

DWGM trade-weighted Cumulative Price Proposal

Meeting:	GWCF Meeting #39
Date:	Wednesday, 19 April 2023
Time:	9:30am-11:30am (AEST)
Location:	Teleconference
Teleconference details:	Meeting Link <u>here</u> .

1 Issue

The 2022 Gas Market Parameter Review provided two items to be further considered. Submissions to the Review suggested that the calculation of the cumulative price should be reviewed, specifically for the DWGM, to use a trade-weighted cumulative price calculation. AEMO proposed that the development of the calculation should be done in consultation with the Gas Wholesale Consultative Forum.

2 Background

The current calculation of the DWGM cumulative price is detailed below. AEMO has performed analysis of the proposal to use a trade-weighted cumulative price for the DWGM in section 3.

2.1 Current calculation of the DWGM Cumulative Price

The cumulative price calculation is described in the Wholesale Market Administered Pricing Procedure (Victoria). The cumulative price calculation uses the marginal price (representing the highest bid price scheduled) to determine the cumulative price over the current and last 34 current day schedules. These marginal prices are used in a simple average to calculate the cumulative price.

The marginal price represents the highest scheduled bid price from the last approved operating schedule for each scheduling interval. The use of the marginal price means that both out of merit order scheduled bids (i.e. resulting in ancillary payments) and merit order scheduled bids (resulting in imbalance payments) are accounted for in the calculation.

The use of the current calculation of the cumulative price means imbalances and deviations in ancillary payments caused in any scheduling interval will be weighted evenly.



3 Potential option to produce a trade-weighted Cumulative Price Calculation

3.1 Limitations to calculations

The current cumulative price is calculated at each operating schedule. At this time the known values in the market are each Market Participants':

- scheduled injection bid quantity;
- scheduled withdrawal bid quantity;
- demand forecast quantity; and
- AEMO's demand forecast override quantity.

Actual settlement quality metering information is only obtained in the DWGM on D+3 after the gas day.
Therefore, AEMO considers that any calculation of an trade-weighted cumulative price would use:

- 1. The imbalance quantity (being the difference between each participant injections and withdrawals (including controllable and uncontrollable demand)) as determined in each scheduling interval; or
- 2. The imbalance quantity (as discussed above) and the gas flow (essentially QDIFF values for each controllable injection and controllable withdrawal point) to determine the deviation.

AEMO does not consider that the second option would best meet the interests of consumers as it represents an imperfect deviation weighting (only account for controllable injection and controllable withdrawal deviations) that excludes deviations from uncontrollable demand. Therefore, AEMO does not consider option 2 to be viable.

AEMO considered whether to use an injection trade-weighted price or a withdrawal trade-weighted price and settled on the latter as the Administered Price Period would be used to protect Market Participants paying to withdraw from the market. Therefore AEMO has proceeded with testing a withdrawal imbalance-weighted cumulative price based on the schedule's imbalance quantity.

3.2 Proposed calculation

Formulation has been adopted based on an adjusted imbalance payment calculation outlined in the DWGM Technical Guide's section 9.1.

In the following equations:

s is the schedule, where s=1 is the 6 AM schedule, s=2 is the 10AM schedule, etc

c is each Market Participant registered in the DWGM for the gas day

MPs is the marginal price in \$/GJ in schedule s

QWS_{s,c} is the scheduled withdrawal quantity (including controllable withdrawals and demand forecast quantity) in GJ in schedule s for each Market Participant c

QIS_{s,c} is the scheduled injection quantity in GJ in schedule s for each Market Participant c

¹ AEMO's operational schedules will use extrapolated actuals for up to the last two hours (e.g. a schedule run at 9:05 AM will likely include extrapolated actuals for the 8:00 AM and 9:00AM hours in the 10:00 AM schedule) leading into the current scheduling interval. The extrapolated actuals used in the schedule take the most recent SCADA values, tracked and recorded by AEMO, and interpolate them with the last approved schedule for the gas days to determine the impact on linepack. In addition, deviations from controllable injections and controllable withdrawals are accounted for by QDIFF.



IQ_{1,c} is the imbalance quantity in GJ in schedule 1 for each Market Participant c

IQ_{s,c} is the imbalance quantity in GJ in schedule s for each Market Participant c

ΔIQs,c is the imbalance quantity change in GJ in schedule s for each Market Participant c

WCPs is the withdrawal trade-weighted cumulative price in \$ in schedule s

For the first (s=1) schedule, which covers the entire gas day, the WCP is calculated by:

$$WCP_1 = \frac{MP_1 \times \sum_c IQ_{1,c}}{\sum_c IQ_{1,c}} = MP_1$$

Where IQ_{1,c} is each Market Participants imbalance quantity:

$$IQ_{1,c} = MAX(0, (QWS_{1,c} - QIS_{1,c}))$$

Note: This formulation ensures only net withdrawals are included in the calculation.

For later schedules (s>1), the WCP captures the change in IQ (i.e. $\Delta IQ_{s,c}$) relative to the previous schedule and is calculated by:

$$WCP_{s} = \frac{(MP_{s} - MP_{s-1}) \times \sum_{c} \Delta IQ_{s,c}}{\sum_{c} IQ_{s,c}}$$

Where ΔIQ_{1,c} is each Market Participants imbalance quantity:

$$\Delta IQ_{s,c} = (QWS_{s,c} - QWS_{s-1,c}) - (QIS_{s,c} - QIS_{s-1,c})$$

Where IQ_{s,c} is each Market Participants imbalance quantity at the last approved schedule s:

$$IQ_{s,c} = MAX(0, (QWS_{s,c} - QIS_{s,c}))$$

Note: This formulation ensures only net withdrawals are included in the calculation. As $\Delta IQ_{s,c}$ calculation means a change in the imbalance quantity can cause the cumulative price to decrease during a gas day.

The cumulative price threshold would be the sum of WCP_s for the current and previous 34 schedules as per the current calculation methodology.

$$CPT_S = \sum_{S=35} WCP_S$$

A sample of this calculation applied to the 2022 calendar year compared to the current calculation methodology is attached.

3.3 Calculation outcomes

AEMO notes there is a limit to the data that can be provided as part of the calculation as we cannot reveal market participant uncontrollable demand. AEMO has provided an example of the proposed cumulative price calculation attached which utilises this information and provides the outcome in aggregate.

There are certain points of interest that need to be pointed out as result of the proposed changed in calculations, which are attached:

 The 6:00 AM marginal price will carry forward throughout the gas day as the majority of gas is traded in this interval.



• The following scheduling intervals will account for the marginal impact of the price change and the quantity imbalance traded in the market to determine the impact.

This is the first iteration of the proposal. Improvements could be made to the calculation methodology such as adjustments to the formulation to prevent a negative price and a reduction in traded quantity results in an increase in the cumulative price, which appears to be inappropriate.

4 Next Steps

- AEMO requests participants' views on the proposed trade-weighted cumulative price calculation by COB 15 May 2023.
- AEMO notes, the benefit of the change is limited in that the 2022 winter administered price period would have ended sooner. This may have induced different market outcomes over the Winter 2022 period.
 However it does this at the cost of increasing the market price risk of all Market Participants.
- As part of participants response please include statements indicating:
 - Support for the change and reasons why.
 - An indication of the expected change in market price risk to your business (i.e. significant increase, insignificant increase in risk, etc).
 - The expected benefit/cost to the participant of the change.
 - Alternative calculation methodologies for consideration.
- A worked example is provided for the proposed formulation.
- AEMO to determine next steps on the basis of participant responses.
- Please send any further questions to gwcf_correspondence@aemo.com.au and luke.stevens@aemo.com.au