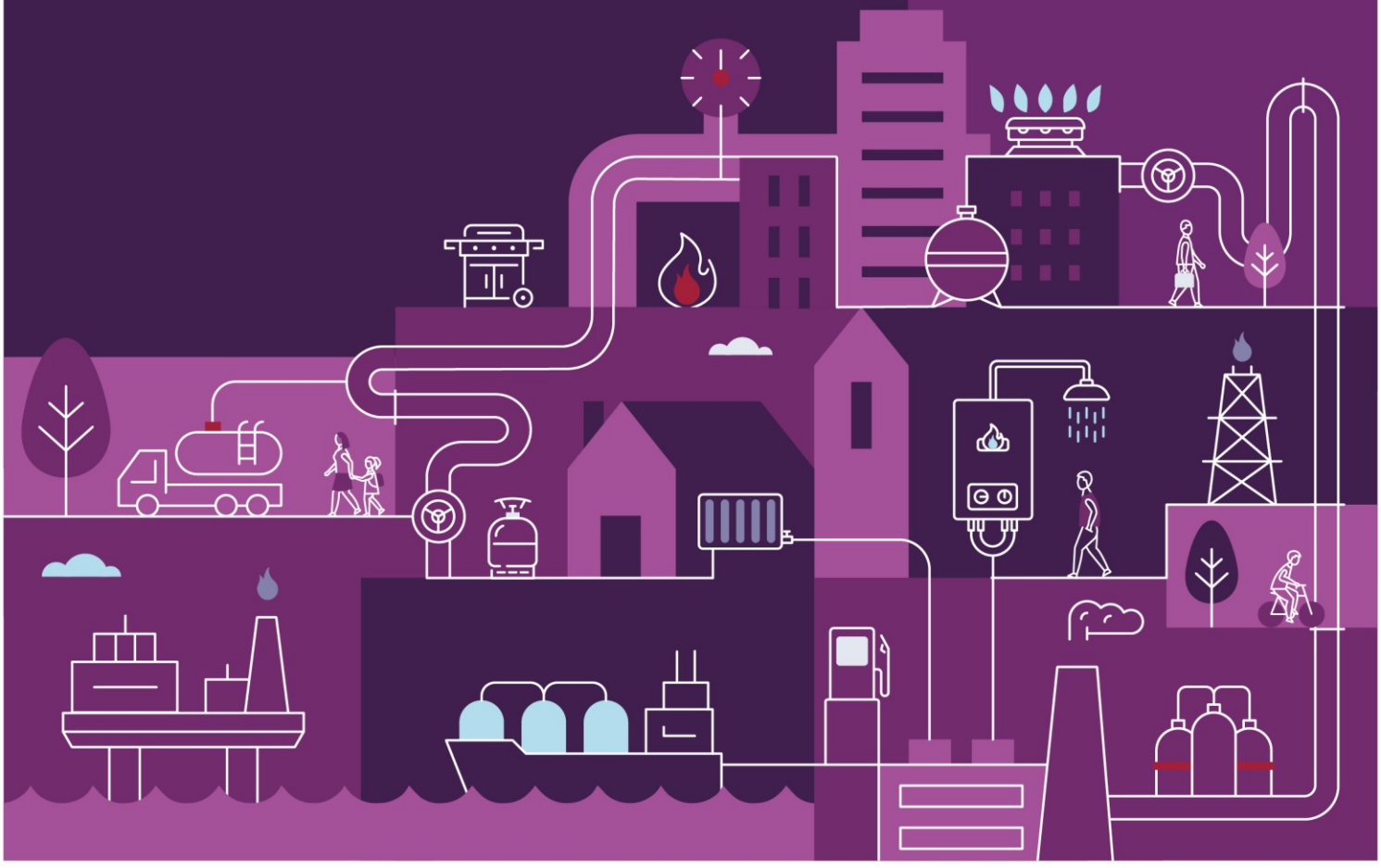
AEMO

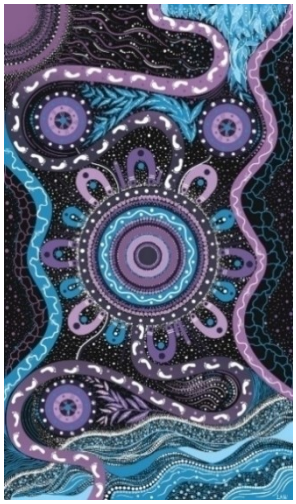
AUSTRALIAN ENERGY MARKET OPERATOR

Draft Gas Infrastructure Options Report

May 2025

For the Integrated System Plan (ISP)





We acknowledge the Traditional Custodians of the land, seas and waters across Australia. We honour the wisdom of Aboriginal and Torres Strait Islander Elders past and present and embrace future generations.

We acknowledge that, wherever we work, we do so on Aboriginal and Torres Strait Islander lands. We pay respect to the world's oldest continuing culture and First Nations peoples' deep and continuing connection to Country; and hope that our work can benefit both people and Country.

'Journey of unity: AEMO's Reconciliation Path' by Lani Balzan

AEMO Group is proud to have launched its first Reconciliation Action Plan in May 2024. 'Journey of unity: AEMO's Reconciliation Path' was created by Wiradjuri artist Lani Balzan to visually narrate our ongoing journey towards reconciliation - a collaborative endeavour that honours First Nations cultures, fosters mutual understanding, and paves the way for a brighter, more inclusive future.

Important notice

Purpose

AEMO publishes this Draft 2025 *Gas Infrastructure Options Report* as part of an initiative to better integrate gas into the 2026 *Integrated System Plan*. This report is part of the 2025 *Inputs, Assumptions and Scenarios Report* (IASR), which is published in accordance with National Electricity Rules (NER) 5.22.8. This publication is generally based on information available to AEMO as at 19 May 2025 unless otherwise indicated.

Disclaimer

AEMO has made reasonable efforts to ensure the quality of the information in this publication but cannot guarantee that information, forecasts and assumptions are accurate, complete or appropriate for your circumstances.

Modelling work performed as part of preparing this publication inherently requires assumptions about future behaviours and market interactions, which may result in forecasts that deviate from future conditions. There will usually be differences between estimated and actual results, because events and circumstances frequently do not occur as expected, and those differences may be material.

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Version control

Version	Release date	Changes
1.0	22 May 2025	**Draft issued for consultation**

Contents

Executive summary

Integrating gas development projections into the *Integrated System Plan* allows for more comprehensive analysis underpinning the optimal development path for the National Electricity Market

Australia needs an energy system that delivers secure, reliable and affordable electricity through the transition to net zero by 2050. Published every two years, AEMO's *Integrated System Plan* (ISP) is a roadmap for the transition of the National Electricity Market (NEM) power system, presenting the plan for essential infrastructure that meets both consumer needs and government energy and emissions targets between now and 2050.

In April 2024, Australia's Energy Ministers provided their response to the Federal Government's review of the ISP, identifying a series of actions for the ISP to provide guidance on additional issues across the energy sector.

One such action was to expand consideration of gas market developments when determining optimal investments in electricity infrastructure. On 19 December 2024, the Australian Energy Market Commission (AEMC) made rule changes to better integrate gas analysis into the ISP. Changes to the National Gas Rules (NGR) enable AEMO to access, use and disclose for ISP purposes gas information which was provided to AEMO for the *Gas Statement of Opportunities* (GSOO), *Victorian Gas Planning Report* (VGPR), Gas Bulletin Board (Gas BB) or East Coast Gas System (ECGS) functions. The intent of this rule change was to enhance gas analysis in the ISP and improve consistency across AEMO's planning reports. Changes to the National Electricity Rules (NER) require AEMO to prepare gas development projections for inclusion in the ISP and promote transparency in identifying the assumptions underpinning those projections.

Given the important role identified for gas-powered electricity generation (GPG) in successive ISPs, AEMO has proposed to apply forecast and potential gas network, storage and supply opportunities to establish the availability of gas in determining optimal power system needs to meet the requirement to include gas development projections in the ISP[1].

To support this approach, inputs such as details of existing, committed, anticipated and uncertain gas projects, infrastructure and supply development options, as well as their costs, will become a key input to evaluate plausible levels of future gas availability.

The *Gas Infrastructure Options Report* outlines new inputs that will be key considerations in preparing the gas development projections in the 2026 ISP, including gas infrastructure options and the gas infrastructure cost components used to develop a range of gas development projections to support the ongoing use of gas by gas customers, particularly for electricity generation purposes. The gas development projections will provide insight into the availability and limitations for gas to supply GPG in the NEM, improving consideration of fuel availability when determining electricity investments.

This Draft 2025 *Gas Infrastructure Options Report* provides cost estimates for expanding and operating traditional gas infrastructure, as well as renewable gas developments, and a cost forecasting approach to apply across the

[1] Details of the Draft ISP Methodology and the consultation are at https://aemo.com.au/consultations/current-and-closed-consultations/2026-isp-methodology.

ISP planning horizon. The cost estimates consider building block components and their baseline costs, as well as adjustment factors for project specific attributes, locational factors and other risk factors.

Gas development projections will represent plausible pathways for gas investments, representing one or many gas infrastructure options

Many different gas investment opportunities exist to support gas consumer's future energy needs, including the needs of gas for power generation, and AEMO's evaluation of possible gas developments will help evaluate investment needs and investment resilience in the power system. Gas development projections provide foundational assumptions for gas availability that will influence electricity investment needs, and risks, when assessing optimal power system investment needs. Unlike actionable electricity investments identified on the ISP 'optimal development path', the NER and NGR do not provide regulatory investment frameworks to enable the actioning of gas projects identified in a gas development projection, and the ISP will not identify an optimal development path for gas investment.

AEMO's approach considers four categories of gas infrastructure options: transport, storage, production and regasification. Gas development projections are a combination of gas infrastructure options developed across the planning horizon, including the timing for when the different options may be developed. Gas infrastructure options considered in this report consist of the gas infrastructure components of a gas development. Gas infrastructure components are the individual building blocks of gas infrastructure, for example a unit-kilometre of pipeline or a unit-sized processing facility.

Multiple gas development projections are therefore expected to be developed using the gas infrastructure options within the *Gas Infrastructure Options Report*. Where appropriate, AEMO's approach will leverage existing analyses conducted for the gas planning publications, using these development options as starting considerations for further gas development projections.

Availability and deliverability of fuel for gas-powered generation in the NEM is reliant on developments in the East Coast Gas Market

GPG provides a reliable, firm and dispatchable supply of electricity that complements intermittent generation sources such as wind and solar generators. It can generate energy during periods of reduced production from renewable generators or when storage facilities have depleted their reserves, and can provide critical system security services to stabilise the grid. GPG provides a clear reliability solution for the NEM, to support a growing customer base and to support the transition from a grid dominated by coal-fired generation to a power system supported by firmed renewables.

Availability and deliverability of gas fuel is a critical consideration when determining the optimal size and location for GPG.

The GSOO forecasts the adequacy of gas supplies in the East Coast Gas Market (ECGM)[2] to provide gas for gas consumers, including for power generation. The 2025 GSOO forecast that with the level of existing, committed and anticipated mid-stream gas infrastructure, and with the forecast level of gas production and demand across the ECGM, there is a risk of peak day shortfalls from 2028 (subject to prevailing conditions) and seasonal and annual supply gaps from 2029, identifying the need for new supply investments to maintain gas supply adequacy.

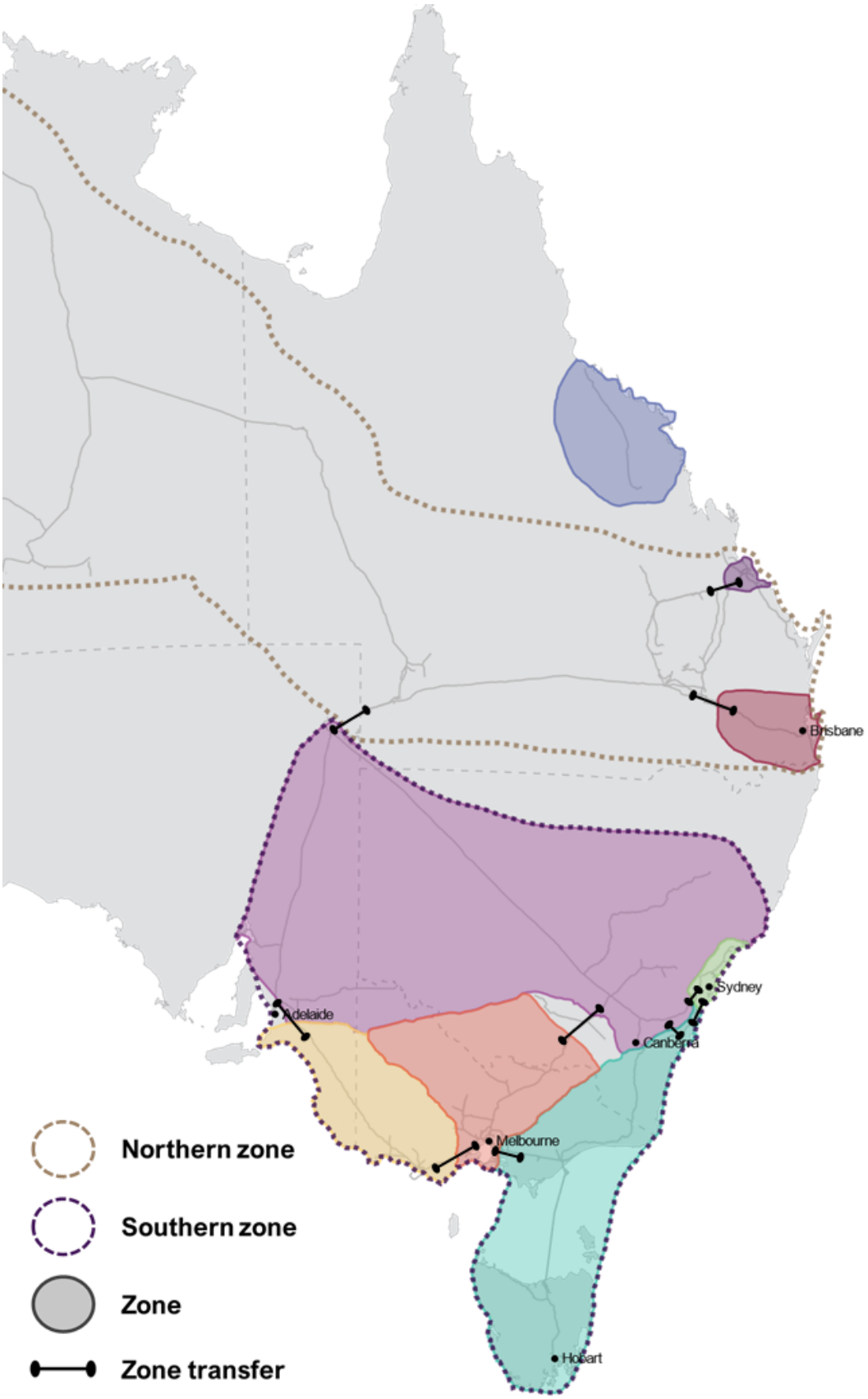
[2] The GSOO includes forecasts for all Australian jurisdictions other than Western Australia.

While several supply, storage and transport solutions are presently proposed, which solution is developed, and the timing, is currently uncertain.

AEMO's gas development projections seek to identify the combination of investments that may be developed by the gas industry to address these opportunities. Each gas development projection will result in forecast levels of daily gas fuel availability for GPG, based on supply and infrastructure constraints in the ECGM after developing one or more gas infrastructure options. These gas limitations will be important to influence the capability for GPG across the NEM to contribute to the reliability of the NEM, and may influence GPG location, electricity network investments, and the role for other electricity firming solutions such as storages.

To model the supply, demand and deliverability of gas in the ECGM for the purposes of the ISP, AEMO proposes a zonal representation of the ECGM, with 13 distinct gas zones reflecting the capability for GPG to operate given gas supply, storage and pipeline capacity constraints, and considering the residential, commercial and industrial gas demand that exists or is forecast within these zones. **Figure 1** shows this proposed topology.

Figure 1 Draft supply and pipeline zones for the East Coast Gas Market



Notice of consultation

AEMO is publishing this draft report on the gas infrastructure costs, options and limitations to form the gas development projections to be used in the 2026 ISP.

The final report will form part of the 2025 *Inputs, Assumptions and Scenarios Report* (IASR), in accordance with the Australian Energy Regulator's (AER's) Forecasting Best Practice Guidelines[3].

Stakeholder submissions are welcomed in response to the Draft 2025 *Gas Infrastructure Options Report*

All stakeholders are invited to make a submission to any matters discussed in this draft report, or in the 2025 *Gas Infrastructure Costs Report* prepared by AEMO's consultant to support this draft report. AEMO has also provided a specific list of key consultation questions on page 10. The report and supporting material are available on the consultation webpage: https://aemo.com.au/consultations/current-and-closed-consultations/2025-gas-infrastructure-options-report.

Submissions in response to this Draft 2025 *Gas Infrastructure Options Report* should be sent to ISP@aemo.com.au, by 5.00pm (AEST) on Monday 23 June 2025.

Please identify any parts of your submission that you wish to remain confidential, and explain why. AEMO may still publish that information if it does not consider it to be confidential, but will consult with you before doing so. Material identified as confidential may be given less weight in the decision-making process than material that is published.

Submissions received after the closing date and time will not be valid, and AEMO is not obliged to consider them. Any late submissions should explain the reason for lateness and the detriment to you if AEMO does not consider your submission.

AEMO will host a 60-minute webinar on Thursday 29 May 2025, from 3.30 pm to 4.30 pm (AEST) to present key materials in this report, and allow time for questions. All interested stakeholders can sign up to attend the webinar[4].

AEMO will publish a consultation summary report alongside the final 2025 *Gas Infrastructure Options Report* in July 2025, explaining how stakeholders' submissions have been considered in the preparation of the final report.

Supplementary materials

To support the *Gas Infrastructure Options Report*, AEMO requires inputs such as existing, committed, anticipated and uncertain projects, infrastructure and supply development options, and gas infrastructure costs. Where available, AEMO will use information provided by stakeholders for the GSOO for project information and other development options.

To complement GSOO information and to establish building block components and costs that may combine to form gas infrastructure options and gas development projections, AEMO engaged consultant GHD to provide

[3] At https://www.aer.gov.au/system/files/AER%20-%20Forecasting%20best%20practice%20guidelines%20-%2025%20August%202020.pdf.
[4] At https://events.teams.microsoft.com/event/c28daf77-df66-49da-8bae-ba323e43c121@320c999e-3876-4ad0-b401-d241068e9e60.

technical and cost information. The GHD analysis and report is key supplementary material complementing this Draft 2025 *Gas Infrastructure Options Report*, as outlined in **Table 1**.

Stakeholders are invited to refer to these documents for further background and context.

Table 1 Related files and reports

Document	Description	Location
2025 Gas Infrastructure Costs Report	Report from independent consultant GHD describing the background and assumptions behind the gas infrastructure cost components and forecasts.	https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2025/2025-Gas-Infrastructure-Options-Report/2025-gas-infrastructure-costs-report
2025 Gas Master Cost database	Spreadsheet database from independent consultant GHD providing the gas infrastructure component costs.	https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2025/2025-Gas-Infrastructure-Options-Report/2025-gas-master-cost-database
2025 Gas Adjustment Factors database	Spreadsheet database from independent consultant GHD providing the adjustment factors to the gas infrastructure component costs.	https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2025/2025-Gas-Infrastructure-Options-Report/2025-gas-adjustment-factors-database
2025 Gas Infrastructure Price forecasts	Spreadsheet from independent consultant GHD providing price forecast indices to forecast the gas infrastructure component costs across the ISP horizon.	https://aemo.com.au/-/media/files/stakeholder_consultation/consultations/nem-consultations/2025/2025-Gas-Infrastructure-Options-Report/2025-gas-infrastructure-price-forecasts

Consultation process and timeline

Table 2 shows the consultation process for the 2025 *Gas Infrastructure Options Report*, which is being undertaken as part of the 2025 IASR. The notice of consultation above provides details for feedback opportunities in response to this Draft 2025 *Gas Infrastructure Options Report*.

Table 2 Consultation process for the 2025 *Gas Infrastructure Options Report*

Activity	Date
ISP Methodology issues paper published	23 October 2024
Draft ISP Methodology and consultation paper published	13 March 2025
Draft 2025 *Gas Infrastructure Options Report* published	22 May 2025
Draft 2025 *Gas Infrastructure Options Report* webinar	29 May 2025
ISP Methodology and consultation paper published	25 June 2025
2025 *Gas Infrastructure Options Report* and 2025 IASR published	By 31 July 2025
2025 *Gas Infrastructure Options Report* webinar	August 2025
Draft 2026 ISP published	December 2025

Note: This table shows webinar details only for the *Gas Infrastructure Options Report.* For details on webinars and verbal submissions for the 2025 IASR and the 2025 *Electricity Network Options Report,* please see the consultation webpages for those reports, at https://aemo.com.au/consultations/current-and-closed-consultations/2025-iasr and https://aemo.com.au/consultations/current-and-closed-consultations/2025-electricity-network-options-report.

Consultation questions provided in this paper

For all questions, please provide relevant data and evidence to support your feedback.

Gas infrastructure costs

1. Do you have any feedback on the gas infrastructure base costs, adjustment factors and escalation indices provided by GHD?
2. Do you have any feedback on the methodology for the gas infrastructure base costs and forecasts provided by GHD?
3. Do you agree with the proposed forecasting approach of applying a single set of cost escalation indices for gas infrastructure components across all ISP scenarios?

Gas development projections

4. Do you have any feedback on AEMO's use of GHD's component costs in costing gas infrastructure options?
5. AEMO has proposed to limit sources of new natural gas supply to known contingent (2C) resources provided via the Gas BB and GSOO surveys. Should other sources of new gas be included?
6. Of the list of gas infrastructure options mentioned in Section 3.2.2 and provided in Appendix A2, are there any options that should not be included, or any further options that should be considered?

Application of gas development projections for fuel limitations in the ISP

7. Will AEMO's proposed gas supply and pipeline zone limitations be effective in limiting fuel availability for GPG?
8. Considering the purpose of the assessment, is it reasonable to apply priority to residential, commercial and industrial customers ahead of GPG?
9. Are there any supply zones missing? Are there any supply zones that will be unrealistically represented by the proposed constraints to gas supply?

1 Introduction

Published every two years, AEMO's ISP is a roadmap for the transition of the NEM power system, with a clear plan for essential infrastructure that will meet future energy needs. Previous ISPs have called for urgent investment in electricity generation, storage and transmission to deliver secure, reliable and affordable electricity to consumers through the transition.

Leveraging expertise from across industry and consumer representatives is pivotal to the development of a robust plan that supports the long-term interests of energy consumers. AEMO is committed to providing an accessible engagement program that offers stakeholders a range of opportunities to shape the 2026 ISP.

In April 2024, Australia's Energy Ministers provided their response to the Federal Government's review of the ISP. Noting that the ISP already "plays a crucial role in providing consistent projections about where and when investments in new electricity infrastructure will be required to support the energy transformation", the Energy Ministers identified a series of actions for the ISP to provide guidance on additional issues across the energy sector, including expanded consideration of the influence of gas market developments on future power system needs.

On 19 December 2024, the AEMC made rule changes to better integrate gas analysis into the ISP. Changes to the NGR enable AEMO to access, use and disclose for ISP purposes gas information which was provided to AEMO as part of the GSOO, VGPR, Gas BB or ECGS functions, enhancing gas analysis in the ISP, increasing transparency and improving consistency across AEMO's reports. Changes to the NER require AEMO to produce gas development projections for inclusion in the ISP and promote transparency in identifying the assumptions underpinning those projections.

This Draft 2025 *Gas Infrastructure Options Report* forms a new and important part of AEMO's collection of inputs and assumptions that will be applied in accordance with AEMO's ISP Methodology. This first draft *Gas Infrastructure Options Report* provides additional detail regarding data and methodology not yet included in AEMO's other inputs and methodology consultation publications, to provide greater context and opportunity to engage on the proposed inputs and assumptions relevant to gas infrastructure. As AEMO's work to integrate gas into ISP analysis matures, future iterations of this publication may consist of different content, or the components may be included in the IASR publication.

AEMO welcomes feedback on all aspects of this Draft 2025 *Gas Infrastructure Options Report*, and has also provided specific consultation questions for consideration (see the purple boxes throughout the report, and the summary listed on page 10).

1.1 Addressing actions from the Federal Government's ISP Review

Over 2023 and early 2024, the Federal Government undertook a review of the ISP[5], and on 5 April 2024, the Energy and Climate Change Ministerial Council published the *Energy Ministers' Response to the ISP Review*[6]. The response outlined a series of actions to enable the ISP to set a direction for the energy system as a whole, while maintaining the critical function of the ISP in electricity transmission planning.

The ISP Review focused on supporting emissions reduction, integrating gas and electricity planning, enhancing demand considerations, transformation of Australia's energy mix, jurisdictional policy interactions, and the timely delivery of ISP projects.

In December 2024, the AEMC amended the NER and NGR to implement aspects of the review of the ISP[7]. The recent rule amendments now enable AEMO to access, use and disclose specified gas information collected under the NGR, subject to confidentiality provisions, to provide more comprehensive gas analysis included in the ISP. The information will be used by AEMO to develop gas development projections that will be included in the ISP.

This Draft *2025 Gas Infrastructure Options Report* provides inputs and methodological considerations to enable AEMO to meet the new rules requirements to increase consideration of gas supply, storage and transportation in the ISP. As provided for in the new rules, AEMO will use data collected for the GSOO and other gas publications and functions, together with gas infrastructure costs provided by independent consultants, to prepare gas development projections for inclusion in the 2026 ISP. Details of this proposed approach can be found in Sections 2 and 3 of this report.

1.2 2026 ISP development process

Figure 2 shows the ISP process as a whole, and current progress on all elements for the 2026 ISP[8]. In addition to this Draft 2025 *Gas Infrastructure Options Report* consultation, two other relevant consultations for the 2026 ISP are underway:

- **The 2025 IASR[9]** will catalogue the range of inputs, assumptions and scenarios for the 2026 ISP. At the time of publication of this report, AEMO has received submissions on the Draft 2025 IASR Stage 1 and Stage 2 reports, has hosted a webinar, and will continue to finalise responses to feedback before publishing the final 2025 IASR in July 2025.

[5] Australian Government, Department of Climate Change, Energy, the Environment and Water. *Review of the Integrated System Plan – Final Report*, January 2024. At https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Energy_Planning_and_Regulation_in_Australia/EnergyPlanning/Additional_Documents.

[6] At https://www.energy.gov.au/sites/default/files/2024-04/ecmc-response-to-isp-review.pdf.

[7] AEMC. *Final report. National Electricity Amendment (Better integration of gas and community sentiment into the ISP) Rule 2024 and National Gas Amendment (Better integration of gas and community sentiment into the ISP) Rule 2024,* December 2024. At https://www.aemc.gov.au/rule-changes/better-integration-gas-and-community-sentiment-isp-0.

[8] The 2026 ISP Timetable provides more information on the key milestones of the 2026 ISP development process, at https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2026-integrated-system-plan-isp.

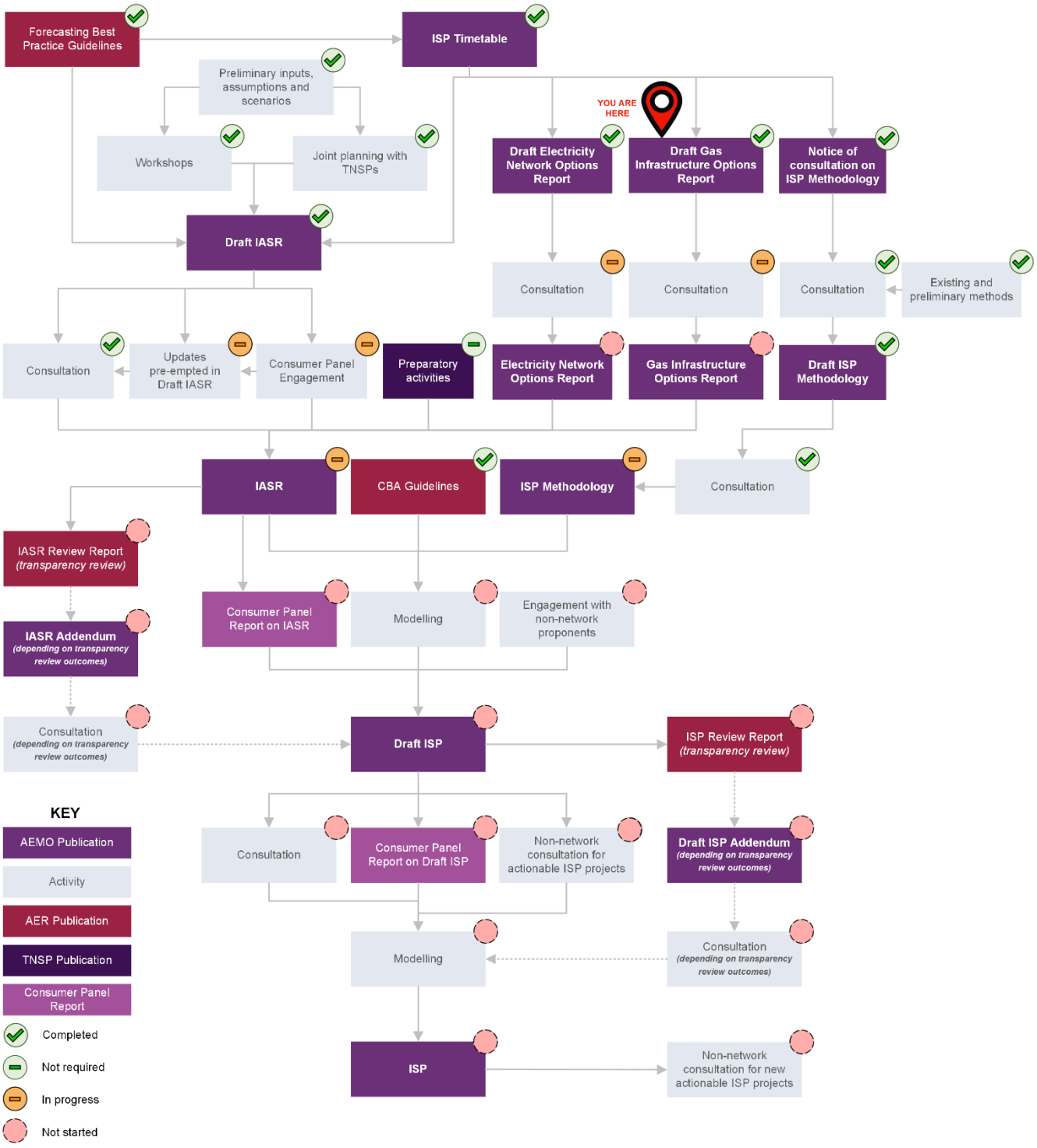
[9] At https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2026-integrated-system-plan-isp/2025-26-inputs-assumptions-and-scenarios.

- **A review of the ISP Methodology**[10] is considering four key changes to the methodology which sets out how modelling is applied in the ISP and how cost benefit analysis is used in the ISP. The review included an issues paper published in October 2024 with written submissions due in November 2024, and a draft report and Draft ISP Methodology published in May 2025 with written submissions due in April 2025. At the time of publication of this report, AEMO is considering stakeholder submissions and will continue to finalise responses to feedback before publishing a final report and the ISP Methodology on 25 June 2025. The final report and the ISP Methodology will include updates that reflect the methodology considerations from this Draft 2025 *Gas Infrastructure Options Report*.

Other stakeholder engagement opportunities exist across the ISP development process, including the Draft 2025 *Electricity Network Options Report*, which is a complementary report released simultaneously with this Draft 2025 *Gas Infrastructure Options Report*.

[10] AEMO. ISP Methodology consultation, at https://aemo.com.au/consultations/current-and-closed-consultations/2026-isp-methodology.

Figure 2 Navigating the ISP process



Note: The diagram above has been amended from the version published in the 2026 ISP timetable by adding boxes for the draft and final versions of the "Electricity Network Options Report" and "Gas Infrastructure Options Report" with an additional "Consultation" box for each publication. The IASR will consider transmission and distribution development options and non-network alternatives.

2 Gas infrastructure costs

AEMO engaged GHD to provide a comprehensive dataset to support its forecasting and planning functions related to the cost of expanding and operating traditional gas infrastructure, as well as renewable gas developments, and to include a cost forecasting approach across the planning horizon for use in the 2026 ISP.

The asset types studied by GHD include:

- natural gas pipelines, processing facilities, compression facilities, and storage facilities
- liquefied natural gas (LNG) regasification terminals and all associated equipment
- carbon capture and storage (CCS)-related infrastructure
- new hydrogen transport options including trucking and pipelines.
- biomethane production
- coal seam gas (CSG) desalination plants, and
- water pipelines related to CSG desalination plants.

Additional information is provided for new natural gas infrastructure such as:

- lead time for building
- operating cost
- cost of upgrading the capacity
- cost of refurbishing existing assets
- cost of retirement and decommissioning, and
- expected technical life for existing natural gas pipelines.

Refer to the *2025 Gas Infrastructure Costs Report* and associated databases published with this Draft 2025 *Gas Infrastructure Options Report* for detailed information on the data provided by GHD.

These costs are to be used in the gas supply development model as proposed in the Draft ISP Methodology, to produce gas development projections (see Section 3) and daily gas fuel limits for GPG (see Section 4).

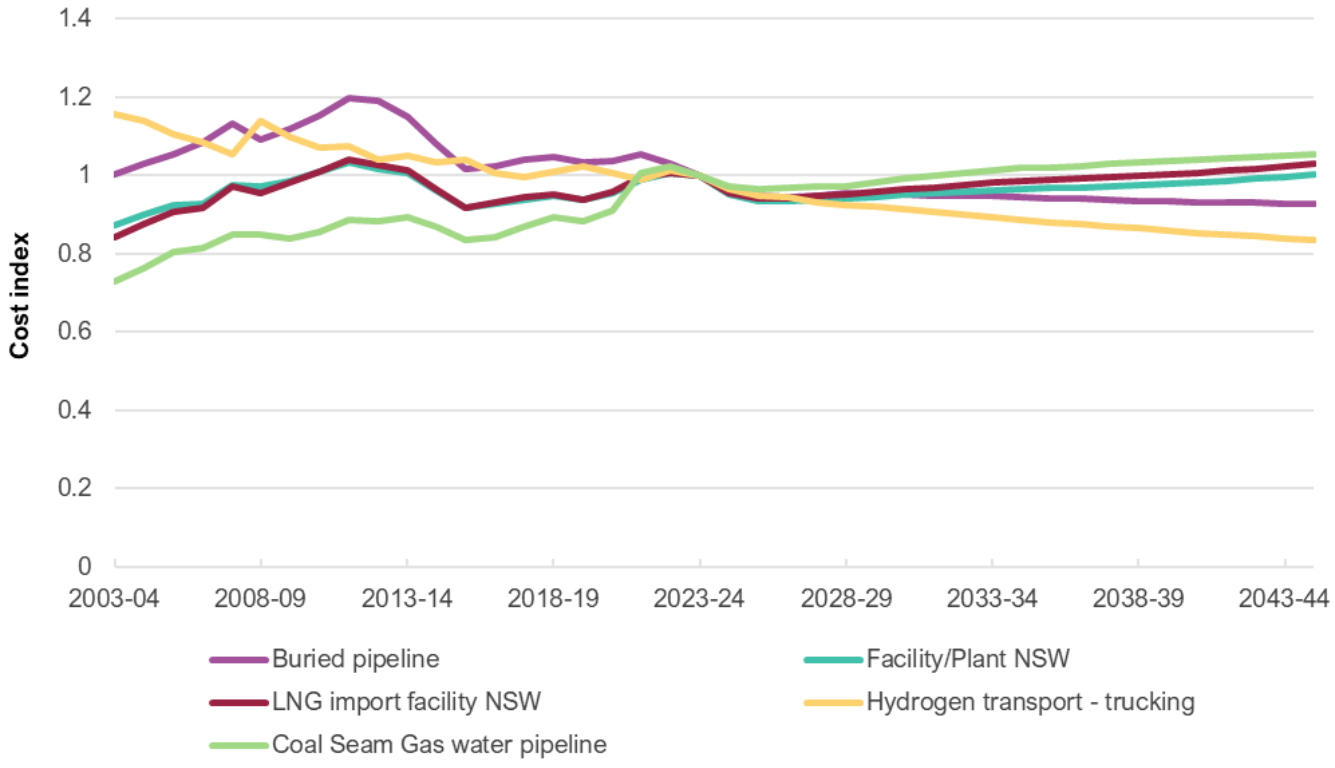
Included with the costs are forecast escalations to capture changes in costs across the ISP horizon. These forecast escalations take into account projections of components such as imported steel, plastic piping, equipment, diesel, labour and exchange rates. Each of these components is separately forecast, then combined into a single cost for each cost element category using the weights shown in **Table 3**. One set of indices has been developed and is proposed to apply to all ISP scenarios for potential gas infrastructure. AEMO is interested in stakeholder views on whether this application is appropriate for gas infrastructure options (as distinct from electricity investments).

Table 3 Weights of each component price in each cost element category

Cost element category	General capital expenditure	Imported steel (piping)	Plastic piping	Australian-sourced equipment	Imported equipment	Diesel	Construction labour	Design & project management labour	Exchange rate	Land value
Buried pipeline (including pipelines for natural gas, biomethane, hydrogen and CCS)	0.1	0.3				0.1	0.2	0.1	0.2	
Facility (including facilities for conventional gas and CSG production, processing, compression, underground and LNG storage, biomethane production and CSG desalination plant)	0.1			0.1	0.2	0.1	0.2	0.1	0.1	0.1
Import facility (including all related LNG regasification infrastructure)	0.1			0.1	0.1	0.1	0.3	0.1	0.1	0.1
Hydrogen transport (including trucking – metal hydride storage)	0.1				0.8				0.1	
CSG water pipeline	0.1		0.4			0.1	0.3	0.1		

Figure 3 shows an example of the combined weighted cost escalation indices for a subset of gas components.

Figure 3 Gas infrastructure cost component indices, real (after inflation) price forecasts, indices 2023-24 = 1



2.1 Cost estimate components

Cost estimates are broken down into several components, building blocks and baseline costs. Each of these is also exposed to adjustments for project specific attributes, and risk factors.

An example of using the gas infrastructure costs to cost an option for gas development projections is provided in Appendix A1.

Building blocks and baseline cost

Cost estimates are typically initiated by defining the quantities of certain 'building blocks' of plant or equipment items and multiplying these by the unit cost per item (such as $/kilometre of pipeline or the cost of a 200 terajoules a day (TJ/day) production plant). The sum of the building block costs is the baseline cost.

Adjustments for project specific attributes

Building block costs will vary depending on many component-specific variables. It is therefore necessary to adjust the basic unit costs to take account of these factors. Building block adjustment factors include the location of the component, the type of terrain involved, and the length of pipelines (as a proxy for the collection of risk factors that affect lineal infrastructure). A description of the adjustment factors and value of each adjustment factor is presented in the Gas Adjustment Factors Database published with this report.

Risk factors

Risk factors may be used to increase or decrease the component cost to cater for project component risks, such as macroeconomic influence, market activity, cultural heritage, geotechnical findings and weather delays.

2.2 Treatment of cost estimate classifications for the ISP

Project cost estimates are produced at a very early stage with little design or information known (least accurate), and evolve to a fully costed and engineered estimate (most accurate).

In the early stages, allowances are used to account for the fact that the work scope is not well defined, project approvals have not yet been obtained, and component costs may not be market-tested. Because these allowances are uncertain, the accuracy of early estimates is low. As projects mature and the scope of works is further defined, more of the cost is assigned to the base estimate, reducing the size of allowances for risks and uncertainties, and improving the accuracy.

The Association for Advancement of Cost Engineering (AACE) International classification system is commonly used in many industries for defining the level of accuracy of a cost estimate, based on the amount of design work that has been done. This system defines a series of 'classes' of estimates, ranging from Class 5 (least accurate) to Class 1 (most accurate).

The framework of the AACE International guideline has been followed in estimating the component costs in this Draft 2025 *Gas Infrastructure Options Report* to classify cost estimates. The gas infrastructure costs provided by GHD have been calculated on a Class 5 basis, with all costs equivalent to Class 5 estimates.

AEMO will use the building block cost estimates provided by GHD to provide costs for all gas development options considered for the ISP. These building blocks will be used for both known options currently under consideration by the gas industry (see Appendix A2 for more information), as well as other generic options. Where gas project proponents have provided AEMO with details regarding the technical components of the option, insufficient information is available for AEMO to estimate the precise costs of the option. Given this, the Class 5 cost estimates developed by GHD will be used for all gas infrastructure options. AEMO lacks visibility of the sunk costs related to known options currently under development by the gas industry. As a result, AEMO will estimate the full cost of these options using the Class 5 build block estimates.

Consultation questions

1. Do you have any feedback on the gas infrastructure base costs, adjustment factors and escalation indices provided by GHD?
2. Do you have any feedback on the methodology for the gas infrastructure base costs and forecasts provided by GHD?
3. Do you agree with the proposed forecasting approach of applying a single set of cost escalation indices for gas infrastructure components across all ISP scenarios?

3 Gas development projections

The Draft ISP Methodology proposed a methodology for the ISP, using gas development projections, to incorporate gas developments and gas supply limitations for GPG when determining the optimal development path for the NEM.

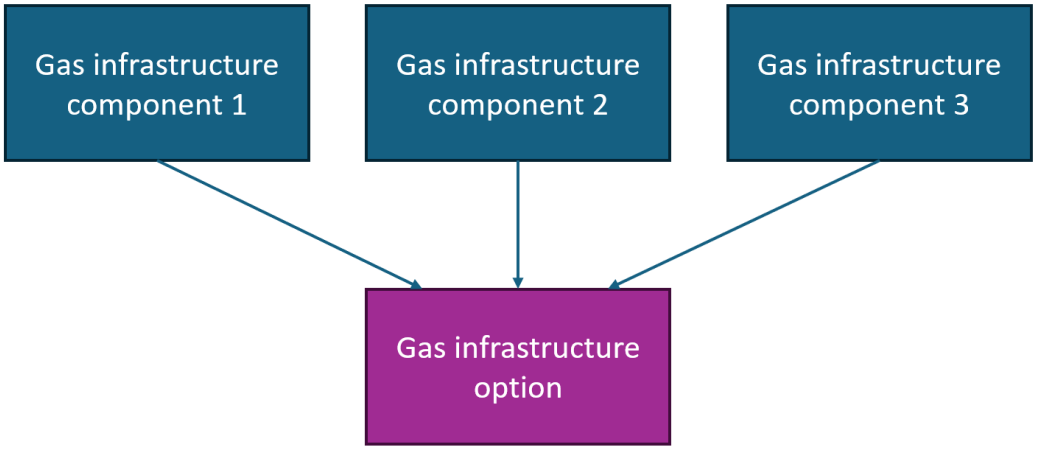
This section provides an overview of how gas infrastructure options and their costs will be modelled to produce gas development projections and provide limitations on fuel availability for GPG.

3.1 Definitions

A **gas infrastructure component** is defined as an individual building block of gas infrastructure (for example, a length of pipeline, or a scalable processing facility). Each of these components has an individual cost provided by GHD in its *2025 Gas Infrastructure Costs Report*. Costs are estimated at a total facility level and include all individual plant and equipment items. For example, the cost for a processing facility component includes all individual equipment costs typically required of a conventional gas processing facility including slug catchers, compression, dehydration, glycol handling, water systems, vents, vessels, separation, storage and associated equipment.

A **gas infrastructure option** considered in this report consists of all the individual gas infrastructure components required to make up a gas development, as shown in **Figure 4**. A gas infrastructure option consists of components that will be developed together, are linked by project proponents, or are technically dependent.

Figure 4 Conceptual gas infrastructure components building up to a gas infrastructure option



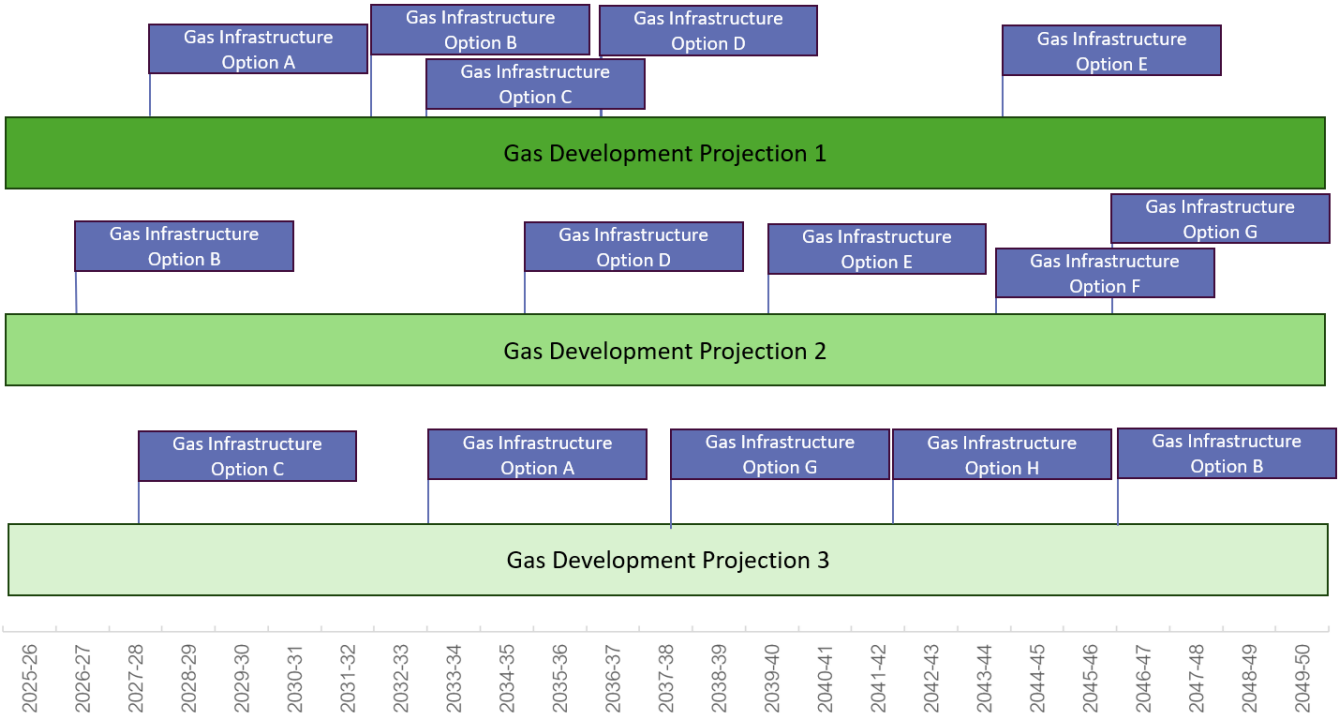
For example, one southern supply solution assessed in the 2025 GSOO was an LNG regasification terminal, which would include components such as the regasification terminal itself, the connection to the associated pipeline, and any subsequent investment to pipeline infrastructure to enable the new supply to reach gas customers. For an example regasification terminal at Port Kembla, the solution also included works to support reverse flow of the Eastern Gas Pipeline (EGP). All relevant gas infrastructure components that combine to form the full solution would be considered as the gas infrastructure option.

Note that some gas infrastructure options may include components that could be considered as gas infrastructure options by themselves; for example, reversal of the EGP to enable gas injected on the New South Wales end of the pipeline to reach Victorian demand centres may be completed independent of the regasification terminal's development.

A gas infrastructure option can also include a supply development without a current known project or proponent (for example, a generic new 100 TJ capacity storage pipeline). As implied, a "gas infrastructure option" may also include a new upstream gas field development, but the focus is intended to be the infrastructure required to deliver the new supply.

A **gas development projection** is a combination of gas infrastructure options across the planning horizon, including the timing for when different infrastructure options are developed. As mentioned in the Draft ISP Methodology, AEMO plans to model multiple gas development projections in the ISP, as shown in **Figure 5**.

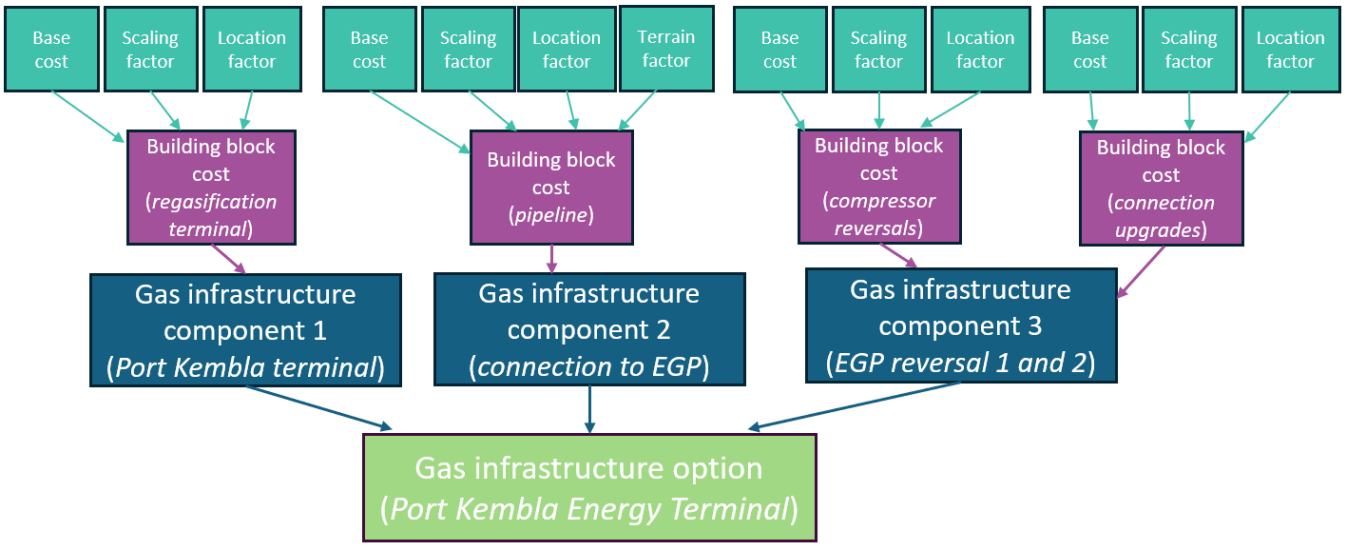
Figure 5 Conceptual gas development projections using different combinations of gas infrastructure options.



Each gas development projection will have a unique set of daily gas fuel limitations for GPG, based on the capabilities of the existing, committed and anticipated ECGM supply developments, as well as each projection's combination of gas infrastructure options. These gas limitations will be a key output of the gas supply development model, to be used by the ISP's electricity models to constrain the operation of GPG in the NEM to levels that reflect forecast gas availability. See Section 4 for more information.

Using the earlier example of the Port Kembla Energy Terminal (PKET) regasification option, **Figure 6** shows how a gas infrastructure option might be built up to form an element of a gas development projection.

Figure 6 Constructing a gas infrastructure option and related costs – LNG regasification example



Note: the italicised, bracketed text is provided as an example application. In practice, any number of components may combine to form a gas infrastructure option, with the options' costs reflective of each component's building block costs.

3.2 Gas infrastructure options

AEMO's GSOO[11] forecasts the adequacy of gas supplies in central and eastern Australia, based on information provided by gas industry participants, to meet households' and businesses' changing energy needs for the next 20 years. This information assists registered participants and other persons in making informed decisions about investments in the ECGM.

The 2025 GSOO forecast risks of peak day gas shortfalls[12] from 2028 and structural supply gaps[13] from 2029. This GSOO included an assessment of some of the various solutions being considered by industry, including several potential future supply, storage and transportation options, to provide additional information on potential investments and their impact on gas supply adequacy. This assessment did not represent a merits or cost-benefit assessment of one solution over another, and did not consider the commercial viability of each based on current market settings. The analysis did not amount to a recommendation of any investment.

3.2.1 Predetermined gas infrastructure options

The Draft 2026 ISP proposes to identify various gas development projections developed from a range of gas infrastructure options, including projections based on the options considered in the 2025 GSOO[14]. By leveraging the analysis performed in the 2025 GSOO, AEMO considers a reasonable potential method for establishing gas development projections is to apply infrastructure options considered in the GSOO as predetermined initial option(s). AEMO's gas supply development model may then select additional options, as required, to determine

[11] At https://aemo.com.au/energy-systems/gas/gas-forecasting-and-planning/gas-statement-of-opportunities-gsoo.

[12] A peak day shortfall is driven by insufficient available gas production or transport capacity to meet extreme peaks in demand on a single day.

[13] A seasonal or annual supply gap is driven by insufficient gas production or transport capacity to meet total seasonal or yearly demand.

[14] The final 2026 ISP (to be published in mid-2026) may consider gas infrastructure options identified during the 2026 GSOO, as appropriate.

plausible gas development projections for each scenario by minimising gas investment costs to maintain gas supply adequacy across the ECGM.

For the 2026 ISP, predetermined option(s) for gas development projections may therefore include:

- An LNG regasification terminal, involving one of:
  - PKET, including EGP reversal stages 1 and 2
  - Venice Outer Harbor LNG Project, including Port Campbell Adelaide (PCA) reversal
  - Viva Energy Gas Terminal, including Westernport Altona Geelong pipeline conversion, or
  - Vopak Victoria Energy Terminal.
- Pipeline expansions and upgrades, including each of:
  - East Coast Grid Expansion stages 3 and 4
  - EGP reversal stages 1 and 2
  - Moomba Sydney Pipeline (MSP) to EGP compression
  - PCA reversal, and
  - additional northern supplies from contingent (2C) resources, including new supply in the Surat and Bowen basins in Queensland and/or the Beetaloo basin in the Northern Territory, and renewable gas (biomethane) projects currently considered uncertain.
- Southern supply, including each of:
  - contingent (2C) resources including new supply in the Gunnedah, Otway, Gippsland, Bass and Cooper basins, and renewable gas (biomethane) projects currently considered uncertain, and
  - Hunter Gas Pipeline (Narrabri to Newcastle), noting that
  - excepting new supply in the Gunnedah basin, all new supply considered for this option will be backfill supply only, utilising existing plant infrastructure.

For each of these, additional storage from known projects (such as Golden Beach Energy Storage Project or Heytesbury Underground Gas Storage Project) may also be included in the predetermined option collection, aligned with the storage needs identified in relevant analysis in the 2025 GSOO.

3.2.2 Model-determined gas infrastructure options

Following any predetermined gas infrastructure options, AEMO's gas supply development model will determine a least-cost projection of gas developments, from a pool of known options (including the above) and a set of generic options, whereby the model's optimisation approach will attempt to minimise or fully resolve gas supply adequacy risks at the lowest gas investment cost. The known options are informed by the following:

- Projects and information provided by stakeholders via surveys for the 2025 GSOO or previously proposed projects provided to AEMO for past GSOOs. This may also include projects and information that may be provided to AEMO for the 2026 GSOO[15].
- Analysis undertaken for the gas Victorian Transmission System (VTS) as part of the VGPR.
- Other public projects or projects informed by stakeholder submissions.

AEMO may include previously proposed projects submitted to past GSOOs as options if AEMO determines the project may still be a feasible development for the ECGM, even if it is no longer viable for the individual project proponent.

In addition to known options, AEMO will include a set of generic options which are informed by typical augmentations that could be undertaken in future. The generic options will be limited to feasible sizes, technical capability and locations.

There are four categories of options:

- **Transport options** – including options that expand the transportation capacity of the ECGM, including compression and pipeline options.
- **Storage options** – including options that expand the gas storage inventory or injection capacity of the ECGM, including aboveground storage, underground storage and pipeline storage options.
- **Production options** – including options that expand the gas production plant capacity or production supply of the ECGM, including natural gas processing plant, biomethane processing plant and the processing of contingent (2C) resources.
- **Regasification options** – including options that expand the capacity of the ECGM to receive, store and process LNG back into its gaseous state before injecting the gas into the transmission pipeline network.

The categories are not restrictive and some options may contribute to multiple categories; for example, the Golden Beach Energy Storage Project is both a storage and production option.

Appendix A2 has the full list of gas infrastructure options that may be selected by the gas supply development model.

3.2.3 Application of options in the gas supply development model

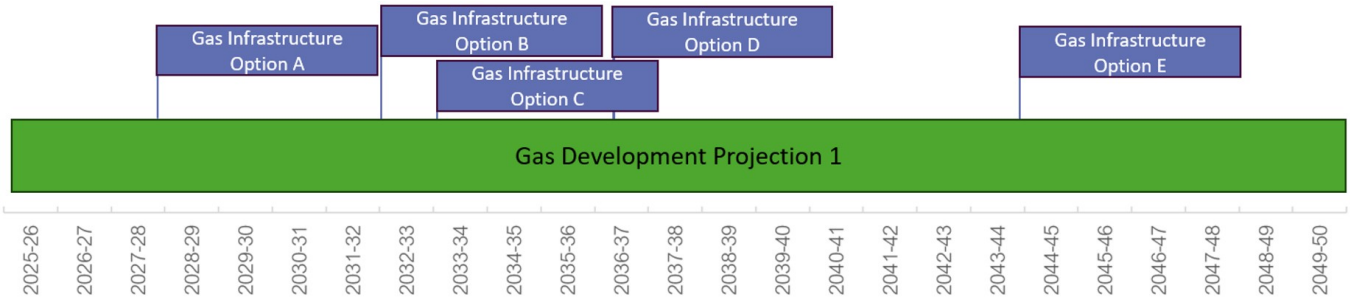
Figure 7 shows the construction of the conceptual Gas Development Projection 1 using a combination of predetermined gas infrastructure options followed by a series of additional options identified by the gas supply development model:

- The gas development projection includes a predetermined combination of Gas Infrastructure Option A (2027-28), Gas Infrastructure Option B (2031-32), and Gas Infrastructure Option C (2033-34). This predetermined combination of options is sourced from analysis in the most recent GSOO.
- Gas Infrastructure Options D and E are identified by the gas supply development model as necessary to maintain gas supply adequacy in 2036-37 and 2043-44 respectively. The gas supply development model selects the preferred complementary option, the scale of any generic option, and the location of any generic

[15] Surveys for the 2026 GSOO have not been sent to stakeholders at the time of writing this report.

option, considering the cost of developing each option against the cost of developing alternative options (or developing no additional option).

Figure 7 Construction of conceptual Gas Development Projection 1 example



A gas infrastructure option is not exclusive to any gas development projection. In the above example, Gas Infrastructure Option B is predetermined to come online in 2031-32 in the conceptual Gas Development Projection 1. It is also brought online by the gas supply development model in 2046-47 in the conceptual Gas Development Projection 3, as shown earlier in Figure 5. The option would also be available for development by the gas supply development model in all other gas development projections. This method will allow AEMO to consider interactions between options, and account for infrastructure dynamics beyond least cost optimisations.

3.2.4 Exclusions from the gas infrastructure options

Gas facilities are the focus of the gas development projections and integration into the ISP. This includes gas processing, storage, LNG facilities, and transport infrastructure such as pipelines and compression.

The upstream components required to develop gas resources – including the appraisal, drilling, and connection of fields to processing facilities – are not considered part of the gas infrastructure options. These development costs are accounted for by the price of gas at each field. This also applies to upstream renewable resources such as the collection and pre-processing of biomass used for biomethane production.

The gas infrastructure options only consider known gas reserves and resources with proved or probable estimations of gas quantities[16]. Exploration of gas fields and the discovery of recoverable resources may materially change the gas supply outlook, however there is insufficient certainty for AEMO to include undiscovered or prospective resources in the gas development projections.

The function of the gas development projections is to support modelling for the ISP for the sole purpose of optimising electricity investments. The projections will not inform or direct gas investment or gas policy decisions. NEM-connected GPG are connected to gas transmission networks, so gas distribution augmentations are not considered. The only exception that may be considered is the Wilton to Newcastle Trunk Main which is a distribution pipeline connected to transmission pipelines supplying GPG.

[16] AEMO uses classifications of reserves and resources aligned with the Society of Petroleum Engineers – Petroleum Resource Management System (PRMS). For more details, see https://www.spe.org/en/industry/reserves/.

3.3 Maintaining the confidentiality of gas data

Confidentiality obligations in the new NGR rules restrict the information that AEMO is permitted to publish in the ISP which has been provided to AEMO for specified gas publications and functions[17]. AEMO must not publish that information (for example, individual gas component or gas infrastructure option costs) if the information could lead to the identification of the person (for example, a business) to whom the information relates, or could be used with other information to derive confidential information. AEMO proposes to provide transparency on the aggregate, annualised, discounted costs of complete gas development projections, while complying with these confidentiality obligations.

A generic example for calculating costs for a project is in Appendix A1.

3.4 Gas development projections for the ISP

AEMO may consider various sensitivities to the gas development projections, such as:

- a gas development projection that does not fill all supply gaps across the ISP horizon
- a gas development projection that does not build any gas infrastructure options, leaving the ECGM with only existing, committed and anticipated projects to meet forecast gas demand across the ISP horizon, and/or
- a gas development projection that does not have any initial predetermined option, and all infrastructure options are modelled on a least-cost basis.

As mentioned in Section 2.2, all costs attached to known and generic projects will be calculated using the Gas Master Cost Database provided by GHD.

Consultation questions

4. Do you have any feedback on AEMO's use of GHD's component costs in costing gas infrastructure options?
5. AEMO has proposed to limit sources of new natural gas supply to known contingent (2C) resources provided via the Gas BB and GSOO surveys. Should other sources of new gas be included?
6. Of the list of gas infrastructure options mentioned in Section 3.2.2 and provided in Appendix A2, are there any options that should not be included, or any further options that should be considered?

[17] See amendments made by National Gas Amendment (Better integration of gas and community sentiment into the ISP) Rule 2024 to NGR Part 16 (Confidential Information).

4 Application of gas development projections for fuel limitations in the ISP

The 2024 ISP partially considered fuel availability limits for GPG by applying a single daily constraint across New South Wales, South Australia, Victoria and Tasmania (Queensland GPG remained unconstrained by gas fuel availability). While daily gas deliverability was potentially constrained depending on the location and magnitude of GPG developments, overall gas supply was assumed to be available to backfill the existing gas infrastructure.

As described in the Draft ISP Methodology, the 2026 ISP intends to improve on the methodology used to determine gas capability in supporting GPG. The gas development projections will enable an assessment of the capabilities of the gas supply and infrastructure to fuel GPG in the NEM over the forecast horizon. As the gas infrastructure options and timing of gas developments will differ across each gas development projection, the gas fuel limitations for GPG will likewise differ for each gas development projection.

These gas fuel limitations for GPG will be input to the electricity capacity outlook model. If insufficient gas is available due to these limits, the capacity outlook model may identify alternative firm capacity developments, or continue to rely on GPG for firming requirements, and leverage the use of secondary fuels.

4.1 Draft gas supply and pipeline zones

Rather than applying daily gas fuel limits for each individual generator, which would be unnecessarily constraining, or at the NEM sub-regional level, which would not accurately capture gas supply and transportation limitations, AEMO intends to calculate daily supply limits for 13 gas supply or pipeline zones. The daily gas fuel limit is the total gas supply available to all GPG in a given zone.

The daily gas fuel limit for GPG in each zone is calculated as the total supply capacity (including supply, storage and infrastructure capacity limitations) minus the forecast consumption from residential, commercial and industrial demand in that zone. All gas fuel limitations for GPG assume that residential, commercial and industrial gas demand is satisfied first. The draft gas supply zones proposed[18] in this Draft 2025 *Gas Infrastructure Options Report* are listed in **Table 4** and shown in **Figure 8**.

Table 4 Draft gas supply and pipelines zones and allocation of GPG

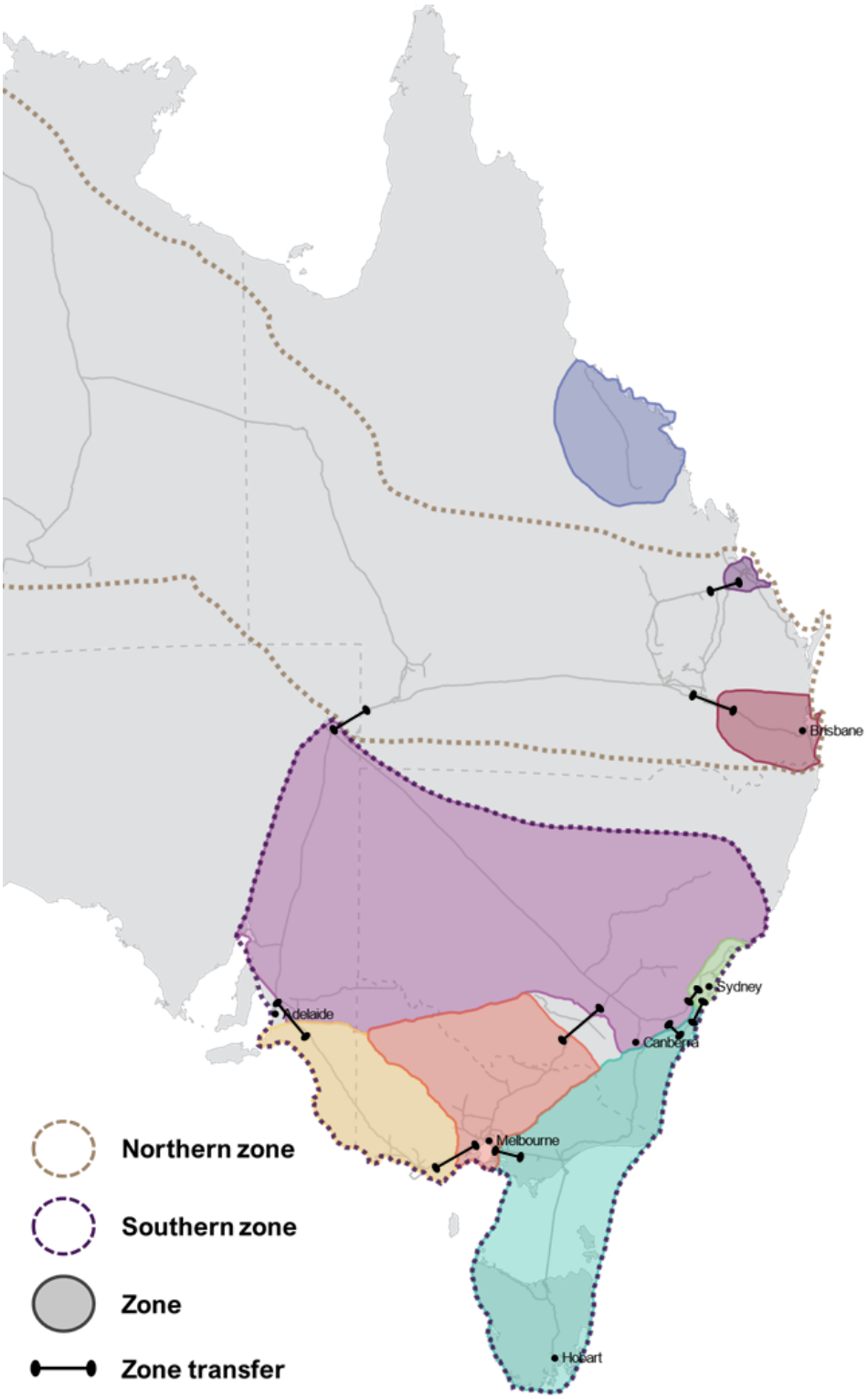
Supply or pipeline zone	Description	Existing GPG	New GPG development locations
Gippsland zone	This zone is limited by supplies from gas fields in the Gippsland and Bass basins to nearby demand zones in Victoria, Tasmania (via the TGP), and New South Wales (via the EGP).	Bairnsdale, Tallawarra, Tallawarra B, Bell Bay Three, Tamar Valley, Tamar Valley Peaking, Jeeralang A, Jeeralang B, Valley Power and Smithfield.	New GPG in Tasmania, Southern New South Wales (SNSW),and South East Victoria (SEV).
Port Campbell zone	This zone is limited by supplies from the Otway basin and Iona Underground Gas Storage to nearby demand zones	Mortlake and Ladbroke Grove.	New GPG in SESA and Western Victoria.

[18] Beyond this consultation process, finalising the number of zones and final configuration must also consider the computational complexity of the broader requirements of the ISP Methodology.

Supply or pipeline zone	Description	Existing GPG	New GPG development locations
	in Port Campbell and South East South Australia (SESA) via PCA.		
Moomba zone	This zone is limited by supplies from the Moomba Gas Plant and imports from South West Queensland Pipeline (SWQP) to Adelaide (via the Moomba Adelaide Pipeline System [MAPS]) and the Sydney area (via the MSP).	Dry Creek, Hallett, Mintaro, Osbourne, Hunter and Colongra.	New GPG in Northern NSW (NNSW), Central NSW (CNSW), Northern (NSA) and Central South Australia (CSA) (excluding new dual-pipeline connected GPG in Adelaide)[A].
Newcastle zone	This zone is limited by supplies from the Wilton to Newcastle Trunk Main, Newcastle Gas Storage Facility and potential new supplies connecting at Newcastle.	Hunter and Colongra.	New GPG in Sydney, Newcastle and Wollongong (SNW).
Melbourne zone	This zone is limited by transfers from Gippsland zone (via the Longford Melbourne Pipeline [LMP]), Moomba zone (via the Victorian Northern Interconnect [VNI]), the Port Campbell zone (via the SWP) and supply from Dandenong LNG.	Somerton, Laverton North and Newport.	New GPG in Greater Melbourne and Geelong (MEL).
South West Pipeline zone	This zone is limited by the capacity of the SWP.	Laverton North	New GPG connecting to the SWP
Colongra Lateral Pipeline zone	This zone is limited by the capacity of the Colongra Lateral Pipeline.	Colongra	
Kurri Kurri Lateral Pipeline zone	This zone is limited by the capacity of the Kurri Kurri Lateral Pipeline.	Hunter	
Southern zone	This zone provides a limitation for all GPG in the southern states, including those within the above supply and pipeline zones, limiting the combined supply of gas to GPG simultaneously.	Bairnsdale, Barker Inlet, Bell Bay Three, Bolivar, Colongra, Dry Creek, Hallett GT, Jeeralang A, Jeeralang B, Hunter, Ladbroke Grove, Laverton North, Mintaro, Mortlake, Newport, Osborne, Pelican Point, Quarantine, Smithfield Energy, Somerton, Tallawarra, Tallawarra B, Tamar Valley, Tamar Valley Peaking, Torrens Island B, Uranquinty and Valley Power.	New GPG in southern states.
Townsville zone	This zone is limited by supply from the Moranbah Gas Plant and transport capacity of the North Queensland Gas Pipeline (NQGP).	Townsville (Yabulu)	
Gladstone zone	This zone is limited by supply to the Gladstone area (excluding the CSG production destined for LNG export at Curtis Island) and transport capacity of the Queensland Gas Pipeline (QGP).		New GPG in Gladstone.
Brisbane zone	This zone is limited by supply to the Brisbane area and transport capacity of the Roma Brisbane Pipeline (RBP).	Braemar, Braemar 2, Swanbank E and Oakey.	New GPG in Brisbane.
Northern zone	This zone provides a limitation for all GPG in Queensland (except for Yabulu and Yarwun station).	Barcaldine, Braemar, Braemar 2, Condamine, Darling Downs, Oakey, Roma and Swanbank E	New GPG in Queensland

A. Dual-pipeline connected GPGs are generally only included in either the Southern zone or Northern zone to reduce the modelling complexity, given the flexibility these plant have at sourcing gas from multiple sources.

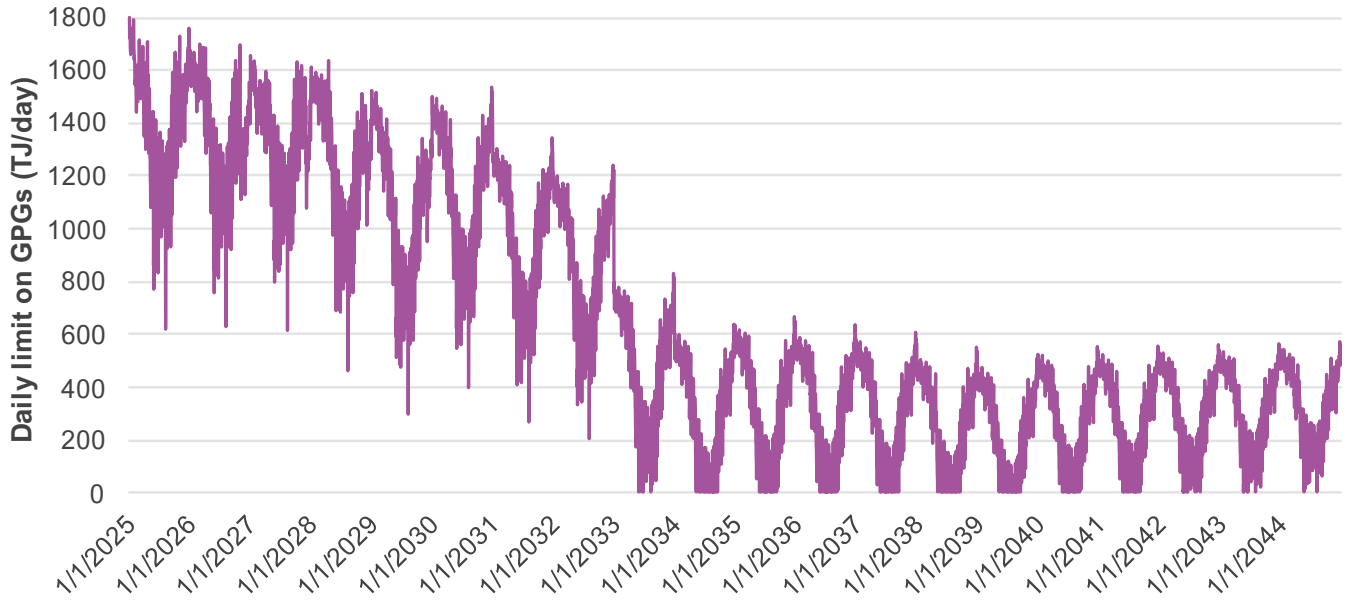
Figure 8 Draft supply and pipeline zones for the East Coast Gas Market



As an example, the daily gas fuel limit for GPG in the Southern zone can be seen in **Figure 9**, when only existing, committed and anticipated projects are considered. As the figure shows, after assuming that residential, commercial and industrial gas consumers are preferenced ahead of GPG for the purposes of this assessment, the

daily gas supply limit is forecast to trend down, particularly as southern gas production declines (as outlined in the 2025 GSOO). By 2034, without additional investments, GPG in the Southern zone may be unable to source gas on some days.

Figure 9 Gas fuel limits for all GPG in the Southern zone, using existing committed and anticipated projects, reference year 2019 (TJ/day)



A set of supply limits for each zone will be provided with the final 2025 *Gas Infrastructure Options Report* for a gas development projection that does not build any gas infrastructure options, reflecting the capability of the ECGM with existing, committed and anticipated projects only to meet gas demand across the ISP horizon. Similar limitations will be produced for each gas development projection that will be used to inform the capacity outlook modelling.

AEMO is considering the confidentiality implications inherent in publishing limitations for zones with a single GPG in operation.

Consultation questions

7. Will AEMO's proposed gas supply and pipeline zone limitations be effective in limiting fuel availability for GPG?
8. Considering the purpose of the assessment, is it reasonable to apply priority to residential, commercial and industrial customers ahead of GPG?
9. Are there any supply zones missing? Are there any supply zones that will be unrealistically represented by the proposed constraints to gas supply?

List of tables and figures

Tables

Figures

A1. Using cost estimate components to estimate gas infrastructure option costs

AEMO cannot publish the cost of known gas projects that have been provided to AEMO on a confidential basis. Rather, AEMO will apply the gas infrastructure component costs of relevant building blocks to determine cost estimates for generic options. The following example demonstrates the application of these cost components.

Example: Production from a new gas supply and the pipeline required to connect the supply to a demand centre

$$
\begin{aligned}
Cost\ of\ developing\ option = \\
& S \\
+ \quad & Prod \times SF_p \times LocationalAF_p \\
+ \quad & Pipe \times \sum_{1}^{n} (Length_n \times TerrainAF_n) \times LocationAF \\
+ \quad & N_{ps} \times PS \times SF_{ps} \times LocationalAF_{ps} \\
+ \quad & N_{cs} \times CS \times SF_{cs} \times LocationalAF_{cs}
\end{aligned}
$$

where:

$\mathbf{S}$ = cost of gas supply from field, from field production costs published with the 2025 GSOO
$\mathbf{Prod}$ = cost of production plant
$\mathbf{SF_p}$ = Scaling Factor for production facilities if size required is other than unit size
$\mathbf{LocationalAF_p}$ = Locational adjustment factor for production facilities (urban, regional, remote)
$\mathbf{Pipe}$ = cost of pipeline (in $/km)
$\mathbf{Length}$ = length of the pipeline, with n accounting for the number of different terrains the pipeline passes through.
$\mathbf{TerrainAF}$ = terrain adjustment factor to account for the terrain the pipeline will travel though, with n accounting for the number of different terrains the pipeline passes through.
$\mathbf{N_{ps}}$ = number of pipeline stations required
$\mathbf{PS}$ = cost of pipeline stations
$\mathbf{SF_{ps}}$ = scaling factor for pipeline stations, if size required is other than unit size
$\mathbf{LocationalAF_{ps}}$ = Locational adjustment factor for pipeline stations (urban, regional, remote)
$\mathbf{N_{cs}}$ = number of compressor stations required
$\mathbf{CS}$ = cost of compressor stations
$\mathbf{SF_{cs}}$ = scaling factor for compressor stations, if size required is other than unit size
$\mathbf{LocationalAF_{cs}}$ = Locational adjustment factor for compressor stations (urban, regional, remote).

A2. Gas infrastructure options

Table 5 shows the list of gas infrastructure options that may be used by the gas supply development model to produce gas development projections. AEMO has included component and capacity information that is publicly available or previously published in a GSOO. Due to confidentiality requirements, AEMO is unable to publish a full list of gas components or options or associated capacities that will be considered within the gas supply development model.

Table 5 Gas infrastructure options available to the gas supply development model

Option	Components or description	Source	Type	Zone	Capacity	Conditions
Port Kembla Energy Terminal	• Regasification terminal at Port Kembla • Pipeline from Port Kembla to the EGP • EGP reversal stages 1 and 2	GSOO	Regasification terminal and transport	Gippsland	• Regasification terminal: 500 TJ/d, 130 petajoules a year (PJ/y) • EGP reversal 1: 200 TJ/d • EGP reversal 2: 325 TJ/d	
Venice Outer Harbor LNG Project	• Regasification terminal at Outer Harbor • Connection to PCA • PCA reversal	GSOO	Regasification terminal and transport	Southern	• Regasification terminal: 405 TJ/d, 144 PJ/y • PCA reversal: 250 TJ/d	
Viva Energy Gas Terminal	• Regasification terminal at Geelong • Connection to VTS via SWP • Westernport Altona Geelong pipeline conversion	GSOO	Regasification terminal and transport	Melbourne	• Regasification terminal: 750 TJ/d, 140 PJ/y • WAG conversion: 120 TJ/d	
Vopak Victoria Energy Terminal	• Regasification terminal in Port Phillip Bay • Connection to VTS via SWP	GSOO	Regasification terminal	Melbourne	Regasification terminal: 778 TJ/d, 270 PJ/y	
East Coast Grid Expansion stage 3	• New compression on MSP mainline • Bulloo Interlink pipeline	GSOO	Transport	Moomba	• MSP capacity: 700 TJ/d • SWQP capacity: 605 TJ/d • MSP lateral to VNI: 229 TJ/d	
East Coast Grid Expansion stage 4	• New compression on MSP lateral to VNI • Riverina storage pipeline	GSOO	Transport and storage	Southern	• Storage capacity: 250 TJ/d or 500 TJ/d • Injection capacity: not published	East Coast Grid Expansion stage 3 complete

Option	Components or description	Source	Type	Zone	Capacity	Conditions
East Coast Grid Expansion stage 5	Expansion of VNI southern pipeline capacity	GSOO	Transport	Melbourne	MSP lateral and VNI: 350 TJ/d	East Coast Grid Expansion stages 3 and 4 complete
Eastern Gas Pipeline reversal stages 1 and 2	• Reversal of EGP compressors • VicHub connection expansion • Additional EGP compression	GSOO	Transport	Gippsland	• EGP reversal 1: 200 TJ/d • EGP reversal 2: 325 TJ/d	
Eastern Gas Pipeline reversal stage 3	Expansion of EGP capacity to supply Sydney	GSOO	Transport	Gippsland	Not published	Eastern Gas Pipeline reversal stages 1 and 2 complete
Eastern Gas Pipeline reversal stage 4	Expansion of EGP capacity to supply Victoria	GSOO	Transport	Gippsland	Not published	Eastern Gas Pipeline reversal stages 1 and 2 complete
Moomba to Sydney Pipeline to Eastern Gas Pipeline compression	Additional compression allowing flow from MSP to EGP	GSOO	Transport	Gippsland	Not published	
Port Campbell to Adelaide pipeline reversal	Reversal of PCA pipeline	GSOO	Transport	Port Campbell	PCA reversal: 250 TJ/d	
South West Pipeline expansion A1 and A2	• Partial looping of SWP • Winchelsea compressor modifications	VGPR	Transport	Melbourne	SWP capacity: 660 TJ/d	
South West Pipeline expansion A3	• Partial looping of SWP • Additional SWP compression	VGPR	Transport	Melbourne	SWP capacity: 780 TJ/d	South West Pipeline expansion A1 and A2 complete
South West Pipeline expansion B	Additional SWP compression	VGPR	Transport	Melbourne	SWP capacity: 643 TJ/d	
Queensland Hunter Pipeline stage 2	• New pipeline from Narrabri to Wallumbilla • Compression • Connection	Public proposal	Transport	Moomba	Not published	2C Gunnedah new development complete
Western Slopes Pipeline	• New pipeline from Narrabri to MSP • Compression • Connection	Previous proposal	Transport	Moomba	Not published	2C Gunnedah new development complete

Option	Components or description	Source	Type	Zone	Capacity	Conditions
Eastern Gas Pipeline extension	Extension of EGP from Horsley Park to Newcastle	Previous proposal	Transport	Newcastle	Not published	
Golden Beach Energy Storage Project	• Processing plant • Pipeline from Golden Beach to Longford • Connections to EGP and VTS • Underground storage plant	GSOO	Production and storage	Gippsland	• Storage capacity: 30 PJ • Injection capacity: 375 TJ/d	
Golden Beach Energy Storage Project expansion	Expansion of Golden Beach injection capability	GSOO	Storage	Gippsland	Not published	Golden Beach Energy Storage Project complete
Heytesbury Underground Storage Project, Phase 2	Underground storage expansion	GSOO	Storage	Port Campbell	• Storage capacity: 32.6 PJ • Injection capacity: 765 TJ/d	
2C Bowen & Surat backfill	Backfill of existing processing plants in Bowen and Surat Basins with 2C resources	GSOO	Production	Northern	Not published	
2C Otway backfill	Backfill of existing processing plants in Otway Basin with 2C resources	GSOO	Production	Port Campbell	Not published	
2C Gippsland backfill	Backfill of existing processing plants in Gippsland Basin with 2C resources	GSOO	Production	Gippsland	Not published	
2C Bass backfill	Backfill of existing processing plants in Bass Basin with 2C resources	GSOO	Production	Gippsland	Not published	
2C Cooper & Eromanga backfill	Backfill of existing processing plants in Cooper and Eromanga Basins with 2C resources	GSOO	Production	Moomba	Not published	
2C Amadeus backfill	Backfill of existing processing plants in Amadeus Basin with 2C resources	GSOO	Production	Northern	Not published	
2C Bowen & Surat new development	• New processing plant or plant expansion sized to produce 2C resources in the Bowen and Surat Basins • Any required pipeline from plant to existing transmission network	GSOO	Production	Northern	Not published	
2C Beetaloo new development 1	• New processing plant sized to produce 2C resources in the Beetaloo Basin • Sturt Plateau Pipeline	GSOO	Production and transport	Northern	Not published	

Option	Components or description	Source	Type	Zone	Capacity	Conditions
2C Beetaloo new development 2	• New processing plant or plant expansion sized to produce 2C resources in the Beetaloo Basin • Any required pipeline from plant to existing east coast transmission network	GSOO	Production and transport	Northern	Not published	
2C Beetaloo new development 3	• New processing plant or plant expansion sized to produce 2C resources in the Beetaloo Basin • Any required pipeline or pipeline upgrades from plant to existing east coast transmission network	GSOO	Production and transport	Northern	Not published	2C Beetaloo new development 2 complete
2C Gunnedah new development	• New processing plant or plant expansion sized to produce 2C resources in the Gunnedah Basin • Hunter Gas Pipeline	GSOO	Production and transport	Moomba	Not published	
2C Gippsland new development	• New processing plant or plant expansion sized to produce 2C resources in the Gippsland Basin • Any required pipeline from plant to existing transmission network	GSOO	Production	Gippsland	Not published	
Uncertain biomethane developments	• New biomethane plant sized to produce biomass resources in various locations • Any required pipeline from plant to existing transmission network	GSOO	Production	Northern, Moomba, Melbourne, Gladstone, Newcastle and/or Southern	Not published	
LNG regasification terminal	Regasification terminal. Limited to regions with suitable ports.	Generic	Regasification terminal	Newcastle, Gippsland, Melbourne and/or Southern	Regasification terminal: 500 TJ/d, 140 PJ/y	
Partial looping of existing pipeline	Partial looping of existing pipelines. Diameter of looping assumed to be the same as existing pipeline.	Generic	Transport	Any	Pipeline capacity: 50 TJ/d	

Option	Components or description	Source	Type	Zone	Capacity	Conditions
Additional compression on existing pipeline	Additional compression added to an existing pipeline. If known, new compression size matched with existing compressors.	Generic	Transport	Any	Pipeline capacity: 20-50 TJ/d	
Dedicated hydrogen pipeline	New pipeline for transporting hydrogen.	Generic	Transport	Any	As required	
Storage pipeline	New storage pipeline using linepack to store gas	Generic	Storage	Any	Storage capacity: 100 TJ	
Underground storage – depleted field	New underground storage facility or existing facility expansion converting a depleted gas field	Generic	Storage	Newcastle, Gippsland and/or Port Campbell	• Storage capacity: field dependent • Injection capacity: 100 TJ/d	For Newcastle, 2C Gunnedah new development complete
LNG storage tank	New aboveground LNG storage tank	Generic	Storage	Any	• Storage capacity: 1,000 TJ • Injection capacity: 120 TJ/d	