AUSTRALIAN ENERGY MARKET COMMISSION

RULE

Background paper

ECGS reliability and supply adequacy rule change requests

Proponents

Energy Senior Officials Group
Victorian Minister for Energy and Resources

20 March 2025

Inquiries

Australian Energy Market Commission
Level 15, 60 Castlereagh Street
Sydney NSW 2000

E aemc@aemc.gov.au
T (02) 8296 7800

Reference: GRC0076

About the AEMC

The AEMC reports to the energy ministers. We have two functions. We make and amend the national electricity, gas and energy retail rules and conduct independent reviews for the energy ministers.

Acknowledgement of Country

The AEMC acknowledges and shows respect for the traditional custodians of the many different lands across Australia on which we all live and work. We pay respect to all Elders past and present and the continuing connection of Aboriginal and Torres Strait Islander peoples to Country. The AEMC office is located on the land traditionally owned by the Gadigal people of the Eora nation.

Copyright

Citation

To cite this document, please use the following:
AEMC, ECGS reliability and supply adequacy rule change requests, Background paper, 20 March 2024

Contents

Tables

Figures

1 Introduction

1.1 Purpose of this document

The purpose of this document is to provide stakeholders with the necessary background and context to engage effectively with the consultation process on four rule change requests to the National Gas Rules (NGR) that address the reliability and supply adequacy (RSA) of the east coast gas system (ECGS). The four rule change requests are:

1. ECGS reliability standard and associated settings
2. ECGS supplier of last resort mechanism
3. ECGS notice of closure for gas infrastructure
4. ECGS projected assessment of system adequacy

These rule change requests are the key building blocks of a framework that the Chair of the Energy Senior Officials Group & Deputy Secretary, Department of Climate Change, Energy, the Environment and Water, and the Victorian Minister for Climate Action, Minister for Energy & Resources and Minister for the State Electricity Commission have proposed to support the RSA of the ECGS.[1] Each request includes proposed solutions, the feasibility of which, at times, may rely on solutions assessed in other rule change requests within the package.[2]

In recognition of the interconnected nature of these rule change requests, this paper includes contextual information stakeholders may want to consider as they engage with the Australian Energy Market Commission (AEMC)'s rule change processes for those.

To this end, this paper illustrates:

- key features of the ECGS and its facilitated markets as well as demand-supply outlooks
- existing tools for ECGS RSA that the proposed framework would build on
- The reliability framework for the national electricity market (NEM), which partly inspired the design of stage 2 RSA framework for the ECGS.

1.2 Overview of the RSA framework and related rule change requests

1.2.1 Background to RSA reforms

In winter 2022, the ECGS experienced higher than expected gas demand (particularly from gas-powered generators (GPG)) and lower than expected supply. Wholesale gas prices in the facilitated markets across the ECGS reached record highs, triggering the administered price caps in some of these markets.[3]

The Australian Energy Market Operator (AEMO) and the Australian Competition & Consumer Commission (ACCC) released reports warning of the impending structural tightening of natural gas demand-supply balance from winter 2023.[4] The latest ECGS supply and demand outlooks released by AEMO and the ACCC in 2024 and 2025, broadly confirm the earlier outlook and supply shortfall risks for the late 2020s (more information in section 2.3).[5]

---

1 On 8 December 2023, Energy Ministers agreed to progress stage 2 of the reforms to the east coast gas system reliability and supply adequacy framework (RSA framework) through the Australian Energy Market Commission's standard rule change request process. Sources: Energy and Climate Change Ministerial Council, *Consultation on Stage 2 of the Reliability and Supply Adequacy Framework for the east coast gas market*. *ECGS Reliability standard and associated settings rule change request (Gas reliability standard rule change request), p 1.*

2 The proponents for the rule change requests *ECGS reliability standard and associated settings*, *ECGS supplier of last resort*, and *ECGS projected assessment of system adequacy* are Energy Senior Officials and the Victorian Minister for Energy and Resources. The proponent of the *ECGS notice of closure for gas infrastructure* rule change request is the Energy Senior Officials.

3 AEMO, *Quarterly Dynamics Q3 2022*, p 39, Oct 2022. GPG is electricity generation or generator powered by gas. Source: AEMO, *Glossary and rules terms*.

4 AEMO, *Gas statement of opportunities*, pp 8-9, March 2022 and ACCC, *Gas inquiry interim report*, p 19, July 2022.

These looming risks prompted energy ministers to make a policy decision in August 2022 to create a reliability and supply adequacy framework for the ECGS.[6] The initial phase of implementing this framework - the stage 1 National Gas Law (NGL) changes - was made in time for the winter of 2023. These law changes expanded AEMO's powers, allowing them to better manage gas supply adequacy and reliability risks with tools to monitor, signal and manage gas supply shortfalls.[7] At that time, it was anticipated that a subsequent package of reforms (referred to as stage 2 RSA reforms) would follow to complete the framework.

As a result, in June 2023, in accordance with the direction of energy ministers, officials asked stakeholders to provide feedback on potential measures for inclusion in the stage 2 RSA framework.[8] The purpose of stage 2 is to complement stage 1 and "enhance the timeliness and efficiency with which market participants can respond to reliability and supply adequacy threats and only require AEMO to intervene as a last resort"[9]

The proposed RSA framework was largely adapted from the NEM reliability framework and AEMO's related functions in the NEM while recognising the differences between the NEM and the ECGS.[10] In their consultation paper for the stage 2 reforms, officials explained how the new framework would instigate market-led responses that incentivise reliability by[11]:

> Providing market participants with greater visibility of the reliability and adequacy of supply over the short, medium and longer term, allowing threats to be objectively identified and communicated to the market in a timely manner; and
>
> Operating in a transparent and predictable manner through the adoption of clear objectives, rules and guidance for market participants and market bodies, as well as an appropriate level of accountability for AEMO.

Following consideration of stakeholder feedback in the high-level design of the framework, on 8 December 2023 energy ministers asked officials to progress stage 2 by lodging rule change requests for the NGR to the AEMC.[12]

1.2.2 Overview of the rule change requests

Figure 1.1 illustrates the four rule change requests included in stage 2 of the RSA framework and how they are related to each other.

5 The 2024 *Gas statement of opportunities* (GSOO) forecasts a continued low relative elasticity to price. AEMO may adjust their price elasticity assumptions in future GSOO forecasts based on gas and electricity consumption data to confirm price and/or electrification trends and identify where they differ from those observed historically. Source: AEMO, *Gas statement of opportunities*, March 2024, pp 26-27.

6 Energy ministers meeting, *Communique on priority reforms for a more secure, resilient and flexible east coast gas market*, August 2022.

7 Chapter 3 of this paper describes the features of stage 1 reforms and how it was implemented following changes to the NGL and the NGR.

8 Information on the consultation run by officials on the stage 2 RSA framework is available on the Department of Climate Change, Energy, the Environment and Water (DCCEEW)'s website.

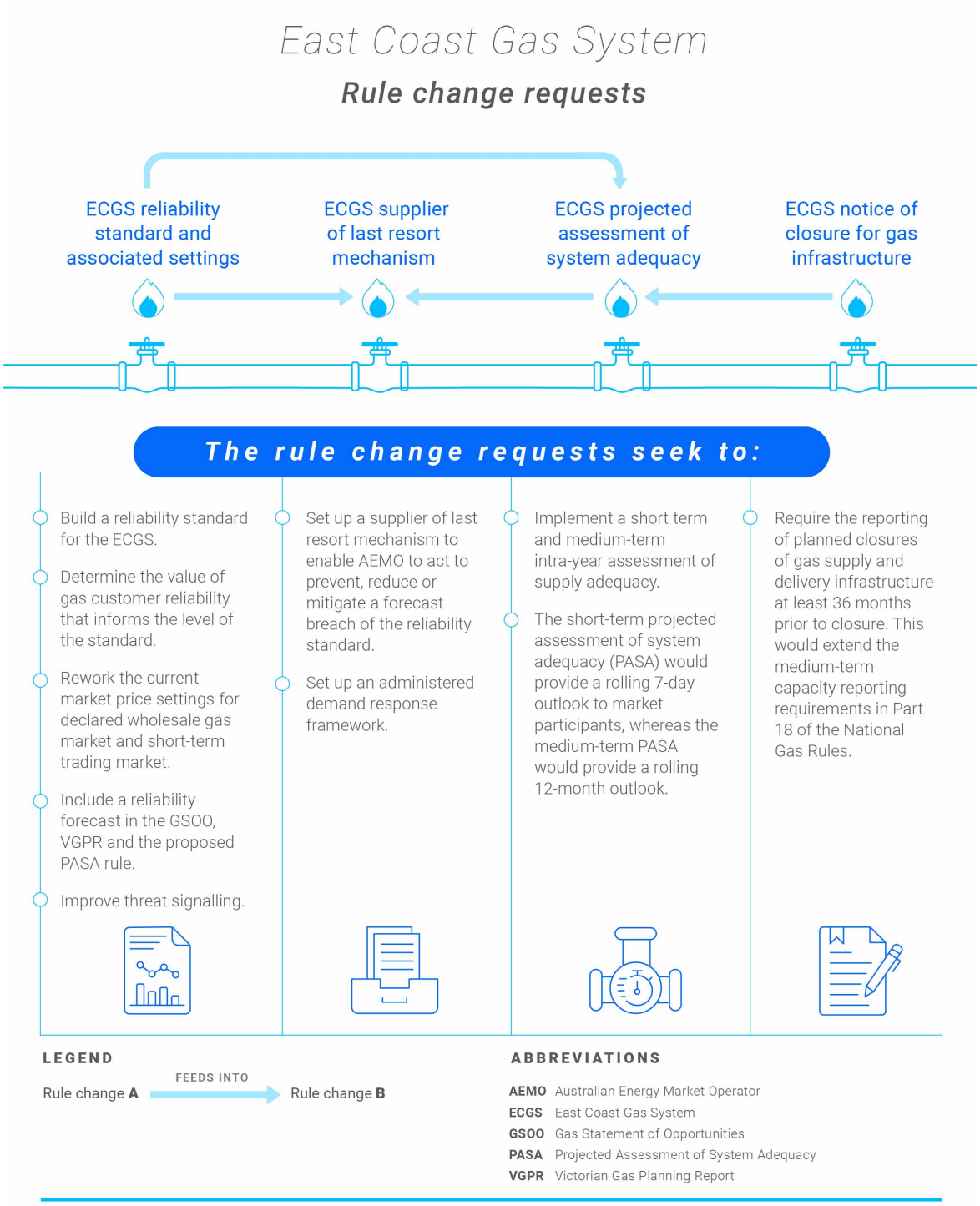
9 Gas reliability standard rule change request, p 8.

10 Gas reliability standard rule change request, p 8.

11 Gas reliability standard rule change request, p 8 quoting DCCEEW, *Reliability and supply adequacy framework for the east coast gas market consultation paper (stage 2 consultation paper)*, June 2023, p 6.

12 DCCEEW, *energy ministers agree to final package of stage 2 reliability and supply adequacy reforms*, 14 December 2023.

Figure 1.1: The four rule change requests and their interrelationships



Source: AEMC.
Note: Illustrative only. See the rule change requests for details.

ECGS reliability standard and associated market settings rule change

This rule change request seeks to introduce a reliability standard for the ECGS and review the associated price settings for the facilitated gas markets. In addition, the request proposes new tools that complement the reliability standard.[13] The request proposes to:

- Establish a reliability standard with two forms:
  - an annual 'unserved' gas measure (USG) that reflects the ability to supply gas, infrastructure capacity and demand response to meet forecast demand.
  - a peak day deliverability measure (1-in-5 or 1-in-10 year peak demand) that does the same as above but on peak days.

An expected breached standard would trigger market responses over the short, medium and longer term, requiring AEMO only to intervene as a last resort. Further, the rule change request seeks to:

- Establish a framework and governance arrangements for the Australian Energy Regulator (AER) to determine the value of gas customer reliability (VGCR). The VCGR would inform the level of the reliability standard.
- Link the market price settings (market price caps, price floors, cumulative price thresholds and administered price caps) for the Victorian declared wholesale gas market (DWGM) and the short-term trading market (STTM) to the reliability standard and assign responsibility for their periodic review to the AEMC.
- Include a reliability forecast in the Gas statement of opportunities (GSOO) and the Victorian gas planning report (VGPR) to improve the planning and investment signals provided by these tools.
- Create a tiered threat signalling mechanism that signals escalating threat levels against the reliability standard.

ECGS supplier of last resort mechanism and administered demand response

This rule change request leverages AEMO's existing trading function in Section 91AD(1)(f) of the NGL introduced in the stage 1 reforms.[14] The request seeks to introduce a supplier of last resort (SoLR) mechanism for the ECGS that would act as a safety net for gas consumers and allow AEMO to step in as a last resort to provide continuity of gas supply.[15] In the proponents' view, the proposed mechanism's design would provide clear guidance on the alternative types of SoLR reserves (i.e. reserve gas supplies or capacity for demand response) that AEMO would be able to establish and the circumstances in which it would be able to do so.[16]

The mechanism is proposed to be triggered under specific pre-conditions:

- AEMO would identify a potential or actual breach of the proposed reliability standard, indicating a potential or actual threat to meeting gas demand. This 'forecast breach' would be identified by tools such as the proposed projected assessment of system adequacy (PASA) for the ECGS or proposed reliability forecasts in the GSOO or VGPR
- AEMO would communicate the forecast breach to the market by publishing a risk or threat notice, and

13 Gas reliability standard rule change request.

14 S. 91 AD(1)(f) of the NGL allows AEMO "to trade in covered gas or to purchase pipeline services or services provided by a compression service provider, blend processing service provider or a storage provider to the extent AEMO considers necessary to maintain and improve the reliability or adequacy of the supply of covered gas within the east coast gas system".

15 *ECGS Supplier of last resort mechanism rule change request* (SoLR rule change request).

16 *SoLR rule change request*, p 34.

- if there are insufficient responses from the market to address the threat, AEMO would trigger the SoLR if it is of the opinion that triggering SoLR is necessary to prevent or mitigate the forecast breach.[17]

When the pre-conditions are met, the SoLR mechanism would enable AEMO to:

- access reserve gas supplies (storage SoLR reserve)
- contract to procure a range of other types of products and services (other SoLR reserve) including demand response from gas users.[18]

ECGS projected assessment of system adequacy

This rule change request proposes to introduce short-term (ST) and medium-term (MT) projected assessment of system adequacy (PASA) tools for the ECGS to provide rolling forecasts of gas supply, demand, and infrastructure capacity. These forecasts would help AEMO, market participants and policymakers anticipate and respond to reliability and supply adequacy threats within intra-year timeframes.

Under the proposed design, AEMO would be responsible for preparing and publishing both[19]:

> An ST PASA, which would be published daily and provide for a rolling 7-day outlook of demand, supply and infrastructure capacity, as well as any actual or potential risks or threats to the reliability or adequacy of supply for the east coast gas system and each region specified in the East Coast Gas System (ECGS) Procedures.
>
> An MT PASA, which would be published weekly and provide for a rolling 12-month outlook of demand and supply and infrastructure capacity for the east coast gas system and each region specified in the ECGS Procedures. Depending on the outcome of the Reliability Standard & Associated Settings rule change, the MT PASA could also include a reliability forecast that includes AEMO's assessment of whether or not the reliability standard is likely to be breached.

ECGS notice of closure for gas infrastructure

The notice of closure of gas infrastructure rule change request seeks to establish requirements for advance notification to AEMO when critical gas infrastructure—such as production facilities, storage facilities, pipelines, or compression stations—is planned to be closed or decommissioned.[20]

The proposal is for operators of production, pipeline, compression, and storage facility infrastructure that meet the bulletin board reporting threshold (i.e. by having a nameplate capacity rating of at least 10 TJ per day) would be required to report the date of the planned closure through the bulletin board 36 months prior to closure, making this information visible to other market participants.[21]

---

17 This summary does not include the proposed list of criteria for AEMO to consider when assessing the necessity of SoLR. For the full list of pre-conditions that would trigger the mechanism, see the SoLR rule change request, pp 32-33.

18 SoLR rule change request, p 34, pp 58-61.

19 *ECGS projected assessment of system adequacy (PASA)* rule change request, p 12, p 14.

20 *ECGS Notice of closure for gas infrastructure* rule change request (Notice of closure rule change request).

21 The gas bulletin board (GBB) was established on 1 July 2008, as a gas market and system information website covering all major gas production fields, major demand centres and natural gas transmission pipeline systems of South Australia, Victoria, Tasmania, NSW, ACT and Queensland. The bulletin board is a website operated by AEMO that contains a mix of short and medium term market and system information for a range of facilities involved in the supply, delivery and use of gas in the east coast that can be used to inform shorter term decisions by market participants (see Part 18 of the NGR).

It is proposed that the information provided in closure notices support improved forecasting in the GSOO, the VGPR and the proposed PASA.[22]

Links across the proposed rule change requests

The most evident inter dependencies between the Gas reliability standard rule change requests are:

- *Reliability standard and SoLR*: the SoLR mechanism would be triggered by a forecast breach of the reliability standard (i.e. the reliability standard is or could be breached) that market-led solutions have failed to fully address.[23]
- *Reliability standard and PASA*: the reliability standard rule change includes a reliability forecast that is proposed to form part of the outputs of the proposed PASA tool, and other existing forecasting and planning tools such as the GSOO and the VGPR. This way, the market can be notified of any potential breaches of the reliability standard through the proposed threat signalling mechanism.[24]
- *Notice of closure and PASA*: the notice of closure rule would support improved forecasting of the proposed gas PASA tool as well as the GSOO and VGPR.[25]

Other potential linkages

At the 6 December 2024 Energy and Climate Change Ministerial Council (ECMC) meeting ministers[26]:

> tasked Senior Officials to work with the AEMO to advise on potential expanded powers for AEMO to address East Coast gas supply issues emerging by 2028 and to recommend policy options to address supply and cost of gas over the medium term. These are to complement market-led solutions, while preserving current export contracts. Ministers will consider this advice at the first meeting of ECMC in 2025.

The Commission may need to consider the impact of senior official's advice to ministers and subsequent ECMC proposed reforms as part of its rule change processes.

Objectives that are out of scope of the rule change requests

The AEMC understands that the RSA framework's primary objective is to allow market participants and AEMO to better manage, in the short to medium term, gas demand-supply issues within existing infrastructure constraints and forecast supply. The reforms and related rule changes do not aim to incentivise additional gas (commodity) supply through increased exploration and production activity.

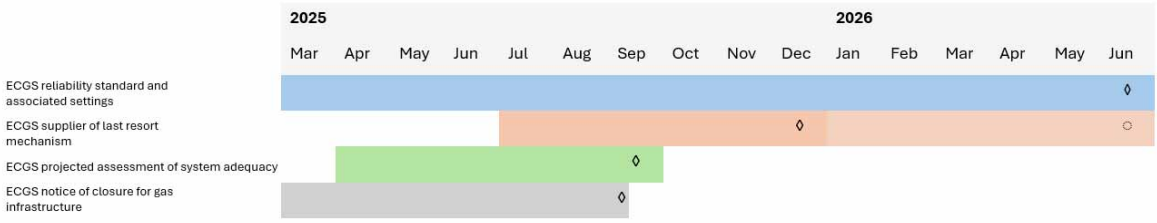
While a reliability standard and updated market settings could also have the purpose of a long term market signal (like in the NEM), this is not the framework's primary objective.

Nonetheless, in considering the rule change requests the Commission may need to consider long term impacts and investment signals, as it does for reliability settings in the electricity market.

22 Notice of closure rule change request, p 16.
23 SoLR rule change request, p 12.
24 Gas reliability standard rule change request, p 8.
25 Notice of closure rule change request, p 16.
26 Communique, *Energy and Climate Change Ministerial Council Meeting*, 6 December 2024, pp 2-3.

Indicative timeline for the AEMC to process the rule change requests

Figure 1.2: Indicative timeframes for the four ECGS rule change requests



Source: AEMC

Note: These timelines are indicative only and subject to final Commission approval. Timelines may vary over the course of each rule change project to account for changes in circumstances. Key: ◊ = statutory completion date for standard rule changes (noting that the ECGS reliability standard rule change has issued extension notices for both draft and final determinations) ○ = potential completion date to account for an extended timeframe to address complexity and difficulty arising from the rule change requests.

2 The east coast gas system

This chapter provides an overview of the ECGS and the key features of the facilitated markets within this system. The chapter also provides a summary of the latest gas demand-supply outlooks produced by AEMO and ACCC.

2.1 Overview of the east coast gas system

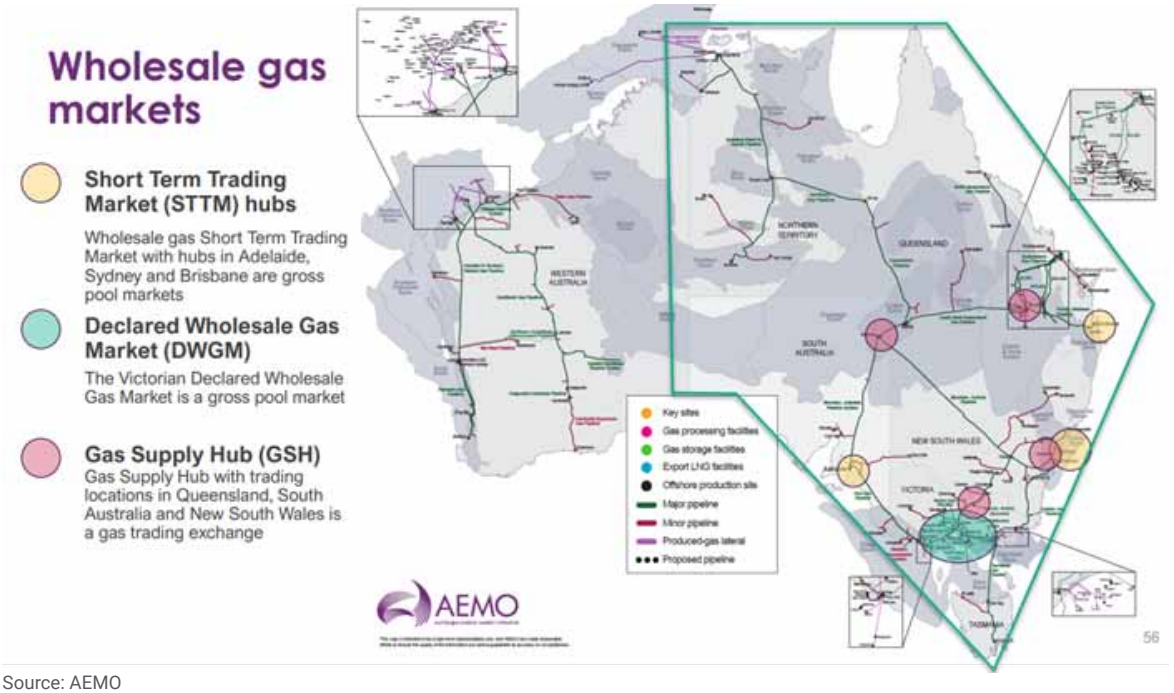
The ECGS is a geographical area that covers all gas infrastructure in Queensland, NSW, ACT, Victoria, South Australia, Tasmania and the Northern Territory.

The ECGS comprises three facilitated gas markets (see Figure 2.1):

1. the Victorian declared wholesale gas market (DWGM)
2. the short term trading market (STTM, which operates in Adelaide, Sydney and Brisbane)
3. the gas supply hub (GSH) at Wallumbilla and Moomba.

The ECGS is not a centrally operated market like the NEM. Within the ECGS, pipeline capacity can be traded, apart from within the Victorian Declared Transmission System (DTS). Gas market participants can trade spare gas pipeline capacity to improve the efficiency with which gas is allocated and used in transmission pipelines and compressors.[27]

Figure 2.1: Wholesale markets in the ECGS (defined by the green perimeter)



Source: AEMO

The definition of the ECGS is set out in section 2 of the NGL:

"east coast gas system" means the following, located wholly or partly within an east coast jurisdiction—

27 Pipeline capacity trading includes the capacity trading platform (CTP) for trading secondary capacity, and the day-ahead auction (DAA), which makes contracted but un-nominated capacity available to gas service providers. Source: AER, *Pipeline capacity trading*.

(a) a covered gas industry facility;

(b) a regulated gas market;

(c) a gas trading exchange for which AEMO has established a gas trading exchange agreement;

(d) a system, market or other thing specified by the Rules.

The NGL (section 2) defines covered gas industry facility as any of the following:

(a) a blend processing facility;

(b) a compression service facility;

(c) a gas processing plant;

(d) an LNG facility;

(e) a pipeline;

(f) a storage facility;

(g) a user facility;

(h) another facility of a type specified by the Regulations for the purpose of this definition.

The recent changes to the NGL and NGR framework, following a 2022 AEMC review on hydrogen and renewable gases, extend it to include gases other than natural gas. Under the framework, covered gases include natural gas, hydrogen and renewable gases.[28]

2.1.1 Other regulatory features unique to the ECGS

In addition to being a geographic area as opposed to a centrally operated market, there are certain features unique to the ECGS described below. In addition, appendix A provides an overview of key instruments and regulations currently in place for the ECGS, providing the broader context and timeframes in which those existing tools and the package of proposed rule changes would operate.

Part 27 of the NGR applies across all the jurisdictions in the ECGS including its facilitated markets

In the NGR, provisions that apply to the STTM and DWGM focus on aspects such as market governance, trading and settlement, compliance and reporting, among others for those facilitated markets specifically. In contrast, Part 27 (titled 'East coast gas system reliability and supply adequacy') provides an overarching 'safety net' to address systemic reliability issues across the geographical areas. The ECGS function does not duplicate markets-specific rules but rather operates in a complimentary fashion.

Economic regulation of pipelines

The AER regulates transmission and distribution gas pipelines in the ECGS under the NGL and the NGR. Pipelines are classified as scheme or non-scheme, with different regulatory requirements.

- Scheme pipelines are subject to the fullest form of regulation. The regulatory framework is set out in Parts 8 to 12 of the NGR. It requires the AER to approve proposed access arrangements. Access arrangements set out the tariff and non-tariff terms and conditions of specified services provided by the pipeline. Service providers of scheme pipelines are also required to meet the information reporting requirements set out in Part 10 of the NGR.

28 AEMC, *Review into extending the regulatory frameworks to hydrogen and renewable gases*, final rules report, 24 November 2022.

- Non-scheme pipelines are not required to provide proposed access arrangements to the AER for approval. Instead, the service providers of these pipelines are required to provide the specified information under Part 10 of the NGR.[29]

The AER can review a pipeline's classification as scheme or non-scheme when appropriate.[30]

Jurisdictional governments are responsible for pipeline safety

Safety responsibilities for gas pipelines are governed at the state and territory level, with each jurisdiction maintaining its own regulatory framework. However, all jurisdictions adhere to common principles, including risk management, operational safety, and emergency response preparedness.

Pipeline operators have a primary duty of care under relevant work health and safety (WHS) laws and specific pipeline safety legislation, which make laws with respect to design, operations, maintenance of pipelines, the development of emergency response plans and the reporting of safety incidents.

The NGL and NGR apply economic regulation but do not override state-based safety frameworks.

In case of multi-jurisdictional gas supply emergencies (i.e. large scale gas supply disruptions), the national gas emergency response advisory Committee (NGERAC) provides advice to the Australian Government and state and territory governments on appropriate responses.[31]

The NGERAC is chaired by the Australian Government and comprises representatives of all state and territory governments, AEMO, and the natural gas industry participants.[32]

Retail gas prices are not regulated

Gas retail pricing is not subject to the same regulation as electricity pricing in the NEM. There is no equivalent to the AER 'default market offer' (DMO) or the Victorian default offer (i.e. the maximum price that a retailer can charge a customer on a 'standing offer' plan).[33]

2.2 Current market settings in facilitated gas markets

2.2.1 Three facilitated markets

The DWGM is a facilitated market and a virtual hub operating across the DTS.[34] The DWGM is a mandatory market covering most of Victoria and is geographically limited to the scope of the DTS. It is a 'gross pool' market, which means that it is compulsory for market participants wanting to inject gas to, or withdraw gas from the DTS to trade through the DWGM, including for participants who already own the gas that they intend to withdraw.[35] Therefore, all gas is centrally dispatched, and prices are determined based on bids and offers from market participants. The wholesale price in the DWGM is based on supply and demand dynamics determined through a market clearing process that operates similarly to an auction. By operating the DWGM, AEMO is also the operator of the DTS.

29 DCCEEW, Energy and Climate Change Ministerial Council, *Energy ministers agree final package of gas pipeline regulatory amendments* and AEMC, *Gas pipeline register*.

30 AER, *State of the energy market 2024*, pp 206-210.

31 DCCEEW, Energy and Climate Change Ministerial Council. *Emergency Management*.

32 DCCEEW, *Energy emergency management forums*.

33 AER, *Default market offer prices 2024-2025*.

34 Victorian Declared Transmission System, also known as the Victorian Transmission System, is a network of transmission pipelines transporting natural gas throughout Victoria.

35 AEMO, *About the declared wholesale gas market (DWGM)* and *Market operations*.

The STTM is a market for the trading of natural gas at the wholesale level at defined hubs between pipelines and distribution systems (Adelaide, Brisbane, and Sydney). Each hub in the STTM is scheduled and settled separately, but all hubs operate under the same rules. At any hub, there can be multiple facilities that deliver gas to the hub (such as transmission pipelines, storage facilities, and production facilities) and multiple distribution systems that deliver the gas from the hub to consumers.[36] It has a system of day-ahead gas trading. Participants submit offers and bids for gas supply and usage, and AEMO determines ex-ante schedules and market prices based on these inputs for the next gas day. The STTM also includes mechanisms like contingency gas arrangements to address unexpected supply-demand imbalances and market operator service (MOS) to manage pipeline flow deviations.

In the STTM, 'shippers' deliver gas to be sold in the market, and 'users' buy gas for delivery to consumers (or for self-consumption). As the majority of gas bought and sold on the east coast is through long term bilateral contracts outside of the STTM, many participants are both shippers and users. This is because all gas delivered to the hub is required to be transacted through the STTM, which can result in an entity selling gas into the STTM and purchasing it back each day.

Due to the physical characteristics of natural gas and the time it takes to flow through transmission pipelines, nominations by gas users are made to producers and pipeline operators a day ahead. Accordingly, the STTM design consists of two broad elements:

- the ex-ante or commodity market — where supply and demand is matched for the following day and an ex-ante price determined by the market operator
- on-the-day balancing mechanism — to account for differences during the gas day between the supply and demand schedules determined in the ex-ante market and to ensure system security is maintained.

The GSH is located at key supply trading points Wallumbilla and Moomba. It is a voluntary, gas trading platform that provides buyers and sellers a centralised trading, settlement and clearing facility through an online portal, and enables generators, users, producers and retailers to manage their daily and future gas requirements. AEMO centrally settles the transactions. Pipeline capacity trading is also offered as part of the GSH.

2.2.2 Role of the key market settings

Price caps and trigger mechanisms are the key market settings used in the DWGM and STTM. These market settings work together to ensure reliability and stability by limiting excessive price volatility while preserving financial incentives for suppliers to respond to tight supply conditions under normal market conditions. There are no price caps within the GSH or in any other part of the ECGS.[37] The following are the three key market settings and/or parameters:

1. **Market price cap (MPC)** sets the maximum price for gas. This is the default price cap that exists in the market preventing prices from exceeding a certain level.
2. **Cumulative price threshold (CPT)** serves to limit the total revenue that suppliers can earn over a cumulative period. The cumulative price period is 35 consecutive scheduling intervals in the DWGM and seven gas days in the STTM.

36 AEMO, *Short term trading market (STTM)* webpage.

37 The GSH and capacity markets have practical control price caps for preventing input errors. These are not settings intended to manage market dynamics and price signals. The GSH exchange has a minimum order price of -$100.00/GJ and a maximum order price of $999.00/GJ, as described in the Gas supply hub industry guide (p 24). The capacity markets maximum price for DAA (day-ahead auction) is $50/GJ and maximum price for CTP (capacity trading pipeline) is $1000/GJ. This information is not explicitly stated in any public documents but was provided by AEMO.

3. **Administered price cap (APC):** During periods of extreme price volatility or market stress a lower price cap known as the APC is applied. The APC can be triggered under certain conditions including but not limited to when the CPT is exceeded. The conditions under which APC may be applied is discussed in section 2.2.3.

Table 2.1 summarises the current price caps (MPC and APC) and triggers (CPT) as they exist in the STTM and DWGM.

Table 2.1: Key market settings as they exist in the DWGM and STTM

	DWGM	STTM
Market price cap (MPC)	$800/GJ (termed 'value of lost load' in the NGR)	$400/GJ
Administered price cap (APC)	$40/GJ	$40/GJ
Cumulative price threshold (CPT)	$1400	$440 (110% of the MPC)

Source: Market reform, Gas market parameters review, 5 September 2022. p 9.

Note: The APC and CPT parameters for the DWGM are as documented in the Wholesale market administered pricing procedures (Victoria). MPC parameter is termed as 'value of lost load' (VoLL) and is as documented in the NGR for DWGM. Note that there is ambiguity in the language used for market cap in the DWGM as it is synonymously used with VoLL, even though the price cap is not the true marginal value of lost load. CPT, MPC and APC parameters in the STTM are as documented in the NGR.

These settings work in tandem to balance market efficiency and risk management. The MPC is set at a price which is estimated to be that which those market participants who have uncontrollable withdrawals would prefer to be curtailed rather than supplied during tight supply conditions, supporting system reliability.[38] Meanwhile, the price caps (both MPC and APC) and CPT act as effective guardrails protecting market participants from excessive price volatility and unmanageable risks.

2.2.3 Conditions when the APC may apply

In order for administered pricing to come into operation, AEMO must determine an administered price cap state applies.

For DWGM, based on guidance under the *Wholesale market administered pricing procedures (Victoria)*, AEMO can impose the administered price cap if any one of the following apply:[39]

- the market is suspended
- material curtailment has been ordered
- a minor or major retailer of last resort (RoLR) event has occurred
- AEMO is unable to publish a market price or pricing schedule as a result of a software failure
- the cumulative price threshold is exceeded (the cumulative price period is 35 consecutive scheduling intervals).

The guidance for administered price cap in the STTM is documented under Part 20 (rule 428) of the NGR. The cumulative price calculation is complex in the STTM as each day:

38 Uncontrollable withdrawal refers to quantities of gas that market participants will withdraw regardless of market price. This applies to "almost all customers in the residential, commercial and industrial sectors" and includes demand from gas-fired power generators.

39 Market Reform, *Gas market parameters review*, 2022, p 21. AEMO, *Wholesale market administered pricing procedures (Victoria)*.

- an ex-ante price is determined for the next day
- contingency gas prices may be determined for the current day
- deviation prices are determined for the prior day.[40]

Therefore, AEMO determines whether the CPT has been exceeded for a gas day during the prior gas day.[41]

Key factors contributed to some extreme events during winter 2022 that subsequently triggered the APC. In the winter of 2022, cold weather, increased gas demand for GPG and extremely high gas coal and gas prices (both internationally and domestically) led to very tight demand-supply conditions in the ECGS. This resulted in administered pricing being applied both in the DWGM and Sydney STTM.[42] The Gas Supply Guarantee was also activated by AEMO.[43] Administered pricing was also applied in the Brisbane and Sydney STTM due to a retailer of last resort event.[44]

The events of winter 2022 highlighted potential gaps in the current approach to administered pricing. Historically, administered pricing interventions have focused on markets, such as the DWGM and STTM, in isolation. However, with increasing linkages between the DWGM, STTM, the broader gas market, and the NEM due to GPG, there has been limited consideration of the implications of simultaneously capping prices across multiple markets.

Moreover, without proper measures in place during tight market situations there is also a possibility that gas may flow to customers outside of the facilitated markets, as they may be able to pay more for the gas, as there is no price cap on gas sold outside of the STTM and DWGM. Differences between the levels of price caps in STTM and DWGM have also been raised as an issue during stakeholder feedback in past reviews. [45]

2.2.4 Reviewing and updating the DWGM and the STTM market settings

AEMO's obligations for determining STTM market settings are contained in the NGR (rule 492). For the STTM, reviews are mandatory every five years. For the DWGM, the obligations for the market settings are contained in the wholesale market administered pricing procedures. [46] Reviews of the DWGM market settings are conducted at AEMO's discretion.

AEMO oversees periodic reviews of these settings to ensure they remain fit for purpose.[47] The reviews consider factors such as interactions between the gas and electricity markets, structural changes in the gas market, demand projections, and feedback from stakeholder consultations.

2.2.5 ECGS compensation framework

AEMO must engage with entities before issuing a direction to them (unless there is no time to do so) in the context of a reliability or supply adequacy threat. However, it is recognised that the act of issuing directions to support the operation of the ECGS could impact specific market participants disproportionately, exposing some to financial loss. To that end, the ECGS framework contains a framework to enable compensation to those detrimentally impacted during periods of administered pricing, market suspension or directions.

---

40 Deviation prices are prices at which deviations from the scheduled volumes of gas are settled.
41 Market Reform, *Gas market parameters review*, 2022, p 26.
42 APC was also triggered for the mainland regions in the NEM due to a breach of the NEM CPT.
43 DCCEEW, *AEMO takes steps to manage tight gas supply*, 2022.
44 Market Reform, *Gas market parameters review*, 5 September 2022.
45 Market Reform, *Gas market parameters review*, 5 September 2022, p 32.
46 AEMO, *Wholesale market administered pricing procedures (Victoria)*.
47 Market Reform. *Gas market parameters review 2022* presents a proposed methodology for these reviews.

Eligible market participants can make claims for compensation based on the arrangements set out in the NGR. The compensation arrangements for AEMO directions made under AEMO's ECGS powers are located in Part 27 of the NGR. These set out the circumstances in which a compensation claim may be made, what costs can be claimed and who funds the compensation.[48]

A final rule determination on 7 March 2024 refined the compensation framework for the ECGS as well as making consequential changes to the relevant to the DWGM and STTM.[49] The Commission's final determination:

- limited the eligible costs to direct costs only
- inserted principles to guide AEMO's cost recovery methodology for compensation claims
- inserted provisions to prohibit intentional or reckless cost exacerbation in response to AEMO directions without reasonable cause while capturing legitimate business decisions
- increased the minimum claim thresholds to $50,000 and does not allow for different entities to join claims.

2.3 ECGS demand and supply outlooks

This section provides additional information on AEMO's and ACCC's forecast gas shortfalls across the ECGS.

2.3.1 Annual gas shortfalls

Both AEMO and ACCC forecast annual gas shortfalls, predicting insufficient gas supply to meet demand in the absence of further investment.

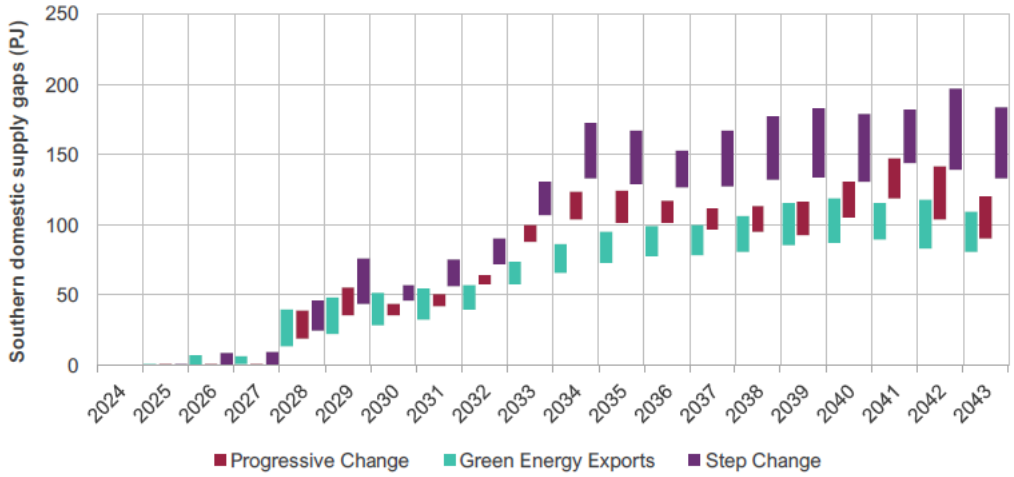
In the GSOO report, AEMO forecasts gas supply shortfalls in the southern regions (Victoria, NSW, SA, Tasmania) by 2026 under certain conditions (green energy exports scenario), and by 2028 onward under all scenarios (green energy exports, progressive change, step change)(see Figure 2.2).[50]

48 Compensation arrangements for directions made by AEMO for the DWGM are included in Part 19 of the NGR.

49 AEMC, *Compensation and dispute resolution framework*, rule determination, 7 March 2024.

50 AEMO, *Gas Statement of Opportunities*, 2024, p 4.

Figure 2.2: Range of domestic annual supply gaps forecast in southern regions based on existing, committed, and anticipated developments, all scenarios, 2024-43 (PJ)



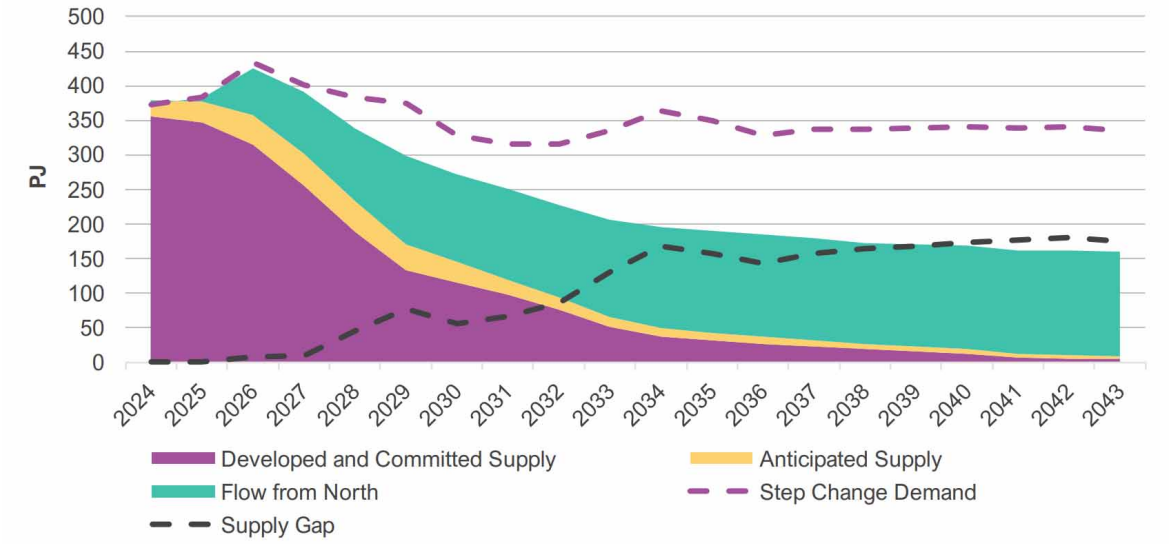
Source: AEMO, *Gas statement of opportunities,* March 2024, Figure 38, p 68.

Those shortfalls are forecast even after including the gas 'flow from north' assumption (see Figure 2.3). The 'flow from north' assumption is the maximum amount of gas that can flow north to south of the ECGS given existing transmission capacity, in particular the capacity of the South West Queensland pipeline (SWQP) and the Moomba Sydney pipeline (MSP).

For example, (see Figure 2.3) in 2030, the total annual demand in the southern regions is expected to be ~350 PJ, but only ~300 PJ of gas supply would be available from the sources shown, leaving a potential supply gap of ~50 PJ which is equivalent to ~14%.[52]

52 Figure 2.3 does not include uncertain projects, defined as projects that are at earlier stages of development or face challenges in terms of commercial viability or approval. See AEMO, 2024 GSOO pp 45-59 for further detail.

Figure 2.3: Projected annual gas supply adequacy in southern regions from AEMO's step change scenario



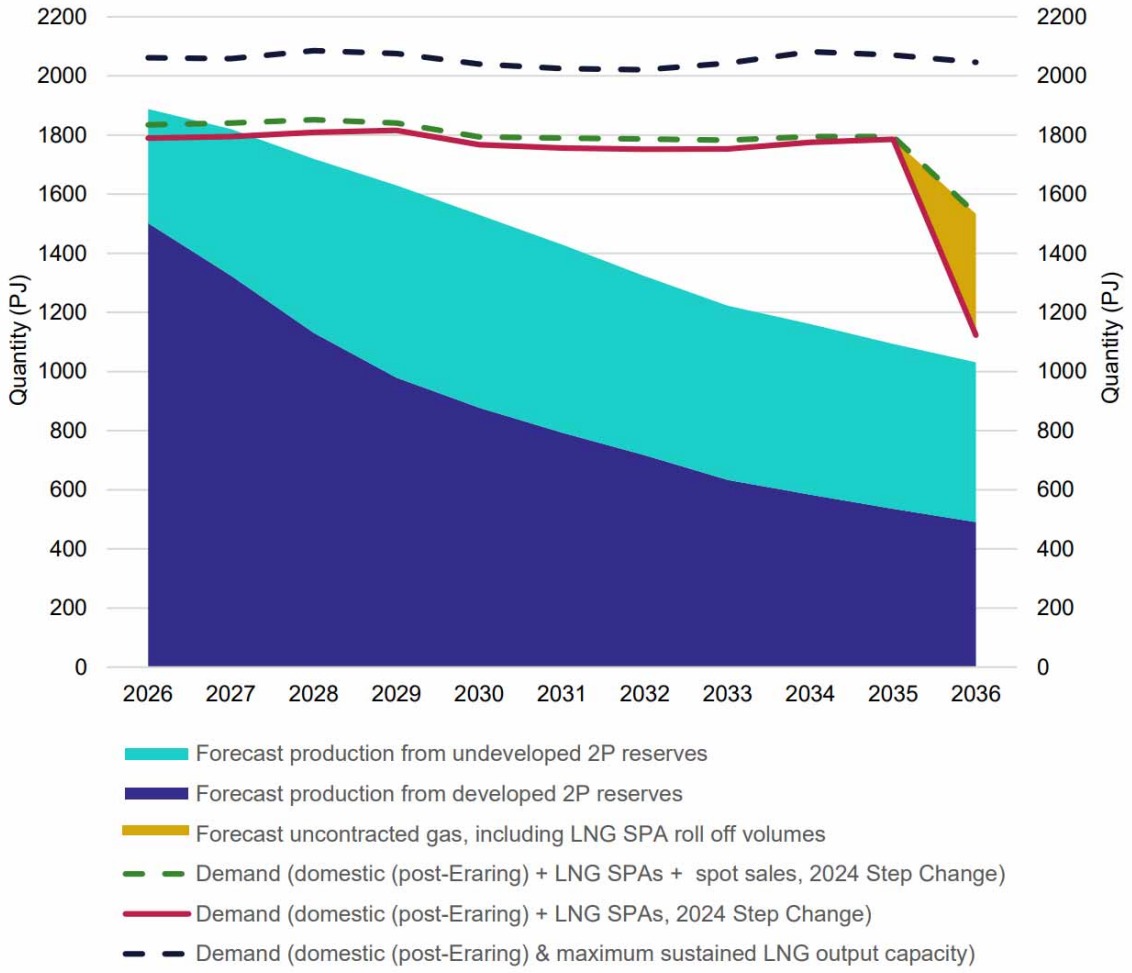
Source: AEMO, *Gas statement of opportunities*, March 2024, Figure 41, p 70.

In the Gas inquiry 2017-2030 interim update from December 2024, the ACCC expects a similar timing for gas supply shortfalls in the southern regions.[53] Despite an expected overall gas supply surplus in the east coast during 2025 and 2026 due to higher than previously expected supply from Queensland, the southern states are still expected to have a 10 PJ shortfall in the second quarter of 2025.[54] The ACCC continues to predict shortfalls in the ECGS from 2027 as previously indicated in the June 2024 interim update (see Figure 2.4). The ACCC forecasts a 20 PJ shortfall in 2027, increasing to 700PJ in 2035 under AEMO's step change scenario.

53 ACCC, *Gas inquiry 2017-2030 December 2024 interim report*, pp 93-97.

54 The increased supply from Queensland is largely due to an increase in gas production by the LNG producers and a decrease in their anticipated export volumes under long term contracts.

Figure 2.4: Projected annual gas demand and supply in the east coast



Source: ACCC, *Gas inquiry 2017-2030 - interim update on east coast gas market*, June 2024, Chart 2.1, p 35.

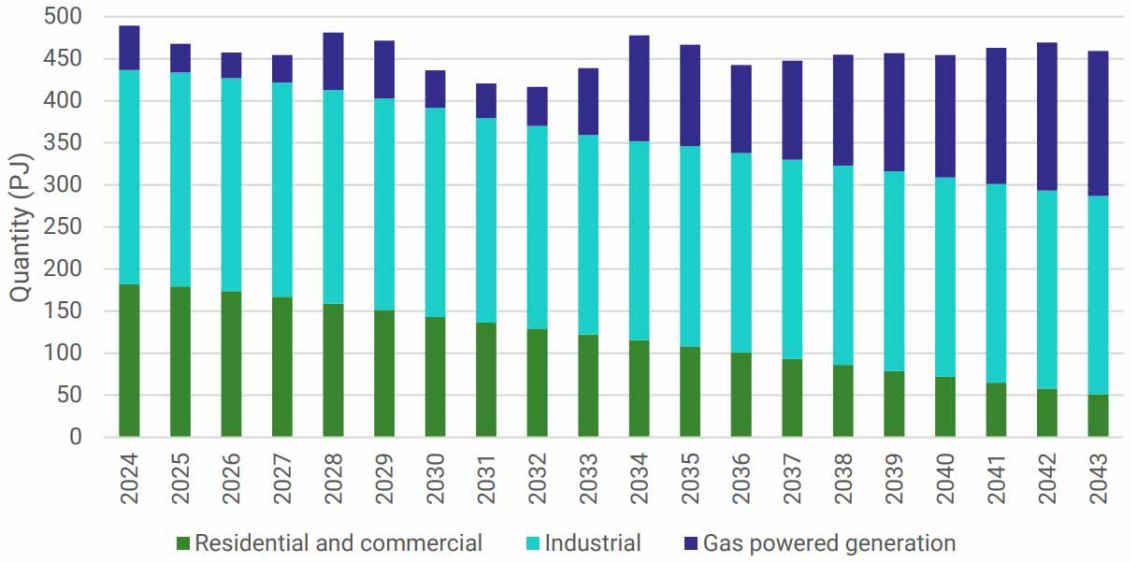
The key factors described between AEMO and the ACCC as driving the expected supply gaps in the southern regions can be summarised as:

- Declines in gas supply from Longford (Victoria) which will outpace the forecast decline in gas consumption in the southern regions, despite residential and commercial sectors' consumption being forecast to decline due to electrification.
- An expected constant gas demand from the industrial sector.
- An increasing demand from GPG due to forecast electricity demand in the NEM.
- Pipeline capacity constraints which limit how much of the supply decline in the south can be offset by transporting more gas from the north (Queensland).
- Storage capacity constraints in the southern regions.
- International liquefied natural gas (LNG) demand that is forecast to remain strong and continue to incentivise LNG exports from Australia.

The ACCC projects that the composition of demand will change, with residential and commercial demand declining but being offset by increased GPG demand. Industrial demand is forecast to remain constant, resulting in steady high levels of total gas consumption (see Figure 2.5). The

ACCC notes that AEMO's projections of declining gas demand by residential and commercial users is based on assumptions made about electrification rates and that this rate is subject to considerable uncertainty.

Figure 2.5: Projected annual gas demand on the east coast. ACCC analysis of AEMO 2024 GSOO data



Source: ACCC, *Gas inquiry 2017-2030 - interim update on east coast gas market*, December 2024, Chart 1, p 5.

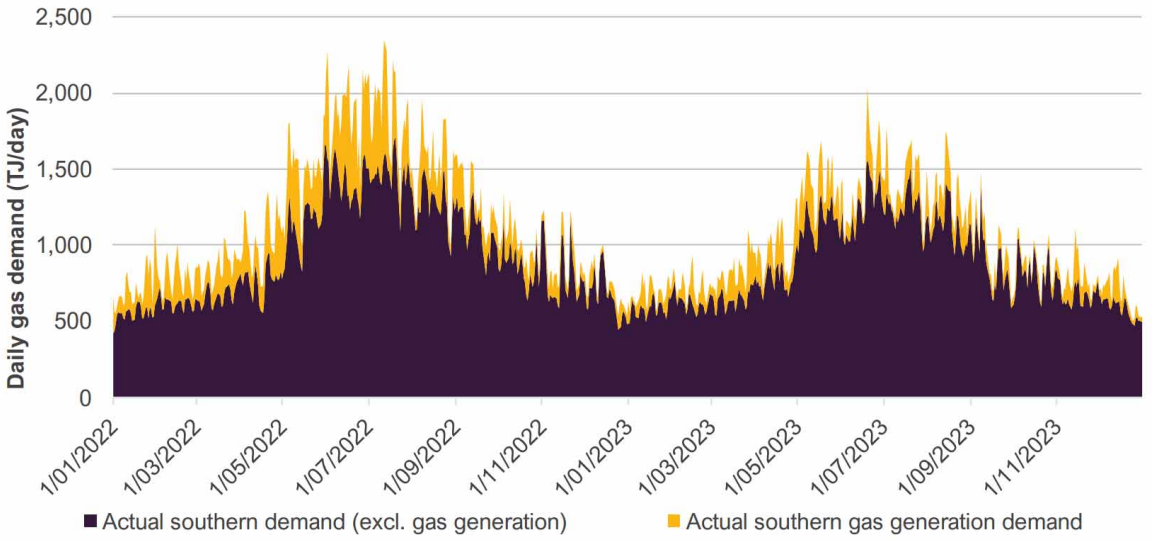
2.3.2 Peak day gas shortfalls

In its 2024 GSOO report, AEMO forecasts peak day gas shortfalls to emerge on some days in winter 2025 under extreme (1 in 20) peak day demand conditions in southern regions. The peak day shortfalls are primarily related to the Longford capacity decline. Peak winter production at Longford has continued to decline from a maximum of 1,046 TJ/day in 2022 to 793 TJ/day in 2023 to 756 TJ/day in 2024.[55]

The 2024 GSOO describes daily demand as strongly seasonal (see Figure 2.6). Daily demand from residential, commercial and industrial sectors is shown as a dark purple area, where significant gas is used for residential and commercial heating in winter months. Gas required for GPG is shown in yellow, where GPG needs may coincide with high gas demand by residential, commercial and industrial consumers as cold weather in winter drives both higher gas and electricity demand.

55 AEMO, *Gas statement of opportunities*, March 2024, pp 8-9. Longford production numbers are sourced from AEMO's Gas Bulletin Board.

Figure 2.6: Actual daily gas demand in southern regions showing seasonality and peakiness



Source: AEMO, Gas statement of opportunities, March 2024, Figure 20, p 36.

The seasonal variations represent a key risk factor that will significantly affect the forecast versus the actual gas demand-supply balance and as such any assessment against a reliability standard. This is because:

- Gas is used for space heating in the residential sector and space heating needs are directly related to temperature. Colder than expected days and seasons will result in additional gas consumption than forecast, and conversely, warmer days or seasons will result in fewer shortfalls. In addition, there is little ability to safely control residential gas demand to manage any demand-supply issues that could arise from cold weather.
- The industrial sector's gas demand is less weather-dependent. Industrial users of natural gas include brick and glass manufacturers, ore refineries and fertiliser and explosive manufacturers. These operations tend to require steady flows of gas for extended periods, and their demand for gas is not likely to be impacted by the weather. This provides gas producers and pipeline service providers with steady, more predictable usage. Some of these users would have the ability to reduce use in response to a demand-supply issue.
- As the economy continues to electrify and decarbonise, GPG gas consumption will continue to increase. AEMO has forecast additional gas consuming GPG capacity will be needed in the NEM to provide firming capacity for variable renewable electricity sources. [56]

56 AEMO, *Gas statement of opportunities*, March 2024, pp 38-41.

3 Stage 1 RSA gas reforms

This chapter provides an overview of stage 1 RSA reforms enacted in 2023 and includes instances where laws and rules introduced by these reforms were used in order to respond to reliability events occurring in 2024.

3.1 Managing reliability risks for winter 2023

The stage 1 RSA reforms expanded AEMO's powers under the NGL enabling AEMO to better manage potential gas supply adequacy and reliability risks in the ECGS that winter. Stage 1 encompassed changes to the NGL, the NGR, and the National Gas Regulations, with a Bill making these changes effective from 27 April 2023, alongside supporting Regulations. The corresponding rule amendments came into effect on 4 May 2023.[57]

The reforms undertaken in stage 1 did not make, nor sought to make the ECGS a connected, centrally operated market like the NEM. Instead, the stage 1 reforms created tools to be used within the ECGS.

The main outcomes of the reforms with relevance to the NGR and market procedures were:

- AEMO's power to perform trading functions when necessary (i.e. the ability to directly trade covered gas and related products in the ECGS for the purposes to maintain and improve the reliability and supply adequacy of the system). Box 1 includes a description of the trading function.[58]
- AEMO's power to issue new directions to gas industry participants. Through this new power, AEMO can give directions to gas industry participants (i.e. instruct them to take specific actions) to resolve an identified risk or threat to reliability. An outline of the directions powers is provided in Box 2.[59]
- A trading fund (for the purpose of the trading function described in Box 1) through which AEMO can trade in natural gas to maintain or improve the reliability or adequacy of gas supply in the ECGS. Currently, the fund amounts to $35,000,000 for each financial year as adjusted under rule 710 (adjustments of amounts for CPI).[60]
- A compensation framework for directions largely based on the approach used in the DWGM that was later refined through a rule change process in early 2024 by the AEMC.[61]
- Transparency and accountability for AEMO's exercise of these new functions through the publication of ECGS Procedures and ECGS Guidelines. These documents communicate to

57 National Gas (South Australia) (East Coast Gas System) Amendment Act 2023. The bill resulted in 12 amendments to the NGL, including, among others, s. 74—*Subject matter for National Gas Rules*, s. 91A—*AEMO's statutory functions*, the insertion of Division 1A—*AEMO's east coast gas system reliability and supply adequacy functions* in Chapter 2, and amendments of s. 91BA—*AEMO's declared system functions*, s. 91F—*Information gathering powers*, s. 91FA—*Making and publication of general market information order*, s. 91FB—*Service of market information notice*, s. 91GG—*Disclosure of protected information for safety, proper operation of the market etc*, and s. 91H—*Obligations under rules or procedures to make payments*.
National Gas Amendment (East Coast Gas System) Rule 2023. The amendment added Part 27 'East coast gas system reliability and supply adequacy' to the NGR, which included the following divisions: Division 1 *Interpretation and Application*, Division 2 *Disclosure obligations* (which need to happen through procedures), Division 3 *Gas supply adequacy and reliability conferences*, Division 4 *Exercise of east coast gas system reliability and supply adequacy functions* (e.g. publication of threat notices), Division 5 *East coast gas system directions,* Division 6 *Compensation claims relating to east coast gas system directions,* Division 7 *Exercise of trading functions*, Division 8 *Miscellaneous.*
National Gas (South Australia) (East Coast Gas System) Amendment Regulations 2023. Regulations 19 and 20 were inserted in Part 2 of the National Gas Regulations. Regulation 19 *Relationship between Division 1A of Part 6 of Chapter 2 of NGL and certain laws of participating jurisdictions*. Regulation 20 *Disclosure of protected information.*

58 National Gas Amendment (East Coast Gas System) Rule 2023, Division 5 *East coast gas system directions,* Division 7 *Exercise of trading functions*. Trading function means a function specified in 91AD(1)(f) of the NGL. Rule 681A, Part 27 of the NGR establishes what AEMO must consider in the exercise of trading and direction functions.

59 S. 91AF of the NGL and rules 700 and 701 of the NGR.

60 Division 7, Part 27 of the NGR.

61 AEMC, *Compensation and dispute resolution frameworks*, rule determination, 7 March 2024. Division 6, Part 27 of the NGR.

market participants and other relevant stakeholders how AEMO exercises its new functions and also communicate obligations of relevant entities involved in the new functions. [62]

- Other transparency and accountability measures that require AEMO to: convene conferences and disclose information obtained at conferences, publish risk or threat notices, publish post-intervention reports, report to the Ministerial Council of Energy (MCE) each calendar year on the exercise of ECGS RSA functions. [63]
- New information disclosure obligations (referred to as Part 27 disclosure obligations) for market participants, ensuring AEMO has the information it needs to monitor reliability and supply adequacy.

Box 1: AEMO's trading function for ECGS reliability and supply adequacy

Under s. 91AD(1)(f) of the NGL, AEMO has the ability to directly trade in natural gas and related products in the ECGS. Under s. 91AD(2) this trading function enables AEMO to step into the market only if it is of the opinion that the trade or purchase of gas is necessary to prevent, reduce or mitigate an identified risk or threat; for instance, when a response from industry does not occur or it is not feasible for industry to mitigate the threat.

If the required conditions are satisfied, AEMO can step in and exercise the trading function in any of the following ways:

- Purchase or sell (i.e. trade) covered gas.
- Procure gas services: AEMO could enter into contracts to procure gas services including pipeline services, blend processing services or services provided by a compression service provider or a storage provider.
- Market trading: AEMO could trade directly in the STTM, DWGM and GSH.
- Procure services from industry: AEMO could pay an industry participant (or participants) to provide a service to the east coast gas system, e.g., supplying additional gas into a certain network.

AEMO's trades are subject to strict reporting requirements to ensure transparency and accountability. AEMO must publish a post-intervention report within four months of every exercise of a trading function. This reporting will include information such as the reasons for the exercise of its functions, the expenditure in the exercise of the functions, and whether it mitigated the risk or threat (rule 698 of the NGR).

Source: Section 91AD of the NGL; Division 7, Part 27 of the NGR; *ECGS Guidelines*, p 14.

Box 2: AEMO's directions function for ECGS reliability and supply adequacy

A direction for gas issued by AEMO is a formal instruction to registered participants, pipeline operators or other relevant entities involved in the gas supply chain to take specific actions to address a reliability or adequacy issue within the ECGS. Similar to the trading function, AEMO can give directions if it considers it necessary to respond to a threat to meeting natural gas demand in the ECGS (s. 91AF of the NGL). AEMO's ECGS Guidelines set out the principles AEMO may consider when giving directions.

A direction could mean interventions such as increasing gas production (producer action),

62 ECGS Procedures are made under s. 91AD(1)(h) of the NGL and deal with the matters set out in s. 91AG(1) of the NGL and Part 27 of the NGR. ECGS Guidelines are made under s. 91AD(3) of the NGL and rule 692(6) of the NGR.

63 Rules 692, 694, 695, 698, 711 of the NGR. While the NGR refers to 'MCE' to indicate energy ministers, this is now the 'Energy and Climate Change Energy Ministerial Council' (ECMC), which is the acronym used in the rest of the paper.

curtailing gas consumption (large industrial user action), supply of gas from storage (action from participants owning stored gas) and changes to pipeline flows to re-direct gas to critical demand areas or ensure system stability (e.g.'linepack management') (pipeline operator action).

Relevant entities that are 'directed' are legally obligated to comply with AEMO's directions. If unable to comply, they should notify AEMO of the reasons (rule 702(1) of the NGR).

After the threat has been mitigated (i.e. no longer meets the criteria in the procedures) AEMO is required to publish a notice revoking the risk or threat notice as soon as reasonably practicable (rule 696(1)(d) of the NGR).

Entities affected by a direction can claim compensation for the direct costs of gas directed from storage, thereby excluding compensation for opportunity costs and consequential costs. The compensation framework is defined in Part 27 of the NGR.

As with its exercise of the trading function, AEMO must publish a post-intervention report within four months of every exercise of a direction function (rule 698 of the NGR).

Source: Section 91AF of the NGL; Division 6, Part 27 of the NGR; *Compensation and dispute resolution framework* rule determination, 7 March 2024, p 7; *ECGS Guidelines*, pp 11-12.

3.2 AEMO's use of stage 1 RSA tools to manage reliability threats

In 2024, AEMO used the stage 1 RSA powers for the first time in two instances:

1. An incident at the Queensland Gas Pipeline (QGP) restricting supply into Gladstone.
2. Reduced gas production capacity and high gas-powered generation demand driving shortfall threats in the southern region of the ECGS.

Due to the different nature of each event, AEMO applied different provisions under Part 27 of the NGR respectively. The two instances are discussed in detail below.

3.2.1 The Queensland Gas Pipeline failure event

On 5 March 2024, after being informed by Jemena, AEMO notified relevant entities of an actual risk or threat to supply adequacy within the ECGS. This threat resulted from a pipeline rupture incident to the QGP between the Rolleston compressor station and Oombabeer, disrupting normal supply of gas to Gladstone, Bundaberg and Maryborough. The QGP is a transmission pipeline located in central Queensland owned and operated by Jemena.

Jemena notified AEMO of the incident by submitting a 'Red linepack/capacity adequacy' indicator to AEMO's Gas Bulletin Board. A red indicator means one of the following conditions are met:

- involuntary curtailment of 'firm' capacity is likely or is happening, or
- linepack has, or is forecast to, drop below minimum operating levels.

The QGP pipeline was shut-in, meaning that it was isolated either side of the failure point to prevent flow into, and release from, the damaged section of the pipeline. The shut-in disconnected all receipt connections on the QGP except for the Moura inlet from the pipeline's end user delivery connections. As such, the Moura inlet was the only available source of supply in the pipeline to meet demand for the duration of the shut-in which would extend from 5 March to 17 March 2024. This created a potential supply shortfall of 90 TJ.

Based on this assessment, AEMO determined the shortfall satisfied the criteria for publication of an ECGS risk or threat notice due to the supply of gas in all or part of the ECGS being inadequate

to meet demand. AEMO convened an ECGS conference with Jemena, APA networks and the Queensland Government.[64]

In this instance, AEMO did not publish a risk or threat notice due to the nature of the event that had occurred. AEMO is not required to publish a risk or threat notice in those circumstances where there is insufficient time to publish a notice before exercising a direction or trading function.[65]

Additionally, the QGP pipeline operates as a contract carriage pipeline, outside of the STTM. As such, the market mechanism that provides for balancing of energy and financial settlements for the Brisbane STTM was not available.[66]

AEMO issued directions in response to the threat

In response to the threat, and in consultation with Jemena and the Queensland Government, AEMO determined that the exercise of directions under its ECGS functions set out in part 27 of the NGR was necessary to prevent, reduce or mitigate an actual or potential threat to the adequacy or reliability of supply of covered gas within the QGP, connected facilities and distribution systems (which are part of the ECGS). Directions were given by AEMO to:

- *Facilitate gas supply into the QGP*

Between 5 March and 17 March, AEMO issued six directions to six relevant entities (producers, facility operators, suppliers and shippers) to facilitate supply into the QGP at the Moura Inlet. AEMO also received a formal notice from one entity describing its inability to comply with the direction. After consulting with the entity, AEMO re-issued the direction.

- *Curtail supply to relevant entities*

Between 8 and 9 March 2024, AEMO issued three directions related to supply curtailment. A pipeline operator requested AEMO to also consider giving directions related to curtailment of supply. AEMO consulted with the Queensland Government and industry stakeholders and determined that directions related to curtailment of supply were necessary.

- *Maintain supply to end users, necessary to mitigate the consequence of inadequate supply to as low as reasonably practicable (ALARP).*

Between 5 and 8 March, AEMO issued a total of 25 directions to six relevant large industrial users to either cease all gas withdrawals or reduce withdrawals to the minimum quantity possible without causing major damage to plants and equipment or threatening health and safety.

In order to maintain supply to end users, on 6 March 2024 the Moura inlet receipt connection was connected to the Meridian Gas Plant, and supply to QGP was gradually increased in stages through to 8 March. AEMO then minimised its intervention by replacing directions to large industrial users with a direction to Jemena (the pipeline operator) to maintain a minimum quantity of supply to identified end users. Available supply above the minimum directed quantities was available to be allocated by the pipeline operator based on existing contractual agreements. AEMO revoked all directions and the ECGS risk or threat notice on 10 December 2024 following advice from Jemena that the QGP has been restored to its full firm contracted capacity.

AEMO's post direction assessment indicates that the directions successfully mitigated the threat by achieving its purpose because:

64 AEMO, *ECGS Conference meeting notes*, 5 March 2024. Rule 692 sets out when AEMO may convene conferences.

65 Rule 695 of the NGR.

66 AEMO, *ECGS Queensland Gas Pipeline event, Final Post-Intervention Report*, December 2024.

- It was uncertain whether supply into the QGP via the Moura Inlet would be maintained at maximum rates for the duration of the directions.
- Supply into the QGP at the Moura Inlet was not interrupted or reduced while the directions remained in place.
- Sufficient gas supply from the QGP was maintained to end users that would have otherwise suffered severe consequences if there was a reduction or interruption in the supply of gas.[67]

3.2.2 The east coast gas system risk or threat notice

On 19 June 2024, AEMO issued a system-wide risk or threat notice stating a potential risk or threat to the reliability or adequacy of the supply of covered gas within the ECGS.[68] The potential risk to the gas supply — primarily affecting NSW, ACT, Victoria, SA and Tasmania — was due to reduced gas production capacity coinciding with high gas-powered electricity generation demand. This led to a rapid decline in Iona underground gas storage and Newcastle LNG storage inventories during May and June. AEMO warned of potential peak day shortfalls under certain demand-supply scenarios. The notice was intended to remain in place until 30 September 2024.

In this instance, AEMO did not exercise directions or trading functions powers but rather outlined industry responses that it considered necessary to mitigate the threat. AEMO expectations included:

- market participants taking reasonable measures to maximise gas supply from Queensland to southern regions to slow storage depletion
- relevant entities (as defined in the NGL) to review specific gas demand requirements, including GPG, to manage winter supply.[69]

Market conditions in Q2 2024 further outlined risk factors for gas reliability

AEMO, in its Quarterly Energy Dynamics Q2 2024 report published in July 2024, confirmed that gas demand increased slightly.

The key figures for the quarter were:[70]

- gas demand increased 1 per cent from Q2 2023, driven by a 5 PJ rise in gas-powered generation
- Victoria hit a record daily gas-powered generation demand of 356 TJ on 13 June
- Longford production fell by 11 PJ (lowest Q2 level since 2009)
- Iona UGS ended Q2 with 14.8 PJ, 7.7 PJ lower than Q2 2023 (this was partly due to heavy reliance from mid-May, planned outage work at Longford, onset of winter in the southern states and high demand from gas-powered generation).

Risk resolution

On 23 August 2024, AEMO revoked the ECGS risk notice as demand-supply trends improved.[71] The publication revoking the notice indicated key factors for the threat resolution as being favourable weather conditions toward the end of winter and reduced gas generation demand that allowed Iona to start refilling its storage capacity. Iona UGS inventory reached 44% (10,736 TJ) by 23 August.[72]

67 AEMO, *ECGS - Queensland Gas Pipeline preliminary post-intervention report*, May 2024, p 8.
68 AEMO, *East coast system risk or threat notice*, 19 June 2024. Rule 695 requires AEMO to publish a risk or threat notice under certain circumstances.
69 AEMO, *Quarterly Energy Dynamics Q2 2024*, p 59.
70 AEMO, *Quarterly Energy Dynamics Q2 2024*, pp 54-64.
71 Rule 696 of the NGR.
72 AEMO, *Revocation of east coast gas system risk or threat notice*, AEMO, 2024; AEMO, *News update: ECGS storage inventory refilling*, 23 Aug 2024.

AEMO stated no post-intervention report was required as no directions or trading functions were exercised.

Wholesale gas prices during the risk or threat notice

Gas prices in the facilitated gas markets did not follow an unusual pattern during the notice period. Quarterly average wholesale gas prices increased compared to Q1 2024 but were four per cent lower than Q2 2023. The average price across all AEMO markets was $13.66/GJ compared to $14.21/GJ in Q2 2023.[73]

The trend of gas prices during the ECGS notice of risk or threat (19 June – 23 August 2024) are shown in Figure 3.1. There were price increases in the STTM and DWGM on the two consecutive gas market days following the notice, with maximum prices reaching $28.00 in Sydney STTM and the DWGM. Following this, there was a steady decline in prices. This volatility correlates with usual price increases in previous winter seasons, except for the unusual winter of 2022 when prices reached $45.39/GJ.

Figure 3.1: Gas prices in the STTM and the DWGM, June to August 2024

Source: AEMC, data sourced from AEMO STTM reports.

73 AEMO, *Quarterly Energy Dynamics Q2 2024*, p 50.

4 NEM reliability framework

The *ECGS reliability standard and associated settings rule change request* draws inspiration, in part, from the reliability framework currently employed in the NEM. To provide stakeholders with a broad understanding of how the reliability framework works in the NEM, this section provides an overview of the NEM reliability framework, including its purpose, components, roles of the reliability standard and settings, and the governance arrangement.

4.1 Purpose of the framework

The reliability framework in the NEM is designed to ensure that reliability is delivered at a level that consumers value. The core objective of the framework is to meet reliability through market mechanisms to the largest extent possible.

In simple terms, a reliable power system has enough electricity supply (generation and demand response) to meet demand. This requires sufficient investment in generation and network capacity to ensure that the demand-supply balance can be maintained.

Historically, the NEM has provided a high level of reliability. However, customers occasionally experience supply interruptions due to system security events, transmission or distribution failures, or reliability issues. Reliability issues relate specifically to a lack of generation capacity or transmission events which may be able to be addressed with prudent additional supply investment. When energy demand is unmet, this is referred to as unserved energy (USE), which is defined in the National Electricity Rules (NER) as the amount of energy demanded, but not supplied, in a region caused by contingency events on a generation unit, bidirectional unit, inter-regional transmission element or delays in construction or commissioning of new generation or inter-regional transmission elements. Historically, only 0.3% of supply interruptions were due to reliability issues (Figure 4.1).

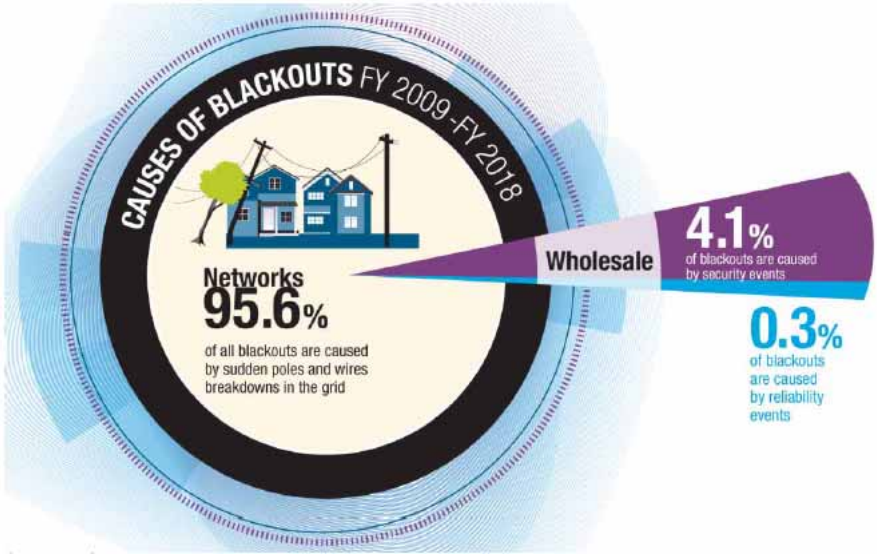
The reliability framework is designed to address USE as a result of this less common type of supply interruption. It includes various market mechanisms that provide signals and incentives for efficient investment in generation and transmission.

The power system can also experience severe disturbances that require emergency load shedding to manage. These emergency response systems are provided to prevent a black system event or major supply disruption following a serious non-credible disturbance, such as the co-incident loss of multiple transmission lines or generators. Load is shed through automatic systems in response to a security event rather than through controlled rotational load shedding as is typically the case in a reliability event.

Reliability and security are distinct concepts managed by different NEM frameworks.[74]

74 Reliability Panel, *Reliability, security and safety frameworks in the NEM – an explanatory statement*, 30 March 2023, p 4.

Figure 4.1: Causes of blackouts: FY 2009 - FY 2018



Source: AEMC

Importantly, the NEM's reliability framework aims to deliver both reliable and affordable electricity to customers through the reliability standard and settings.

4.2 Reliability standard

In the NEM, the reliability standard and settings are key tools to achieve an efficient level of power system reliability. The reliability standard is an ex-ante standard used by AEMO to both forecast investment opportunities by measuring the likely reliability outcomes from known investment proposals and inform the preparation of an integrated system plan which forecasts potential levels of investment. The reliability standard is characterised by its scope, form, and level. The reliability standard sets a threshold against which the expected USE from failures in generation and inter regional transmission as a percentage of total energy demanded in a region for any financial year is measured. It is currently set at 0.002%.

While the 0.002% level has remained unchanged since the market's inception and initially reflected an existing jurisdictional planning standard, the current methodology for establishing the level of reliability has changed, as described below.

The reliability standard expresses the desired level of reliability from generation assets, demand response, and the transmission lines that transport power between states. It balances the dual objectives of reliability and affordability by considering the cost of building and operating additional interconnection or supply against the benefit of reducing the cost to consumers from outages, which is estimated through the value of customer reliability (VCR) by the AER. The reliability standard also informs the critical market price settings supporting the effective operation and investment in the NEM and drives contract volumes and prices.[75]

4.2.1 Three elements of the reliability standard

The reliability standard is defined by three elements: scope, form and level.

75 Reliability Panel, *The reliability standard: current considerations*, information paper, 12 March 2020.

- **Scope**

The scope can be understood in terms of what is considered a reliability issue. Not all events that result in an interruption to the supply to customers are considered reliability events to be measured against the standard. In the NEM, reliability issues are summarised as a limited range of situations where there is insufficient generation, demand response and inter-connector network capacity to meet consumer demand.

Specifically, the NEM reliability standard's scope includes generation and inter-regional transmission capacity but excludes distribution networks. In terms of events, the NEM reliability standard scope excludes power system security incidents, such as blackouts caused by severe storms, industrial action or sudden faults in transmission or distribution network that do not significantly impact power transfer between regions where USE has occurred. It also excludes events which are considered non-credible such as multiple coincident failures of generation or transmission elements.

- **Form**

The form of the NEM reliability standard is expressed as maximum expected forecast unmet energy, or USE in a region for each financial year as a proportion of the total electricity supplied in that region. The expected value is a probability-weighted average, taken over multiple simulations of future demand and supply. In other words, the form means that we expect, on average to have enough electricity supply to meet "X" percent of demand in every region in each financial year. While it is an ex-ante planning standard, the ex-post measurement of the actual realised reliability in any region or year may or may not meet the average expected value expressed in the reliability standard.

Low probability events may sometimes happen, and the actual amount of USE may be above the expected standard. The NEM reliability standard is, therefore, statistically interpreted as a projected maximum average and not a cap on actual levels of USE in any particular year. The reliability standard, therefore, doesn't preclude much higher levels of USE occurring in any single year. Instead, we would see that the reliability standard has been breached, if the forward-looking projection of expected unserved energy is above the standard.

- **Level**

The level of the NEM reliability standard is the metric — the actual quantifiable target — to be measured or assessed. In the NEM, this is expressed as a maximum expected USE in a region of 0.002% (or less) of the total electricity demand for a given financial year. In other words, this level means we expect to have enough electricity supply to meet 99.998% of demand, in every region every financial year.

VCR values are an estimate of customers' willingness to pay to avoid the expected level of USE. VCR is a key input in determining the reliability level as it allows for an assessment of the trade-off between the value customers place on supply reliability and the overall power system costs associated with achieving a certain reliability level. The AER uses a combination of survey-based techniques to derive these figures. [76]

4.2.2 Market settings

The reliability framework includes reliability settings derived from the reliability standard. The NEM reliability standard is not a compliance measure for AEMO or any other market participant, instead, it exists to inform the mechanisms that incentivise investment in capacity and decisions

76 AER, *Values of customer reliability, final report on VCR values*, 18 December 2024.

regarding the availability of that capacity in the market. The market price settings are the key parameters for this purpose.

The price settings are designed to support the investments needed to achieve the reliability standard but not too high to create systemic financial risks that could destabilise the market. In the NEM, the settings are reviewed periodically by the reliability panel to ensure they remain appropriate. Market settings provide a 'price envelope' to protect market integrity. They comprise:

- **Market price cap**: the maximum price that can be reached on the spot market during any dispatch and trading interval, currently set at $17, 500/MWh.
- **Cumulative price threshold**: the maximum price across seven days' worth of trade, currently set at $1,573,700/MWh.
- **Administered price cap** : default price cap that applies is exceeded, after a set of sustained high dispatch prices exceed the CPT, currently $600/MWh.
- **Market floor price**: lower limit on wholesale market prices that can be reached in any trading interval, currently set at –$1,000/MWh.[77]

4.2.3 The reliability standard supports efficient investment and operations

In the NEM, the reliability standard is designed to serve two roles:

1. a market signal — the standard signals to the market commercial opportunities for more efficient investment in generation, demand response and contracting
2. an operational driver — AEMO seeks to efficiently operate the system to meet the reliability standard.

The below sections summarise how the reliability standard serves these roles, through the mechanisms that comprise the reliability framework.

Reliability standard as a market signal for investment

In AEMO's *Electricity statement of opportunities* (ESOO), the reliability standard is used to signal to market participants commercial opportunities for more efficient investment in electricity capacity in the form of potential generation, demand response and, interregional network interconnection.

In the NEM, when the electricity demand-supply balance tightens, spot and contract prices rise (within the price envelope defined by the settings). This price rise should trigger certain short term operational decisions from relevant market participants and provide an incentive for entry and expansion of the NEM generation and demand response capacity. Specifically, the spot market allows for real-time balancing of demand and supply, and contract prices should provide incentives for additional investment.

The market price settings are set at a level such that prices over the long term should incentivise enough new efficient investment in generation and demand response so that the reliability standard is expected to be met.[78] For the reliability standard to work effectively as a market signal, there is a need for a well-functioning market where the spot and contract markets can provide clear price signals for the market to respond.

77 AEMC, *2024-25 market price cap now available*, media release, 22 February 2024; AEMC, National Electricity Amendment (*Amending the administered price cap*) Rule 2022, rule determination, 17 November 2022.

78 Reliability Panel, *2022 Reliability standard and settings review*, final report, 1 September 2022, pp 62-66.

Reliability standard as operational driver to manage reliability threats

Through its forecasting processes, AEMO advises the market whether the reliability standard is expected to be met. AEMO's forecasts are informed by input from market participants and its constant monitoring of the demand-supply balance.

AEMO expects the market to respond with adequate and efficient short term operational decisions and/or long term investment in additional capacity to meet electricity demand in the future. AEMO can intervene, when it forecasts market response will be insufficient. Its intervention actions differ depending on the horizon over which the potential shortfall is forecast. In the short term, AEMO may elect to instruct or direct market participants or in an extreme circumstance manage demand directly. In the longer term, AEMO may purchase emergency reserves under the long notice reliability and emergency reserve trader (RERT) mechanism.[79]

AEMO's forecasting exercise encompasses 10-year, 3-year, 2-year, 1-year and 7-day forecasts. These time frames are known as T-X (e.g. T-10 years). The list below adds further detail on these forecasts.

- T-10 years: Each year, AEMO produces an ESOO which includes a reliability forecast for each of the coming 10 years. This publicises expected supply shortfalls, highlighting potential investment opportunities for additional supply capacity. AEMO may update these 10 year ESOO forecasts and opportunities when conditions change. Over the last five years AEMO has published a post-summer ESOO update that reflects known changes to forecast demand and new sources of supply.[80]
- T-3 years: In accordance with the retailer reliability obligation (RRO), AEMO makes assessments of reliability gaps three years into the future. As an integral part of the ESOO, reliability shortfalls (ie a breach of the standard) that satisfy the RRO timing requirements require AEMO to request the AER to make a T-3 reliability instrument. The T-3 reliability instrument defines the reliability risk period or gap. The RRO then expects NEM liable entities (mostly retailers) to enter into sufficient qualifying contracts to cover their share of a one-in-two year peak demand for the time of the declared reliability gap. Many of these contracts are made with existing generators or new generation or storage capacity (through new investment).[81]
- T-2 years: T-2 corresponds to the medium term project assessment of system adequacy (MT PASA), a forecast published by AEMO for every day of the coming two years. MT PASA assesses the adequacy of expected electricity supply to meet demand across the two-year horizon through regular assessment of any imbalance between supply and demand that exceeds the reliability standard. MT PASA is designed to be a maintenance and availability tool that assists registered participants and other stakeholders making decisions about supply and transmission network outages over that period. MT PASA uses probabilistic modelling to estimate the likelihood and magnitude of USE in each half hour based on information from registered participants, AEMO's expected demand, intermittent generation forecasts and estimated transmission constraints. If the reliability standard is forecast to be breached, then AEMO uses low reserve condition (LRC) notices to engage with industry and seek a correction. If the shortfall remains, then AEMO may also start procuring the volume of emergency reserves needed to avoid breaching the standard.[82]

79 AEMO, *Fact sheet: the reliability and emergency reserve trader (RERT)*, 28 November 2023.

80 AEMO, *NEM Electricity statement of opportunities (ESOO)* webpage.

81 AER, *Retailer reliability obligation*. Note that a forecast LOR occurs when AEMO's forecasts show a reduced amount of electricity reserves. An actual LOR is when the market response to the forecast LOR has not been adequate to clear the LOR thresholds, and the LOR becomes an operational reality.

82 AEMO, *Medium term PASA process description*, final document, 24 April 2023.

- T-1 year: The ESOO also serves to assess whether the reliability standard will be breached one year out. If AEMO determines that a T-3 reliability gap still exists, it must request the AER to make a 'T-1' Reliability Instrument, which means liable entities under the RRO must report their net contract positions to the AER for assessment, against which they will be assessed at the end of the gap period.
- T-7 days: The short term project assessment of system adequacy (ST PASA) cannot forecast annual reliability against the standard, but it does forecast the level of reserves needed in the market. The ST PASA process operates similarly to the MT PASA process but utilises more accurate information based on actual weather forecasts and more accurate operational information from generators. Despite the reliability standard defining an annual threshold over operational time frames, AEMO translates the reliability standard into situational reserve measures. If the reserves are insufficient, AEMO issues a signal to the market to make more capacity available to address the anticipated supply scarcity conditions, which for example, could cause generators to delay planned maintenance.[83]
- T-hours: AEMO's pre-dispatch forecast provides market participants with projections of the prices and generation dispatch based on bids and offers, as well as AEMO's forecasts of demand and other system conditions. AEMO can intervene in the market to manage reliability by activating RERT and issuing instruction and directions to market participants. AEMO updates any existing and publishes additional LOR notices as information on the market response leading to real-time supply scarcity conditions improves.
- Real-time: The spot market prices represent real-time balancing of system reliability needs and existing contracts incentivise operation. AEMO issues actual LOR notices in real-time and dispatches procured RERT to address actual supply scarcity conditions that emerge because of an insufficient market response to LOR notices and other information.

4.3 Governance structure of the NEM reliability framework

The Reliability Panel (the Panel), which forms part of the AEMC's institutional arrangements, reviews and reports on the safety, security and reliability of the national electricity system. The Panel, chaired by an AEMC Commissioner, comprises representatives from consumer groups, generators, retailers, network providers and AEMO. Under the NER, the Panel must review the reliability standard and settings at least every four years.

The Reliability Standard and Settings (RSS) Guideline outlines the review process for the standard and settings. Currently, the reliability standard is not automatically reassessed each review cycle. Instead, the Panel applies a materiality test to decide if reassessment is needed. If the materiality threshold is not met, the standard remains unchanged.[84]

On 30 March 2023, the AEMC tasked the Panel with reviewing the form of the reliability standard to determine if it adequately reflected the changing reliability risk profile or whether alternatives needed to be considered. On 27 June 2024, the Panel released a final recommendation to maintain the current form of the reliability standard and the current form of the APC.[85]

4.3.1 The interim reliability measure

Since the market's inception in 1998, the Panel has not recommended changes to the reliability standard. However, in 2020, based on the Energy Security Board's advice, Energy Ministers

83 AEMO, *Fact sheet: lack of reserve notices*, 28 November 2023.
84 Reliability Panel, *Review of the reliability standard and settings guidelines*, final report, 1 July 2021, pp 23-24.
85 Reliability Panel, Review of the form of the reliability standard and APC, final report, 27 June 2024.

introduced an interim reliability measure (IRM) of 0.0006% expected unserved energy to ensure electricity supply remains reliable during a 1-in-10-year summer to apply across the NEM.

The IRM has limited application as compared to the reliability standard. The reliability standard continues to be the key input for the reliability settings such as the MPC and CPT, which drive long term investment. The IRM use is limited to serve as a trigger for the:

- interim reliability reserve (IRR), which is an out-of-market reserve that AEMO can procure to avoid load shedding. The IRR augments the RERT by allowing AEMO to procure multi-year reserve contracts
- retailer reliability obligation (RRO), which aims to provide stronger incentives for market participants to invest in the right technologies in regions where it is needed to support NEM reliability.

The reliability settings are set to achieve a level of investment that is consistent with the reliability standard, not the interim reliability measure.

The IRM was established as a temporary measure to protect customers from increasing reliability risks, particularly low-probability events that could have a high impact on reliability outcomes. While the IRM is separate to the reliability standard it uses the same form. The level of the IRM is 0.0006 % USE compared to 0.002% USE for the reliability standard.

In May 2023 the IRM was extended to 30 June 2028.[86]

4.3.2 Changes to the NEM market price settings

The Panel proposed a rule to amend the market price settings (MPC, CPT, and APC) as part of the 2022 RSS review. It determined that the current levels of the MPC and CPT needed to be increased to support the necessary investment for achieving the reliability standard.

On 16 November 2022, the Panel submitted a rule change request to the AEMC to amend the market price settings. In December 2023, the AEMC reviewed the NEM price settings that will apply from 1 July 2025 to 30 June 2028.[87] A key consideration in defining the new settings was that the existing market settings were too low to support efficient levels of investment needed to maintain reliability as the NEM transitions to net zero.

The proposed schedule of progressive adjustments is set out in Table 4.1 below. It is important to note that these are nominal figures. The AEMC publishes a schedule of reliability settings document each year which provides CPI-adjusted figures for the MPC and CPT. [88]

86 AEMC, *Review of the interim reliability measure* final report, 25 May 2023.

87 AEMC, National Electricity Amendment (*Amendment of the market price cap, cumulative price threshold and administered price cap*) rule, rule determination, 7 December 2023.

88 AEMC, Schedule of reliability settings - 2025-26 financial year, February 2025.

Table 4.1: Recommended progressive annual changes to the MPC, CPT and APC

Market price settings	1 July 2025	1 July 2026	1 July 2027
MPC	$18,600/MWh	$20,700/MWh	$22,800/MWh
CPT	$1,674,000/MWh	$1,987,200/MWh	$2,325,600/MWh
CPT hours at MPC	7.5	8	8.5
APC	$600/MWh	$600/MWh	$600/MWh
MFP	-$1000/MWh	-$1000/MWh	-$1000/MWh

Source: AEMC

4.3.3 AEMO reliability assessment

For the first time in 2024, AEMO integrated the standard and interim reliability measures into the reliability forecast (Figure 4.2). The AEMO reliability forecast is a 10-year reliability assessment under different sensitives, which include different levels of supply with varying degrees of development certainty.[89] The assessment uses ESOO methodology that reflects commissioning uncertainty for projects that are committed and anticipated but have not yet met certain commissioning milestones.[90]

The 'Committed and Anticipated Investments' sensitivity meets AEMO's obligations under NER clauses 4A.B.1 and 4A.B.2 to publish reliability forecasts and indicative reliability forecasts, detailing expected unserved energy and potential reliability gaps. This sensitivity also indicates the additional capacity needed to meet the IRM and reliability standard in each NEM region.

As noted above, the reliability settings are set to deliver the reliability standard of 0.002% expected USE, not the interim reliability measure. The forecast shows that expected USE is within the reliability standard in most NEM regions except for some minor exceedances in Victoria and NSW.

Figure 4.2: Reliability forecast, all NEM regions, first five years (2024-25 to 2028-29)

Source: AEMO, ESOO 2024, p 63.

89 AEMO, 2024 *Electricity statement of opportunities*, August 2024, pp 60-64.

90 AEMO, *ESOO and reliability forecast methodology document*, August 2023.

A Existing regulatory tools for gas reliability

This appendix provides an overview of the instruments and regulations currently in place for the ECGS that can impact reliability or supply adequacy outcomes. It is intended to assist understanding by providing the broader context and timeframes in which those existing tools and the package of proposed rule changes would operate. This information does not capture every regulation or intervention in the gas markets.

Figure A.1: Overview of gas regulations and tools

	Timeframes* ST MT LT	Ongoing or point in time^	
Market price settings (STTM, DWGM)	↔	Ongoing	
Information and Coordination			
GSOO	↔	Ongoing	All information tools canvass both supply and demand.
VGPR	↔	Ongoing	
Gas bulletin board (GBB) *Proposed: Introduce notice of closure period of 36 months* *Proposed: Introduce ST and MT PASA*	↔	Ongoing	
National gas emergency response committee (NGERAC)	↔	Point in time	
ECGS annual winter readiness and management plan	↔	Ongoing	
Threat signalling *Proposed: Amend to increase objectivity*	Not specified	Point in time	
GSAR conferences	Not specified	Point in time	
Proposed: Reliability Standard and proposed VGCR	↔	Ongoing	
DWGM only: threat to system security notice	↔	Point in time	
Interventions			**Supply or demand focused**
Gas market code	↔	Ongoing	Supply
ADGSM	↔	Point in time	Supply
Heads of Agreement	↔	Ongoing	Supply
AEMO ECGS directions	↔	Point in time	Both
AEMO trading powers	↔	Point in time	Supply
Proposed: AEMO SoLR role, including demand response	↔	Point in time	Both
STTM only: contingency Gas	↔	Point in time	Both
DWGM only: intervention power	Not specified	Point in time	Both

Key: ***Timeframes** are the approximate time period an intervention is intended to impact upon (or, for information, how far out the forecasts or other relevant information cover).

- Short-term (ST): up to one year
- Medium-term (MT): 1-5 years
- Long-term (LT): 5+ years

^**Point in time** refers a tool that can be deployed in response to a specific event. Some tools are '**ongoing**,' even if they are set to expire on a specific date.

The stage 2 package of rule change requests are in blue text/arrows.

Source: AEMC

Note: The above diagram specifically excludes participant reporting obligations, jurisdictional approval processes and economic regulation of pipelines, and jurisdictional activities on electrification and alternative gases.

The below table provides an overview of gas regulations included in the above diagram but not mentioned elsewhere in this background paper. The table indicates the tool's primary purpose (information or intervention), key dates, category (supply only or both supply and demand), and impact horizon. This list does not attempt to describe each tool in detail, but provides references for further information.

Table A.1: Additional details on regulatory tools supporting reliability and supply adequacy outcomes

Tool	Key dates	Category	Description	Horizon of impact	References
Information					
Bulletin board (also called gas bulletin board, GBB)	Commenced on 1 July 2008 Updates to reporting requirements to the GBB commenced on 15 March 2023	Supply and demand-side	The objective of the GBB is to facilitate improved decision making and trade in gas commodity and pipeline capacity, through the provision of readily accessible and up-to-date gas system and market information. The GBB is administered by AEMO and is composed of data dashboards, register and capacity outlooks that apply to BB facilities.	Historic data of gas flow information and a 36-month outlook of uncontracted capacity for pipelines, storage, production, LNG import and compression facilities	Section 227 of the NGL. Part 18 of the NGR. AEMO, *About the Gas Bulletin Board (GBB)*.
ECGS Annual winter readiness and management plan ('the plan')	Incorporated into the 2023 Winter gas outlook released on 19 May 2023	Supply and demand-side	AEMO prepares an *Annual winter readiness and management plan* to address security and reliability issues in the electricity and gas market. In the plan, AEMO considers its ECGS function and the need to minimise market intervention and costs to gas consumers. Energy ministers requested AEMO to introduce the plan in 2022 alongside stage 1	Yearly	AEMO, *System operations*, *Victorian gas operations.*

Tool	Key dates	Category	Description	Horizon of impact	References
			RSA reforms.		
DWGM threat to system security notice	Last updated on 1 May 2024	Supply and demand side	AEMO must provide registered participants with details of a threat to system security in the DWGM.	Variable, depending on the threat and AEMO's determination	Subdivision 5 *System security threat* of the NGR, in particular Rule 341. AEMO, *Wholesale market system security procedures (Victoria)*, 1 May 2024, pp 14-19
Intervention					
Gas market code (the Code)	Commenced on 11 July 2023 The Code will expire on 1 October 2033.	Supply-side	The Code is enforced by the ACCC. It aims to secure adequate supply of wholesale gas to the domestic market at reasonable prices and on reasonable terms through the combined incentives of a 'price cap' (currently $12/GJ) and an exemptions' framework. The Code also includes good faith requirements for gas market participants negotiating with each other.	Medium term	Part IVBB of the Competition and Consumer Act 2010 ACCC, *Gas market code* Australian Government, Federal register of legislation. *Competition and consumer (gas market code) regulations 2023*.
Australian domestic security gas mechanism (ADGSM)	The mechanism commenced on 1 July 2017. It was subsequently reformed, becoming effective on 1 April 2023. The mechanism will be in place	Supply-side	The ADGSM is a measure of last resort to respond to nation-wide gas shortfalls. The Commonwealth Minister for Resources determines whether a shortfall market exists; in which case, LNG projects may need to limit exports or find new gas sources. The decision is informed by expert advice from AEMO, the ACCC, and industry.	Forthcoming quarter	Australian Government. Department of Industry, Science and Resources. *Domestic gas supply* Division 6 of customs regulations, *Customs (Prohibited Exports) (Operation of the Australian Domestic Gas Security Mechanism) Guidelines 2023*.

Tool	Key dates	Category	Description	Horizon of impact	References
	until 2030.				
Heads of agreement (HoA)	Commenced on 28 September 2018 and renewed on 5 January 2021. The HoA is in place until 1 January 2026.	Supply-side	The HoA, between the Australian Government and the east coast LNG exporters, aims to secure gas for the ECGS through LNG exporters committing to offer uncontracted gas to the domestic market before exporting it overseas.	Intra year Information on uncontracted gas volumes is published every six months	Australian Government. Department of Industry, Science and Resources, *Domestic gas supply* and *Heads of agreement*.
STTM contingency gas mechanism	The mechanism is integrated in the STTM since its inception on 1 September 2010 and was updated on 7 May 2015 with the *Contingency gas evidentiary changes* final rule.	Supply and demand-side	A series of market arrangements and technical procedures for the reliability of the STTM. Contingency gas is expected to be triggered by AEMO in situations where there is a gas shortfall at a hub, following one of the triggers outlined in AEMO's *Technical guide to the short term trading market.*	Short term and depending on the contingency and AEMO's determination	Part 20, Division 8 of the NGR. AEMO, *Technical guide to the short term trading market*, 3 March 2025, pp 63-68.
DWGM Intervention power, also referred to as Gas emergency protocol (Victoria)	Last updated on 7 December 2022	Supply and demand-side	This is a high level set of documents that outline the actions AEMO may take in an emergency. The NGR define an emergency protocol as an instrument of a legislative or administrative character made by AEMO with respect to gas emergencies or a particular	Variable, depending on the emergency and AEMO's determination	Rules 200 of the NGR, Part 19, Division 5 of the NGR. AEMO, Emergency procedures (GAS), 7 December 2022.

Tool	Key dates	Category	Description	Horizon of impact	References
			gas emergency under an application Act or jurisdictional gas legislation.		

Abbreviations and terms

AEMC	Australian Energy Market Commission
ACCC	Australian Competition & Consumer Commission
ADGSM	Australian domestic security gas mechanism
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
APC	Administered price cap
BB	Bulletin board
Commission	See AEMC
CPT	Cumulative price threshold
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DTS	Declared Transmission System
DWGM	Declared wholesale gas market
ECGS	East coast gas system
ESOO	Electricity statement of opportunities
GBB	Gas bulletin board
GSOO	Gas statement of opportunities
HoA	Heads of agreement
IRM	Interim reliability measure
LOR	Lack of reserve
MPC	Market price cap
NEM	National Electricity Market
NER	National Electricity Rules
NGERAC	National gas emergency response committee
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
PASA	Projected assessment of system adequacy
QGP	Queensland Gas Pipeline
RERT	Reliability and emergency reserve trader
RSA Framework	Reliability and supply adequacy framework
RRO	Retailer reliability obligation
SoLR	Supplier of last resort
STTM	Short term trading market
USG	Unserved gas
VGCR	Value of gas customer reliability
VoLL	Value of lost load