Significant price variation report

Victorian gas wholesale market

Negative Ancillary Payments 14 October 2016

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AUSTRALIAN ENERGY REGULATOR

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 520
Melbourne Vic 3001

Tel: (03) 9290 1444
Fax: (03) 9290 1457

Email: AERInquiry@aer.gov.au
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Executive summary

On Friday 14 October 2016, large negative ancillary payments **(negative APs)** totalling -$365 612 occurred in the Victorian Gas Market **(VGM)** which is the highest level of negative APs since October 2008.

The AER's SPV guideline specifies reporting on ancillary payments which exceed the threshold set in 2011 of $250,000 for a gas day.[1] Consultation with industry in 2011 indicates the intent was to report on positive ancillary payments only. However given the rarity of this event and the magnitude of the payments we are publishing an additional report to better inform industry, particularly newer participants, on the factors causing such a large negative payment and the market impact.

In short, on this day de-scheduled withdrawal (and injection) quantities resulted in large negative ancillary payments, particularly at 10 am, accounting for the large price difference between the 6 am and 10 am price of $11/GJ. The negative APs formed part of the offset mechanism involved with payments for gas that was no longer required. An example of the application of negative APs in the context of one bid on the day is discussed at the end of the report.

Driving this de-scheduling was a constraint imposed in response to a request by Esso based on unplanned offshore maintenance at Longford. Application of the constraint resulted in a reduction in supply from the facility. When a constraint was applied on injections at the facility at 10 am the market price increased from $5.75/GJ to $16.89/GJ and large quantities of withdrawal bids were de-scheduled reducing controllable demand.[2]

Negative ancillary payments occur relatively frequently in the Victorian gas market in small amounts of quantity and payment. According to the pricing methodology, the negative AP is calculated for each GJ of de-scheduled gas at a rate equal to the difference between the applicable bid price and the relevant market price.[3]

AEMO in 2012 analysed negative APs (which do not follow a previous Ancillary Payment) and concluded that the method of calculation works as intended. The negative AP "claws back" some but not all of the profit difference caused by for withdrawals, gas being bought at a lower price and then when later de-scheduled bought back by the market at a higher price.

1 http://www.aer.gov.au/wholesale-markets/market-guidelines/significant-price-variation-guideline-for-victorian-declared-wholesale-market

2 While controllable demand associated with withdrawal bids was reduced at 10 am, other factors such as increased uncontrollable demand forecasts and the shortfall in linepack following lower than expected injections at Longford drove higher supply requirements for the 10 am scheduling horizon.

3 The methodology appears in a document titled Investigation of Ancillary Payments GWCF-12-017-01

1 Background

Relevant to the 14 October gas day, there were a number of VGM primary market mechanisms and ancillary payment mechanisms which influenced market outcomes. Ancillary market mechanisms occur less frequently and further compensate participants beyond primary market mechanisms for their gas supply (or in the case of 14 October claw-back amounts from participants who are de-scheduled).

Further information detailing the structure of the Victoria's gas market arrangements and the roles and responsibilities of participants can be found in the gas weekly user guide and the Longford outage report located on our website.

1.1 Primary Market mechanisms

Scheduling

In the Victorian gas market, participants submit daily injection (offers) and withdrawal bids for the gas day to set a market price. These bids can be revised over 5 daily scheduling horizons, setting 5 schedule prices during the gas day. The quantity of gas scheduled during each horizon covers the volume of gas set to be delivered across the entire gas day. This process is referred to as the Pricing Schedule.

While gas market prices are set using the available injection and withdrawal bids in merit order, quantities of gas which otherwise could be scheduled at each of the injection points across the Victorian market may not be deliverable due to physical supply constraints.[4] On 14 October during the day, a constraint limited the quantity of gas which could be supplied to the market through the Longford system injection point and caused gas originally scheduled at 6 am to be de-scheduled later in the day (and also influenced the change to a higher market price).

Imbalance Payments

Imbalance positions are determined based on the difference between supply and demand. Individual net (imbalance) positions are calculated for each participant based on forecast information at the beginning of each schedule, where participants are either paid for their net supply (imbalance injection), or pay for their net demand (imbalance withdrawal) position in the market. The schedule price is applied to these imbalance quantities and results in 'imbalance payments'.

In summary, the mechanism is applied for what participants are scheduled to do for the gas day at each scheduling horizon.

Deviation payments

While participants are paid or pay for their imbalance position during each schedule, actual injections and withdrawals at the end of each scheduling horizon may not match

[4] These constraints on individual injection or withdrawal meter locations are referred to as Supply Demand Point Constraints (SDPCs). Other constraints also limit gas injections/withdrawals to maintain ideal operating pressures.

the quantities scheduled. These deviations from the gas schedule may result in a shortfall of gas supply or an oversupply. As such, scheduled quantities for the upcoming horizon need to be adjusted to maintain adequate levels of linepack in the system, which could result in additional gas being scheduled (raising the price) or less gas being scheduled (lowering the price) for the subsequent scheduling interval. As such, the schedule price during the following interval is applied to these deviation quantities that occur within a given schedule.

In summary, the mechanism is applied for what participants actually did by the end of each scheduling horizon.

This mechanism was not particularly relevant to the negative APs which occurred on 14 October.

1.2 Ancillary Market mechanisms

Ancillary payments

Ancillary payments **(APs)** are designed to compensate participants who inject gas above the market price to assist in reducing congestion in the transmission network.

As constraints may affect where gas can be physically supplied in the market, out of merit order gas may be required to reduce system congestion. When available injection bids are scheduled at prices above the market price through the operational schedule, ancillary payments are required to compensate participants who have placed a higher value on their gas supply.

As these participants have placed a higher value on their gas injections, above the market price applied to their injection quantities via imbalance payments, out of merit order gas suppliers will not be fully remunerated through the imbalance mechanism. Thus, the ancillary mechanism provides additional payments to ancillary service providers to adjust for the shortfall in the amount paid for the higher priced gas.

Negative Ancillary Payments – 14 October 2016

Negative ancillary payments **(negative APs)** may occur with or without prior scheduling of out of merit order gas (see Appendix B).

However, as occurred on 14 October in the VGM, changes to market factors or physical conditions across the gas day may result in changes to the schedules, such that gas is de-scheduled and negative APs occur without any prior positive APs (see Appendix B, scenario 4). These factors may include events such as changes to the market price or participants rebidding or physical constraints on supply points.

In these instances, money has been paid to the market participants based on their forecast position in a given scheduling interval (through imbalance payments). If conditions change, negative ancillary payments recover that payment when gas is de-scheduled (accounting for the price difference between schedules). Therefore, when assessing the market impact of negative APs, the money being returned to the

market must then be considered alongside the initial imbalance payments for gas that did not actually flow on the day.

Uplift payments associated with Ancillary Payments

Ancillary costs generated over a gas day are usually recouped through uplift payments, which are divided into three areas in regard to participants' payments. These are surprise uplift (when there is a deviation or a change in forecast demand), congestion uplift (when the system is constrained and participants exceed their allowable quantities) and common uplift (covering a participant's proportion of the daily withdrawals, when the quantity is not related to surprise or congestion).[5]

5 Uplift payments are described more fully within the AEMO's procedure at https://www.aemo.com.au/media/Files/Other/consultations/gas/1091-0021%20pdf.pdf

2 Overview of the large negative AP cause

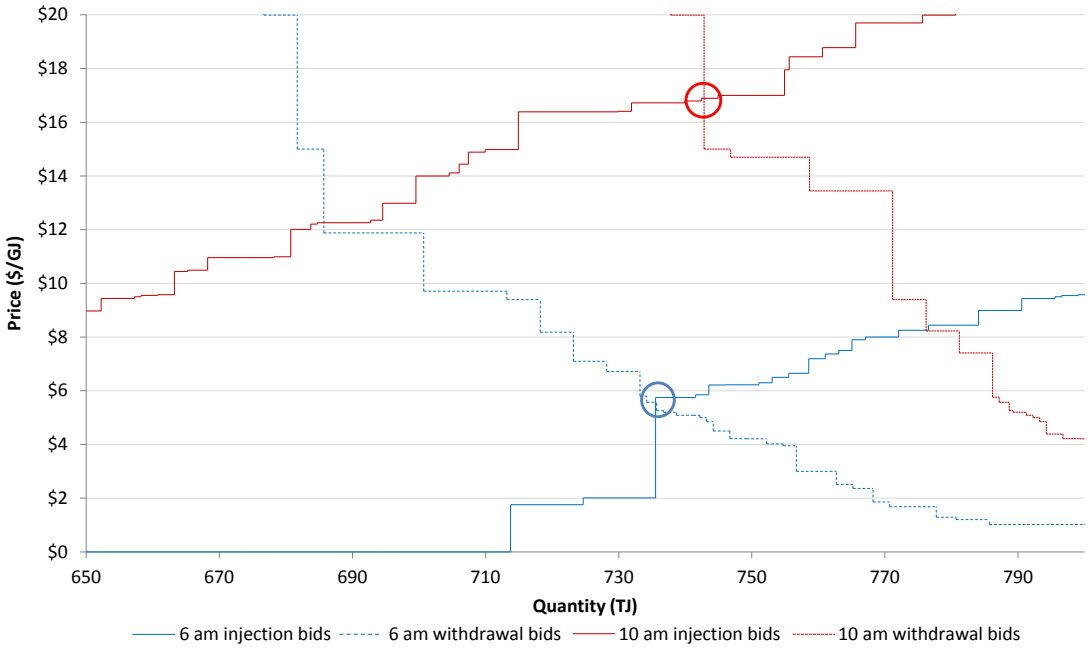
The de-scheduling of gas quantities from 10 am led to the accumulation of negative ancillary payments (negative APs) to the amount of -$365 612 across the 14 October gas day.

The beginning-of-day schedule included 586.7 TJ of available $0/GJ (cheap) injection bids at the Longford production facility to supply the market. Esso later announced that unplanned offshore maintenance at the facility on-the-day was impacting supply. Accordingly, at the request of Esso, AEMO imposed a constraint on the Longford system injection point to limit the daily deliverable quantity to less than 453 TJ for the day.

The constraint was not invoked until 8.45 am, and accordingly there was only 15 minutes before the bid cut-off time for participants to submit revised bids to the market for the 10 am scheduling horizon. As such, the quantity offered by participants at Longford remained at 586.7 TJ until the following schedule. There appears to have been little time for market participants to respond to rebid e.g. to reduce offers at Longford in accordance with the constraint or submit changed offers at other system points for the 10 am schedule (to prevent the sharp price increase to almost $17/GJ).

Figure 1 illustrates the change in the available offers (accounting largely for the Longford constraint) which led to higher prices in the 10 am scheduling horizon.[6]

Figure 1: The supply/demand balance for the 6 am and 10 am schedules



6 The Supply Demand curve is illustrative only. The 10 am withdrawal bid curve has been adjusted to the right to take into account the higher uncontrollable demand and the shortfall in linepack resulting from lower than expected injections from Longford during the beginning of day schedule. The 10 am injection bid curve has been adjusted to the left to account for the constraint applied to Longford injections on Esso's request.

In addition to changed supply conditions, higher demand forecasts (5.4 TJ) led to AEMO scheduling higher priced injections, which increased the schedule price from $5.75/GJ to $16.89/GJ at 10 am.

As the price increased for the 10 am schedule, there were a number of withdrawal bids which had been above the 6 am price, but were now below the higher 10 am price and no longer scheduled. These were largely located at the Culcairn and Iona withdrawal points. This resulted in those withdrawal bids being de-scheduled (48.75 TJ), accounting for just under $293,000 of the negative APs.

Following de-scheduling, participants no longer supplying the quantities of gas they had been paid for at 6 am must refund that money to the market. That is, participants who had been paid for their supply, through imbalance payments related to the 6 am scheduled quantity at the 6 am schedule price, were now required to pay back money for the amount of gas they were no longer forecast to provide.

Table 1 shows a breakdown of the separate components which factor into the negative ancillary payment amounts accrued across the five daily schedules highlighting the 10 am schedule. The clawed back negative APs are redistributed to participants via negative uplifts.

Table 1 – Volumes / payments (including funding allocation) by schedule

Schedule	De-scheduled quantity (TJ)	ANCILLARY PAYMENTS			Total amount ($)
		Congestion amount ($)	Surprise amount ($)	Common amount ($)	
6 am		-	-	-	-
10 am	**48.75**	**-78,523**	**-87,924**	**-126,206**	**-292,653**
2 pm	16.67	-6,798	-52,218	-1,128	-60,144
6 pm	28.62	-	-8,763	-683	-9,447
10 pm	4.34	-	-3,369	-	-3,369

From 2 pm, further gas withdrawal quantities at Iona and Culcairn were de-scheduled, despite the fall in schedule price to $6.24/GJ, because participants rebid further to reduce higher priced withdrawal bids. Remaining schedules saw further reductions still to the market price and similar de-scheduled injection quantities at 6 pm (28.6 TJ) and 10 pm (4.3 TJ).

As can be seen in Table 1, the overwhelming majority of negative congestion and surprise uplift was accrued during the 10 am schedule following the de-scheduling of low-priced withdrawal bids. This reduced system demand led to a negative change in

both the congestion and the surprise uplift quantities between the 6 am and 10 am schedules.[7]

In summary, the cost recovery of de-scheduled gas quantities is applied through both imbalance payments and negative APs. The mechanism to recoup these costs is referred to as claw-back.

Where gas has been scheduled prior to mitigate system security concerns and/or in the presence of constraints (such as the scheduling of LNG), negative APs might occur alongside previous positive ancillary payments. However, such as on 14 October, if gas is de-scheduled when a participant changes their bid price or reduces the volume of their bid quantity, or where gas is de-scheduled due to fluctuations in the schedule price, negative APs may occur without any positive APs having been paid to the market. Negative APs happen very often but until now have not exceeded - $250, 000.

Example in relation to one of the withdrawal bids de-scheduled at 10 AM

- For the 6 am schedule with a market clearing price of $5.75/GJ a withdrawal bid priced at $15 /GJ of 4000 GJ was scheduled in merit order. The participant paid $23 000 being the quantity multiplied by the 6 am price.
- At 10 AM when the market price rose to $16.90 most of this quantity was de-scheduled. The participant was then paid for that quantity now not needed over the rest of the day at the higher 10 am price.
- At this stage it had an “imbalance profit” in general terms being the volume de-scheduled times the difference between the 6 am and 10 am price.
- In these circumstances, the negative ancillary payment mechanism acts in addition to other mechanisms to claw back some of the imbalance profit that participant would otherwise receive through having gas de-scheduled.

[7] Uplift quantities that cannot be attributed to congestion or surprise factors are redistributed to participants according to their share of the total withdrawal quantity on the gas day (known as the common uplift).

Appendix A – AER SPV reporting thresholds

The Significant Price Variation Reporting thresholds are set out below.

The two reporting thresholds set out in the Victorian SPV guideline are when:

Primary Market Reporting Mechanism

- the trade weighted market price published by AEMO on a gas day is more than three times the average price for the previous 30 days and the trade weighted market price is equal to or greater than $15/GJ

Ancillary Market Reporting Mechanism

- the ancillary payment amount published by AEMO on a gas day is an amount payable or receivable which exceeds $250 000*

* The AER will continue to treat this to mean when there is a positive amount of ancillary payments generated for a day in excess of $250 000.

Appendix B – De-scheduling & Negative APs

In a paper dated 12 June 2012 for the Gas Wholesale Consultative Forum, AEMO published a paper titled “Investigation of Ancillary Payments”. In this paper AEMO noted a number of factors that can cause gas—scheduled in a previous schedule—to be de-scheduled subsequently.

AEMO noted **four scenarios**:

1. LNG can be scheduled initially, out of merit order,—for e.g., at the 2 pm schedule—to meet high forecast gas demand for the 2 pm scheduling horizon. LNG is subsequently de-scheduled due to the revised warmer forecast weather conditions. Under these circumstances, the injecting participants are compensated via APs, but must refund the market via negative APs in subsequent schedule(s) when that gas is no longer required.
2. Gas can be de-scheduled because AEMO applies supply-demand point constraints (SDPC) at a system point due to operational requirements. Under this scenario, the affected participants only incur imbalance and deviation payments. Negative APs will not be generated.
3. An injecting participant rebids its gas higher than market price, and possibly at VoLL to be de-scheduled. Similarly, a withdrawing participant can revise its bid price lower than market price to de-schedule itself. Negative APs can occur.
4. In other scenarios, the injecting or withdrawing participants do not change bid prices in subsequent schedules. But market prices move below the relevant injection bid prices, or above the relevant withdrawal bid prices. Gas is hence de-scheduled in subsequent schedules and negative APs can occur.

AEMO noted that only scenarios 3 and 4 above can involve negative APs without associated positive APs in previous schedules. The 14 October 2017 gas day fits most neatly into scenario 4.