WEEKLY GAS MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

28 November – 4 December 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 and Adelaide hubs are shown in figure 1.

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

28 Nov – 4 Dec	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	1.11	0.62	1.91

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

STTM Gas Markets (Adelaide and Sydney)

Figure S3 shows that the average daily ex ante price for Sydney remained the same as the previous week and the average daily ex post price fell slightly compared to the previous week.

As shown in figure S4, both the average daily ex ante and ex post prices in Adelaide fell by $0.56/GJ compared to the previous week. On Friday the ex ante price fell to $0.59/GJ as a result of an increase of 11 TJ in $0/GJ offers on the Moomba to Adelaide Pipeline (MAP) compared to the previous day (when prices were above $2/GJ). The low ex ante price on this day saw 10 TJ of withdrawal bids (or backhaul) scheduled on the MAP. On the same day, the

ex post price fell to $0/GJ as a result of Adelaide hub demand being over forecast by around 10 TJ (see figures S6 and S20).

MOS Stacks — December to February

On 29 September, AEMO published the estimated maximum quantity of MOS[1] for each pipeline for the December 2010 to February 2011 period. Final offers to provide these services were published by AEMO on 16 November 2010.

Figures 2 to 5 compare MOS offers and requirements for the Sydney and Adelaide hubs, for the periods 1 December to 28 February and the initial MOS period (1 September to 30 November). MOS offers exceeded daily maximum MOS estimates at both hubs. Actual daily MOS requirements have not exceeded estimated maximum quantities since market start.[2]

The majority of the increase in offers on the EGP were priced above $30/GJ. The volume of increase MOS offers on the MAP fell by 3 TJ compared to the previous period, however there was an increase in offers in higher price bands.

Figure 2: MOS Offers & AEMO MOS estimate Sydney (1 September to 30 November)

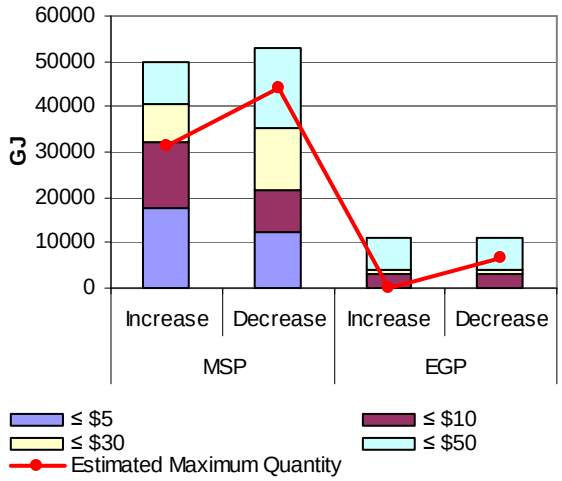


Figure 3: MOS Offers & AEMO MOS estimate Adelaide (1 September to 30 November)

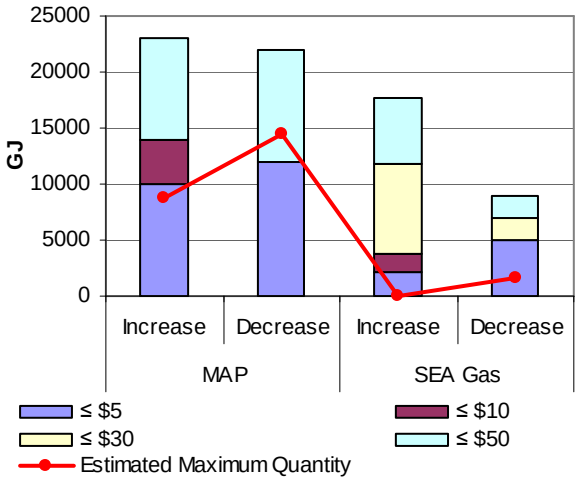


Figure 4: MOS Offers & AEMO MOS estimate Sydney (1 December to 28 February)

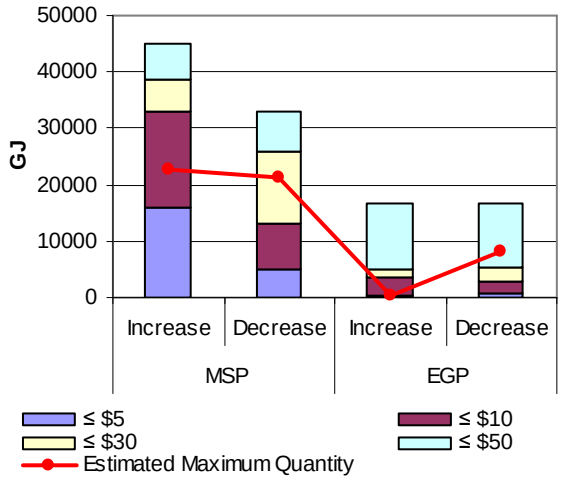
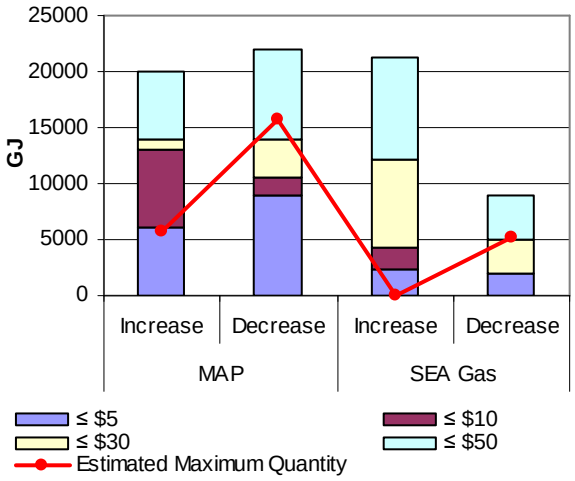


Figure 5: MOS Offers & AEMO MOS estimate Adelaide (1 December to 28 February)



[1] Market Operator Service (MOS) is described in detail on p 22 of this report.
[2] If the MOS quantity exceeds the capacity of the MOS stack then gas must be allocated to the overrun MOS.

Victorian Gas Market

Consistent with a slight reduction in demand in Victoria (as shown in figure N4), there was a slight reduction in injections (figure V3) compared to the previous week. Despite the reduction in demand, the average daily imbalance price increased slightly compared to the previous week (see figure V2).

AEMO issued a demand override of -3 TJ on Saturday. Supply demand point constraints were issued for withdrawals at SEA Gas every day of the week, and for withdrawals at Vic Hub on 1 December and injections at Bass Gas on 3 December.

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 increased slightly compared to the previous week, primarily driven by increased usage of gas for GPG. There were small changes in demand in other regions.

Overall average daily production increased slightly compared to the previous week. The largest percentage increase was 13 per cent or 29 TJ at Moomba. With the exception of increased flows on the Eastern Gas Pipeline catering for the increased GPG demand in NSW, pipeline flows remained relatively unchanged from the previous week.

Part A: National Gas Market Bulletin Board

Overview of pipeline and production flows

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

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

						QLD		
Average daily flows	**NSW**	**ACT**	**VIC**	**SA**	**TAS**	Brisbane	Mt Isa	Gladstone
28 Nov – 4 Dec	335	10	361	267	32	142	98	106
Financial Year-to-date 2010-11*	406	30	712	294	45	176	93	108
Financial Year-to-date 2009-10**	398	28	692	292	37	165	84	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
28 Nov – 4 Dec	84	2	157	19	172
Financial Year-to-date 2010-11*	83	17	167	30	158
Financial Year-to-date 2009-10**	87	46	165	21	150

^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.

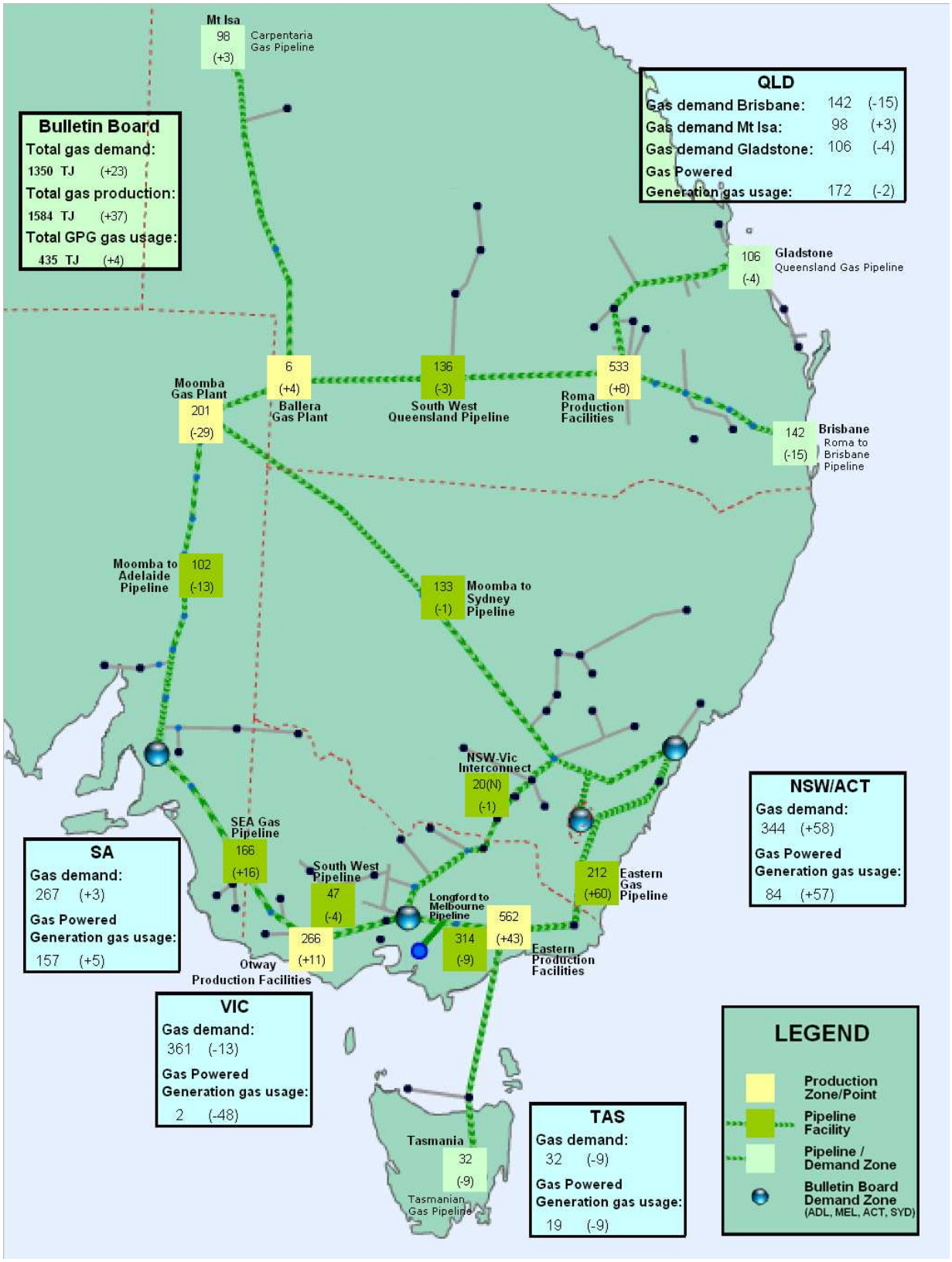
Figure N3: Daily average production flows (TJ) for each production zone

Average daily flows	Roma (QLD)	Eastern Victoria	Otway Basin (VIC)	Moomba (SA/QLD)
28 Nov – 4 Dec	533	562	266	207
Financial Year-to-date 2010-11*	546	859	304	314
Financial Year-to-date 2009-10**	441	768	307	307

*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)

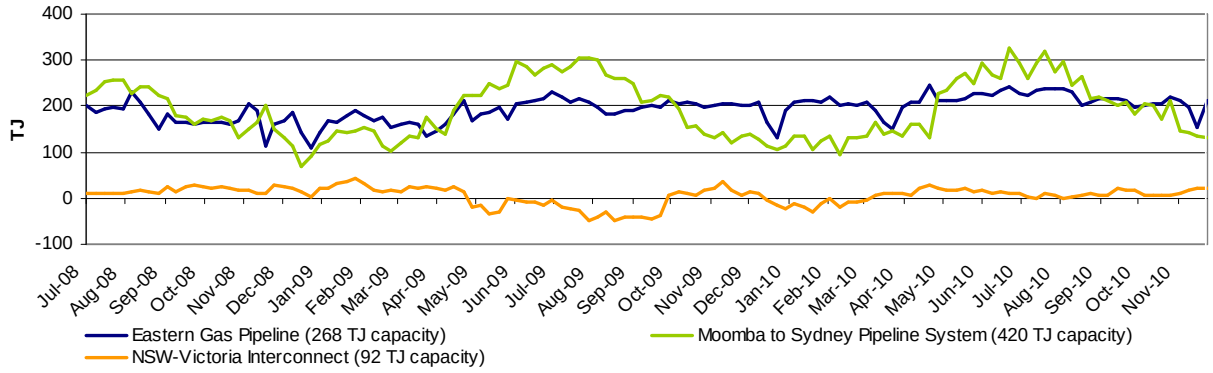


Source: Natural Gas Market Bulletin Board http://www.gasbb.com.au
Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
Numbers in brackets indicate a change in average daily flow from the previous week.

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.

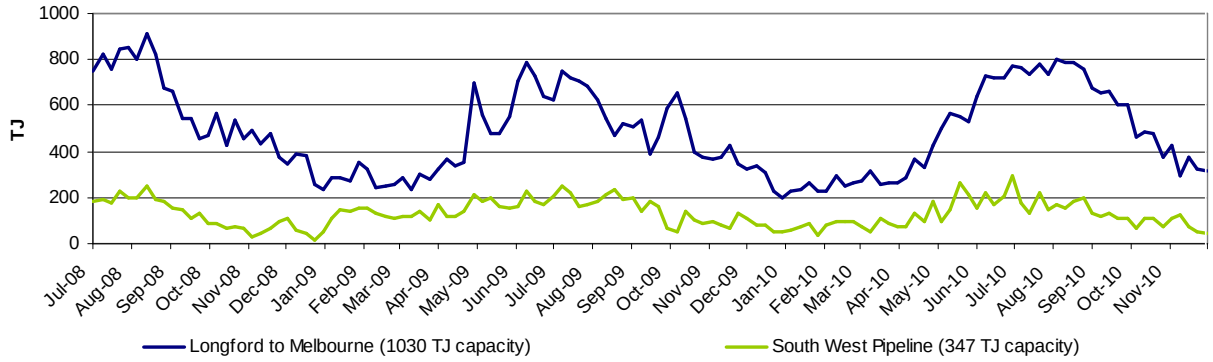
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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

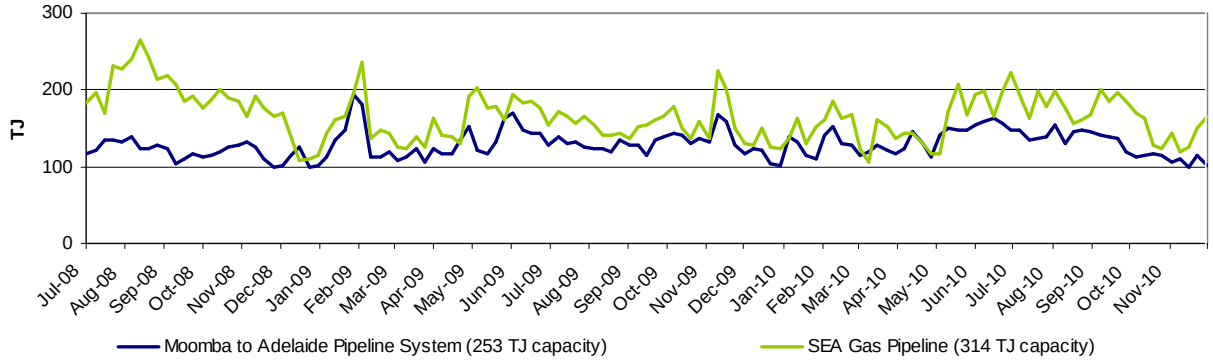
Notes: Negative flows on the NSW-Victoria Interconnect represent flows out of NSW into VIC.

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	NS	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	
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					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)

	28 Nov – 4 Dec	21 Nov – 27 Nov	2010-11 Financial YTD*	2009-10 Financial YTD**
Average daily price	1.11	1.06	1.87	*1.59*

28 Nov – 4 Dec	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	1.42	1.17	1.64	0.60	1.70	0.69	0.58

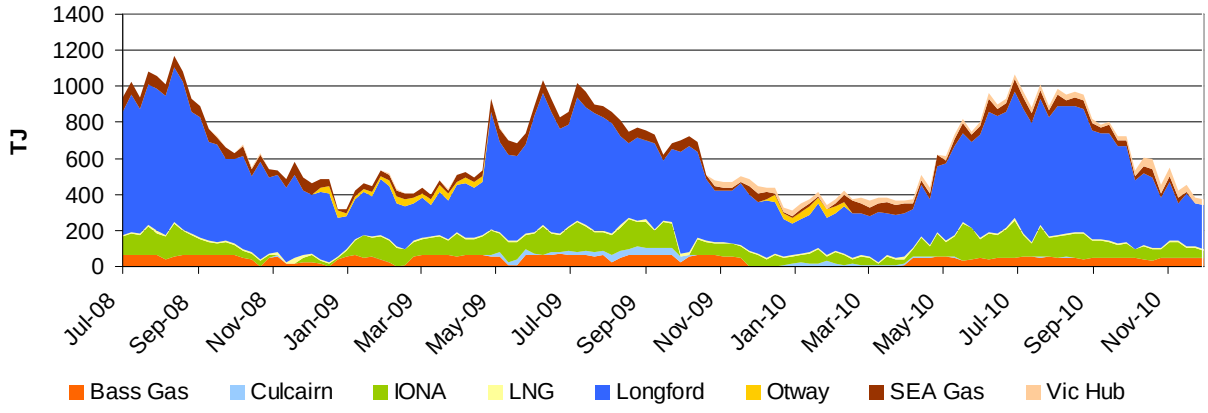
*Average daily imbalance weighted average price from 1 July 2010 to the current week (inclusive)
**Average daily imbalance weighted average price from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: http://www.aemo.com.au (INT 041)

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:	28 Nov – 4 Dec	21 Nov – 27 Nov	2010-11 Financial YTD*	2009-10 Financial YTD**
Culcairn	0	0	1	21
Longford	242	238	510	461
LNG	9	7	8	9
IONA	46	51	89	100
VicHub	30	36	33	10
SEAGas	1	0	37	49
Bass Gas	44	50	48	52
Otway	0	0	0	0
TOTAL	**371**	**383**	**726**	**701**

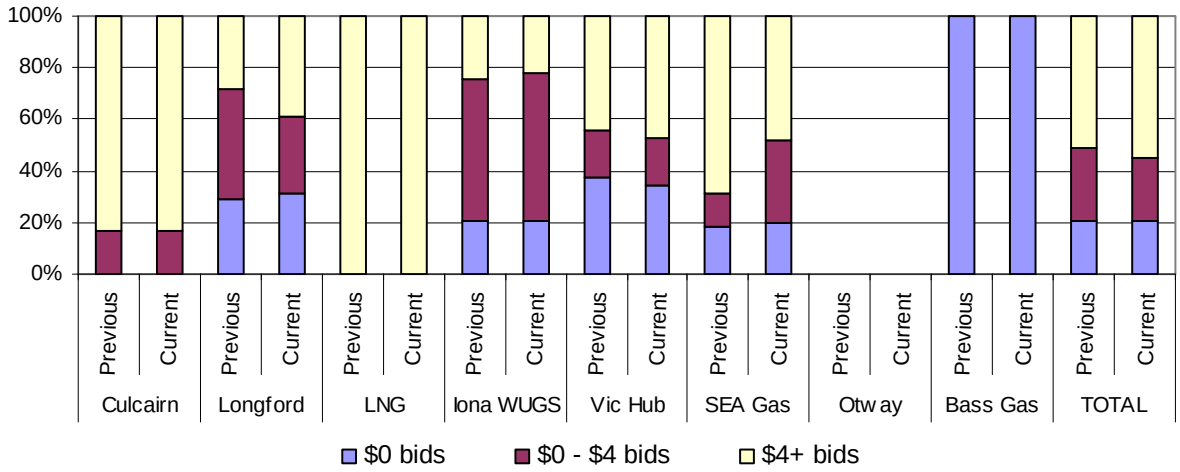


*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: http://www.aemo.com.au (INT 150)

Bidding Activity

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

Figure V4: Price structure of bids by injection points



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

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

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

Figure V5: Intra-day rebidding of gas injections

Injection Point:	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Culcairn							
Longford	AGL TRU	AGL TRU	AGL Origin TRU	Origin TRU	Origin TRU	AGL Origin TRU	AGL Origin TRU
LNG							
Iona	Origin APG	Origin TRU APG	Origin TRU	Origin TRU	Origin TRU	Origin Lumo	Origin
VicHub	AETV Lumo	AETV Lumo	AETV Lumo	AETV TRU Lumo	AETV Lumo	AETV Lumo	AETV Lumo
SEAGas			Simply	Simply	Simply	Simply	Simply
Bass Gas			Origin				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:	28 Nov – 4 Dec	21 Nov – 27 Nov	2010-11 Financial YTD*	2009-10 Financial YTD**
Ballarat	14	11	32	30
Geelong^	60	81	94	87
Gippsland	34	35	49	51
Melbourne	252	262	492	470
Northern	55	52	70	63
TOTAL	**415**	**441**	**737**	**701**

^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 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	1							S
EnergyAustralia	STTM User,Shipper	2	S	S					
Esso Australia Resources Pty Ltd	Shipper								
Lumo Energy Australia Pty Ltd	Shipper	1	S						
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		NS			
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	NS	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

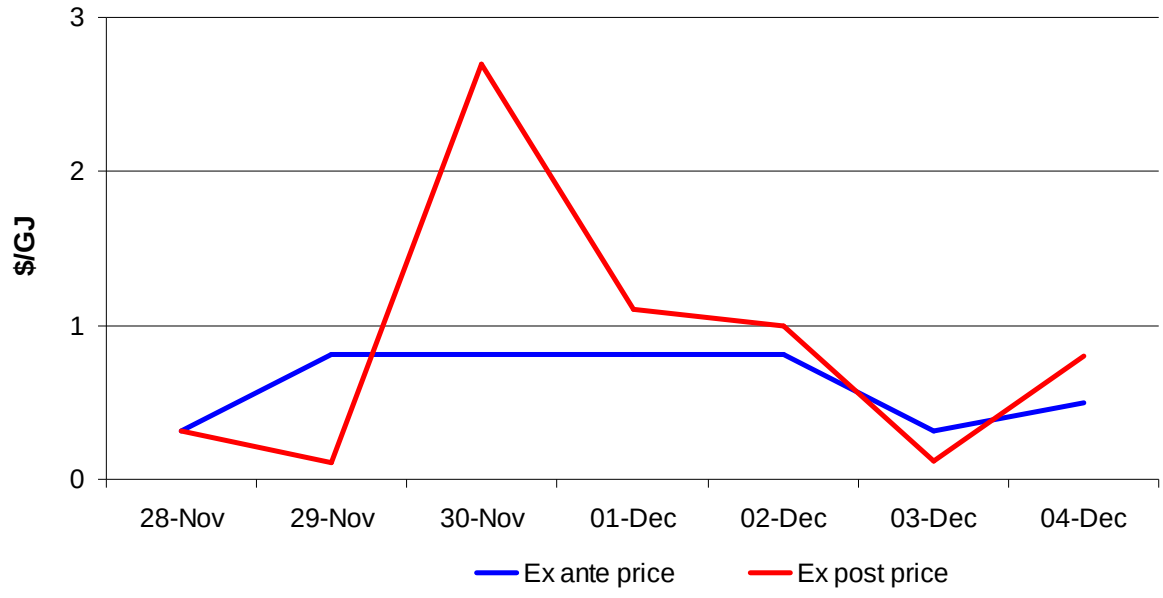
Ex ante and Ex post Market Prices

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)^

	28 Nov – 4 Dec	21 Nov – 27 Nov	2010-11 Financial YTD*
Ex ante price	0.62	0.62	3.25
Ex post price	0.88	1.06	10.55

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

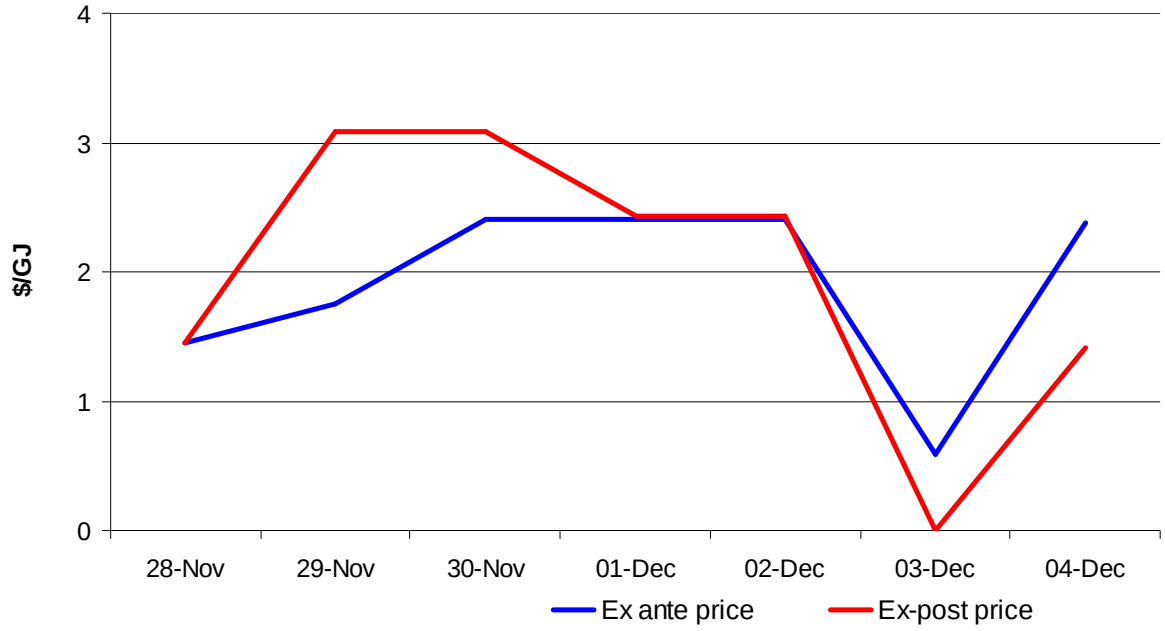


Source: http://www.aemo.com.au INT 651, 657

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

	28 Nov – 4 Dec	21 Nov – 27 Nov	2010-11 Financial YTD*
Ex ante price	1.91	2.47	2.77
Ex post price	1.99	2.55	2.84

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



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

Scheduled gas

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

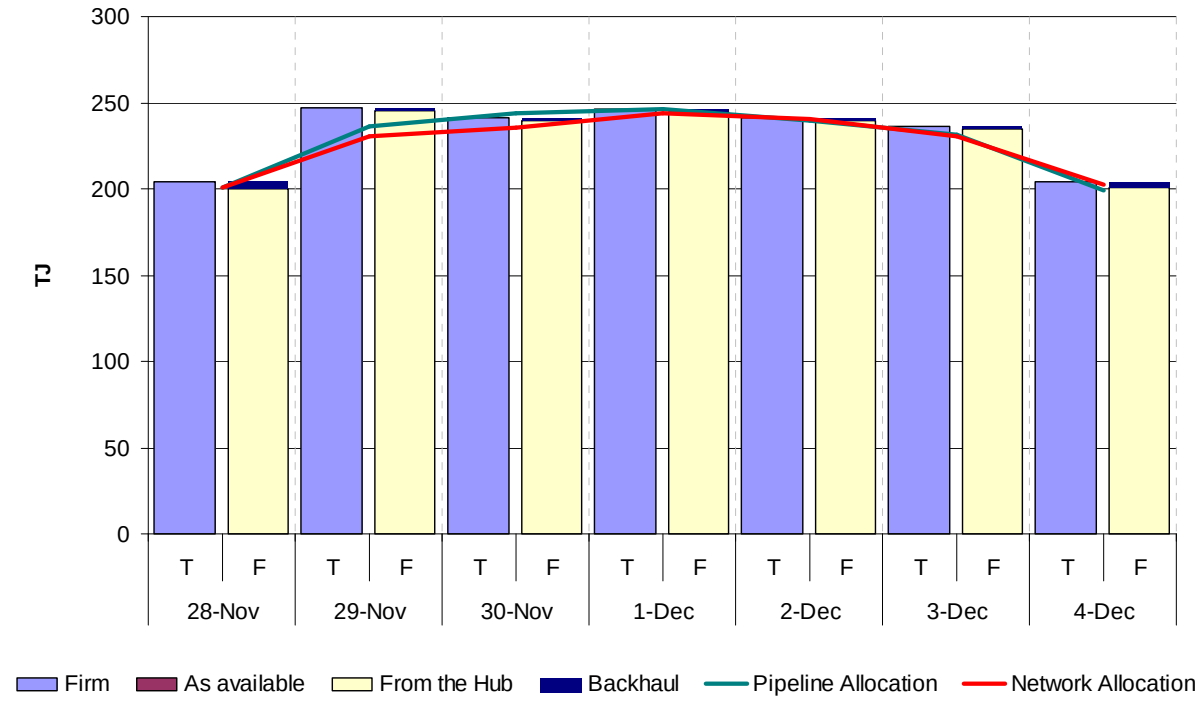
Gas can also be scheduled from the STTM hubs. This happens when Shippers "backhaul" gas from the hub or Users bid to take gas from the hub (including price taker bids).

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

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

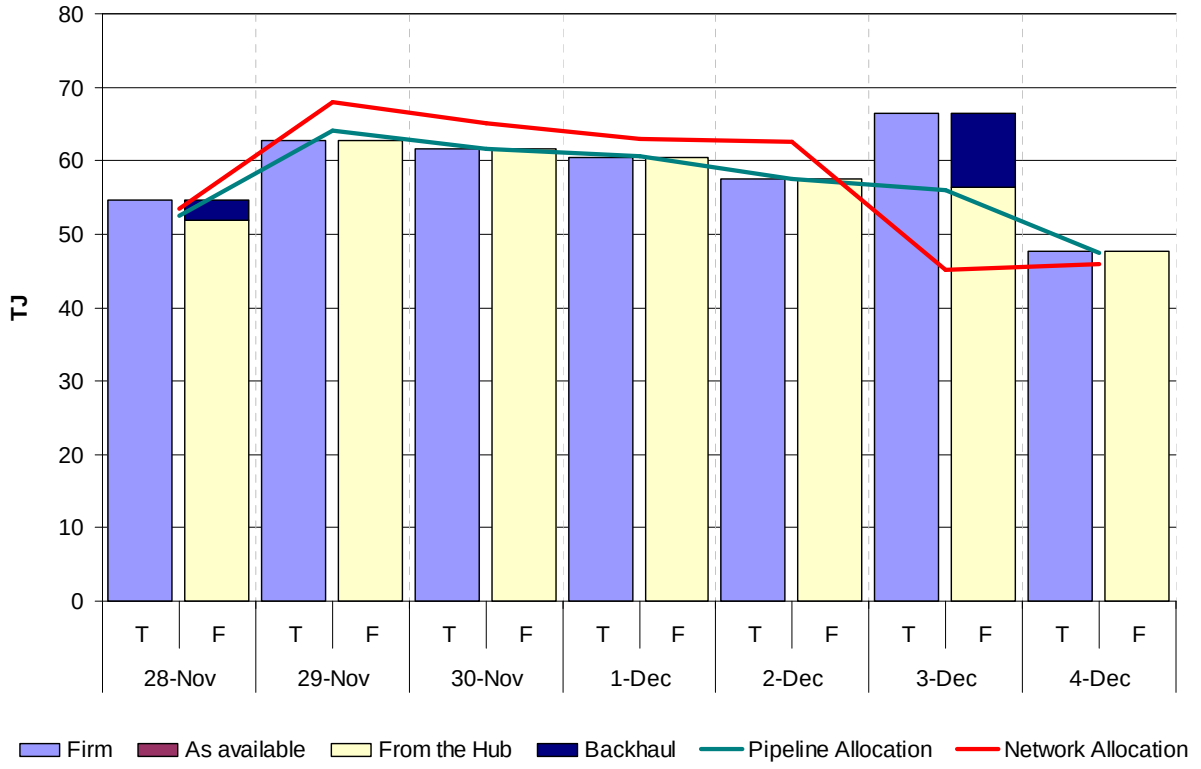
By comparing the level of the red line to the columns marked "F", it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked "T" shows how the actual flow of gas (allocation) compared to what was scheduled.

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



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

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



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

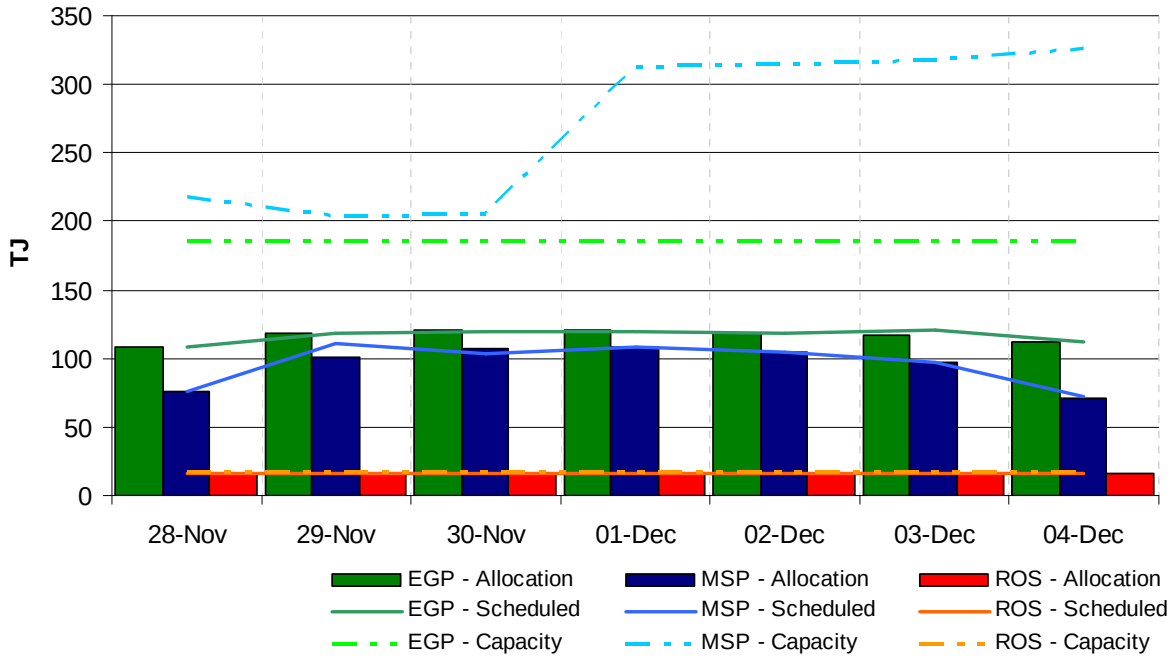
Pipeline Facility Allocations

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

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

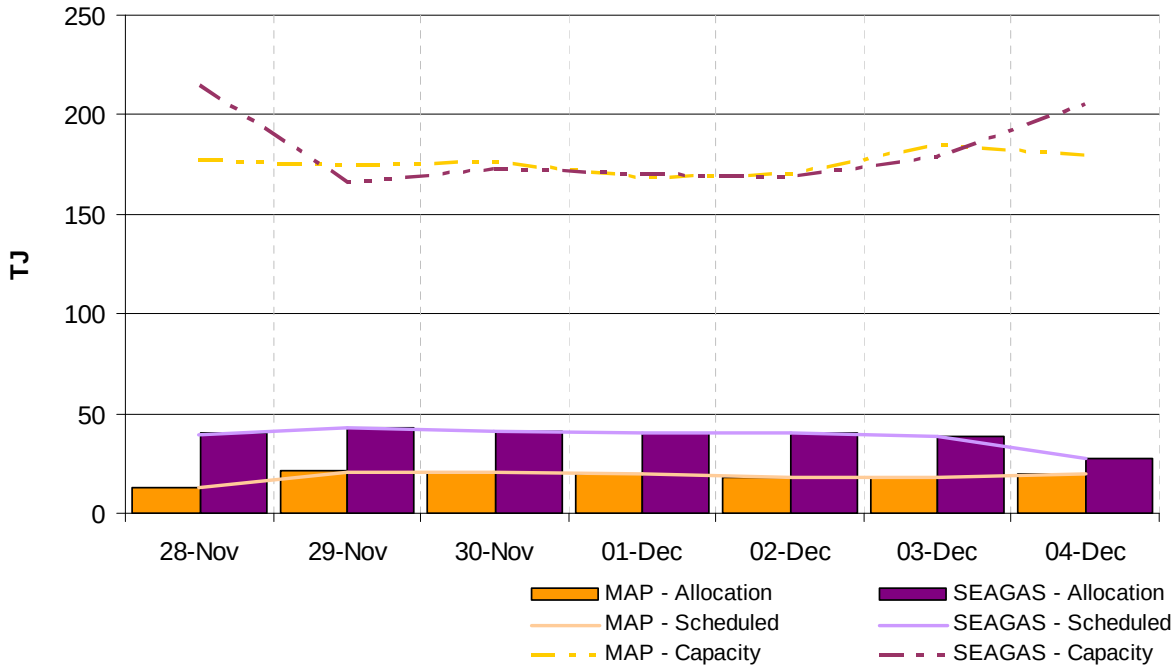
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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



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

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



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

Offers and Bids

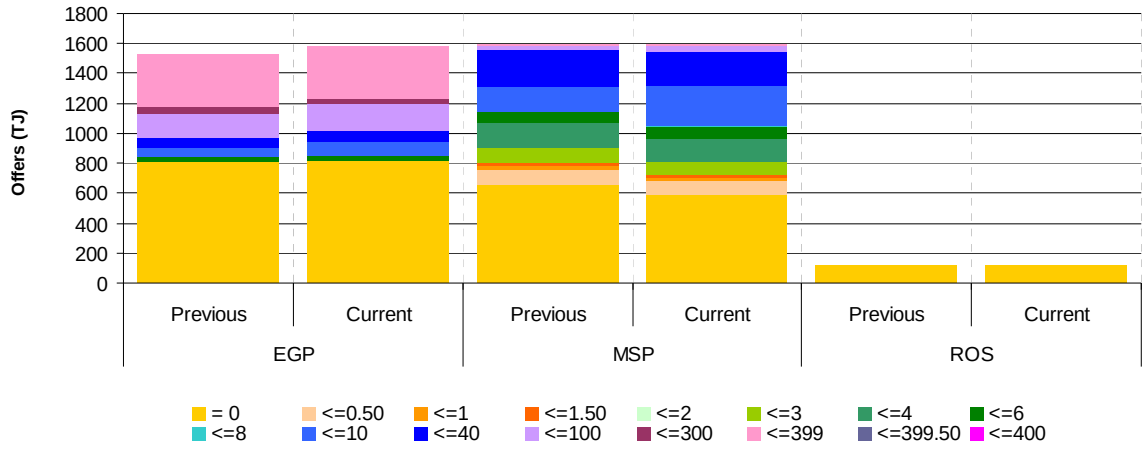
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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

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

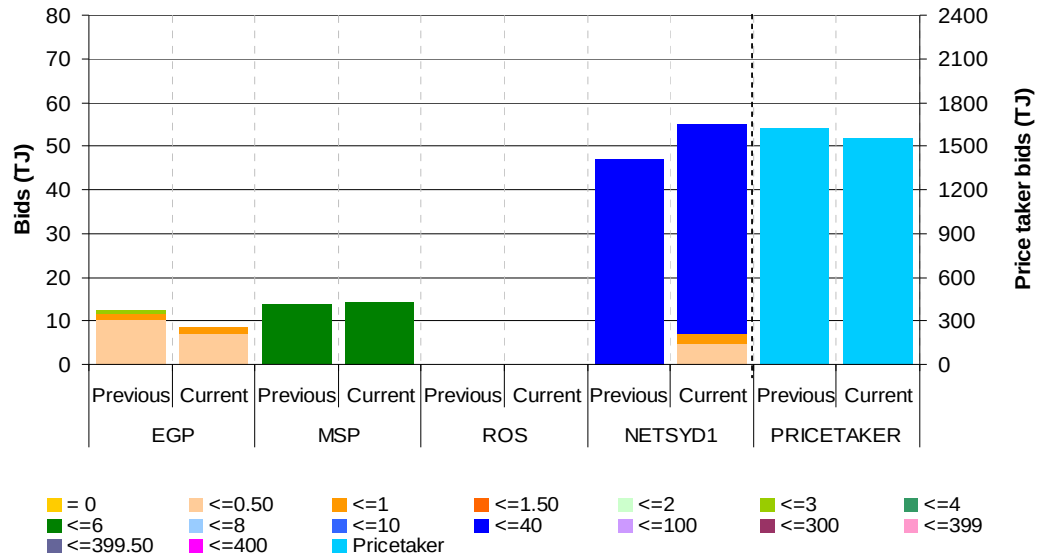
Because scheduling is price-driven, offers for lower-priced gas are scheduled ahead of offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

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



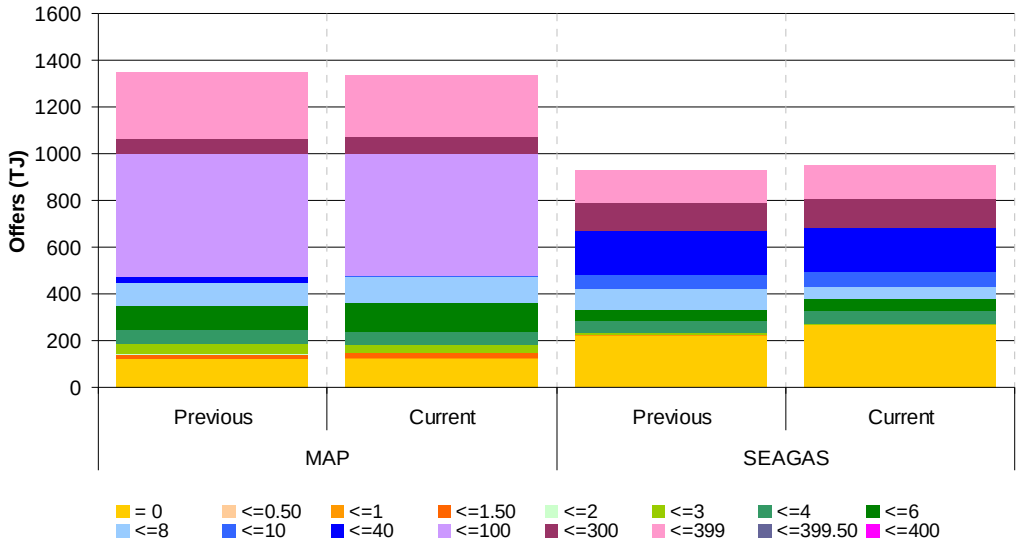
Source: http://www.aemo.com.au INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

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



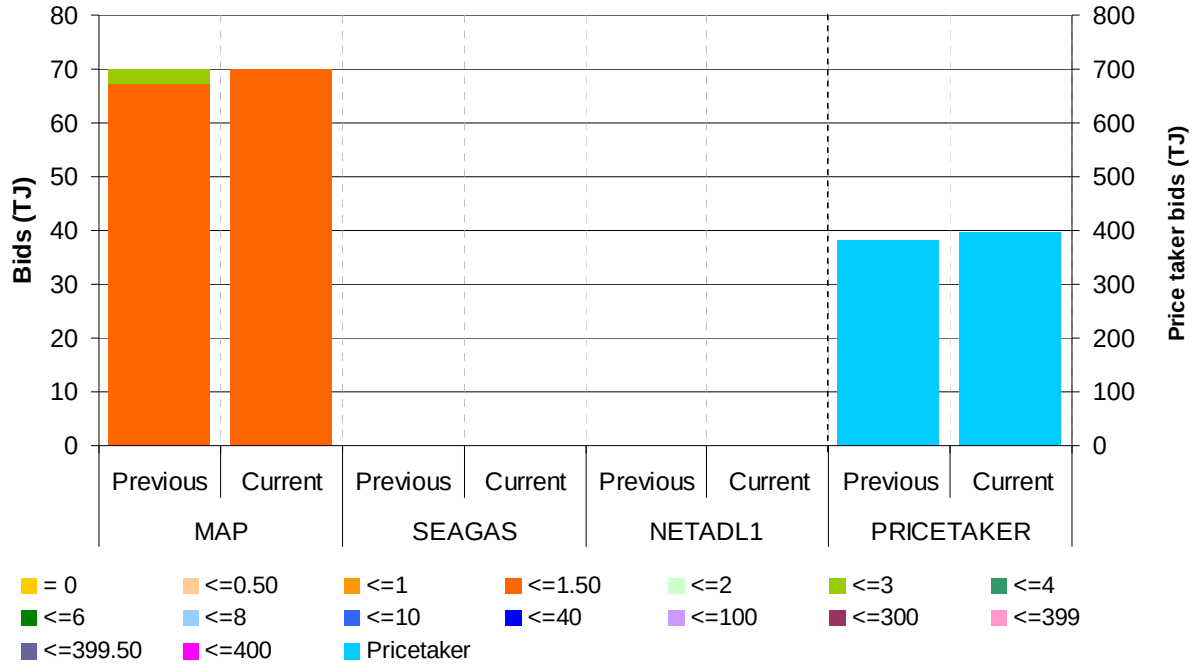
Source: http://www.aemo.com.au INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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



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

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



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

Re-offers and re-bids

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

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

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

Pipeline	Schedule	Sun	Mon	Tue	Wed	Thu	Fri	Sat
EGP	D-3 to D-2	BluSc EA SANTOS TRU	SANTOS TRU		AGL(ESM) AGL(WG) Country EA Lumo OneStl(NSW) TRU	EA Origin SANTOS TRU	EA Origin	EA OneStl(NSW) TRU
	D-2 to D-1	SANTOS	TRU	BluSc EA Lumo	BluSc EA SANTOS TRU	BluSc EA OneStl(NSW) Origin TRU	BluSc EA OneStl(NSW) SANTOS TRU	BluSc EA OneStl(NSW) SANTOS
MSP	D-3 to D-2	AGL(ESM) EA TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) AGL(WG) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) AGL(WG) Origin TRU
	D-2 to D-1	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA TRU	AGL(ESM) AGL(WG) Origin TRU	AGL(ESM) AGL(WG) 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 Lumo = Lumo Energy Australia Pty Ltd |
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

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

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

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	Simply				
	D-2 to D-1	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

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.

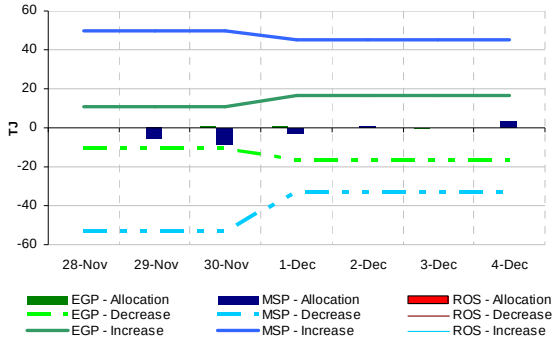
MOS offers are made by participants who have contracts with pipeline facilities to "park" gas (on the pipeline) or "loan" gas (from the pipeline). Based on these contracts, two types of MOS are offered: increase offers to increase flows on a pipeline to a hub; and decrease offers to decrease flows on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

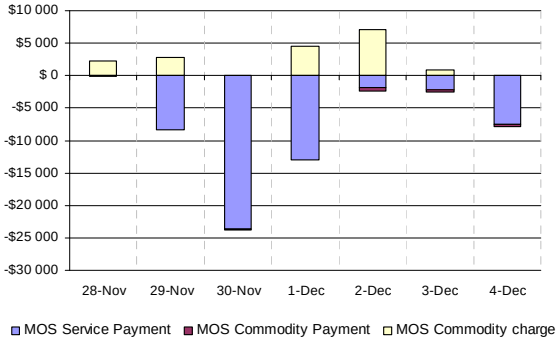
[3] Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule.

Figure S17 and S18 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). The figures also show MOS service payments and MOS commodity payments or charges. Payments fall below the horizontal axis and charges are displayed above the axis.

Figure S17: Sydney MOS allocations

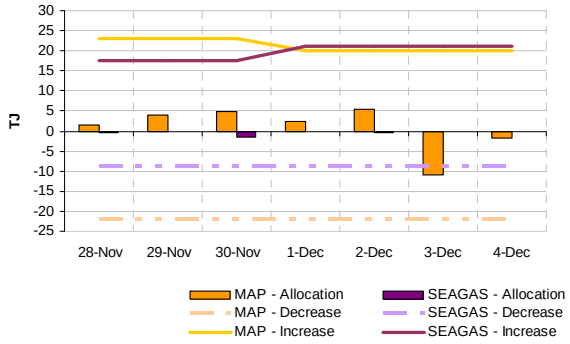


Sydney MOS payments / Charges

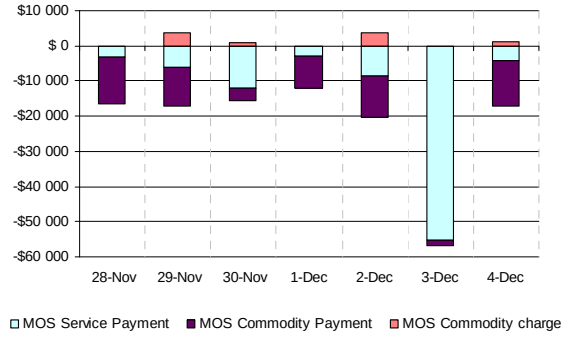


Source: http://www.aemo.com.au INT 663, 664, 665
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

Figure S18: Adelaide MOS allocations



Adelaide MOS payments / Charges

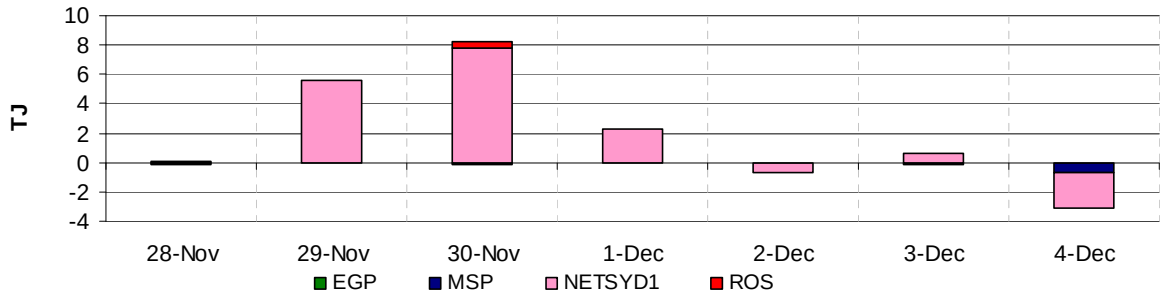


Source: http://www.aemo.com.au INT 663, 664, 665
MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

Deviations

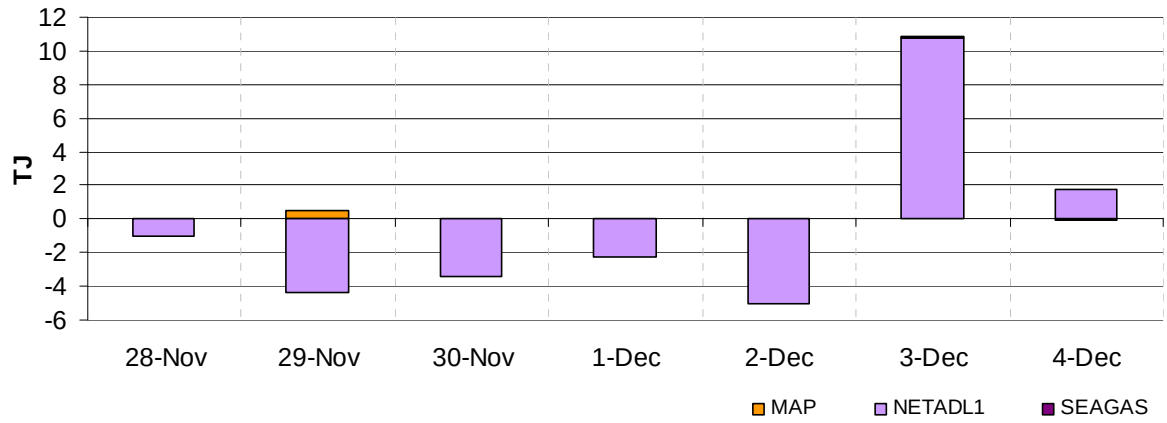
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

Figure S19: Net Deviations – Sydney Hub



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

Figure S20: Net Deviations – Adelaide Hub



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

Market Schedule Variations

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

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

Figures S21 and S22 show MSV quantities and charges at the STTM Hubs.

Figure S21: Average Daily Market Variations - Sydney Hub

	28 Nov – 4 Dec	21 Nov – 27 Nov	2010-11 Financial YTD*
Quantity (TJ)	4.52	5.30	4.80
Charges ($)	13.71	29.14	1501.16

*** 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

	28 Nov – 4 Dec	21 Nov – 27 Nov	2010-11 Financial YTD*
Quantity (TJ)	0.33	1.57	1.22
Charges ($)	0.25	79.28	29.83

*** 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	95	95	95	98	99	99	103	117	80	98	93	84
QLD Gas Pipeline	109	102	101	105	104	108	110	142	76	106	108	69
Roma to Brisbane Pipeline	115	144	152	157	158	146	122	219	80	142	176	165
South West QLD Pipeline	147	118	123	109	138	151	167	181	69	136	125	150
NSW/ACT												
Eastern Gas Pipeline	191	217	219	223	219	216	196	268	80	212	215	203
Moomba to Sydney Pipeline	106	144	144	152	146	134	105	420	53	133	221	223
NSW-VIC Interconnect^	21	21	18	24	26	25	6	92	11	20	10	-14
VIC												
Longford to Melbourne	373	364	327	311	317	259	246	1030	57	314	585	520
South West Pipeline	35	49	49	47	46	48	55	347	36	47	126	151
SA												
Moomba to Adelaide Pipeline	87	100	103	103	107	107	103	253	50	102	127	133
SEA Gas Pipeline	125	149	176	187	196	175	155	314	53	166	167	158
TAS												
Tasmanian Gas Pipeline	37	39	39	11	14	43	42	129	35	32	45	37

*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: 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	89	83	83	89	103	102	102	140	70	93	97	91
Fairview	132	130	132	132	132	132	129	130	93	131	122	113
Kenya Gas Plant	38	36	50	40	48	52	49	160	37	45	60	41
Kincora	0	0	0	0	5	6	0	25	12	2	3	1
Kogan North	10	10	11	11	10	11	10	12	76	10	9	8
Peat	7	10	10	10	6	6	5	15	66	8	10	9
Rolleston	10	11	9	10	11	10	10	30	37	10	11	11
Scotia	20	29	30	30	30	30	30	29	89	29	26	21
Spring Gully	42	42	44	44	44	44	44	69	73	43	50	47
Strathblane	42	42	44	44	44	44	44	69	73	43	50	47
Taloona	25	26	27	27	27	27	27	42	73	27	31	29
Wallumbilla	8	8	8	8	8	8	8	20	44	8	9	11
Yellowbank	12	13	12	12	12	12	12	30	41	12	12	14
Talinga	72	72	75	81	75	63	63	90	62	72	55	
Moomba (SA/QLD)												
Moomba Gas Plant	147	234	220	217	205	208	175	430	69	201	295	301
Ballera	0	15	7	18	0	0	0	150	13	6	19	6
Eastern (VIC)												
Orbost Gas Plant	64	64	64	60	60	58	58	100	19	61	19	8
Lang Lang Gas Plant	50	50	57	51	49	13	37	70	69	44	48	51
Longford Gas Plant	416	523	486	435	469	453	421	1145	69	458	792	708
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	37	47	62	62	62	62	62	73	90	57	65	76
Otway Gas Plant	160	194	151	113	172	178	56	205	70	146	143	131
Iona Underground Gas Storage	46	47	49	96	66	67	73	440	22	63	95	100

*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)

^ These figures were submitted in error as gigajoules (GJ) rather than terajoules (TJ) by Lang Lang gas plant, and have been modified by the AER as TJs.

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)
28 Nov – 4 Dec	Average min.	19.8	18.2	13.8	15.7	15.7	12.4
	Average max.	26.2	22.6	20.8	25.5	26.7	20.3
21 Nov – 27 Nov	Average min.	17.8	17.6	9.5	17.3	19.4	12.4
	Average max.	26.4	24.7	26.7	27.4	29.9	21.9

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

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

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

28 Nov – 4 Dec	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	1.39	0.58	2.10	2.78	2.80	1.42
Mon	1.15	1.59	1.59	1.99	2.45	1.17
Tue	1.67	0.67	0.58	0.58	1.60	1.64
Wed	0.58	0.61	1.56	0.61	0.73	0.60
Thu	1.68	2.00	2.10	2.10	1.99	1.70
Fri	0.70	0.58	0.59	0.59	0.58	0.69
Sat	0.58	0.26	0.68	0.37	2.09	0.58

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	
28-Nov	**MP:**	388	402	412	415	415	**0**
	AEMO:	402	408	433	436	461	
	MP as % of AEMO	96	99	95	95	90	
29-Nov	**MP:**	410	408	408	408	408	**0**
	AEMO:	460	464	459	451	441	
	MP as % of AEMO	89	88	89	91	92	
30-Nov	**MP:**	387	388	388	387	387	**0**
	AEMO:	403	401	401	392	391	
	MP as % of AEMO	96	97	97	99	99	
1-Dec	**MP:**	383	381	381	381	381	**0**
	AEMO:	389	385	387	394	393	
	MP as % of AEMO	98	99	99	97	97	
2-Dec	**MP:**	398	390	390	390	390	**0**
	AEMO:	399	399	386	385	383	
	MP as % of AEMO	100	98	101	101	102	
3-Dec	**MP:**	353	351	351	351	351	**0**
	AEMO:	368	366	351	352	347	
	MP as % of AEMO	96	96	100	100	101	
4-Dec	**MP:**	291	284	289	283	287	**-3**
	AEMO:	310	288	292	285	280	
	MP as % of AEMO	94	99	99	99	103	

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

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

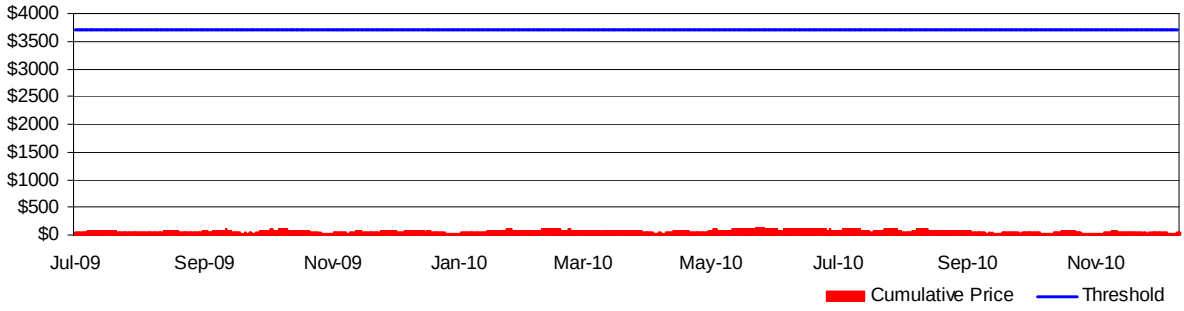
Figure A6 shows "unaccounted for gas" as a percentage of the gas used on a 28-day rolling average basis. A positive "unaccounted for gas" indicates more gas purchased than sold, and negative indicates more gas is purchased from a supplier than sold to customers. The difference may be caused by measurement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

Figure A6: Unaccounted for Gas – 28 Day Rolling Average

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

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

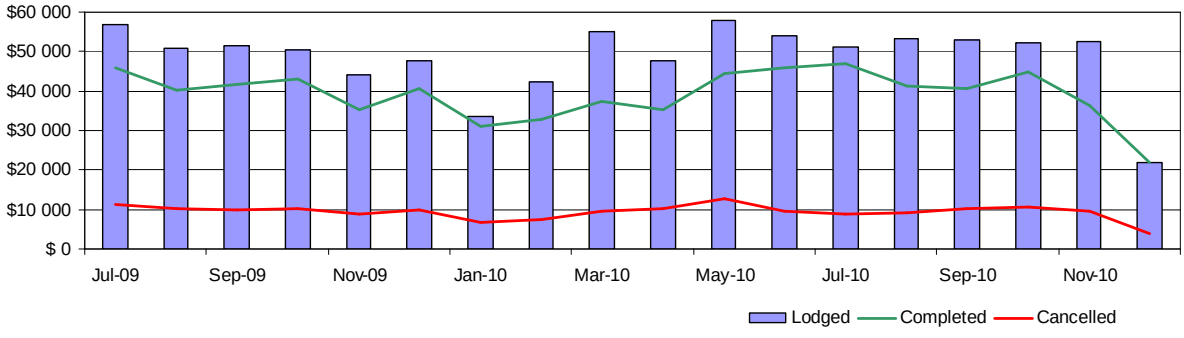
Figure A7: Cumulative Price and Threshold



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

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

Figure A8: Customer Transfers



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