

28 August – 3 September 2011

Preface

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

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

The Victorian Gas Market lies between the two STTM hubs and shares common production sources with the Adelaide and Sydney hubs. Participation in the Victorian Gas Market and the STTM hubs occurs on the basis of a different set of market rules and requires contractual arrangements with different pipeline owners. Participants operate in only those markets where they have production, gas and pipeline contracts. 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

28 August – 3 September	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	3.10	3.13	3.84

*weighted average daily imbalance price

**ex ante market price

STTM Gas Markets (Adelaide and Sydney)

Figures S3 and S4 shows this week’s average ex ante and ex post prices were lower in Sydney but slight higher in Adelaide compared to the respective prices in the previous week.

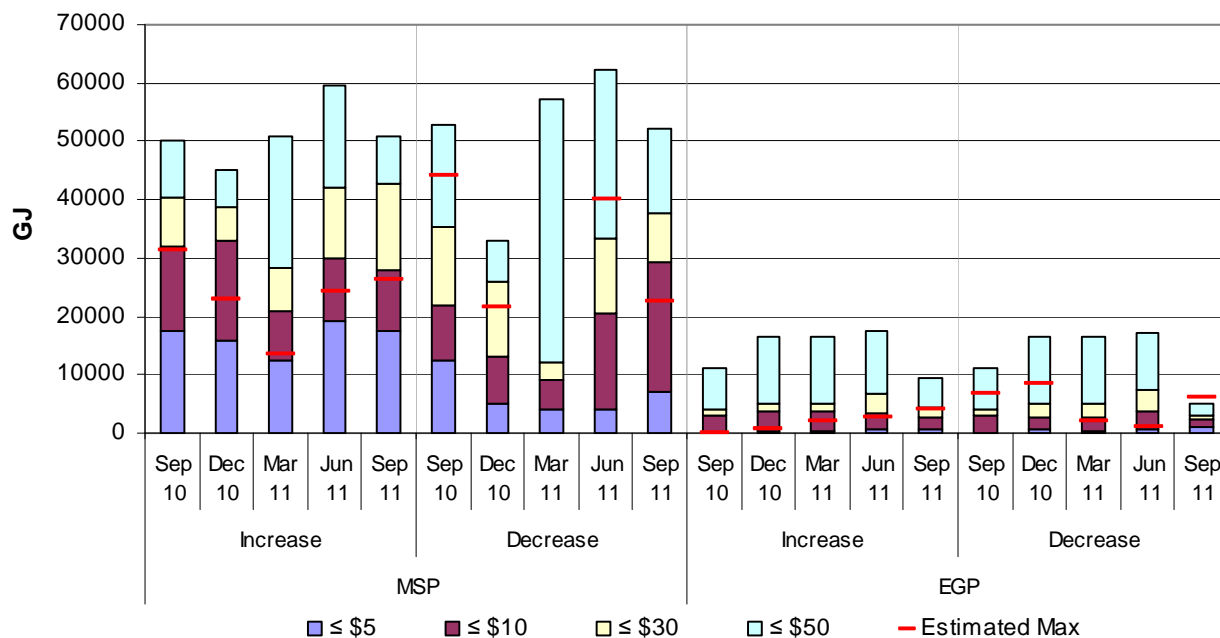
Low prices in Sydney on 28 August and 3 September indicates demand was lower on the weekend. The relatively large differences between ex ante and ex post prices in Sydney this week (when compared to Adelaide) indicates forecast demand exceeded actual demand (see

figure S19). The AER is making inquiries into recent demand forecasting inaccuracies at the Sydney hub.

MOS Stacks — 1 September to 30 November 2011

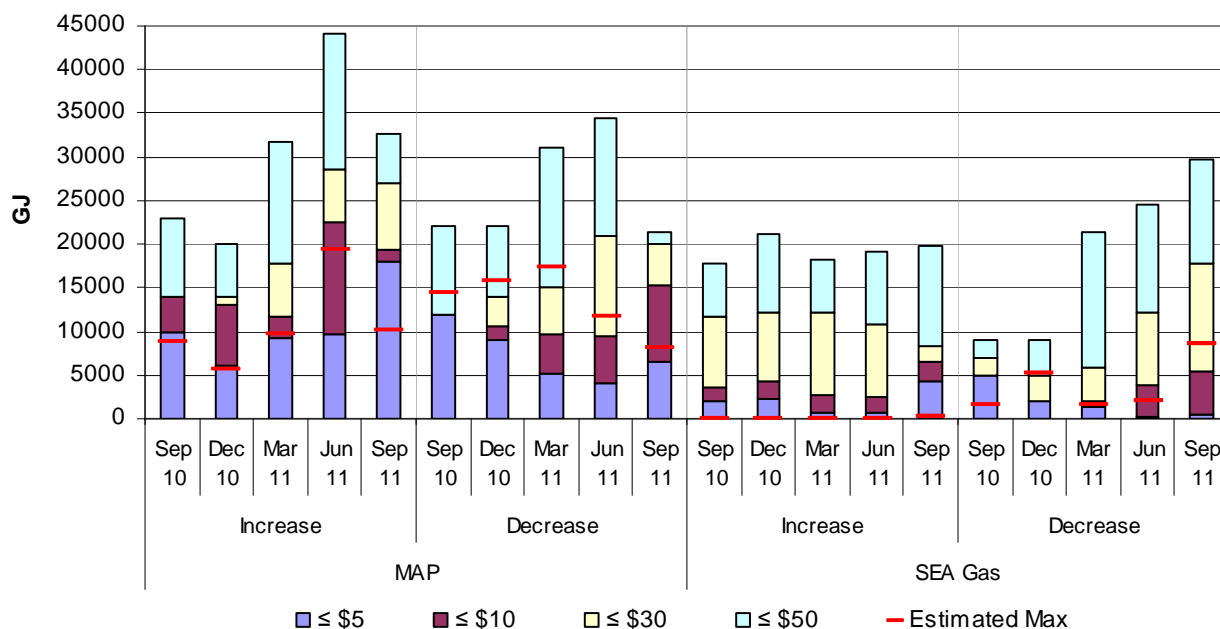
On 7 August 2011, AEMO published the estimated maximum quantity of MOS for each pipeline for the September to November 2011 period. Figures 2 and 3 compare MOS requirements and offers for this period to the four previous periods at the Sydney and Adelaide hub respectively.

Figure 2: MOS Offers & AEMO MOS estimates – Sydney hub



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

Figure 3: MOS Offers & AEMO MOS estimate – Adelaide hub



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

Figures 2 and 3 show the volume of MOS increase and decrease offers for the Sydney hub on the pressure controlled Moomba to Sydney pipeline (MSP) continue to be higher than on the flow controlled Eastern Gas Pipeline (EGP), which is what would normally be expected.

However, figure 3 shows that for the current period decrease offers on the flow controlled SEA Gas pipeline are higher than on the pressure controlled Moomba to Adelaide Pipeline (MAP).

Increase and decrease MOS offers have fallen this quarter compared to the previous quarter (winter peak period) on the MSP, the EGP and the MAP. However, on the SEA Gas pipeline increase and decrease MOS offers have increased slightly. This may be because significant decrease MOS requirements on the SEA Gas Pipeline on several days this year (caused in part by Adelaide hub deviations) have resulted in significant MOS decrease payments, enticing participants to offer more decrease MOS.

The total quantity of decrease offers on the EGP (5 TJ) for the September 2011 quarter is lower than for the 2010 September quarter (17 TJ) and slightly below AEMO's estimated maximum daily quantity of 6 TJ.¹ According to the STTM Procedures, in the event that MOS decrease requirements on the EGP exceed 5 TJ on a gas day, this would trigger a requirement for overrun MOS. This overrun MOS would be set at the price of the highest MOS offer – \$49.99/GJ.

Victorian Gas Market

Lower average demand this week (see figure V3) saw a 58 TJ/day increase in \$0/GJ bids at Longford (the largest system injection point) compared to the previous week, and a general shift of higher priced gas into lower price bands. Figure V2 shows prices dropped from \$3.37/GJ to \$3.10/GJ this week.

Figures V3 and V4 shows injections and offers from Bass Gas fell significantly this week, as a result of supply demand point constraints (due to operational requirements) applied by AEMO from Sunday to Tuesday.²

National Gas Market Bulletin Board

Figure N4 shows overall gas demand and production this week was slightly lower across the Bulletin Board.

There were no instances of late or missing Bulletin Board data this week.

¹ This is the highest actual MOS decrease allocation on EGP from the 2010 September quarter.

² AEMO System Wide Notices on 4 September, 5 September and 6 September.

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
28 August – 3 September	365	31	689	296	46	175	100	122
Financial Year-to-date 2011-12*	403	44	851	313	49	172	101	122
Financial Year-to-date 2010-11**	457	48	934	322	50	188	92	99

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (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
28 August – 3 September	75	3	171	32	138
Financial Year-to-date 2011-12*	80	20	184	34	124
Financial Year-to-date 2010-11**	81	20	180	34	160

^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 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (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

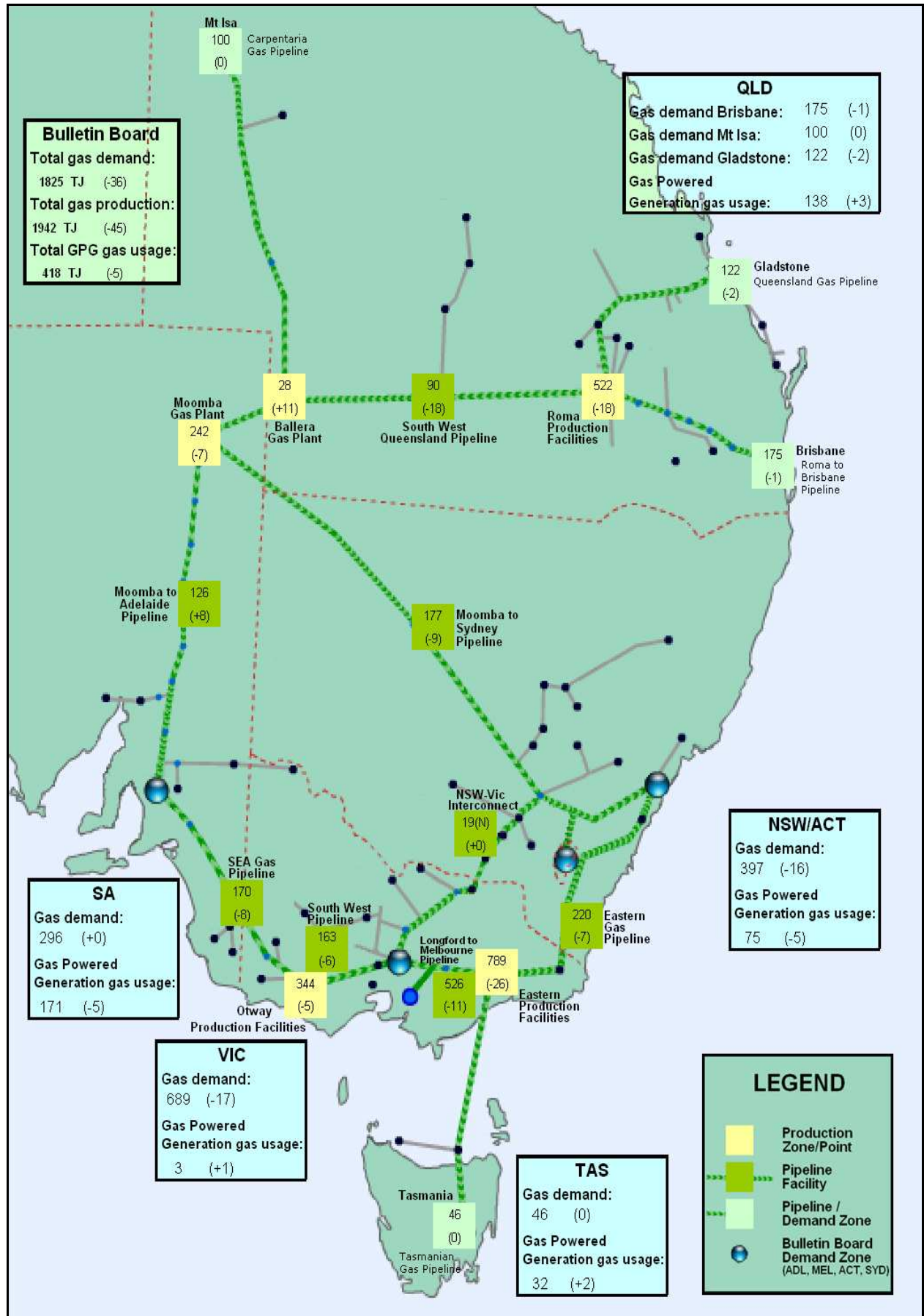
Average daily flows	Roma (QLD)	Eastern Victoria	Otway Basin (VIC)	Moomba (SA/QLD)
28 August – 3 September	522	789	344	271
Financial Year-to-date 2011-12*	561	935	385	285
Financial Year-to-date 2010-11**	565	1053	355	366

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

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

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



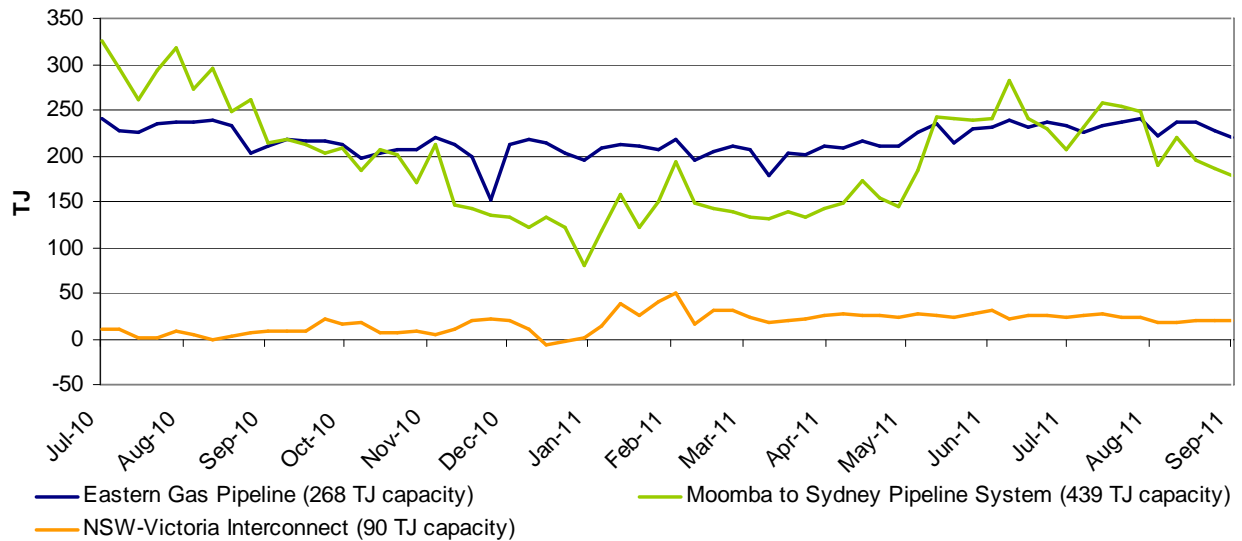
Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>

Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North). Numbers in brackets indicate a change in average daily flow from the previous week.

Gas flows into demand regions

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

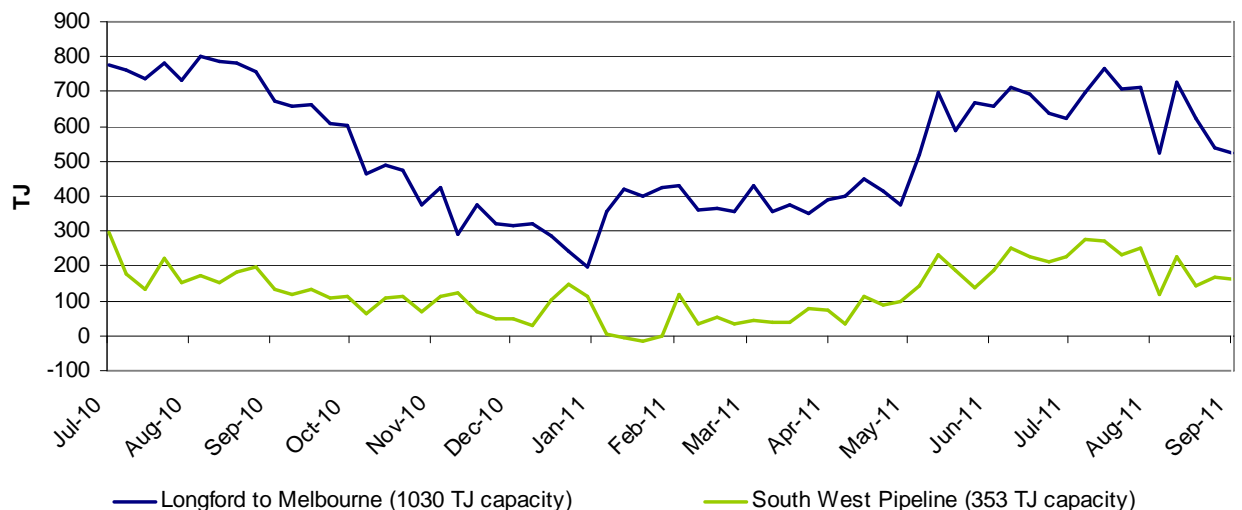
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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

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

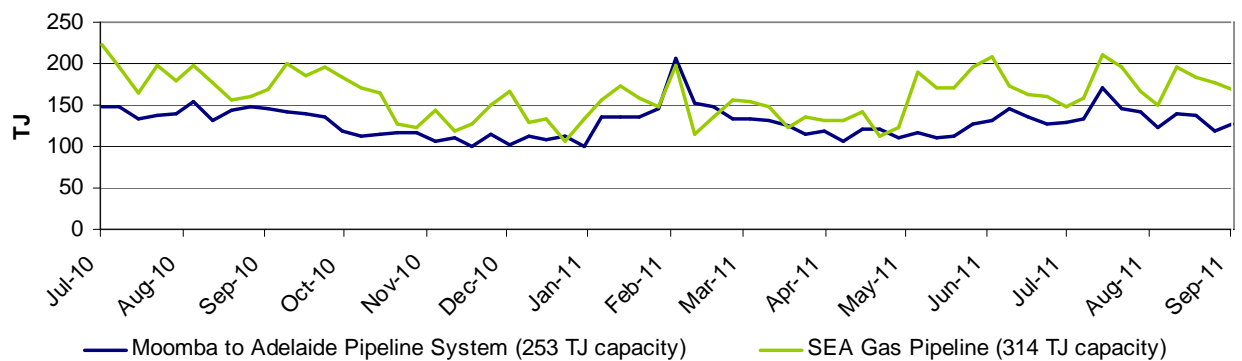
Figure N6: Average daily flows (TJ) into VIC demand region



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

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

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



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

Part B: Victorian Gas Market

Participation in the market

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

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

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

Market Participant	Participant type	No. of injection / withdrawal bid points	Injection bids in the VPTS									Withdrawal bids in the VPTS				
			BassGas	Culcairn	IONA	LNG	Longford	SEA Gas	VicHub	Otway	Mortlake	Culcairn	IONA	SEA Gas	VicHub	
AETV Power	Trader	2					S		NS							S
AGL (Qld)	Retailer	1				NS										
AGL	Retailer	3			NS	NS	S						NS			
Aurora Energy	Retailer	1					S									
Ausgrid	Retailer	1					S									
Aust. Power & Gas	Retailer	3			S	NS	S						S			
Aust. Power & Gas	Trader	1					S									
Coogee Energy	Transmission Customer	1					S									
Essential Energy	Transmission Customer	1										S				
Lumo Energy	Retailer	5		NS	S	NS		S	S							
Lumo Energy	Trader	2			NS				NS				S			NS
Origin (Vic)	Retailer	6	S	NS	S	NS	S	S				NS	NS			
Origin (Uranquinty)	Trader	2					S					S				
Red Energy	Retailer	1					S									
Santos	Retailer	1							S							
Simply Energy	Retailer	3			S	NS		S					S	S		
TRU Energy	Retailer	4			S	NS	S		S				NS			NS
TRU Energy 2	Retailer	1					S									
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)

	28 August – 3 September	21 August – 27 August	2011-12 Financial YTD*	2010-11 Financial YTD**
Average daily price	3.10	3.37	3.47	2.75

28 August – 3 September	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	3.01	3.46	3.71	3.19	2.97	3.09	2.26

*Average daily imbalance weighted average price from 1 July 2011 to the current week (inclusive)

**Average daily imbalance weighted average price from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

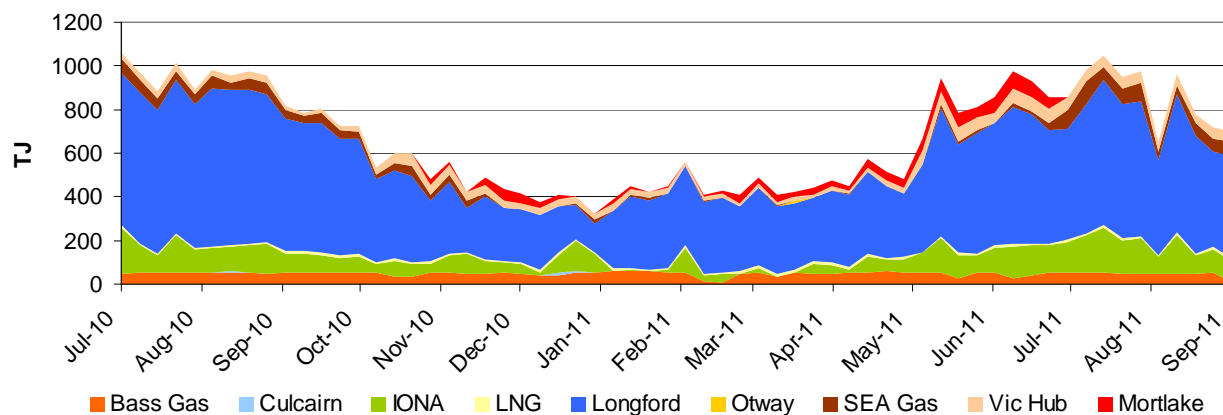
Source: <http://www.aemo.com.au> (INT 041)

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:	28 August – 3 September	21 August – 27 August	2011-12 Financial YTD*	2010-11 Financial YTD**
Culcairn	0	0	0	2
Longford	471	434	554	684
LNG	11	10	10	8
IONA	100	106	137	121
VicHub	48	50	49	30
SEAGas	63	63	67	51
Bass Gas	9	54	45	50
Otway	0	0	0	0
Mortlake	0	0	0	0
TOTAL	700	716	861	946



*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

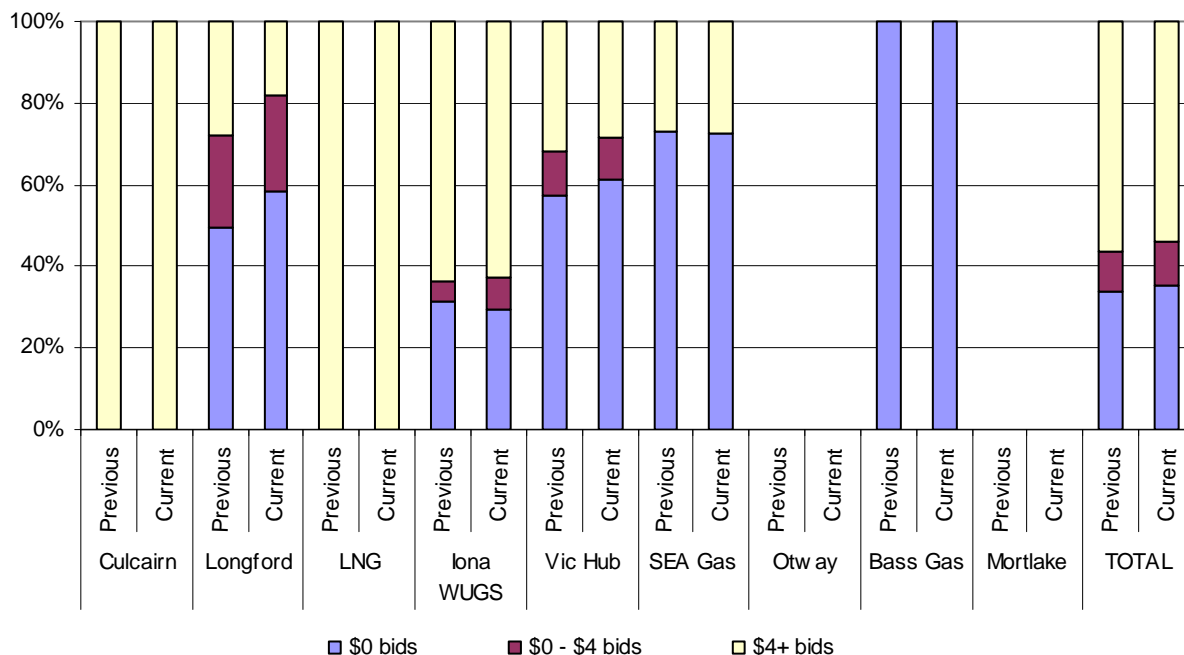
**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

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

Bidding Activity

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

Figure V4: Price structure of bids by injection points



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

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

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

Figure V5: Intra-day rebidding of gas injections

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

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

Notes: Origin = Origin Energy | AGL = AGL Sales | TRU = TRUenergy | Simply = Simply Energy | AETV = AETV Power | APG = Australian Power & Gas | CE = Country Energy | Lumo = Lumo Energy (formerly Victoria Electricity) | AGL (QLD) = AGL Sales (Queensland) | Red = Red Energy | Ausgrid = Ausgrid | Aurora = Aurora 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:	28 August – 3 September	21 August – 27 August	2011-12 Financial YTD*	2010-11 Financial YTD**
Ballarat	31	30	39	45
Geelong^	96	94	103	107
Gippsland	47	47	52	58
Melbourne	449	462	575	653
Northern	84	84	94	85
TOTAL	707	717	864	949

^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 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (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								
AGL Energy Sales & Marketing Limited	STTM User,Shipper	3	S	S	S				
AGL Wholesale Gas Limited	Shipper	2	S	S					
Ausgrid	STTM User,Shipper	2	S	S					
Australian Power & Gas Pty Ltd	STTM User,Shipper	1	S						
BHP Billiton Petroleum (Bass Strait) PL	Shipper								
BlueScope Steel	STTM User,Shipper	1	S						
Commonwealth Steel Company Pty Limited	STTM User								
Delta Electricity	STTM User,Shipper	1							S
Essential Energy	STTM User,Shipper	2	S				S		
Esso Australia Resources Pty Ltd	Shipper								
Lumo Energy (NSW) Pty Ltd	STTM User								
Lumo Energy Australia Pty Ltd	Shipper	2	NS			NS	S		
OneSteel Coil Coaters Pty Ltd	STTM User								
OneSteel Manufacturing Pty Ltd	STTM User,Shipper	1	S						
OneSteel NSW Pty Ltd	STTM User,Shipper	1	S						
OneSteel Trading Pty Limited	STTM User								
Origin Energy LPG Limited	STTM User,Shipper								
Origin Energy Retail Ltd	STTM User,Shipper	1		S					
Santos Direct Pty Ltd	STTM User,Shipper	1	S						
TRUenergy Pty Ltd	STTM User,Shipper	2	S	S		S			
TRUenergy Pty Ltd No. 2	STTM User,Shipper	1		S					
Tyco Water	STTM User								

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

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

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

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

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

Trading Participant	Participant type	No. of supply offers / withdrawal bid points	Offers		Bids		
			MAP	SEAGAS	MAP	SEAGAS	ADL - NET
AGL South Australia Pty Limited	STTM User,Shipper	1	S				
AGL Wholesale Gas (SA) Pty Ltd	Shipper	2	S	S			
Adelaide Brighton Cement Ltd	STTM User,Shipper	1	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	S	S			

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

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

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

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

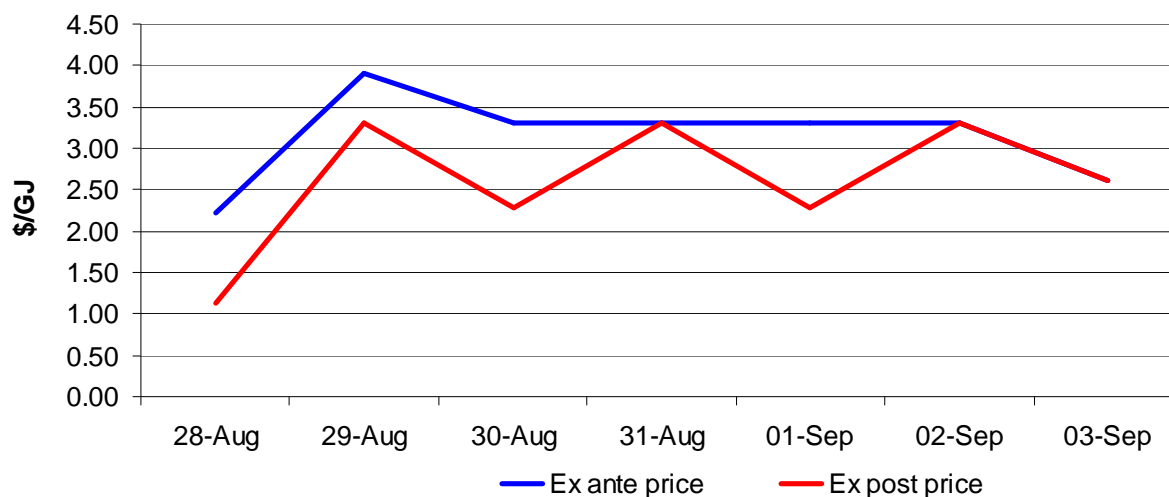
Ex ante and Ex post Market Prices

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

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

	28 August – 3 September	21 August – 27 August	2011-12 Financial YTD*
Ex ante price	3.13	3.87	3.52
Ex post price	2.60	3.75	3.04

*Financial Year to date figure from 1 July 2011 to the current week (inclusive)
Source: <http://www.aemo.com.au> INT 651, 657

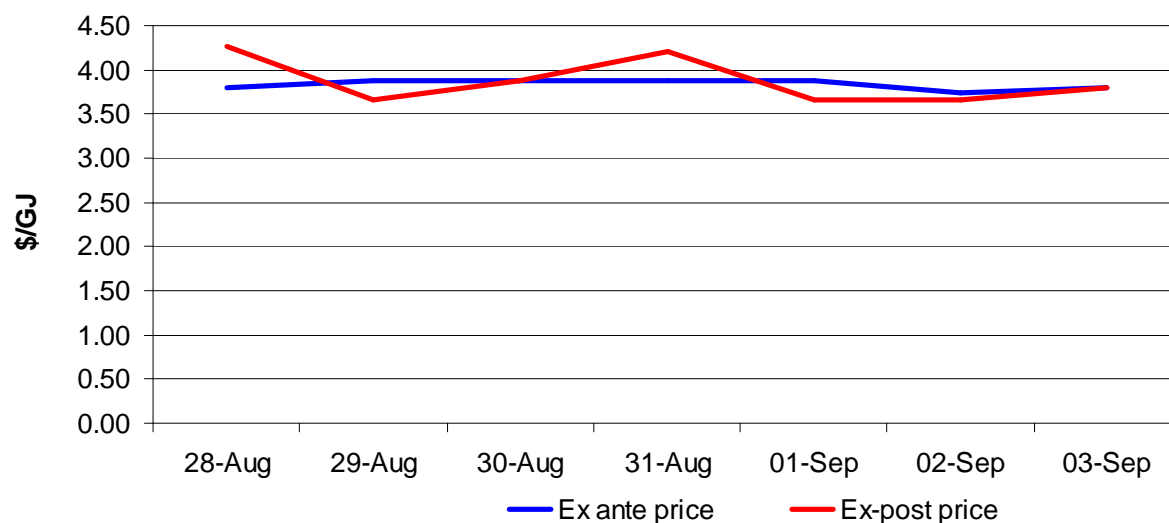


Source: <http://www.aemo.com.au> INT 651, 657

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

	28 August – 3 September	21 August – 27 August	2011-12 Financial YTD*
Ex ante price	3.84	3.78	3.88
Ex post price	3.88	3.73	3.92

*Financial Year to date figure from 1 July 2011 to the current week (inclusive)
Source: <http://www.aemo.com.au> INT 651, 657



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

Scheduled gas

“Firm” and “non-firm” gas is scheduled to the STTM hubs. Firm capacity describes a facility contract that has the highest haulage priority. Non-firm (as available) capacity refers to facility contracts with lower order priority.

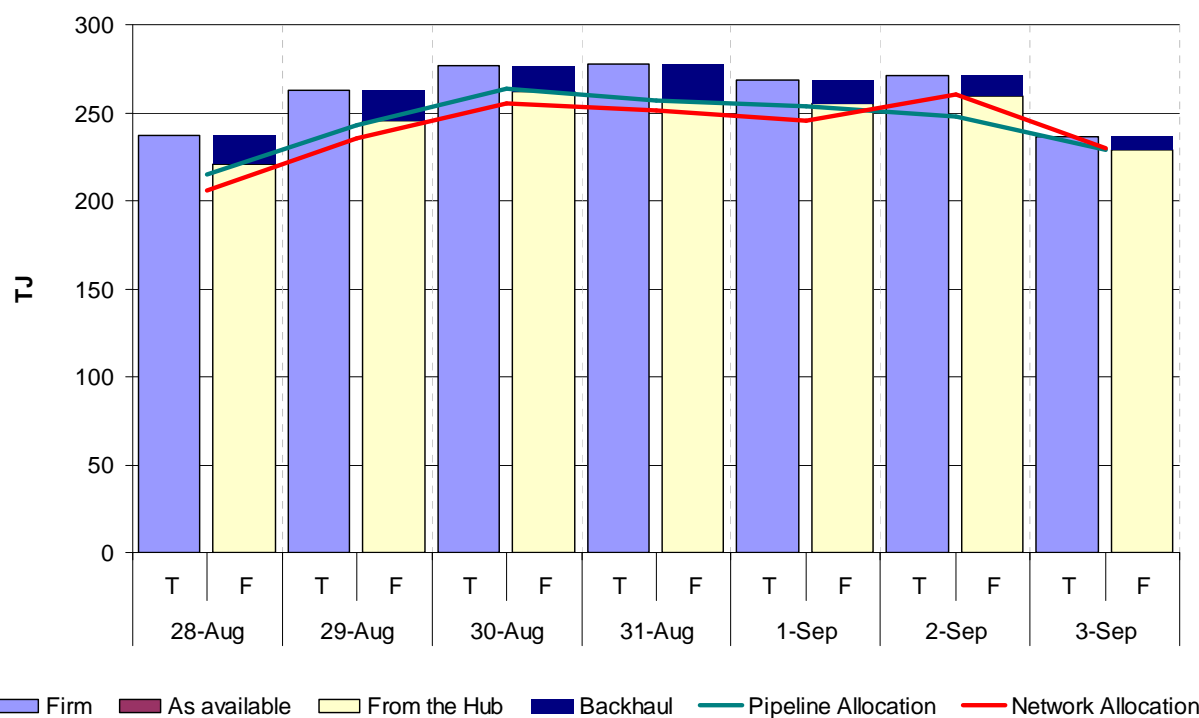
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

Figures S5 and S6 show scheduled versus allocated gas at each hub. To understand the figures, the quantities of firm and non-firm gas scheduled via offers to the hub are indicated by the columns marked “T” (or **to** the hub). Firm offers are indicated by light purple shading and as available gas is indicated by maroon shading. Bids to take gas from the hub are indicated by columns marked “F” (or **from** the hub). User bids are indicated by light yellow shading and backhaul is indicated by dark blue shading.

The red line shows network (or in other words hub or demand side) allocations and the green line shows pipeline allocations. Allocations show actual gas flows for the day based on pipeline and network metered data.

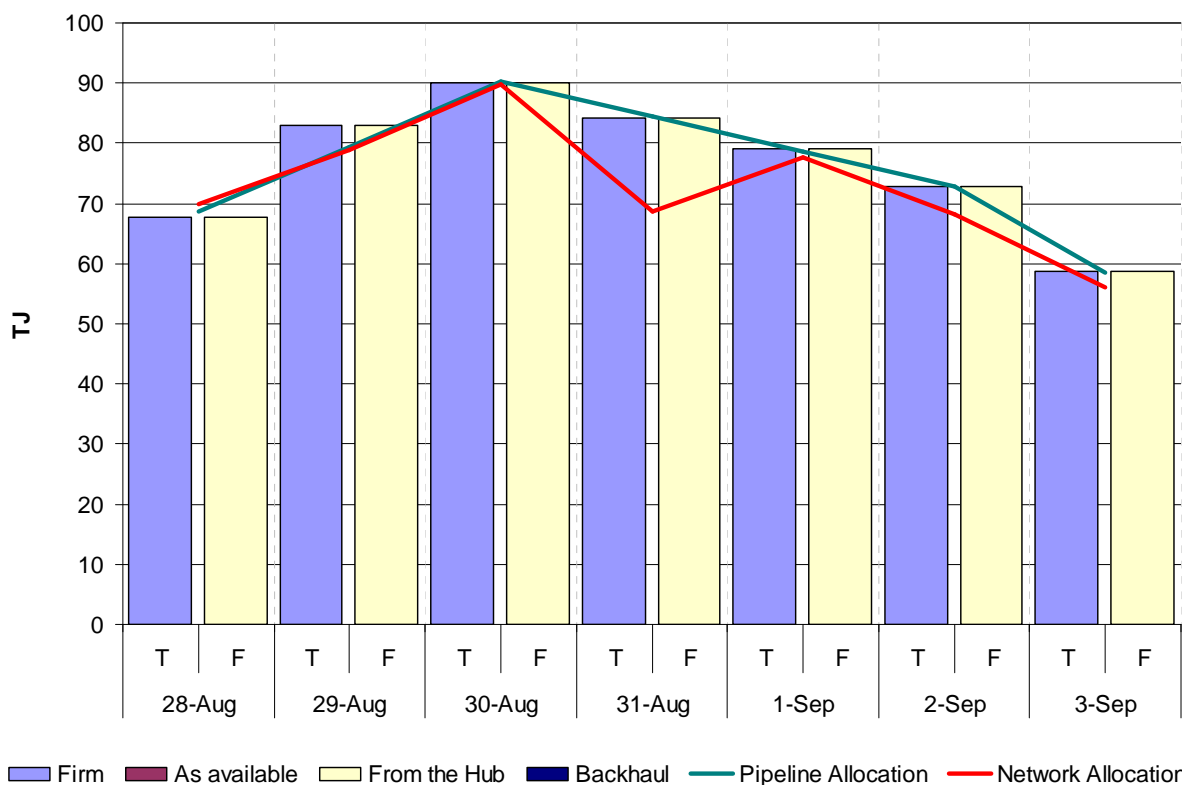
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

Figure S5: Allocated vs scheduled ex ante quantity - Sydney Hub (TJ)^



Source: <http://www.aemo.com.au> INT 651, 652, 658 and 664 (MOS allocations removed)

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



Source: <http://www.aemo.com.au> INT 651, 652, 658 and 664 (MOS allocations removed)

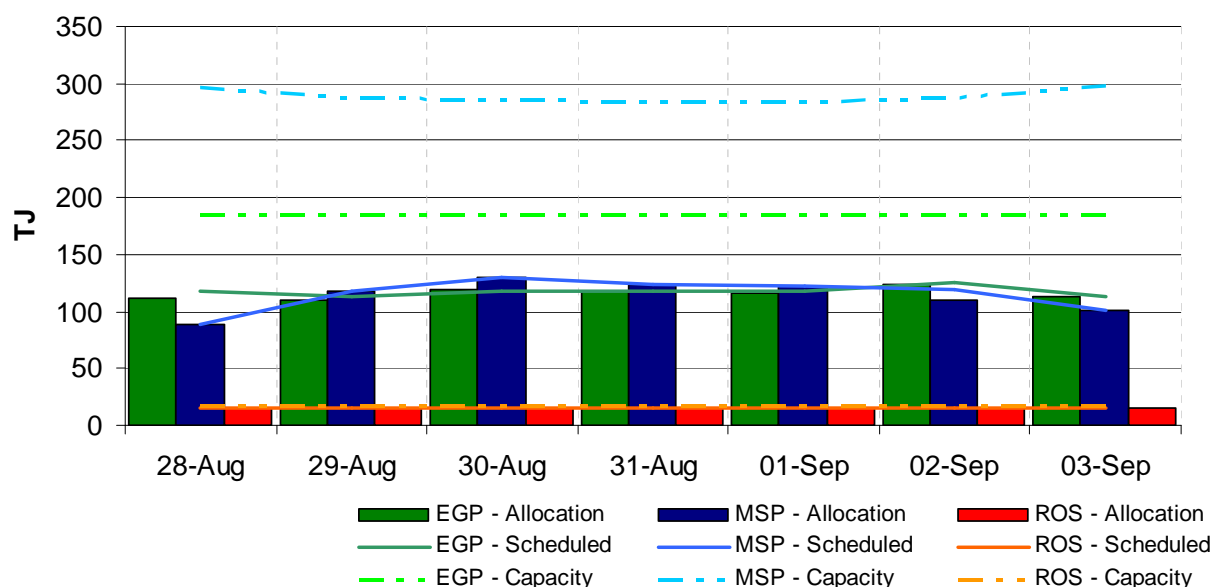
Pipeline Facility Allocations

A number of pipelines supply the Adelaide and Sydney hubs. Figures S7 and S8 show, for each hub, the allocation (or actual flow) of gas to each of the pipeline facilities supplying the hub, the quantity of gas scheduled (ex ante) on the pipeline and the capacity of the pipeline.

For a gas day, the pipeline operator delivers gas to the hub, and users withdraw gas from the hub. However, the quantities delivered to or withdrawn from the hub may not, and generally will not, match with the ex ante schedules. In addition, during the day, as gas requirements become better known, and if permitted by their contracts, shippers may renominate quantities (“intraday nominations”) with their pipeline operators.

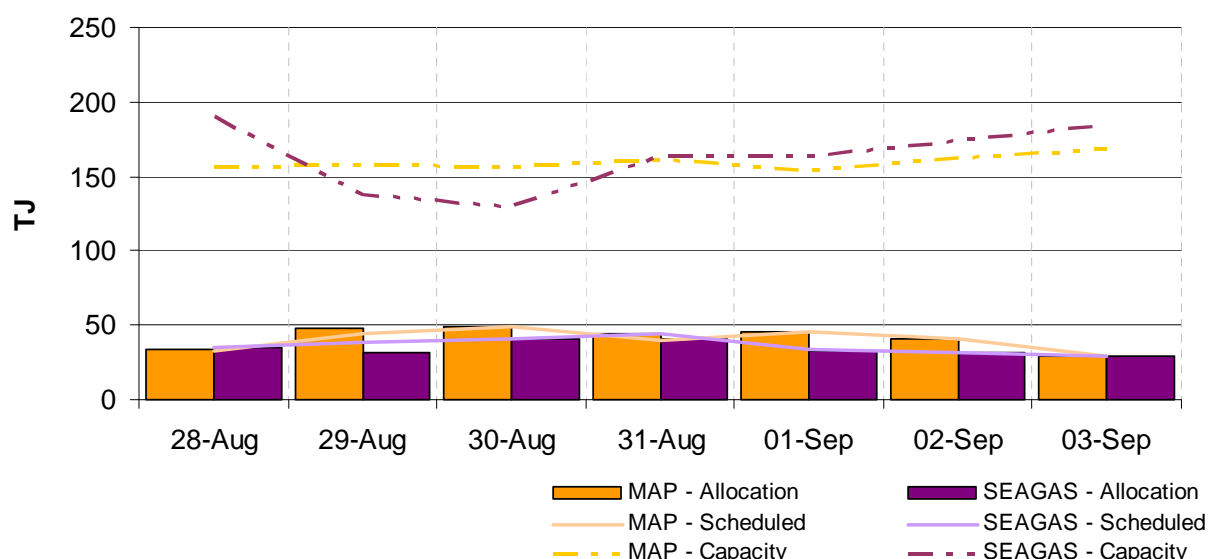
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

Figure S7: Allocated vs scheduled pipeline quantities - Sydney Hub (TJ)



Source: <http://www.aemo.com.au> INT 652, 653, 658 and 664 (MOS allocations removed)
 EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park production facility

Figure S8: Allocated vs scheduled pipeline quantities - Adelaide Hub (TJ)



Source: <http://www.aemo.com.au> INT 652, 653, 658 and 664 (MOS allocations removed)
 MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

Offers and Bids

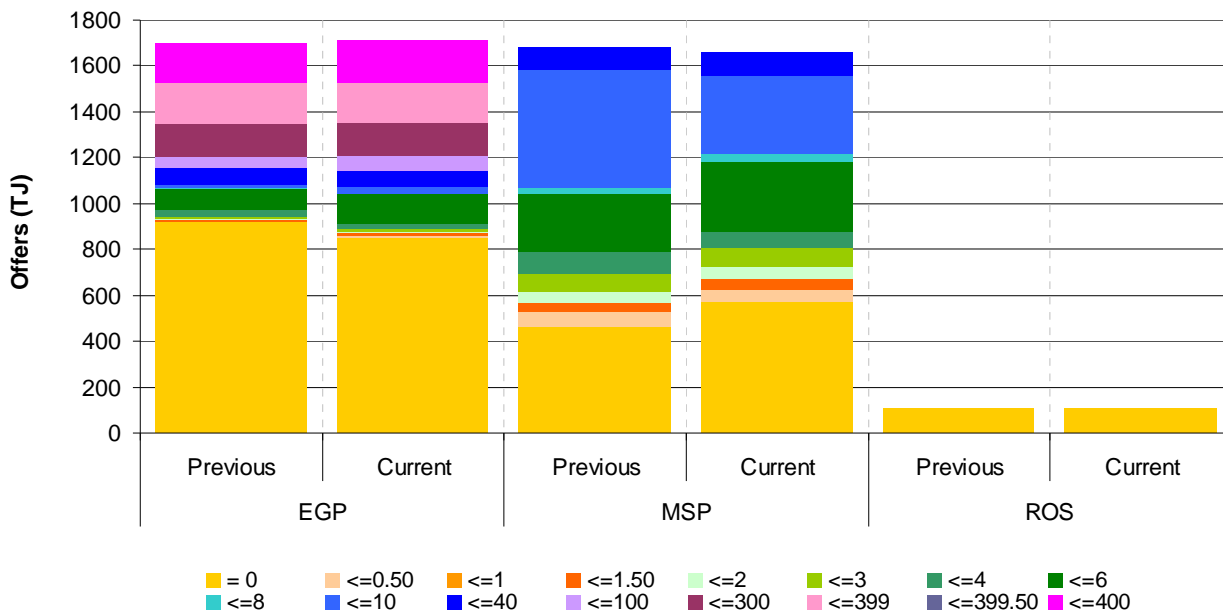
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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

These figures also include information on price-taker bids. A price-taker bid is a bid for a quantity of gas that the user will accept at any price. Only STTM users are able to place price-taker bids, that is, to purchase gas at any price. These bids (which represent customer demand forecasts) must be submitted on a daily basis. Price-taker bid data is read against the right-hand-

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

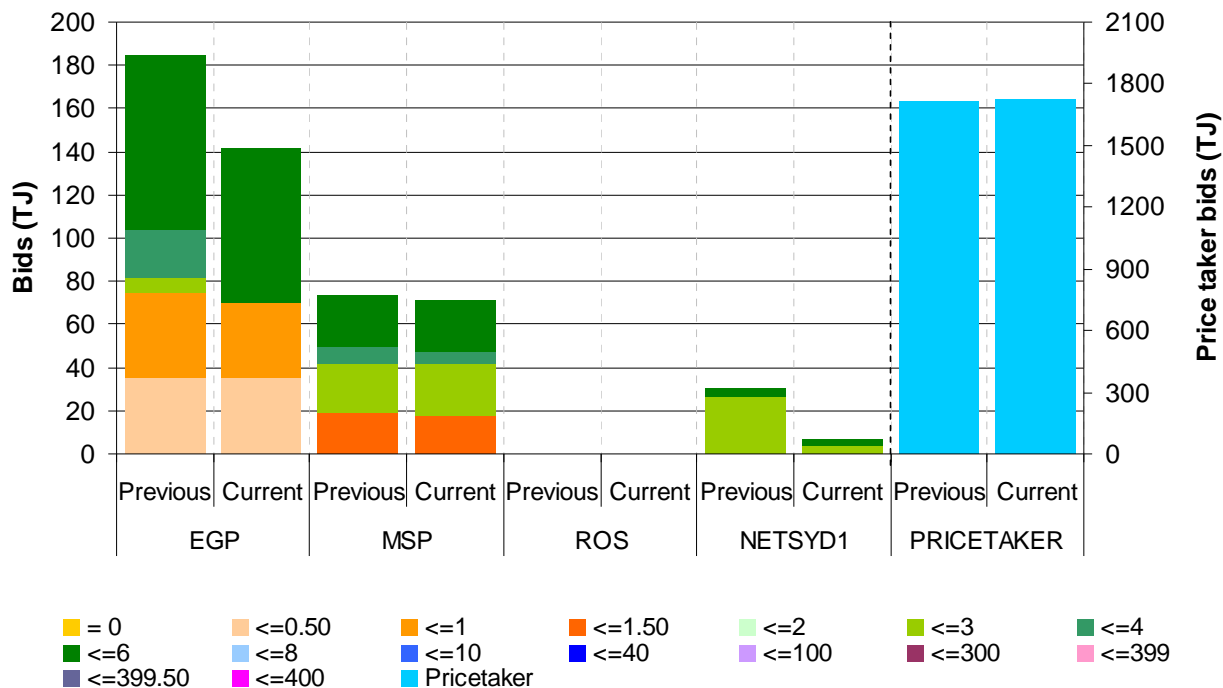
Figure S9: Total weekly Sydney hub offers (TJ) within price bands (\$/GJ)



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

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

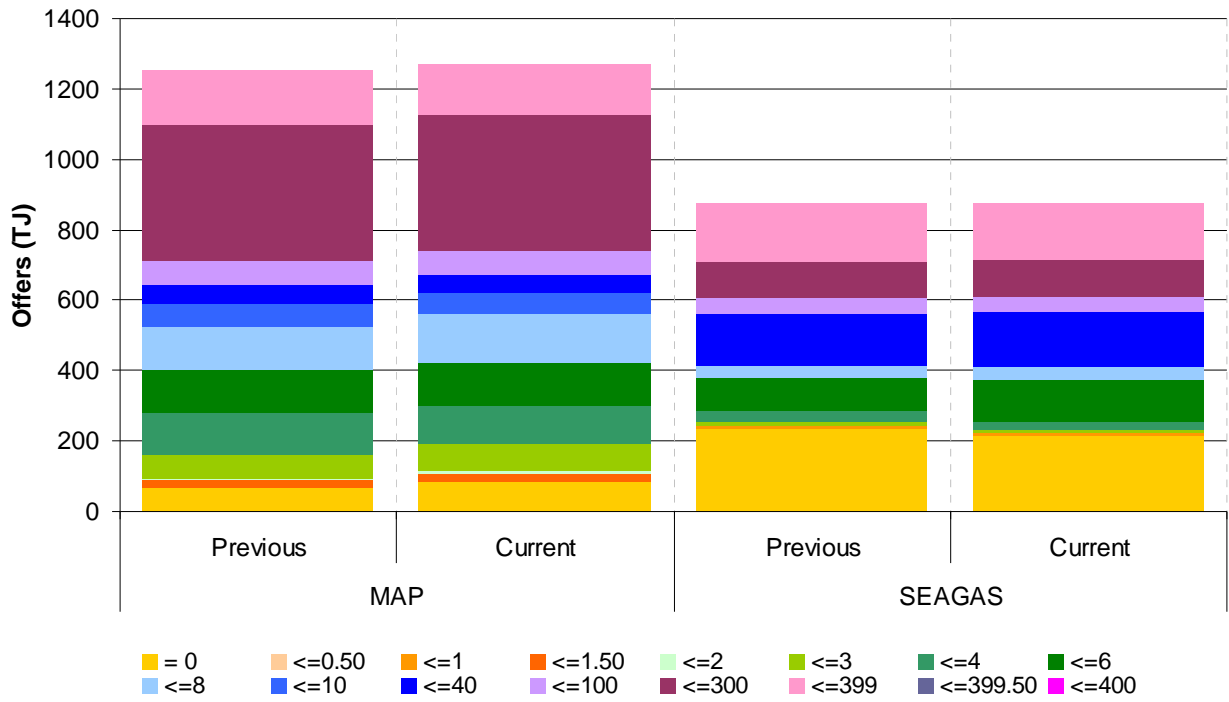
Figure S10: Total weekly Sydney hub bids (TJ) within price bands (\$/GJ)



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

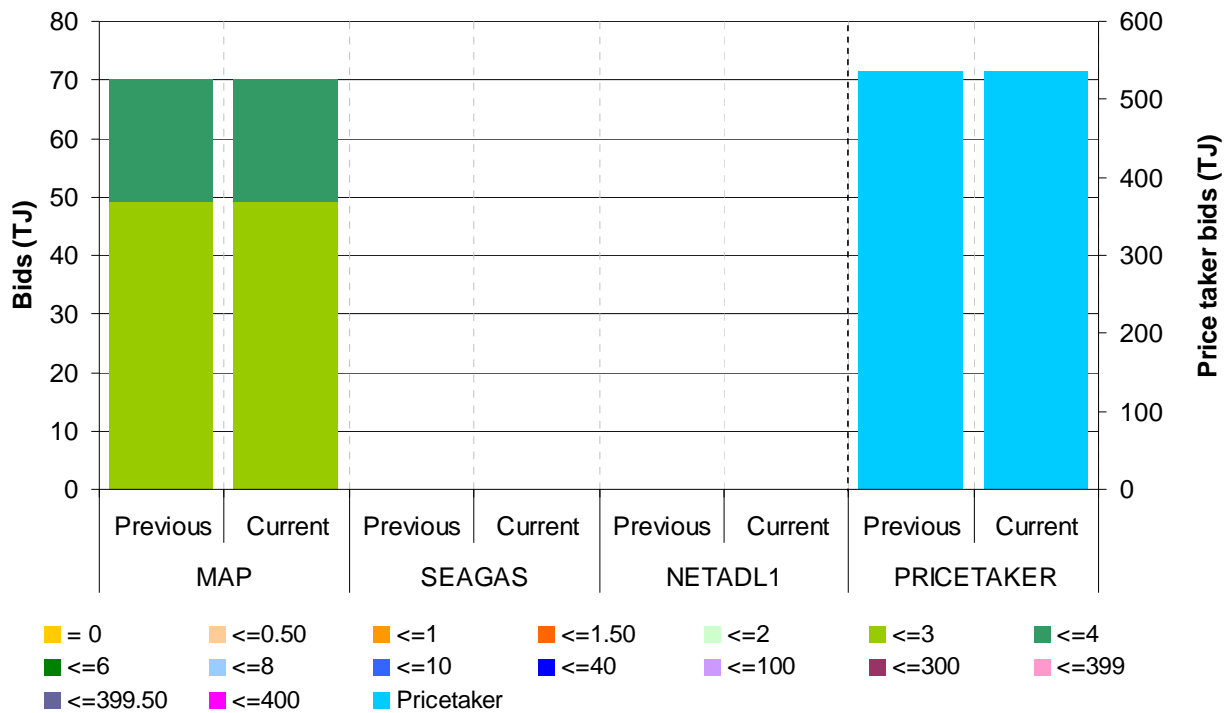
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

Figure S11: Total weekly Adelaide hub offers (TJ) within price bands (\$/GJ)



Source: <http://www.aemo.com.au> INT 652, 659
 MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

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



Source: <http://www.aemo.com.au> INT 652, 659
 MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline, NETADL1=Adelaide Hub

Re-offers and re-bids

In the STTM, offers and bids must first be submitted three days before the gas day (D-3), leading to an initial provisional price and schedule for the gas day. Re-offers and re-bids are then allowed for the D-2 schedule and finally for the D-1 “ex ante” schedule.

Re-offers and re-bids can lead to significant changes between D-3 and D-2 provisional prices and the ex ante price. Figures S13, S14, S15 and S16 show the participants that made inter-day re-offers and re-bids at the hubs for the different pipeline facilities.

Figure S13: Inter-day resubmission of offers at Sydney Hub

Pipeline	Schedule	Sun	Mon	Tue	Wed	Thu	Fri	Sat
EGP	D-3 to D-2	BluSc EA TRU	EA TRU	EA SANTOS TRU	EA SANTOS TRU	SANTOS TRU	Lumo SANTOS TRU	SANTOS TRU
	D-2 to D-1	EA SANTOS TRU	EA SANTOS TRU	APG BluSc EA SANTOS TRU	EA OneStl(NSW) SANTOS TRU	BluSc Lumo SANTOS TRU	BluSc SANTOS TRU	BluSc TRU
MSP	D-3 to D-2	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU
	D-2 to D-1	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) Origin TRU	AGL(ESM) AGL(WG) Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) EA Origin TRU
ROS	D-3 to D-2	AGL(ESM)			AGL(ESM)	AGL(ESM)		
	D-2 to D-1			AGL(ESM)	AGL(ESM)			

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

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

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

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

APG= Australian Power & Gas Pty Ltd |

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

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

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

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

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

Lumo= Lumo Energy Australia Pty Ltd |

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

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

Pipeline	Schedule	Sun	Mon	Tue	Wed	Thu	Fri	Sat
MAP	D-3 to D-2	AGL(SA) Origin Simply TRU	AGL(SA) Origin Simply TRU	AGL(SA) Origin Simply TRU	AGL(SA) Origin Simply TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU
	D-2 to D-1	AGL(SA) Origin Simply TRU	AGL(SA) Origin Simply TRU	AGL(SA) Origin Simply TRU	AGL(SA) Origin TRU	AGL(SA) Origin TRU	AGL(SA) Origin	ABC AGL(SA) Origin Simply TRU
SEA-GAS	D-3 to D-2	TRU	Origin TRU	TRU	TRU	Origin TRU	AGL(WGSA) TRU	TRU
	D-2 to D-1	Origin TRU	TRU	TRU	Origin TRU	AGL(WGSA) TRU	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 S16: Inter-day resubmission of bids at Adelaide Hub

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

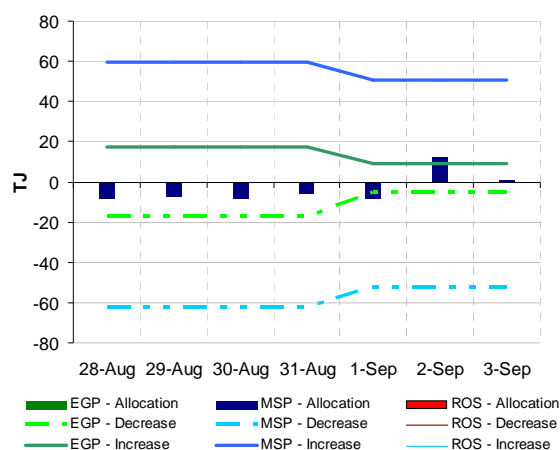
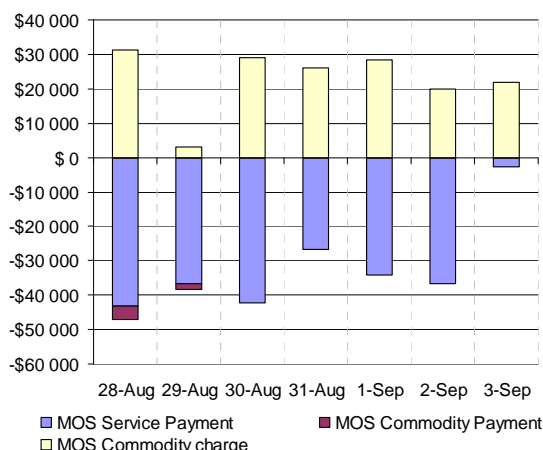


Figure S17b: Sydney MOS payments/charges



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

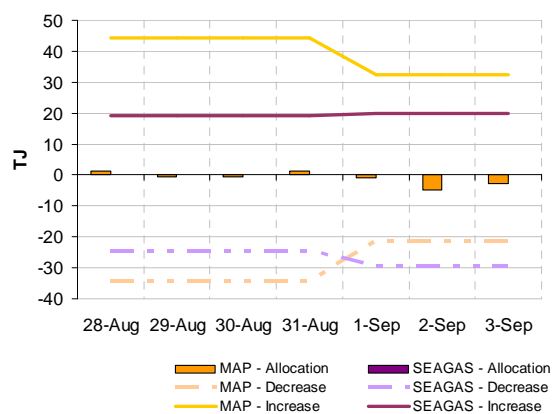
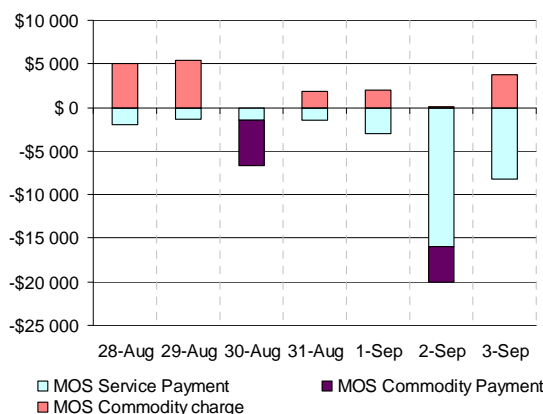


Figure S18b: Adelaide MOS payments/charges



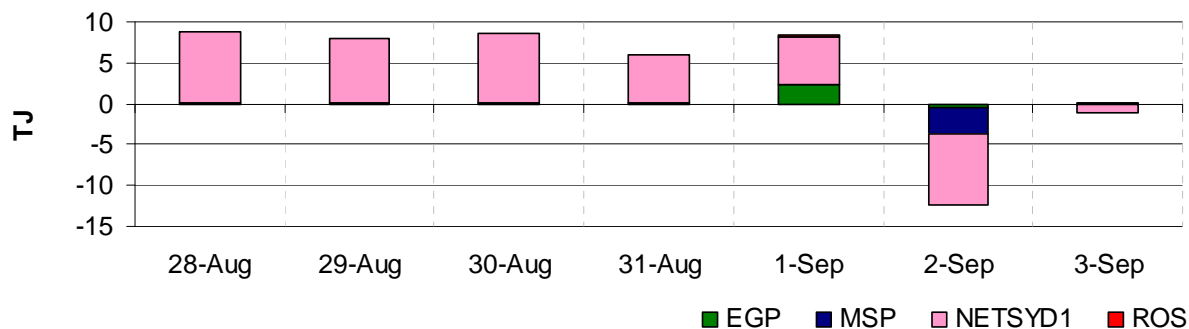
Source: <http://www.aemo.com.au> INT 663, 664, 665

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

Deviations

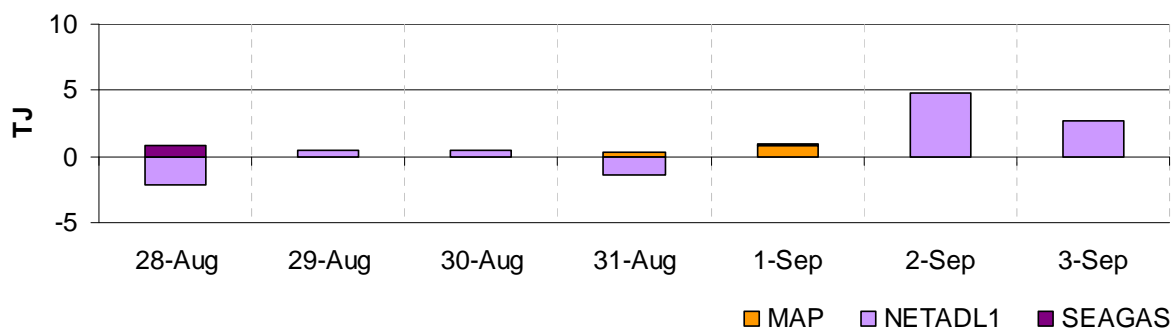
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

	28 August – 3 September	21 August – 27 August	2011-12 Financial YTD*
Quantity (TJ)	4.84	5.86	5.25
Charges (\$)	68.58	219.53	166.55

*Financial Year to date figure from 1 July 2011 to the current week (inclusive)

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

Figure S22: Average Daily Market Variations - Adelaide Hub

	28 August – 3 September	21 August – 27 August	2011-12 Financial YTD*
Quantity (TJ)	1.80	0.57	1.19
Charges (\$)	80.96	0.00	44.16

*Financial Year to date figure from 1 July 2011 to the current week (inclusive)

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

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	108	100	99	92	92	104	106	119	85	100	101	92
QLD Gas Pipeline	116	120	122	124	126	126	122	142	86	122	122	99
Roma to Brisbane Pipeline	160	178	183	192	184	171	161	219	78	175	172	188
South West QLD Pipeline	109	86	104	96	59	97	77	181	80	90	144	138
NSW/ACT												
Eastern Gas Pipeline	206	217	223	225	225	232	210	268	86	220	231	228
Moomba to Sydney Pipeline	142	186	208	199	173	183	152	439	49	177	217	277
NSW-VIC Interconnect	20	24	29	20	22	4	18	90	24	19	22	5
VIC												
Longford to Melbourne	442	629	645	602	577	492	291	1030	63	526	645	760
South West Pipeline^	180	150	230	168	123	114	178	353	58	163	206	173
SA												
Moomba to Adelaide Pipeline	124	135	142	139	131	116	98	253	54	126	136	141
SEA Gas Pipeline	140	212	220	202	186	122	106	314	56	170	177	180
TAS												
Tasmanian Gas Pipeline	44	49	47	47	49	46	40	129	38	46	49	50

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (inclusive)

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

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

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

Production zone and production / storage facility	Sun	Mon	Tue	Wed	Thu	Fri	Sat	MDQ (TJ)	YTD average capacity usage* (%)	Current week average daily flows	Current YTD average daily flows*	Previous YTD average daily flows**
Roma (QLD)												
Berwyndale South	98	97	97	95	95	98	97	140	66	97	92	98
Fairview	79	75	75	75	59	51	51	130	83	66	108	122
Kenya Gas Plant	82	80	84	83	85	85	85	160	47	83	76	61
Kincora	10	10	10	10	7	7	10	25	42	9	10	5
Kogan North	7	7	7	7	7	7	7	12	56	7	7	10
Peat	8	6	8	8	8	8	8	15	52	8	8	10
Rolleston	9	9	9	9	9	10	9	30	32	9	9	11
Scotia	30	20	29	30	29	30	30	29	90	28	26	28
Spring Gully	42	42	45	45	45	44	42	69	64	44	44	53
Strathblane	42	42	45	45	45	44	42	69	64	44	44	53
Talooka	26	25	27	27	27	27	26	42	64	26	27	32
Yellowbank	9	10	9	9	9	10	10	30	32	9	10	13
Talinga	103	104	105	104	76	76	71	120	83	91	99	59
Moomba (SA/QLD)												
Moomba Gas Plant	197	253	265	259	259	240	224	430	64	242	277	358
Ballera	14	17	25	26	51	29	35	150	6	28	9	9
Eastern (VIC)												
Orbost Gas Plant	69	62	64	64	66	66	66	100	68	65	68	0
Lang Lang Gas Plant	56	2	0	0	0	0	0	70	64	8	45	50
Longford Gas Plant	563	767	865	836	789	721	472	1145	72	716	822	1003
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	70	70	70	67	57	45	35	73	94	59	69	83
Otway Gas Plant	181	183	183	181	183	183	155	205	78	178	159	141
Iona Underground Gas Storage	93	112	180	129	78	34	121	440	36	107	157	131

*Average daily estimated gas consumption measured from 1 July 2011 to the current week (inclusive)

**Average daily estimated gas consumption measured from 1 July 2010 to the equivalent week in 2010-11 (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)
28 August – 3 September	Average min.	13.6	12.2	1.5	8.8	10.4	6.7
	Average max.	23.8	20.1	17.6	18.0	20.5	15.3
21 August – 27 August	Average min.	13.6	11.6	0.1	8.2	8.7	8.3
	Average max.	21.7	18.9	18.3	19.8	19.9	17.8

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

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

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

28 August – 3 September	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	3.03	3.47	2.18	2.03	2.99	3.01
Mon	3.51	3.14	2.62	2.12	2.12	3.46
Tue	3.72	3.15	3.50	3.46	3.06	3.71
Wed	3.20	3.46	2.71	2.73	2.80	3.19
Thu	3.06	2.72	2.58	1.02	0.57	2.97
Fri	3.17	3.10	2.63	2.00	0.16	3.09
Sat	2.19	3.49	3.19	3.18	3.29	2.26

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	
28-Aug	MP:	645	656	654	653	655	0
	AEMO:	646	652	629	591	609	
	MP as % of AEMO	100	101	104	110	107	
29-Aug	MP:	869	863	853	850	850	0
	AEMO:	840	831	786	779	769	
	MP as % of AEMO	103	104	109	109	111	
30-Aug	MP:	880	881	881	882	881	-17
	AEMO:	823	831	839	851	823	
	MP as % of AEMO	107	106	105	104	107	
31-Aug	MP:	823	809	809	813	813	0
	AEMO:	821	817	794	776	745	
	MP as % of AEMO	100	99	102	105	109	
1-Sep	MP:	843	812	810	813	814	0
	AEMO:	815	804	749	730	729	
	MP as % of AEMO	103	101	108	111	112	
2-Sep	MP:	715	691	688	673	673	0
	AEMO:	708	668	644	629	598	
	MP as % of AEMO	101	103	107	107	113	
3-Sep	MP:	430	441	444	444	443	0
	AEMO:	423	445	450	450	458	
	MP as % of AEMO	102	99	99	99	97	

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