

## 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**

26 Dec – 1 Jan	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
<b>Average Price</b>	2.30	0.98	2.76

\* weighted average daily imbalance price

\*\* ex ante market price

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

Figure S3 shows the average daily ex ante price in Sydney increased this week driven by the \$2.99/GJ price on Friday. The average ex post price decreased compared to the previous week, and was slightly lower than the average ex ante price.

While average ex ante prices increased in Adelaide again this week, compared to the previous week, average ex post prices fell compared to the previous week. Both ex ante and ex post prices exceeded year-to-date averages. Ex ante and ex post prices were closely aligned throughout the week.

Relatively high MOS payments occurred in Adelaide on the 31 December gas day. The gas weekly report for 28 November – 4 December provides for more detail about MOS stacks.

## **Victorian Gas Market**

Decreased demand in Victoria (see figure N4) saw injections fall by 80 TJ (20 per cent) compared to the previous week (see figure V3). Despite a decrease in demand the average daily price rose from \$1.60/GJ in the previous week to \$2.30/GJ (see figure V2). This was driven by a reduction in the amount of \$0/GJ bids to the market (see figure V4).

AEMO issued demand overrides of -1 TJ on Sunday and -16 TJ on Friday. Supply demand point constraints were issued for withdrawals at Vic Hub on 26 and 29 December, injections at Bass Gas on 31 December and withdrawals at SEA Gas on 1 January.

## **National Gas Market Bulletin Board**

The Minerva plant failed to provide daily production data for the Saturday 1 January gas day.

Figure N4 shows changes in gas demand and production and pipeline flows compared to the previous week. Total average daily demand (1229 TJ) fell by 128 TJ compared to the previous week. While minor reductions in Queensland and Tasmania offset an 18 TJ increase in South Australia, significant reductions were observed in Victoria (79 TJ or 20 per cent) and New South Wales (50 TJ or 15 per cent). Total average daily gas powered generation (GPG) gas usage increased by 31 TJ. This increase was largely due to higher GPG demand in South Australia, while relatively minor increases in Victoria and New South Wales were mostly offset by decreases in Queensland and Tasmania.

Overall average daily production fell by 177 TJ (11 per cent) compared to the previous week. More significant reductions were seen at the Roma, Moomba and eastern Victoria regions (58 TJ, 54 TJ and 61 TJ respectively). Flows decreased significantly on the South West and Longford to Melbourne pipelines (32 TJ and 42 TJ respectively) and on the Moomba to Sydney Pipeline (42 TJ), while flows on the SEA Gas pipeline to Adelaide increased by 29 TJ compared to the previous week.

# Part A: National Gas Market Bulletin Board

## Overview of pipeline and production flows

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

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

Average daily flows	NSW	ACT	VIC	SA	TAS	QLD		
						Brisbane	Mt Isa	Gladstone
26 Dec – 1 Jan	269	5	314	235	36	149	102	118
Financial Year-to-date 2010-11*	392	27	658	285	45	174	94	109
Financial Year-to-date 2009-10**	382	25	639	285	37	165	85	69

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

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

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

Figure N2 provides the average daily amount of gas used for GPG (gas-powered generators) in each state.

**Figure N2: Average daily gas (TJ) used by gas-powered generators in each state**

Average daily gas for GPG usage^	NSW	VIC	SA	TAS	QLD
26 Dec – 1 Jan	89	9	141	24	146
Financial Year-to-date 2010-11*	83	16	162	30	158
Financial Year-to-date 2009-10**	84	45	162	22	156

^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)
26 Dec – 1 Jan	513	433	242	158
Financial Year-to-date 2010-11*	545	807	292	295
Financial Year-to-date 2009-10**	443	730	295	293

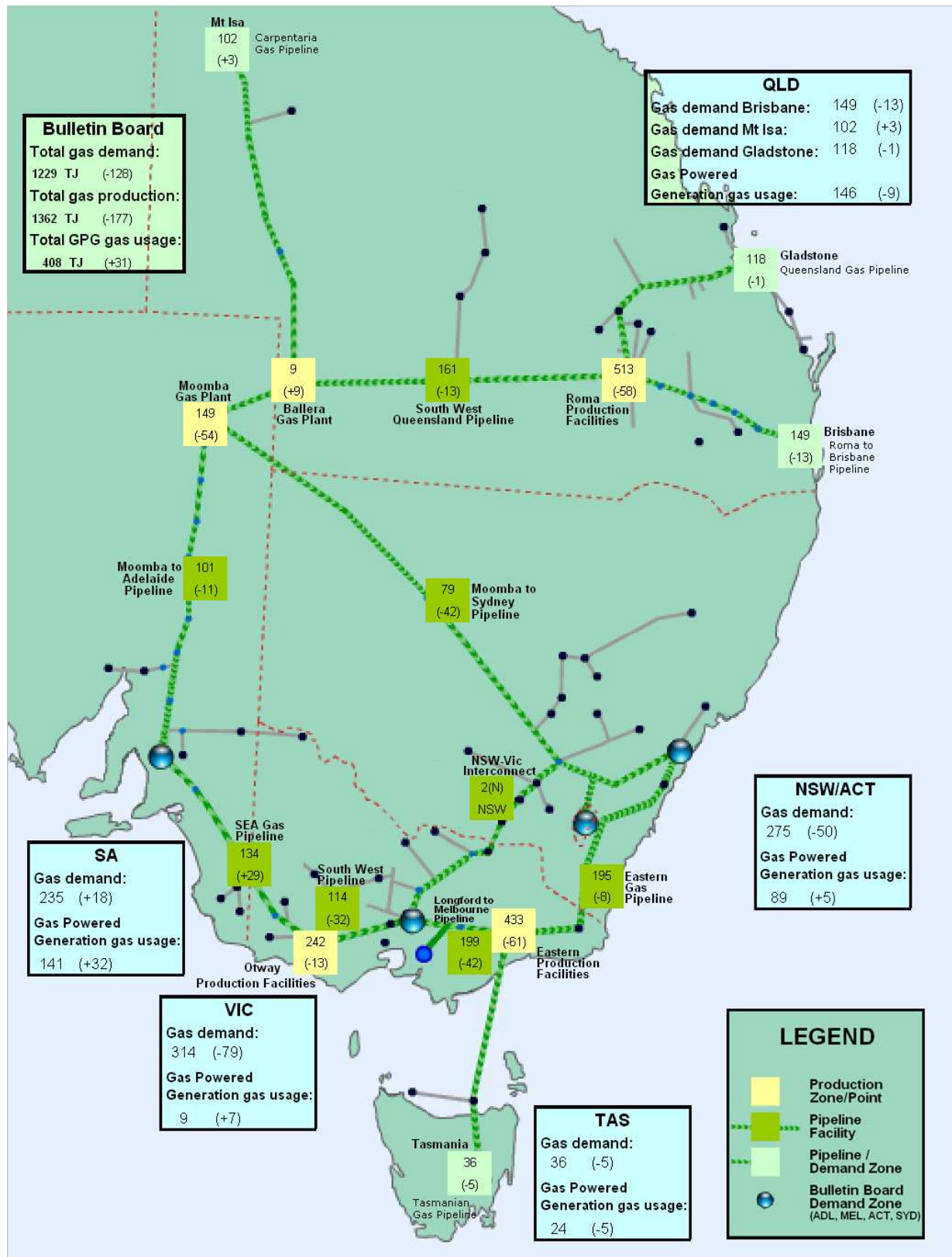
\*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)

\*\*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)**

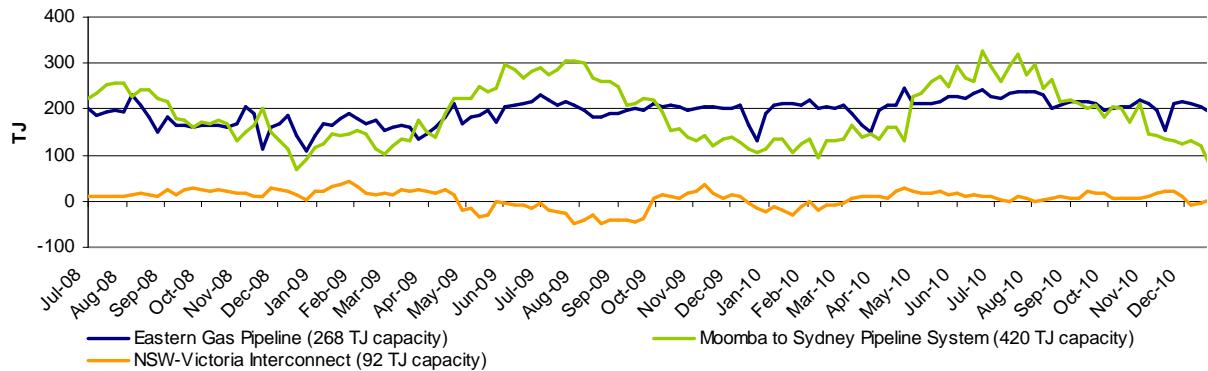


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>  
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North). Numbers in brackets indicate a change in average daily flow from the previous week.

## 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.

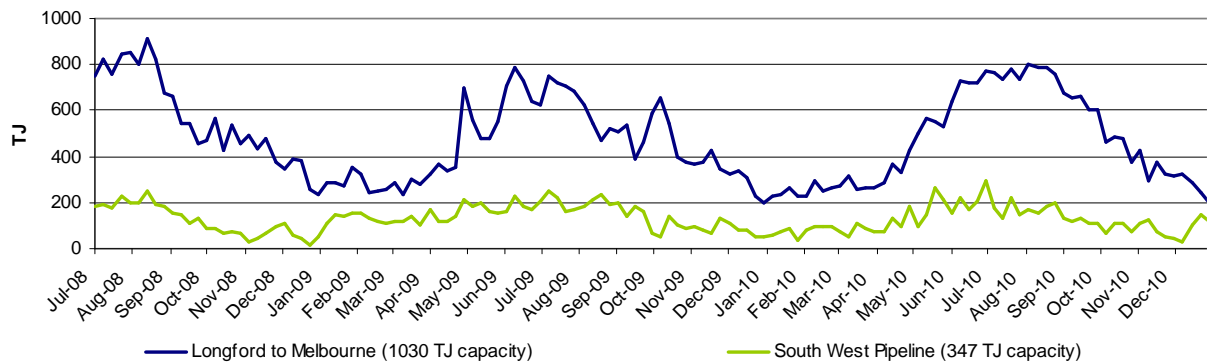
**Figure N5: Average daily flows (TJ) into NSW/ACT demand region**



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

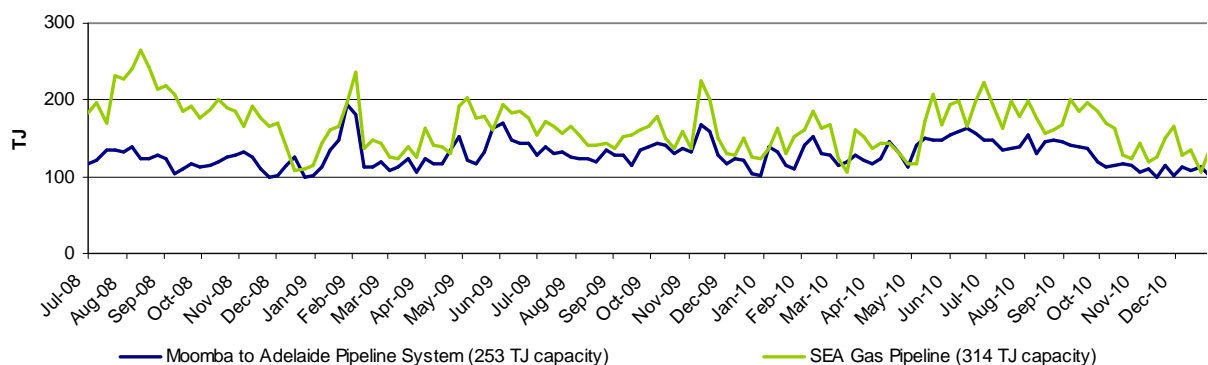
Notes: Negative flows on the NSW-Victoria Interconnect represent flows out of NSW into VIC.

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

	26 Dec – 1 Jan	19 Dec – 25 Dec	2010-11 Financial YTD*	2009-10 Financial YTD**
<b>Average daily price</b>	2.30	1.41	1.83	1.57

26 Dec – 1 Jan	Sun	Mon	Tue	Wed	Thu	Fri	Sat
<b>Daily price</b>	1.67	3.00	2.51	2.88	2.07	1.52	2.42

\*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)

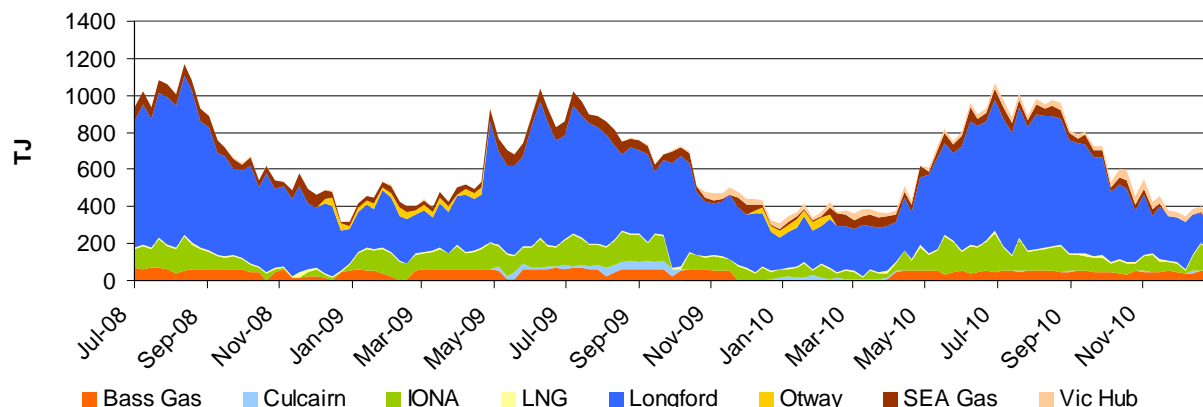
Source: <http://www.aemo.com.au> (INT 041)

## 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:	26 Dec – 1 Jan	19 Dec – 25 Dec	2010-11 Financial YTD*	2009-10 Financial YTD**
<b>Culcairn</b>	1	6	1	18
<b>Longford</b>	129	160	461	428
<b>LNG</b>	10	9	9	9
<b>IONA</b>	86	141	88	92
<b>VicHub</b>	21	31	33	12
<b>SEAGas</b>	25	4	33	45
<b>Bass Gas</b>	50	51	48	44
<b>Otway</b>	0	0	0	4
<b>TOTAL</b>	<b>321</b>	<b>401</b>	<b>672</b>	<b>652</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)

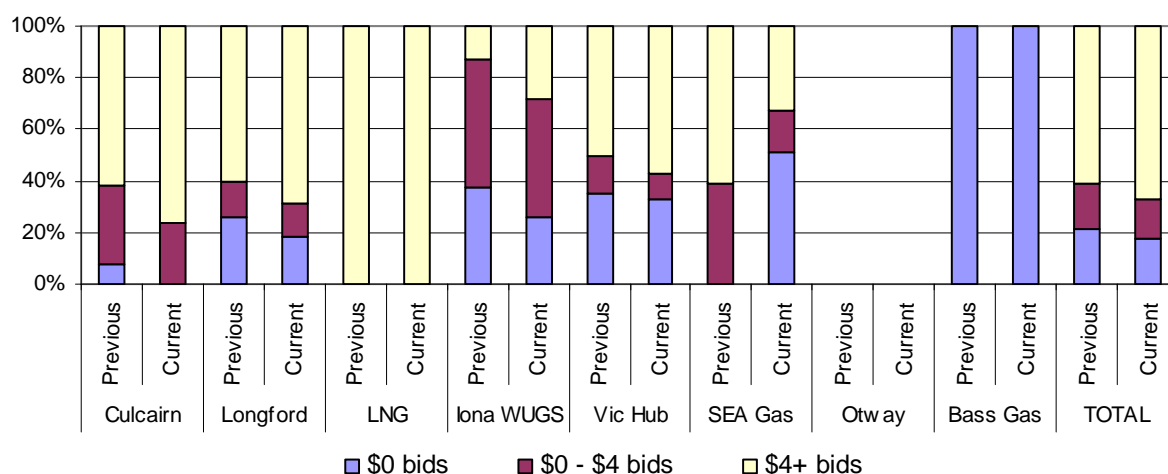
Source: <http://www.aemo.com.au> (INT 150)



## 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>Culcain</b>		Origin	Origin		Origin	Origin	
<b>Longford</b>					TRU	TRU	AGL Origin TRU
<b>LNG</b>							
<b>Iona</b>	Origin TRU	TRU	TRU	TRU	TRU	AGL Origin TRU	TRU
<b>VicHub</b>	AETV TRU Lumo	AETV Lumo	AETV	AETV Lumo	AETV	Lumo	AETV
<b>SEAGas</b>	Simply	Simply	Simply	Lumo		Simply	
<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>26 Dec – 1 Jan</b>	<b>19 Dec – 25 Dec</b>	<b>2010-11 Financial YTD*</b>	<b>2009-10 Financial YTD**</b>
<b>Ballarat</b>	9	14	29	27
<b>Geelong^</b>	53	62	90	84
<b>Gippsland</b>	35	30	47	49
<b>Melbourne</b>	208	266	453	435
<b>Northern</b>	23	33	64	59
<b>TOTAL</b>	<b>328</b>	<b>405</b>	<b>683</b>	<b>653</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								
OneSteel Manufacturing Pty Ltd	STTM User,Shipper	1	S						
OneSteel NSW Pty Ltd	STTM User,Shipper								
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	2	S	S			
Lumo Energy Australia Pty Ltd	Shipper						
OneSteel Manufacturing Pty Ltd	Shipper						
Origin Energy Retail Ltd	STTM User,Shipper	2	S	S			
Pelican Point Power Limited	Shipper						
Simply Energy	STTM User,Shipper	2	S	S	NS		
TRUenergy Pty Ltd	STTM User,Shipper	2	S	S			

^ Offers and bids taken from the (D-1) ex ante schedule

^^ STTM Users also submit price-taker bids to satisfy customer demand, which are not included in this table

Source: <http://www.aemo.com.au> INT 651, 659, 668

MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline, ADL-NET=Adelaide Hub

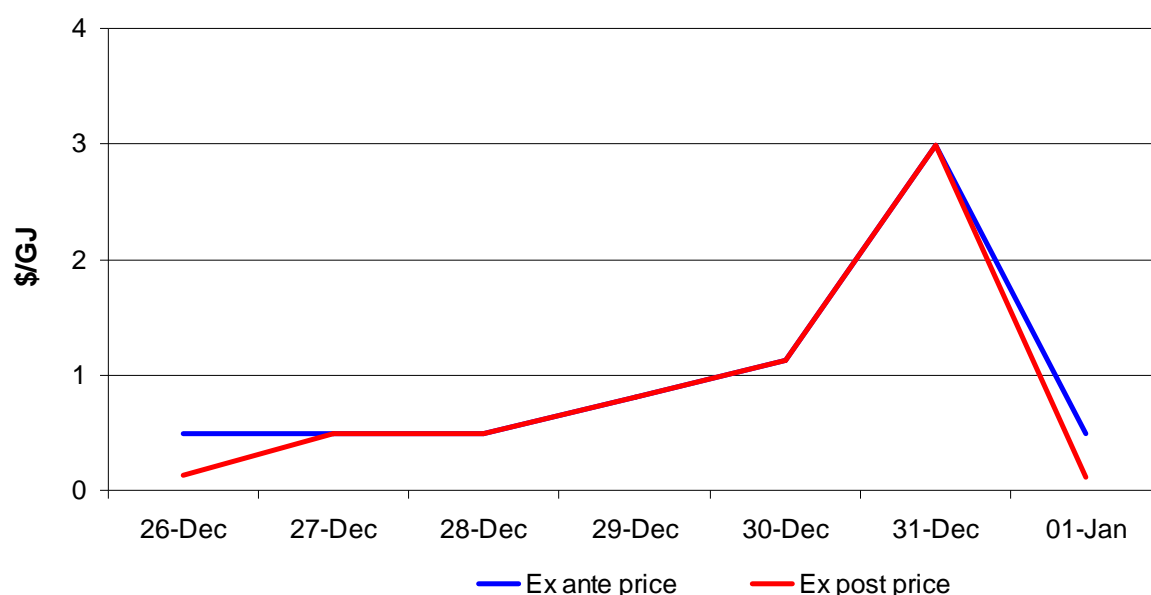
### Ex ante and Ex post Market Prices

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

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

	26 Dec – 1 Jan	19 Dec – 25 Dec	2010-11 Financial YTD*
Ex ante price	0.98	0.90	2.68
Ex post price	0.88	1.60	8.37

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

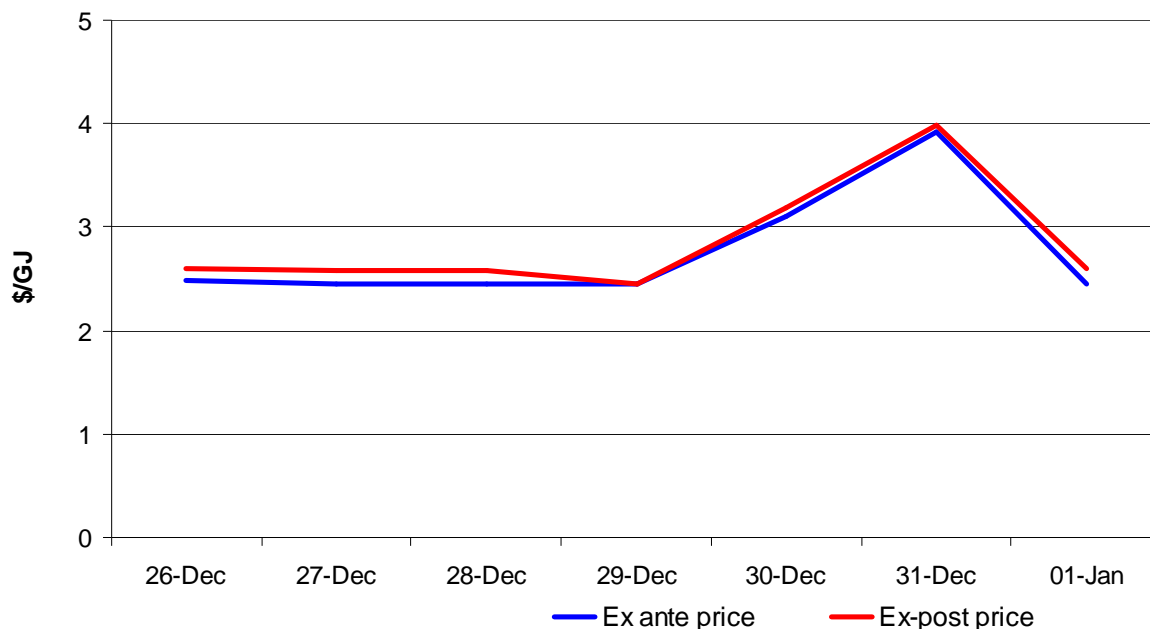


Source: <http://www.aemo.com.au> INT 651, 657

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

	26 Dec – 1 Jan	19 Dec – 25 Dec	2010-11 Financial YTD*
Ex ante price	2.76	2.28	2.66
Ex post price	2.85	2.87	2.77

\* 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.

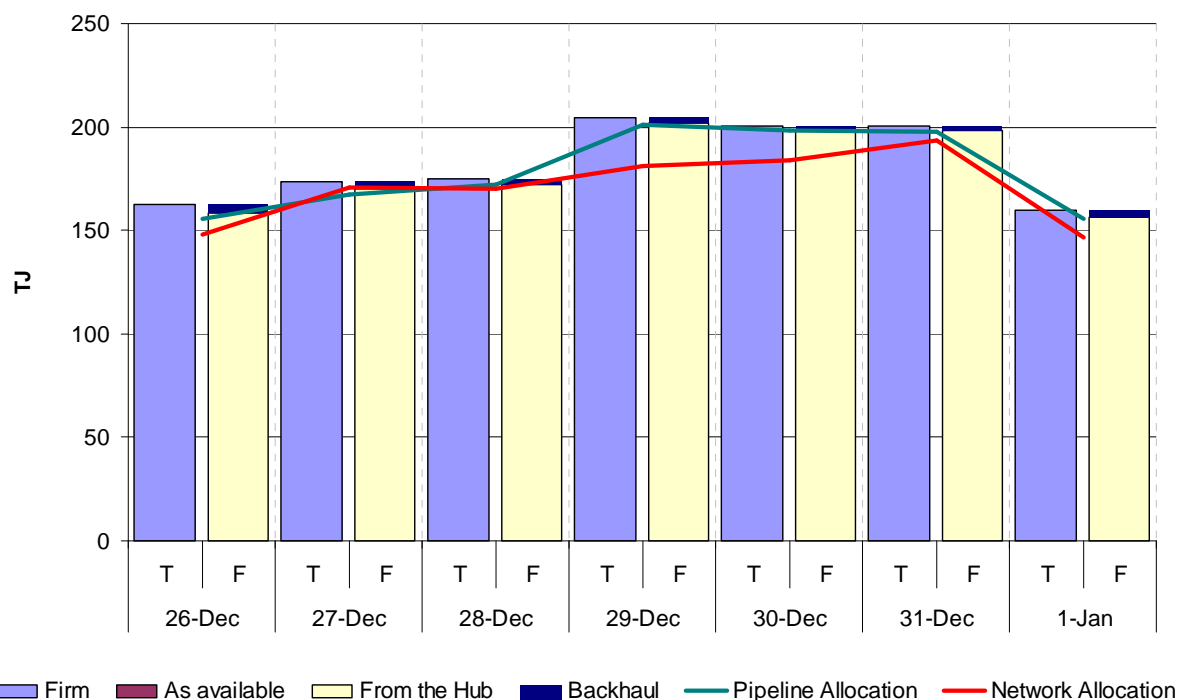
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

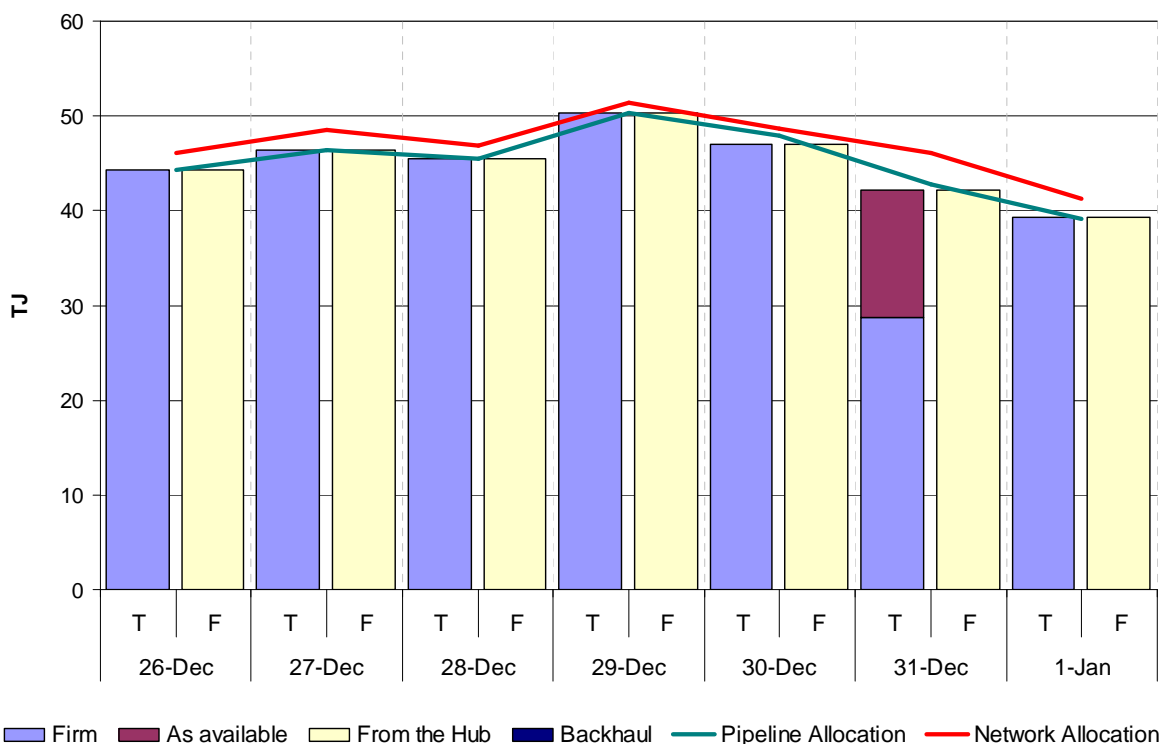
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

**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)

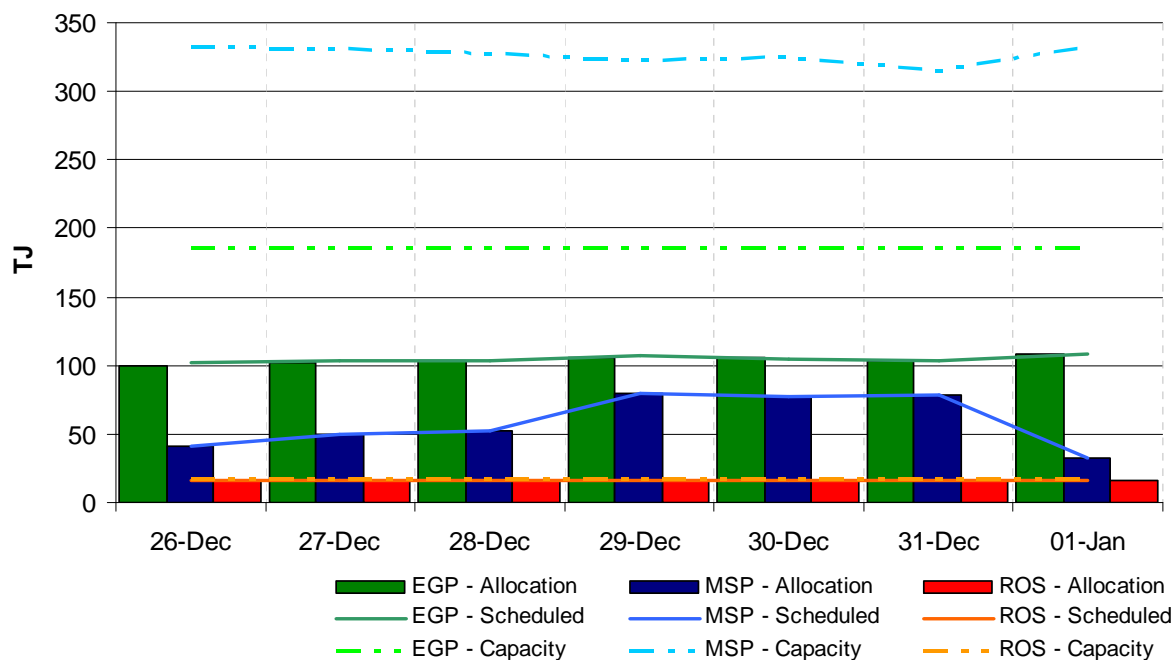
### Pipeline Facility Allocations

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.

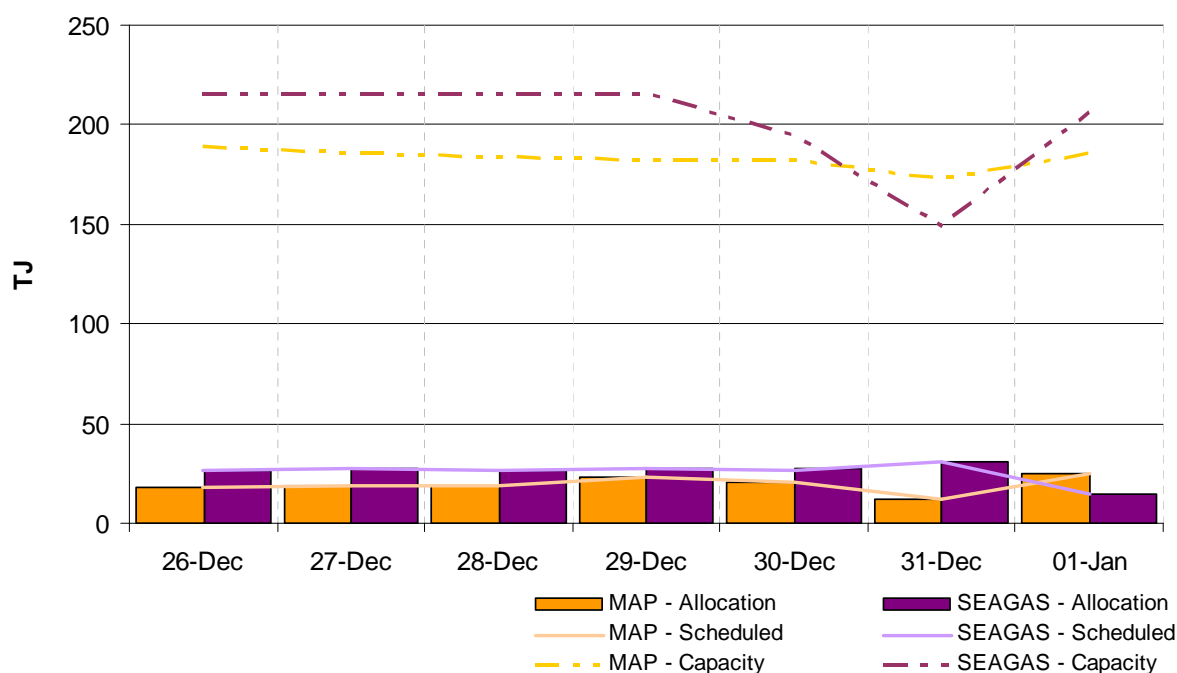
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

**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

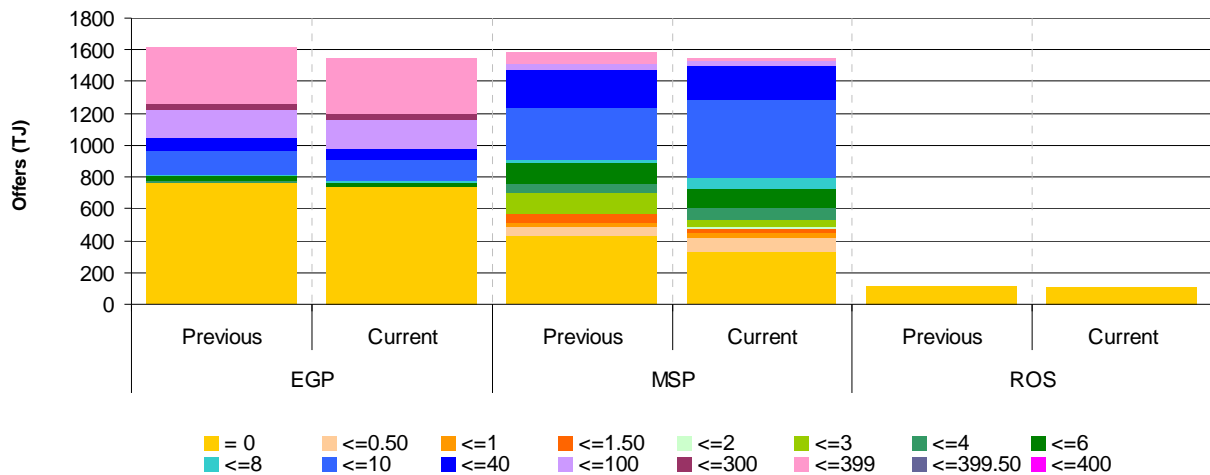
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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.

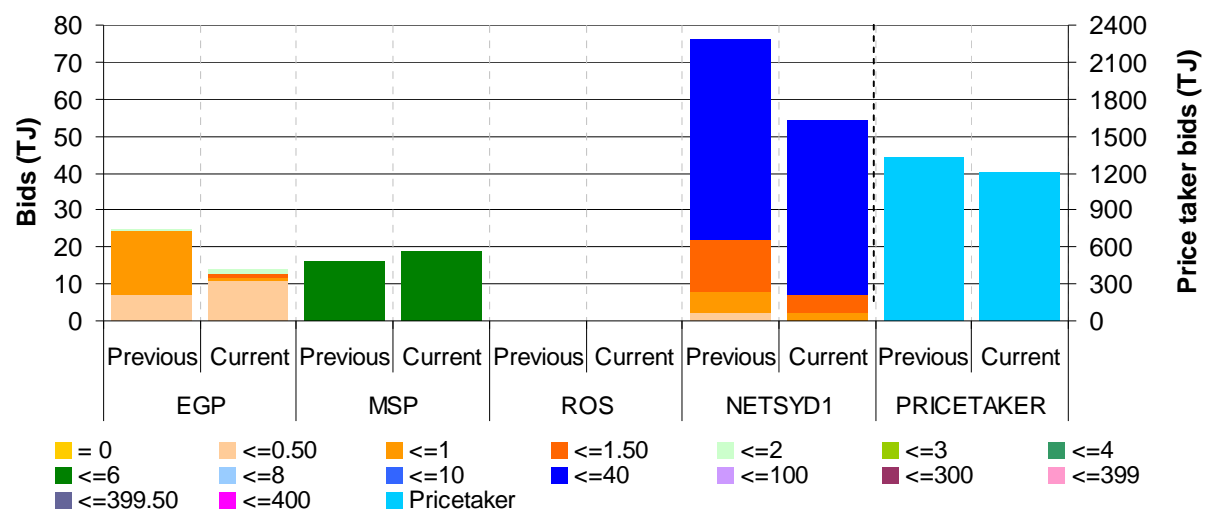
**Figure S9: Total weekly Sydney hub offers (TJ) within price bands (\$/GJ)**



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

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

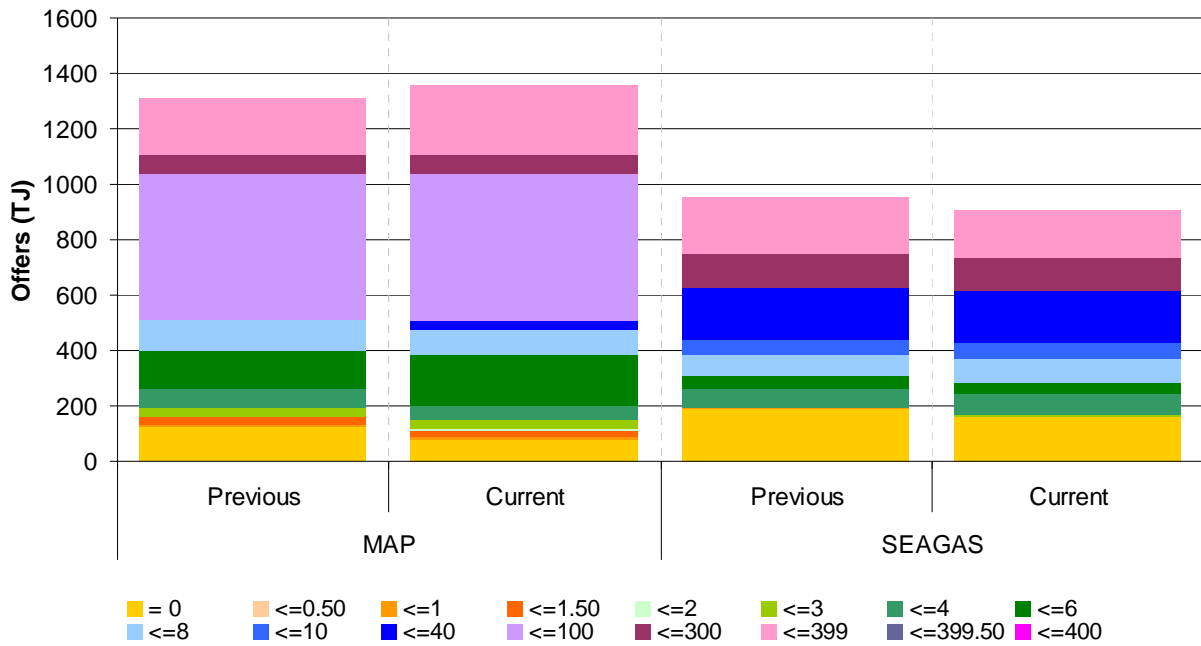
**Figure S10: Total weekly Sydney hub bids (TJ) within price bands (\$/GJ)**



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

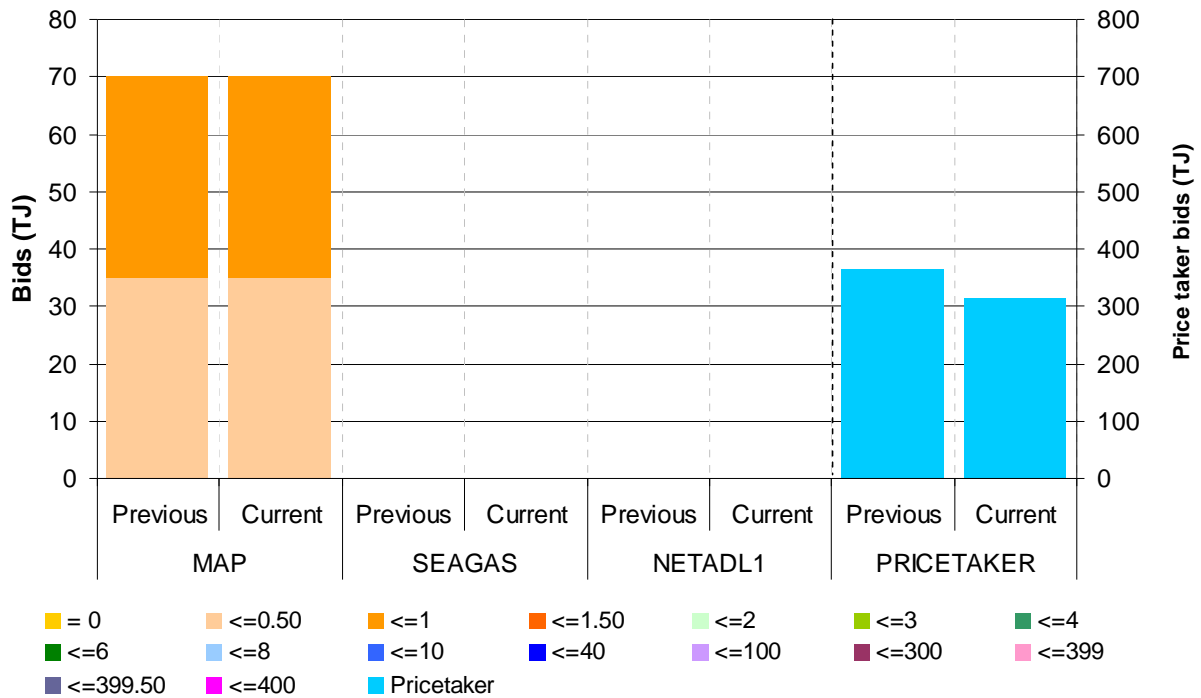
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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

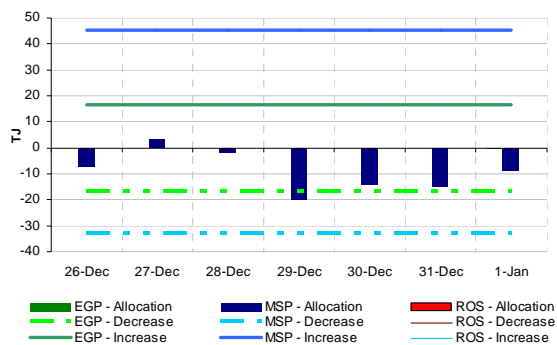
MOS offers are made by participants who have contracts with pipeline facilities to “park” gas (on the pipeline) or “loan” gas (from the pipeline). Based on these contracts, two types of MOS are offered: increase offers to increase flows on a pipeline to a hub; and decrease offers to decrease flows on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

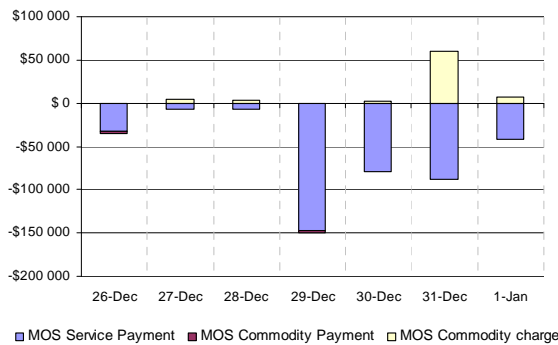
<sup>1</sup> Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule.

Figure S17a and S18a show quantities of MOS allocated on a daily basis compared to total MOS increase and decrease offers (from potential providers) on each pipeline at each hub. MOS allocations are shown by the columns in these figures, whereas total MOS increase and decrease offers on each pipeline are shown by horizontal lines (as indicated in the legend). Figures S17b and S18b show MOS service payments and MOS commodity payments or charges. Payments fall below the horizontal axis and charges are displayed above the axis.

**Figure S17: Sydney MOS allocations**

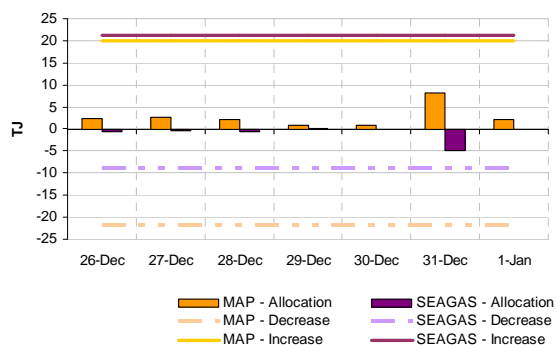


**Sydney MOS payments / Charges**

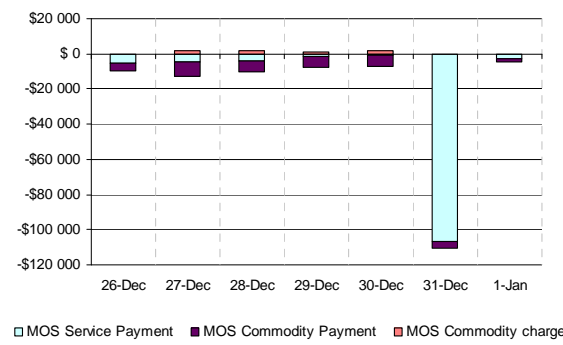


Source: <http://www.aemo.com.au> INT 663, 664, 665  
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

**Figure S18: Adelaide MOS allocations**



**Adelaide MOS payments / Charges**

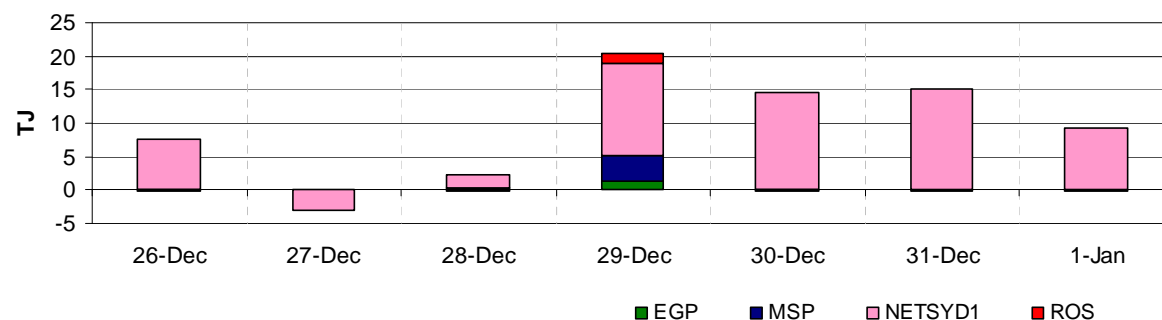


Source: <http://www.aemo.com.au> INT 663, 664, 665  
MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

## Deviations

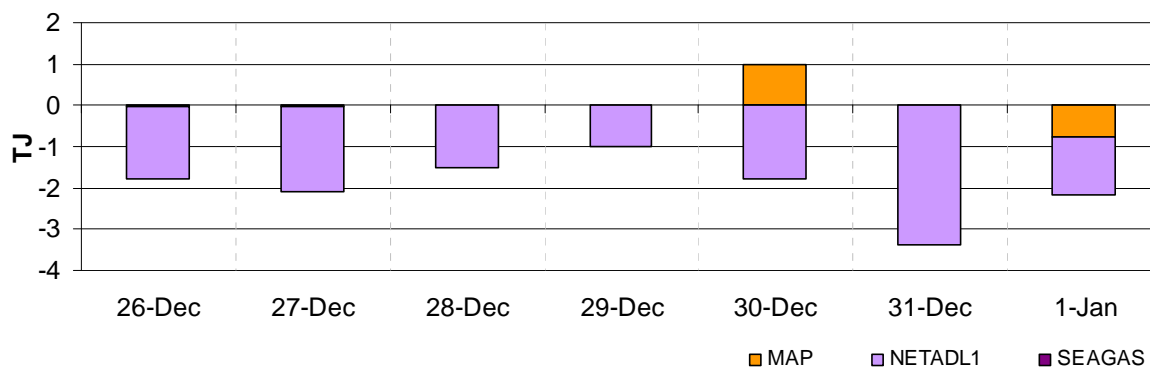
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

	26 Dec – 1 Jan	19 Dec – 25 Dec	2010-11 Financial YTD*
Quantity (TJ)	2.54	1.30	4.26
Charges (\$)	11.81	5.61	1161.54

\* **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**

	26 Dec – 1 Jan	19 Dec – 25 Dec	2010-11 Financial YTD*
Quantity (TJ)	0.18	0.05	0.99
Charges (\$)	0.00	0.00	23.16

\* **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	101	101	102	103	103	103	100	117	81	102	94	85
QLD Gas Pipeline	119	120	119	120	117	116	112	142	77	118	109	69
Roma to Brisbane Pipeline	139	150	150	157	158	151	141	219	79	149	174	165
South West QLD Pipeline	177	178	152	186	176	192	70	181	72	161	130	146
<b>NSW/ACT</b>												
Eastern Gas Pipeline	183	190	192	204	204	202	194	268	80	195	214	199
Moomba to Sydney Pipeline	55	78	80	88	88	88	77	420	49	79	205	208
NSW-VIC Interconnect <sup>^</sup>	1	2	-6	5	3	3	3	92	9	2	8	-11
<b>VIC</b>												
Longford to Melbourne	178	197	189	179	183	206	260	1030	52	199	535	482
South West Pipeline	103	202	146	129	127	65	27	347	35	114	122	138
<b>SA</b>												
Moomba to Adelaide Pipeline	91	90	88	102	111	109	115	253	49	101	124	130
SEA Gas Pipeline	84	83	120	143	192	200	120	314	51	134	161	155
<b>TAS</b>												
Tasmanian Gas Pipeline	33	34	34	35	36	36	46	129	35	36	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	103	94	96	97	90	89	66	140	70	91	98	92
Fairview	131	132	132	132	132	122	54	130	93	119	120	114
Kenya Gas Plant	46	46	45	46	46	46	46	160	36	46	58	45
Kincora	5	6	0	15	10	10	7	25	16	8	4	1
Kogan North	10	10	10	10	10	10	10	12	77	10	9	8
Peat	11	11	11	11	9	6	5	15	66	9	10	8
Rolleston	10	11	10	13	3	8	11	30	36	9	11	11
Scotia	30	29	30	30	22	22	22	29	91	26	26	22
Spring Gully	40	41	44	46	50	47	39	69	72	44	50	45
Strathblane	40	41	44	46	50	47	39	69	72	44	50	45
Talooka	24	25	27	28	30	28	23	42	71	26	30	27
Wallumbilla	6	6	6	6	6	6	6	20	42	6	8	11
Yellowbank	11	11	11	12	10	12	11	30	41	11	12	14
Talinga	70	71	69	71	70	51	41	90	65	63	58	
<b>Moomba (SA/QLD)</b>												
Moomba Gas Plant	135	139	141	151	185	145	148	430	65	149	279	285
Ballera	0	0	0	0	0	0	65	150	11	9	17	8
<b>Eastern (VIC)</b>												
Orbost Gas Plant	37	37	37	37	37	37	59	100	24	40	24	11
Lang Lang Gas Plant	50	50	50	51	51	39	56	70	68	50	48	44
Longford Gas Plant	312	315	325	356	361	358	382	1145	64	344	736	674
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
<b>Otway Basin (VIC)</b>												
Minerva Gas Plant	37	37	37	73	73	73	N/A	73	88	55	64	73
Otway Gas Plant	81	72	72	92	105	91	82	205	63	85	129	129
Iona Underground Gas Storage	65	169	109	121	158	92	2	440	22	102	98	92

\*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>26 Dec – 1 Jan</b>	Average min.	20.9	19.1	11.6	13.6	16.5	9.9
	Average max.	27.4	25.7	29.1	25.6	29.8	20.6
<b>19 Dec – 25 Dec</b>	Average min.	19.1	17.0	8.2	11.8	14.0	9.8
	Average max.	26.6	25.7	23.3	21.8	25.0	18.7

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>26 Dec – 1 Jan</b>	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
<b>Sun</b>	1.68	1.68	1.68	1.59	0.60	1.67
<b>Mon</b>	3.00	2.99	3.01	3.01	2.99	3.00
<b>Tue</b>	2.47	3.10	2.47	2.01	1.70	2.51
<b>Wed</b>	2.99	2.13	1.70	1.51	0.60	2.88
<b>Thu</b>	2.12	1.71	0.99	1.50	0.93	2.07
<b>Fri</b>	1.50	0.90	2.50	1.73	0.90	1.52
<b>Sat</b>	2.44	2.01	1.10	0.89	1.10	2.42

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	
26-Dec	MP:	305	306	307	307	306	-1
	AEMO:	289	281	267	270	265	
	MP as % of AEMO	105	109	115	114	115	
27-Dec	MP:	385	389	389	396	396	0
	AEMO:	380	411	442	436	419	
	MP as % of AEMO	101	95	88	91	95	
28-Dec	MP:	334	358	343	344	344	0
	AEMO:	376	386	375	370	340	
	MP as % of AEMO	89	93	91	93	101	
29-Dec	MP:	364	362	362	357	357	0
	AEMO:	335	325	320	310	308	
	MP as % of AEMO	109	111	113	115	116	
30-Dec	MP:	346	348	348	349	349	0
	AEMO:	333	315	311	312	309	
	MP as % of AEMO	104	110	112	112	113	
31-Dec	MP:	330	311	316	321	312	-16
	AEMO:	291	303	307	308	302	
	MP as % of AEMO	114	103	103	104	103	
1-Jan	MP:	298	298	298	298	298	0
	AEMO:	294	273	274	271	300	
	MP as % of AEMO	101	109	109	110	99	

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