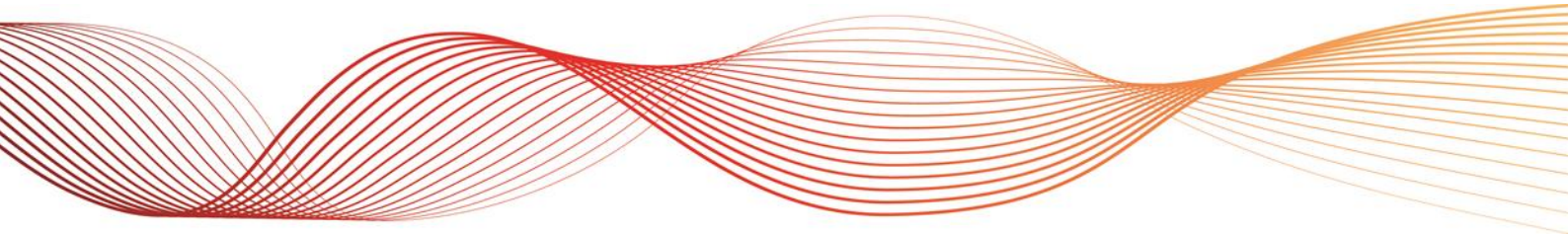




# GAS MARKET PARAMETER REVIEW 2018

CONSULTATION PAPER

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## EXECUTIVE SUMMARY

Rule 492 of the National Gas Rules (NGR) requires AEMO to conduct a review of market parameter settings in the Short Term Trading Market (STTM). While there is no mandated review of the market parameters in the Declared Wholesale Gas Market (DWGM), AEMO is taking the opportunity to also review the DWGM market parameters in conjunction with the STTM parameter review.

AEMO is required to review the STTM market parameters in accordance with the extended consultative procedure set out in rule 9A of the NGR and produce a final report setting out the outcomes of its review by 30 April 2018.

### Parameters covered by the review

Market parameters should remain in force for long enough for market participants to establish their forward contracting strategy, but should change when they could be more effective in some aspect, or when they are subject to changes in cost structure.

AEMO has split this review into modelled parameters (where the parameter could be more effective, or could be subject to changes in cost structure) and reviewed parameters (where the parameter is unlikely to become more effective, or are not subject to significant changes in cost structure).

**Table 1 Market Parameters to be reviewed**

Parameter	STTM	DWGM
Market Price Cap (STTM) VoLL (DWGM)	\$400/GJ	\$800/GJ
Administered Price Cap	\$40/GJ	\$40/GJ
Cumulative Price Threshold	\$440/GJ (110 percent of the MPC)	\$1,800/GJ
CPT horizon (STTM) Cumulative price period (DWGM)	7 consecutive gas days	35 consecutive scheduling intervals (7 gas days)
Minimum Market Price (MMP)	\$0/GJ	\$0/GJ

### Modelling approach

The parameters that will be modelled are the market price caps, the administered price caps, and the cumulative price threshold. The main driver for modelling is that there has been sustained increases to underlying market prices in both the STTM and the DWGM.

AEMO has appointed Market Reform Pty Ltd to carry out the modelling work for this review. Their modelling approach is scenario based analysis of each market's economic efficiency for a range of scenarios, market parameter values and market participant types. The scenarios cover extreme events in each market, and input data is modified for different years within the study period. Each scenario includes a sensitivity analysis to check the outcome for variations in input data.

The modelling will allow identification of sets of well performing and robust market parameters which will be used to inform the need for change and provide the basis for any recommendations for change.

AEMO is seeking submissions from interested parties on the proposed modelling approach.

### Review approach

The parameters that are being reviewed are the cumulative price horizon/period and the minimum market price. These parameters are well established, and are unlikely to require change.



AEMO is seeking submissions from interested parties to confirm that these parameters are unlikely to become more effective in any way or are not subject to significant changes in cost structure in any way.

### Consultation to date

AEMO briefed the Gas Wholesale Consultative Forum (GWCF) in June 2017 on the impact of high prices on market parameters and AEMO's proposed approach to the review. A GWCF workshop in November 2017 provided interested parties with more details of the modelling approach.

### Next Steps

This consultation will be open for submissions until **COB on Wednesday 24 January 2018**.

AEMO will brief the GWCF on modelling results in February 2018, and will publish a draft report by 2 March 2018. The draft report will be open for submission until COB on Monday 19 March 2018.

The final report will be published by 30 April 2018.

If AEMO recommends changing any market parameter, further regulatory approval will be needed to implement any changes with effect from 1 July 2020.



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# 1. INTRODUCTION

The Short Term Trading Market (STTM) and Declared Wholesale Gas Market (DWGM) feature a number of price cap parameters that manage participant risk, and convey economic price signals. These parameters have previously been derived based on extensive modelling and review. The STTM parameters were first set in 2009, based on modelling performed by McLennan Magasanik Associates (MMA) and a peer review by Creative Energy Consulting. The DWGM parameters were first set over 1997 and 1998, and were reviewed in 2008 based on modelling performed by MMA, with peer review by Market Reform. No changes resulted from this review. The DWGM cumulative price threshold was reviewed in 2013 and changed with effect from 1 April 2014.

Rule 492 of the National Gas Rules (NGR) requires AEMO to undertake a review of the STTM market parameters by 30 April 2018. AEMO is also taking the opportunity to review the DWGM market parameters in conjunction with the STTM parameter review.

This document outlines the proposed approach to the review together with AEMO’s initial analysis and considerations for stakeholder feedback.

# 2. PARAMETERS COVERED BY THE REVIEW

## 2.1 STTM market parameters

The following STTM market parameters are mandated for review under clause 492 of the NGR.

**Table 2 STTM Market Parameters**

Parameter	Description	Documented In	Value
<b>Market Price Cap (MPC)</b>	The maximum market price to apply for a gas day. The MPC provides an upper limit on market clearing prices while not suppressing or distorting economic incentives for capacity investment, and providing market compensation for involuntary curtailment.	National Gas Rules	\$400/GJ
<b>Administered Price Cap (APC)</b>	The cap applicable when an administered price cap state is in place. The APC mitigates the risk of high prices in circumstances where exposure to extreme pricing is unlikely to promote a reasonable market response or market outcome.	National Gas Rules	\$40/GJ
<b>Cumulative Price Threshold (CPT)</b>	The threshold for automatic imposition of an administered price cap state. The CPT mitigates the risk of extended periods of high prices.	National Gas Rules	\$440/GJ (110 percent of the MPC)
<b>CPT horizon (CPTH)</b>	The period over which hub prices are summed to determine whether the cumulative price threshold has been exceeded.	National Gas Rules	7 consecutive gas days
<b>Minimum Market Price (MMP)</b>	The minimum market price to apply for a gas day.	National Gas Rules	\$0/GJ

There are two other parameters that currently operate in the STTM:

- **Market operator service (MOS) Cost Cap**—currently set at \$50/GJ, the MOS cost cap is the maximum price for MOS increase and decrease offers covering the MOS service component of market settlements. The MOS cost cap must be sufficient to cover the cost of holding capacity, while limiting MOS costs on the market.
- **Settlement Surplus Cap**—currently set at \$0.14/GJ, the settlement surplus cap is the maximum settlement surplus payment rate to be allocated based on deviations.

Neither the MOS cost cap nor the settlement surplus cap are within the scope of this review. Both were considered in the STTM operational review completed on 30 March 2012<sup>1</sup>.

## 2.2 DWGM market parameters

The following DWGM parameters were included in the 2008 review:

**Table 3 DWGM Market Parameters**

Parameter	Description	Documented In	Value
<b>Value of Lost Load (VoLL)</b>	The maximum market price. VoLL provides an upper limit on market clearing prices while not suppressing or distorting economic incentives for capacity investment, and providing market compensation for involuntary curtailment.	National Gas Rules	\$800/GJ
<b>Administered Price Cap (APC)</b>	The cap applicable when an administered price cap state is in place. The APC mitigates the risk of high prices in circumstances where exposure to extreme pricing is unlikely to promote a reasonable market response or market outcome.	Wholesale Market Administered Pricing Procedures (Victoria)	\$40/GJ
<b>Cumulative Price Threshold (CPT)</b>	The threshold for imposition of an administered price period. The CPT mitigates the risk of extended periods of high prices.	Wholesale Market Administered Pricing Procedures (Victoria)	\$1,800/GJ
<b>Cumulative Price Period (CPP)</b>	The period over which marginal clearing prices are summed to determine whether the cumulative price threshold has been exceeded.	Wholesale Market Administered Pricing Procedures (Victoria)	35 consecutive scheduling intervals (7 gas days)
<b>Minimum bid price (MBP)</b>	The minimum price for a bid	National Gas Rules	\$0/GJ

The Value of Customer Reliability (VCR) is not within the scope of this review.

## 3. REVIEW APPROACH AND TIMETABLE

### 3.1 Review approach

Once set, market parameters should remain in force for long enough for market participants to establish their forward contracting strategy, but should change when they could be more effective in some aspect, or when they are subject to changes in cost structures. Accordingly, AEMO has split the market parameters being into two review categories:

- **Modelled parameters** – where the parameters may be more effective or could be subject to changes in cost structure; and
- **Reviewed parameters** – where the parameters are unlikely to become more effective or are not subject to significant changes in cost structure.

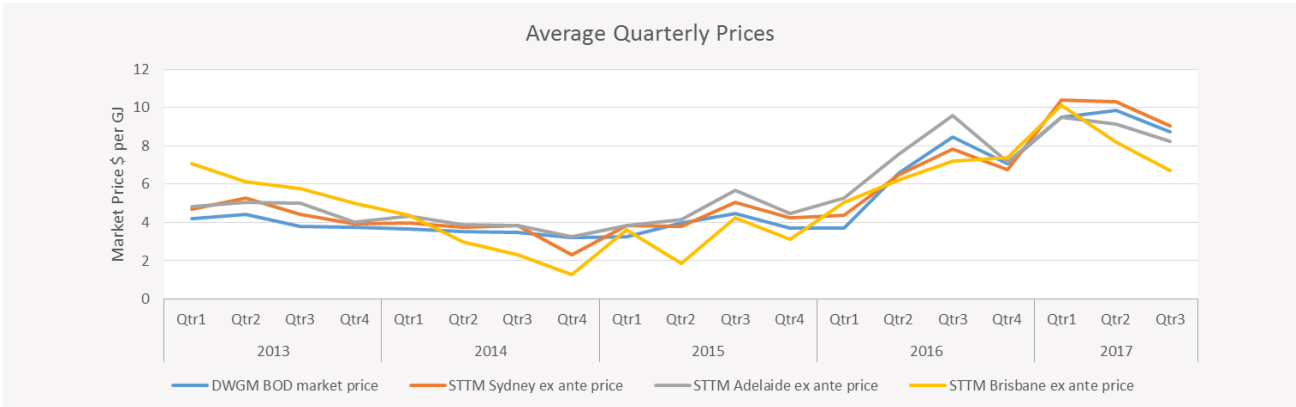
Each is discussed in more detail below.

<sup>1</sup> STTM Operational Review and Demand Hubs Review—Final Report, AEMO, 30 March 2012.

### Modelled Parameters

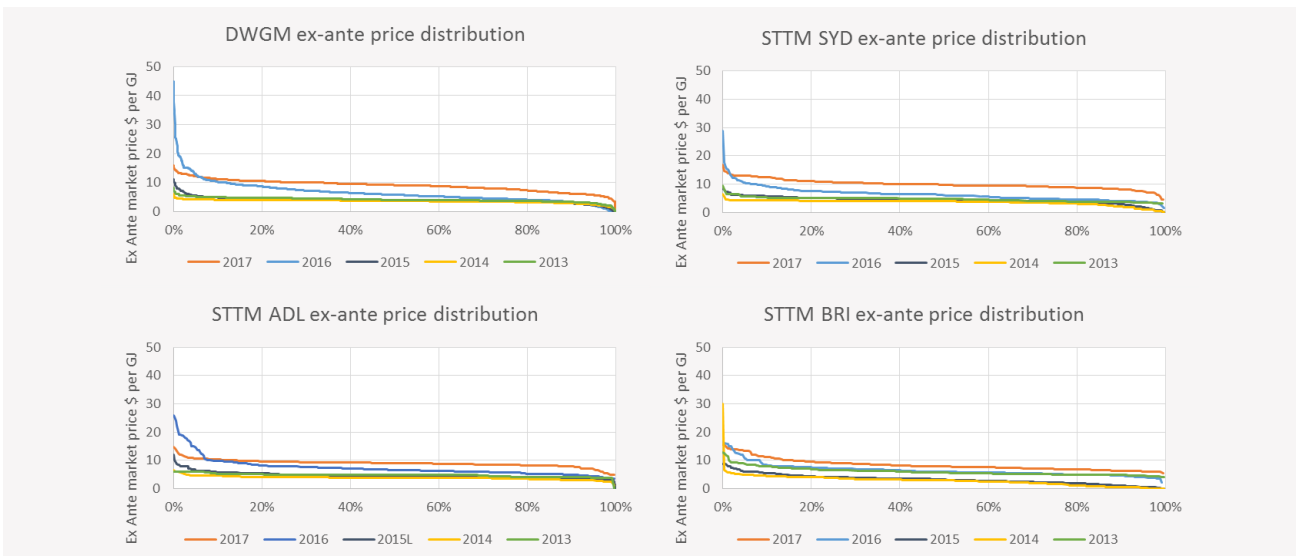
With the sustained high average prices in all east coast gas markets since 2016 (see below), it is clear that there have been sustained changes to the cost structures of some market parameters.

**Figure 1 Average quarterly prices by market**



The distribution of ex ante prices since 2013 shows steady increases across all markets, with increased price volatility in 2016 (see Figure 2 below).

**Figure 2 Ex ante price distribution**



Parameters possibly affected by changes to cost structure are:

- Market Price Cap (MPC) / VoLL
- Administered Price Cap (APC)
- Cumulative Price Threshold (CPT)

AEMO has retained consultants Market Reform Pty Ltd to develop a modelling approach, model the parameters and make recommendations for the values of market parameters to be applied from 1 July 2020.

### Reviewed Parameters

Where parameters are unlikely to become more effective or subject to significant changes in cost structure, AEMO will be consulting with interested parties to confirm that these parameters should remain unchanged. Parameters included in this category are:

- CPT Horizon (CPTH) / Cumulative price period (CPP)
- Minimum Market Price (MMP) / Minimum bid price (MBP)

These market parameters are reviewed in section 4 below.



### 3.2 Modelling Approach

Based on a Scope of Work developed in consultation with the Gas Wholesale Consultative Forum (GWCF), AEMO sought proposals from consultants to carry out the modelling work. Three submissions were received. After evaluation of the proposals, AEMO appointed Market Reform Pty Ltd as the modelling consultant.

#### Summary of Market Reform’s modelling approach

Market Reform’s approach is to model the market’s economic efficiency for a range of market parameter values across a number of scenarios. Each scenario will include base and extreme event cases, so that the loss of economic efficiency for the modelled market parameter values can be determined for the scenario. The market outcomes for the scenario are then applied to a number of typical market participants to assess their varying degree of risk exposures resulting from the scenario.

The market context for scenarios will reflect either the DWGM or the STTM, with the supply and demand modified to reflect conditions for a particular year within the study period and extreme events relevant to the particular market. Each scenario will include an extreme pricing event and subsequent days during which the CPT may be reached, triggering APC. This allows assessment of each market’s economic performance for the modelled market parameter values.

A scenario designed to reflect interactions between markets will include sets of STTM data and DWGM data suited to the scenario, but the market modelling for each will be run separately. Each simulation will include a sensitivity analysis to test the robustness of the market parameters for outcomes resulting from changes to the uncontrollable demand and offer prices used in the scenario. Where a scenario and set of data inputs would result in curtailment, the outputs are ignored<sup>2</sup>.

The modelling will produce sets of results for combinations of gas market parameters, extreme events (in different market contexts) and for different sensitivity factor settings. From these, a set of well performing and robust parameters can be identified. This set of parameters will be used to inform the need for change for a market parameter, and will inform the recommendation of more appropriate market parameter values.

For more details of Market Reform’s approach, please refer to Attachment 1 – Gas Market Parameter Review 2018 – Consultation Report - Market Reform Pty Ltd.

#### Market Reform Consultation paper

Market Reform’s approach to modelling the parameters is explained in more detail in Attachment 1, and is structured as set out in Table 4 below.

**Table 4 Market Reform report structure**

Parameter	Description
Section 1	Overview of the Market Parameter Review
Section 2	Overview of the markets, trends and the drivers of risks in those markets.
Section 3	Role and bounds of gas market parameters
Section 4	Parameter assessment problem.
Section 5	Proposed Methodology and Scenarios
Section 6	Comparison of this review with previous gas market parameter reviews conducted for AEMO.
Section 7	Key data and sources.
Section 8	Next steps

<sup>2</sup> General curtailment in the STTM or the DWGM will lead to an APC regardless of other market prices, so the scenario is ineffective.

**Modelling Approach and Scenarios**

AEMO is seeking submissions from interested parties as to the suitability of the proposed approach, with details of any areas of potential improvements.

**Market Reform’s specific questions**

AEMO is seeking submissions from interested parties in response to the specific questions posed in Attachment 1 – Gas Market Parameter Review 2018 – Consultation Report - Market Reform Pty Ltd.

### 3.3 Review timetable

AEMO is required to review the STTM market parameters in accordance with the extended consultative procedure as per section 9A of the NGR. AEMO is required to complete this review by producing a final report setting out its final recommendations by 30 April 2018.

The review of the DWGM market parameters will adhere to this timetable.

**Table 5 Review timetable**

Process	Date
<i>Industry workshop to discuss review approach and scope</i>	3 November 2017 (Completed)
Consultation Paper – Open for Consultation	8 December 2017
Consultation Paper – Closing date for submissions	24 January 2018
Gas Wholesale Consultative Forum – Presentation of modelling and consultation outcomes	13 February 2018
Draft Report – Open for consultation	2 March 2018
Draft Report – Closing date for submissions	19 March 2018
AEMO releases final report	30 April 2018

## 4. REVIEW OF PARAMETERS

### 4.1 Minimum market price / Minimum bid price

**Purpose of Minimum market price**

Key principles in setting minimum market price:

- no shipper should want to supply the spot market at a price less than MMP<sup>3</sup>
- MMP set sufficiently low as to not constrain the schedule

**Previous reviews**

The initial review of the STTM market parameters during the STTM Establishment Project concluded that:

*“...a commercial or operational requirement for a negative minimum market price may not exist. Without a demonstrated need to bid below \$0/GJ there appears little justification for setting a minimum market price below this level.”<sup>4</sup>*

Although not specifically modelled in previous reviews of the DWGM, the circumstances applying to the STTM are directly applicable to the DWGM.

<sup>3</sup> STTM MARKET SETTINGS ANALYSIS, June 2009, Report to VENCORP by McLennan Magasanik Associates  
<sup>4</sup> STTM MARKET SETTINGS ANALYSIS, June 2009, Report to VENCORP by McLennan Magasanik Associates

### Treatment of minimum market price in the NEM

The National Electricity Market (NEM) includes a negative minimum market price to allow negatively priced offers to give greater certainty of dispatch, thus avoiding stopping and starting generators for short periods.

Because injections of gas are treated as being uniform for the balance of the gas day in the DWGM, and for a full gas day in the STTM, the scheduling period in gas is significantly longer than the five minute NEM dispatch interval. It is therefore unlikely that the incentive for generators to offer short periods at negative prices in the NEM is replicated in gas markets.

### Are current minimum market prices effective?

From 2013 until the end of Q3 in 2017, there have been 14 instances where the ex-ante market price has cleared at zero dollars per GJ (see Table 6 below for details).

**Table 6 Ex Ante market prices of zero dollars per GJ**

	DWGM	STTM
2013	1 (10am)	1 (Adelaide)
2014	-	1 (Brisbane)
2015	-	-
2016	2 (10am) 3 (6pm) 6 (10pm)	-
2017 (to end Q3) <sup>5</sup>	-	-

While it is likely there will be tie breaking at zero dollars due to system point constraints in the DWGM (eg during maintenance), setting a negative MMP is likely to shift the tie breaking to the lower MMP with no change to the ex-ante market price.

### Submissions on suitability of current minimum market prices

AEMO’s initial assessment is that the setting for an MMP set at zero dollars per GJ is effective.

**Minimum market price**  
 AEMO is seeking submissions from interested parties as to whether the setting for MMP in the DWGM and STTM at \$0 per GJ could be more effective in any way?  
 If so please advise the areas of potential improvements.

## 4.2 CPT horizon / Cumulative price period

### Purpose of the CPT horizon / Cumulative price period

The primary purpose of the CPT is to cap price risks over a period of time. The CPTH / CPP sets the period of time for which prices are accumulated. It is aligned across the DWGM and STTM at seven gas days (35 consecutive scheduling intervals), which corresponds with the 336 intervals used in the NEM.

### Treatment of the CPT horizon in current Reliability Panel review

The Reliability Panel has determined that the current review of reliability standard and settings will not examine the form of the CPT, and will only assess the level of the CPT<sup>6</sup>.

### Submissions on suitability of the current CPT horizon

AEMO’s initial assessment is that having the settings for CPTH / CPP are effective at seven consecutive gas days in the STTM and 35 consecutive scheduling intervals in the DWGM.

<sup>5</sup> There has been one zero dollars per GJ ex ante market price for the 10pm schedule in Q4 to date

<sup>6</sup> Reliability Panel, Review of reliability standard and settings guidelines, final guidelines, 1 December 2016, Sydney (Section 3.4)

**CPT horizon / Cumulative price period**

AEMO is seeking submissions from interested parties as to whether the setting for CPTH at seven consecutive gas days in the STTM and CPP at 35 consecutive scheduling intervals in the DWGM could be more effective in any way?

If so please advise the areas of potential improvements.

## 5. CONSULTATION TO DATE

### 5.1 GWCF briefing

The GWCF was briefed on the impact of higher prices on market parameters and AEMO's proposed approach to the parameter review, and were given the opportunity to provide input to the scope of work for modelling of market parameters.

Papers for past GWCF meetings are available on AEMO's website.

### 5.2 Industry workshop

To initiate consultation on the review process, on 3 November 2017, AEMO held an industry workshop. The purpose of the workshop was to seek industry views on the following:

- The review approach and timetable proposed by AEMO.
- The set of parameters requiring review and/or modelling.
- Presentation from Market Reform Pty Ltd including:
  - Markets and Trends
  - Past Reviews
  - Proposed Approach
  - Modelling
  - Data Sources

## 6. NEXT STEPS

AEMO invites submissions from interested parties in response to questions in this paper and in Attachment 1 Gas Market Parameter Review 2018 – Consultation Report - Market Reform Pty Ltd. Interested parties should use the submission template provided at the Gas Market Parameter Review 2018 website (<http://www.aemo.com.au/Stakeholder-Consultation/Consultations/Gas-Market-Parameter-Review-2018>) to provide responses.

Responses should be directed by email to [gwcf\\_correspondence@aemo.com.au](mailto:gwcf_correspondence@aemo.com.au), with '[company name] Submission to Consultation – Gas Market Parameter Review 2018' in the subject to be received no later than **COB on Wednesday 24 January 2018**.

## 7. ATTACHMENTS

1. Gas Market Parameter Review 2018 – Consultation Report - Market Reform Pty Ltd.
2. Gas Market Parameter Review 2018 – Consultation - Submission template



# MEASURES, ABBREVIATIONS AND GLOSSARY

## Units of measure

Abbreviation	Unit of measure
GJ	Gigajoule
TJ	Terajoule
PJ	Petajoule

## Abbreviations

Abbreviation	Expanded name
AEMO	Australian Energy Market Operator
APC	Administered Price Cap (STTM & DWGM)
CPP	Cumulative Price Period (for CPT in DWGM) – equivalent to CPTH in STTM
CPT	Cumulative Price Threshold (STTM & DWGM)
CPTH	CPT Horizon (for CPT in STTM) – equivalent to CPP in DWGM
DWGM	Declared Wholesale Gas Market - Victoria
MBP	Minimum Bid Price (DWGM) - equivalent to MMP in STTM
MMP	Minimum Market Price (STTM) – equivalent to MBP in DWGM
MPC	Market Price Cap (STTM) – equivalent to VoLL in DWGM
NEM	National Electricity Market
NER	National Electricity Rules
NGL	National Gas Law
NGR	National Gas Rules
STTM	Short Term Trading Market – Sydney, Adelaide and Brisbane hubs
VoLL	Value of Lost Load (DWGM) – equivalent to MPC in STTM

## Glossary

This document uses many terms that have meanings defined in the National Electricity Rules (NER) or the National Gas Rules (NGR). The NER / NGR meanings are adopted unless otherwise specified.