Market analysis

11 - 17 DECEMBER 2005

Demand peaked in Queensland at 8 200MW on Wednesday, slightly surpassing the record set the previous week. Spot prices averaged $20/MWh in Queensland, New South Wales and Victoria.

A number of short term price spikes were seen in South Australia and Tasmania this week, leading to increases in average prices of $45/MWh and $49/MWh respectively.

Turnover in the energy market for the mainland was $80 million. The total cost of ancillary services for the week was around $200 000, or 0.5 per cent of turnover. Turnover in Tasmania for the week was $8 million with the cost of ancillary services totaling $270 000 or 3 per cent of turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 46, or around 14 per cent of all trading intervals. Demand forecasts produced 4 and 12 hours ahead varied from actual by more than 5 per cent in almost a third of all trading intervals across the market. These variations were most frequent in South Australia occurring in around 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

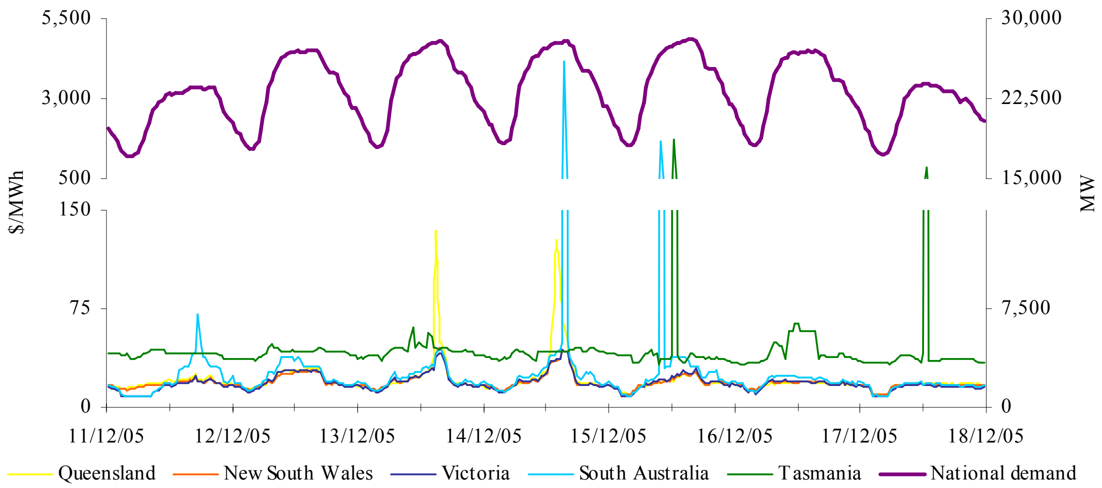


Figure 2: volume weighted average spot price for energy market ($/MWh)

	QLD	NSW	VIC	SA	TAS
Last week	21	20	19	45	49
Previous week	188	230	28	32	46
Same quarter last year	48	90	38	54	-
Financial year to date	30	48	29	36	86
% change from previous week	▼89%	▼91%	▼33%	▲41%	▲5%
% change from same quarter last year	▼55%	▼78%	▼50%	▼17%	-
% change from year to date	▼21%	▼22%	▼14%	▼21%	-

Figure 3: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	0.60	0.52	0.56	0.80	0.25
Previous week	7.73	8.14	1.35	1.23	0.19
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

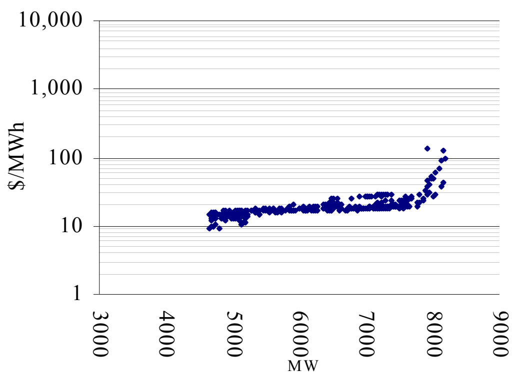


Figure 5: New South Wales

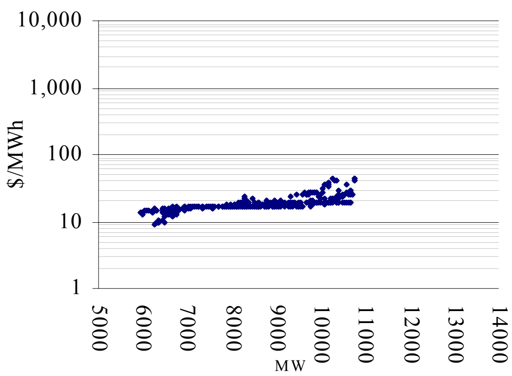


Figure 6: Victoria

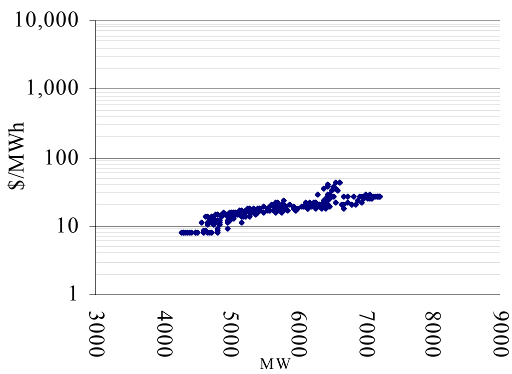


Figure 7: South Australia

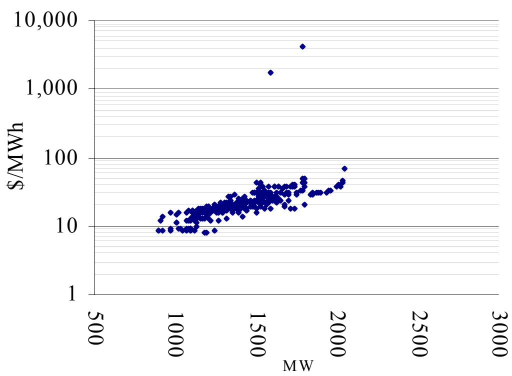
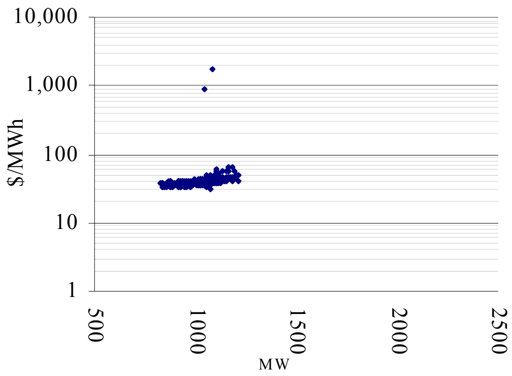


Figure 8: Tasmania



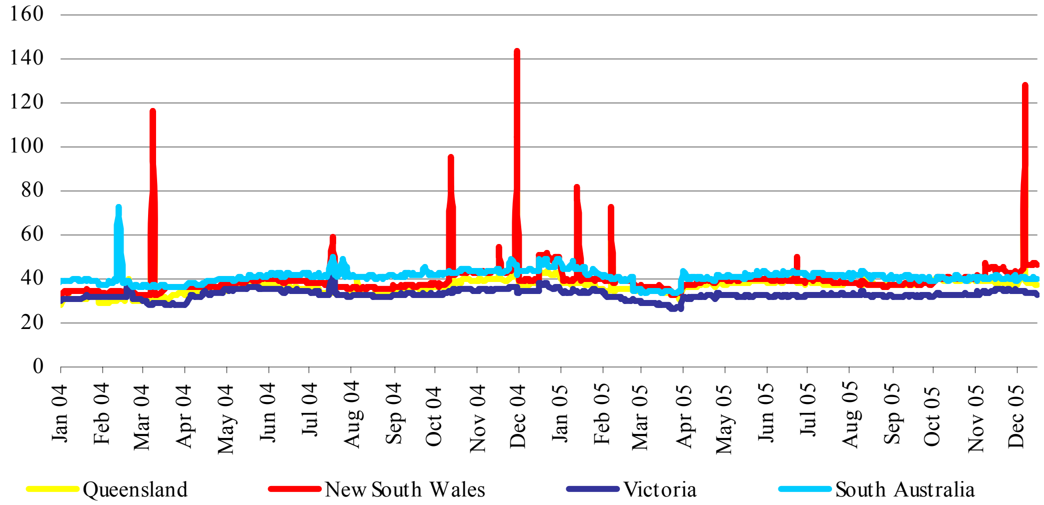
The maximum spot price for the week in Queensland was $134/MWh. In New South Wales and Victoria the price peaked at $45/MWh, whilst in South Australia the highest price for the week was $4 173/MWh on Tuesday. In Tasmania, the highest price for the week was recorded at 12.30pm on Thursday at $1 700/MWh.

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	38.35	38.50	38.53	37.58	37.10
New South Wales	46.53	47.37	46.71	47.03	46.81
Victoria	34.03	33.19	33.22	33.34	33.02
South Australia	39.92	39.85	41.02	40.07	39.76

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

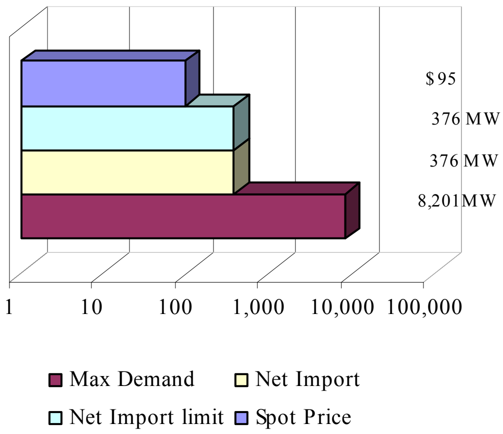


Figure 12: New South Wales

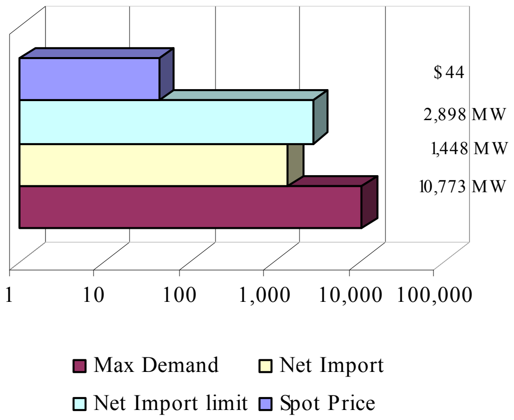


Figure 13: Victoria

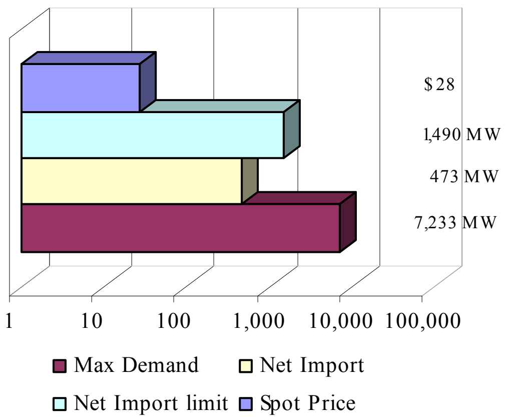
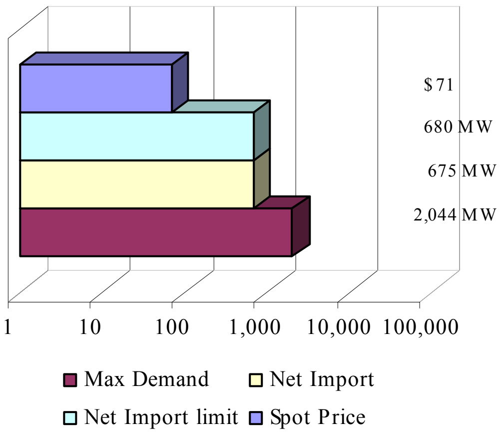


Figure 14: South Australia



In Tasmania, demand reached a maximum of 1 216MW at 7.30am on Friday, 16 December. The spot price at the time was $49/MWh.

Price variations

There were 46 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

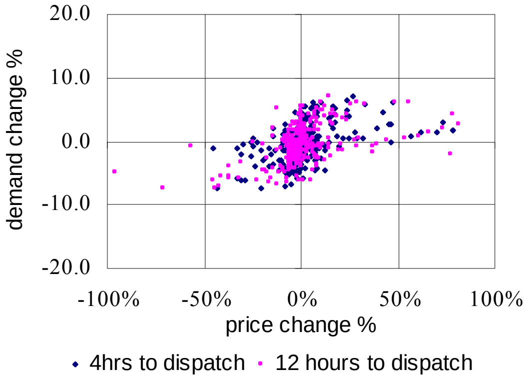


Figure 16: New South Wales

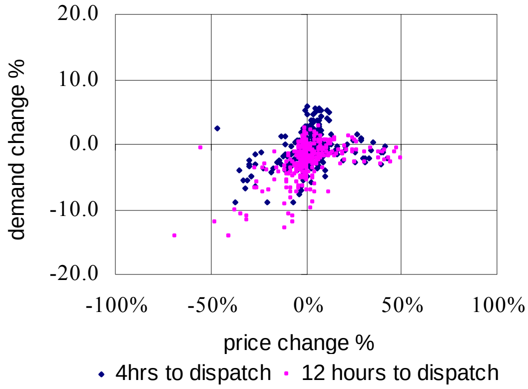


Figure 17: Victoria

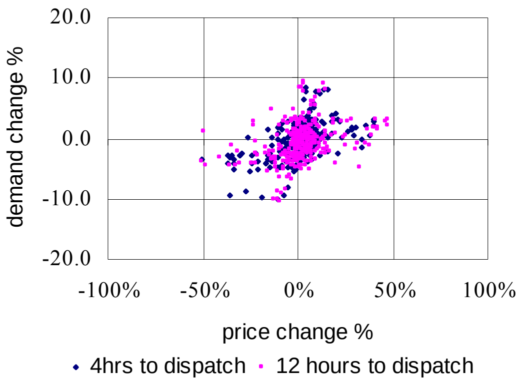


Figure 18: South Australia

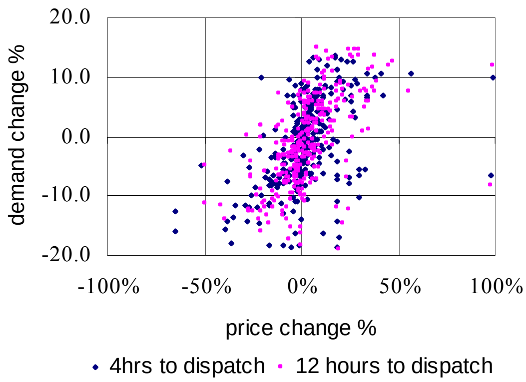


Figure 19: Tasmania

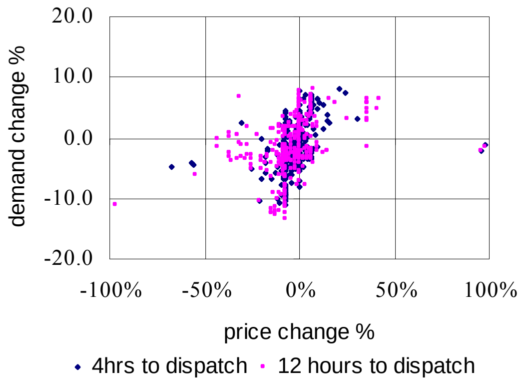
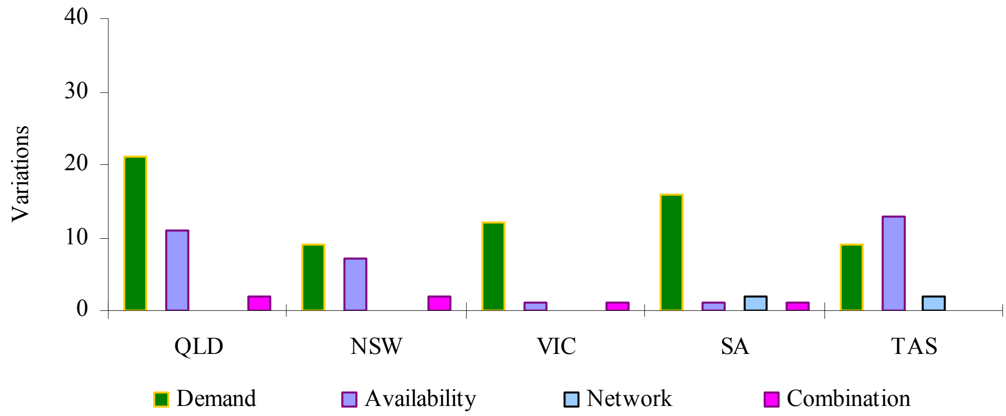


Figure 20 summarises the number and most probable reason for variations between forecast and actual prices.

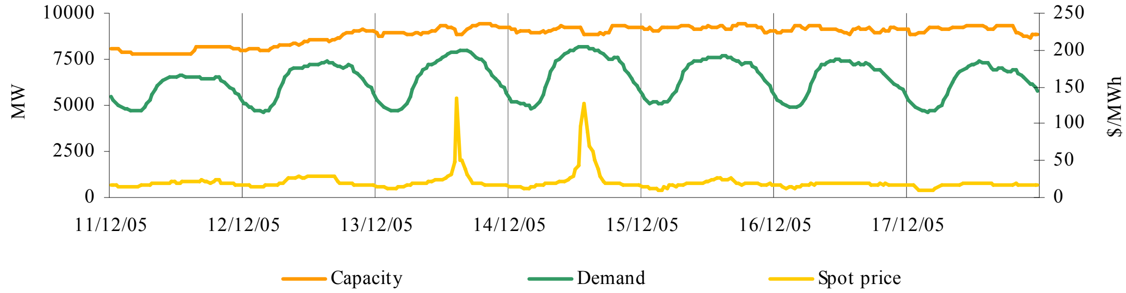
Figure 20: reasons for variations between forecast and actual prices

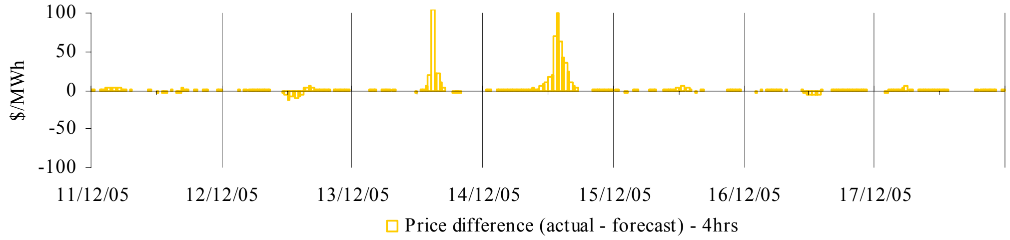


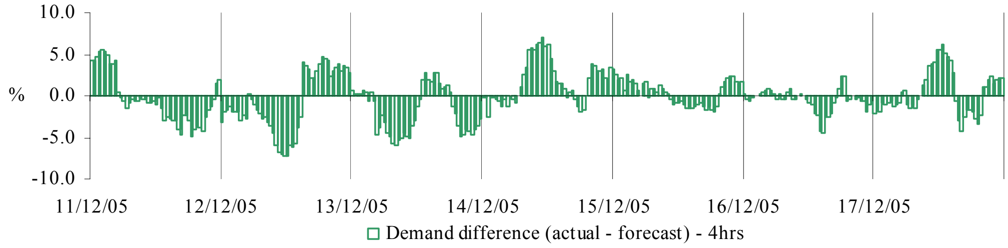
Price and demand

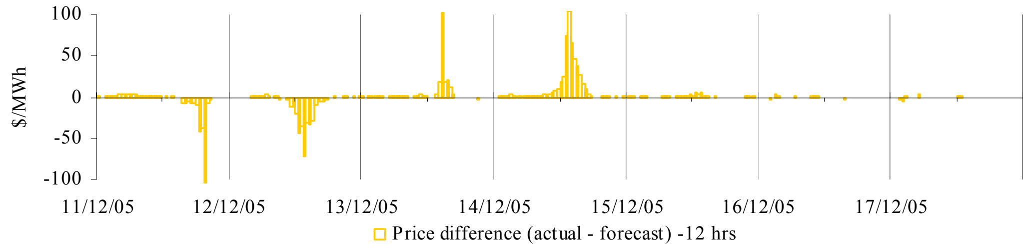
Figures 21 - 50 set out details of spot prices and demand on a regional basis. They include the actual spot price, actual demand outcomes and variation from forecasts made 4 and 12 hours ahead of dispatch on a daily basis. The differences between the maximum temperature and the temperature forecast at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

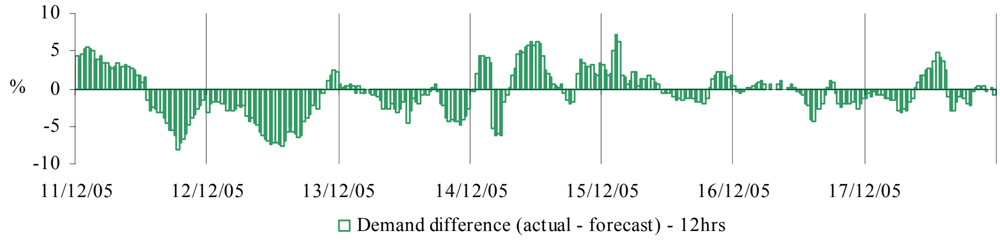
Figures 21-26: Queensland actual spot price, demand and forecast differences

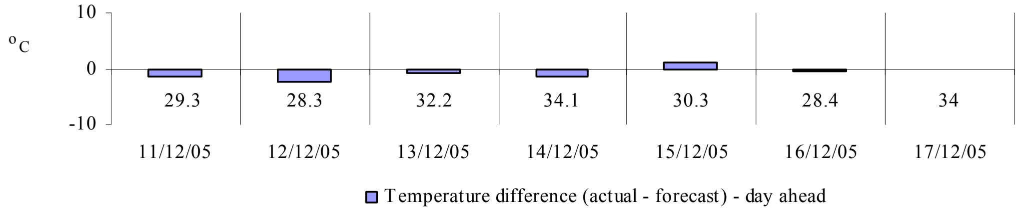












There were five occasions in Queensland where the spot price was greater than three times the weekly average price of $21/MWh. These occurred at 3pm on Tuesday and between 1.30pm and 3pm on Wednesday.

Tuesday, 13 December

3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	133.90	29.39	30.73
Demand (MW)	7 926	7 787	8 077
Available capacity (MW)	8 867	9 195	9 197

Conditions at the time saw demand around 150MW higher than forecast and within 300MW of the record set the previous week. Imports from New South Wales were limited to around 350MW. There was 300MW less capacity available than expected four hours to dispatch.

At 10.43am, the return to service of Callide Power's unit 4 was brought forward by around eight hours effective immediately. As a result, there was 210MW of extra capacity available at 3pm. All of this capacity was priced at less than $20/MWh. The rebid reasons given were "Unit RTS" and "SCC Problems". The availability of unit 3 was reduced at 10.43am by 55MW. The rebid reason given was "Plant failure". All of this capacity was priced at less than $10/MWh.

Minor revisions to the availability of Millmerran from midday saw a reduction of as much as 125MW across both units, with 80MW being restored over the course of the trading interval. The rebid reasons given were "ACC backpressure limit". All of this capacity was priced at less than zero.

At 2.08pm, Tarong Energy reduced the availability at Tarong unit 3 by 70MW. The rebid reason given was "P Emissions::Reduced avail".

At around 2.30pm, Gladstone unit 3 tripped offline from around 280MW. The rebid reason given was "Unit trip – reasons unknown – change availability". Almost all of this capacity was priced at less than $30/MWh. The availability of Gladstone unit 1 and 2 was reduced by 35MW over two rebids at 2.26pm and 2.46pm. The rebid reasons given were "Rearrangement post outage::changed MW distrib" and "Unit trip – reasons unknown – change availability", respectively. Most of this capacity was priced at less than $30/MWh.

There was no other significant rebidding.

Wednesday, 14 December

1:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	95.38	25.44	20.39
Demand (MW)	8 201	7 965	7 844
Available capacity (MW)	9 220	9 365	9 380
2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	127.79	27.05	23.47
Demand (MW)	8 147	8 017	7 937
Available capacity (MW)	8 865	9 310	9 380
2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	89.42	26.67	23.64
Demand (MW)	8 129	8 011	7 970
Available capacity (MW)	8 886	9 365	9 380
3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	70.14	26.85	23.80
Demand (MW)	8 111	7 990	7 985
Available capacity (MW)	8 879	9 365	9 380

Conditions at the time saw demand reach a new record of 8 201MW[1] at 1.30pm, which was more than 200MW higher than forecast four hours to dispatch. There was almost 500MW less capacity available than expected four hours to dispatch, primarily as a result of the loss of Callide Power's unit 3.

At 11.16am and 11.24am, Millmerran reduced the availability of both units 1 and 2 by 25MW and 20MW respectively. The rebid reasons given were "Energy limitations". All of this capacity was priced at less than zero.

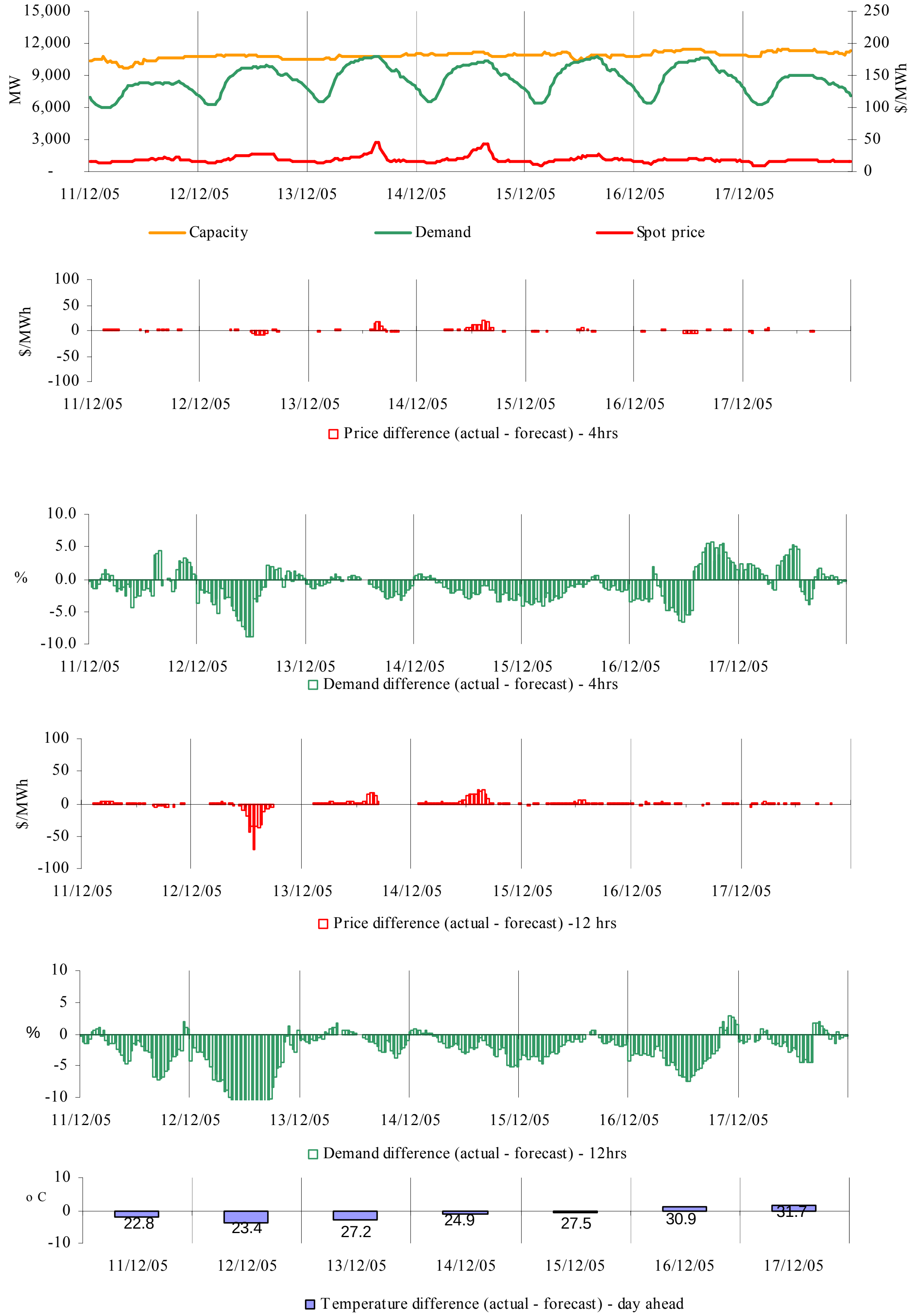
Around midday, Enertrade shifted 120MW of capacity across Gladstone from prices of less than $20/MWh to prices above $250/MWh. The rebid reason given was "Powerlink direction::GPS output variation". This was partially offset at 12.57pm, when 45MW of capacity at Mt Stuart unit 1 was shifted from prices of more than $9 000/MWh to zero. The rebid reason given was "Amended contract position::changed MW distrib".

At around 1.30pm, Callide Power's unit 3 tripped offline from 350MW. The rebid reason given was 'Plant failure". All of this capacity was priced at less than $10/MWh.

There was no other significant rebidding.

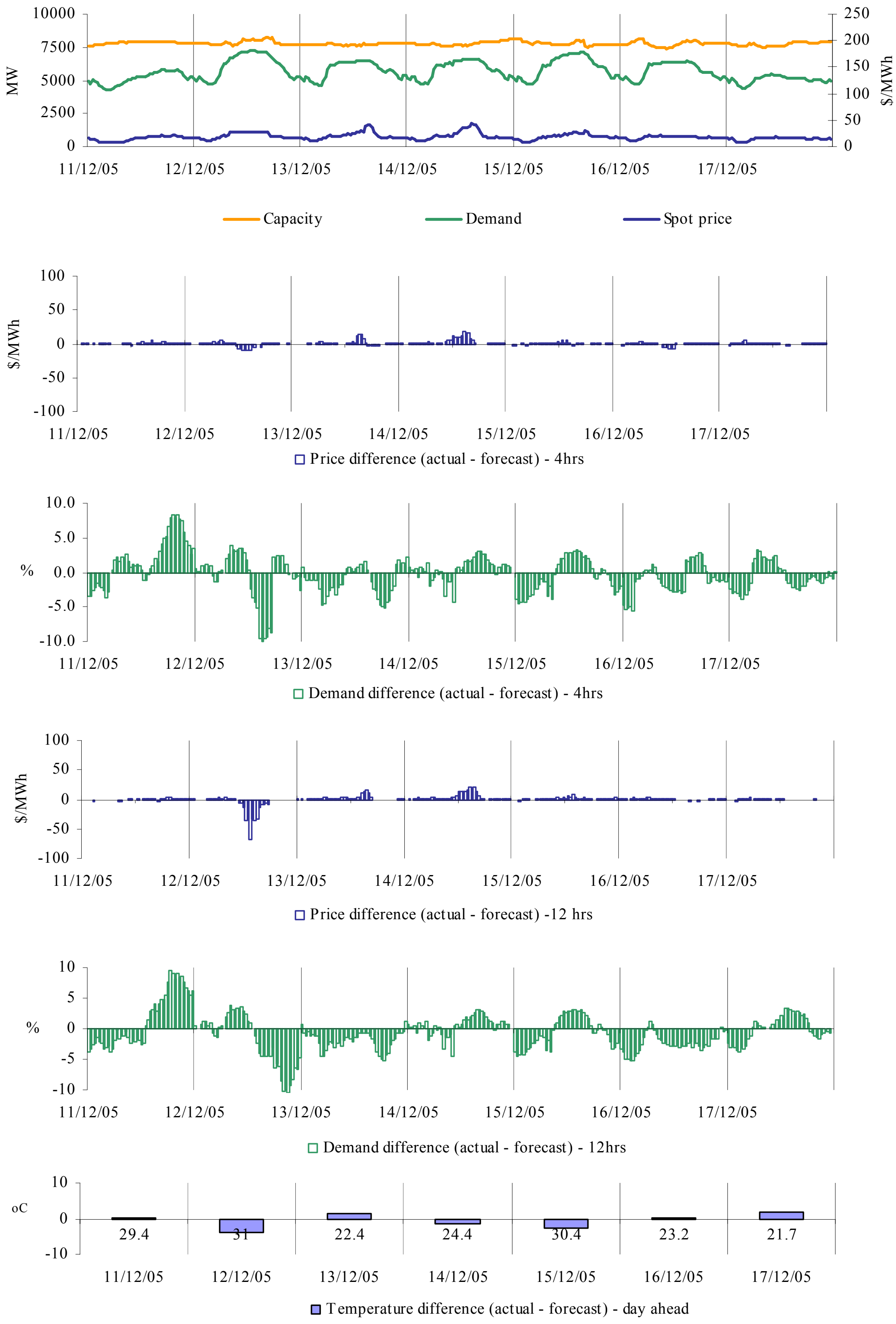
[1] This is the measure of demand referred to as "initial supply", which we use as the best measure available with sufficient history for comparison. Initial supply is a measure of the demand at the start of a dispatch interval and is defined as the sum of the metered scheduled generation in the region plus metered imports into the region.

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



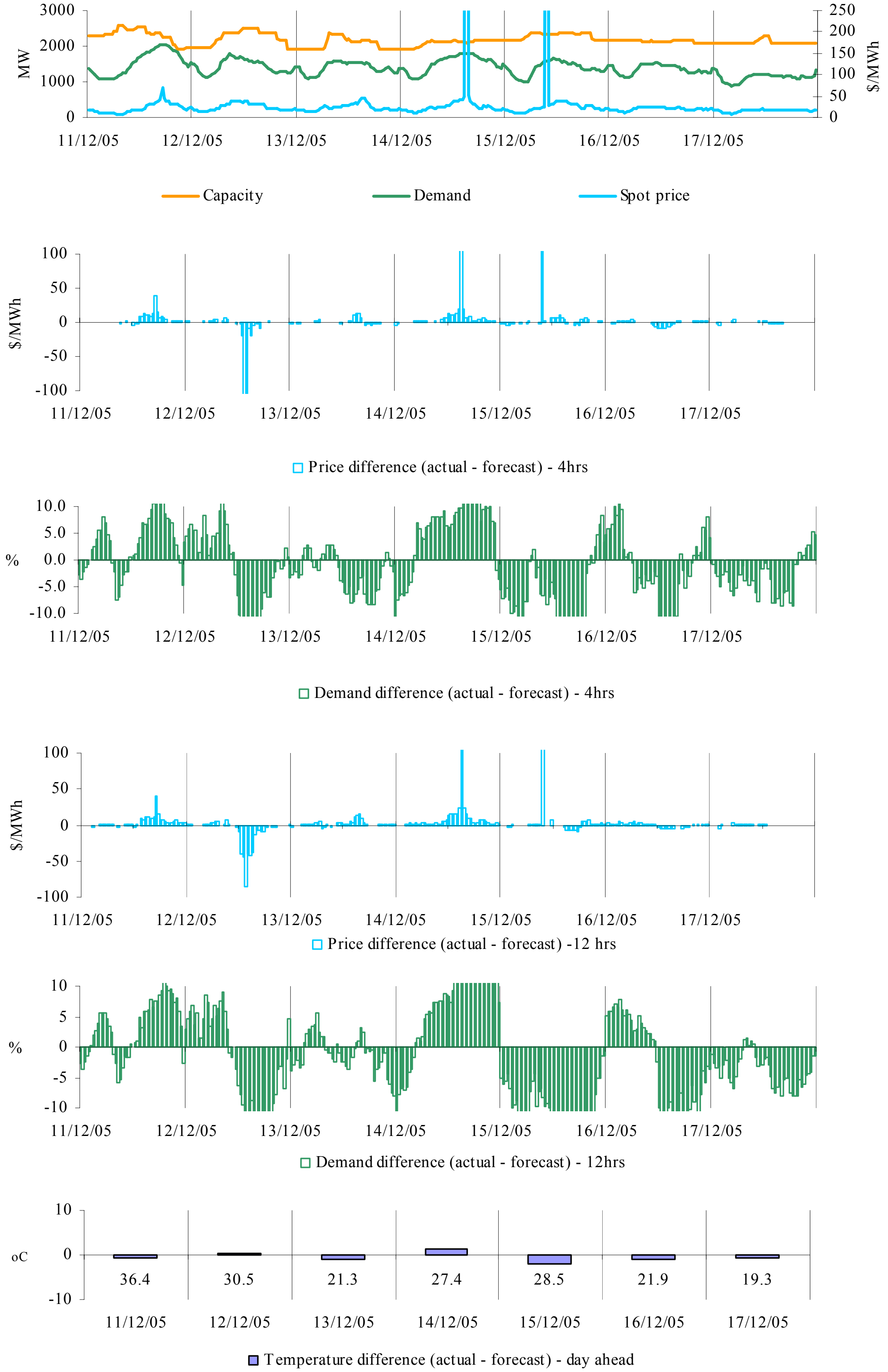
There were no occasions in New South Wales where the spot price was greater than three times the weekly average price of $20/MWh.

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



There were no occasions in Victoria where the spot price was greater than three times the weekly average price of $19/MWh.

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



There were two occasions in South Australia where the spot price was greater than three times the weekly average price of $45/MWh. These occurred at 3.30pm on Wednesday and at 10am on Thursday.

Wednesday, 14 December

3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	4 173.42	30.14	27.20
Demand (MW)	1 791	1 615	1 575
Available capacity (MW)	2 096	2 174	2 194

Conditions at the time saw demand 170MW higher than forecast four hours ahead. The price increased from $50/MWh at 3.05pm to $5 000/MWh at 3.10pm. The price remained at this level for the rest of the trading interval. There was only 39MW of available capacity priced between $40/MWh and $5 000/MWh.

Across two rebids at 10.03am and 12.58pm, NRG Flinders reduced the availability of Playford by a total of 65MW. The rebid reasons given were "Adj Playford loading schedule plant conditions" and "Reduce unit availability due to plant problems". All of this capacity had been priced at less than zero. At 2.48pm, 39MW of capacity at Osborne was shifted from prices of around $50/MWh to $150/MWh. The rebid reason given was "Avoid uneconomical commitment of high cost capacity".

Step changes in the offer profile of TRU Energy's Torrens Island saw 130MW of capacity priced at $5 000/MWh between 3.05pm and 4pm. At other times of the day this capacity was priced at less than $50/MWh. This step change was established as part of TRU Energy's day-ahead bid.

At 3pm effective 3.10pm, International Power rebid 72MW of capacity at Pelican Point from prices of less than $40/MWh to prices above $9 000/MWh. The rebid reason given was "responding to change in 5 MPD prices".

At 3.14pm, effective 3.25pm, two Quarantine units totaling 46MW in capacity, were committed at prices of zero. The rebid reason given was "Est (N) change in PDS". This capacity had previously been priced at $9 000/MWh. At 3.11pm, effective 3.20pm, Origin Energy reduced the availability of Ladbroke Grove unit 1 to zero from 43MW. The rebid reason given was "Est (N) avoid uneconomic start". This capacity was priced at $2 000/MWh. The remaining two Quarantine units were committed from 3.35pm.

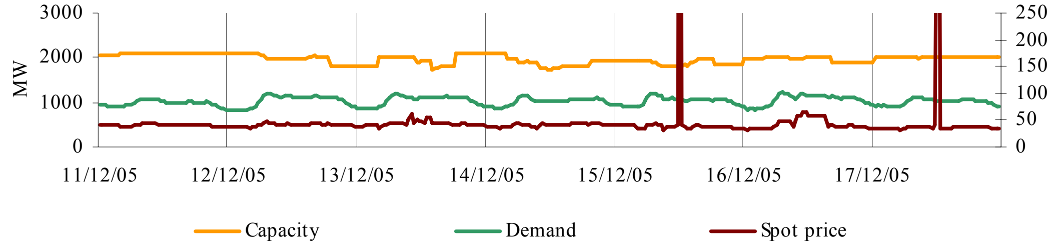
There was no other significant rebidding.

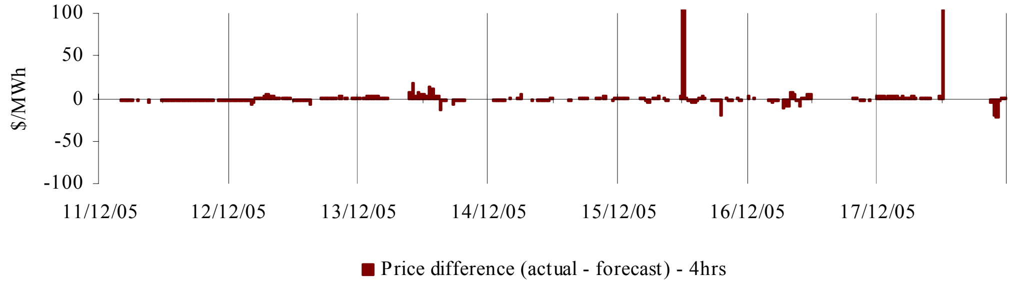
Thursday, 15 December

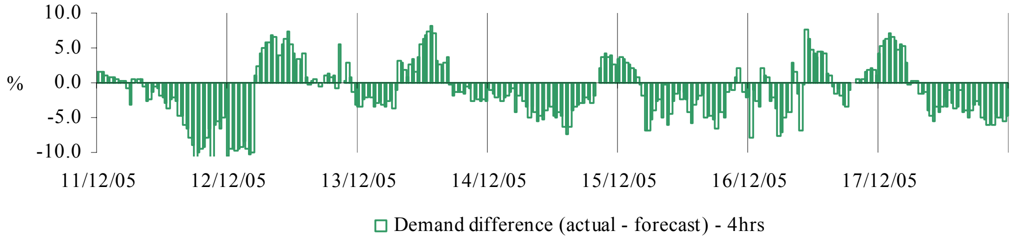
10:00 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1 686.70	30.90	30.01
Demand (MW)	1 591	1 697	1 722
Available capacity (MW)	2 342	2 368	2 371

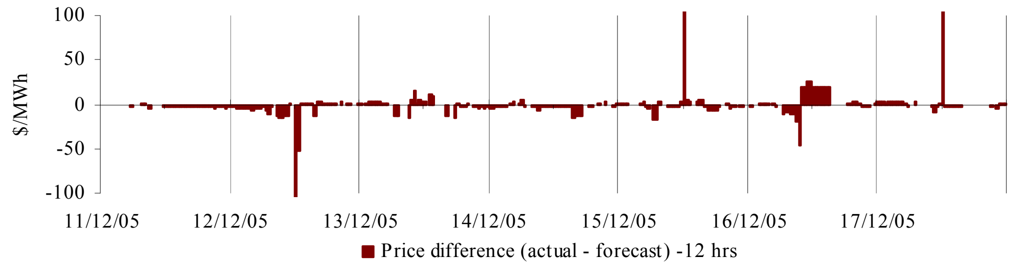
Following advice from ElectraNet of lightning in the vicinity of the Heywood interconnector, NEMMCO reduced the limit for flows from Victoria from around 440MW at 9.55am to 80MW at 10am. This step reduction was not able to be met, with flows reduced by around 260MW but remaining above the limit. The five-minute dispatch price spiked from $24/MWh to $9 999.99. The constraint reducing the limit was then removed and the limit returned to around 440MW at 10.05am. Further constraints were then invoked from 10.10am which ramped down flows on the interconnector to 50MW over the next 20 minutes, with the price remaining below $32/MWh.

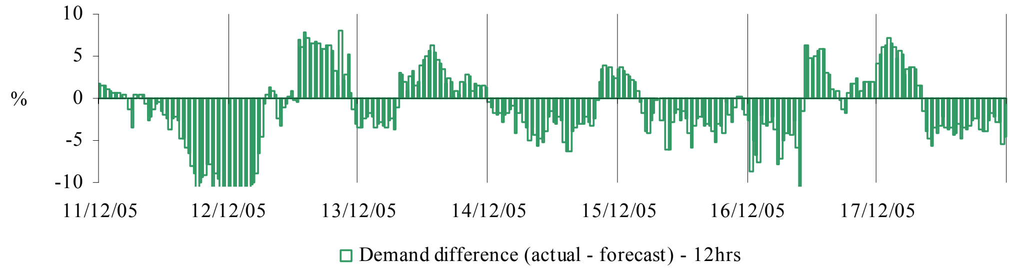
Figures 45-50: Tasmania actual spot price, demand and forecast differences

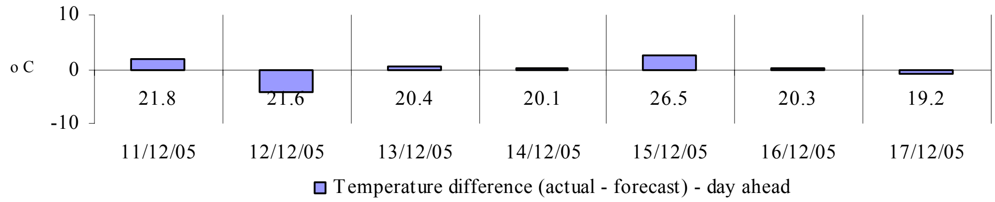












There were two occasions in Tasmania where the spot price was greater than three times the weekly average price of $49/MWh. These occurred at 12.30pm on Thursday and Saturday.

Thursday, 15 December

12:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	1 700.42	40.50	34.51
Demand (MW)	1 082	1 096	1 098
Available capacity (MW)	1 827	1 827	1 827

Conditions at the time saw demand close to forecast. At 12.05pm, testing on Basslink commenced for flows of 200MW north from Tasmania into Victoria. This testing was scheduled to occur from the previous day. At 12.10pm the ramp rates for almost every generator in Tasmania reduced from in most cases 30MW per minute to 1MW per minute. This led to violated constraints and a price of $10 000/MWh for this dispatch interval. For the next dispatch interval ramp rates returned to the previous levels and the price returned to $40/MWh.

There was no significant rebidding.

Saturday, 17 December

12:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	861.25	33.52	33.57
Demand (MW)	1 045	1 067	1 067
Available capacity (MW)	2 026	2 026	2 026

Conditions at the time saw demand close to forecast.

Basslink was forecast to flow 100MW north for the trading interval ending 12pm and 100MW south for the 12.30pm trading interval. At 12.05pm, however, the flow continued northwards at 50MW.

There was a step change in the offer profile for the 12.30pm trading interval for Reece unit 1 coincident with the forecast reduction in exports from Tasmania. This change in offer profile saw 100MW of capacity reallocated from prices of $40/MWh at 12pm to more than $2 000/MWh from 12.05pm.

At 12.05pm, a significant increase in the requirement for all frequency control services across the market occurred. The requirement for the Tasmanian lower 6 second service was not met, leading to a $10 000/MW price for this service.

The combined effect of the increase in the requirement for ancillary services, higher than forecast exports and the offer profile change led to the price for energy spiking to $5 000/MWh at 12.05pm. At 12.10pm the flow on Basslink moved to 100MW south, the ancillary services requirements reduced and as a result the price returned to less than $40/MWh.

There was no significant rebidding.

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

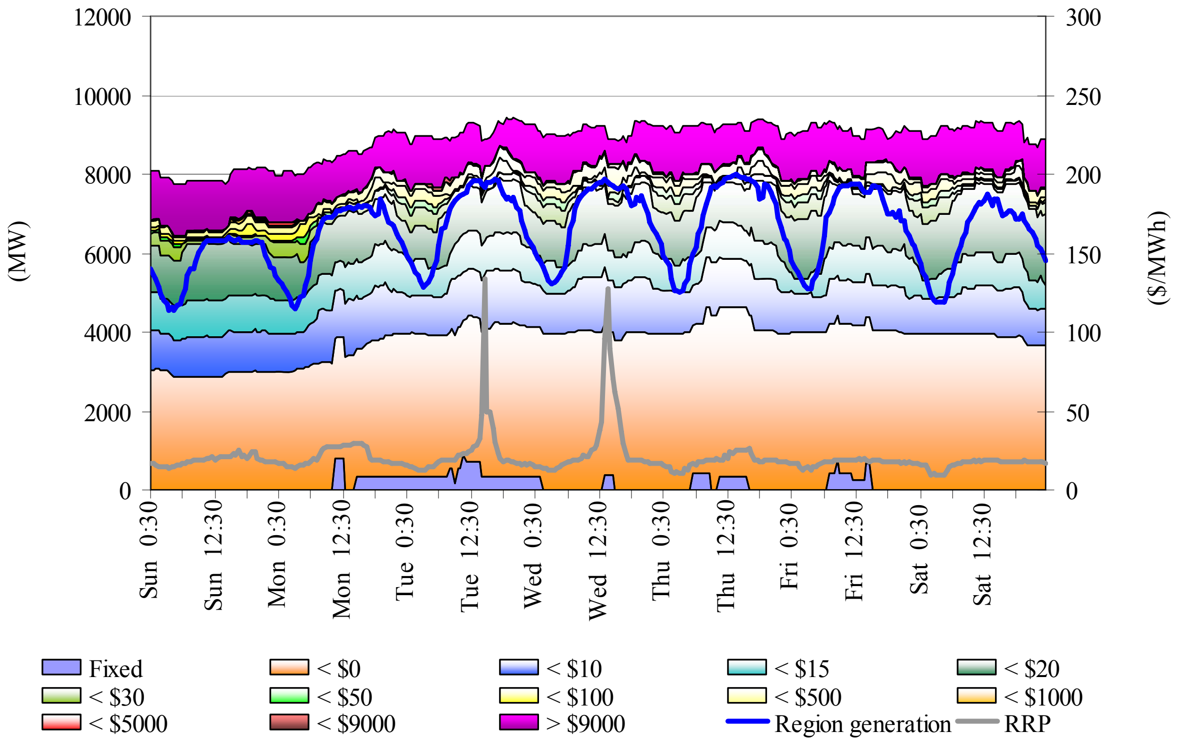


Figure 52: New South Wales closing bid prices, dispatched generation and spot price

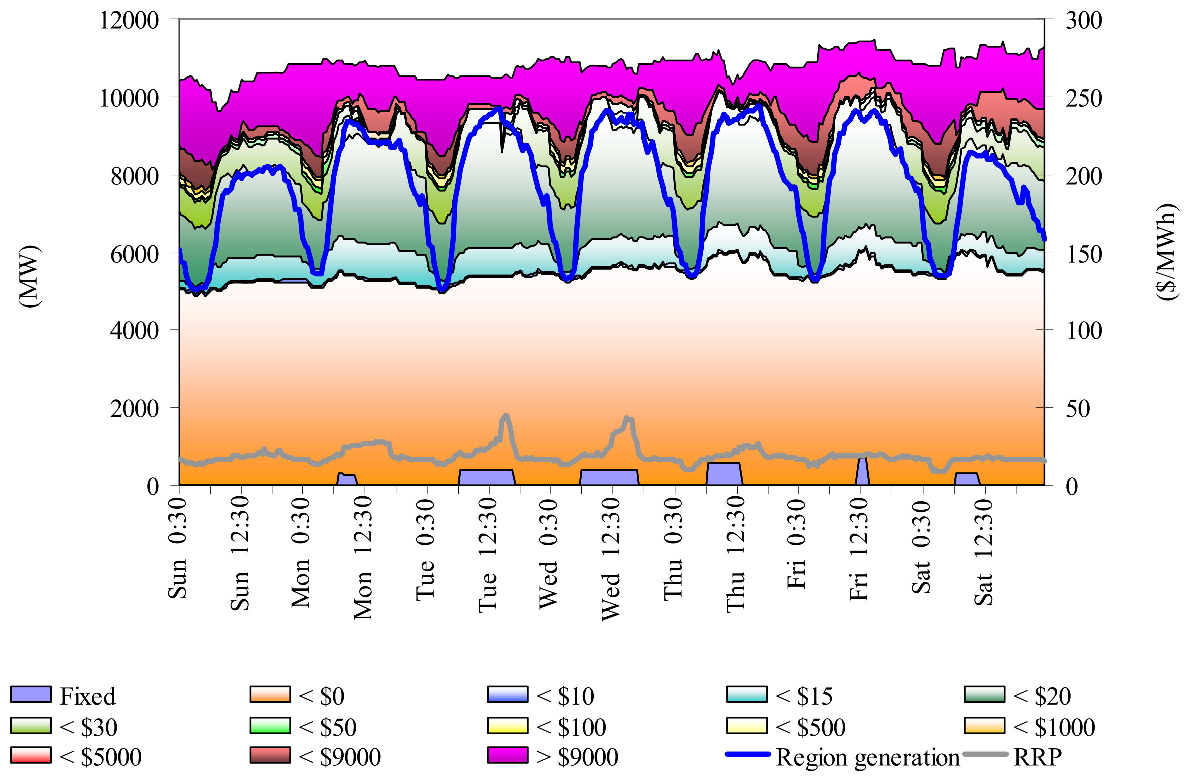


Figure 53: Victoria closing bid prices, dispatched generation and spot price

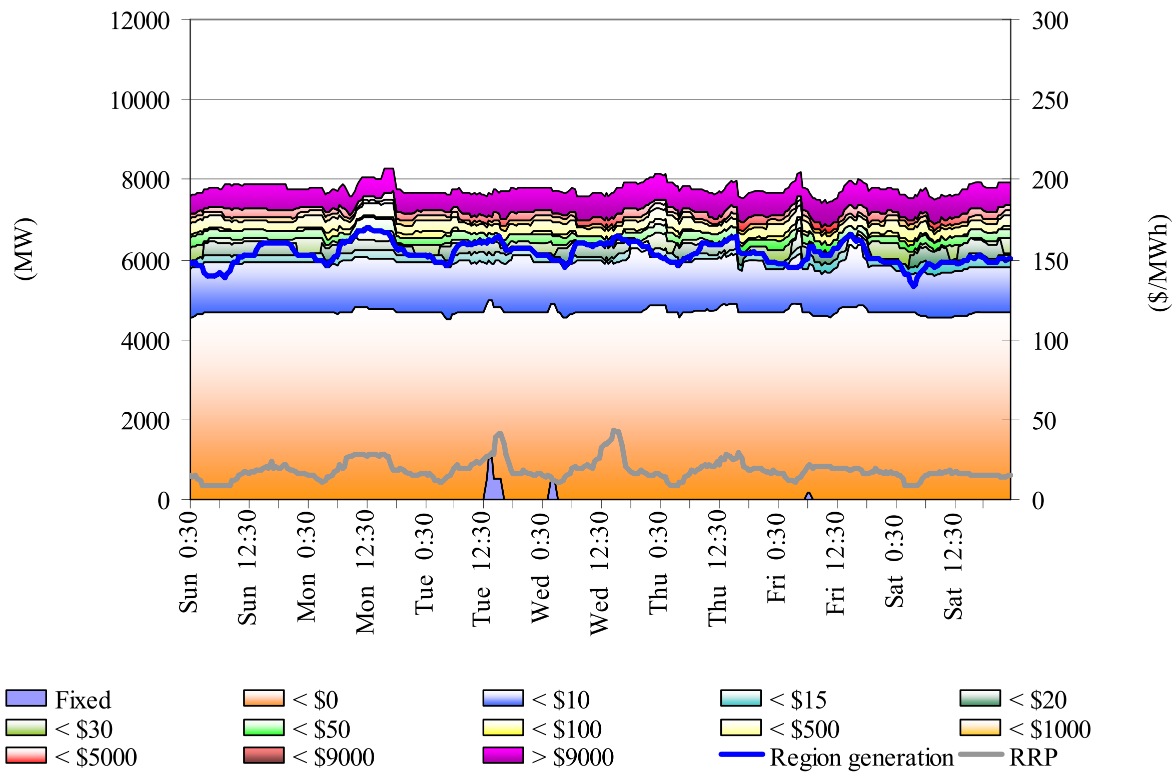


Figure 54: South Australia closing bid prices, dispatched generation and spot price

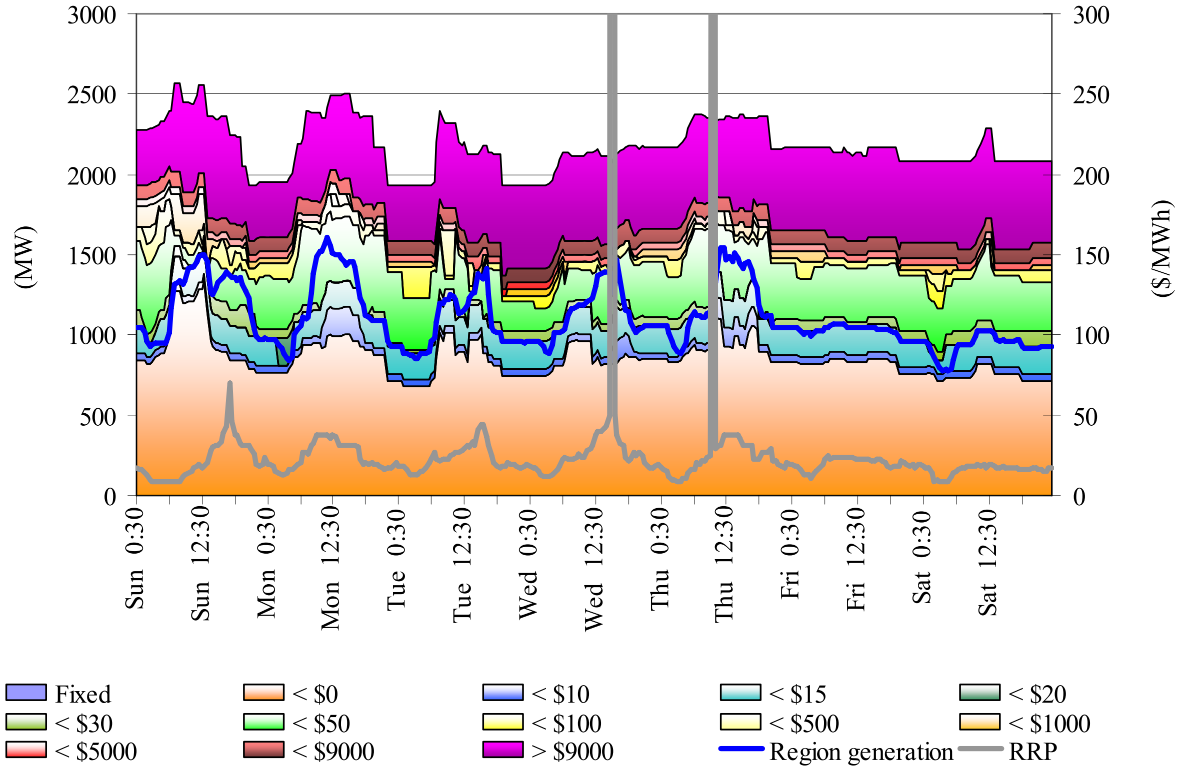
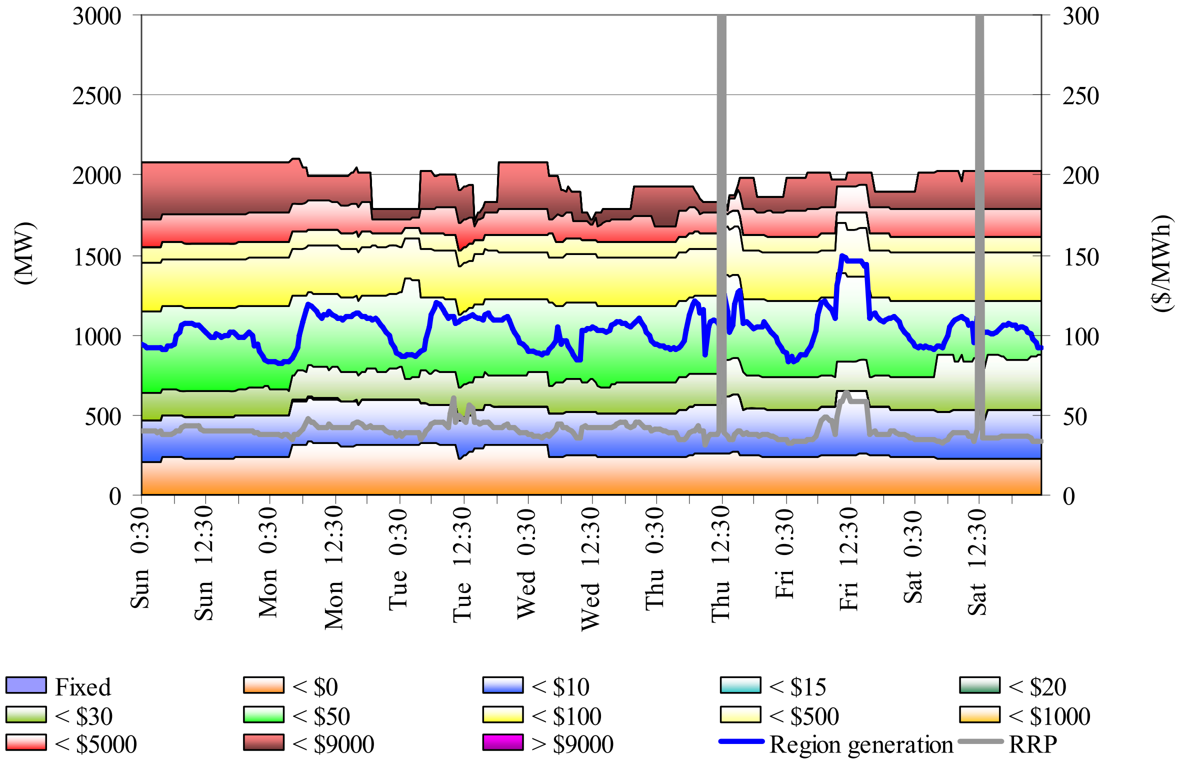


Figure 55: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was around $200 000 or around 0.5 per cent of the total turnover in the energy market. Figure 56 summarises the volume weighted average prices and costs for the eight frequency control ancillary services across the interconnected regions.

Figure 56: frequency control ancillary service prices and costs

	Raise 6 sec	Raise 60 sec	Raise 5 min	Raise reg	Lower 6 sec	Lower 60 sec	Lower 5 min	Lower reg
Last week	0.90	0.44	0.95	1.17	0.16	0.27	0.80	1.87
Previous week	1.67	0.57	1.20	1.85	0.37	0.42	7.26	1.71
Last quarter	1.62	0.91	1.00	1.36	0.20	0.64	2.29	1.56
Market Cost ($1000s)	42	21	61	25	1	2	13	40
% of energy market	0.05%	0.03%	0.08%	0.03%	0.01%	0.01%	0.02%	0.05%

The total cost of ancillary services in Tasmania for the week was $270 000 or 3 per cent of the total turnover in the energy market in Tasmania. The majority of this cost occurred in five minutes on Saturday as a result of a shortfall and resulting $10 000/MW price for the lower 6 second service. 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	1.61	1.05	1.06	1.06	10.31	1.05	1.05	1.06
Previous week	3.37	1.05	1.05	1.06	2.06	1.05	1.06	1.07
Last quarter	19.40	1.05	1.14	2.25	6.25	1.06	1.06	1.26
Market Cost ($1000s)	$12	$10	$10	$9	$162	$34	$26	$9
% of energy market	0.14%	0.12%	0.12%	0.10%	1.93%	0.41%	0.31%	0.11%

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

Figure 58: daily frequency control ancillary service costs

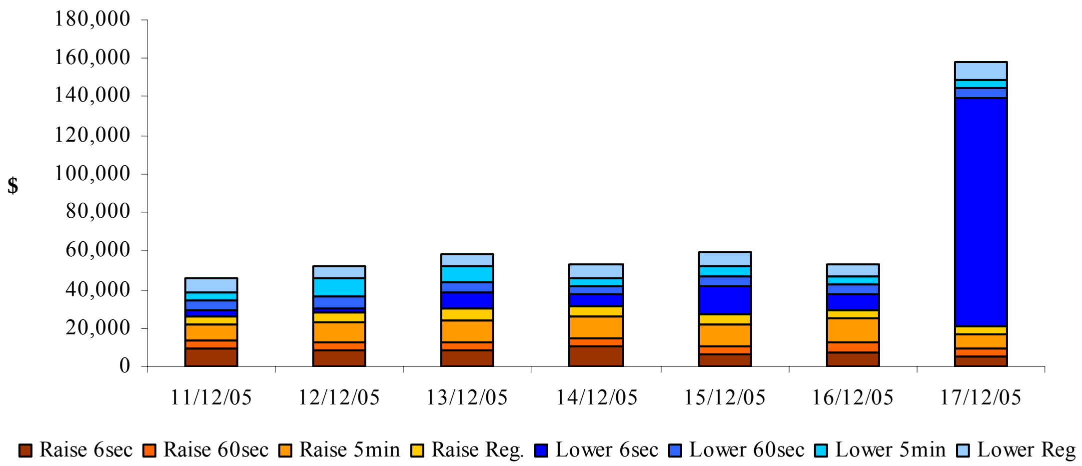
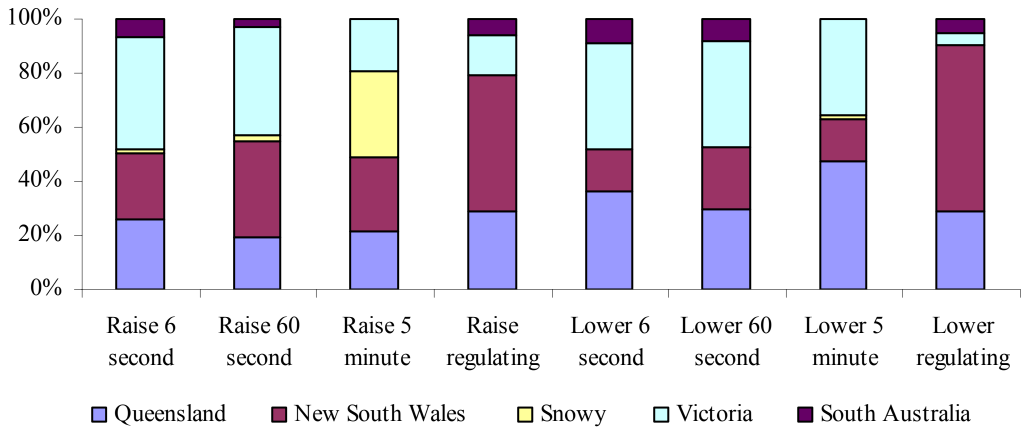


Figure 59 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

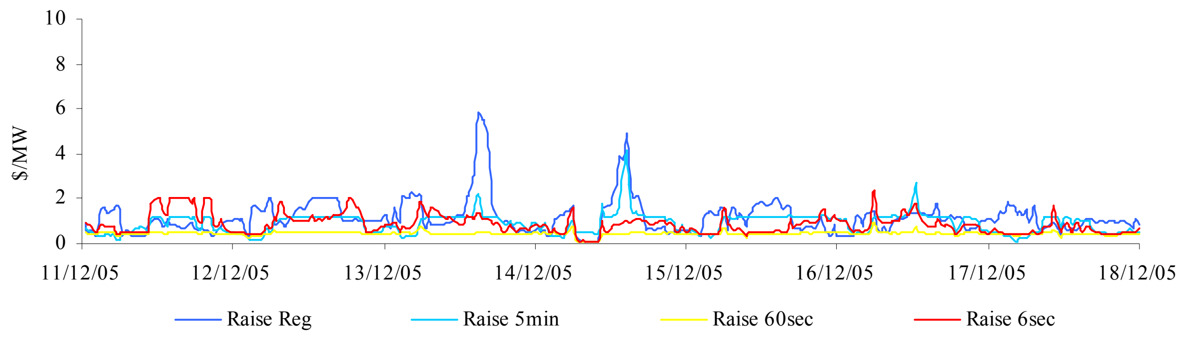


Figure 60A: prices for raise services - Tasmania

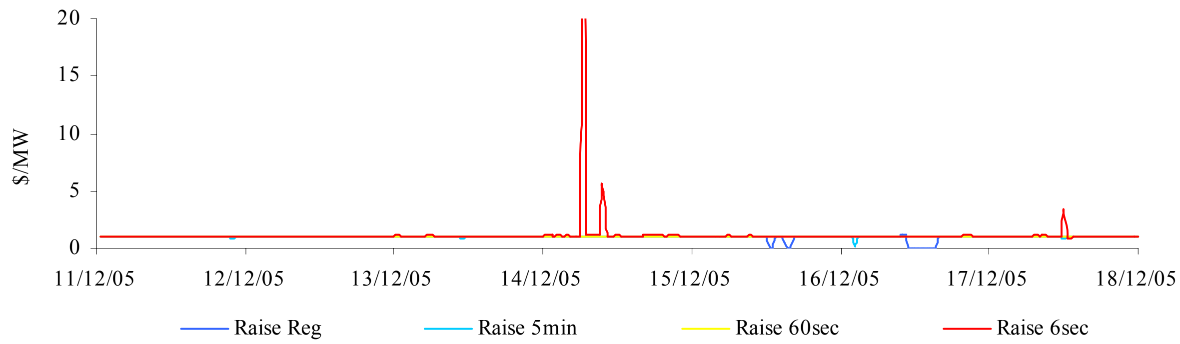


Figure 61: prices for lower services

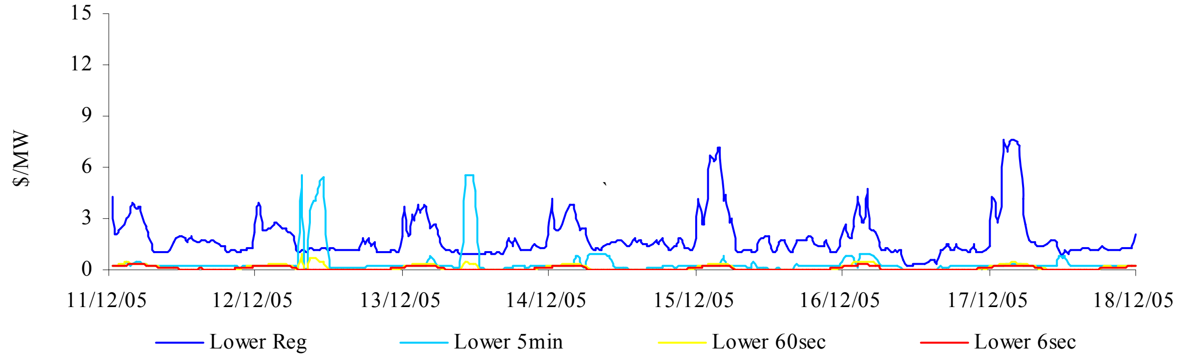
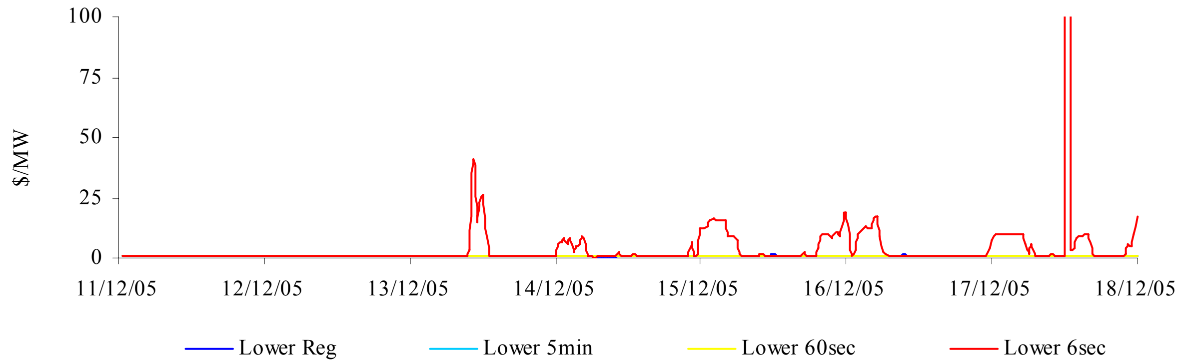


Figure 61A: prices for lower services - Tasmania



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

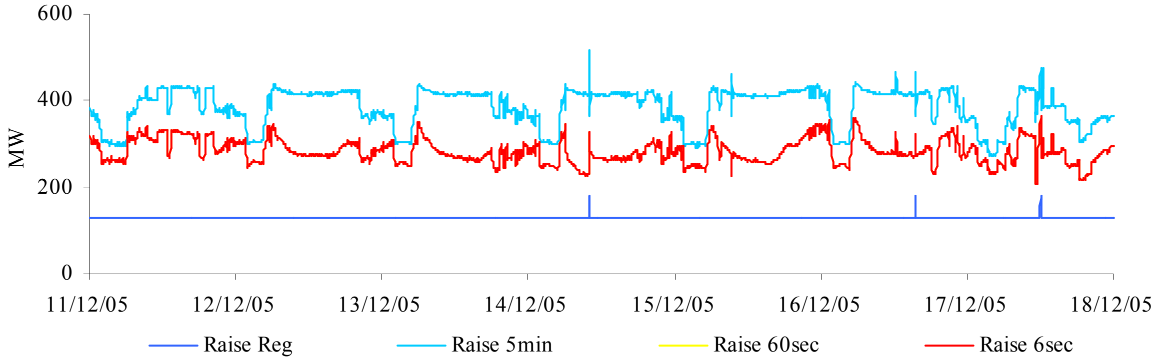


Figure 62A: raise requirements - Tasmania

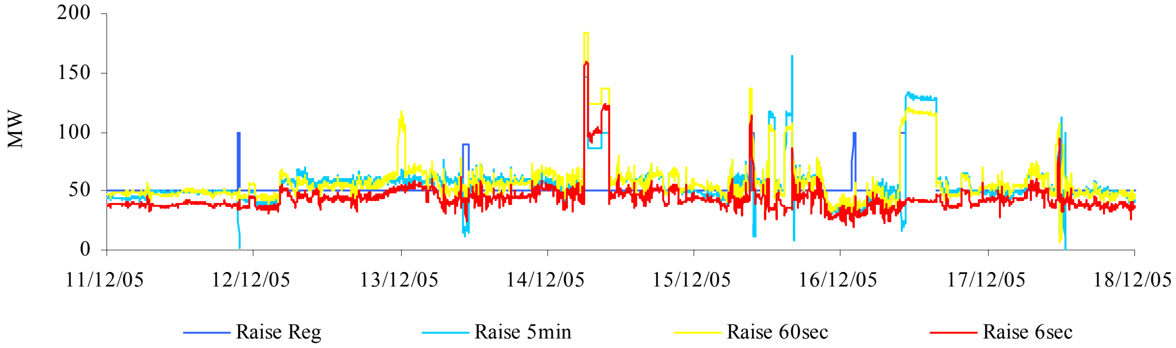


Figure 63: lower requirements

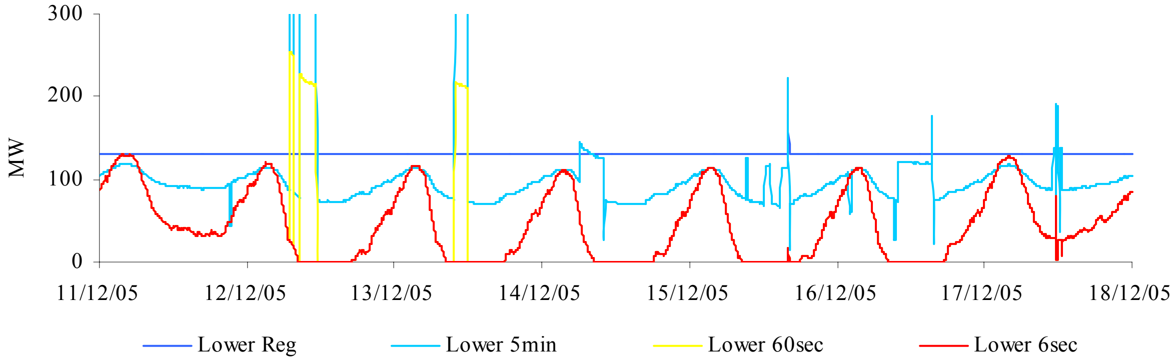
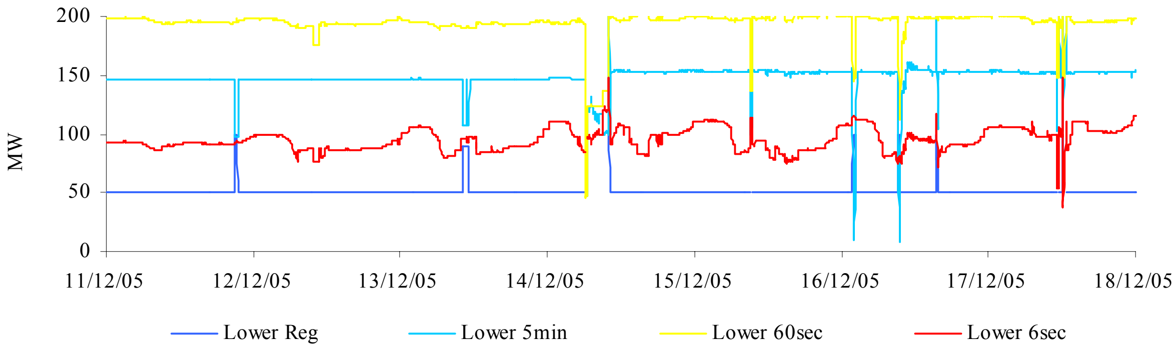


Figure 63A: lower requirements - Tasmania



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