WEEKLY GAS MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

14 November – 20 November 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. For the fourth week since the commencement of the STTM, average daily prices were lower at the Sydney hub of the STTM than in the Victorian market.

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

14 Nov – 20 Nov	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	1.31	0.43	2.01

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

STTM Gas Markets (Adelaide and Sydney)

Figure S3 and S4 show that average ex ante and ex post prices were higher in Adelaide than Sydney this week. While average ex ante prices were slightly lower at both hubs this week compared to the previous week, average ex post prices were slightly higher.

As shown in figure S21, average daily market schedule variations were relatively high in Sydney this week at around 7 TJ.

Adelaide Hub – 20 November gas day

SEAGas failed to submit pipeline allocation data[1] (the actual gas flow for the 20 November gas day) for the SEAGas pipeline prior to the 11 am cut-off time on 21 November. The AER understands this was due to annual planned maintenance affecting building power supplies on 21 November. As a consequence, AEMO was required to use default allocations[2]. These default allocations assume that the amount of gas supplied on the pipeline is equal to the amount of gas scheduled.

Default allocations may cause a different ex post price compared to the price if actual allocation data had been submitted on time and used. However, on this occasion actual allocations were close to scheduled (default allocations) and there was no price impact. Nevertheless, the AER is concerned with the potential for inefficient price outcomes caused by late submission of data and is seeking further information from SEAGas.

Victorian Gas Market

Slightly higher demand for gas in Victoria compared to the previous week (see figure N4), driven by cooler temperatures in Melbourne (see figure A3), saw average gas injections rise slightly compared to the previous week (see figure V3). Despite increased demand, the average daily imbalance price fell slightly from $1.38/GJ in the previous week to $1.31/GJ (see figure V2) as a result of more $0/GJ bids compared to the previous week (mainly at Longford see figure V4).

AEMO issued one demand override of -1 TJ on Saturday 20 November (see figure A5). Supply or demand point constraints (SDPC) were applied to withdrawals at SEAGas from 17 to 20 November and for injections at Bass Gas on 18 November. SDPCs were also applied for both injections and withdrawals at Iona on 18 November. A directional flow point constraint was applied to SEAGas on 17 November.

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 (1424 TJ) was only 5 TJ higher than the previous week. While demand fell in Queensland, New South Wales and South Australia, this was more than offset by an increase in Victoria.

Total average daily gas powered generation (GPG) gas usage fell in every region other than Queensland compared to the previous week, resulting in an overall reduction of 39 TJ (or 9 per cent).

Overall average daily production volumes were close to the previous week. Increased production in Eastern Victoria was offset by decreased production in all other production zones.

The most significant increase in pipeline flow compared to the previous week occurred on the Longford to Melbourne Pipeline (86 TJ or 29 per cent), and the most significant decrease occurred on the South West Pipeline (53 TJ or 43 per cent).

[1] In accordance with section 419(1) of the National Gas Rules.
[2] In accordance with section 419(6) of the National Gas Rules,

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
14 Nov – 20 Nov	333	9	447	227	42	172	89	106
Financial Year-to-date 2010-11*	416	32	746	297	46	179	93	108
Financial Year-to-date 2009-10**	405	30	714	294	35	163	85	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**
14 Nov – 20 Nov	76	0	113	28	173
Financial Year-to-date 2010-11*	85	16	168	31	156
Financial Year-to-date 2009-10**	85	43	166	19	146

^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.

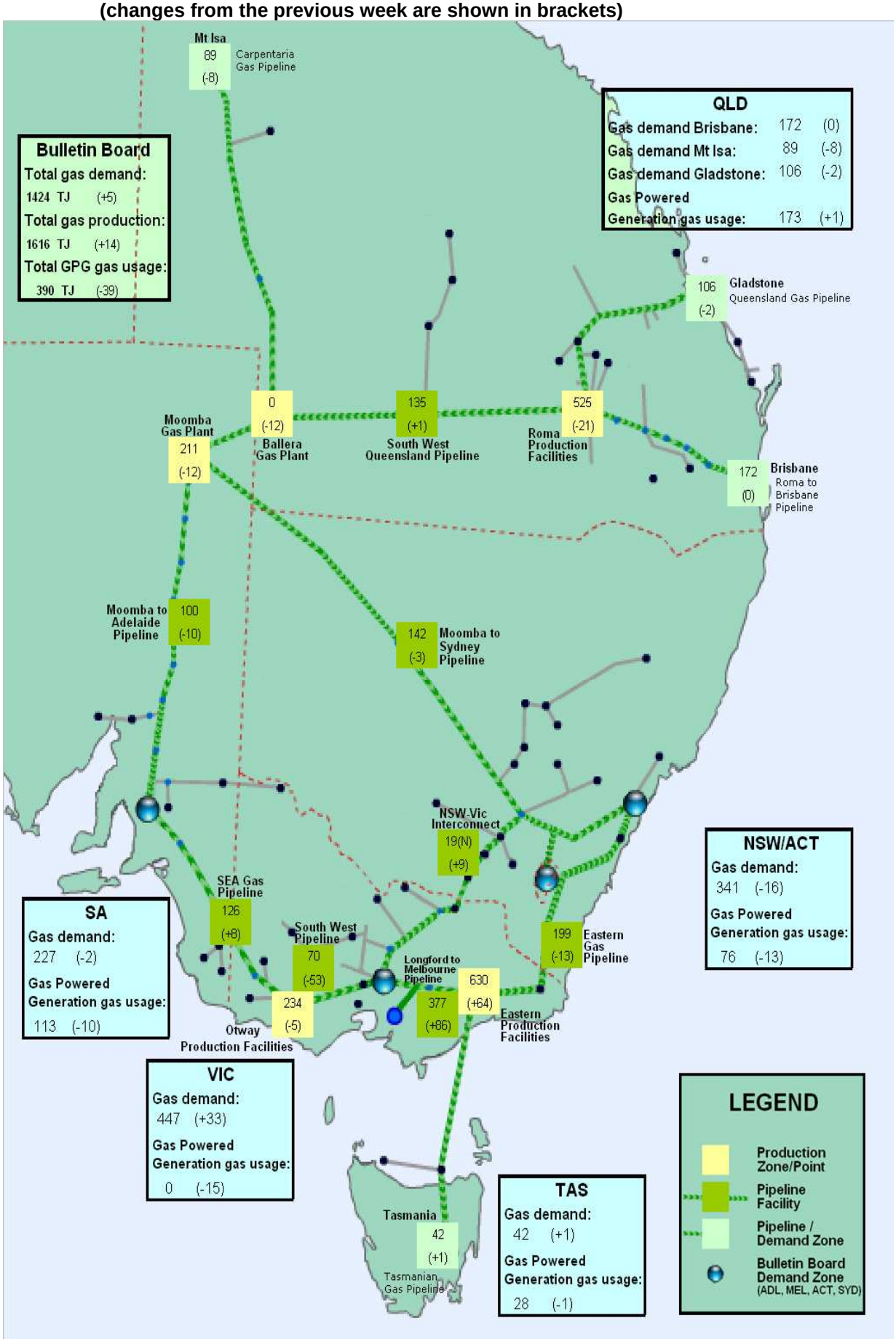
Figure N3: Daily average production flows (TJ) for each production zone

Average daily flows	**Roma (QLD)**	**Eastern Victoria**	**Otway Basin (VIC)**	**Moomba (SA/QLD)**
14 Nov – 20 Nov	525	630	234	211
Financial Year-to-date 2010-11*	547	890	308	323
Financial Year-to-date 2009-10**	438	784	312	318

*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)

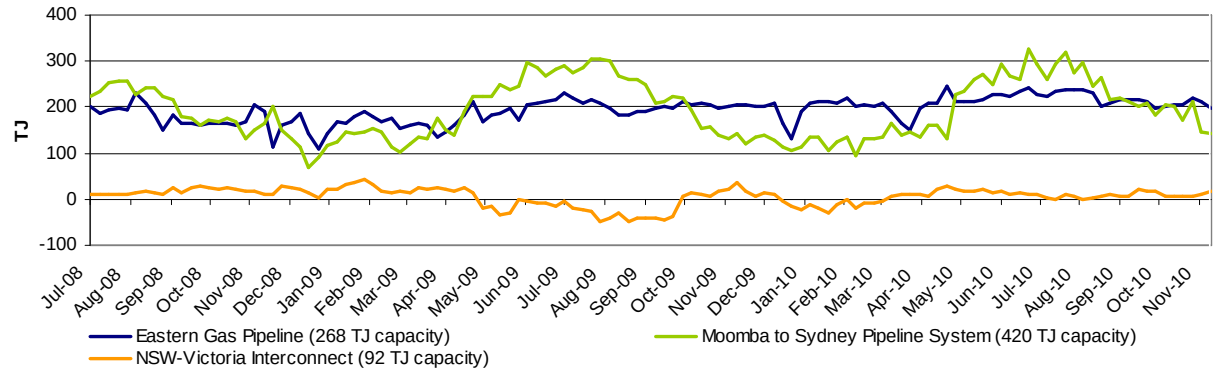


Source: Natural Gas Market Bulletin Board http://www.gasbb.com.au
Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
Numbers in brackets indicate a change in average daily flow from the previous week.

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.

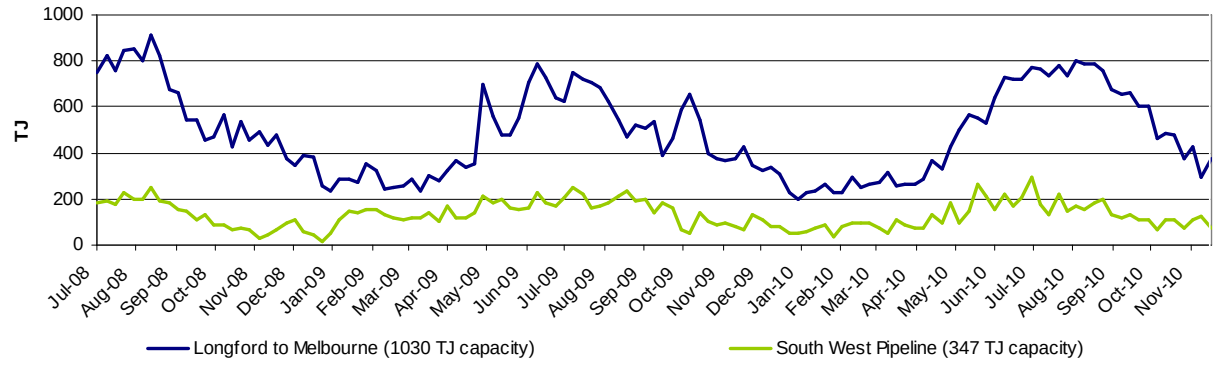
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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

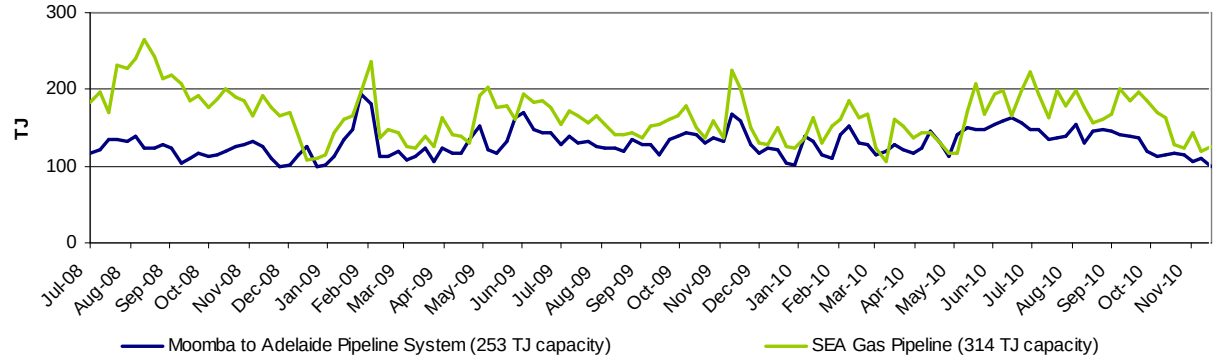
Notes: Negative flows on the NSW-Victoria Interconnect represent flows out of NSW into VIC.

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	5		NS	S	NS	S		NS		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	1									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	S	NS	S	S			S	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	4			S	NS	S		S			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)

	14 Nov – 20 Nov	7 Nov – 13 Nov	2010-11 Financial YTD*	2009-10 Financial YTD**
Average daily price	1.31	1.38	1.95	*1.59*

14 Nov – 20 Nov	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	1.17	1.72	1.70	0.60	1.45	1.42	1.14

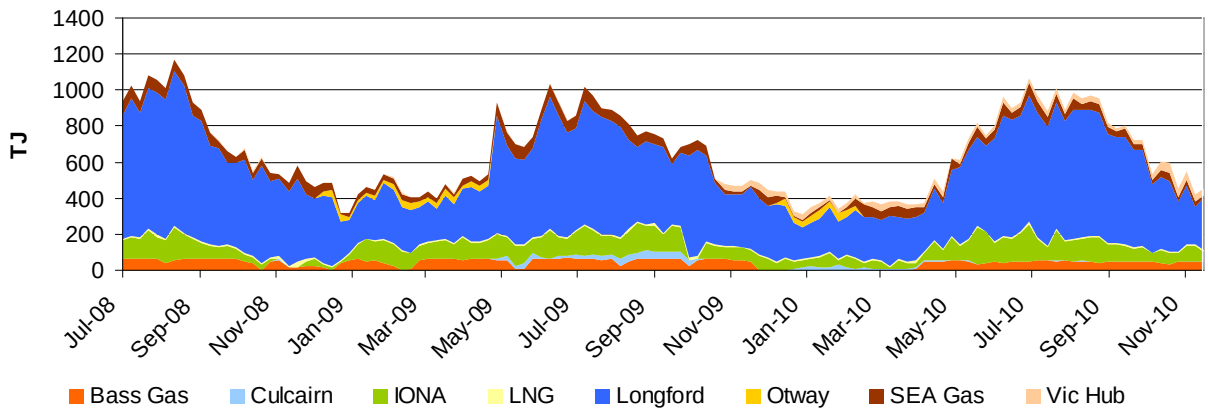
*Average daily imbalance weighted average price from 1 July 2010 to the current week (inclusive)
**Average daily imbalance weighted average price from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: http://www.aemo.com.au (INT 041)

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:	14 Nov – 20 Nov	7 Nov – 13 Nov	2010-11 Financial YTD*	2009-10 Financial YTD**
Culcairn	0	0	1	23
Longford	290	203	536	476
LNG	8	9	8	9
IONA	57	88	93	103
VicHub	41	40	33	7
SEAGas	13	34	41	49
Bass Gas	48	49	48	57
Otway	0	0	0	0
TOTAL	**457**	**424**	**761**	**723**

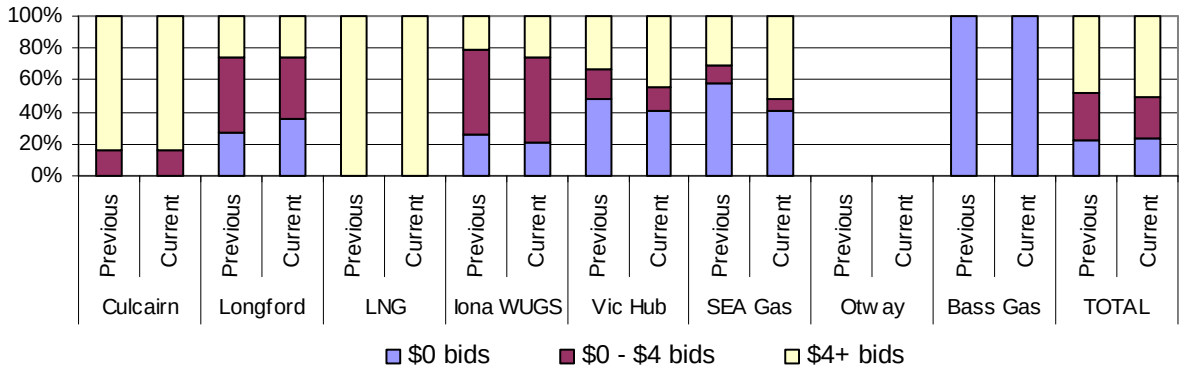


*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: http://www.aemo.com.au (INT 150)

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					Origin Lumo		
Longford	AGL TRU	TRU	AGL TRU	AGL	AGL Origin TRU	AGL TRU	AGL TRU
LNG					Origin TRU		
Iona	AGL Origin TRU	Origin TRU APG	AGL Origin TRU	AGL Origin	Origin TRU APG	Origin TRU	Origin TRU
VicHub	AETV Lumo	AETV Lumo	AETV	AETV Lumo	AETV TRU Lumo	AETV TRU Lumo	AETV TRU Lumo
SEAGas	Simply		Simply				
Bass Gas					Origin		

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:	14 Nov – 20 Nov	7 Nov – 13 Nov	2010-11 Financial YTD*	2009-10 Financial YTD**
Ballarat	18	13	34	31
Geelong^	72	80	96	87
Gippsland	38	34	50	53
Melbourne	306	255	515	488
Northern	55	42	71	64
TOTAL	**489**	**424**	**767**	**723**

^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	1	NS			S			
AGL Energy Sales & Marketing Limited	STTM User,Shipper	4	S	S	S				S
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		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	NS		
TRUenergy Pty Ltd	STTM User,Shipper	2	S	S			

^ Offers and bids taken from the (D-1) ex ante schedule
^^ STTM Users also submit price-taker bids to satisfy customer demand, which are not included in this table
Source: http://www.aemo.com.au INT 651, 659, 668
MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline, ADL-NET=Adelaide Hub

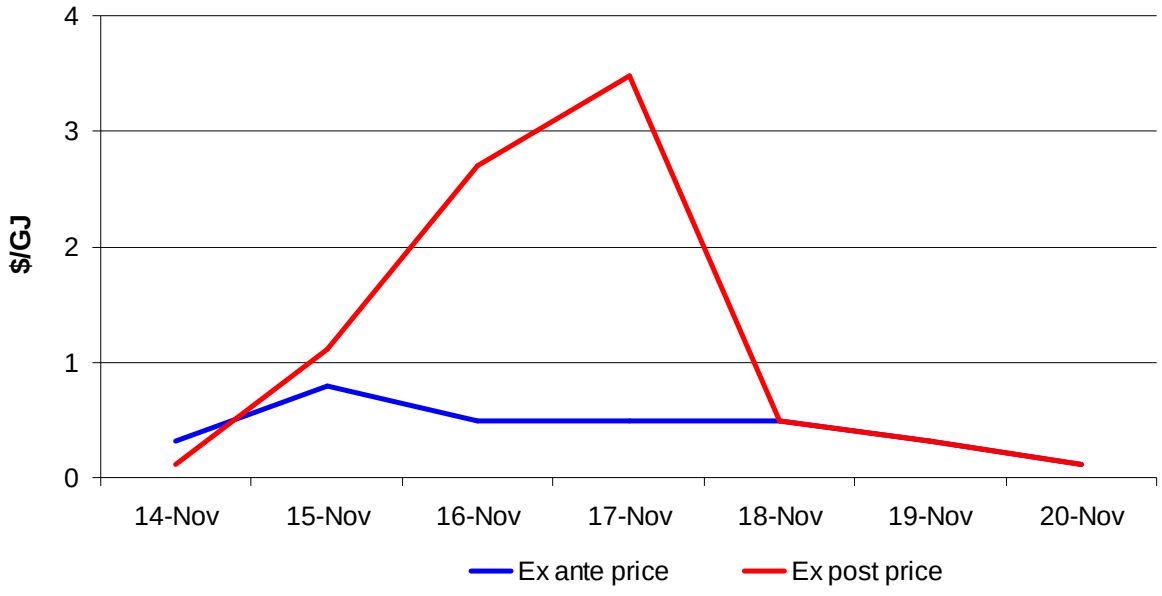
Ex ante and Ex post Market Prices

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

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

	14 Nov - 20 Nov	7 Nov - 13 Nov	2010-11 Financial YTD*
Ex ante price	0.43	0.53	3.70
Ex post price	1.19	0.95	12.20

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

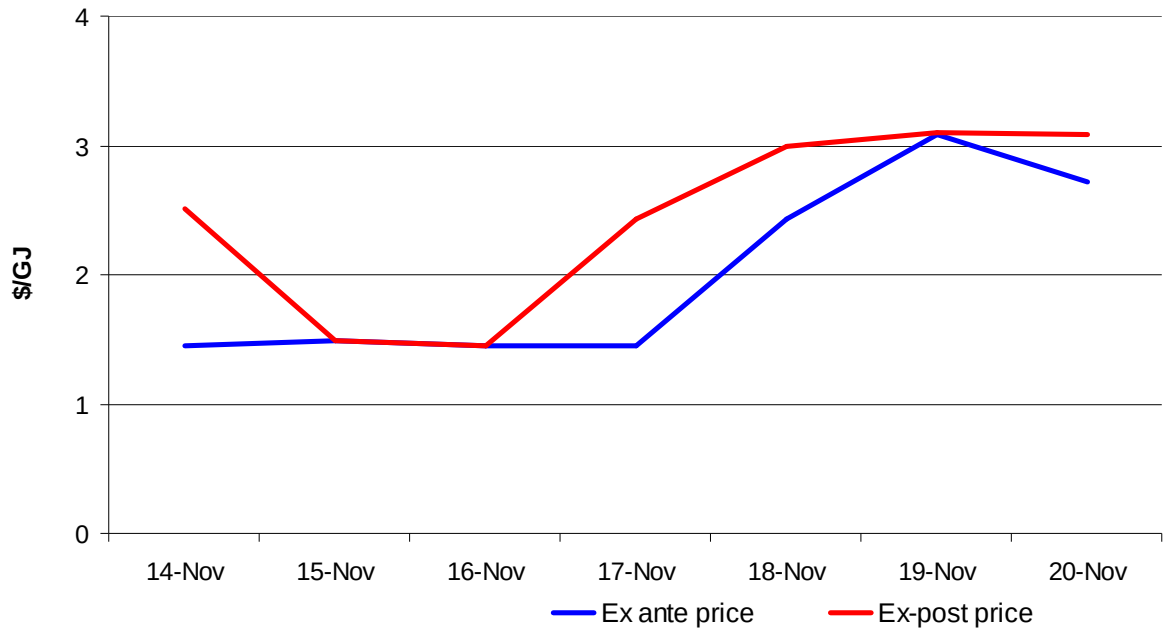


Source: http://www.aemo.com.au INT 651, 657

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

	14 Nov - 20 Nov	7 Nov - 13 Nov	2010-11 Financial YTD*
Ex ante price	2.01	2.06	2.86
Ex post price	2.44	2.10	2.94

*** 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.

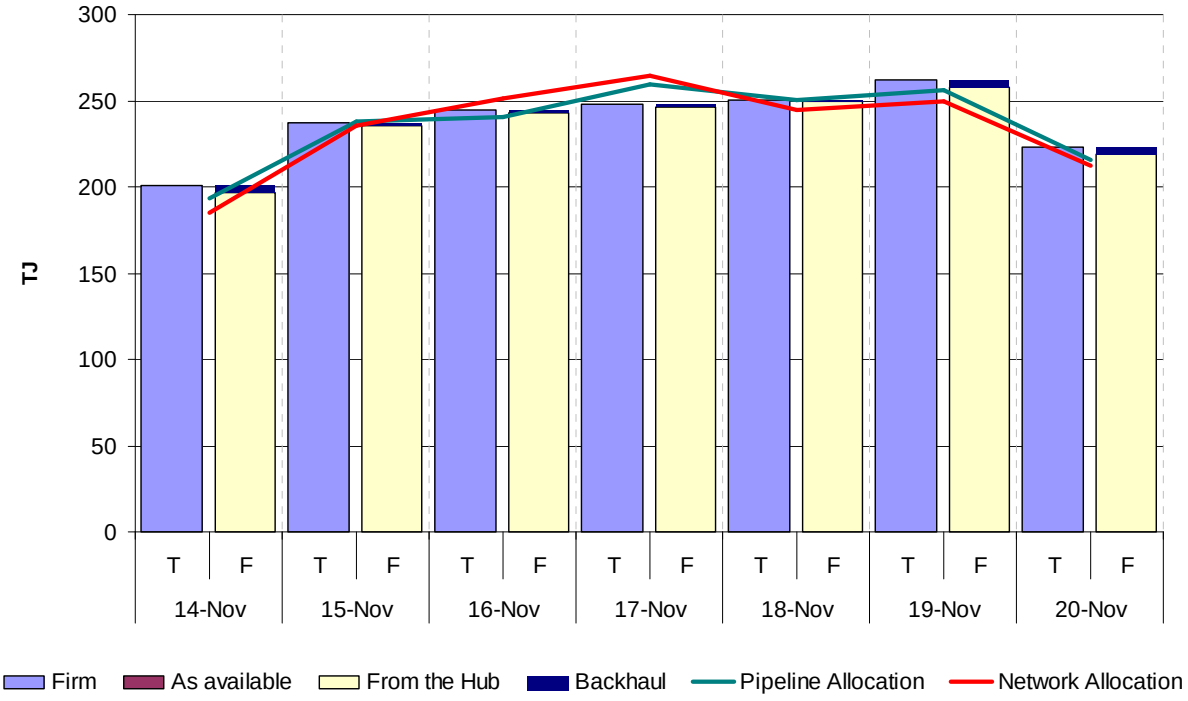
Gas can also be scheduled from the STTM hubs. This happens when Shippers "backhaul" gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

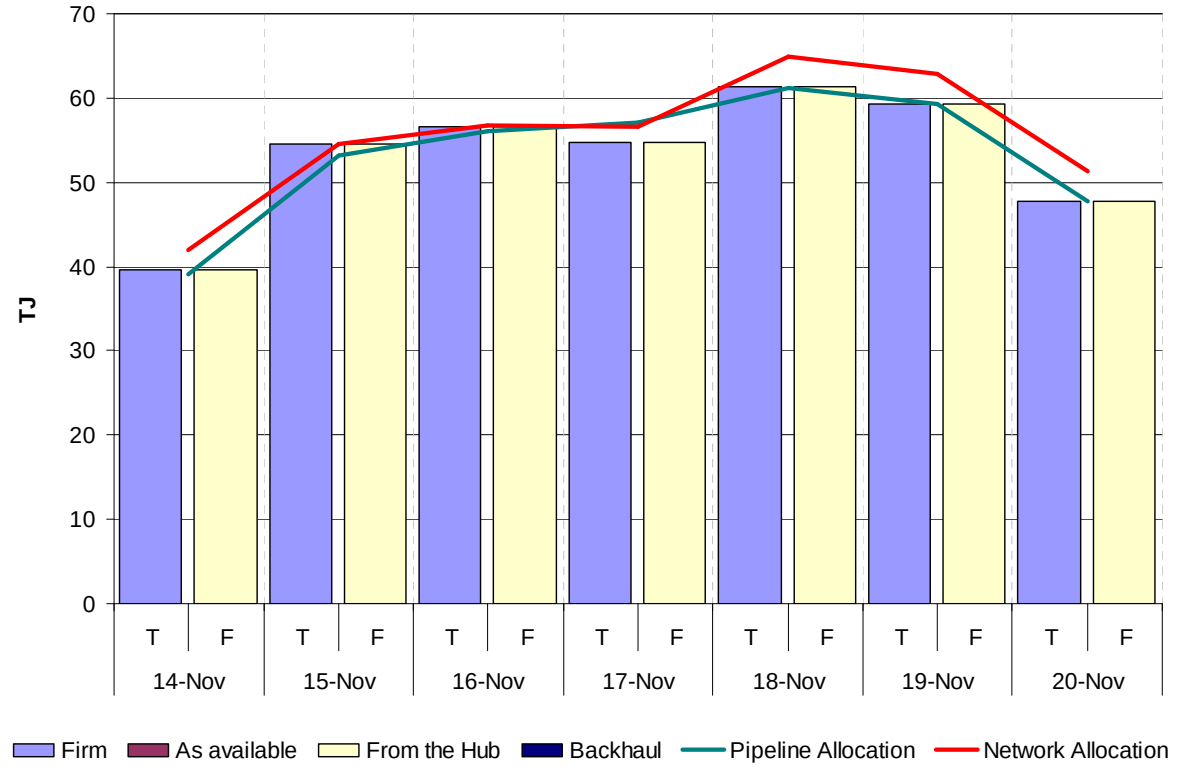
By comparing the level of the red line to the columns marked "F", it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked "T" shows how the actual flow of gas (allocation) compared to what was scheduled.

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)

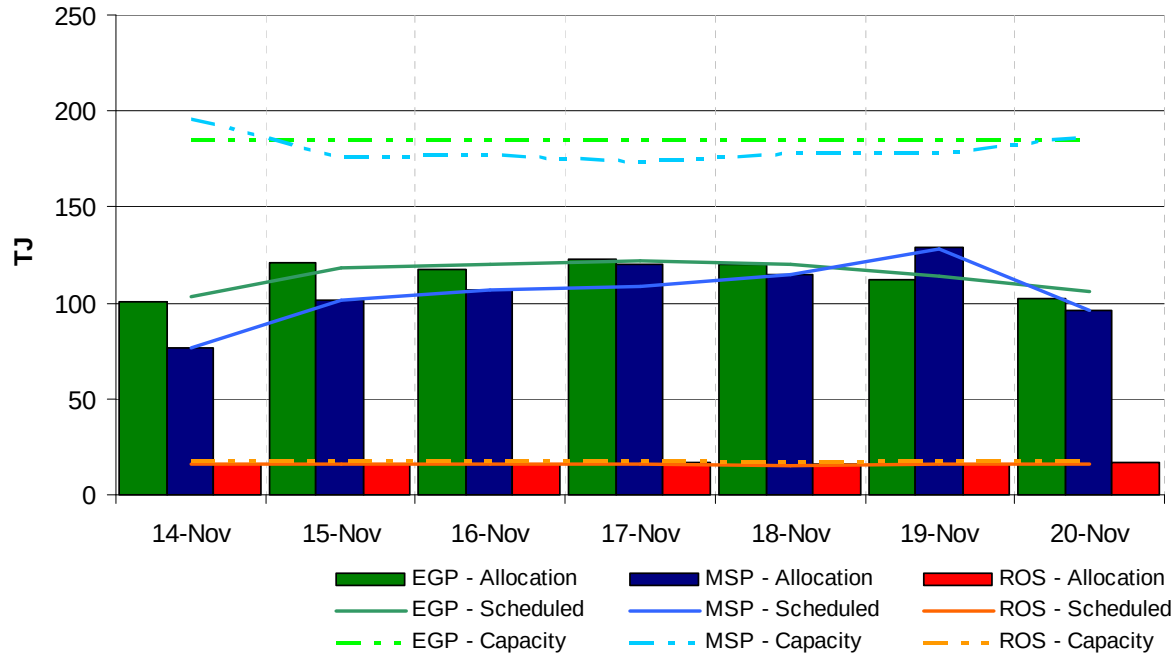
Pipeline Facility Allocations

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.

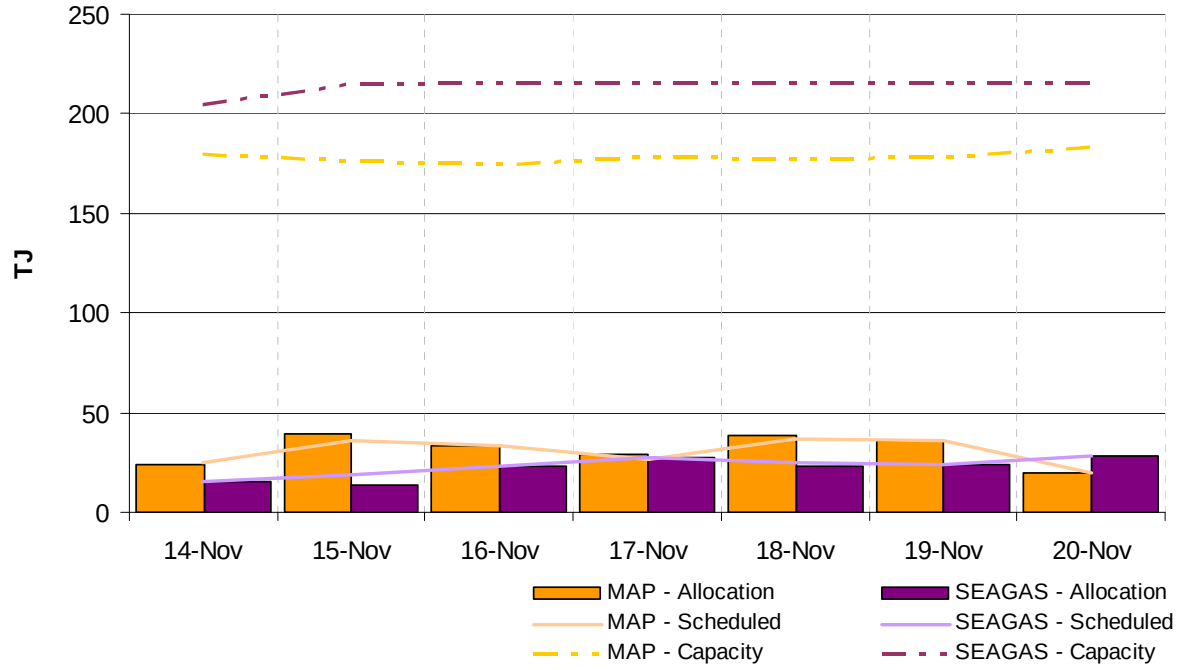
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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.

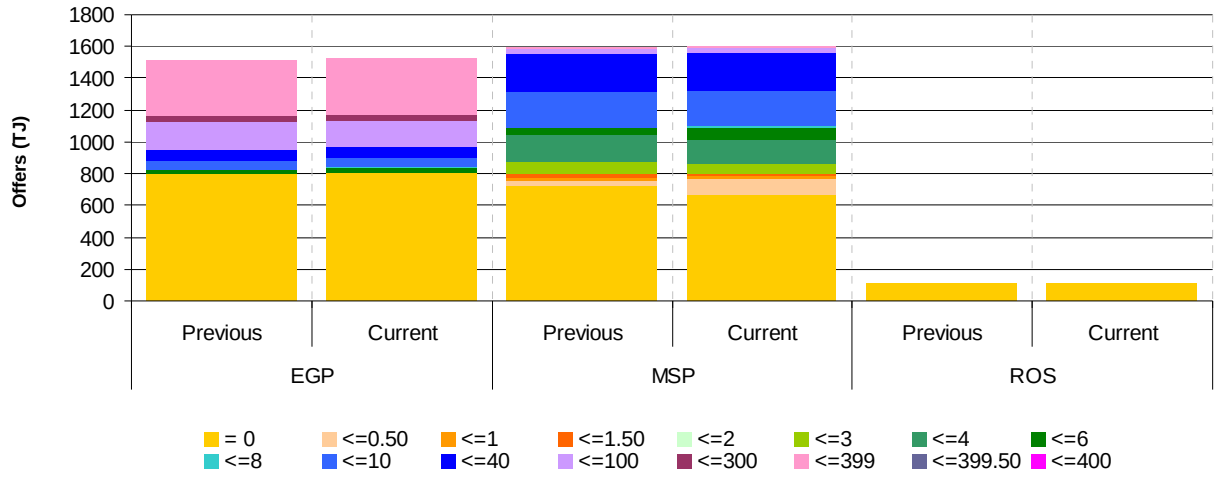
Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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.

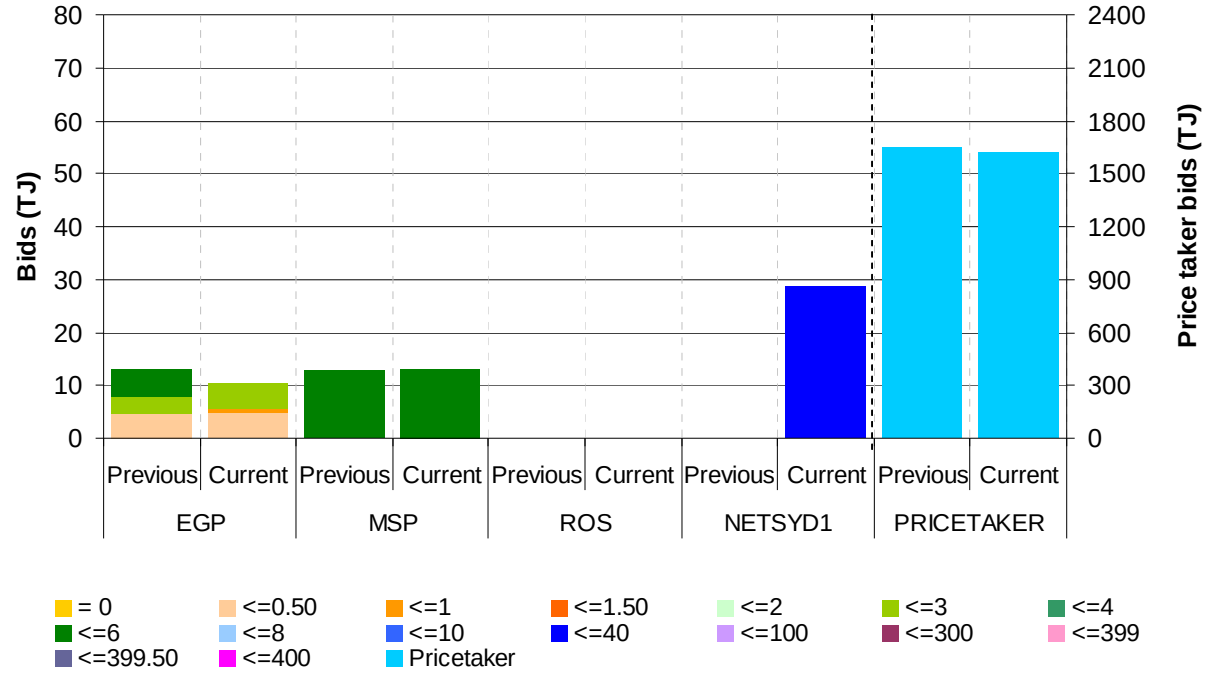
Because scheduling is price-driven, offers for lower-priced gas are scheduled ahead of offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

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



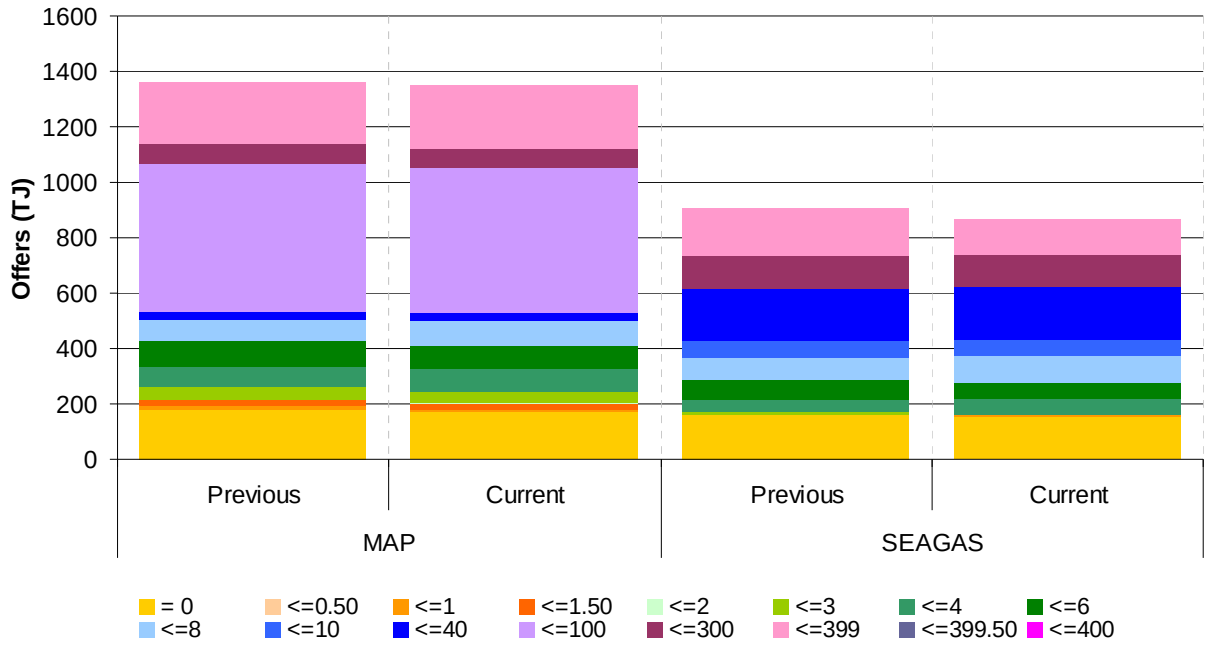
Source: http://www.aemo.com.au INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

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



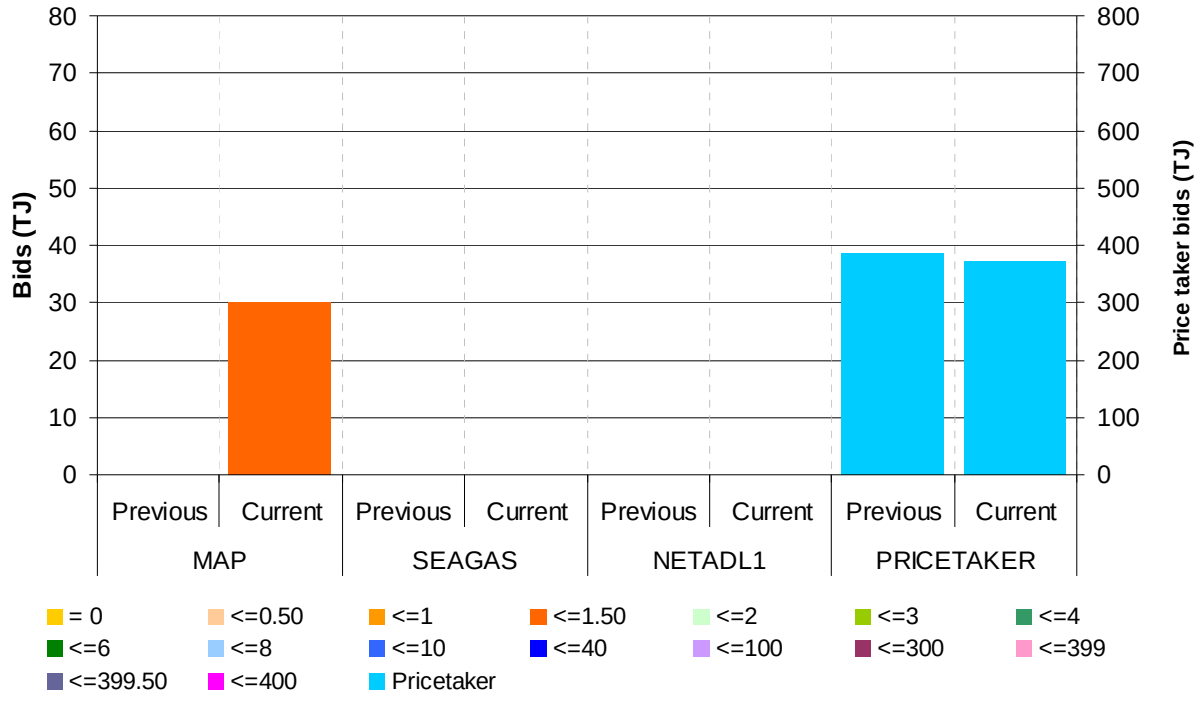
Source: http://www.aemo.com.au INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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 OneStl(NSW) TRU	OneStl(NSW) TRU		OneStl(NSW) SANTOS	SANTOS	OneStl(NSW)	OneStl(NSW)
	D-2 to D-1	OneStl(NSW) TRU	TRU	AETV BluSc EA OneStl(NSW) SANTOS	AETV BluSc EA OneStl(NSW) SANTOS	AETV BluSc EA SANTOS	AETV BluSc EA OneStl(NSW) SANTOS TRU	AETV BluSc EA OneStl(NSW) SANTOS TRU
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 Origin TRU	AGL(ESM) EA Origin	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)		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	TRU		AETV	AETV	AETV	AETV TRU	AETV TRU
MSP	D-3 to D-2	Country				Country		
	D-2 to D-1				Country	Country	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 TRU	ABC AGL(WGSA) Origin TRU	ABC AGL(WGSA) Origin Simply	ABC AGL(WGSA) Origin	ABC AGL(WGSA) Origin	ABC AGL(SA) AGL(WGSA) Origin	AGL(WGSA) Origin TRU
	D-2 to D-1	ABC AGL(WGSA) Origin TRU	ABC AGL(WGSA) Origin TRU	ABC AGL(WGSA) Origin Simply	AGL(WGSA) Origin Simply	ABC AGL(SA) AGL(WGSA) Origin	ABC AGL(WGSA) Origin TRU	AGL(WGSA) Origin
SEA-GAS	D-3 to D-2	Origin TRU	ABC TRU	ABC Origin Simply TRU	Origin TRU	Origin TRU	Origin Simply TRU	Origin TRU
	D-2 to D-1	ABC TRU	ABC Origin TRU	Origin Simply TRU	Origin Simply TRU	Origin Simply TRU	TRU	Origin 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

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

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[3] 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.

[3] 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.

MOS allocations are shown by the columns in these figures, whereas total MOS increase and decrease offers on each pipeline are shown by horizontal lines (as indicated in the legend). Figures S17b and S18b show MOS service payments and MOS commodity payments or charges. Payments fall below the horizontal axis and charges are displayed above the axis.

Figure S17a – Sydney MOS allocations

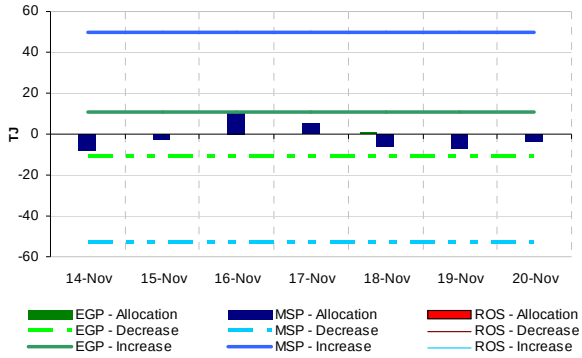
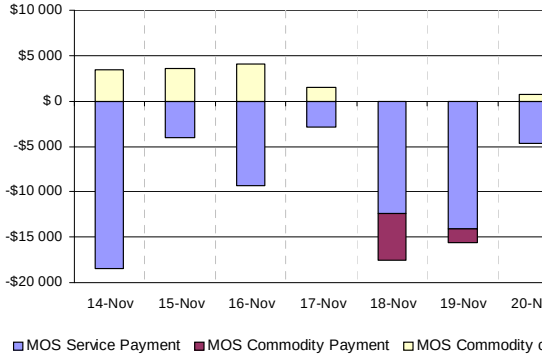


Figure S17b Sydney MOS payments / Charges



Source: http://www.aemo.com.au INT 663, 664, 665
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

Figure S18a – Adelaide MOS allocations

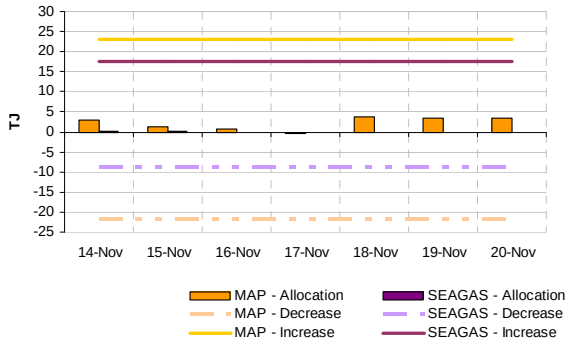
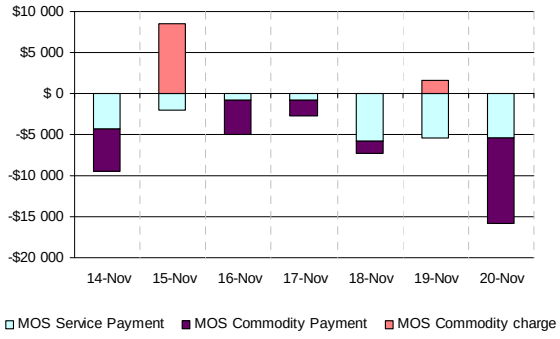


Figure S18b Adelaide MOS payments / Charges



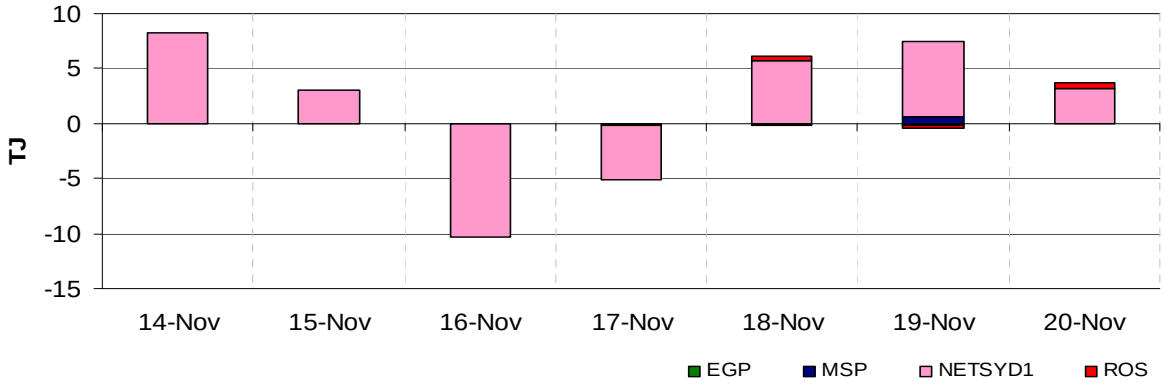
Source: http://www.aemo.com.au INT 663, 664, 665
MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

Deviations

Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule.

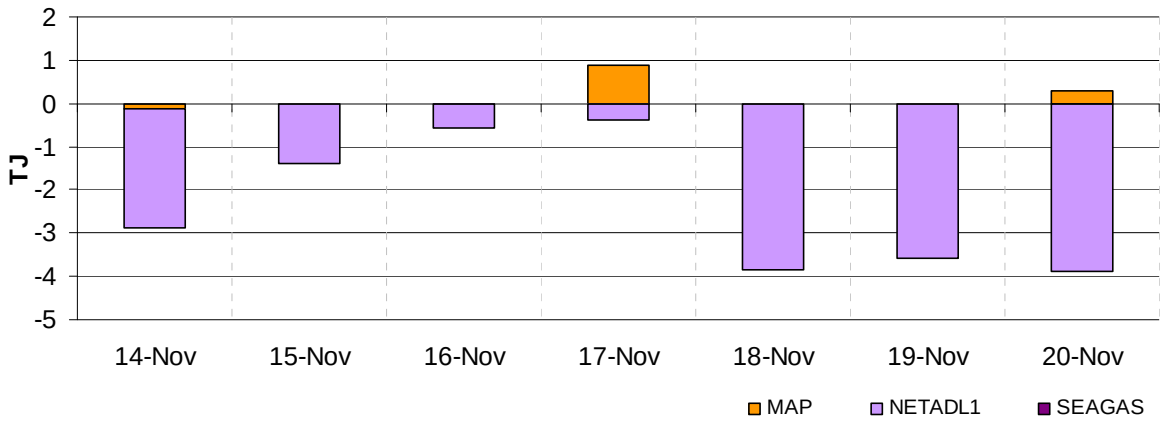
The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As discussed previously, figures S5 and S6 show allocated quantities versus scheduled. Where they differ, there is a deviation. Net deviations may lead to requirements for MOS services. Figures S19 and S20 show net deviations at the STTM hubs.

Figure S19 Net Deviations – Sydney Hub



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

Figure S20 Net Deviations – Adelaide Hub



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

Market Schedule Variations

When a shipper deviates from the ex ante schedule, it can submit a "market schedule variation" 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

	14 Nov - 20 Nov	7 Nov - 13 Nov	2010-11 Financial YTD*
Quantity (TJ)	7.12	4.48	4.78
Charges ($)	40.85	20.56	1756.92

*** 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

	14 Nov - 20 Nov	7 Nov - 13 Nov	2010-11 Financial YTD*
Quantity (TJ)	0.74	0.73	1.27
Charges ($)	10.01	5.63	28.11

*** 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	98	78	76	84	89	101	99	117	80	89	93	85
QLD Gas Pipeline	104	102	105	108	106	107	110	142	76	106	108	69
Roma to Brisbane Pipeline	154	180	184	184	186	180	136	219	82	172	179	163
South West QLD Pipeline	127	134	139	146	128	133	140	181	69	135	124	151
NSW/ACT												
Eastern Gas Pipeline	191	223	219	222	219	193	131	268	81	199	218	203
Moomba to Sydney Pipeline	98	133	167	162	145	159	131	420	55	142	230	232
NSW-VIC Interconnect^	4	18	24	24	26	17	20	92	9	19	9	-17
VIC												
Longford to Melbourne	310	391	426	357	418	431	305	1030	59	377	612	537
South West Pipeline	65	126	102	53	73	33	40	347	39	70	134	154
SA												
Moomba to Adelaide Pipeline	95	112	103	99	114	100	79	253	51	100	129	134
SEA Gas Pipeline	117	126	132	127	128	130	125	314	54	126	168	160
TAS												
Tasmanian Gas Pipeline	37	48	44	44	46	41	36	129	36	42	46	35

*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	78	87	96	97	77	77	77	140	70	84	98	90
Fairview	132	132	132	132	132	131	131	130	93	132	121	112
Kenya Gas Plant	52	51	52	52	51	52	52	160	38	52	61	38
Kincora	0	0	0	0	0	0	0	25	12	0	3	1
Kogan North	9	10	10	10	10	10	10	12	75	10	9	8
Peat	11	11	11	11	11	11	11	15	67	11	10	9
Rolleston	11	9	11	9	10	11	11	30	37	10	11	11
Scotia	30	30	30	30	30	30	21	29	89	29	26	20
Spring Gully	42	42	42	42	42	42	38	69	74	41	51	48
Strathblane	42	42	42	42	42	42	38	69	74	41	51	48
Taloona	26	26	26	26	26	26	23	42	74	26	31	29
Wallumbilla	8	8	8	8	8	8	8	20	44	8	9	10
Yellowbank	12	13	12	12	13	12	12	30	41	12	12	14
Talinga	70	72	72	61	64	70	73	81	67	69	54	
Moomba (SA/QLD)												
Moomba Gas Plant	177	211	201	222	244	241	178	430	70	211	303	312
Ballera	0	3	0	0	0	0	0	150	13	0	20	5
Eastern (VIC)												
Orbost Gas Plant	67	68	66	66	66	66	66	100	14	66	14	6
Lang Lang Gas Plant	50	51	50	50	32	50	50	70	69	48	48	56
Longford Gas Plant	423	518	541	560	593	570	408	1145	72	516	827	721
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	47	62	62	47	62	62	67	73	90	59	66	75
Otway Gas Plant	93	112	133	136	123	115	113	205	70	118	143	133
Iona Underground Gas Storage	54	90	61	52	72	33	40	440	23	57	99	103

*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)
14 Nov – 20 Nov	Average min.	20.0	17.8	10.9	11.0	11.3	8.3
	Average max.	27.4	23.6	22.5	20.3	23.1	18.0
7 Nov – 13 Nov	Average min.	18.8	17.6	10.3	15.1	15.3	11.0
	Average max.	26.9	26.0	25.3	25.8	24.8	20.6

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

14 Nov – 20 Nov	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	1.13	1.57	1.74	2.00	2.00	1.17
Mon	1.68	2.44	2.00	2.01	2.98	1.72
Tue	1.68	2.10	2.10	2.10	1.38	1.70
Wed	0.57	1.60	0.69	1.31	0.40	0.60
Thu	1.38	0.69	2.36	2.39	2.99	1.45
Fri	1.38	2.36	2.15	1.70	0.40	1.42
Sat	1.13	2.39	1.13	0.70	0.69	1.14

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	
14-Nov	**MP:**	353	358	357	363	364	
	AEMO:	387	388	388	384	395	
	MP as % of AEMO	91	92	92	94	92	**0**
15-Nov	**MP:**	474	485	486	487	486	
	AEMO:	485	492	505	499	503	
	MP as % of AEMO	98	98	96	97	97	**0**
16-Nov	**MP:**	510	504	503	500	499	
	AEMO:	547	507	507	503	502	
	MP as % of AEMO	93	99	99	99	100	**0**
17-Nov	**MP:**	441	437	435	435	435	
	AEMO:	457	441	441	427	423	
	MP as % of AEMO	96	99	99	102	103	**0**
18-Nov	**MP:**	497	485	502	506	506	
	AEMO:	510	506	528	546	548	
	MP as % of AEMO	97	96	95	93	92	**0**
19-Nov	**MP:**	473	472	476	475	475	
	AEMO:	491	490	490	501	474	
	MP as % of AEMO	96	96	97	95	100	**0**
20-Nov	**MP:**	367	369	370	371	373	
	AEMO:	377	361	353	348	366	
	MP as % of AEMO	97	102	105	107	102	**-1**

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