

9 January – 15 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.³

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, with the subject title 'Comments on weekly gas report'.

Summary

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

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

9 Jan – 15 Jan	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	2.54	1.61	2.67

* weighted average daily imbalance price

** ex ante market price

STTM Gas Markets (Adelaide and Sydney)

Figure S3 shows that in Sydney this week the average daily ex post price was higher than the average daily ex ante price and both prices were higher than for the previous week. While ex post and ex ante prices were similar most of the week, at \$3.33/GJ the ex post price for the Thursday 13 January gas day was around double the ex ante price. The higher ex post price on this day resulted from the volume of network allocations being higher than the volume of gas scheduled by 11 TJ (as shown in figure S5). Although deviations were higher the previous day, the nature of the offer stack and demand on 13 January led to a high ex post price on the day.

Figure S4 shows that in Adelaide this week the average ex ante price was higher than for the previous week and the average ex post price was lower than the previous week. The volume of network allocations was higher than the volume of gas scheduled for most days of the week (see figure S6) resulting in the average ex post price being higher than the ex ante price.

High MOS payments in the Adelaide hub on Friday 14 January and Saturday 15 January (see figure S18b) were as a result of higher than usual volumes of decrease MOS sourced from the SEAGas pipeline. According to the current MOS stack, MOS offers exceeding \$28/GJ must be scheduled when more than 2 TJ of decrease MOS is required on the SEAGas pipeline. On these two days offers above \$28/GJ accounted for around 84 per cent of MOS service payments (see figure S18a). There have only been three previous occurrences of MOS decrease offers sourced from SEA Gas exceeding these volumes since the STTM commenced.

Victorian Gas Market

With demand in Victoria higher than the previous week (see figure N4), average daily injections were 66 TJ (16 per cent) higher than the previous week (see figure V3). Despite there being more \$0/GJ bids from Longford than the previous week (see figure V4), at \$2.54/GJ the average price was higher than last week (\$2.27/GJ - see figure V2), in line with higher demand.

Figure V1 shows that for the 6 am gas day schedules the number of participants with injection bids on the Declared Transmission System (DTS) at Iona reduced from two in the previous week (Origin and TRU Energy) to one (TRU Energy), while the number of market participants with withdrawal bids scheduled remained at four.

Consistent with what was reported in last week's Weekly Gas Market Analysis report, AEMO's INT313 report indicates that withdrawals at Iona exceeded injection volumes for six days during this week. Figure V3 shows that at 2 TJ, average daily injection volumes at Iona were the same as the previous week. Average daily injection volumes at Longford were higher than the previous week to meet higher demand.

AEMO did not issue any demand overrides this week. Supply demand point constraints (SDPCs) were issued for withdrawals at SEA Gas from Sunday to Tuesday and at Culcairn on Monday. SDPCs were also applied to injections at Bass Gas on Tuesday and at Longford from Wednesday to Friday.

National Gas Market Bulletin Board

Figure N4 shows changes in gas demand as well as gas flows from production and pipeline facilities on the Bulletin Board compared to the previous week. At 1511 TJ, total average daily demand was 120 TJ (9 per cent) higher than the previous week. With the exception of Mt Isa (where average daily demand was lower than the previous week), demand was higher in all regions this week than the previous week.

Flows were higher on most pipelines this week than the previous week. As was the case last week, flows were negative on the bi-directional South West Pipeline, again related to withdrawal of gas into underground storage at Iona.

Overall average daily production across the Bulletin Board was higher than last week by 161 TJ (11 per cent). With the exception of Ballera, production was higher at all production facilities this week than for the previous week.

Total average daily gas powered generation usage was 79 TJ higher than for the previous week.

Roma to Brisbane pipeline – reduced capacity

The AER understands that part of the Roma to Brisbane Pipeline in Queensland sustained damage during recent floods in south east Queensland, resulting in an unplanned outage on the pipeline. The AER has been advised that the damage was first discovered by the pipeline operator on Friday 14 January. The AER will provide further information in its next Weekly Gas Market Analysis.

Part A: National Gas Market Bulletin Board

Overview of pipeline and production flows

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

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

Average daily flows	NSW	ACT	VIC	SA	TAS	QLD		
						Brisbane	Mt Isa	Gladstone
9 Jan – 15 Jan	364	6	416	309	49	157	97	114
Financial Year-to-date 2010-11*	389	25	639	286	45	173	95	109
Financial Year-to-date 2009-10**	377	23	616	285	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
9 Jan – 15 Jan	133	73	205	34	156
Financial Year-to-date 2010-11*	86	19	164	30	157
Financial Year-to-date 2009-10**	84	46	164	22	157

^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)
9 Jan – 15 Jan	486	692	170	246
Financial Year-to-date 2010-11*	538	797	283	291
Financial Year-to-date 2009-10**	443	712	292	288

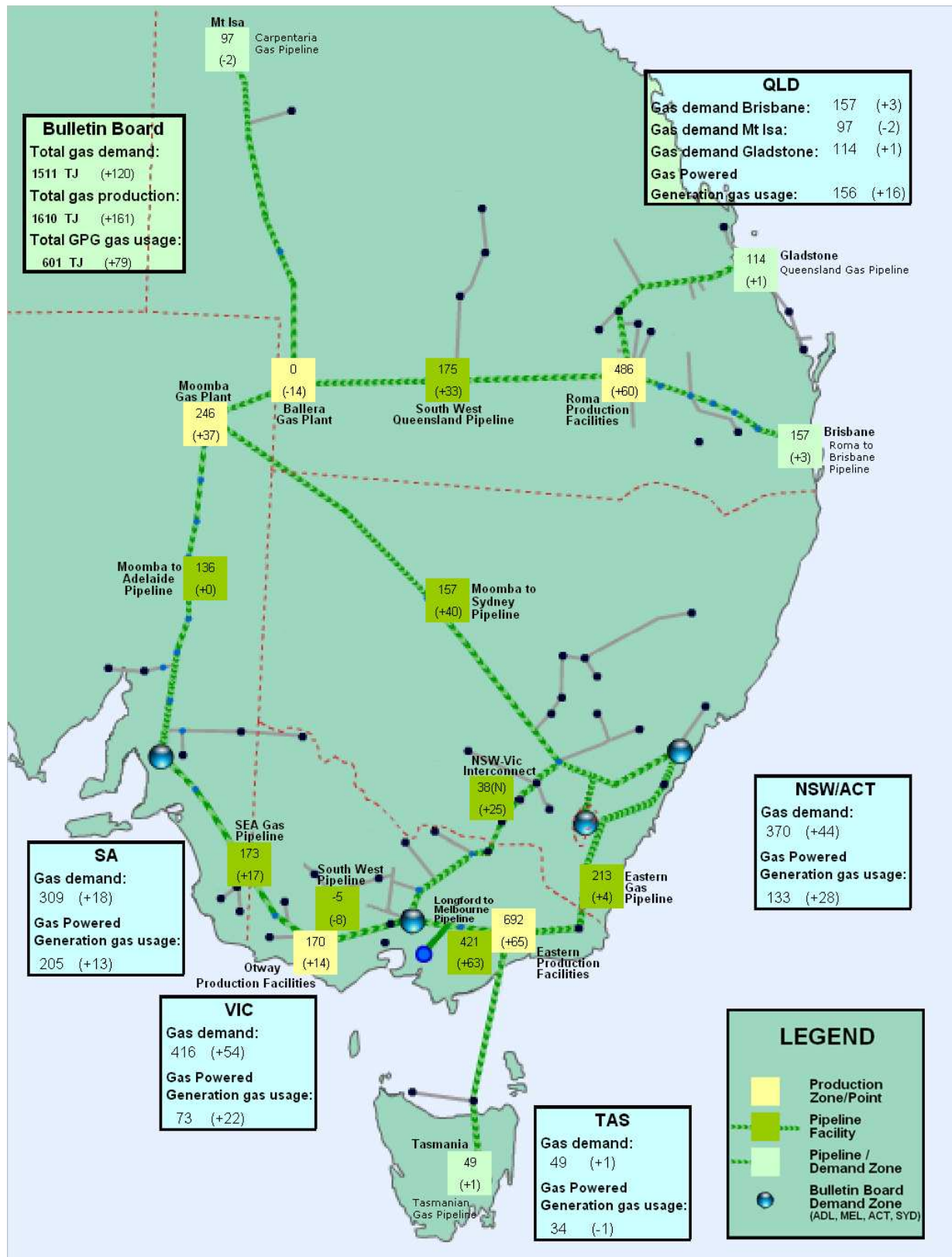
*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)

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

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

Figure N4 shows the changes in average daily pipeline and production flows compared to the previous week, as well as the gas demand and GPG usage of gas in each region.

Figure N4: Gas production/consumption and pipeline flows (TJ) (changes from the previous week are shown in brackets)

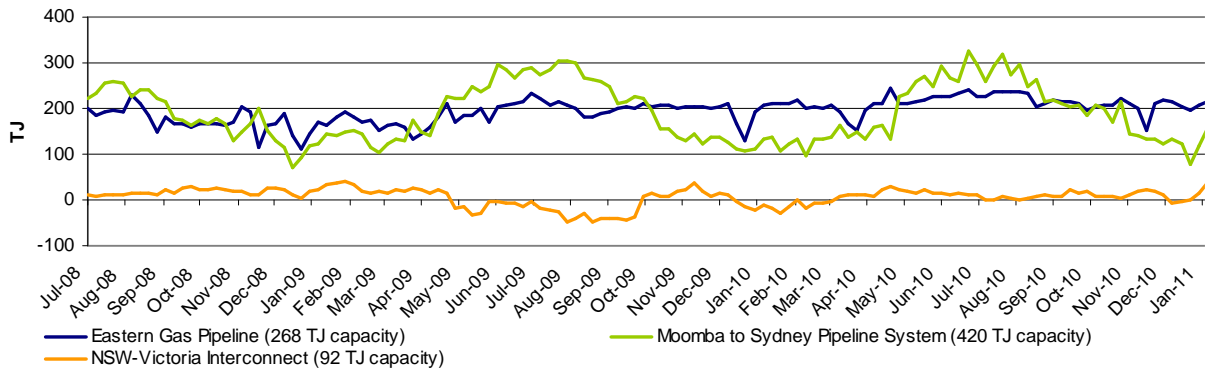


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North). Numbers in brackets indicate a change in average daily flow from the previous week.

Gas flows into demand regions

The figures below provide the average daily flows into each of the demand regions served by multiple pipelines and supply sources.

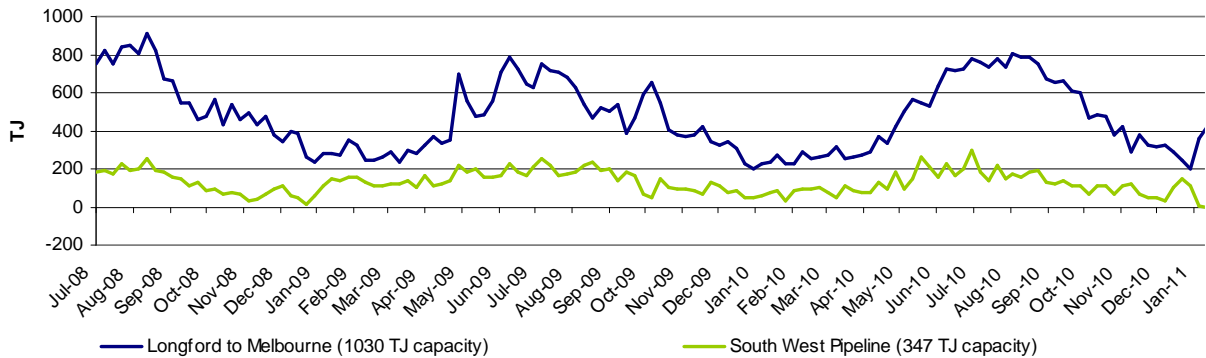
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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

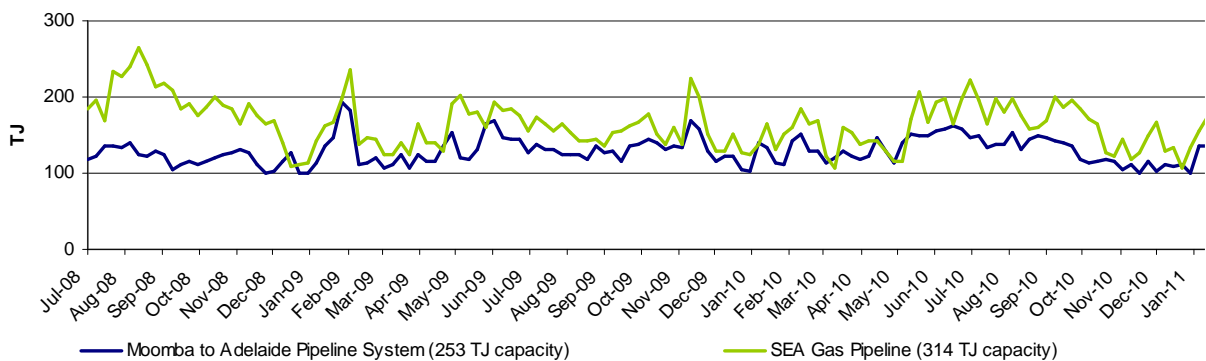
Notes: Negative flows on the NSW-Victoria Interconnect represent flows out of NSW into VIC.

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



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

Figure N7: Average daily flows (TJ) into SA demand region



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

Part B: Victorian Gas Market

Participation in the market

Figure V1 shows participant bids submitted at the start of the gas day (6 am) at injection and withdrawal points on the Victorian Declared Transmission System (DTS). The orange shaded boxes indicate that the participant submitted bids at that location on at least one occasion during the week. An “S” indicates that some of this nominated gas was scheduled into the gas market, while “NS” indicates that none of the gas was scheduled. Green shading indicates where a change has occurred from the previous week.

Bids are scheduled in price merit order — this means injection bids which are less than the market clearing price will be scheduled, while withdrawal bids which are greater than the market clearing price will be scheduled into the market.

Figure V1: Injection and withdrawal point bids in the VIC Gas Market[^]

Market Participant	Participant type	No. of injection / withdrawal bid points	Injection bids in the DTS							Withdrawal bids in the DTS				
			BassGas	Culcairn	IONA	LNG	Longford	SEA Gas	Vichub	Otway	Culcairn	IONA	SEA Gas	Vichub
AETV Power	Trader	1								S				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	2		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				S		S			NS
Origin (Vic)	Retailer	6	S	NS	NS	NS	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					NS		
Visy Paper	Distribution Customer	2					S				S			

[^]Bids taken from 6 am data for each gas day during the current week.

Source: <http://www.aemo.com.au> (INT131)

Market Prices

Figure V2 displays volume-weighted average daily imbalance prices, compared to the 2010-11 financial year-to-date average and the 2009-10 financial year-to-date equivalent as well as daily imbalance prices for each day during the current week.

The daily average market price is a volume weighted imbalance price taking account of trading amounts at five times through the gas day — 6 am, 10 am, 2 pm, 6 pm and 10 pm.

Figure V2: Imbalance Weighted Prices (\$/GJ)

	9 Jan – 15 Jan	2 Jan – 8 Jan	2010-11 Financial YTD*	2009-10 Financial YTD**
Average daily price	2.54	2.27	1.87	1.55

9 Jan – 15 Jan	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	2.46	2.54	2.46	2.46	3.29	2.10	2.44

*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)

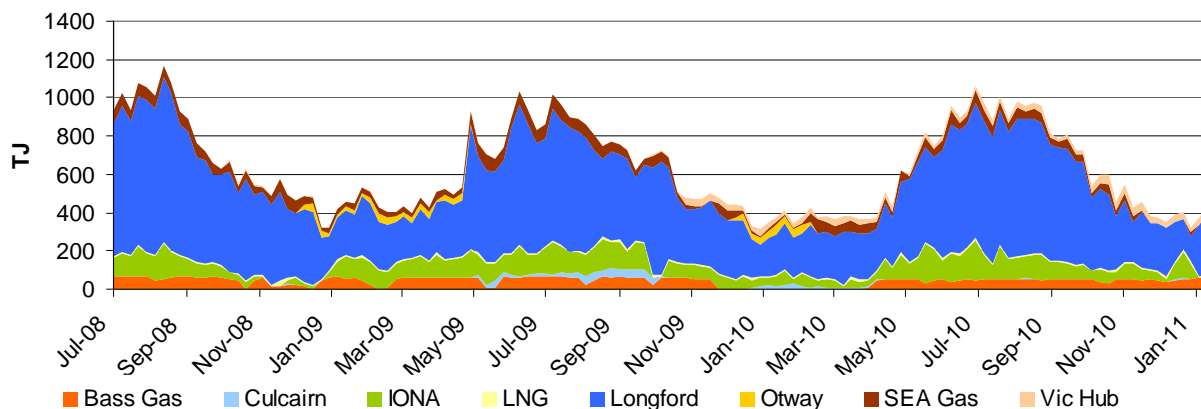
Source: <http://www.aemo.com.au> (INT 041)

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:	9 Jan – 15 Jan	2 Jan – 8 Jan	2010-11 Financial YTD*	2009-10 Financial YTD**
Culcairn	0	1	1	18
Longford	328	268	450	412
LNG	10	10	9	8
IONA	2	2	82	89
VicHub	31	32	33	14
SEAGas	4	0	31	42
Bass Gas	62	58	49	41
Otway	0	0	0	7
TOTAL	437	371	653	632



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

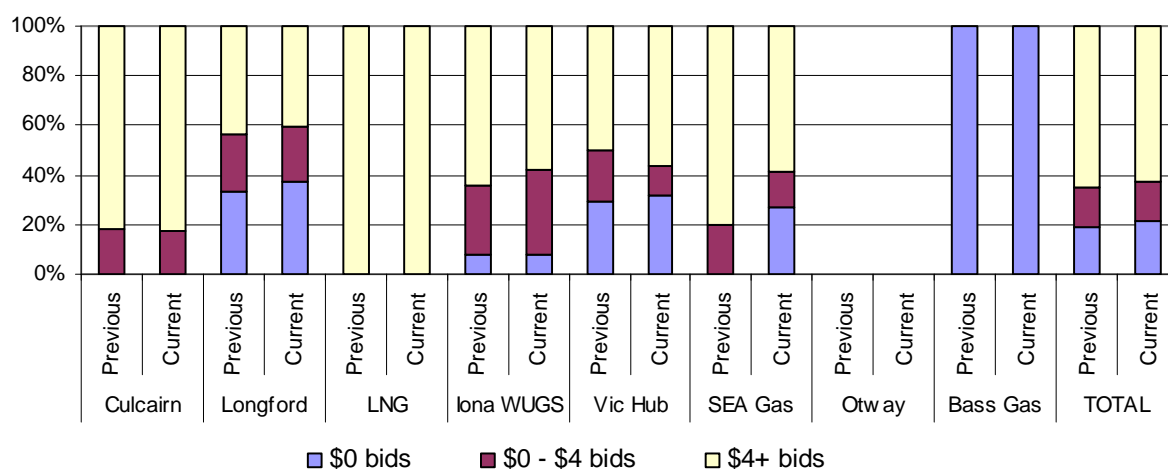
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)

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

Bidding Activity

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

Figure V4: Price structure of bids by injection points



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

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

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

Figure V5: Intra-day rebidding of gas injections

Injection Point:	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Culcairn		Lumo					
Longford	Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin	AGL Origin TRU
LNG							
Iona	TRU	TRU APG Simply	TRU	TRU	Origin TRU Simply	Origin TRU APG Simply	Origin TRU Simply
VicHub	AETV	AETV	AETV Lumo	AETV Lumo	AETV Lumo	AETV	AETV
SEAGas	Simply						
Bass Gas							

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

System withdrawal zone:	9 Jan – 15 Jan	2 Jan – 8 Jan	2010-11 Financial YTD*	2009-10 Financial YTD**
Ballarat	9	8	28	25
Geelong^	103	87	90	84
Gippsland	34	34	46	48
Melbourne	236	226	437	419
Northern	67	38	64	56
TOTAL	448	393	664	632

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

AEMO's website (www.aemo.com.au) contains documents that provide further detail on how the STTM works, including a glossary of terms.

Participation in the market

Figures S1 and S2 show participant supply offers and withdrawal bids submitted in the Sydney and Adelaide STTM hubs. The orange shaded boxes indicate that the participant submitted offers and bids at that location on at least one occasion during the week. An “S” indicates that some of this gas was scheduled into the gas market, while “NS” indicates that none of the gas was scheduled. Green shading indicates where a change has occurred from the previous week.

Offers and Bids are scheduled in price merit order—this means offers that are less than the market clearing price will be scheduled, while withdrawal bids that are greater than the market clearing price will be scheduled into the market.

Figure S1: Supply Offers and Withdrawal Bids (Sydney Hub)^

Trading Participant	Participant type^^	No. of supply offer / withdrawal bid points	Offers			Bids			
			EGP	MSP	ROS	EGP	MSP	ROS	SYD - NET
AETV Power	Shipper	1	S			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	NS			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	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	NS	S			

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

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

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

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

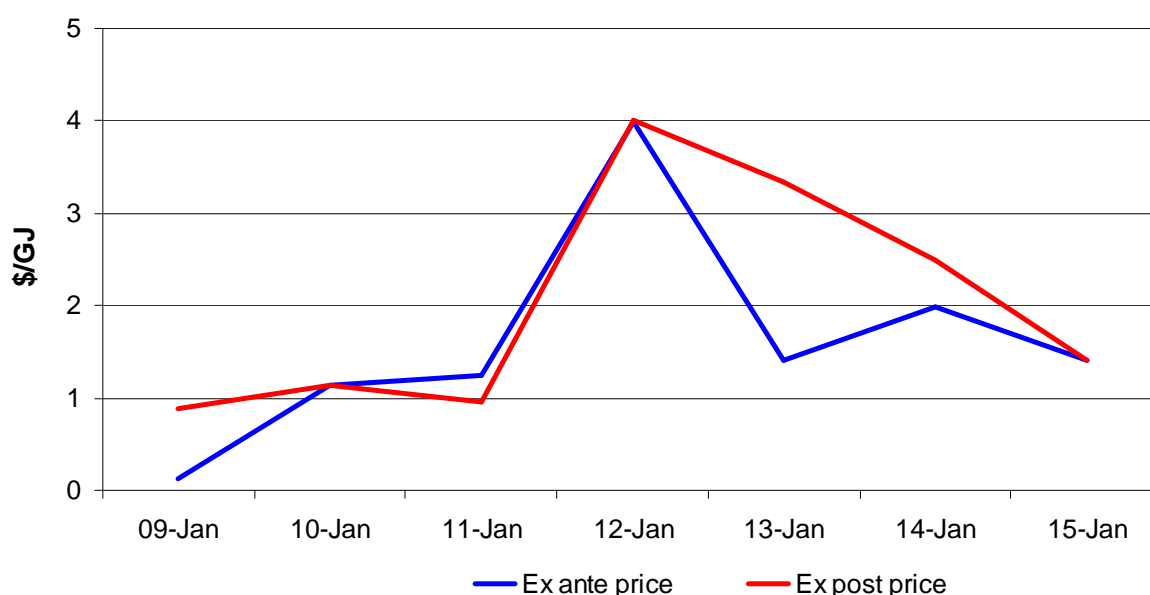
Ex ante and Ex post Market Prices

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

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

	9 Jan – 15 Jan	2 Jan – 8 Jan	2010-11 Financial YTD*
Ex ante price	1.61	1.07	2.54
Ex post price	2.03	1.77	7.71

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

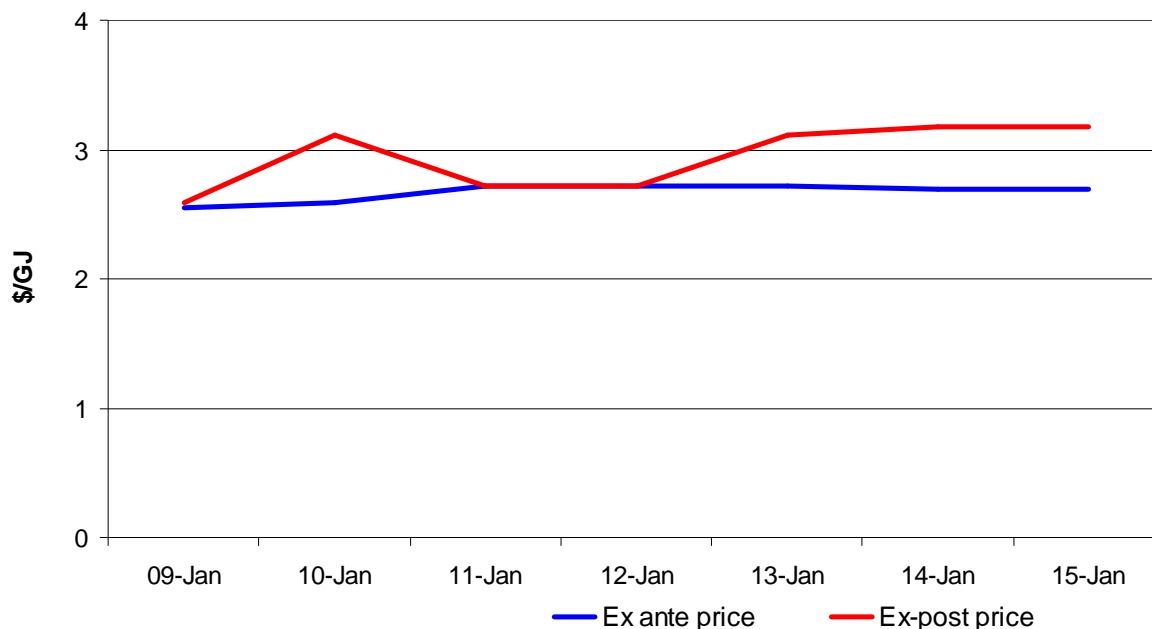


Source: <http://www.aemo.com.au> INT 651, 657

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

	9 Jan – 15 Jan	2 Jan – 8 Jan	2010-11 Financial YTD*
Ex ante price	2.67	2.51	2.66
Ex post price	2.94	2.98	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.

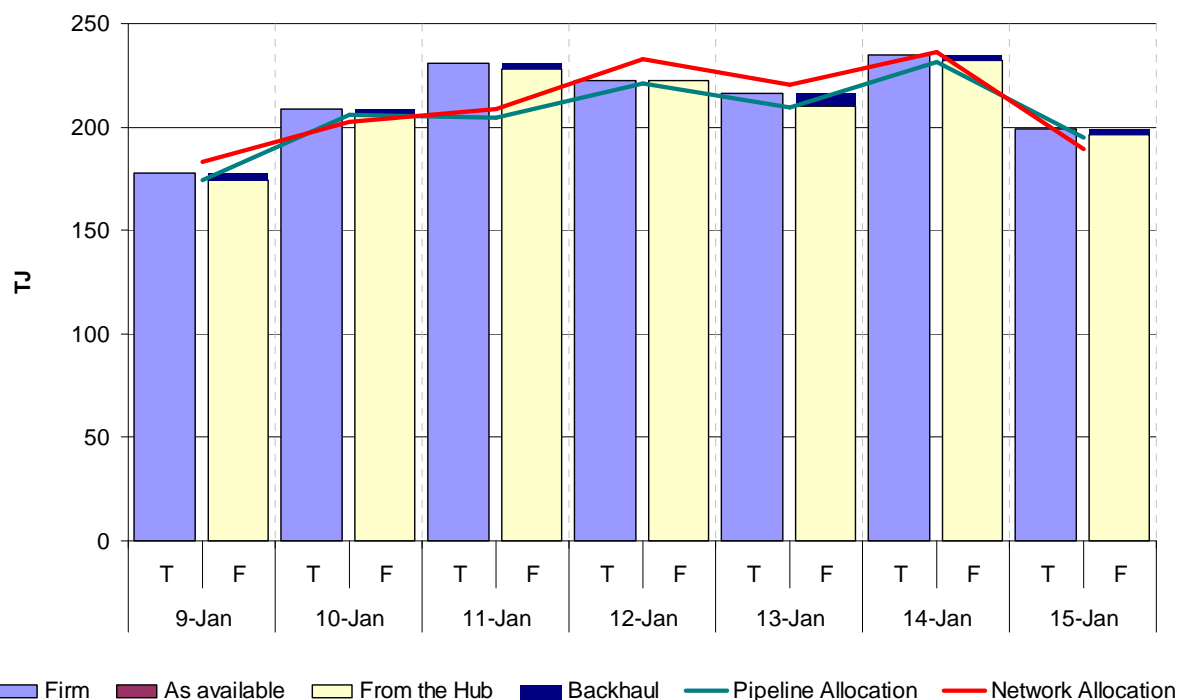
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

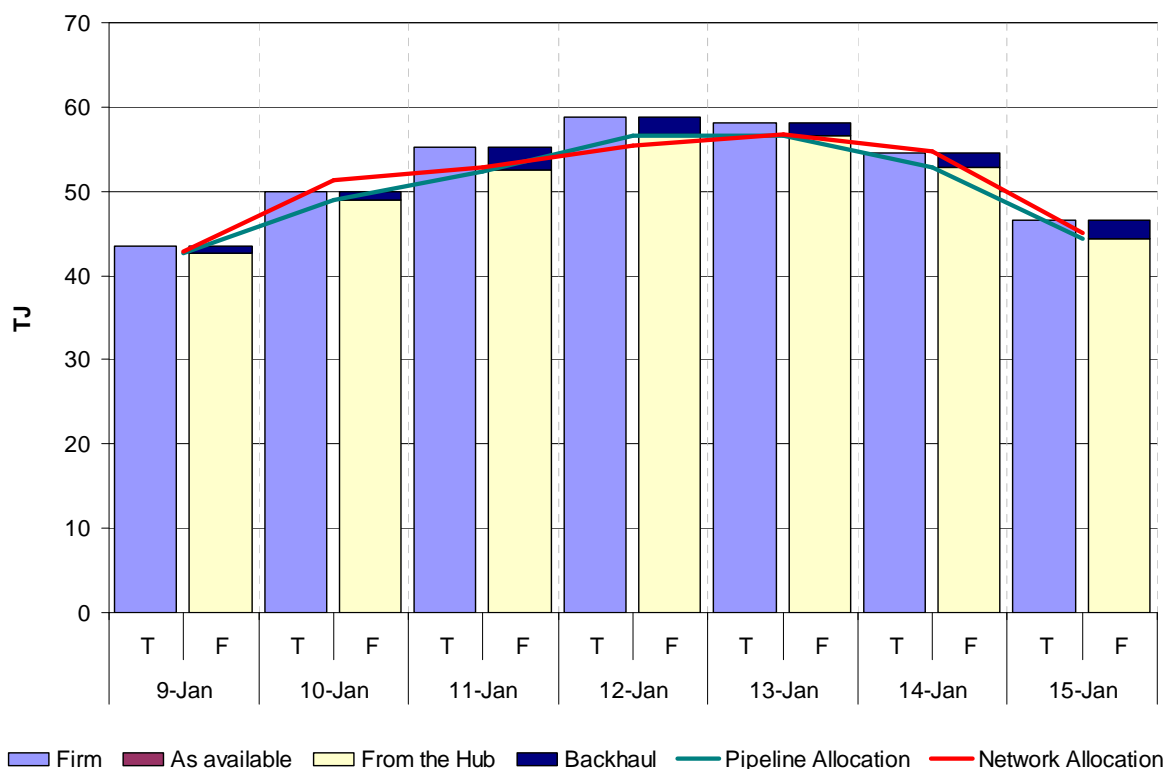
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

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)

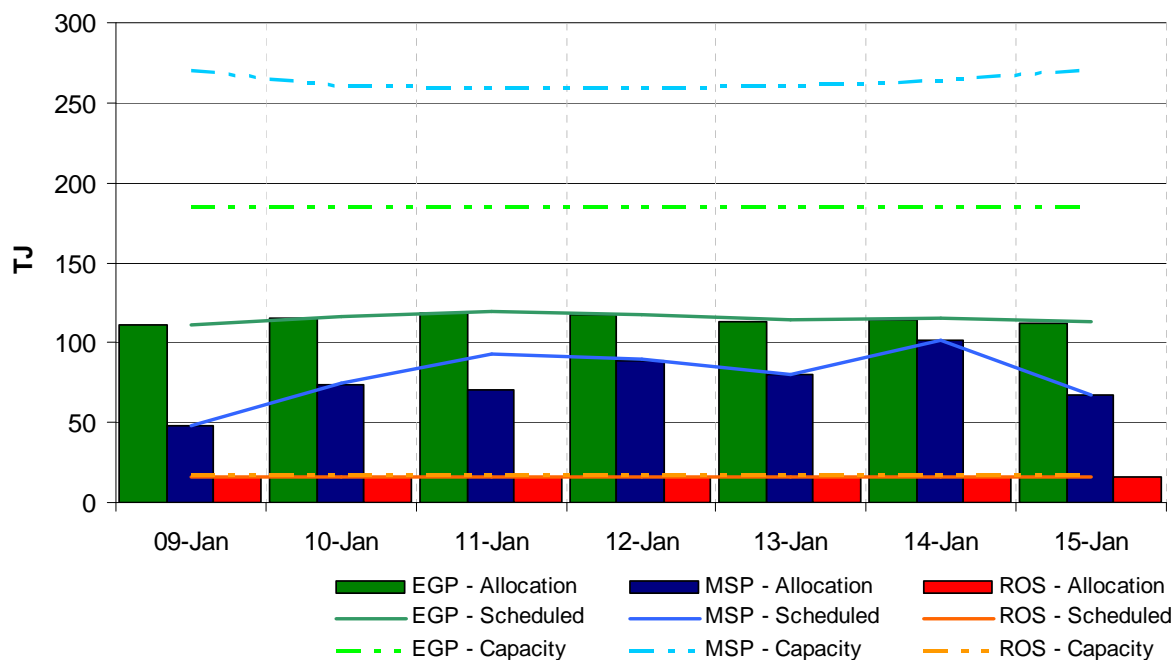
Pipeline Facility Allocations

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.

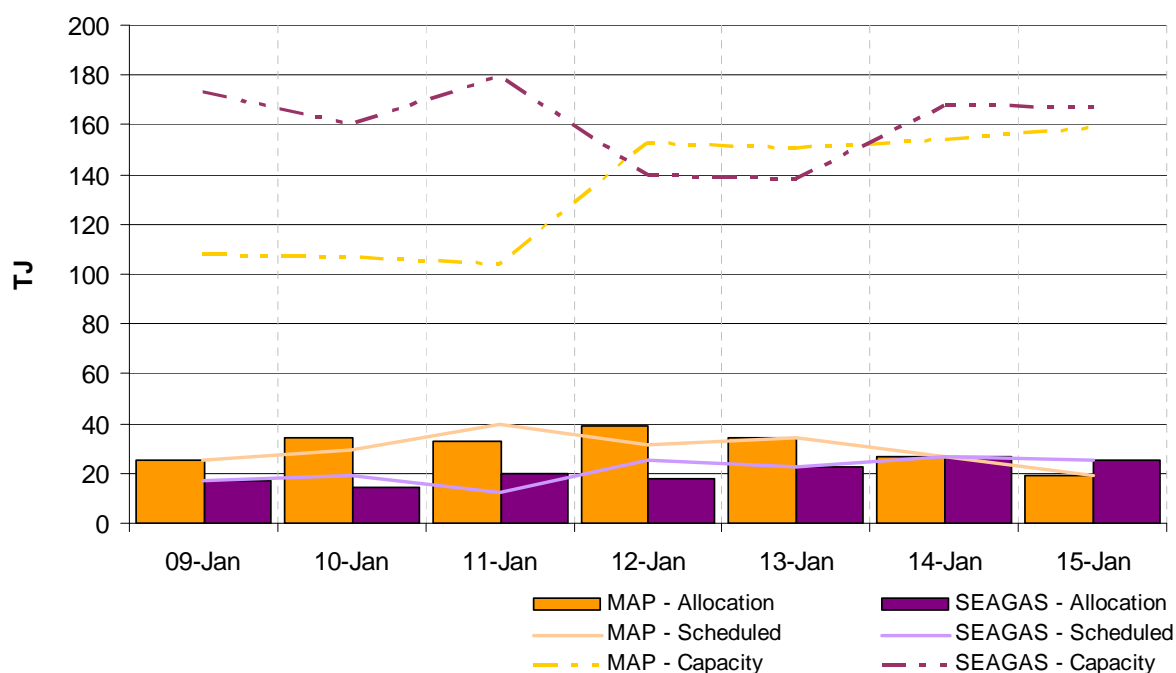
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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

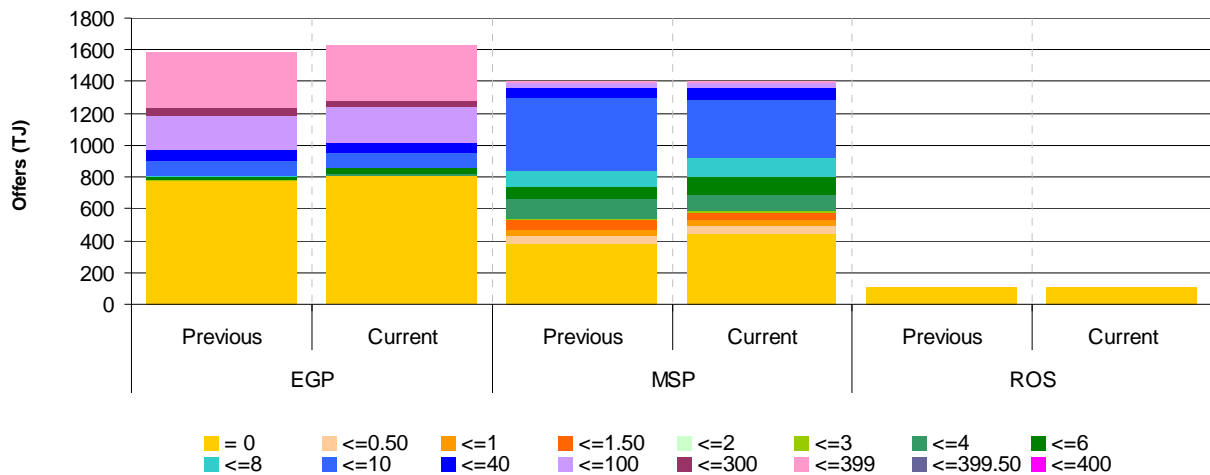
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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.

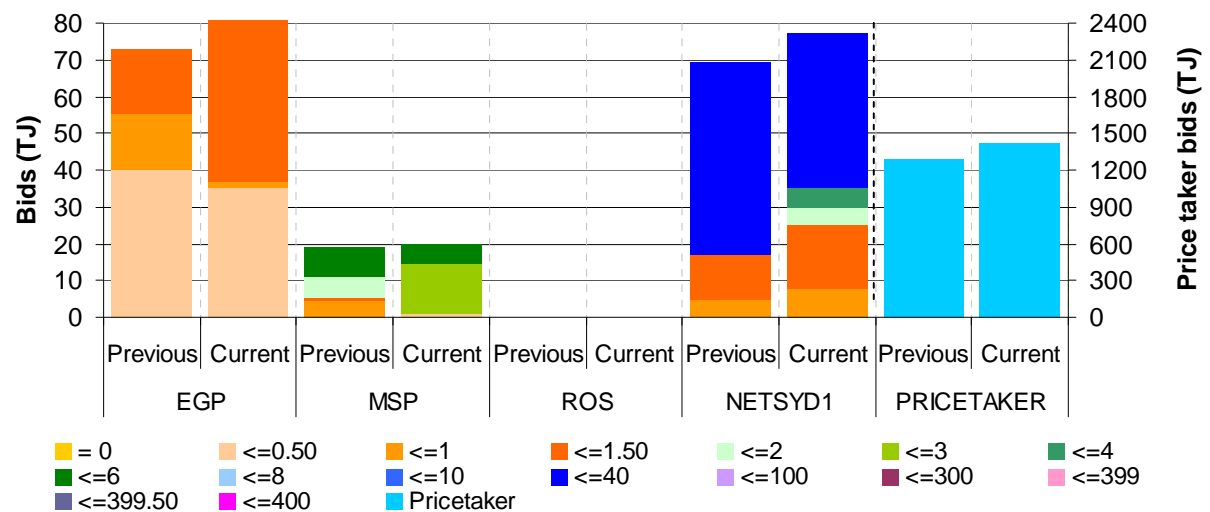
Because scheduling is price-driven, offers for lower-priced gas are scheduled ahead of offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

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



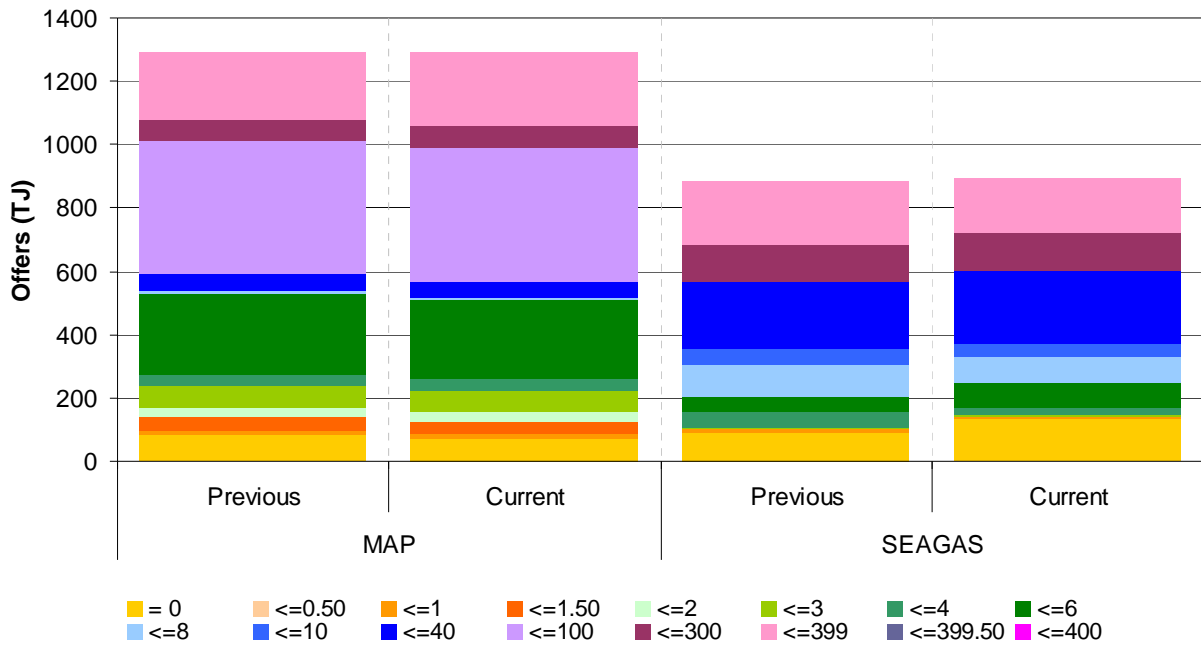
Source: <http://www.aemo.com.au> INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

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



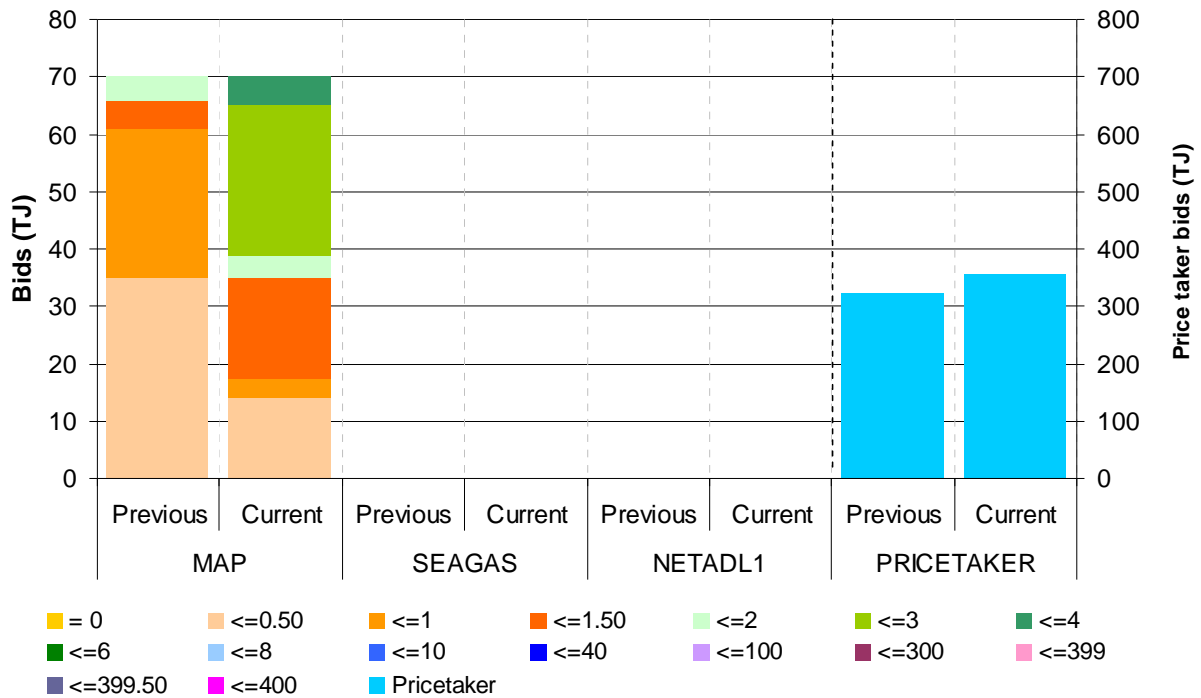
Source: <http://www.aemo.com.au> INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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 OneStl(NSW) SANTOS TRU	OneStl(NSW) TRU	TRU	Country EA OneStl(NSW)	EA OneStl(NSW) TRU	EA Lumo Energy Australia Pty Ltd SANTOS	AETV OneStl(NSW)
	D-2 to D-1	OneStl(NSW) TRU	TRU	BluSc Country EA OneStl(NSW) SANTOS TRU	BluSc Country EA OneStl(NSW) TRU	BluSc Country EA Lumo Energy Australia Pty Ltd SANTOS TRU	AETV BluSc Country EA OneStl(NSW) SANTOS	BluSc Country EA SANTOS
MSP	D-3 to D-2	AGL(ESM) EA Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) Origin TRU
	D-2 to D-1	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU
ROS	D-3 to D-2							
	D-2 to D-1							

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				Lumo	Lumo		AETV
	D-2 to D-1			Lumo	Lumo		AETV	AETV
MSP	D-3 to D-2				Country TRU			
	D-2 to D-1			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 TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU	ABC AGL(SA) Origin Simply TRU	AGL(SA) Origin TRU	AGL(SA) Origin Simply TRU
	D-2 to D-1	AGL(SA) Origin	AGL(SA) Origin	ABC AGL(SA) Origin	ABC AGL(SA) Origin Simply	AGL(SA) Origin	AGL(SA) Origin Simply	AGL(SA) Origin Simply
SEA-GAS	D-3 to D-2	Origin TRU	Simply TRU	TRU	Origin TRU	AGL(WGSA) Origin Simply TRU	AGL(WGSA) Origin TRU	Origin TRU
	D-2 to D-1	Simply TRU		Origin	AGL(WGSA) Origin Simply TRU	AGL(WGSA) Origin TRU	Origin 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
	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 deviation¹ occurs on a gas day and there is a requirement for MOS from a MOS provider (either an increase or decrease offer), the MOS provider is paid according to their MOS offer price (the MOS service payment).

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

¹ 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.

charge). The MOS provider can then choose to submit bids or offers for the gas it needs to replace or run down its MOS gas allocation on the gas day.

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

Figure S17a: Sydney MOS allocations

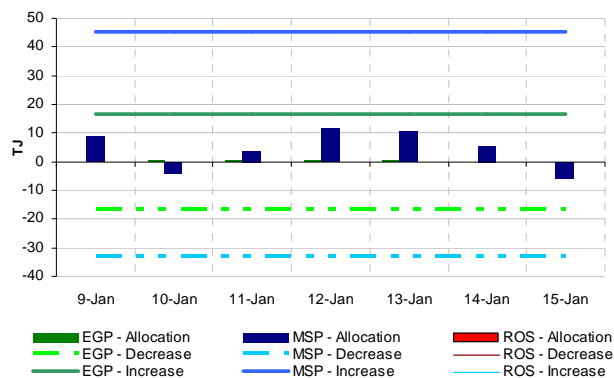
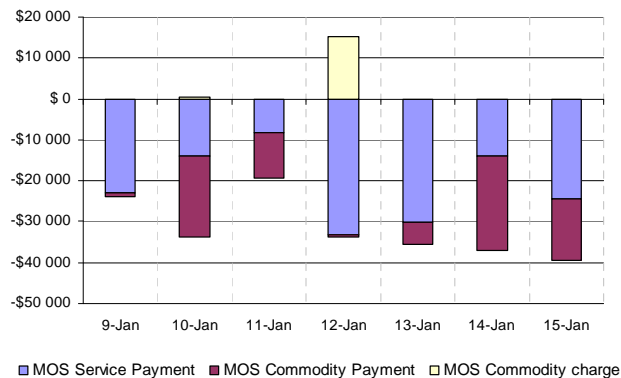


Figure S17b: Sydney MOS payments/charges



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

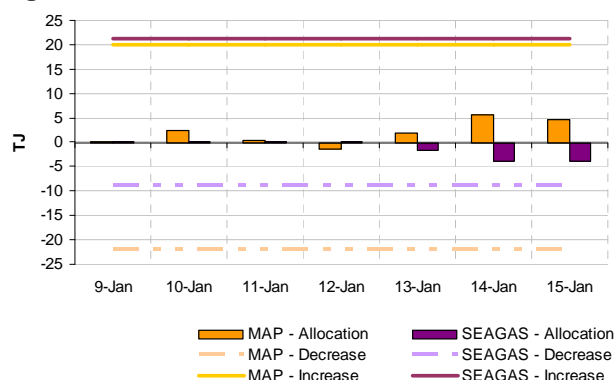
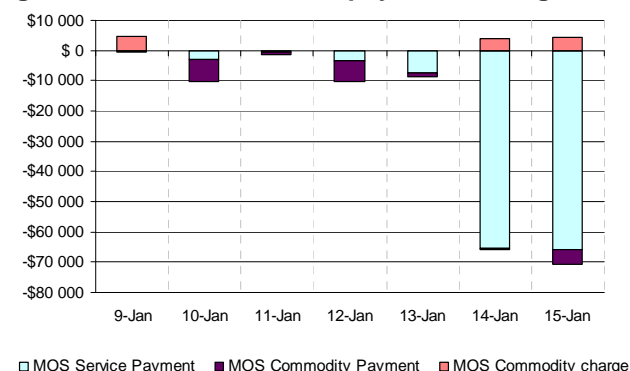


Figure S18b: Adelaide MOS payments/charges



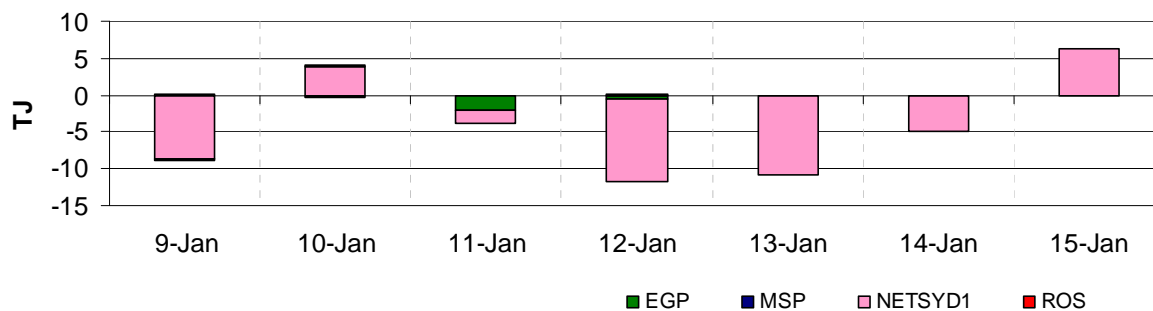
Source: <http://www.aemo.com.au> INT 663, 664, 665

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

Deviations

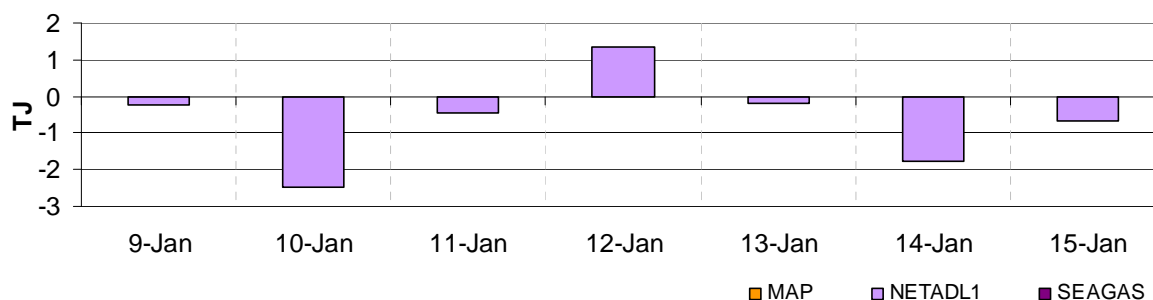
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

	9 Jan – 15 Jan	2 Jan – 8 Jan	2010-11 Financial YTD*
Quantity (TJ)	4.18	2.05	4.15
Charges (\$)	71.58	20.02	1047.52

* 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

	9 Jan – 15 Jan	2 Jan – 8 Jan	2010-11 Financial YTD*
Quantity (TJ)	0.02	0.30	0.90
Charges (\$)	0.00	0.00	20.79

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

Source: <http://www.aemo.com.au> INT663

APPENDIX

Figures A1 and A2 display the daily gas flows from each pipeline and production/storage facility in the National Gas Market over the current week. The nameplate capacity or MDQ (Maximum Daily Quantity) for each facility are also provided, along with the proportion of MDQ used on average over the current week and the year to date at each facility. Flow data not provided by bulletin board polling time is indicated by N/A.

Figure A1: Daily flows (TJ) for pipeline facilities

Demand zone and pipeline facility	Sun	Mon	Tue	Wed	Thu	Fri	Sat	MDQ (TJ)	YTD average capacity usage (%)	Current week average daily flows	Current YTD average daily flows*	Previous YTD average daily flows**
QLD												
Carpentaria Pipeline	93	97	96	97	93	101	104	117	81	97	95	86
QLD Gas Pipeline	114	114	111	112	115	116	114	142	77	114	109	69
Roma to Brisbane Pipeline	153	167	179	156	159	153	132	219	79	157	173	166
South West QLD Pipeline	144	150	180	205	186	187	173	181	73	175	132	146
NSW/ACT												
Eastern Gas Pipeline	197	220	227	219	213	215	201	268	80	213	213	199
Moomba to Sydney Pipeline	97	183	135	192	197	184	112	420	48	157	200	202
NSW-VIC Interconnect [^]	25	35	44	40	39	40	46	92	10	38	10	-12
VIC												
Longford to Melbourne	319	421	456	482	463	459	346	1030	51	421	525	464
South West Pipeline	-9	45	-9	-17	-18	-25	1	347	33	-5	113	133
SA												
Moomba to Adelaide Pipeline	127	145	149	148	145	124	114	253	49	136	125	131
SEA Gas Pipeline	107	177	177	185	194	198	171	314	51	173	161	154
TAS												
Tasmanian Gas Pipeline	50	55	52	51	44	46	42	129	35	49	45	37

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

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

[^]Negative figure represents a reverse flow of gas along the pipeline

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

Notes: Operational ranges for each pipeline facility range from a minimum of 20 per cent to a maximum of 120 per cent of the respective MDQs. The exceptions are the South West Queensland Pipeline and the NSW-VIC Interconnect which have operational ranges 40 per cent to 120 per cent and 0 to 120 per cent of MDQ respectively.

Figure A2: Figure A2: Daily flows (TJ) for production / storage facilities compared to operational ranges and use of production/storage capacity

Production zone production / storage facility	Sun	Mon	Tue	Wed	Thu	Fri	Sat	MDQ (TJ)	YTD average capacity usage* (%)	Current week average daily flows	Current YTD average daily flows*	Previous YTD average daily flows**
Roma (QLD)												
Berwyndale South	83	80	83	83	76	82	82	140	69	81	97	90
Fairview	86	80	98	124	112	110	104	130	91	102	118	114
Kenya Gas Plant	52	49	48	44	44	46	46	160	36	47	57	47
Kincora	7	7	7	15	0	0	0	25	16	5	4	1
Kogan North	10	10	10	10	10	10	10	12	77	10	9	8
Peat	6	6	6	6	6	6	6	15	64	6	10	8
Rolleston	8	9	9	9	9	9	9	30	36	9	11	11
Scotia	22	25	26	26	26	26	26	29	90	25	26	22
Spring Gully	42	46	49	46	46	43	47	69	71	46	49	45
Strathblane	42	46	49	46	46	43	47	69	71	46	49	45
Talooka	26	28	30	28	28	26	28	42	71	28	30	27
Wallumbilla	5	5	5	5	5	2	0	20	41	4	8	11
Yellowbank	12	12	13	12	13	12	11	30	41	12	12	14
Talinga	50	65	70	71	67	70	69	90	64	66	58	
Moomba (SA/QLD)												
Moomba Gas Plant	184	238	253	256	243	319	226	430	64	246	275	280
Ballera	0	1	0	0	0	0	0	150	11	0	16	8
Eastern (VIC)												
Orbost Gas Plant	60	58	58	57	57	57	57	100	26	58	26	13
Lang Lang Gas Plant	61	63	58	64	63	63	63	70	69	62	49	40
Longford Gas Plant	484	559	605	610	618	617	512	1145	63	572	722	657
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	71	71	71	68	50	50	50	73	88	61	64	73
Otway Gas Plant	51	86	106	87	88	103	99	205	61	89	126	129
Iona Underground Gas Storage	-3	8	17	53	36	20	9	440	21	20	92	90

*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)
9 Jan – 15 Jan	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
2 Jan – 8 Jan	Average min.	21.5	19.3	13.5	16.3	17.6	12.8
	Average max.	28.7	25.0	25.6	26.4	30.0	23.9

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

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

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

9 Jan – 15 Jan	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	2.46	2.46	2.46	2.46	2.50	2.46
Mon	2.47	2.79	3.17	3.42	0.93	2.54
Tue	2.46	2.79	2.86	2.01	1.05	2.46
Wed	2.46	2.01	2.47	2.85	1.13	2.46
Thu	3.30	3.48	3.10	3.32	2.84	3.29
Fri	2.05	3.19	3.50	3.11	2.05	2.10
Sat	2.46	2.46	2.10	2.03	2.50	2.44

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

Figure A5 compares the market participants and market operator demand forecasts and each of the scheduling intervals on each gas day during the current week. Total actual demand for each gas day is also provided, along with the total demand override (if any) from AEMO.

Figure A5: Daily demand forecasts (TJ) and daily demand overrides (TJ)

Gas Day	Demand Forecasts (TJ)	Schedule					Total Demand Override (TJ)
		1	2	3	4	5	
9-Jan	MP:	283	283	283	283	283	0
	AEMO:	264	265	265	269	276	
	MP as % of AEMO	107	107	107	105	103	
10-Jan	MP:	359	397	410	429	429	0
	AEMO:	346	393	418	427	451	
	MP as % of AEMO	104	101	98	100	95	
11-Jan	MP:	439	439	448	445	445	0
	AEMO:	427	425	434	419	412	
	MP as % of AEMO	103	103	103	106	108	
12-Jan	MP:	435	461	461	456	456	0
	AEMO:	417	440	439	430	428	
	MP as % of AEMO	104	105	105	106	107	
13-Jan	MP:	424	439	432	432	432	0
	AEMO:	402	421	413	410	407	
	MP as % of AEMO	106	104	105	105	106	
14-Jan	MP:	412	425	425	426	426	0
	AEMO:	403	424	427	420	411	
	MP as % of AEMO	102	100	100	101	104	
15-Jan	MP:	302	307	307	308	308	0
	AEMO:	312	292	295	289	300	
	MP as % of AEMO	97	105	104	107	103	

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