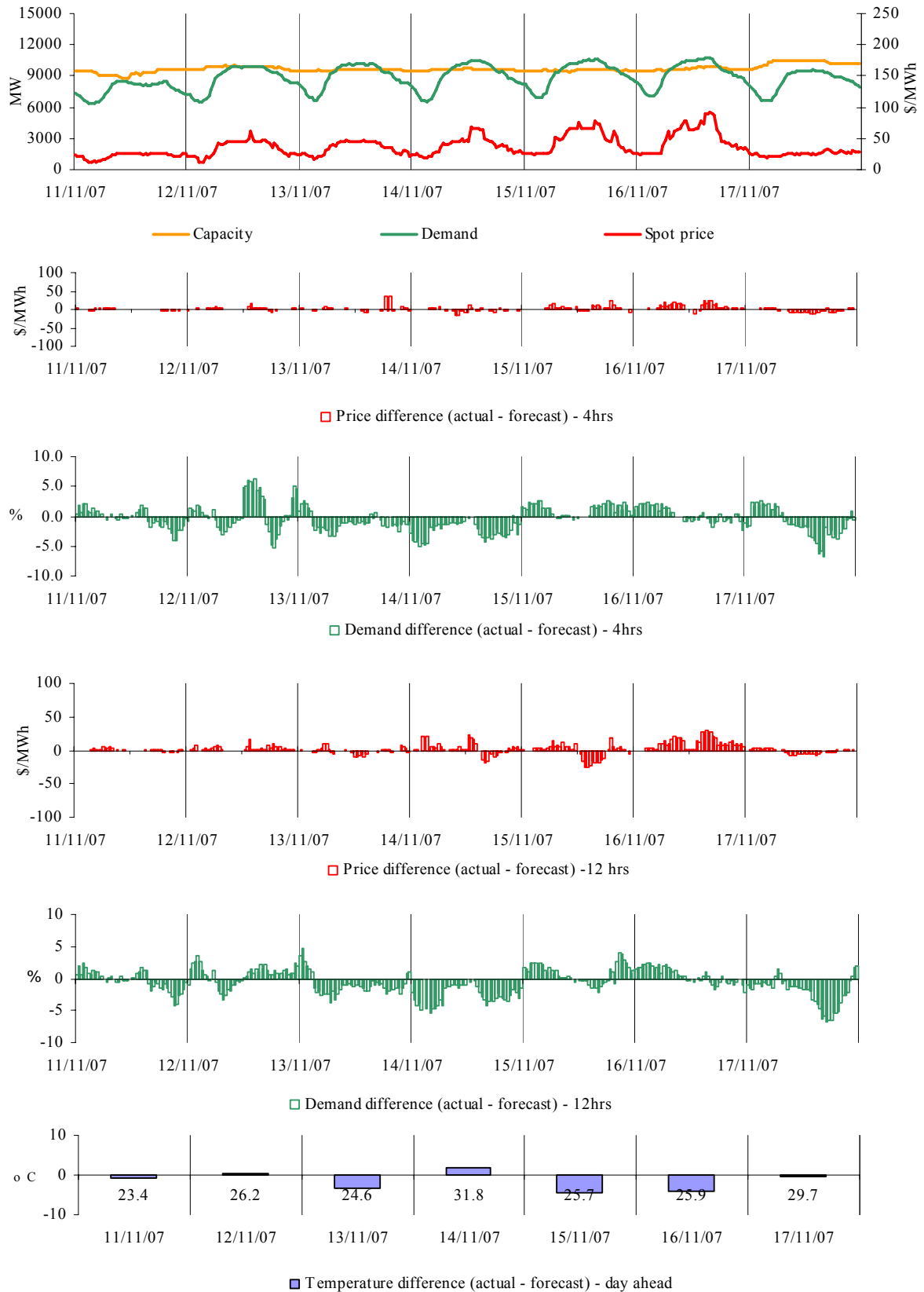


There was no occasion where the spot price in Queensland was greater than three times the Queensland weekly average price of \$35/MWh.

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

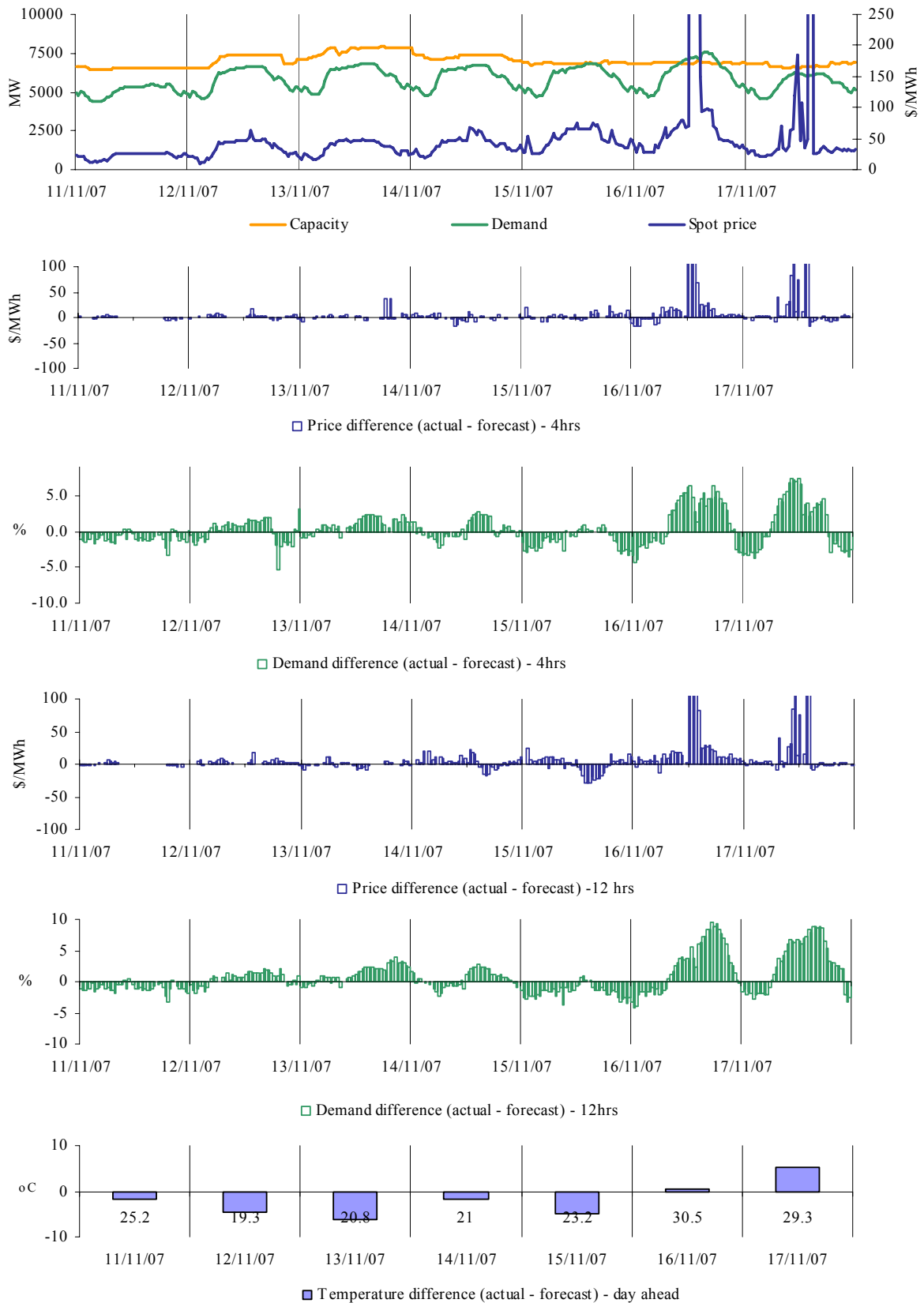


There was no occasion where the spot price in New South Wales was greater than three times the New South Wales weekly average price of \$38/MWh.

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 six occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of \$63/MWh.

Friday, 16 November

12:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1594.7	66.91	67.62
Demand (MW)	7169	6727	6903
Available capacity (MW)	6789	6873	6940
1:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	284.54	66.9	68.27
Demand (MW)	7184	6731	6956
Available capacity (MW)	6858	6868	6935
1:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	413.59	78.97	67.93
Demand (MW)	7298	6956	6883
Available capacity (MW)	6961	6868	6935
2:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	972.63	81.87	68.38
Demand (MW)	7194	7003	6929
Available capacity (MW)	6965	6878	6935

Conditions at the time saw demand 450 MW higher than forecast four hours ahead with available capacity close to that forecast.

A planned outage of the Wagga to Yanco (994) 132 kV line in southern New South Wales commenced at around 5.30 am. With the line out of service and demand in the area higher than forecast, NEMMCO's real-time contingency analysis tool detected potential problems with the operation of the network. NEMMCO discussed the security issues with TransGrid who elected to disarm the Buronga to Darlington Point tripping scheme, an automatic network control scheme design to protect the system when certain network elements in south west New South Wales fail. NEMMCO then invoked the relevant network outage constraints

The constraints were invoked between 11.15 am and 2.30 pm and significantly reduced the capability for southern flows across the Victoria to Snowy interconnector. The affects of these constraints were not reflected in market forecasts, which showed a limit on flow south from Snowy into Victoria of almost 1250 MW. In dispatch, these constraints set the limit to as low as 220 MW, or 1000 MW less than forecast. Actual flows south were subsequently reduced by as much as 380 MW from the forecasts.

As demand around Wagga continued to rise, further exacerbating the problem, NEMMCO and Transgrid agreed to reconfigure the 132kV network around Wagga, which alleviated the issue by 2.30 pm.

During this period the five-minute price varied between \$70/MWh and \$8756/MWh. At the time there was only 99 MW of capacity in Victoria and South Australia priced between \$50/MWh and \$5000/MWh.

At 12.51 pm, first used at 1 pm, LYMMCO rebid 120 MW of capacity across Loy Yang A from prices of less than \$20/MWh to around \$5000/MWh. The rebid reason given was "Variation B/W act and f/casts". This rebid was effective until 3.30 pm. At 2.31 pm, this rebid was reversed, returning capacity to the previous prices. The rebid reason given was "Material change in market conditions".

There was no significant other rebidding.

Saturday, 17 November

2:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1726.59	35.78	32.35
Demand (MW)	6056	5824	5627
Available capacity (MW)	6635	6646	6676
2:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1644.2	38.26	32.65
Demand (MW)	6048	5815	5611
Available capacity (MW)	6629	6671	6676

Conditions at the time saw demand around 250 MW higher than forecast four hours ahead and 420 MW higher than forecast 12 hours ahead. Available capacity was close to that forecast four and 12 hours ahead.

At 5.35 am a planned outage in southern New South Wales for construction of network related to the new Uranquinty power station commenced. Constraints used to manage this outage began reducing the Murraylink limit on flows into South Australia from Victoria to zero by 6.45 am.

Coincidentally, at 6.58 am, an unplanned outage of Murraylink occurred. Constraints were invoked to keep flows across this interconnector to zero. The Uranquinty outage was likely to have driven flows from South Australia to Victoria, counter price, had the loss of Murraylink not occurred.

The Murraylink outage then led to an increased impact of the Uranquinty outages on the Snowy to Victoria interconnector. The outage began reducing the limit on flows south from Snowy at 6.55 am and by 9 am flows were forced north, counter price. Northward flows continued to increase, reaching 730 MW at 2.25 pm. It is likely that significant counter price flows would not have occurred on the Victoria to Snowy interconnector had the Murraylink outage not occurred.

At around 2.25 pm, NEMMCO's real-time contingency analysis tool detected potential problems with the operation of the network. NEMMCO discussed the security issues with TransGrid who elected to reconfigure the 132kV network around Wagga which alleviated the issue by 2.30 pm.

Subsequently, counter-price flows ceased. By this stage, negative settlement residues had reached around \$700 000.

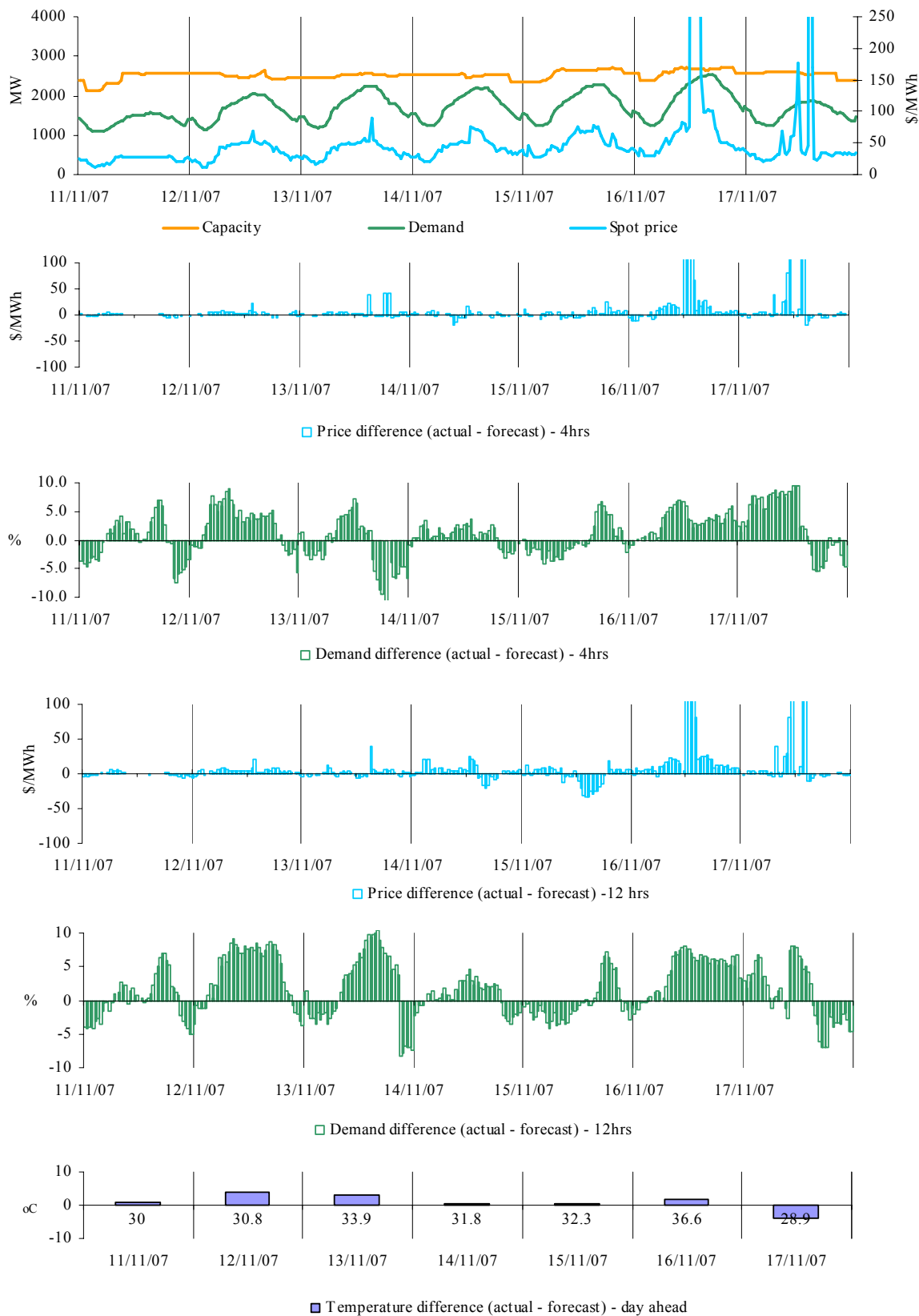
Prices during much of this period varied between \$30/MWh and \$300/MWh and reached \$10 000/MWh at 2 pm, coinciding with a five-minute increase in forced flows north of 140 MW. Under similar conditions at 2.15 pm a second price spike of \$9391/MWh occurred. There was around 150 MW of capacity priced between \$35/MWh and \$9000/MWh in Victoria and South Australia.

There was no significant rebidding.

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 five occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of \$64/MWh.

Friday, 16 November

12:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1688.54	71.4	71.25
Demand (MW)	2362	2201	2180
Available capacity (MW)	2691	2731	2746
1:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	298.35	71.08	72.87
Demand (MW)	2390	2245	2224
Available capacity (MW)	2688	2716	2746
1:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	426.78	85.87	73.5
Demand (MW)	2419	2333	2267
Available capacity (MW)	2662	2686	2746
2:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	998.56	89.6	75.12
Demand (MW)	2460	2375	2313
Available capacity (MW)	2685	2701	2746

Conditions at the time saw demand as much as 160 MW higher than forecast four hours ahead. Availability was close to forecast on the same basis.

Price outcomes reflected the conditions in Victoria.

Saturday, 17 November

2:00 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	1669.7	35	35
Demand (MW)	1883	1841	1787
Available capacity (MW)	2540	2650	2638

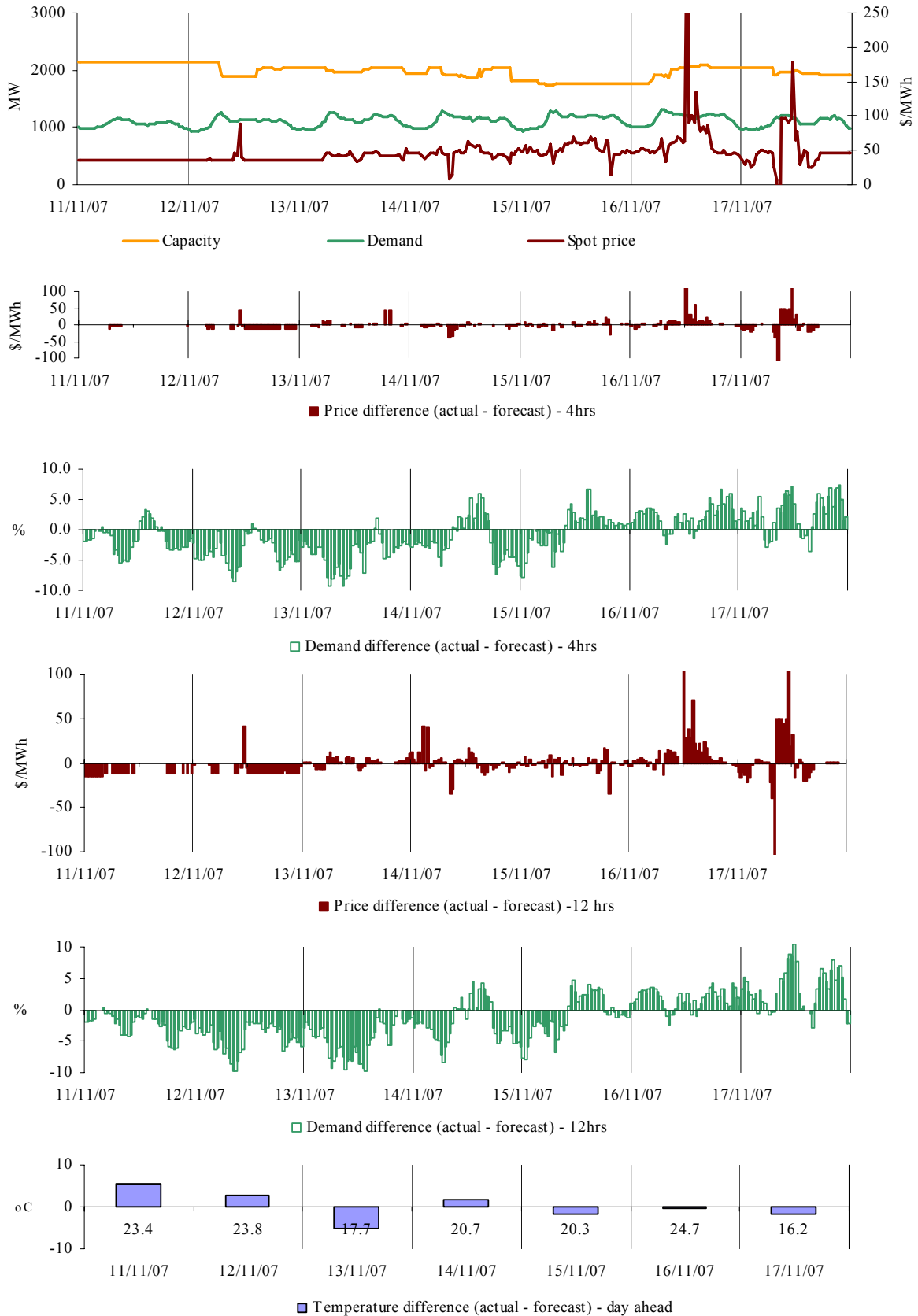
Conditions at the time saw demand close to forecast four hours ahead. Availability was around 110 MW lower on the same basis.

Price outcomes reflected the conditions in Victoria.

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 two occasions where the spot price in Tasmania was greater than three times the Tasmania weekly average price of \$47/MWh.

Friday, 16 November

12:30 pm	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	453.54	61.99	62.33
Demand (MW)	1218	1185	1185
Available capacity (MW)	2053	2005	2005

Conditions at the time saw demand and availability close to forecast four hours ahead.

Price outcomes reflected the conditions in Victoria.

Saturday, 17 November

11:30 am	Actual	4 hr forecast	12 hr forecast
Price (\$/MWh)	179.51	46.24	46.24
Demand (MW)	1168	1102	1067
Available capacity (MW)	1964	1905	1905

Conditions at the time saw demand and available capacity close to that forecast.

Price outcomes reflected the conditions in Victoria.

At 11.05 am there was a step change in the bidding profile of Hydro Tasmania, set up a day ahead, reduced the available capacity priced below \$100/MWh by around 590 MW.

There was no significant rebidding.

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

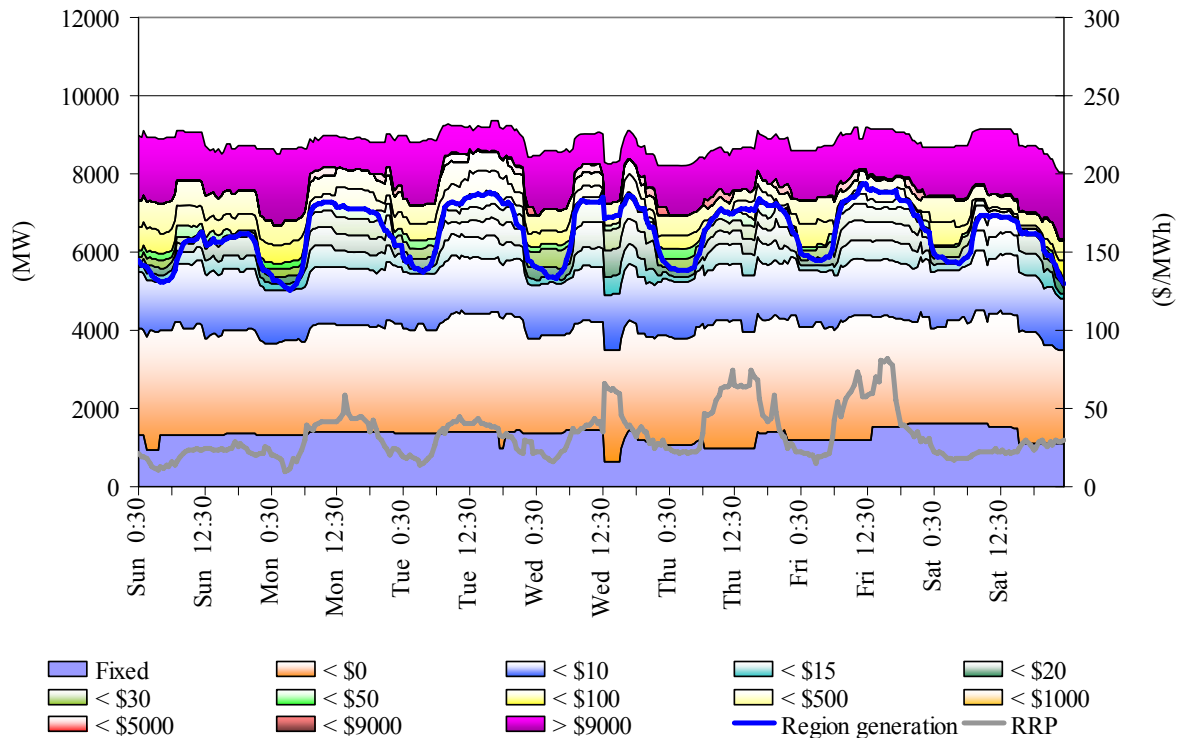


Figure 58: New South Wales closing bid prices, dispatched generation and spot price

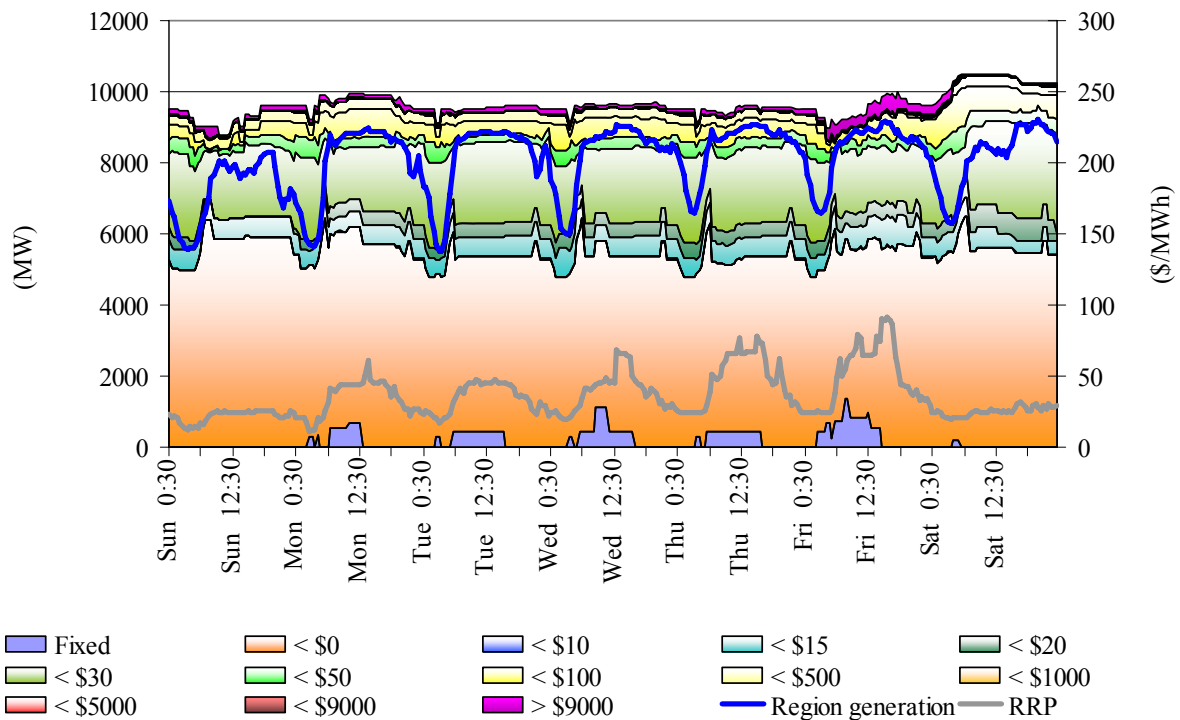


Figure 59: Victoria closing bid prices, dispatched generation and spot price

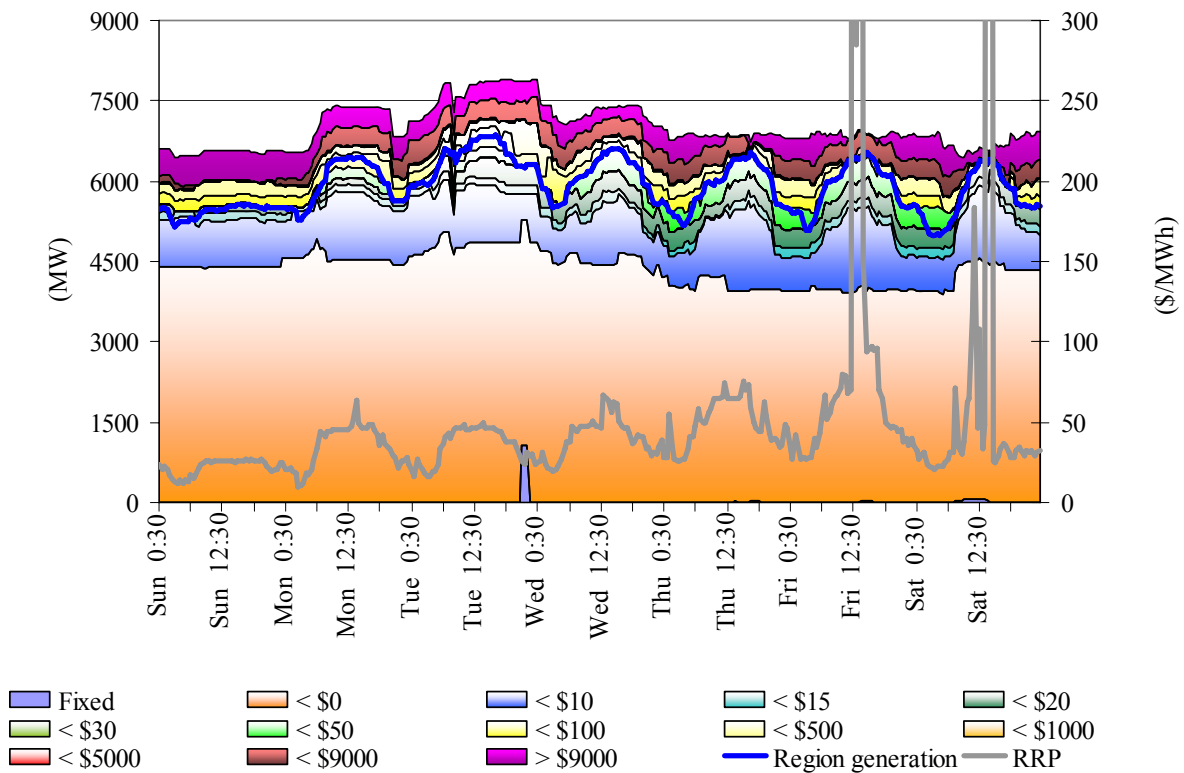


Figure 60: South Australia closing bid prices, dispatched generation and spot price

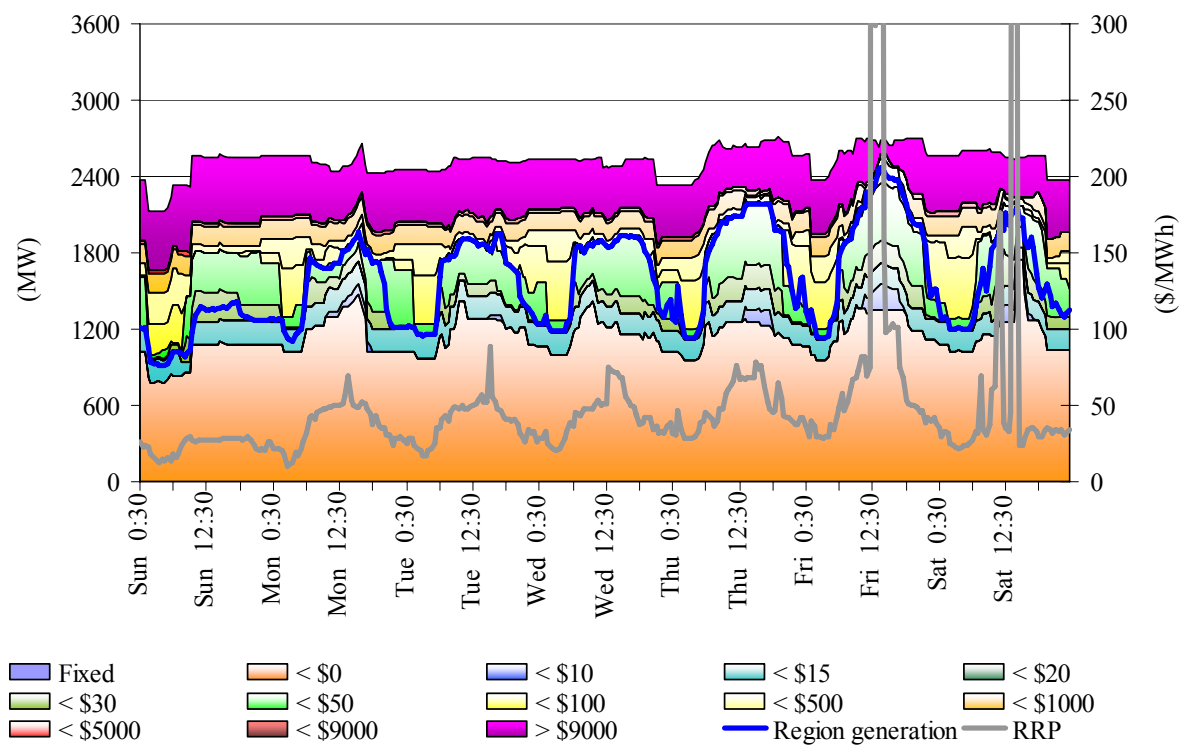
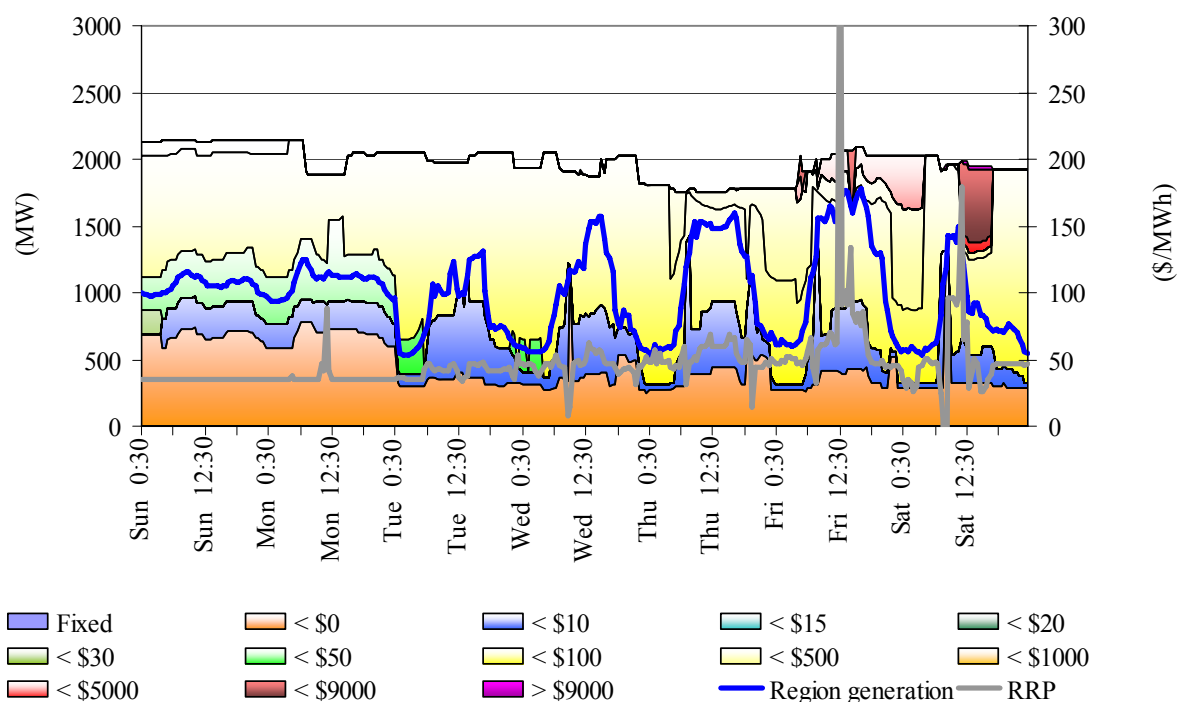


Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was \$1.5 million or 1 per cent of turnover in the energy market. A planned reduction in International Power’s Loy Yang B unit 3 at 3.05 am on Sunday saw a step change in the bid profile for energy and ancillary services. Loy Yang B unit 3 was being dispatched at 50 MW at the time, out of a total dispatch of 500 MW. This step change led to a short term price spike in the raise 6 second market. The price increased to \$4000/MW for the 3.05 am five-minute interval. An immediate rebid by International Power returned the availability of the service. 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)	13.13	2.36	7.26	3.03	0.23	0.59	1.39	1.99
Previous week (\$/MW)	4.60	1.08	3.55	2.17	0.54	0.27	0.54	1.72
Last quarter (\$/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost (\$1000s)	\$755	\$115	\$502	\$73	\$1	\$7	\$32	\$34
% of energy market	0.44%	0.07%	0.29%	0.04%	0.01%	0.01%	0.02%	0.02%

The total cost of ancillary services in Tasmania for the week was \$506 000 or 5.8 per cent of the turnover in the Tasmanian energy market. At 8.10 am Saturday morning the requirement for ancillary services increased in Tasmania as Basslink changed direction and entered the no-go zone. The price of raise 6 second service increased to more than \$2000/MW for 20 minutes. 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)	18.65	1.43	3.14	6.15	0.50	10.34	0.99	2.89
Previous week (\$/MW)	5.48	0.90	4.06	2.61	0.51	1.47	1.13	1.72
Last quarter (\$/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost (\$1000s)	\$177	\$33	\$56	\$34	\$3	\$171	\$15	\$16
% of energy market	2.03%	0.38%	0.64%	0.39%	0.03%	1.96%	0.17%	0.19%

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

Figure 64: daily frequency control ancillary service cost

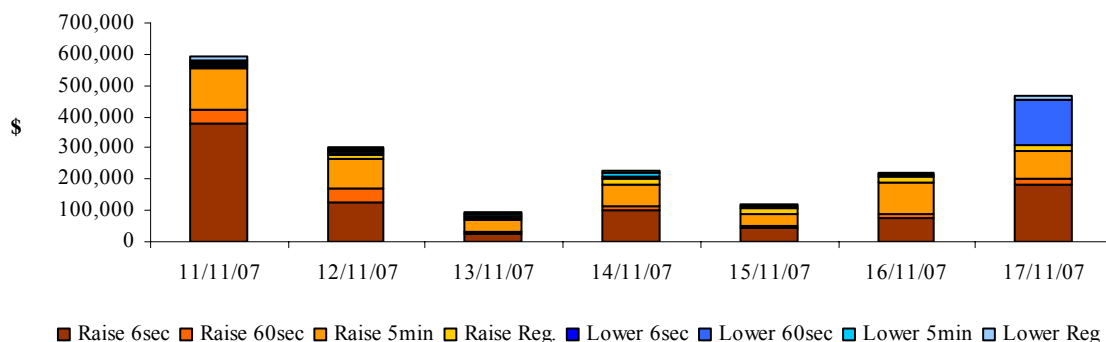
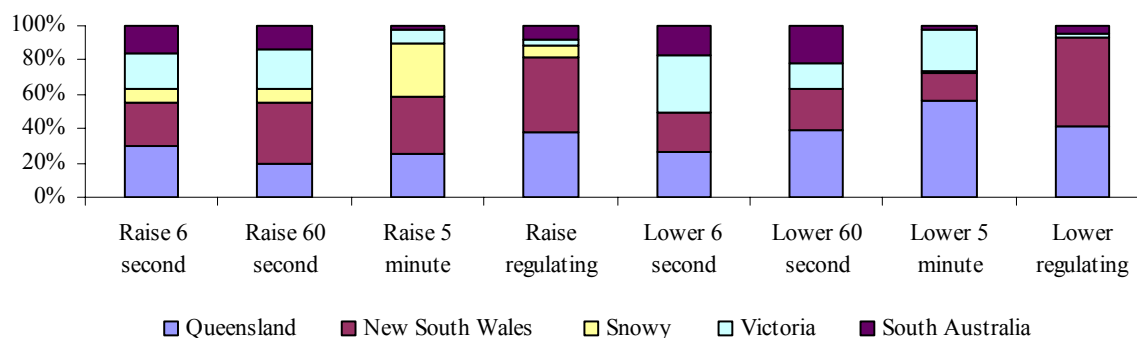


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

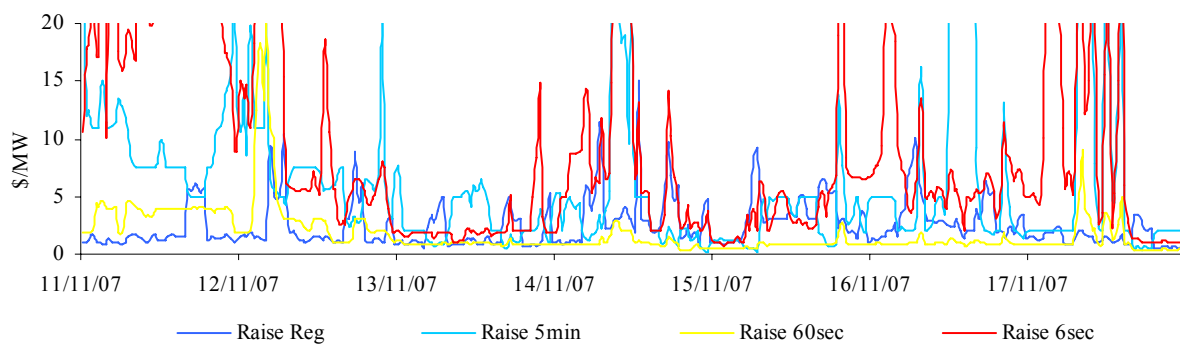


Figure 66A: prices for raise services – Tasmania

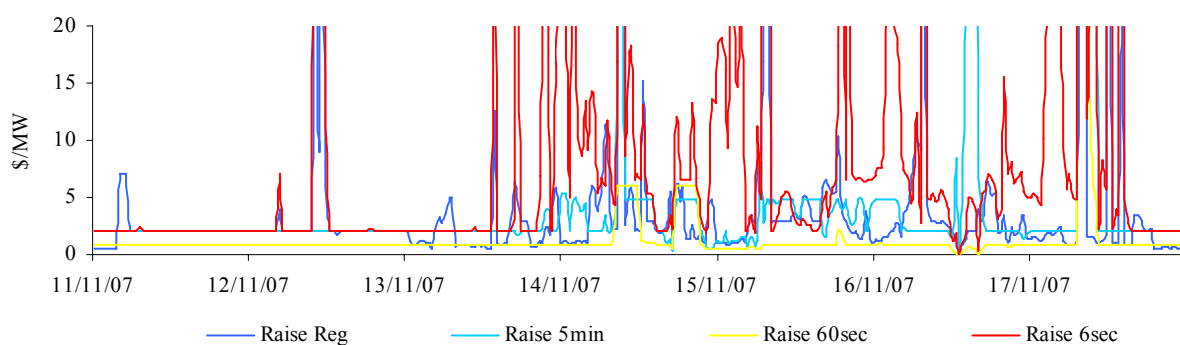


Figure 67: prices for lower services

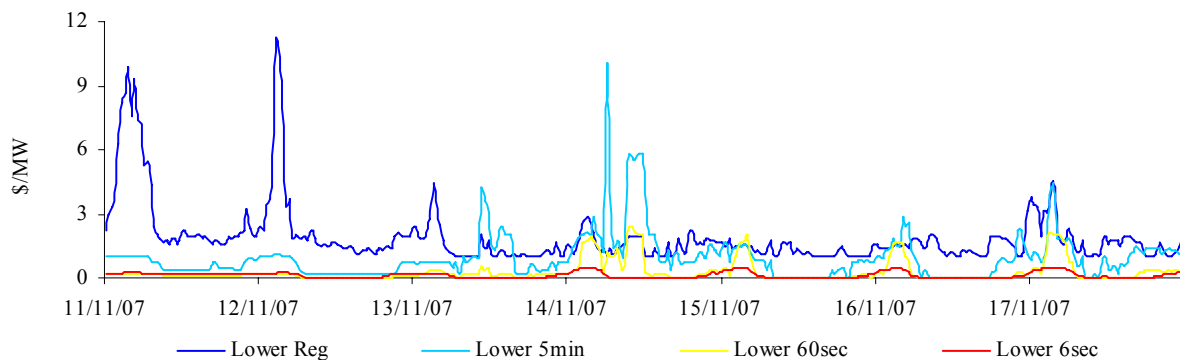
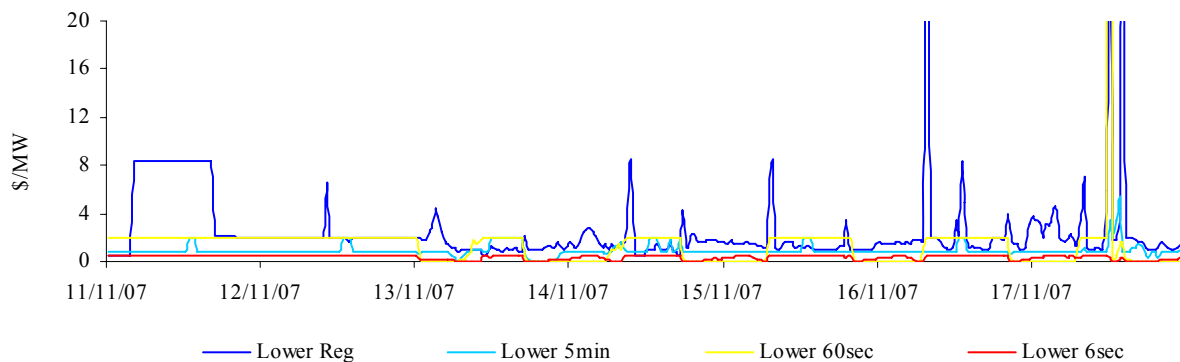


Figure 67A: prices for lower services – Tasmania



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

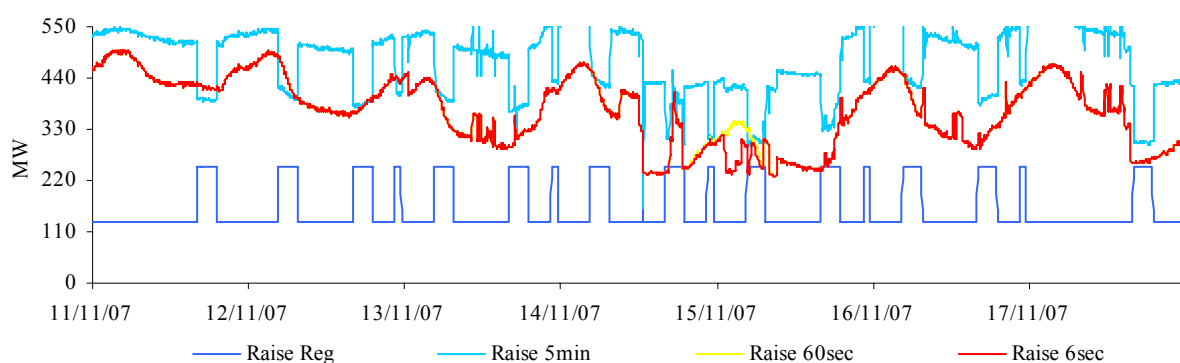


Figure 68A: raise requirements – Tasmania

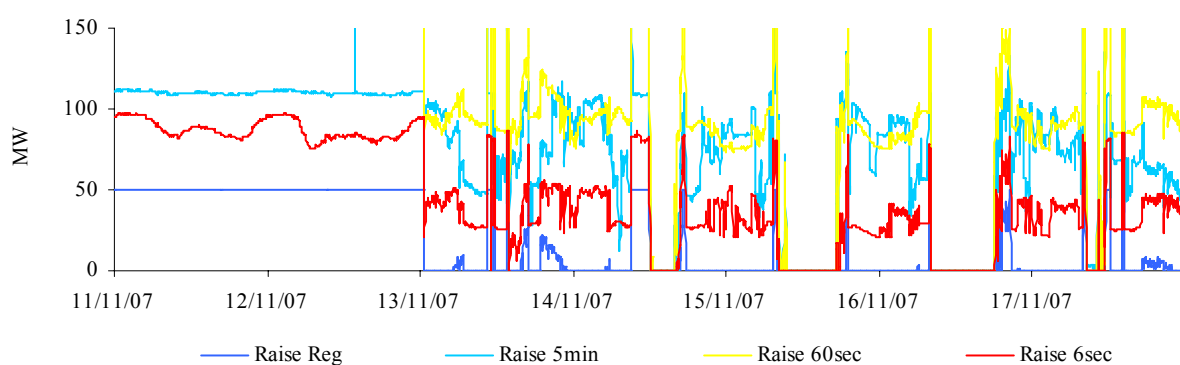


Figure 69: lower requirements

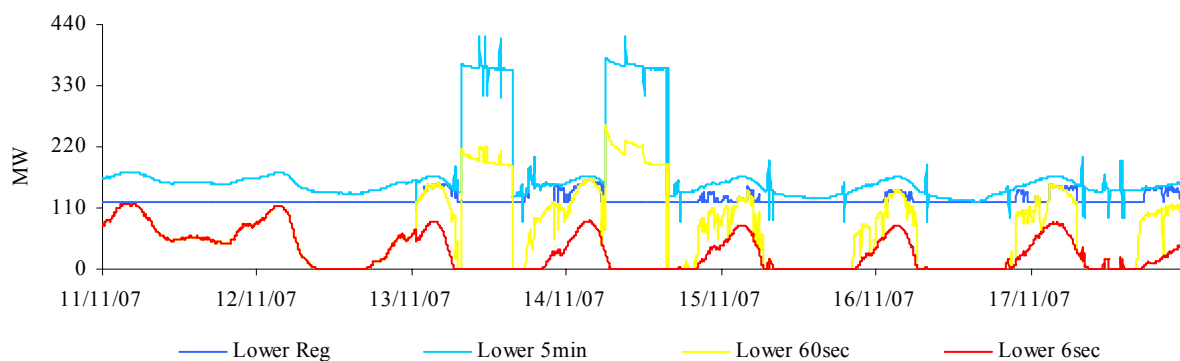


Figure 69A: lower requirements – Tasmania

