WEEKLY GAS MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

24 October – 30 October 2010

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 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. The larger number of retailers participating in the Victorian gas market reflects the increased number of retailers in Victoria. 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 aerinquiry@aer.gov.au, with the subject title 'Comments on weekly gas report'.

Summary

Average daily prices in the Victoria market, Sydney hub and Adelaide hub are shown in figure 1. At $0.81/GJ, the average price for Sydney was equal to the average price in the Victorian market this week. Prices in the Adelaide hub were higher, at $2.40/GJ.

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

24 Oct – 30 Oct	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	0.81	0.81	2.40

***** weighted average daily imbalance price
****** ex ante market price

STTM Gas Markets (Adelaide and Sydney)

Figure S3 shows that, despite the ex post price in Sydney falling to $0.10/GJ (equal lowest) on 25 October, the average ex post price at the Sydney hub increased compared to the previous week. The. low average ex post price in Sydney was primarily driven by events on 25 October, where the ex ante price fell to the price floor (explained in detail below).

Figure S4 shows that the average ex post price in Adelaide was lower than the average ex post price from the previous week. In addition, a fall in price taker bids (see figure S12), saw a fall in ex ante prices compared to the previous week.

Sydney Hub – 25 October 2010

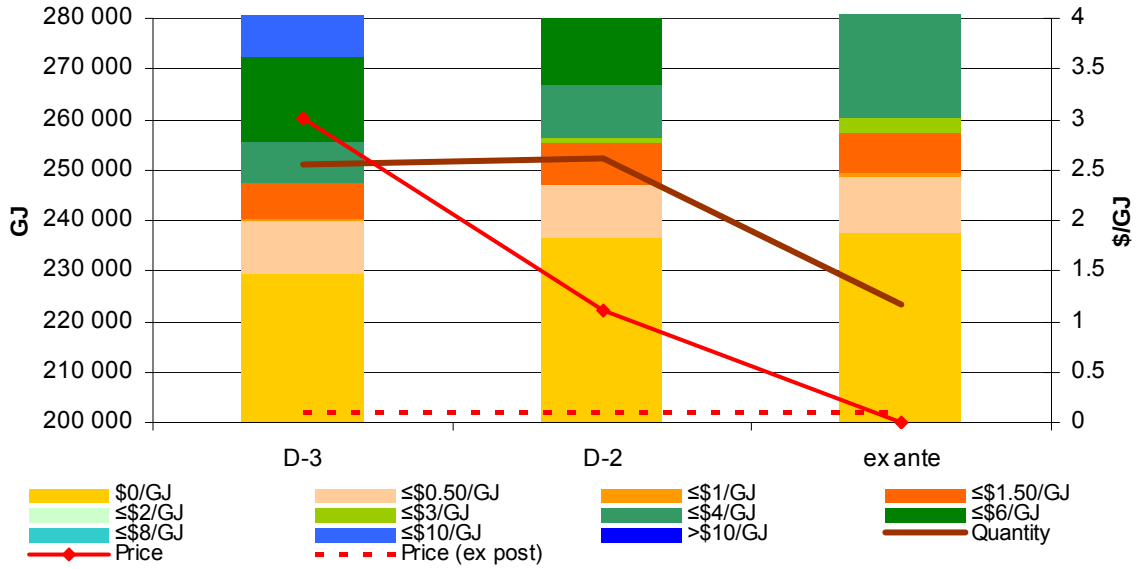
On 25 October, the ex ante price in Sydney fell to $0/GJ (the market price floor). Figure 2 shows that the ex ante price was not forecast in the D-3 and D-2 schedules. The solid red line shows movement in ex ante prices and the brown line shows movements in forecast demand. The ex post price of $0.10/GJ is represented by the dotted red line.

The figure shows that for the D-3 schedule, the level of demand was around 250 TJ and was met by offers between $3/GJ and $4/GJ (shown by the green box). The scale on the right-hand side shows that the actual D-3 price was $3.01/GJ.

The figure also shows that from D-3 to D-2, there was an increase of 7 TJ in the volume of $0/GJ offers (shown by the yellow box). Although (at around 250 TJ) demand was at the same level as D-3, the increase in $0/GJ gas moved the offer stack up and demand was met by gas in the range $1/GJ to $1.50/GJ (as indicated by the orange box) As a result the D-2 price was $1.11/GJ.

However, forecast withdrawals fell significantly (by around 29 TJ) from the D-2 schedule to the ex ante schedule. As shown in figure 2, this level of demand was met by $0/GJ offers and as a result the ex ante price fell to the price floor. The ex post price was higher at $0.10/GJ as there was higher gas usage than forecast on the day.

Figure 2: Offer price thresholds in the Sydney hub for 25 October*



Victorian Gas Market

Figure N4 shows that demand fell in Victoria compared to the previous week, in line with mild weather conditions. Consistent with this, average gas injections fell by 141 TJ compared to the previous week, as shown in figure V3. The fall in demand coupled with a small reduction in GPG gas usage compared with the previous week, saw low weighted average prices throughout the week. The average imbalance price fell from $1.37/GJ in the previous week to $0.81/GJ (see figure V2).

AEMO issued a demand override of 5 TJ on Wednesday 27 October (see Figure A5). Supply demand point constraints were applied to injections at Longford on 26 October, injections and withdrawals at Vic Hub on 26 October and withdrawals at SEA Gas on 29 October. Directional flow point constraints were applied to injections and withdrawals at SEA Gas on 27 and 28 October.

National Gas Market Bulletin Board

There were no instances of missing flow data on the Bulletin Board this week.

Figure N4 shows changes in gas demand and production and pipeline flows compared to the previous week. Total average daily demand fell by 170 TJ (or ten per cent) compared to the previous week, largely driven by a reduction in demand in Victoria (145 TJ or 25 per cent), with smaller reductions in NSW/ACT and South Australia. Queensland and Tasmania experienced small increases in demand compared to the previous week.

Total average daily gas powered generation (GPG) gas usage was close to the previous week. Minor falls in Victoria and Tasmania were just outweighed by increased usage in Queensland.

Total average daily production volumes fell slightly compared to the previous week, with the largest falls recorded at the Eastern Production Facilities and Moomba. This coincided with a reduction in flows on the pipelines delivering gas to Melbourne and the Moomba to Sydney Pipeline. Flows on all other pipelines were close to the previous 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

						QLD		
Average daily flows	**NSW**	**ACT**	**VIC**	**SA**	**TAS**	Brisbane	Mt Isa	Gladstone
24 Oct – 30 Oct	365	12	445	239	51	180	96	115
Financial Year-to-date 2010-11*	424	36	796	308	47	179	93	107
Financial Year-to-date 2009-10**	418	34	756	286	32	159	87	69

*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (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
24 Oct – 30 Oct	97	27	130	27	159
Financial Year-to-date 2010-11*	85	17	176	31	154
Financial Year-to-date 2009-10**	84	34	155	16	136

^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 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (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.

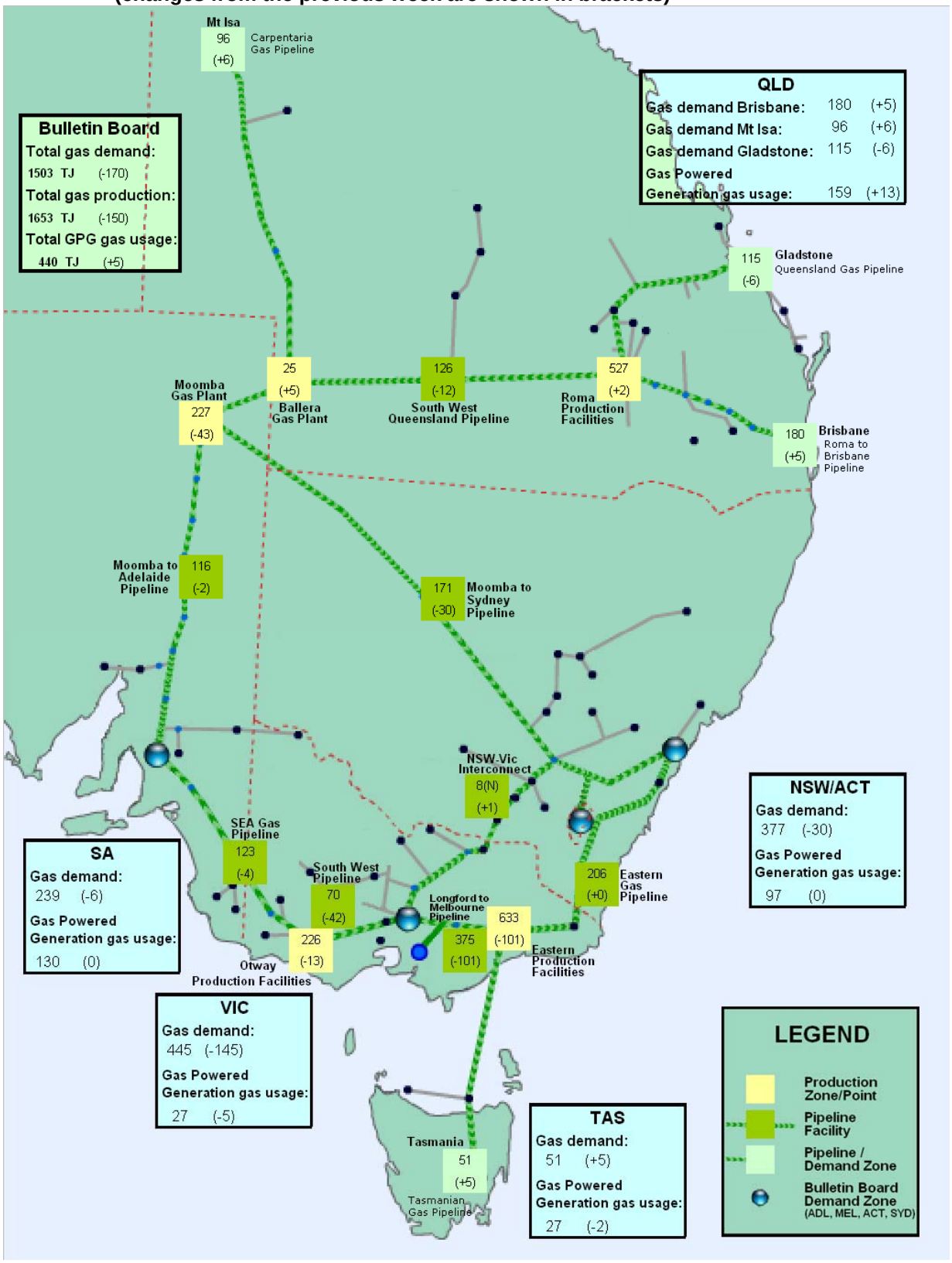
Figure N3: Daily average production flows (TJ) for each production zone

Average daily flows	Roma (QLD)	Eastern Victoria	Otway Basin (VIC)	Moomba (SA/QLD)
24 Oct – 30 Oct	527	633	226	252
Financial Year-to-date 2010-11*	549	935	319	337
Financial Year-to-date 2009-10**	432	808	319	331

*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: National Gas Market Bulletin Board http://www.gasbb.com.au

Figure N4 shows the changes in average daily pipeline and production flows compared to the previous week, as well as the gas demand and GPG usage of gas in each region.

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

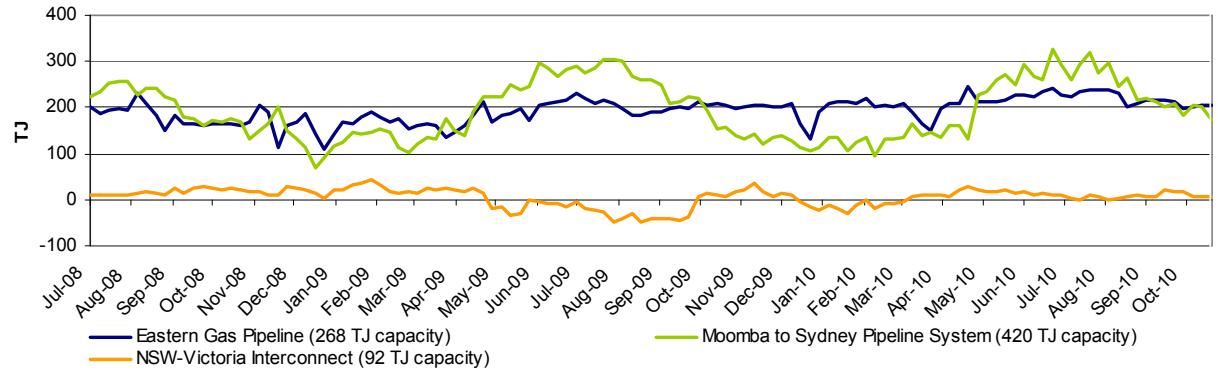


Source: Natural Gas Market Bulletin Board http://www.gasbb.com.au
Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
Numbers in brackets indicate a change in average daily flow from the previous week.

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.

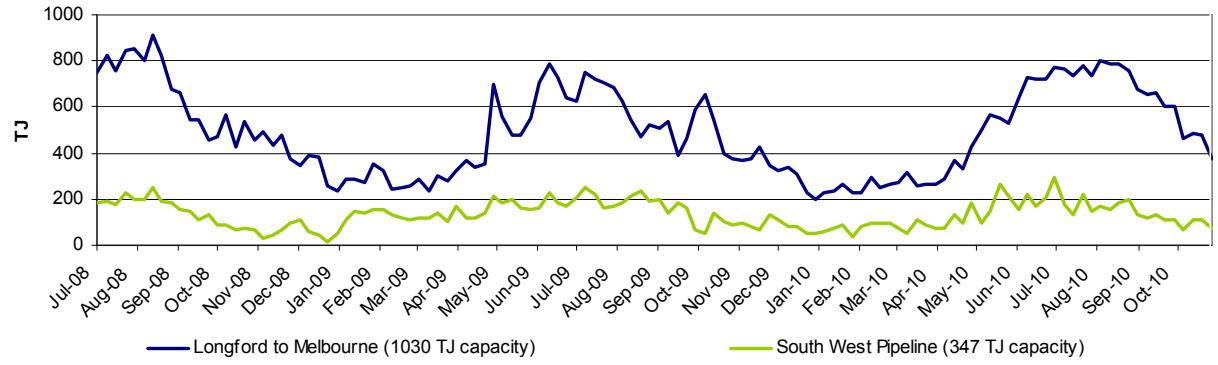
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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

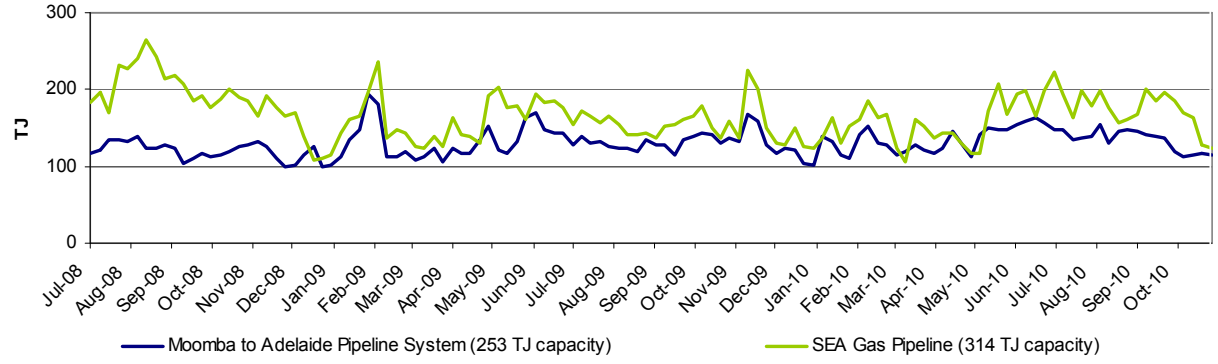
Notes: Negative flows on the NSW-Victoria Interconnect represent flows out of NSW into VIC.

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



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

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 DTS								Withdrawal bids in the DTS			
			BassGas	Culcairn	IONA	LNG	Longford	SEA Gas	VicHub	Otway	Culcairn	IONA	SEA Gas	VicHub
AETV Power	Trader	1							NS					S
AGL (Qld)	Retailer	1				NS								
AGL	Retailer	4		NS	S	NS	S				NS	NS		
Aurora Energy	Retailer	1					S							
Aust. Power & Gas	Retailer	3			NS	NS	S					S		
Coogee Energy	Transmission Customer	1					S							
Country Energy	Transmission Customer	2									S			
Energy Australia	Retailer	3			S		S		NS					NS
International Power	Transmission Customer	1											S	
Lumo Energy	Retailer	5		NS	S	NS		S	S					
Lumo Energy	Trader	2			NS				NS			S		S
Origin (Vic)	Retailer	6	S	NS	NS	NS	S	S			NS	S	S	
Origin (Uranquinty)	Trader	1					S							
Red Energy	Retailer	1					S							
Santos	Retailer	2						S	S					
Simply Energy	Retailer	3				NS	S	NS						
TRU Energy	Retailer	3			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)

	24 Oct – 30 Oct	17 Oct – 23 Oct	2010-11 Financial YTD*	2009-10 Financial YTD**
Average daily price	0.81	1.37	2.06	*1.70*

24 Oct – 30 Oct	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	0.60	0.56	0.59	1.53	1.30	0.54	0.56

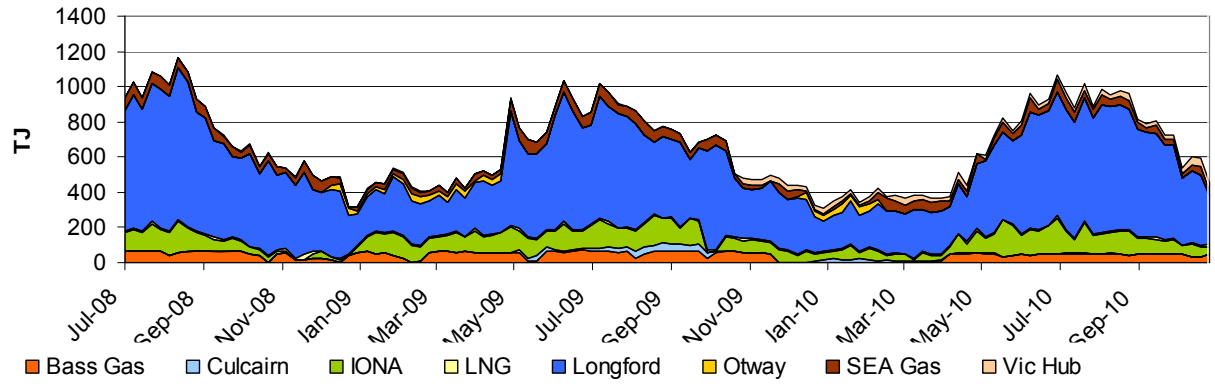
*Average daily imbalance weighted average price from 1 July 2010 to the current week (inclusive)
**Average daily imbalance weighted average price from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: http://www.aemo.com.au (INT 041)

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:	24 Oct – 30 Oct	17 Oct – 23 Oct	2010-11 Financial YTD*	2009-10 Financial YTD**
Culcairn	0	1	1	27
Longford	277	393	581	506
LNG	10	8	8	9
IONA	42	61	96	109
VicHub	49	54	32	3
SEAGas	29	50	43	56
Bass Gas	51	31	48	57
Otway	0	0	0	0
TOTAL	**457**	**598**	**810**	**766**

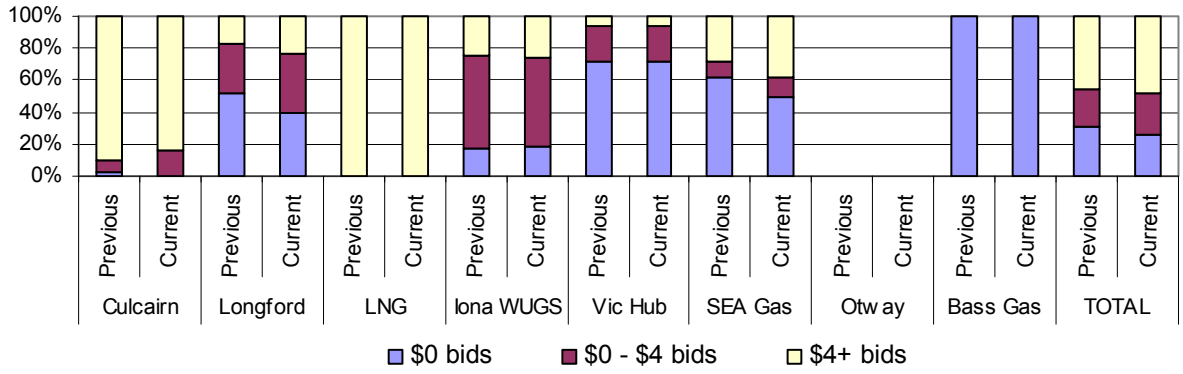


*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: http://www.aemo.com.au (INT 150)

Bidding Activity

Figure V4 compares the price structure of gas bid at each of the injection points on the VPTS, 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 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							
Longford	AGL Origin TRU	AGL Origin TRU	Origin TRU	TRU	Origin TRU	Origin TRU	AGL TRU
LNG							
Iona	AGL APG	Origin	Origin TRU	TRU	Origin TRU	Origin	
VicHub	AETV Lumo	AETV Lumo	AETV	AETV Lumo	AETV Lumo	AETV Lumo	AETV Lumo
SEAGas	Simply	Simply	Origin Simply	Simply	Simply		Origin
Bass Gas							

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 I CE = Country Energy | Lumo = Lumo Energy (formerly Victoria Electricity) |
AGL (QLD) = AGL Sales (Queensland) | Red = Red 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:	24 Oct – 30 Oct	17 Oct – 23 Oct	2010-11 Financial YTD*	2009-10 Financial YTD**
Ballarat	17	21	37	35
Geelong^	87	98	99	89
Gippsland	41	47	52	53
Melbourne	295	380	550	525
Northern	46	54	75	66
TOTAL	**487**	**601**	**814**	**768**

^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 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (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	• Wholesale market operator, • Retail market operator, • Transmission pipeline system operator	• Wholesale market operator, • Retail market operator
Scheduling	• 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).	• 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	• 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	• 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)	• 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	• On the day pipeline balancing through Market Operator Service (MOS), provided by MOS offers from shippers
Transmission pipeline constraint management	• Ancillary payments for higher priced gas scheduled that relieves constraints • Uplift payments to fund ancillary payments	• 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 offer / withdrawal bid points	Offers			Bids			
			EGP	MSP	ROS	EGP	MSP	ROS	SYD - NET
AETV Power	Shipper								
AGL Energy Sales & Marketing Pty Ltd	STTM User,Shipper	4	S	S	S				S
AGL Wholesale Gas Limited	Shipper	2	S	NS					
BHP Billiton Petroleum (Bass Strait) PL	Shipper								
BlueScope Steel	STTM User,Shipper	1	S						
Country Energy	STTM User,Shipper	2	S				S		
Delta Electricity	STTM User,Shipper								
EnergyAustralia	STTM User,Shipper	2	S	S					
Esso Australia Resources Pty Ltd	Shipper								
Lumo Energy Australia Pty Ltd	Shipper								
OneSteel Manufacturing Pty Ltd	STTM User,Shipper	1	S						
OneSteel NSW Pty Ltd	STTM User,Shipper	1	S						
Origin Energy LPG Limited	STTM User,Shipper								
Origin Energy Retail Ltd	STTM User,Shipper	2	S	S					
Santos Direct Pty Ltd	STTM User,Shipper	1	S						
TRUenergy Pty Ltd	STTM User,Shipper	2	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 bids	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	2	S	S			
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	S			
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

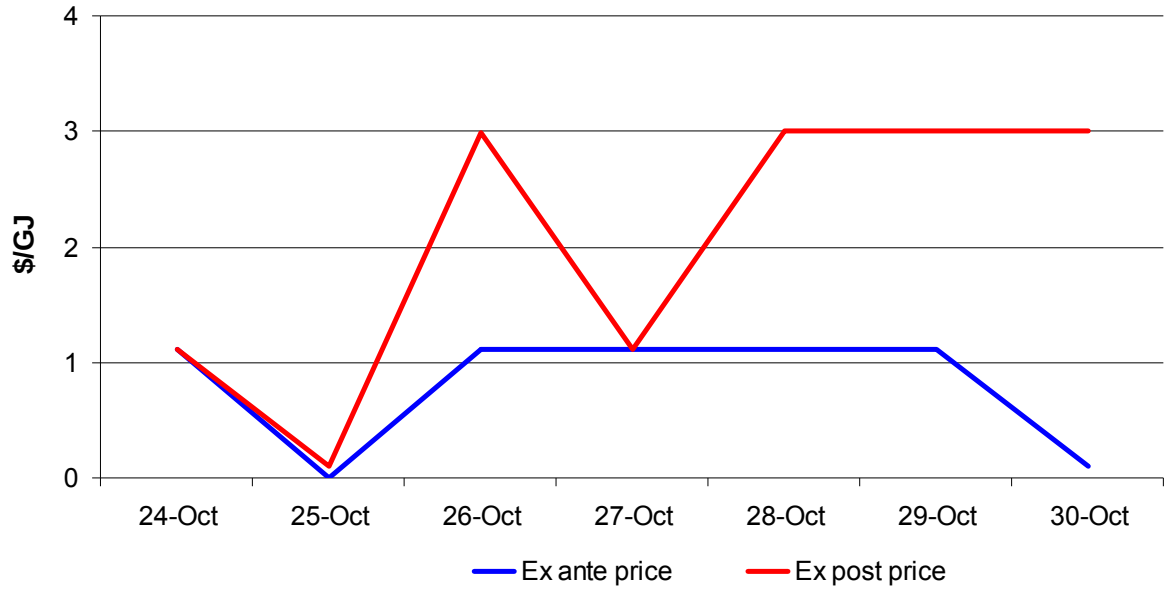
Ex ante and Ex post Market Prices

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)^

	24 Oct - 30 Oct	17 Oct - 23 Oct	2010-11 Financial YTD*
Ex ante price	0.81	1.20	2.30
Ex post price	2.04	1.73	9.27

*Financial Year to date figures exclude market trial data (year-to-date from 1 September 2010)

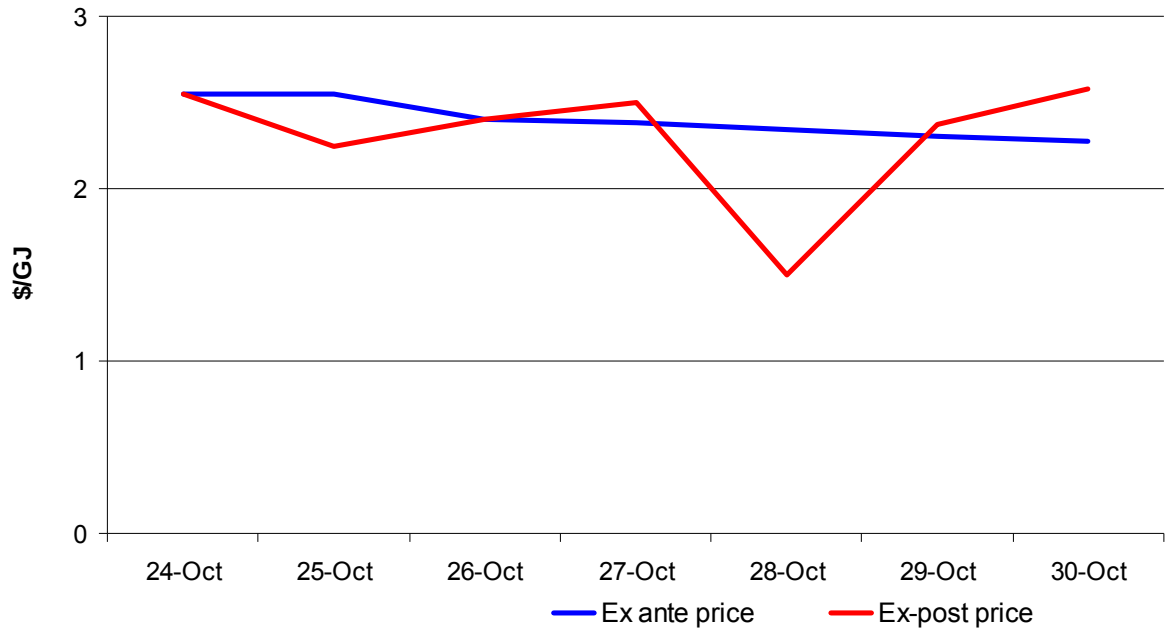


Source: http://www.aemo.com.au INT 651, 657

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

	24 Oct - 30 Oct	17 Oct - 23 Oct	2010-11 Financial YTD*
Ex ante price	2.40	2.56	3.14
Ex post price	2.31	2.32	3.20

* Financial Year to date figures exclude market trial data (year-to-date from 1 September 2010)



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.

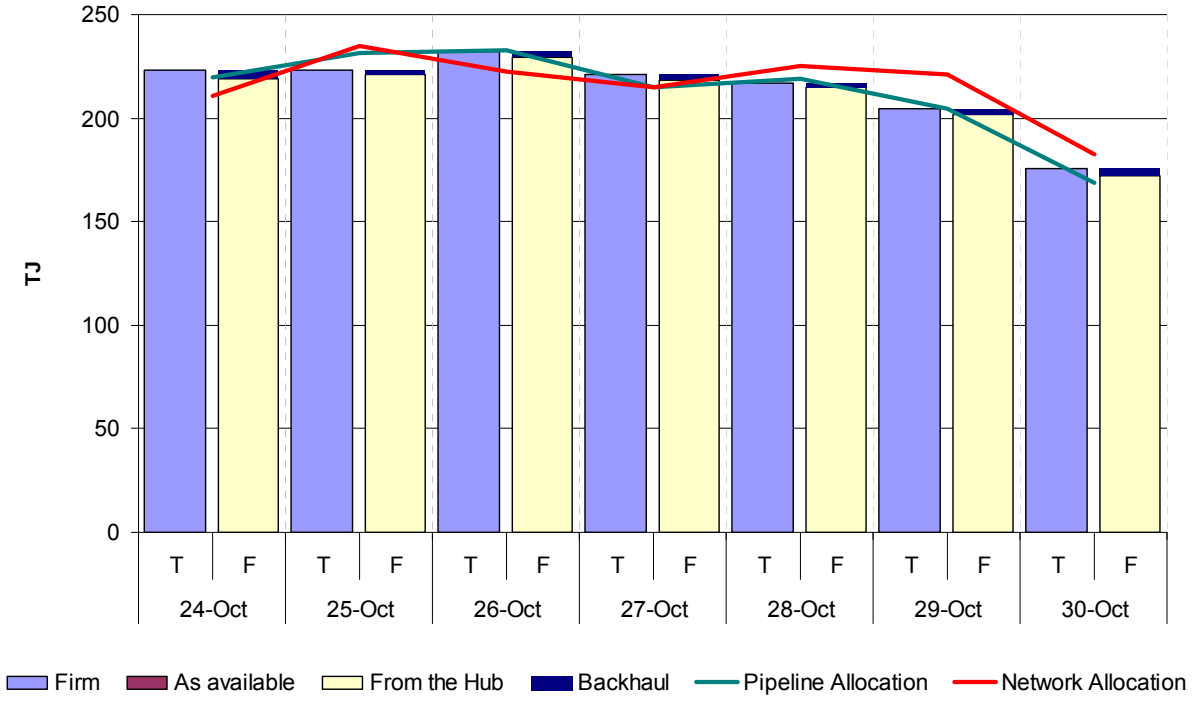
Gas can also be scheduled from the STTM hubs. This happens when Shippers "backhaul" gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

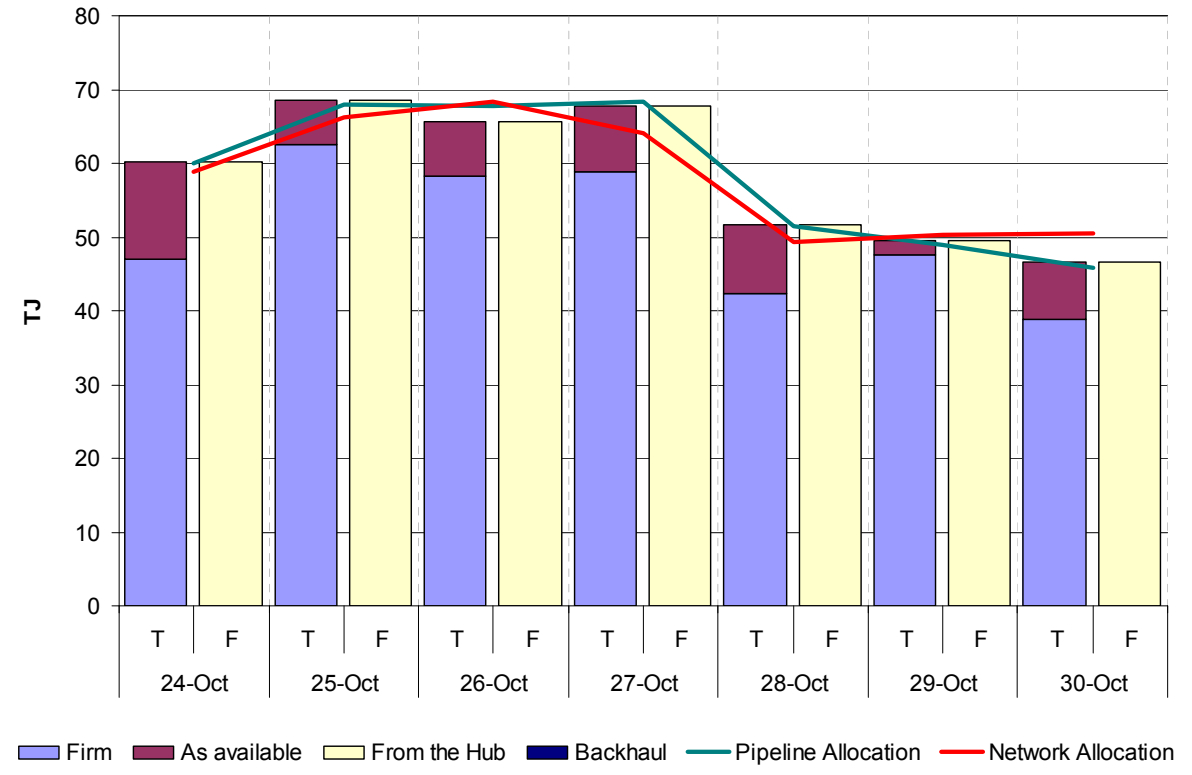
By comparing the level of the red line to the columns marked "F", it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked "T" shows how the actual flow of gas (allocation) compared to what was scheduled.

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)

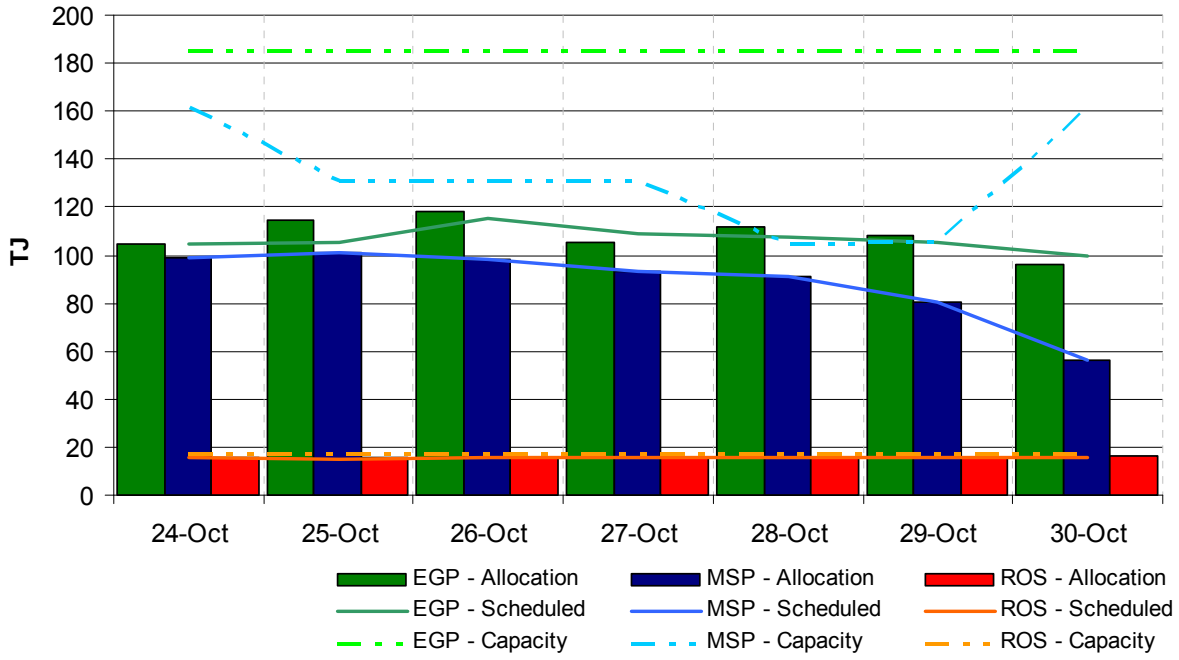
Pipeline Facility Allocations

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.

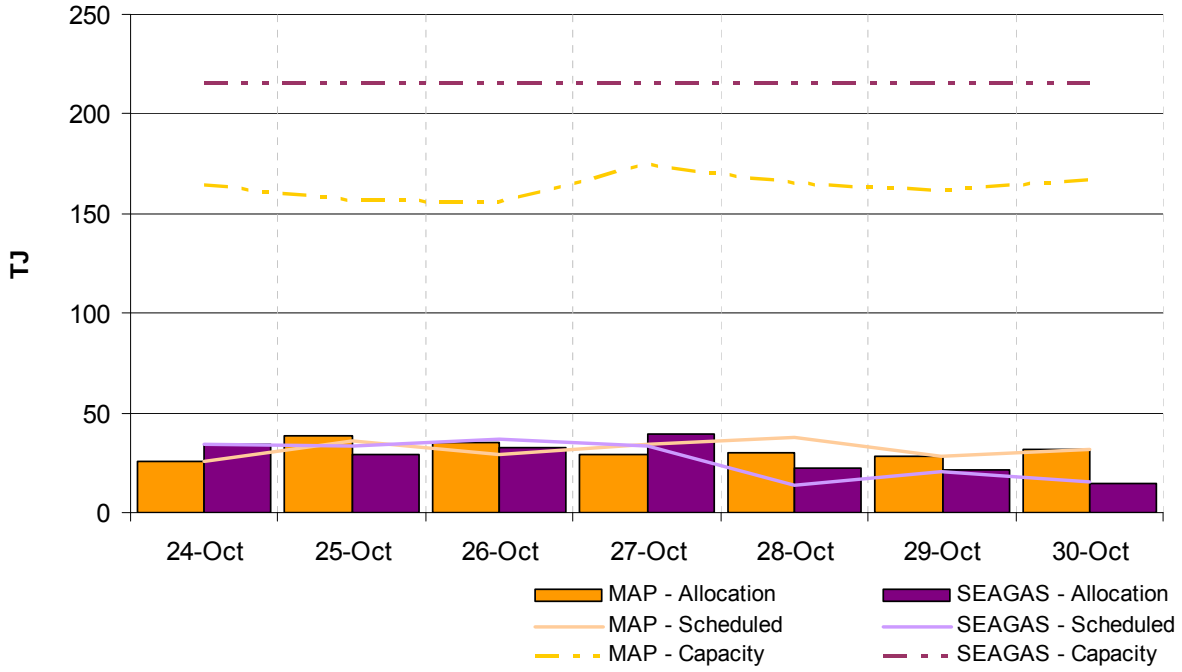
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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.

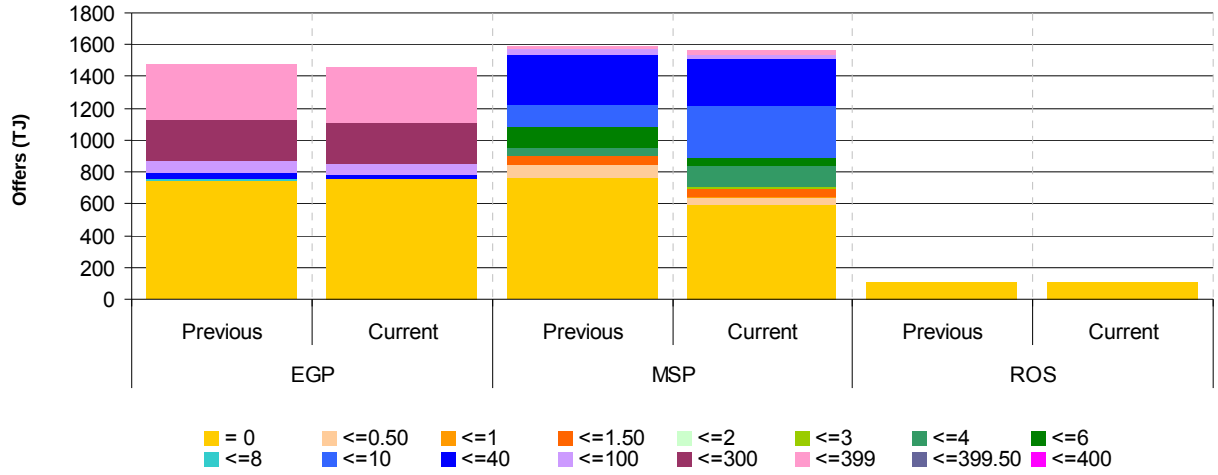
Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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.

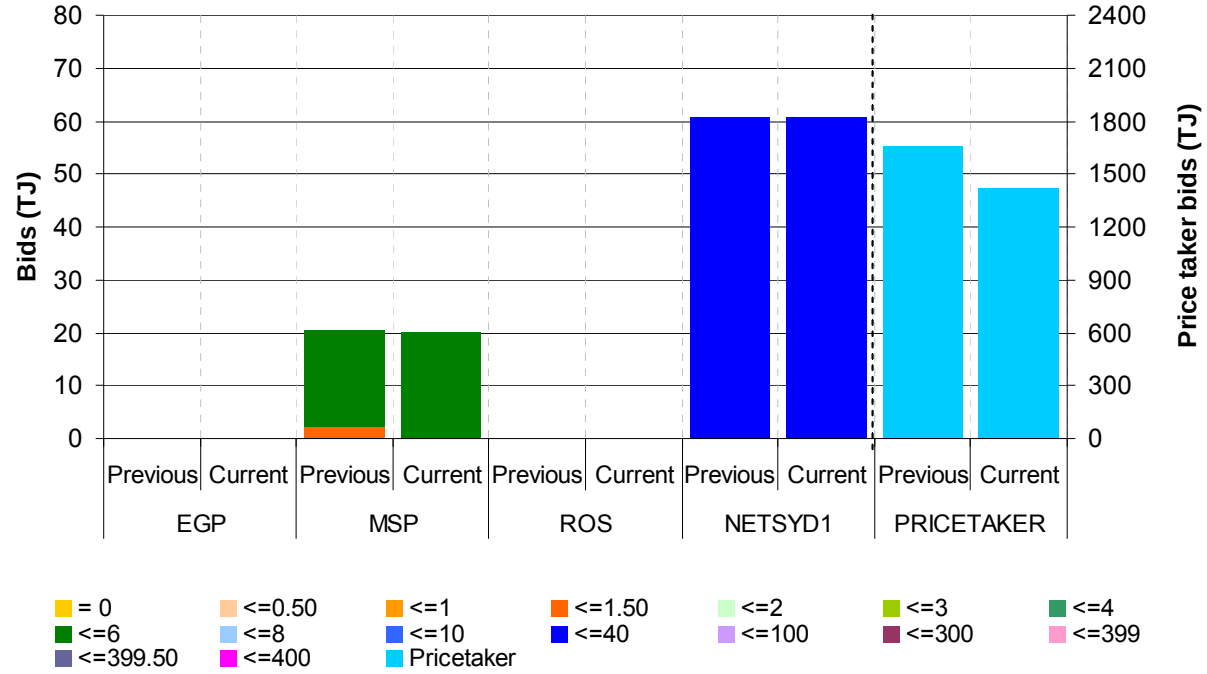
Because scheduling is price-driven, offers for lower-priced gas are scheduled ahead of offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

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



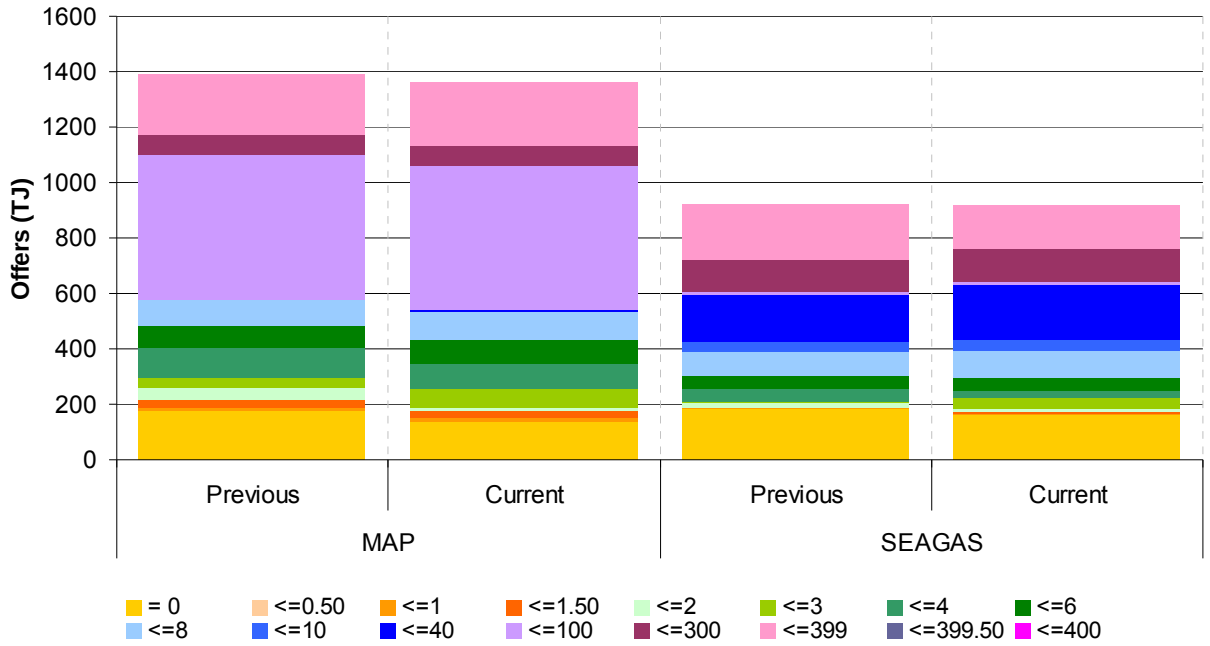
Source: http://www.aemo.com.au INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

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



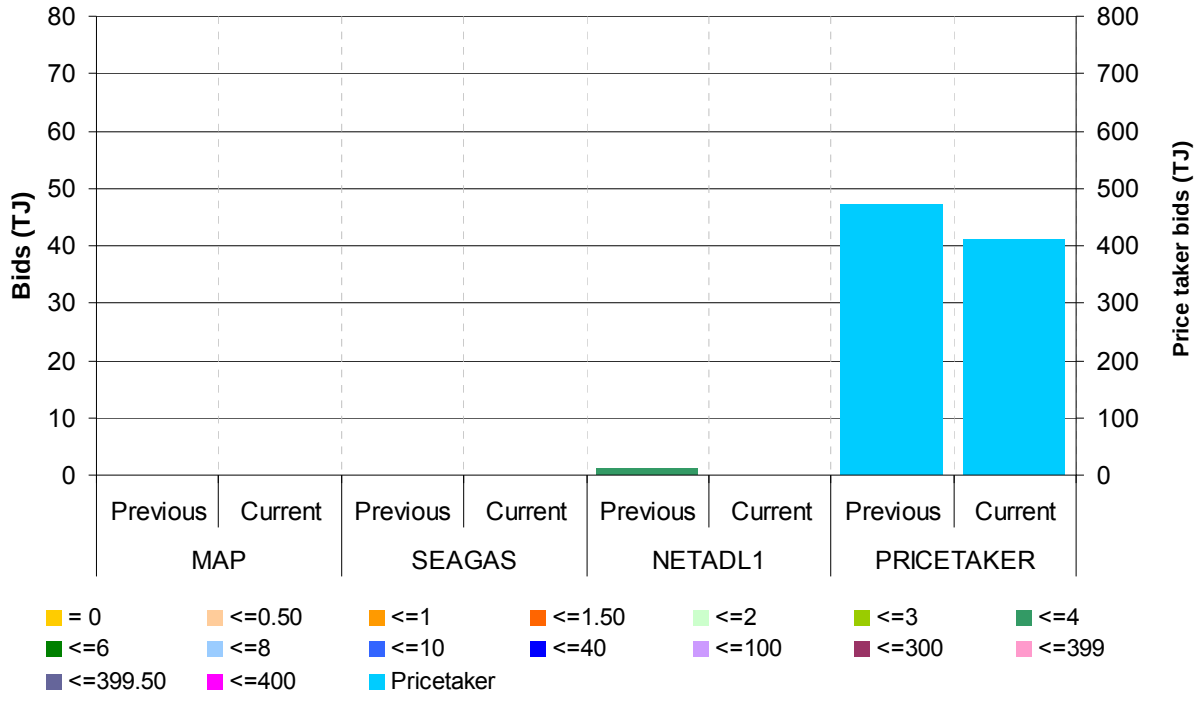
Source: http://www.aemo.com.au INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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	SANTOS				OneStl(NSW)	OneStl(NSW)
	D-2 to D-1	SANTOS	SANTOS	BluSc EA SANTOS	BluSc EA	BluSc EA	BluSc EA OneStl(NSW) SANTOS	BluSc EA OneStl(NSW) SANTOS
MSP	D-3 to D-2	AGL(ESM) EA Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU
	D-2 to D-1	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) EA TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU
ROS	D-3 to D-2				AGL(ESM)	AGL(ESM)		
	D-2 to D-1			AGL(ESM)	AGL(ESM)			

Source: http://www.aemo.com.au INT 659
BluSc= BlueScope Steel I Country= Country Energy I Origin=Origin Energy Retail Ltd I TRU= TRUenergy Pty Ltd I
AGL(WG)= AGL Wholesale Gas Limited I EA=EnergyAustralia I OneStl(NSW)= OneSteel NSW Pty Ltd I
SANTOS= Santos Direct Pty Ltd I AGL(ESM)= AGL Energy Sales & Marketing Pty Ltd I
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							
	D-2 to D-1							
MSP	D-3 to D-2				Country		Country	Country
	D-2 to D-1			Country		Country		
NETSYD1	D-3 to D-2							
	D-2 to D-1							
ROS	D-3 to D-2							
	D-2 to D-1					Country		

Source: http://www.aemo.com.au INT 659
Country= Country Energy
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(WGSA) Origin Simply TRU	AGL(SA) AGL(WGSA) Origin TRU	AGL(WGSA) Origin TRU	AGL(WGSA) Origin TRU	ABC AGL(WGSA) Origin Simply TRU	ABC AGL(WGSA) Origin Simply TRU	ABC AGL(WGSA) Origin TRU
	D-2 to D-1	AGL(SA) AGL(WGSA) Origin TRU	AGL(WGSA) Origin	AGL(WGSA) Origin Simply TRU	ABC AGL(WGSA) Origin Simply	ABC AGL(WGSA) Origin Simply TRU	ABC AGL(WGSA) Origin TRU	AGL(WGSA) Origin TRU
SEA-GAS	D-3 to D-2	Origin Simply TRU	Origin Simply TRU	Origin Simply TRU	Origin TRU	ABC Origin Simply TRU	ABC Origin Simply TRU	Origin Simply TRU
	D-2 to D-1	Origin Simply TRU	Origin Simply TRU	Origin Simply TRU	Origin Simply TRU	ABC Origin Simply	Origin Simply TRU	Origin Simply TRU

Source: http://www.aemo.com.au INT 659
ABC= Adelaide Brighton Cement Ltd I AGL(WGSA)= AGL Wholesale Gas (SA) Pty Ltd I Origin=Origin Energy Retail Ltd I Simply= Simply Energy I TRU= TRUenergy Pty Ltd I AGL(SA)= AGL South Australia Pty Limited I
MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

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

There were no inter-day resubmissions of bids at the Adelaide Hub this week.

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 deviation[1] 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.

[1] 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.

Figure S17a – Sydney MOS allocations

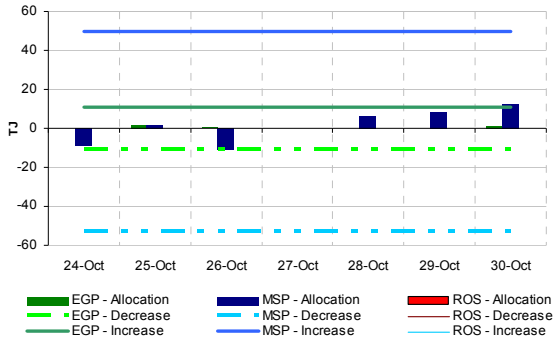
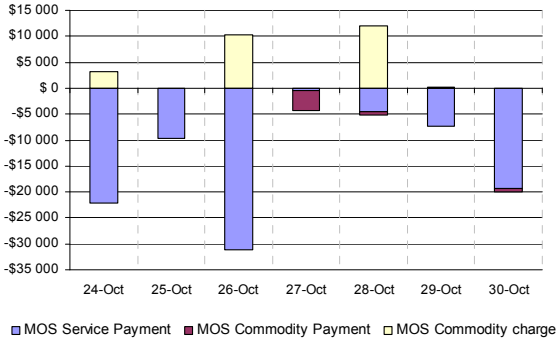


Figure S17b Sydney MOS payments / Charges



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

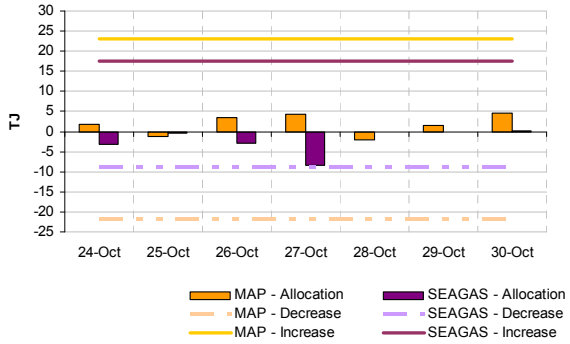
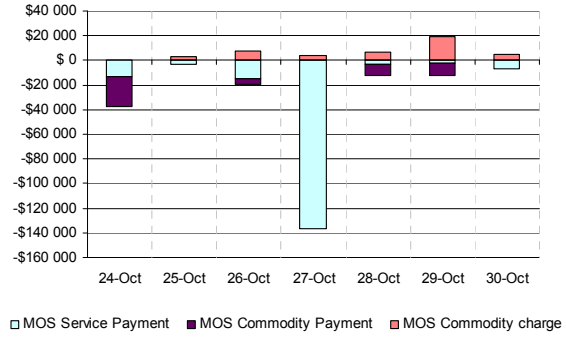


Figure S18b Adelaide MOS payments / Charges



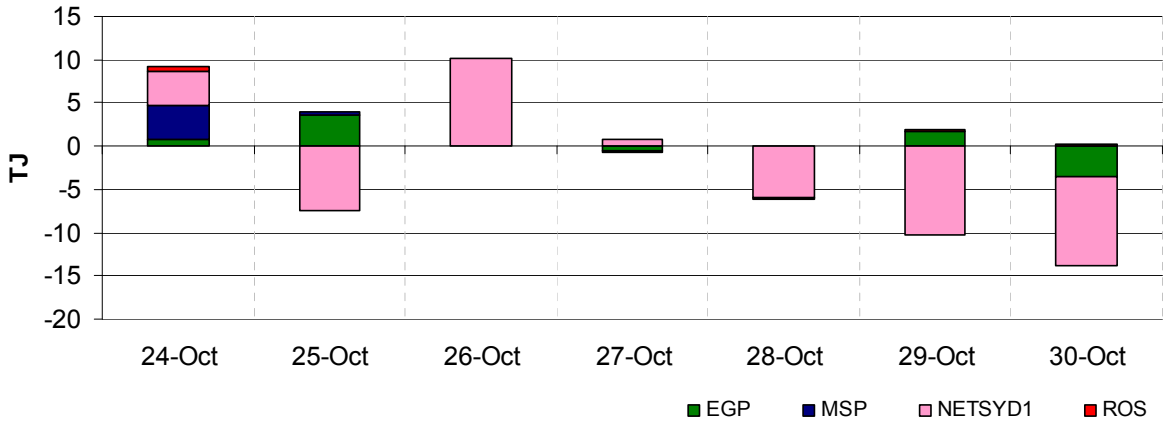
Source: http://www.aemo.com.au INT 663, 664, 665
MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

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.

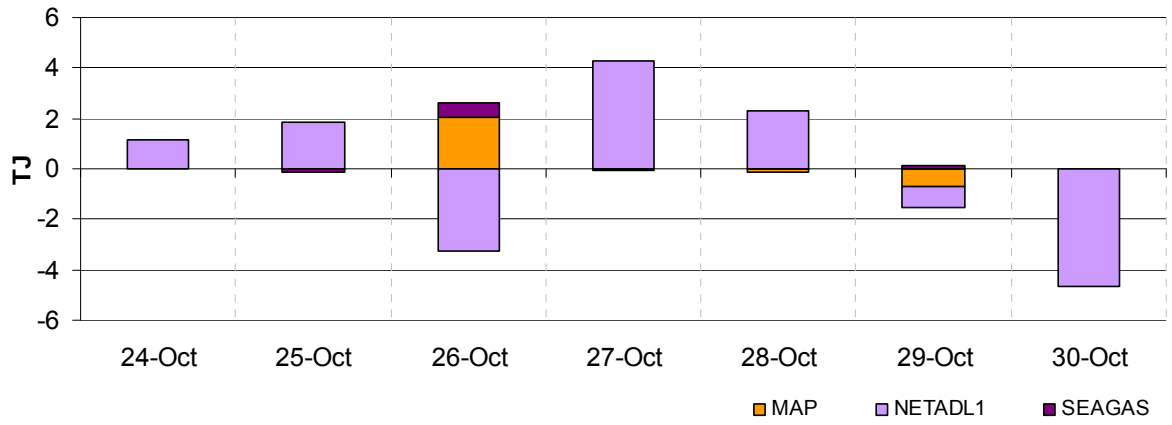
The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As discussed previously, figures S5 and S6 show allocated quantities versus scheduled. Where they differ, there is a deviation. Net deviations may lead to requirements for MOS services. 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" 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 market schedule variation quantities and charges at the STTM Hubs.

Figure S21 Average Daily Market Variations - Sydney Hub

	24 Oct - 30 Oct	17 Oct - 23 Oct	2010-11 Financial YTD*
Quantity (TJ)	4.22	3.12	3.22
Charges ($)	42.81	56.55	84.97

***** Financial Year to date figures exclude market trial data (year-to-date from 1 September 2010)
Source: http://www.aemo.com.au INT663

Figure S22 Average Daily Market Variations - Adelaide Hub

	24 Oct - 30 Oct	17 Oct - 23 Oct	2010-11 Financial YTD*
Quantity (TJ)	0.53	1.51	1.47
Charges ($)	1.48	45.43	36.00

***** Financial Year to date figures exclude market trial data (year-to-date from 1 September 2010)
Source: http://www.aemo.com.au INT663

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	90	96	96	95	96	101	98	117	80	96	93	87
QLD Gas Pipeline	119	114	102	114	121	121	112	142	75	115	107	69
Roma to Brisbane Pipeline	156	188	198	182	195	187	156	219	82	180	179	159
South West QLD Pipeline	152	115	125	110	121	131	129	181	68	126	123	155
NSW/ACT												
Eastern Gas Pipeline	195	220	217	206	218	208	182	268	82	206	219	204
Moomba to Sydney Pipeline	145	191	172	192	206	188	102	420	57	171	241	249
NSW-VIC Interconnect^	18	6	5	6	7	7	6	92	9	8	8	-24
VIC												
Longford to Melbourne	392	392	361	445	366	344	323	1030	64	375	655	564
South West Pipeline	83	100	119	42	59	35	54	347	40	70	140	166
SA												
Moomba to Adelaide Pipeline	120	124	117	113	96	110	129	253	53	116	133	131
SEA Gas Pipeline	85	154	138	169	128	114	73	314	56	123	175	155
TAS												
Tasmanian Gas Pipeline	45	49	46	45	43	39	88	129	37	51	47	32

*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
^Negative figure represents a reverse flow of gas along the pipeline
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 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	58	77	82	85	85	80	80	140	71	78	99	87
Fairview	116	119	116	108	111	118	123	130	91	116	119	111
Kenya Gas Plant	51	63	59	64	70	69	70	160	39	64	63	33
Kincora	0	0	0	0	0	0	0	25	11	0	3	1
Kogan North	9	10	10	10	10	10	10	12	75	10	9	8
Peat	11	11	11	10	10	7	6	15	67	9	10	9
Rolleston	10	10	11	11	11	11	10	30	37	11	11	11
Scotia	30	30	30	30	30	30	30	29	88	30	26	19
Spring Gully	53	57	56	53	53	52	43	69	77	52	53	49
Strathblane	53	57	56	53	53	52	43	69	77	52	53	49
Taloona	32	34	34	32	32	32	26	42	76	32	32	30
Wallumbilla	8	9	9	9	9	9	9	20	44	9	9	10
Yellowbank	13	12	12	13	13	13	12	30	42	13	13	15
Talinga	60	42	34	50	57	60	58	81	62	52	51	
Moomba (SA/QLD)												
Moomba Gas Plant	214	258	257	246	217	207	192	430	73	227	314	327
Ballera	0	36	24	34	35	22	22	150	15	25	22	4
Eastern (VIC)												
Orbost Gas Plant	66	58	59	59	59	59	54	100	6	59	6	2
Lang Lang Gas Plant	51	50	51	51	51	50	50	70	69	51	48	56
Longford Gas Plant	523	547	431	594	580	529	458	1145	77	523	881	749
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	1
Otway Basin (VIC)												
Minerva Gas Plant	0	37	47	47	57	37	37	73	94	38	69	75
Otway Gas Plant	133	172	162	139	160	160	109	205	72	148	147	136
Iona Underground Gas Storage	27	57	81	54	50	16	-1	440	23	41	103	108

*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)

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)
24 Oct – 30 Oct	Average min.	17.6	14.7	7.4	12.2	11.9	8.5
	Average max.	26.8	22.0	20.7	22.0	22.4	19.2
17 Oct – 23 Oct	Average min.	13.4	13.4	5.3	9.6	11.8	7.4
	Average max.	24.2	22.7	19.7	20.8	21.7	18.9

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

24 Oct – 30 Oct	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	0.61	0.55	0.55	0.55	0.20	0.60
Mon	0.55	1.00	0.55	0.55	0.29	0.56
Tue	0.55	1.30	1.25	1.25	1.96	0.59
Wed	1.57	1.57	0.57	0.55	0.55	1.53
Thu	1.31	0.59	1.97	1.59	0.65	1.30
Fri	0.54	0.60	0.57	0.22	0.20	0.54
Sat	0.58	0.55	0.38	0.26	0.23	0.56

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	
24-Oct	**MP:**	506	490	490	509	510	
	AEMO:	465	508	486	480	482	
	MP as % of AEMO	109	96	101	106	106	**0**
25-Oct	**MP:**	493	506	507	509	509	
	AEMO:	517	517	530	530	488	
	MP as % of AEMO	95	98	96	96	104	**0**
26-Oct	**MP:**	465	466	470	471	470	
	AEMO:	474	475	491	498	506	
	MP as % of AEMO	98	98	96	95	93	**0**
27-Oct	**MP:**	607	597	591	585	591	
	AEMO:	592	598	588	564	581	
	MP as % of AEMO	103	100	100	104	102	**5**
28-Oct	**MP:**	476	474	474	474	474	
	AEMO:	508	490	481	481	487	
	MP as % of AEMO	94	97	98	99	97	**0**
29-Oct	**MP:**	472	473	474	474	474	
	AEMO:	502	452	452	448	447	
	MP as % of AEMO	94	105	105	106	106	**0**
30-Oct	**MP:**	392	394	382	394	394	
	AEMO:	442	406	388	388	384	
	MP as % of AEMO	89	97	98	102	103	**0**

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