

# Wholesale Market Gas Scheduling Procedures (Victoria)

**Prepared by:** AEMO Gas Markets and System Operations

---

**Version:** 4.2

---

**Effective date:** 1 March 2023

---

**Status:** FINAL

---

**Approved for distribution and use by:**

**Approved by:** M Gatt

---

**Title:** Executive General Manager, Operations

---

**Date:** 08 / 02 / 2023

---

[aemo.com.au](https://aemo.com.au)

New South Wales | Queensland | South Australia | Victoria | Australian Capital Territory | Tasmania | Western Australia

Australian Energy Market Operator Ltd ABN 94 072 010 327

## Contents

<b>Current version release details</b>	<b>3</b>
<b>1. Introduction</b>	<b>4</b>
1.1. Purpose and scope	4
1.2. Application	4
1.3. Legal and Regulatory Framework	4
1.4. Definitions and interpretation	4
1.5. Related documents	6
<b>2. General</b>	<b>7</b>
2.1. Document and Process Overview	7
2.2. Scheduling Instructions	7
2.3. Objectives	8
<b>3. Inputs to Scheduling</b>	<b>10</b>
3.1. AEMO demand forecasts and demand forecast overrides	10
3.2. Compressor Commitment	10
3.3. End of Day Linepack Target	11
3.4. Operating Data	12
3.5. Market Clearing Engine Reference Data	12
3.6. Market Participant Data	13
3.7. Nodal Demand Allocation	14
3.8. Constraints	14
3.9. Tie breaking rights from capacity certificates	17
3.10. Intra-day Adjustments for Injections or Withdrawals of Controllable Quantities (Qdiff)	18
3.11. Initial Conditions	18
<b>4. Scheduling – Normal State</b>	<b>20</b>
4.1. Operating Schedule	20
4.2. Pricing Schedule	21
<b>5. Dealing with Abnormal conditions</b>	<b>24</b>
5.1. Plant or Facility Outages	24
5.2. Ad hoc Operating Schedules	24
5.3. Threats to System Security	25
5.4. Scheduling in Abnormal Conditions	28
<b>6. Operation of AEMO’s LNG Reserve</b>	<b>36</b>
<b>7. Administered Prices</b>	<b>37</b>
<b>8. Market Notifications and Communications</b>	<b>37</b>
<b>Version release history</b>	<b>39</b>

## Tables

Table 1 Glossary of Terms .....	4
Table 2 Abbreviations .....	5

Table 3 Related Wholesale Market Procedures ..... 6

Table 4 Accreditation values ..... 17

Table 5 Schedule Review Process ..... 21

Table 6 Condition 1 – Scheduling to address facility outages, interruptions, or supply deficiency ..... 30

Table 7 Condition 2 – Unable to produce both the pricing schedule and operating schedule by the required standard schedule time ..... 30

Table 8 Condition 3 – Unable to produce an operating schedule (pricing schedule is valid) by the required standard schedule time ..... 31

Table 9 Condition 4 – Unable to approve the pricing schedule and operating schedule by the required standard schedule time ..... 32

Table 10 Condition 5 – Unable to approve the pricing schedule and operating schedule by the required standard schedule time ..... 33

Table 11 Condition 6 – Publish an ad hoc operating schedule due to potential threat to system security ..... 34

Table 12 Condition 7 – Market Participants unable to submit scheduling input data by the required submission cut-off time ..... 34

Table 13 Condition 8 – Unable to produce a Nodal demand ..... 35

## Figures

Figure 1 Process for scheduling gas in the DWGM by AEMO ..... 7

Figure 2 AEMO Response to a Threat to System Security ..... 25

## Current version release details

Version	Effective date	Summary of changes
4.2	1 March 2023	AEMO is implementing this Procedure change to comply with the AEMC's DWGM interim LNG storage measures rule change by adding a new chapter 6 Operation of AEMO's LNG Reserve to the Procedure. Minor editorial amendment to clarify that AEMO informs participant of threat instead of declaring a threat.

**Note: There is a full version history at the end of this document.**

# 1. Introduction

## 1.1. Purpose and scope

These are the Wholesale Market Gas Scheduling Procedures (Victoria) (**Procedures**) made in accordance with section 91BL of the National Gas Law (NGL) and rule 206 of the National Gas Rules (NGR).

The NGL and the NGR prevail over these Procedures to the extent of any inconsistency.

These Procedures may only be remade in accordance with Part 15B of the NGR.

The purpose of these Procedures is to govern the operation of the Declared Wholesale Gas Market (DWGM).

## 1.2. Application

These Procedures applies to AEMO and each person to whom they are expressed to apply.

## 1.3. Legal and Regulatory Framework

These Procedures have been made under section 91BL of the National Gas Law.

These Procedures also address AEMO's actions in the context of *emergencies*. Section 53 of the National Gas (Victoria) Act 2008 requires AEMO to publish a 'gas emergency protocol'. AEMO has published the Gas Emergency Protocol in compliance with that requirement. Additionally, the Minister may issue directions to AEMO in respect of the Gas Emergency Protocol or its operation under section 54.

Finally, the Minister has powers under Part 9 of the Gas Industry Act 2001 to proclaim that a shortage of gas supply exists and exercise certain powers, including direct AEMO in the circumstances.

## 1.4. Definitions and interpretation

### 1.4.1. Glossary

Terms defined in the NGL and the NGR have the same meanings in these Procedures unless otherwise specified in this clause.

Terms defined in the NGL and NGR are intended to be identified in these Procedures by italicising them, but failure to italicise a defined term does not affect its meaning.

The words, phrases and abbreviations in the table below have the meanings set out opposite them when used in these Procedures.

**Table 1** Glossary of Terms

Term	Definition
Cut-Off Time	The time after which a Market Participant submission ceases to apply for a scheduling horizon. This cut-off time is normally two hours before the day-ahead midnight standard schedule time, and one hour before other standard schedule times.
Demand Override Methodology	The methodology published under clause 3.1A.

Term	Definition
Facility Operator	(a) A Producer; (b) An interconnected transmission pipeline service provider; or A Storage Provider
Feasible Operating Schedule	An operating schedule that is physically achievable within operating pressures between the relevant maximum allowable and minimum operational pressures across the DTS
Gas Emergency Protocol	The collection of documents at: <a href="https://aemo.com.au/energy-systems/gas/emergency-management/victorian-role">https://aemo.com.au/energy-systems/gas/emergency-management/victorian-role</a>
MCE Factors	Mathematical constants used in the MCE algorithm such as gas properties and characteristics, linearisation steps used by the MCE and VoLL.
Node	A point on a pipeline used to define the pipeline network for a mathematical model for the purpose of scheduling by the MCE, such as a junction, a supply point, delivery point, an inlet or an outlet of a connected facility (e.g. compressor) used to define the pipeline network for a mathematical model for the purpose of scheduling by the MCE.
Normal State	The DTS is in a Normal State when all of the following conditions are met: (a) it is operating within the requirements of the Gas Quality Guidelines and breaches of the gas quality specifications as specified in the Guidelines do not require intervention by AEMO; (b) system pressures and flows are within, and forecast to remain within, the operating limits specified in the Wholesale Market System Security Procedures; and (c) in AEMO's reasonable opinion there is no threat to: (i) public safety; or (ii) the supply of gas to end users.
Schedule	An operating schedule or a pricing schedule
Valid Pricing Schedule	A pricing schedule that achieves competitive market price outcomes by scheduling the lowest-priced injection bids, the highest-priced withdrawal bids and demand forecasts, within the accreditation of controllable quantities and the capacity limitations at connection points.
WebExchanger	An electronic system used by Market Participants to submit information to AEMO.

## 1.4.2. Abbreviations

**Table 2** Abbreviations

Term	Definition
APC	administered price cap
BoD	Beginning of Day
DFPC	A Directional Flow Point Constraint applied to two or more points on a pipeline in accordance with clause 3.9.
DFS	Demand Forecast System, which is used for processing Market Participant forecasts, AEMO demand forecast overrides, and generating nodal demand forecasts as inputs for the MCE.
DTS	The declared transmission system in Victoria.
EoD	End of Day
LP	Linepack
MCE	Market Clearing Engine, optimisation software that determines operating schedules and pricing schedules.
MIBB	market information bulletin board
NFTC	Net Flow Transportation Constraint - A constraint applied to a group of injection/withdrawal meters at a common location to prevent the transportation capacity of the pipeline being exceeded.
NGL	National Gas Law

Term	Definition
NGR or Rules	National Gas Rules
Qdiff	An Intra-day adjustment applied to operating schedules and pricing schedules, by AEMO clause in accordance with clause 3.11.
SCADA	A real time supervisory control and data acquisition system that processes data used in the management of the DTS.
SDPC	Supply Demand Point Constraint -A constraint applied to a system point, by AEMO in accordance with clause 3.7.
SMS	Short Message Service, which allows for the transmission of short text messages to and from digital mobile phones.
SWN	A System Wide Notice to individual Market Participants, all Market Participants, or any other relevant Participants.
TMM	A system used by AEMO in conjunction with the MCE to produce operating schedules and pricing schedules.

### 1.4.3. Interpretation

The following principles of interpretation apply to these Procedures unless otherwise expressly indicated:

- (a) These Procedures are subject to the principles of interpretation set out in Schedule 2 of the National Gas Law.
- (b) References to time are references to Australian Eastern Standard Time.
- (c) Market prices are determine to four decimal places and gas is scheduled in integer gigajoule terms to the whole gigajoule.

## 1.5. Related documents

The following documents support this Procedure.

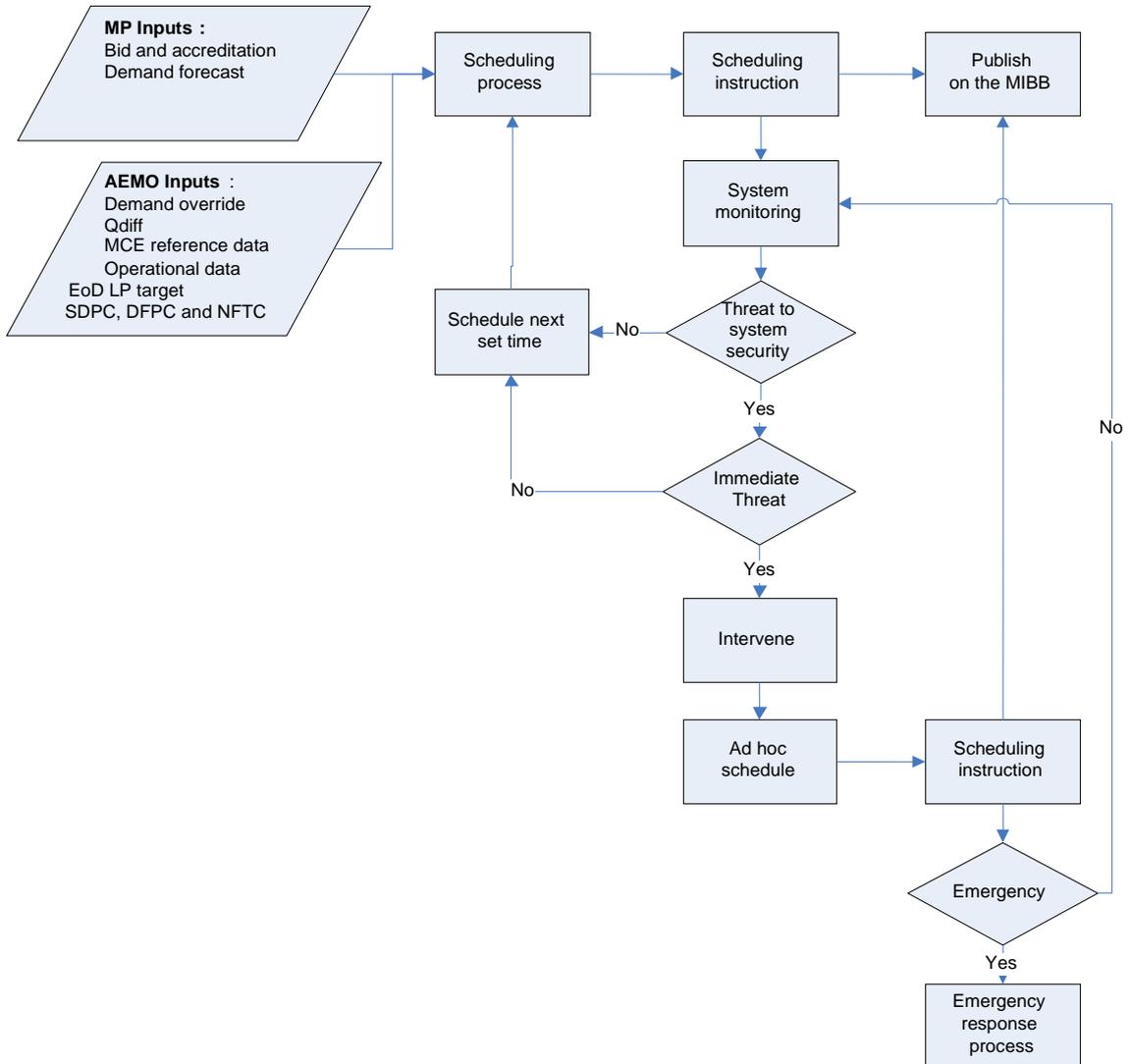
**Table 3 Related Wholesale Market Procedures**

Reference	Title	Location
Accreditation Procedures	Wholesale Market Accreditation Procedures (Victoria)	<a href="#">AEMO website</a>
Administered Pricing Procedures	Wholesale Market Administered Pricing Procedures (Victoria)	<a href="#">AEMO website</a>
Ancillary Payment Procedures	Wholesale Market Ancillary Payment Procedures (Victoria)	<a href="#">AEMO website</a>
Electronic Communication Procedures	Wholesale Market Electronic Communication Procedures (Victoria)	<a href="#">AEMO website</a>
LNG Reserve Procedure	Wholesale Market LNG Reserve Procedure (Victoria)	<a href="#">AEMO website</a>
System Security Procedures	Wholesale Market System Security Procedures (Victoria)	<a href="#">AEMO website</a>
Uplift Payment Procedures	Wholesale Market Uplift Payment Procedures (Victoria)	<a href="#">AEMO website</a>
Capacity Certificates Auction and Transfer Procedures	Wholesale Market Capacity Certificates Auction and Transfer Procedures	<a href="#">AEMO Website</a>
Gas Quality Guidelines	Gas Quality Guidelines	<a href="#">AEMO Website</a>
Gas Emergency Protocol	Gas Emergency Protocol	<a href="#">AEMO Website</a>

## 2. General

### 2.1. Document and Process Overview

Figure 1 Process for scheduling gas in the DWGM by AEMO



### 2.2. Scheduling Instructions

AEMO will issue *scheduling instructions* to *Market Participants*, and, in the case of the scheduling of *LNG injection bids*, the *declared LNG storage provider*. The issued *scheduling instructions* will specify the quantities of gas which each *Market Participant* is required, in accordance with the Rules, to inject or withdraw in each hour of the *gas day*.

The scheduling instructions will normally be issued using the *operating schedule* published on the MIBB (refer to Chapter 7). However, if AEMO is unable to *publish an operating schedule* or *Market Participants* are unable to access the MIBB to retrieve their *scheduled injections* or

*scheduled withdrawals*, AEMO may issue *scheduling instructions* to *Market Participants* or the *declared LNG storage provider* by telephone, followed up with a fax or email confirmation of the instructions.

## 2.3. Objectives

AEMO will, to the extent practicable, attempt to satisfy the following objectives when issuing *scheduling instructions*:

- (a) ensure that enough gas is made available for withdrawal from the DTS during each *gas day* to satisfy withdrawal and LP requirements;
- (b) operate the DTS within the system security procedures and avert or minimise threats to system security; and
- (c) minimise the cost of satisfying demand for gas, taking into account:
  - (i) *operating schedules*;
  - (ii) *injection bids* and *withdrawal bids* by *Market Participants*;
  - (iii) any operational agreements, including operating agreements for interconnecting pipelines and the *service envelope agreement*;
  - (iv) information from the accreditation of *controllable quantities* of injections and withdrawals for individual *Market Participants* and locations where more than one *Market Participant* injects or withdraws gas through a common *connection point* or *meter*;
  - (v) plant or facility outages;
  - (vi) maintenance of the DTS;
  - (vii) *system injection point* constraints, *system withdrawal point* constraints, and DFPC;
  - (viii) DTS constraints;
  - (ix) any direction under the Gas Industry Act 2001 (Vic) or intervention by AEMO under the Rules;
  - (x) the practicality in compressor ramping up and down, time and the technical limitations and implications of starting and stopping compressors for short periods;
  - (xi) where *LNG* is scheduled to be vaporised:
    - (A) the time taken to start the vaporisation processes and implement it;
    - (B) the technical limitations and practicality in starting and stopping vaporisation over short periods; and
    - (C) the minimum practical rate of vaporising *LNG*; and
  - (xii) any other matter which AEMO reasonably considers is required to be taken into account to achieve the objectives of minimising the cost of satisfying demand and maintaining the security of the DTS.

When issuing *scheduling instructions*, AEMO may adjust the inputs to or outputs from the *scheduling* process where it reasonably considers this is required to reflect operational practicalities.

All material factors which AEMO takes into account for the purposes of preparing an *operating schedule* will be recorded by AEMO so that the *gas scheduling procedures* can be properly audited.

## 3. Inputs to Scheduling

Chapter 4 sets out the inputs and assumptions used by AEMO for the purposes of producing *operating schedules* and *pricing schedules* under normal operating conditions. This chapter provides more information about some of those inputs and assumptions.

### 3.1. AEMO demand forecasts and demand forecast overrides

AEMO determines its own *demand forecasts*.

Prior to producing an *operating schedule*, AEMO will compare its *demand forecast* with the Market Participants' aggregate *demand forecast* and may apply a *demand forecast override*.

A *demand forecast override* is an amount added or subtracted by AEMO to the *Market Participants'* aggregate *demand forecast* for each hour so as to ensure that an appropriate amount of gas is *scheduled* for that *gas day* to maintain adequate LP over the day and therefore maintain *system security*.

AEMO will apply a demand forecast override if:

- (a) the *Market Participants'* aggregate *demand forecast*, including any updated *demand forecasts* submitted by *Market Participants*, differ from AEMO's aggregate *demand forecast* by more than the amounts specified in the Demand Override Methodology; or
- (b) AEMO reasonably considers that scheduling the DTS without applying a *demand forecast override* creates an unacceptable risk of *curtailment*, threat to *system security*, or generates circumstances where a threat to *system security* may occur.

#### 3.1.1. Demand Override Methodology

AEMO must prepare and publish a methodology setting out how it will determine and apply *demand forecast overrides*.

### 3.2. Compressor Commitment

The commitment of compressors will depend on the following criteria:

- (a) availability of compressors;
- (b) gas demand for the *gas day*;
- (c) injections and withdrawals at different locations;
- (d) Balance of Day (BoD) Linepack (LP);
- (e) End of Day (EoD) LP target;
- (f) expected injections and withdrawals by location; and
- (g) total forecast demand for the following day.

AEMO will specify an initial commitment of required compressors as an input to the MCE for scheduling. The MCE optimises the operation of committed compressors by determining the required power output for each committed compressor. Power output is constrained by the minimum and maximum operating limits of each compressor.

As far as practicable, AEMO will:

- (a) assess the effect of the compressor commitment in the *operating schedule* on:
  - (i) *system security*, in accordance with the *system security procedures*;
  - (ii) compressor operations; and
  - (iii) locational (Nodal) prices in the *operating schedule*; and
- (b) adjust compressor commitments to produce an *operating schedule* that:
  - (i) schedules pipeline pressures above minimum operating pressures and below maximum operating pressures, and in which all expected demand is satisfied, taking into account that the MCE alerts the operator to a non-feasible solution where any pipeline pressure is below the defined minimum operating pressure (refer to clause 3.5).
  - (ii) is feasible;
  - (iii) achieves a reasonable and practical balance between the starting and stopping of compressors over short time periods (i.e. 3 - 4 hours) and the objective of minimising the cost of satisfying demand over the day, taking into account that the MCE does not optimise the full costs and practicalities of starting and stopping compressors; and
  - (iv) reasonably satisfies the objective of minimising the cost of satisfying demand, taking into account the effects of compressor operations on locational (nodal) prices.

### 3.3. End of Day Linepack Target

The DTS typically operates with a reasonably constant rate of hourly injections of gas from the *system injection points*. The total hourly demand swings from levels below the injection rates during off peak periods to above the injection rates during peak periods. LP varies over the day, as it is the difference between the normally constant injection rate and the normally variable withdrawal rate accumulated over the day. A certain amount of LP is required to maintain minimum system pressures, but LP beyond that level can be used as a source of supply for future hours.

AEMO's objective in setting EoD LP targets is to ensure sufficient gas in the pipelines at the end of each day so that:

- (a) AEMO's reasonable expectation of the following day's demand will be met at all *system withdrawal points* and times during that *gas day*; and
- (b) pressures will not fall below minimum, or rise above maximum, limits of operation during a *gas day*.

AEMO will set the EoD total system LP target when producing *operating schedules* and *pricing schedules*, and may also set EoD LP targets for *system withdrawal zones* for operational reasons in an *operating schedule* when required. The MCE *schedules* an EoD LP quantity in accordance with the target specified by AEMO for the system total in the *operating schedules* and *pricing schedules*.

AEMO will determine the EoD total system LP target by balancing *system security* with market requirements according to the following inputs and criteria:

- (a) minimum required EoD LP level is maintained at all *system withdrawal points* and at all times during a *gas day*, especially in winter operation;
- (b) use of system LP capacity is maximised to cope with various operational scenarios in responding to gas market operation;
- (c) sufficient LP “head room” is retained for *demand forecast* error in order to prevent potential breaches of maximum operational pressures;
- (d) appropriate compressor operation is achieved;
- (e) injection and withdrawal rates at each *system injection point* or *system withdrawal point* (as relevant);
- (f) the total demand level and demand profile, as affected by weather conditions and usage by large customers (e.g. gas fired generation demand);
- (g) seasonal factors (i.e. time of year); and
- (h) *system security*.

AEMO may change the EoD total system LP target from time to time where it reasonably considers it is necessary to maintain efficient and safe system operational conditions. AEMO will notify *Market Participants* of any changes to EoD total system LP target by an SWN in accordance with Chapter 7.

### 3.4. Operating Data

Operating data is used by AEMO on the following basis:

- (a) Nodal pressures are provided by AEMO’s SCADA. This data is extrapolated to determine starting conditions that AEMO applies to produce the current *gas day* initial and intra-day *operating schedules* and *pricing schedules*.
- (b) Subject to paragraph (c), AEMO will use the metered *gas* quantities that the DFS imports from SCADA to determine any Qdiff value to be applied when producing current *gas day* intra-day *operating schedules* and *pricing schedules*.
- (c) AEMO may substitute data for the purpose of producing *operating schedules* and *pricing schedules* when any SCADA data is not accurate or not available during any *gas day*, due to either communication or hardware problems.

### 3.5. Market Clearing Engine Reference Data

The MCE models the DTS using MCE reference data, which comprises Node configuration, *system withdrawal zones*, pipe segments, LP zones, compressor characteristics and the MCE Factors. This data is necessary for the MCE to be able to produce Feasible Operating Schedules.

AEMO will:

- (a) *publish* the details of the current MCE reference data on the MIBB;
- (b) apply an appropriate change management process to make any changes to MCE reference data. Reasons for change may include system operation requirements, alterations to the physical system or variations to the MCE Factors; and

- (c) notify *Market Participants* by SWN in accordance with Chapter 8 of any significant changes made to MCE reference data, such as adding or removing *system withdrawal zones*, LP zones, pipe segments, compressor stations or changes to the MCE Factors.

### 3.6. Market Participant Data

*Market Participants* must communicate their intentions to inject gas into or withdraw gas from the DTS each day in accordance with the Wholesale Market Electronic Communications Procedures.

#### 3.6.1. Market Participants Bids

*Market Participants* must submit bids in accordance with the Rules and the Wholesale Market Electronic Communications Procedures.

*Market Participants* may:

- (a) make *bids* applicable for a specified date-time period (such as a single day or span many days); and
- (b) update *bids* any time up to the cut-off times specified in the Rules.

If a *Market Participant* submission is invalid, AEMO will not use that submission for *scheduling* and, as soon as practicable after it becomes aware of the invalidity, AEMO will notify the *Market Participant* in accordance with the Wholesale Market Electronic Communications Procedures.

Each *bid* that is valid will be:

- (a) date-time stamped;
- (b) assigned a unique identifier; and
- (c) stored in AEMO's database for audit purposes.

An updated *bid* must be for the whole of the *gas day*, and must be consistent with the quantity scheduled in respect of that *bid* for the current and preceding *scheduling intervals* on that *gas day*.

#### 3.6.2. Market Participants Demand Forecast

*Market Participants* must submit *demand forecasts* in accordance with the Rules and the *electronic communication procedures*.

*Demand forecasts* may be updated by *Market Participants* at any time up to the times specified in the Rules.

When producing schedules, AEMO will use the most recent valid *Market Participants' demand forecasts* for the first hour of the relevant *scheduling horizon* until the end of the *gas day*.

*Market Participants* may provide AEMO with a validation threshold against which *demand forecasts* by the *Market Participant* will be verified. If a validation threshold has been provided by a *Market Participant*, any *demand forecast* that exceeds the validation threshold provided by the *Market Participant* will be invalid.

AEMO may apply a *demand forecast override* in accordance with clause 3.1.

## 3.7. Nodal Demand Allocation

AEMO will *allocate* the aggregated *Market Participant demand forecasts* and any AEMO *demand forecast override* to each Node according to a base-load to heating-load split determined by AEMO for that Node. This split may be updated by AEMO from time to time.

## 3.8. Constraints

### 3.8.1. Supply and Demand Point Constraints

AEMO may apply SDPCs to reflect contractual, physical and operating constraints for facilities that are external to the DTS to *system injection points* and *system withdrawal points*. These are applied to both *pricing schedules* and *operating schedules*.

AEMO may also apply SDPCs to restrict injections or withdrawals which would exceed the physical capacity of the DTS including pipeline capacity, pipeline facility commissioning, and maintenance (e.g. maintenance of compressors) or to avert threats to *system security*. An SDPC that is used due to an injection limitation within the DTS are applied to *operating schedules* only and not to *pricing schedules*. An SDPC that is used due to a withdrawal limitation within the DTS may be applied to both the *pricing schedule* and *operating schedules*.

SDPCs consist of:

- (a) *supply point* constraints, which usually apply to the aggregate schedules on all *Market Participants* injecting gas at a particular *meter*;
- (b) *supply point* constraints which selectively constrain *injection bids* at *system injection points* where the facility operator has registered multiple supply sources in accordance with clause 3.8.2 and *Market Participants* have accredited multiple supply sources in accordance with clause 3.8.6; and
- (c) *demand point* constraints, which usually apply to the aggregate schedules on all *Market Participants* withdrawing gas at a single off-take *meter*.

When AEMO applies an SDPC to reflect the limitations of a connected facility, it will set the SDPC parameters at an injection or withdrawal *meter* according to information supplied by the Facility Operator, either from the terms and conditions specified in operating agreements, which are entered into between AEMO and the associated party that is injecting or withdrawing; or using information provided by such party. This information will be used to set the overall limits for the *system injection points* or *system withdrawal points* specified in the information provided, to ensure any *scheduling instruction* issued by AEMO is consistent with injection or withdrawal capabilities of the *system injection point* or *system withdrawal point* for the period that the SDPC applies. The SDPC parameters include:

- (a) daily minimum quantity;
- (b) daily maximum quantity;
- (c) hourly minimum quantity;
- (d) hourly maximum quantity;
- (e) hourly ramp up/down limits;
- (f) hourly response time;

- (g) flexible response; and
- (h) point expiration time.

AEMO may apply and change SDPCs independently during the *gas day* where AEMO becomes aware of changes in the physical capabilities of a system injection point or system withdrawal point that may constrain that point.

AEMO will notify Market Participants of changes to SDPCs by an SWN in accordance with Chapter 8.

### 3.8.2. Supply Source Outage at a System Injection Point

In the event of an outage of a supply source at a *system injection point* for which the Facility Operator has registered multiple supply sources in accordance with clause 3.8.7, the Facility Operator may advise AEMO that they will cease to inject *gas* from that supply source into the DTS.

After receiving this advice, AEMO must:

- (a) set the maximum hourly quantity to zero for *injection bids* at the failed supply source from *Market Participants* who have accredited the failed supply source as one of their multiple supply sources, in accordance with clause 3.8.6; and
- (b) notify *Market Participants* of the applied SDPC by an SWN in accordance with Chapter 8.

### 3.8.3. Directional Flow Point Constraints

A special case of the SDPC, a DFPC, allows an injection and withdrawal *meter* to be paired so that the net flow is subject to a new set of constraints. The feature of the MCE is also capable of specifying different maximum flow limits depending on the net direction of flow.

Maximum hourly and maximum daily constraints can be specified in either or both flow directions and are applied on both the *operating schedule* and the *pricing schedule*.

This feature of MCE allows for financial flows to be maximised in either or both directions subject to physical limits specified in either operating agreements or operational conditions on the day.

The DFPC parameters are:

- (a) maximum hourly net injection quantities: describing the maximum net amount of gas that can be injected in an hour;
- (b) maximum hourly net withdrawal quantities: describing the maximum net amount of gas that can be withdrawn in an hour;
- (c) maximum daily net injection quantities: describing the maximum net amount of gas that can be injected over a day; and
- (d) maximum daily net withdrawal quantities: describing the maximum net amount of gas that can be withdrawn over a day.

AEMO may apply and change DFPCs to both *operating schedules* and *pricing schedules* during the *gas day* where AEMO reasonably considers that it is needed to reflect the circumstances applicable at the relevant *system injection points* and *system withdrawal points*. AEMO will notify *Market Participants* of any changes to DFPCs by an SWN in accordance with Chapter 8.

### 3.8.4. Financial Flows during Plant Outages

Where there is a complete outage of a facility, AEMO will not schedule any injections or withdrawals to take place at the relevant *system injection points* or *system withdrawal points* (even where net gas flows at the points would be zero).

### 3.8.5. Net Flow Transportation Constraints

A NFTC allows multiple *system injection points* and *system withdrawal points* at a common location to be combined so that the net aggregate flow is constrained to reflect the physical DTS capacity (e.g. pipeline capacity).

The NFTC parameters are:

- (a) maximum hourly net injection quantities: describing the maximum net amount of gas that can be injected in an hour;
- (b) maximum hourly net withdrawal quantities: describing the maximum net amount of gas that can be withdrawn in an hour;
- (c) maximum daily net injection quantities: describing the maximum net amount of gas that can be injected over a day; and
- (d) maximum daily net withdrawal quantities: describing the maximum net amount of gas that can be withdrawn over a day.

AEMO must apply:

- (a) net injection NFTCs to *operating schedules* only; and
- (b) net withdrawal NFTCs to *pricing schedules* and *operating schedules*.

AEMO may apply and change NFTCs applied for a *gas day* where combined *scheduled* net flows at a common location would otherwise exceed either the maximum daily or maximum hourly transportation capacity of the pipeline. AEMO will notify *Market Participants* of any changes to NFTCs by an SWN in accordance with Chapter 8.

### 3.8.6. Accreditation of Controllable Quantities

Under rule 210(1) of the Rules, AEMO and the *Market Participants* must comply with the *accreditation procedures* for the accreditation of quantities.

*Market Participants* who wish to be eligible to receive *ancillary payments* arising from the lodgement of their *injection bids* and *withdrawal bids* of a *controllable quantity* must provide information on any constraints applicable to the deliverability of gas for their injections or withdrawals through the accreditation process (refer to clause 3.8.1).

AEMO will record any accredited set of constraints for a *Market Participant's bids* at a *meter*. AEMO will only apply accredited constraints as inputs to the MCE and such accredited constraints will be applied to both the *operating schedule* and the *pricing schedule* unless AEMO reasonably determines that the accreditation data is the cause of an infeasible *operating schedule* or *pricing schedule*.

If AEMO identifies that *bid* data that has passed validation is causing an *operating schedule* or *pricing schedule* to be infeasible, AEMO may amend intraday the accredited quantities of the

relevant *Market Participant*, as described further in clause 5.4. AEMO will notify the affected *Market Participant* of any such actions undertaken by AEMO.

Accreditation quantities for a *Market Participant* may include those shown in the table below:

**Table 4 Accreditation values**

Accredited quantities for injection bids	Accredited Quantities for withdrawal bids
Hourly ramp down rate	Hourly ramp down rate
Hourly ramp up rate	Hourly ramp up rate
Minimum hourly flow	Maximum hourly flow
Maximum hourly flow	Hourly response time
Hourly response time	Bid expiration time
Bid expiration time	Fixed schedule quantities (schedule restriction)
Fixed schedule quantities (schedule restriction)	Flexible response
Flexible response	
Nominated multiple supply source for SDPC	

### 3.8.7. Registration of multiple supply sources

A facility operator may apply to register multiple supply sources at a *system injection point* for the purpose of reflecting an outage of a supply source at that *system injection point*.

AEMO must register the multiple supply sources if the Facility Operator can demonstrate that appropriate arrangements are in place between the facility operator and the relevant *Market Participants* to allow the SDPCs to operate in accordance with clause 3.8.2.

## 3.9. Tie breaking rights from capacity certificates

### 3.9.1. General

- (a) In accordance with NGR 214, AEMO must Schedule equally beneficial *bids* associated with *capacity certificates* before *scheduling bids* not associated with *capacity certificates*.
- (b) For the purposes of NGR 328A(4), the process for a *Market Participant* to use a *capacity certificate* at an individual *system point* is set out in this section.
- (c) Where a *tie breaking event* occurs, *capacity certificates* provide tie breaking rights to the *Market Participant* who is the registered owner of the *capacity certificates* in AEMO market systems on that *gas day*.
- (d) The quantity of *capacity certificates* available for tie breaking in each *capacity certificate zone* must be adjusted by AEMO to take into consideration constraints applied under section 3.8 of this Procedure.

### 3.9.2. Tie-breaking rights

- (a) AEMO will determine the quantities of each *bid* that are supported by Capacity Certificates.
- (b) AEMO will associate a *Market Participant's* Capacity Certificate holdings with each bid step of their *injection bids* at all *system injection points* in a *capacity certificate zone* in order of increasing *bid price* to the extent of their Capacity Certificate holdings.

- (i) Where more than one bid step of equal bid price cannot be fully associated with the remaining quantity of Capacity Certificates, AEMO must associate the remaining quantity of Capacity Certificates with each bid step in proportion of their respective bid step quantities to the total bid step quantities.
  - (ii) Where the full quantity of a bid step cannot be associated with the remaining quantity of Capacity Certificate holdings, AEMO must divide the bid step into two portions where one bid step has the remaining quantity of Capacity Certificate holdings, and the other has none.
- (c) AEMO will associate a *Market Participant's* Capacity Certificate holdings with each bid step of their *withdrawal bids* at all *system withdrawal points* in a *capacity certificate zone* in order of decreasing bid price to the extent of their Capacity Certificate holdings.
- (i) Where more than one bid step of equal bid price cannot be fully associated with the remaining quantity of Capacity Certificates, AEMO must associate the remaining quantity of Capacity Certificates with each bid step in proportion of their respective bid step quantities to the total bid step quantities.
  - (ii) Where the full quantity of a bid step cannot be associated with the remaining quantity of Capacity Certificate holdings, AEMO must divide the bid step into two portions where one bid step has the remaining quantity of Capacity Certificate holdings, and the other has none.

### 3.10. Intra-day Adjustments for Injections or Withdrawals of Controllable Quantities (Qdiff)

Gas suppliers typically operate under contracts that commit them to deliver into the DTS a quantity of *gas* over the *gas day*. These suppliers may over-inject later in the day if they under-inject in the first part of the day, so as to meet contractual amounts for daily deliveries. The same applies on the withdrawal side, for example, at interconnected pipelines.

AEMO may make an intra-day adjustment (called Qdiff) when producing *operating schedules* and *pricing schedules*. This is to recognise that the Facility Operator injecting or withdrawing *gas* at a *system point* is expected to make up any difference (of scheduled versus actual) at the time of reschedule and that there is no need to schedule additional (or less) *gas* as a result of the deviation from the *operating schedule*. Qdiff, therefore, accounts for LP deviations arising from intraday behaviour of suppliers and minimises the cost of satisfying the demand over the day by avoiding the need for unnecessary injections of higher priced *gas*.

The Qdiff intra-day adjustment is not associated with any individual *operating schedule* or *pricing schedule* and will only be applied to *system injection points* or *system withdrawal points* by AEMO after taking into account advice received by the relevant Facility Operator.

### 3.11. Initial Conditions

AEMO will assess the state of the DTS as it expects it will be at the start of the horizon being scheduled, taking into account:

- (a) the initial pressures at all Nodes to apply at the start of the horizon being scheduled. This information effectively defines the initial LP levels in each pipeline represented in the *operating schedule*, and the aggregated initial LP used in the *pricing schedule*; and

- (b) initial injection and withdrawal rates at the start of the horizon being scheduled and subject to accreditation (refer to clause 3.10).

AEMO will apply the following when producing an *operating schedule* and *pricing schedule*:

- (a) BoD injection and withdrawal rates are to be based on the end conditions of the last approved *operating schedule* of the previous day, except where alternative starting conditions have been accredited (refer clause 3.8.6); and
- (b) reschedule injection and withdrawal rates are to be based on the conditions at the end of the preceding hour in the last approved *operating schedule*.

## 4. Scheduling – Normal State

### 4.1. Operating Schedule

*Operating schedules* will be produced by AEMO for the current *gas day* and the *gas days* one day ahead and two days ahead, at the standard schedule times in accordance with the Rules.

#### 4.1.1. Inputs

Inputs to *operating schedules* will include:

- (a) data provided by *Market Participants*, including:
  - (i) *demand forecasts* (refer to clause 3.6.2);
  - (ii) *injection bids* and *withdrawal bids* (refer to clause 3.6.1); and
  - (iii) any conditions or constraints included in the accreditation of controllable quantities (refer to clause 3.8.6);
- (b) Total *capacity certificates* allocated to each *Market Participant* as at that *gas day*
- (c) information on physical deliverability requirements from operating agreements for locations where more than one *Market Participant* is injecting or withdrawing gas at a common point, SDPCs and DFPCs (refer to clauses 3.8.1 and 3.8.3);
- (d) constraints on the physical capacity of the DTS, including SDPCs and NFTCs (refer to clauses 3.8.1 and 3.8.5);
- (e) AEMO's *demand forecast override* (refer to clause 3.1);
- (f) AEMO's nodal demand *allocation* (refer to clause 3.7);
- (g) physical pipeline constraints including a model of the physical gas pipeline or other physical gas system components such as the commitment of compressors (refer to clause 3.2);
- (h) EoD LP target (refer to clause 3.3);
- (i) MCE reference data (refer to clause 3.5);
- (j) intra-day adjustments for injections or withdrawals of controllable quantities (refer to clause 3.10);
- (k) initial conditions (refer to clause 3.11); and
- (l) any other input or assumption that AEMO reasonably considers is required to produce an *operating schedule* in accordance with the objectives of minimising the cost of satisfying demand and maintaining system security.

#### 4.1.2. Review Process

AEMO will review *operating schedules* prior to *publication* to assess:

- (a) whether it is a Feasible Operating Schedule, taking into account:
  - (i) whether the Nodal pressures are within the normal operational pressure range;

- (ii) whether the EoD LP is sufficient to allow the *scheduled injections* to satisfy the *demand forecast* tomorrow within the requirements of the *system security procedures*; and
- (iii) whether the availability of *LNG* stock is sufficient to support the *LNG* scheduled; and
- (b) the efficiency of the *operating schedule* in terms of minimising the cost of satisfying demand, taking into account:
  - (i) whether the Nodal prices are stable over the course of the day (as improving the stability of Nodal prices at Nodes across the day usually also improves the economic efficiency delivered by the resultant operating schedule);
  - (ii) whether any Nodal prices are at VoLL (as VoLL will result in curtailment that may possibly be avoided e.g. through an increased compressor commitment);
  - (iii) whether any Nodal prices are negative (as negative prices are caused by an over-supply of gas that could, for example, be caused from too much compressor commitment); and
  - (iv) EoD LP targets and compressor operations (as these may have an adverse effect on nodal prices, and thence efficiency, or may give rise to ancillary payments).

Prior to *publication*, AEMO may, if time permits, adjust the AEMO inputs as referred to in clause 4.1.1, including *demand forecast overrides*, compressor commitments and constraints (as required), and amend the *operating schedule* to minimise the cost of meeting market, operational and *system security* objectives.

The last published *operating schedule* constitutes AEMO's issued *scheduling instructions* at the time to all *Market Participants* and Facility Operators.

The review process is set out in Table 5.

**Table 5 Schedule Review Process**

If after checking, the operational schedule is:	And:	Then:
infeasible	There is sufficient time:	<ul style="list-style-type: none"> <li>a) Adjust input data</li> <li>b) Rerun <i>operating schedule</i>; and</li> <li>c) If needed, repeat these steps until <i>operating schedule</i> is feasible</li> </ul>
	There is insufficient time	Refer to clause 5.4
feasible		<ul style="list-style-type: none"> <li>a) Review the efficiency of the <i>operating schedule</i> in accordance with clause 4.1.2.</li> <li>b) if AEMO reasonably considers it will improve efficiency in the resultant <i>operating schedule</i>, adjust compressor commitments and re-run the <i>operating schedule</i>; and</li> <li>c) if needed, repeat these steps whilst time permits.</li> </ul>

## 4.2. Pricing Schedule

The *pricing schedule* determines the *market price*. The *market price* applies to all locations for the *scheduling horizon*. AEMO will publish *pricing schedules* for current day, one day ahead, and two day ahead *gas days* and amendments to those *pricing schedules* by the times provided in the Rules.

The *pricing schedule* will not be updated where AEMO *publishes* an *ad hoc operating schedule* between the standard schedule times. For the avoidance of doubt, *market price* is not revised for *ad hoc operating schedules*.

The *pricing schedule* produces a *schedule* of the gas injections and withdrawals at each Node per hour. An important characteristic of the *pricing schedule* is that it does not contain a model of the DTS or other physical gas system components. The pricing schedule is, therefore, an ideal schedule where the DTS is represented as a gas supply pipeline system that takes into account physical DTS withdrawal limitations (as withdrawal NFTCs), *Market Participant bids* and *demand forecasts* (including any *demand forecast override quantity*), accreditations of *controllable quantities*, SDPCs and DFPCs.

#### 4.2.1. Inputs

Inputs to *pricing schedules* include:

- (a) data provided by Market Participants, including:
  - (i) *demand forecasts* (refer to clause 3.6.2);
  - (ii) *injection bids* and *withdrawal bids* (refer to clause 3.6.1);
  - (iii) any conditions or constraints included in the accreditation of *controllable quantities* (refer to clause 3.8.6);
- (b) Total *capacity certificate* allocated to each *Market Participant* as at that *gas day*
- (c) constraints on physical deliverability requirements from operating agreements for locations where more than one *Market Participant* is injecting or withdrawing gas at a common *system injection point* or *system withdrawal point*, SDPCs, and DFPCs (refer to clause 3.8.1 and 3.8.3);
- (d) withdrawal constraints on the physical capacity of the DTS, including SDPCs and NFTCs (refer to clauses 3.8.1 and 3.8.5);
- (e) AEMO's *demand forecast override* (refer to clause 3.1);
- (f) AEMO's Nodal demand *allocation* (refer to clause 3.7);
- (g) EoD LP target (refer to clause 3.3);
- (h) MCE reference data, (refer to clause 3.5);
- (i) intra-day adjustments for injection or withdrawal of *controllable quantities* (refer to clause 3.10);
- (j) initial conditions (refer to clause 3.11); and
- (k) any other input or assumption that AEMO reasonably considers is required to produce a *schedule* in accordance with the objectives of minimising the cost of satisfying demand and maintaining *system security*.

#### 4.2.2. Review Process

AEMO will review *pricing schedules* prior to *publication* to assess whether:

- (a) *Market price*, injections, controllable and uncontrollable withdrawals, and system LP match expectations, taking into account:
  - (i) information from accreditation of quantities;

- (ii) SDPCs applied at *system injection points* and *system withdrawal points*;
  - (iii) DFPCs applied at bi-directional *system injection points/system withdrawal points*;
  - (iv) withdrawal NFTCs applied at a common location to *system injection points* and *system withdrawal points*;
  - (v) total *demand forecast*;
  - (vi) initial conditions; and
  - (vii) the EoD LP target; and
- (b) the *market price* is consistent with *bids* that were scheduled.

AEMO may publish a *market price* sensitivity report linked with various *demand forecast* profiles. The profiles correspond to  $\pm 10\%$  *deviation* from the forecast demand, which may change from time to time.

## 5. Dealing with Abnormal conditions

### 5.1. Plant or Facility Outages

AEMO will assess the *system security* impact of any plant outage and may amend relevant SDPCs and DFPCs to reflect the outage in subsequent *operating schedules*.

If, in AEMO's reasonable consideration:

- (a) a delay in rescheduling until the next *standard schedule time* may threaten *system security*, AEMO may *publish* an ad hoc *operating schedule* applying appropriate SDPCs and DFPCs to reflect the outage; or
- (b) a delay in rescheduling until the next *standard schedule time* is not likely to threaten *system security*, AEMO may amend relevant SDPCs and DFPCs to reflect the outage and apply these in the schedules published at the next *standard schedule time*.

### 5.2. Ad hoc Operating Schedules

Where AEMO revises and publishes an *operating schedule* outside the standard schedule times, it is known as an ad hoc *operating schedule*. For the avoidance of doubt, late *publication* of an *operating schedule* is not an ad hoc *operating schedule* (refer to clause 5.4).

Publishing an ad hoc *operating schedule* as the revised *scheduling instruction* is classified as an intervention under the Rules (excepting day-ahead and two-day-ahead schedules). AEMO must notify *Market Participants* of a threat to *system security* prior to publishing an ad hoc *operating schedule*, and may only publish an ad hoc *operating schedule* due to a *system security* threat in accordance with rule 215(4) and rule 343.

AEMO will take into account various factors when considering the need for an ad hoc *operating schedule*, including:

- (a) significant *demand forecast* increase due to unexpected cold weather or unexpected gas fired power generation;
- (b) unexpected high demand prior to or during evening peak that requires an increased rate of peak shaving gas, LNG vaporisation;
- (c) loss of plant or facility; and
- (d) other operational reasons, such as a tripped compressor, or gas quality considerations.

AEMO will notify *Market Participants* of the *publication* of any ad hoc *operating schedules* by an SWN in accordance with Chapter 8.

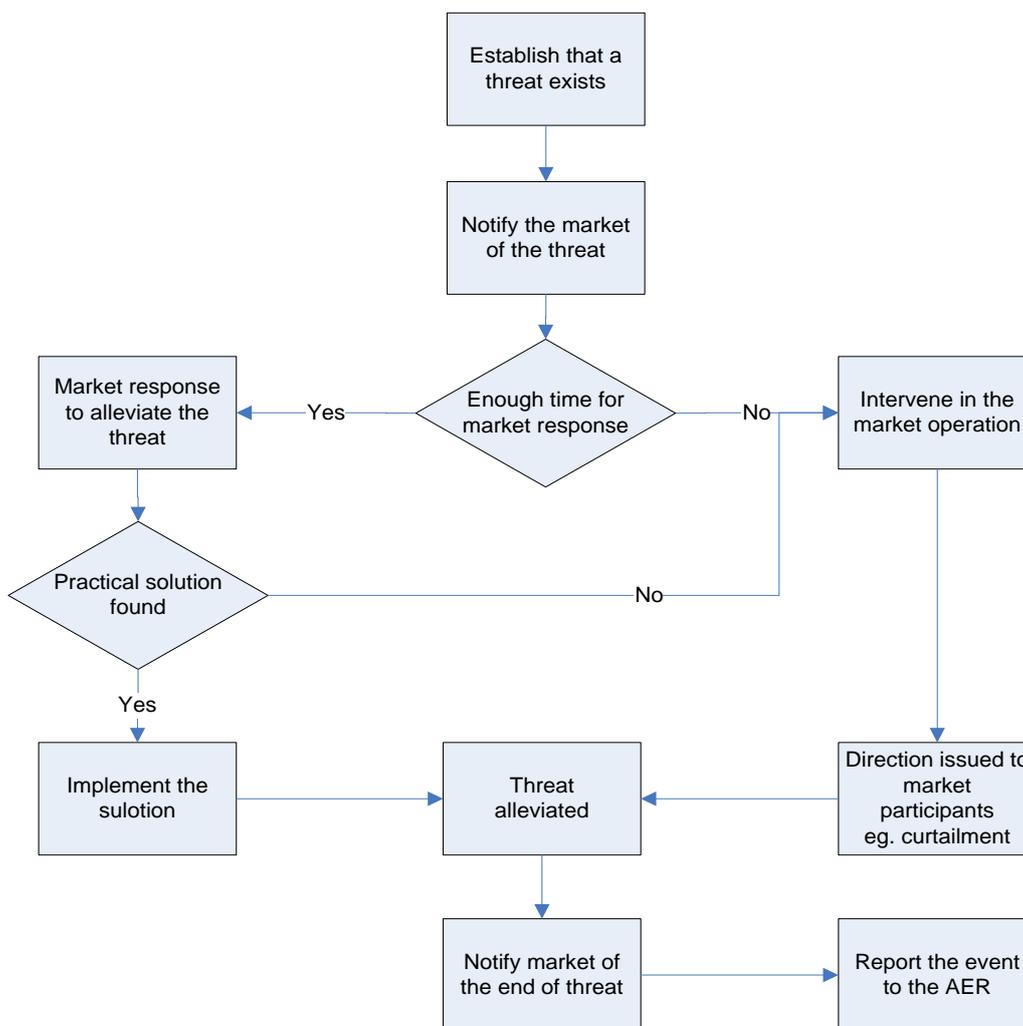
AEMO will not revise or update the applicable *pricing schedule* or *market price* when it publishes an ad hoc *operating schedule*. The *pricing schedule* published at the last *standard schedule time* is not updated until the next *standard schedule time* regardless of any ad hoc *operating schedules published* during the *scheduling interval*. *Market price* only changes at the fixed times (*standard schedule times*) and *ancillary payments* will, as far as practicable, apply as a result of any ad hoc *operating schedule* or other forms of intervention.

## 5.3. Threats to System Security

### 5.3.1. Introduction

Figure 2 depicts the process followed by AEMO in response to a threat to *system security*.

**Figure 2 AEMO Response to a Threat to System Security**



Examples of events that may create a threat to system security include:

- (a) gas demand exceeding DTS capacity;
- (b) a significant unforeseen increase in gas demand;
- (c) gas supply sources incapable of meeting foreseen gas demand;
- (d) a breakdown of the DTS equipment such as compressors or LNG vaporisers;
- (e) a transmission pipeline incident;
- (f) a distribution incident that significantly affects injections into or withdrawals from the DTS;  
or
- (g) a gas supply incident, including gas quality excursions leading to off-specification gas in the DTS.

If, at any time, AEMO reasonably considers there is a likelihood that system pressures may fall outside the range of allowable system operating pressures and time permits, AEMO will immediately establish if the threat can be alleviated by normal rescheduling or requires an ad hoc *operating schedule* under rule 215(4) of the Rules (see clause 5.2).

Critical system operating pressures are detailed in the *system security procedures*.

Where time does not permit, or AEMO considers commercial market responses are inadequate, AEMO will intervene in the operation of the Market by issuing directions to *Market Participants* under rule 343 of the Rules.

AEMO may declare an *emergency* in accordance with the Gas Emergency Protocol where it reasonably considers this step to be required to assist it with directly co-ordinating and managing action to alleviate the threat to *system security*.

### 5.3.2. Notification of Threat to System Security

If AEMO believes that there is a threat to *system security* that cannot be alleviated through normal scheduling processes including the publication of ad hoc *operating schedules*, it will advise all *Market Participants* of:

- (a) the nature and general magnitude of the threat;
- (b) the estimated likely duration of the threat;
- (c) the shortfall in *gas* supplies likely to occur during that period;
- (d) the latest time AEMO will need to intervene in the operation of the gas market if the threat does not subside without intervention by AEMO; and
- (e) the system withdrawal zones within the DTS in which the threat to system security is, or is likely, to be located.

Notification will be made by an SWN in accordance with Chapter 7.

AEMO may, as part of the above notice or by separate subsequent notice, seek *Market Participant* advice regarding its best estimates of the following:

- (a) whether the *Market Participant* is in a position to make additional injections or withdrawals of *gas* and whether the *Market Participant* would need to reschedule maintenance or other work in order to do so;
- (b) whether the *Market Participant* is in a position to inject non-firm *gas* into the DTS;
- (c) whether the *Market Participant* is in a position to inject off-specification *gas* into the DTS;
- (d) the period of notice the *Market Participant* would require before making additional injections or withdrawals under paragraphs (a), (b) and (c); and
- (e) the costs the *Market Participant* would incur in facilitating or implementing an injection or withdrawal under paragraphs (a), (b) and (c).

AEMO will as soon as practicable advise all *Market Participants* of any significant change in the information provided by an SWN in accordance with Chapter 7.

### 5.3.3. Notification of Return to Normal Operating Conditions

AEMO will advise all *Market Participants* immediately of the cessation of the threat to *system security* and the return to normal operating conditions when it reasonably considers that the threat to *system security* to be at an end.

This notification will be made by an SWN in accordance with Chapter 7.

### 5.3.4. Alleviation of a Threat through Market Response

It may be possible for *Market Participants* to assist in alleviating a threat to *system security* through changes to their bids.

If AEMO reasonably considers that a threat to *system security* will subside without intervention, AEMO will:

- (a) advise those *Market Participants* that AEMO considers would be required to take action if the threat to *system security* is not resolved without intervention, including *Market Participants* whose *bids* are likely to be scheduled in accordance with an *operating schedule*, of the following information:
  - (i) the existence of the threat to *system security*; and
  - (ii) the likely nature of any requirement if AEMO determines that it should intervene; and
- (b) keep all *Market Participants* informed with up-to-date information about the threat to *system security* and measures taken to avert the threat.

AEMO will provide the above advice by an SWN in accordance with Chapter 7. AEMO may also initiate further contact by telephone with *Market Participants* in order to encourage a market response to alleviate the threat to *system security*.

### 5.3.5. Alleviation of the Threat through AEMO Intervention

If AEMO reasonably considers that a threat to *system security* is unlikely to subside without intervention, AEMO will intervene in the Market by taking measures it believes are reasonable and necessary to overcome the threat to *system security*.

AEMO may, if it reasonably considers that the actions available to it under the National Gas Law and the Rules might not be adequate to alleviate the threat, seek intervention by the Victorian government under the Gas Industry Act 2001.

Without in any way limiting the actions available to AEMO, reasonable and necessary actions that AEMO may take include:

- (a) scheduling AEMO's LNG reserve in accordance with rule 285(2) of the Rules;
- (b) *curtailment* in accordance with the Gas Load Curtailment and Gas Rationing and Recovery Guidelines, subject to paragraph (c);
- (c) increasing withdrawals;
- (d) requiring *Market Participants* to use reasonable endeavours to inject available *gas* to which the *Market Participant* is entitled, but which has not been *bid* on the relevant *gas day* or which is non-firm *gas*, recognising in the case of non-firm *gas* the uncertainties associated with the supply and injection of that *gas*;

- (e) requiring any *Market Participant* to inject off-specification gas into the DTS; and
- (f) requiring *Market Participants* to do any reasonable act or thing that AEMO believes necessary in the circumstances.

AEMO may determine a new SDPC and apply it only to the *operating schedule* when it intervenes in the market if it reasonably considers that this is required to produce the required outcomes. In so doing, AEMO may apply an amended minimum hourly quantity by a SDPC to an *operating schedule* to schedule additional peak shaving gas (e.g. LNG) or any other gas supply for operational needs.

### 5.3.6. LNG Scheduled Out Of Merit Order for System Security Purposes during Standard Schedule Time

If LNG is *scheduled* out-of-merit-order as an operational response for *system security* purposes (i.e. peak shaving gas), AEMO will notify *Market Participants* by an SWN of low LP conditions as soon as possible after the first *operating schedule* incorporating operational response LNG is approved and will notify *Market Participants* of a threat to *system security* in accordance with rule 341.

This includes scheduling AEMO's LNG reserve to provide gas, when *Market Participant's* LNG injection bids are insufficient to overcome a threat to *system security*, as outlined in section 6.1.1.

AEMO will also notify *Market Participants* by an SWN when the LP condition changes or when LNG is no longer required to relieve the threat to *system security*.

### 5.3.7. Directions

Refer to the Gas Emergency Protocol for the issue of directions and management of *emergencies*.

## 5.4. Scheduling in Abnormal Conditions

This section describes how AEMO will complete the scheduling process in circumstances where abnormal conditions exist. The following are deemed to be abnormal conditions:

- Condition 1     *Scheduling* to address facility outages, interruptions, or supply deficiency
- Condition 2     Unable to produce both the *pricing schedule* and *operating schedule* by the required *standard schedule time*
- Condition 3     Unable to produce an *operating schedule* (*pricing schedule* is valid) by the required *standard schedule time*
- Condition 4     Unable to approve either the *pricing schedule* or *operating schedule* by the required *standard schedule time*
- Condition 5     Unable to publish either the approved *pricing schedule* or approved *operating schedule* by the required *standard schedule time*
- Condition 6     Publish an ad hoc *operating schedule* due to potential threat to *system security*
- Condition 7     *Market Participants* unable to submit *scheduling* input data by the required *bid submission cut-off time*

Condition 8      Unable to produce a Nodal demand

Unless stated otherwise, all conditions will apply only to current day and intra-day *pricing schedules* and *operating schedules* not Day+1 or Day+2 forecast schedules

Table 6 Condition 1 – Scheduling to address facility outages, interruptions, or supply deficiency

If due to:	AEMO will:	if this is not possible, or does not resolve matters:
Facility Outages, Interruptions OR Supply Deficiency	<p>If the conditions do not give rise to a threat to <i>system security</i>:</p> <ul style="list-style-type: none"> <li>adjust the AEMO inputs as defined in clause 4.1.1 and 4.2.1 as required</li> <li>run revised schedule</li> </ul> <p>If revised <i>operating schedules</i> are feasible:</p> <ul style="list-style-type: none"> <li>publish standard schedules at the next <i>scheduling interval</i></li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>	<p>if time permits and further steps may resolve the matter:</p> <ul style="list-style-type: none"> <li>repeat process</li> </ul>
	<p>if the conditions give rise to a threat to <i>system security</i>:</p> <ul style="list-style-type: none"> <li>notify <i>Market Participants</i> of threat to <i>system security</i> as soon as possible</li> </ul> <p>if time permits:</p> <ul style="list-style-type: none"> <li>assess whether adjustment of AEMO inputs as defined in clause 4.1.1 and 4.2.1 may resolve the threat</li> <li>if so, adjust operator inputs accordingly</li> <li>re-schedule</li> </ul> <p>if revised <i>operating schedules</i> are feasible, then:</p> <ul style="list-style-type: none"> <li>if ad hoc <i>operating schedule</i> is needed refer to Abnormal Condition 6</li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>	<p>if time permits and further steps may resolve the matter:</p> <ul style="list-style-type: none"> <li>repeat process</li> </ul> <p>if time does not permit or repeating unlikely to resolve:</p> <ul style="list-style-type: none"> <li>intervene in the market and issue directions as required (refer to clauses 5.3.5 and 5.3.6)</li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>

Table 7 Condition 2 – Unable to produce both the pricing schedule and operating schedule by the required standard schedule time

If due to:	AEMO will:	if this is not possible, or does not resolve matters:
bid data that AEMO is able to identify as either corrupt, missing or otherwise causing the problem	<ul style="list-style-type: none"> <li>adjust the accreditation constraints applicable to the relevant bid(s) that appear to be causing the problem</li> <li>re-run the <i>operating schedule</i> and <i>pricing schedule</i></li> <li>notify the <i>Market Participant</i> involved of the issue and the steps undertaken</li> </ul>	<ul style="list-style-type: none"> <li>re-approve the most recently approved <i>operating schedule</i> and <i>pricing schedules</i> as the updated schedules;</li> <li>declare an <i>administered price period</i> and set the administered price flag (manual)</li> <li>review the <i>market price</i> of the re-approved <i>pricing schedule</i> and if greater than the APC, manually cap at the APC</li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>
<p>failure of MCE or TMM or other related systems, including:</p> <ul style="list-style-type: none"> <li>failure to transfer data to MCE/TMM from associated applications; or</li> <li>corruption of data; or</li> <li>any other issues that prevent the solution of a Feasible <i>Operating Schedule</i>.</li> </ul>	<ul style="list-style-type: none"> <li>re-approve the most recently approved <i>operating schedule</i> and <i>pricing schedule</i> as the updated schedules</li> <li>declare an <i>administered price period</i> and set the administered price flag</li> <li>review the <i>market price</i> of the re-approved <i>pricing schedule</i> and if greater than the APC, manually cap at the APC</li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>	<p>if the conditions do not give rise to a threat to <i>system security</i>:</p> <ul style="list-style-type: none"> <li>continue to repeat process at the next <i>standard schedule time</i>.</li> </ul> <p>if the conditions give rise to a threat to <i>system security</i>:</p> <ul style="list-style-type: none"> <li>intervene in the market and issue directions as required (refer to clauses 5.3.5 and 5.3.7)</li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>

**Table 8 Condition 3 – Unable to produce an operating schedule (pricing schedule is valid) by the required standard schedule time**

If due to:	AEMO will:	if this is not possible, or does not resolve matters:
<p>Failure of MCE or TMM to produce a Feasible <i>Operating Schedule</i>, including:</p> <ul style="list-style-type: none"> <li>• corruption of data; or</li> <li>• any other issues (including input data) that prevent the solution of a Feasible <i>Operating Schedule</i>.</li> </ul>	<p>if time permits:</p> <ul style="list-style-type: none"> <li>• assess whether adjustment of AEMO inputs as referred to in clause 4.1.1 may resolve the issue and adjust accordingly</li> <li>• re-run <i>operating schedule</i> with the adjusted inputs to achieve a Feasible <i>Operating Schedule</i></li> <li>• repeat process if <i>operating schedule</i> is still not feasible and time permits</li> </ul>	<p>If the <i>pricing schedule</i> is physically achievable within system operating limits, and can be used as the <i>operating schedule</i>:</p> <ul style="list-style-type: none"> <li>• create the <i>operating schedule</i> from the <i>pricing schedule</i> (i.e. use the <i>pricing schedule</i> as the <i>operating schedule</i>) for the <i>scheduling horizon</i></li> <li>• approve both <i>pricing schedule</i> and <i>operating schedule</i></li> </ul> <p>If the <i>pricing schedule</i> is not physically achievable within system operating limits, and cannot be used as the <i>operating schedule</i>:</p> <ul style="list-style-type: none"> <li>• re-approve the most recently approved <i>operating schedule</i> and <i>pricing schedules</i> as the updated schedules</li> <li>• declare an <i>administered price period</i> and set the administered price flag (manual)</li> <li>• review the <i>market price</i> of the re-approved <i>pricing schedule</i> and if greater than the APC, manually cap at the APC</li> <li>• notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>

**Table 9 Condition 4 – Unable to approve the pricing schedule and operating schedule by the required standard schedule time**

If due to:	AEMO will:	if this is not possible, or does not resolve matters:
<p>Failure to approve <i>pricing schedule</i> and <i>operating schedule</i> on time</p>	<p>If there is a Feasible <i>Operating Schedule</i> and Valid <i>Pricing Schedule</i> available AEMO will:</p> <ul style="list-style-type: none"> <li>• approve the <i>operating schedule</i> and <i>pricing schedule</i></li> <li>• declare an <i>administered price period</i> and set the administered price flag (manual);</li> <li>• review the <i>market price</i> of the approved <i>pricing schedule</i> and if greater than the APC, manually cap at the APC</li> <li>• notify <i>Market Participants</i> of the event and actions undertaken</li> </ul> <p>If there is a Valid <i>Pricing Schedule</i> but no Feasible <i>Operating Schedule</i> AEMO will:</p> <ul style="list-style-type: none"> <li>• create an <i>operating schedule</i> from the Valid <i>Pricing Schedule</i></li> <li>• approve the <i>operating schedule</i> and <i>pricing schedule</i></li> <li>• declare an <i>administered price period</i> and set the administered price flag</li> <li>• review the <i>market price</i> of the approved <i>pricing schedule</i> and if greater than the APC, manually cap at the APC</li> <li>• notify <i>Market Participants</i> of the event and actions undertaken</li> </ul> <p>If there is no Valid <i>Pricing Schedule</i> and Feasible <i>Operating Schedule</i> AEMO will:</p> <ul style="list-style-type: none"> <li>• re-approve the most recently approved <i>operating schedule</i> and <i>pricing schedule</i> as the updated schedules</li> <li>• declare an <i>administered price period</i> and set the administered price flag (manual)</li> <li>• review the <i>market price</i> of the re-approved <i>pricing schedule</i> and if greater than the APC, manually cap at the APC</li> <li>• notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>	<p>No further action</p>

Table 10 Condition 5 – Unable to approve the pricing schedule and operating schedule by the required standard schedule time

If due to:	AEMO will:	if this is not possible, or does not resolve matters:
<p>Delay in publication of either/both schedules on MIBB.</p>	<p>If the <i>pricing schedule</i> or <i>operating schedule</i> is anticipated to be published in a timely manner</p> <ul style="list-style-type: none"> <li>the approved, but unpublished, <i>pricing schedule</i> or <i>operating schedule</i> continue to apply;</li> <li>notify <i>Market Participants</i> of the expected late publication of schedule/s; and</li> <li>notify <i>Market Participants</i> of the actual publication time when the relevant <i>pricing schedule</i> or <i>operating schedule</i> is published</li> </ul>	<p>If only the <i>operating schedule</i> has not been or will not be published on time</p> <ul style="list-style-type: none"> <li>the published <i>pricing schedule</i> and the approved but unpublished <i>operating schedule</i> shall continue to apply;</li> <li>advise <i>Market Participants</i> of their <i>operating schedules</i> until such time as the <i>operating schedule</i> is published on MIBB (if required)</li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul> <p>If both the <i>operating schedule</i> and <i>pricing schedule</i> have not been or will not be published on time:</p> <ul style="list-style-type: none"> <li>the approved but unpublished <i>pricing schedule</i> and <i>operating schedule</i> shall continue to apply;</li> <li>declare an <i>administered price period</i>; and</li> <li>set the administered price flag and manually set the administered price;</li> <li>advise <i>Market Participants</i> of their <i>operating schedules</i> until such time as the <i>operating schedule</i> is published on the MIBB (if required)</li> <li>notify <i>Market Participants</i> of the event and the <i>market price</i></li> </ul>

Table 11 Condition 6 – Publish an ad hoc operating schedule due to potential threat to system security

If due to:	AEMO will:	if this is not possible, or does not resolve matters:
<p>The most recently approved <i>operating schedule</i> is no longer appropriate due to a threat to <i>system security</i> that can be addressed with an ad hoc schedule.</p>	<ul style="list-style-type: none"> <li>• declare and notify market participants of a threat to <i>system security</i> for an ad hoc schedule</li> <li>• produce an ad hoc <i>operating schedule</i> by:               <ul style="list-style-type: none"> <li>– applying the <i>Market Participant</i> bids and <i>capacity certificate</i> information from the most recently approved <i>operating schedule</i> to the ad hoc <i>operating schedule</i> by setting the cut-off time to the one applicable in that previous schedule</li> <li>– applying the most up-to-date <i>demand forecasts</i> by leaving the <i>demand forecast</i> time set to the cut-off time of the start of the current <i>scheduling horizon</i> schedule (not reset to earlier schedule)</li> <li>– adjusting operator inputs as required</li> <li>– publish the new <i>operating schedule</i> if feasible</li> </ul> </li> </ul> <p>or</p> <ul style="list-style-type: none"> <li>• produce an ad hoc <i>operating schedule</i> by copying an existing <i>operating schedule</i> for the <i>scheduling horizon</i>, overriding the scheduled quantities appropriately and publish if feasible</li> <li>• notify <i>Market Participants</i> that an ad hoc schedule has been published</li> </ul>	<p>if the conditions give rise to a threat to <i>system security</i> that can be addressed with a further ad hoc schedule:</p> <ul style="list-style-type: none"> <li>• repeat process</li> <li>• notify <i>Market Participants</i> of the event and actions undertaken</li> </ul> <p>if the conditions give rise to a threat to <i>system security</i> that cannot be addressed with a new ad hoc <i>operating schedule</i>:</p> <ul style="list-style-type: none"> <li>• intervene in the market and issue directions as required (refer to clauses 5.3.5 and 5.3.7)</li> <li>• notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>

Table 12 Condition 7 – Market Participants unable to submit scheduling input data by the required submission cut-off time

If due to:	AEMO will:	if this is not possible, or does not resolve matters:
<p>WebExchanger outage/failure for part/entirety of the submission window or other issue preventing <i>Market Participants</i> from submitting <i>scheduling</i> inputs</p>	<ul style="list-style-type: none"> <li>• notify <i>Market Participants</i> as soon as possible of the failure</li> <li>• produce standard schedules at the next <i>scheduling horizon</i> using the latest <i>Market Participant</i> submissions</li> <li>• notify <i>Market Participants</i> when WebExchanger returned to service</li> </ul>	<p>No further action</p>

**Table 13 Condition 8 – Unable to produce a Nodal demand**

If due to:	AEMO will:	if this is not possible, or does not resolve matters:
<p>AEMO is unable to produce a Nodal demand for the next <i>scheduling horizon</i></p>	<ul style="list-style-type: none"> <li>produce standard schedules at the next <i>scheduling horizon</i> using the latest available Nodal demand (this may be the previous horizons <i>Market Participant</i> demand forecasts and applicable AEMO demand override)</li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>	<p>if the conditions give rise to a threat to <i>system security</i> that can be addressed with an ad hoc schedule:</p> <ul style="list-style-type: none"> <li>produce an ad hoc <i>operating schedule</i> by following Condition 6:</li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul> <p>if the conditions give rise to a threat to <i>system security</i> that cannot be addressed with an ad hoc schedule:</p> <ul style="list-style-type: none"> <li>intervene and issue directions as required (refer to clauses 5.3.5 and 5.3.7)</li> <li>notify <i>Market Participants</i> of the event and actions undertaken</li> </ul>

## 6. Operation of AEMO's LNG Reserve

### 6.1.1. Scheduling AEMO's LNG Reserve in response to a Threat to System Security

For the purposes of rule 285(3) of the Rules, AEMO may inject gas from AEMO's *LNG reserve* in response to a threat to *system security*, which may include for:

- (a) Locational or temporal issues (e.g. caused by surprise demand or loss of a Production Facility) requiring gas from the *LNG storage facility* to be injected, including AEMO's *LNG reserve* in the event *Market Participant's LNG injection bids* provide insufficient supply, to support pressures at the Dandenong City Gas in order to mitigate *curtailment*; or
- (b) Lack of supply for the entire DTS, in which case AEMO's *LNG reserve* will be scheduled to mitigate *curtailment* across the DTS.

The process, as required by rule 285(4)(a) of the Rules, for AEMO to inject gas from AEMO's *LNG reserve* in response to a threat to *system security* is:

- (a) AEMO may submit a *LNG injection bid* with a price of VoLL and a quantity up to and including AEMO's *LNG storage capacity*, as a standing bid for a period.  
  
Note: the *LNG injection bid* may be updated from time to time to reflect limitations at the *LNG storage facility* impacting AEMO's *LNG storage capacity* or AEMO's *LNG stock*.
- (b) AEMO will have an accreditation with a Maximum Hourly Quantity of 0 GJ/hr at the *LNG storage facility's system injection point* by default for each gas day.
- (c) If AEMO determines the daily quantity required to be injected from the *LNG storage facility* exceeds *Market Participant's aggregate LNG injection bid* quantity then AEMO will schedule gas from AEMO's *LNG reserve*.
- (d) If (c) applies, AEMO will adjust AEMO's *LNG reserve* accreditation's Maximum Hourly Quantity for the gas day to be a value determined in paragraph (c) over an hourly profile required to meet operational requirements, rounded up to whole GJ terms.

### 6.1.2. Scheduling AEMO's LNG Reserve for disposal or relinquishment

AEMO may inject gas from AEMO's *LNG reserve* for disposal or relinquishment of *LNG stock* in accordance with the LNG Reserve Procedure.

The process, as required by rule 285(4)(a) of the Rules, for AEMO to inject gas from AEMO's *LNG reserve* for the purpose of disposal or relinquishment is:

- (a) AEMO determines the daily quantity from AEMO's *LNG reserve* for disposal or relinquishment as required by the LNG Reserve Procedures that must be injected into the DTS for the *gas day* or period of *gas days*.
- (b) AEMO may enter an injection bid for a *gas day* or period of *gas days* with:
  - (i) A bid step priced at \$0/GJ, as required by rule 286(5)(a) of the Rules, for a quantity equal to the *LNG stock* for disposal or relinquishment as determined in (a);
  - (ii) And may also include a bid step priced at VoLL for a quantity equal to AEMO's *LNG storage capacity*.

Note: the *LNG injection bid* may be updated from time to time to reflect limitations at the *LNG storage facility* impacting AEMO's *LNG storage capacity* or AEMO's *LNG stock*.

- (c) AEMO will have an accreditation with a Maximum Hourly Quantity of 0 GJ/hr at the *LNG storage facility* by default for each *gas day*.
- (d) AEMO will adjust AEMO's *LNG reserve* accreditation's Maximum Hourly Quantity to be the *LNG stock* for disposal or relinquishment determined under the LNG Reserve Procedures, in whole GJ terms, in accordance with the *LNG storage facility* injection operating limits as defined in the *LNG Storage Provider* operating agreement.
- (e) AEMO will inform *Market Participants*, via SWN, of AEMO's *LNG injection bid* quantity, as soon as reasonably practicable after the *LNG injection bid* (in paragraph (b) above) and accreditation (in paragraph (d) above) has been entered in market systems.

### 6.1.3. Withdrawing gas into AEMO's LNG Reserve

AEMO will arrange for refilling AEMO's *LNG Reserve* in accordance with the process detailed in the LNG Reserve Procedures.

## 7. Administered Prices

Refer to the Wholesale Market Administered Pricing Procedures that specify the processes for determining administered pricing, including the Administered Price Cap and AEMO's processes for declaring the commencement of and end of *administered price periods*.

## 8. Market Notifications and Communications

Notifications and communication of market and system information between AEMO and *Market Participants* must be in accordance with the Wholesale Market Electronic Communication Procedures.

MIBB is the primary means by which AEMO and *Market Participants* communicate information required under these Procedures.

If the MIBB fails, AEMO and *Market Participants* must use the backup communication arrangements directed by AEMO to communicate the information required. The backup communication arrangements may include facsimile, telephone, or other means, as directed by AEMO at the time.

Notification by an SWN with follow up SMS as the secondary means for communicating updates to *Market Participants* as required by these Procedures.

For the avoidance of doubt, an error or failure to notify *Market Participants* by SMS is not an unintended *scheduling* result.

An SWN with follow up SMS message may be used to notify *Market Participants* of any of the following:

- (a) the application of any new or amended constraints (SDPCs, DFPCs or NFTCs);
- (b) changes to EoD total system LP target;
- (c) changes made to MCE reference data;

- (d) declaration of a threat to *system security* to allow AEMO to run an ad-hoc *operating schedule*;
- (e) publication of an ad hoc *operating schedule*;
- (f) time and date of the commencement and completion of any *intervention*;
- (g) time and date of the commencement and completion of any *Market* suspension;
- (h) time and date of the commencement and completion of any threats to *system security*;
- (i) time and date of the commencement and completion of an *administered price period*; and
- (j) any other information AEMO reasonably considers it needs to notify *Market Participants*.

## Version release history

Version	Effective date	Summary of changes
4.1	1 January 2023	Procedure update includes the removal of Zonal Scaling Factors and Adjusted Capacity Certificates which were removed from the updated tie breaking process.
4.0	1 Jan 2023	Procedure update includes: <ul style="list-style-type: none"> <li>• Updated definitions</li> <li>• Remove references to authorised MDQ and AMDQ credits</li> <li>• Remove Market Participant Hedge Nomination, previously section 3.8.3</li> <li>• Added tie breaking rights, see section 3.9</li> <li>• Correction of minor typographic errors</li> </ul>
3.0	31 Mar 2020	Procedure update includes: <ul style="list-style-type: none"> <li>• Updated to new AEMO template (changes not tracked).</li> <li>• Incorporating withdrawal NFTC being applied in both PS and OS schedule.</li> <li>• Minor editorial to website location of Gas Emergency Protocol and in Chapter 7 that AEMO will send a SWN when a constraint (SDPC, DFPC, NFTC) is applied.</li> </ul>
2.0	4 May 2015	Procedures updated to include; <ul style="list-style-type: none"> <li>• Addition of Table 2: Acronyms Definitions</li> <li>• addition of abnormal scheduling conditions 7 and 8;</li> <li>• addition of Transmission Constraint (NFTC);</li> <li>• declaration of a Threat to System Security prior to publishing an ad hoc schedule;</li> <li>• addition of notification process for scheduling peak-shaving LNG during a standard schedule time as an operational response;</li> <li>• removal of the procurement of pipeline commissioning gas from Section 3.6.2; and</li> <li>• general updating to improve the overall clarity of the Procedures.</li> </ul>
1.2	1 May 2012	Procedures updated to reflect that the hedge nomination and AMDQ nomination information is used for determining ITR and AMIQ, and that Market Participants can: <ul style="list-style-type: none"> <li>• submit injection hedge nominations and agency injection hedge nominations by close proximity injection point;</li> <li>• update the submitted AMIQ profile in reschedules in accordance to the Rules; and</li> <li>• nominate and renominate authorised MDQ and AMDQ credit to system injection points via the new AMDQ nomination WebExchanger screen.</li> </ul> Other changes include: <ul style="list-style-type: none"> <li>• added clause 3.1A to provide the reference to Demand Override Methodology; and</li> <li>• changes made to improve the overall clarity of the Procedures.</li> </ul>
1.1	1 April 2011	Updated to reflect supply and demand point constraints at system injection points with multiple supply sources, and directional flow point constraints applied to a group of selected pipeline points
1.0	1 July 2010	Rebranded and updated for NGR