Market analysis

4 - 10 DECEMBER 2005

Record demand in Queensland, combined with a new summer record in New South Wales resulted in significant increases in the average spot price in those regions for the week. Demand in Queensland reached almost 8 200MW[1] on Tuesday just exceeding the previous high set in February this year. Demand in Queensland remained around 8 000MW for the remainder of the week. In New South Wales, the demand reached just over 12 900MW on Wednesday, the highest-ever for summer and only 200MW short of the winter record. Spot price reached around $8 000/MWh in New South Wales and Queensland. As a result, prices in New South Wales and Queensland averaged $230/MWh and $188/MWh respectively for the week.

The spot prices in Victoria averaged $28/MWh, up by a third compared to the previous week. In South Australia and Tasmania prices averaged $32/MWh and $46/MWh respectively. Exports from Victoria to Snowy were significantly restricted for the peak periods each day from Monday to Thursday to manage counter-price flows.

Turnover in the energy market for the mainland was $598 million. This compares to $78 million the previous week. The total cost of ancillary services for the week was around $400 000, or 0.1 per cent of turnover. Turnover in Tasmania for the week was $8 million and the cost of ancillary services was $160 000 or 2 per cent of turnover.

Significant variations between actual prices and those forecast 4 and 12 hours ahead occurred in 73, or around a quarter, of all 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 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 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	188	230	28	32	46
Previous week	18	20	22	53	56
Same quarter last year	48	90	38	54	-
Financial year to date	31	49	29	36	88
% change from previous week	▲	▲	▲31%	▼40%	▼17%
% change from same quarter last year	▲292%	▲155%	▼26%	▼41%	-
% change from year to date	▼20%	▼22%	▼13%	▼23%	-

[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.

Figure 2: national demand and spot prices

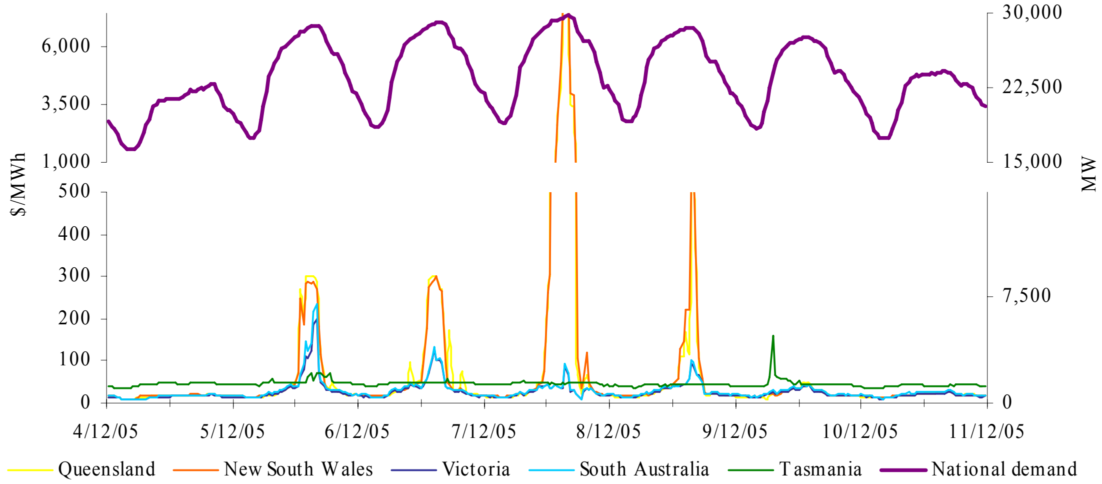


Figure 3: volatility index during peak periods

	QLD	NSW	VIC	SA	TAS
Last week	7.73	8.14	1.35	1.23	0.19
Previous week	0.46	0.44	0.65	0.63	0.13
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

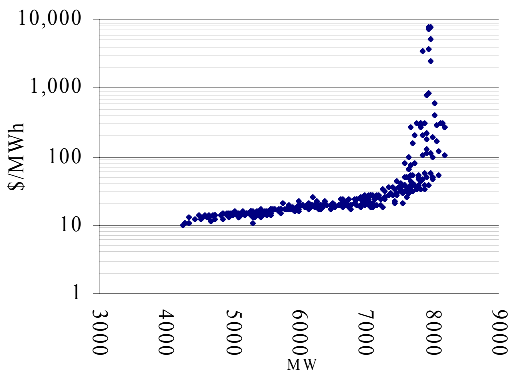


Figure 5: New South Wales

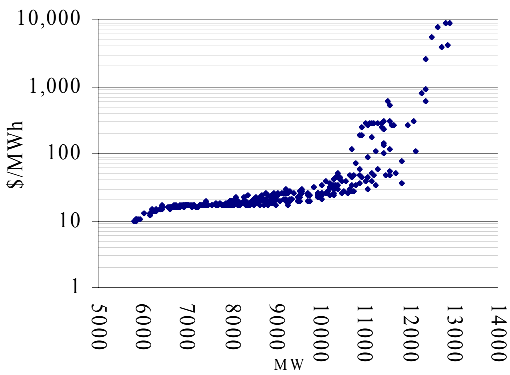


Figure 6: Victoria

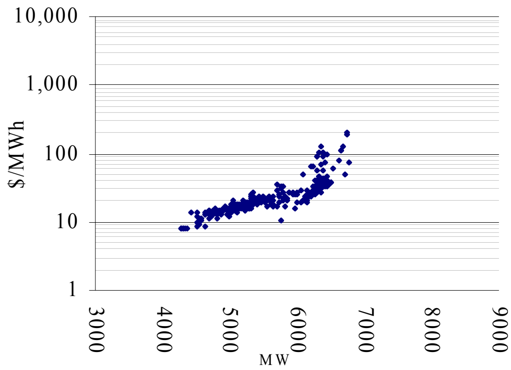


Figure 7: South Australia

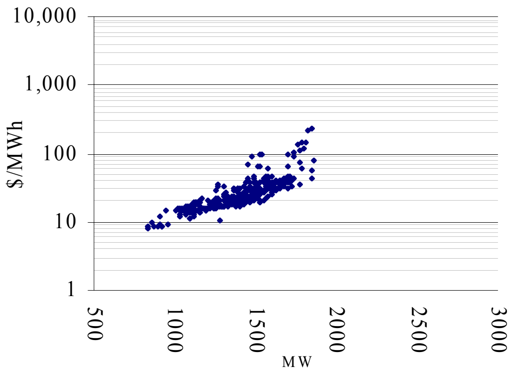
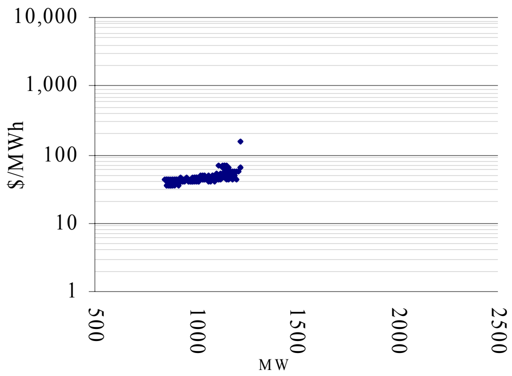


Figure 8: Tasmania



There were seven instances where the spot price exceeded $5 000/MWh - three each in New South Wales and Queensland and one in the Snowy region.

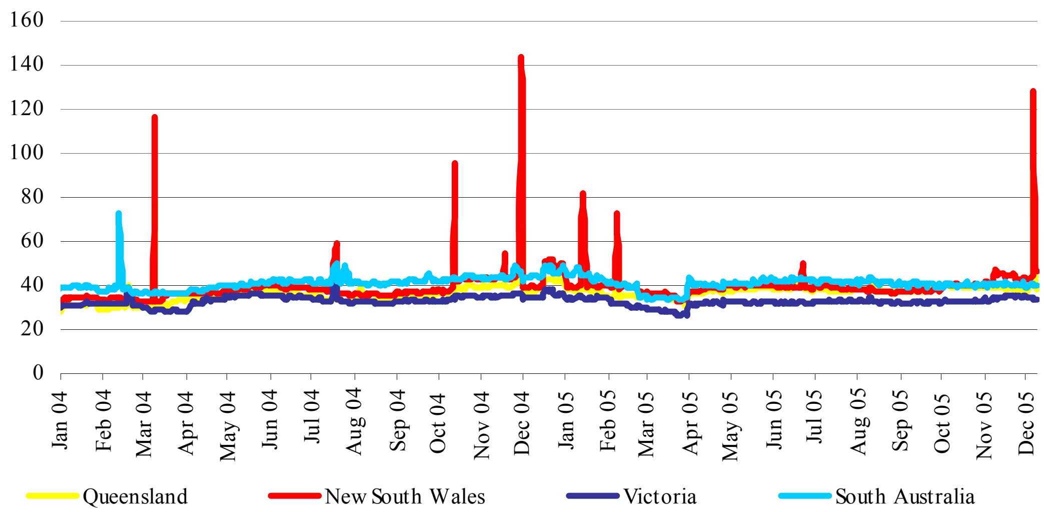
The maximum spot prices for the week in Queensland and New South Wales were $7,867/MWh and $8,755/MWh respectively on Wednesday afternoon. Other maximum prices were $197/MWh in Victoria and $236/MWh in South Australia at 4pm on Monday and $159/MWh in Tasmania on Friday at 7am.

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	41.08	41.52	96.41	41.65	38.27
New South Wales	43.83	44.38	127.89	48.15	46.77
Victoria	34.40	34.47	33.95	33.87	33.47
South Australia	41.17	40.74	39.57	40.33	40.29

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

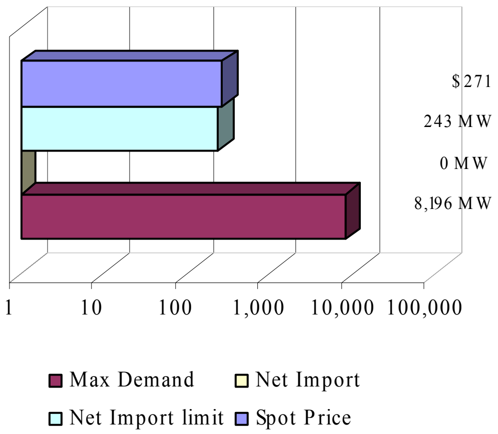


Figure 12: New South Wales

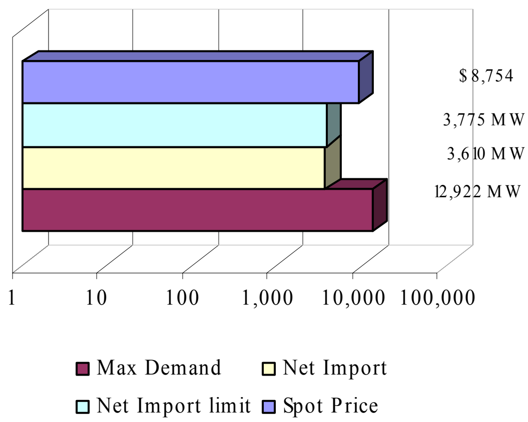


Figure 13: Victoria

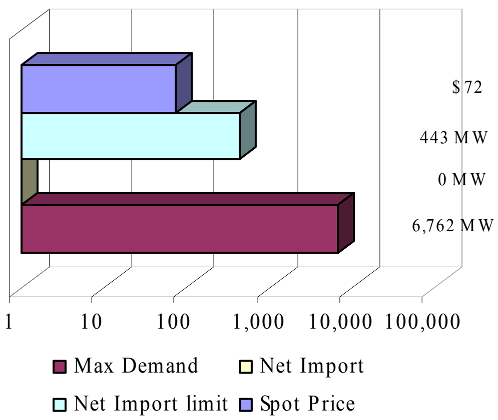
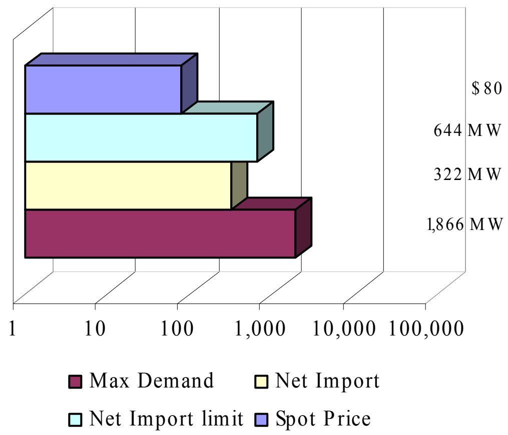


Figure 14: South Australia



In Tasmania, demand reached a maximum of 1 225MW at 8am on Friday, 9 December. The spot price at the time was $64/MWh.

Price variations

There were 73 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

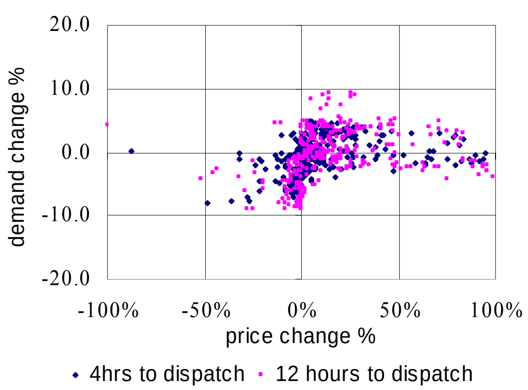


Figure 16: New South Wales

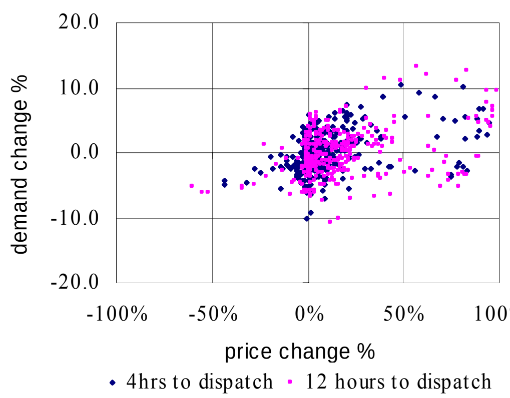


Figure 17: Victoria

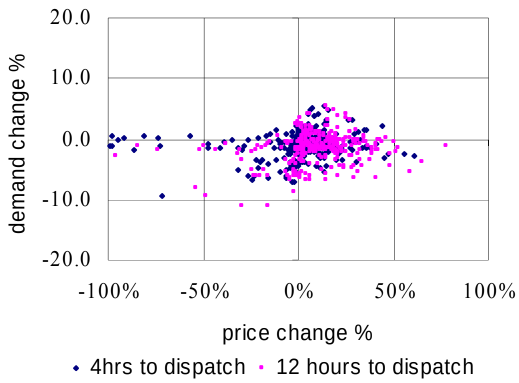


Figure 18: South Australia

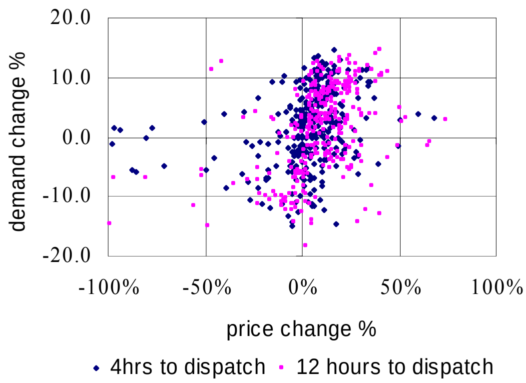


Figure 19: Tasmania

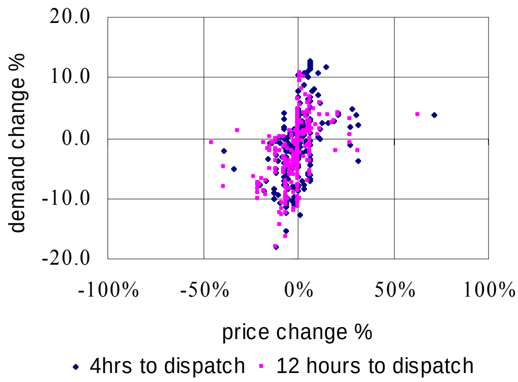
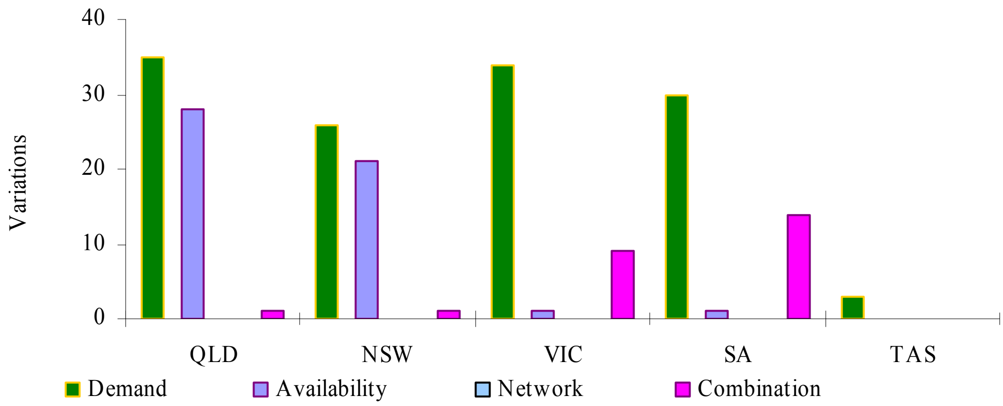


Figure 20 summarises the number and most probable reason for variations between forecast and actual prices.

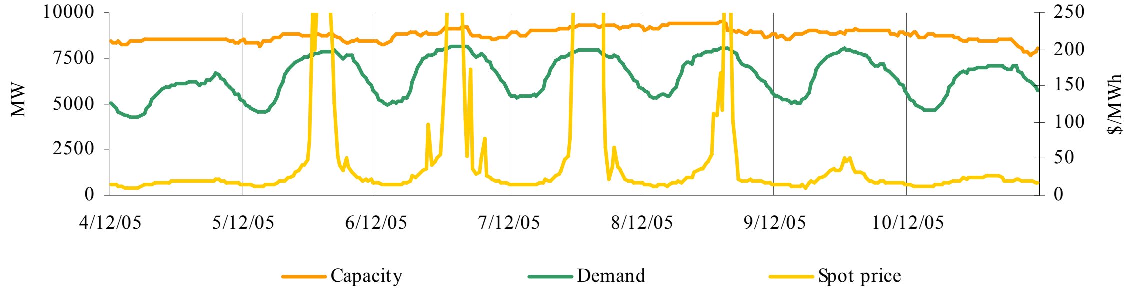
Figure 20: reasons for variations between forecast and actual prices

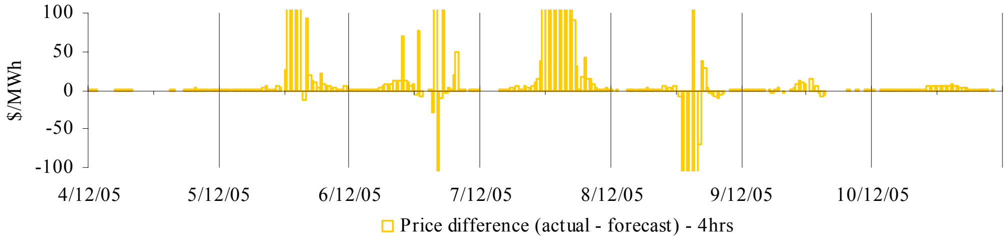


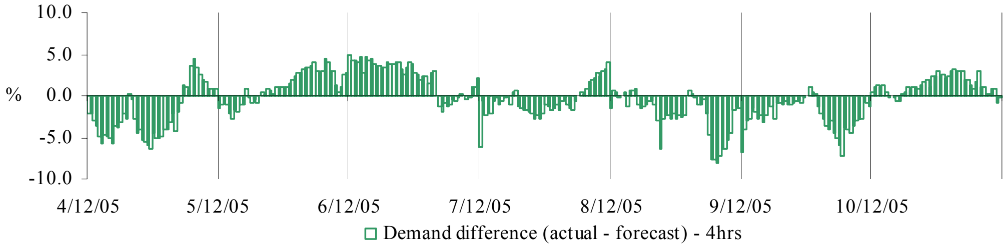
Price and demand

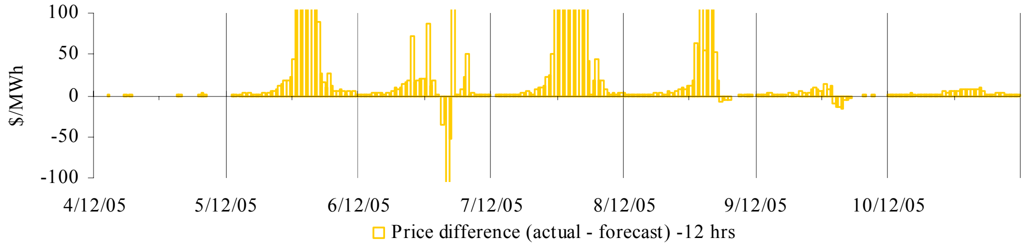
Figures 21 - 50 set out details of spot prices and demand on a regional basis. They include the actual spot price, actual demand outcomes and variation from forecasts made 4 and 12 hours ahead of dispatch on a daily basis. The differences between the maximum temperature and the temperature forecast at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

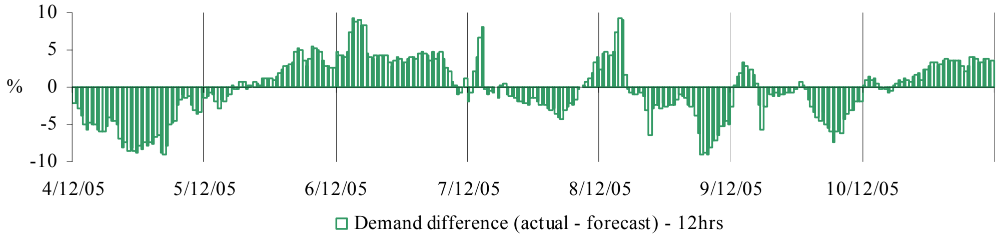
Figures 21-26: Queensland actual spot price, demand and forecast differences

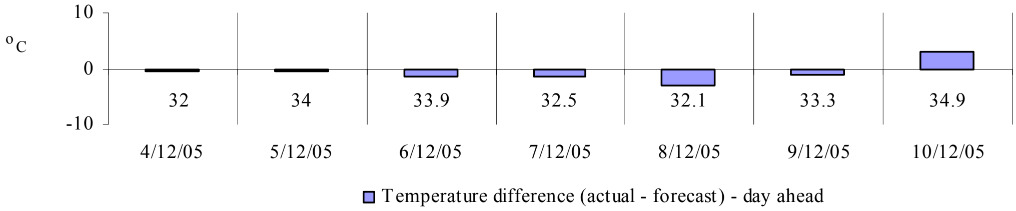












There were 10 occasions in Queensland where the spot price was greater than three times the weekly average price of $188/MWh. These occurred between 1pm and 5pm on Wednesday and at 4pm on Thursday.

Wednesday, 7 December

1:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	767.75	100.02	51.17
Demand (MW)	7 922	8 019	8 079
Available capacity (MW)	9 293	9 666	9 588
1:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	834.31	299.64	96.99
Demand (MW)	7 941	8 080	8 139
Available capacity (MW)	9 360	9 403	9 588
2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	2 422.90	4 29.88	112.26
Demand (MW)	7 990	8 107	8 157
Available capacity (MW)	9 327	9 408	9 588
2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	4 937.05	315.82	281.81
Demand (MW)	7 974	8 067	8 167
Available capacity (MW)	9 300	9 408	9 588
3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	7 089.57	853.56	282.89
Demand (MW)	7 946	8 074	8 174
Available capacity (MW)	9 295	9 406	9 588
3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	7 867.33	846.63	299.64
Demand (MW)	7 939	7 982	8 184
Available capacity (MW)	9 345	9 411	9 588
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	7 824.25	412.69	299.64
Demand (MW)	7 984	8 009	8 212
Available capacity (MW)	9 286	9 651	9 588
4:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	3 534.93	874.39	282.01
Demand (MW)	7 938	8 015	8 218
Available capacity (MW)	9 194	9 286	9 581
5:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	3 430.24	299.83	51.80
Demand (MW)	7 861	7 971	8 173
Available capacity (MW)	9 196	9 636	9 581

Conditions at the time saw demand within 200MW of the record set the previous day. Forecasts prepared 12 hours ahead of dispatch were predicting demands as much 300MW higher than actual. Demands in New South Wales at the time were also at record summer levels and within 200MW of the highest ever.

Constraints between central and south Queensland, which limit flows to 1 900MW, saw at times as much as 150MW of low priced capacity constrained off.

Exports from Queensland into New South Wales peaked at 800MW, around 100MW below the limit.

Delays in the return to service of Millmerran unit 1, which had been out of service since mid November and was initially expected to return around 8am, saw as much 250MW less available capacity than expected at 1pm. The rebid reasons given included “Revised synchronization” and “Changed plant conditions”. All of this capacity was priced at less than zero.

At 8.50am, Origin Energy committed 58MW of capacity at Roma at prices close to zero from prices above $9 000/MWh. The rebid reason given was “Est (N) change in PDS”.

At 11.46am, CS Energy rebid 67MW of capacity from prices of less than $20/MWh to prices above $400/MWh. The rebid reason given was “Portfolio rearrangement based on latest P”. At 1.19pm, around 400MW was rebid from prices of zero and above to the market floor across Callide B. The rebid reason given was “Callide B response to Central to south constraint”. Shortly after at 1.39pm Callide B1 was rebid as fixed load. The rebid reason given was “Callide B1 unit instability”.

From midday, Enertrade rebid around 450MW of capacity from across its portfolio from prices above $100/MWh, to prices below zero. The rebid reasons given included “Inter/Intra connector constraint::Changed MW distrib” and “Material change in market conditions ::Changed MW distrib”.

At 1.50pm, effective 2pm, Callide Power Trading reduced the availability of Callide unit C3 by 50MW. The rebid reason given was “Mill trip” and was effective until 3.05pm. All of this capacity was priced at less than zero.

There was no other significant rebidding.

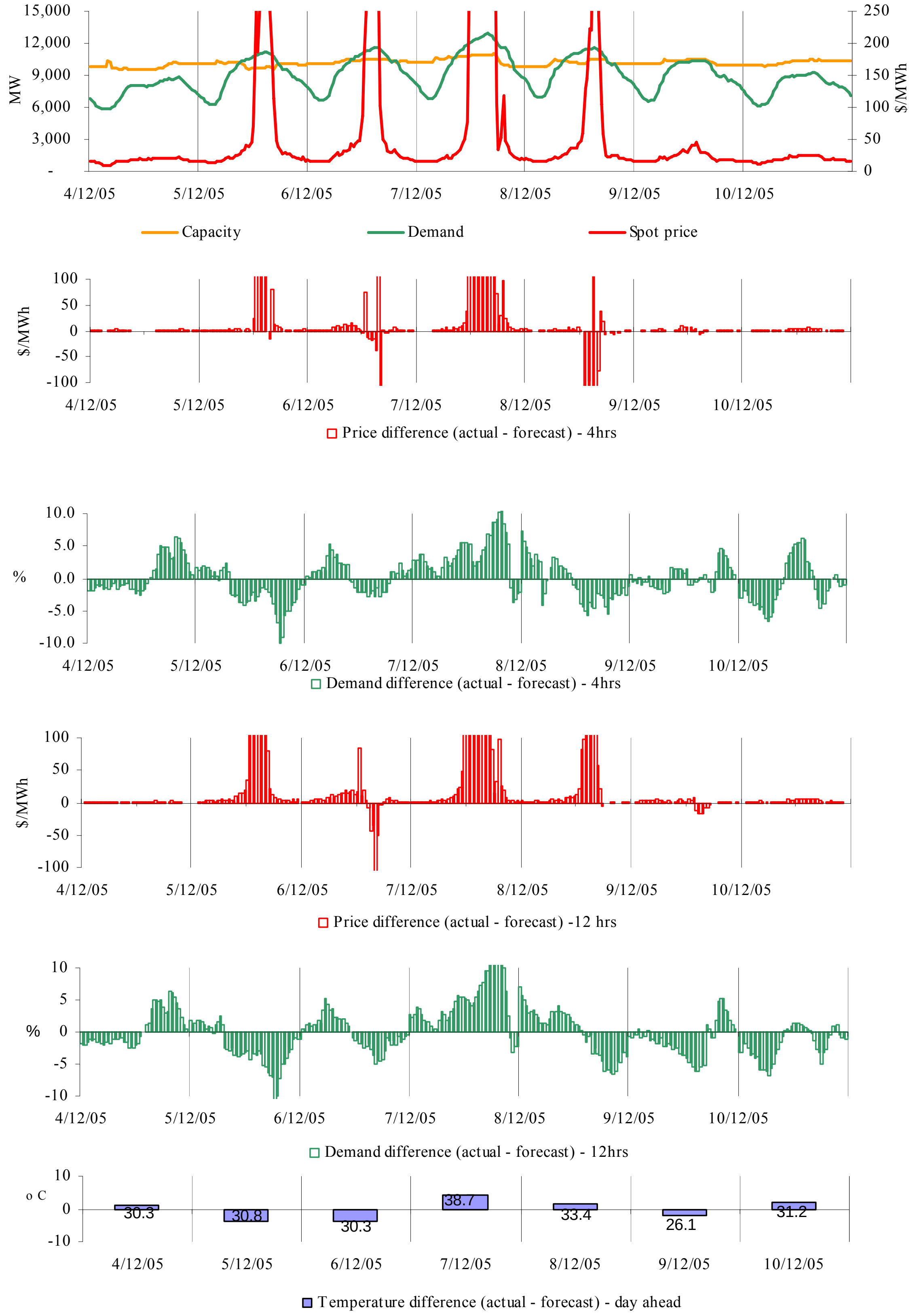
Thursday, 8 December

4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	589.18	777.71	63.15
Demand (MW)	8 033	8 047	8 147
Available capacity (MW)	9 019	9 483	9 654

Conditions at the time saw price and demand close to that forecast four hours ahead. At around 3.30pm the available capacity in Queensland was reduced by 460MW following the loss of Millmeran unit 1 at 3.24pm. The rebid reason given was “Unit trip”. All of this capacity was priced at zero. The unit returned around 3am the following morning.

There was no other significant rebidding.

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



There were 9 occasions in New South Wales where the spot price was greater than three times the weekly average price of $230/MWh. These occurred between 1pm and 5pm on Wednesday. Prices were above $5 000/MWh in four trading intervals.

Wednesday, 7 December

1:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	802.42	92.33	49.21
Demand (MW)	12 277	11 617	11 664
Available capacity (MW)	10 946	10 742	11 047
1:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	894.93	292.86	91.99
Demand (MW)	12 366	12 049	11 797
Available capacity (MW)	10 921	10 742	11 047
2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	2 599.22	452.00	106.50
Demand (MW)	12 385	12 136	11 891
Available capacity (MW)	10 886	10 712	11 047
2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	5 331.75	334.86	267.39
Demand (MW)	12 525	12 192	11 961
Available capacity (MW)	10 886	10 762	11 047
3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	7 798.39	919.35	268.44
Demand (MW)	12 670	12 340	11 979
Available capacity (MW)	10 886	10 782	11 047
3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	8 730.82	920.30	288.40
Demand (MW)	12 844	12 397	12 021
Available capacity (MW)	10 926	10 826	11 047
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	8 754.32	451.72	284.20
Demand (MW)	12 922	12 342	11 993
Available capacity (MW)	10 926	10 826	11 047
4:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	4 002.39	921.18	266.33
Demand (MW)	12 863	12 228	11 881
Available capacity (MW)	10 926	10 956	11 047
5:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	3 887.47	315.52	48.71
Demand (MW)	12 738	11 869	11 528
Available capacity (MW)	10 926	10 956	11 047

The temperatures in Sydney on the day peaked at 39 degrees with demand in New South Wales reaching a new summer record and within 200MW of the highest ever. Demand forecast errors four hours to dispatch varied from around 300MW at 1.30pm to a maximum error of 870MW at 5pm.

Demands in Queensland at the time were also within 200MW of the highest ever.

Flows into New South Wales from Snowy were around 2 900MW, and at the limit, throughout this period while transfers from Victoria and South Australia into Snowy were constrained to as little as 50MW to manage the accumulation of negative settlement residues across the Victoria to Snowy interconnector. Flows south from Queensland peaked during the 5pm trading interval at more than 800MW, short of the limit by around 100MW.

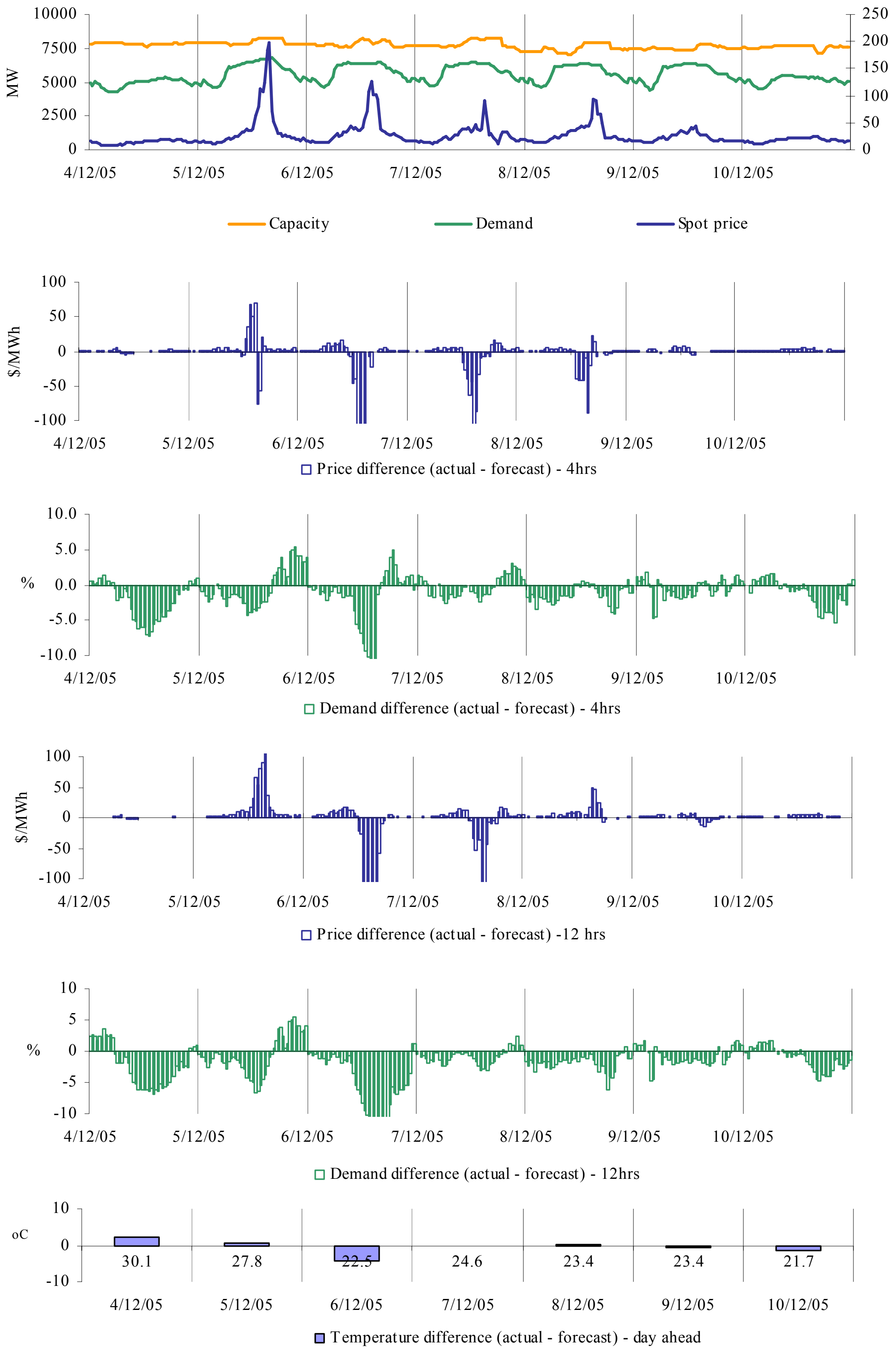
There was around 9 200MW of capacity priced below $30/MWh presented through day-ahead bids, with around 200MW of capacity priced between $30/MWh and $5 000/MWh. A further 1 600MW of capacity in New South Wales was priced above $5 000/MWh.

At 9.08am, Macquarie Generation rebid as much as 400MW of capacity from prices below $20/MWh to prices above $500/MWh. The reason given was "RP/Volume tradeoff – load expected to vary from forecast".

At 2.16pm, effective from 2.25pm until 4pm, Eraring Energy rebid 100MW of capacity from prices of less than $30/MWh to prices above $9 000/MWh. The rebid reason given was "F:Increased likelihood of increased profit".

There was no other significant rebidding.

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



There were 13 trading intervals in Victoria where the spot price was greater than three times the weekly average price of $28/MWh. These occurred between 2pm and 4pm on Monday and Tuesday, at 3.30pm on Wednesday and 3.30pm and 4pm on Thursday.

Monday, 5 December

2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	111.71	43.37	46.00
Demand (MW)	6 657	6 836	7 024
Available capacity (MW)	8 218	8 258	8 064
2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	108.40	57.35	55.72
Demand (MW)	6 659	6 826	6 959
Available capacity (MW)	8 216	8 248	8 064
3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	124.27	54.33	43.69
Demand (MW)	6 671	6 833	6 917
Available capacity (MW)	8 216	8 248	8 064
3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	184.65	261.10	94.40
Demand (MW)	6 737	6 842	6 894
Available capacity (MW)	8 216	8 233	8 064
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	197.34	254.17	44.17
Demand (MW)	6 740	6 820	6 808
Available capacity (MW)	8 216	8 233	8 064

Conditions at the time saw demand slightly lower than forecast four hours ahead. The price forecast four hours ahead varied over this period, from $70/MWh lower than the actual price, to $80/MWh higher at the end of the period.

Early in the morning, Ecogen Energy committed 500MW of capacity at Newport for the period between 11am and 6pm with 100MW priced at less than zero. The rebid reason given was “Adj to unit commitment due to PD conditions”. Over two subsequent rebids, at 12.28pm and 12.43pm, 400MW of this capacity was shifted from prices above $9 000/MWh to $35/MWh. The rebid reason given was “Redistribution of load due to gas fuel risk”.

From 12.45pm NEMMCO invoked constraints to limit flows from Victoria to Snowy. Those constraints were designed to limit the accumulation of negative settlement residues.

At 12.42pm, effective 12.50pm, LYMMCO rebid 95MW of capacity at Loy Yang A from prices of less than $15/MWh to around $88/MWh and $243/MWh. The rebid reasons included “Binding I/C CSC/CSP” and “Network constraints on all 3 sides”. This rebid was effective until 4pm. A rebid at 2.09pm reversed the first rebid. The rebid reason given was “Change in price forecast in PD”. A series of rebids around 3pm then moved 145MW of capacity from less $15/MWh to $88/MWh and $243/MWh. The rebid reason given was “Change in 5-min PD” and “Change in VSN disc constraint”.

Just after 1pm, International Power rebid almost 190MW of Hazelwood power station's capacity from below $20/MWh to between $250/MWh and $1 700/MWh. The rebid reason given "Change in Vic-Snowy I/C flow".

At 1.45pm and 2.20pm, International Power rebid just over 100MW of Loy Yang B's capacity from prices of less than $10/MWh to $120/MWh and $280/MWh. The rebid reason was given as "change in price forecasts".

There was no other significant rebidding.

Tuesday, 6 December

2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	106.00	290.76	241.67
Demand (MW)	6 399	7 095	7 089
Available capacity (MW)	8 148	8 118	8 380
2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	126.41	291.15	258.24
Demand (MW)	6 349	7 098	7 096
Available capacity (MW)	7 875	8 178	8 380
3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	100.65	283.54	273.25
Demand (MW)	6 320	7 088	7 086
Available capacity (MW)	7 797	8 178	8 310
3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	100.70	100.70	289.98
Demand (MW)	6 373	6 458	7 129
Available capacity (MW)	7 859	8 183	8 372
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	94.08	100.70	284.50
Demand (MW)	6 442	6 479	7 159
Available capacity (MW)	7 919	8 153	8 372

Conditions at the time saw demand as much as 750MW or 12 per cent lower than forecast four hours ahead. As a result price was also lower than forecast. Available capacity was around 300MW below forecast.

At 10.03am Ecogen rebid 310MW of capacity at Newport from prices of above $9 000/MWh to below $50/MWh, resulting in a total of 500MW of capacity priced at less than $50/MWh. The reason given was "adj to unit commitment due to PD conditions".

Over two rebids at 12.52pm and 1.38pm, Alinta rebid 84MW of capacity at Bairnsdale from prices of more than $9 000/MWh to $35/MWh. The rebid reasons given were "market conditions – price/demand expectation".

Between 2pm and 4pm NEMMCO invoked constraints to manage negative settlement residues limiting exports from Victoria to Snowy to zero.

Technical limits at both Hazelwood and Yallourn throughout the day saw the available capacity from those stations up to 500MW lower than that forecast at 6am. The limits related to fuel, mills and boiler fouling.

There was no other significant rebidding.

Wednesday, 7 December

3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	89.95	177.63	244.68
Demand (MW)	6,398	6,469	6,573
Available capacity (MW)	8,162	8,194	8,402

Conditions at the time saw demand close to forecast four hours to dispatch, with price lower than forecast. Flows north into New South Wales were constrained to limit negative settlements across the Victoria to Snowy interconnector between 11.25am and 6.25pm. The limit was around 150MW lower than forecast.

From around midday, LYMMCO rebid as much as 150MW of capacity at Loy Yang A from prices of less than $20/MWh to $250/MWh. The rebid reasons given included: "Change in VSN disc constraint"; "change in price forecast in PD"; and "Change in 5-min Pd".

There was no other significant rebidding.

Thursday, 8 December

3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	92.07	100.70	43.19
Demand (MW)	6286	6317	6370
Available capacity (MW)	7889	7859	8021
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	89.61	178.65	43.40
Demand (MW)	6303	6370	6438
Available capacity (MW)	7898	7864	8021

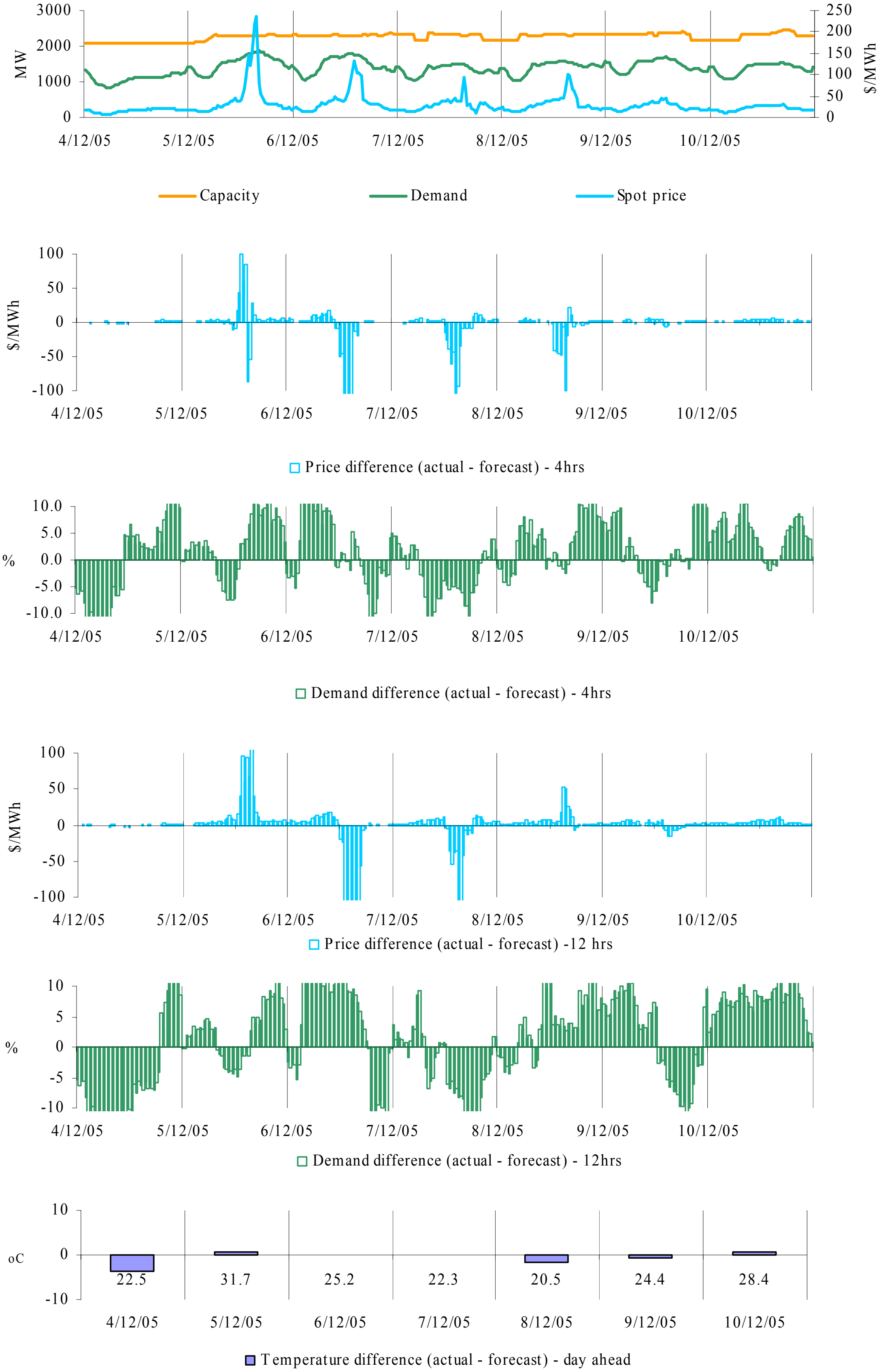
Conditions at the time saw demand slightly lower than forecast four hours ahead with prices lower than forecast.

Constraints to manage the accumulation of negative settlements were invoked for the fourth consecutive day, on this occasion between 1.15pm and 4pm. Exports from Victoria were limited to between 100MW and 250MW.

At 1.47pm, LYMMCO rebid 120MW of capacity at Loy Yang A from prices below $13/MWh to $90/MWh. The reason given was "binding VSN disc constraint".

There was no other significant rebidding.

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



There were 12 periods in South Australia where the spot price was greater than three times the weekly average price of $32/MWh. These occurred between 2pm and 4pm on Monday and Tuesday, and at 3.30pm and 4pm on Thursday.

Monday, 5 December

2:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	146.13	46.13	51.01
Demand (MW)	1 783	1 727	1 811
Available capacity (MW)	2 272	2 297	2 314
2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	122.14	60.47	61.78
Demand (MW)	1 794	1 740	1 819
Available capacity (MW)	2 276	2 297	2 314
3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	142.21	57.28	48.95
Demand (MW)	1 809	1 739	1 822
Available capacity (MW)	2 285	2 297	2 314
3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	217.31	304.45	150.90
Demand (MW)	1 827	1 756	1 853
Available capacity (MW)	2 290	2 295	2 314
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	235.51	289.48	60.11
Demand (MW)	1 848	1 725	1 797
Available capacity (MW)	2 290	2 288	2 314

Conditions at the time saw demand as much as 120MW higher than forecast.

At 8.52am, Origin Energy committed all four Quarantine units by rebidding its capacity to zero price, the rebid reason given was "Est (NP) change in PDS, match bid to output". Two hours later, at 11.13am, 36MW at Ladbroke was bid from prices of $2 000/MWh to zero. The rebid reason given was "Est (N) change in PDS".

At 11.53pm, International Power rebid 72MW of capacity at Pelican Point from prices above $9 000/MWh to prices of $150/MWh and $300/MWh. The rebid reason given was "Change in price forecast".

TRU Energy rebid 420MW of capacity at Torrens Island from prices below $38/MWh to $149/MWh over two bids at 12.45pm and 2.12pm. These rebids were effective between 2pm and 3pm. The reason give was "fuel limits- decreasing gen to match fuel profile". For the 3.30pm and 4pm trading intervals, 300MW, or half of the available capacity at Torrens Island was priced at $5 000/MWh or above through day-ahead bids.

There was no other significant rebidding.

Tuesday, 6 December

2:00 pm	Actual	4 hr forecast	12 hr forecast
Price ($/MWh)	111.01	315.89	250.88
Demand (MW)	1 772	1 776	1 608
Available capacity (MW)	2 312	2 324	2 331
2:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	131.89	304.96	266.71
Demand (MW)	1 767	1 774	1 607
Available capacity (MW)	2 312	2 312	2 331
3:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	103.89	296.99	282.22
Demand (MW)	1 736	1 768	1 597
Available capacity (MW)	2 312	2 312	2 331
3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	104.49	110.51	325.81
Demand (MW)	1 738	1 646	1 573
Available capacity (MW)	2 307	2 327	2 331
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	96.95	109.37	318.04
Demand (MW)	1 695	1 628	1 549
Available capacity (MW)	2 309	2 342	2 331

Conditions at the time saw demand close to forecast four hours to dispatch with prices lower than forecast.

At 8.34am, Origin Energy increased the availability at Ladbroke unit 2 from zero to 43MW. The rebid reason given was “Est (P) unit now available”. All of this capacity was priced at zero. At 9.32am, all four Quarantine units and the remaining Ladbroke unit were also committed, moving capacity from $9 000/MWh and $2 000/MWh respectively to zero. The rebid reasons given were “Est (N) change in PDS”.

NRG Flinders reduced the availability of Playford over the course of the day by up to 40MW. The rebid reason given was “Adjust Playford loading to latest plant info”. All of this capacity was priced at less than zero.

There was no other significant rebidding.

Thursday, 8 December

3:30 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	99.82	107.11	46.46
Demand (MW)	1 ,545	1 ,571	1 ,493
Available capacity (MW)	2 ,302	2 ,326	2 ,332
4:00 pm	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	96.46	196.13	46.46
Demand (MW)	1 521	1 561	1 482
Available capacity (MW)	2 300	2 326	2 332

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

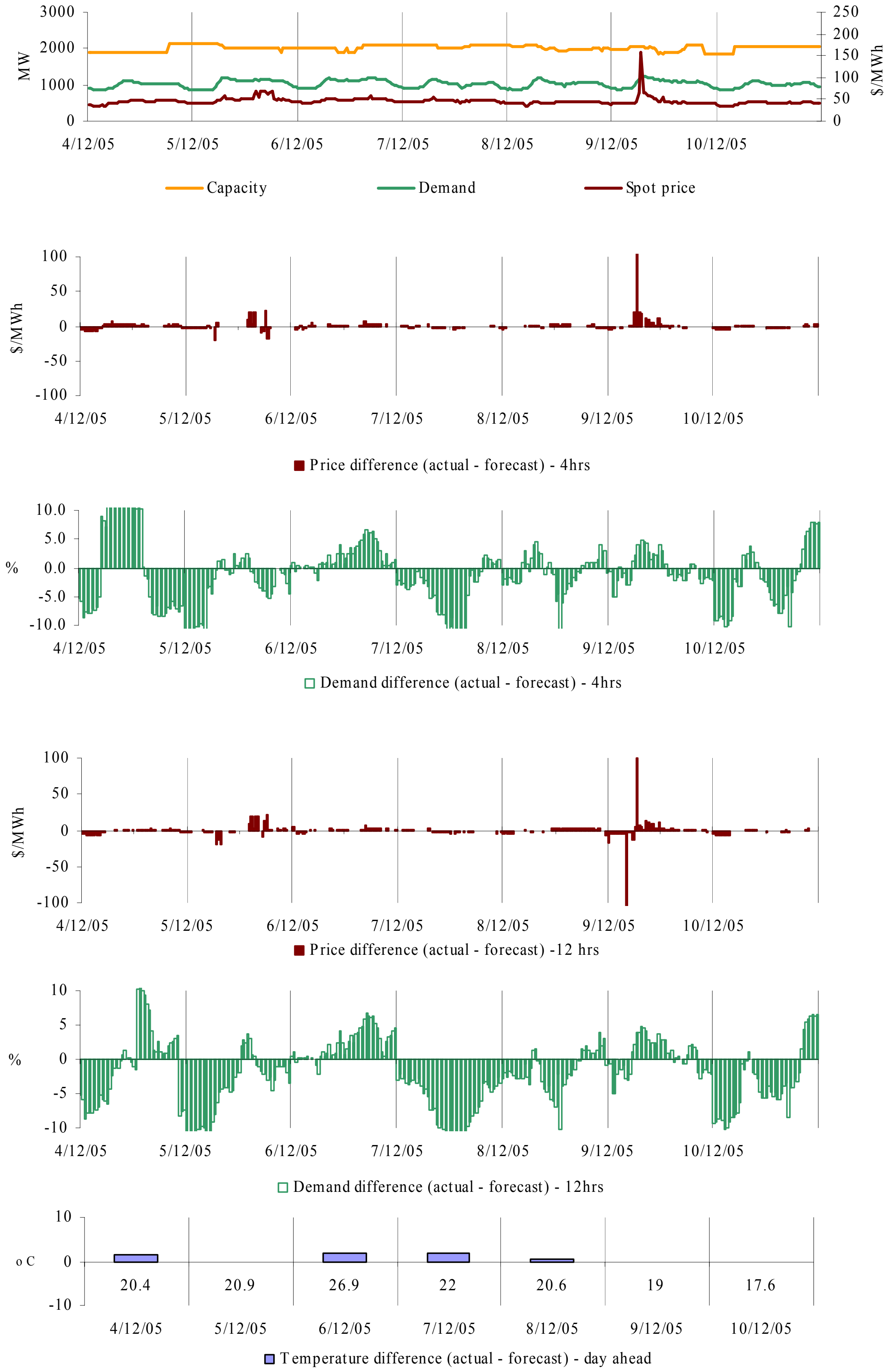
At 10.38am, Origin Energy committed all four Quarantine units, shifting 92MW of capacity from prices of $9 000/MWh to zero. The rebid reason given was “Est (N, P) change in PDS, match bid to output”. At 11.48am, a Ladbroke unit was committed by rebidding its capacity from prices of $2 000/MWh to zero. The rebid reason given was “Est (N) change in PDS”.

At 3.12pm, effective 3.20pm, NRG Flinders reduced the availability at Northern by as much as 44MW and rebid 35MW of capacity at Osborne from prices of $150/MWh to $51/MWh. The rebid reason given was “Adj OCPL loading to manage contract position”. The reduction in capacity at Northern had all previously been priced at less than $20/MWh.

Between 3.30pm and 4pm, TRU Energy had 200MW, or a third of its total capacity priced above $9 000/MWh, which was set up through day-ahead bids. At other times in the day this capacity had been priced at less than $40/MWh.

There was no other significant rebidding.

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



There was one occasion in Tasmania where the spot price was greater than three times the weekly average price of $46/MWh. This occurred at 7am on Friday.

Friday, 9 December

7:00 am	**Actual**	**4 hr forecast**	**12 hr forecast**
Price ($/MWh)	158.34	45.50	57.98
Demand (MW)	1 219	1 171	1 171
Available capacity (MW)	2 065	2 065	1 958

Conditions at the time saw demand around 50MW higher than forecast four hours ahead. A binding network constraint led to around 60MW of capacity constrained off at John Butters, which was priced at less than $50/MWh. Poatina was setting the price for most of the trading interval at $100/MWh.

For the 7am 5-minute dispatch interval, the constraint led to a combination of offers at Gordon priced at $295/MWh and at John Butters priced around $46/MWh setting the price at $475/MWh.

There was no significant rebidding.

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

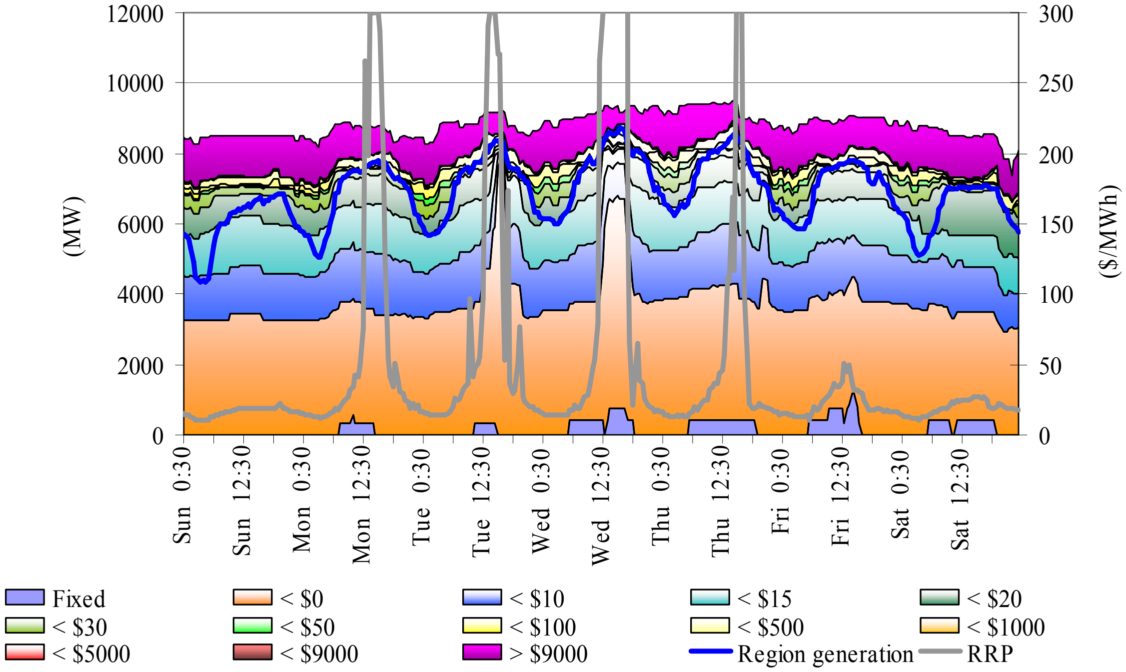


Figure 52: New South Wales closing bid prices, dispatched generation and spot price

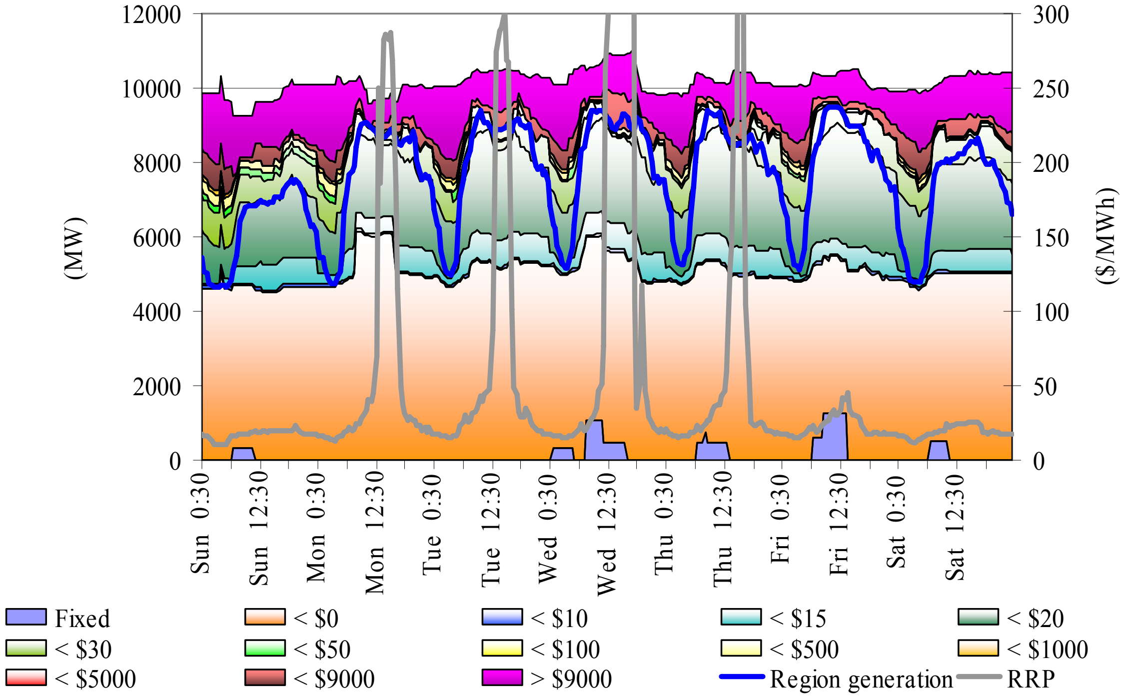


Figure 53: Victoria closing bid prices, dispatched generation and spot price

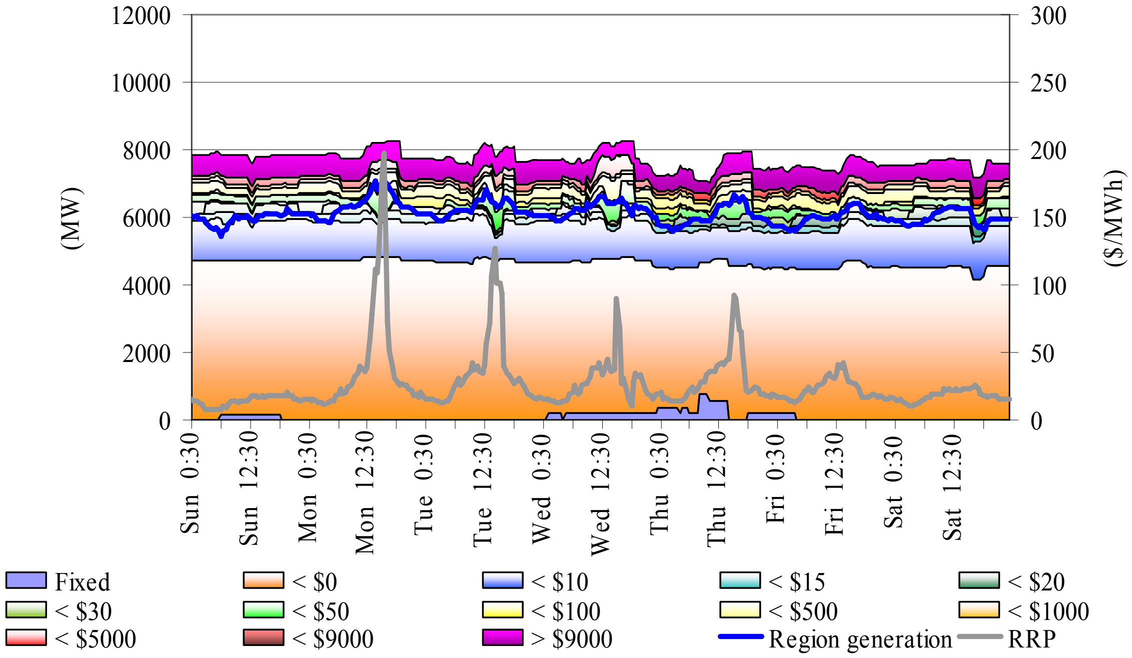


Figure 54: South Australia closing bid prices, dispatched generation and spot price

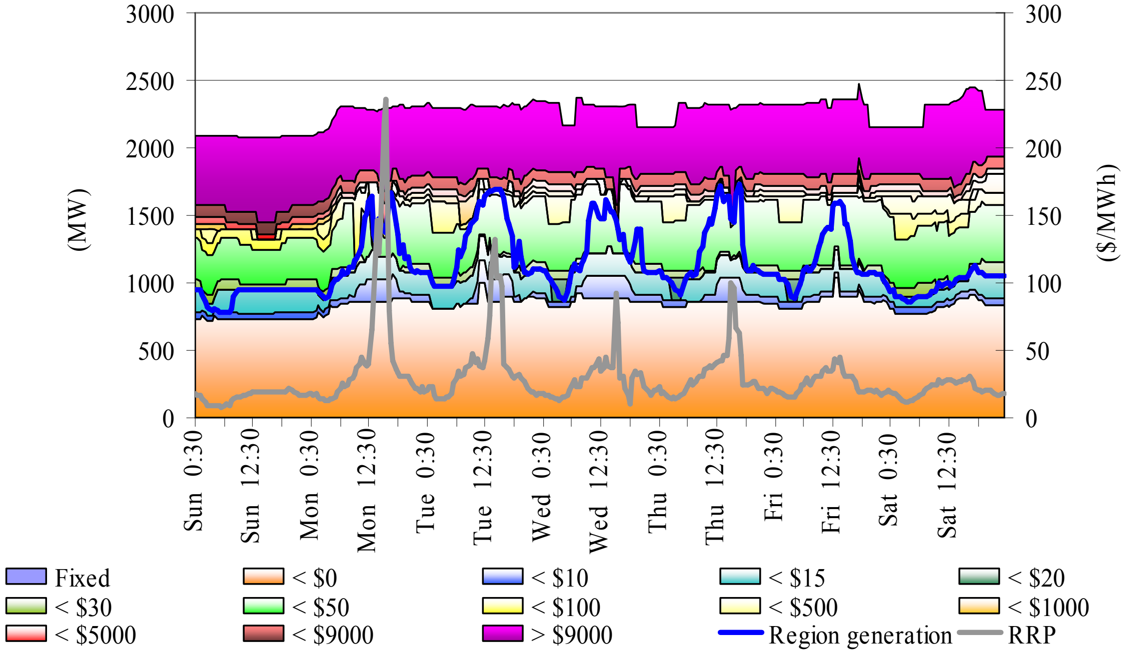
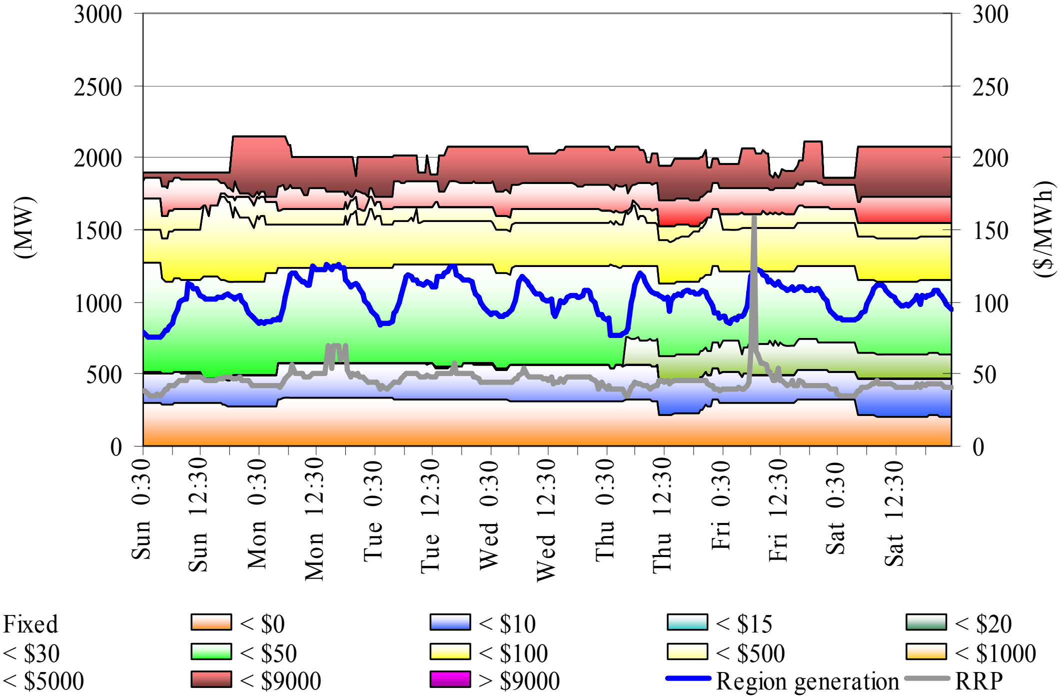


Figure 55: Tasmania closing bid prices, dispatched generation and spot price



Ancillary service market

The total cost of ancillary services on the mainland for the week was around $400 000 or around 0.1 per cent of the total turnover in the energy market. On Wednesday and Thursday, lightning led to a reduction in flows from Queensland to New South Wales. This resulted in a requirement for lower contingency services to be sourced locally in Queensland for a total of around 10 hours. The price for lower 5 minute reached $800/MW on Wednesday, with a total cost for these local services of around $120 000 or 30 per cent of the cost for all services for the week. 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	1.67	0.57	1.20	1.85	0.37	0.42	7.26	1.71
Previous week	2.13	0.71	1.00	1.55	0.43	2.10	3.36	1.70
Last quarter	1.62	0.91	1.00	1.36	0.20	0.64	2.29	1.56
Market Cost ($1000s)	82	28	80	40	3	4	118	37
% of energy market	0.01%	0.00%	0.01%	0.01%	0.00%	0.00%	0.02%	0.01%
Cost of local services ($1000s)	0	0	0	0	2	2	115	0
% due to local services	0%	0%	0%	0%	58%	52%	98%	0%

The total cost of ancillary services in Tasmania for the week was $160 000 or 2 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	3.37	1.05	1.05	1.06	2.06	1.05	1.06	1.07
Previous week	1.12	1.05	1.05	1.05	24.75	1.05	1.05	1.05
Last quarter	19.40	1.05	1.14	2.25	6.25	1.06	1.06	1.26
Market Cost ($1000s)	27	11	10	9	31	34	26	9
% of energy market	0.34%	0.13%	0.13%	0.12%	0.39%	0.43%	0.32%	0.12%

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

Figure 58: daily frequency control ancillary service costs

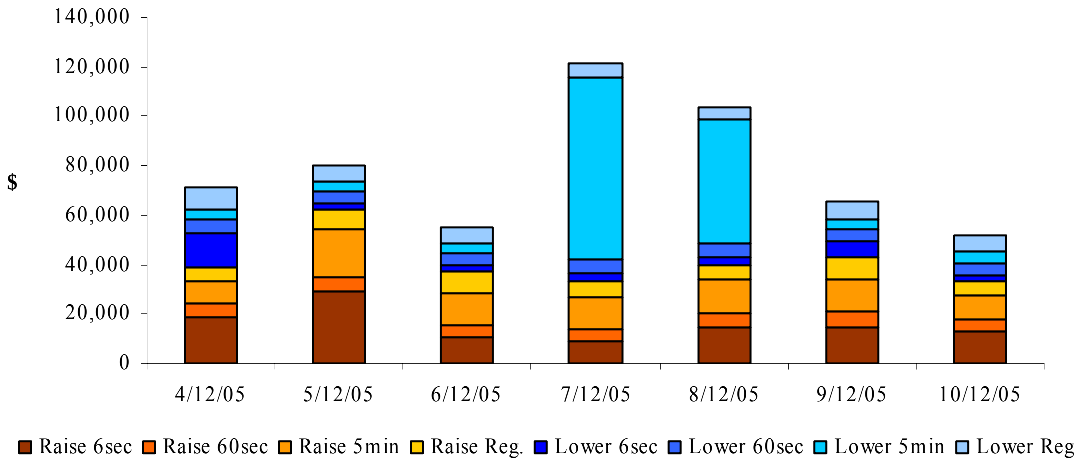
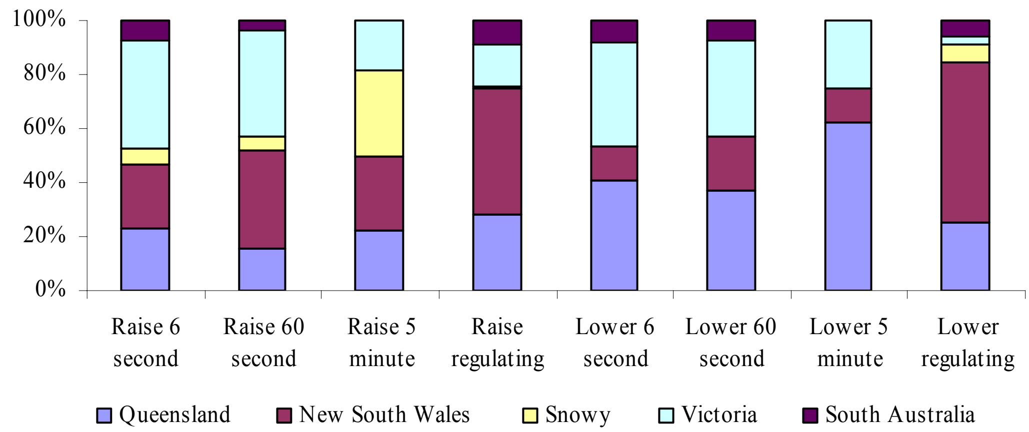


Figure 59 shows the contribution, on a percentage basis, that frequency control ancillary service providers are utilised (in each mainland region) to satisfy the total requirement for each service.

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

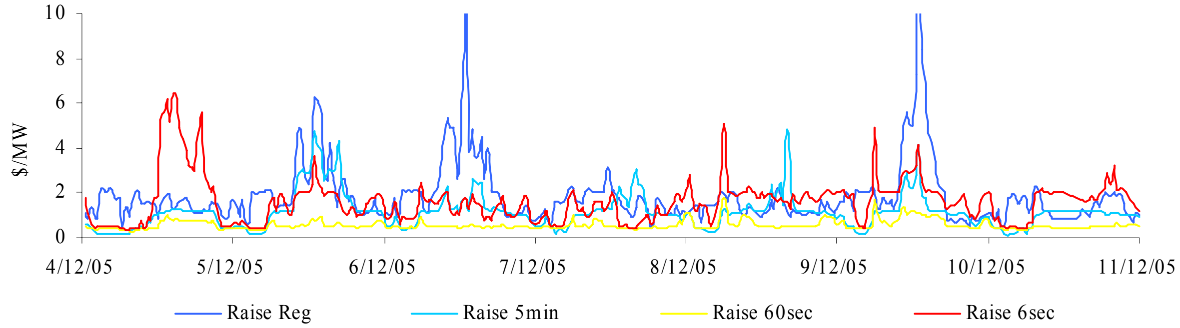


Figure 60A: prices for raise services - Tasmania

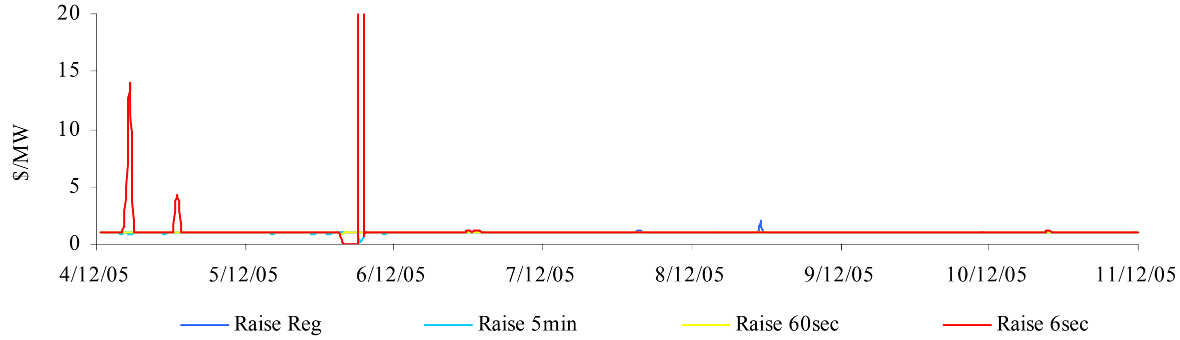


Figure 61: prices for lower services

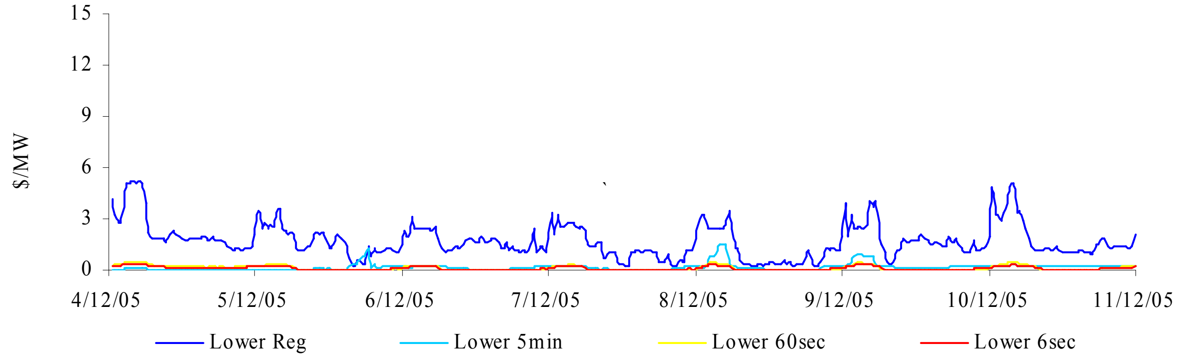
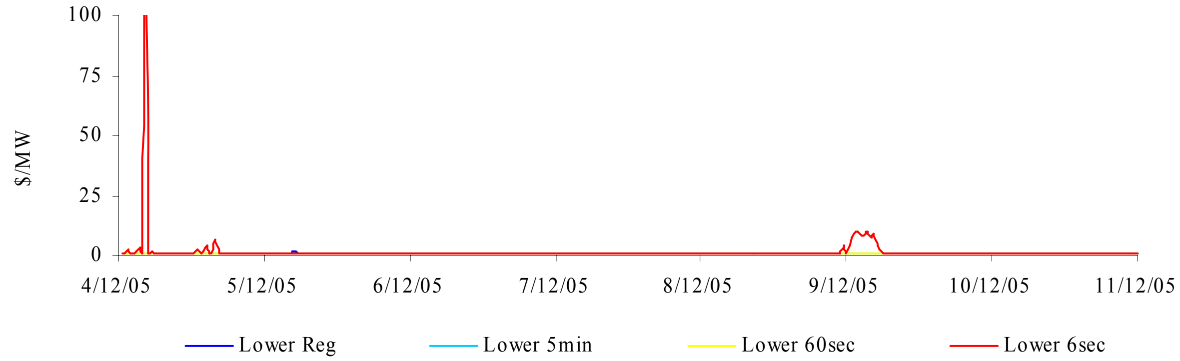


Figure 61A: prices for lower services - Tasmania



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

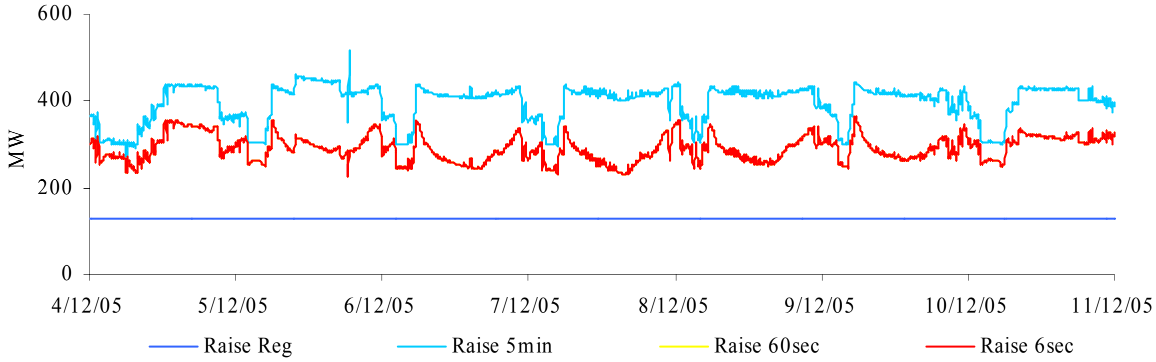


Figure 62A: raise requirements - Tasmania

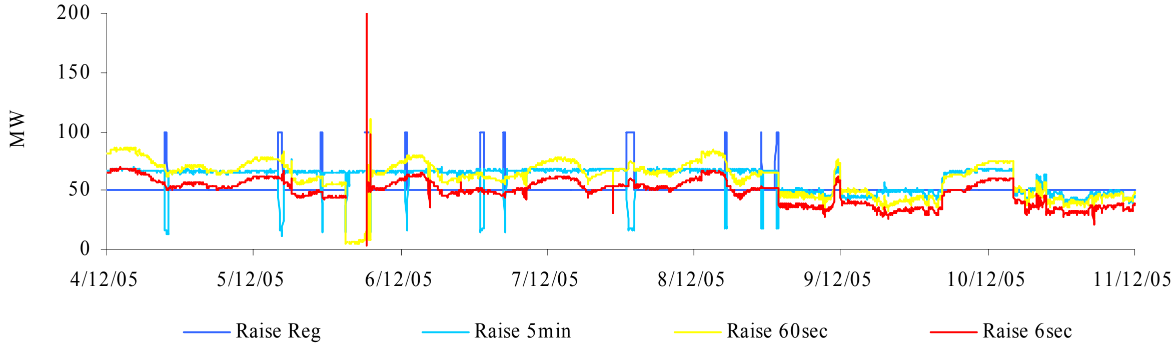


Figure 63: lower requirements

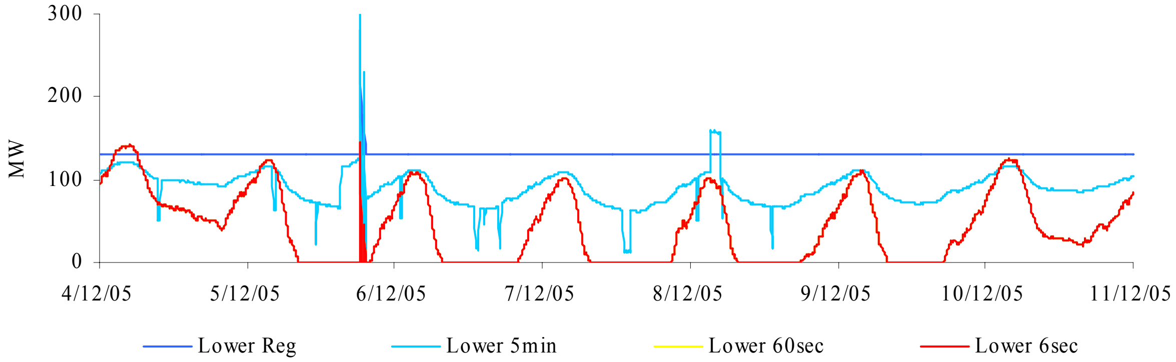
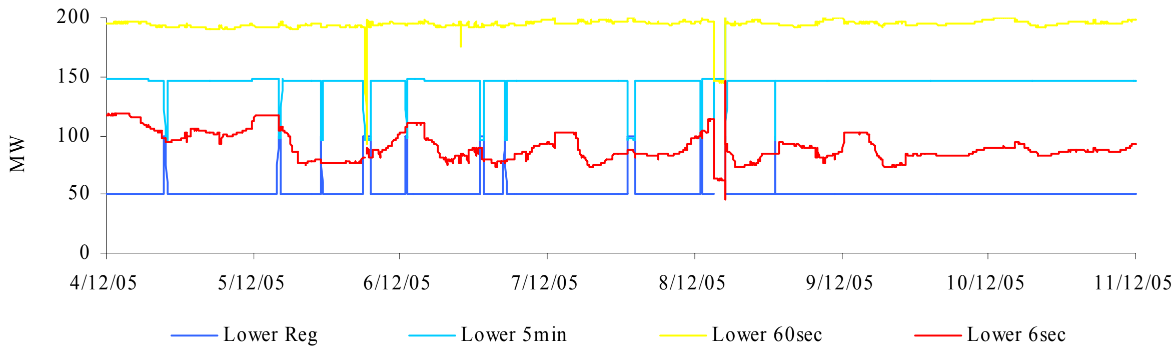


Figure 63A: lower requirements - Tasmania



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