

9 October – 15 October 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

9 October – 15 October	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	2.25	2.99	3.53

*weighted average daily imbalance price

**ex ante market price

STTM Gas Markets (Adelaide and Sydney)

Figure S3 shows that this week’s average ex ante price in Sydney was lower than the previous week’s and the financial year to date average, while the average ex post price was higher than the previous week’s and lower than the financial year to date average. In contrast to previous weeks, the ex ante price and ex post price was aligned on most days this week, indicative of more accurate participant demand forecasts.

As shown in figure S4, the average ex ante price in Adelaide was higher than the previous week's and lower than the financial year to date average. The average ex post price was lower than the previous week's and the financial year to date average.

Ex post prices were lower than ex ante prices each day of the week. This price variance occurred because forecast demand exceeded actual hub consumption each day, with the largest deviation of 11 TJ occurring on Sunday 9 October. On this day, the ex ante price (set according to forecast demand) was 3.59/GJ, while the ex post price (set according to actual demand) was \$2.02/GJ and 11 TJ of decrease MOS was required. Participants received over \$50 000 to park gas (not consumed in the hub) on the Moomba to Adelaide Pipeline, the largest payment this financial year in Adelaide (see figure S18).

Victorian Gas Market

Demand in Victoria was higher than the previous week, driving higher average daily injections (624 TJ compared to 577 TJ the previous week). Despite the increase in demand, the average price was \$2.25/GJ compared to \$2.85/GJ the previous week (see figure V2), partly explained by the higher volume of \$0/GJ bids at Longford and Iona, the two largest injection points (see figure V4).

Although Melbourne experienced mild temperatures for the week, on Friday 14 October the price dropped to \$0/GJ (the minimum offer price allowed in the market) at the 10 pm interval and, as shown in figure V2, the daily imbalance weighted average price was \$0.52/GJ for the Saturday gas day. This was the lowest price since March this year.

National Gas Market Bulletin Board

Figure N4 shows overall gas demand, gas production and gas-powered generation (GPG) volumes were slightly higher than the previous week's volumes.

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

Amber LCA flag on Roma-Brisbane Pipeline

During this week APA gave notification of problems on the Roma Brisbane Pipeline, giving the reason "Operational pressure restrictions applied in accordance with operating standard which reduces capacity. Duration of event to be advised". An amber linepack capacity adequacy (LCA) flag was applied to the pipeline. An amber flag indicates that load shedding of one or more interruptible gas customers is likely or happening on the gas day.

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
9 October – 15 October	288	19	616	253	50	175	101	115
Financial Year-to-date 2011-12*	364	37	769	291	49	173	102	122
Financial Year-to-date 2010-11**	431	39	832	318	47	180	93	106

*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
9 October – 15 October	23	22	137	33	144
Financial Year-to-date 2011-12*	60	16	165	33	131
Financial Year-to-date 2010-11**	83	15	183	32	154

^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

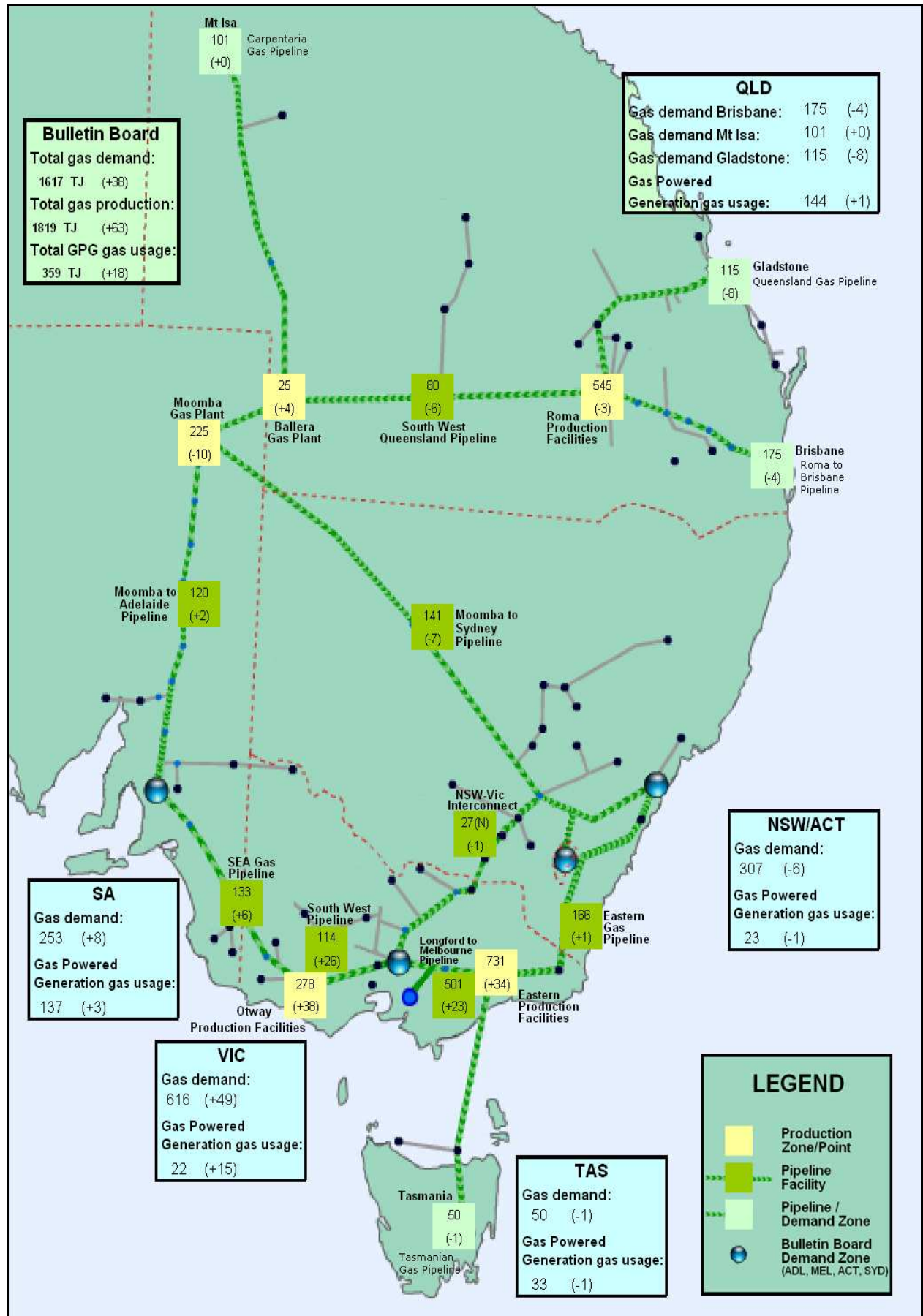
Average daily flows	Roma (QLD)	Eastern Victoria	Otway Basin (VIC)	Moomba (SA/QLD)
9 October – 15 October	545	731	278	249
Financial Year-to-date 2011-12*	555	869	338	277
Financial Year-to-date 2010-11**	552	969	330	346

*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)

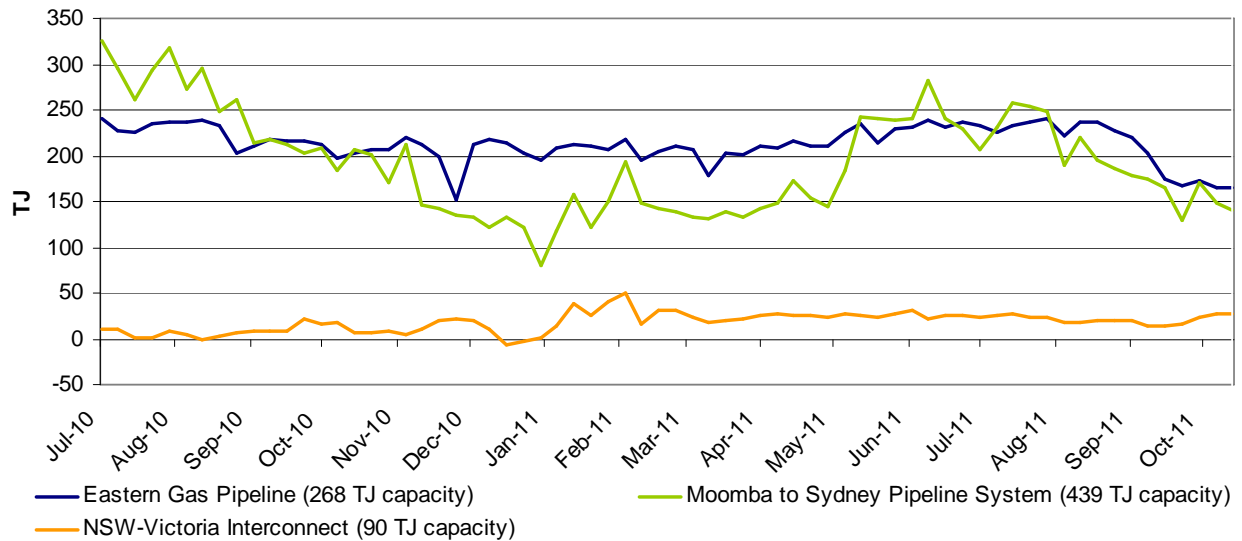


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
 Numbers in brackets indicate a change in average daily flow from the previous week.

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.

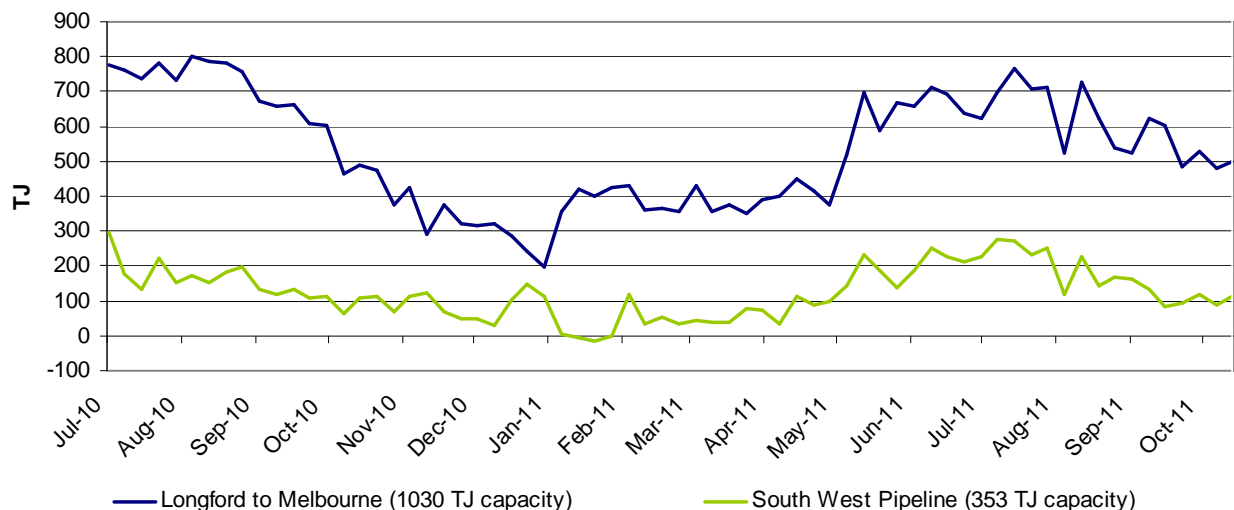
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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.

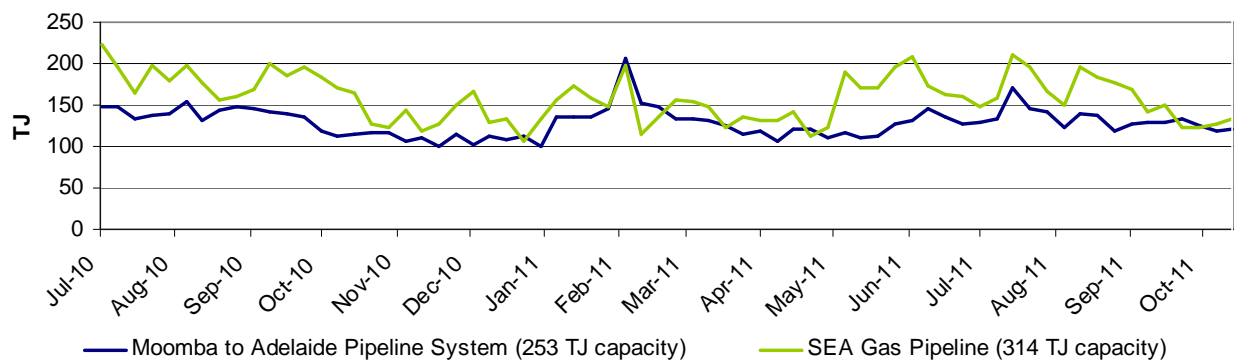
Figure N6: Average daily flows (TJ) into VIC demand region



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								S
AGL (Qld)	Retailer	1				NS											
AGL	Retailer	3			NS	NS	S							S			
Aurora Energy	Retailer	1					S										
Aust. Power & Gas	Retailer	3			NS	NS	S							S			
Aust. Power & Gas	Trader	1					S										
Coogee Energy	Transmission Customer	1					S										
Lumo Energy	Retailer	4		NS		NS		S	S				NS				
Lumo Energy	Trader	2			NS				NS					S			S
Origin (Vic)	Retailer	6	S	NS	S	NS	S	S					S	S			
Origin (Uranquinty)	Trader	2					S						S				
Red Energy	Retailer	1					S										
Santos	Retailer	2			S			S									
Simply Energy	Retailer	4			NS	NS	S	S						S	S		
TRU Energy	Retailer	4			S	NS	S		S					S			
TRU Energy 2	Retailer	2					S		NS								NS
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)

	9 October – 15 October	2 October – 8 October	2011-12 Financial YTD*	2010-11 Financial YTD**
Average daily price	2.25	2.85	3.21	2.18

9 October – 15 October	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	1.92	3.10	2.69	2.97	2.95	1.59	0.52

*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)

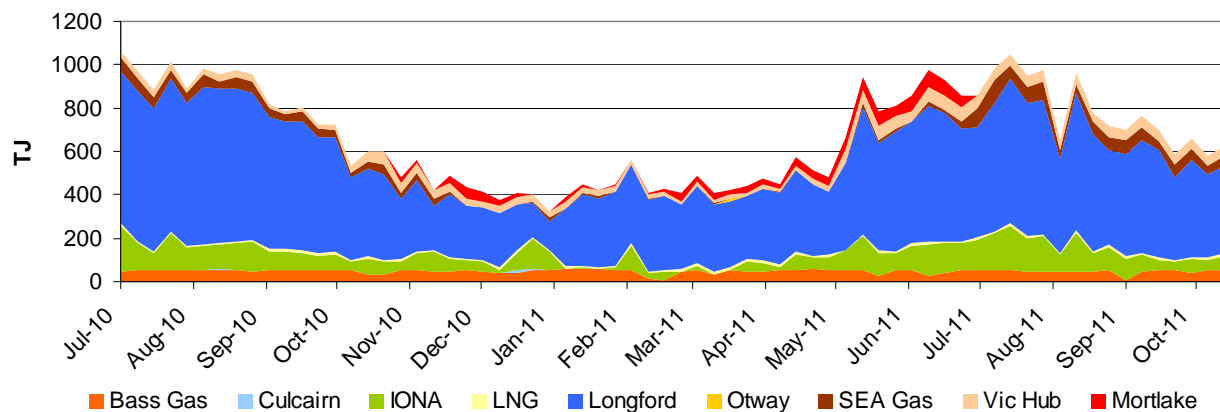
Source: <http://www.aemo.com.au> (INT 041)

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:	9 October – 15 October	2 October – 8 October	2011-12 Financial YTD*	2010-11 Financial YTD**
Culcairn	0	0	0	1
Longford	405	384	509	613
LNG	8	10	10	8
IONA	68	48	105	101
VicHub	46	45	49	29
SEAGas	45	40	60	44
Bass Gas	52	51	47	49
Otway	0	0	0	0
Mortlake	0	0	0	0
TOTAL	624	577	779	846



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

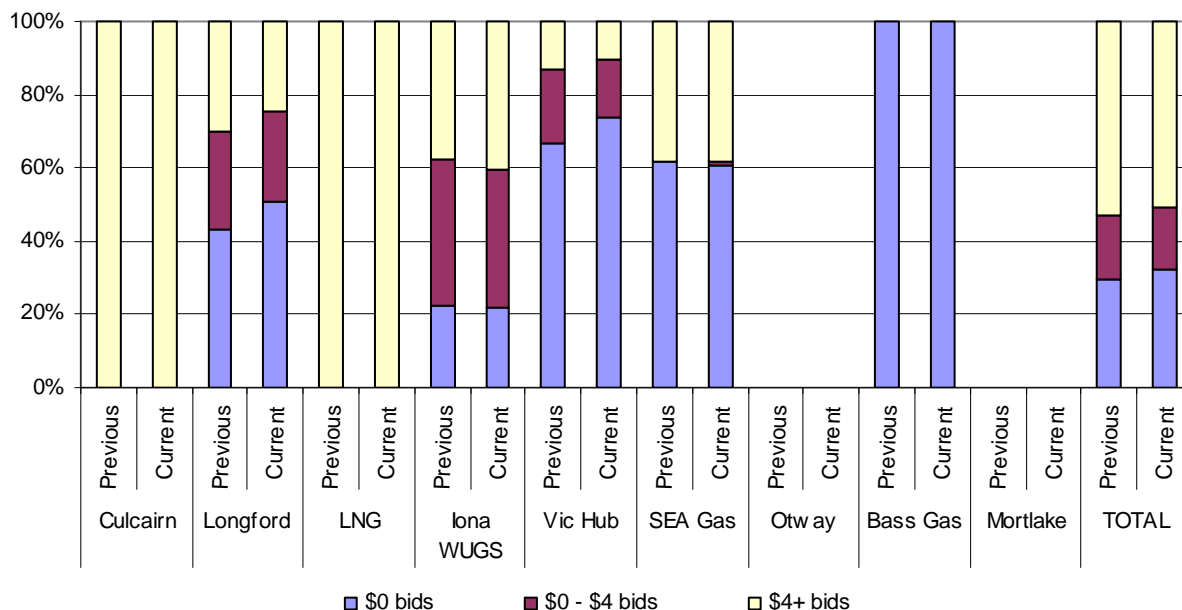
**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

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 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					
Longford	AETV AGL TRU	AETV AGL Origin TRU Aurora	AGL Origin TRU Aurora	AGL Origin TRU	AGL Origin TRU Aurora	AGL Origin TRU	AGL Origin TRU
LNG		APG Lumo					
Iona	Origin TRU APG	AGL Origin TRU APG Simply Lumo	Origin TRU APG Simply	Origin TRU APG Simply Lumo	Origin TRU Simply Lumo	Origin TRU Simply Lumo	Origin TRU APG
VicHub	AETV TRU	AETV TRU Lumo	AETV Lumo	AETV Lumo	AETV Lumo	AETV	AETV Lumo
SEAGas	Santos Lumo	Origin Simply	Origin Simply	Simply	Simply	Simply	Simply
Bass Gas	Origin						
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:	9 October – 15 October	2 October – 8 October	2011-12 Financial YTD*	2010-11 Financial YTD**
Ballarat	24	21	34	39
Geelong^	87	88	98	100
Gippsland	48	41	50	54
Melbourne	393	352	512	577
Northern	77	77	87	79
TOTAL	628	580	782	849

^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					
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	S			NS	NS		
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					
TRUenergy Pty Ltd No. 2	STTM User,Shipper								
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	2	S	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	NS	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.

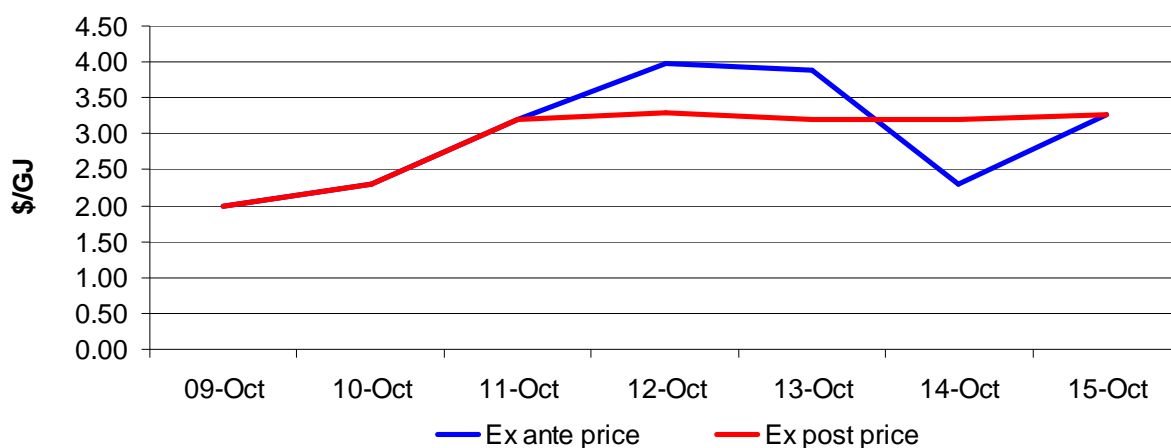
Figure S3: Ex ante vs Ex post Price - Sydney Hub (\$/GJ)

	9 October – 15 October	2 October – 8 October	2011-12 Financial YTD*	2010-11 Financial YTD**
Ex ante price	2.99	3.18	3.40	2.72
Ex post price	2.92	2.30	2.98	11.75

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

**Financial Year to date figure from 1 Sep 2010 (market start) to the equivalent week in 2010-11 (inclusive)

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



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

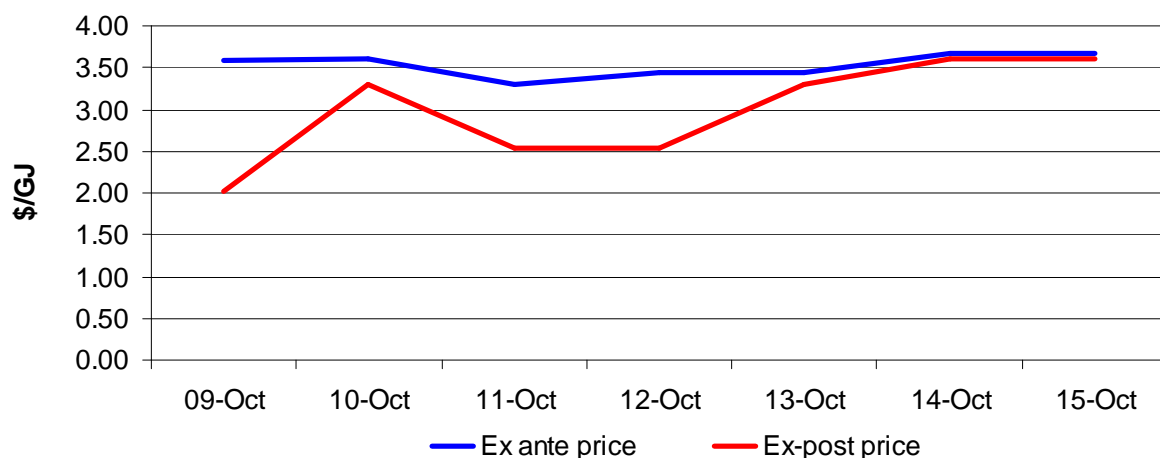
Figure S4: Ex ante vs Ex post Price - Adelaide Hub (\$/GJ)

	9 October – 15 October	2 October – 8 October	2011-12 Financial YTD*	2010-11 Financial YTD**
Ex ante price	3.53	3.46	3.79	3.35
Ex post price	2.98	3.12	3.76	3.47

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

**Financial Year to date figure from 1 Sep 2010 (market start) to the equivalent week in 2010-11 (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.

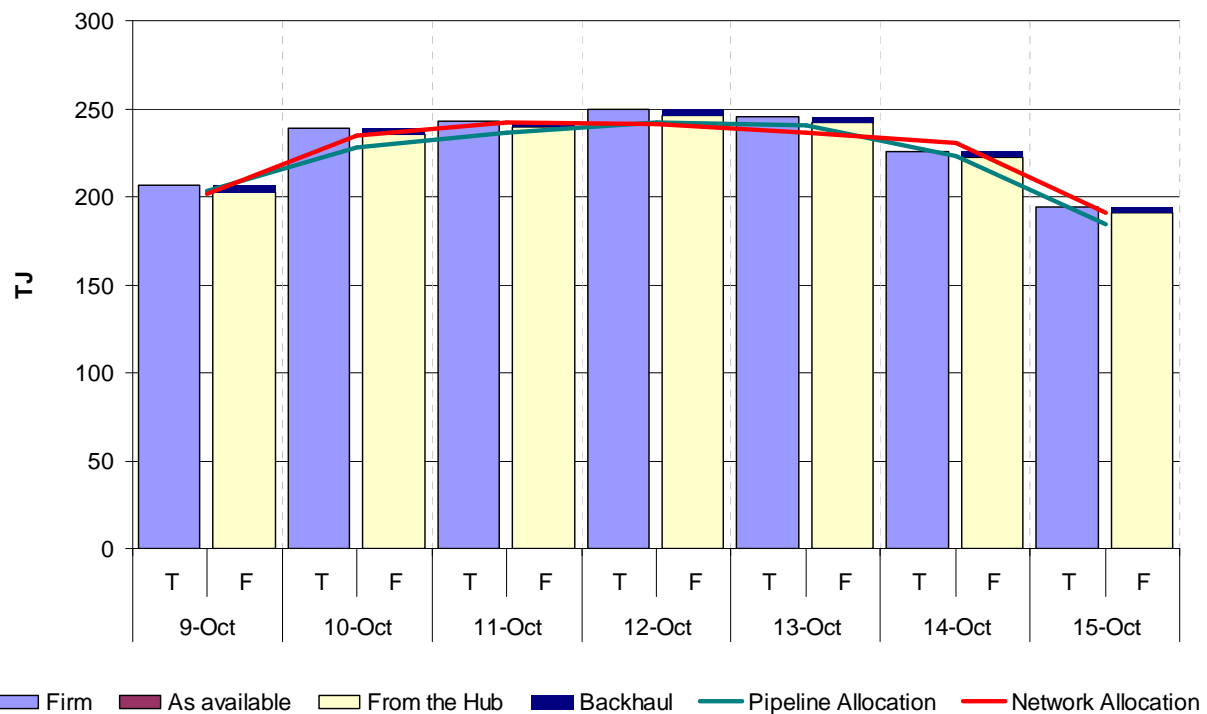
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

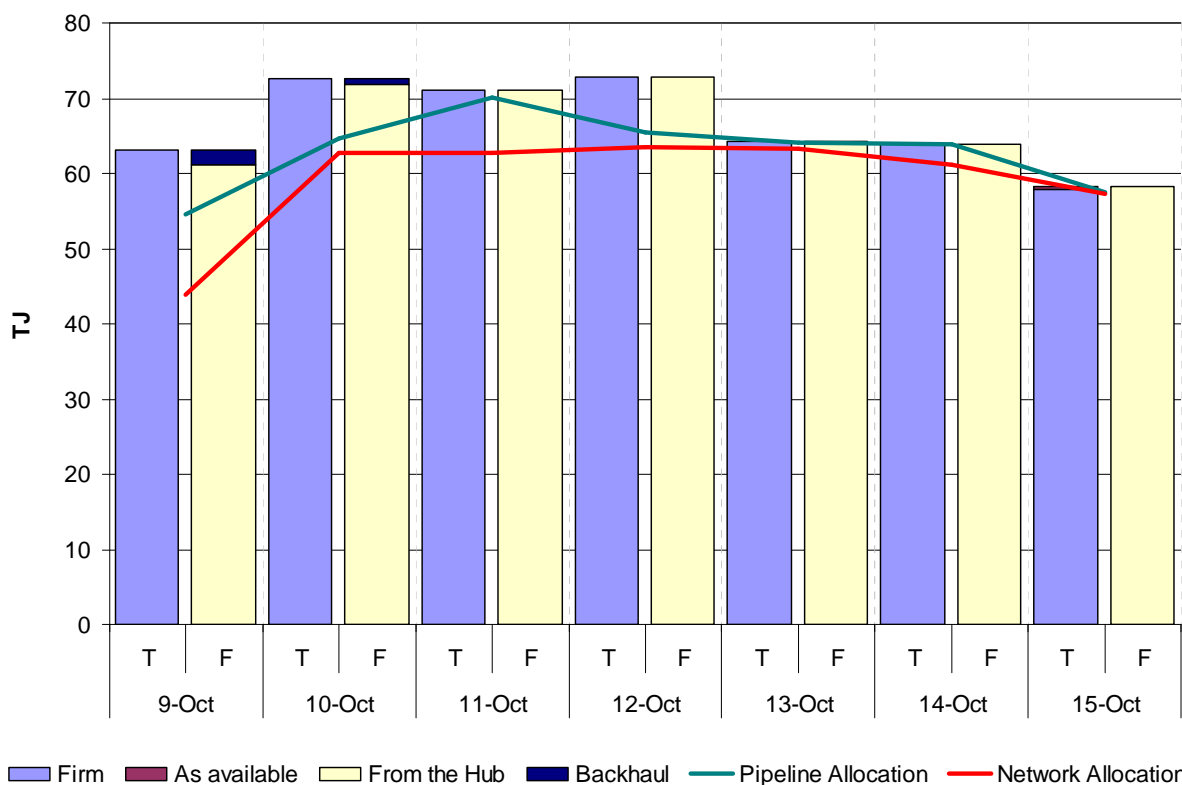
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

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)

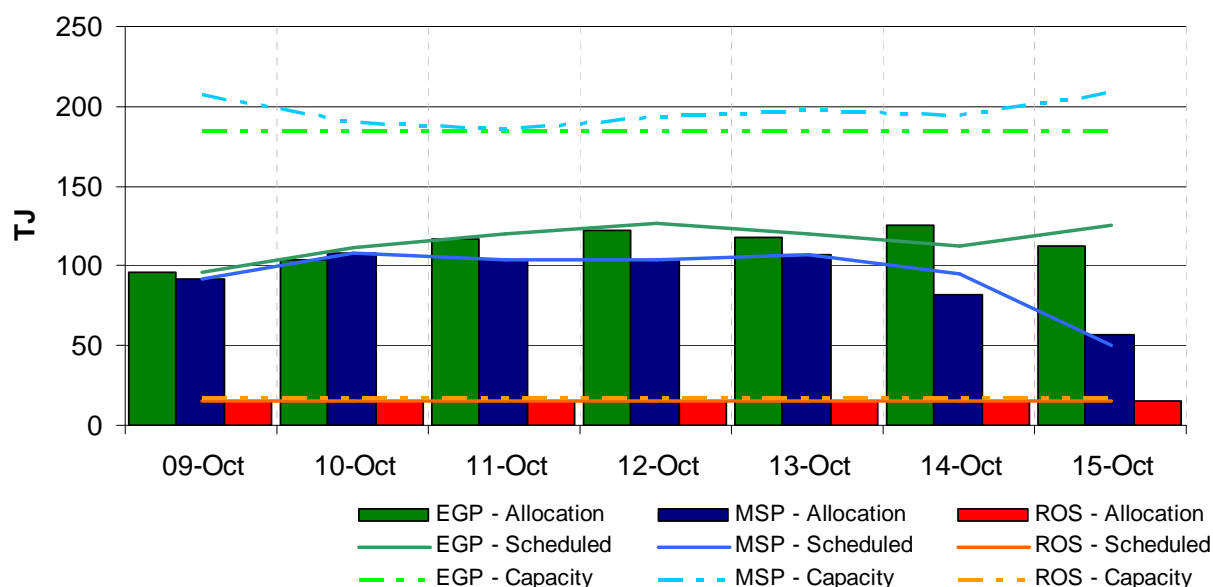
Pipeline Facility Allocations

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.

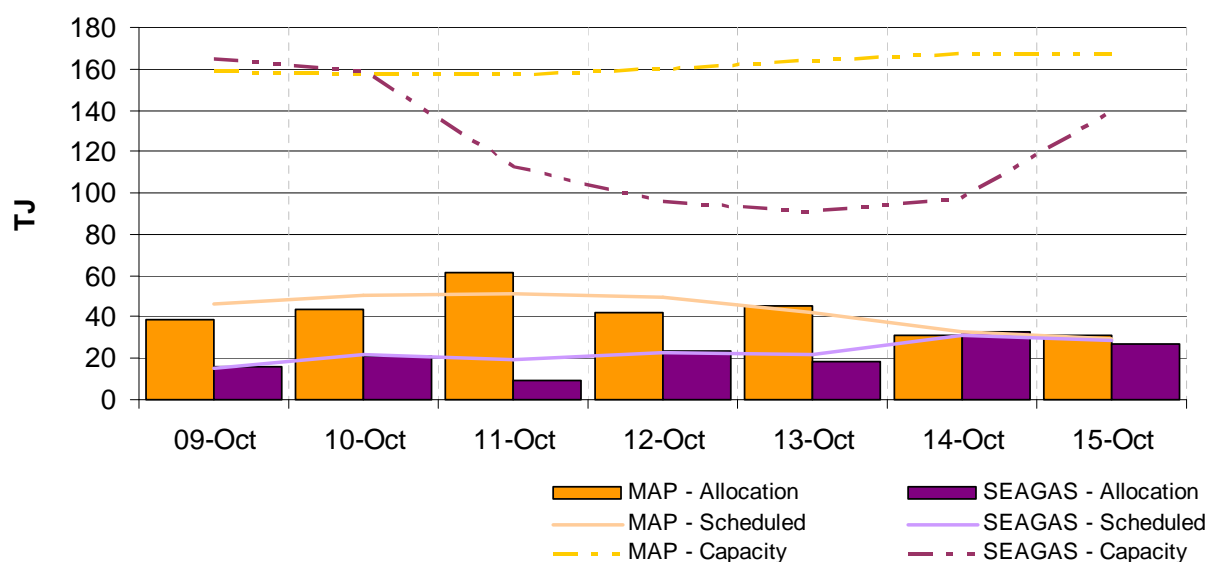
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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

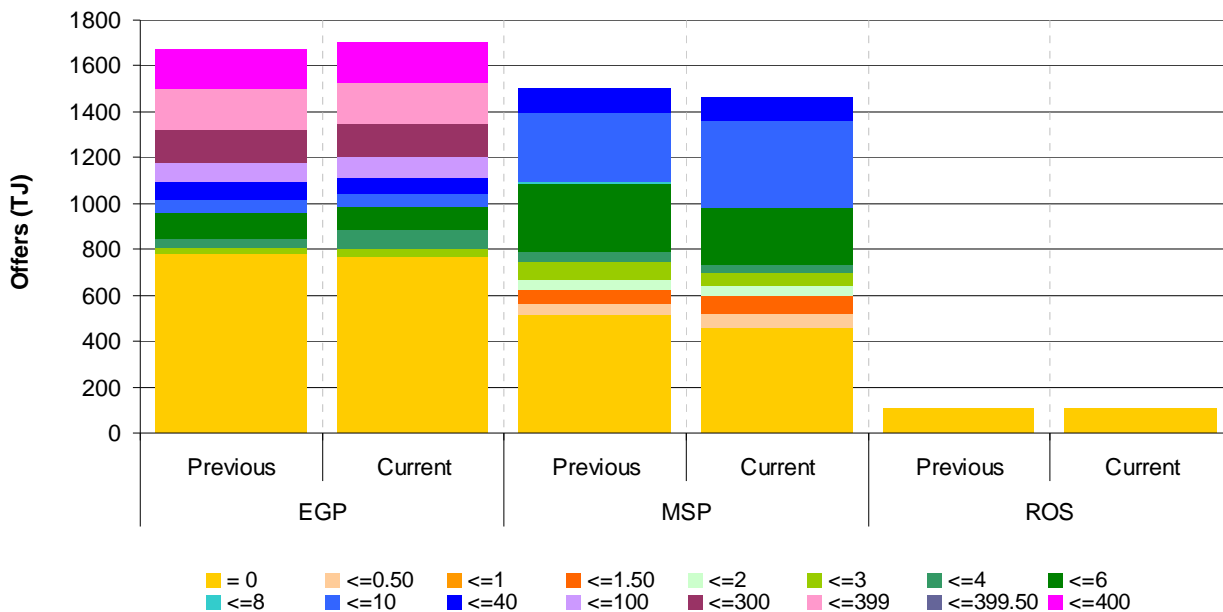
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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.

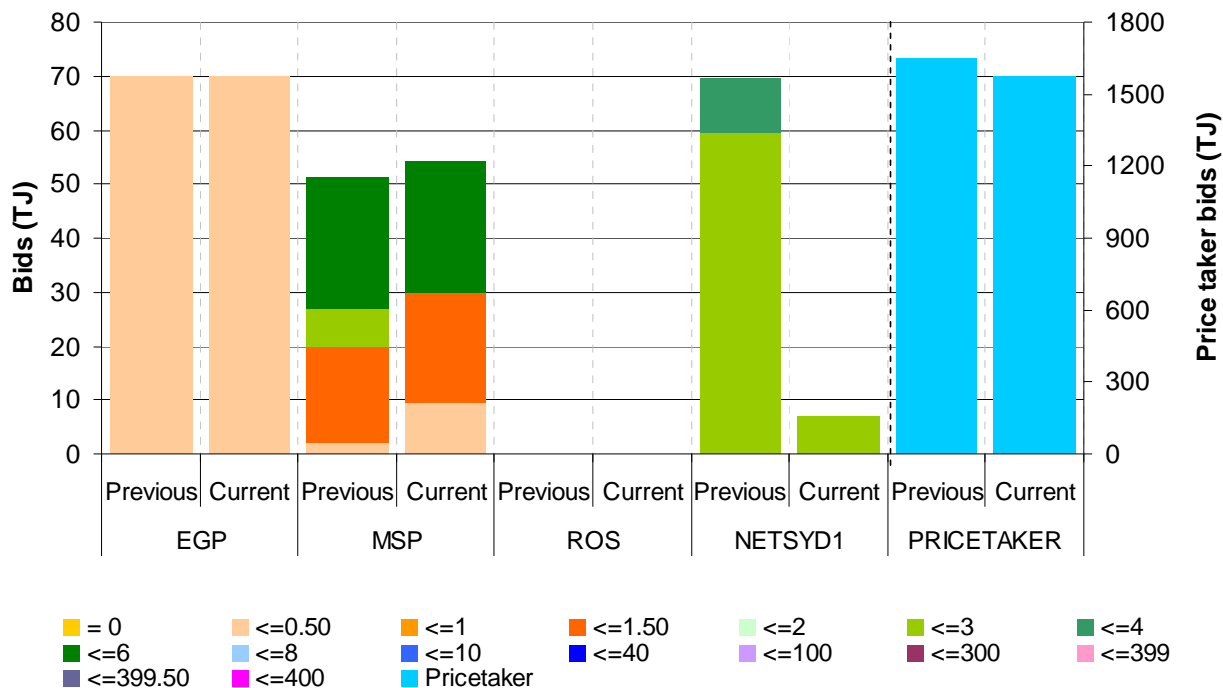
Figure S9: Total weekly Sydney hub offers (TJ) within price bands (\$/GJ)



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

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

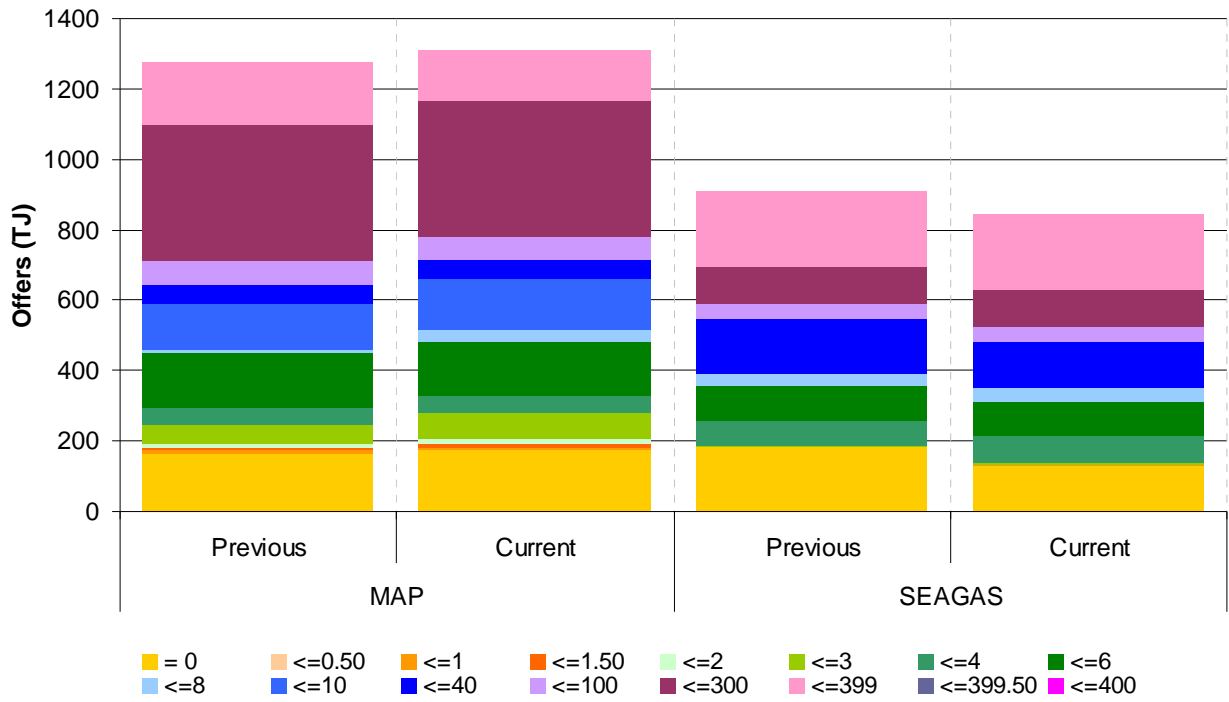
Figure S10: Total weekly Sydney hub bids (TJ) within price bands (\$/GJ)



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

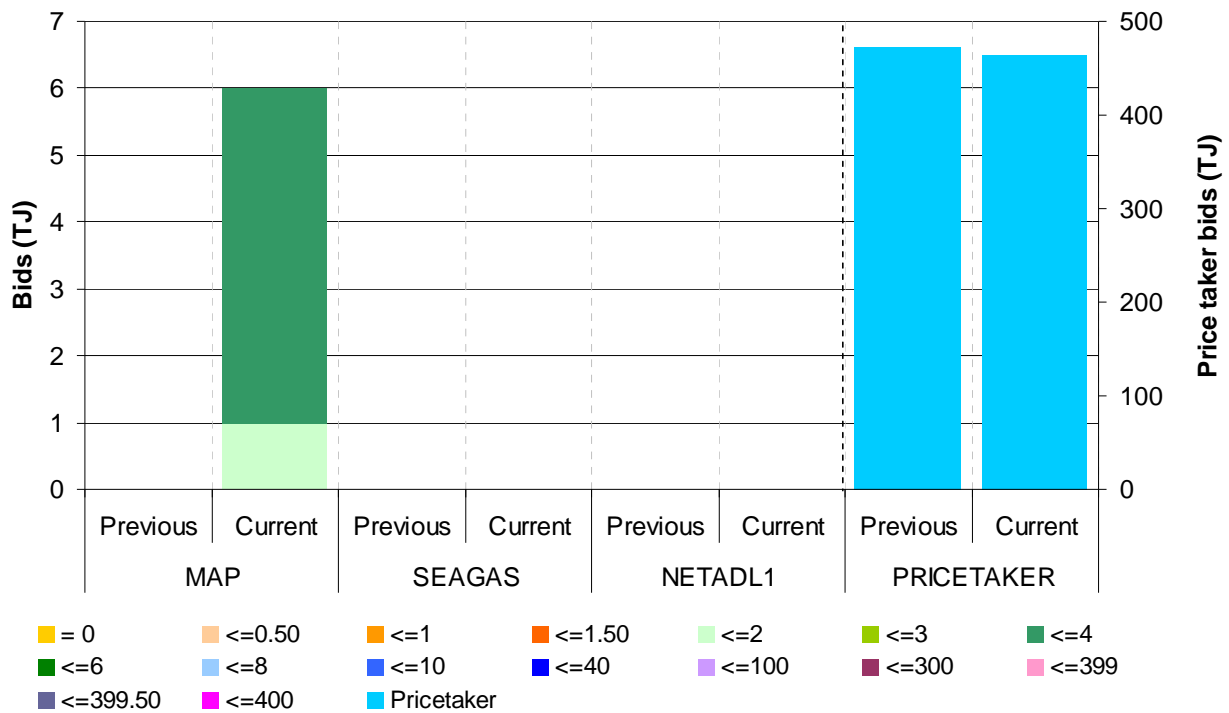
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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 SANTOS TRU	SANTOS TRU	TRU	OneStl(NSW) TRU	TRU	Lumo OneStl(NSW) TRU	AGL(ESM) Lumo OneStl(NSW) TRU
	D-2 to D-1	SANTOS TRU	TRU	APG BluSc OneStl(NSW) SANTOS TRU	BluSc OneStl(NSW) SANTOS TRU	BluSc SANTOS TRU	BluSc OneStl(NSW) SANTOS TRU	BluSc Lumo OneStl(NSW) SANTOS TRU
MSP	D-3 to D-2	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) 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) Origin TRU	AGL(ESM) Origin	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU
ROS	D-3 to D-2		AGL(ESM)		AGL(ESM)		AGL(ESM)	
	D-2 to D-1	AGL(ESM)		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						Lumo	
	D-2 to D-1							Lumo
MSP	D-3 to D-2	Country			Lumo			Country
	D-2 to D-1					Country	Country	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 TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU	ABC AGL(SA) Origin TRU
	D-2 to D-1	ABC AGL(SA) Origin TRU	ABC AGL(SA) Origin	ABC AGL(SA) Origin TRU	ABC AGL(SA) Origin TRU	ABC AGL(SA) Origin TRU	ABC AGL(SA) Origin TRU	ABC AGL(SA) Origin TRU
SEA-GAS	D-3 to D-2	ABC Origin Simply TRU	ABC Origin Simply TRU	Origin Simply TRU	ABC Origin Simply TRU	Origin Simply TRU	Origin TRU	Origin Simply TRU
	D-2 to D-1	ABC Origin Simply TRU	Origin TRU	ABC Origin Simply TRU	Origin Simply TRU	Origin TRU	Origin Simply TRU	ABC Origin Simply 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	Simply	Simply	Simply		
	D-2 to D-1	Simply	Simply	Simply	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 | TRU= TRUenergy Pty Ltd |

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.

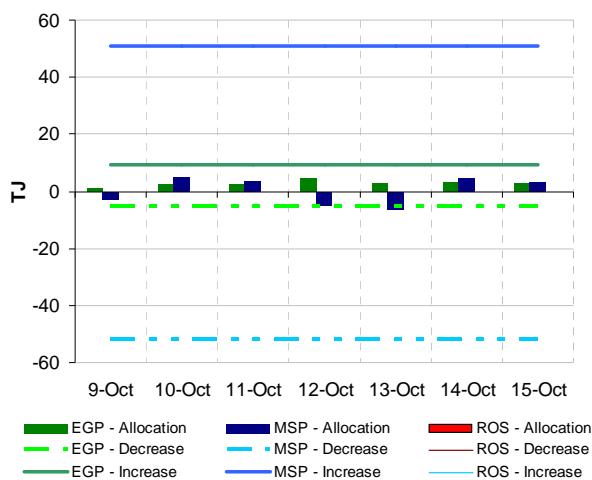
MOS offers are made by participants who have contracts with pipeline facilities to “park” gas (on the pipeline) or “loan” gas (from the pipeline). Based on these contracts, two types of MOS are offered: increase offers to increase flows on a pipeline to a hub; and decrease offers to decrease flows on 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



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 S17b: Sydney MOS payments/charges

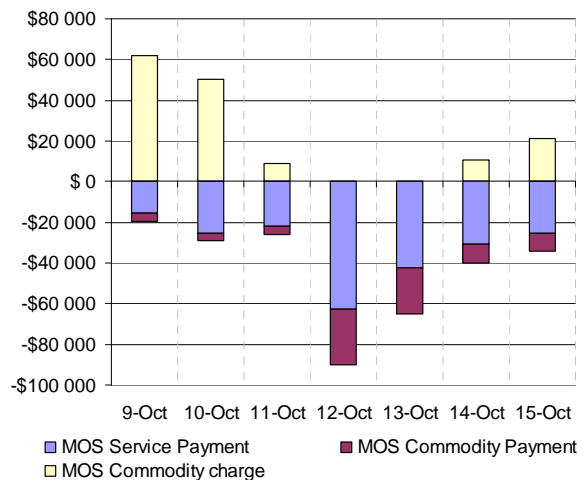
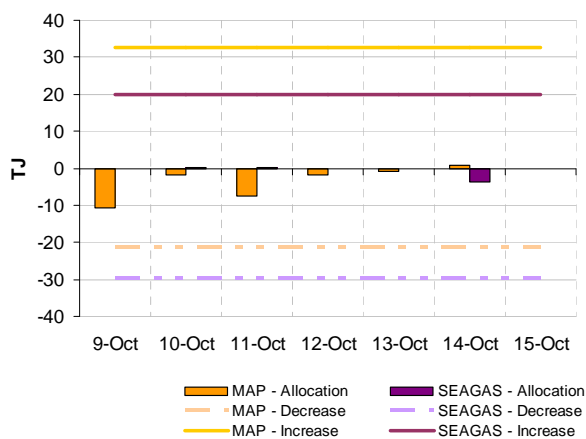


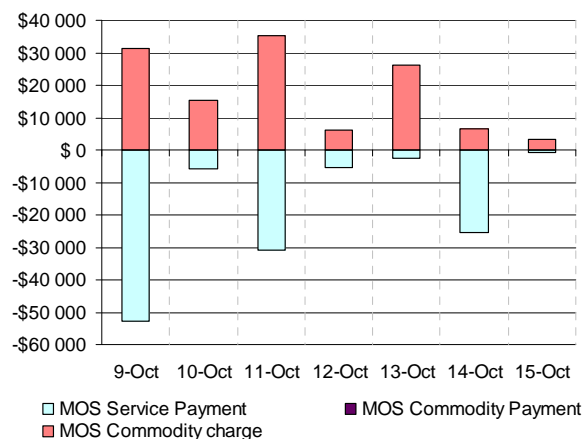
Figure S18a: Adelaide MOS allocations



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

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

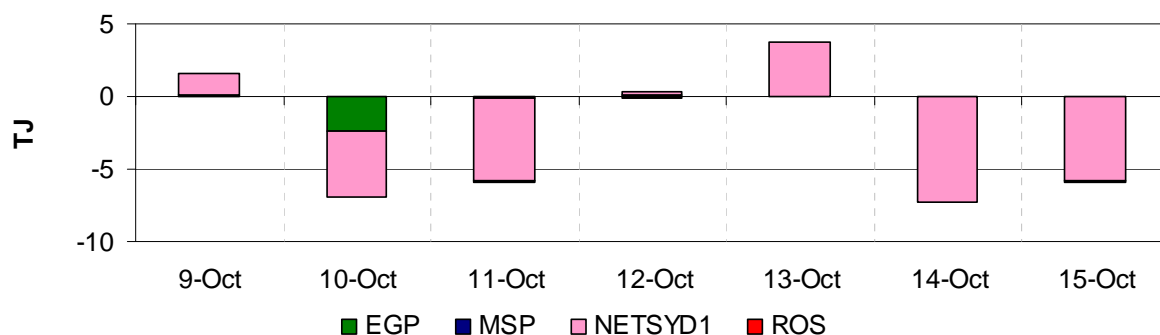
Figure S18b: Adelaide MOS payments/charges



Deviations

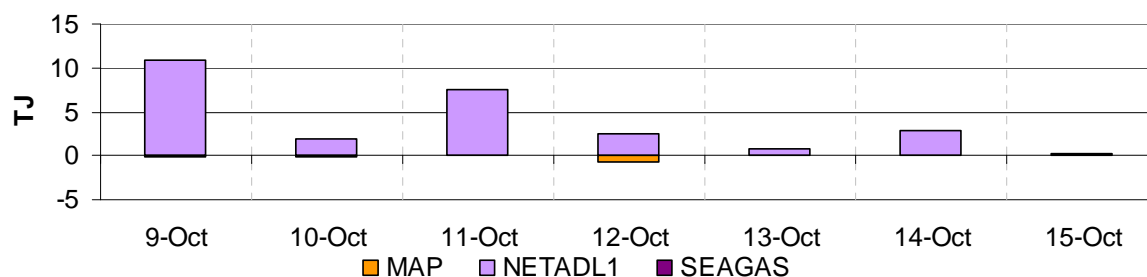
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As 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

	9 October - 15 October	2 October - 8 October	2011-12 Financial YTD*	2010-11 Financial YTD**
Syd Quantity (TJ)	7.88	5.94	5.88	3.05
Syd Charges (\$)	311.86	309.94	208.29	94.50

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

**Financial Year to date figure from 1 Sep 2010 (market start) to the equivalent week in 2010-11 (inclusive)

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

Figure S22: Average Daily Market Variations - Adelaide Hub

	9 October - 15 October	2 October - 8 October	2011-12 Financial YTD*	2010-11 Financial YTD**
Adl Quantity (TJ)	3.20	4.97	1.77	1.63
Adl Charges (\$)	258.56	433.56	100.27	40.70

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

**Financial Year to date figure from 1 Sep 2010 (market start) to the equivalent week in 2010-11 (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	103	97	99	101	104	101	100	119	86	101	102	93
QLD Gas Pipeline	111	108	114	118	118	121	113	142	86	115	122	106
Roma to Brisbane Pipeline	166	186	183	176	181	173	159	219	79	175	173	180
South West QLD Pipeline	78	84	83	68	95	79	75	181	66	80	119	121
NSW/ACT												
Eastern Gas Pipeline	142	161	174	181	176	180	146	268	78	166	209	221
Moomba to Sydney Pipeline	132	171	172	154	144	129	89	439	44	141	193	249
NSW-VIC Interconnect	22	35	18	27	26	23	36	90	24	27	21	8
VIC												
Longford to Melbourne	519	626	589	587	465	399	325	1030	58	501	603	686
South West Pipeline^	79	205	132	111	88	96	88	353	47	114	166	145
SA												
Moomba to Adelaide Pipeline	122	125	137	119	126	110	102	253	52	120	132	136
SEA Gas Pipeline	114	145	141	159	141	138	93	314	51	133	159	182
TAS												
Tasmanian Gas Pipeline	50	53	54	52	50	47	45	129	38	50	49	47

*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	97	98	97	97	96	94	97	140	67	96	94	101
Fairview	87	95	104	100	118	103	87	130	80	99	104	119
Kenya Gas Plant	92	87	88	86	92	86	95	160	51	89	82	62
Kincora	7	9	7	10	7	9	8	25	39	8	10	3
Kogan North	8	8	8	8	8	8	8	12	59	8	7	9
Peat	8	8	8	7	8	7	6	15	51	7	8	10
Rolleston	10	10	8	10	10	9	10	30	33	10	10	11
Scotia	30	30	30	30	30	30	30	29	95	30	27	25
Spring Gully	42	44	44	42	44	43	44	69	63	43	44	53
Strathblane	42	44	44	42	44	43	44	69	63	43	44	53
Talooka	25	27	27	26	27	26	27	42	63	26	26	32
Yellowbank	9	10	9	9	9	9	10	30	31	9	9	13
Talinga	75	74	74	74	75	75	84	120	76	76	91	51
Moomba (SA/QLD)												
Moomba Gas Plant	198	248	268	274	232	180	173	430	61	225	260	324
Ballera	25	18	15	40	13	29	32	150	11	25	17	22
Eastern (VIC)												
Orbost Gas Plant	69	69	69	69	69	69	69	100	68	69	68	0
Lang Lang Gas Plant	54	53	52	52	51	51	53	70	67	52	47	50
Longford Gas Plant	570	663	698	709	652	567	414	1145	66	610	754	919
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	71	71	71	60	50	45	35	73	81	57	59	73
Otway Gas Plant	71	153	169	169	160	164	137	205	74	146	152	148
Iona Underground Gas Storage	73	181	80	69	50	45	21	440	29	74	127	109

*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)
9 October – 15 October	Average min.	16.1	13.8	5.9	10.4	12.5	7.6
	Average max.	27.4	21.7	19.4	19.7	20.8	16.8
2 October – 8 October	Average min.	13.5	12.2	4.3	10.2	12.3	7.3
	Average max.	23.5	19.6	17.5	20.3	19.5	15.4

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

9 October – 15 October	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	1.90	2.29	1.31	1.19	3.18	1.92
Mon	3.00	3.00	4.02	3.86	3.66	3.10
Tue	2.70	3.00	2.60	1.84	2.40	2.69
Wed	3.00	2.86	2.99	2.49	1.51	2.97
Thu	3.00	3.34	2.99	1.86	0.99	2.95
Fri	1.57	2.80	1.60	1.01	0.00	1.59
Sat	0.47	1.01	0.99	1.29	2.47	0.52

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	
9-Oct	MP:	578	593	595	599	601	-19
	AEMO:	547	545	537	544	601	
	MP as % of AEMO	106	109	111	110	100	
10-Oct	MP:	780	761	767	768	768	0
	AEMO:	766	745	749	816	777	
	MP as % of AEMO	102	102	102	94	99	
11-Oct	MP:	752	740	740	734	738	0
	AEMO:	731	739	741	741	710	
	MP as % of AEMO	103	100	100	99	104	
12-Oct	MP:	737	733	753	734	736	0
	AEMO:	768	759	775	742	686	
	MP as % of AEMO	96	96	97	99	107	
13-Oct	MP:	574	577	570	565	566	-2
	AEMO:	582	527	527	528	526	
	MP as % of AEMO	99	109	108	107	108	
14-Oct	MP:	485	501	519	526	526	-3
	AEMO:	472	488	488	475	472	
	MP as % of AEMO	103	103	106	111	111	
15-Oct	MP:	391	381	381	382	384	0
	AEMO:	387	385	374	393	384	
	MP as % of AEMO	101	99	102	97	100	

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