

Significant gas market event STTM Sydney Hub

27 February 2012



AUSTRALIAN ENERGY
REGULATOR

Introduction

The AER is required to identify and publish a report on significant price variations in the Short Term Trading Market (STTM).¹

Although the AER is yet to publish a guideline on what constitutes a significant price variation in the STTM, the AER considers it appropriate to report on the 27 February 2012 gas day given the high value of MOS payments generated on the day.

Summary/assessment

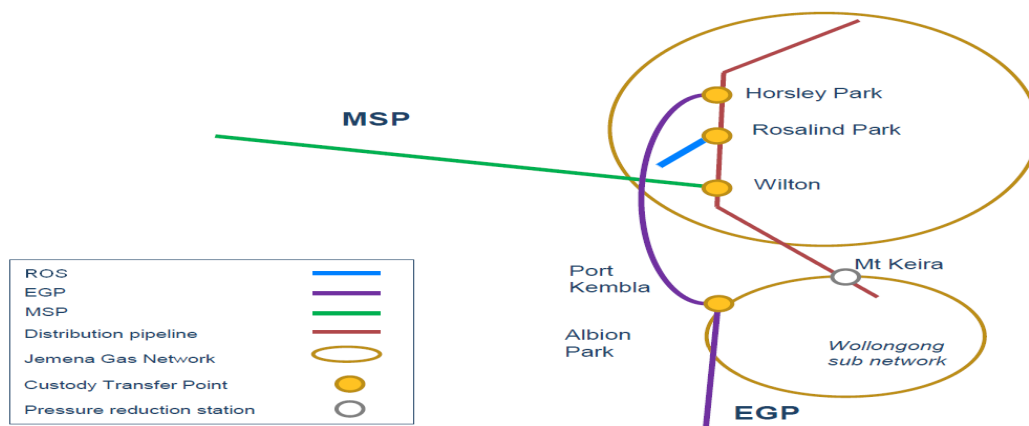
On the 27 February gas day there was an unusually large Market Operator Service (MOS) allocation on the Eastern Gas Pipeline (EGP) at the Sydney STTM hub. The EGP is operated by Jemena Eastern Gas Pipeline (Jemena).

Jemena's EGP over delivered to the Sydney hub due to an IT operational error, resulting in the requirement for increase MOS services. This in turn caused the Moomba to Sydney Pipeline (MSP) to under deliver gas to the Sydney hub, leading to the requirement for decrease MOS services. High MOS offers on the EGP resulted in increase MOS service payments on the EGP in the order of \$924 000. Despite higher requirements for decrease MOS on the MSP (relative to increase requirements on the EGP), lower priced offers for decrease MOS resulted in comparatively low MOS costs of around \$48 000 for the MSP.

The Sydney hub

Figure 1 shows the points at which the EGP and MSP (and Rosalind Park, or ROS) connect to the Sydney hub.²

Figure 1: Sydney hub



Source: AEMO presentation, MOS Workshop, 8 May 2012.

¹ This requirement is set out in clause 498 of the National Gas Rules.

² Also known as Custody Transfer Points.

Pipeline deliveries and MOS

In general, differences between scheduled pipeline flows and actual deliveries can occur for the following reasons:

- if there is a discrepancy between forecast gas demand and actual gas demand in the hub.
- if trading participants do not nominate in accordance with market schedules.
- due to physical (including IT-related) pipeline problems.

MOS is used to balance the difference between scheduled pipeline flows and actual deliveries on a gas day. The service is usually provided by trading participants who have rights to “park” or “borrow” gas from pipeline line-pack.

When a pipeline deviates and delivers more gas than is scheduled, this results in increase MOS allocations. In physical terms extra gas is borrowed from line pack and delivered into the hub. When a pipeline delivers less gas than is scheduled, this results in decrease MOS allocations. In physical terms, gas which was scheduled for delivery to the hub is parked before the hub, increasing line-pack.

Over-deliveries from EGP into the Sydney hub

On 27 February, Jemena’s EGP delivered 116.5 TJ into Horsley Park, 19.9 TJ more than nominations by STTM Shippers. Jemena’s EGP also delivered 19.8 TJ into Port Kembla, 0.2 TJ less than nominations. In total there was a 19.7 TJ over-delivery by Jemena’s EGP to the Sydney hub. As a result 19.7 TJ of increase MOS was allocated to the EGP: 10.9 TJ to MOS, and 8.8 TJ to overrun MOS.³

Manual error caused over-deliveries from EGP into Horsley Park

AER staff met with Jemena staff as part of its inquiries into the events of the day. Jemena’s explanation for the event is that an error with the download of code information resulted in the Horsley Park accumulator (which tracks how much gas has been delivered to that point on the day) being reset to a lower figure than had actually been delivered.

On the day, Jemena was due to update the coding for each of its gas runs (run 1 and run 2) at the Horsley Park custody transfer point. Jemena updated the code for run 1 at the beginning of the day while run 2 was delivering gas into the Sydney STTM Hub. This update was successful. Following this, EGP switched the gas delivery from run 2 to run 1, in order to allow for the code in run 2 to be updated.

Jemena claims that although the code downloaded into run 2 was correct, an operator manually input an incorrect “signal” which forms part of the “recipe” (which is separate but related to the actual code). This occurred because the operator didn’t follow standard procedures. Jemena has advised that while such an error should have been identified during its verification process, the error went unnoticed.

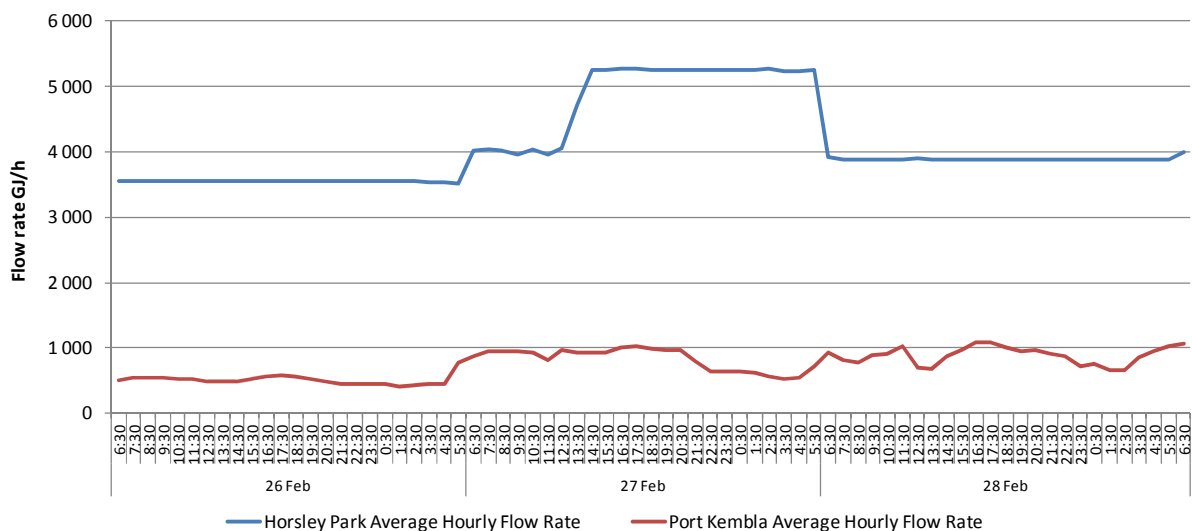
One of the purposes of the “recipe” is to record the amount of gas the run has delivered for the current gas day. The “recipe” then forwards this data to the remote telemetry unit (RTU) which maintains a cumulative total of gas delivered between the two runs for the gas day. However, this did not happen due to the error in the signal, and instead the accumulator in the RTU reset to a lower value. This caused the control system to increase flow rates to ensure the

³ Rule 421(1) provides that overrun MOS must be allocated when the total pipeline deviation exceeds the available quantity of MOS offered on a pipeline in the MOS stack for a gas day.

total nomination was delivered over the remainder of the gas day. This is shown by the jump in the blue line in Figure 2, which shows Horsley Park hourly flow rate and the Port Kembla hourly flow rate.

The resultant change to flows went undetected in the control room because the changes in flows and nominations did not show up as anomalous when compared to maximum daily quantity (MDQ) limits by flow computers.

Figure 2: Horsley Park and Port Kembla flow rates on 27 February



Effects on the MSP

As part of its inquiries the AER asked APA Group, the operator of the MSP, if there was a significant impact on the MSP.

There was a decrease MOS allocation of 17.5 TJ on the MSP. APA said that the over delivery into Horsley Park resulted in greater than expected increases in shippers’ line-pack. This in turn resulted in a reduction in compressor capability to deliver gas to Wilton. APA said that the incident did not cause significant operational problems because it occurred over a single day and there was capacity on the MSP to absorb the increased line-pack.

Flows from Rosalind Park had little impact

The Rosalind Park Gas Facility (ROS) delivered 15.5 TJ into the Sydney hub instead of the 16.8 TJ scheduled (an under-delivery of 1.3 TJ). This small under-delivery had little effect on total MOS requirements.

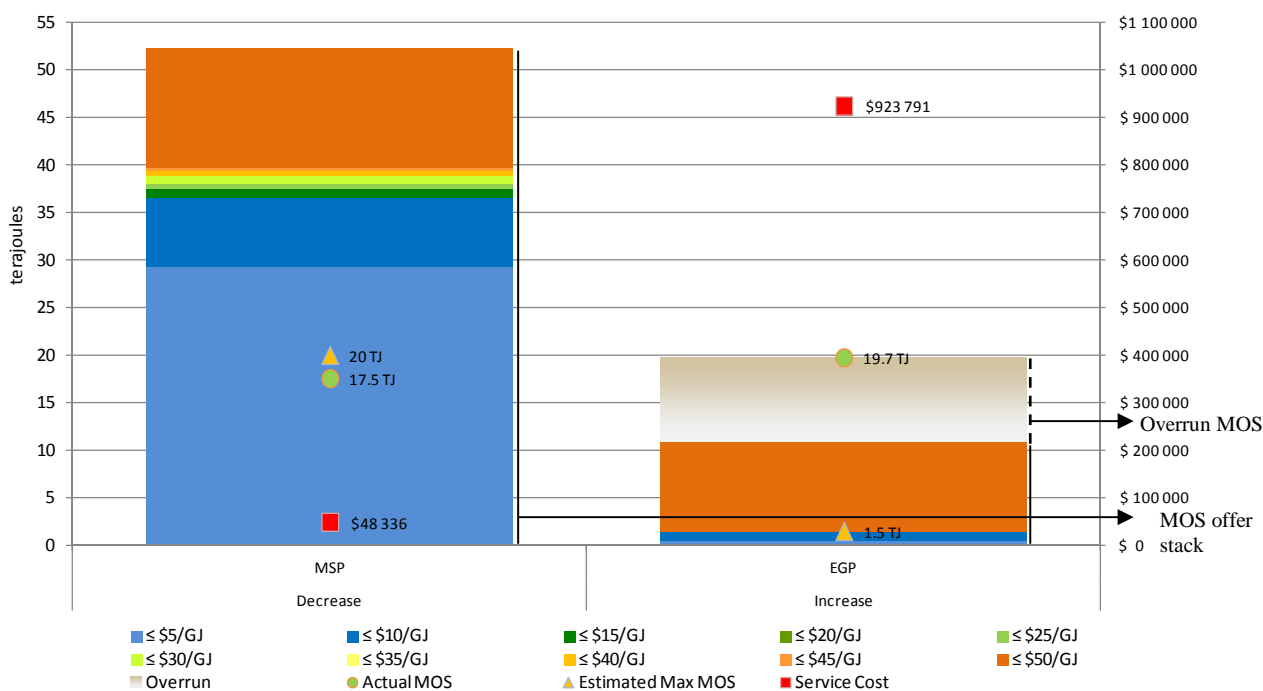
Financial outcomes

This section examines the financial outcomes.

MOS outcomes

Figure 3 shows the decrease MOS stack for the MSP and the increase MOS stack for the EGP.

Figure 3: MOS stacks



As shown by the green circle on the decrease MOS stack for the MSP, decrease MOS requirements were 17.5 TJ, which was met by offers at \$5/GJ and under. However, as shown in the figure, the increase MOS requirements of 19.7 TJ was not able to be met by cheap offers: 1.4 TJ was met by offers at \$10/GJ or under and 9.5 TJ was met by the remaining offers in EGP's increase MOS stack, which were priced near the price cap of \$50/GJ. Overrun MOS, which was priced at close to \$50/GJ⁴ was required to meet the remaining 8.8 TJ of requirements. This was the first time overrun MOS has been allocated to an STTM hub.

Due to the high cost of increase MOS on the EGP, MOS payments on the EGP totalled \$923 791 (\$483 050 from the MOS stack and \$440 741 from overrun MOS). Decrease MOS payments on the MSP totalled \$48 336.

Only TRUenergy made offers to supply increase MOS on the EGP for the December 2011 to February 2012 MOS offer stack, and therefore received all EGP payments.⁵

Settlement impact

With charges such as deviations payments significantly lower than MOS payments on the day, there was a resultant settlement shortfall of \$970 589. This accounted for the vast majority of the settlement shortfall in the Sydney hub for the month of February of \$1 239 429. This amount was required to be paid by Trading Participants in accordance with an allocation

⁴ In accordance with overrun MOS calculation requirements, overrun MOS is priced as the highest offer price of MOS in the relevant MOS stack (when the requirement for MOS exceeds the estimated maximum for the period), in this case \$49.99/GJ.

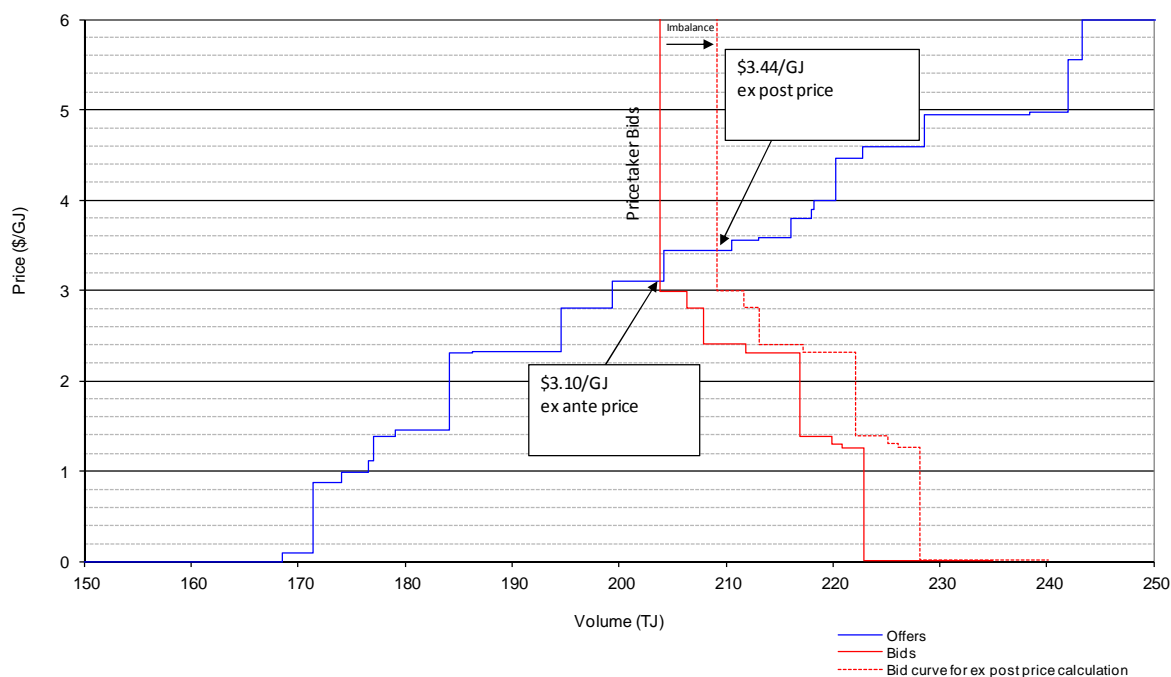
⁵ The March to June 2012 MOS stack includes offers by two participants to supply increase MOS.

formula. The formula accounts for STTM Users' total allocation quantities and total absolute deviation quantities over that billing period. Accordingly, it is expected that larger STTM Users by volume will fund more of any STTM settlement shortfall.

Market prices and other payments (not including MOS)

As shown in figure 4, the ex ante price was (set by Origin at) \$3.10/GJ, and the ex post price was (set by TRUenergy at) \$3.44/GJ. The ex post price was higher than the ex ante price because actual demand was 5.3 TJ above forecast demand.

Figure 4: Ex ante bids and offers on the gas day



Events on the day did not result in abnormally low or high ex ante or ex post prices. This shows there can be high MOS payments in the STTM without there being significant impacts in the primary market for the daily trade of gas.

Participant behaviour

STTM Pipeline Operators

It appears that all pipeline operators (Jemena for the EGP, APA for the MSP and AGL for the Rosalind Park facility) submitted accurate allocation data on the day.

Jemena's over-delivery on the EGP to the Sydney hub was the result of a 'signal error', not inaccurate data, and its allocation notice reflected actual gas deliveries on the gas day. Jemena has explained to AER staff that the events of the day have been a learning experience and is taking the following measures to prevent such an event happening again:

- Jemena staff will monitor hourly gas flow trends during future RTU code updates.
- Systems will be updated to issue an 'alarm' if a similar event occurs.
- There will be an engineer on site in the control room when code uploads are performed.
- An RTU upgrade is scheduled for October.

Jemena indicated to the AER that it will share its findings from this incident with other STTM pipeline operators.

Trading Participants

STTM Shipper offers and nominations

In examining shippers' nomination data, the AER found only small variances between offers and nominations. The AER considers that these variances did not materially impact on MOS payments on the gas day.

Demand forecasting

There are two likely outcomes when there are significant under or over forecasts of hub demand: MOS balancing gas will be required; and the ex ante price and ex post price will diverge. Therefore, to the extent demand forecasts (in the form of price taker bids) are accurate, MOS payments should decrease and there should be less divergence between the ex ante and ex post price.

The AER compared STTM user allocated deliveries to the Sydney hub on the gas day to STTM demand forecasts. In aggregate across all trading participants, there was an under forecast of approximately 5 TJ. The AER considers, therefore, that in comparison to the over deliveries on the EGP the under forecast of demand was not a material driver of MOS payments on the day.

Despite the aggregate data showing only moderate under-forecasting on the day, analysis shows there were some large forecasting errors by individual STTM users (more than 20 per cent for one user and between 10 and 20 per cent for three other users).

The AER considers there is scope for Trading Participants to improve their demand forecasting. To this end, the AER is currently undertaking a project to track the accuracy of demand forecasts over time and will report its findings in future quarterly compliance reports.

Other issues

In a paper tabled at the STTM Consultative Forum of 24 April 2012, AGL submitted a paper which suggested that the MOS outcomes were an unintended application of the pipeline deviation and MOS arrangements in the Gas Rules. The AER understands AGL's concern is that MOS payments should not arise under the rules in a scenario where a MOS outcome is caused by a pipeline operator. The STTM Consultative Forum is currently considering a proposal by AGL to amend the rules and/or procedures.