

16 January – 22 January 2011

## Preface

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

The AER is responsible for monitoring and enforcing compliance with Part 20 of the National Gas Rules 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 [aer inquiry@ aer.gov.au](mailto:aer inquiry@ aer.gov.au), with the subject title 'Comments on weekly gas report'.

## Summary

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

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

16 Jan – 22 Jan	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
<b>Average Price</b>	2.61	1.99	2.75

\* weighted average daily imbalance price

\*\* ex ante market price

## **STTM Gas Markets (Adelaide and Sydney)**

Figure S3 shows that weekly average ex ante and ex post prices were higher in Sydney this week than the previous week. The average ex post price was higher than the average ex ante price, mainly as a result of the ex post price was reaching \$3.33/GJ on Thursday 20 January compared to the ex ante price of \$1.42/GJ. The higher ex post price was reflective of the volume of network allocations (network demand) being higher than the volume of gas scheduled into the network by around 8 TJ (as shown in figure S5 and S19).

As shown in figure S3, the weekly average ex ante price in Adelaide was slightly higher this week than the previous week, while the weekly average ex post price was slightly lower than the previous week. Ex ante and ex post prices were closely aligned in the Adelaide hub this week.

## **Victorian Gas Market**

Average daily injections (see figure V3) were slightly lower than the previous week, in line with lower demand in Victoria than the previous week (see figure N4). Despite slightly lower demand, at \$2.61/GJ, the average daily price was slightly higher than last week (\$2.54/GJ).

Figure V1 shows that for the 6 am gas day schedule the number of participants with injection bids scheduled on the Declared Transmission System (DTS) at Iona increased from one to two, with Origin along with TRU Energy having bids cleared on various days during the current week. However, figure V3 shows that overall physical injections were 0 TJ at Iona, down from 2 TJ the previous week. This indicates that although injection bids were scheduled at Iona across the week, these bids were offset by larger quantity withdrawal bids scheduled simultaneously with the net effect being that there were zero actual injections from Iona this week. Average daily injections at all other system injection points were largely unchanged from the previous week (see figure V3).

AEMO did not issue any demand overrides this week. Supply demand point constraints were issued for withdrawals at SEA Gas on Sunday, Monday, Wednesday and Thursday this week.

## **National Gas Market Bulletin Board**

Figure N4 shows this week's total gas demand, gas production and GPG usage across the Bulletin Board was lower than the previous week. The only region with higher demand than the previous week was Mt Isa (4 TJ or 4 per cent).

While production was down in Moomba and the Victorian plants this week, production increased in both Queensland plants with Ballera production plant back online. While flows were higher on the Carpentaria Gas Pipeline (which flows into Mt Isa) compared to the previous week, flows on all other pipelines were lower than the previous week.

Total average daily gas powered generation usage was 113 TJ (or 19 per cent) lower than the previous week. This was largely due to average daily decreases of 39 TJ and 43 TJ in New South Wales and Victoria respectively.

Both the Kincora and Wallumbilla plants in the Roma region (QLD) did not produce any gas for the current week. Daily production capacity outlook at the Kincora plant was also down to 10 TJ from 12 January to 14 January due to the recent flooding in Queensland.

### *Roma to Brisbane pipeline – reduced capacity*

As discussed in last week's Gas Market Analysis report, part of the Roma to Brisbane Pipeline (RBP) in Queensland sustained damage during recent floods in south east Queensland. The

AER understands that the flood damage includes a leak on the 10 inch pipeline of the RBP, which resulted in an unplanned outage on the pipeline. The damage was first discovered by the pipeline operator on Friday 14 January.

From the 16 January gas day, the Bulletin Board showed that the pipeline flow capacity had been reduced from 219 TJ/day to approximately 170 TJ/day. On Tuesday 18 January, forecast shipper nominations on the RBP exceeded the available capacity on the pipeline, as provided on the Bulletin Board. This meant that a small amount of total gas nominations (approximately 3 to 5 per cent) were not able to be met on this gas day.

The AER will continue to seek further information in relation to this matter and provide further updates in future Weekly Gas Market Analysis reports.

# Part A: National Gas Market Bulletin Board

## Overview of pipeline and production flows

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

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

Average daily flows	NSW	ACT	VIC	SA	TAS	QLD		
						Brisbane	Mt Isa	Gladstone
16 Jan – 22 Jan	327	6	386	294	43	153	101	105
Financial Year-to-date 2010-11*	387	25	630	286	45	172	95	109
Financial Year-to-date 2009-10**	376	23	607	283	37	166	86	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
16 Jan – 22 Jan	94	30	189	27	148
Financial Year-to-date 2010-11*	86	20	165	30	157
Financial Year-to-date 2009-10**	84	46	163	22	158

^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)
16 Jan – 22 Jan	493	662	158	226
Financial Year-to-date 2010-11*	537	792	278	289
Financial Year-to-date 2009-10**	444	705	290	287

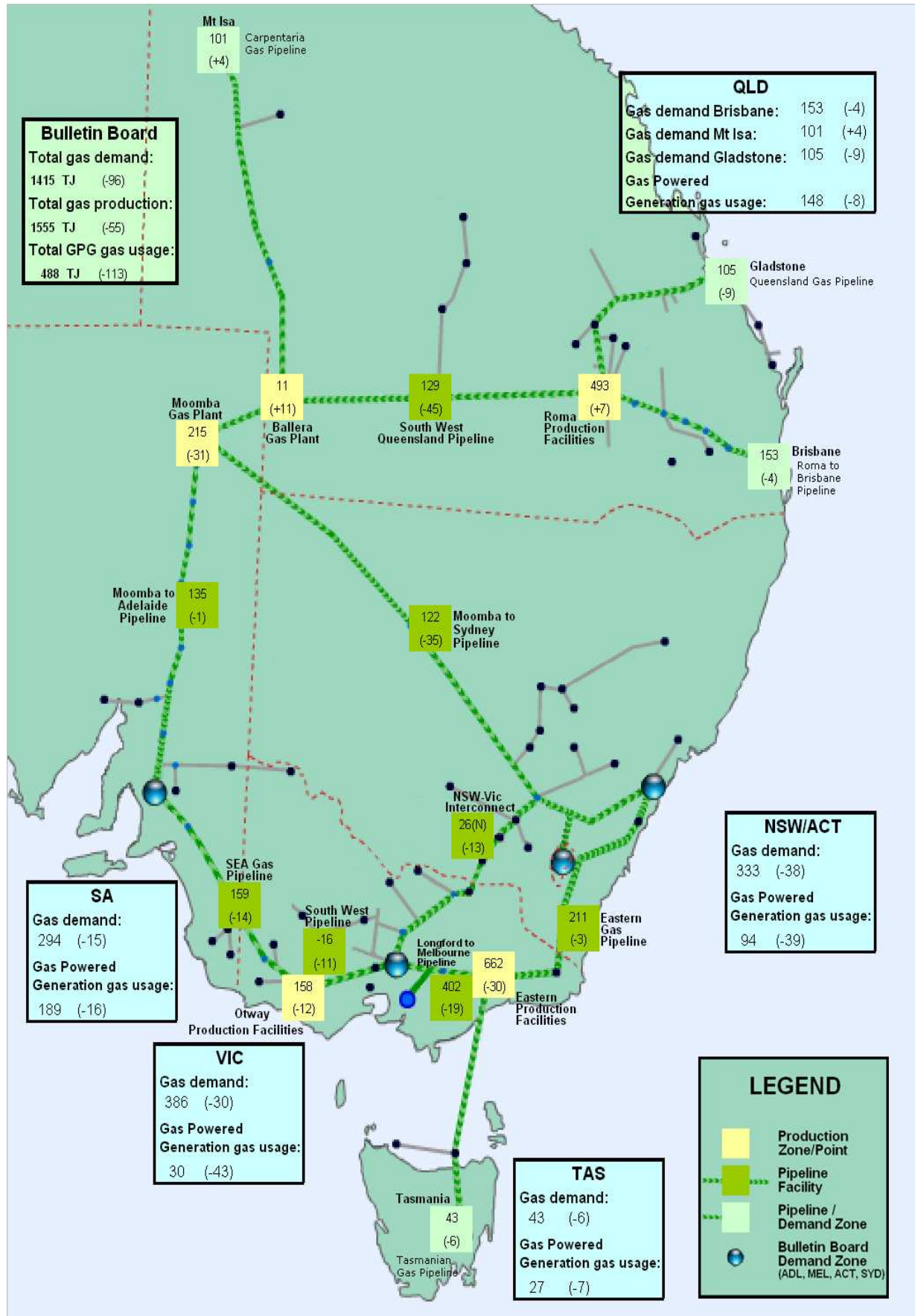
\*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)

\*\*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)**

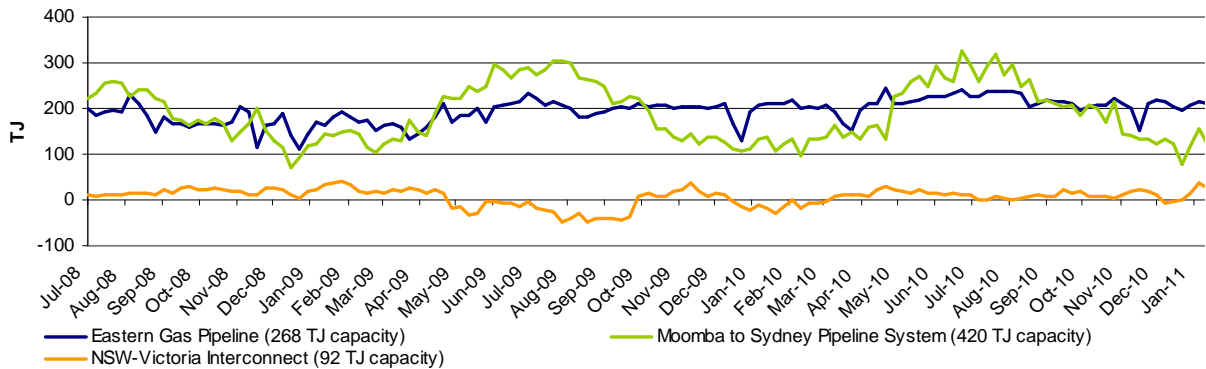


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>  
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).  
 Numbers in brackets indicate a change in average daily flow from the previous week.

## 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.

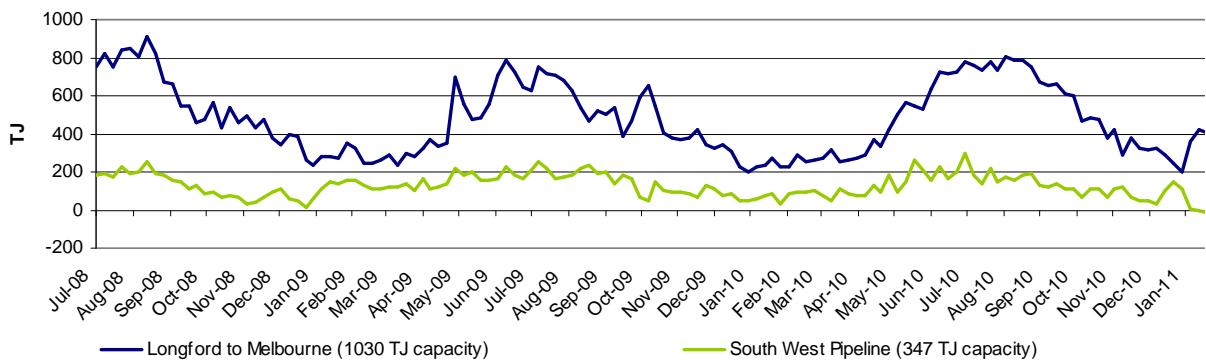
**Figure N5: Average daily flows (TJ) into NSW/ACT demand region**



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

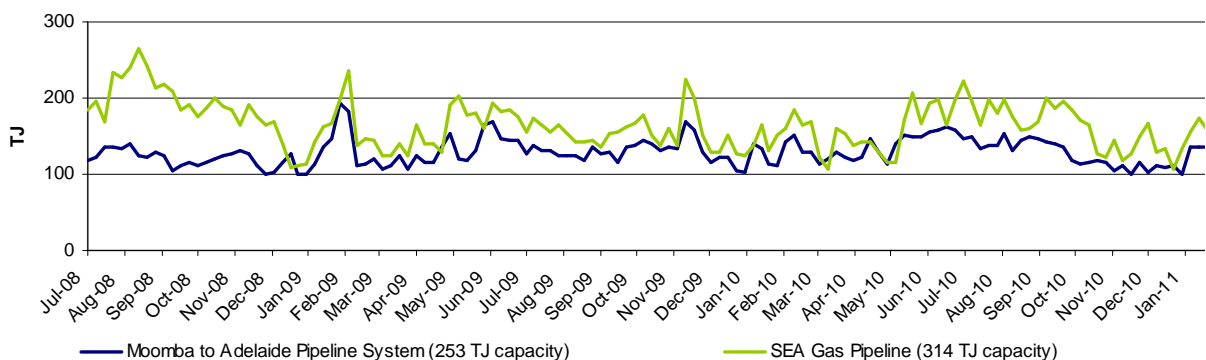
Notes: Negative flows on the NSW-Victoria Interconnect represent flows out of NSW into VIC.

**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<sup>^</sup>**

Market Participant	Participant type	No. of injection / withdrawal bid points	Injection bids in the VPTS								Withdrawal bids in the VPTS				
			BassGas	Culcairn	IONA	LNG	Longford	SEA Gas	VicHub	Otway	Culcairn	IONA	SEA Gas	VicHub	
AETV Power	Trader	1								NS					S
AGL (Qld)	Retailer	1				NS									
AGL	Retailer	4			NS	NS	S			NS		S			
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	2					S			NS					NS
International Power	Transmission Customer	1											S		
Lumo Energy	Retailer	4		NS		NS		S		S		NS			
Lumo Energy	Trader	2			NS					NS			S		NS
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	1								S					
Simply Energy	Retailer	4			NS	NS	S	NS				NS			
TRU Energy	Retailer	3			S	NS	S					S			
Visy Paper	Distribution Customer	2					S				S				

<sup>^</sup>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)**

	16 Jan – 22 Jan	9 Jan – 15 Jan	2010-11 Financial YTD*	2009-10 Financial YTD**
<b>Average daily price</b>	2.61	2.54	1.89	1.58

16 Jan – 22 Jan	Sun	Mon	Tue	Wed	Thu	Fri	Sat
<b>Daily price</b>	2.05	2.09	2.83	2.79	2.82	2.83	2.84

\*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)

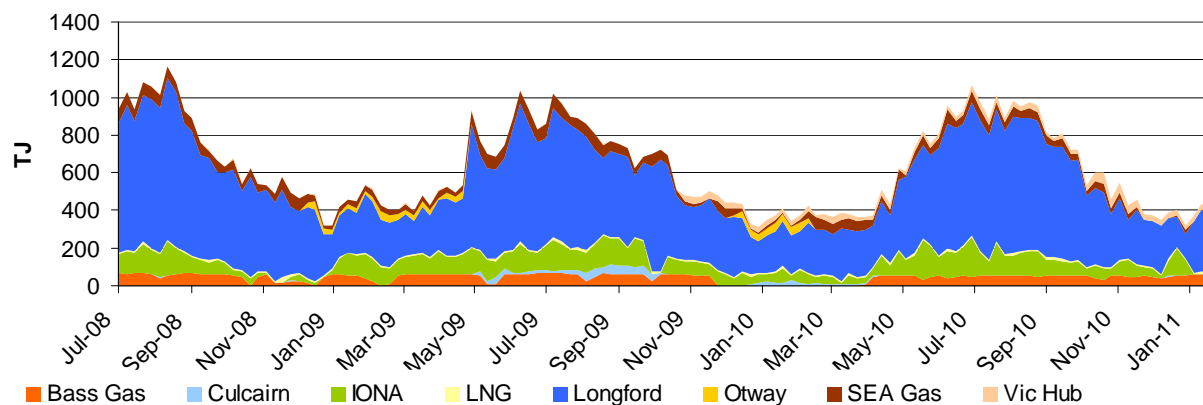
Source: <http://www.aemo.com.au> (INT 041)

## 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:	16 Jan – 22 Jan	9 Jan – 15 Jan	2010-11 Financial YTD*	2009-10 Financial YTD**
<b>Culcairn</b>	0	0	1	18
<b>Longford</b>	317	328	445	406
<b>LNG</b>	9	10	9	8
<b>IONA</b>	0	2	79	88
<b>VicHub</b>	26	31	32	14
<b>SEAGas</b>	7	4	30	41
<b>Bass Gas</b>	60	62	49	40
<b>Otway</b>	5	0	0	8
<b>TOTAL</b>	<b>424</b>	<b>437</b>	<b>645</b>	<b>624</b>



\*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)

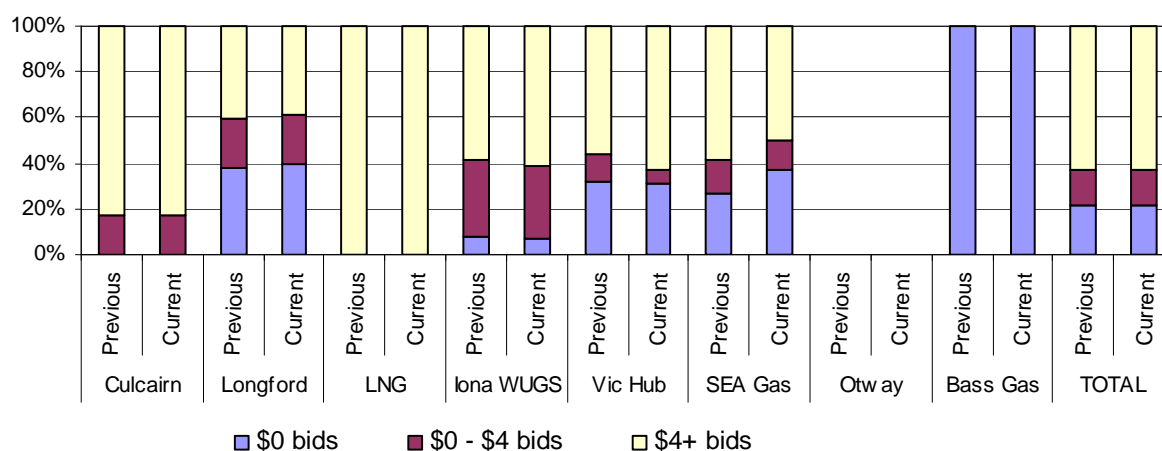
Source: <http://www.aemo.com.au> (INT 150)



## 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
<b>Culcairn</b>		CE		CE	CE		
<b>Longford</b>	Origin TRU	AGL Origin	AGL TRU	AGL TRU	AGL Origin TRU	AGL TRU	AGL TRU
<b>LNG</b>							
<b>Iona</b>	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU
<b>VicHub</b>	AETV	AETV Lumo	AETV Lumo	AETV Lumo	AETV Lumo	AETV Lumo	AETV
<b>SEAGas</b>					Origin	Origin	
<b>Bass Gas</b>							

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

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

## 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**

<b>System withdrawal zone:</b>	<b>16 Jan – 22 Jan</b>	<b>9 Jan – 15 Jan</b>	<b>2010-11 Financial YTD*</b>	<b>2009-10 Financial YTD**</b>
<b>Ballarat</b>	11	9	27	25
<b>Geelong^</b>	101	103	90	83
<b>Gippsland</b>	31	34	45	48
<b>Melbourne</b>	229	236	430	413
<b>Northern</b>	53	67	63	55
<b>TOTAL</b>	<b>424</b>	<b>448</b>	<b>656</b>	<b>625</b>

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

AEMO's website ([www.aemo.com.au](http://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	1		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	1	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	NS	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

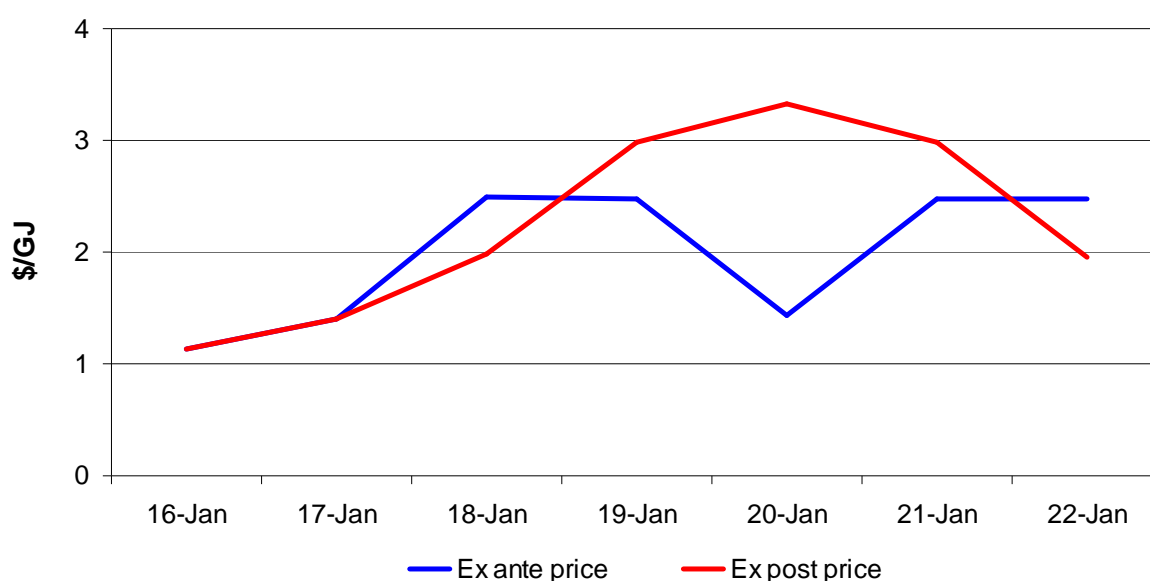
### Ex ante and Ex post Market Prices

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)^**

	16 Jan – 22 Jan	9 Jan – 15 Jan	2010-11 Financial YTD*
Ex ante price	1.99	1.61	2.52
Ex post price	2.26	2.03	7.44

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

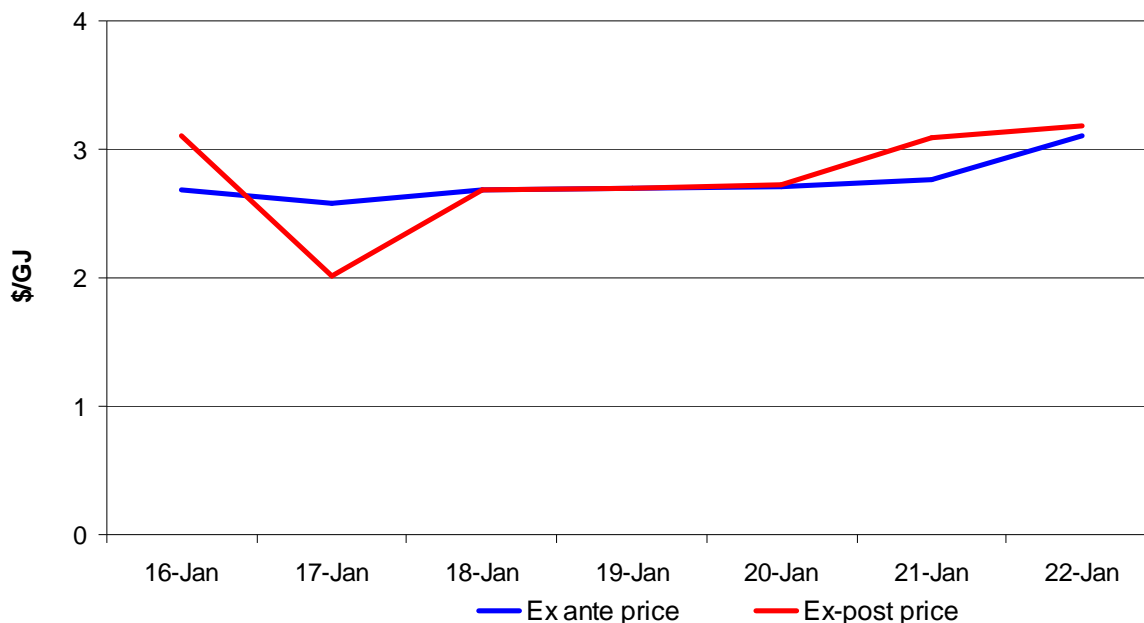


Source: <http://www.aemo.com.au> INT 651, 657

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

	16 Jan – 22 Jan	9 Jan – 15 Jan	2010-11 Financial YTD*
Ex ante price	2.75	2.67	2.66
Ex post price	2.79	2.94	2.79

\* 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.

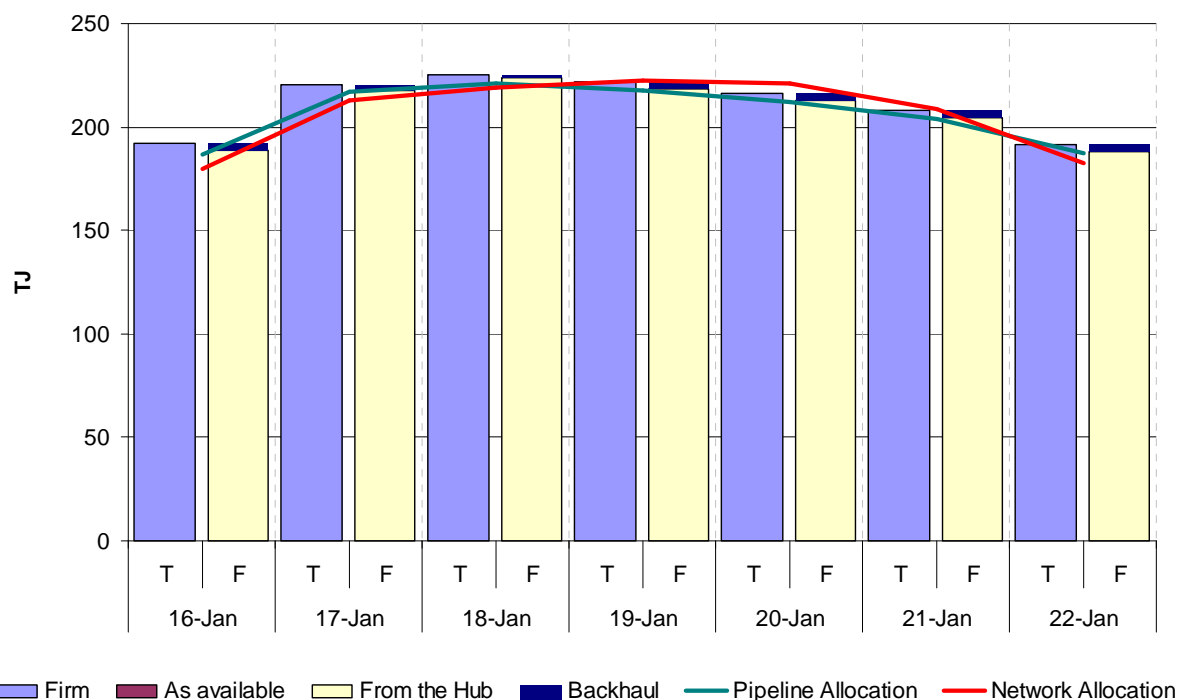
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

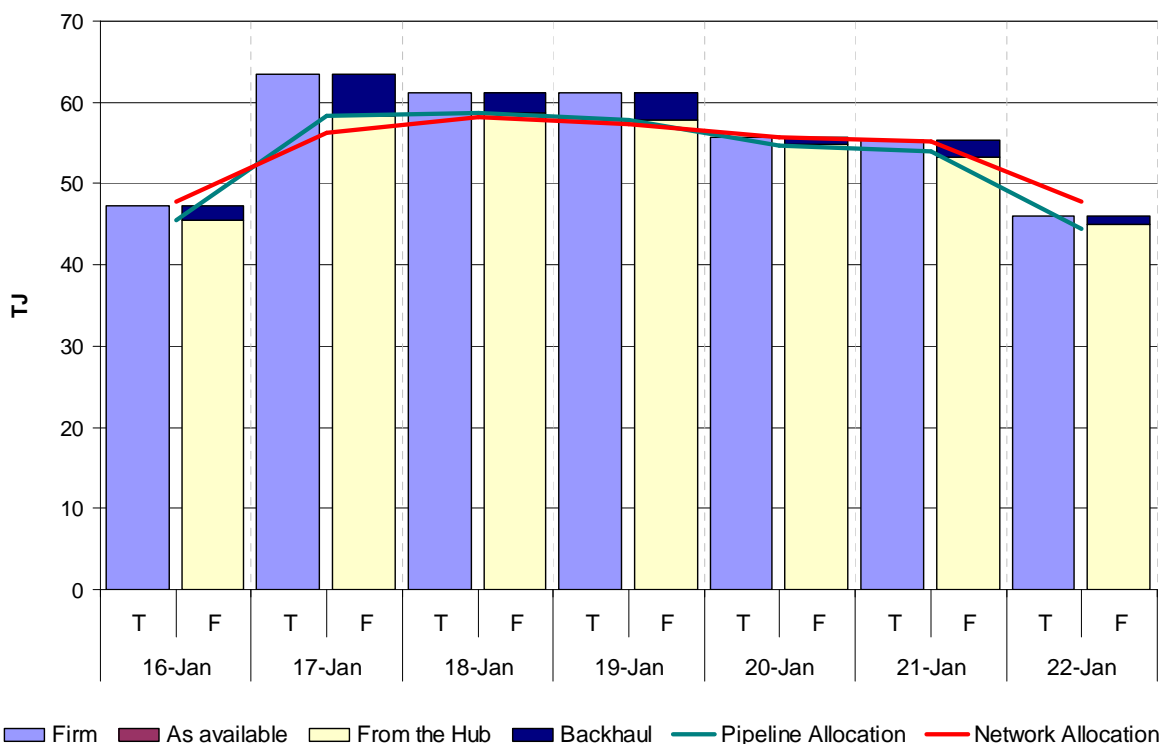
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

**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

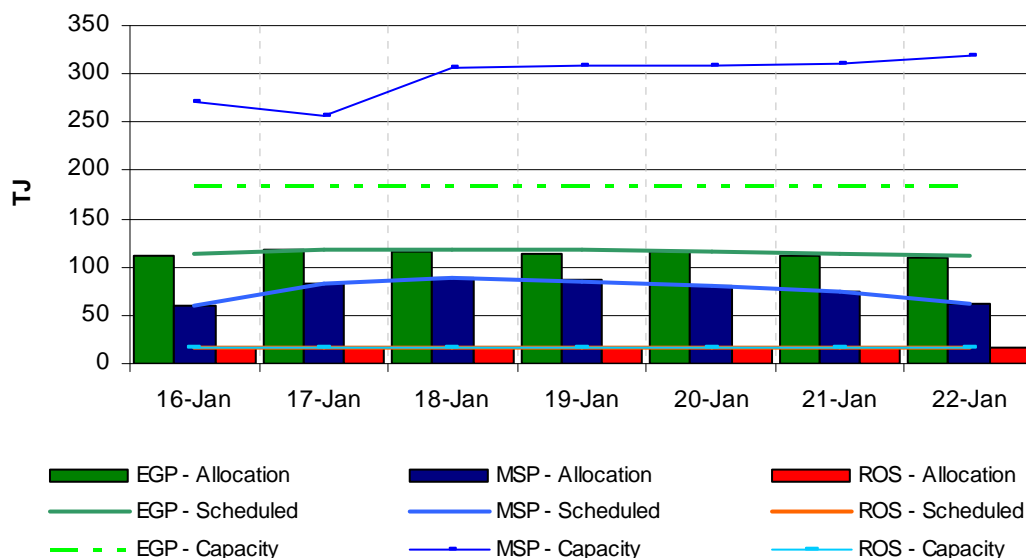
A number of pipelines supply the Adelaide and Sydney hubs. Figures S7 and S8 show, for each hub, the allocation (or actual flow) of gas to each of the pipeline facilities supplying the hub, the quantity of gas scheduled (ex ante) on the pipeline and the capacity of the pipeline.



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.

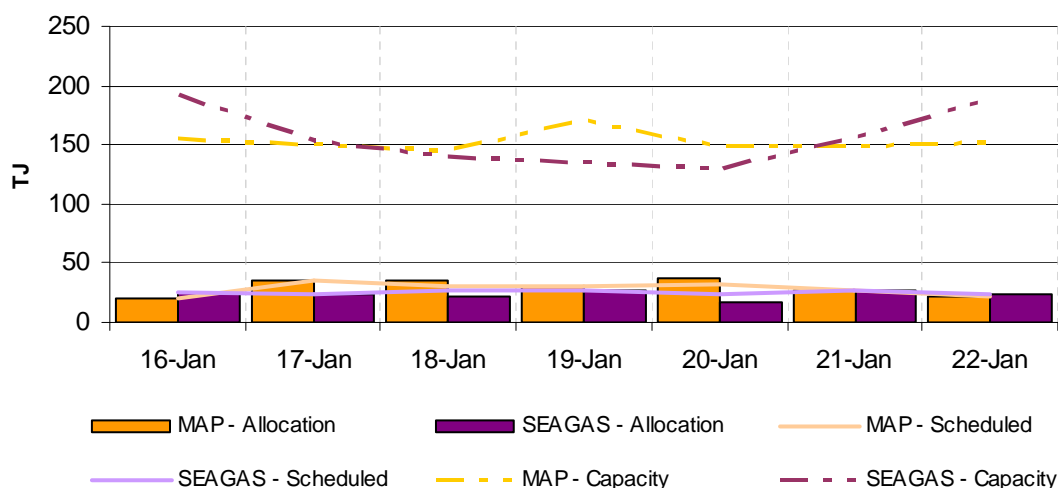
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

**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

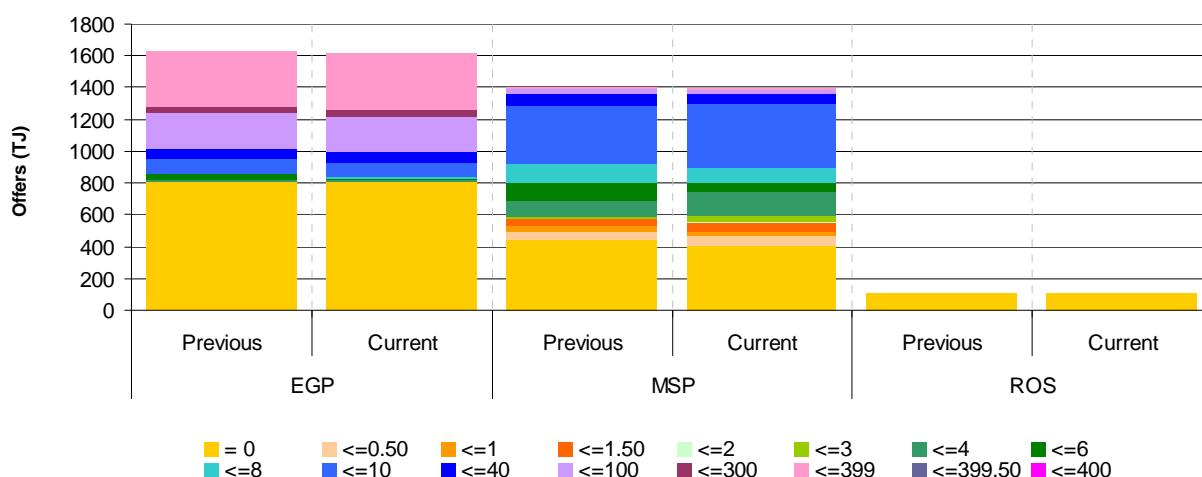
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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.

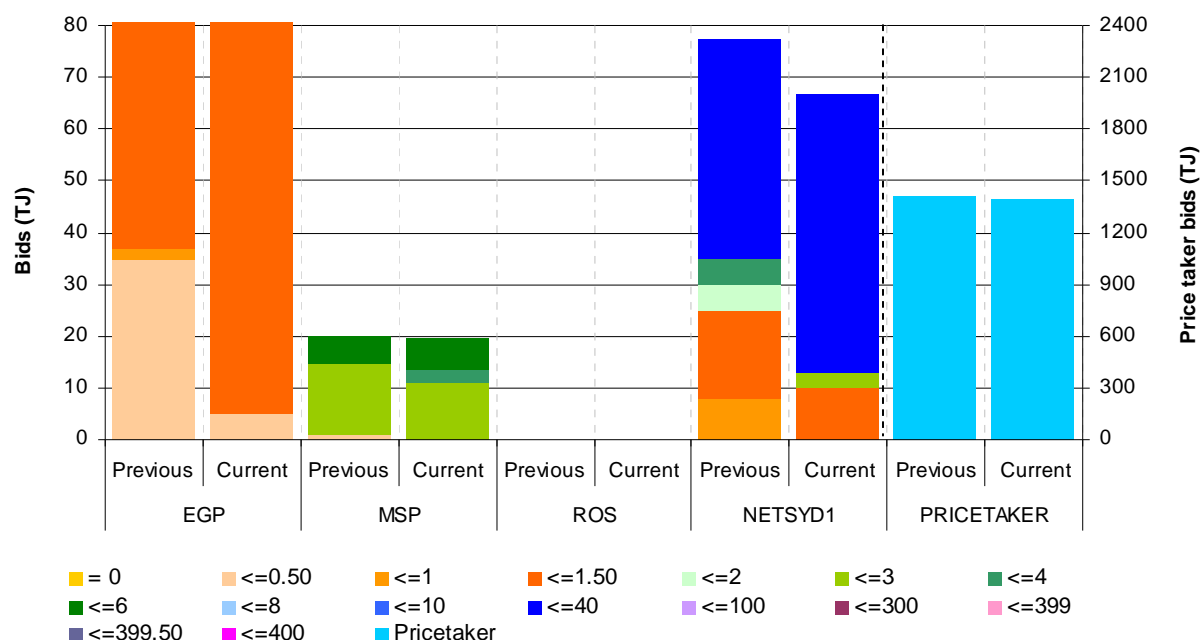
Because scheduling is price-driven, offers for lower-priced gas are scheduled ahead of offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

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



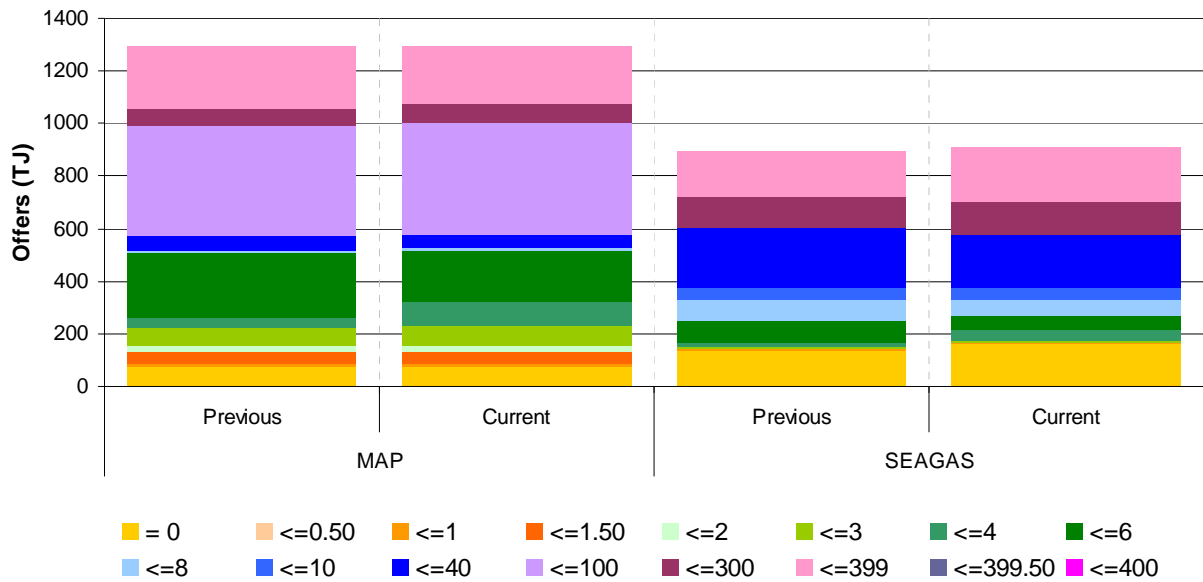
Source: <http://www.aemo.com.au> INT 652, 659  
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

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



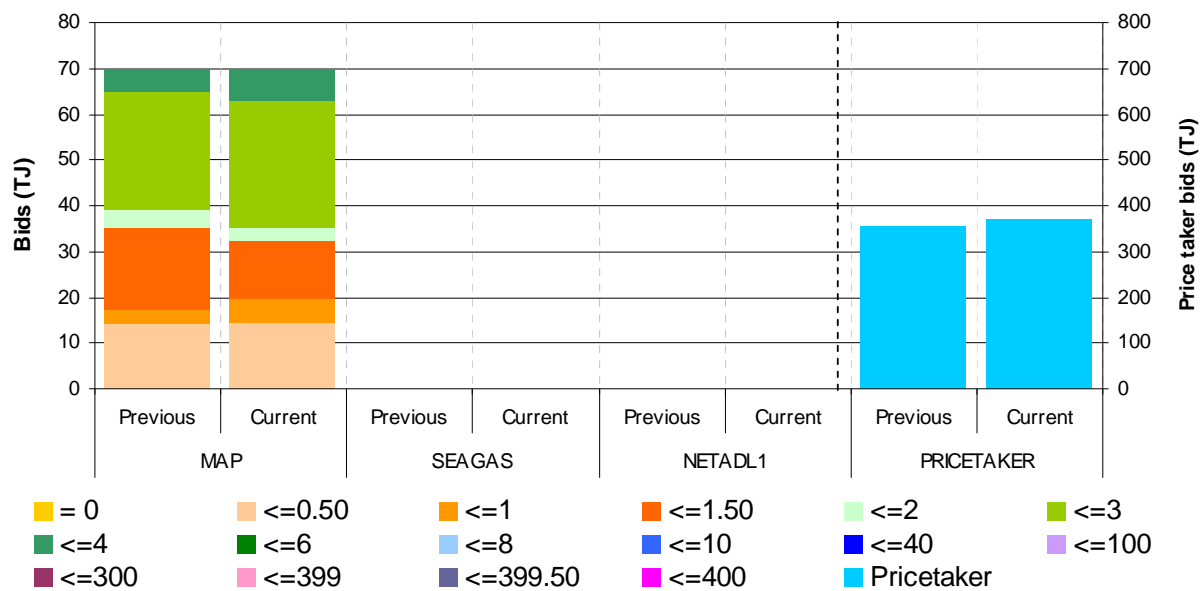
Source: <http://www.aemo.com.au> INT 652, 659  
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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

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

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

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

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

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	AETV			Lumo Energy Australia Pty Ltd			
	D-2 to D-1			Lumo Energy Australia Pty Ltd	Lumo Energy Australia Pty Ltd	Lumo Energy Australia Pty Ltd	Lumo Energy Australia Pty Ltd	Lumo Energy Australia Pty Ltd
MSP	D-3 to D-2		Country		Country	Country		Country
	D-2 to D-1	Country		Country	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 | AETV = Aurora Energy Tamar Valley | Country= Country Energy | TRU= TRUenergy Pty Ltd |

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

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

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

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

ABC= Adelaide Brighton Cement Ltd | AGL(WGSA)= AGL Wholesale Gas (SA) Pty Ltd | Origin=Origin Energy Retail Ltd |

Simply= Simply Energy | TRU= TRUenergy Pty Ltd | AGL(SA)= AGL South Australia Pty Limited |

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

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

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

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

Simply= Simply Energy

### 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<sup>1</sup> 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).

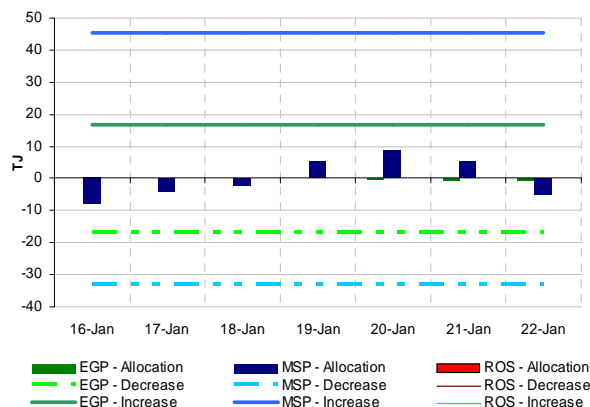
In addition, where this MOS service is required, AEMO pays or charges the MOS provider for the MOS gas allocation on the gas day at the ex ante market price two days after the gas day, which covers the cost of restoring its inventory of MOS gas (the MOS commodity payment or charge). The MOS provider 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.

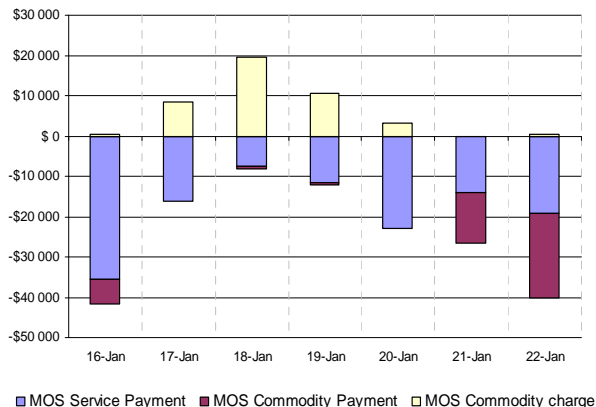
<sup>1</sup> Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule.

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**



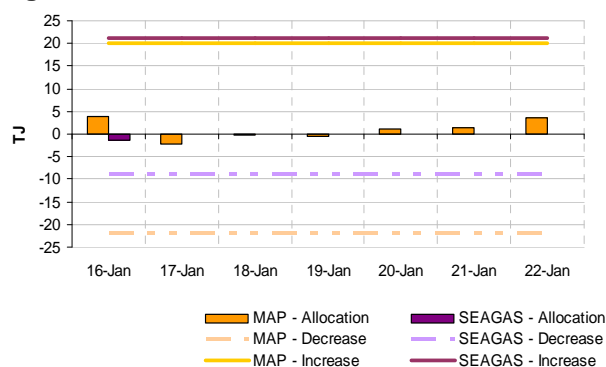
**Figure S17b: Sydney MOS payments / Charges**



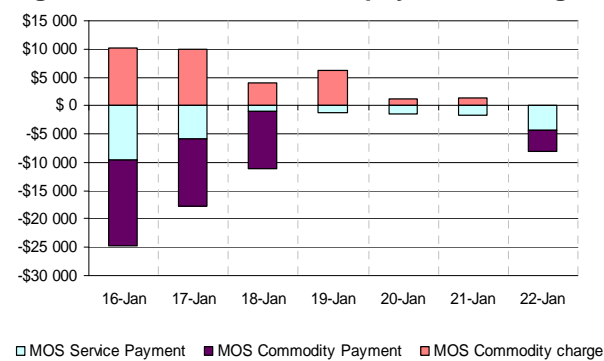
Source: <http://www.aemo.com.au> INT 663, 664, 665

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**



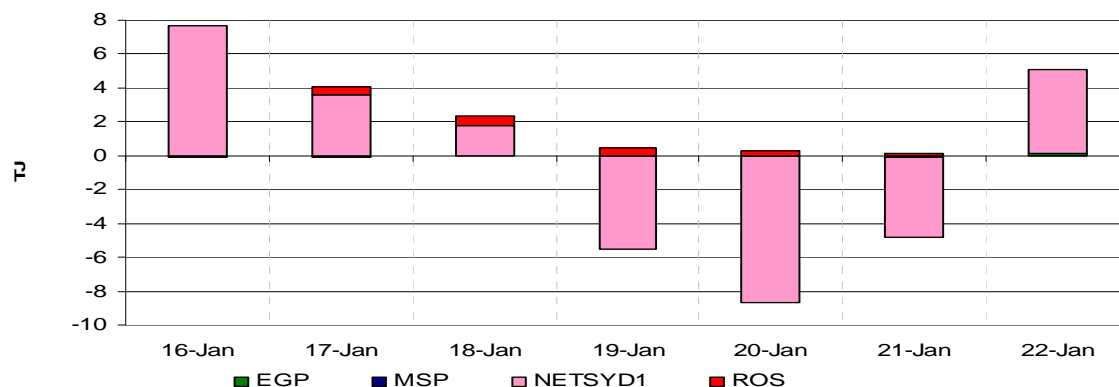
Source: <http://www.aemo.com.au> INT 663, 664, 665

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

## Deviations

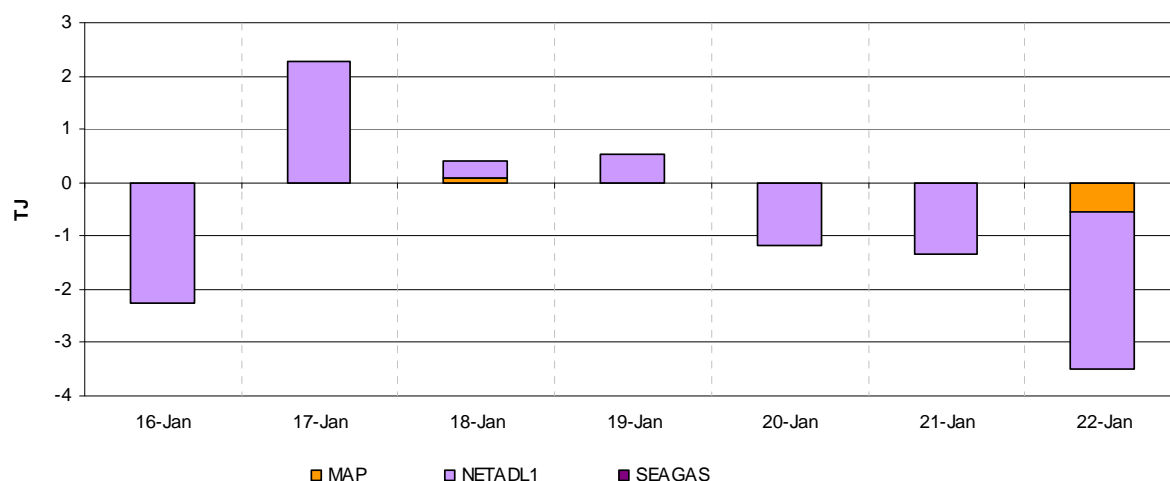
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

	16 Jan – 22 Jan	9 Jan – 15 Jan	2010-11 Financial YTD*
Quantity (TJ)	2.35	4.18	4.06
Charges (\$)	48.38	71.58	998.95

\* **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**

	16 Jan – 22 Jan	9 Jan – 15 Jan	2010-11 Financial YTD*
Quantity (TJ)	0.12	0.02	0.87
Charges (\$)	0.00	0.00	19.78

\* **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**
<b>QLD</b>												
Carpentaria Pipeline	104	102	105	102	101	97	100	117	81	101	95	86
QLD Gas Pipeline	115	115	100	56	116	116	117	142	77	105	109	69
Roma to Brisbane Pipeline	139	153	173	156	148	154	151	219	78	153	172	166
South West QLD Pipeline	126	143	146	124	115	127	125	181	73	129	132	146
<b>NSW/ACT</b>												
Eastern Gas Pipeline	200	217	218	214	214	213	198	268	80	211	213	200
Moomba to Sydney Pipeline	75	130	148	143	143	124	94	420	47	122	198	199
NSW-VIC Interconnect <sup>^</sup>	1	16	15	29	40	43	34	92	11	26	10	-12
<b>VIC</b>												
Longford to Melbourne	296	419	405	482	458	411	342	1030	51	402	521	458
South West Pipeline	-7	-31	0	-43	-15	4	-21	347	31	-16	109	131
<b>SA</b>												
Moomba to Adelaide Pipeline	127	144	145	131	153	132	113	253	50	135	125	130
SEA Gas Pipeline	129	133	152	162	209	185	140	314	51	159	161	153
<b>TAS</b>												
Tasmanian Gas Pipeline	41	43	45	42	42	43	45	129	35	43	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)

<sup>^</sup>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**
<b>Roma (QLD)</b>												
Berwyndale South	82	82	80	88	84	91	90	140	69	85	96	91
Fairview	105	111	121	105	81	79	N/A	130	91	100	118	114
Kenya Gas Plant	45	46	50	49	45	50	52	160	36	48	57	48
Kincora	0	0	0	0	0	0	0	25	16	0	4	1
Kogan North	10	9	10	10	10	10	10	12	77	10	9	8
Peat	6	6	6	6	6	6	6	15	63	6	9	8
Rolleston	8	9	8	9	9	9	9	30	35	9	11	11
Scotia	26	27	29	29	29	29	N/A	29	90	28	26	22
Spring Gully	46	46	47	47	47	50	48	69	71	47	49	44
Strathblane	46	46	47	47	47	50	48	69	71	47	49	44
Talooka	28	28	28	28	29	30	29	42	71	29	30	27
Wallumbilla	0	0	0	0	0	0	N/A	20	40	0	8	11
Yellowbank	13	13	7	13	11	13	10	30	41	11	12	14
Talinga	69	69	70	70	75	75	74	90	65	72	58	
<b>Moomba (SA/QLD)</b>												
Moomba Gas Plant	199	224	226	228	211	202	N/A	430	64	215	273	279
Ballera	0	1	4	5	33	23	N/A	150	11	11	16	8
<b>Eastern (VIC)</b>												
Orbost Gas Plant	57	53	57	59	59	55	N/A	100	27	57	27	14
Lang Lang Gas Plant	63	60	59	60	60	59	57	70	70	60	49	39
Longford Gas Plant	460	575	519	594	590	576	508	1145	63	546	716	651
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
<b>Otway Basin (VIC)</b>												
Minerva Gas Plant	55	55	45	45	60	55	35	73	88	50	64	74
Otway Gas Plant	53	77	102	51	100	103	96	205	61	83	124	127
Iona Underground Gas Storage	22	-7	3	34	60	66	-7	440	20	25	90	89

\*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)
<b>16 Jan – 22 Jan</b>	Average min.	20.8	20.8	14.4	15.9	16.7	13.0
	Average max.	31.0	27.4	29.5	25.7	29.3	21.5
<b>9 Jan – 15 Jan</b>	Average min.	21.7	22.1	17.9	19.9	18.7	15.7
	Average max.	28.5	27.3	25.5	26.5	28.3	21.5

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**

<b>16 Jan – 22 Jan</b>	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
<b>Sun</b>	2.05	2.01	1.99	1.99	1.26	2.05
<b>Mon</b>	2.10	2.01	1.99	1.26	1.50	2.09
<b>Tue</b>	2.83	2.79	2.84	2.86	3.00	2.83
<b>Wed</b>	2.79	2.79	3.14	2.85	2.52	2.79
<b>Thu</b>	2.79	2.99	3.17	3.30	2.86	2.82
<b>Fri</b>	2.83	2.84	2.85	2.86	2.11	2.83
<b>Sat</b>	2.83	3.17	3.17	3.17	2.86	2.84

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	
16-Jan	MP:	304	305	305	305	305	0
	AEMO:	318	293	299	293	293	
	MP as % of AEMO	95	104	102	104	104	
17-Jan	MP:	401	399	399	399	399	0
	AEMO:	408	401	395	390	388	
	MP as % of AEMO	98	100	101	102	103	
18-Jan	MP:	400	397	397	397	397	0
	AEMO:	395	395	397	396	394	
	MP as % of AEMO	101	100	100	100	101	
19-Jan	MP:	413	412	412	413	413	0
	AEMO:	403	402	410	414	408	
	MP as % of AEMO	102	102	101	100	101	
20-Jan	MP:	380	380	405	405	405	0
	AEMO:	369	369	423	416	396	
	MP as % of AEMO	103	103	96	97	102	
21-Jan	MP:	390	390	392	392	392	0
	AEMO:	379	379	376	373	369	
	MP as % of AEMO	103	103	104	105	106	
22-Jan	MP:	300	300	300	300	300	0
	AEMO:	295	295	300	290	286	
	MP as % of AEMO	102	102	100	103	105	

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