

23 June 2025

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## **AEMO – Draft Gas Infrastructure Options Report May 2025**

Energy Networks Australia (ENA) welcomes the opportunity to make a submission to the Australian Energy Market Operator (AEMO)'s *Draft Gas Infrastructure Options Report* May 2025.

ENA represents Australia's electricity distribution and transmission, and gas distribution networks. Our members provide over 16 million electricity and gas connections to almost every home and business across Australia.

ENA is supportive of integrating gas development projections into the *Integrated System Plan* as this will allow for a more comprehensive analysis underpinning the optimal development path for the National Electricity Market.

Please find attached (Attachment 1), ENA's comments on the consultation questions which are relevant to our members. We make two recommendations:

- that AEMO includes renewable gases and not limit its scope to known contingent (2C) resources for natural gas only, and
- that AEMO considers HESS as an option that should be included in the Gas Infrastructure Options Report.

If you would like to discuss the contents of this submission, please contact Terese Weber, Renewable Gas Policy Manager at [tweber@energynetworks.com.au](mailto:tweber@energynetworks.com.au).

Yours sincerely,



Dominic Adams  
**General Manager, Networks**

Response to consultation questions

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| <i>Gas development projections</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |
| <b>4. Do you have any feedback on AEMO's use of GHD's component costs in costing gas infrastructure options?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | No comment |
| <p><b>5. AEMO has proposed to limit sources of new natural gas supply to known contingent (2C) resources via the Gas BB and GSOO surveys. Should other sources of gas be included?</b></p> <p>Renewable gases are critical in the energy transition. Renewable gas is essential for industry, particularly those that are hard to abate. Many industrial processes either do not have an electrification alternative, or the electrification alternative is too expensive to justify.</p> <ul style="list-style-type: none"> <li>• Without access to renewable gases, many Australian industries will not be viable, may not be able to meet their Safeguard Mechanism emission reductions obligations and will either move offshore or go out of business.</li> <li>• Renewable gases, such as biomethane and hydrogen, will enable these Australian industries to continue to operate.</li> </ul> <p>Australia's gas distribution networks are already trialing the delivery of renewable gas and renewable gas blends to customers in various projects around Australia.</p> <ul style="list-style-type: none"> <li>• Biomethane can be substituted into existing natural gas pipelines and networks with no appliance or network upgrades. The Malabar Biomethane Injection Project in Sydney is currently injecting biomethane into the gas network.</li> <li>• Infrastructure compatibility testing of hydrogen and hydrogen blends is ongoing with most networks being capable of safely and efficiently transporting hydrogen.</li> <li>• Australia's gas distribution networks are among the safest and most reliable of anywhere in the world and are capable of delivering renewable gas now.</li> </ul> <p>Recent unpublished work undertaken by Blunomy for Energy Networks Australia found that Australia's recoverable biomethane potential is estimated at around 411 PJ per year. This work will be published in coming weeks. This potential offers a scalable pathway for economy-wide decarbonization.</p> <ul style="list-style-type: none"> <li>• This figure is substantially higher than that assumed in the CSIRO's multi-sector modelling recently released and the underlying assumptions in the multi-sector modelling should be updated.</li> </ul> |            |

- Renewable gases, in particular biomethane, have the potential to assist Australia meet its 2030 climate targets and ensure that industry, particularly those hard-to-abate industries, are able to continue to contribute to Australia's prosperity.

ENA recommends that AEMO include renewable gases and not limit its scope to known contingent (2C) resources for natural gas only.

**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?**

Appendix A2 lists a broad range of gas infrastructure options including new underground storage facilities or storage in pipelines. Hydrogen storage in pipelines is mentioned but underground hydrogen storage is not.

A project by Future Fuels CRC has provided valuable insights into the techno-economics of long-term duration energy storage including pumped hydro (PHES) and hydrogen energy storage systems (HESS). The hydrogen energy storage system essentially consists of an electrolyser to produce renewable hydrogen during surplus electricity supply, connected to an underground storage system via a pipeline. The pipeline is bi-directional and can provide hydrogen to the storage site but also provide hydrogen to a turbine located near the electrolyser (and the electricity network connection).

A range of scenarios are modelled to evaluate the merits of different LDES options including the anticipated Snowy 2.0 and Borumba projects; a scenario with HESSs located in Victoria and southern Queensland; and combinations of these.

The project stress tests AEMO's 2024 ISP using comparable zero-emission LDES technology case studies and advanced modelling techniques that not only replicate the 2024 ISP operational modelling but also introduce the additional granularity and foresight needed to evaluate both current NEM benefits and the enhanced reliability and resilience provided by LDES. The project demonstrates that both HESSs and PHES, when deployed in strategic locations, have distinct merits and can coexist synergistically – particularly when assessed across a broad range of actions, including reliability and resilience.

The FFCRC researchers briefed AEMO's hydrogen and sector coupling teams earlier this year on the key findings from the project. ENA recommends that AEMO considers HESS as an option that should be included in the Gas Infrastructure Options Report.

The summary of the key findings of the modelling work is attached and the detailed final report can be downloaded from:

<https://www.futurefuelscrc.com/project/rp1-1-07-integrated-electricity-hydrogen-future-system-and-market-interactions-under-different-storage-considerations/>