

13 March – 19 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

13 Mar – 19 Mar	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	3.01	3.23	3.51

* weighted average daily imbalance price

** ex ante market price

STTM Gas Markets (Adelaide and Sydney)

Figure S3 shows the Sydney average ex ante price was higher than for the previous week and the financial year to date average. The average ex post price was lower than the previous week (partly due to events on the 15 March gas day, discussed below) and the financial year-to-date average.

The average ex ante price in Adelaide was higher than the financial year-to-date average, but lower than for the previous week, while the average ex post price was higher than for the previous week and the financial year-to-date.

Following the NSW Government’s sale of the retail parts of its electricity businesses in early March, two new participants commenced trading in the Sydney hub this week. AusGrid, now part of TRUenergy’s business, formerly traded as EnergyAustralia, and Essential Energy, now part of Origin Energy’s business, formerly traded as Country Energy.

Figure S5 shows that for the Sydney hub, network allocation (usage at the hub) exceeded pipeline allocations (deliveries to the hub) on the 14 and 15 March gas days. These deviations were caused by over-withdrawals of around 7-9 TJ at the hub (see Figure S19) and around 3-5 TJ of under-deliveries on the EGP (see Figure S7). On the 15 March gas day at the Adelaide hub 11.6 TJ of under-deliveries on the SEAGas Pipeline were matched to over-deliveries on the Moomba to Adelaide Pipeline (MAP) (see Figure S8). This was a result of participant gas nominations on pipelines not aligning with AEMO’s respective pipeline schedules for that gas day.

Sydney hub – 15 March gas day

The ex ante price for the 15 March gas day was \$3.60/GJ. Based on Jemena submitting an allocation amount of 98.95 TJ on the EGP, the ex post price was set at \$2.49/GJ. However, the allocation amount was found to be incorrect, causing Jemena to submit a revised allocation amount of 114.95 TJ.

The revised allocation amount was, however, submitted after the 11 am deadline on 16 March. Therefore, deviations were calculated using the original ex post price of \$2.49/GJ. Figure 1 shows that had the allocation amount of 114.95 TJ been used, the ex post price would have been \$3.95/GJ.

Figure 1: EGP allocation data and ex ante/ex post prices

15 March gas day	Actual	If revised
EGP allocation amount (TJ)	98.95	114.95
Ex ante price (\$/GJ)	\$3.60	\$3.60
Ex post price (\$/GJ)	\$2.49	\$3.95

Positive deviations are paid to participants at the lower of the ex ante and ex post price, while negative deviations are charged to participants at the higher of the two prices. For the 15 March gas day, therefore payments were lower than they would otherwise have been (calculated on \$2.49/GJ instead of \$3.60/GJ) for participants who delivered more (or withdrew less) than they were scheduled for. Similarly, deviation charges were lower than they would otherwise have been (calculated on \$3.60/GJ rather than \$3.95/GJ) to participants who delivered less (or withdrew more) than they were scheduled for.

Unlike the case for setting the ex post price, the revised allocation amount of 114.95 TJ was able to be used in calculating deviation quantities. This is because AEMO uses the most up-to-date allocation data for calculating deviation quantities and charges, which in this case was submitted prior to the next day’s 11 am deadline. These are then published at 4 pm.

Scheduled EGP allocations on this day were 118.73 TJ. Therefore deviation quantities were smaller, as they were based on the revised allocation amount of 114.95 TJ rather than 98.95 TJ. (i.e. actual flows were closer than what was scheduled to flow).

The AER is working closely with all participants to ensure robust systems and processes for the provision of STTM data. The AER also intends to undertake a series of audits beginning in the second half of 2011 to assess pipeline operator compliance with STTM obligations.

Victorian Gas Market

Planned maintenance at Iona from 11 March to 19 March meant there was less gas in low price bands. Despite this, the average price this week (\$3.01/GJ) was only slightly higher than the previous week's average of \$2.98/GJ. This was largely due to the market price on Sunday 13 March gas day falling to a low of \$0.001/GJ at the fifth scheduling interval and averaging just \$0.59/GJ for the whole day. The low prices were a result of surplus gas supplies in the Declared Transmission System and lower than expected customer demand.

On 13 March AEMO issued a -3 TJ override in response to market participant demand forecasts being around 14 TJ higher than AEMO forecasts (see Appendix A5). The lower demand was consistent with relatively warm temperatures on that gas day compared to the rest of the week (see Appendix A3). Average prices for all other days during the week were above \$3.00/GJ.

Two participants were scheduled to withdraw gas from Iona this week compared to five participants the previous week (see figure V1), consistent with limited injection and withdrawal capacity at Iona. AER analysis shows that average daily injection bid quantities at Iona also dropped from 243 TJ for the previous week to 33 TJ. Figure V4 shows this week's average daily injections (403 TJ/day) were higher than the previous week (378 TJ/day). Continuing from the previous week, no injections were scheduled at SEAGas or Culcairn this week. However, gas was scheduled from Otway injection point for the first time this year.

National Gas Market Bulletin Board

Figure N4 shows total average gas demand and gas production across the Bulletin Board were slightly higher than the previous week. Thirty TJ/day higher demand than the previous week in NSW/ACT was offset by 30 TJ/day lower in SA, driven by changes in gas powered generation usage. However, average daily demand across all regions was also lower than their respective financial year-to-date averages.

Production from the Otway facilities was lower than the previous week because planned maintenance at Iona limited injection capacity into Victoria. However higher production levels in Eastern Victoria (68 TJ/day) were able to meet higher demand than the previous week in Victoria and NSW/ACT.

There were no instances of missing bulletin board data this week.

Part A: National Gas Market Bulletin Board

Overview of pipeline and production flows

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

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

Average daily flows	NSW	ACT	VIC	SA	TAS	QLD		
						Brisbane	Mt Isa	Gladstone
13 Mar – 19 Mar	333	7	414	248	45	134	81	103
Financial Year-to-date 2010-11*	377	21	588	288	45	168	94	108
Financial Year-to-date 2009-10**	366	19	555	283	38	169	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
13 Mar – 19 Mar	75	25	137	31	145
Financial Year-to-date 2010-11*	89	27	170	30	155
Financial Year-to-date 2009-10**	84	43	165	23	164

^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)
13 Mar – 19 Mar	512	644	167	222
Financial Year-to-date 2010-11*	534	760	260	280
Financial Year-to-date 2009-10**	453	666	281	277

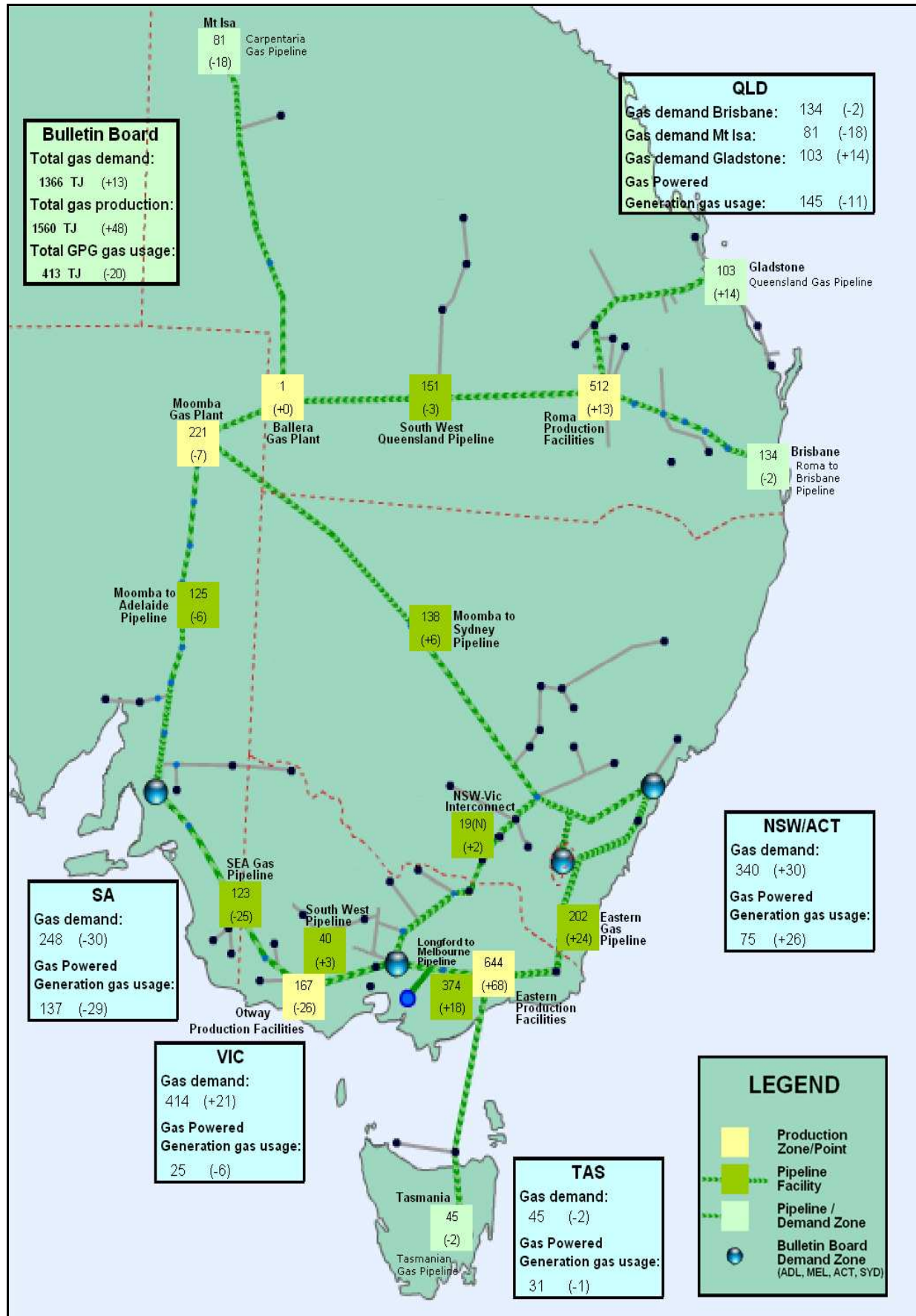
*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)

**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)

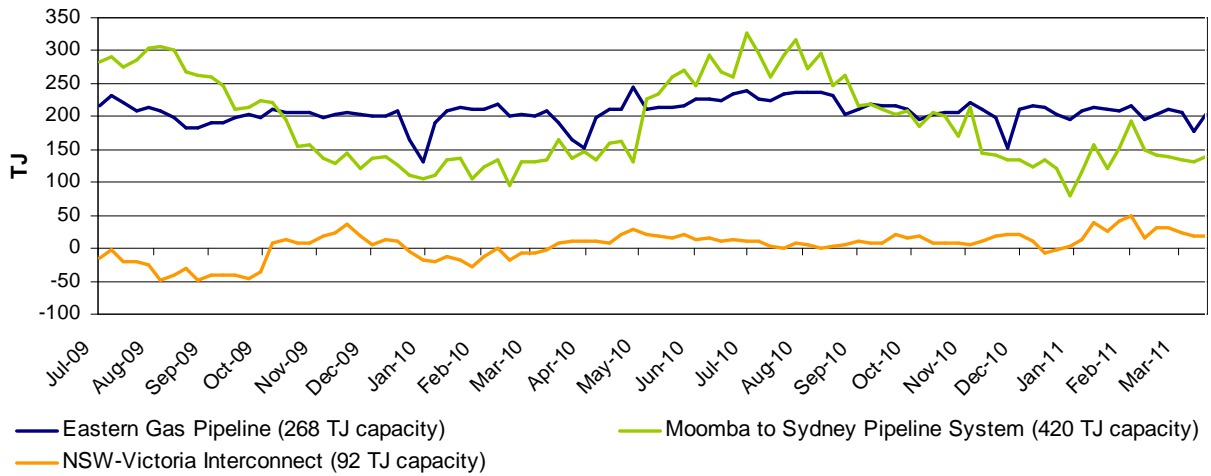


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North). Numbers in brackets indicate a change in average daily flow from the previous week.

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.

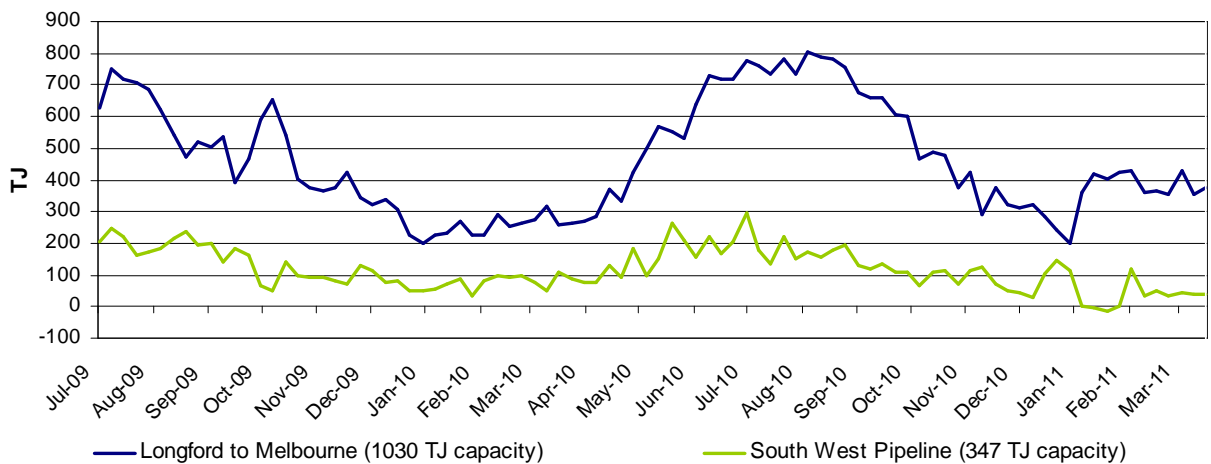
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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.

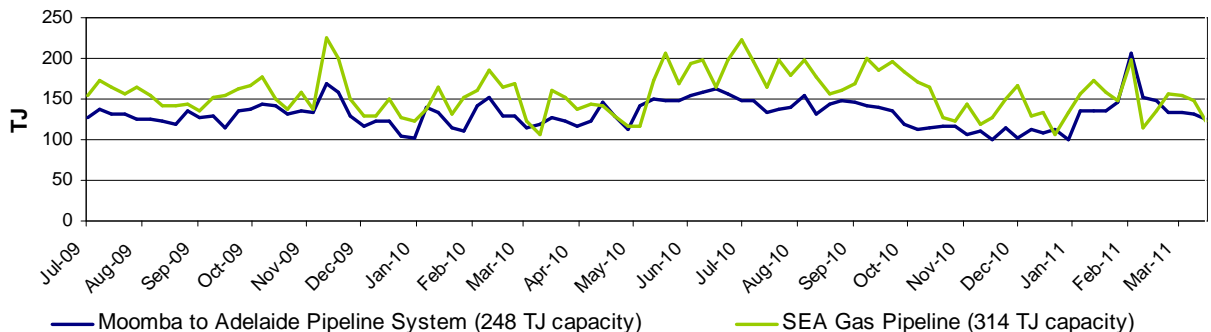
Figure N6: Average daily flows (TJ) into VIC demand region



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							S					S
AGL (Qld)	Retailer	1				NS								
AGL	Retailer	4			NS	NS	S		NS		S			
Aurora Energy	Retailer	1					S							
Aust. Power & Gas	Retailer	3			NS	NS	S				S			
Coogee Energy	Transmission Customer	1					S							
Country Energy	Transmission Customer	1		NS										
Energy Australia	Retailer	2					S		NS					
International Power	Transmission Customer	1										S		
Lumo Energy	Retailer	3		NS		NS			S					
Lumo Energy	Trader	2			NS				S		NS		S	
Origin (Vic)	Retailer	6	S	NS	S	NS	S			S	S	NS		
Origin (Uranquinty)	Trader	1					S							
Red Energy	Retailer	1					S							
Santos	Retailer	1							S					
Simply Energy	Retailer	4			NS	NS	S	NS				NS		
TRU Energy	Retailer	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)

	13 Mar – 19 Mar	6 Mar – 12 Mar	2010-11 Financial YTD*	2009-10 Financial YTD**
Average daily price	3.01	2.98	2.07	1.64

13 Mar – 19 Mar	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	0.59	3.00	3.54	3.50	3.65	3.64	3.16

*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)

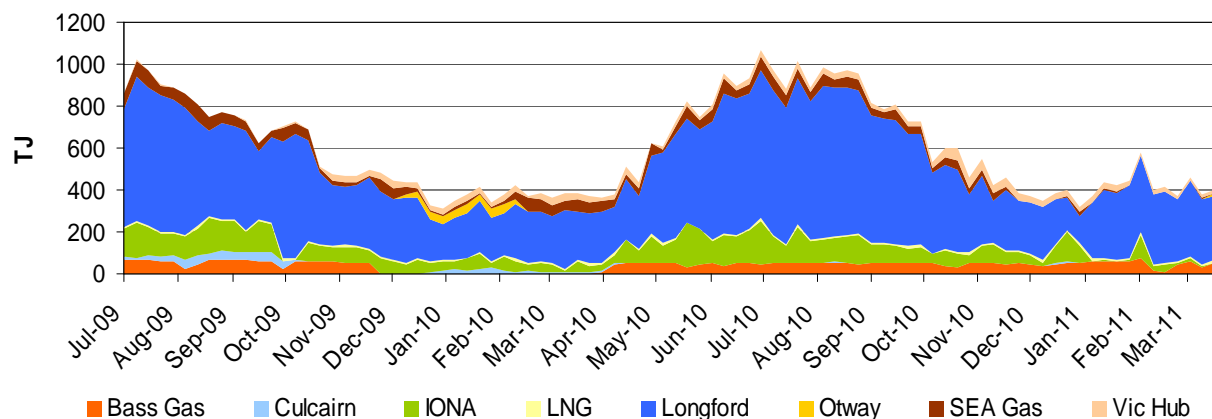
Source: <http://www.aemo.com.au> (INT 041)

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:	13 Mar – 19 Mar	6 Mar – 12 Mar	2010-11 Financial YTD*	2009-10 Financial YTD**
Culcairn	0	0	1	17
Longford	303	309	421	370
LNG	9	10	9	8
IONA	2	3	68	78
VicHub	19	16	29	17
SEAGas	1	7	24	42
Bass Gas	53	33	47	31
Otway	16	0	0	9
TOTAL	403	378	599	572



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

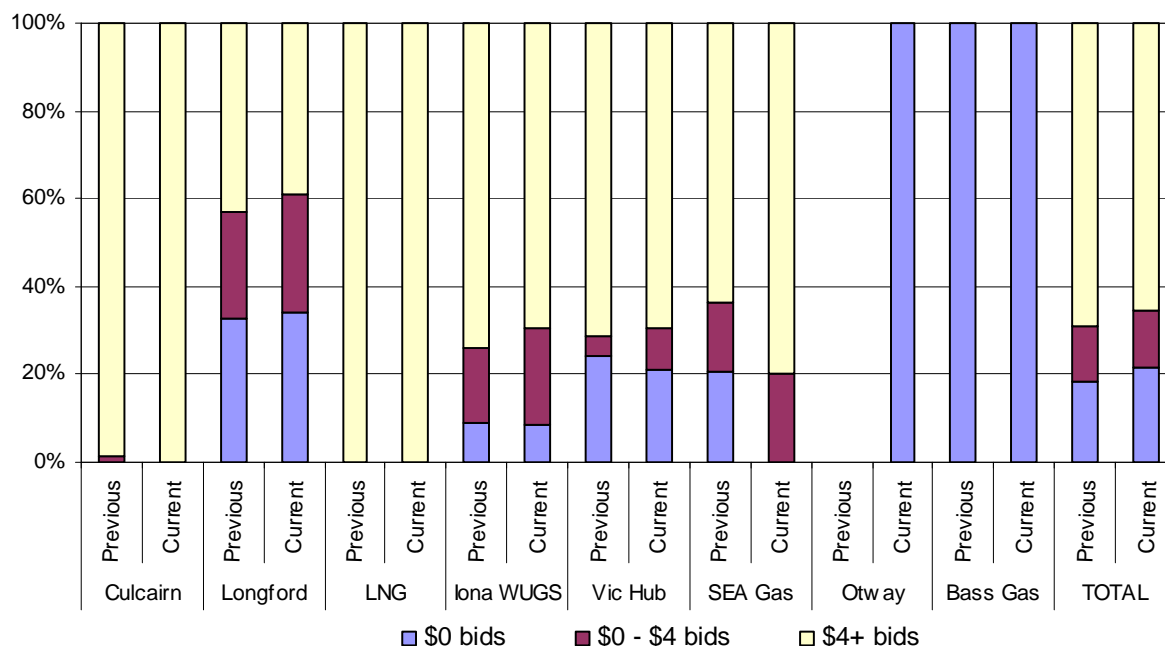
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)

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	CE Origin	Origin Lumo		
Longford	AGL Origin TRU EA	AGL TRU	AGL TRU	AGL Origin TRU	AGL Origin TRU	AGL TRU	TRU EA
LNG	TRU						
Iona						Origin TRU Simply	Origin TRU
VicHub	AETV TRU	AETV EA	AETV Lumo	AETV TRU Lumo	AETV TRU EA Lumo	AETV TRU Lumo	AETV TRU Lumo
SEAGas	Simply	Simply	Simply	Simply	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:	13 Mar – 19 Mar	6 Mar – 12 Mar	2010-11 Financial YTD*	2009-10 Financial YTD**
Ballarat	14	13	24	22
Geelong^	92	101	90	80
Gippsland	31	30	43	45
Melbourne	232	217	391	375
Northern	53	50	63	51
TOTAL	421	410	611	573

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

* traded as Energy Australia until 17 March, then from 18 March commenced trading as Ausgrid.

** traded as Country Energy until 17 March, then from 18 March commenced trading as Essential Energy.

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	S	NS	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

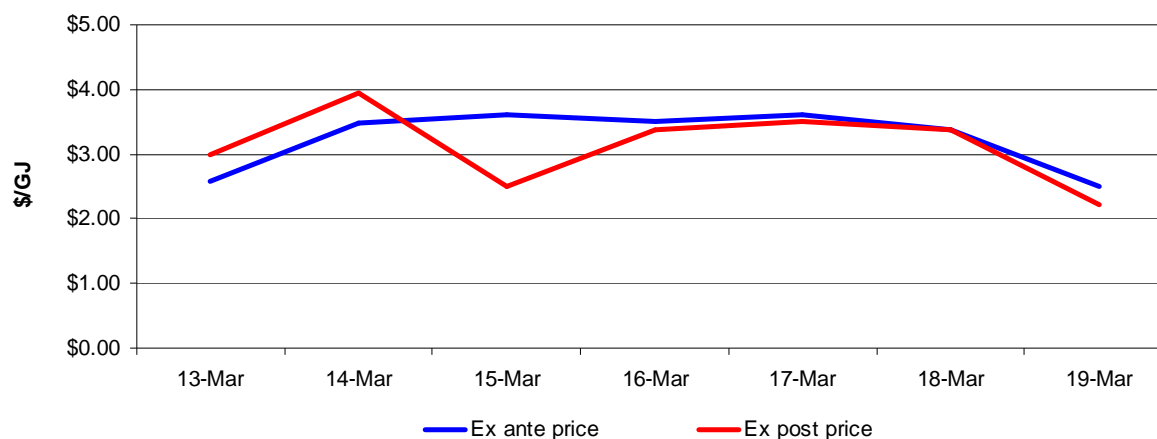
Ex ante and Ex post Market Prices

Figures S3 and S4 show the 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)^

	13 Mar – 19 Mar	6 Mar – 12 Mar	2010-11 Financial YTD*
Ex ante price	3.23	3.10	2.58
Ex post price	3.13	3.29	6.16

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

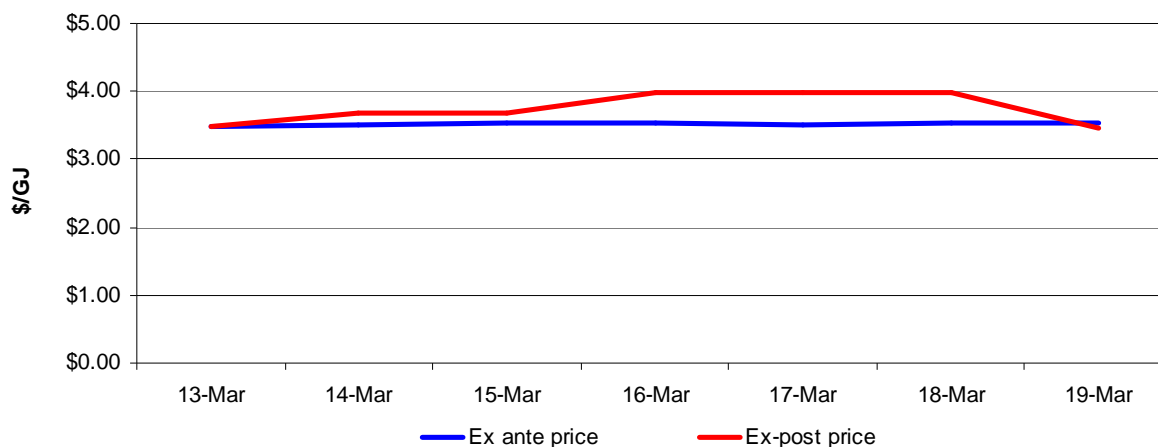


Source: <http://www.aemo.com.au> INT 651, 657

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

	13 Mar – 19 Mar	6 Mar – 12 Mar	2010-11 Financial YTD*
Ex ante price	3.51	3.55	2.86
Ex post price	3.75	3.47	2.99

* 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.

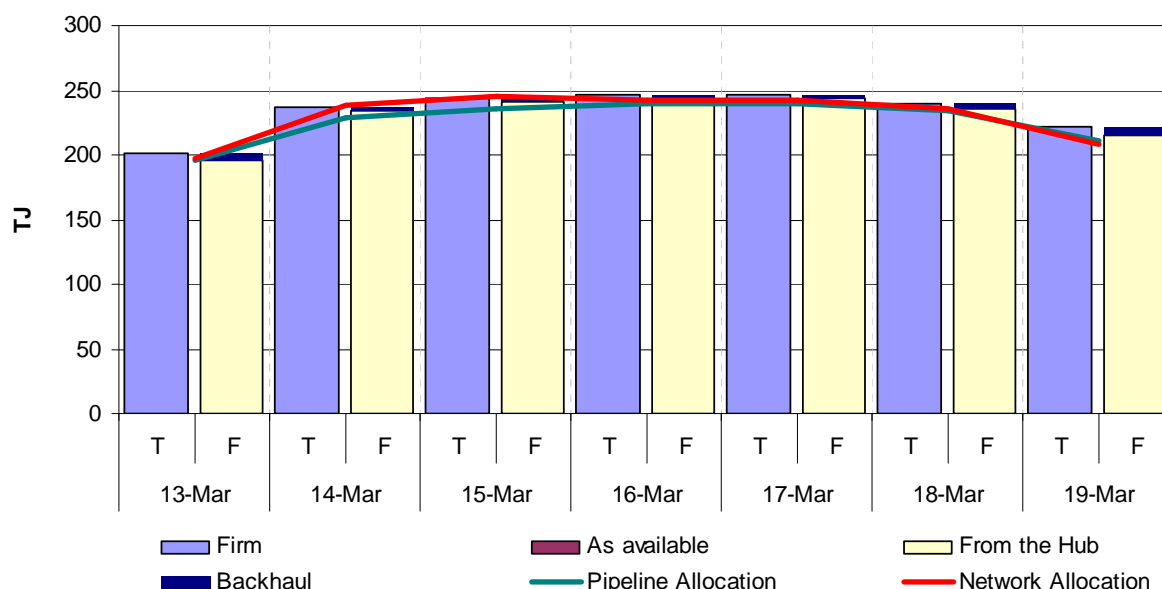
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

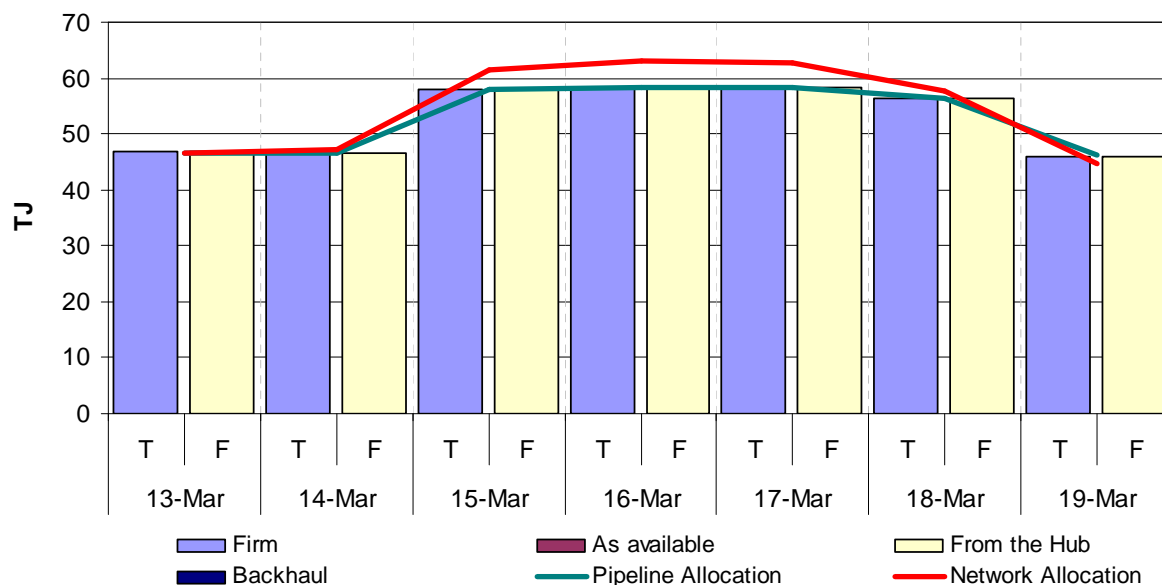
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

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)

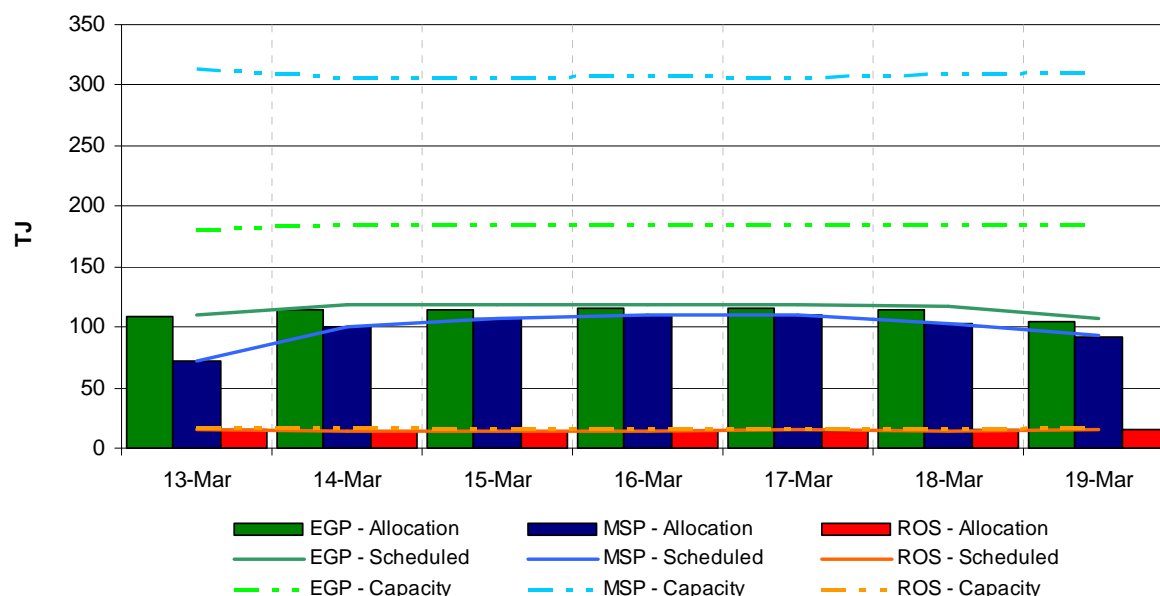
Pipeline Facility Allocations

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.

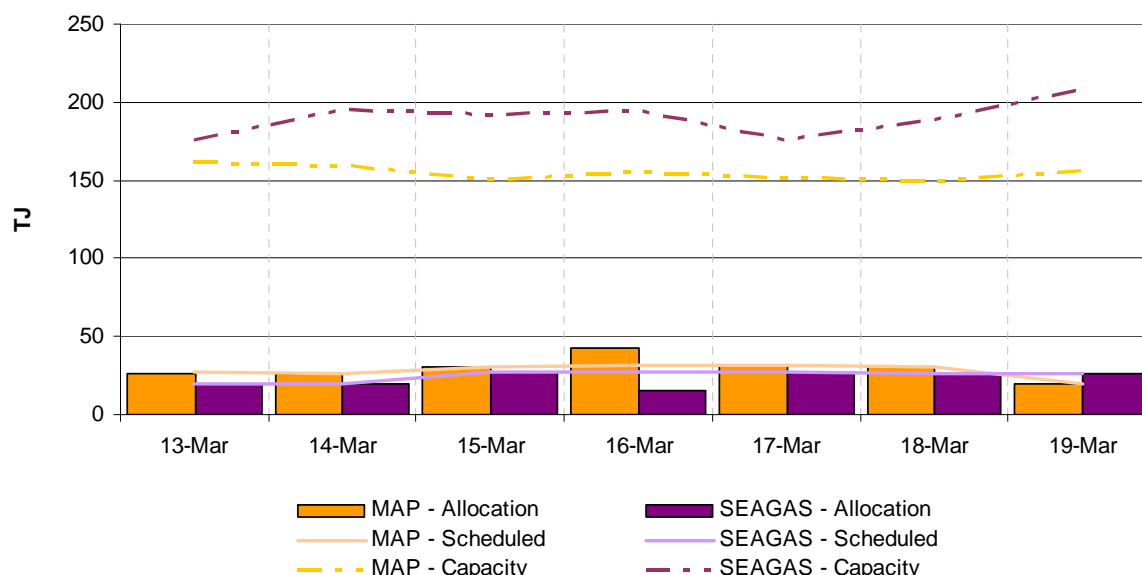
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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.

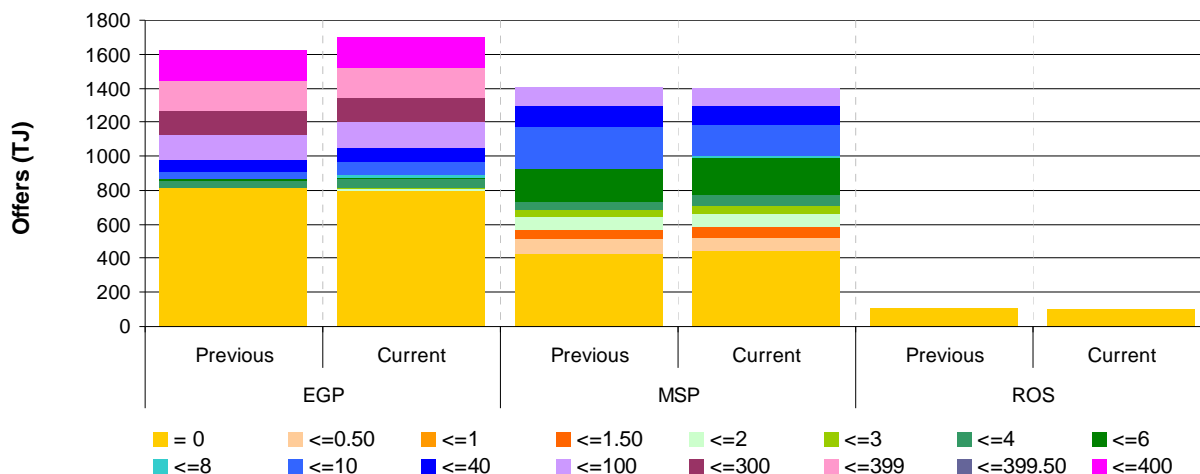
Figures S10 and S12 show for the Sydney and Adelaide hubs respectively, total bids within various price bands for the current week compared to the previous week for each of the pipeline facilities and the hubs themselves (NETSYD1 and NETADL1).

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.

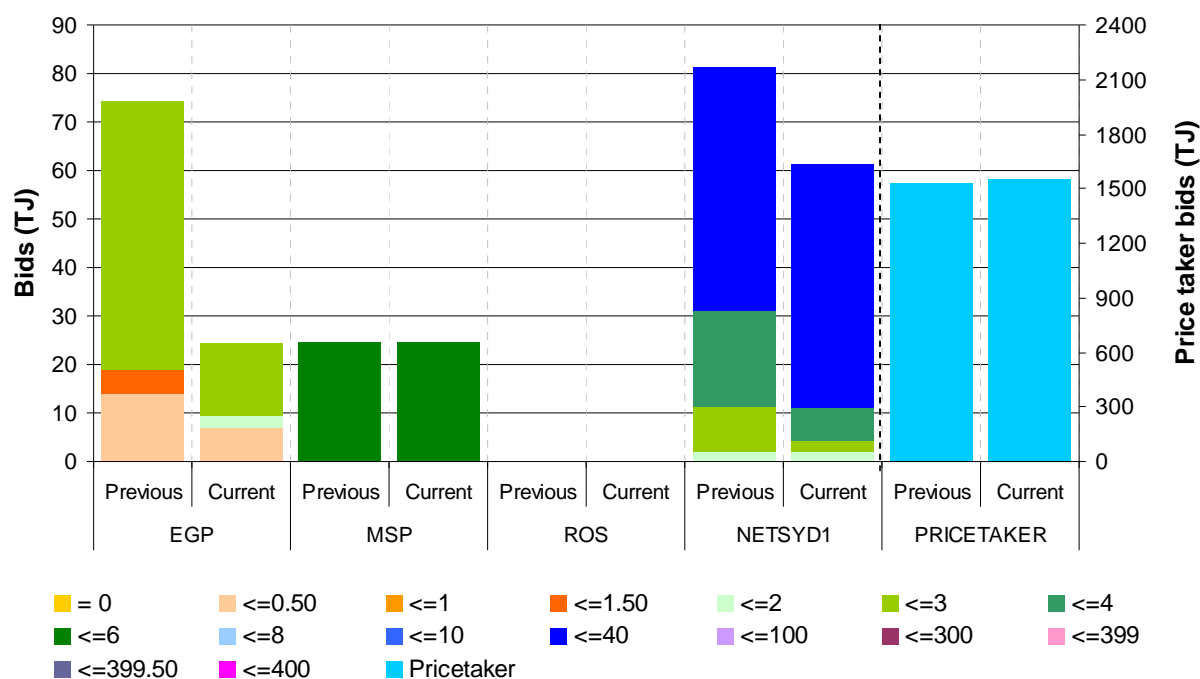
Because scheduling is price-driven, offers for lower-priced gas are scheduled ahead of offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

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)

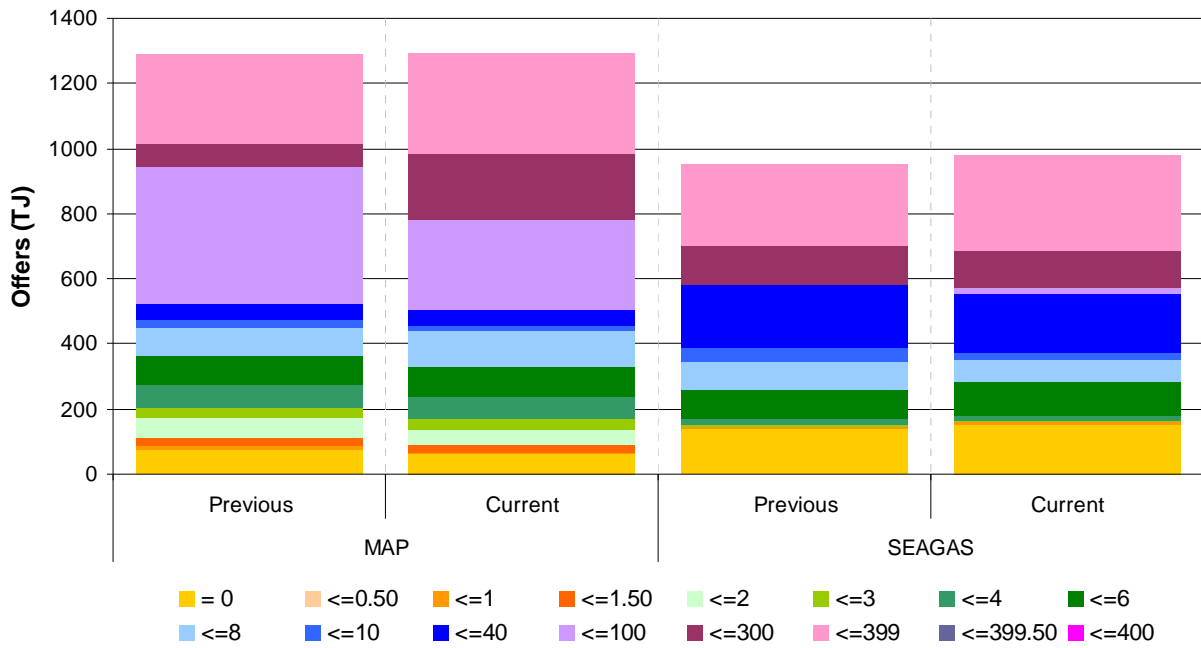
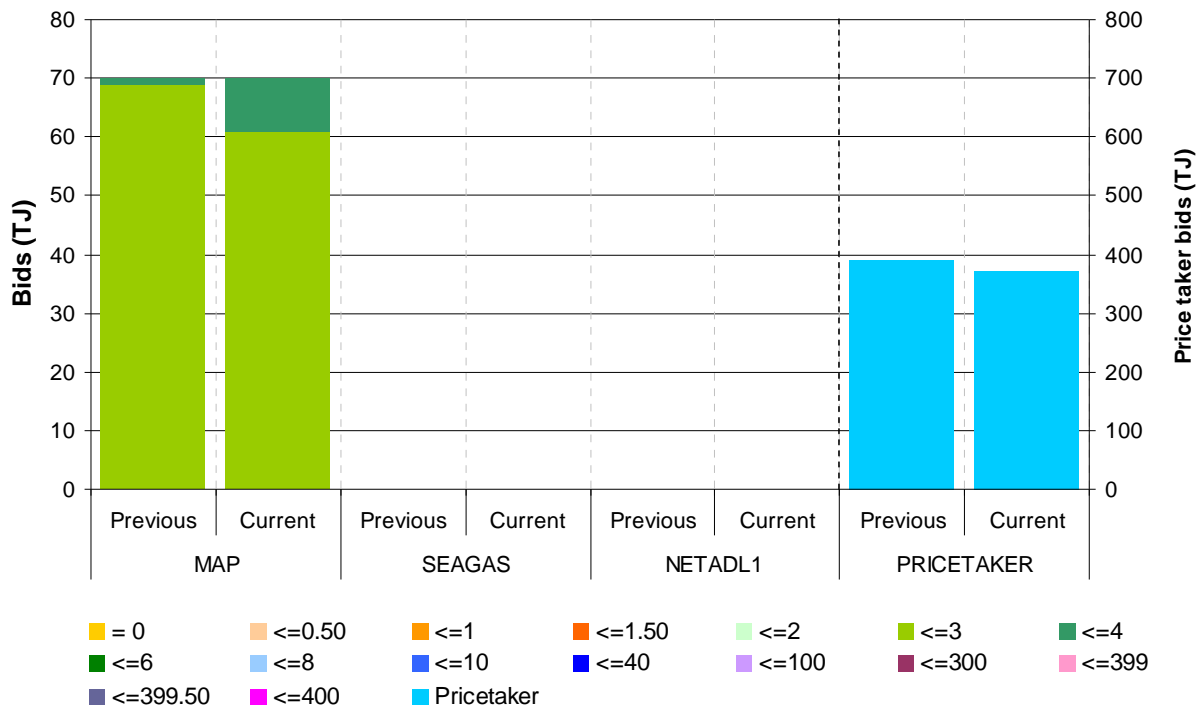


Figure S12: Total weekly Adelaide hub bids (TJ) within price bands (\$/GJ)



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

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

BluSc= BlueScope Steel | Country= Country Energy | Origin=Origin Energy Retail Ltd | TRU= TRUenergy Pty Ltd |
 AGL(WG)= AGL Wholesale Gas Limited | EA=EnergyAustralia | OneStl(NSW)= OneSteel NSW Pty Ltd |
 SANTOS= Santos Direct Pty Ltd | AGL(ESM)= AGL Energy Sales & Marketing Pty Ltd | Lumo = Lumo Energy Australia Pty Ltd |
 EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

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

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

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

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

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

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		
	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 deviation¹ occurs on a gas day and there is a requirement for MOS from a MOS provider (either an increase or decrease offer), the MOS provider is paid according to their MOS offer price (the MOS service payment).

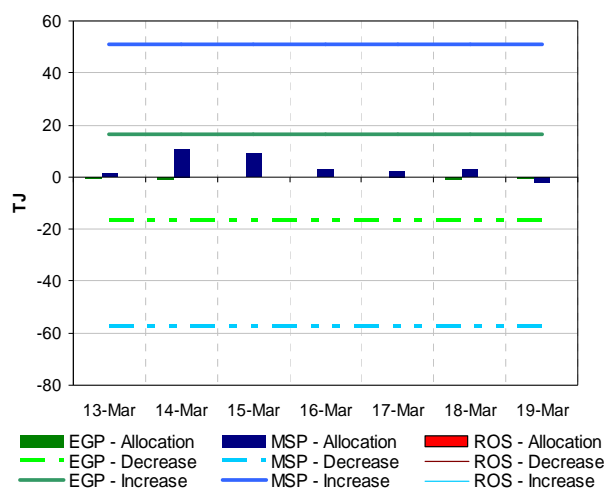
In addition, where this MOS service is required, AEMO pays or charges the MOS provider for the MOS gas allocation on the gas day at the ex ante market price two days after the gas day, which covers the cost of restoring its inventory of MOS gas (the MOS commodity payment or charge). The MOS provider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

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

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

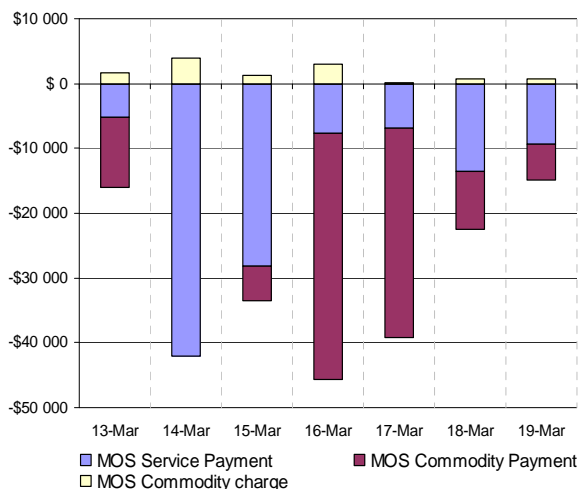
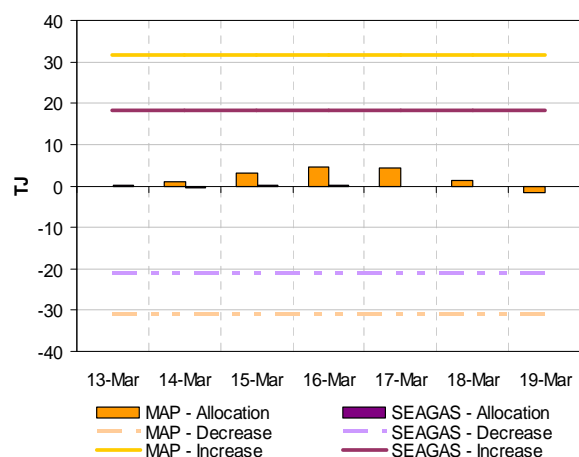


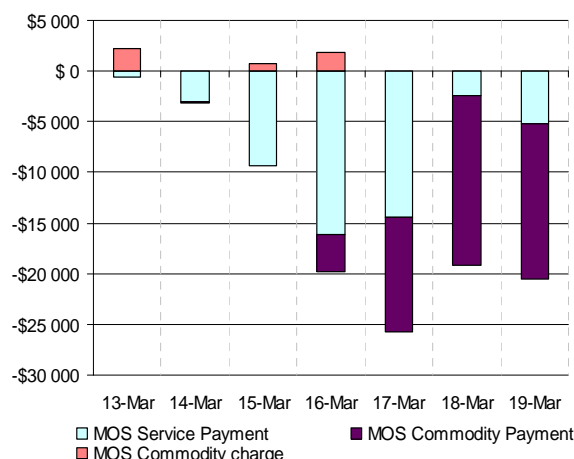
Figure S18a: Adelaide MOS allocations



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

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

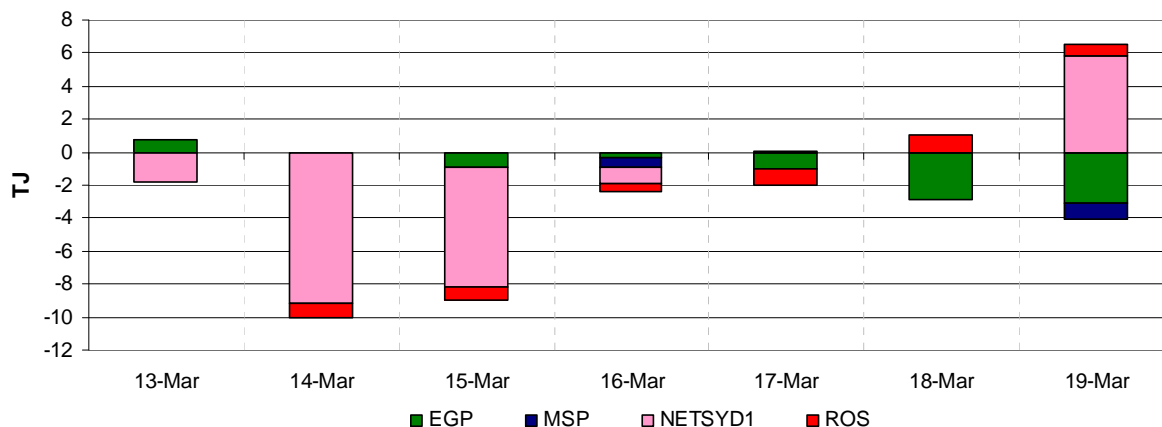
Figure S18b: Adelaide MOS payments/charges



Deviations

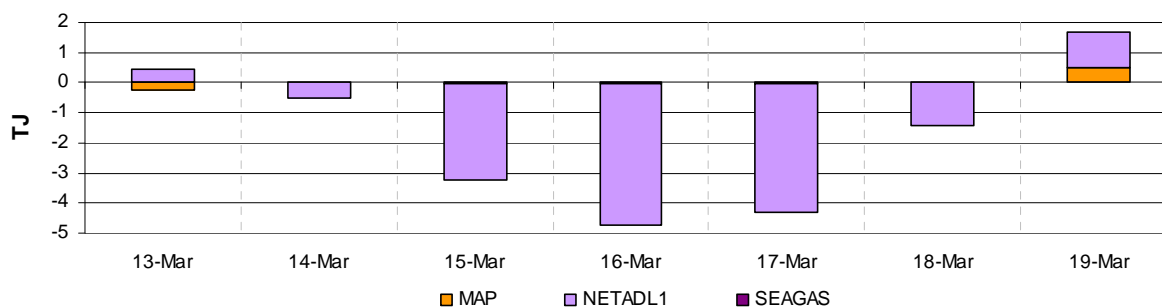
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

	13 Mar – 19 Mar	6 Mar – 12 Mar	2010-11 Financial YTD*
Quantity (TJ)	3.61	2.28	3.90
Charges (\$)	178.80	40.03	756.81

* **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

	13 Mar – 19 Mar	6 Mar – 12 Mar	2010-11 Financial YTD*
Quantity (TJ)	0.03	0.76	0.76
Charges (\$)	0.00	63.16	22.58

* **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	92	86	77	76	82	86	72	119	79	81	94	85
QLD Gas Pipeline	97	99	102	105	108	105	103	142	76	103	108	71
Roma to Brisbane Pipeline	126	140	142	141	143	132	117	219	77	134	168	169
South West QLD Pipeline	134	147	160	164	151	160	139	181	75	151	136	139
NSW/ACT												
Eastern Gas Pipeline	193	210	211	205	210	202	185	268	79	202	211	201
Moomba to Sydney Pipeline	101	148	157	149	148	143	120	420	44	138	187	184
NSW-VIC Interconnect	19	19	19	19	16	18	25	92	15	19	14	-11
VIC												
Longford to Melbourne	263	309	390	431	436	437	353	1030	48	374	492	417
South West Pipeline^	26	29	59	29	57	55	28	347	27	40	95	120
SA												
Moomba to Adelaide Pipeline	116	118	124	149	147	125	97	248	52	125	130	130
SEA Gas Pipeline	114	109	152	104	122	135	123	314	50	123	158	153
TAS												
Tasmanian Gas Pipeline#	46	46	48	48	49	44	37	129	35	45	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	89	89	88	89	89	89	89	140	68	89	95	92
Fairview	82	101	94	95	89	95	87	130	89	92	115	113
Kenya Gas Plant	53	53	53	53	52	53	18	160	35	48	56	53
Kincora	9	15	15	13	15	14	15	25	22	14	5	2
Kogan North	9	10	10	10	10	10	10	12	79	10	10	9
Peat	11	6	6	6	6	6	6	15	62	7	9	8
Rolleston	9	9	9	8	9	10	10	30	34	9	10	11
Scotia	29	29	29	29	29	29	29	29	93	29	27	23
Spring Gully	46	46	46	47	47	47	47	69	70	47	48	43
Strathblane	46	46	46	47	47	47	47	69	70	47	48	43
Talooka	28	28	28	28	28	28	28	42	70	28	29	26
Wallumbilla	4	4	4	4	4	4	4	20	35	3	7	11
Yellowbank	11	12	12	12	10	11	11	30	40	11	12	13
Talinga	74	65	84	84	84	84	83	90	69	80	62	5
Moomba (SA/QLD)												
Moomba Gas Plant	159	244	235	235	236	257	181	430	62	221	266	268
Ballera	9	0	0	0	0	0	0	150	9	1	14	10
Eastern (VIC)												
Orbost Gas Plant	49	48	41	43	48	50	51	100	31	47	31	19
Lang Lang Gas Plant	50	51	51	55	56	56	57	70	67	54	47	31
Longford Gas Plant	410	466	568	599	591	621	552	1145	60	544	683	616
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	45	45	60	50	55	50	45	84	76	50	64	74
Otway Gas Plant	97	102	137	83	150	134	106	205	54	116	111	130
Iona Underground Gas Storage	0	0	0	0	0	-1	10	440	19	1	85	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)

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)
6 Mar – 12 Mar	Average min.	21.0	20.0	14.8	15.0	16.5	10.3
	Average max.	28.6	26.3	24.6	23.7	26.3	20.4
27 Feb – 5 Mar	Average min.	19.4	19.7	11.9	16.3	17.0	11.6
	Average max.	27.8	26.7	24.3	26.4	27.9	22.9

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

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

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

6 Mar – 12 Mar	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	0.51	3.16	2.51	0.51	0.00	0.59
Mon	3.00	2.57	2.99	2.98	2.99	3.00
Tue	3.55	3.64	3.15	2.55	3.30	3.54
Wed	3.50	3.50	3.50	3.64	3.64	3.50
Thu	3.65	3.62	3.50	3.70	3.83	3.65
Fri	3.64	3.61	3.64	3.60	3.64	3.64
Sat	3.15	3.57	3.63	3.57	2.55	3.16

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	
6-Mar	MP:	288	304	304	303	303	- 3
	AEMO:	289	282	285	295	280	
	MP as % of AEMO	100	108	107	103	108	
7-Mar	MP:	325	324	324	322	322	0
	AEMO:	310	340	340	330	331	
	MP as % of AEMO	105	95	95	98	97	
8-Mar	MP:	432	432	434	434	438	0
	AEMO:	442	443	443	441	454	
	MP as % of AEMO	98	98	98	99	97	
9-Mar	MP:	443	449	449	443	443	0
	AEMO:	463	461	450	436	432	
	MP as % of AEMO	96	97	100	102	103	
10-Mar	MP:	472	462	459	459	459	0
	AEMO:	445	441	457	477	476	
	MP as % of AEMO	106	105	100	96	97	
11-Mar	MP:	453	456	456	456	456	0
	AEMO:	471	465	483	471	472	
	MP as % of AEMO	96	98	94	97	97	
12-Mar	MP:	343	343	343	343	343	0
	AEMO:	339	340	342	332	333	
	MP as % of AEMO	101	101	100	103	103	

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