Market analysis

21 October – 27 October 2007

Summary

Spot prices for the week averaged between $44/MWh in Tasmania and $72/MWh in New South Wales. On Monday the spot price exceeded $5000/MWh in New South Wales. The AER will be issuing a separate report into the events of that day.

Turnover in the energy market in the week ended 27 October was $236 million. The total cost of ancillary services for the week was $1.7 million or 0.7 per cent of energy market turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 150, or 45 per cent, of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in 14 per cent of all trading intervals across the market. These variations were most frequent in South Australia, occurring in over a quarter of 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

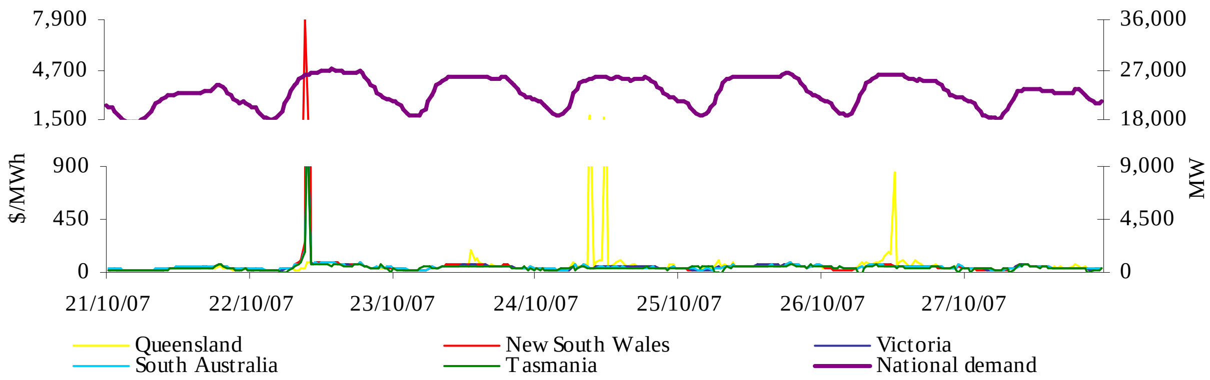

Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	64	72	50	50	44
Previous week	26	29	27	29	37
Same quarter last year	23	27	29	40	37
Financial year to date	59	56	55	56	59
% change from previous week*	▲142%	▲154%	▲83%	▲75%	▲19%
% change from same quarter last year**	▲175%	▲164%	▲71%	▲25%	▲20%
% change from year to date***	▲137%	▲56%	▲50%	▲40%	▲46%

*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.

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Figures 3 to 7 show the weekly correlation between spot price and demand.

Figure 3: Queensland

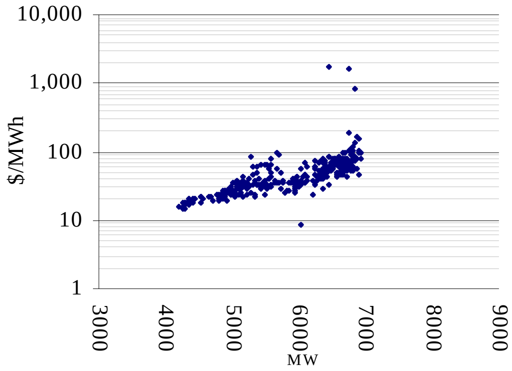


Figure 4: New South Wales

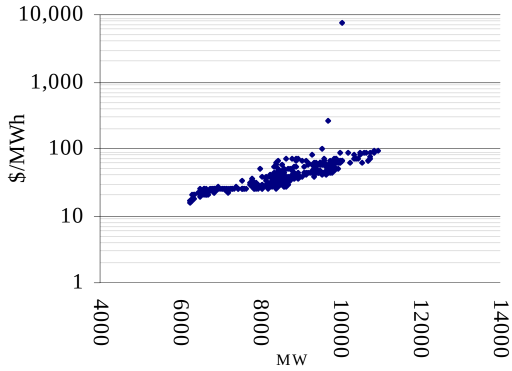


Figure 5: Victoria

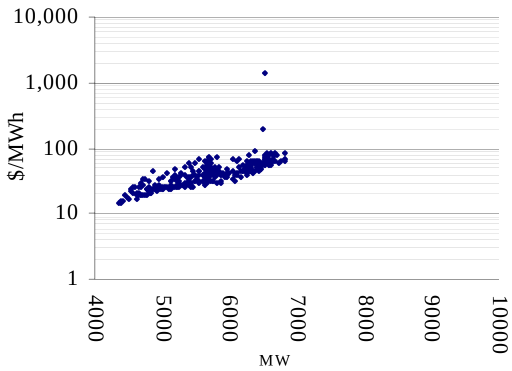


Figure 6: South Australia

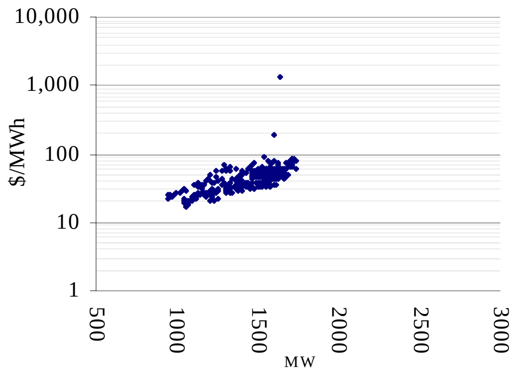
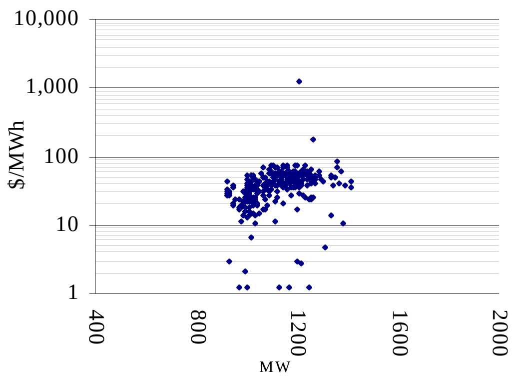


Figure 7: Tasmania



Maximum spot prices for the week ranged from $1284/MWh in Tasmania to $7858/MWh in New South Wales. Figure 8 compares the weekly price volatility index with the averages for the previous week and the same quarter last year.

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Figure 8: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.88	0.61	0.53	0.55	0.48
Previous week	0.70	0.64	0.57	0.42	1.01
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

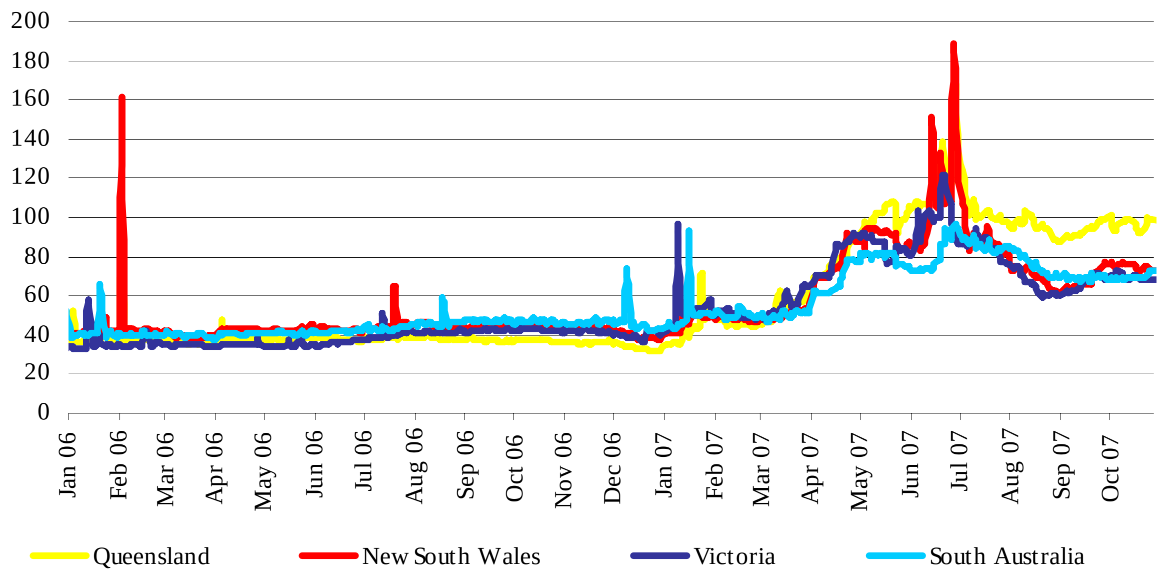
Figure 9 sets out the d-cyphaTrade wholesale electricity price index (WEPI)* for each region throughout the week excluding Tasmania. Figure 10 sets out the WEPI since 1 January 2006.

Figure 9: d-cyphaTrade WEPI for the week

	Monday	Tuesday	Wednesday	Thursday	Friday
Queensland	94.03	98.58	99.58	99.37	99.08
New South Wales	74.82	73.99	73.16	73.30	72.63
Victoria	70.67	69.77	68.97	68.96	68.46
South Australia	69.60	70.21	70.83	71.91	72.88

* 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



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Reserves

A low reserve condition was forecast on Wednesday at 2.50 pm, in Queensland.

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

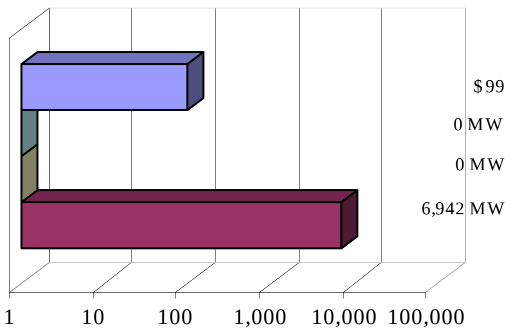


Figure 12: New South Wales

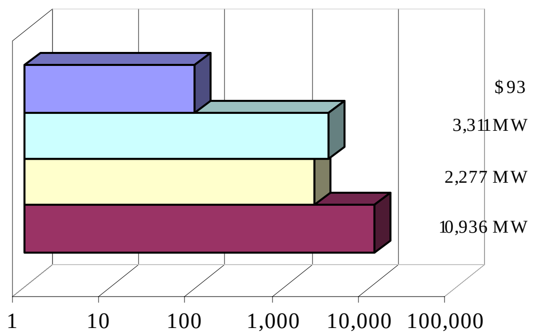


Figure 13: Victoria

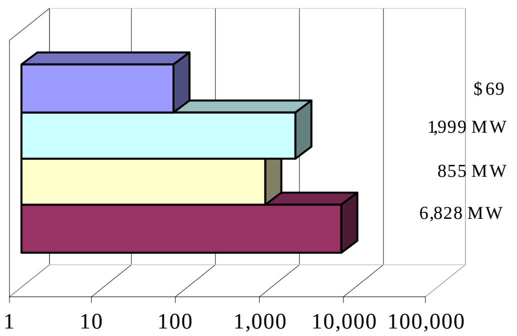


Figure 14: South Australia

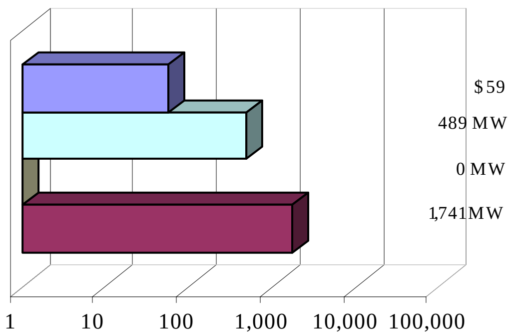
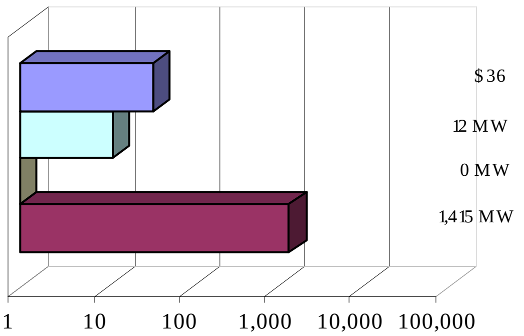
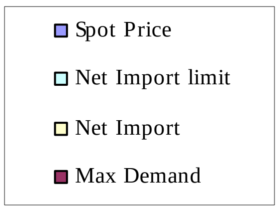


Figure 15: Tasmania





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Price variations

There were 150 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

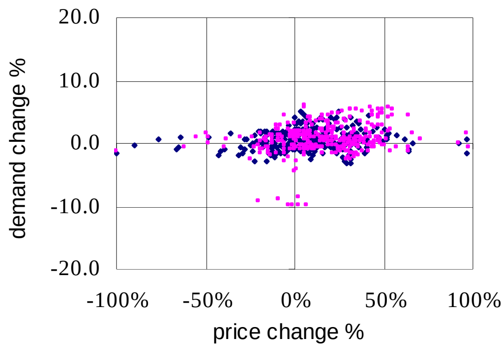

Figure 17: New South Wales

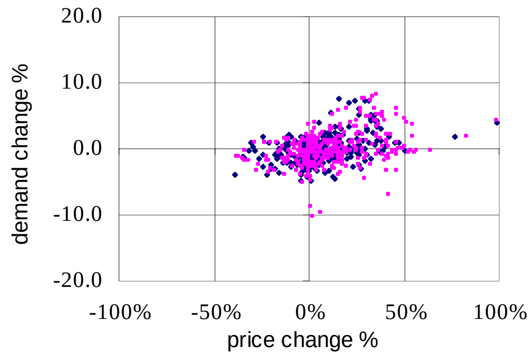

Figure 18: Victoria

Figure 19: South Australia

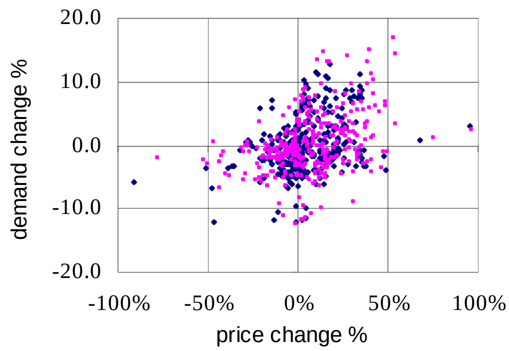

Figure 20: Tasmania

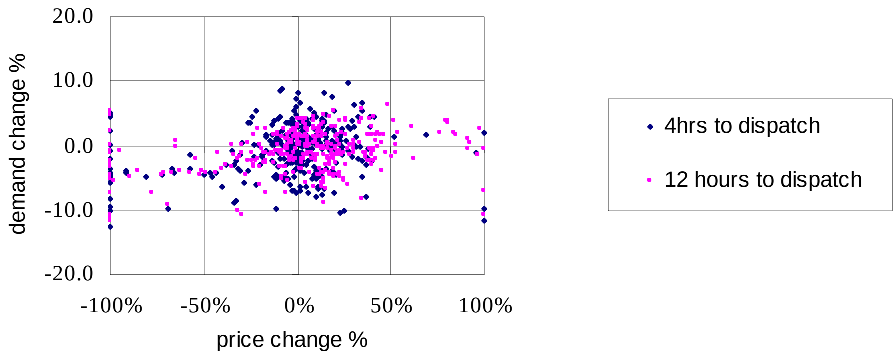

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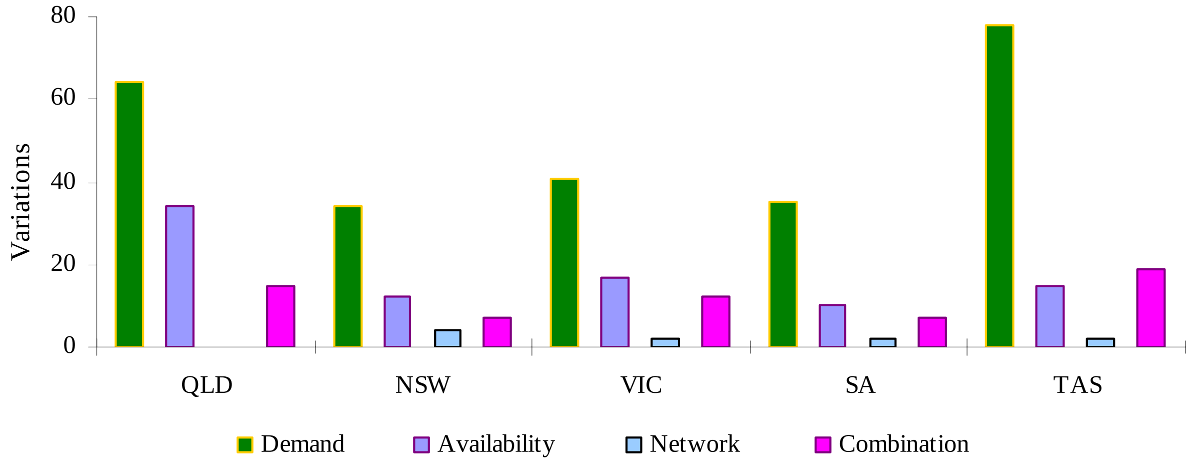
Figure 21 summarises the number and most probable reason for variations between forecast and actual prices.

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.

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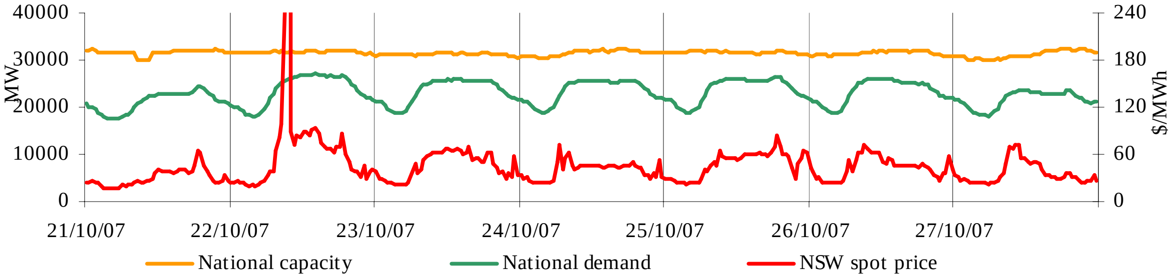
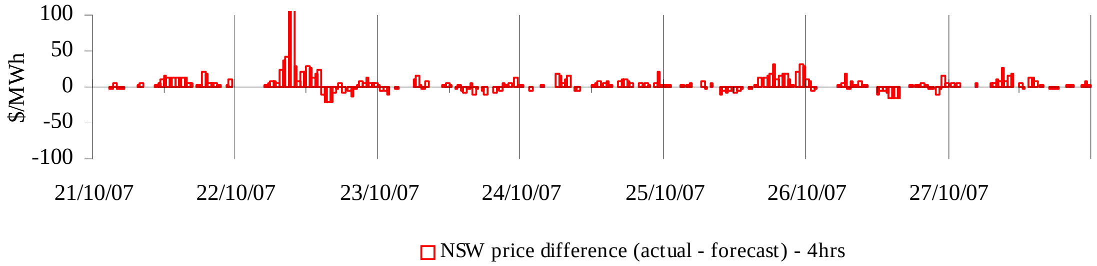
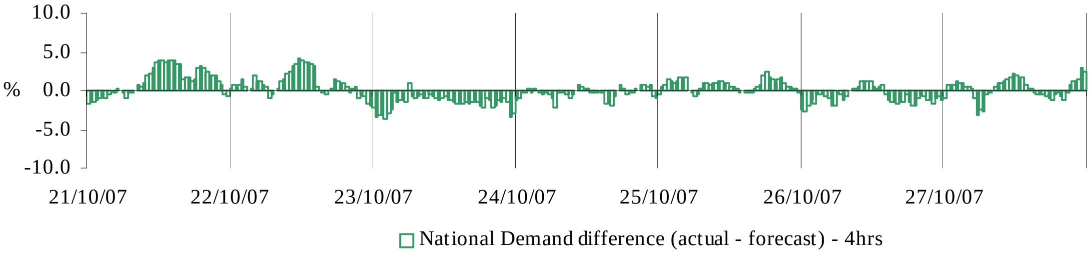
National Market

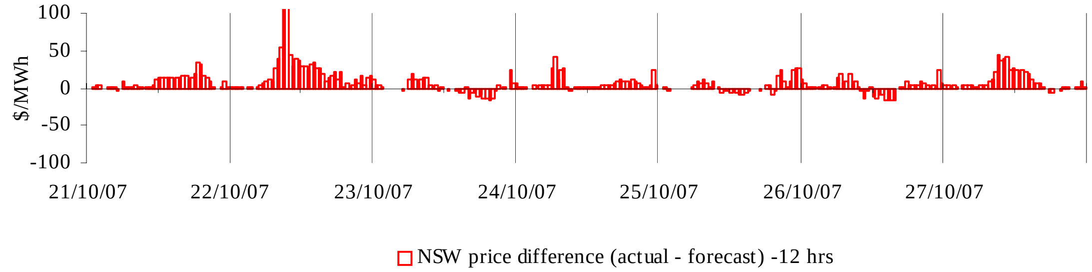
Spot prices within the national market are regularly aligned with conditions in one region reflected across all others. Figures 22-26 shows pricing events that occurred when spot prices were generally aligned across all regions of the national electricity market – the New South Wales spot price has been used as a proxy national price under these conditions as New South Wales is located in the centre of the NEM.

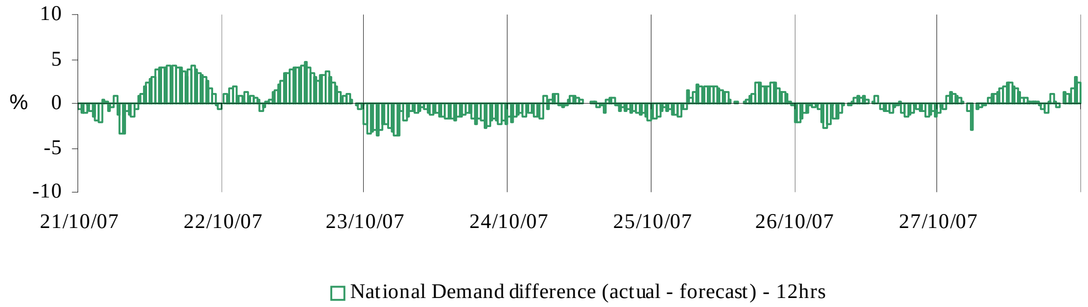
Figures 22-26: National market outcomes











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There were two occasions 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 $72/MWh.

Monday, 22 October

9:30 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	255.03	58.65	44.05
Demand (MW)	25559	25210	25196
Available capacity (MW)	31433	31991	32554
10:00 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	7858.07	60	44.91
Demand (MW)	25932	25354	25361
Available capacity (MW)	31617	31979	32532

In accordance with clause 3.13.7 of the Rules, the AER will be issuing a reporting into the circumstances of the day that led to the spot price exceeding $5000/MWh. This report will identify whether reductions in generation capacity, network availability and rebidding contributed to the market outcomes.

This report will be published later in November 2007.

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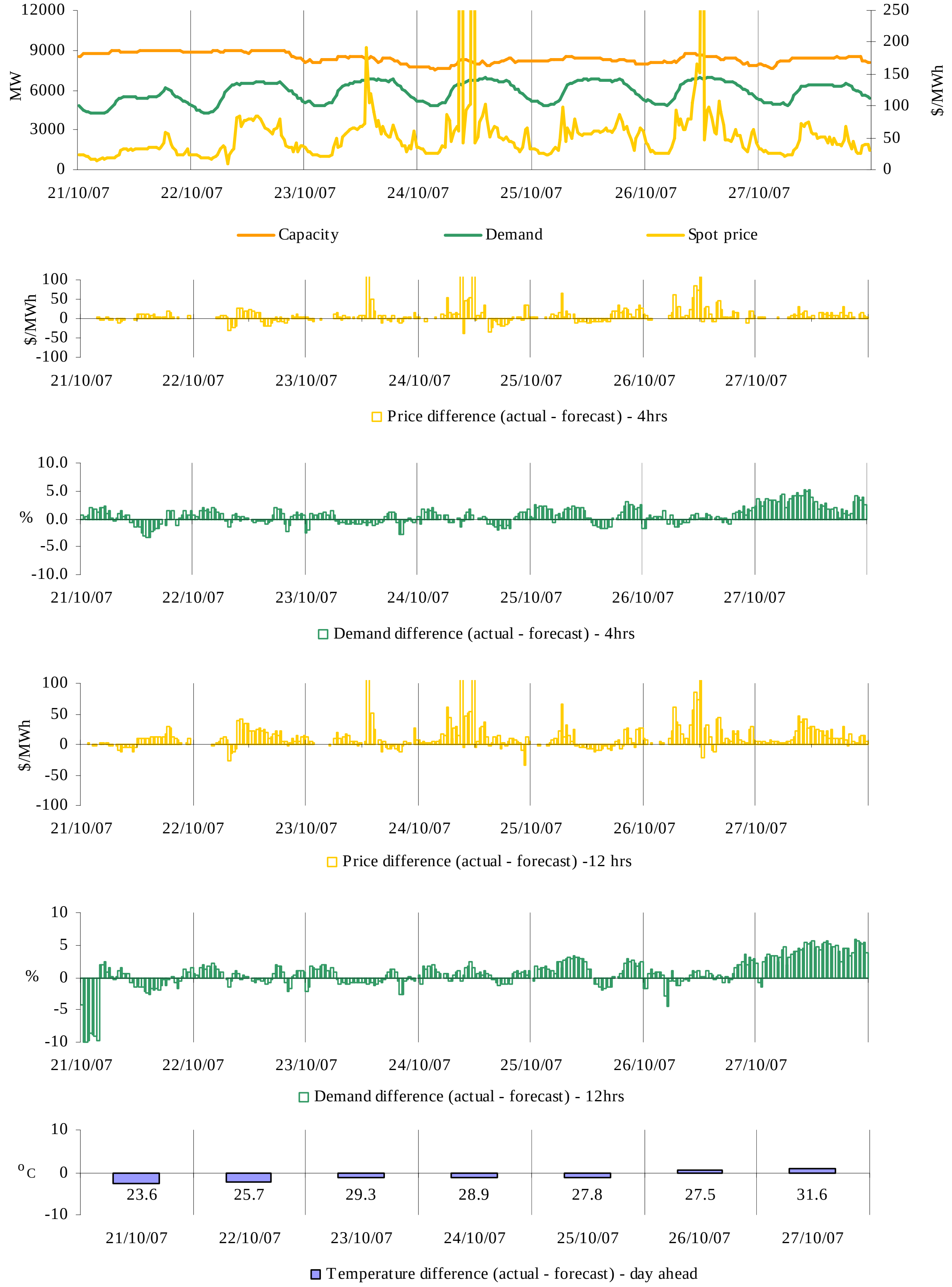
Queensland

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

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



There were four occasions where the spot price in Queensland was greater than three times the Queensland weekly average price of $64/MWh.

Tuesday, 23 October

1:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	191.5	69.15	67.9
Demand (MW)	6743	6820	6820
Available capacity (MW)	8291	8660	8923

Conditions at the time saw demand close to forecast and available capacity 630 MW lower than forecast 12 hours ahead.

Flows across QNI and Terranora were forced into New South Wales by up to 330 MW during this trading interval. From 1.10 pm, NEMMCO applied a constraint, which limited flow into New South Wales in order to prevent further accumulation of negative residues on the QNI interconnector.

Limited ramping capability in Queensland led to two price spikes during the trading interval. Prices rose from less than $100/MWh to around $460/MWh at 1.05 pm and 1.15 pm.

Over several rebids from 8.56 am Millmerran Energy Trader reduced the availability of Millmerran unit two by 180 MW. All of this capacity was priced below $15/MWh. The reason given was “Changed plant conditions”.

At 11.31 am Origin Energy reduced the availability of Mount Stuart unit one by 144 MW to zero. All of this capacity was priced above $9000/MWh and therefore had no impact on price. The reason given was “Change in availability”.

At 11.43 am CS Energy delayed the return to service of unit four at Swanbank B reducing its availability by 120 MW. Most of this capacity was priced at or below $100/MWh.

Over two rebids at 1.08 pm and 1.20 pm AGL Hydro reduced the availability of its Oakey units by 281 MW to zero. This capacity was priced at less than $300/MWh. The reason given was “Portfolio optimisation avoid uneconomical running”. Both units had received instructions to start prior to these rebids being submitted.

There was no other significant rebidding.

Wednesday, 24 October

9:30 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1699.62	51.56	47.23
Demand (MW)	6443	6539	6485
Available capacity (MW)	8310	8289	8429

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

At 9 am, the five-minute dispatch price was $80/MWh. Flows across Terranora were being forced, counter-price, into New South Wales by around 100 MW. The QNI interconnector was limited to zero, around 400 MW lower than its forecast capability an hour ahead of dispatch. A change to the ramp up rate of Kogan Creek at around 8.30 am led to a sharp reduction in the forecast capability of QNI as the output of Kogan Creek rapidly increased.

At 9.05 am, a small increase in Queensland demand and further forced exports into New South Wales resulted in a five minute price of $10 000/MWh.

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At the time, there was around 560 MW of capacity priced between $80/MWh and $10 000/MWh. Around 340 MW was offline and unable to respond to short-term price fluctuations. Around 220 MW of online capacity was limited in this dispatch interval by ramping limitations and frequency control ancillary service bids. These limitations led to 13 MW at Barron Gorge being dispatched at $10 000/MWh.

At 9.10 am, the price fell to $40/MWh. Following the price spike, around 670 MW was rebid into prices below $30/MWh effective for the 9.30 am trading interval only. Flows south across QNI increased to 590 MW at 9.30 am before returning to previous levels over the next trading interval.

There was no other significant rebidding

12:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1657.51	47.6	47.29
Demand (MW)	6737	6685	6640
Available capacity (MW)	8091	8420	8423

Conditions at the time saw demand close to that forecast and available capacity 330 MW lower than forecast four hours ahead.

The five-minute price spiked to $9604/MWh at 11.45 am from prices around $100/MWh. The circumstances were similar to those experienced earlier in the day.

At 11.38 am AGL Hydro rebid 80 MW of capacity at Oakey unit two from prices of zero to above $9000/MWh. The rebid was first used at 11.45 am, coinciding with the price spike. The reason given was “Fuel limits::fuel conservation”. A second rebid at 11.44 am, reduced the availability of Oakey unit one by 141 MW to zero. The reason given was “Portfolio optimisation”.

Constraints used to manage the accrual of negative settlement residues forced flow north across QNI at 50 MW. At the same time, flows across the Terranora interconnector were forced south at 150 MW. System normal constraints to manage network security were binding on both interconnectors.

Over several rebids from 9.38 am, Millmerran Energy Trader reduced the availability of Millmerran unit two by 120 MW priced below $5/MWh. The reasons given were “Changed plant conditions” and “Forced outage”.

At 10.02 am Stanwell Corporation delayed the return to service of Gladstone unit one reducing its availability by 140 MW. All of this capacity was priced below zero. The reason given was “Extend unit availability::change avail”.

There was no other significant rebidding.

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Friday, 26 October

12:30 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	846.25	67.9	67.9
Demand (MW)	6855	6857	6852
Available capacity (MW)	8599	8538	8528

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

At midday, Queensland was exporting a total of around 60 MW across QNI and Terranora. The price in Queensland was around $150/MWh.

At 12.05 pm, the five-minute price spiked to $4893/MWh. Exports from Queensland remained around 60 MW, counter price, for this dispatch interval.

For the 12.30 pm trading interval, Tarong Energy committed Wivenhoe power station. This was a planned commitment with the unit receiving targets in predispatch from 1 pm the previous day. At the same time, the generation at Tarong had an equivalent reduction planned in its offer. This swap of capacity was not forecast to have an impact on price. At 12.05 pm, however, the fast start profile of the Wivenhoe unit prevented it from completely replacing the capacity removed at Tarong. As a result, higher priced generation was dispatched including 5 MW at Tarong unit three setting price at close to $5000/MWh.

There was no significant rebidding.

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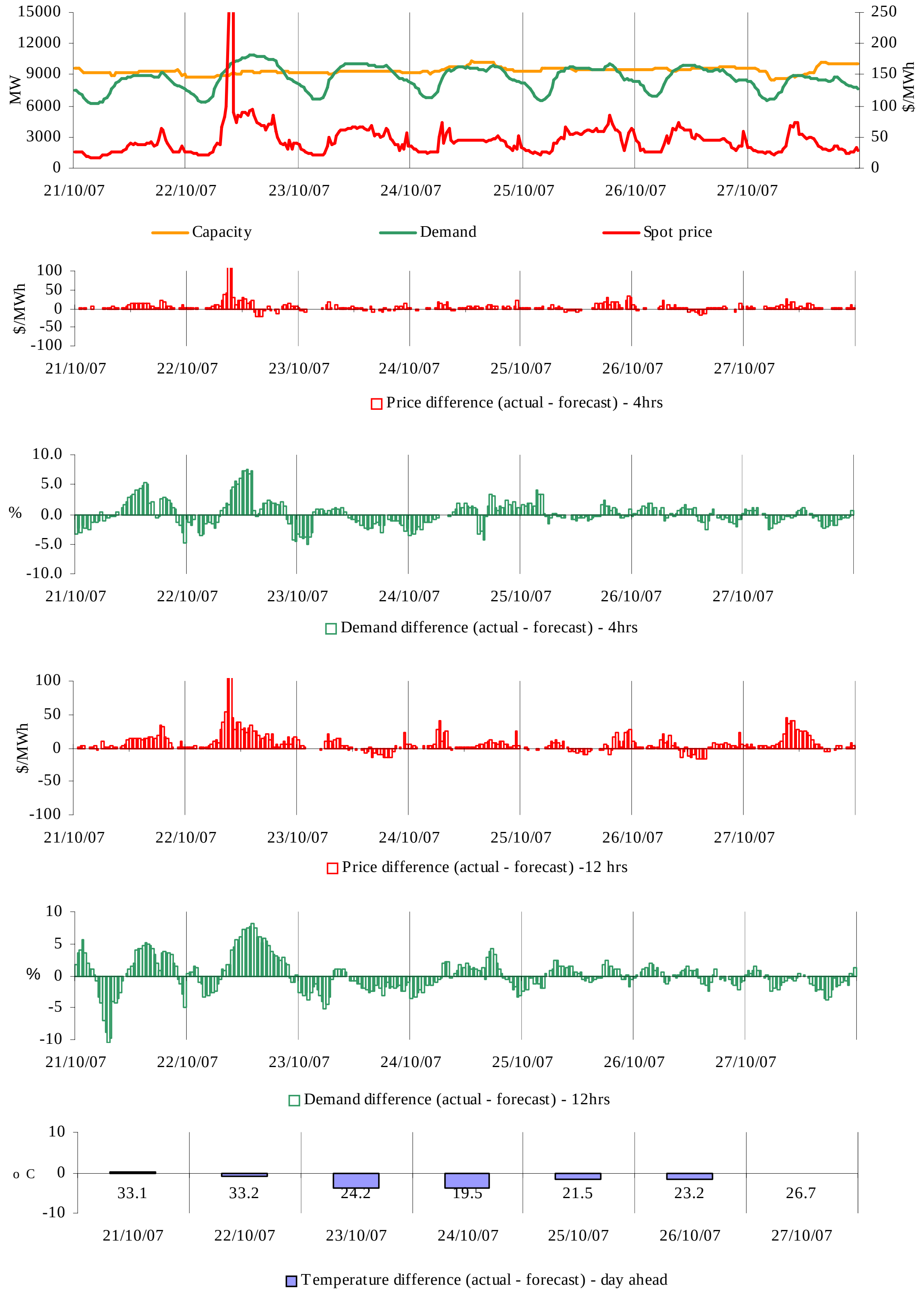
New South Wales

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

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



There were two occasions where the spot price in New South Wales was greater than three times the New South Wales weekly average price of $72/MWh. At the time, prices were aligned across the market. The AER will be issuing a separate report into the circumstances of the day that led to the spot price exceeding $5000/MWh.

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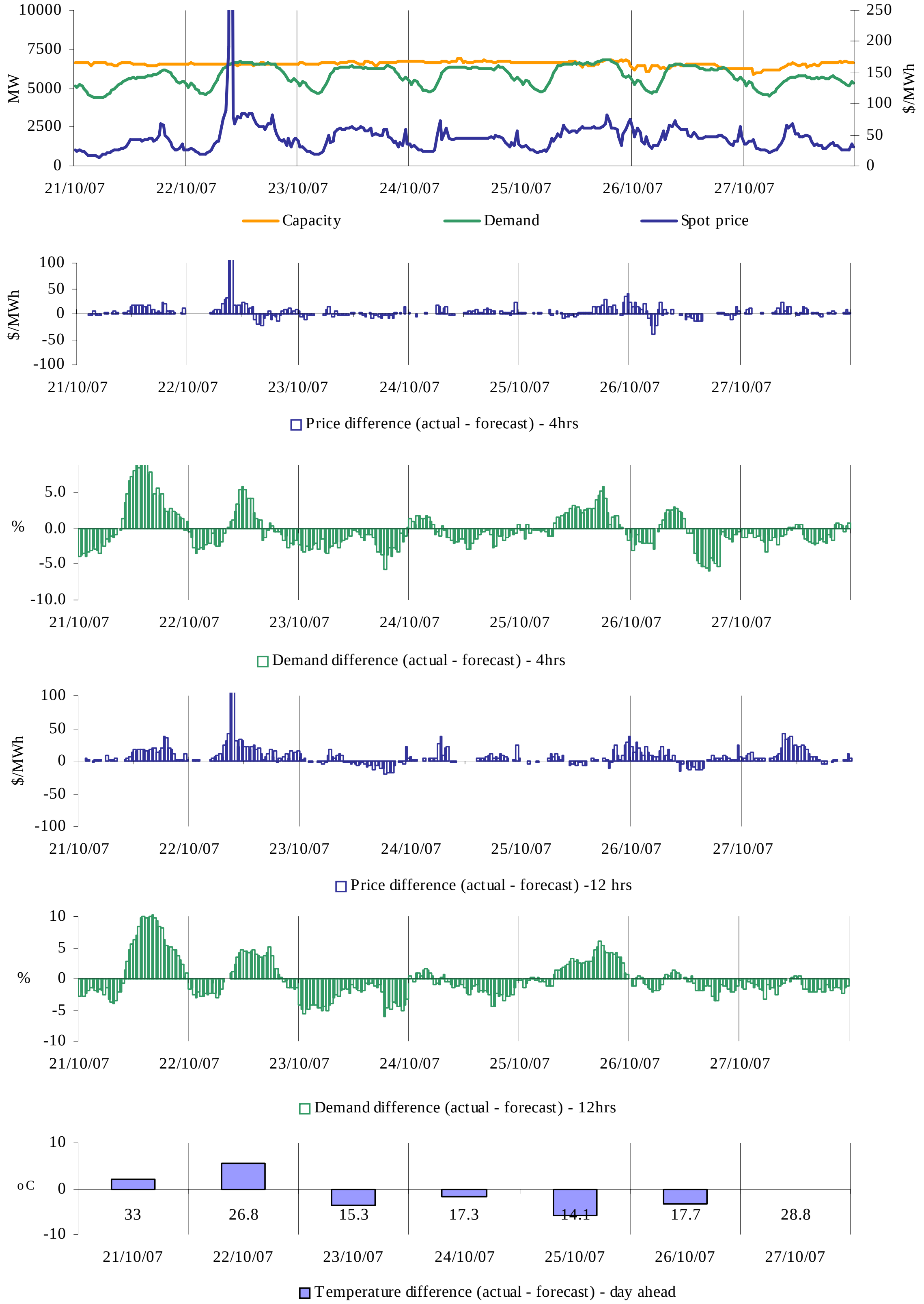
Victoria

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 two occasions where the spot price in Victoria was greater than three times the Victoria weekly average price of $50/MWh. At the time, prices were aligned across the market. The AER will be issuing a separate report into the circumstances of the day.

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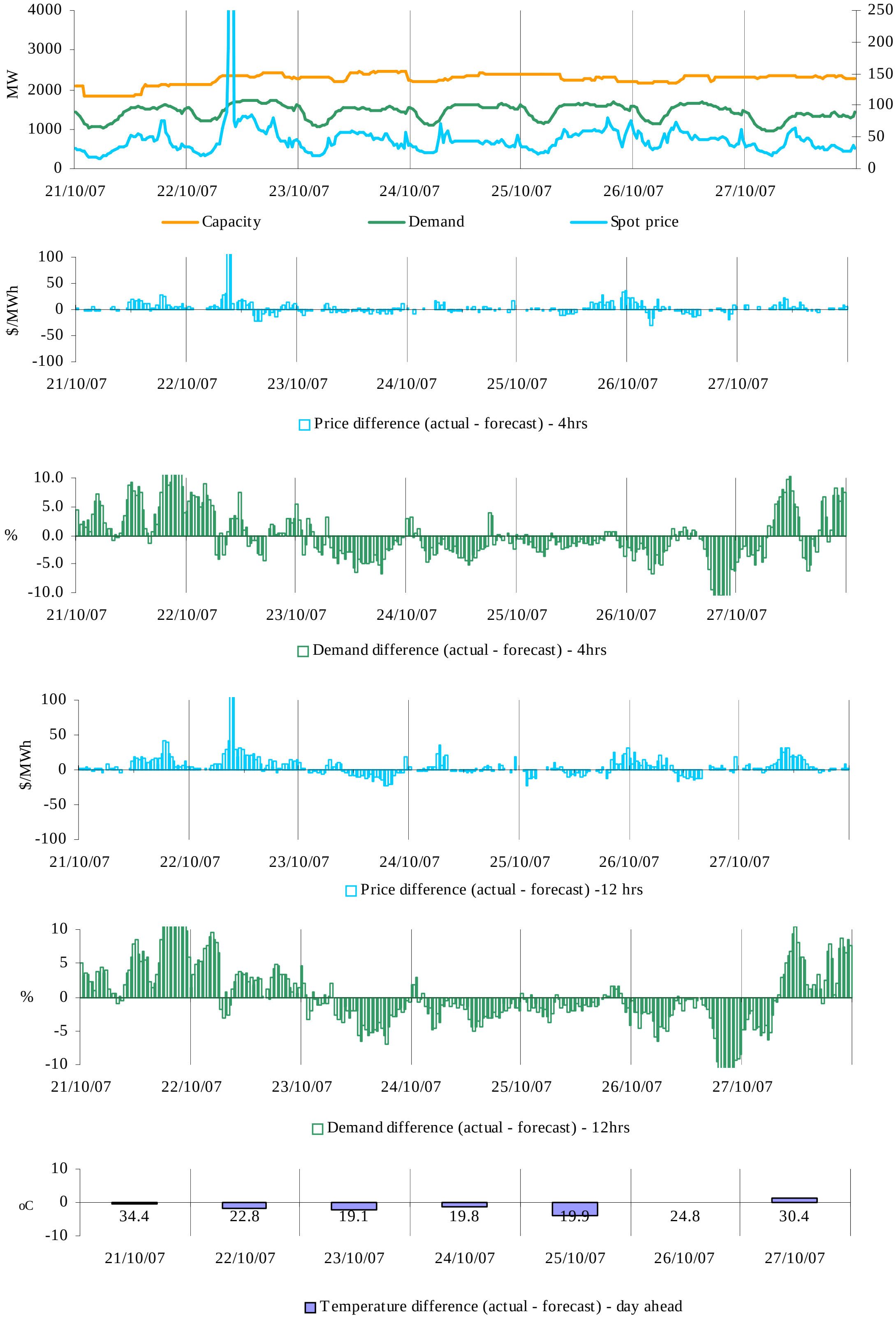
South Australia

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 two occasions where the spot price in South Australia was greater than three times the South Australia weekly average price of $50/MWh. At the time, prices were aligned across the market. The AER will be issuing a separate report into the circumstances of the day.

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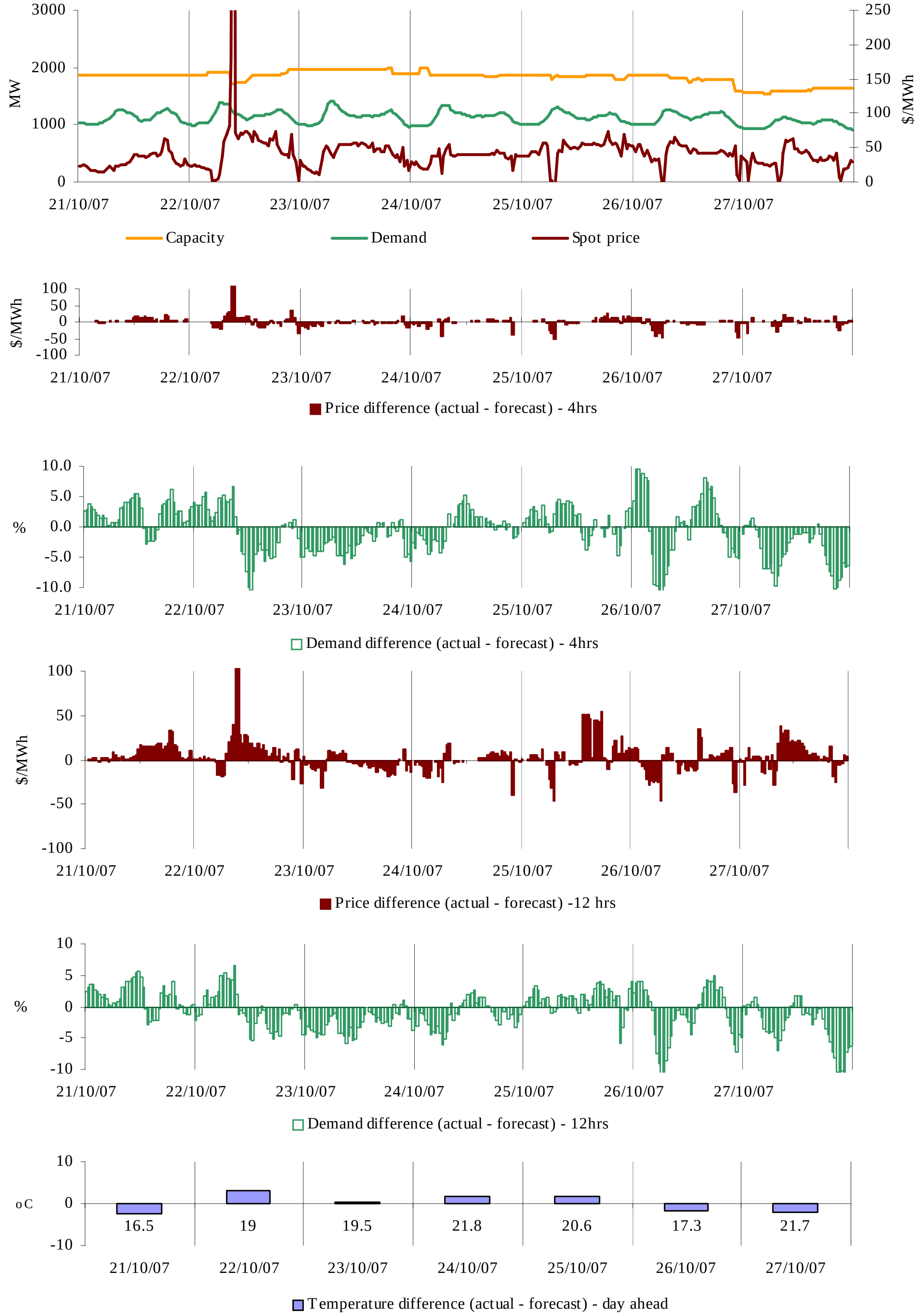
Tasmania

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 $44/MWh. At the time, prices were aligned across the market. The AER will be issuing a separate report into the circumstances of the day.

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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

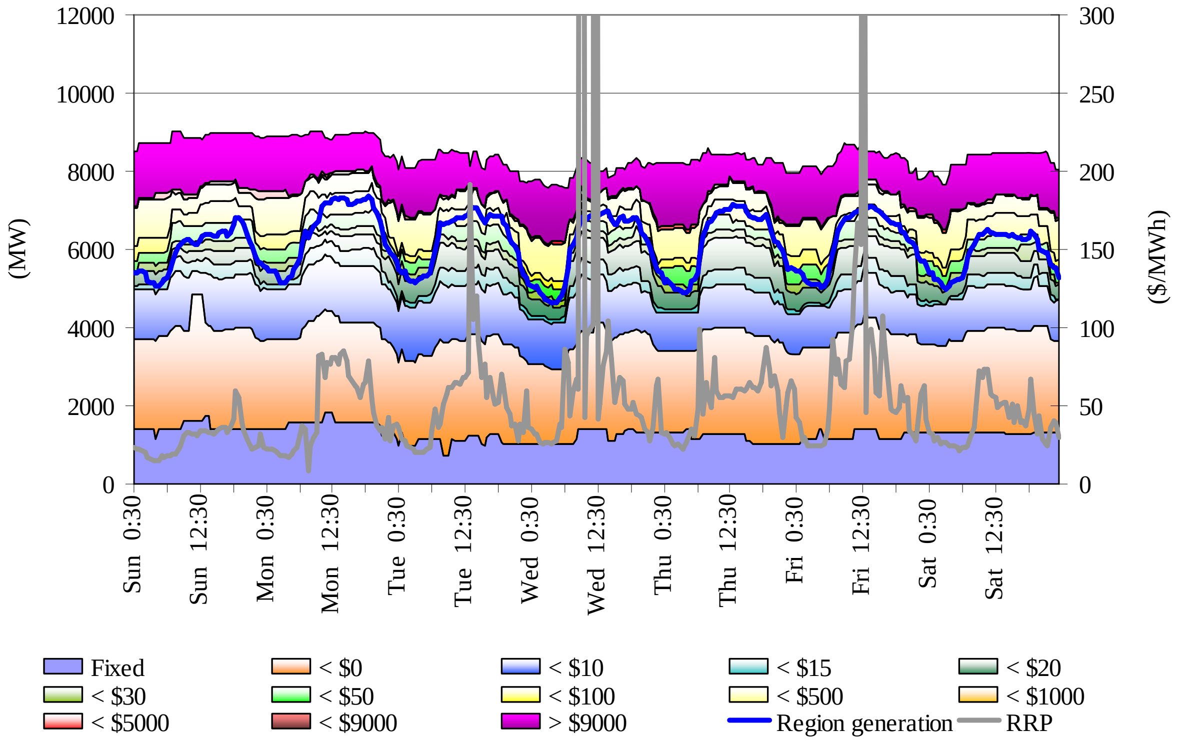

Figure 58: New South Wales closing bid prices, dispatched generation and spot price

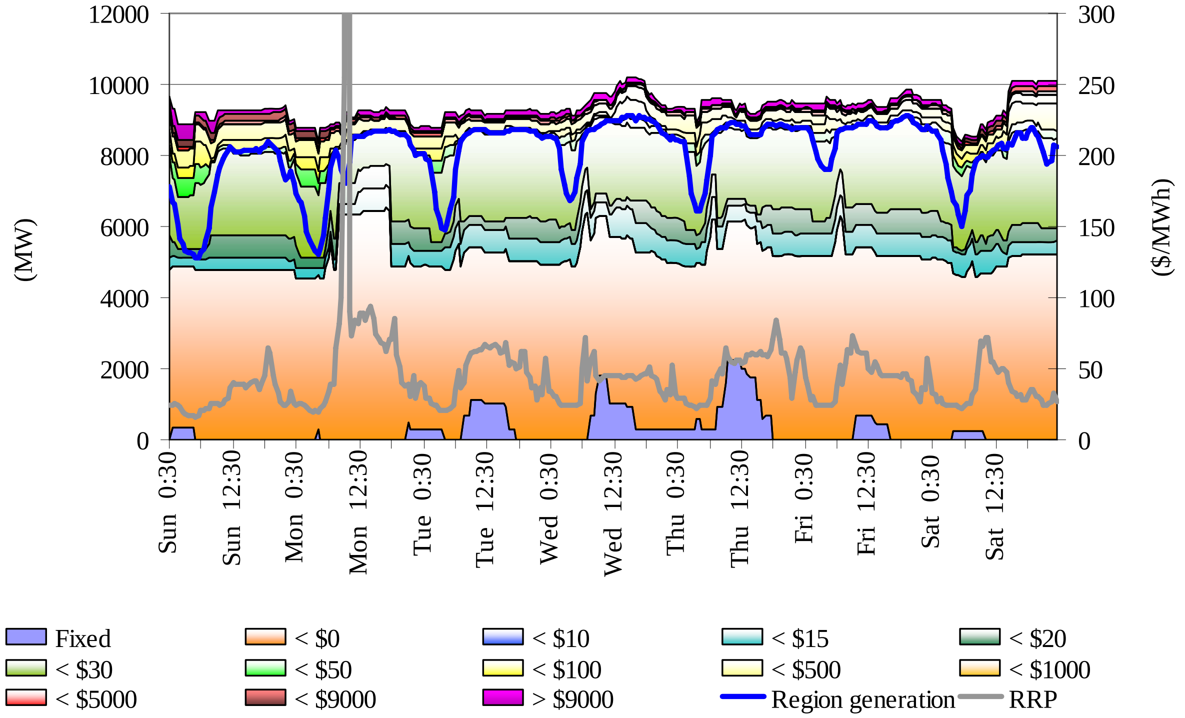

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Figure 59: Victoria closing bid prices, dispatched generation and spot price

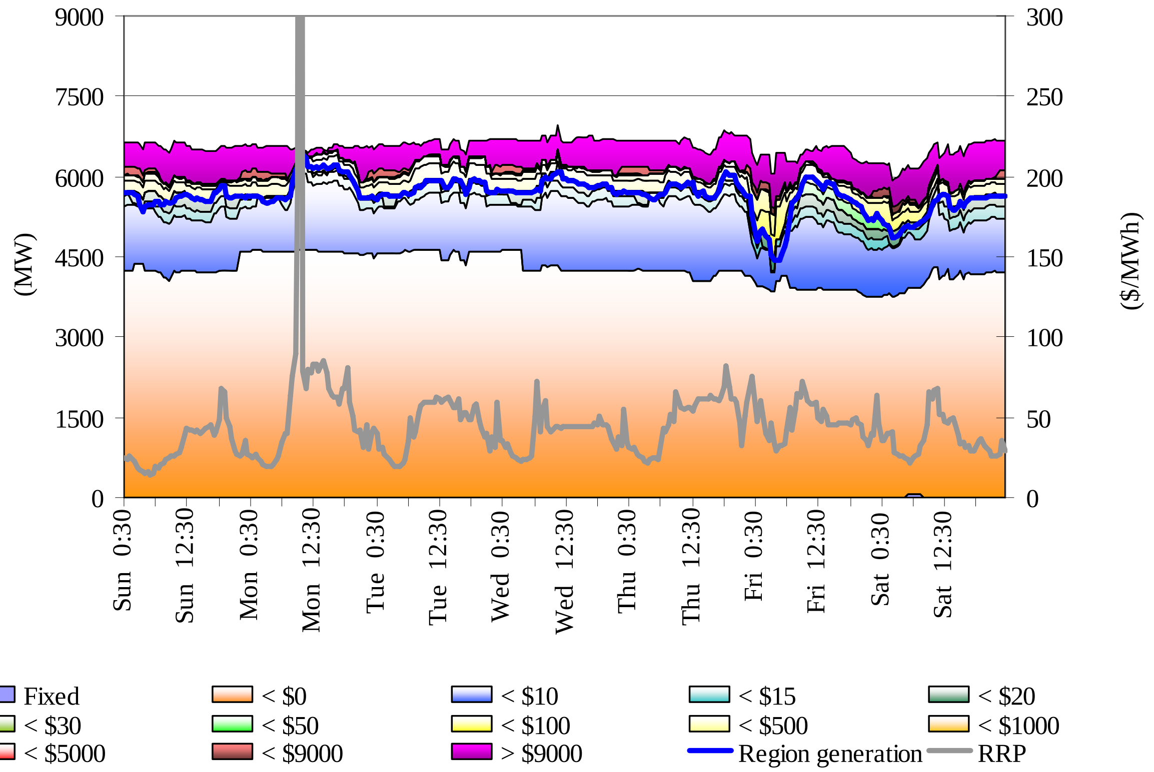

Figure 60: South Australia closing bid prices, dispatched generation and spot price

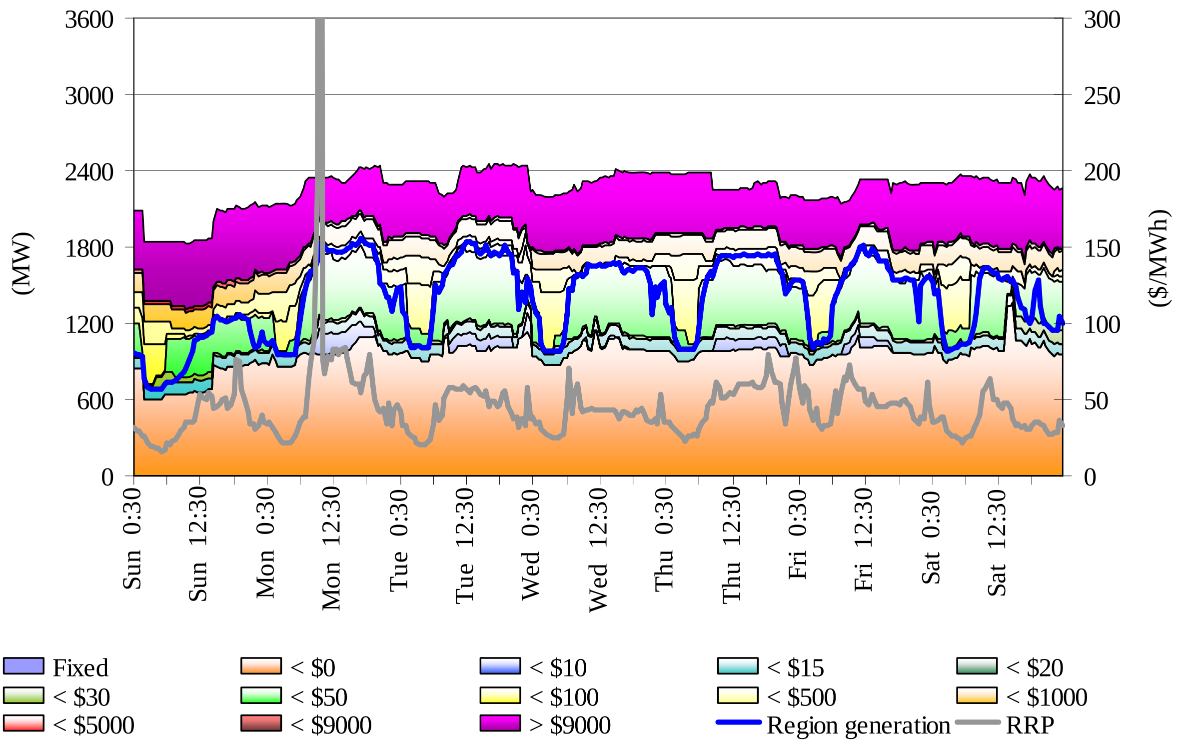

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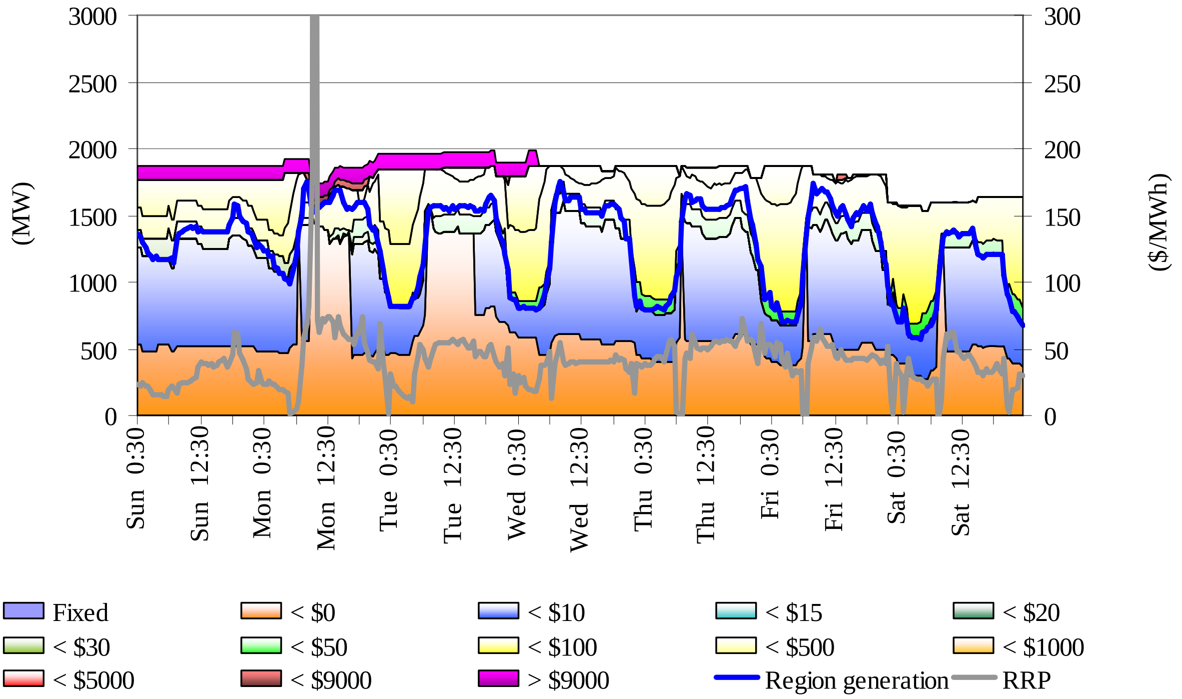
Figure 61: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was $1.4 million or 0.6 per cent of turnover in the energy market. 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 ($/MW)	13.89	2.12	5.37	5.75	0.05	0.05	0.44	2.27
Previous week ($/MW)	7.90	1.95	8.19	3.56	0.04	0.03	0.10	2.47
Last quarter ($/MW)	1.76	0.73	1.15	1.54	0.39	2.28	5.00	1.93
Market Cost ($1000s)	$754	$99	$362	$142	$0	$0	$5	$41
% of energy market	0.33%	0.04%	0.16%	0.06%	0.01%	0.01%	0.01%	0.02%

The total cost of ancillary services in Tasmania for the week was $301 000 or 3.6 per cent of the turnover in the Tasmanian energy market. Figure 63 summarises for Tasmania the prices and costs for the eight frequency control ancillary services.

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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 ($/MW)	18.70	1.69	4.80	7.18	1.20	1.93	5.44	2.90
Previous week ($/MW)	10.32	2.17	22.97	87.75	0.83	1.90	5.53	2.54
Last quarter ($/MW)	4.97	0.49	2.93	3.00	12.67	0.43	0.82	0.45
Market Cost ($1000s)	$68	$20	$53	$17	$4	$37	$96	$7
% of energy market	0.82%	0.25%	0.63%	0.20%	0.05%	0.44%	1.16%	0.08%

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

Figure 64: daily frequency control ancillary service cost

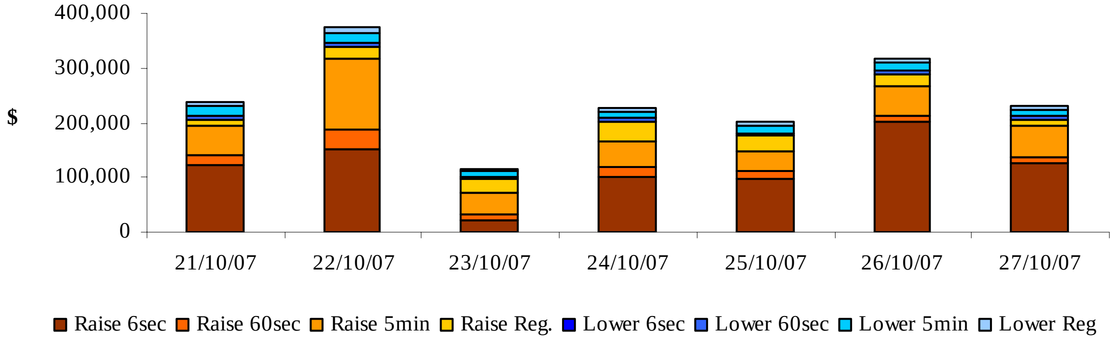
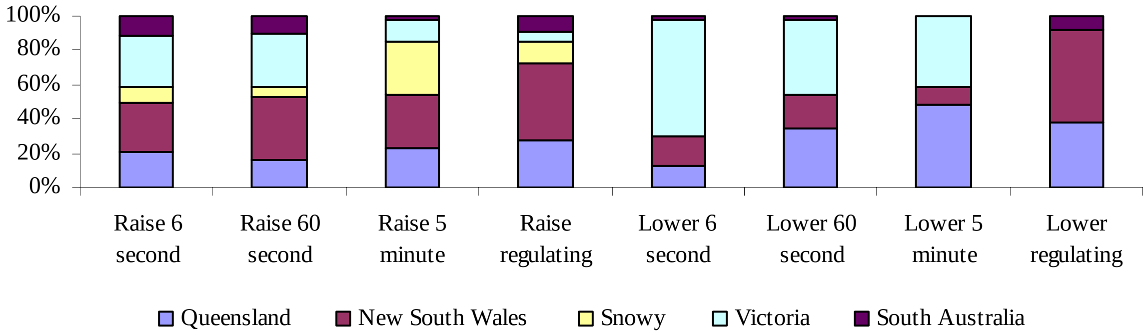


Figure 65 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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.

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Figure 66: prices for raise services

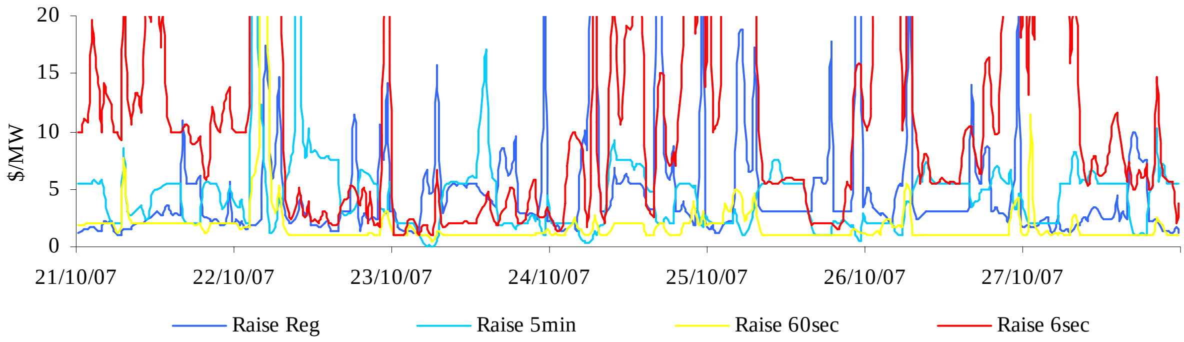


Figure 66A: prices for raise services – Tasmania

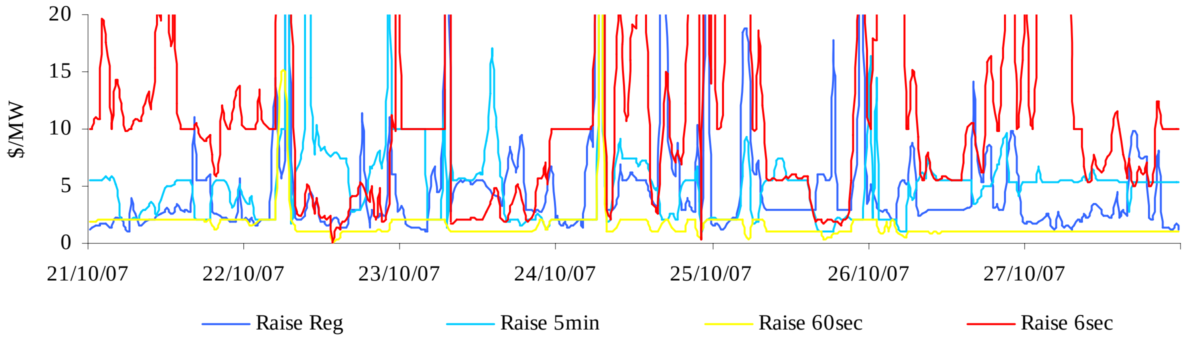


Figure 67: prices for lower services

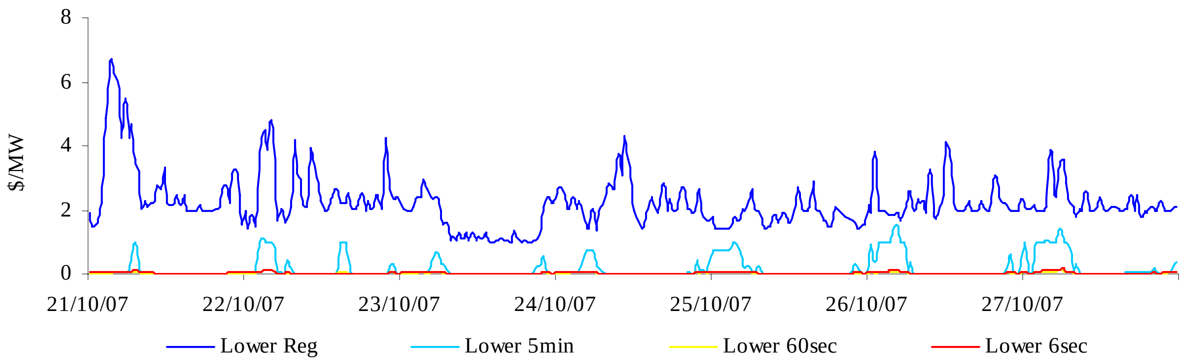
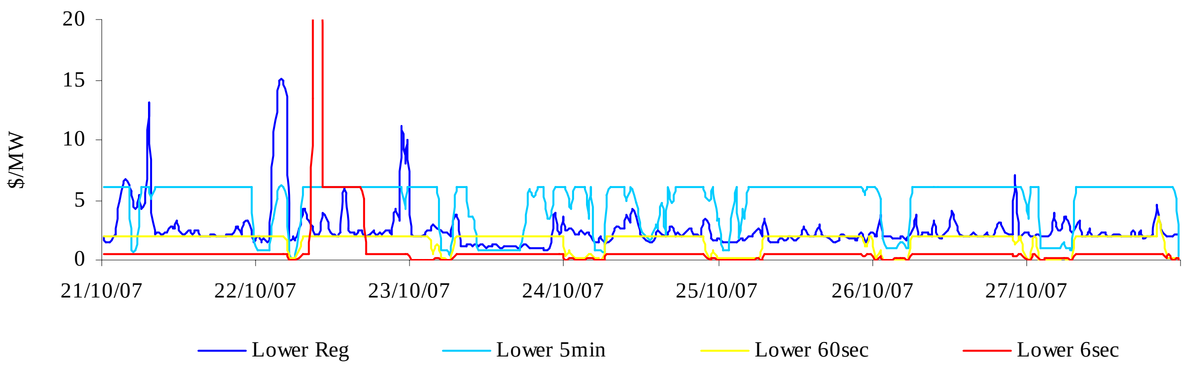


Figure 67A: prices for lower services – Tasmania



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Figures 68 and 69 present for both raise and lower frequency control services the requirement, established by NEMMCO, for each service to satisfy the frequency standard.

Figure 68: raise requirements

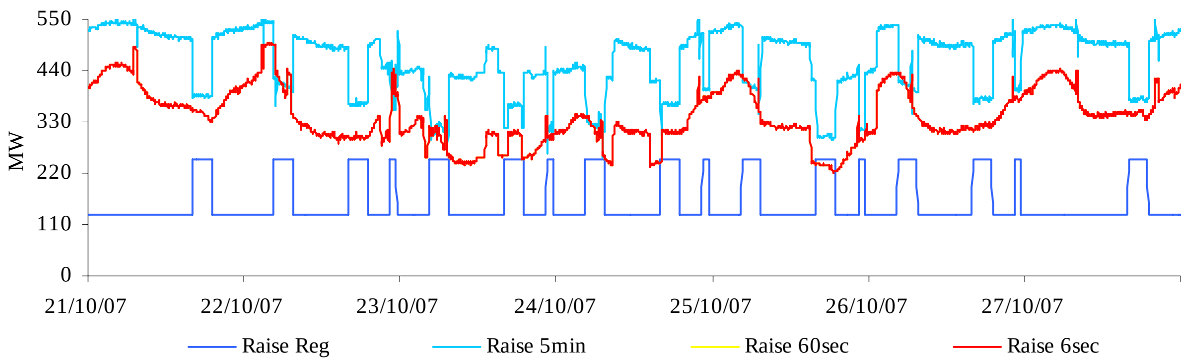


Figure 68A: raise requirements – Tasmania

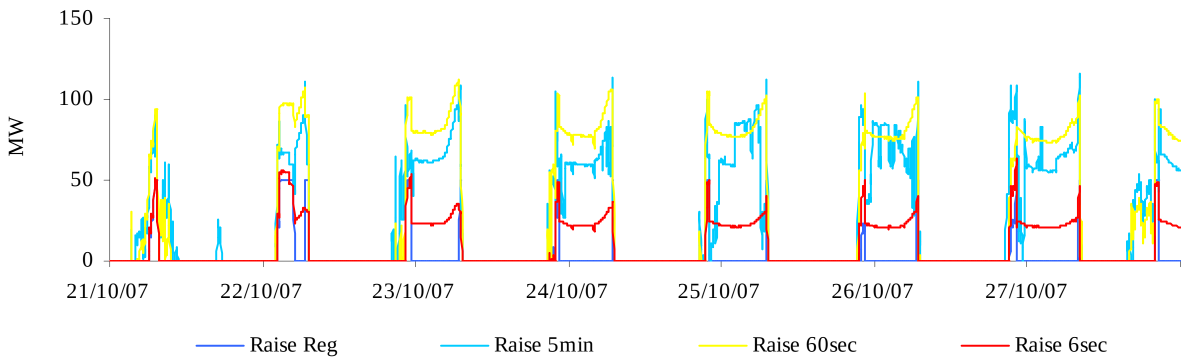


Figure 69: lower requirements

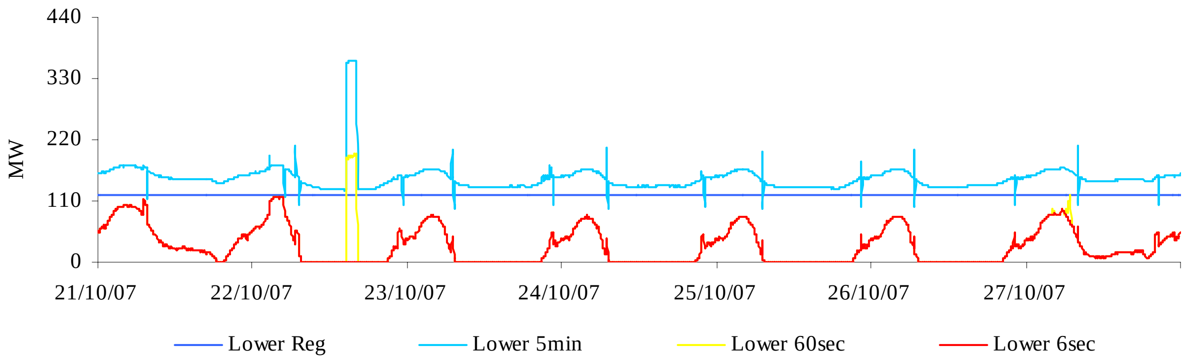
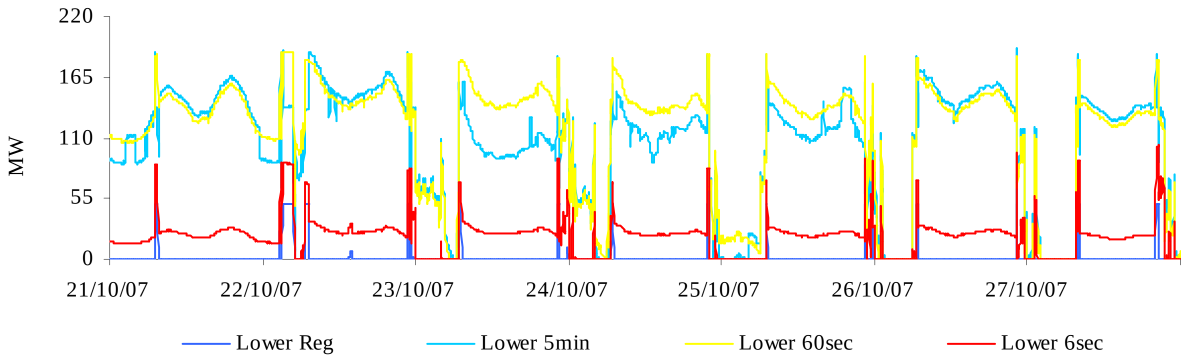


Figure 69A: lower requirements – Tasmania



Australian Energy Regulator

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