# WEEKLY GAS MARKET ANALYSIS

AUSTRALIAN ENERGY REGULATOR

**21 November – 27 November 2010**

## Preface

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

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

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

This report will evolve over time and the nature of information presented may change. The AER welcomes feedback on the report from interested parties. Feedback can be sent to aerinquiry@aer.gov.au, with the subject title 'Comments on weekly gas report'.

## Summary

Average daily prices in the Victoria market, Sydney and Adelaide hubs are shown in figure 1. For the fifth week since the commencement of the STTM, average daily prices were lower at the Sydney hub of the STTM than in the Victorian market

**Figure 1: Average daily price ($/GJ) – All gas markets**

| 21 Nov – 27 Nov | Victorian market* | STTM Sydney hub** | STTM Adelaide hub** |
|---|---|---|---|
| **Average Price** | 1.06 | 0.62 | 2.47 |

* weighted average daily imbalance price
** ex ante market price

## STTM Gas Markets (Adelaide and Sydney)

Figure S3 and S4 shows that average ex ante prices increased in both Sydney and Adelaide this week, while ex post prices increased in Adelaide but fell in Sydney.

*Adelaide Hub - late data*

There were several instances of pipeline allocation and capacity data not being submitted in accordance with market cut-off times in the Adelaide STTM hub this week.

Epic Energy (Epic) failed to submit pipeline allocation data for the Moomba to Adelaide Pipeline (MAP) (the actual gas flow for the 22 November gas day) prior to the 11 am cut-off time on 23 November[1]. The AER understands this was due to a missed password update. As a consequence, AEMO was required to use default allocations.[2] These default allocations assume that the amount of gas supplied on the pipeline is equal to the amount of gas scheduled.

Default allocations may cause a different ex post price compared to the price if actual allocation data had been submitted on time and used. On this occasion actual allocations were 8 TJ higher than scheduled (default allocations), however there was minimal price impact. Nevertheless, the AER is concerned with the potential for inefficient price outcomes caused by late submission of data and is seeking further information from Epic.

SEAGas (because of the power supply issues reported on last week) and Epic (because of this password issue) also failed to submit D-1 pipeline capacity data by the 11 am cut-off time for the 22 November and 24 November gas days respectively[3]. The AER understands that on these days AEMO used the capacity value submitted for D-2 in substitution for the missing data.[4] There was no impact on ex ante pricing because the SEAGas and MAP pipelines were unconstrained (See Figure S8). Nevertheless, the AER is concerned with the potential for inefficient price outcomes caused by the failure to submit pipeline data and is seeking further information from SEAGas and Epic.

**Victorian Gas Market**

A 73 TJ decrease in demand for gas in Victoria (see Figure N4) was consistent with the warmer weather this week (see Figure A3). Average injections fell by 74 TJ (16 per cent) compared to the previous week (see Figure V3). This caused the average imbalance price to fall from $1.31/GJ in the previous week to $1.06/GJ (see Figure V2).

AEMO did not issue any demand overrides during the week. However, AEMO did issue Supply Demand Point Constraints (SDPCs) for withdrawals at SEAGas for every day apart from 21 and 25 November.

**National Gas Market Bulletin Board**

The Minerva gas plant failed to provide daily production data for the Friday 26 November gas day. Lang Lang gas plant in Victoria provided its daily production data in gigajoules (GJ) rather than terajoules (TJ) for the three gas days from 23 November to 25 November.

Figure N4 shows changes in gas demand and production and pipeline flows compared to the previous week. Total average daily demand (1326 TJ) fell by 98 TJ (or 7 per cent) from the previous week, which was largely influenced by the lower demand in Victoria and also in NSW (where demand fell by 55 TJ). Total average daily gas powered generation (GPG) gas usage increased by 42 TJ which was largely driven by the increased GPG in South Australia (+38 TJ) and Victoria (+50 TJ), but offset by decreased GPG in NSW (-49 TJ).

[1] In accordance with section 419(1) of the Gas Rules
[2] In accordance with section 419(6) of the Gas Rules
[3] In accordance with section 414(1) of the Gas Rules
[4] In accordance with section 414(2) of the Gas Rules

Overall average daily production was also relatively stable compared to the previous week, with the exception of the Eastern Victoria facilities with decreased production of 110 TJ. Pipeline flows in each region were also relatively stable compared with the previous week, with the most significant decreases coming out of Victoria on the Longford to Melbourne pipeline (-54 TJ) and Eastern Gas Pipeline (-48 TJ).

# 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**

| | | | | | | QLD | | |
|---|---|---|---|---|---|---|---|---|
| **Average daily flows** | **NSW** | **ACT** | **VIC** | **SA** | **TAS** | Brisbane | Mt Isa | Gladstone |
| 21 Nov – 27 Nov | 279 | 7 | 374 | 264 | 41 | 157 | 95 | 110 |
| Financial Year-to-date 2010-11* | 409 | 31 | 729 | 295 | 46 | 178 | 93 | 108 |
| Financial Year-to-date 2009-10** | 401 | 29 | 703 | 294 | 36 | 164 | 85 | 69 |

*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 |
|---|---|---|---|---|---|
| 21 Nov – 27 Nov | 27 | 51 | 153 | 28 | 174 |
| Financial Year-to-date 2010-11* | 83 | 17 | 168 | 31 | 157 |
| Financial Year-to-date 2009-10** | 86 | 45 | 167 | 20 | 148 |

^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.

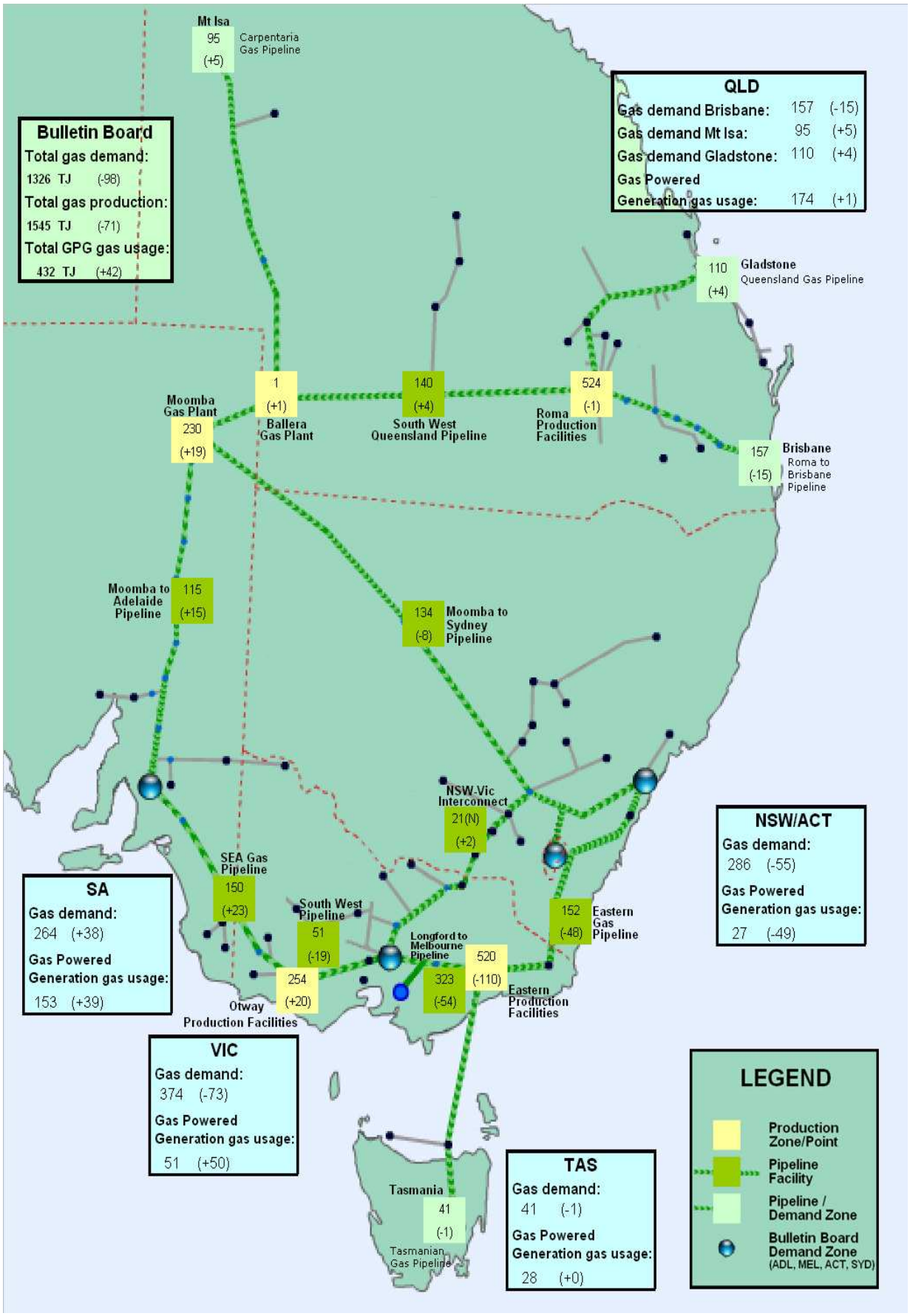
**Figure N3: Daily average production flows (TJ) for each production zone**

| Average daily flows | Roma (QLD) | Eastern Victoria | Otway Basin (VIC) | Moomba (SA/QLD) |
|---|---|---|---|---|
| 21 Nov – 27 Nov | 524 | 520 | 254 | 231 |
| Financial Year-to-date 2010-11* | 546 | 873 | 305 | 319 |
| Financial Year-to-date 2009-10** | 440 | 777 | 310 | 312 |

*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: National Gas Market Bulletin Board http://www.gasbb.com.au

Figure N4 shows the changes in average daily pipeline and production flows compared to the previous week, as well as the gas demand and GPG usage of gas in each region.

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

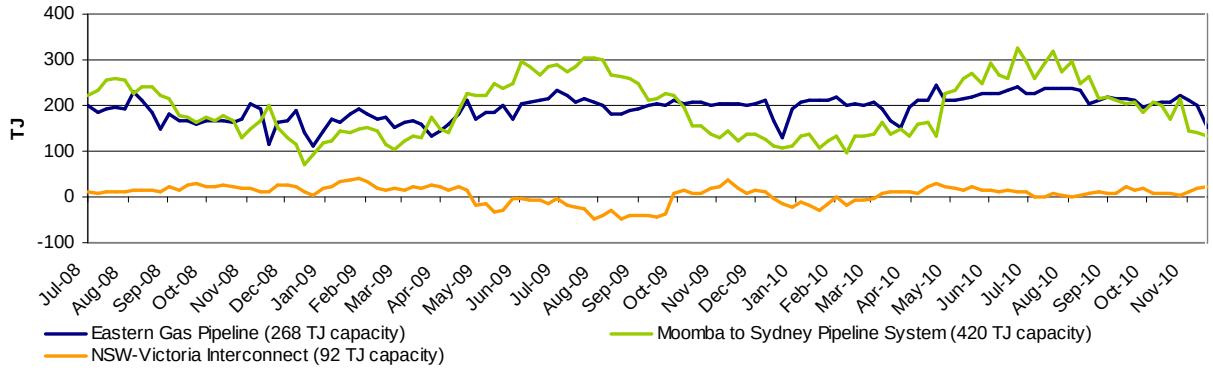



Source: Natural Gas Market Bulletin Board http://www.gasbb.com.au
Notes: Direction of aggregate daily flows along the NSW-Vic Interconnect indicated on map by S (South) or N (North).
Numbers in brackets indicate a change in average daily flow from the previous week.

## Gas flows into demand regions

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

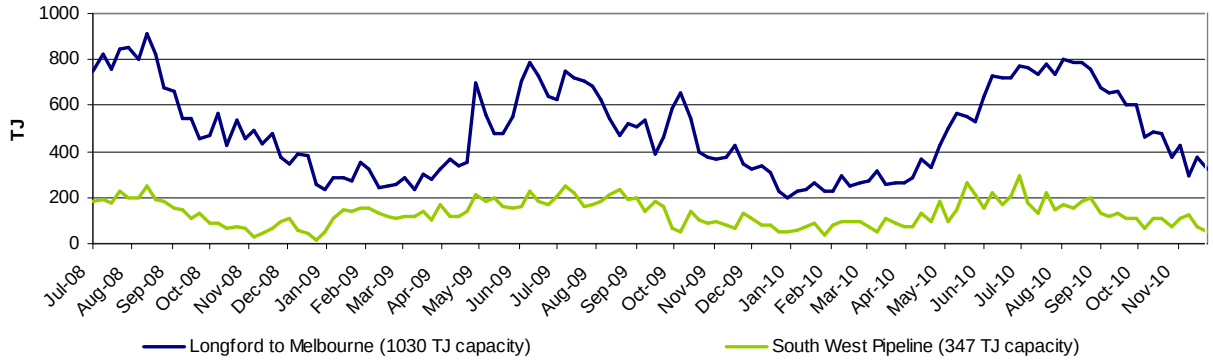
**Figure N5: Average daily flows (TJ) into NSW/ACT demand region**




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

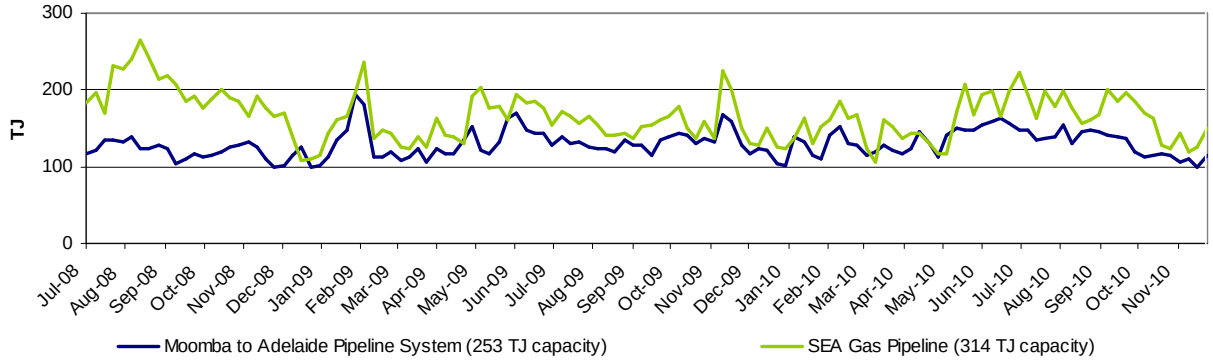
Notes: Negative flows on the NSW-Victoria Interconnect represent flows out of NSW into VIC.

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




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

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




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

# Part B: Victorian Gas Market

## Participation in the market

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

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

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

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

| | 21 Nov – 27 Nov | 14 Nov – 20 Nov | 2010-11 Financial YTD* | 2009-10 Financial YTD** |
|---|---|---|---|---|
| **Average daily price** | 1.06 | 1.31 | 1.91 | *1.59* |

| 21 Nov – 27 Nov | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|---|
| **Daily price** | 0.57 | 0.70 | 0.71 | 0.72 | 1.68 | 1.69 | 1.36 |

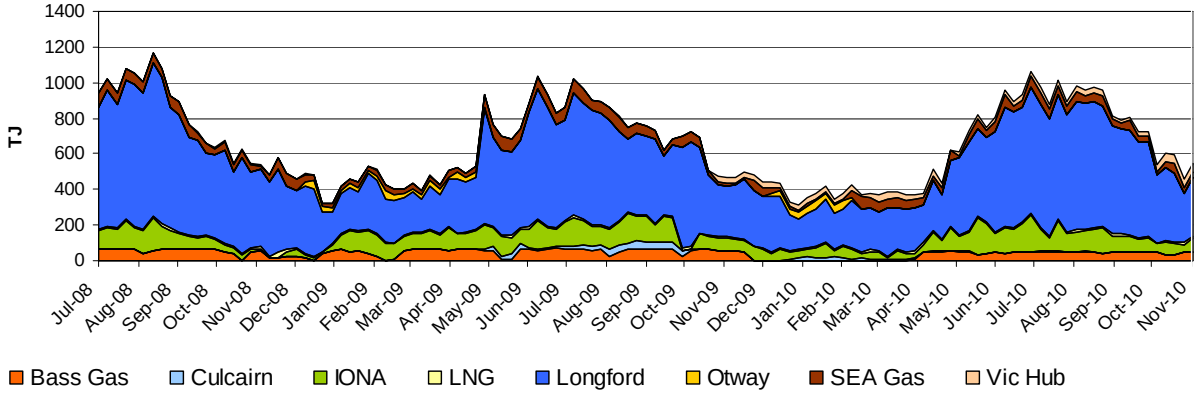
*Average daily imbalance weighted average price from 1 July 2010 to the current week (inclusive)
**Average daily imbalance weighted average price from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: http://www.aemo.com.au (INT 041)

## 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: | 21 Nov – 27 Nov | 14 Nov – 20 Nov | 2010-11 Financial YTD* | 2009-10 Financial YTD** |
|---|---|---|---|---|
| **Culcairn** | 0 | 0 | 1 | 22 |
| **Longford** | 238 | 290 | 522 | 469 |
| **LNG** | 7 | 8 | 8 | 9 |
| **IONA** | 51 | 57 | 91 | 101 |
| **VicHub** | 36 | 41 | 33 | 8 |
| **SEAGas** | 0 | 13 | 39 | 49 |
| **Bass Gas** | 50 | 48 | 48 | 54 |
| **Otway** | 0 | 0 | 0 | 0 |
| **TOTAL** | **383** | **457** | **743** | **713** |

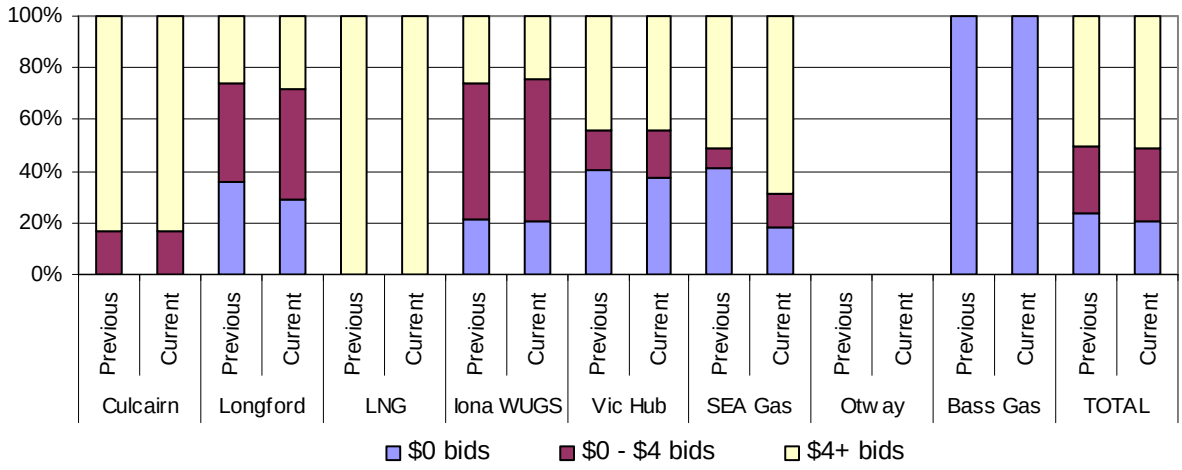



*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
Source: http://www.aemo.com.au (INT 150)

## Bidding Activity

Figure V4 compares the price structure of gas bid at each of the injection points on the VPTS, 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** | | | | | | Origin | |
| **Longford** | Origin<br>TRU | Origin<br>TRU | Origin<br>TRU | Origin<br>TRU | TRU | AGL<br>Origin<br>TRU | AGL<br>Origin<br>TRU |
| **LNG** | | | | | | Origin<br>TRU | |
| **Iona** | Origin<br>TRU | Origin<br>TRU | TRU | Origin<br>TRU | Origin<br>TRU | Origin<br>TRU | Origin |
| **VicHub** | AETV<br>TRU<br>Lumo | AETV<br>Lumo | AETV<br>Lumo | AETV<br>Lumo | AETV<br>Lumo | AETV<br>Lumo | AETV<br>Lumo |
| **SEAGas** | Simply | Simply | Simply | Simply | | | |
| **Bass Gas** | | | | | | | |

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

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

### System withdrawals

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

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

| System withdrawal zone: | 21 Nov – 27 Nov | 14 Nov – 20 Nov | 2010-11 Financial YTD* | 2009-10 Financial YTD** |
|---|---|---|---|---|
| **Ballarat** | 11 | 18 | 33 | 30 |
| **Geelong^** | 81 | 72 | 95 | 87 |
| **Gippsland** | 35 | 38 | 50 | 52 |
| **Melbourne** | 262 | 306 | 503 | 479 |
| **Northern** | 52 | 55 | 71 | 64 |
| **TOTAL** | **441** | **489** | **752** | **713** |

^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 | • Wholesale market operator,<br>• Retail market operator,<br>• Transmission pipeline system operator | • Wholesale market operator,<br>• Retail market operator |
| Scheduling | • On the day scheduling comprising five pricing and operating schedules at set times. Ad hoc schedules if required.<br>• Day ahead and 2-Day ahead schedules (forecast data only). | • Day ahead market schedules<br>• Shippers may vary from their market schedules when they nominate to pipeline operators<br>• 2-Day ahead and 3-Day ahead schedules (forecast data only). |
| Market Price | • Five ex ante prices for imbalances set on the day<br>• Ex ante prices in subsequent schedules after the 6am schedule apply to deviations<br>• Market price is for commodity only. Transportation is charged separately by pipeline owner | • One ex ante market price set the day before the gas day<br>• One ex post imbalance price set the day after the gas day<br>• Price includes both commodity and delivery to the hub and represents purchase of gas at the hub |
| Linepack management (pipeline balancing mechanism) | • AEMO defines linepack target depending on operational conditions and is generally set seasonally not daily.<br>• Linepack account covers costs that includes costs of day to day linepack variations | • On the day pipeline balancing through Market Operator Service (MOS), provided by MOS offers from shippers |
| Transmission pipeline constraint management | • Ancillary payments for higher priced gas scheduled that relieves constraints<br>• Uplift payments to fund ancillary payments | • 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 offer / withdrawal bid points | Offers | | | Bids | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | EGP | MSP | ROS | EGP | MSP | ROS | SYD - NET |
| AETV Power | Shipper | 1 | NS | | | S | | | |
| AGL Energy Sales & Marketing Limited | STTM User,Shipper | 4 | S | S | S | | | | S |
| AGL Wholesale Gas Limited | Shipper | 2 | S | NS | | | | | |
| BHP Billiton Petroleum (Bass Strait) PL | Shipper | | | | | | | | |
| BlueScope Steel | STTM User,Shipper | 1 | S | | | | | | |
| Country Energy | STTM User,Shipper | 2 | S | | | | S | | |
| Delta Electricity | STTM User,Shipper | | | | | | | | |
| EnergyAustralia | STTM User,Shipper | 2 | S | S | | | | | |
| Esso Australia Resources Pty Ltd | Shipper | | | | | | | | |
| Lumo Energy Australia Pty Ltd | Shipper | | | | | | | | |
| OneSteel Manufacturing Pty Ltd | STTM User,Shipper | 1 | S | | | | | | |
| OneSteel NSW Pty Ltd | STTM User,Shipper | 1 | S | | | | | | |
| Origin Energy LPG Limited | STTM User,Shipper | | | | | | | | |
| Origin Energy Retail Ltd | STTM User,Shipper | 2 | S | 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 bids | 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 | 2 | S | S | | | |
| 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 | 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

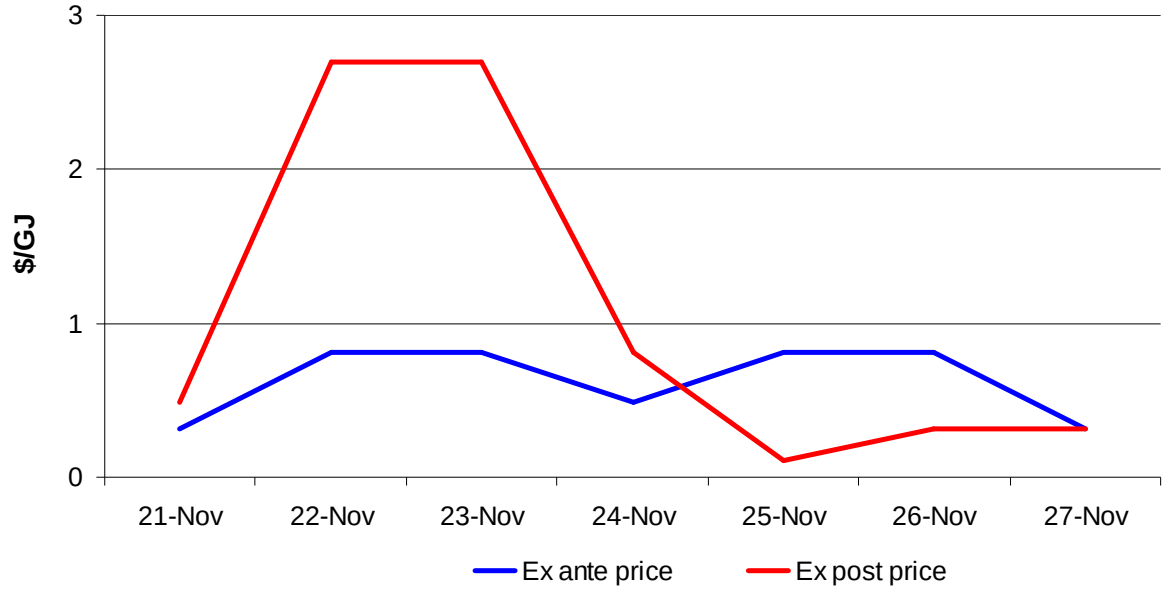
## Ex ante and Ex post Market Prices

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)^**

| | 21 Nov – 27 Nov | 14 Nov – 20 Nov | 2010-11 Financial YTD* |
|---|---|---|---|
| Ex ante price | 0.62 | 0.43 | 3.45 |
| Ex post price | 1.06 | 1.19 | 11.32 |

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

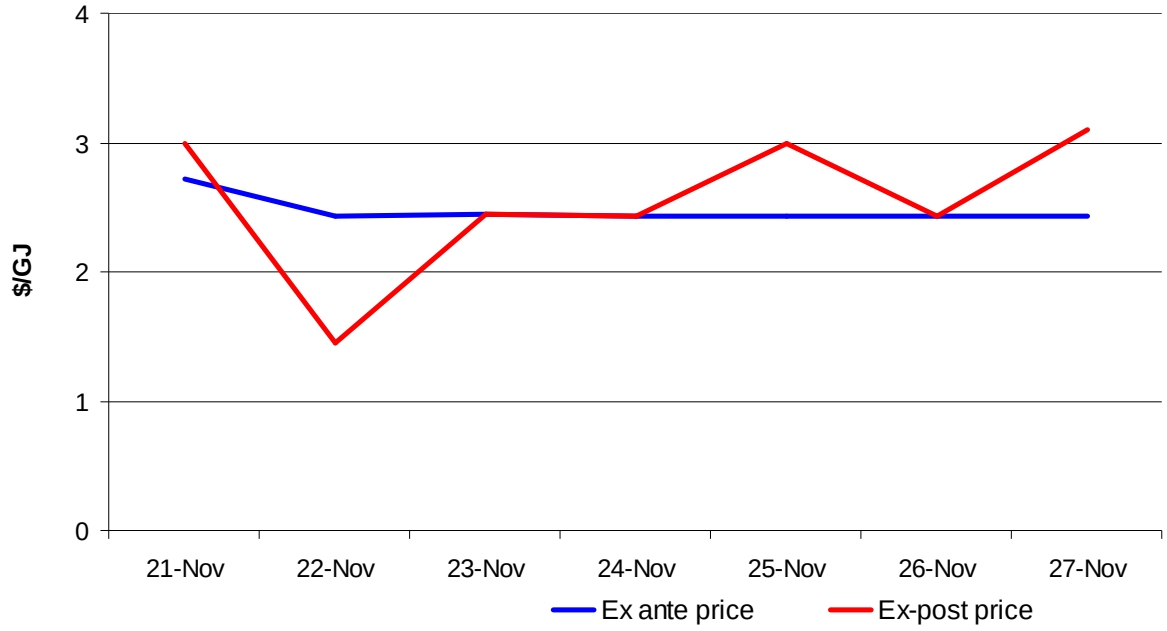



Source: http://www.aemo.com.au INT 651, 657

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

| | 21 Nov – 27 Nov | 14 Nov – 20 Nov | 2010-11 Financial YTD* |
|---|---|---|---|
| Ex ante price | 2.47 | 2.01 | 2.83 |
| Ex post price | 2.55 | 2.44 | 2.91 |

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




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

## Scheduled gas

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

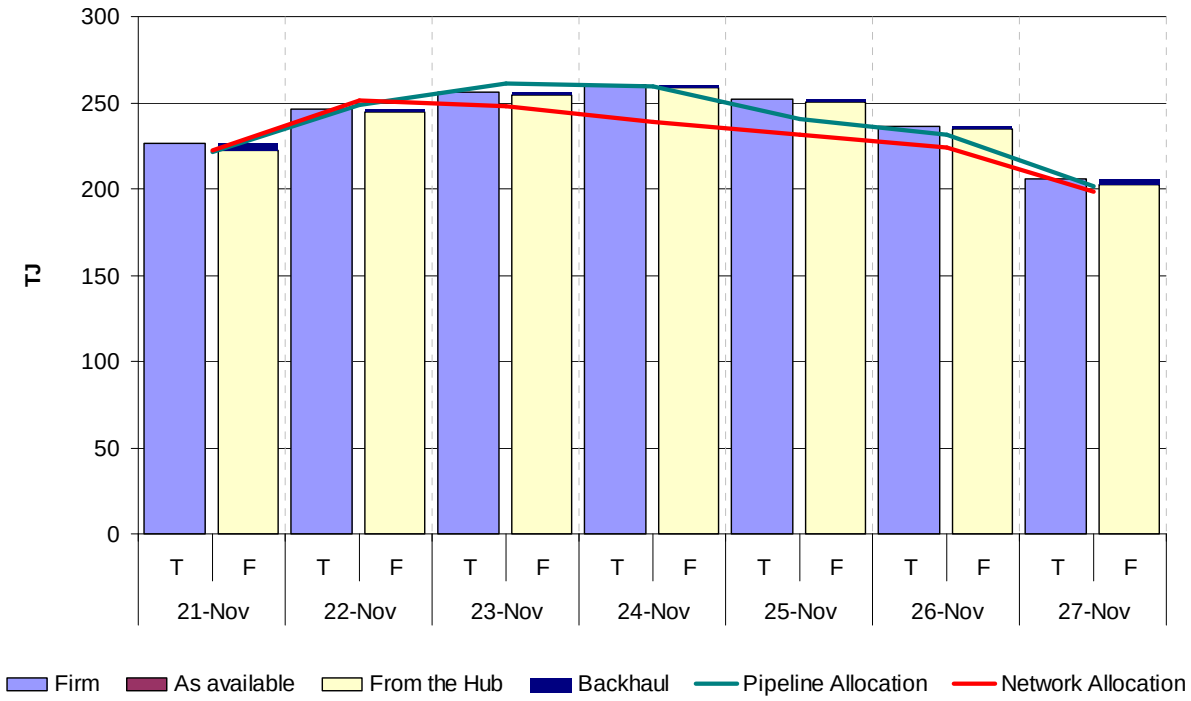
Gas can also be scheduled from the STTM hubs. This happens when Shippers "backhaul" gas from the hub or Users bid to take gas from the hub (including price taker bids).

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

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

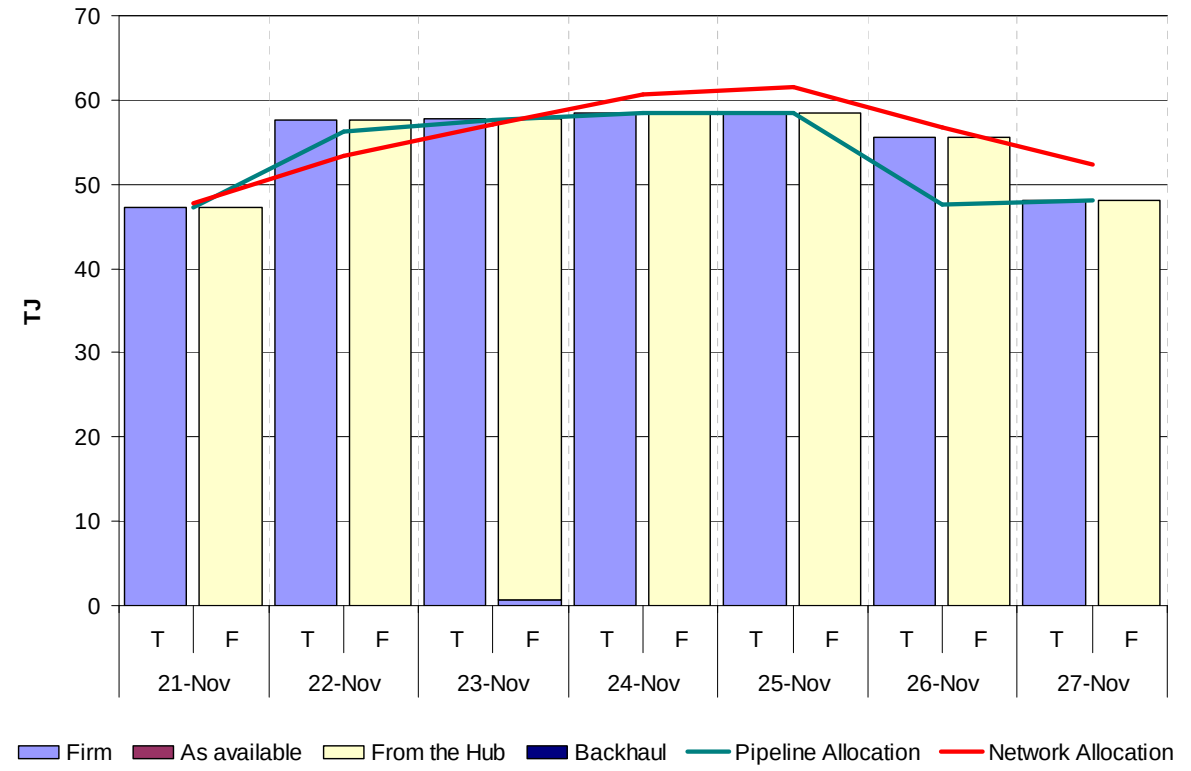
By comparing the level of the red line to the columns marked "F", it can be shown whether demand (allocation) was higher than scheduled. Similarly, comparing the green line to the columns marked "T" shows how the actual flow of gas (allocation) compared to what was scheduled.

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




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

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




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

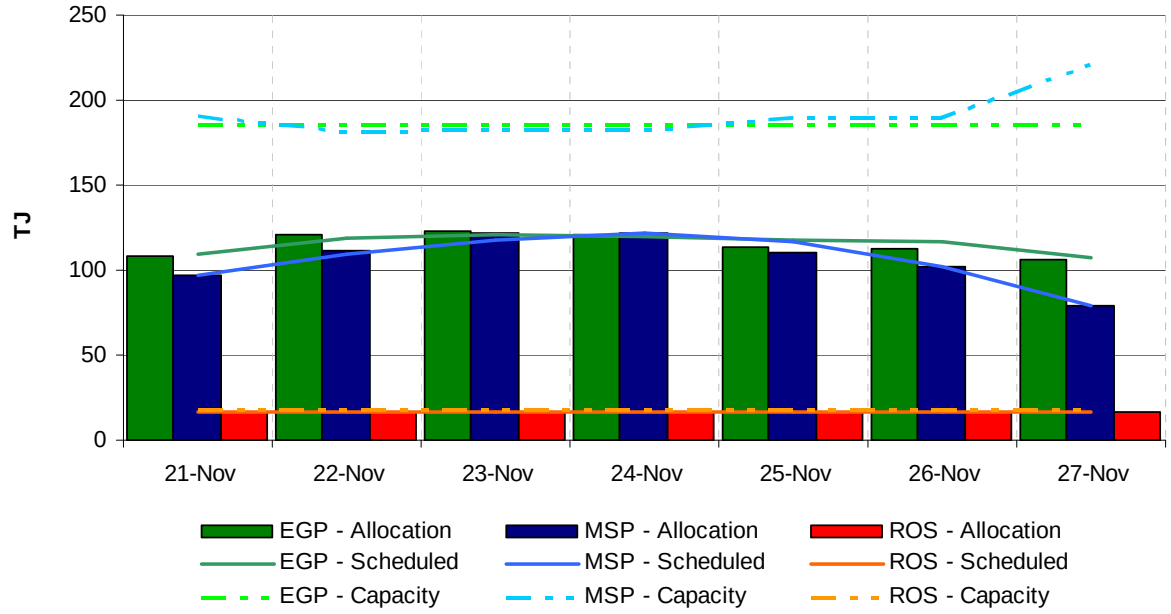
## Pipeline Facility Allocations

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

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

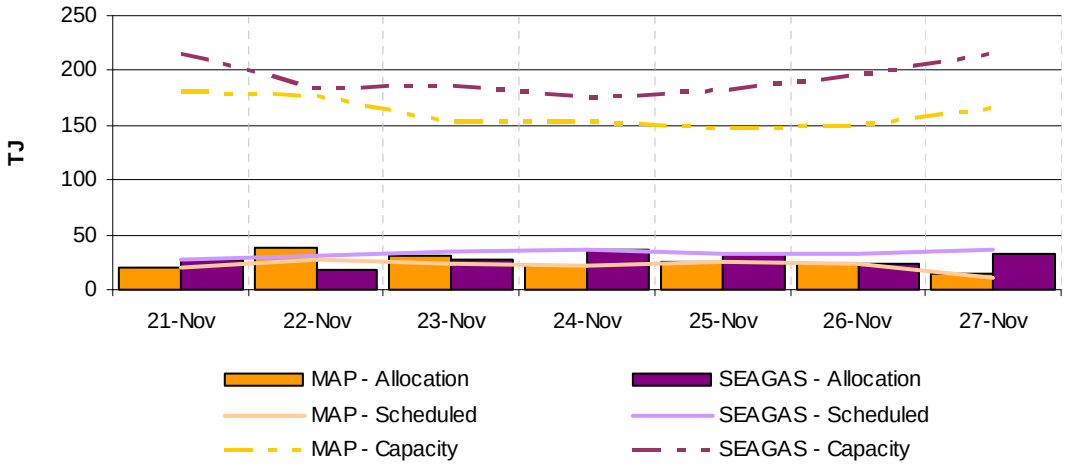
Differences between the amount of gas scheduled and what was actually allocated can result in variations between the ex ante and ex post price, as the ex post price is related to the offers actually allocated while ex ante is related to the offers scheduled.

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




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

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




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

## Offers and Bids

Trading Participants submit offers to sell gas into an STTM hub and withdrawal bids to take gas from a hub. Figures S9 and S11 show for the Sydney and Adelaide hubs respectively, total

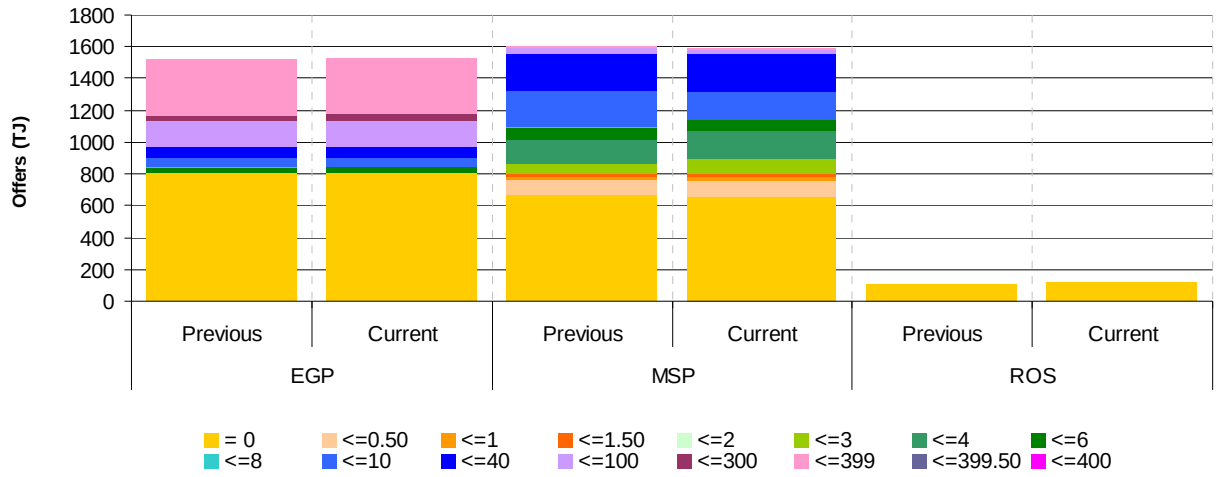
offers within various price bands for the current week compared to the previous week for each of the pipeline facilities.

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

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

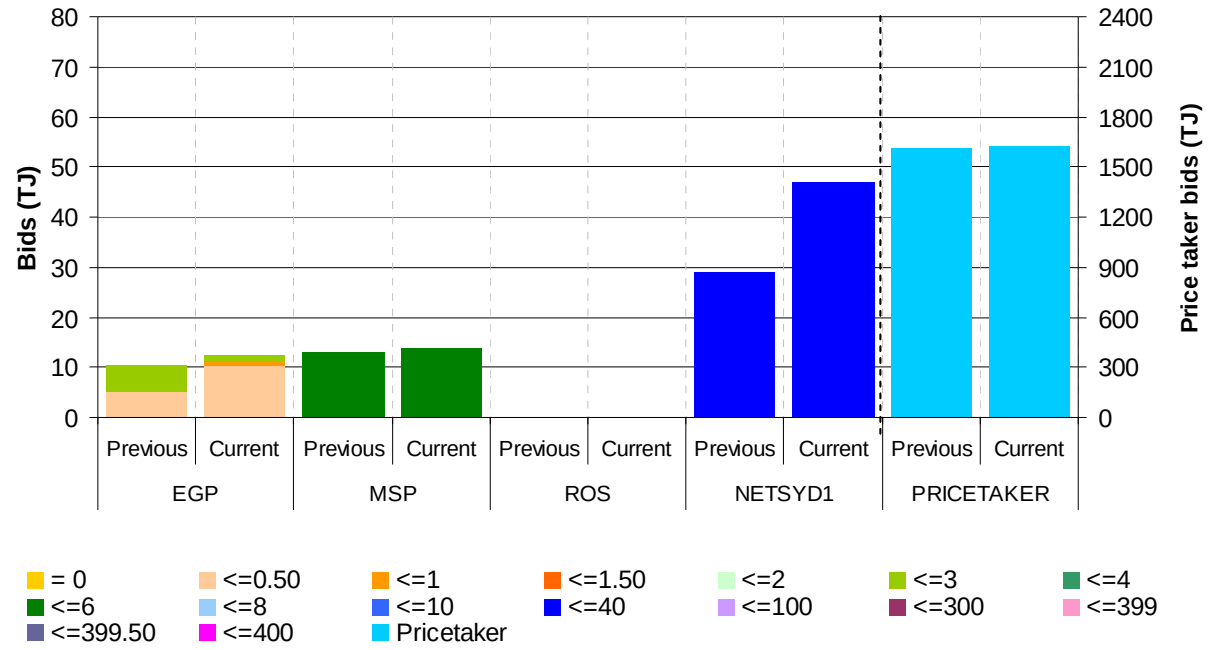
Because scheduling is price-driven, offers for lower-priced gas are scheduled ahead of offers for higher-priced gas and bids for higher-priced gas are scheduled ahead of bids for lower-priced gas.

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



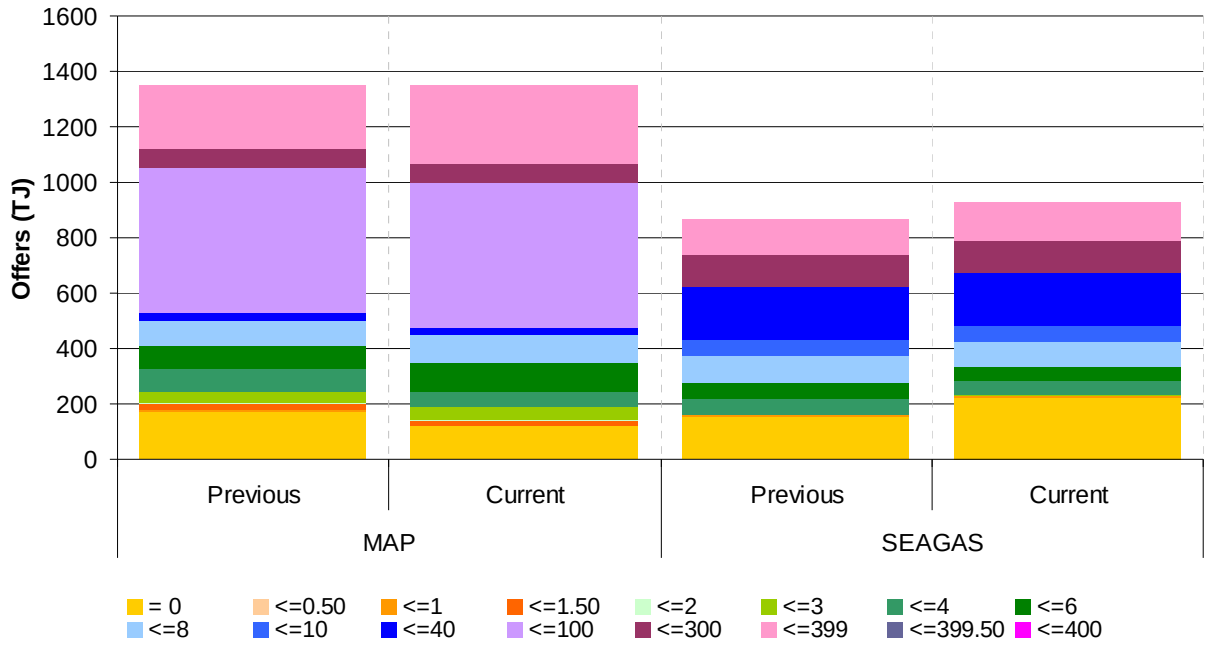

Source: http://www.aemo.com.au INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

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



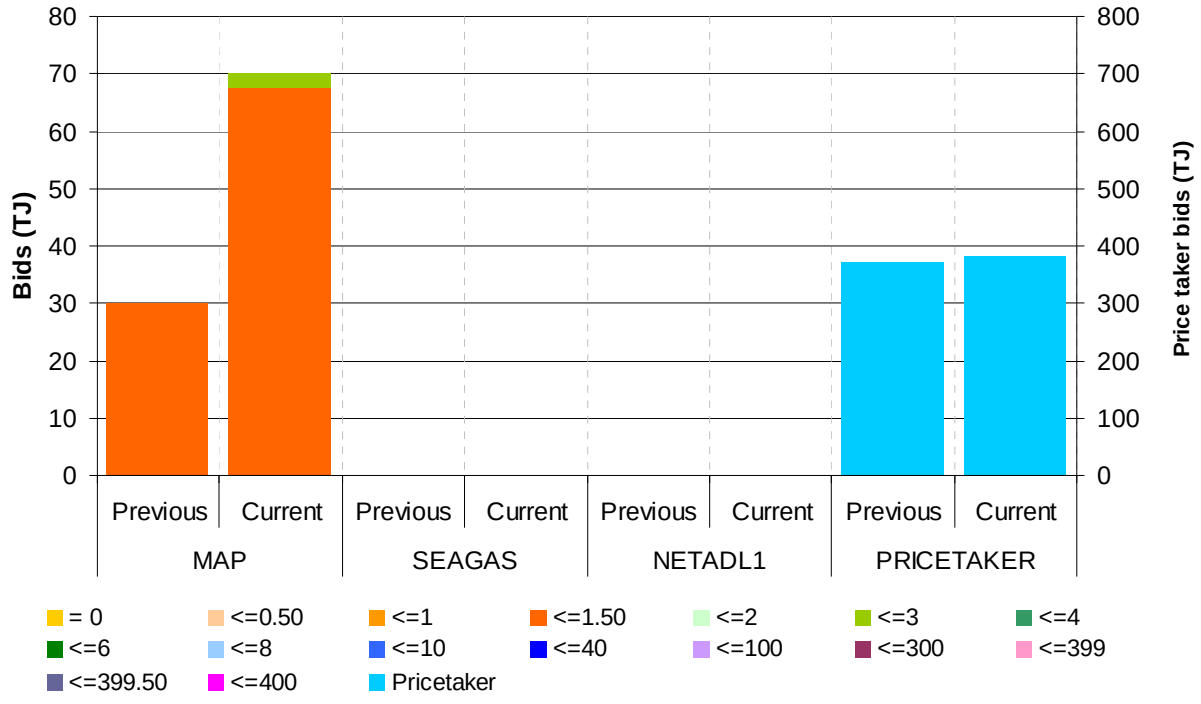

Source: http://www.aemo.com.au INT 652, 659
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility, NETSYD1=Sydney Hub

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




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

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




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

## Re-offers and re-bids

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

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

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

| Pipeline | Schedule | Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|---|---|---|---|---|---|---|---|---|
| EGP | D-3 to D-2 | BluSc<br>EA<br>OneStl(NSW)<br>TRU | SANTOS<br>TRU | SANTOS | AETV<br>OneStl(NSW) | | | SANTOS |
| | D-2 to D-1 | SANTOS<br>TRU | SANTOS<br>TRU | AETV<br>BluSc<br>EA<br>OneStl(NSW)<br>SANTOS | BluSc<br>EA<br>SANTOS | BluSc<br>EA<br>SANTOS | BluSc<br>EA<br>SANTOS | BluSc<br>EA<br>SANTOS<br>TRU |
| MSP | D-3 to D-2 | AGL(ESM)<br>EA<br>Origin<br>TRU | AGL(ESM)<br>Origin<br>TRU | AGL(ESM)<br>Origin<br>TRU | AGL(ESM)<br>Origin<br>TRU | AGL(ESM)<br>Origin<br>TRU | AGL(ESM)<br>Origin<br>TRU | AGL(ESM)<br>Origin<br>TRU |
| | D-2 to D-1 | AGL(ESM)<br>Origin<br>TRU | AGL(ESM)<br>Origin<br>TRU | AGL(ESM)<br>EA<br>Origin | AGL(ESM)<br>EA<br>Origin | AGL(ESM)<br>EA<br>Origin<br>TRU | AGL(ESM)<br>EA<br>Origin<br>TRU | AGL(ESM)<br>EA<br>TRU |
| ROS | D-3 to D-2 | | | | AGL(ESM) | | | AGL(ESM) |
| | D-2 to D-1 | | | AGL(ESM) | | | | |

Source: http://www.aemo.com.au INT 659
BluSc= BlueScope Steel I Country= Country Energy I Origin=Origin Energy Retail Ltd I TRU= TRUenergy Pty Ltd I
AGL(WG)= AGL Wholesale Gas Limited I EA=EnergyAustralia I OneStl(NSW)= OneSteel NSW Pty Ltd I
SANTOS= Santos Direct Pty Ltd I AGL(ESM)= AGL Energy Sales & Marketing Pty Ltd I
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 | AETV | | | |
| | D-2 to D-1 | TRU | TRU | AETV | | | | |
| MSP | D-3 to D-2 | Country | | | Country | Country | Country | Country |
| | D-2 to D-1 | | | 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
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(WGSA)<br>Origin<br>TRU | AGL(WGSA)<br>Origin<br>Simply<br>TRU | AGL(WGSA)<br>Origin<br>TRU | AGL(SA)<br>AGL(WGSA)<br>Origin<br>Simply<br>TRU | AGL(WGSA)<br>Origin<br>Simply<br>TRU | ABC<br>AGL(WGSA)<br>Origin<br>Simply<br>TRU | AGL(WGSA)<br>Origin<br>Simply<br>TRU |
| | D-2 to D-1 | AGL(WGSA)<br>Origin | AGL(WGSA)<br>Origin<br>TRU | AGL(SA)<br>AGL(WGSA)<br>Origin<br>Simply<br>TRU | AGL(WGSA)<br>Origin<br>Simply<br>TRU | AGL(WGSA)<br>Origin<br>Simply<br>TRU | AGL(WGSA)<br>Origin<br>Simply | AGL(SA)<br>AGL(WGSA)<br>TRU |
| SEA-GAS | D-3 to D-2 | Origin<br>TRU | Origin<br>TRU | Origin<br>TRU | Origin<br>TRU | Origin<br>TRU | ABC<br>Origin<br>Simply<br>TRU | Origin<br>Simply<br>TRU |
| | D-2 to D-1 | Origin<br>TRU | Origin<br>TRU | Origin<br>TRU | Origin<br>TRU | Origin<br>Simply<br>TRU | Origin<br>Simply<br>TRU | AGL(WGSA)<br>TRU |

Source: http://www.aemo.com.au INT 659
ABC= Adelaide Brighton Cement Ltd I AGL(WGSA)= AGL Wholesale Gas (SA) Pty Ltd I Origin=Origin Energy Retail Ltd I Simply= Simply Energy I TRU= TRUenergy Pty Ltd I AGL(SA)= AGL South Australia Pty Limited I
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 | Simply | | Simply |
| | D-2 to D-1 | | | Simply | Simply | | Simply | |
| NETADL1 | D-3 to D-2 | | | | | | | |
| | D-2 to D-1 | | | | | | | |
| SEA-GAS | D-3 to D-2 | | | | | | | |
| | D-2 to D-1 | | | | | | | |

Source: http://www.aemo.com.au INT 659
Simply= Simply Energy

## Market Operator Service

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

MOS offers are made by participants who have contracts with pipeline facilities to "park" gas (on the pipeline) or "loan" gas (from the pipeline). Based on these contracts, two types of MOS are offered: increase offers to increase flows on a pipeline to a hub; and decrease offers to decrease flows on a pipeline to a hub. Where a pipeline deviation[5] 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).

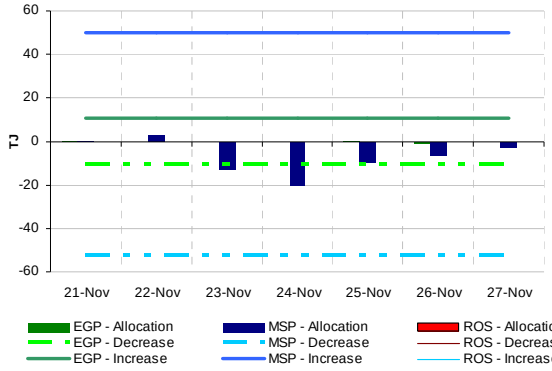
In addition, where this MOS service is required, AEMO pays or charges the MOS provider for the MOS gas allocation on the gas day at the ex ante market price two days after the gas day, which covers the cost of restoring its inventory of MOS gas (the MOS commodity payment or

[5] 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.

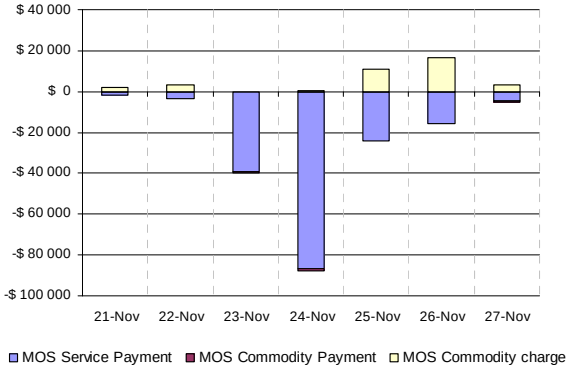
charge). The MOS provider can then choose to submit bids or offers for the gas it needs to replace or run down its MOS gas allocation on the gas day.

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 S17: Sydney MOS allocations**

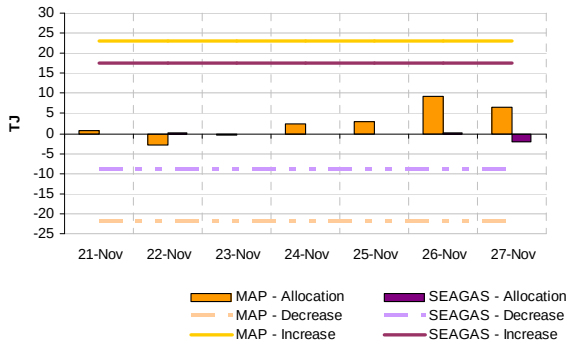



**Sydney MOS payments / Charges**

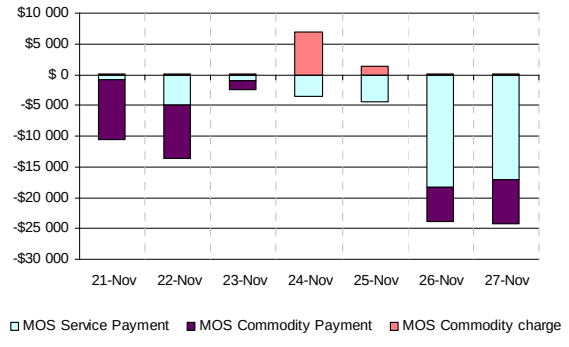



Source: http://www.aemo.com.au INT 663, 664, 665
EGP=Eastern Gas Pipeline, MSP=Moomba to Sydney Pipeline, ROS=Rosalind Park Production facility

**Figure S18: Adelaide MOS allocations**




**Adelaide MOS payments / Charges**

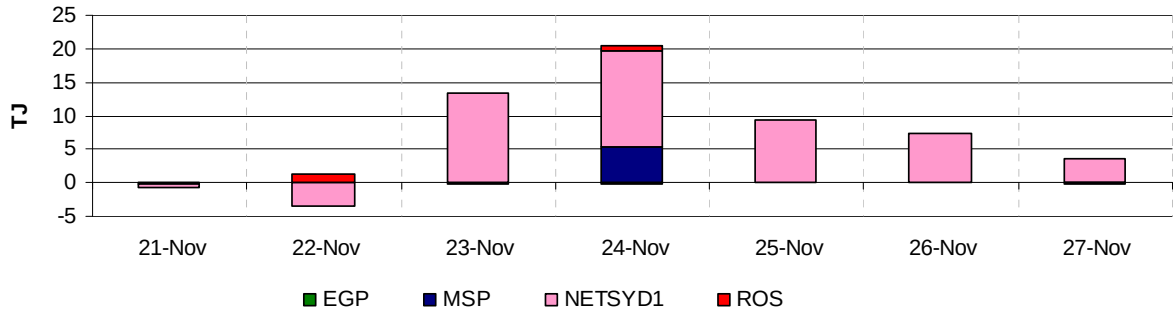



Source: http://www.aemo.com.au INT 663, 664, 665
MAP=Moomba to Adelaide Pipeline, SEAGAS=SEA gas pipeline

## Deviations

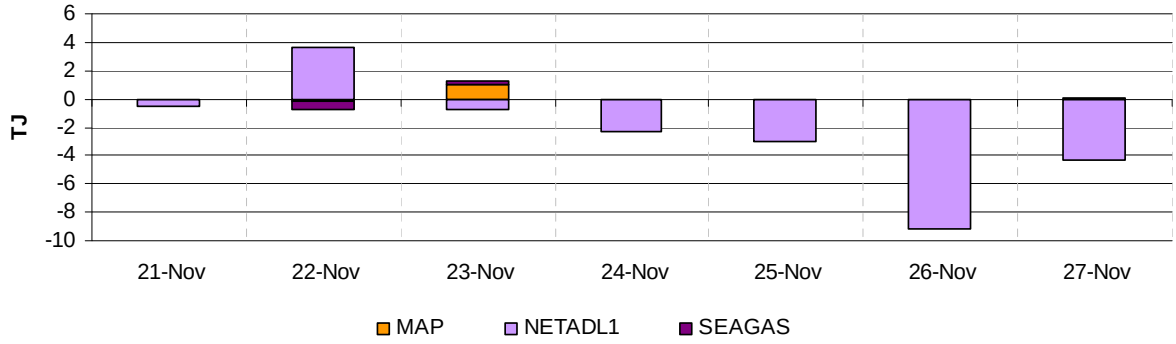
Deviations occur when the gas flowed on pipelines into hubs on a gas day differ from the modified market schedule, or when gas taken out of the hub is different to the schedule. The most likely reason for deviations is where participants incorrectly forecast the demand of customers within the hub. As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

| | 21 Nov – 27 Nov | 14 Nov – 20 Nov | 2010-11 Financial YTD* |
|---|---|---|---|
| Quantity (TJ) | 5.20 | 7.12 | 4.81 |
| Charges ($) | 29.14 | 40.85 | 1619.48 |

*** 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**

| | 21 Nov – 27 Nov | 14 Nov – 20 Nov | 2010-11 Financial YTD* |
|---|---|---|---|
| Quantity (TJ) | 5.20 | 7.12 | 4.81 |
| Charges ($) | 29.14 | 40.85 | 1619.48 |

*** Financial** Year to date figures exclude market trial data (year-to-date from 1 September 2010)
Source: http://www.aemo.com.au INT663

# APPENDIX

Figures A1 and A2 display the daily gas flows from each pipeline and production/storage facility in the National Gas Market over the current week. The nameplate capacity or MDQ (Maximum Daily Quantity) for each facility are also provided, along with the proportion of MDQ used on average over the current week and the year to date at each facility. Flow data not provided by bulletin board polling time is indicated by N/A.

**Figure A1: Daily flows (TJ) for pipeline facilities**

| Demand zone and pipeline facility | Sun | Mon | Tue | Wed | Thu | Fri | Sat | MDQ (TJ) | YTD average capacity usage (%) | Current week average daily flows | Current YTD average daily flows* | Previous YTD average daily flows** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **QLD** | | | | | | | | | | | | |
| Carpentaria Pipeline | 92 | 99 | 92 | 89 | 94 | 99 | 97 | 117 | 80 | 95 | 93 | 85 |
| QLD Gas Pipeline | 109 | 111 | 106 | 109 | 109 | 111 | 114 | 142 | 76 | 110 | 108 | 69 |
| Roma to Brisbane Pipeline | 151 | 185 | 186 | 184 | 141 | 140 | 110 | 219 | 81 | 157 | 178 | 164 |
| South West QLD Pipeline | 152 | 132 | 129 | 132 | 132 | 147 | 153 | 181 | 69 | 140 | 125 | 151 |
| **NSW/ACT** | | | | | | | | | | | | |
| Eastern Gas Pipeline | 136 | 159 | 163 | 162 | 153 | 151 | 140 | 268 | 80 | 152 | 215 | 203 |
| Moomba to Sydney Pipeline | 130 | 148 | 148 | 147 | 135 | 127 | 104 | 420 | 54 | 134 | 226 | 227 |
| NSW-VIC Interconnect^ | 17 | 18 | 22 | 22 | 27 | 19 | 21 | 92 | 10 | 21 | 9 | -15 |
| **VIC** | | | | | | | | | | | | |
| Longford to Melbourne | 256 | 312 | 315 | 361 | 350 | 363 | 303 | 1030 | 58 | 323 | 598 | 529 |
| South West Pipeline | 39 | 50 | 88 | 65 | 24 | 56 | 34 | 347 | 37 | 51 | 130 | 152 |
| **SA** | | | | | | | | | | | | |
| Moomba to Adelaide Pipeline | 80 | 129 | 127 | 127 | 133 | 120 | 88 | 253 | 51 | 115 | 128 | 134 |
| SEA Gas Pipeline | 131 | 178 | 191 | 161 | 146 | 138 | 103 | 314 | 53 | 150 | 167 | 160 |
| **TAS** | | | | | | | | | | | | |
| Tasmanian Gas Pipeline | 38 | 43 | 46 | 42 | 45 | 41 | 34 | 129 | 36 | 41 | 46 | 36 |

*Average daily estimated gas consumption measured from 1 July 2010 to the current week (inclusive)
**Average daily estimated gas consumption measured from 1 July 2009 to the equivalent week in 2009-10 (inclusive)
^Negative figure represents a reverse flow of gas along the pipeline
Source: Natural Gas Market Bulletin Board http://www.gasbb.com.au

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

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

| Production zone production / storage facility | Sun | Mon | Tue | Wed | Thu | Fri | Sat | MDQ (TJ) | YTD average capacity usage* (%) | Current week average daily flows | Current YTD average daily flows* | Previous YTD average daily flows** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Roma (QLD)** | | | | | | | | | | | | |
| Berwyndale South | 92 | 96 | 96 | 99 | 92 | 85 | 88 | 140 | 70 | 93 | 98 | 90 |
| Fairview | 132 | 132 | 132 | 132 | 132 | 132 | 132 | 130 | 93 | 132 | 121 | 112 |
| Kenya Gas Plant | 54 | 58 | 56 | 55 | 28 | 38 | 38 | 160 | 38 | 46 | 60 | 39 |
| Kincora | 10 | 10 | 10 | 7 | 0 | 0 | 0 | 25 | 12 | 5 | 3 | 1 |
| Kogan North | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 75 | 10 | 9 | 8 |
| Peat | 11 | 11 | 11 | 11 | 7 | 9 | 9 | 15 | 67 | 10 | 10 | 9 |
| Rolleston | 11 | 11 | 10 | 11 | 11 | 10 | 10 | 30 | 37 | 11 | 11 | 11 |
| Scotia | 21 | 30 | 30 | 30 | 30 | 30 | 20 | 29 | 89 | 27 | 26 | 20 |
| Spring Gully | 38 | 38 | 38 | 38 | 50 | 45 | 36 | 69 | 74 | 40 | 51 | 48 |
| Strathblane | 38 | 38 | 38 | 38 | 50 | 45 | 36 | 69 | 74 | 40 | 51 | 48 |
| Taloona | 23 | 23 | 23 | 23 | 30 | 27 | 22 | 42 | 73 | 24 | 31 | 29 |
| Wallumbilla | 8 | 8 | 8 | 9 | 8 | 8 | 8 | 20 | 44 | 8 | 9 | 11 |
| Yellowbank | 13 | 12 | 11 | 12 | 12 | 13 | 12 | 30 | 41 | 12 | 12 | 14 |
| Talinga | 25 | 68 | 71 | 73 | 69 | 73 | 73 | 81 | 67 | 65 | 55 | |
| **Moomba (SA/QLD)** | | | | | | | | | | | | |
| Moomba Gas Plant | 173 | 257 | 259 | 270 | 257 | 212 | 179 | 430 | 70 | 230 | 299 | 306 |
| Ballera | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 150 | 13 | 1 | 19 | 6 |
| **Eastern (VIC)** | | | | | | | | | | | | |
| Orbost Gas Plant | 66 | 64 | 64 | 60 | 60 | 60 | 64 | 100 | 17 | 62 | 17 | 7 |
| Lang Lang Gas Plant | 51 | 50^ | 50^ | 50^ | 50 | 50 | 50 | 70 | 69 | 50 | 48 | 54 |
| Longford Gas Plant | 309 | 375 | 399 | 464 | 452 | 449 | 403 | 1145 | 71 | 407 | 808 | 715 |
| LNG Storage Dandenong | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 158 | 0 | 0 | 0 | 0 |
| **Otway Basin (VIC)** | | | | | | | | | | | | |
| Minerva Gas Plant | 73 | 67 | 57 | 73 | 72 | N/A | 37 | 73 | 90 | 63 | 66 | 76 |
| Otway Gas Plant | 112 | 151 | 198 | 195 | 161 | 66 | 95 | 205 | 70 | 140 | 143 | 132 |
| Iona Underground Gas Storage | 39 | 50 | 87 | 64 | 24 | 55 | 34 | 440 | 22 | 51 | 97 | 102 |

*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)
^ These figures were submitted in error as gigajoules (GJ) rather than terajoules (TJ) by Lang Lang gas plant, and have been modified by the AER as TJs.

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) |
|---|---|---|---|---|---|---|---|
| **21 Nov – 27 Nov** | Average min. | 17.8 | 17.6 | 9.5 | 17.3 | 19.4 | 12.4 |
| | Average max. | 26.4 | 24.7 | 26.7 | 27.4 | 29.9 | 21.9 |
| **14 Nov – 20 Nov** | Average min. | 20.0 | 17.8 | 10.9 | 11.0 | 11.3 | 8.3 |
| | Average max. | 27.4 | 23.6 | 22.5 | 20.3 | 23.1 | 18.0 |

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**

| 21 Nov – 27 Nov | Scheduling Interval | | | | | Daily Imbalance Weighted Average Price |
|---|---|---|---|---|---|---|
| | 6am | 10am | 2pm | 6pm | 10pm | |
| **Sun** | 0.57 | 0.57 | 0.57 | 0.39 | 0.42 | 0.57 |
| **Mon** | 0.70 | 0.70 | 0.70 | 1.58 | 0.69 | 0.70 |
| **Tue** | 0.70 | 2.01 | 0.71 | 0.767 | 0.70 | 0.72 |
| **Wed** | 1.68 | 1.39 | 1.69 | 2.01 | 1.61 | 1.68 |
| **Thu** | 1.68 | 2.10 | 2.10 | 2.10 | 2.50 | 1.69 |
| **Fri** | 1.39 | 0.59 | 0.61 | 0.61 | 2.36 | 1.36 |
| **Sat** | 0.07 | 0.70 | 0.70 | 1.5 | 0.72 | 0.71 |

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 | |
| **21-Nov** | **MP:** | 341 | 341 | 340 | 340 | 341 | **0** |
| | **AEMO:** | 331 | 322 | 324 | 333 | 345 | |
| | **MP as % of AEMO** | 103 | 106 | 105 | 102 | 99 | |
| **22-Nov** | **MP:** | 416 | 406 | 407 | 407 | 407 | **0** |
| | **AEMO:** | 398 | 395 | 395 | 399 | 390 | |
| | **MP as % of AEMO** | 104 | 103 | 103 | 102 | 104 | |
| **23-Nov** | **MP:** | 447 | 439 | 440 | 445 | 444 | **0** |
| | **AEMO:** | 433 | 429 | 432 | 440 | 444 | |
| | **MP as % of AEMO** | 103 | 102 | 102 | 101 | 100 | |
| **24-Nov** | **MP:** | 473 | 481 | 478 | 492 | 492 | **0** |
| | **AEMO:** | 459 | 456 | 454 | 471 | 471 | |
| | **MP as % of AEMO** | 103 | 105 | 105 | 104 | 104 | |
| **25-Nov** | **MP:** | 422 | 424 | 425 | 425 | 425 | **0** |
| | **AEMO:** | 422 | 409 | 420 | 424 | 424 | |
| | **MP as % of AEMO** | 100 | 104 | 101 | 100 | 100 | |
| **26-Nov** | **MP:** | 422 | 420 | 420 | 421 | 426 | **0** |
| | **AEMO:** | 424 | 426 | 422 | 416 | 422 | |
| | **MP as % of AEMO** | 100 | 99 | 99 | 101 | 101 | |
| **27-Nov** | **MP:** | 337 | 338 | 336 | 335 | 335 | **0** |
| | **AEMO:** | 351 | 351 | 372 | 351 | 357 | |
| | **MP as % of AEMO** | 96 | 96 | 90 | 95 | 94 | |

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