

8 May – 14 May 2011

Preface

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

The AER is responsible for monitoring and enforcing compliance with Part 20 of the National Gas Rules (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

8 May – 14 May	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	3.59	3.44	3.57

*weighted average daily imbalance price

**ex ante market price

STTM Gas Markets (Adelaide and Sydney)

Figure S3 shows this week's average ex ante price at the Sydney hub was higher than the previous week and the financial year-to-date average. In Adelaide, the weekly average ex ante price was lower than the previous week, but higher than the financial year-to-date average (as shown in figure S4). Withdrawal bids at the Adelaide hub were scheduled for the first time this year (see figure S2).

In Sydney on Wednesday 11 May, network allocations (consumption at the hub) exceeded pipeline allocations (deliveries to the hub) by 19 TJ (see figure S5). This was the largest deviation since the 22 March gas day when pipeline allocations exceeded network allocations by 45 TJ due to network pressure issues (see *AER Gas Weekly Analysis 20 March to 26 March*). The 19 TJ deviation was caused by consumption at the hub being 22 TJ higher than forecast, (partially offset by 3 TJ of over-injections from the Rosalind Park facility as shown in figure S19). Market operator services (MOS) payments on the day were \$84 951 (see figure S17b).

On 14 May a deviations of 16 TJ in the Sydney hub led to \$263 711 in MOS payments. Although deviations were lower on this day than for 11 May, MOS payments were higher because deviations on 14 May resulted in the need for decrease MOS offers, which are priced higher than increase MOS offers for the same quantities.

At the Adelaide hub, network allocations exceeded pipeline allocations on each day this week, with the exception of Thursday 12 May (see figure S6). This was because consumption at the hub was on average 3.7 TJ/day higher than forecast (see figure S20). Figure S8 also shows SEAGas pipeline allocations were lower than the scheduled volumes on each day this week. Taken together, this resulted in a requirement for MOS increase allocations on the Moomba to Adelaide Pipeline (MAP), and MOS decrease allocations on the SEAGas Pipeline, on each day this week (see figure S18).

Victorian Gas Market

Figure V2 shows this week's average daily price was \$3.59/GJ, up from \$3.28/GJ in the previous week, consistent with higher average injections into the Victorian Declared Transmission System (DTS) of 940 TJ/day, compared to 664 TJ/day the previous week (see figure V3). The higher demand was consistent with the drop in average minimum and average maximum temperatures this week which fell from 11.2 C to 7.1 C and 17.5 C to 14.6 C respectively (see Appendix A3). The daily imbalance weighted average price reached \$3.98/GJ on Thursday (see Appendix A4), the second highest this financial year behind \$4.71/GJ on 2 February.

AEMO issued several demand overrides this week; the largest at 33 TJ on Thursday 12 May (see Appendix A5). AEMO also increased its end-of-day (EOD) line pack target from 350 TJ to 360 TJ on that gas day. This was done to reflect northern zone upgrades to the DTS.¹

This report now includes average daily flows and information on injection bids from the Mortlake injection point (see figures V1 and V3 to V5).

National Gas Market Bulletin Board

AGL and Santos did not provide actual flow data for their respective production facilities for the 12 May 2011 gas day. The AER has launched a special project to ensure the timely provision of accurate data, which is necessary to the efficient and effective operation of the market. As part of this project, the AER has commenced an auditing process to ensure participants' compliance with the relevant requirements.

Figure N4 shows this week's average gas demand as significantly higher than last week, led by Victoria (up by 271 TJ/day) and NSW/ACT (up by 66 TJ/day). However, lower demand in South Australia was the result of a 24 TJ/day fall in demand for gas powered generation (GPG). In response to higher demand in Victoria, NSW/ACT and Tasmania, average production in the Eastern facilities reached 1000 TJ/day this week (up by 195 TJ from last week). Average daily production at Otway and Moomba were also 60 TJ and 44 TJ higher respectively.

¹ Information provided in an AEMO system wide notice on 10 May 2011, 1:57pm

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
8 May – 14 May	434	42	932	281	56	169	91	110
Financial Year-to-date 2010-11*	374	20	582	283	45	165	94	109
Financial Year-to-date 2009-10**	363	19	542	280	38	169	86	71

*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
8 May – 14 May	76	26	173	39	120
Financial Year-to-date 2010-11*	87	24	166	31	150
Financial Year-to-date 2009-10**	84	39	165	24	163

^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, Barcardine, 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)
8 May – 14 May	548	1002	426	273
Financial Year-to-date 2010-11*	533	754	264	268
Financial Year-to-date 2009-10**	459	657	274	274

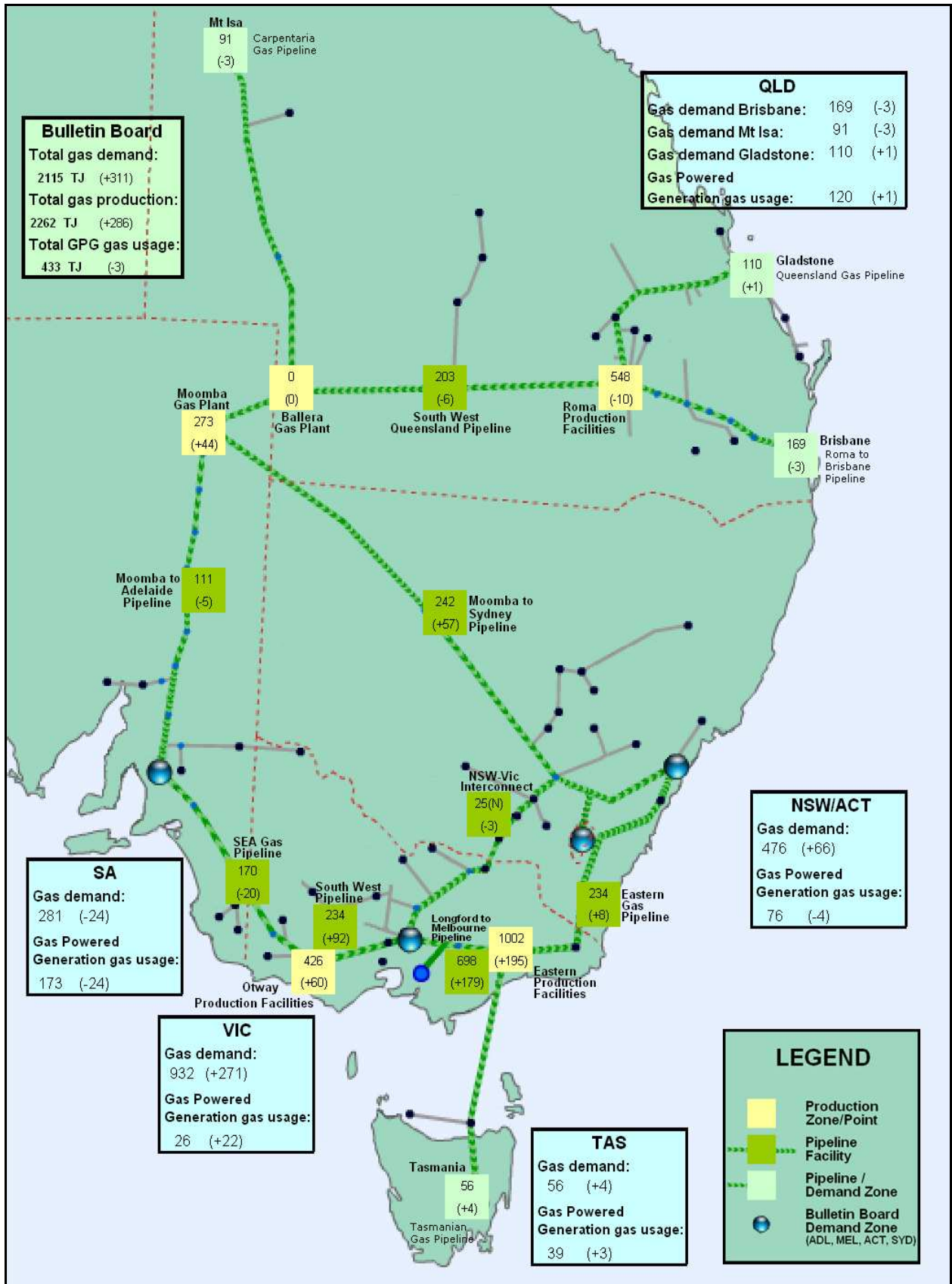
*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)

**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)

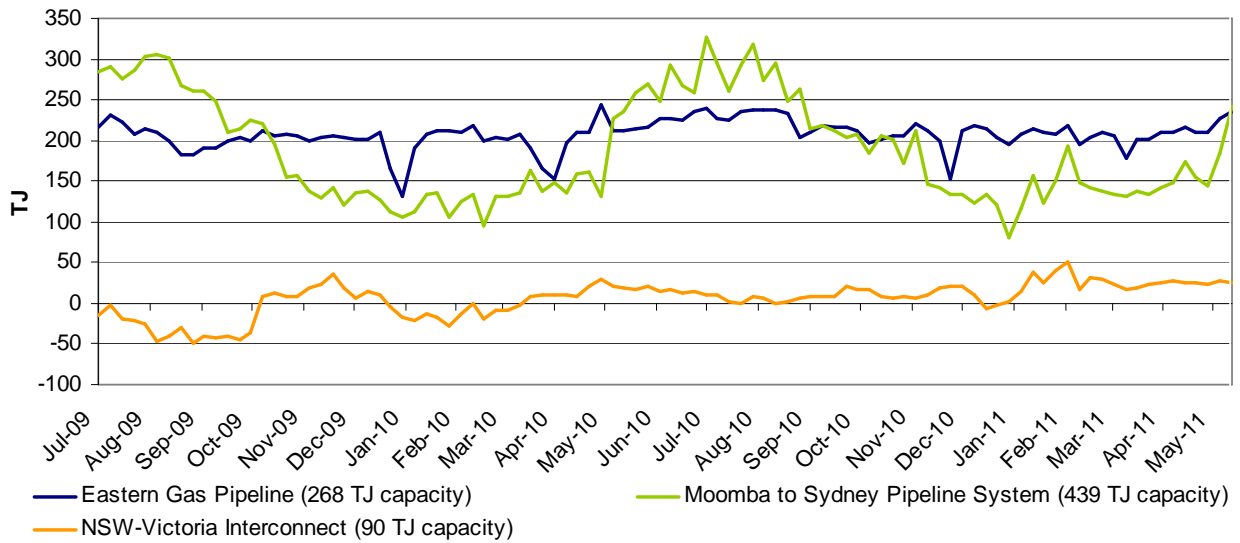


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
 Numbers in brackets indicate a change in average daily flow from the previous week.

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.

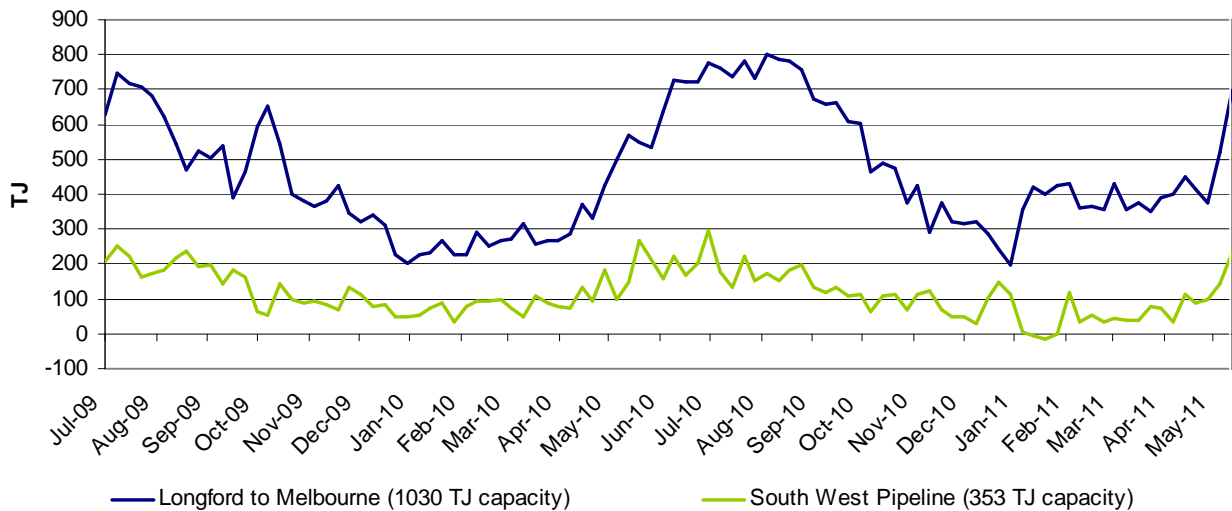
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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.

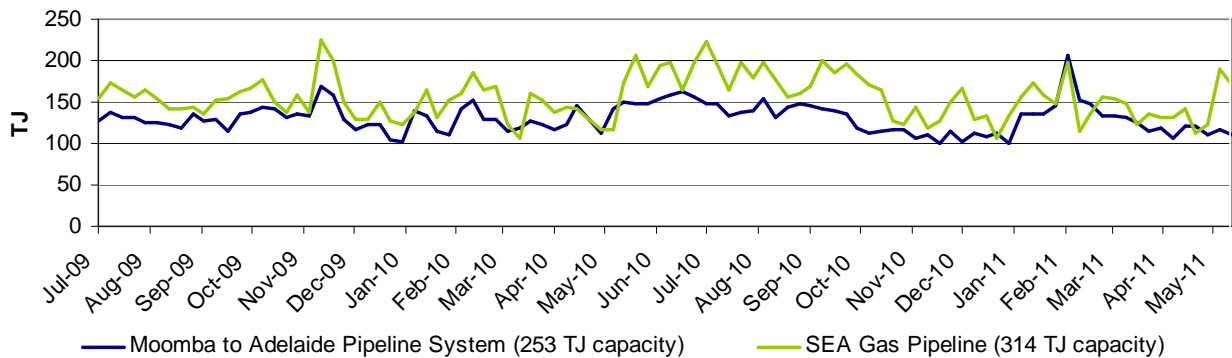
Figure N6: Average daily flows (TJ) into VIC demand region



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

Notes: Negative flows on the South West Pipeline represent flows out of the VPTS and back into storage at Iona.

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 VPTS										Withdrawal bids in the VPTS				
			BassGas	Culcairn	IONA	LNG	Longford	SEA Gas	VicHub	Otway	Mortlake	Culcairn	IONA	SEA Gas	VicHub		
AETV Power	Trader	1								NS							S
AGL (Qld)	Retailer	1				NS											
AGL	Retailer	4			NS	NS	S			NS					S		
Aurora Energy	Retailer	1					S										
Ausgrid	Retailer	2					S			S							
Aust. Power & Gas	Retailer	3			S	NS	S								S		
Aust. Power & Gas	Trader	1					S										
Coogee Energy	Transmission Customer	1					S										
Essential Energy	Transmission Customer	1											S				
International Power	Transmission Customer	1							NS								
Lumo Energy	Retailer	3		S		NS				S		S	NS				
Lumo Energy	Trader	2			S					S					NS		NS
Origin (Vic)	Retailer	5	S	NS	S	NS	S					S	S	NS			
Origin (Uranquinty)	Trader	1					S										
Red Energy	Retailer	1					S										
Santos	Retailer	1								S		S					
Simply Energy	Retailer	4			S	NS	S	S							NS	S	
TRU Energy	Retailer	4			S	NS	S			NS					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)

	8 May – 14 May	1 May – 7 May	2010-11 Financial YTD*	2009-10 Financial YTD**
Average daily price	3.59	3.28	2.26	1.69

8 May – 14 May	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	3.16	3.46	3.78	3.82	3.98	3.23	3.71

*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)

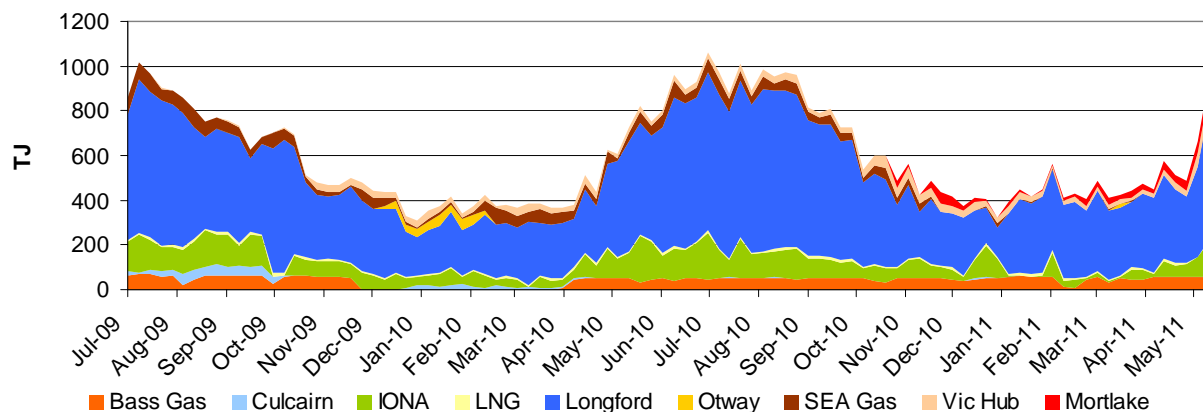
Source: <http://www.aemo.com.au> (INT 041)

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:	8 May – 14 May	1 May – 7 May	2010-11 Financial YTD*	2009-10 Financial YTD**
Culcairn	0	0	1	15
Longford	587	402	411	360
LNG	8	3	9	9
IONA	156	87	67	77
VicHub	59	64	30	18
SEAGas	14	0	20	41
Bass Gas	56	56	48	32
Otway	0	0	0	8
Mortlake	60	52	20	-
TOTAL	940	664	606	559



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

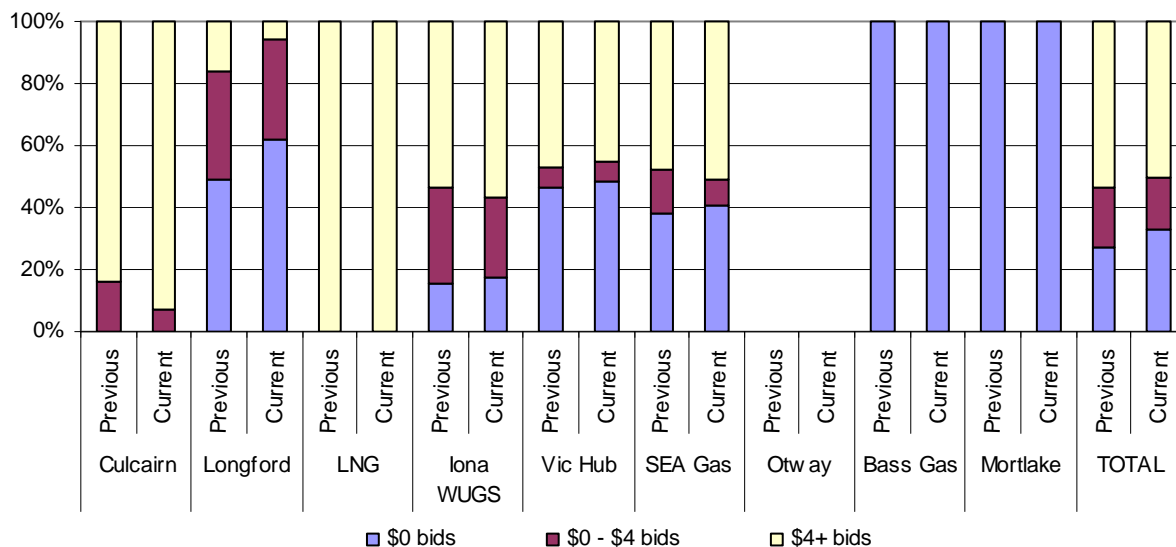
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)

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 DTS, 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
Culcain	Lumo	Lumo	Lumo	Lumo	Origin Lumo		
Longford	AGL Origin TRU	AGL Origin TRU	AGL TRU	Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU
LNG			APG	AGL APG AGL (QLD)	Origin AGL (QLD)		Origin
Iona	TRU	APG Simply Lumo	AGL Origin TRU APG Simply Lumo	AGL Origin TRU APG Lumo	AGL Origin TRU APG Simply Lumo	TRU Lumo	Origin TRU Simply Lumo
VicHub	AETV TRU Ausgrid	AETV Lumo	AETV Lumo	TRU Lumo	TRU	Lumo	AETV
SEAGas			Simply	Simply	Simply	Simply	Simply
Bass Gas							
Mortlake				Origin			

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

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

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:	8 May – 14 May	1 May – 7 May	2010-11 Financial YTD*	2009-10 Financial YTD**
Ballarat	42	30	24	21
Geelong^	114	85	89	79
Gippsland	55	42	43	44
Melbourne	636	428	385	363
Northern	96	81	64	53
TOTAL	943	667	605	559

^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 offers / withdrawal bid points	Offers			Bids			
			EGP	MSP	ROS	EGP	MSP	ROS	SYD - NET
AETV Power	Shipper	1				S			
AGL Energy Sales & Marketing Limited	STTM User,Shipper	4	S	S	S				S
AGL Wholesale Gas Limited	Shipper	2	S	NS					
Ausgrid	STTM User,Shipper	2	S	S					
Australian Power & Gas Pty Ltd	STTM User,Shipper	1	S						
BHP Billiton Petroleum (Bass Strait) PL	Shipper								
BlueScope Steel	STTM User,Shipper	1	S						
Commonwealth Steel Company Pty Limited	STTM User								
Delta Electricity	STTM User,Shipper	2	S						S
Essential Energy	STTM User,Shipper	2	S				S		
Esso Australia Resources Pty Ltd	Shipper								
Lumo Energy (NSW) Pty Ltd	STTM User								
Lumo Energy Australia Pty Ltd	Shipper	2	NS			S	S		
OneSteel Coil Coaters Pty Ltd	STTM User								
OneSteel Manufacturing Pty Ltd	STTM User,Shipper	1	S						
OneSteel NSW Pty Ltd	STTM User,Shipper	1	S						
OneSteel Trading Pty Limited	STTM User								
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		S			
Tyco Water	STTM User								

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

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

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

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

Figure S2: Supply Offers and Withdrawal Bids (Adelaide Hub)^

Trading Participant	Participant type	No. of supply offers / withdrawal bid points	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	NS				
Lumo Energy (SA) Pty Ltd	STTM User						
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	S	S		
TRUenergy Pty Ltd	STTM User,Shipper	2	S	S			

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

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

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

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

Ex ante and Ex post Market Prices

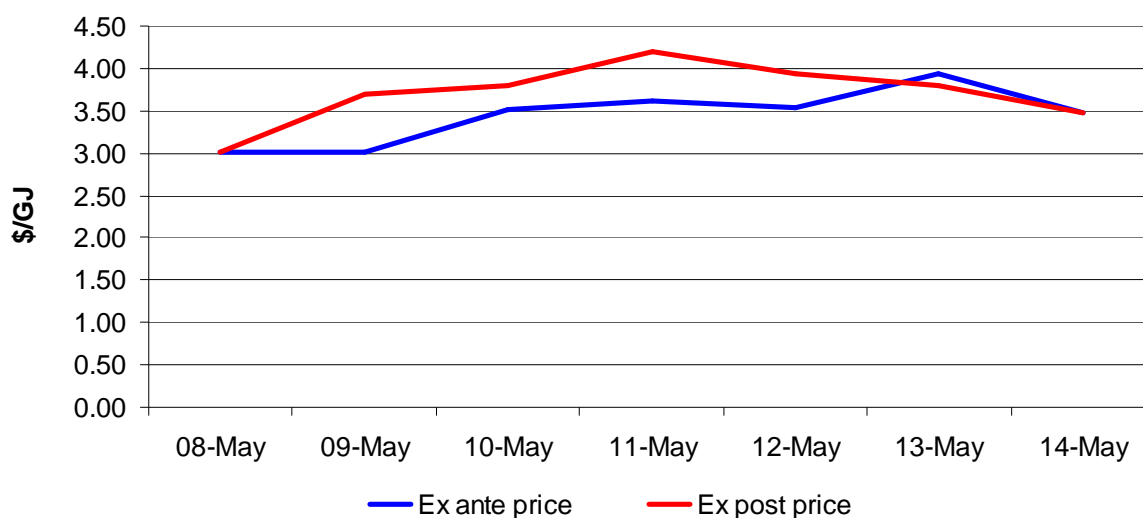
Figures S3 and S4 show ex ante and ex post prices at the Sydney and Adelaide Hubs. Differences between the ex ante and ex post price may arise where there are significant differences between price taker bids (demand forecasts) for the hub and actual demand in the hub. When this occurs, this leads to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

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

	8 May – 14 May	1 May – 7 May	2010-11 Financial YTD*
Ex ante price	3.44	3.32	2.72
Ex post price	3.70	3.59	5.56

*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

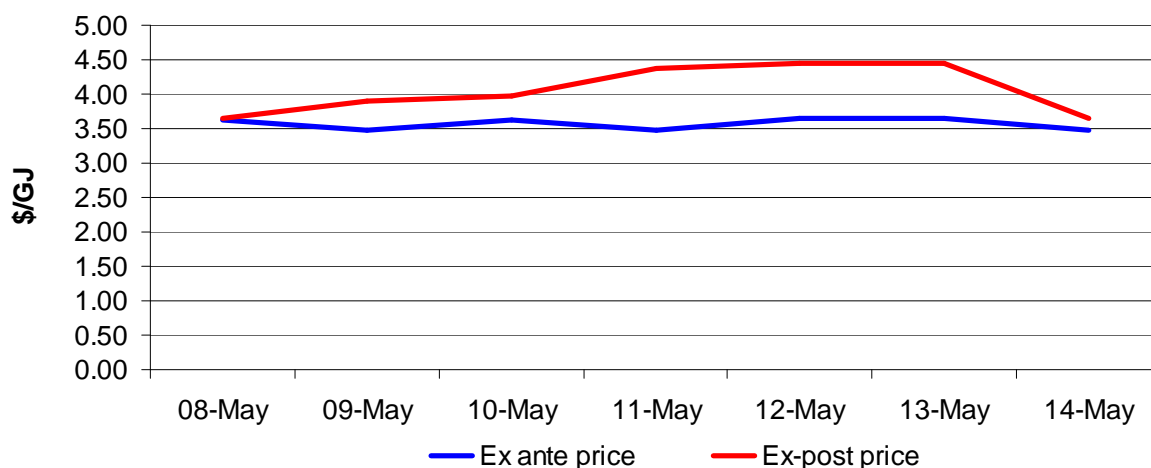


Source: <http://www.aemo.com.au> INT 651, 657

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

	8 May – 14 May	1 May – 7 May	2010-11 Financial YTD*
Ex ante price	3.57	3.64	3.04
Ex post price	4.07	3.88	3.19

* 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.

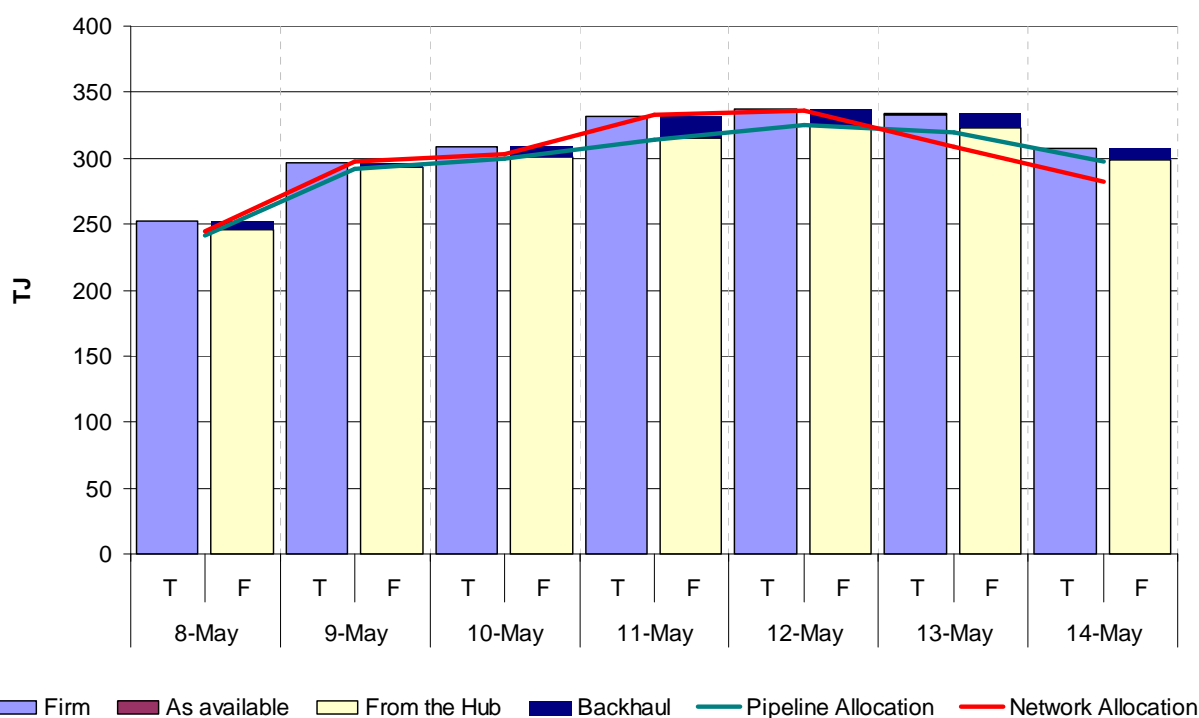
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

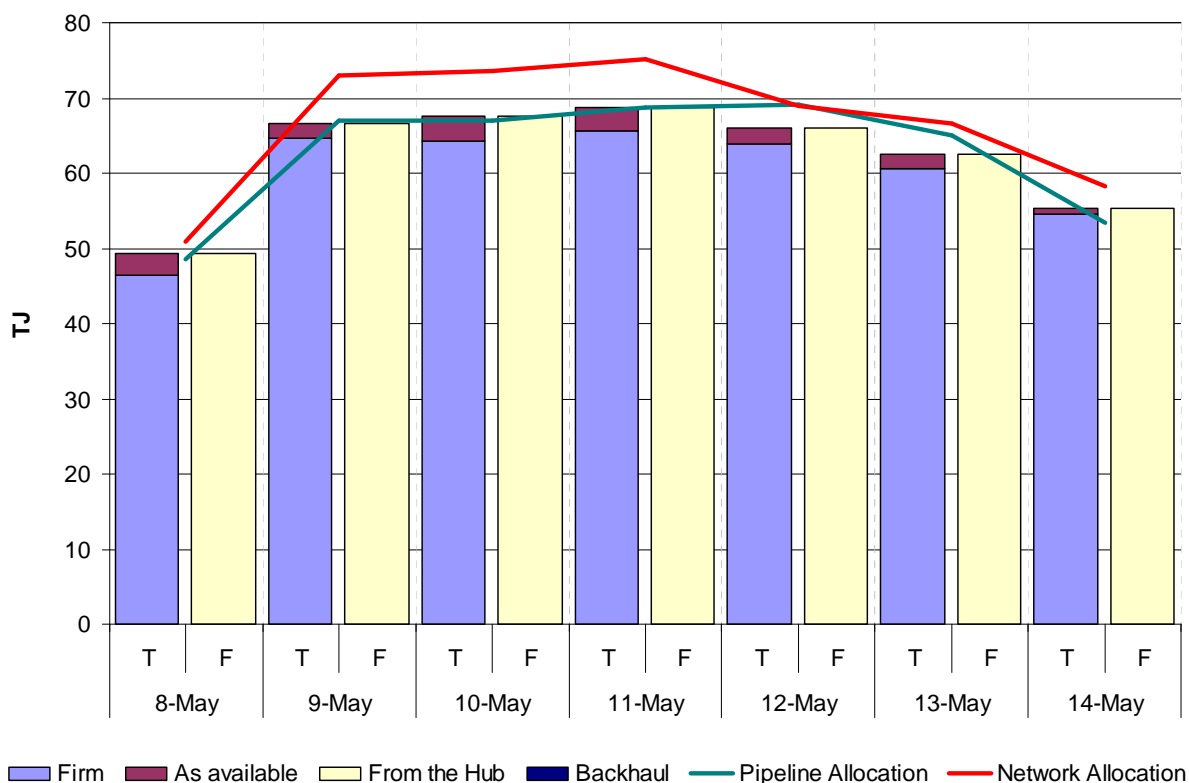
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

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)

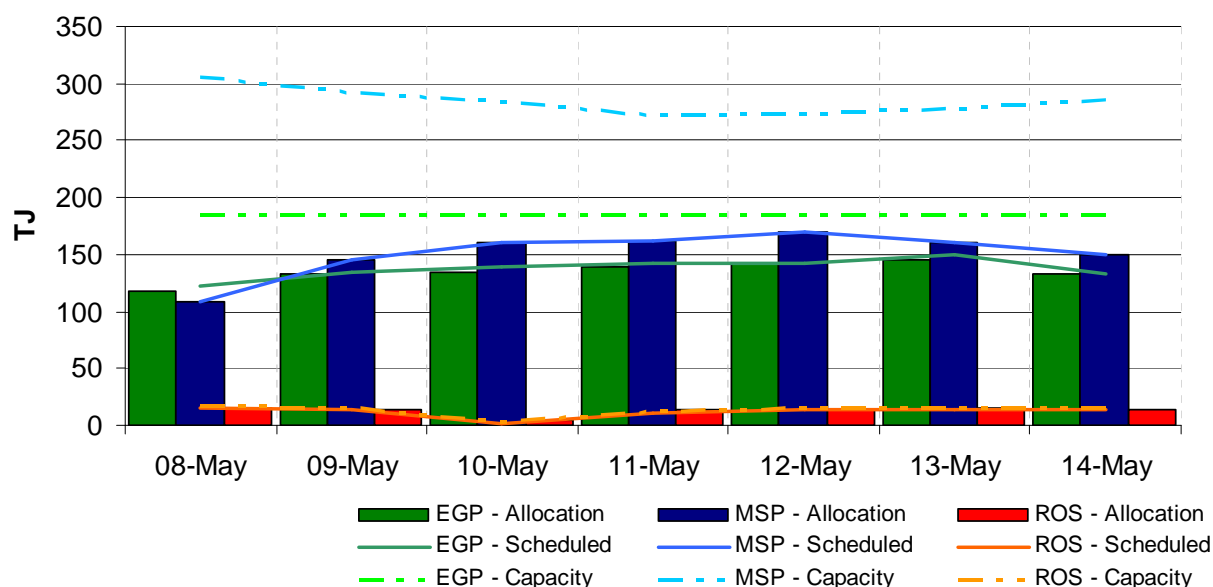
Pipeline Facility Allocations

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.

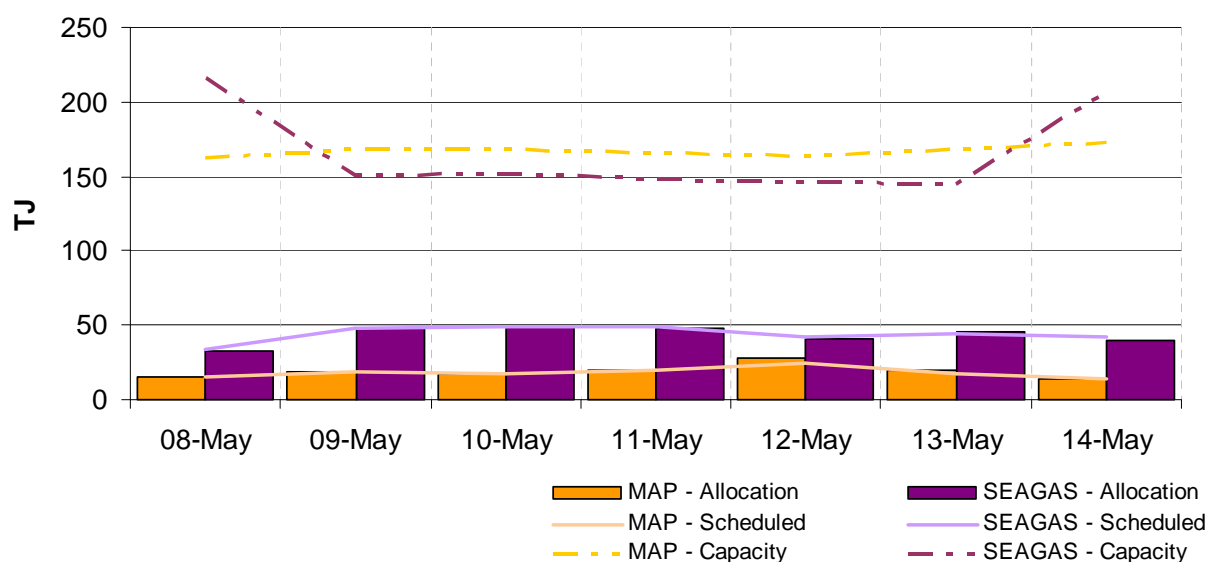
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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

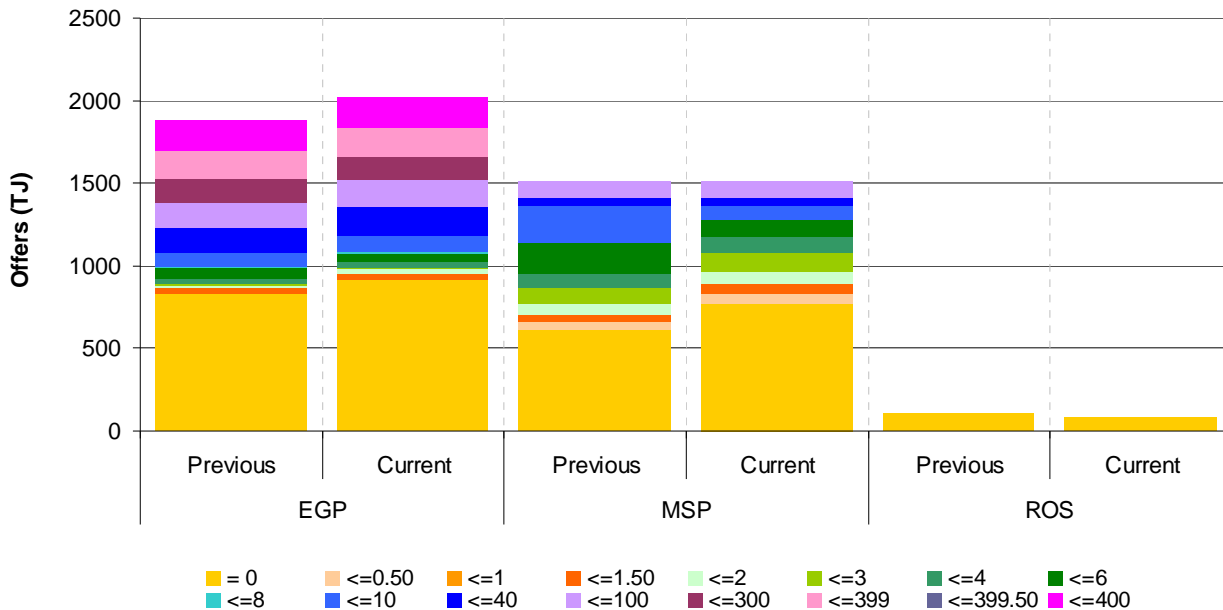
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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-

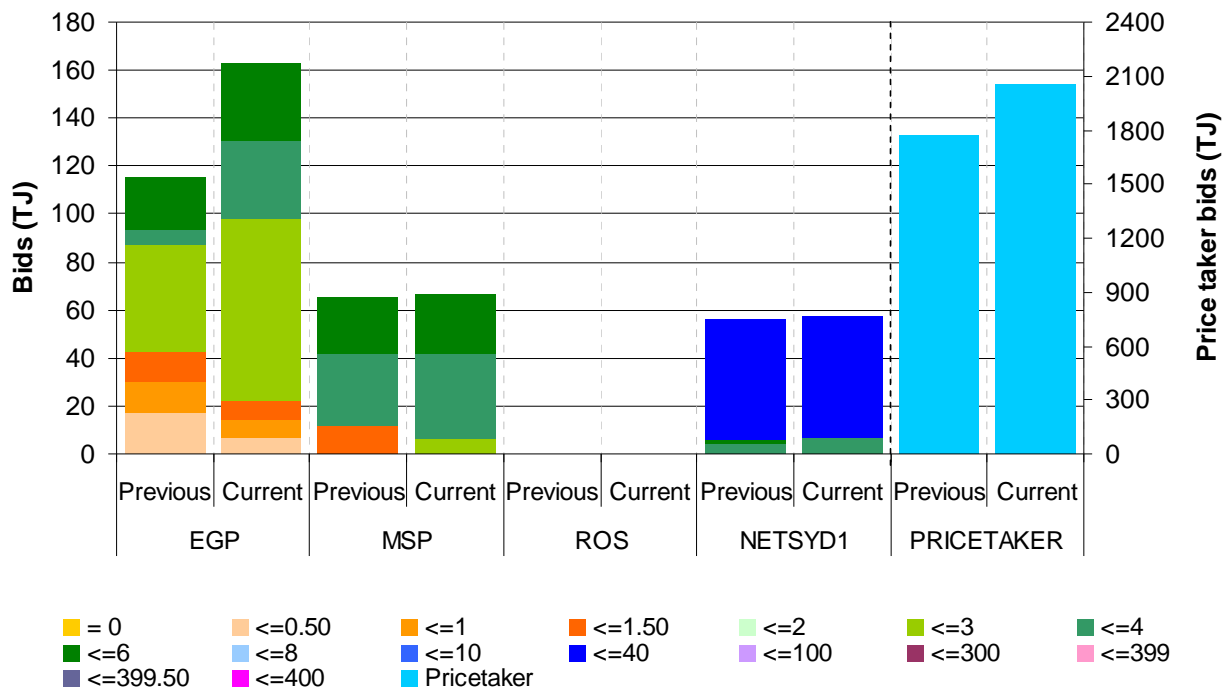
side axis. Because scheduling is price-driven, offers for lower-priced gas are scheduled ahead of offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

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



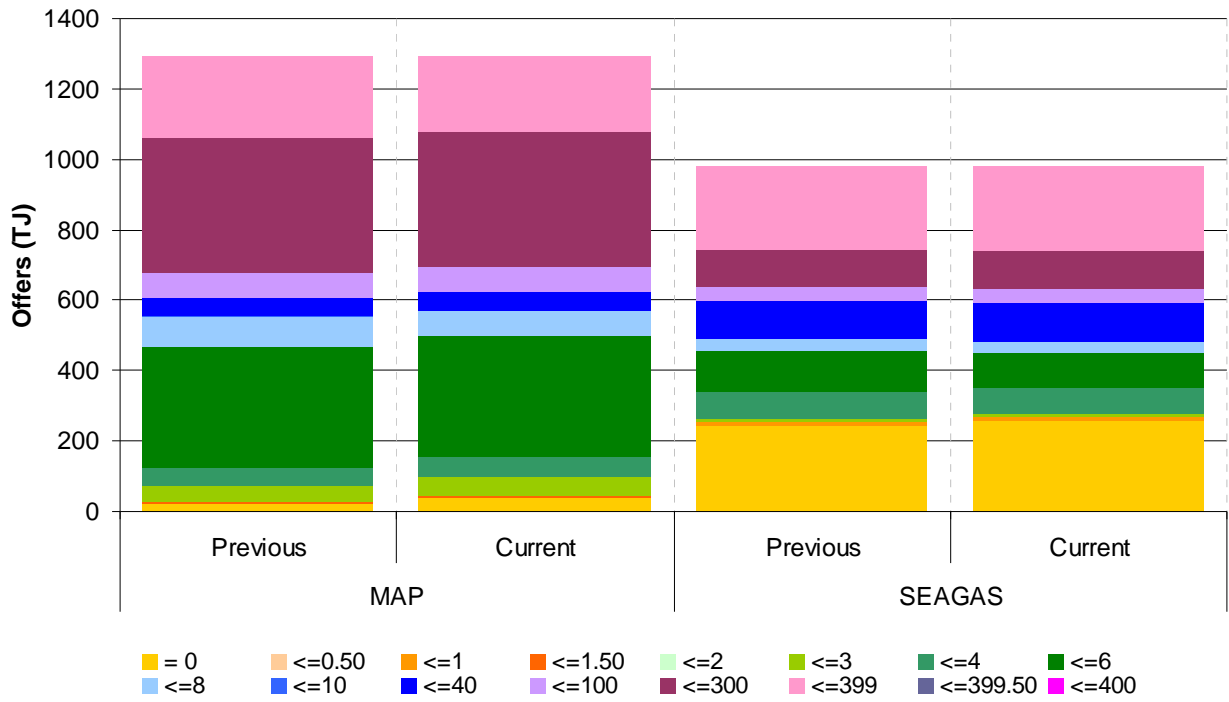
Source: <http://www.aemo.com.au> INT 652, 659
 EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

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



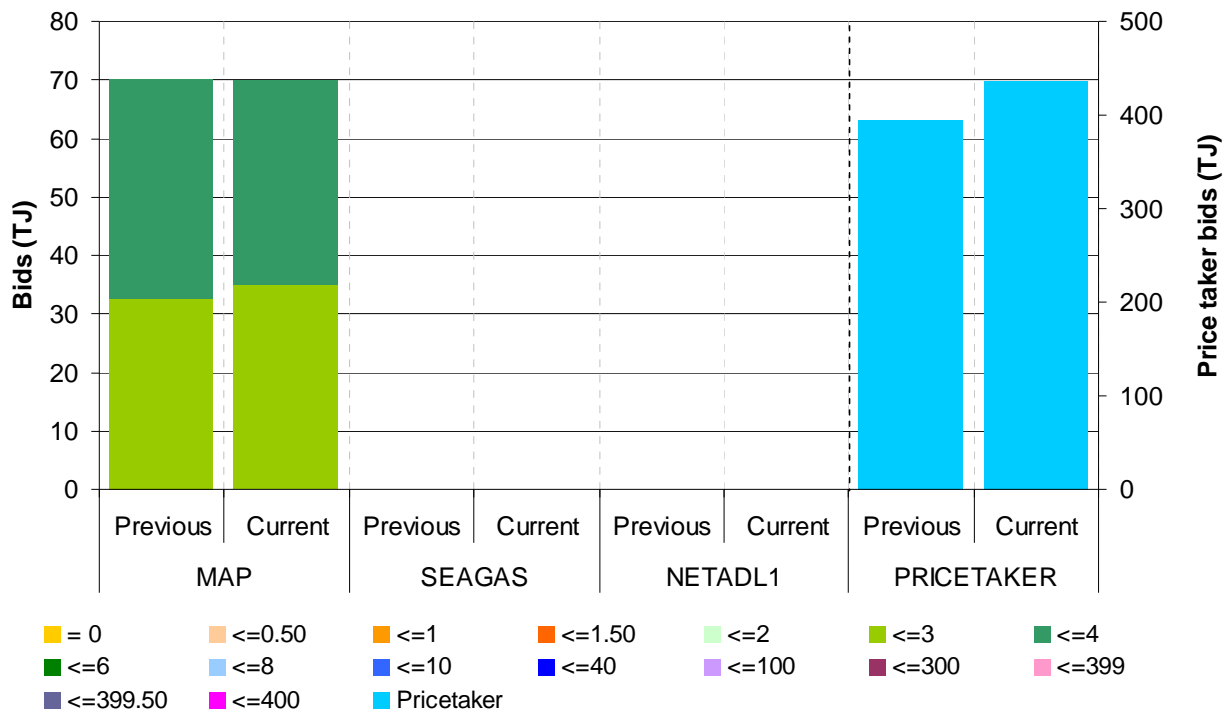
Source: <http://www.aemo.com.au> INT 652, 659
 EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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 TRU	AGL(WG) EA TRU	EA SANTOS TRU	AGL(WG) EA SANTOS TRU	APG EA OneStl(NSW) TRU	EA TRU	EA SANTOS TRU
	D-2 to D-1	EA	EA SANTOS	AGL(WG) BluSc EA SANTOS	APG BluSc EA	BluSc EA OneStl(NSW)	BluSc Delta EA OneStl(NSW) SANTOS	BluSc EA
MSP	D-3 to D-2	AGL(ESM) Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) EA TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU
	D-2 to D-1	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU
ROS	D-3 to D-2							
	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 |

APG= Australian Power & Gas 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	Lumo	Lumo
	D-2 to D-1			Lumo TRU	AETV Lumo TRU	AETV Lumo TRU	AETV Lumo TRU	Lumo TRU
MSP	D-3 to D-2		Country		Country Lumo	Country Lumo	Lumo	Country Lumo
	D-2 to D-1			Country Lumo	Country Lumo	Lumo	Country Lumo	Lumo
NETSYD1	D-3 to D-2							
	D-2 to D-1							
ROS	D-3 to D-2							
	D-2 to D-1							Lumo

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

Country= Country Energy | AETV = Aurora Energy Tamar Valley | Country= Country Energy | TRU= TRUenergy Pty Ltd |

Lumo= Lumo Energy Australia 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	AGL(SA) Origin	AGL(SA) Origin Simply	AGL(SA) Origin	AGL(SA) Origin	AGL(SA) Origin	AGL(SA) Origin
	D-2 to D-1	AGL(SA) Origin	AGL(SA) Origin	AGL(SA) Origin	AGL(SA) Origin	AGL(SA) Origin	AGL(SA) Origin TRU	AGL(SA) Origin TRU
SEA-GAS	D-3 to D-2	Simply TRU	Origin Simply TRU	Origin Simply TRU	Origin TRU	Origin Simply TRU	Origin TRU	AGL(WGSA) Origin Simply TRU
	D-2 to D-1	Origin Simply TRU	Origin Simply TRU	Origin TRU	Origin Simply TRU	Origin TRU	AGL(WGSA) Origin Simply TRU	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.

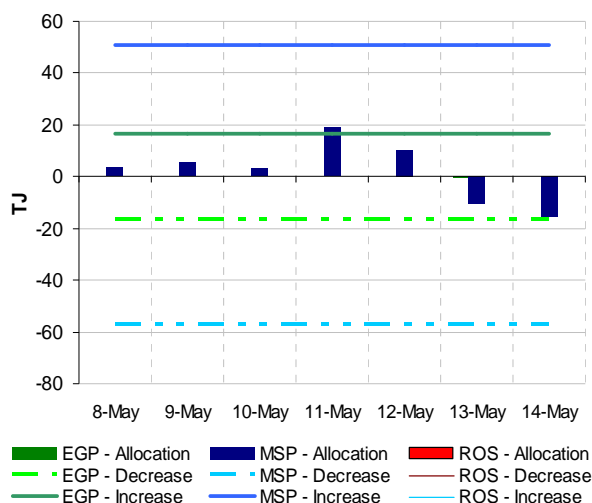
MOS offers are made by participants who have contracts with pipeline facilities to “park” gas (on the pipeline) or “loan” gas (from the pipeline). Based on these contracts, two types of MOS are offered: increase offers to increase flows on a pipeline to a hub; and decrease offers to decrease flows on a pipeline to a hub. Where a pipeline deviation² occurs on a gas day and there is a requirement for MOS from a MOS provider (either an increase or decrease offer), the MOS provider is paid according to their MOS offer price (the MOS service payment).

In addition, where this MOS service is required, AEMO pays or charges the MOS provider for the MOS gas allocation on the gas day at the ex ante market price two days after the gas day, which covers the cost of restoring its inventory of MOS gas (the MOS commodity payment or charge). The MOS provider can then choose to submit bids or offers for the gas it needs to replace or run down its MOS gas allocation on the gas day.

Figure S17a and S18a show quantities of MOS allocated on a daily basis compared to total MOS increase and decrease offers (from potential providers) on each pipeline at each hub. 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



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 S17b: Sydney MOS payments/charges

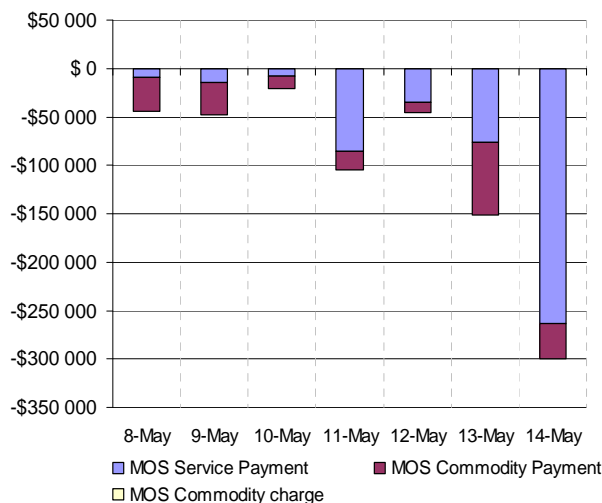
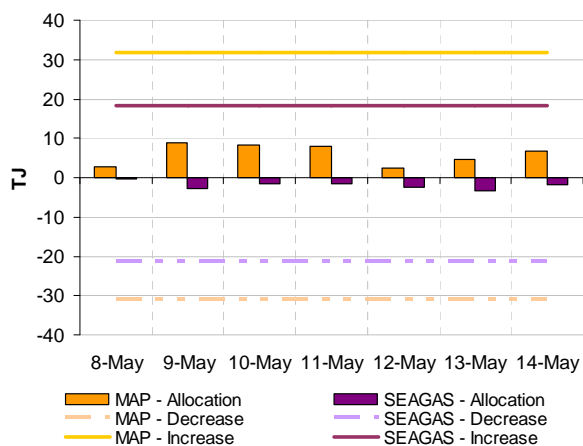


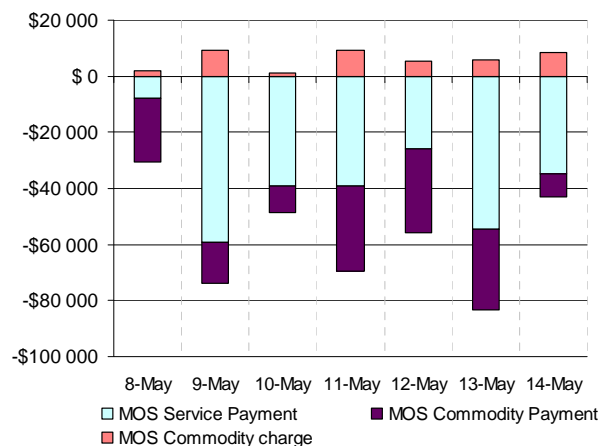
Figure S18a: Adelaide MOS allocations



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

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

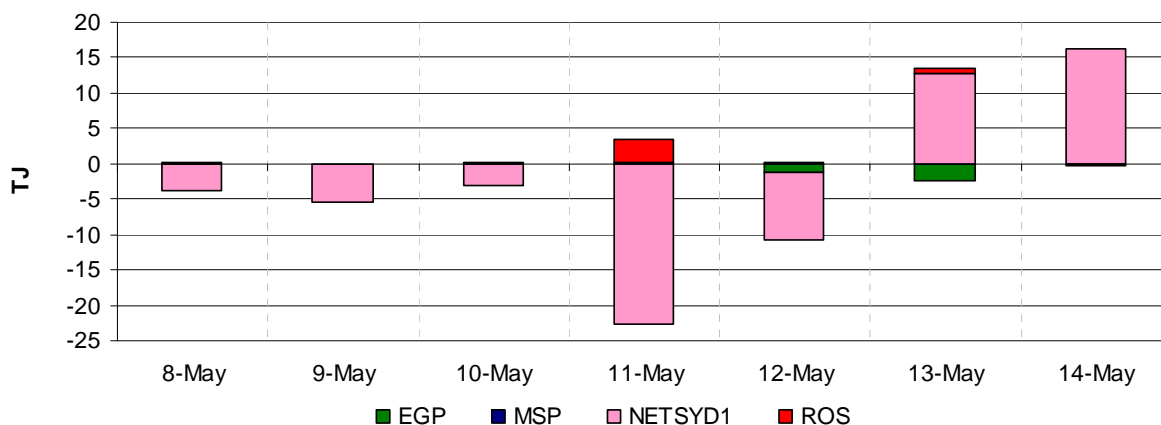
Figure S18b: Adelaide MOS payments/charges



Deviations

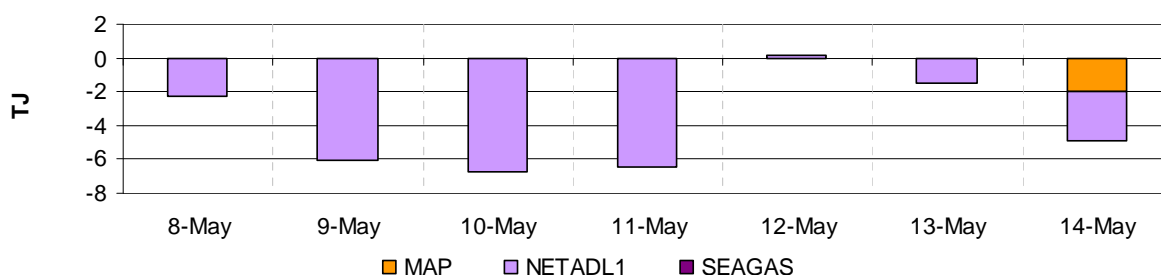
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

	8 May – 14 May	1 May – 7 May	2010-11 Financial YTD*
Quantity (TJ)	7.74	5.05	4.13
Charges (\$)	170.57	198.43	623.91

* **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

	8 May – 14 May	1 May – 7 May	2010-11 Financial YTD*
Quantity (TJ)	1.50	0.83	0.81
Charges (\$)	40.19	8.83	27.30

* **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	93	86	88	89	94	98	119	79	91	94	86
QLD Gas Pipeline	126	125	128	118	111	85	74	142	77	110	109	71
Roma to Brisbane Pipeline	162	173	178	176	174	167	150	219	76	169	165	169
South West QLD Pipeline	213	208	190	192	211	199	204	181	81	203	146	136
NSW/ACT												
Eastern Gas Pipeline	213	239	238	243	244	245	219	268	79	234	212	201
Moomba to Sydney Pipeline	176	237	257	287	285	239	212	439	42	242	183	181
NSW-VIC Interconnect	21	28	23	29	17	29	28	90	18	25	16	-7
VIC												
Longford to Melbourne	566	674	764	773	753	645	709	1030	47	698	484	409
South West Pipeline^	150	173	273	298	305	213	225	353	28	234	97	118
SA												
Moomba to Adelaide Pipeline	107	112	111	111	116	117	104	253	50	111	127	130
SEA Gas Pipeline	138	225	205	165	148	145	164	314	50	170	156	150
TAS												
Tasmanian Gas Pipeline	52	58	61	61	59	53	51	129	35	56	45	38

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

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

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

Production zone and 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	90	88	89	90	89	89	89	140	67	89	94	92
Fairview	133	130	130	130	N/A	110	78	130	88	118	115	111
Kenya Gas Plant	52	48	48	52	52	52	52	160	33	51	53	56
Kincora	15	15	7	12	10	7	7	25	26	10	6	2
Kogan North	9	9	9	9	9	9	8	12	78	9	9	9
Peat	8	8	8	9	9	8	8	15	61	8	9	9
Rolleston	10	10	10	10	9	9	9	30	34	10	10	11
Scotia	29	29	29	29	N/A	29	29	29	93	29	27	23
Spring Gully	48	48	48	47	49	47	47	69	70	48	48	43
Strathblane	48	48	48	47	49	47	47	69	70	48	48	43
Talooka	29	29	29	28	29	29	29	42	69	29	29	26
Yellowbank	10	9	9	10	10	11	10	30	39	10	12	12
Talinga	91	88	94	94	93	86	80	108	60	89	65	11
Moomba (SA/QLD)												
Moomba Gas Plant	220	267	255	296	N/A	314	286	430	60	273	256	262
Ballera	0	0	0	0	N/A	0	0	150	8	0	12	12
Eastern (VIC)												
Orbost Gas Plant	83	83	73	79	N/A	83	83	100	33	81	33	20
Lang Lang Gas Plant	56	56	55	56	55	56	56	70	69	56	48	32
Longford Gas Plant	703	838	930	982	955	832	823	1145	59	866	673	605
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	53	71	71	60	73	73	73	73	85	67	62	69
Otway Gas Plant	167	183	192	191	179	185	153	205	57	179	118	124
Iona Underground Gas Storage	134	154	248	214	198	142	169	440	19	180	84	81

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

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)
8 May – 14 May	Average min.	11.4	9.6	-1.4	7.1	10.0	5.1
	Average max.	22.1	18.5	14.2	14.6	17.3	12.5
1 May – 7 May	Average min.	14.3	12.3	1.4	11.2	9.6	7.6
	Average max.	25.9	20.2	17.5	17.5	19.0	14.8

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

8 May – 14 May	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	3.16	3.16	3.13	3.13	3.06	3.16
Mon	3.48	3.16	3.16	3.16	3.59	3.46
Tue	3.75	4.10	4.22	3.95	3.94	3.78
Wed	3.79	3.99	4.20	4.30	4.41	3.82
Thu	3.91	4.90	4.51	3.73	3.29	3.98
Fri	3.23	3.23	3.22	3.48	3.59	3.23
Sat	3.70	3.94	3.92	3.93	3.50	3.71

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	
8-May	MP:	731	723	724	722	724	-1
	AEMO:	668	669	682	690	705	
	MP as % of AEMO	109	108	106	105	103	
9-May	MP:	866	864	859	846	860	-6
	AEMO:	793	813	810	806	833	
	MP as % of AEMO	109	106	106	105	103	
10-May	MP:	936	985	990	990	990	0
	AEMO:	887	977	996	1001	969	
	MP as % of AEMO	105	101	99	99	102	
11-May	MP:	992	1014	1010	1017	1016	0
	AEMO:	920	980	1007	1056	1077	
	MP as % of AEMO	108	103	100	96	94	
12-May	MP:	977	1088	1089	1052	1050	33
	AEMO:	973	1095	1095	1073	1013	
	MP as % of AEMO	100	99	100	98	104	
13-May	MP:	887	885	888	891	879	-12
	AEMO:	872	862	879	866	861	
	MP as % of AEMO	102	103	101	103	102	
14-May	MP:	825	867	856	866	861	8
	AEMO:	798	900	910	922	912	
	MP as % of AEMO	103	96	94	94	94	

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