

Department of Industry, Energy and Emissions Reductions

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**Submission to Department of Industry, Energy and Emissions Reductions: Extending the National gas regulatory framework to hydrogen blends & renewable gases – Consultation paper**

The Australian Energy Council (AEC) welcomes the opportunity to make a submission to Department of Industry, Energy and Emissions Reductions: Extending the National gas regulatory framework to hydrogen blends & renewable gases – Consultation paper (Consultation paper).

The AEC is the industry body representing 20 electricity and downstream natural gas businesses operating in the competitive wholesale and retail energy markets. These businesses collectively generate the majority of the electricity in Australia, sell gas and electricity to over ten million homes and businesses, and are major investors in renewable energy generation.

## Introduction

We recognise the desire of Ministers to act upon recommendations from the 2019 Hydrogen Strategy to review a range of technical, economic, regulatory and legal barriers to hydrogen uptake. However, the AEC believes the focus should first be on technical and economic barriers. These would appear to be required to be addressed before resources are expended on regulatory and legal issues associated with an unproven and currently uneconomic approach to decarbonisation.

As the NEM continues to decarbonise and transitions to more variable renewable energy (VRE), distributed energy resources (DER), energy storage and declining levels of thermal generation both the AEMC and AEMO are under heavy workloads for the foreseeable future.

The AEC has already expressed its views on the role that it thinks hydrogen may play in Australia's decarbonisation pathway:<sup>1</sup>

- to replace natural gas for some industrial processes (eg, requiring intense heat);
- potential export markets; and
- as a substitute (or complement) for gas powered generation (GPG). For example, the 300MW Tallawarra B power station expansion involves a commitment to buy 200,000kg of hydrogen per year from 2025 to offset the plant's residual scope one emissions.

The AEC considers utilising hydrogen blends in gas distribution networks may not be an optimal approach to decarbonisation. Alternatively, electrification which uses proven and economic technology utilising existing infrastructure, would appear to be a more straightforward pathway. However, if over time the technology and economics of hydrogen blends improve such that it is a viable tool to assist the transition to net zero emissions then it would be appropriate to then focus resources towards it. This would be likely to require a long-term implementation approach and a communication strategy which explains the concept of "blending" to consumers to ensure that details are correctly resolved and that it has community acceptance.

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<sup>1</sup> <https://www.energycouncil.com.au/media/okwh4bog/20210816-aec-infrastructure-vic-towards-2050-gas-and-zero-emissions-final.pdf>  
<https://www.energycouncil.com.au/media/3espt34d/20210806-aec-submission-vic-gas-substitution-roadmap-consultation-paper.pdf>

It is widely acknowledged that many Australian gas networks are exposed to significant asset stranding risk as the economy seeks to decarbonise and the logic of electrification looms. As noted by the Australian Energy Regulator (AER) on 15 November 2021,

*“We have observed a range of factors that are likely to exert considerable downward pressure on natural gas demand in Australia’s eastern states in the medium to long term, ...”<sup>2</sup>*

Therefore, at a time when Australia is seeking to decarbonise in the most cost-effective way, undertaking additional capex on gas distribution infrastructure is possibly not the best use of resources and could increase the magnitude of stranding risk.

## Terminology

The AEC queries the use of the term “natural gas equivalents” (NGE) when referring to hydrogen blends. An example of equivalence is one mile is equivalent to 1.60934km. To one decimal place this would be 1.6km. Hydrogen blends are not equivalent to natural gas. Table E.3 in the AEMC’s, *Review into Extending the Regulatory Frameworks to Hydrogen and Renewable Gases – Consultation paper* to see that a 10% hydrogen blend has 93.21% of the energy content of pure methane.<sup>3</sup> Hence, to go back to the distance analogy, the ‘mile equivalent’ would be 1.500066km (ie, approximately 100 metres short).

Furthermore, the AEC’s understanding is that hydrogen is more explosive than natural gas and has a higher permeation coefficient in both steel and polymer pipes (3 times higher in the former and 4-5 times higher in the latter).<sup>4</sup> As stated by the United States National Renewable Energy Laboratory,

*“Any introduction of a hydrogen blend concentration would require extensive study, testing, and modifications to existing pipeline monitoring and maintenance practices (e.g., integrity management systems). Additional cost would be incurred as a result, and this cost must be weighed against the benefit of providing a more sustainable and low-carbon gas product to consumers.”<sup>5</sup>*

Based on the reduced energy content and other differences between hydrogen blends and natural gas, the AEC believes hydrogen blends should be treated as ‘other gas’ (OG) products because that is what they are and using the term NGE is not an accurate representation of the product.

Alternatively, a better descriptor for a 10% hydrogen blend would be H10 as this would be ‘equivalent’ to how 10% ethanol petrol blends are labelled (ie, E10). This would better inform consumers of the nature of the product and clearly identify the fact it contains hydrogen. Furthermore, there may be different blends of hydrogen such as 5% which could be labelled H5. Gas users have the right to know exactly what they are purchasing, and this approach would more accurately inform them of nature of the product when making energy consumption decisions.

## Biomethane

The AEC understands that biomethane is genuinely equivalent to natural gas. When it is injected into networks no modifications are required and it has the same properties as natural gas. Hence, it should be captured under the definition of natural gas.<sup>6</sup>

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<sup>2</sup> <https://www.aer.gov.au/system/files/AER%20Information%20Paper%20-%20Regulating%20gas%20pipelines%20under%20uncertainty%20-%202015%20November%202021.pdf>

<sup>3</sup> [https://www.aemc.gov.au/sites/default/files/documents/consultation\\_paper\\_-\\_review\\_into\\_extending\\_the\\_regulatory\\_frameworks\\_to\\_hydrogen\\_and\\_renewable\\_gases\\_-\\_emo0042.pdf](https://www.aemc.gov.au/sites/default/files/documents/consultation_paper_-_review_into_extending_the_regulatory_frameworks_to_hydrogen_and_renewable_gases_-_emo0042.pdf)

<sup>4</sup> <https://www.nrel.gov/docs/fy13osti/51995.pdf>

<sup>5</sup> Op cit.

<sup>6</sup> Consultation paper, p.13.

## “Future proofing”<sup>7</sup>

The AEC does not support resources being expended on ‘other gases’ that are even further removed from natural gas than low level hydrogen blends. These OGs are likely to require substantial capital expenditure on gas infrastructure and associated costs to consumers. On this basis the AEC believes they should not be included as part of the proposed changes.

## Conclusion

The AEC does not see the case for the urgency with respect to changing the NGL, NER and Regulations to accommodate hydrogen blends in natural gas distribution networks. It is currently an emerging technology that may or may not become a viable approach to transitioning to net zero emissions. Ultimate approval for hydrogen blends to enter distribution networks is up to the jurisdictions and significant engagement with gas users would be required to ensure acceptance.

The AEC has concerns with labelling hydrogen blends as NGEs when they are not equivalent to natural gas. The AEC does not see the need to establish arrangements for OGs as they are unable to be utilised without significant capex across networks, businesses and households. With respect to biomethane, the AEC recommends that it is classified as natural gas under the NEL, NER and Regulations.

Any questions about our submission should be addressed to Peter Brook, by email to [peter.brook@energycouncil.com.au](mailto:peter.brook@energycouncil.com.au) by telephone on (03) 9205 3103.

Yours sincerely,



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<sup>7</sup> Consultation paper, p.30.