

27 February – 5 March 2011

Preface

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

The AER is responsible for monitoring and enforcing compliance with Part 20 of the National Gas Rules that authorise and govern conduct in the Short Term Trading Market (STTM). The STTM is a market for the wholesale trading of natural gas at defined hubs between pipelines and distribution systems, and began operation on 1 September 2010. With initial hubs of Sydney and Adelaide, additional hubs are intended for the future. Each hub is scheduled and settled separately, but all hubs operate under the same rules. Part C provides a summary of operational and market data in the STTM.

The Victorian Gas Market lies between the two STTM hubs and shares common production sources with the Adelaide and Sydney hubs. Participation in the Victorian Gas Market and the STTM hubs occurs on the basis of a different set of market rules and requires contractual arrangements with different pipeline owners. Participants operate in only those markets where they have production, gas and pipeline contracts. The larger number of retailers participating in the Victorian gas market reflects the increased number of retailers in Victoria. Some key differences between the STTM and the Victorian Gas Market are set out at the start of Part C.

This report will evolve over time and the nature of information presented may change. The AER welcomes feedback on the report from interested parties. Feedback can be sent to aer inquiry@ aer.gov.au, 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

27 Feb – 5 Mar	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	2.66	2.20	3.45

* weighted average daily imbalance price

** ex ante market price

STTM Gas Markets (Adelaide and Sydney)

Figure S2 shows for the third consecutive week, no withdrawal bids were scheduled at the Adelaide hub. Figure S3 shows this week's average ex ante and ex post prices at the Sydney hub were lower than the previous week. The ex ante price (\$2.20/GJ) was also lower than the financial year to date (FYTD) average (\$2.54/GJ). The ex post price reached a maximum of \$3.99/GJ on Tuesday 1 March while the average ex post price was \$2.82/GJ this week. Figure S4 shows the average ex ante and ex post prices at the Adelaide hub were higher than the

previous week's prices. Both the ex ante and ex post price reached a maximum of \$3.77/GJ this week and were more closely aligned than the equivalent prices at the Sydney hub.

Figures S5 and S6 show pipeline allocation volumes were generally aligned with network allocations at both hubs this week. For Sydney however, network allocations (represented by the red line) exceeded pipeline allocations (represented by the green line) by approximately 17.5 TJ on Wednesday 2 March. In other words, users at the hub consumed 17.5 TJ more gas than the amount injected by the pipelines into the hub, before MOS services were provided. This over-withdrawal or deviation at the Sydney hub on 2 March is also shown in Figure S19.

This deviation resulted in 17.5 TJ of Market Operator Service (MOS) gas to be delivered from pipeline linepack supplies for 2 March gas day. These MOS gas allocations were provided by shippers on the Moomba to Sydney Pipeline (see figure S17a). Figure 17b shows this resulted in over \$75 000 of MOS service payments to those shippers, and \$38 000 of MOS commodity payments to shippers on 4 March gas day (paid at the day+2 ex ante price of \$2.17/GJ).

MOS Stacks — 1 March to 31 May 2011

On 11 February 2011, AEMO published the estimated maximum quantity of MOS¹ for each pipeline for the 3-month period of March to May 2011. Figures 2 and 3 compare MOS offers and requirements for the Sydney and Adelaide hubs, for the period 1 March to 31 May and the previous MOS period (1 December to 28 February).

MOS offers for the Sydney hub have increased significantly for the current period, due to expected higher gas demand and greater demand volatility due to the colder temperatures. MOS increase and decrease offers on the Moomba to Sydney Pipeline (MSP) were much larger than that on the Eastern Gas Pipeline (EGP). This is because scheduled and allocation flow quantities are generally more aligned on the EGP, which, as a 'flow-controlled pipeline' can more easily respond to volatile demand and intra-day nominations. In contrast, the MSP (which is a 'pressure-controlled pipeline' responds to changes in pipeline pressure depending on the amount of gas consumed.

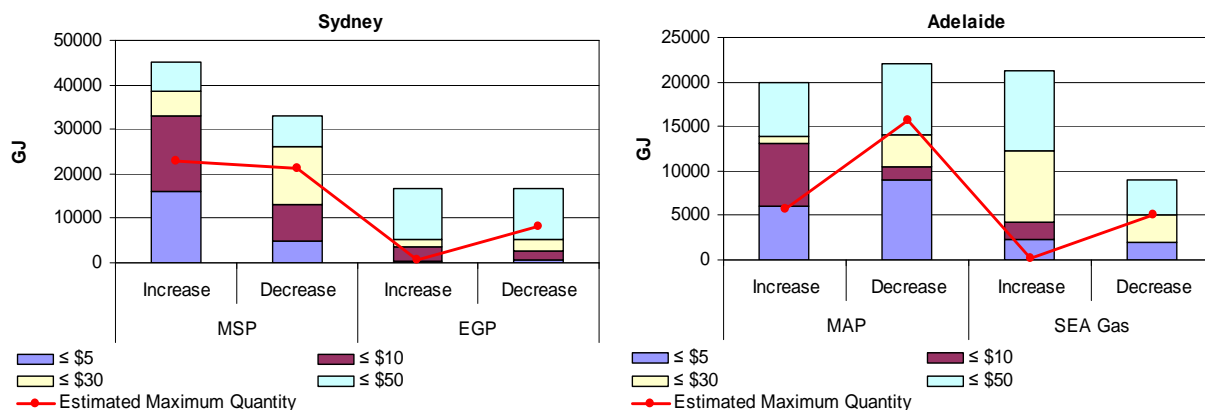
MOS decrease offers on the MSP fell short of the estimated maximum daily quantity required for that service of 88.6 TJ. This was despite the total volume of offers for the service increasing by 72 per cent (to 57.1 TJ) from the previous December – February 2011 MOS period. If during the current MOS period any daily decrease MOS allocations exceed the amount in the MOS stack then further MOS provided (known as overrun MOS) will receive the volume weighted average cost of MOS offers on the MSP (\$39.25/GJ).² It is noted that overrun MOS has not been required in previous MOS periods with MOS allocations being met by sufficient MOS offers.

The volume of increase MOS on the SEAGas pipeline decreased by 3 TJ compared to the previous period. With the exception of the Eastern Gas Pipeline, where offers remained the same as for the previous period, all other pipelines saw an increased volume of MOS offers for both increase and decrease services. This was largely due to increased volume offered above \$30/GJ, while there was also less gas offered between \$10/GJ and \$30/GJ on the Moomba to Sydney Pipeline.

¹ Market Operator Service (MOS) is described in detail on p 22 of this report.

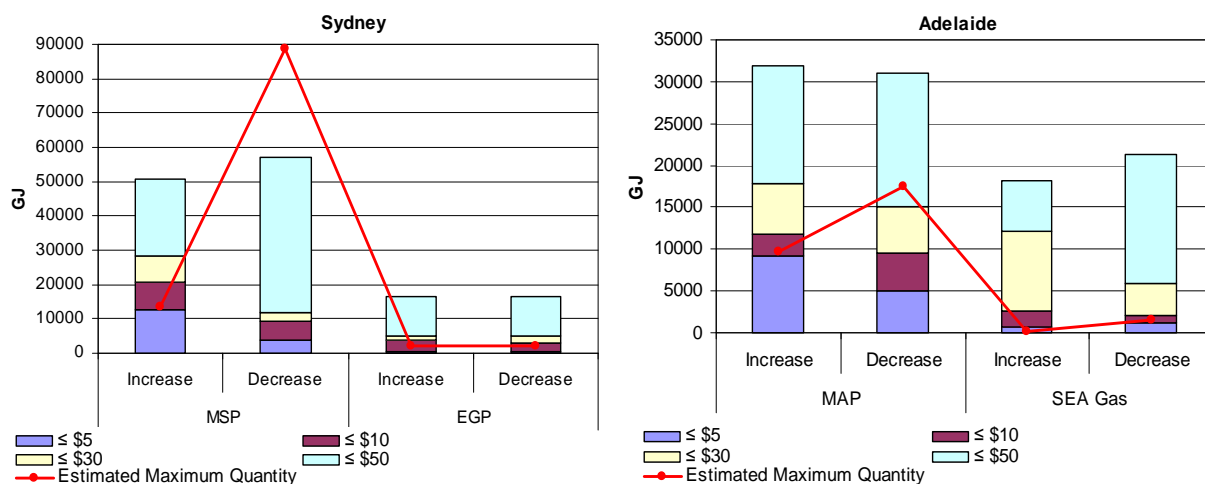
² This is for overrun MOS required up to the maximum MOS estimate based on offers in the MSP MOS decrease stack. If MOS allocated exceeds the AEMO estimated maximum MOS requirement then this gas will be paid the highest offer in the MSP MOS decrease stack (\$/50GJ).

Figure 2: MOS Offers & AEMO MOS estimate – Previous period (1 December to 28 February)



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

Figure 3: MOS Offers & AEMO MOS estimate – Current period (1 March to 31 May)



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

Victorian Gas Market

Figure V2 shows this week's average daily price (\$2.66/GJ) was higher than last week (\$2.41/GJ) and the FYTD average (\$2.02/GJ). The daily average market price was \$1.62/GJ on Sunday 27 February and gradually increased throughout the week to be \$3.00/GJ Saturday 5 March. The higher average price this week was consistent with higher average injections and withdrawals on the Victorian Declared Transmission System (see figures V3 and V6). Figure V1 shows that participation in the market was largely unchanged from the previous week. For the second consecutive week, no injections were scheduled from Culcain or SEAGas.

Following on from the previous week, AEMO continued to apply Supply Demand Point Constraints (SDPCs) for withdrawals at SEAGas during this week. SDPCs were also applied to injections at BassGas and withdrawals at VicHub for 3 March and 4 March respectively. No demand overrides were issued this week (see figure A5).

National Gas Market Bulletin Board

Figure N4 shows total gas demand, gas production, and gas-powered generation (GPG) usage on an average daily basis were slightly higher than the previous week. This was largely due to the higher demand for gas in Victoria this week, including for GPG usage which was 27 TJ/day higher than last week. This increased demand led to higher average daily production and pipeline flows in Victoria, which was consistent with the higher average prices and injections in the Victorian gas market as discussed above.

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
27 Feb – 5 Mar	336	7	489	291	44	143	101	113
Financial Year-to-date 2010-11*	381	21	599	290	45	170	95	109
Financial Year-to-date 2009-10**	367	20	565	284	38	168	86	70

*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
27 Feb – 5 Mar	82	37	172	33	162
Financial Year-to-date 2010-11*	87	33	171	26	159
Financial Year-to-date 2009-10**	84	45	166	23	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, Barcaldine, and Swanbank power stations.

Figure N3 sets out the daily average flows from production and storage facilities from each production zone across the National Gas Market. A list of production/storage facilities for each zone is provided in Figure A2.

Figure N3: Daily average production flows (TJ) for each production zone

Average daily flows	Roma (QLD)	Eastern Victoria	Otway Basin (VIC)	Moomba (SA/QLD)
27 Feb – 5 Mar	526	695	220	231
Financial Year-to-date 2010-11*	536	769	265	284
Financial Year-to-date 2009-10**	453	672	285	280

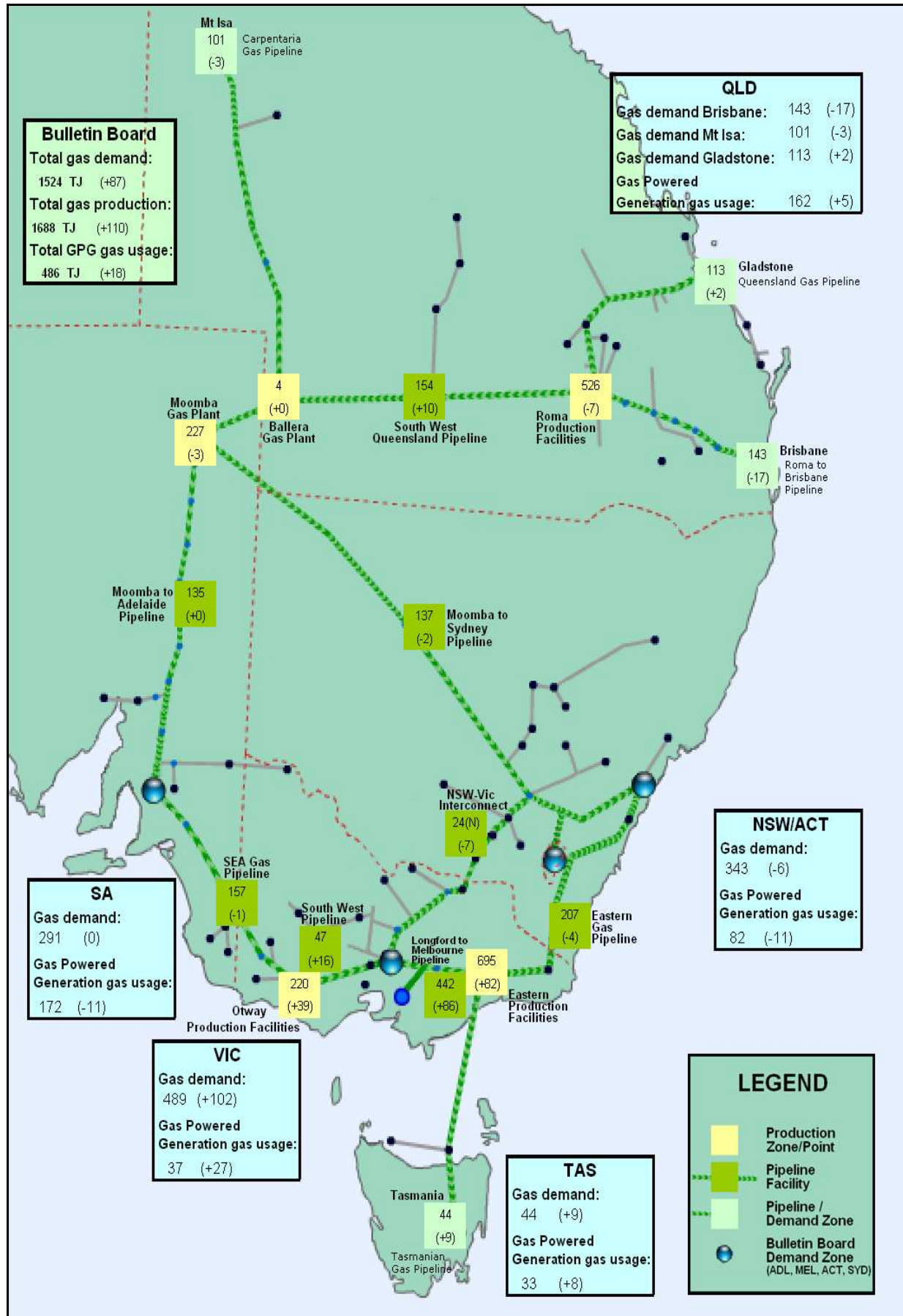
*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)

**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)

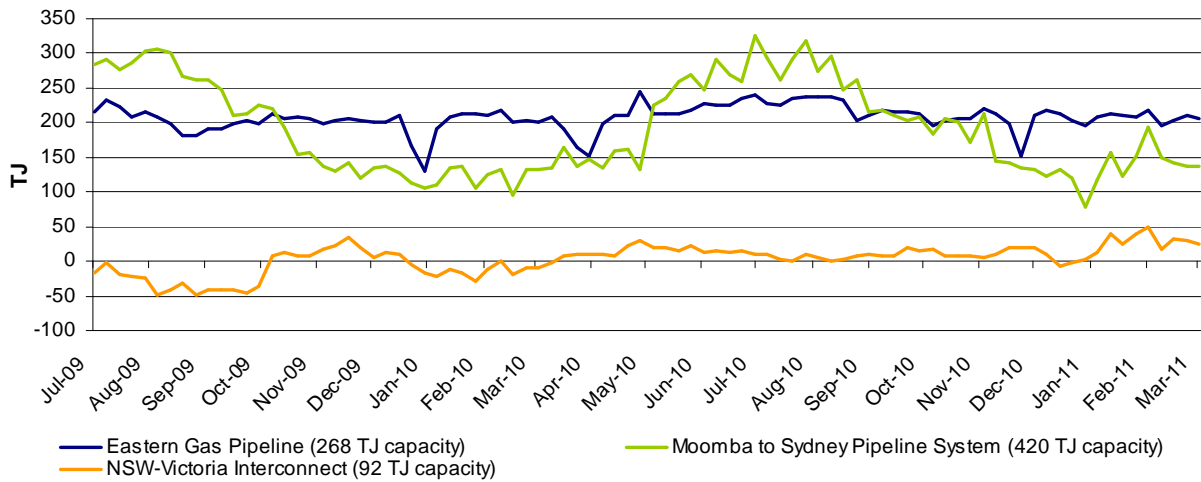


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
 Numbers in brackets indicate a change in average daily flow from the previous week.

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.

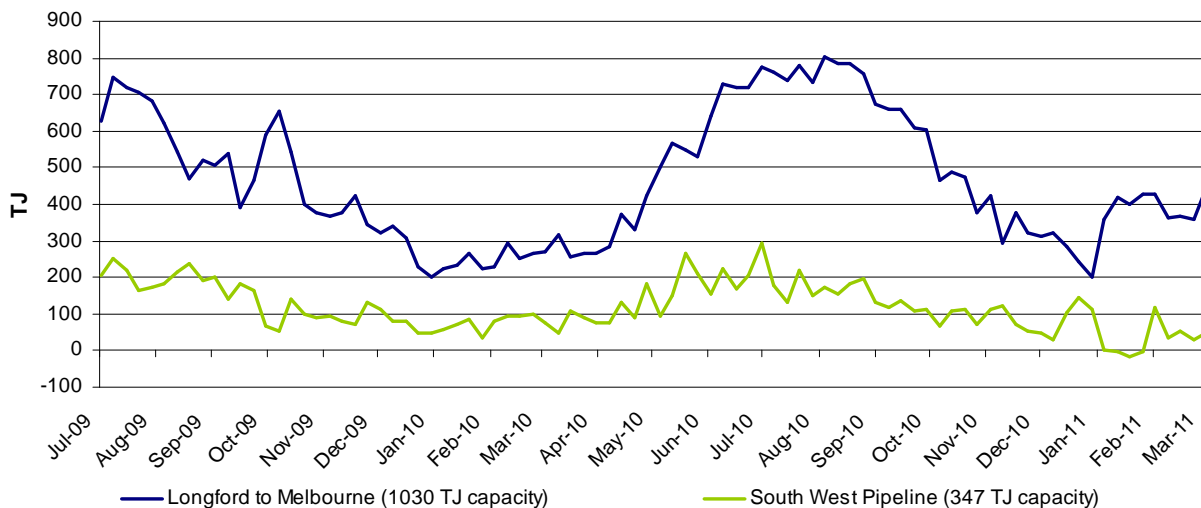
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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.

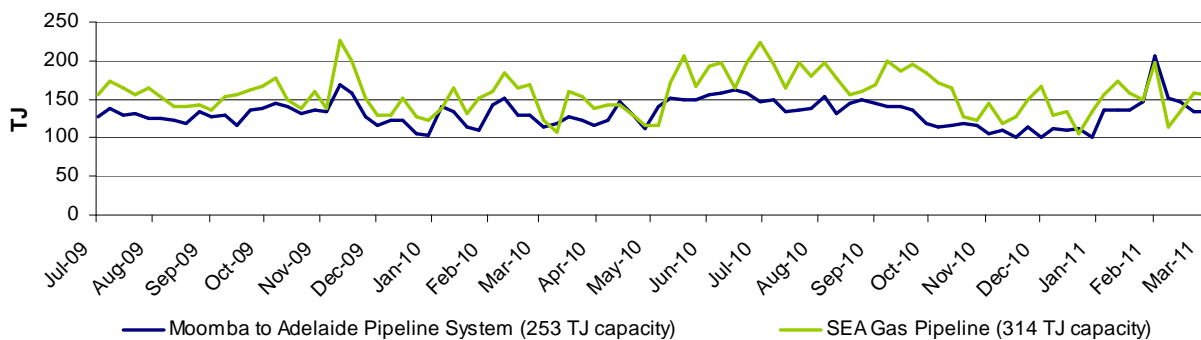
Figure N6: Average daily flows (TJ) into VIC demand region



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

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

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

Market Prices

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

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

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

	27 Feb – 5 Mar	20 Feb – 26 Feb	2010-11 Financial YTD*	2009-10 Financial YTD**
Average daily price	2.66	2.41	2.02	1.64

27 Feb – 5 Mar	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	1.62	2.53	2.85	2.84	2.85	2.93	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)

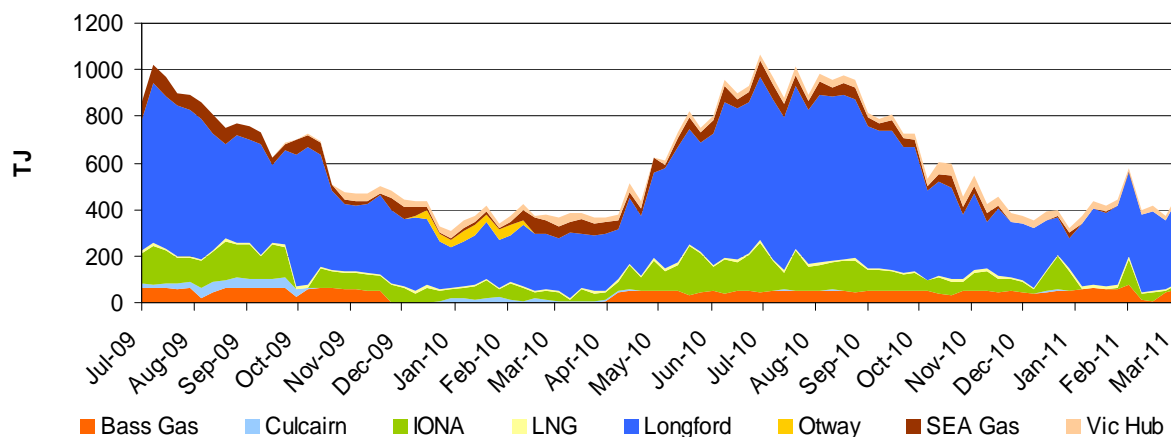
Source: <http://www.aemo.com.au> (INT 041)

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:	27 Feb – 5 Mar	20 Feb – 26 Feb	2010-11 Financial YTD*	2009-10 Financial YTD**
Culcairn	0	0	1	18
Longford	359	298	427	376
LNG	9	9	9	8
IONA	20	3	71	81
VicHub	18	14	30	16
SEAGas	1	0	25	41
Bass Gas	56	46	48	33
Otway	0	0	0	10
TOTAL	462	370	611	583



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

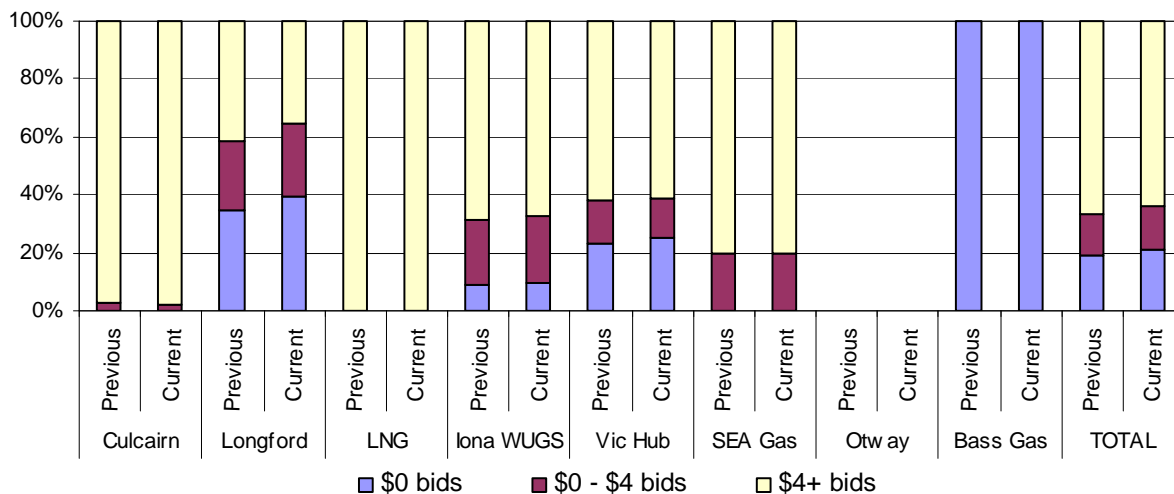
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)

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		CE					
Longford	Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL Origin TRU	AGL TRU	AGL Origin TRU
LNG			Simply				
Iona	TRU	Origin TRU Simply	Origin TRU Simply	Origin TRU Simply	Origin Simply	Origin Simply	Simply
VicHub	AETV Lumo	AETV Lumo	AETV Lumo	AETV	AETV Lumo	AETV TRU Lumo	AETV Lumo
SEAGas			Simply	Simply	Simply		
Bass Gas					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 |

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:	27 Feb – 5 Mar	20 Feb – 26 Feb	2010-11 Financial YTD*	2009-10 Financial YTD**
Ballarat	17	13	25	22
Geelong^	98	80	90	81
Gippsland	30	16	44	46
Melbourne	273	236	401	382
Northern	59	64	63	52
TOTAL	477	410	622	583

^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	NS			S			
AGL Energy Sales & Marketing Limited	STTM User,Shipper	4	S	S	S				S
AGL Wholesale Gas Limited	Shipper	2	S	NS					
BHP Billiton Petroleum (Bass Strait) PL	Shipper								
BlueScope Steel	STTM User,Shipper	1	S						
Country Energy	STTM User,Shipper	2	S				S		
Delta Electricity	STTM User,Shipper	1							S
EnergyAustralia	STTM User,Shipper	2	S	S					
Esso Australia Resources Pty Ltd	Shipper								
Lumo Energy (NSW) Pty Ltd	STTM User								
Lumo Energy Australia Pty Ltd	Shipper	1	NS			S			
OneSteel Manufacturing Pty Ltd	STTM User,Shipper	1	S						
OneSteel NSW Pty Ltd	STTM User,Shipper	1	S						
Origin Energy LPG Limited	STTM User,Shipper								
Origin Energy Retail Ltd	STTM User,Shipper	1		S					
Santos Direct Pty Ltd	STTM User,Shipper	1	S						
TRUenergy Pty Ltd	STTM User,Shipper	2	S	S		NS			
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	NS	S		
TRUenergy Pty Ltd	STTM User,Shipper	2	NS	S		NS	

^ 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)^

	27 Feb – 5 Mar	20 Feb – 26 Feb	2010-11 Financial YTD*
Ex ante price	2.20	3.00	2.54
Ex post price	2.82	2.98	6.38

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

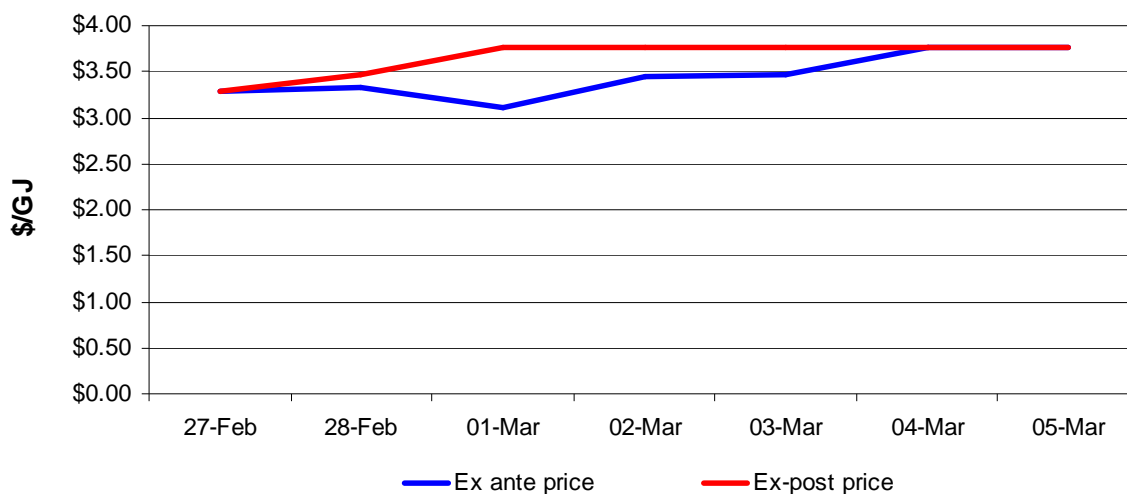


Source: <http://www.aemo.com.au> INT 651, 657

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

	20 Feb – 26 Feb	13 Feb – 19 Feb	2010-11 Financial YTD*
Ex ante price	3.45	3.19	2.81
Ex post price	3.66	3.60	2.95

* 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.

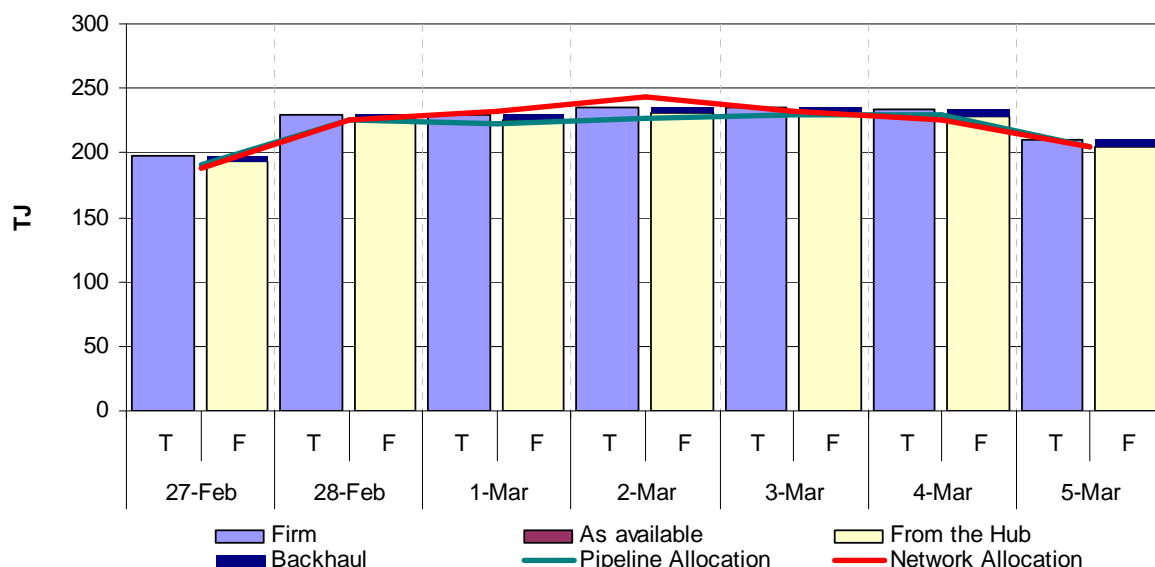
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

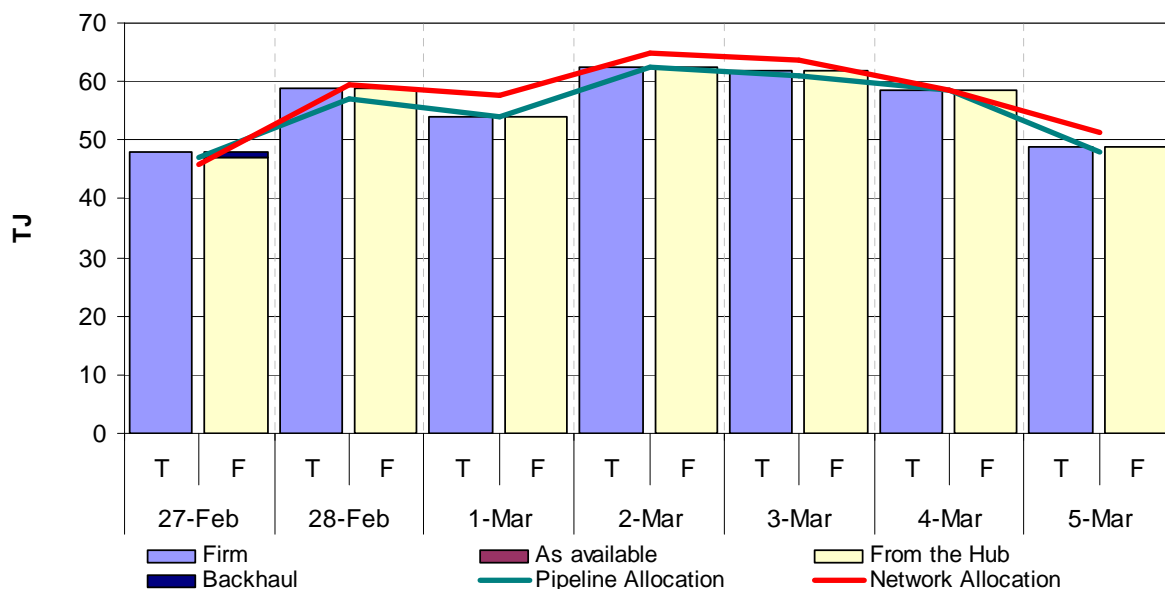
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

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)

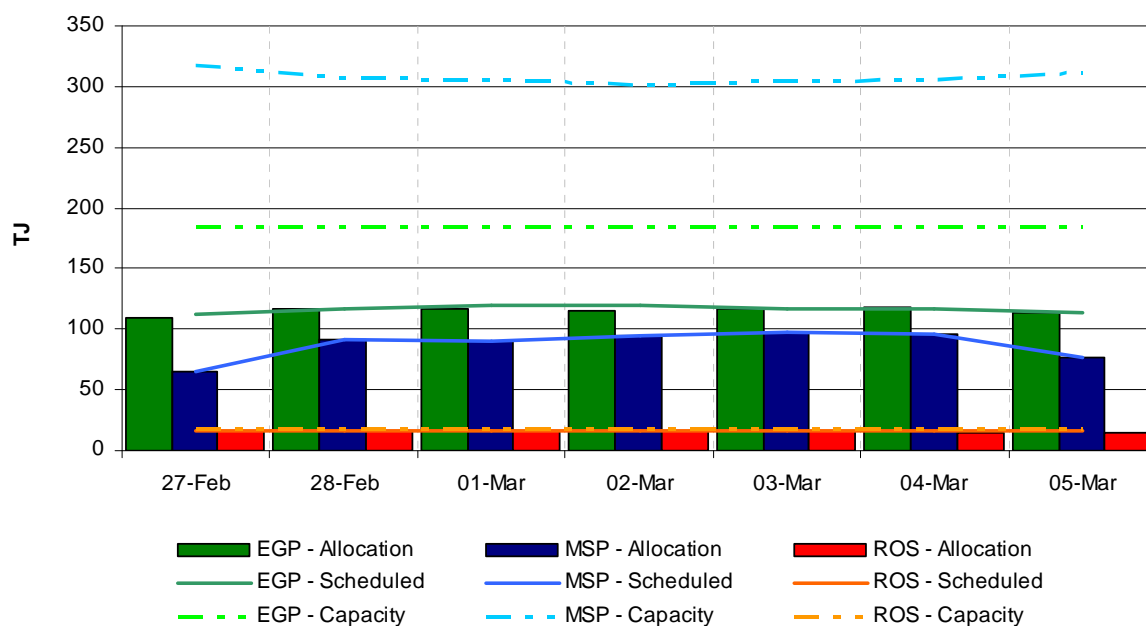
Pipeline Facility Allocations

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.

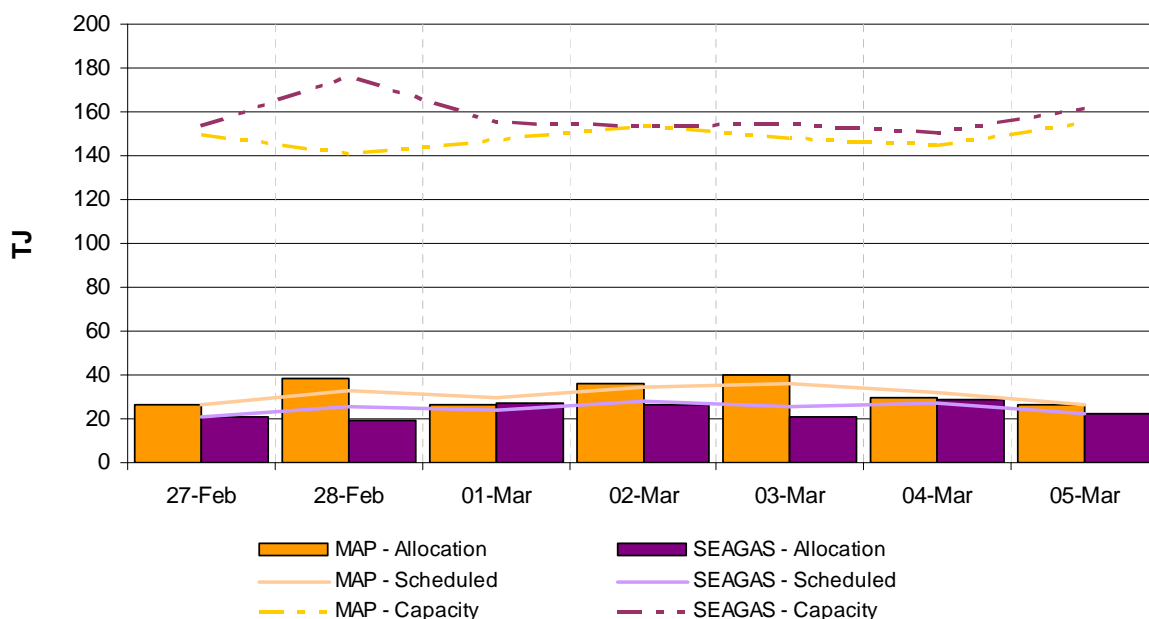
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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

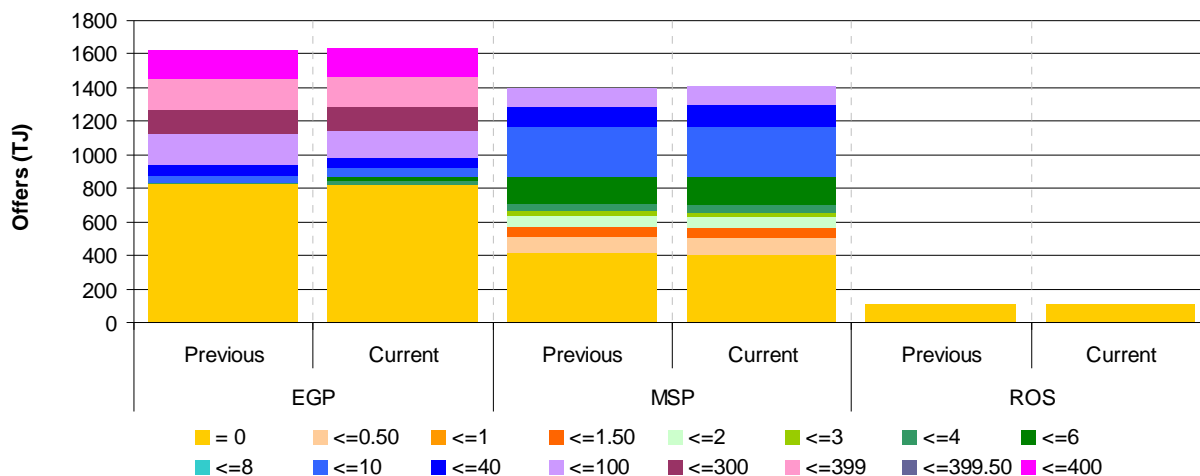
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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.

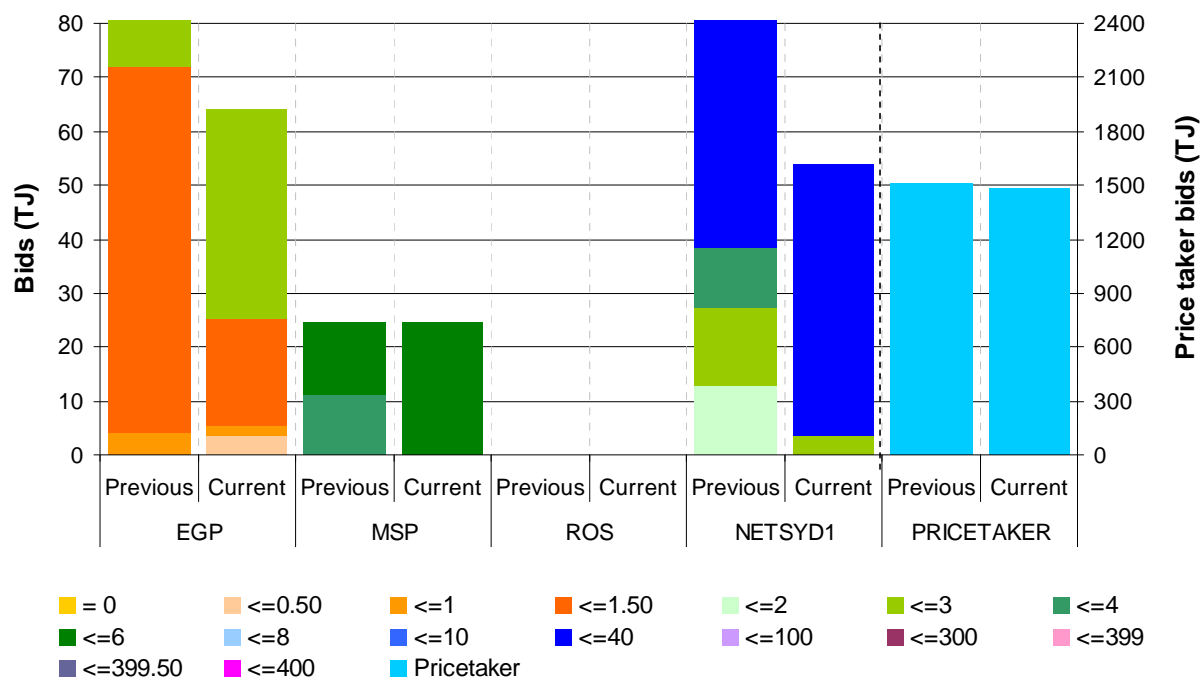
Figure S9: Total weekly Sydney hub offers (TJ) within price bands (\$/GJ)



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

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

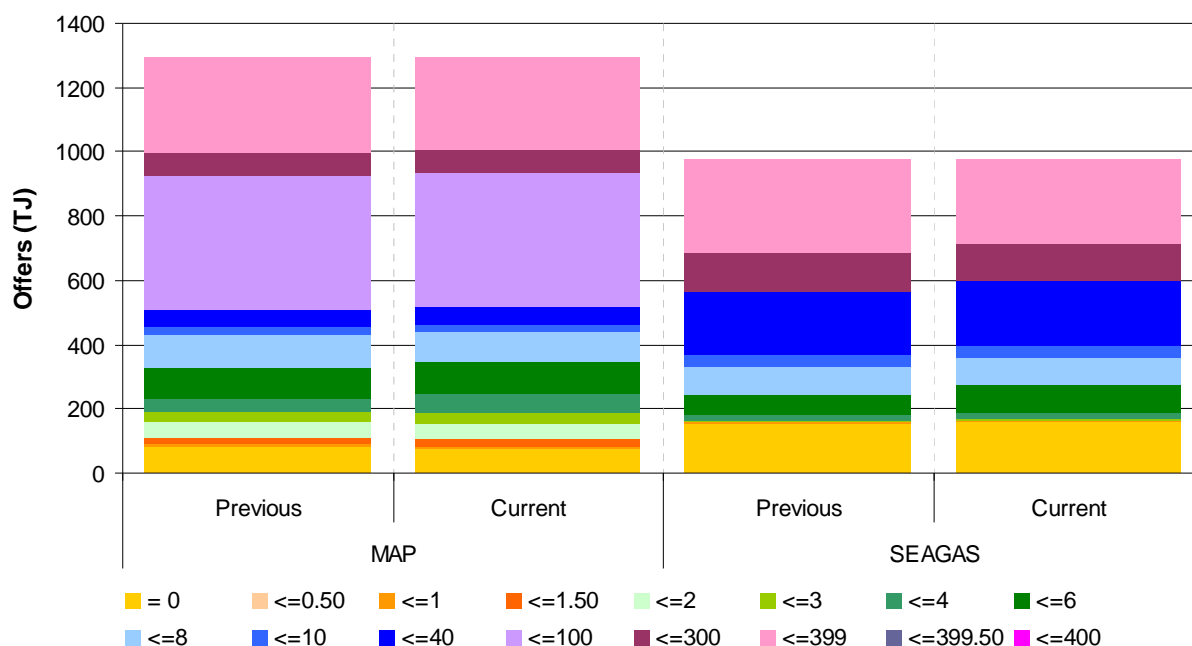
Figure S10: Total weekly Sydney hub bids (TJ) within price bands (\$/GJ)



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

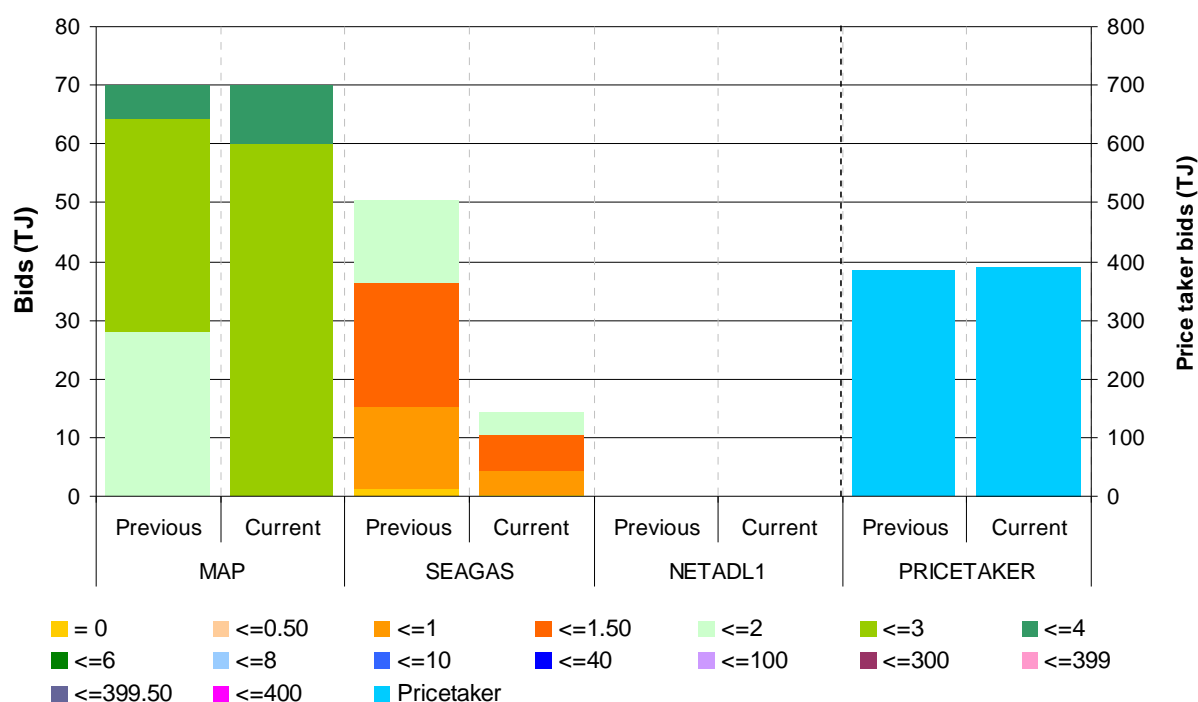
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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 Lumo Energy Australia Pty Ltd SANTOS	SANTOS		Lumo Energy Australia Pty Ltd OneStl(NSW) SANTOS TRU	EA SANTOS	Lumo Energy Australia Pty Ltd OneStl(NSW) SANTOS	
	D-2 to D-1	SANTOS		BluSc EA Lumo Energy Australia Pty Ltd OneStl(NSW) SANTOS TRU	BluSc	BluSc EA Lumo Energy Australia Pty Ltd OneStl(NSW) SANTOS	BluSc EA OneStl(NSW)	BluSc EA SANTOS
MSP	D-3 to D-2	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) TRU	AGL(ESM) EA TRU	EA Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU
	D-2 to D-1	AGL(ESM) Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) TRU	EA Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU
ROS	D-3 to D-2		AGL(ESM)		AGL(ESM)		AGL(ESM)	
	D-2 to D-1	AGL(ESM)		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	Lumo Energy Australia Pty Ltd	Lumo Energy Australia Pty Ltd		AETV	Lumo Energy Australia Pty Ltd		Lumo Energy Australia Pty Ltd
	D-2 to D-1				Lumo Energy Australia Pty Ltd		Lumo Energy Australia Pty Ltd	Lumo Energy Australia Pty Ltd
MSP	D-3 to D-2				Country			
	D-2 to D-1			Country			Country	
NETSYD1	D-3 to D-2							
	D-2 to D-1							
ROS	D-3 to D-2							
	D-2 to D-1						Country	

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

Country= Country Energy | AETV = Aurora Energy Tamar Valley | Country= Country Energy | TRU= TRUenergy Pty Ltd |
 EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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 Simply	ABC AGL(SA) Origin Simply	AGL(SA) Origin Simply	AGL(SA) Origin	AGL(SA) Origin	AGL(SA) Origin
	D-2 to D-1	ABC AGL(SA) Origin Simply	ABC AGL(SA) Origin Simply	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 TRU	Origin TRU	Origin Simply TRU	Origin TRU	Origin TRU	Origin TRU	Origin
	D-2 to D-1	Origin	Origin Simply TRU	Origin TRU	Origin TRU	Origin TRU	Origin TRU	Origin 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	Simply	Simply		
	D-2 to D-1	Simply	Simply	Simply				
NETADL1	D-3 to D-2							
	D-2 to D-1							
SEA-GAS	D-3 to D-2							
	D-2 to D-1							

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

Simply= Simply Energy

Market Operator Service

The Market Operator Service (MOS) is a daily mechanism for allocating balancing gas provided by pipelines to maintain pressures at receipt points. This balancing gas is the difference between what was scheduled by a pipeline operator (the pipeline schedule) and the actual quantities of gas that flowed on a pipeline on the day.

MOS offers are made by participants who have contracts with pipeline facilities to “park” gas (on the pipeline) or “loan” gas (from the pipeline). Based on these contracts, two types of MOS are offered: increase offers to increase flows on a pipeline to a hub; and decrease offers to decrease flows on a pipeline to a hub. Where a pipeline deviation³ 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

³ 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.

decrease offers on each pipeline are shown by horizontal lines (as indicated in the legend). Figures S17b and S18b show MOS service payments and MOS commodity payments or charges. Payments fall below the horizontal axis and charges are displayed above the axis.

Figure S17a: Sydney MOS allocations

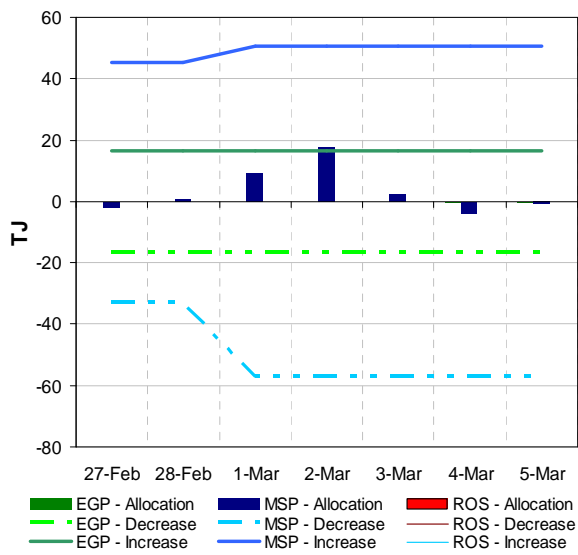
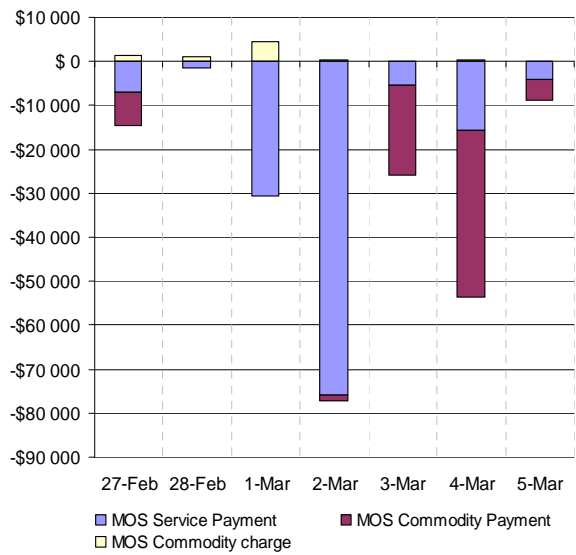


Figure S17b: Sydney MOS payments/charges



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

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

Figure S18a: Adelaide MOS allocations

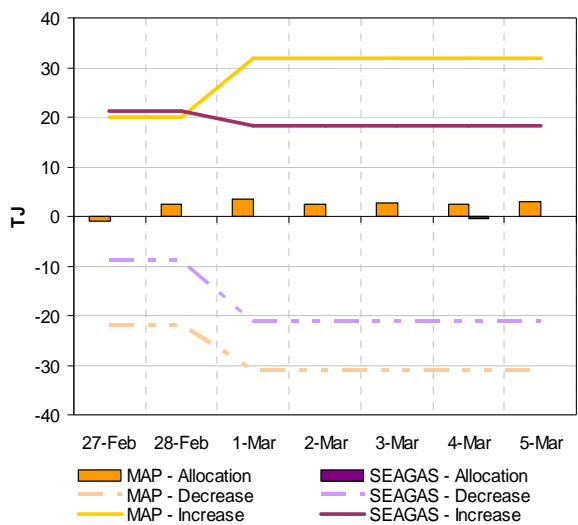
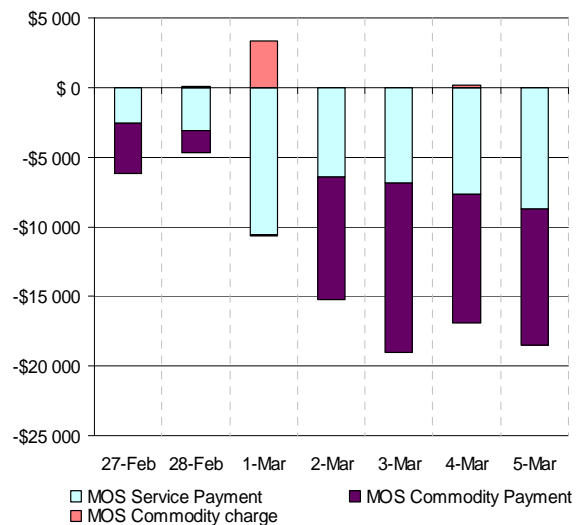


Figure S18b: Adelaide MOS payments/charges



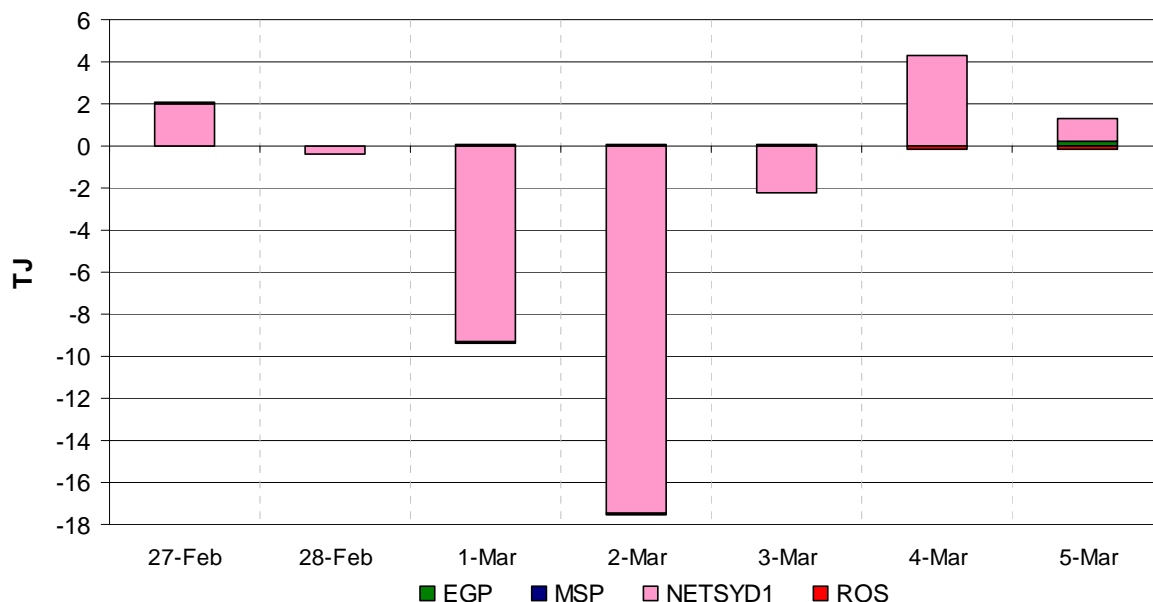
Source: <http://www.aemo.com.au> INT 663, 664, 665

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

Deviations

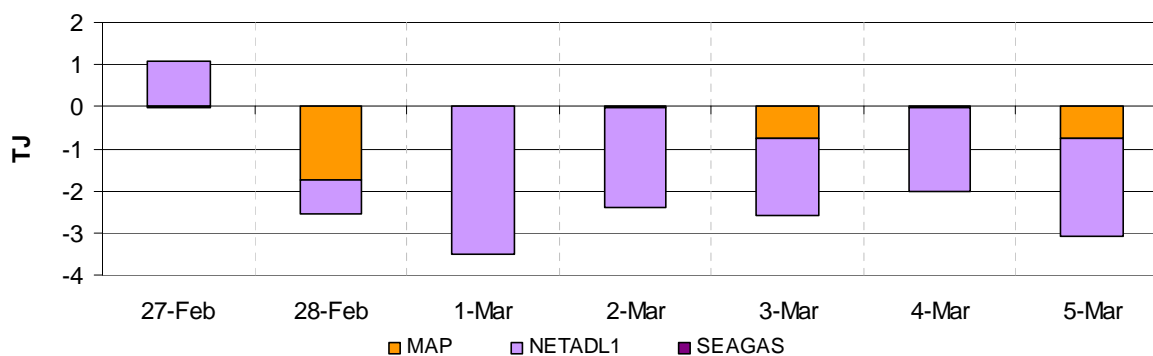
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As discussed previously, figures S5 and S6 show allocated quantities versus scheduled. Where they differ, there is a deviation. Net deviations may lead to requirements for MOS services. Figures S19 and S20 show net deviations at the STTM hubs.

Figure S19: Net Deviations – Sydney Hub



Source: <http://www.aemo.com.au> INT652

Figure S20: Net Deviations – Adelaide Hub



Source: <http://www.aemo.com.au> INT652

Market Schedule Variations

When a shipper deviates from the ex ante schedule, it can submit a “market schedule variation” (MSV) to AEMO. The variation must be matched by an opposite variation from either another shipper or a user. Market schedule variations allow shippers to adjust their schedules in line with their pipeline allocations and so avoid deviation charges. A variation can include flows from the hub, which must also be matched with variation of flows to the hub.

Variations that cause a change in withdrawals at the hub attract a variation charge (but no deviation charge), which is designed to encourage more accurate day-ahead forecasting. The variation charge has a sliding scale such that the bigger the variation, the bigger the charge. However, variations that do not change the demand at the hub are exempt. Figures S21 and S22 show MSV quantities and charges at the STTM Hubs.

Figure S21: Average Daily Market Variations - Sydney Hub

	20 Feb – 26 Feb	13 Feb – 19 Feb	2010-11 Financial YTD*
Quantity (TJ)	3.51	4.09	3.97
Charges (\$)	125.95	184.77	805.54

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

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

Figure S22: Average Daily Market Variations - Adelaide Hub

	20 Feb – 26 Feb	13 Feb – 19 Feb	2010-11 Financial YTD*
Quantity (TJ)	0.00	0.12	0.79
Charges (\$)	0.00	0.91	21.90

* **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	102	101	100	101	100	102	101	117	81	101	95	86
QLD Gas Pipeline	121	120	113	107	98	120	112	142	77	113	109	70
Roma to Brisbane Pipeline	122	143	161	142	151	137	122	219	78	143	170	168
South West QLD Pipeline	133	167	138	182	157	148	150	181	75	154	135	140
NSW/ACT												
Eastern Gas Pipeline	186	207	208	211	211	218	203	268	79	207	212	201
Moomba to Sydney Pipeline	93	152	150	157	139	130	109	420	45	137	190	186
NSW-VIC Interconnect	27	32	26	16	20	21	26	92	15	24	14	-12
VIC												
Longford to Melbourne	308	477	485	433	456	496	359	1030	49	442	500	424
South West Pipeline^	19	46	66	36	46	69	29	347	28	47	98	123
SA												
Moomba to Adelaide Pipeline	121	144	131	141	141	129	119	253	51	135	130	130
SEA Gas Pipeline	155	166	160	155	147	157	142	314	51	157	159	154
TAS												
Tasmanian Gas Pipeline [#]	42	42	43	47	45	46	42	129	35	44	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)

^Negative flows represent back-haul flows along the South West Pipeline back into storage at Iona

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

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

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

Production zone production / storage facility	Sun	Mon	Tue	Wed	Thu	Fri	Sat	MDQ (TJ)	YTD average capacity usage* (%)	Current week average daily flows	Current YTD average daily flows*	Previous YTD average daily flows**
Roma (QLD)												
Berwyndale South	91	92	91	92	92	92	91	140	68	92	95	92
Fairview	90	122	87	102	103	103	79	130	90	101	117	112
Kenya Gas Plant	52	53	52	52	50	52	46	160	35	52	56	52
Kincora	8	8	15	15	12	12	15	25	20	12	5	2
Kogan North	10	10	10	8	9	10	10	12	78	10	9	8
Peat	10	11	11	10	11	11	10	15	62	11	9	8
Rolleston	10	10	9	9	9	9	9	30	34	9	10	11
Scotia	29	29	29	29	29	29	29	29	92	29	27	23
Spring Gully	42	42	46	43	44	42	42	69	70	43	49	44
Strathblane	42	42	46	43	44	42	42	69	70	43	49	44
Talooka	25	26	28	26	27	25	25	42	70	26	29	26
Wallumbilla	12	12	3	3	3	4	4	20	36	6	7	11
Yellowbank	11	11	12	11	10	12	13	30	40	11	12	13
Talinga	80	80	80	84	82	84	80	90	68	82	61	7
Moomba (SA/QLD)												
Moomba Gas Plant	194	223	208	256	247	233	207	430	62	227	269	270
Ballera	7	0	8	0	8	0	0	150	10	4	15	10
Eastern (VIC)												
Orbost Gas Plant	47	48	49	47	47	47	51	100	29	47	29	17
Lang Lang Gas Plant	56	56	56	57	54	57	54	70	67	56	47	32
Longford Gas Plant	430	585	663	612	601	660	505	1145	60	592	693	622
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	71	71	60	50	55	60	55	73	88	61	64	74
Otway Gas Plant	134	166	139	115	124	125	118	205	54	134	110	130
Iona Underground Gas Storage	-2	19	36	16	28	54	44	440	20	25	90	80

*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)
27 Feb – 5 Mar	Average min.	21.7	20.9	12.8	14.5	16.7	11.1
	Average max.	29.8	26.6	24.4	24.0	27.9	20.0
20 Feb – 26 Feb	Average min.	23.3	23.2	17.9	19.1	24.4	13.2
	Average max.	31.4	33.9	34.5	30.7	34.9	22.2

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

27 Feb – 5 Mar	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	1.61	1.61	2.11	2.11	2.82	1.62
Mon	2.50	2.50	2.52	3.08	3.74	2.53
Tue	2.83	3.08	3.06	2.83	3.42	2.85
Wed	2.83	3.08	3.08	3.25	3.48	2.84
Thu	2.83	3.25	3.30	3.39	3.30	2.85
Fri	2.91	3.43	2.92	3.40	3.50	2.93
Sat	2.98	3.67	3.40	3.25	2.99	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	
27-Feb	MP:	300	300	300	300	300	0
	AEMO:	292	290	303	310	300	
	MP as % of AEMO	103	103	99	97	100	
28-Feb	MP:	459	458	465	471	471	0
	AEMO:	458	462	476	494	493	
	MP as % of AEMO	100	99	98	95	95	
1-Mar	MP:	513	516	506	496	496	0
	AEMO:	497	499	522	511	504	
	MP as % of AEMO	103	104	97	97	98	
2-Mar	MP:	421	416	415	415	415	0
	AEMO:	405	451	448	453	423	
	MP as % of AEMO	104	92	93	92	98	
3-Mar	MP:	484	486	486	479	479	0
	AEMO:	482	480	469	479	477	
	MP as % of AEMO	101	101	104	100	100	
4-Mar	MP:	536	531	523	523	523	0
	AEMO:	521	518	520	552	518	
	MP as % of AEMO	103	102	101	95	101	
5-Mar	MP:	354	351	350	348	348	0
	AEMO:	361	361	361	364	365	
	MP as % of AEMO	98	97	97	96	95	

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