

17 April – 23 April 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

17 Apr – 23 Apr	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	3.08	3.38	3.78

*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 in Sydney was higher than the previous week and the financial year to date average while the average ex post price was lower than the previous week and the financial year to date average.

Figure S4 shows average ex ante prices in Adelaide were higher than the previous week and the financial year to date average, while ex post prices were lower than the previous week but higher than the financial year to date average.

Sydney hub trunk pressure increase – 20-21 April 2011

As discussed in the AER Weekly gas analysis report covering the period 20 to 26 March, pressure changes at the Sydney hub on 22 March restricted pipeline deliveries into the hub. On 20 and 21 April, Jemena Gas Networks (JGN), the operator of the Sydney hub network, increased pressure at the hub by 600 kPa and 700 kPa, respectively to restore network pressure to pre 22 March levels. .

Under these conditions participants would normally be expected to nominate supply offers to satisfy expected consumption at the hub and the demand caused by increased network linepack.¹ However, Sydney hub participants were not informed of these operations until late in the afternoon on Tuesday 19 April. However, participants were unable to renominate supply bids and withdrawal offers for the 20 April gas day because they were required to be submitted by midday on 19 April. Participant nominations on 20 April exceeded actual demand by around 16 TJ (which is higher than other the variance on other gas days during this week). .

The AER is making enquiries into trunk pressure operations on the network on these gas days.

Figure S5 shows for Sydney on Thursday 21 April and Friday 22 April, pipeline allocations (gas deliveries to the hub) exceeded network allocations (consumption of delivered gas at the hub) by 15 TJ and 10 TJ respectively. These were largely due to positive deviations at the hub (see figure S19). Deviations on 21 April were consistent with the operations to increase network 'trunk' pressures to pre-22 March levels.

Victorian Gas Market

Figure V2 shows this week's average price was close to the previous week's but higher than the financial year to date average. Figure V3 shows average injections into the Victorian Declared Transmission System (DTS) were around 60 TJ lower than the previous week, at 478 TJ/day.

AEMO issued a -6 TJ demand override on the 23 April gas day. This was in response to market participant forecasts being 54 TJ higher than AEMO forecasts (see Appendix A5).

National Gas Market Bulletin Board

Figure N4 shows total average gas demand, gas used for gas-powered generation, and production across the Bulletin Board were lower than the previous week.

For the 18 April to 23 April gas days, SEAGas did not provide actual flow data for its pipeline in the timeframe required under the National Gas Rules. The timely provision of accurate data is critical to the efficient functioning of the gas markets. The AER is, therefore, making enquiries into this late data provision and will engage with SEAGas to ensure they have robust systems and processes in place to meet their data provision obligations under the Gas Rules.

The AER understands that the Wallumbilla gas production facility is now owned by AGL Gas Storage Pty Ltd. However this facility is not currently operational.

¹ Linepack is gas held in the network to satisfy network operational needs. A change in trunk pressure can cause a change in linepack. The increase in trunk pressures on 21 and 22 April (to pre 22 March levels) meant more gas was required to satisfy higher linepack requirements.

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
17 Apr – 23 Apr	345	20	503	250	48	155	100	114
Financial Year-to-date 2010-11*	374	20	575	284	45	165	94	109
Financial Year-to-date 2009-10**	361	18	537	281	38	170	85	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
17 Apr – 23 Apr	72	8	148	32	106
Financial Year-to-date 2010-11*	87	25	166	30	152
Financial Year-to-date 2009-10**	83	40	165	23	165

^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)
17 Apr – 23 Apr	506	683	265	197
Financial Year-to-date 2010-11*	531	749	258	271
Financial Year-to-date 2009-10**	452	650	275	275

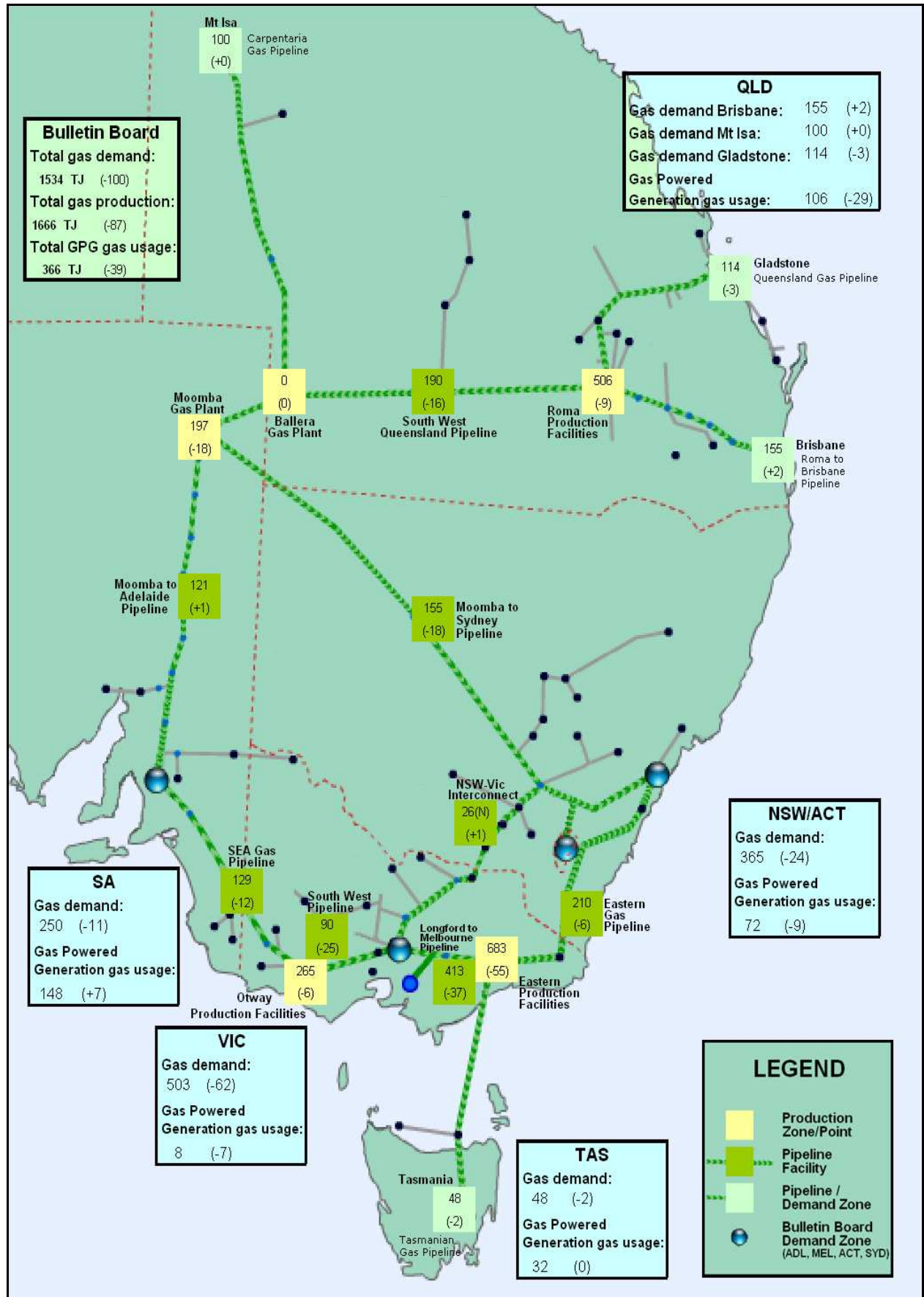
*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)

**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)

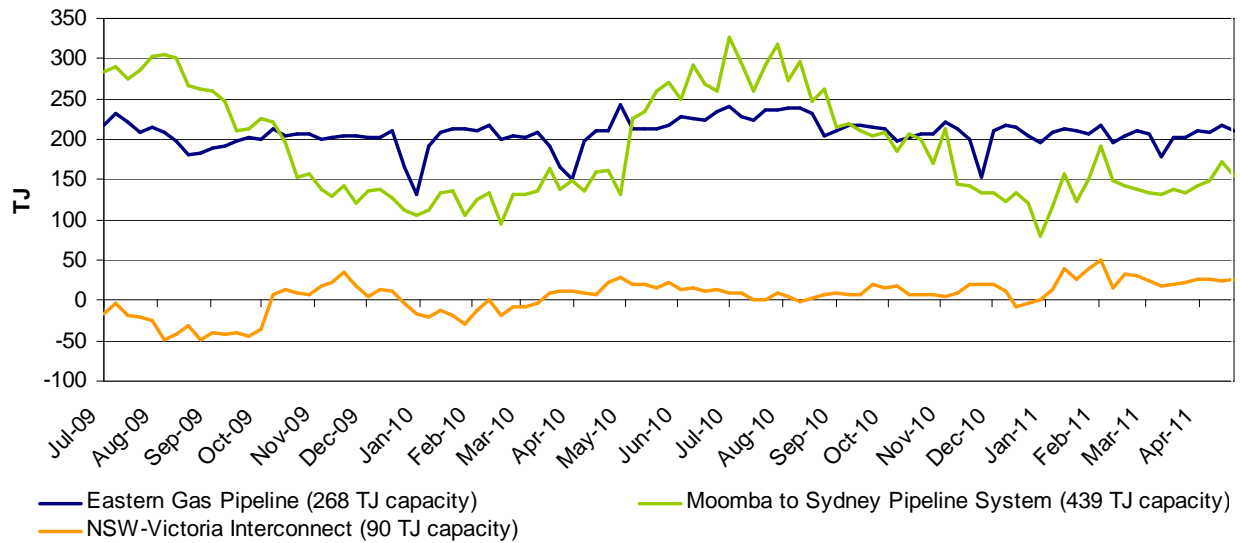


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
 Numbers in brackets indicate a change in average daily flow from the previous week.

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.

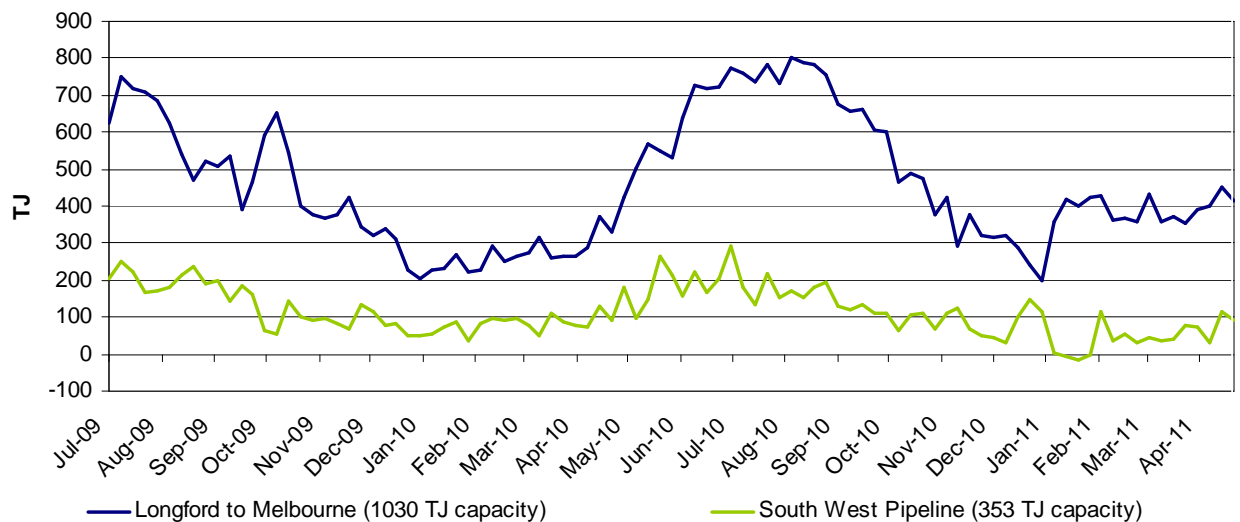
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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.

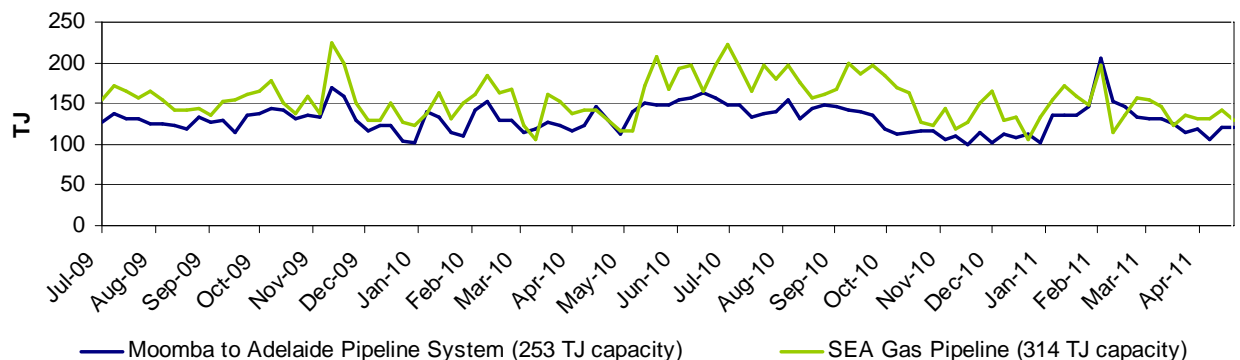
Figure N6: Average daily flows (TJ) into VIC demand region



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	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		NS					
Aust. Power & Gas	Retailer	3			NS	NS	S					S		
Coogee Energy	Transmission Customer	1					S							
Essential Energy	Transmission Customer	1		NS							NS			
International Power	Transmission Customer	1						NS						
Lumo Energy	Retailer	3		NS		NS			S		NS			
Lumo Energy	Trader	2			NS				NS			S		S
Origin (Vic)	Retailer	5	S	NS	S	NS	S				S	NS		
Origin (Uranquinty)	Trader	1					S							
Red Energy	Retailer	1					S							
Santos	Retailer	1							S					
Simply Energy	Retailer	4			NS	NS	S	S				S	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)

	17 Apr – 23 Apr	10 Apr – 16 Apr	2010-11 Financial YTD*	2009-10 Financial YTD**
Average daily price	3.08	3.10	2.19	1.65

17 Apr – 23 Apr	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	3.14	3.02	3.05	3.11	3.10	3.11	3.00

*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)

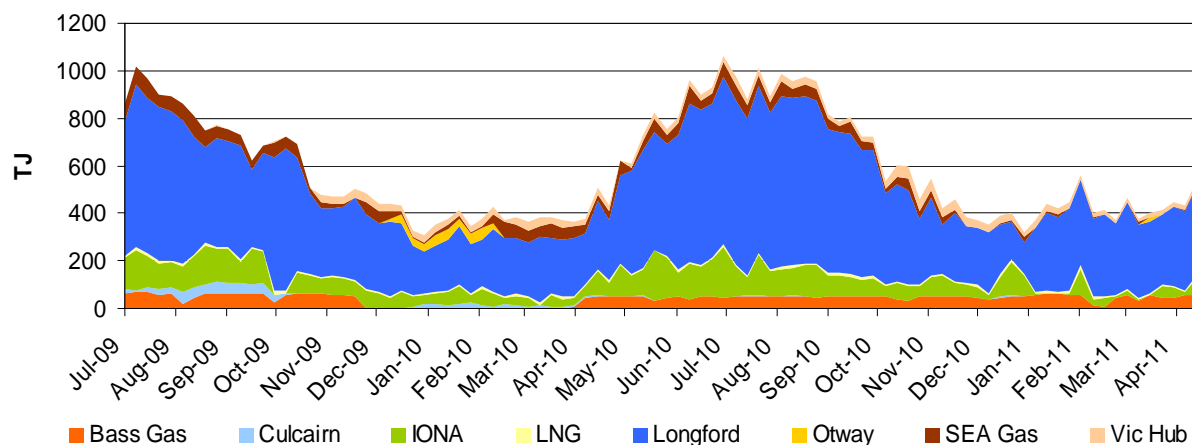
Source: <http://www.aemo.com.au> (INT 041)

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:	17 Apr – 23 Apr	10 Apr – 16 Apr	2010-11 Financial YTD*	2009-10 Financial YTD**
Culcairn	0	0	1	16
Longford	330	375	410	355
LNG	9	9	9	8
IONA	53	72	65	75
VicHub	28	22	28	18
SEAGas	1	3	21	41
Bass Gas	56	56	47	31
Otway	0	0	0	8
TOTAL	478	536	583	553



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

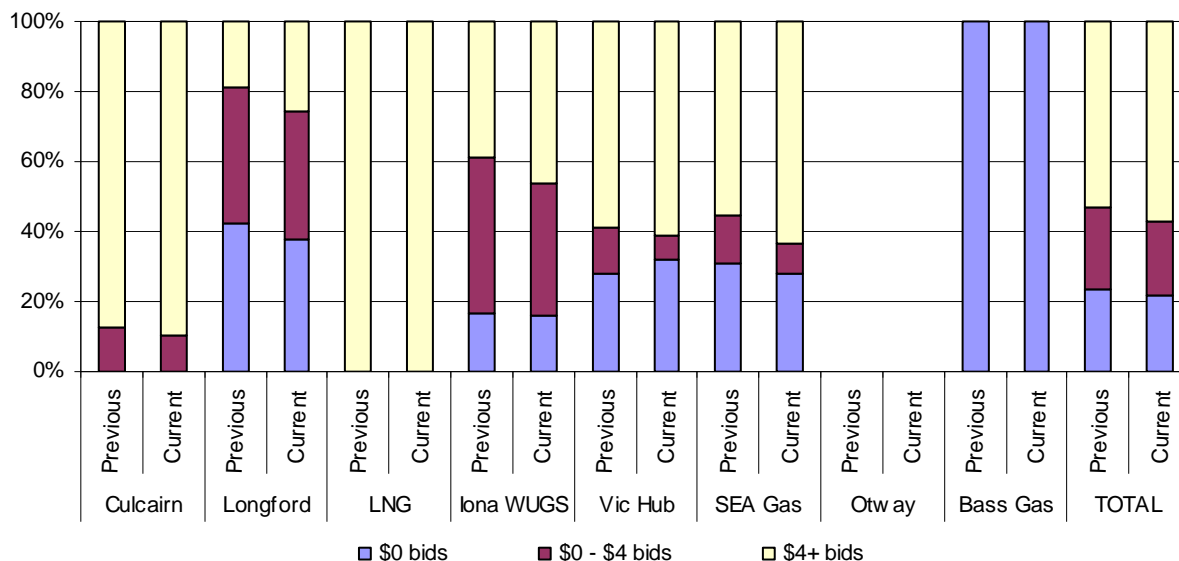
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)

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
Culcairn							Lumo
Longford	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU
LNG							
Iona	Origin TRU Simply Lumo	Origin TRU Simply Lumo	Origin TRU Simply Lumo	Origin TRU APG Simply Lumo	Origin TRU Lumo	Origin TRU APG	Origin TRU Simply
VicHub	AETV Ausgrid	AETV TRU	AETV TRU	AETV TRU Lumo Ausgrid	AETV TRU	AETV	AETV Ausgrid
SEAGas			Simply		Simply	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:	17 Apr – 23 Apr	10 Apr – 16 Apr	2010-11 Financial YTD*	2009-10 Financial YTD**
Ballarat	19	24	23	21
Geelong^	80	91	89	78
Gippsland	38	39	43	44
Melbourne	306	351	380	359
Northern	68	73	63	52
TOTAL	511	579	598	554

^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								
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	1							S
Essential Energy	STTM User, Shipper	2	S				S		
Eso Australia Resources Pty Ltd	Shipper								
Lumo Energy (NSW) Pty Ltd	STTM User								
Lumo Energy Australia Pty Ltd	Shipper	1					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		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 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	S				
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	NS		
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)^

	17 Apr – 23 Apr	10 Apr – 16 Apr	2010-11 Financial YTD*
Ex ante price	3.38	3.36	2.66
Ex post price	3.31	3.52	5.73

*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

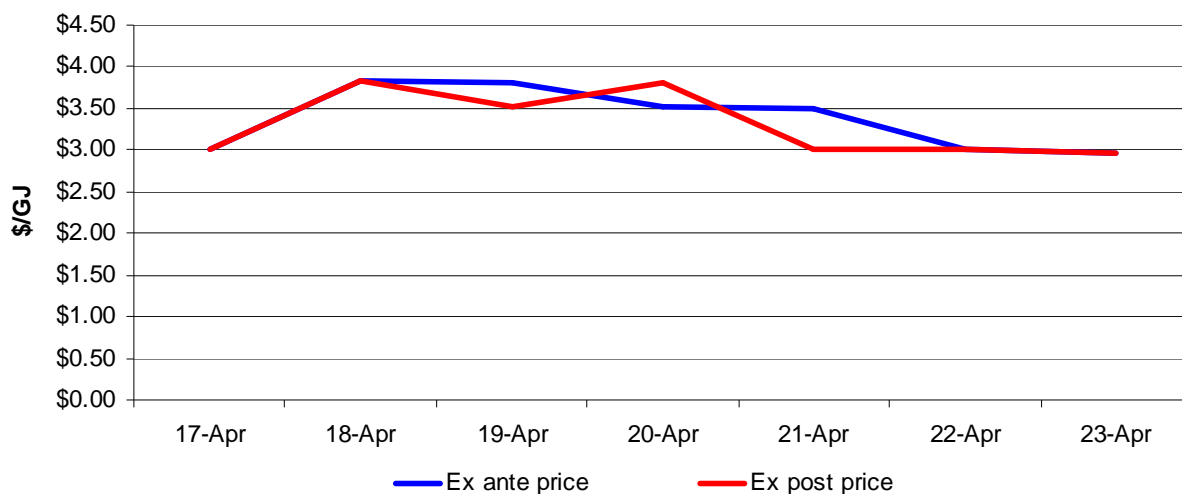
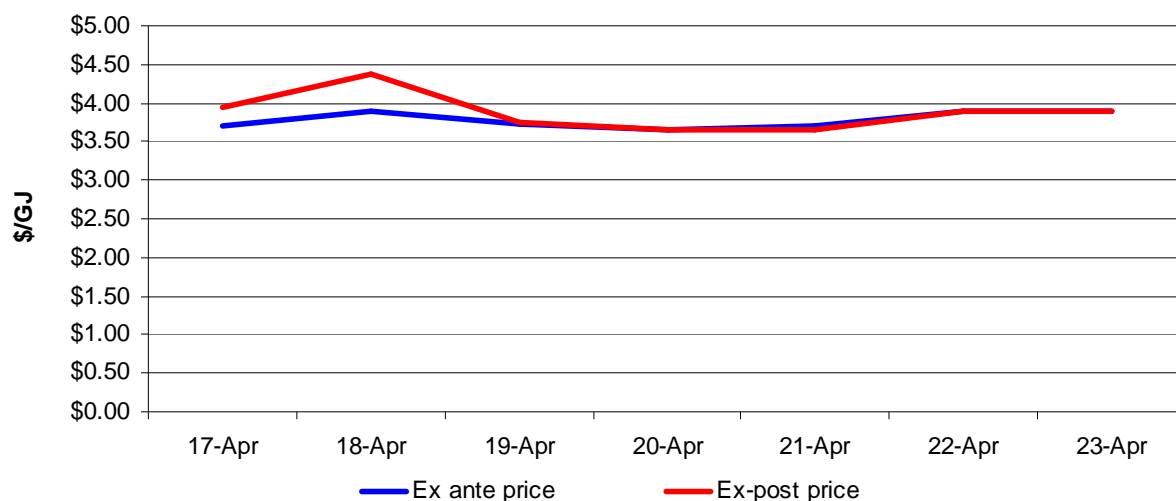


Figure S4: Ex ante vs Ex post Price - Adelaide Hub (\$/GJ)

	17 Apr – 23 Apr	10 Apr – 16 Apr	2010-11 Financial YTD*
Ex ante price	3.78	3.70	2.99
Ex post price	3.88	4.01	3.12

* 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)^

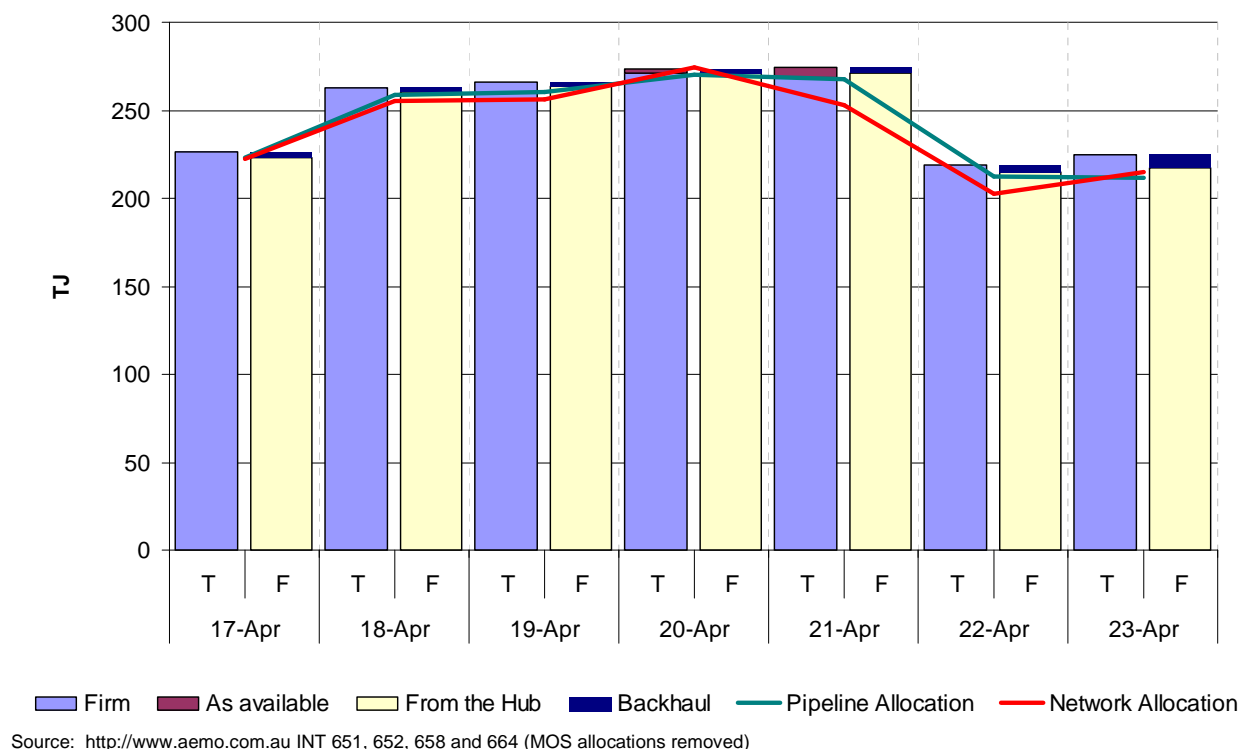
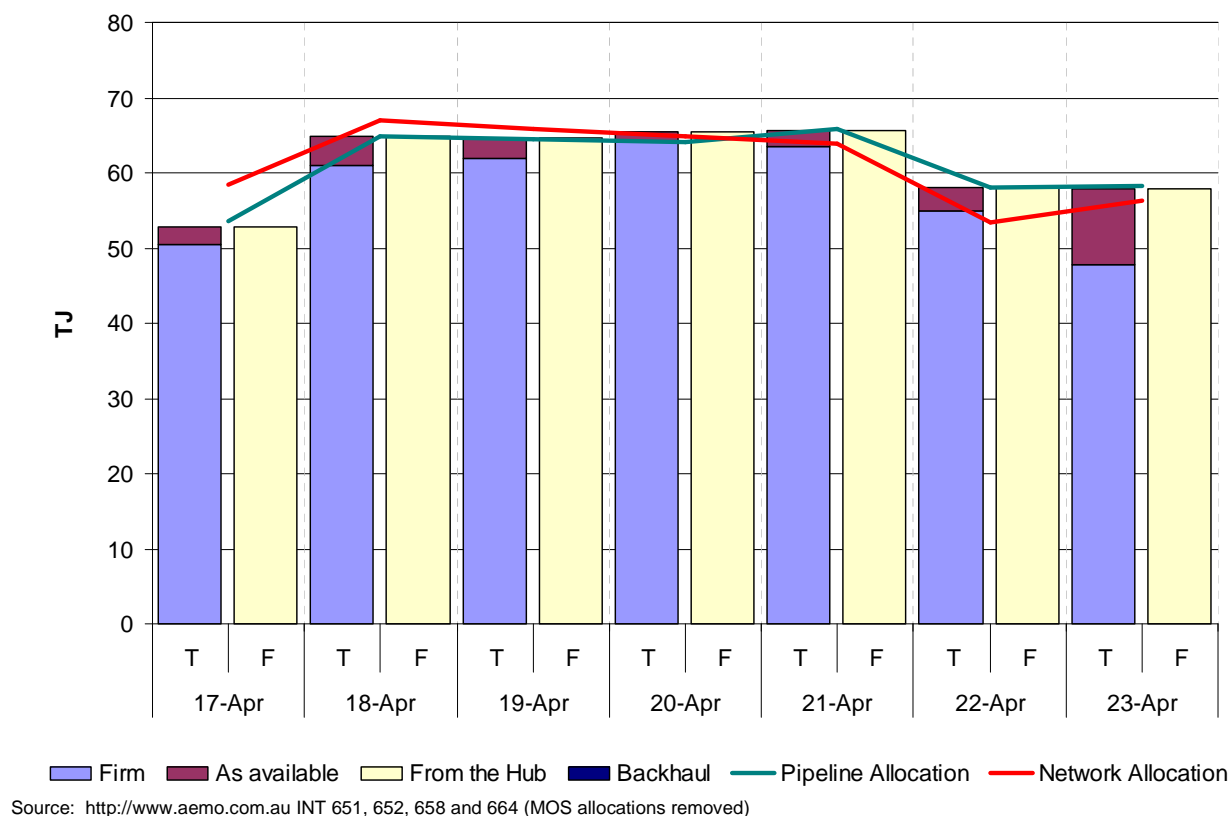


Figure S6: Allocated vs scheduled ex ante quantity - Adelaide Hub (TJ)



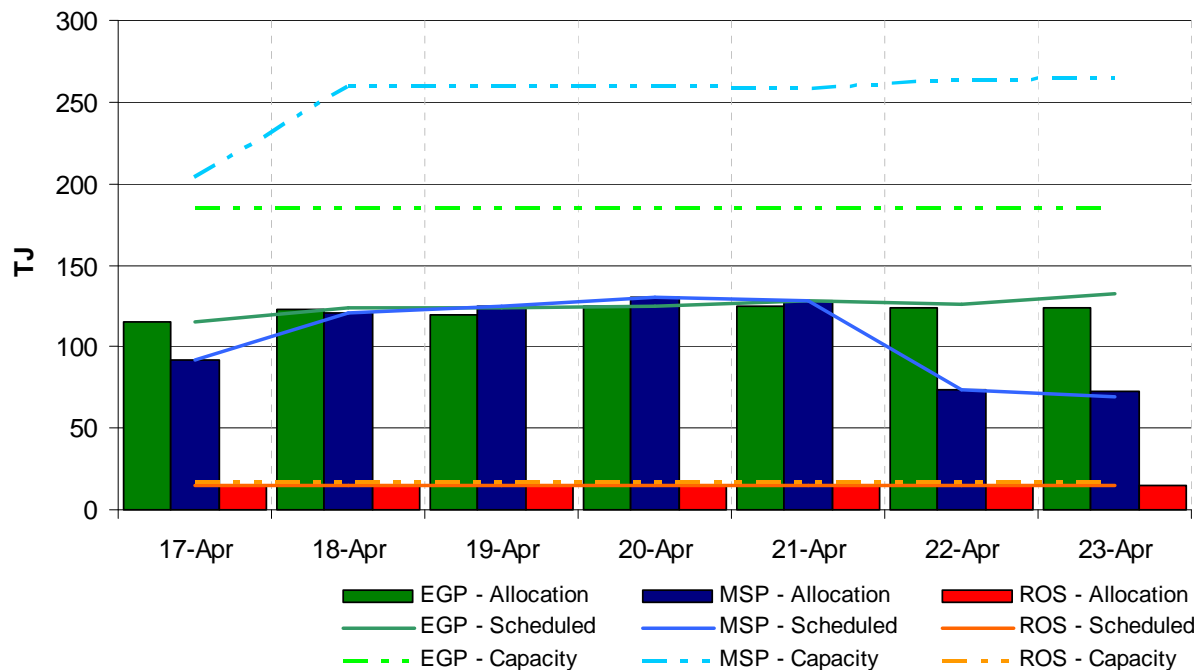
Pipeline Facility Allocations

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.

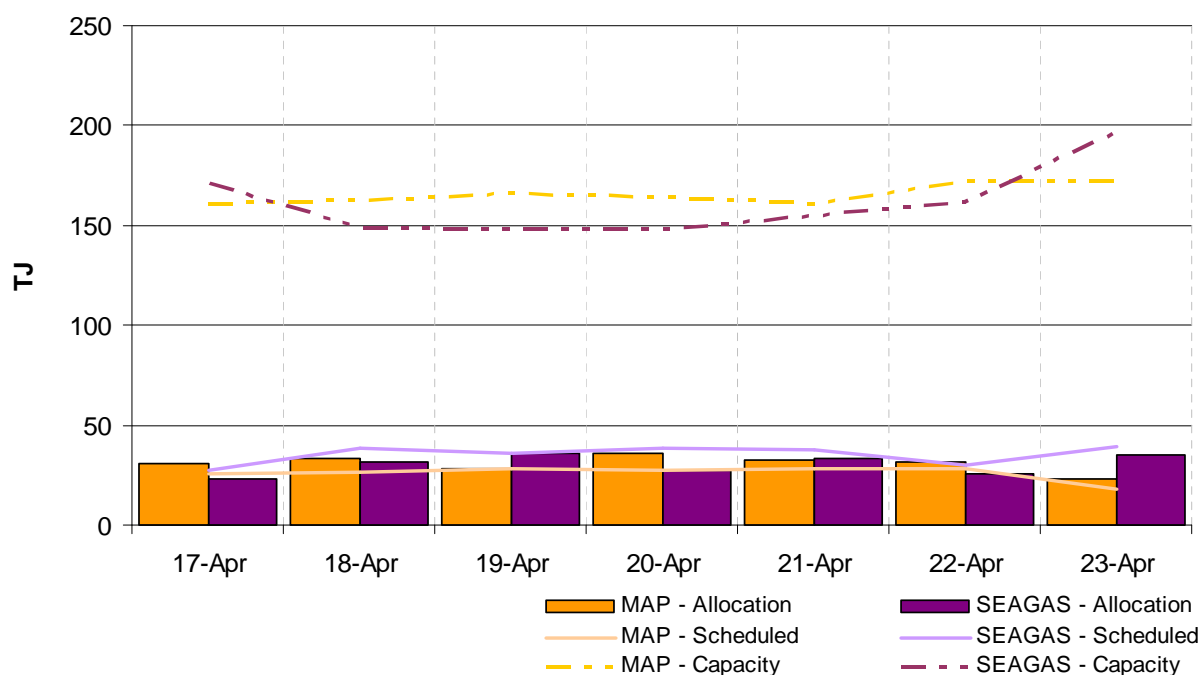
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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

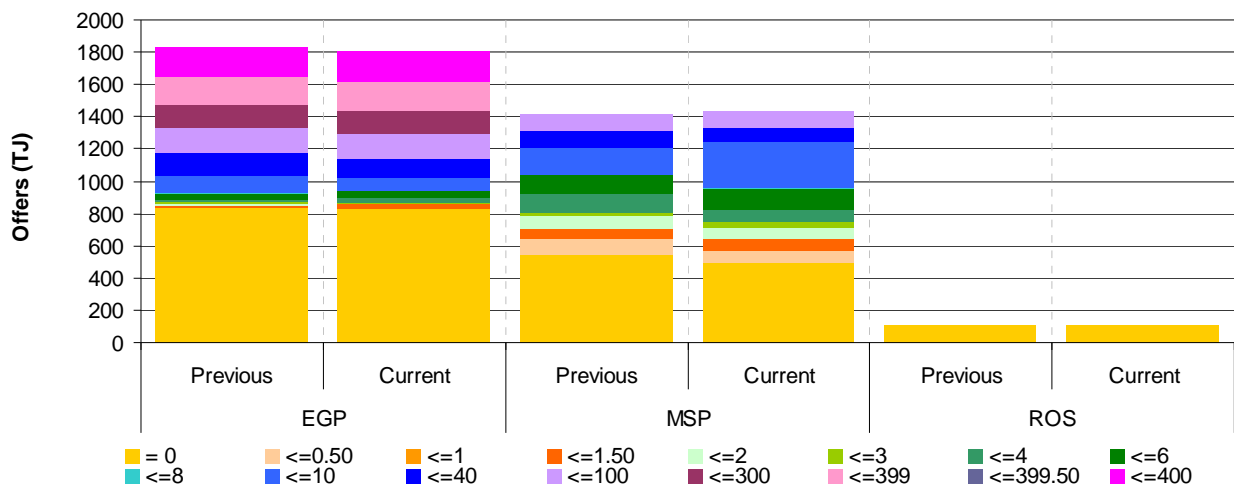
Offers and Bids

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.

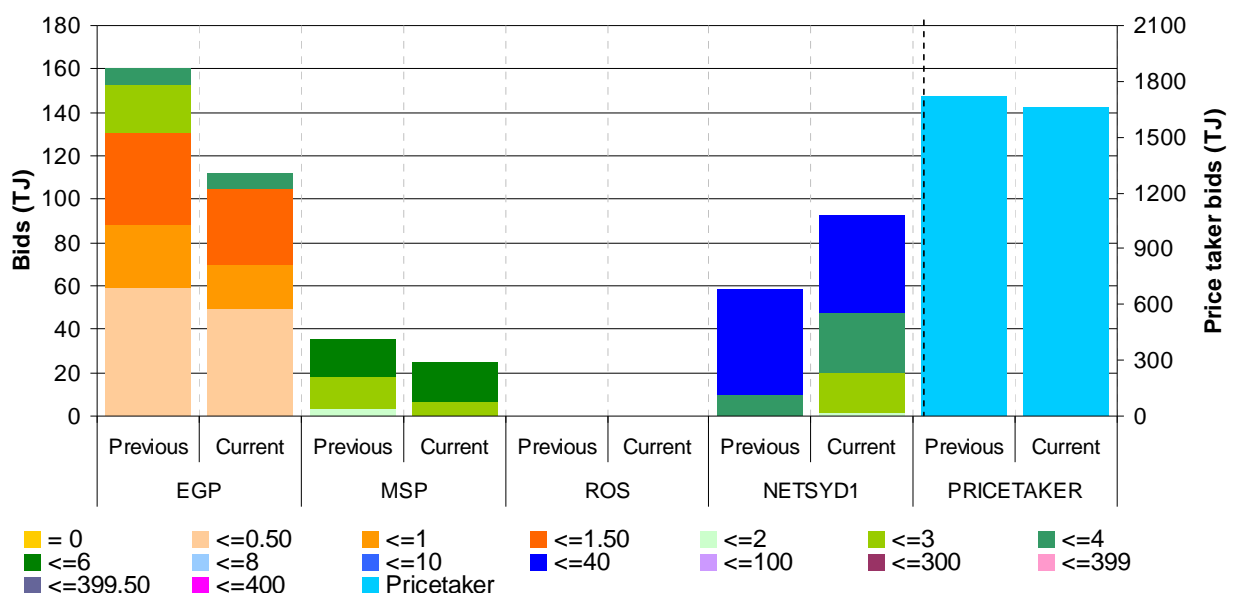
Figure S9: Total weekly Sydney hub offers (TJ) within price bands (\$/GJ)



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)

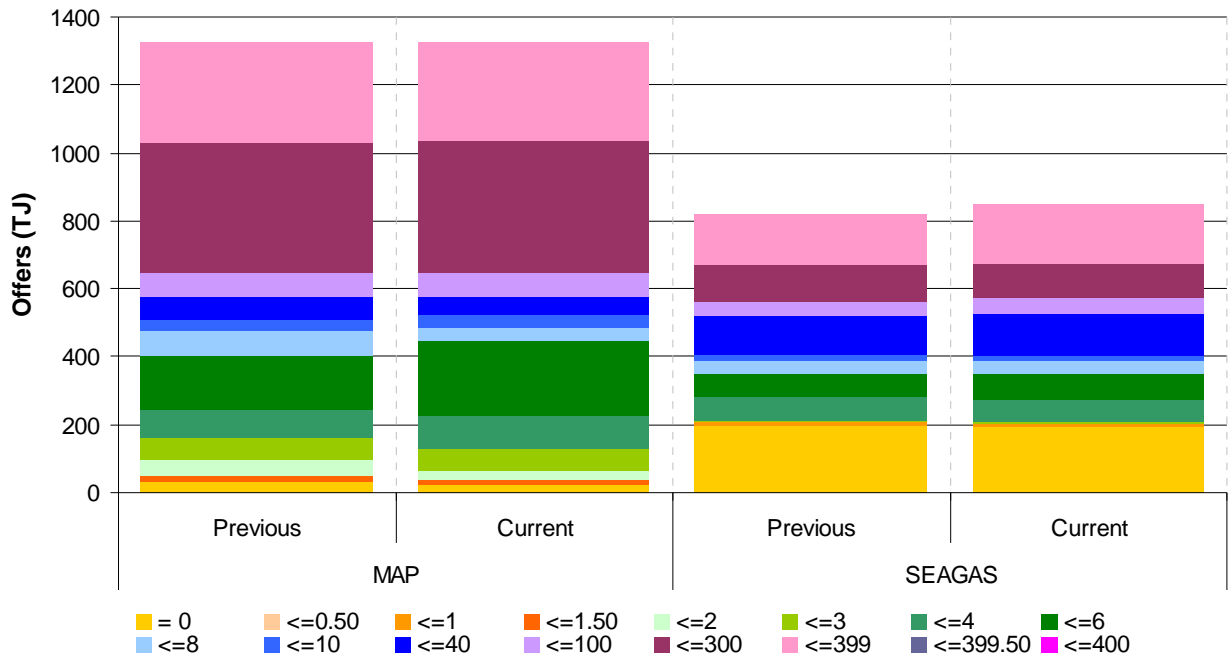
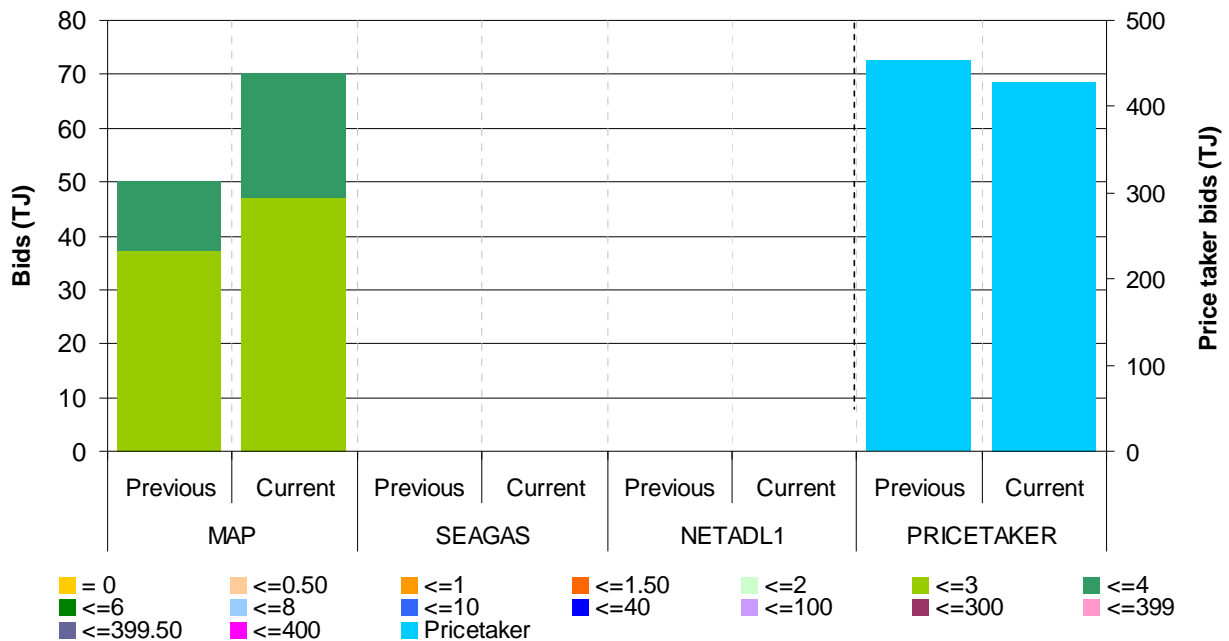


Figure S12: Total weekly Adelaide hub bids (TJ) within price bands (\$/GJ)



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

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

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

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

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

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

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

Pipeline	Schedule	Sun	Mon	Tue	Wed	Thu	Fri	Sat
EGP	D-3 to D-2							
	D-2 to D-1							
MSP	D-3 to D-2							Lumo Energy Australia Pty Ltd
	D-2 to D-1						Lumo Energy Australia Pty Ltd	Lumo Energy Australia Pty Ltd
NETSYD1	D-3 to D-2							
	D-2 to D-1							
ROS	D-3 to D-2							
	D-2 to D-1							Lumo Energy Australia Pty Ltd

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

Inter-day resubmission of offers at Adelaide Hub

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

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

ABC= Adelaide Brighton Cement Ltd | AGL(WGSA)= AGL Wholesale Gas (SA) Pty Ltd | Origin=Origin Energy Retail Ltd | Simply= Simply Energy | TRU= TRUenergy Pty Ltd | AGL(SA)= AGL South Australia Pty Limited | MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

Figure S15: Inter-day resubmission of bids at Adelaide Hub

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

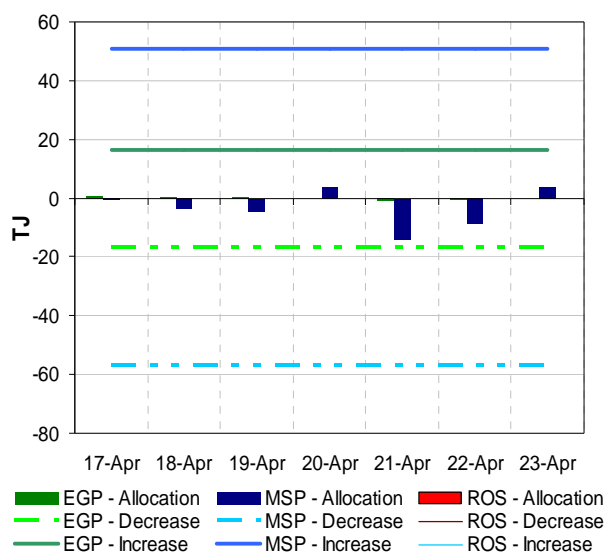
MOS offers are made by participants who have contracts with pipeline facilities to “park” gas (on the pipeline) or “loan” gas (from the pipeline). Based on these contracts, two types of MOS are offered: increase offers to increase flows on a pipeline to a hub; and decrease offers to decrease flows on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

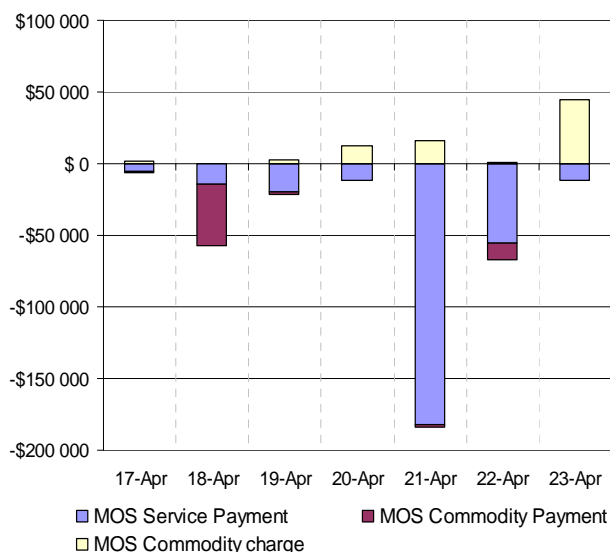
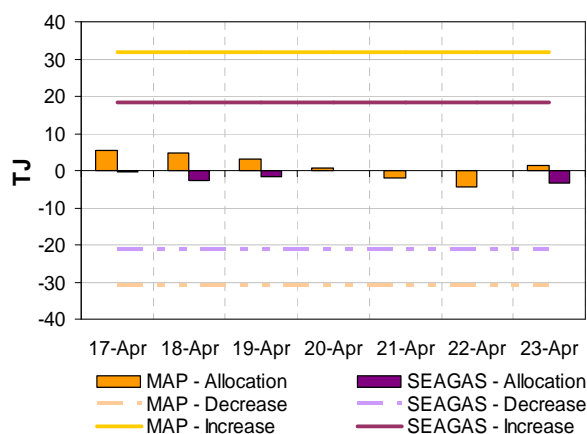


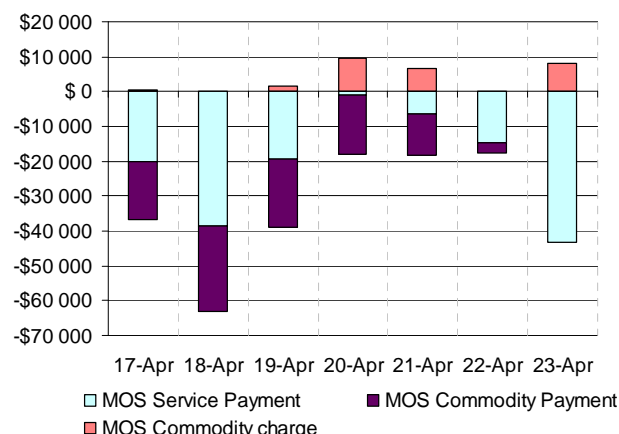
Figure S18a: Adelaide MOS allocations



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

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

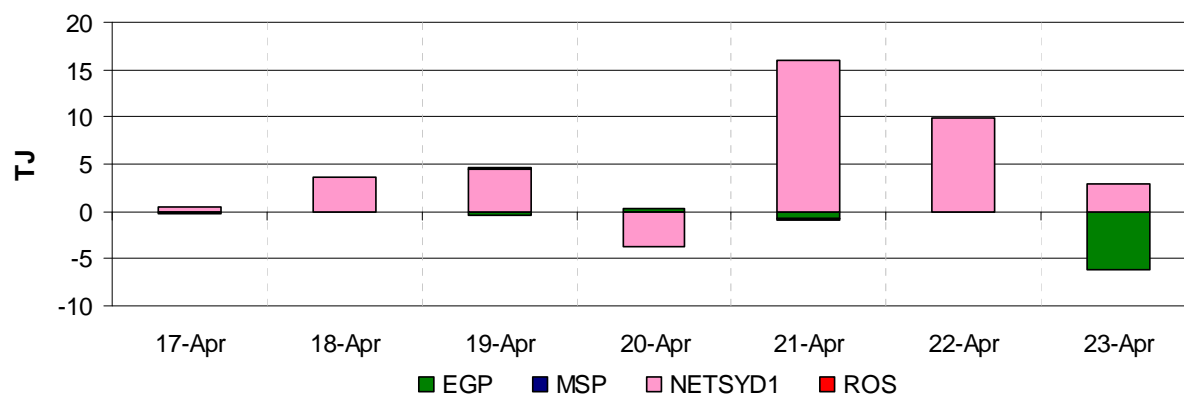
Figure S18b: Adelaide MOS payments/charges



Deviations

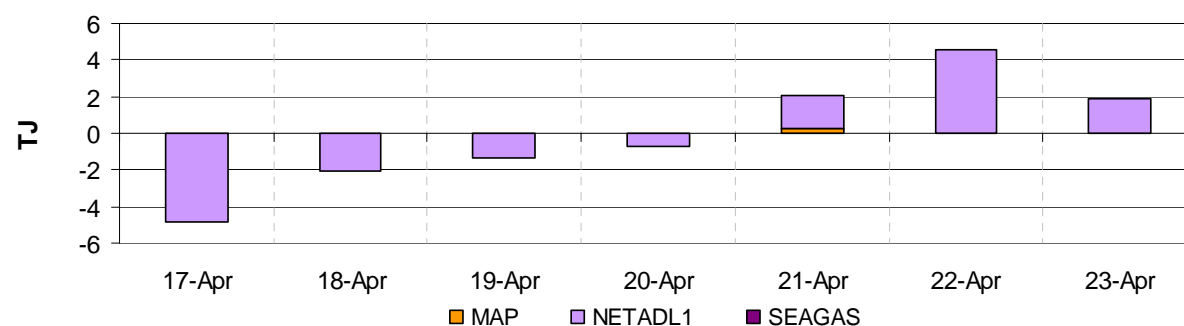
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

	17 Apr – 23 Apr	10 Apr – 16 Apr	2010-11 Financial YTD*
Quantity (TJ)	3.66	4.05	3.99
Charges (\$)	176.36	96.63	664.06

* **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

	17 Apr – 23 Apr	10 Apr – 16 Apr	2010-11 Financial YTD*
Quantity (TJ)	0.50	0.56	0.80
Charges (\$)	5.54	0.58	28.23

* **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	105	102	101	98	98	99	99	119	79	100	94	85
QLD Gas Pipeline	118	112	116	117	112	114	114	142	77	114	109	71
Roma to Brisbane Pipeline	148	157	161	161	156	151	151	219	75	155	165	170
South West QLD Pipeline	204	188	194	195	197	178	171	181	79	190	142	136
NSW/ACT												
Eastern Gas Pipeline	203	221	217	215	212	203	202	268	79	210	211	199
Moomba to Sydney Pipeline	138	172	177	193	165	113	125	439	42	155	183	180
NSW-VIC Interconnect	22	22	23	28	34	27	26	90	17	26	15	-9
VIC												
Longford to Melbourne	433	413	357	436	401	427	423	1030	47	413	481	403
South West Pipeline^	49	100	95	106	92	92	93	353	26	90	93	117
SA												
Moomba to Adelaide Pipeline	123	127	126	127	125	111	107	253	51	121	128	129
SEA Gas Pipeline	129	N/A	N/A	N/A	N/A	N/A	N/A	314	50	129	156	152
TAS												
Tasmanian Gas Pipeline	47	50	51	50	47	44	45	129	35	48	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	92	92	90	90	90	89	140	67	90	94	92
Fairview	88	126	110	129	130	89	89	130	88	109	114	111
Kenya Gas Plant	52	52	51	50	53	53	53	160	33	52	53	55
Kincora	7	7	7	7	12	12	15	25	24	10	6	2
Kogan North	10	8	8	8	9	10	10	12	79	9	10	9
Peat	11	9	6	6	6	5	5	15	62	7	9	9
Rolleston	10	10	10	10	10	10	10	30	34	10	10	11
Scotia	29	1	0	0	17	24	29	29	92	14	27	24
Spring Gully	48	49	48	49	46	48	48	69	70	48	48	43
Strathblane	48	49	48	49	46	48	48	69	70	48	48	43
Talooka	29	29	29	30	28	29	29	42	70	29	29	26
Wallumbilla [#]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	20	34	N/A	7	11
Yellowbank	11	11	10	10	10	10	10	30	40	10	12	13
Talinga	65	61	61	60	69	88	89	90	70	70	63	5
Moomba (SA/QLD)												
Moomba Gas Plant	189	219	231	233	194	157	157	430	60	197	258	263
Ballera	0	0	0	0	0	0	0	150	8	0	12	12
Eastern (VIC)												
Orbost Gas Plant	0	15	55	56	57	57	53	100	30	42	30	21
Lang Lang Gas Plant	57	56	57	56	56	56	56	70	68	56	47	31
Longford Gas Plant	654	627	515	580	561	577	578	1145	59	585	671	598
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	50	71	71	71	71	45	40	73	85	60	62	70
Otway Gas Plant	86	147	120	166	143	144	131	205	56	134	114	128
Iona Underground Gas Storage	20	81	115	104	75	52	51	440	19	71	82	77

*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)

[#] The Wallumbilla gas production facility is not currently operational

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)
17 Apr – 23 Apr	Average min.	18.2	14.0	3.5	11.9	12.0	9.8
	Average max.	26.1	23.0	19.6	20.2	22.1	17.9
10 Apr – 16 Apr	Average min.	17.0	14.2	6.6	11.5	11.1	9.8
	Average max.	27.5	23.1	16.5	19.3	20.2	14.7

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

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

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

17 Apr – 23 Apr	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	3.12	3.44	3.44	2.66	2.59	3.14
Mon	3.00	3.50	3.58	3.21	3.58	3.02
Tue	3.04	3.00	3.48	3.00	3.50	3.05
Wed	3.09	3.09	3.43	3.49	3.49	3.11
Thu	3.11	3.14	3.05	3.05	2.50	3.10
Fri	3.12	3.10	3.07	3.05	2.50	3.11
Sat	3.00	3.15	3.11	3.11	2.50	3.00

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	
17-Apr	MP:	421	447	443	450	450	0
	AEMO:	372	518	475	462	440	
	MP as % of AEMO	113	86	93	97	102	
18-Apr	MP:	455	457	457	456	456	0
	AEMO:	437	456	475	484	486	
	MP as % of AEMO	104	100	96	94	94	
19-Apr	MP:	414	410	412	409	409	0
	AEMO:	388	397	407	405	406	
	MP as % of AEMO	107	103	101	101	101	
20-Apr	MP:	467	473	494	499	499	0
	AEMO:	470	482	518	518	524	
	MP as % of AEMO	99	98	95	96	95	
21-Apr	MP:	492	495	490	487	487	0
	AEMO:	498	493	483	482	458	
	MP as % of AEMO	99	100	102	101	106	
22-Apr	MP:	539	540	539	534	536	0
	AEMO:	489	479	471	475	481	
	MP as % of AEMO	110	113	114	112	111	
23-Apr	MP:	484	504	523	522	522	-6
	AEMO:	444	468	498	499	486	
	MP as % of AEMO	109	108	105	105	107	

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