

# Spot prices greater than \$5000/MWh



AUSTRALIAN ENERGY  
REGULATOR

Queensland 22 & 23 February 2008

## Introduction

The AER is required to publish a report covering the circumstances in which the spot price exceeded \$5000/MWh, pursuant to clause 3.13.7 (d) of the Rules. That report should:

- describe significant factors contributing to the spot price exceeding \$5000/MWh, including withdrawal of generation capacity and network availability;
- assess whether rebidding pursuant to clause 3.8.22 contributed to the spot price exceeding \$5000/MWh;
- identify the marginal scheduled generating units; and
- identify all units with offers for the trading interval equal to or greater than \$5000/MWh and compare these dispatch offers to relevant dispatch offers in previous trading intervals.

This report examines the factors that can contribute to the spot price exceeding \$5000/MWh including: changes in demand (compared to that forecast by NEMMCO); generator offers and rebidding (including changes to generation capacity); and changes to network availability.

## Summary

On 22 and 23 February the spot price in Queensland exceeded \$5000/MWh on 14 occasions, peaking at \$9561/MWh and \$9153/MWh respectively.

On Friday 22 February, temperatures reached 33 degrees in Brisbane driving demand to around 8100 MW, which was the highest for the summer and within 500 MW of the highest-ever. Around 2200 MW of Queensland's 10 000 MW<sup>1</sup> of available generating capacity was offered at prices exceeding \$5000/MWh. This capacity was offered by Tarong Energy, CS Energy, Stanwell Corporation and Millmerran. The spot price exceeded \$5000/MWh for the seven trading intervals between 1 pm and 4 pm inclusive, but not at the time of highest demand. These high prices were only forecast intermittently.

On Saturday 23 February temperatures reached 39 degrees in Brisbane driving demand to around 8000 MW, the highest weekend demand ever. Similar to the previous day, 2470 MW of capacity was priced above \$5000/MWh by Tarong Energy, CS Energy and Stanwell Corporation. Significantly higher than forecast demand combined with rebidding by Stanwell and CS Energy that shifted as much as 770 MW of capacity into high prices led to higher than forecast prices. These rebids often took place close to dispatch. The spot price exceeded \$5000/MWh for the seven trading intervals between 12.30 pm and 3.30 pm inclusive. These high prices were not forecast until after the high price period had commenced.

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<sup>1</sup> Queensland has an installed capacity of around 11 200 MW. Some of this capacity was not presented on the day. This is detailed in the section "Generator offers and rebidding".

The seven-day cumulative price in Queensland reached \$144 000 on 23 February, just short of the threshold of \$150 000 which would see administered pricing applied<sup>2</sup>.

### Actual and forecast demand

On 22 February at 4.30 pm, demand in Queensland peaked at 8083 MW, its highest level for the summer but around 500 MW below the highest-ever<sup>3</sup>. Queensland demand varied between 7865 MW and 8055 MW at the time of high prices and was up to 280 MW above that forecast four hours ahead.

On 23 February the demand in Queensland reached a record for a weekend, peaking at 7978 MW at 2.30 pm. Actual demand on the day was up to 486 MW higher than forecast four hours ahead.

Figures 1 and 2 compare the actual demand in Queensland with that forecast by NEMMCO four and twelve hours ahead of dispatch on 22 and 23 February respectively. A comparison of actual and forecast spot price is also included.

*Figure 1: Actual and forecast demand and spot price in Queensland on 22 February*

<b>Friday 1:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7865	7654	7423
Spot Price (\$/MWh)	7169.02	290.79	250.79
<b>Friday 1:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7923	7679	7485
Spot Price (\$/MWh)	6347.90	120.78	250.79
<b>Friday 2:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7957	7708	7508
Spot Price (\$/MWh)	8811.93	101.00	250.79
<b>Friday 2:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7994	7758	7535
Spot Price (\$/MWh)	8743.92	101.00	250.79
<b>Friday 3:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	8023	7740	7521
Spot Price (\$/MWh)	6421.40	101.00	250.79
<b>Friday 3:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	8013	7817	7514
Spot Price (\$/MWh)	9561.42	101.02	290.79
<b>Friday 4:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	8055	7832	7512
Spot Price (\$/MWh)	9494.95	54.89	290.79

<sup>2</sup> The cumulative price threshold is defined in Clause 3.14.1 (c) of the rules as \$150 000. Clause 3.14.2 c (1) states that when the sum of the spot prices for the previous 336 trading intervals – prices over the previous week – exceeds the cumulative price threshold, administered pricing is to apply. Administered pricing caps the maximum price to \$100/MWh during peak periods and \$50/MWh at other times.

<sup>3</sup> Queensland's highest demand is 8594 MW, which occurred on 12 March 2007.

**Figure 2: Actual and forecast demand and spot price in Queensland on 23 February**

<b>Saturday 12:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7800	7314	7195
Spot Price (\$/MWh)	8177.45	33.00	32.98
<b>Saturday 1:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7901	7439	7256
Spot Price (\$/MWh)	8471.44	34.65	36.11
<b>Saturday 1:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7928	7504	7309
Spot Price (\$/MWh)	8811.24	43.51	38.61
<b>Saturday 2:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7968	7547	7478
Spot Price (\$/MWh)	9153.61	38.61	250.79
<b>Saturday 2:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7978	7578	7513
Spot Price (\$/MWh)	7065.39	36.11	250.79
<b>Saturday 3:00 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7952	7704	7522
Spot Price (\$/MWh)	7065.33	54.86	250.79
<b>Saturday 3:30 PM</b>	<b>Actual</b>	<b>4 hr forecast</b>	<b>12 hr forecast</b>
Demand (MW)	7843	7682	7509
Spot Price (\$/MWh)	6000.01	101.00	250.79

### **Changes to network availability**

On both days, imports into Queensland across the Queensland to New South Wales (QNI) and Terranora interconnectors were restricted to a combined total of less than 200 MW. Flows on both days were around 95 MW higher than forecast as a result of rebidding by CS Energy that reduced the output of Kogan Creek by a similar amount.

Flows into Queensland were restricted to manage the loss of the largest generator in Queensland. From late 2007, with the commissioning of CS Energy's 750 MW Kogan Creek unit, the size of the largest generator has increased from 450 MW to 750 MW. The size of the maximum generator is critical because if that generator fails then imports will increase instantly to make up for the reduction in supply, so the larger the generator, the lower the maximum imports.<sup>4</sup> The output of Kogan Creek was averaging 655 MW on 22 and 23 February, which was around 200 MW higher than the next largest generator.

On 22 February, an unplanned outage of network equipment at Lismore in New South Wales reduced the capability of QNI by a further 40 MW.

On 23 February a planned outage of the Alstonville to Ballina 66 kV line in northern New South Wales occurred between 5 am and 6.40 pm. Country Energy gave three days notice of the need to take the outage. The outage resulted in forced flows from Queensland into northern New South Wales across the Terranora interconnector by up to 50 MW.

<sup>4</sup> The increase in the size of the largest generator causes imports to be reduced by a similar amount. There is a large proportion of Queensland generation in the south west, between the New South Wales border and the Brisbane load centre. At times, for example during network outages or as a result of lightning in the vicinity, those generators are dispatched in preference to imports from New South Wales across QNI. This also leads to reduced flows across QNI into Queensland.

## Generator offers and rebidding

On both days, through a combination of initial offers and rebidding, more than 20 per cent of capacity in Queensland was offered at prices above \$5000/MWh. A further 1314 MW or 12 per cent of capacity was not presented to the market. There were many rebids over the two days. The following paragraphs summarise the closing offers and significant rebids related to the periods when prices were above \$5000/MWh for each day.

**22 February:** CS Energy presented an average of 387 MW of capacity at prices above \$5000/MWh, mostly through initial offers. This capacity was priced at less than \$100/MWh at other times of the day. A further 489 MW of capacity was not presented to the market. Rebids reduced the available capacity at Kogan Creek and Collinsville by up to 220 MW, with half of this priced at less than \$30/MWh. The reasons given included “SCC limitations”, “Lost B mill” and “Colnsv availability”.

Over a number of rebids from 8.46 am Millmerran Energy Trader shifted an average of 166 MW of capacity from prices of less than \$25/MWh to prices above \$5000/MWh. All of this capacity was initially offered for the whole day at prices of less than \$25/MWh. The reason given for all rebids was “Changed PD::Adjust MW dist”.

Stanwell Corporation presented an average of 426 MW of capacity at prices above \$5000/MWh with a further 420 MW of capacity not presented to the market. Rebids from 10.56 am shifted up to 120 MW of capacity at Gladstone from prices of less than \$100/MWh to above \$5000/MWh. These rebids were short in duration – typically for only one hour - and were extended a number of times during the day. The reasons given included “Portfolio optimisation::change MW distrib”, “Rearrange/rebalance portfolio::change avail/MW distrib” and “Extend previous bid::change avail/MW distrib”.

Tarong Energy presented an average of 1180 MW or around 50 per cent of its capacity at prices above \$5000/MWh, mostly through initial offers. Rebids from 11.55 am shifted 80 MW of capacity from prices above \$9000/MWh down to less than \$100/MWh. The reasons given were “Manage contract position::volume profile change”.

**23 February:** CS Energy presented an average of 393 MW of capacity at prices above \$5000/MWh. Most of this capacity was priced at less than \$100/MWh at other times of the day. A further 515 MW of capacity was not presented to the market. Rebids from 10.47 am shifted 195 MW of capacity at Swanbank E from prices below \$30/MWh to above \$5000/MWh. The reason given was “Change in predispach”. Additional rebids from 8.17 am reduced the available capacity of the portfolio by 270 MW, with 105 MW priced below \$30/MWh. These reductions occurred at Collinsville, Callide B, Swanbank B and Kogan Creek. The reasons given included “Extend outage”, “Swan B1 70 MW mill PF leak”, “Call B2 max availability”, “SCC limitations” and “Call B1 vac limit”.

Stanwell Corporation presented an average of 780 MW of capacity at prices above \$5000/MWh, with a further 296 MW of capacity not presented to the market. Rebidding from 12.11 pm shifted 420 MW of capacity from prices of less than \$100/MWh to above \$5000/MWh. The reasons given were “Portfolio optimisation::change MW distrib” and “Material change in market conditions::change MW distrib”.

Tarong Energy presented an average of 1297 MW or around 50 per cent of its capacity at prices above \$5000/MWh through initial offers made the previous day.

The National Electricity Rules (NER) requires all rebids to be made in good faith. The AER is examining the rebids that occurred on these two days to assess their compliance with the NER.

Figures 1a and 1b show for all participants in Queensland the capacity that was presented at prices above \$5000/MWh and the amount of capacity not presented to the market when

compared to the registered capacity of the plant. It also shows a combined total of high priced or unavailable capacity as a percentage of the registered capacity.

**Figure 1a: Capacity offered above \$5000/MWh in Queensland on Friday 22 February between 1 pm and 4 pm.**

<b>Participant</b>	<b>Registered rating</b>	<b>Capacity priced above \$5000/MWh</b>	<b>Capacity not presented</b>	<b>Combined total as % of registered rating**</b>
AGL Hydro Partnership	514	0	6	1%
Callide Power Trader	840	0	390	46%
CS Energy	2639	387	489	33%
Ergon Energy Queensland	55	0	4	7%
Millmerran Energy Trader	852	166	-8*	19%
Braemar Power Project	504	0	45	9%
Origin Energy	368	0	25	7%
Stanwell Corporation	3264	426	420	26%
Tarong Energy	2343	1180	-56*	48%
<b>TOTAL</b>	<b>11379</b>	<b>2159</b>	<b>1314</b>	<b>31%</b>

\* A negative value indicates that more capacity was presented across the portfolio than the summer rating on the plant.

\*\* This column shows capacity priced above \$5000/MWh and capacity not presented as a proportion of each generator's registered capacity.

**Figure 1b: Capacity offered above \$5000/MWh in Queensland on Saturday 23 February between 12.30 pm and 3.30 pm.**

<b>Participant</b>	<b>Registered rating</b>	<b>Capacity priced above \$5000/MWh</b>	<b>Capacity not presented</b>	<b>Combined total as % of registered rating**</b>
AGL Hydro Partnership	514	1	3	1%
Callide Power Trader	840	0	400	48%
CS Energy	2639	393	515	34%
Ergon Energy Queensland	55	0	55	100%
Millmerran Energy Trader	852	0	72	8%
Braemar Power Project	504	0	50	10%
Origin Energy	368	0	24	6%
Stanwell Corporation	3264	780	296	33%
Tarong Energy	2343	1297	-100*	51%
<b>TOTAL</b>	<b>11379</b>	<b>2471</b>	<b>1314</b>	<b>33%</b>

\* A negative value indicates that more capacity was presented across the portfolio than the summer rating on the plant.

\*\* This column shows capacity priced above \$5000/MWh and capacity not presented as a proportion of each generator's registered capacity.

The generators involved in setting the spot price during the times of prices above \$5000/MWh and how that price was determined by the market systems are detailed in **Appendix A**.

The closing bids for all participants in Queensland with significant capacity priced at or above \$5000/MWh during this period are presented in **Appendix B**.

## **Assessment**

On Friday 22 and Saturday 23 February, the spot price in Queensland exceeded \$5000/MWh on 14 occasions. The highest demands for the summer coupled with a large proportion of generation capacity priced at greater than \$5000/MWh contributed. A number of rebids by Millmerran Energy Trader, CS Energy and Stanwell Corporation shifted capacity from lower prices into prices above \$5000/MWh. The AER is investigating further the rebids during this period to assess compliance with the good faith provisions in the National Electricity Rules.

**Australian Energy Regulator**

**April 2008**

## Appendix A – Price setters for trading intervals above \$5000/MWh on 22-23 February

The following table identifies the trading intervals in which the spot price exceeded \$5000/MWh. Each five minute dispatch interval price and the generating units involved in setting the energy price, as published in the market systems are shown. This information is published by NEMMCO<sup>5</sup>. Also shown is the energy or ancillary service offer price involved in determining the dispatch price together with the quantity of that service and the contribution to the total energy price. The 30-minute spot price is the time weighted average of the six dispatch interval prices.

### Friday 22 February - 1 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
12:35	\$4,991.85	Tarong	TARONG#4	Energy	\$4,991.85	1.00	\$4,991.85
12:40	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	1.00	\$9,491.85
12:45	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.21	\$2,034.01
		Tarong	TARONG#4	Energy	\$9,491.85	0.79	\$7,457.84
12:50	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.21	\$2,034.01
		Tarong	TARONG#4	Energy	\$9,491.85	0.79	\$7,457.84
12:55	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.21	\$2,034.01
		Tarong	TARONG#4	Energy	\$9,491.85	0.79	\$7,457.84
13:00	\$54.89	Stanwell	STAN-2	Energy	\$54.89	1.00	\$54.89
<b>Spot price</b>		<b>\$7169.02/MWh</b>					

### Friday 22 February - 1.30pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
13:05	\$54.89	Stanwell	STAN-2	Energy	\$54.89	1.00	\$54.89
13:10	\$54.89	Stanwell	STAN-2	Energy	\$54.89	1.00	\$54.89
13:15	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	1.00	\$9,494.95
13:20	\$9,492.79	Stanwell	GSTONE2	Raise reg	\$0.94	1.00	\$0.94
		Tarong	TARONG#4	Energy	\$9,491.85	1.00	\$9,491.85
		Tarong	TARONG#4	Raise reg	\$0.00	-1.00	\$0.00
13:25	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
13:30	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
<b>Spot price</b>		<b>\$6347.90/MWh</b>					

<sup>5</sup> NEMMCO first published details on how the price is determined, for every dispatch interval, in June 2004. Documentation of this process can be found at <http://www.nemmco.com.au/dispatchandpricing/140-0036.htm>

**Friday 22 February - 2 pm**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
13:35	\$9,899.95	Tarong	W/HOE#2	Energy	\$9,899.95	1.00	\$9,899.95
13:40	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
13:45	\$4,994.95	Tarong	TARONG#1	Energy	\$4,994.95	0.50	\$2,497.48
		Tarong	TARONG#2	Energy	\$4,994.95	0.50	\$2,497.48
13:50	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
13:55	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
14:00	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.21	\$2,034.01
		Tarong	TARONG#4	Energy	\$9,491.85	0.79	\$7,457.84
<b>Spot price</b>		<b>\$8811.93/MWh</b>					

**Friday 22 February - 2.30 pm**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
14:05	\$4,994.95	Tarong	TARONG#1	Energy	\$4,994.95	0.50	\$2,497.48
		Tarong	TARONG#2	Energy	\$4,994.95	0.50	\$2,497.48
14:10	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.21	\$2,034.01
		Tarong	TARONG#4	Energy	\$9,491.85	0.79	\$7,457.84
14:15	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
14:20	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
14:25	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
14:30	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	1.00	\$9,491.85
<b>Spot price</b>		<b>\$8743.92/MWh</b>					

**Friday 22 February - 3 pm**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
14:35	\$54.86	Stanwell	STAN-4	Energy	\$54.86	1.00	\$54.86
14:40	\$94.95	Tarong	TARONG#1	Energy	\$94.95	0.33	\$31.65
		Tarong	TARONG#2	Energy	\$94.95	0.33	\$31.65
		Tarong	TARONG#3	Energy	\$94.95	0.33	\$31.65
14:45	\$9,899.95	Tarong	W/HOE#2	Energy	\$9,899.95	1.00	\$9,899.95
14:50	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
14:55	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	1.00	\$9,491.85
15:00	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.21	\$2,034.01
		Tarong	TARONG#4	Energy	\$9,491.85	0.79	\$7,457.84
<b>Spot price</b>		<b>\$6421.40/MWh</b>					



**Friday 22 February - 3.30 pm**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
15:05	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.21	\$2,034.01
		Tarong	TARONG#4	Energy	\$9,491.85	0.79	\$7,457.84
15:10	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
15:15	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.21	\$2,034.01
		Tarong	TARONG#4	Energy	\$9,491.85	0.79	\$7,457.84
15:20	\$9,899.95	Tarong	W/HOE#2	Energy	\$9,899.95	1.00	\$9,899.95
15:25	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
15:30	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
<b>Spot price</b>		<b>\$9561.42/MWh</b>					

**Friday 22 February - 4 pm**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
15:35	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
15:40	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
15:45	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
15:50	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
15:55	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
16:00	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
<b>Spot price</b>		<b>\$9494.95/MWh</b>					

**Saturday 23 February - 12.30 pm**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
12:05	\$280.00	Millmerran	MPP_1	Energy	\$280.00	0.50	\$140.00
		Millmerran	MPP_2	Energy	\$280.00	0.50	\$140.00
12:10	\$9,994.90	Stanwell	GSTONE1	Energy	\$9,994.90	0.25	\$2,498.73
		Stanwell	GSTONE2	Energy	\$9,994.90	0.25	\$2,498.73
		Stanwell	GSTONE3	Energy	\$9,994.90	0.25	\$2,498.73
		Stanwell	GSTONE5	Energy	\$9,994.90	0.25	\$2,498.73
12:15	\$9,899.95	Tarong	W/HOE#2	Energy	\$9,899.95	1.00	\$9,899.95
12:20	\$9,899.95	Tarong	W/HOE#2	Energy	\$9,899.95	1.00	\$9,899.95
12:25	\$9,494.95	Tarong	TARONG#2	Energy	\$9,494.95	1.00	\$9,494.95
12:30	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
<b>Spot price</b>		<b>\$8177.45/MWh</b>					

**Saturday 23 February - 1 pm**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
12:35	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
12:40	\$7,450.00	Stanwell	GSTONE1	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	GSTONE2	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	GSTONE5	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	GSTONE6	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	STAN-2	Energy	\$7,450.00	0.25	\$1,862.50
		Stanwell	STAN-4	Energy	\$7,450.00	0.25	\$1,862.50
12:45	\$7,450.00	Stanwell	GSTONE1	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	GSTONE2	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	GSTONE5	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	GSTONE6	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	STAN-2	Energy	\$7,450.00	0.25	\$1,862.50
		Stanwell	STAN-4	Energy	\$7,450.00	0.25	\$1,862.50
12:50	\$7,450.00	Stanwell	GSTONE1	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	GSTONE2	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	GSTONE5	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	GSTONE6	Energy	\$7,450.00	0.13	\$931.25
		Stanwell	STAN-2	Energy	\$7,450.00	0.25	\$1,862.50
		Stanwell	STAN-4	Energy	\$7,450.00	0.25	\$1,862.50
12:55	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.57	\$5,423.93
		Tarong	TARONG#4	Energy	\$9,491.85	0.43	\$4,067.92
13:00	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.57	\$5,423.93
		Tarong	TARONG#4	Energy	\$9,491.85	0.43	\$4,067.92
<b>Spot price</b>		<b>\$8471.44/MWh</b>					

**Saturday 23 February - 1.30 pm**

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
13:05	\$9,491.85	Tarong	TARONG#4	Energy	\$9,491.85	1.00	\$9,491.85
13:10	\$9,491.85	Tarong	TARONG#4	Energy	\$9,491.85	1.00	\$9,491.85
13:15	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	1.00	\$9,491.85
13:20	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	1.00	\$9,491.85
13:25	\$7,450.01	Stanwell	GSTONE3	Energy	\$7,450.01	1.00	\$7,450.01
13:30	\$7,450.00	Stanwell	GSTONE1	Energy	\$7,450.00	0.08	\$620.81
		Stanwell	GSTONE2	Energy	\$7,450.00	0.08	\$620.81
		Stanwell	GSTONE5	Energy	\$7,450.00	0.08	\$620.81
		Stanwell	GSTONE6	Energy	\$7,450.00	0.08	\$620.81
		Stanwell	STAN-2	Energy	\$7,450.00	0.33	\$2,483.31
		Stanwell	STAN-4	Energy	\$7,450.00	0.33	\$2,483.31
<b>Spot price</b>		<b>\$8811.24/MWh</b>					

### Saturday 23 February - 2 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
13:35	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
13:40	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.57	\$5,423.93
		Tarong	TARONG#4	Energy	\$9,491.85	0.43	\$4,067.92
13:45	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
13:50	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	1.00	\$9,494.95
13:55	\$7,450.00	Eraring	ER02	Lower reg	\$0.99	-0.50	-\$0.50
		Stanwell	STAN-2	Energy	\$7,450.00	0.50	\$3,725.00
		Stanwell	STAN-4	Energy	\$7,450.00	0.50	\$3,725.00
		Stanwell	STAN-4	Lower reg	\$0.99	0.50	\$0.50
14:00	\$9,494.95	Tarong	TARONG#1	Energy	\$9,494.95	0.50	\$4,747.48
		Tarong	TARONG#2	Energy	\$9,494.95	0.50	\$4,747.48
<b>Spot price</b>		<b>\$9153.61/MWh</b>					

### Saturday 23 February - 2.30 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
14:05	\$7,450.45	Stanwell	GSTONE1	Raise reg	\$0.94	1.00	\$0.94
		Stanwell	STAN-4	Energy	\$7,450.00	1.00	\$7,450.00
		Stanwell	STAN-4	Raise reg	\$0.49	-1.00	-\$0.49
14:10	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
14:15	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
14:20	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
14:25	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.57	\$5,423.93
		Tarong	TARONG#4	Energy	\$9,491.85	0.43	\$4,067.92
14:30	\$7,450.00	Stanwell	STAN-2	Energy	\$7,450.00	0.50	\$3,725.00
		Stanwell	STAN-4	Energy	\$7,450.00	0.50	\$3,725.00
<b>Spot price</b>		<b>\$7065.39/MWh</b>					

### Saturday 23 February - 3 pm

Time	Dispatch price	Participant	Unit	Service	Offer price	Marginal change	Contribution
14:35	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
14:40	\$7,450.00	Stanwell	STAN-2	Energy	\$7,450.00	1.00	\$7,450.00
14:45	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
14:50	\$9,491.85	Tarong	TARONG#3	Energy	\$9,491.85	0.57	\$5,423.93
		Tarong	TARONG#4	Energy	\$9,491.85	0.43	\$4,067.92
14:55	\$7,450.00	Stanwell	STAN-2	Energy	\$7,450.00	1.00	\$7,450.00
15:00	\$6,000.11	LYMMCO	LYA2	Raise reg	\$0.90	1.00	\$0.90
		CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
		CS Energy	SWAN_E	Raise reg	\$0.80	-1.00	-\$0.80
<b>Spot price</b>		<b>\$7065.33/MWh</b>					

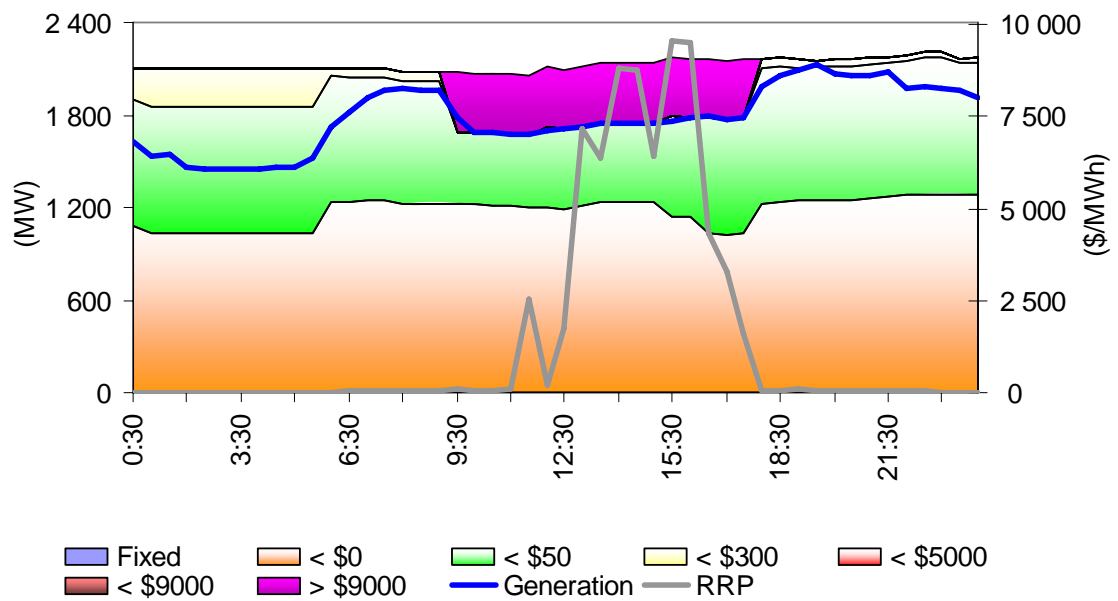
**Saturday 23 February - 3.30 pm**

<b>Time</b>	<b>Dispatch price</b>	<b>Participant</b>	<b>Unit</b>	<b>Service</b>	<b>Offer price</b>	<b>Marginal change</b>	<b>Contribution</b>
15:05	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
15:10	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
15:15	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
15:20	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
15:25	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
15:30	\$6,000.01	CS Energy	SWAN_E	Energy	\$6,000.01	1.00	\$6,000.01
<b>Spot price</b>		<b>\$6000.01/MWh</b>					

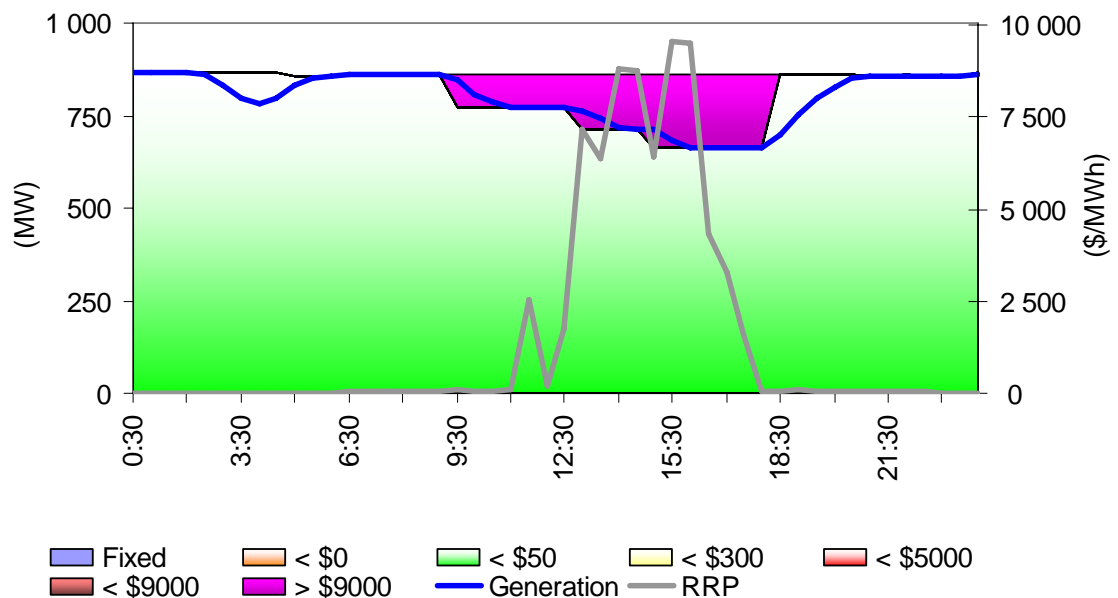
## Appendix B – Closing bids

Figures B1 to B5 highlight the half hour closing bids for the participants in Queensland with capacity priced at or above \$5000/MWh during the trading interval in which the spot price exceeded \$5000/MWh. It also shows the generation output of that participant and the spot price.

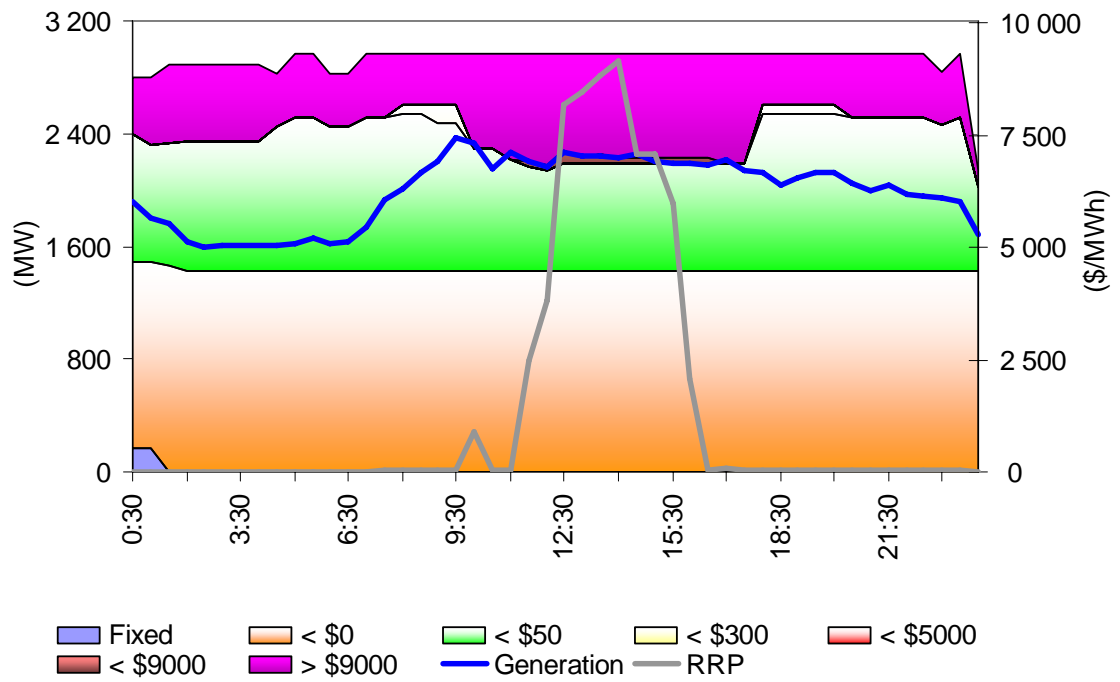
**Figure B1: CS Energy closing bid prices, dispatch and spot price for 22 February.**



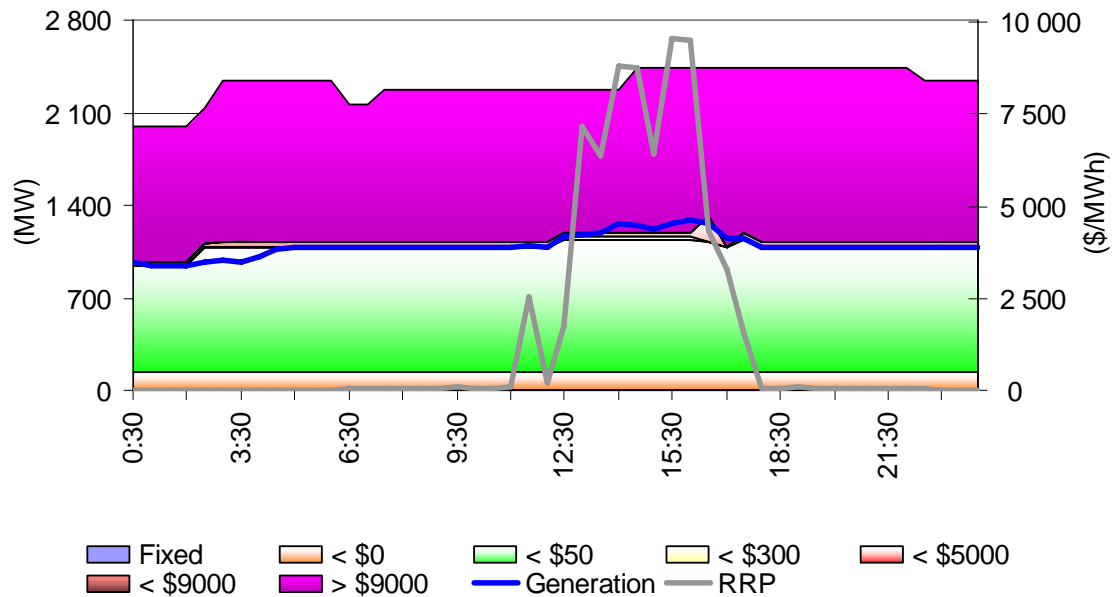
**Figure B2: Millmerran closing bid prices, dispatch and spot price 22 February.**



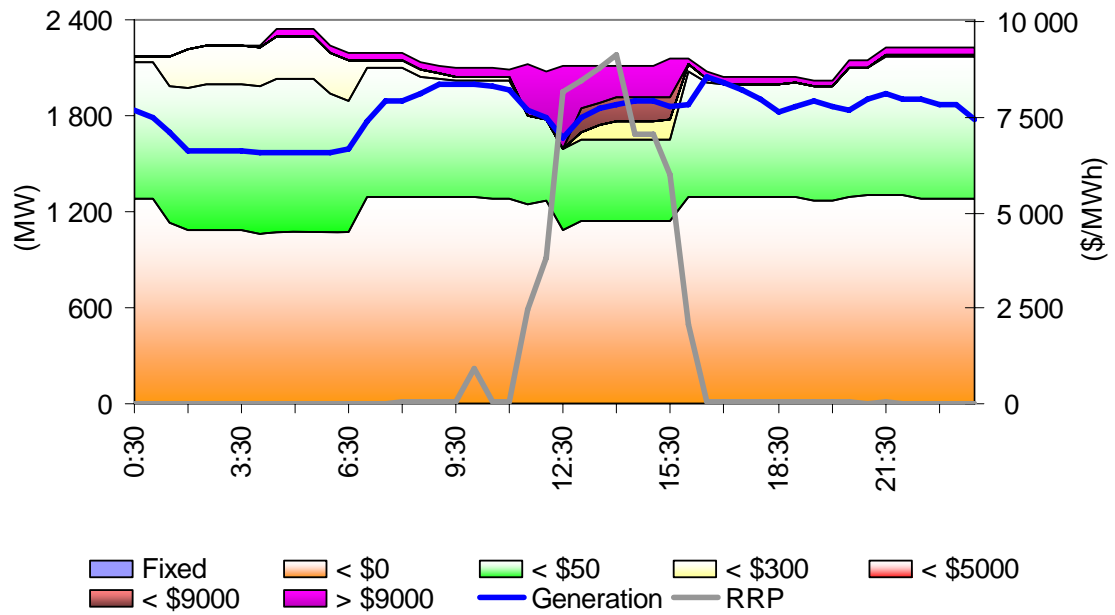
**Figure B3: Stanwell Corporation closing bid prices, dispatch and spot price 22 February.**



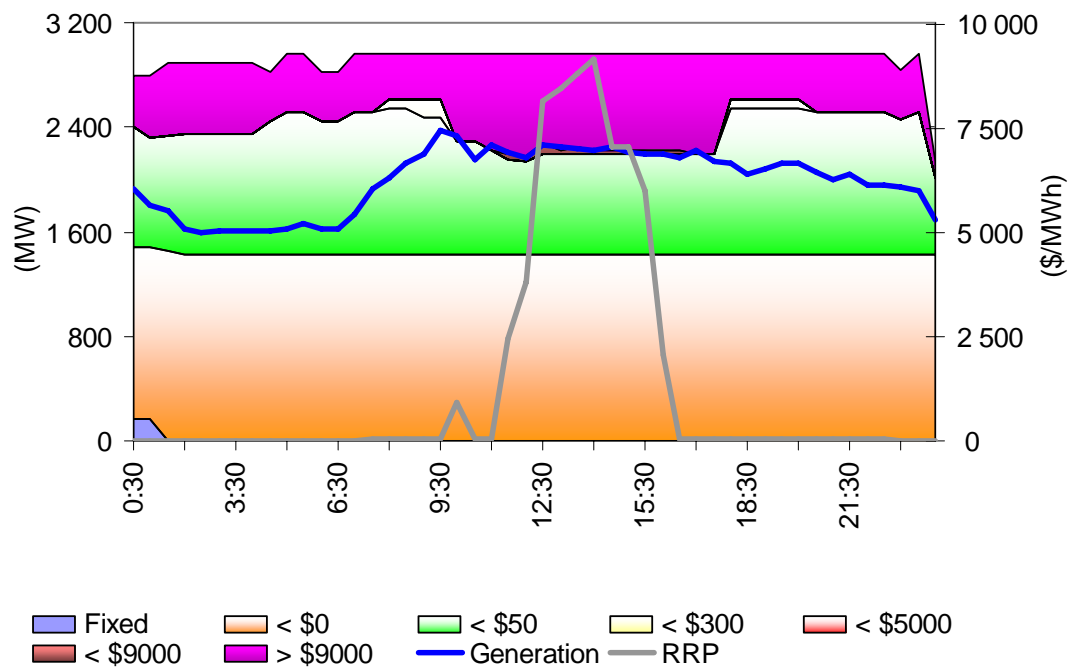
**Figure B4: Tarong Energy closing bid prices, dispatch and spot price 22 February.**



**Figure B5: CS Energy closing bid prices, dispatch and spot price for 23 February.**



**Figure B6: Stanwell Corporation closing bid prices, dispatch and spot price 23 February.**



**Figure B7: Tarong Energy closing bid prices, dispatch and spot price 23 February.**

