

31 July – 6 August 2011

Preface

As part of its monitoring roles for the National Gas Market Bulletin Board (Bulletin Board) and the Declared Wholesale Gas Market (Victorian Gas Market), the AER publishes a weekly gas market report. Part A of the report looks at gas usage and flows of registered facilities in southern and eastern Australia (as reported on the Bulletin Board). Part B provides a summary of operational and market data in the Victorian Gas Market.

The AER is responsible for monitoring and enforcing compliance with Part 20 of the National Gas Rules (Gas Rules) that authorise and govern conduct in the Short Term Trading Market (STTM). The STTM is a market for the wholesale trading of natural gas at defined hubs between pipelines and distribution systems, and began operation on 1 September 2010. With initial hubs of Sydney and Adelaide, additional hubs are intended for the future. Each hub is scheduled and settled separately, but all hubs operate under the same rules. Part C provides a summary of operational and market data in the STTM.

The Victorian Gas Market lies between the two STTM hubs and shares common production sources with the Adelaide and Sydney hubs. Participation in the Victorian Gas Market and the STTM hubs occurs on the basis of a different set of market rules and requires contractual arrangements with different pipeline owners. Participants operate in only those markets where they have production, gas and pipeline contracts. Some key differences between the STTM and the Victorian Gas Market are set out at the start of Part C.

This report will evolve over time and the nature of information presented may change. The AER welcomes feedback on the report from interested parties. Feedback can be sent to aer inquiry@aer.gov.au, with the subject title 'Comments on weekly gas report'.

Summary

Average daily prices in the Victorian market and the Sydney and Adelaide hubs are shown in figure 1.

Figure 1: Average daily price (\$/GJ) – All gas markets

31 July – 6 August	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	3.10	3.12	3.88

*weighted average daily imbalance price

**ex ante market price

STTM Gas Markets (Adelaide and Sydney)

Figure S3 shows that at \$1.83/GJ, the average ex post price in Sydney was significantly lower than the average ex ante price of \$3.12/GJ. The difference between the prices was driven by ex post prices of \$0.50/GJ on Friday 5 August and \$0.00/GJ (the lowest possible price in the market) on Saturday 6 August.

Figure 2: Ex ante vs. Ex post prices in Sydney – 31 July to 6 August

	31-Jul	1-Aug	2-Aug	3-Aug	4-Aug	5-Aug	6-Aug
Ex-ante price (\$/GJ)	3.30	3.49	3.50	3.30	3.30	2.97	1.99
Ex-post price (\$/GJ)	2.01	3.02	3.30	2.01	1.99	0.50	0.00

Source: <http://www.aemo.com.au> INT 651, 657

Figure 2 compares ex ante and ex post prices at the Sydney hub this week. This shows the low ex post prices on 5 and 6 August, in comparison to ex ante prices.

The ex post price is calculated after the gas day to determine a price that reflects the changes that actual flows to the hub would have had on the ex ante market. It is determined using the same data used to determine the ex ante market schedules and prices, but includes a dummy bid or offer that simulates the effect of the deviations if they had been scheduled in the market.

Figure S5 shows scheduled gas from the hub (represented by the yellow-shaded bar) exceeded network allocations (actual demand, represented by the red line) on each day of the week. The difference was most pronounced on 5 and 6 August, where actual demand was less than forecast by 14 per cent, and led to the large difference between ex ante and ex post prices.

The demand forecasting errors on 5 August and 6 August led to large Market Operator Service (MOS) decrease allocations (see figure S17a). That is, more gas was sent to the network than was required, which meant the excess gas was parked on the pipelines. The provision of MOS is paid for through MOS service payments. Figure S17b shows the large MOS service payments on the Moomba to Sydney Pipeline on these days, of approximately \$346 000 and \$236 000 respectively, substantially higher than the financial year to date daily average of \$71 000.

Inaccurate demand forecasts can lead to differences between ex ante and ex post prices and have a follow-on impact on deviation costs, payments and high MOS service payments, which are ultimately charged to participants.

Figure S4 shows the contrast in the Adelaide hub where ex ante and ex post prices were closely aligned throughout the week, and close to the previous week's prices.

Victorian Gas Market

Figure V3 shows average demand was significantly lower (33 per cent) than the previous week, driven by mild weather. Injections at Longford, Iona and SEAGas were significantly lower than the previous week. Consistent with this, figure V2 shows, at \$3.10/GJ the average daily price was lower than the previous week's average of \$3.75/GJ. AEMO issued demand overrides on several days this week in response to market participants' forecasts being higher than AEMO forecasts (see figure A5).

National Gas Market Bulletin Board

Figure N4 shows gas demand was lower than for the previous week in all regions except for Mt Isa (where it was slightly higher). Lower demand in NSW/ACT and Victoria was consistent with mild weather this week and resultant lower demand for residential heating. Gas powered generation was also lower in each of the southern states. Gas production levels were also lower this week, particularly in the Victorian and Moomba facilities.

There were no instances of late or missing Bulletin Board data this week.

Part A: National Gas Market Bulletin Board

Overview of pipeline and production flows

Figure N1 sets out the average daily pipeline flows into each key demand region across the National Gas Market. A list of pipeline facilities for each demand region is provided in Figure A1 of the Appendix.

Figure N1: Average daily pipeline flows (TJ) into each demand region

Average daily flows	NSW	ACT	VIC	SA	TAS	QLD		
						Brisbane	Mt Isa	Gladstone
31 July – 6 August	372	38	642	274	45	169	104	122
Financial Year-to-date 2011-12*	416	49	906	314	51	171	101	122
Financial Year-to-date 2010-11**	474	51	939	331	49	186	91	84

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

Source: National Gas Market Bulletin Board <http://www.gasbb.com.au>

Figure N2 provides the average daily amount of gas used for GPG (gas-powered generators) in each state.

Figure N2: Average daily gas (TJ) used by gas-powered generators in each state

Average daily gas for GPG usage^	NSW	VIC	SA	TAS	QLD
31 July – 6 August	83	6	156	30	131
Financial Year-to-date 2011-12*	78	24	183	36	118
Financial Year-to-date 2010-11**	86	25	190	34	157

^Estimated values based on application of implied heat rates for generators within the demand region sourced from ACIL Tasman's 2009 Final Report 'Fuel resource, new entry and generation costs in the NEM'

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

Source: <http://www.aemo.com.au>

Notes: Data for each state collected on the following basis:

1. NSW - Smithfield Energy, Uranquinty, Hunter Valley GT, Colongra and Tallawarra power stations.
2. VIC - Laverton North, Valley Power, Jeeralang A, Jeeralang B, Somerton, Bairnsdale, and Newport power stations.
3. SA - Dry Creek GT, Hallet, Pelican Point, Torrens Island, Mintaro, Osborne, Ladbroke Grove, and Quarantine power stations.
4. TAS - Tamar Valley power stations.
5. QLD - Braemar 1, Braemar 2, Roma, Oakey, Barcaldine, and Swanbank power stations.

Figure N3 sets out the daily average flows from production and storage facilities from each production zone across the National Gas Market. A list of production/storage facilities for each zone is provided in Figure A2.

Figure N3: Daily average production flows (TJ) for each production zone

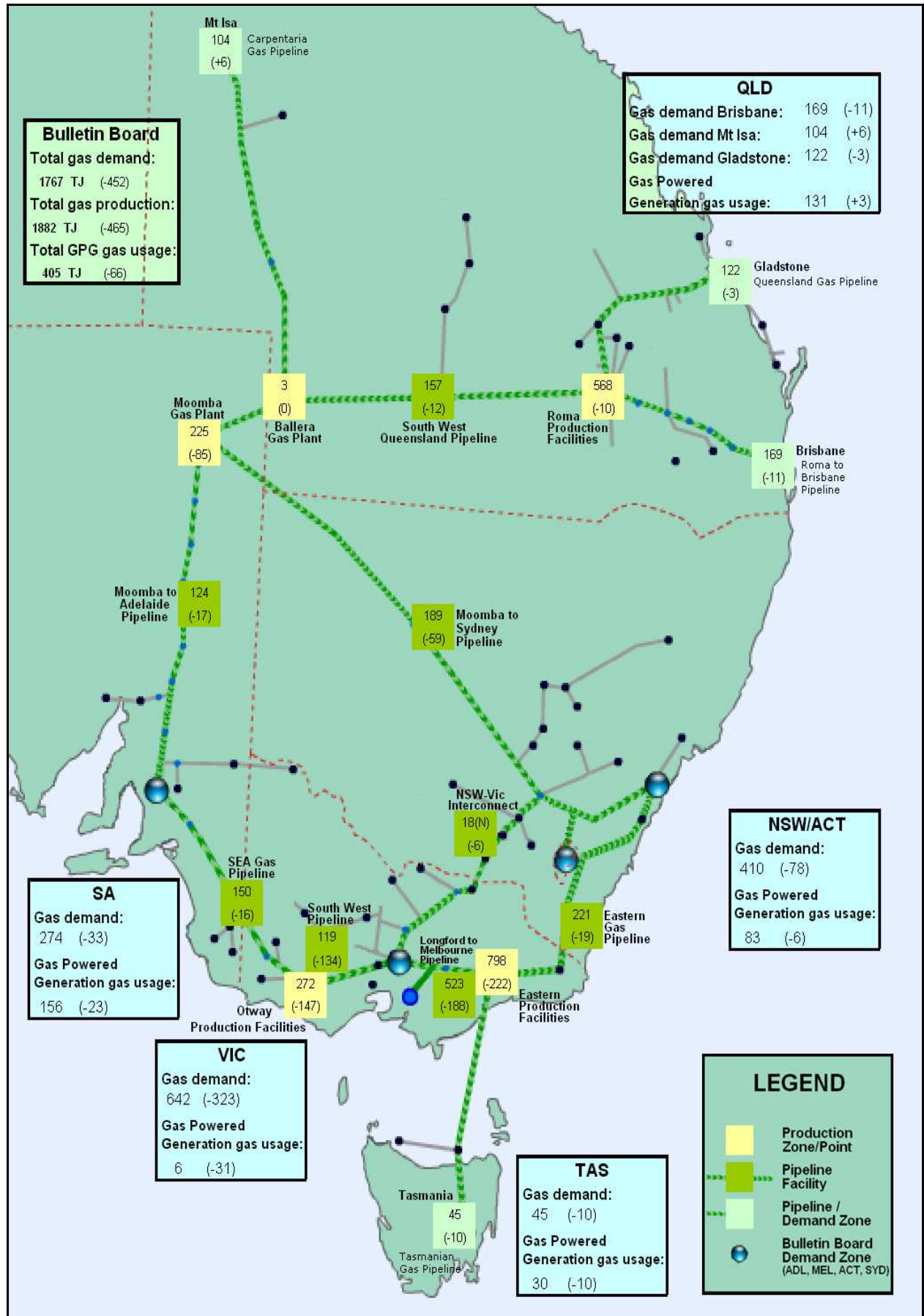
Average daily flows	Roma (QLD)	Eastern Victoria	Otway Basin (VIC)	Moomba (SA/QLD)
31 July – 6 August	568	798	272	228
Financial Year-to-date 2011-12*	567	971	404	294
Financial Year-to-date 2010-11**	555	1059	374	370

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

Source: National Gas Market Bulletin Board <http://www.gasbb.com.au>

Figure N4: Gas production/consumption and pipeline flows (TJ) (changes from the previous week are shown in brackets)

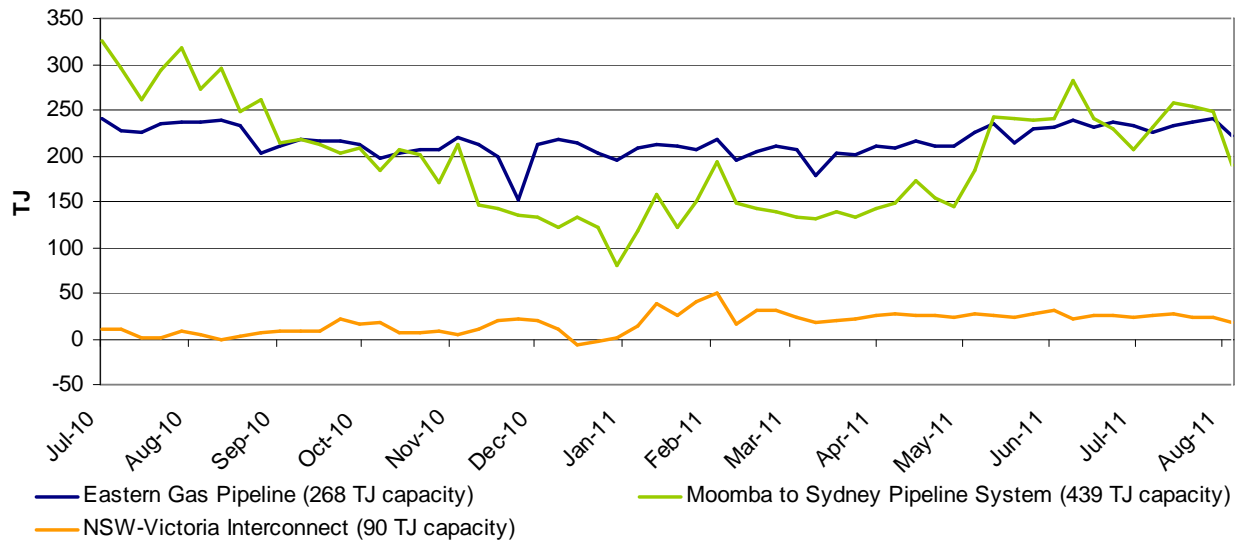


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
 Numbers in brackets indicate a change in average daily flow from the previous week.

Gas flows into demand regions

The figures below provide the average daily flows into each of the demand regions served by multiple pipelines and supply sources.

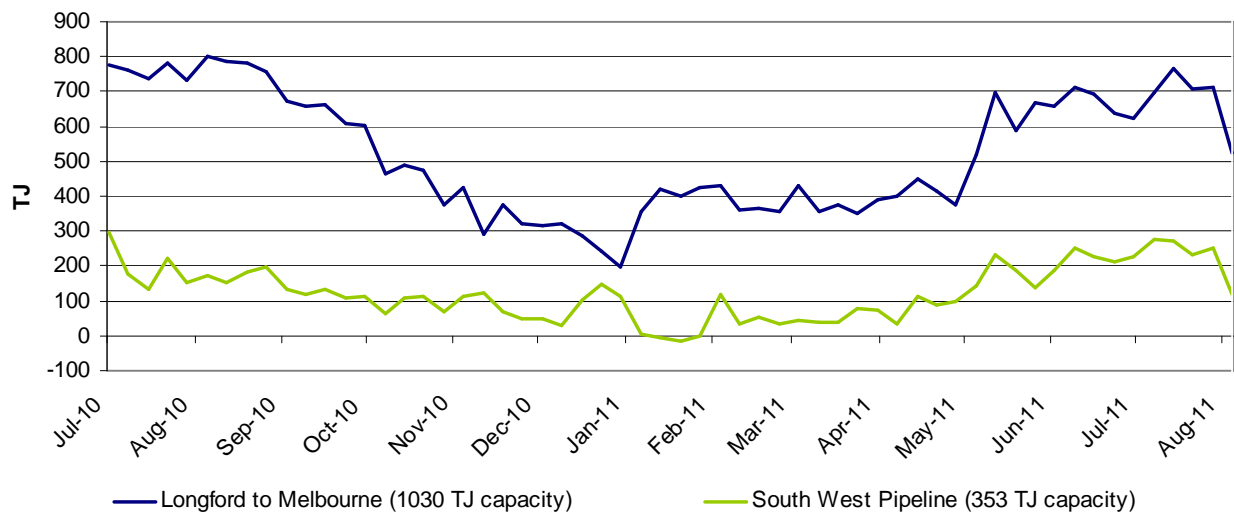
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>

Notes: Negative flows on the NSW-Victoria Interconnect represent flows out of NSW into VIC.

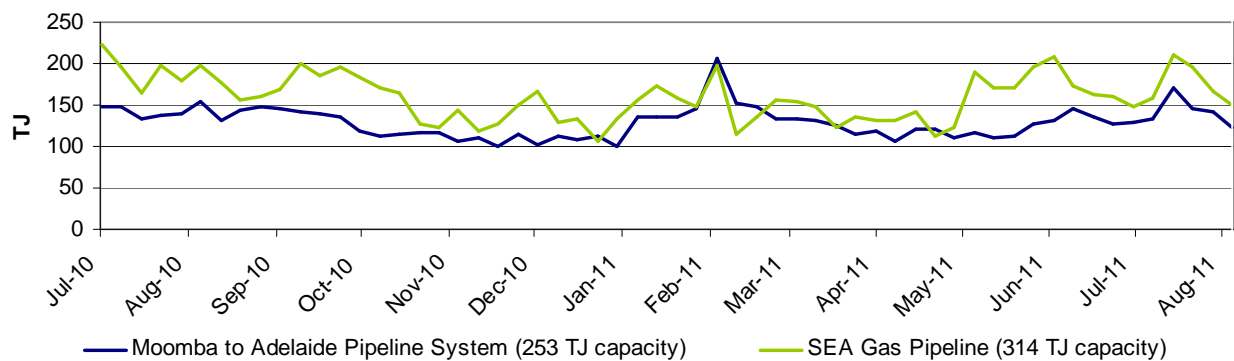
Figure N6: Average daily flows (TJ) into VIC demand region



Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>

Notes: Negative flows on the South West Pipeline represent flows out of the VPTS and back into storage at Iona.

Figure N7: Average daily flows (TJ) into SA demand region



Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>

Part B: Victorian Gas Market

Participation in the market

Figure V1 shows participant bids submitted at the start of the gas day (6 am) at injection and withdrawal points on the Victorian Declared Transmission System (DTS). The orange shaded boxes indicate that the participant submitted bids at that location on at least one occasion during the week. An “S” indicates that some of this nominated gas was scheduled into the gas market, while “NS” indicates that none of the gas was scheduled. Green shading indicates where a change has occurred from the previous week.

Bids are scheduled in price merit order — this means injection bids which are less than the market clearing price will be scheduled, while withdrawal bids which are greater than the market clearing price will be scheduled into the market.

Figure V1: Injection and withdrawal point bids in the VIC Gas Market[^]

Market Participant	Participant type	No. of injection / withdrawal bid points	Injection bids in the VPTS									Withdrawal bids in the VPTS			
			BassGas	Culcairn	IONA	LNG	Longford	SEA Gas	VicHub	Otway	Mortlake	Culcairn	IONA	SEA Gas	VicHub
AETV Power	Trader	2					NS		NS						NS
AGL (Qld)	Retailer	1				NS									
AGL	Retailer	4			NS	NS	S		NS				NS		
Aurora Energy	Retailer	1					S								
Ausgrid	Retailer	1					S								
Aust. Power & Gas	Retailer	3			NS	NS	S						S		
Aust. Power & Gas	Trader	1					S								
Coogee Energy	Transmission Customer	1					S								
Essential Energy	Transmission Customer	1										S			
Lumo Energy	Retailer	5		NS	S	NS		S	S			NS			
Lumo Energy	Trader	2			NS				NS				S		NS
Origin (Vic)	Retailer	6	S	NS	S	NS	S	S				S	NS		
Origin (Uranquinty)	Trader	2					S					S			
Red Energy	Retailer	1					S								
Santos	Retailer	1							S						
Simply Energy	Retailer	4			NS	NS	S	S					S	S	
TRU Energy	Retailer	4			S	NS	S		NS				S		S
Visy Paper	Distribution Customer	2					S					S			

[^]Bids taken from 6 am data for each gas day during the current week.
Source: <http://www.aemo.com.au> (INT131)

Market Prices

Figure V2 displays volume-weighted average daily imbalance prices, compared to the 2010-11 financial year-to-date average and the 2009-10 financial year-to-date equivalent as well as daily imbalance prices for each day during the current week.

The daily average market price is a volume weighted imbalance price taking account of trading amounts at five times through the gas day — 6 am, 10 am, 2 pm, 6 pm and 10 pm.

Figure V2: Imbalance Weighted Prices (\$/GJ)

	31 July – 6 August	24 July – 30 July	2011-12 Financial YTD*	2010-11 Financial YTD**
Average daily price	3.10	3.75	3.55	2.81

31 July – 6 August	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	2.56	3.46	3.16	3.12	3.39	3.16	2.87

*Average daily imbalance weighted average price from 1 July 2011 to the current week (inclusive)

**Average daily imbalance weighted average price from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

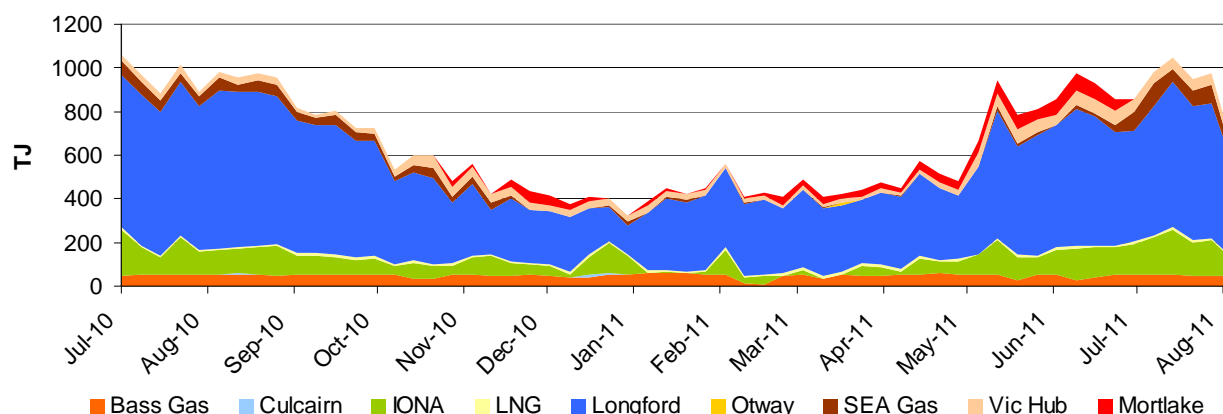
Source: <http://www.aemo.com.au> (INT 041)

System Injections

Figure V3 shows the average daily injections into the DTS for the current and previous week, compared with the 2010-11 and 2009-10 equivalent financial year-to-date daily averages.

Figure V3: Average daily flows (TJ) from Injection Points on the DTS

Injection Point:	31 July – 6 August	24 July – 30 July	2011-12 Financial YTD*	2010-11 Financial YTD**
Culcairn	0	0	0	1
Longford	431	620	581	685
LNG	10	9	9	8
IONA	76	164	152	122
VicHub	45	49	50	30
SEAGas	44	86	74	55
Bass Gas	47	47	49	51
Otway	0	0	0	0
Mortlake	0	0	0	0
TOTAL	653	975	915	952



*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

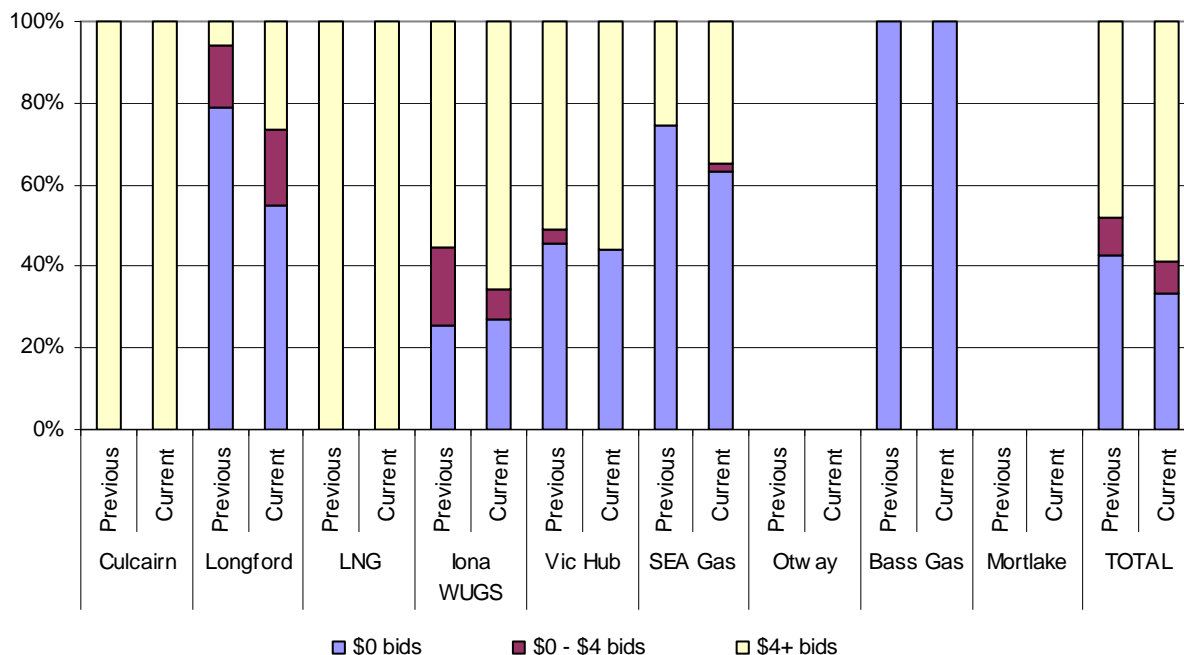
**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

Source: <http://www.aemo.com.au> (INT 150)

Bidding Activity

Figure V4 compares the price structure of gas bid at each of the injection points on the DTS, within three price bands of \$0/GJ, \$0/GJ to \$4/GJ, and \$4/GJ and above, for the current week and for the previous week.

Figure V4: Price structure of bids by injection points



Source: <http://www.aemo.com.au> (INT 131) - bids submitted for the 6am schedule on each day of the week.

Notes: Figures in the table are rounded off to the nearest round number (TJ); the maximum allowable bid is \$800/GJ.

Figure V5 provides a table of injection points on the DTS where market participants submitted intra-day renominations, for each day of the week.

Figure V5: Intra-day rebidding of gas injections

Injection Point:	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Culcairn						Lumo	Lumo
Longford		AETV AGL Origin TRU Ausgrid Aurora	AETV Origin TRU Aurora	AETV Origin TRU Aurora	AETV AGL Origin TRU Aurora	AETV Origin TRU Aurora	AETV AGL Origin TRU Aurora
LNG							APG
Iona	Origin TRU Simply	Origin TRU	Lumo	TRU	TRU	TRU Lumo	TRU APG Lumo
VicHub	AETV	AETV TRU	AETV Lumo	AETV Lumo	AETV Lumo	AETV	AETV Lumo
SEAGas	Simply	Simply		Simply			
Bass Gas							
Mortlake							

Source: <http://www.aemo.com.au> (INT 131)

Notes: Origin = Origin Energy | AGL = AGL Sales | TRU = TRUenergy | Simply = Simply Energy | AETV = AETV Power | APG = Australian Power & Gas | CE = Country Energy | Lumo = Lumo Energy (formerly Victoria Electricity) | AGL (QLD) = AGL Sales (Queensland) | Red = Red Energy | Ausgrid = Ausgrid | Aurora = Aurora Energy |

System withdrawals

Figure V6 shows the average daily gas usage on the DTS for the current and previous week, compared with the 2010-11 and 2009-10 equivalent financial year-to-date daily averages.

Figure V6: Average daily withdrawals (TJ) from system demand zones on the DTS

System withdrawal zone:	31 July – 6 August	24 July – 30 July	2011-12 Financial YTD*	2010-11 Financial YTD**
Ballarat	30	45	43	45
Geelong^	94	110	104	109
Gippsland	43	58	54	58
Melbourne	416	664	618	657
Northern	76	103	99	87
TOTAL	659	980	918	956

^Data presented also includes withdrawals for the Western system withdrawal zone or Western Transmission System (WTS).

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

Source: <http://www.aemo.com.au> (INT 150).

Part C: STTM MARKET DATA

What is the STTM?

The STTM is a market for the trading of natural gas at the wholesale level at defined hubs between pipelines and distribution systems. Currently the STTM has two hubs: Sydney and Adelaide. The AER first commenced reporting on the STTM in September. The report deliberately contains a significant amount of information on the STTM. It is envisaged that over time as readers become familiar with the market, the amount of information will be reduced, while being mindful not to compromise the quality of the report.

Although the STTM and Victorian gas markets (discussed in Part B of this report) are both spot markets for gas, there are a number of key differences. Some of these differences are listed in the table below.

Key area of difference	Victoria Gas Market	STTM
AEMO role	<ul style="list-style-type: none"> Wholesale market operator, Retail market operator, Transmission pipeline system operator 	<ul style="list-style-type: none"> Wholesale market operator, Retail market operator
Scheduling	<ul style="list-style-type: none"> On the day scheduling comprising five pricing and operating schedules at set times. Ad hoc schedules if required. Day ahead and 2-Day ahead schedules (forecast data only). 	<ul style="list-style-type: none"> Day ahead market schedules Shippers may vary from their market schedules when they nominate to pipeline operators 2-Day ahead and 3-Day ahead schedules (forecast data only).
Market Price	<ul style="list-style-type: none"> Five ex ante prices for imbalances set on the day Ex ante prices in subsequent schedules after the 6am schedule apply to deviations Market price is for commodity only. Transportation is charged separately by pipeline owner 	<ul style="list-style-type: none"> One ex ante market price set the day before the gas day One ex post imbalance price set the day after the gas day Price includes both commodity and delivery to the hub and represents purchase of gas at the hub
Linepack management (pipeline balancing mechanism)	<ul style="list-style-type: none"> AEMO defines linepack target depending on operational conditions and is generally set seasonally not daily. Linepack account covers costs that includes costs of day to day linepack variations 	<ul style="list-style-type: none"> On the day pipeline balancing through Market Operator Service (MOS), provided by MOS offers from shippers
Transmission pipeline constraint management	<ul style="list-style-type: none"> Ancillary payments for higher priced gas scheduled that relieves constraints Uplift payments to fund ancillary payments 	<ul style="list-style-type: none"> Capacity payments from shippers with non-firm contracts to shippers with firm contracts if a pipeline is constrained (based on the pipeline capacity price)

AEMO's website (www.aemo.com.au) contains documents that provide further detail on how the STTM works, including a glossary of terms.

Participation in the market

Figures S1 and S2 show participant supply offers and withdrawal bids submitted in the Sydney and Adelaide STTM hubs. The orange shaded boxes indicate that the participant submitted offers and bids at that location on at least one occasion during the week. An "S" indicates that some of this gas was scheduled into the gas market, while "NS" indicates that none of the gas was scheduled. Green shading indicates where a change has occurred from the previous week.

Offers and Bids are scheduled in price merit order—this means offers that are less than the market clearing price will be scheduled, while withdrawal bids that are greater than the market clearing price will be scheduled into the market.

Figure S1: Supply Offers and Withdrawal Bids (Sydney Hub)^

Trading Participant	Participant type	No. of supply offers / withdrawal bid points	Offers			Bids			
			EGP	MSP	ROS	EGP	MSP	ROS	SYD - NET
AETV Power	Shipper								
AGL Energy Sales & Marketing Limited	STTM User,Shipper	3	S	S	S				
AGL Wholesale Gas Limited	Shipper	2	S	S					
Ausgrid	STTM User,Shipper	2	S	S					
Australian Power & Gas Pty Ltd	STTM User,Shipper	1	S						
BHP Billiton Petroleum (Bass Strait) PL	Shipper								
BlueScope Steel	STTM User,Shipper	1	S						
Commonwealth Steel Company Pty Limited	STTM User								
Delta Electricity	STTM User,Shipper	1							S
Essential Energy	STTM User,Shipper	2	S				S		
Esso Australia Resources Pty Ltd	Shipper								
Lumo Energy (NSW) Pty Ltd	STTM User								
Lumo Energy Australia Pty Ltd	Shipper	2	NS			S	S		
OneSteel Coil Coaters Pty Ltd	STTM User								
OneSteel Manufacturing Pty Ltd	STTM User,Shipper	1	S						
OneSteel NSW Pty Ltd	STTM User,Shipper	1	S						
OneSteel Trading Pty Limited	STTM User								
Origin Energy LPG Limited	STTM User,Shipper								
Origin Energy Retail Ltd	STTM User,Shipper	1		S					
Santos Direct Pty Ltd	STTM User,Shipper	1	S						
TRUenergy Pty Ltd	STTM User,Shipper	2	S	S		S			
Tyco Water	STTM User								

^Offers and bids taken from the (D-1) ex ante schedule

^STTM Users also submit price-taker bids to satisfy customer demand, which are not included in this table

Source: <http://www.aemo.com.au> INT 651, 659, 668

EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, SYD-NET=Sydney Hub

Figure S2: Supply Offers and Withdrawal Bids (Adelaide Hub)^

Trading Participant	Participant type	No. of supply offers / withdrawal bid points	Offers		Bids		
			MAP	SEAGAS	MAP	SEAGAS	ADL - NET
AGL South Australia Pty Limited	STTM User,Shipper	1	S				
AGL Wholesale Gas (SA) Pty Ltd	Shipper	2	S	S			
Adelaide Brighton Cement Ltd	STTM User,Shipper	1	S				
Lumo Energy (SA) Pty Ltd	STTM User						
Lumo Energy Australia Pty Ltd	Shipper						
OneSteel Manufacturing Pty Ltd	Shipper						
Origin Energy Retail Ltd	STTM User,Shipper	2	S	S			
Pelican Point Power Limited	Shipper						
Simply Energy	STTM User,Shipper	2	S	NS	NS		
TRUenergy Pty Ltd	STTM User,Shipper	2	S	S			

^ Offers and bids taken from the (D-1) ex ante schedule

^ STTM Users also submit price-taker bids to satisfy customer demand, which are not included in this table

Source: <http://www.aemo.com.au> INT 651, 659, 668

MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline, ADL-NET=Adelaide Hub

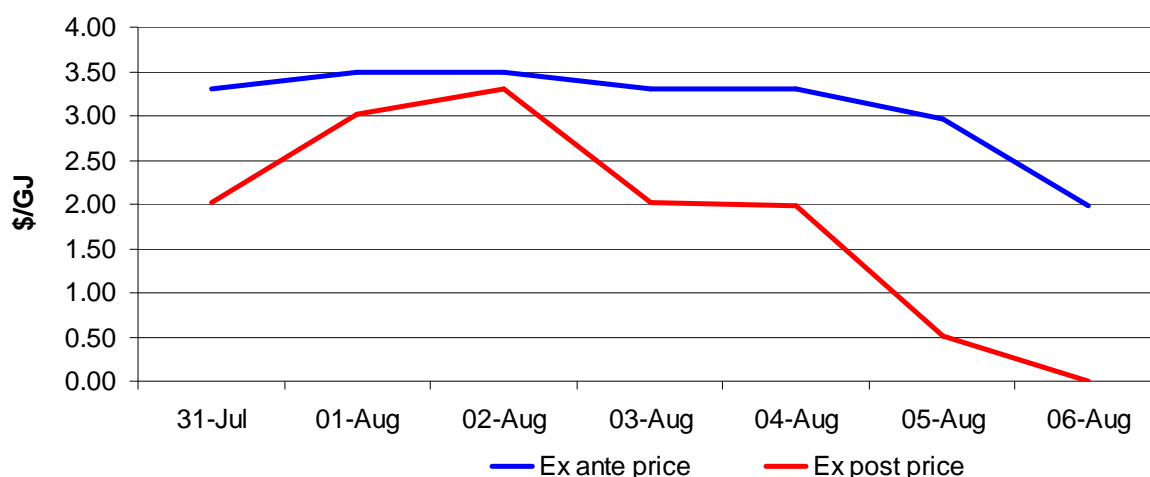
Ex ante and Ex post Market Prices

Figures S3 and S4 show ex ante and ex post prices at the Sydney and Adelaide Hubs. Differences between the ex ante and ex post price may arise where there are significant differences between price taker bids (demand forecasts) for the hub and actual demand in the hub. When this occurs, this leads to more or less gas being scheduled in the ex post market and a divergence between the ex ante and ex post prices.

Figure S3: Ex ante vs Ex post Price - Sydney Hub (\$/GJ)^

	31 July – 6 August	24 July – 30 July	2011-12 Financial YTD*
Ex ante price	3.12	3.94	3.56
Ex post price	1.83	3.73	3.02

*Financial Year to date figure from 1 July 2011 to the current week (inclusive)
Source: <http://www.aemo.com.au> INT 651, 657

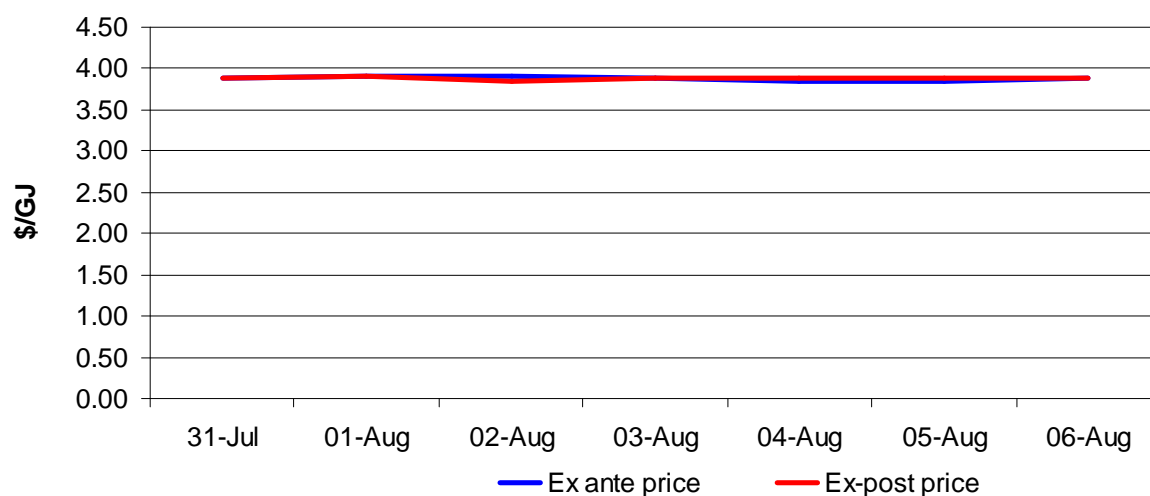


Source: <http://www.aemo.com.au> INT 651, 657

Figure S4: Ex ante vs Ex post Price - Adelaide Hub (\$/GJ)

	31 July – 6 August	24 July – 30 July	2011-12 Financial YTD*
Ex ante price	3.88	3.89	3.93
Ex post price	3.89	3.84	4.01

*Financial Year to date figure from 1 July 2011 to the current week (inclusive)
Source: <http://www.aemo.com.au> INT 651, 657



Source: <http://www.aemo.com.au> INT 651, 657

Scheduled gas

“Firm” and “non-firm” gas is scheduled to the STTM hubs. Firm capacity describes a facility contract that has the highest haulage priority. Non-firm (as available) capacity refers to facility contracts with lower order priority.

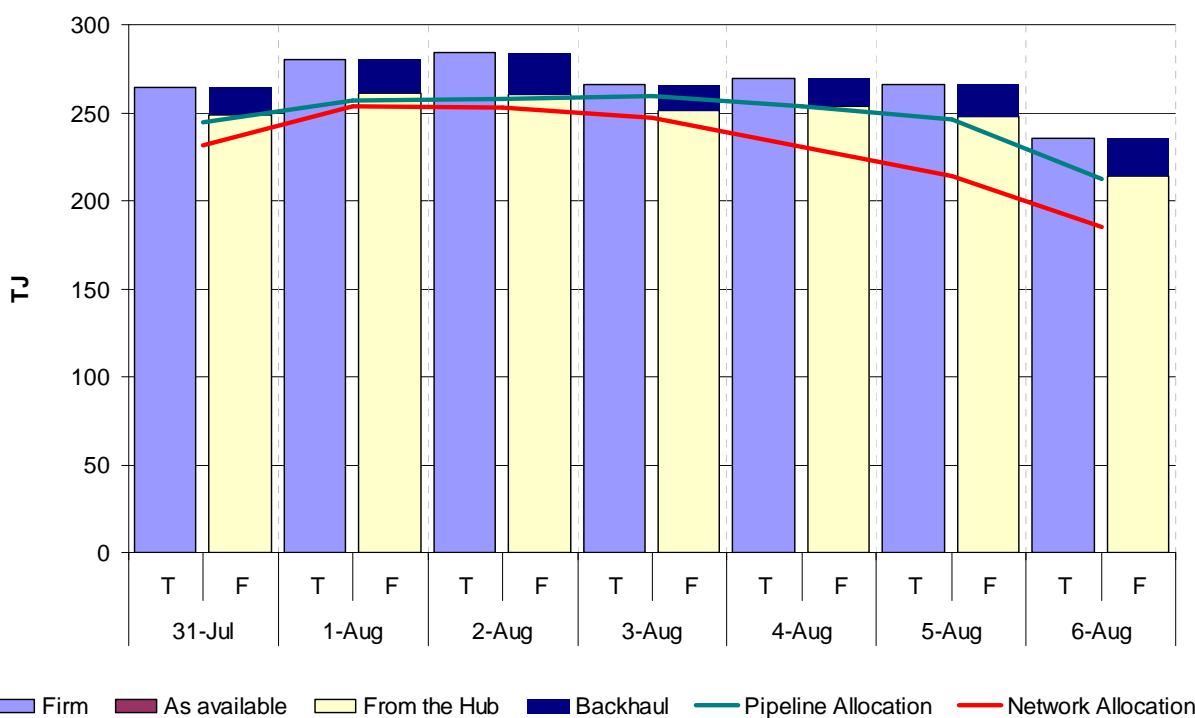
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

Figures S5 and S6 show scheduled versus allocated gas at each hub. To understand the figures, the quantities of firm and non-firm gas scheduled via offers to the hub are indicated by the columns marked “T” (or **to** the hub). Firm offers are indicated by light purple shading and as available gas is indicated by maroon shading. Bids to take gas from the hub are indicated by columns marked “F” (or **from** the hub). User bids are indicated by light yellow shading and backhaul is indicated by dark blue shading.

The red line shows network (or in other words hub or demand side) allocations and the green line shows pipeline allocations. Allocations show actual gas flows for the day based on pipeline and network metered data.

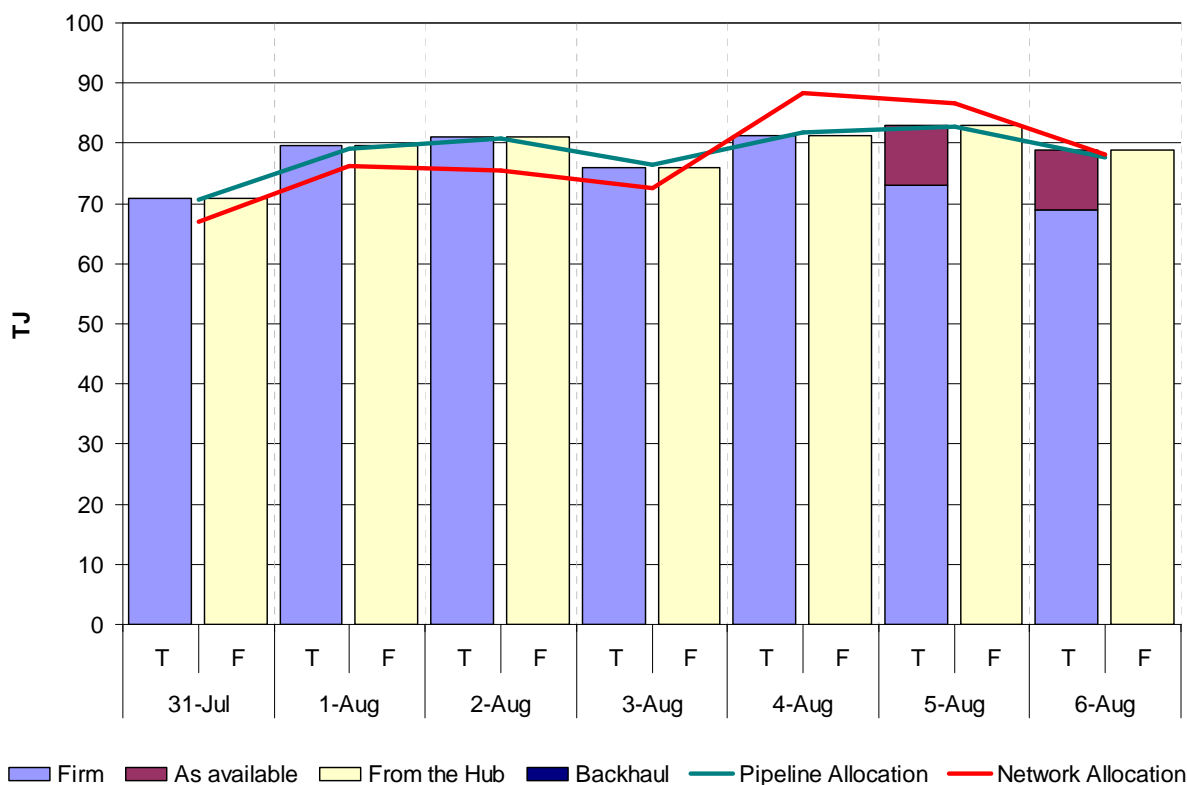
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

Figure S5: Allocated vs scheduled ex ante quantity - Sydney Hub (TJ)^



Source: <http://www.aemo.com.au> INT 651, 652, 658 and 664 (MOS allocations removed)

Figure S6: Allocated vs scheduled ex ante quantity - Adelaide Hub (TJ)



Source: <http://www.aemo.com.au> INT 651, 652, 658 and 664 (MOS allocations removed)

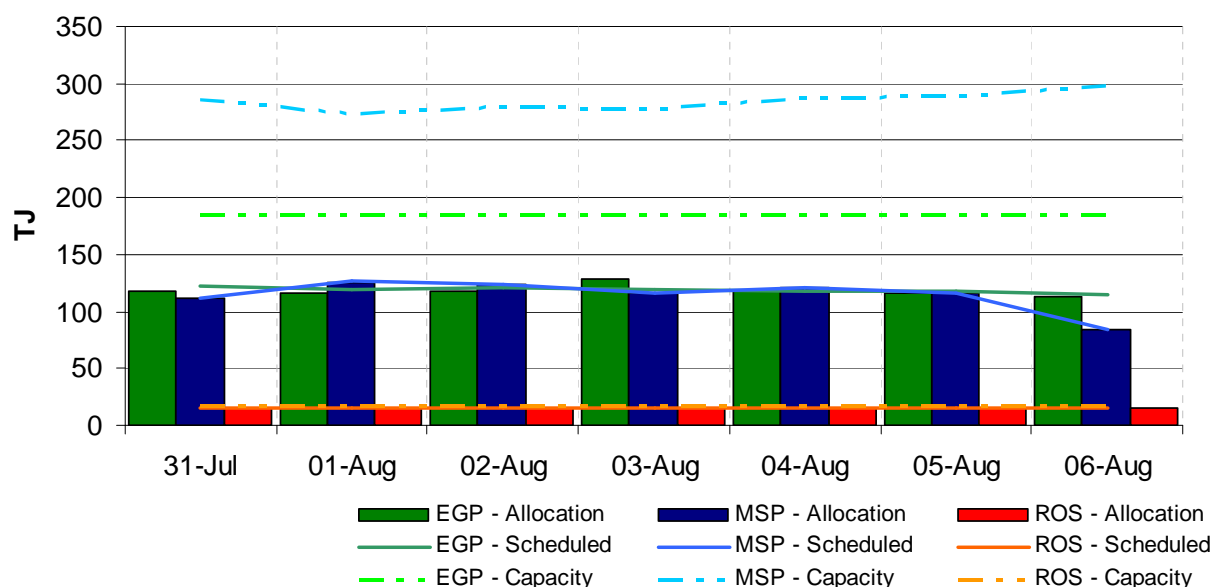
Pipeline Facility Allocations

A number of pipelines supply the Adelaide and Sydney hubs. Figures S7 and S8 show, for each hub, the allocation (or actual flow) of gas to each of the pipeline facilities supplying the hub, the quantity of gas scheduled (ex ante) on the pipeline and the capacity of the pipeline.

For a gas day, the pipeline operator delivers gas to the hub, and users withdraw gas from the hub. However, the quantities delivered to or withdrawn from the hub may not, and generally will not, match with the ex ante schedules. In addition, during the day, as gas requirements become better known, and if permitted by their contracts, shippers may renominate quantities (“intraday nominations”) with their pipeline operators.

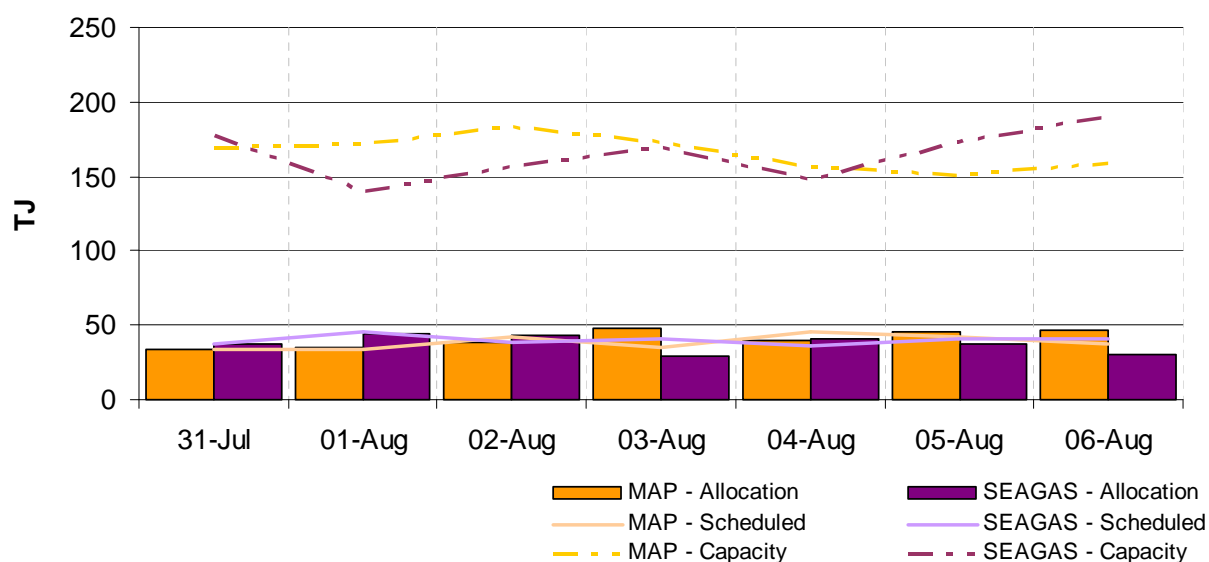
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

Figure S7: Allocated vs scheduled pipeline quantities - Sydney Hub (TJ)



Source: <http://www.aemo.com.au> INT 652, 653, 658 and 664 (MOS allocations removed)
 EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park production facility

Figure S8: Allocated vs scheduled pipeline quantities - Adelaide Hub (TJ)



Source: <http://www.aemo.com.au> INT 652, 653, 658 and 664 (MOS allocations removed)
 MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

Offers and Bids

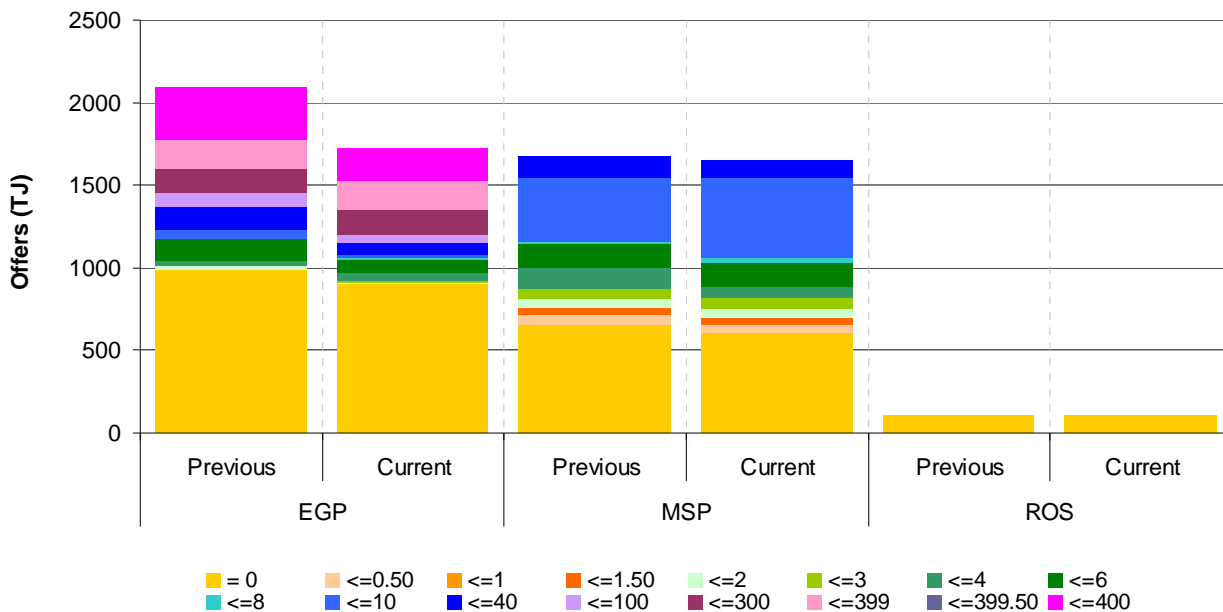
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

Figures S10 and S12 show for the Sydney and Adelaide hubs respectively, total bids within various price bands for the current week compared to the previous week for each of the pipeline facilities and the hubs themselves (NETSYD1 and NETADL1).

These figures also include information on price-taker bids. A price-taker bid is a bid for a quantity of gas that the user will accept at any price. Only STTM users are able to place price-taker bids, that is, to purchase gas at any price. These bids (which represent customer demand forecasts) must be submitted on a daily basis. Price-taker bid data is read against the right-hand-

side axis. Because scheduling is price-driven, offers for lower-priced gas are scheduled ahead of offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

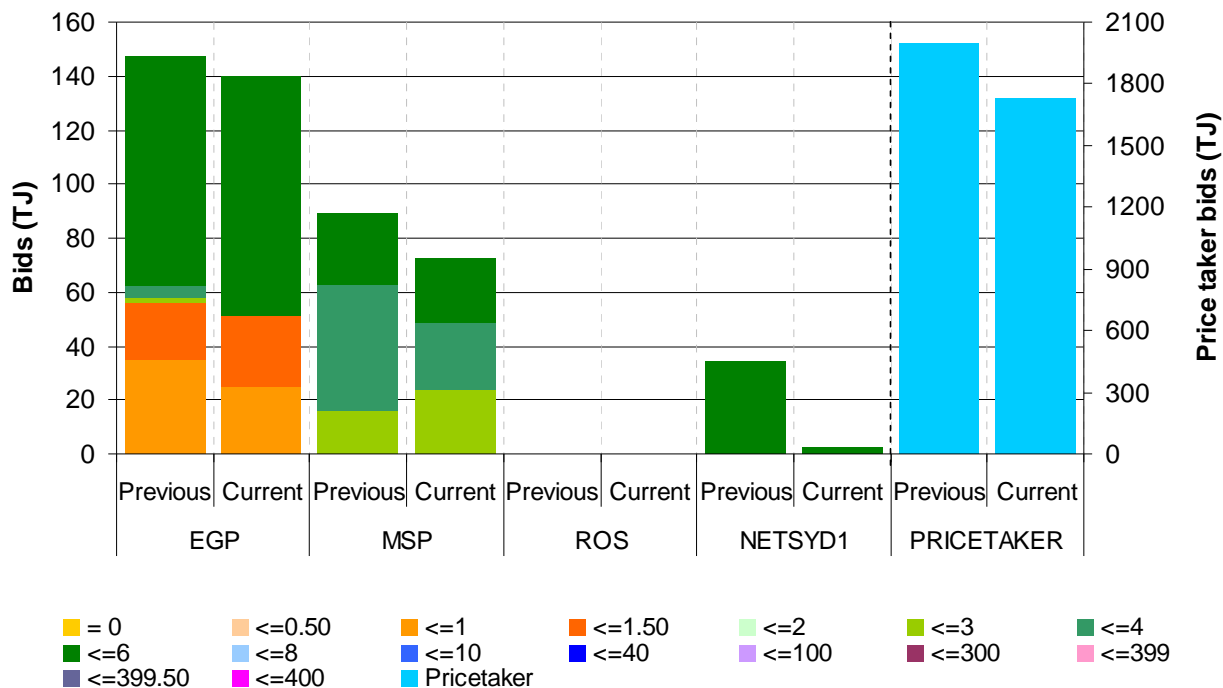
Figure S9: Total weekly Sydney hub offers (TJ) within price bands (\$/GJ)



Source: <http://www.aemo.com.au> INT 652, 659

EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

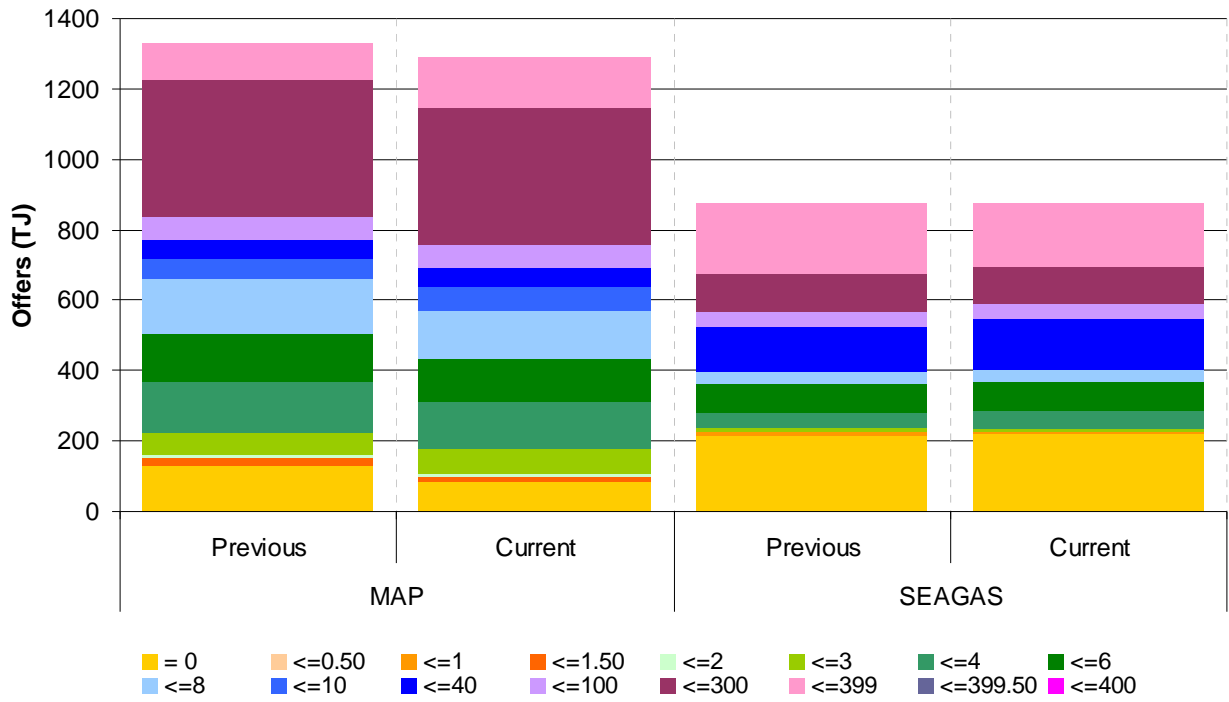
Figure S10: Total weekly Sydney hub bids (TJ) within price bands (\$/GJ)



Source: <http://www.aemo.com.au> INT 652, 659

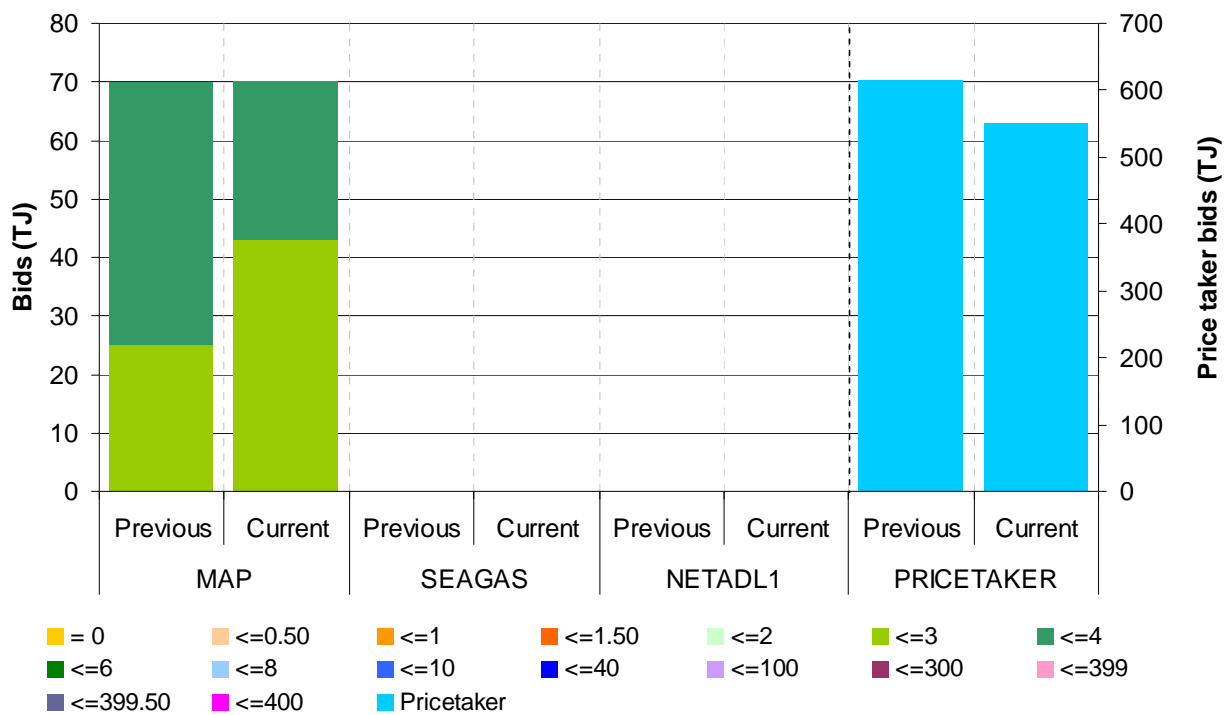
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

Figure S11: Total weekly Adelaide hub offers (TJ) within price bands (\$/GJ)



Source: <http://www.aemo.com.au> INT 652, 659
 MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

Figure S12: Total weekly Adelaide hub bids (TJ) within price bands (\$/GJ)



Source: <http://www.aemo.com.au> INT 652, 659
 MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline, NETADL1=Adelaide Hub

Re-offers and re-bids

In the STTM, offers and bids must first be submitted three days before the gas day (D-3), leading to an initial provisional price and schedule for the gas day. Re-offers and re-bids are then allowed for the D-2 schedule and finally for the D-1 “ex ante” schedule.

Re-offers and re-bids can lead to significant changes between D-3 and D-2 provisional prices and the ex ante price. Figures S13, S14, S15 and S16 show the participants that made inter-day re-offers and re-bids at the hubs for the different pipeline facilities.

Figure S13: Inter-day resubmission of offers at Sydney Hub

Pipeline	Schedule	Sun	Mon	Tue	Wed	Thu	Fri	Sat
EGP	D-3 to D-2	BluSc EA TRU	EA TRU	EA TRU	EA SANTOS TRU	EA TRU	EA Lumo TRU	EA Lumo TRU
	D-2 to D-1	EA TRU	EA TRU	BluSc EA SANTOS TRU	BluSc EA OneStl(NSW) TRU	BluSc EA TRU	BluSc EA Lumo SANTOS TRU	BluSc EA TRU
MSP	D-3 to D-2	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU
	D-2 to D-1	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) EA Origin TRU
ROS	D-3 to D-2							
	D-2 to D-1							AGL(ESM)

Source: <http://www.aemo.com.au> INT 659

BluSc= BlueScope Steel | Country= Country Energy | Origin=Origin Energy Retail Ltd | TRU= TRUenergy Pty Ltd |

AGL(WG)= AGL Wholesale Gas Limited | EA=EnergyAustralia | OneStl(NSW)= OneSteel NSW Pty Ltd |

SANTOS= Santos Direct Pty Ltd | AGL(ESM)= AGL Energy Sales & Marketing Pty Ltd | Lumo = Lumo Energy Australia Pty Ltd |

APG= Australian Power & Gas Pty Ltd |

EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

Figure S14: Inter-day resubmission of bids at Sydney Hub

Pipeline	Schedule	Sun	Mon	Tue	Wed	Thu	Fri	Sat
EGP	D-3 to D-2		TRU	TRU	Lumo	TRU	Lumo TRU	TRU
	D-2 to D-1	TRU		Lumo	TRU	Lumo		
MSP	D-3 to D-2	Country			Lumo		Lumo	
	D-2 to D-1			Lumo	Country	Country Lumo	Country Lumo	Country Lumo
NETSYD1	D-3 to D-2							
	D-2 to D-1							
ROS	D-3 to D-2							
	D-2 to D-1							Lumo

Source: <http://www.aemo.com.au> INT 659

Country= Country Energy | AETV = Aurora Energy Tamar Valley | Country= Country Energy | TRU= TRUenergy Pty Ltd |

Lumo= Lumo Energy Australia Pty Ltd |

EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

Figure S15: Inter-day resubmission of offers at Adelaide Hub

Pipeline	Schedule	Sun	Mon	Tue	Wed	Thu	Fri	Sat
MAP	D-3 to D-2	AGL(SA) Origin Simply TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU	AGL(SA) Origin Simply TRU	AGL(SA) Origin Simply TRU	AGL(SA) Origin Simply TRU	AGL(SA) Origin Simply TRU
	D-2 to D-1	ABC AGL(SA) Origin Simply TRU	ABC AGL(SA) Origin Simply TRU	ABC AGL(SA) Origin Simply	ABC AGL(SA) Origin Simply TRU	ABC AGL(SA) Origin Simply TRU	ABC AGL(SA) Origin Simply	ABC AGL(SA) Origin Simply TRU
SEA-GAS	D-3 to D-2	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU
	D-2 to D-1	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU

Source: <http://www.aemo.com.au> INT 659

ABC= Adelaide Brighton Cement Ltd | AGL(WGSA)= AGL Wholesale Gas (SA) Pty Ltd | Origin=Origin Energy Retail Ltd | Simply= Simply Energy | TRU= TRUenergy Pty Ltd | AGL(SA)= AGL South Australia Pty Limited | MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

Figure S16: Inter-day resubmission of bids at Adelaide Hub

Pipeline	Schedule	Sun	Mon	Tue	Wed	Thu	Fri	Sat
MAP	D-3 to D-2				Simply			
	D-2 to D-1			Simply				
NETADL1	D-3 to D-2							
	D-2 to D-1							
SEA-GAS	D-3 to D-2							
	D-2 to D-1							

Source: <http://www.aemo.com.au> INT 659

Simply= Simply Energy

Market Operator Service

The Market Operator Service (MOS) is a daily mechanism for allocating balancing gas provided by pipelines to maintain pressures at receipt points. This balancing gas is the difference between what was scheduled by a pipeline operator (the pipeline schedule) and the actual quantities of gas that flowed on a pipeline on the day.

MOS offers are made by participants who have contracts with pipeline facilities to “park” gas (on the pipeline) or “loan” gas (from the pipeline). Based on these contracts, two types of MOS are offered: increase offers to increase flows on a pipeline to a hub; and decrease offers to decrease flows on a pipeline to a hub. Where a pipeline deviation¹ occurs on a gas day and there is a requirement for MOS from a MOS provider (either an increase or decrease offer), the MOS provider is paid according to their MOS offer price (the MOS service payment).

In addition, where this MOS service is required, AEMO pays or charges the MOS provider for the MOS gas allocation on the gas day at the ex ante market price two days after the gas day, which covers the cost of restoring its inventory of MOS gas (the MOS commodity payment or charge). The MOS provider can then choose to submit bids or offers for the gas it needs to replace or run down its MOS gas allocation on the gas day.

Figure S17a and S18a show quantities of MOS allocated on a daily basis compared to total MOS increase and decrease offers (from potential providers) on each pipeline at each hub. MOS allocations are shown by the columns in these figures; whereas total MOS increase and decrease offers on each pipeline are shown by horizontal lines (as indicated in the legend). Figures S17b

and S18b show MOS service payments and MOS commodity payments or charges. Payments fall below the horizontal axis and charges are displayed above the axis.

Figure S17a: Sydney MOS allocations

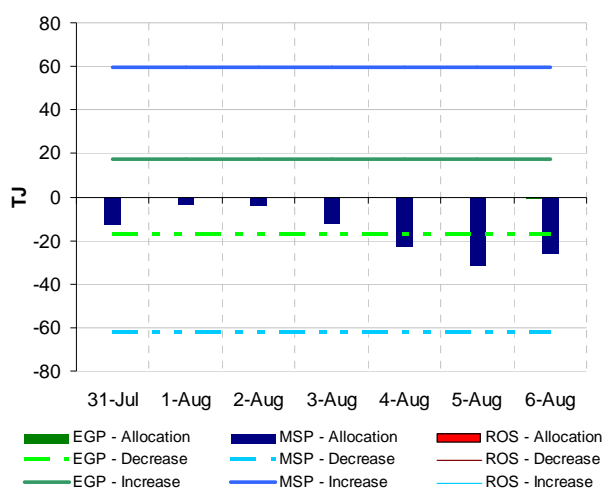
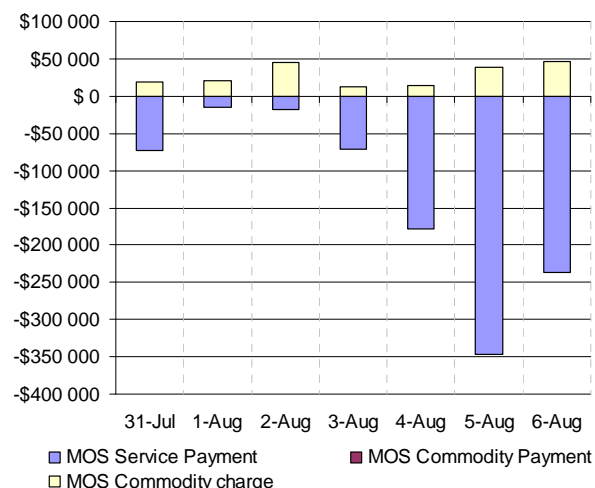


Figure S17b: Sydney MOS payments/charges



Source: <http://www.aemo.com.au> INT 663, 664, 665

EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

Figure S18a: Adelaide MOS allocations

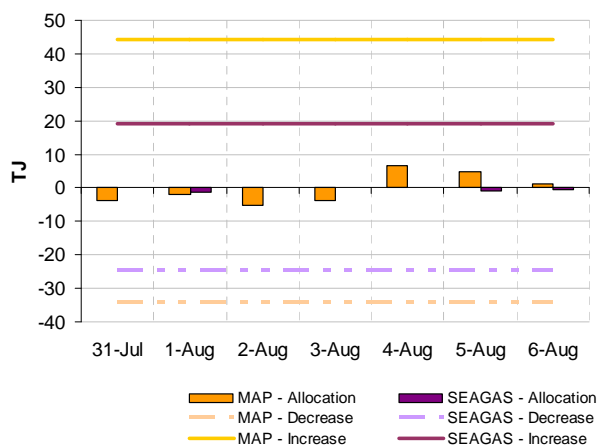
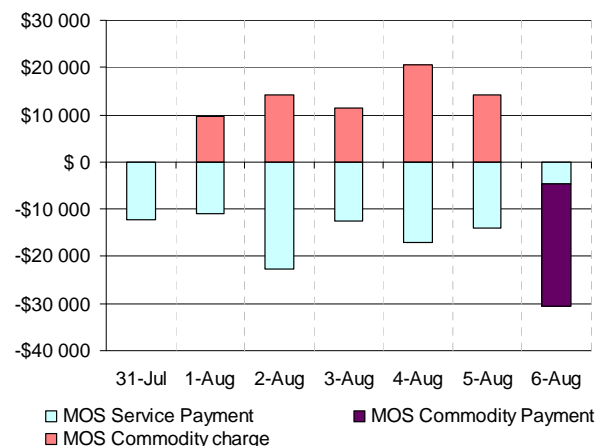


Figure S18b: Adelaide MOS payments/charges



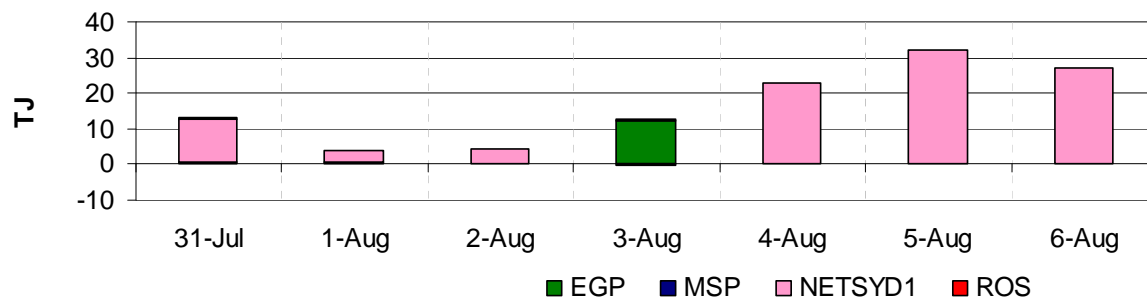
Source: <http://www.aemo.com.au> INT 663, 664, 665

MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

Deviations

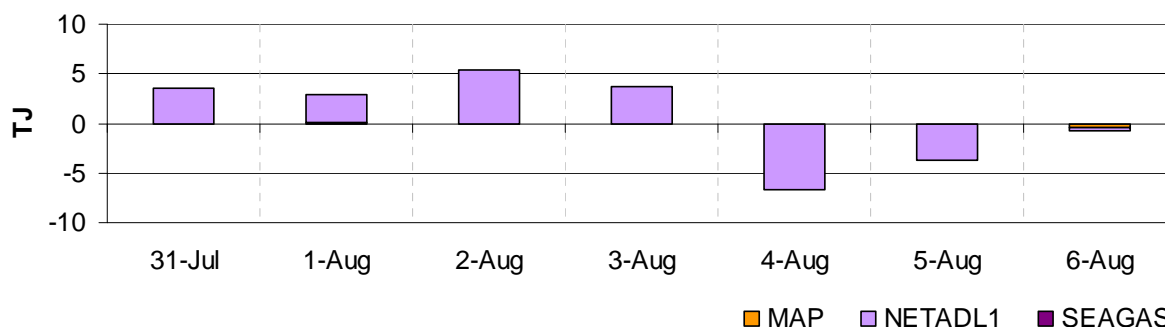
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As discussed previously, figures S5 and S6 show allocated quantities versus scheduled. Where they differ, there is a deviation. Net deviations may lead to requirements for MOS services. Figures S19 and S20 show net deviations at the STTM hubs.

Figure S19: Net Deviations – Sydney Hub



Source: <http://www.aemo.com.au> INT652

Figure S20: Net Deviations – Adelaide Hub



Source: <http://www.aemo.com.au> INT652

Market Schedule Variations

When a shipper deviates from the ex ante schedule, it can submit a “market schedule variation” (MSV) to AEMO. The variation must be matched by an opposite variation from either another shipper or a user. Market schedule variations allow shippers to adjust their schedules in line with their pipeline allocations and so avoid deviation charges. A variation can include flows from the hub, which must also be matched with variation of flows to the hub.

Variations that cause a change in withdrawals at the hub attract a variation charge (but no deviation charge), which is designed to encourage more accurate day-ahead forecasting. The variation charge has a sliding scale such that the bigger the variation, the bigger the charge. However, variations that do not change the demand at the hub are exempt. Figures S21 and S22 show MSV quantities and charges at the STTM Hubs.

Figure S21: Average Daily Market Variations - Sydney Hub

	31 July – 6 August	24 July – 30 July	2011-12 Financial YTD*
Quantity (TJ)	6.75	4.77	5.13
Charges (\$)	240.95	217.28	177.68

*Financial Year to date figure from 1 July 2011 to the current week (inclusive)

Source: <http://www.aemo.com.au> INT 651, 657

Figure S22: Average Daily Market Variations - Adelaide Hub

	31 July – 6 August	24 July – 30 July	2011-12 Financial YTD*
Quantity (TJ)	1.04	1.10	1.26
Charges (\$)	3.74	54.77	49.44

*Financial Year to date figure from 1 July 2011 to the current week (inclusive)

Source: <http://www.aemo.com.au> INT 651, 657

APPENDIX

Figures A1 and A2 display the daily gas flows from each pipeline and production/storage facility in the National Gas Market over the current week. The nameplate capacity or MDQ (Maximum Daily Quantity) for each facility are also provided, along with the proportion of MDQ used on average over the current week and the year to date at each facility. Flow data not provided by bulletin board polling time is indicated by N/A.

Figure A1: Daily flows (TJ) for pipeline facilities

Demand zone and pipeline facility	Sun	Mon	Tue	Wed	Thu	Fri	Sat	MDQ (TJ)	YTD average capacity usage (%)	Current week average daily flows	Current YTD average daily flows*	Previous YTD average daily flows**
QLD												
Carpentaria Pipeline	105	103	99	105	105	104	107	119	85	104	101	91
QLD Gas Pipeline	127	125	120	118	120	122	123	142	86	122	122	84
Roma to Brisbane Pipeline	164	184	172	173	176	167	150	219	78	169	171	186
South West QLD Pipeline	148	167	156	168	167	154	141	181	89	157	161	146
NSW/ACT												
Eastern Gas Pipeline	211	223	226	234	224	223	209	268	86	221	231	233
Moomba to Sydney Pipeline	188	224	261	176	170	156	151	439	53	189	234	293
NSW-VIC Interconnect	24	19	22	20	19	17	4	90	26	18	24	6
VIC												
Longford to Melbourne	513	593	508	438	419	568	622	1030	66	523	676	761
South West Pipeline^	128	123	130	91	117	126	121	353	65	119	229	177
SA												
Moomba to Adelaide Pipeline	112	116	114	130	139	128	130	253	56	124	141	140
SEA Gas Pipeline	109	158	146	107	193	185	154	314	55	150	173	191
TAS												
Tasmanian Gas Pipeline	33	46	45	45	47	49	46	129	40	45	51	49

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>

Notes: Operational ranges for each pipeline facility range from a minimum of 20 per cent to a maximum of 120 per cent of the respective MDQs. The exceptions are the South West Queensland Pipeline and the NSW-VIC Interconnect which have operational ranges 40 per cent to 120 per cent and 0 to 120 per cent of MDQ respectively.

Figure A2: Daily flows (TJ) for production / storage facilities compared to operational ranges and use of production/storage capacity

Production zone and production / storage facility	Sun	Mon	Tue	Wed	Thu	Fri	Sat	MDQ (TJ)	YTD average capacity usage* (%)	Current week average daily flows	Current YTD average daily flows*	Previous YTD average daily flows**
Roma (QLD)												
Berwyndale South	93	91	92	93	94	95	94	140	66	93	92	93
Fairview	117	124	129	104	108	108	83	130	92	110	119	123
Kenya Gas Plant	74	77	80	80	81	81	82	160	45	79	71	55
Kincora	10	10	10	10	10	10	10	25	43	10	11	5
Kogan North	8	7	7	7	7	7	7	12	56	7	7	10
Peat	6	7	8	8	9	8	9	15	54	8	8	11
Rolleston	9	10	11	10	10	10	11	30	31	10	9	12
Scotia	30	30	30	30	30	30	30	29	82	30	24	27
Spring Gully	40	41	41	44	44	45	44	69	65	43	45	52
Strathblane	40	41	41	44	44	45	44	69	65	43	45	52
Talooka	24	24	25	27	27	27	26	42	64	26	27	32
Yellowbank	10	10	10	10	10	10	10	30	33	10	10	13
Talinga	104	104	97	98	90	104	98	120	83	99	100	60
Moomba (SA/QLD)												
Moomba Gas Plant	246	244	279	220	209	193	184	430	67	225	289	365
Ballera	21	0	0	0	0	0	1	150	3	3	4	5
Eastern (VIC)												
Orbost Gas Plant	69	69	69	69	69	69	66	100	68	68	68	0
Lang Lang Gas Plant	46	47	48	48	48	47	47	70	70	47	49	51
Longford Gas Plant	649	740	657	590	622	740	778	1145	75	682	853	1008
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	45	70	65	58	58	70	65	84	84	62	70	85
Otway Gas Plant	111	110	109	108	110	111	111	205	78	110	160	158
Iona Underground Gas Storage	89	107	88	42	123	138	116	440	40	100	174	131

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>

Notes: Operational ranges for each production and storage facility range from minimum of 0 per cent to a maximum of 120 per cent of the respective MDQs. The exception is the Longford Gas Plant which has a minimum operational range of 20 per cent to 120 per cent of its MDQ.

Figure A3 provides the average minimum and maximum temperatures for each of the demand regions for the current week. The average temperatures for the previous week are also provided. (Note: only the demand regions where temperature is a driver of gas demand are included).

Figure A3: Average daily temperatures (°C) at each demand region

Average daily temperatures (°C)		QLD (Brisbane)	NSW (Sydney)	ACT (Canberra)	VIC (Melbourne)	SA (Adelaide)	TAS (Hobart)
31 July – 6 August	Average min.	9.5	10.8	0.7	12.2	10.0	8.3
	Average max.	22.7	23.5	17.9	19.4	19.4	15.2
24 July – 30 July	Average min.	8.6	7.3	-3.4	6.7	9.8	3.7
	Average max.	22.2	18.7	13.4	15.0	17.6	13.7

Source: <http://www.bom.gov.au/climate/dwo>

Figure A4 shows the market prices at each of the scheduling intervals on each day during the current week. The imbalance weighted average prices for each gas day are also provided.

Figure A4: Daily Victorian gas market prices (\$/GJ) at each scheduling interval

31 July – 6 August	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	2.55	3.12	3.30	2.55	2.80	2.56
Mon	3.49	2.77	2.77	3.20	2.52	3.46
Tue	3.18	3.52	2.55	2.24	2.26	3.16
Wed	3.17	3.16	2.55	2.55	1.66	3.12
Thu	3.40	3.22	2.75	3.40	3.66	3.39
Fri	3.18	3.10	2.51	2.52	3.40	3.16
Sat	2.83	3.52	3.52	3.15	2.59	2.87

Source: <http://www.aemo.com.au> (INT 041).

Figure A5 compares the market participants and market operator demand forecasts and each of the scheduling intervals on each gas day during the current week. Total actual demand for each gas day is also provided, along with the total demand override (if any) from AEMO.

Figure A5: Daily demand forecasts (TJ) and daily demand overrides (TJ)

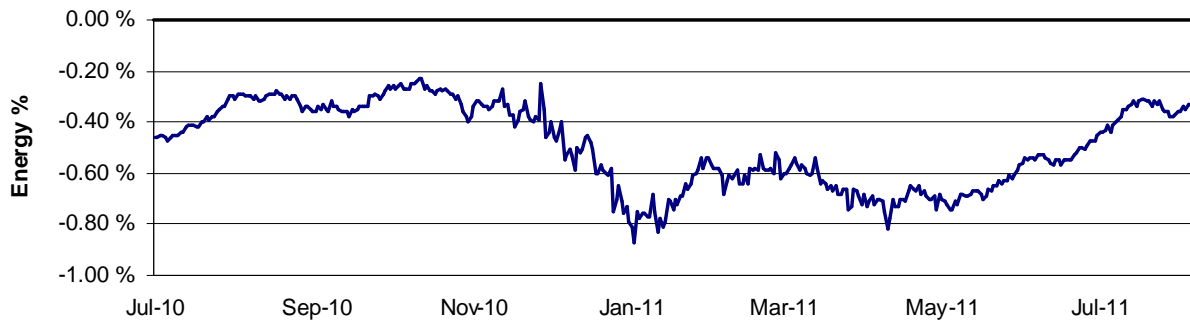
Gas Day	Demand Forecasts (TJ)	Schedule					Total Demand Override (TJ)
		1	2	3	4	5	
31-Jul	MP:	710	704	697	691	691	-13
	AEMO:	662	676	673	652	636	
	MP as % of AEMO	107	104	104	106	109	
1-Aug	MP:	750	744	739	741	741	-11
	AEMO:	738	731	737	729	703	
	MP as % of AEMO	102	102	100	102	105	
2-Aug	MP:	665	658	652	649	649	0
	AEMO:	647	645	641	626	619	
	MP as % of AEMO	103	102	102	104	105	
3-Aug	MP:	572	562	560	551	551	-17
	AEMO:	551	545	548	500	502	
	MP as % of AEMO	104	103	102	110	110	
4-Aug	MP:	526	518	515	510	510	0
	AEMO:	530	525	506	504	528	
	MP as % of AEMO	99	99	102	101	97	
5-Aug	MP:	714	711	712	710	710	-3
	AEMO:	696	695	667	681	673	
	MP as % of AEMO	103	102	107	104	106	
6-Aug	MP:	779	756	784	785	784	-12
	AEMO:	739	732	744	743	740	
	MP as % of AEMO	105	103	105	106	106	

Source: <http://www.aemo.com.au> (INT 108, INT 126, INT 153)

Figures A6 to A8 present information that was previously published by AEMO in its monthly Victorian Gas Market Reports.

Figure A6 shows “unaccounted for gas” as a percentage of the gas used on a 28-day rolling average basis. A positive “unaccounted for gas” indicates more gas purchased than sold, and negative indicates more gas is purchased from a supplier than sold to customers. The difference may be caused by measurement errors, leakages, pressure regulation, construction activities, theft or damage to the pipeline system. The increased quantity over November 2009 was related to pigging substitutions.

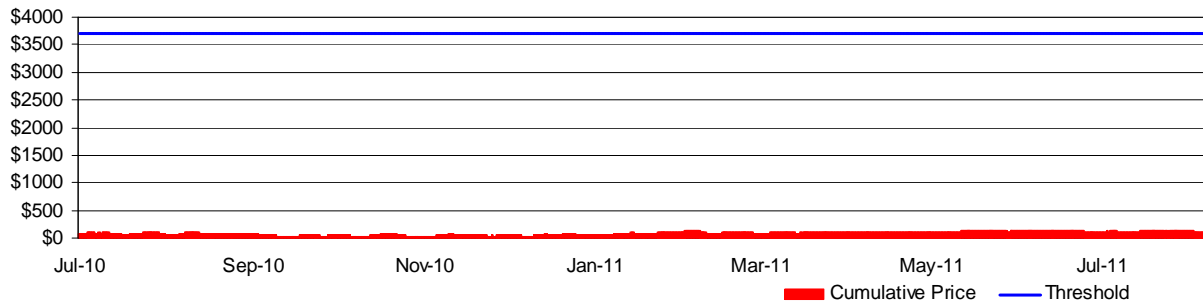
Figure A6: Unaccounted for Gas – 28 Day Rolling Average



Source: <http://www.aemo.com.au> (INT 312)

Figure A7 shows the cumulative weekly price and the cumulative price threshold (CPT), which is set at \$3700. The cumulative price is measured over a rolling weekly period, (35 scheduling intervals). When the cumulative price breaches the CPT, an administered price cap (APC) is applied to the market at \$40/GJ. AEMO may declare the end of an administered price period subsequent to the cumulative price falling below the threshold.

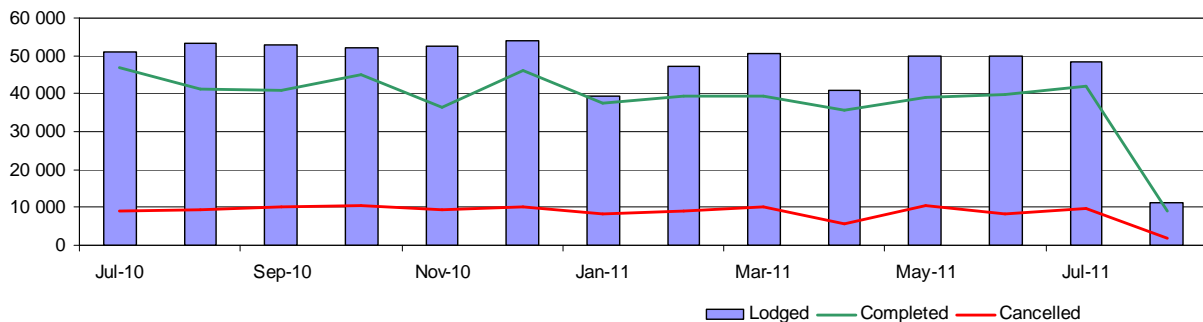
Figure A7: Cumulative Price and Threshold



Source: <http://www.aemo.com.au> (INT 199)

Figure A8 shows the monthly (and current month to date) retail customer transfers lodged, completed or cancelled in the Victorian gas market.

Figure A8: Customer Transfers



Source: <http://www.aemo.com.au> (INT 311)