INTEGRATED SYSTEM PLAN METHODOLOGY | *CONSULTATION*

Australian Energy Producers | 23 April 2025

Australian Energy Producers welcomes the opportunity to present its views on the Australian Energy Market Operator's (AEMO) proposed methodology for the 2026 Integrated System Plan (ISP).

Natural gas supply and gas power generation (GPG) remain critical to the energy transition. Natural gas supports the transition away from coal, provides the firm dispatchable energy required to unlock large-scale renewable energy deployment, and powers Australian industries across the economy including manufacturing, mining and critical minerals processing.

"Under all credible net zero scenarios, natural gas is needed through to 2050 and beyond" | Future Gas Strategy (FGS). The Australian Government has recognised the critical role of natural gas across the economy, including in reaching net zero. The FGS also emphasises the importance of carbon capture, utilisation and storage (CCUS) in decarbonisation across the economy, and in particular in hard-to-abate industry. There must be stronger alignment between the ISP's modelling inputs and government strategies, including the FGS, to ensure consistent investment signals and avoid market distortions.

Key recommendations:

- **The ISP methodology should take into account the broad role of GPG in the electricity system.** The ISP and underlying Inputs, Assumptions and Scenarios Report (ISAR) risk overlooking the broader benefits of GPG by relying heavily on levelised cost of energy (LCOE), as used in the GenCost[1] analysis, rather than considering the full-system cost. This in-turn risks underestimating GPG's role in the National Electricity Market (NEM). GPG provides critical dispatchable power supply, including during peak times and as back up when other generation is not available. GPG also enhances system reliability, supports a greater integration of variable renewable energy, and is part of the least-cost approach to energy security and emissions abatement – none of which are captured in a LCOE assessment.
- **Switching from coal power generation to GPG should be considered in the ISP as a key emissions reductions and system reliability pathway.** GPG emits approximately 50 per cent less CO_2-e per MWh than coal making it a highly effective abatement option alongside the system value of GPG in enhancing reliability and security.[2]
- **Australian Energy Producers supports further integration of gas supply and infrastructure planning into the ISP through the Gas Supply Expansion Model (GSEM) and Gas Supply Development Model (GSDM).** While these models improve the representation of gas availability and delivery constraints in the ISP, they only assess physical feasibility. Currently, they are not co-optimised with electricity models or responsive to real-world investment signals, policy mechanisms, or market behaviours. AEMO is encouraged to further integrate these models going forward.
- **The role of CCUS in decarbonising industry, producing low-carbon hydrogen, and addressing regional emissions should be recognised.** CCUS has a key role to play in achieving net zero in Australia, which is currently not reflected in the IASR or ISP.

Australian Energy Producers looks forward to providing further input into the 2026 ISP. Further comments and recommendations follow.

[1] CSIRO, *GenCost 2024-25*, 2024

[2] Intergovernmental Panel on Climate Change (IPCC), 5th Assessment Report, Working Group III, Chapter 7 page 517

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COMMENTS AND RECOMMENDATIONS

The ISP is a valuable long-term planning tool for the NEM.

Australian Energy Producers recognises the role of the ISP in energy planning and policy making and encourages the ongoing integration of gas supply and infrastructure in the ISP development. Improved integration of gas supply and infrastructure analysis will improve the modelling of gas development pathways across ISP scenarios, enabling a comprehensive assessment of GPG availability under varying conditions. A better understanding of the role of gas supply and GPG in delivering secure, affordable and lower emissions energy is a critical foundation to energy and climate policy making and in-turn future energy and climate investment.

The ISP should reflect the long-term role of natural gas across the economy and in supporting least-cost energy security and emissions reductions outcomes in the NEM.

The ISP should fully consider the system benefits of GPG in facilitating variable renewable penetration, maintaining grid stability, and delivering reliable, rapid, and least-cost electricity system outcomes. To avoid underestimating GPG's role in the NEM, the ISP must consider full-system cost metrics rather than LCOE alone, as presented in the GenCost report.[3] The broader benefits of GPG, including dispatchable supply, system reliability, improved renewable integration, and cost-effective emissions abatement, are not captured in LCOE assessments. GPG optimisation is particularly important for reducing renewables curtailment, as higher renewables penetration increases the likelihood of curtailment in the absence of sufficient highly flexible firming capacity, such as that provided by GPG.

The status and costs of alternative fuels must be more accurately reflected in the ISP. Overestimating the maturity and scalability of potential natural gas alternatives such as renewable hydrogen and biomethane while underestimating their costs risks distorting the analysis and undermining the ISP's planning and policy value. While renewable hydrogen and biomethane are recognised as important complements to natural gas, they are not yet deployed at scale and remain significantly more expensive than natural gas. The International Energy Agency (IEA) estimates global renewable hydrogen production at approximately 85,000 tonnes (11 PJ)[4] annually, equivalent to just three days of Australian domestic natural gas demand.

The 2024 *National Hydrogen Strategy* assumes renewable hydrogen costs of $5-10/kg ($42-83/GJ), compared to natural gas at $10-$14/GJ. Substituting renewable hydrogen at these costs would result in abatement costs of between $570 to $1,380 tCO_2-e avoided, based on an emissions reduction of 6.2tCO_2-e per tonne of hydrogen and a natural gas price of $12/GJ.

The ISP should advance a diversified portfolio of emissions reduction technologies to mitigate technology and supply chain risks.

A balanced approach to energy security and emissions reductions that includes natural gas, CCUS, and CCUS-based low-carbon hydrogen is the most robust way to manage uncertainties associated with any single technology. Overreliance on one technology or pathway risks undermining energy security, affordability, and emissions reduction targets if that technology is not deployed at the pace and scale expected. This should be explicitly reflected in the IASR scenario development and in the ISP methodology.

The IASR and ISP would benefit from considering a constrained renewables scenario to further explore the technology and supply chain risks associated with Australia's approach to net zero. All three scenarios currently considered in the ISP include strong assumptions around the deployment of renewables, including the assumption that an 82 per cent share of renewable generation will be reliably

[4] IEA, *World Energy Outlook 2024*, 2024

achieved by 2030. This assumption is coupled with optimistic assumptions about the production of renewable hydrogen which increases Australia's reliance on renewable power further. The development of an alternative scenario or sensitivity where the growth of renewable energy is constrained would represent a prudent risk management tool that would strengthen the IASR and ISP and help understand the benefits of diversified emissions reductions approach.

The role of CCUS in decarbonising industry, producing low-carbon hydrogen, and addressing regional emissions should be recognised.

The ISP should more accurately reflect the status of CCUS in Australia and its role as a key element of the least cost approach to net zero. The IEA find CCUS to be a least-cost decarbonisation option for hard-to-abate sectors such as steel, cement, ammonia, and methanol production.[5] The IEA[6] and the 2024 *National Hydrogen Strategy*[7] recognise natural gas with CCUS to be an enabler of least-cost hydrogen production.[8] Australia's world-class geological storage capacity is demonstrated by two of the world's largest storage projects, the Gorgon and Moomba CCS projects, which together currently sequester over 2.5 $MtCO_2$ annually.

However, the ISP does not consider CCUS as an emission reductions pathway for low-carbon hydrogen production or with respect to low-carbon steel, ammonia or methanol production. The ISP modelling should include for a more accurate consideration of CCUS across a range of industrial sectors, as well as low-carbon hydrogen production from natural gas with CCUS, as part of a least-cost approach to emissions reductions.

[5] IEA, *Is CCUS too expensive?*, 2021
[6] *IEA, Carbon Capture and Storage*
[7] Department of Climate Change, Energy, the Environment and Water, *National Hydrogen Strategy 2024*, 2024
[8] Global CCS Institute, *Global Status of CCS 2024*, 2024