

15 May – 21 May 2011

Preface

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

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

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

15 May – 21 May	Victorian market*	STTM Sydney hub**	STTM Adelaide hub**
Average Price	3.49	3.39	3.68

*weighted average daily imbalance price

**ex ante market price

STTM Gas Markets (Adelaide and Sydney)

Figure S3 shows for Sydney, this week’s average ex ante price was lower than the previous week, but higher than the financial year-to-date average. The weekly average ex post price was higher than the previous week’s but lower than the financial year-to-date average. As shown in figure S4, the average ex ante price in Adelaide was higher than the previous week and the financial year-to-date average. The weekly average ex post price was lower than for the previous week but higher than the financial year-to-date average.

Figure S5 shows network allocations (consumption at the hub) exceeded what was scheduled at the Sydney hub on the Monday 16 May and Tuesday 17 May gas days by 23 TJ and 26 TJ respectively. As a result, network allocations on those days exceeded pipeline allocations (deliveries to the hub) by 23 TJ and 26 TJ respectively.¹ These deviations on 16 and 17 May resulted in a requirement for MOS increase allocations on both the Eastern Gas Pipeline and Moomba to Sydney Pipeline (see figure S17a).

15 March – Large MOS service payments in Adelaide

On the Sunday 15 May gas day at the Adelaide hub, MOS service payments reached an Adelaide hub record of \$361 000 (see figure S18b). This was the result of around 10.3 TJ of MOS increase allocations on the Moomba to Adelaide Pipeline (MAP) and 10.6 TJ of MOS decrease allocations on the SEAGas pipeline (see figure S18a). This record MOS service payment amount occurred on the same day as there was a record on-the-gas-day hub deviation, where actual network allocations were 22.7 TJ short of what was scheduled. On the same day, figure S8 shows pipeline allocations on the MAP and SEAGas were, respectively, 9 TJ and 13 TJ lower than scheduled. Although participants appear to have over-forecast (on a day-ahead basis) consumption requirements for the 15 May gas day, participants appear to have nominated just enough gas on the day to meet expected consumption at the hub.

Despite the large difference between scheduled and allocated gas, figure S19 shows there were no significant deviations for the 15 May gas day. This is because participants submitted market schedule variations (MSVs) to reduce exposure to deviation charges. If AEMO pays more for MOS than it receives in revenue, it recovers the shortfall through settlement shortfall charges (SSC). SSCs are calculated monthly and are levied against participants in accordance with the magnitude of their deviations. Figure S22 shows the volume of MSVs this week was higher than the previous week and the year to date average. MSVs of 22 TJ were submitted for the 15 May gas day, the largest at the Adelaide hub this year.

The AER is making further enquiries into this gas day to understand the reasons behind the record MOS payment amounts, the large difference between hub consumption and deliveries, high STTM pipeline deviations, and the large MSVs for the 15 May gas day.

Victorian Gas Market

Figure V2 shows that at \$3.49/GJ, the average daily market price was lower than the previous week (\$3.59/GJ), consistent with milder temperatures than the previous week (see figure A3), lower demand than the previous week (see figure N4) and lower average injections into the Declared Transmission System (DTS) (785 TJ/day) than the previous week (940 TJ/day).

AEMO issued a 1 TJ demand override on Monday 16 May, in response to market participants' forecasts being lower than AEMO forecasts throughout the gas day (see Appendix A5).

National Gas Market Bulletin Board

Figure N4 shows overall average gas demand and production were lower than the previous week. This was led by lower demand in Victoria (-155 TJ/day on average), and lower production at the Eastern Victoria production facilities (-159 TJ/day on average) and Otway facilities (-53 TJ/day on average). Lower production at Eastern Victoria was also consistent with lower demand in NSW/ACT (-21 TJ/day) and Tasmania (-27 TJ/day), largely due to less demand for gas-powered generation.

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

¹ These differences were the largest difference since the 22 March gas day, when pipeline allocations exceeded network allocations by 45 TJ (see *AER Weekly Gas Report 20 March – 26 March 2011*).

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
15 May – 21 May	413	42	777	285	30	166	95	71
Financial Year-to-date 2010-11*	375	21	586	283	45	165	94	108
Financial Year-to-date 2009-10**	365	19	548	282	38	168	86	71

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

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

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

Figure N2 provides the average daily amount of gas used for GPG (gas-powered generators) in each state.

Figure N2: Average daily gas (TJ) used by gas-powered generators in each state

Average daily gas for GPG usage^	NSW	VIC	SA	TAS	QLD
15 May – 21 May	60	24	183	18	120
Financial Year-to-date 2010-11*	86	24	166	30	149
Financial Year-to-date 2009-10**	84	39	167	23	162

^Estimated values based on application of implied heat rates for generators within the demand region sourced from ACIL Tasman's 2009 Final Report 'Fuel resource, new entry and generation costs in the NEM'

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

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

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

Notes: Data for each state collected on the following basis:

1. NSW - Smithfield Energy, Uranquinty, Hunter Valley GT, Colongra and Tallawarra power stations.
2. VIC - Laverton North, Valley Power, Jeeralang A, Jeeralang B, Somerton, Bairnsdale, and Newport power stations.
3. SA - Dry Creek GT, Hallet, Pelican Point, Torrens Island, Mintaro, Osborne, Ladbroke Grove, and Quarantine power stations.
4. TAS - Tamar Valley power stations.
5. QLD - Braemar 1, Braemar 2, Roma, Oakey, Barcaldine, and Swanbank power stations.

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

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

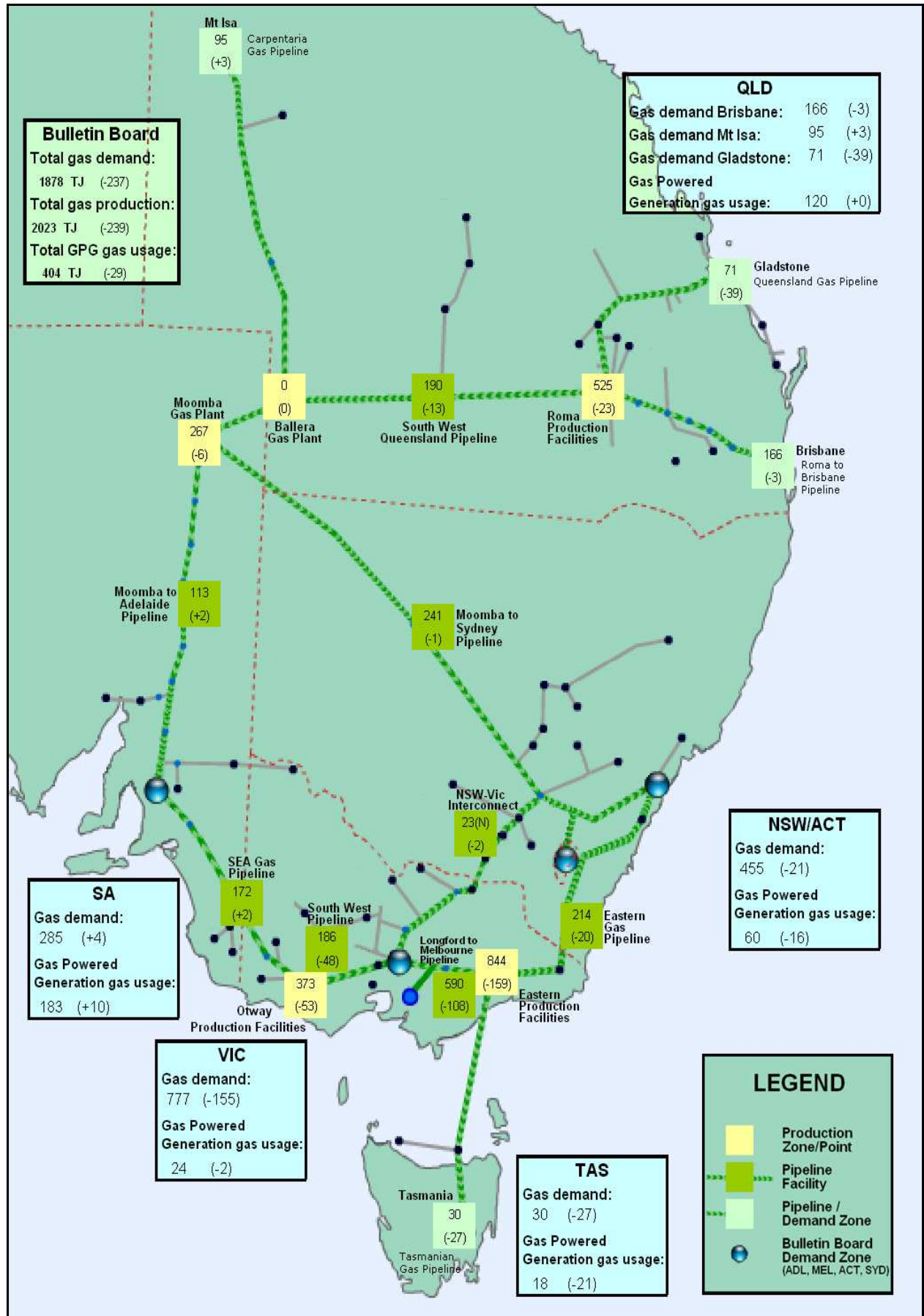
Average daily flows	Roma (QLD)	Eastern Victoria	Otway Basin (VIC)	Moomba (SA/QLD)
15 May – 21 May	525	844	373	267
Financial Year-to-date 2010-11*	533	756	266	268
Financial Year-to-date 2009-10**	461	660	278	275

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

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

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

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

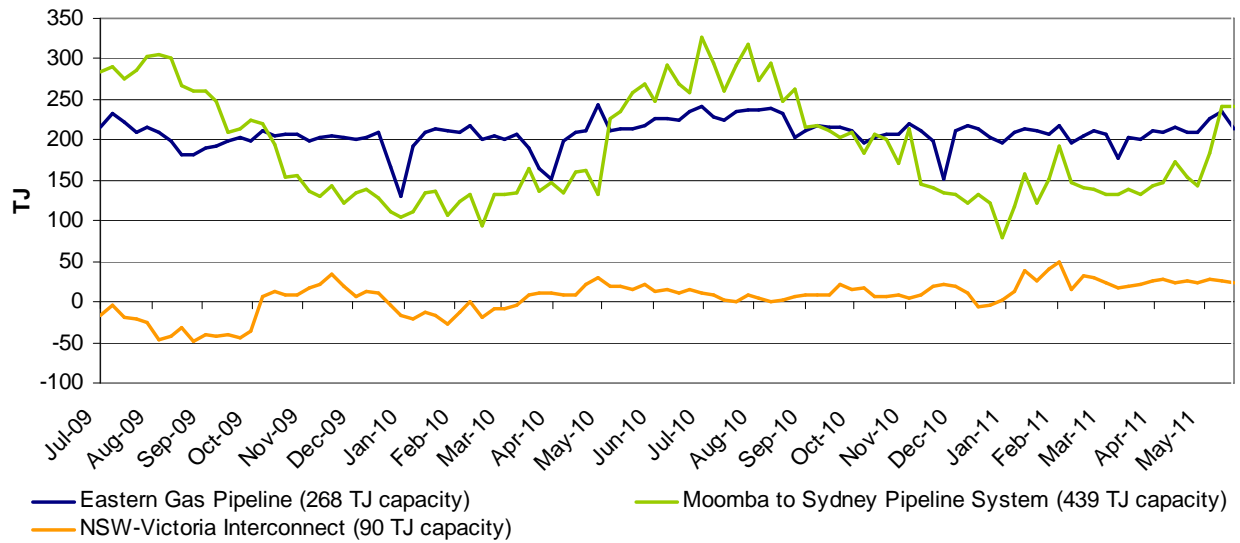


Source: Natural Gas Market Bulletin Board <http://www.gasbb.com.au>
 Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
 Numbers in brackets indicate a change in average daily flow from the previous week.

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.

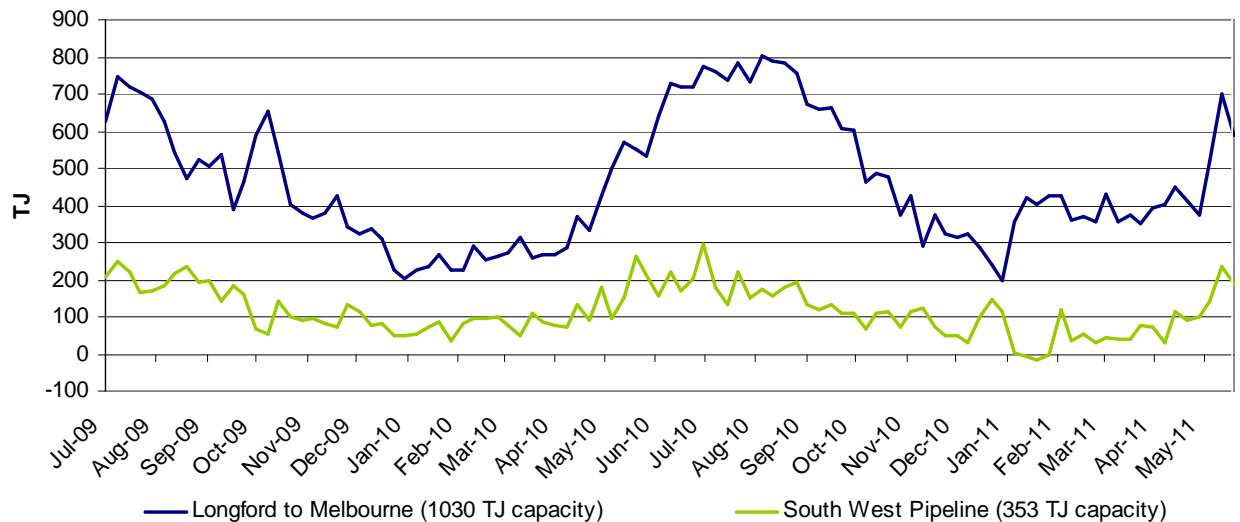
Figure N5: Average daily flows (TJ) into NSW/ACT demand region



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.

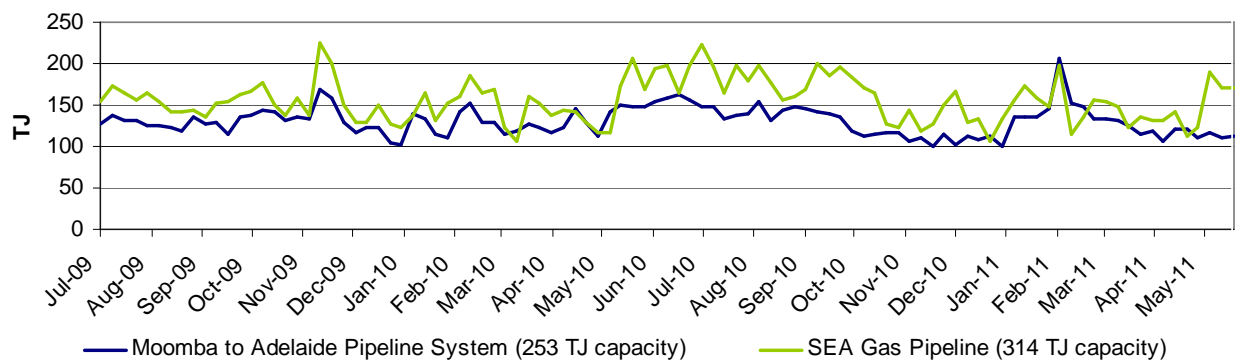
Figure N6: Average daily flows (TJ) into VIC demand region



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	Montlake	Culcairn	IONA	SEA Gas	VicHub	
AETV Power	Trader	2					S		S							NS
AGL (Qld)	Retailer	1				NS										
AGL	Retailer	4			NS	NS	S		NS				NS			
Aurora Energy	Retailer	1					S									
Ausgrid	Retailer	2					S		NS							
Aust. Power & Gas	Retailer	3			S	NS	S							S		
Aust. Power & Gas	Trader	1					S									
Coogee Energy	Transmission Customer	1					S									
Essential Energy	Transmission Customer	1										S				
International Power	Transmission Customer	1						NS								
Lumo Energy	Retailer	3		NS		NS			S		S	NS				
Lumo Energy	Trader	2			S				S				NS		S	
Origin (Vic)	Retailer	5	S	S	S	NS	S				S	S	S			
Origin (Uranquinty)	Trader	2					S					S				
Red Energy	Retailer	1					S									
Santos	Retailer	1							S							
Simply Energy	Retailer	4			NS	NS	S	S					S	S		
TRU Energy	Retailer	4			S	NS	S		NS				NS			
Visy Paper	Distribution Customer	2					S					S				

[^]Bids taken from 6 am data for each gas day during the current week.
Source: <http://www.aemo.com.au> (INT131)

Market Prices

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

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

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

	15 May – 21 May	8 May – 14 May	2010-11 Financial YTD*	2009-10 Financial YTD**
Average daily price	3.49	3.59	2.29	1.72

15 May – 21 May	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Daily price	3.33	3.19	3.72	3.99	3.05	3.63	3.48

*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)

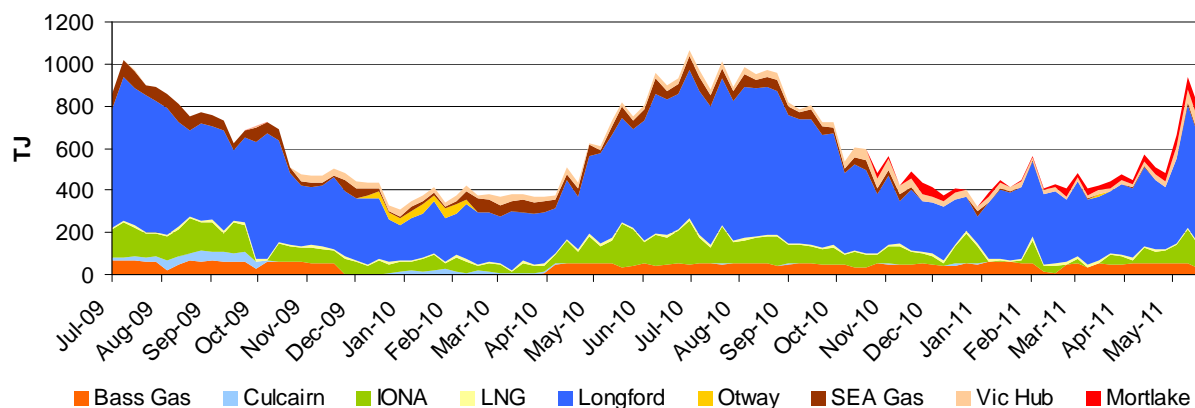
Source: <http://www.aemo.com.au> (INT 041)

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:	15 May – 21 May	8 May – 14 May	2010-11 Financial YTD*	2009-10 Financial YTD**
Culcairn	0	0	1	14
Longford	499	587	413	362
LNG	8	8	9	8
IONA	106	156	68	79
VicHub	66	59	31	18
SEAGas	8	14	20	41
Bass Gas	28	56	48	32
Otway	0	0	0	7
Mortlake	69	60	23	–
TOTAL	785	940	612	564



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

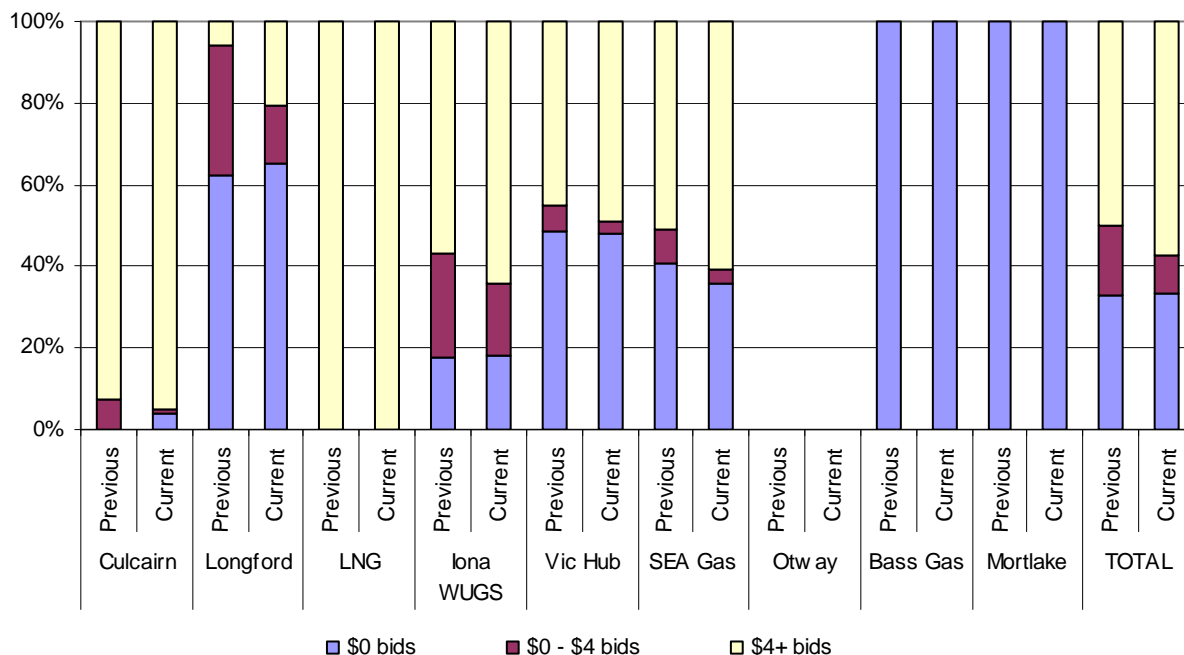
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)

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

Bidding Activity

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

Figure V4: Price structure of bids by injection points



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

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

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

Figure V5: Intra-day rebidding of gas injections

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

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

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

System withdrawals

Figure V6 shows the average daily gas usage on the DTS for the current and previous week, compared with the 2010-11 and 2009-10 equivalent financial year-to-date daily averages.

Figure V6: Average daily withdrawals (TJ) from system demand zones on the DTS

System withdrawal zone:	15 May – 21 May	8 May – 14 May	2010-11 Financial YTD*	2009-10 Financial YTD**
Ballarat	35	42	24	21
Geelong^	97	114	90	79
Gippsland	48	55	43	44
Melbourne	516	636	388	367
Northern	91	96	65	54
TOTAL	786	943	608	565

^Data presented also includes withdrawals for the Western system withdrawal zone or Western Transmission System (WTS).

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

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

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

Part C: STTM MARKET DATA

What is the STTM?

The STTM is a market for the trading of natural gas at the wholesale level at defined hubs between pipelines and distribution systems. Currently the STTM has two hubs: Sydney and Adelaide. The AER first commenced reporting on the STTM in September. The report deliberately contains a significant amount of information on the STTM. It is envisaged that over time as readers become familiar with the market, the amount of information will be reduced, while being mindful not to compromise the quality of the report.

Although the STTM and Victorian gas markets (discussed in Part B of this report) are both spot markets for gas, there are a number of key differences. Some of these differences are listed in the table below.

Key area of difference	Victoria Gas Market	STTM
AEMO role	<ul style="list-style-type: none"> Wholesale market operator, Retail market operator, Transmission pipeline system operator 	<ul style="list-style-type: none"> Wholesale market operator, Retail market operator
Scheduling	<ul style="list-style-type: none"> On the day scheduling comprising five pricing and operating schedules at set times. Ad hoc schedules if required. Day ahead and 2-Day ahead schedules (forecast data only). 	<ul style="list-style-type: none"> Day ahead market schedules Shippers may vary from their market schedules when they nominate to pipeline operators 2-Day ahead and 3-Day ahead schedules (forecast data only).
Market Price	<ul style="list-style-type: none"> Five ex ante prices for imbalances set on the day Ex ante prices in subsequent schedules after the 6am schedule apply to deviations Market price is for commodity only. Transportation is charged separately by pipeline owner 	<ul style="list-style-type: none"> One ex ante market price set the day before the gas day One ex post imbalance price set the day after the gas day Price includes both commodity and delivery to the hub and represents purchase of gas at the hub
Linepack management (pipeline balancing mechanism)	<ul style="list-style-type: none"> AEMO defines linepack target depending on operational conditions and is generally set seasonally not daily. Linepack account covers costs that includes costs of day to day linepack variations 	<ul style="list-style-type: none"> On the day pipeline balancing through Market Operator Service (MOS), provided by MOS offers from shippers
Transmission pipeline constraint management	<ul style="list-style-type: none"> Ancillary payments for higher priced gas scheduled that relieves constraints Uplift payments to fund ancillary payments 	<ul style="list-style-type: none"> Capacity payments from shippers with non-firm contracts to shippers with firm contracts if a pipeline is constrained (based on the pipeline capacity price)

AEMO's website (www.aemo.com.au) contains documents that provide further detail on how the STTM works, including a glossary of terms.

Participation in the market

Figures S1 and S2 show participant supply offers and withdrawal bids submitted in the Sydney and Adelaide STTM hubs. The orange shaded boxes indicate that the participant submitted offers and bids at that location on at least one occasion during the week. An "S" indicates that some of this gas was scheduled into the gas market, while "NS" indicates that none of the gas was scheduled. Green shading indicates where a change has occurred from the previous week.

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

Figure S1: Supply Offers and Withdrawal Bids (Sydney Hub)^

Trading Participant	Participant type	No. of supply offers / withdrawal bid points	Offers			Bids			
			EGP	MSP	ROS	EGP	MSP	ROS	SYD - NET
AETV Power	Shipper	1				NS			
AGL Energy Sales & Marketing Limited	STTM User,Shipper	4	S	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	2	S						S
Essential Energy	STTM User,Shipper	2	S				S		
Esso Australia Resources Pty Ltd	Shipper								
Lumo Energy (NSW) Pty Ltd	STTM User								
Lumo Energy Australia Pty Ltd	Shipper	2	S			S	S		
OneSteel Coil Coaters Pty Ltd	STTM User								
OneSteel Manufacturing Pty Ltd	STTM User,Shipper	1	S						
OneSteel NSW Pty Ltd	STTM User,Shipper	1	S						
OneSteel Trading Pty Limited	STTM User								
Origin Energy LPG Limited	STTM User,Shipper								
Origin Energy Retail Ltd	STTM User,Shipper	1		S					
Santos Direct Pty Ltd	STTM User,Shipper	1	S						
TRUenergy Pty Ltd	STTM User,Shipper	2	S	S		S			
Tyco Water	STTM User								

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

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

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

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

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

Trading Participant	Participant type	No. of supply offers / withdrawal bid points	Offers		Bids		
			MAP	SEAGAS	MAP	SEAGAS	ADL - NET
AGL South Australia Pty Limited	STTM User,Shipper	1	S				
AGL Wholesale Gas (SA) Pty Ltd	Shipper	2	S	S			
Adelaide Brighton Cement Ltd	STTM User,Shipper	1	NS				
Lumo Energy (SA) Pty Ltd	STTM User						
Lumo Energy Australia Pty Ltd	Shipper						
OneSteel Manufacturing Pty Ltd	Shipper						
Origin Energy Retail Ltd	STTM User,Shipper	2	S	S			
Pelican Point Power Limited	Shipper						
Simply Energy	STTM User,Shipper	2	NS	S	S		
TRUenergy Pty Ltd	STTM User,Shipper	2	S	S			

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

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

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

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

Ex ante and Ex post Market Prices

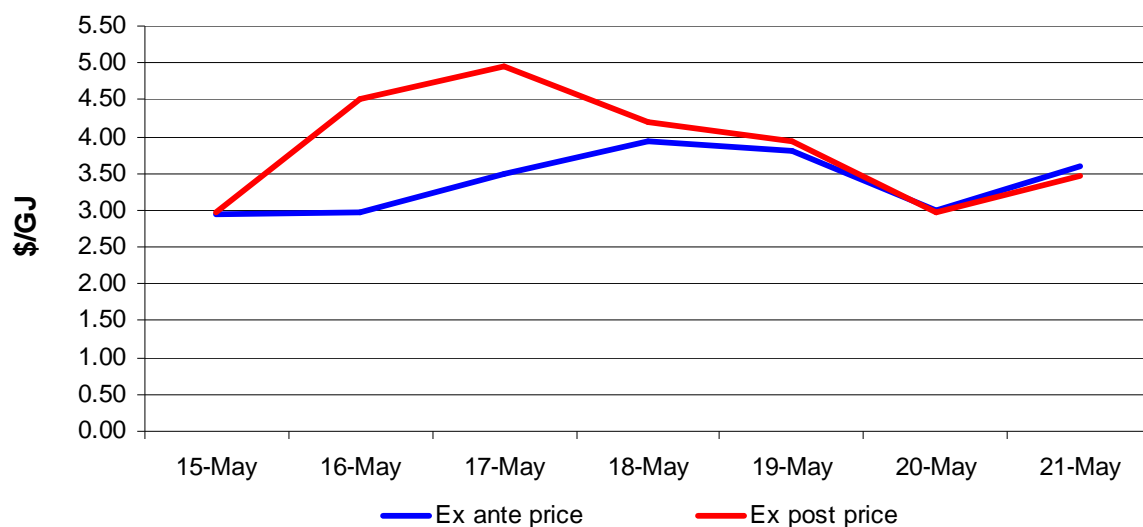
Figures S3 and S4 show ex ante and ex post prices at the Sydney and Adelaide Hubs. Differences between the ex ante and ex post price may arise where there are significant differences between price taker bids (demand forecasts) for the hub and actual demand in the hub. When this occurs, this leads to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

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

	15 May – 21 May	8 May – 14 May	2010-11 Financial YTD*
Ex ante price	3.39	3.44	2.74
Ex post price	3.86	3.70	5.51

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

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

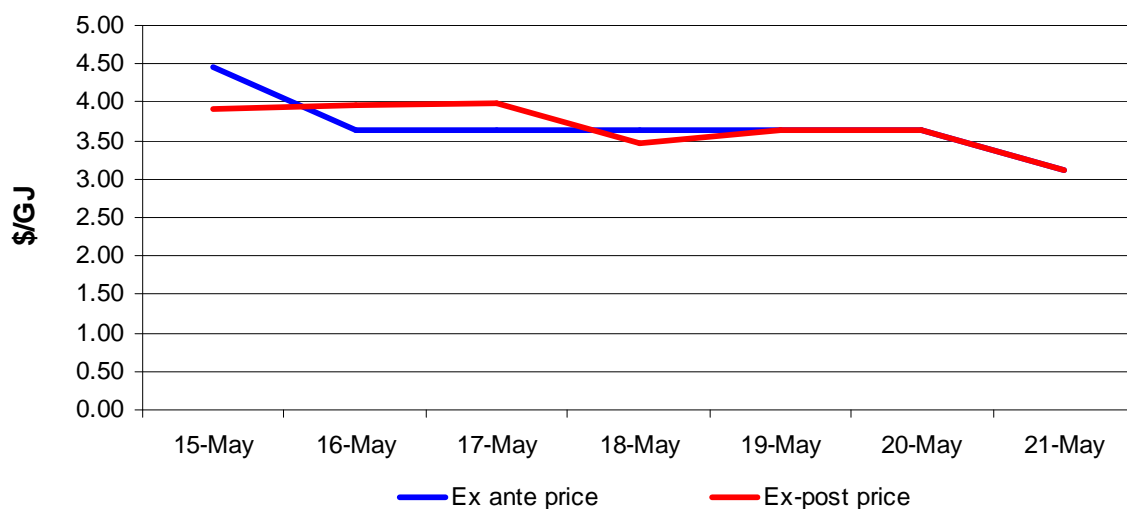


Source: <http://www.aemo.com.au> INT 651, 657

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

	15 May – 21 May	8 May – 14 May	2010-11 Financial YTD*
Ex ante price	3.68	3.57	3.06
Ex post price	3.67	4.07	3.20

* 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.

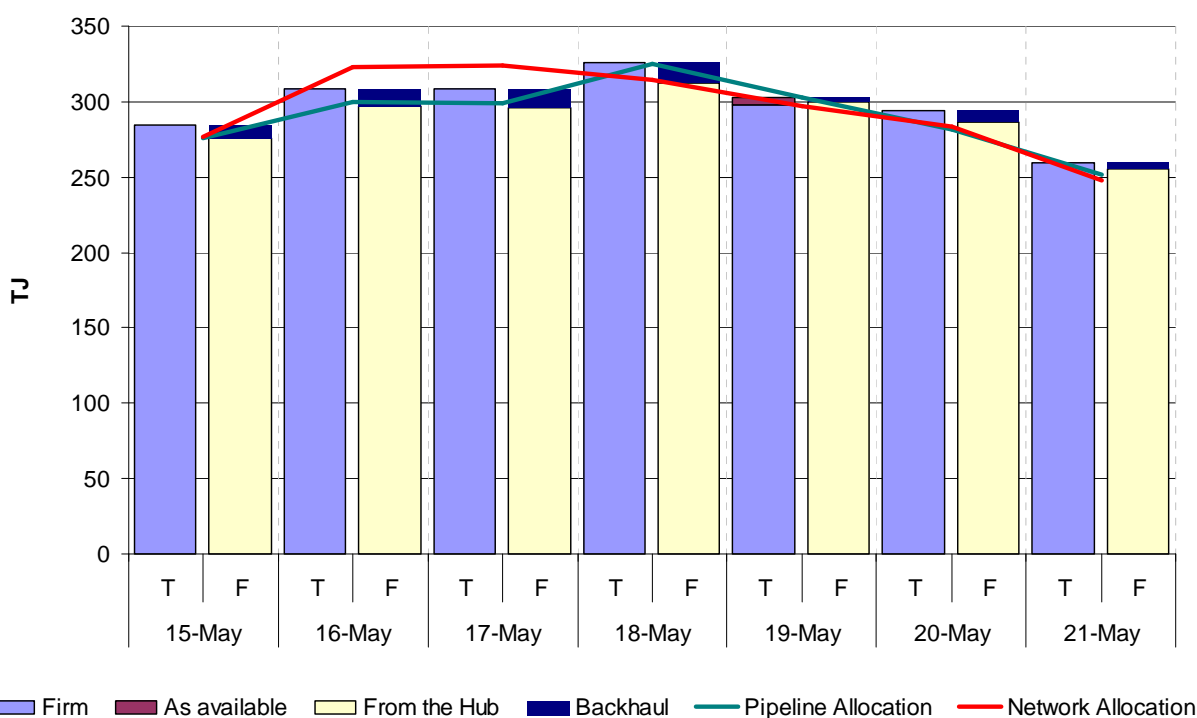
Gas can also be scheduled from the STTM hubs. This happens when Shippers “backhaul” gas from the hub or Users bid to take gas from the hub (including price taker bids).

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.

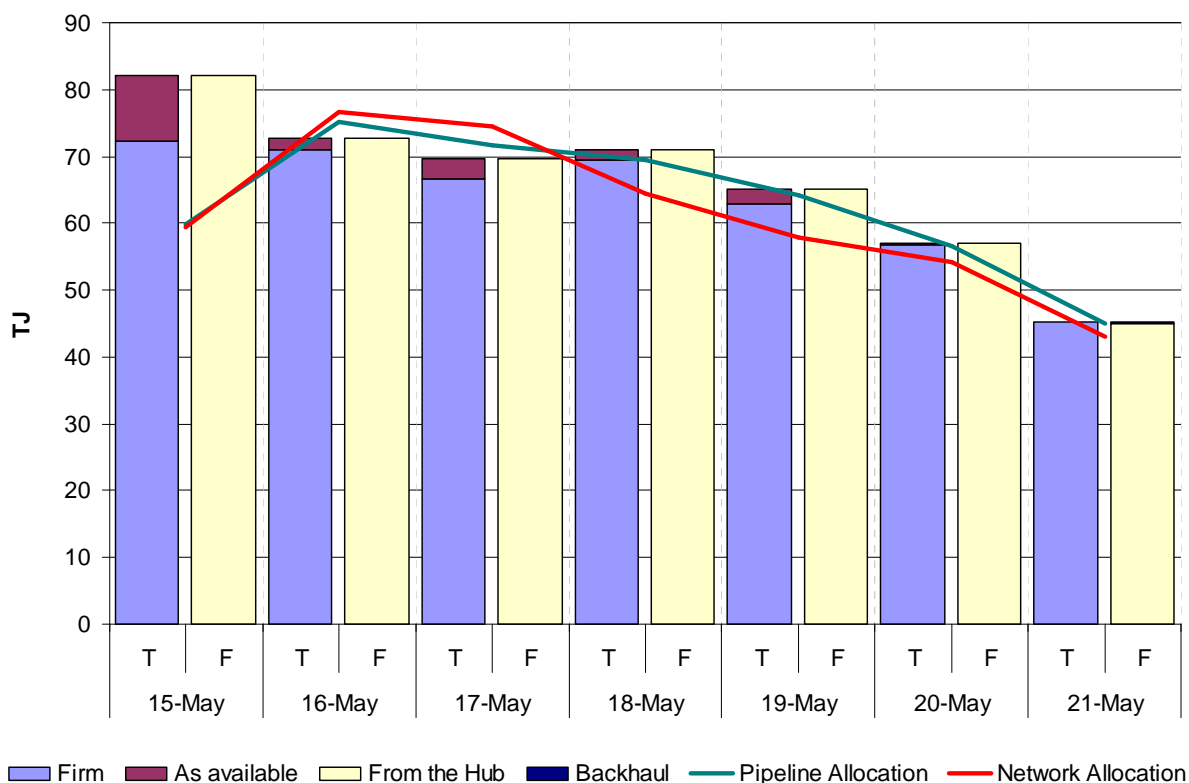
By comparing the level of the red line to the columns marked “F”, it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked “T” shows how the actual flow of gas (allocation) compared to what was scheduled.

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)

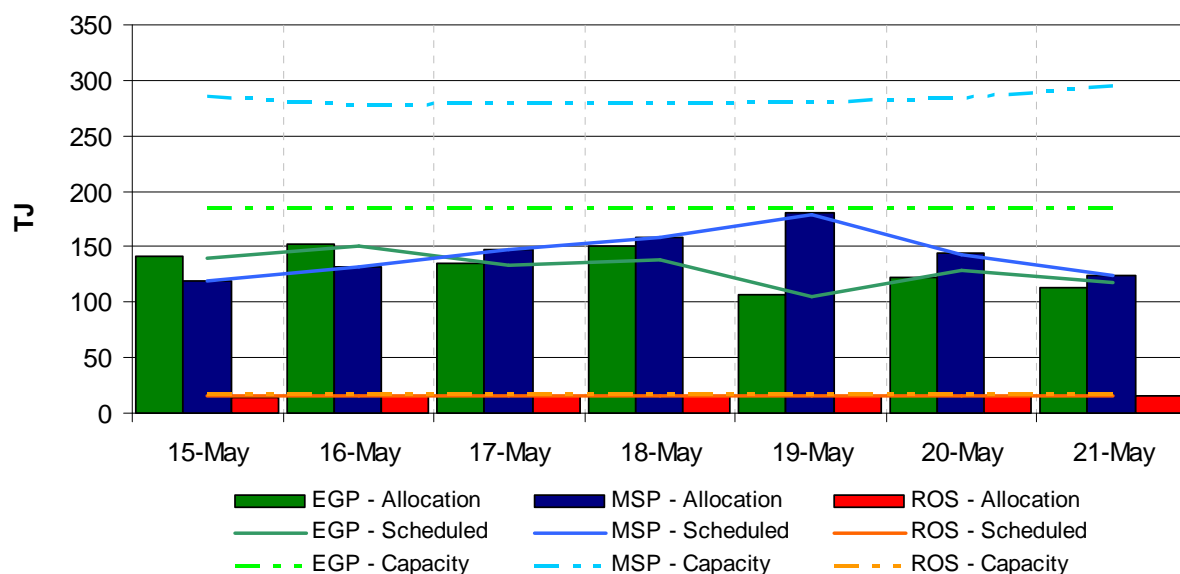
Pipeline Facility Allocations

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.

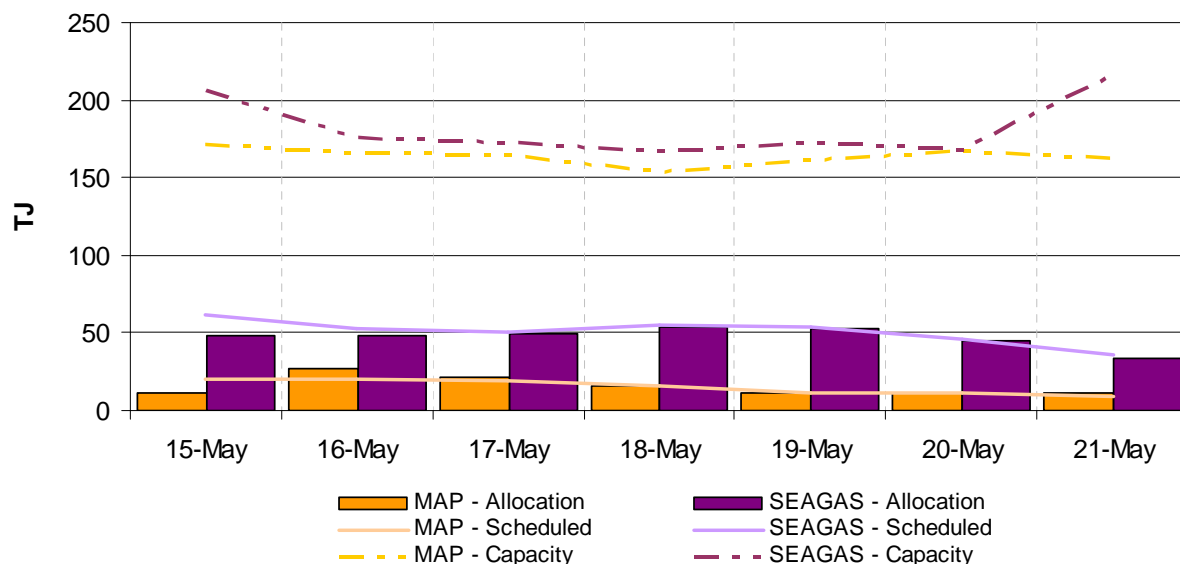
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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

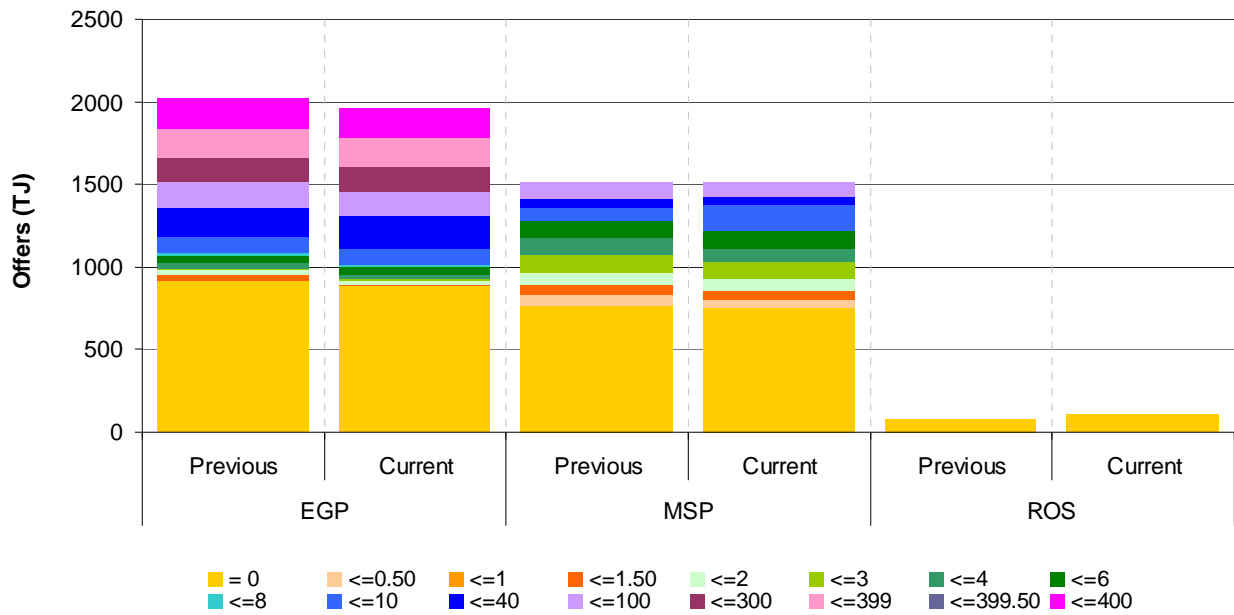
Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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

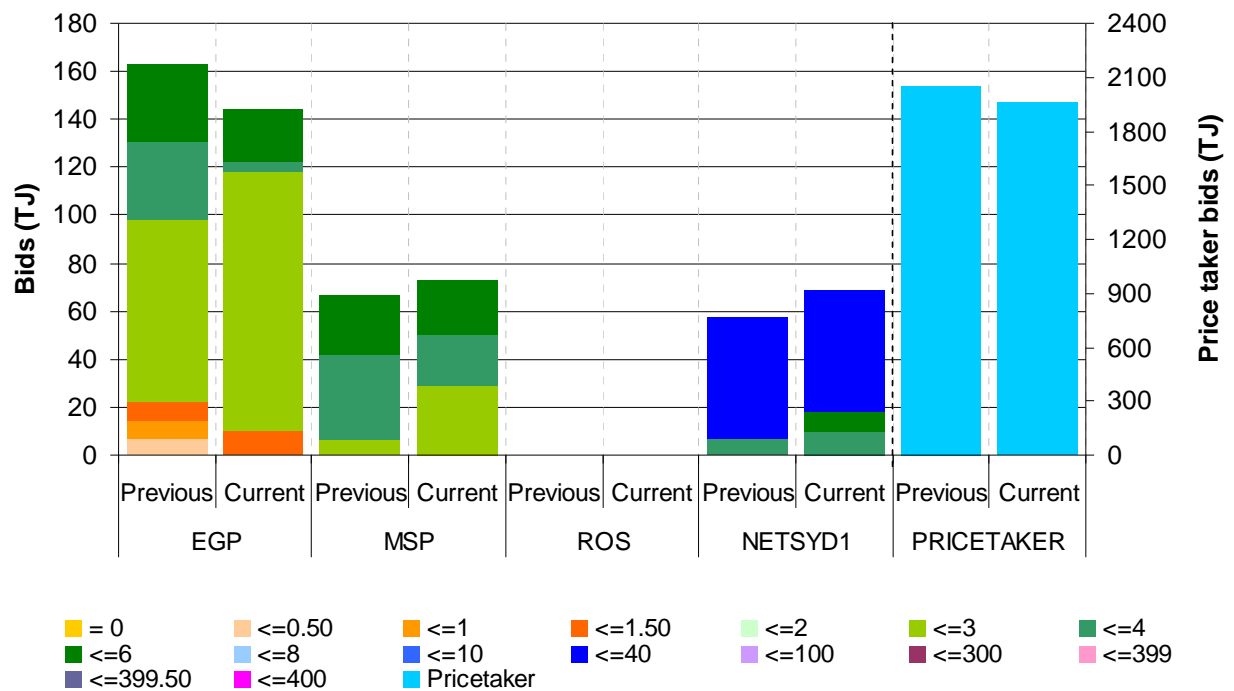
offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

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)

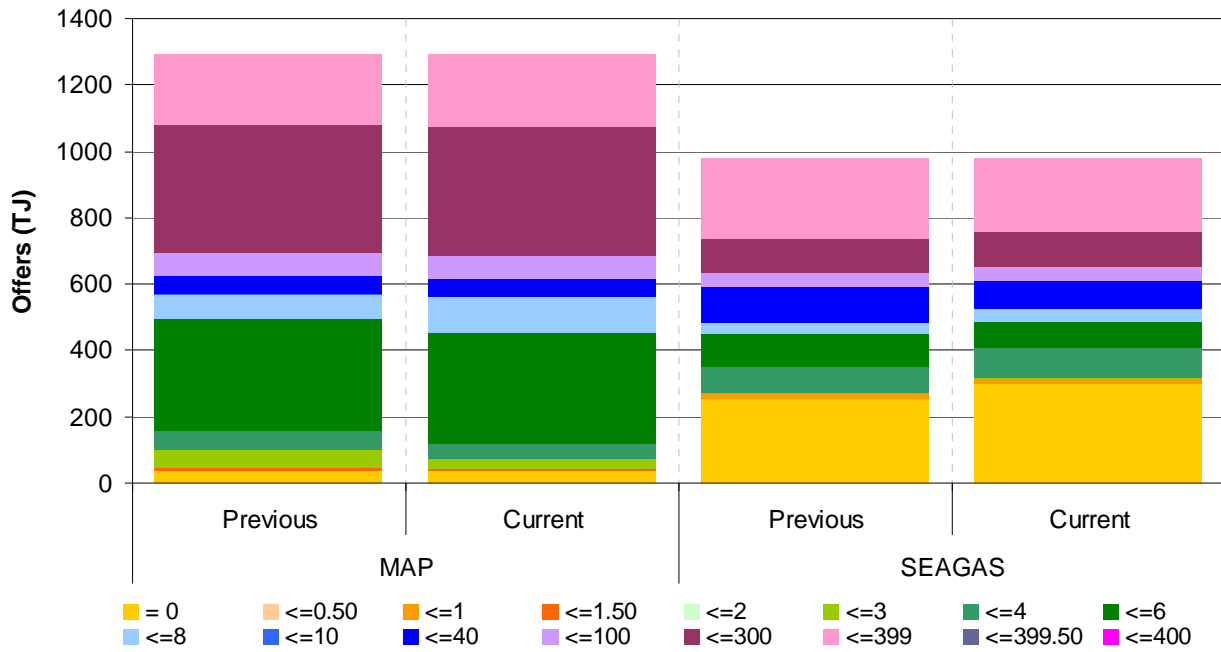
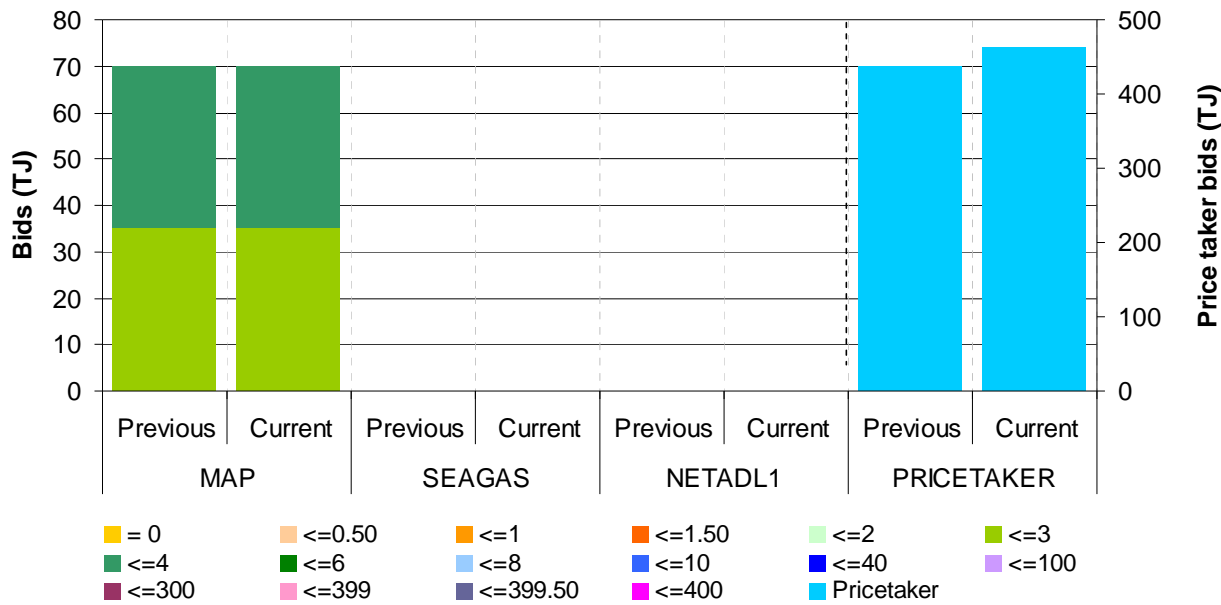


Figure S12: Total weekly Adelaide hub bids (TJ) within price bands (\$/GJ)



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 TRU	EA TRU	EA TRU	EA TRU	AGL(ESM) EA SANTOS TRU	EA TRU	AGL(ESM) EA Lumo Energy Australia Pty Ltd OneStl(NSW) TRU
	D-2 to D-1	EA SANTOS	EA SANTOS	BluSc EA SANTOS	BluSc EA OneStl(NSW) SANTOS	AGL(WG) BluSc Delta EA Lumo Energy Australia Pty Ltd SANTOS TRU	AGL(ESM) EA BluSc Lumo Energy Australia Pty Ltd OneStl(NSW) SANTOS TRU	BluSc EA SANTOS TRU
MSP	D-3 to D-2	AGL(ESM) 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) EA Origin TRU	AGL(ESM) EA Origin TRU	AGL(ESM) AGL(WG) 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)	AGL(ESM)	
	D-2 to D-1	AGL(ESM)			AGL(ESM)			AGL(ESM)

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

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

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

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

APG= Australian Power & Gas Pty Ltd |

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

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

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

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

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

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

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

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

Figure S16: Inter-day resubmission of bids at Adelaide Hub

Pipeline	Schedule	Sun	Mon	Tue	Wed	Thu	Fri	Sat
MAP	D-3 to D-2				Simply			Simply
	D-2 to D-1			Simply			Simply	
NETADL1	D-3 to D-2							
	D-2 to D-1							
SEA-GAS	D-3 to D-2							
	D-2 to D-1							

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

Simply= Simply Energy

Market Operator Service

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

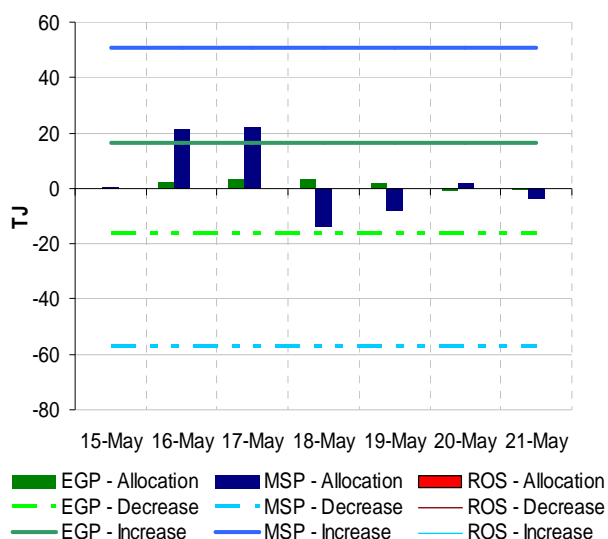
MOS offers are made by participants who have contracts with pipeline facilities to “park” gas (on the pipeline) or “loan” gas (from the pipeline). Based on these contracts, two types of MOS are offered: increase offers to increase flows on a pipeline to a hub; and decrease offers to decrease flows on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

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

Figure S17a and S18a show quantities of MOS allocated on a daily basis compared to total MOS increase and decrease offers (from potential providers) on each pipeline at each hub. MOS allocations are shown by the columns in these figures; whereas total MOS increase and decrease

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

Figure S17a: Sydney MOS allocations



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

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

Figure S17b: Sydney MOS payments/charges

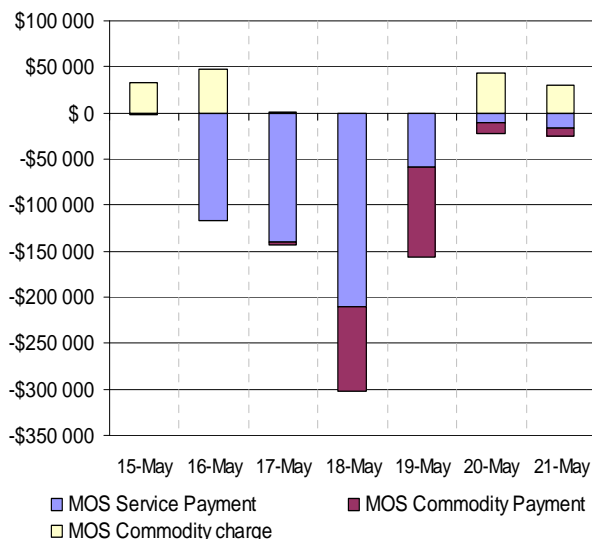
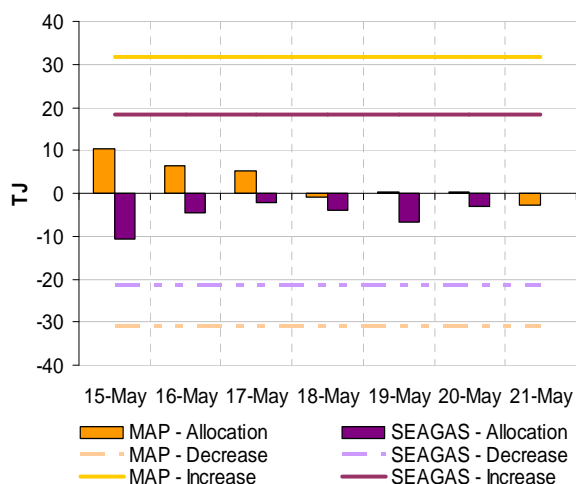


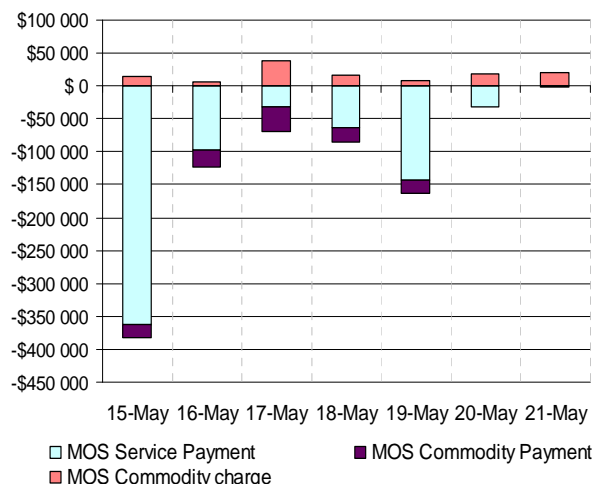
Figure S18a: Adelaide MOS allocations



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

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

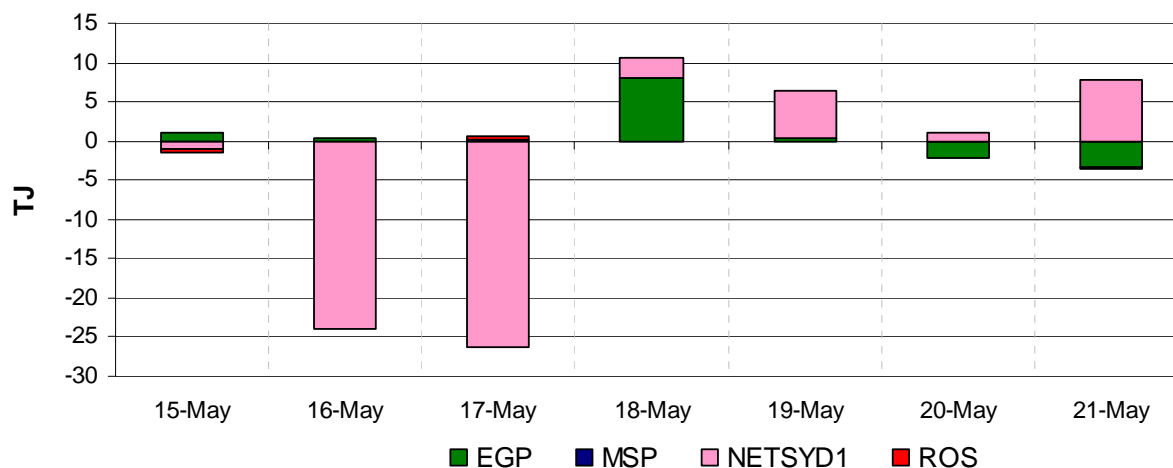
Figure S18b: Adelaide MOS payments/charges



Deviations

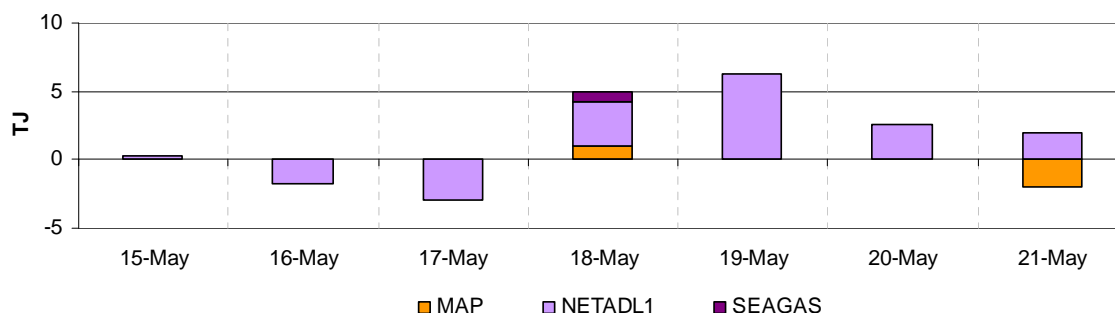
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

Figure S19: Net Deviations – Sydney Hub



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

Figure S20: Net Deviations – Adelaide Hub



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

Market Schedule Variations

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

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

Figure S21: Average Daily Market Variations - Sydney Hub

	15 May – 21 May	8 May – 14 May	2010-11 Financial YTD*
Quantity (TJ)	3.03	7.74	4.10
Charges (\$)	15.34	170.57	607.72

* 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

	15 May – 21 May	8 May – 14 May	2010-11 Financial YTD*
Quantity (TJ)	4.61	1.50	0.91
Charges (\$)	382.33	40.19	36.75

* 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	96	95	94	89	91	97	102	119	79	95	94	86
QLD Gas Pipeline	77	77	60	67	69	74	75	142	76	71	108	71
Roma to Brisbane Pipeline	157	170	169	171	176	167	150	219	76	166	165	168
South West QLD Pipeline	201	189	190	200	188	179	184	181	81	190	147	137
NSW/ACT												
Eastern Gas Pipeline	228	257	242	238	164	177	195	268	79	214	212	201
Moomba to Sydney Pipeline	203	271	267	243	266	249	187	439	42	241	184	183
NSW-VIC Interconnect	24	21	35	29	30	-3	25	90	18	23	16	-6
VIC												
Longford to Melbourne	579	607	619	694	621	576	435	1030	47	590	487	412
South West Pipeline^	234	207	175	250	144	176	118	353	28	186	99	121
SA												
Moomba to Adelaide Pipeline	108	129	127	103	113	112	101	253	50	113	127	130
SEA Gas Pipeline	165	217	195	180	176	173	96	314	50	172	156	152
TAS												
Tasmanian Gas Pipeline	39	28	24	34	26	27	29	129	35	30	45	38

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

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

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

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

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

Production zone and production / storage facility	Sun	Mon	Tue	Wed	Thu	Fri	Sat	MDQ (TJ)	YTD average capacity usage* (%)	Current week average daily flows	Current YTD average daily flows*	Previous YTD average daily flows**
Roma (QLD)												
Berwyndale South	88	90	89	89	89	89	89	140	67	89	94	92
Fairview	89	78	104	99	103	116	116	130	88	101	114	112
Kenya Gas Plant	52	52	51	52	53	53	53	160	33	52	53	56
Kincora	7	9	3	15	7	15	15	25	26	10	7	2
Kogan North	8	8	8	8	8	8	8	12	78	8	9	9
Peat	8	6	8	8	9	9	6	15	61	8	9	9
Rolleston	10	10	10	10	10	9	9	30	34	10	10	11
Scotia	29	29	29	29	29	29	26	29	93	29	27	23
Spring Gully	46	44	45	45	47	44	47	69	70	45	48	43
Strathblane	46	44	45	45	47	44	47	69	70	45	48	43
Talooka	28	27	27	27	28	27	28	42	69	27	29	26
Yellowbank	10	10	9	9	9	10	10	30	39	10	12	12
Talinga	81	94	94	95	95	95	84	108	61	91	66	13
Moomba (SA/QLD)												
Moomba Gas Plant	237	291	292	290	281	260	216	430	60	267	256	263
Ballera	0	0	0	0	0	0	0	150	8	0	11	12
Eastern (VIC)												
Orbost Gas Plant	83	84	83	83	83	80	83	100	34	83	34	19
Lang Lang Gas Plant	55	32	0	0	9	51	51	70	68	28	48	32
Longford Gas Plant	730	740	716	995	712	683	554	1145	59	733	674	608
LNG Storage Dandenong	0	0	0	0	0	0	0	158	0	0	0	0
Otway Basin (VIC)												
Minerva Gas Plant	71	71	71	60	65	71	43	73	85	64	62	70
Otway Gas Plant	186	190	187	192	184	190	144	205	58	182	119	124
Iona Underground Gas Storage	191	171	133	178	63	79	72	440	19	126	85	84

*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)
15 May – 21 May	Average min.	12.6	9.4	-3.9	10.1	11.2	9.9
	Average max.	23.6	20.7	15.6	17.3	21.1	17.2
8 May – 14 May	Average min.	11.4	9.6	-1.4	7.1	10.0	5.1
	Average max.	22.1	18.5	14.2	14.6	17.3	12.5

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

15 May – 21 May	Scheduling Interval					Daily Imbalance Weighted Average Price
	6am	10am	2pm	6pm	10pm	
Sun	3.31	3.16	3.49	3.94	4.08	3.33
Mon	3.16	3.16	3.50	3.72	4.24	3.19
Tue	3.74	3.48	3.50	3.29	3.29	3.72
Wed	3.99	4.13	3.94	3.94	3.98	3.99
Thu	3.00	3.64	3.64	3.17	3.93	3.05
Fri	3.63	3.64	3.71	3.72	3.94	3.63
Sat	3.48	3.48	3.59	3.48	3.89	3.48

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	
15-May	MP:	762	762	762	768	768	0
	AEMO:	804	799	803	815	803	
	MP as % of AEMO	95	95	95	94	96	
16-May	MP:	778	777	778	784	783	1
	AEMO:	826	844	825	834	827	
	MP as % of AEMO	94	92	94	94	95	
17-May	MP:	799	784	790	791	791	0
	AEMO:	821	812	820	795	785	
	MP as % of AEMO	97	97	96	100	101	
18-May	MP:	851	857	858	871	871	0
	AEMO:	874	866	871	879	883	
	MP as % of AEMO	97	99	98	99	99	
19-May	MP:	733	729	722	722	722	0
	AEMO:	780	768	776	761	760	
	MP as % of AEMO	94	95	93	95	95	
20-May	MP:	713	717	719	718	718	0
	AEMO:	733	766	771	718	725	
	MP as % of AEMO	97	94	93	100	99	
21-May	MP:	511	523	523	507	507	0
	AEMO:	527	533	525	522	509	
	MP as % of AEMO	97	98	100	97	100	

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