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Ms Anna Collyer
Chair
Australian Energy Market Commission
PO Box A2449
Sydney South NSW 1235

Reference code: EMO0042

Dear Ms Collyer,

Response to the Hydrogen and Renewable Gases Review

AusNet is pleased to have the opportunity to provide this submission to the AEMC's market review into extending the regulatory framework to hydrogen and renewable gases.

The Review Consultation Paper is part of a broader package of reforms being considered under the 'Extending the Regulatory Frameworks to Hydrogen and Renewable Gases' reform package. We support the objective of these reforms, which is to bring renewable gas networks within the scope of the national gas legislative and regulatory framework.

We are a major energy network business that owns and operates key regulated electricity transmission and electricity and gas distribution assets located in Victoria. These assets include:

- More than 6,000 kilometres of electricity transmission network that services all electricity consumers across Victoria;
- An electricity distribution network delivering electricity to approximately 750,000 customer connection points in eastern Victoria; and
- A gas distribution network delivering gas to approximately 760,000 customer supply points in an area of more 60,000 square kilometres in central and western Victoria.

AusNet is a founding member of the Australian Hydrogen Centre, that aims to explore the feasibility of hydrogen in gas networks, and is developing feasibility studies into hydrogen blending with Natural Gas (**NG**) and 100% hydrogen networks. We consider the use of gas networks to store and transport hydrogen and renewable gases will be essential for the efficient transition to renewable energy.

AusNet supports the proposed extension of the National Gas Law (**NGL**), the National Gas Rules (**NGR**)) and economic regulation to NG equivalents. Over time, NG will likely evolve into NG equivalents as the incremental injection of renewable energy gases like hydrogen occurs. During the transition to renewable energy sources, existing appliances will be replaced with appliances that can consume NG equivalents with an increasing proportion of renewable gas content. NG equivalents will use the same pipelines as NG, be used to fuel the same types of appliances as NG, and will largely share the same customer base as NG. In the longer term, and as outlined in our submission to the DWGM rule change consultation paper, we support the proposed application of the same markets, transparency mechanisms and frameworks to NG equivalents, subject to only minor amendments.

Current network assets can safely transport low blends of hydrogen (less than 10%) generally without significant asset management issues. As the hydrogen composition increases in modern gas pipelines, a broad range of issues arise:

- Meter locations may need to be moved, and city gates may need upgrades due to the larger hazardous zone clearances from ignition sources that will be required.
- The materials in residential diaphragm meters may degrade and leak with higher hydrogen content.
- Large commercial turbine meters are not suitable for NG equivalents containing more than between 5%-10% hydrogen.
- Older pipelines will need to be replaced.
- Customer appliances may also need upgrading.

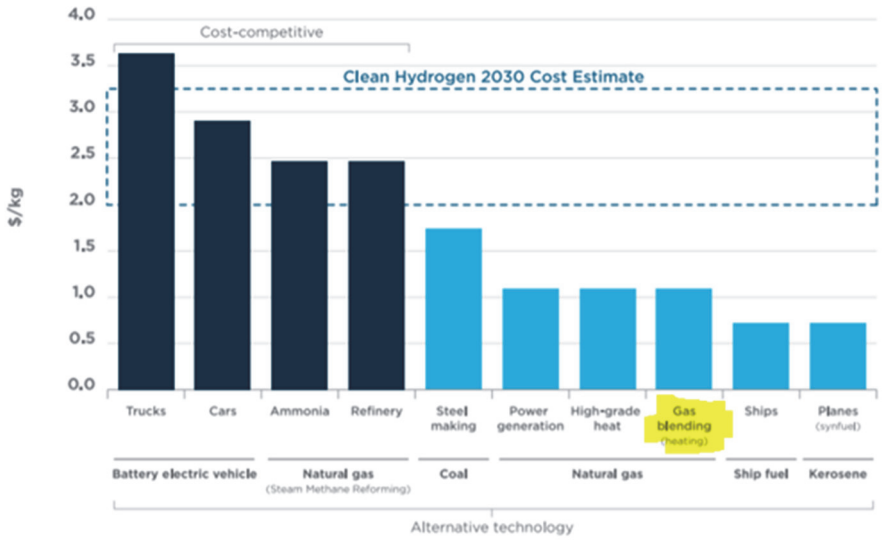
The transition of NG equivalents to higher blends of hydrogen will require an extensive assessment and preparations to resolve these issues, which may take many years.

Ring fencing should not preclude gas distributors from taking necessary steps to transition their networks to renewable gases

As gas networks transition to renewable gas, it is important that ring fencing does not prohibit the speed of the transition to renewable gases, in line with the policy intent of jurisdictional Governments. Gas distributors need to be able to undertake effective trials to understand the readiness of their networks, learn about the operational impacts of renewable gases and educate and engage with their customers on renewable gases, to overcome information barriers which may otherwise slow its uptake. Ring fencing should not prohibit or impede these important tasks.

In addition, given that the production of hydrogen and renewable gases is still in its infancy, the risk that gas distributors will interfere with a market for hydrogen production for the purpose of blending is very low. Research performed by Advisian indicates that the use of hydrogen in the existing gas distribution networks is not expected to be cost competitive with the incumbent NG technology until at least 2050. The development of hydrogen for vehicle transport, and in particular heavy vehicle transport, is significantly more cost competitive than blending hydrogen in existing gas networks. The Australian National Hydrogen Strategy reached the same conclusion.

Figure 1.3 Breakeven cost of hydrogen against alternative technology for major applications, in 2030.



Source: COAG Energy Council, Australian National Hydrogen Strategy, November, p6

This indicates that it may be more profitable for hydrogen producers to target these markets in the first instance rather than targeting gas blending.

In our submission to the proposed changes to the National Gas Law, we recommended the current ring fencing provisions are moved into the National Gas Rules to allow for more flexibility over time as the market for blended gases develops and transition to NG equivalents occurs. This change would also align with the electricity framework.

In the short term, gas distributors have a stronger incentive to produce renewable gas than third parties. Until renewable gas becomes cost competitive in networks, facilitating this transition is one of few options gas distributors have to mitigate the risk of stranded assets.

To enable new markets to develop and grow, broad ring fencing exemptions that allow gas distributors to produce hydrogen and share marketing staff must be available. These exemptions will facilitate small and large-scale trials that enable distributors to learn how NG equivalents and constituent gases (**CGs**) can be safely distributed to decarbonise their gas networks and customers will benefit from the learnings. Preventing gas distributors from producing hydrogen risks precluding or slowing the take up of blended gas and hydrogen. As recognised by the policy intent of this review, prematurely ruling out this pathway to energy decarbonisation is not desirable. Therefore, it would be better to facilitate market development during the early stages of the transition to cost competitive renewable gas by permitting economies of scale and other cost efficiencies.

The sharing of marketing staff while the hydrogen market is in its infancy and market power is not a concern (i.e. because there is no market) should be allowed. It is vital that customers are provided with clear and technically accurate information about the production and use of renewable gas, and distributors are best placed to do this. This will assist customers to understand and adapt to the use of NG equivalents or CG and overcome any barriers to uptake caused by lack of information.

Ring fencing arrangements may need to evolve during the transition. In the longer term, it is important that gas distributors are not prohibited from producing renewable gas where this is required for the safe and reliable operation of the network, or for balancing services, as currently recognised in section 137 of the NGL.

Regarding the risk of inequitable curtailment, when NG equivalents containing hydrogen become cost competitive, hydrogen production will not be concentrated in specific exploration areas. Rather, production will likely follow renewable energy generation and could be located anywhere and by undertaken by anyone. Issues of equitable curtailment associated with NG equivalents can be avoided by establishing a requirement for gas distributors to publish curtailment policies that are subject to review and approval by the AER as part of the access arrangement review process. This would ensure curtailment of gas injection at blending facilities is done fairly and prevent gas distributors from favouring their own production. This approach would require NGR changes and would mirror the current queuing policy for shippers.

Market transparency, facilitated markets and retail markets

AusNet supports the introduction of the same transparency, facilitated and retail market framework to NG equivalents, noting they should be treated in the same manner as NG. These markets and arrangement have evolved over time to provide efficient outcomes for customers. Treating NG equivalents and CG materially differently may introduce inefficiencies, however the application of some requirements specific for high volumes of NG may not be efficient. The benefits to consumers of introducing reporting requirements on low volume facilities should be balanced against the costs.

As identified in the Review, the unaccounted-for gas process (**UAFG**) has the potential to be supportive during the very early stages of the transition and while less than 3% of the gas in the network is renewable. We are very cautious about recommending significant changes to facilitate gas distributors producing renewable gas to offset UAFG to occur, as it does require regulatory and market changes. Additionally, gas distributors have an even greater role to contribute to a renewable future than providing up to 3% of renewable gas in NG equivalents, as renewable gas may still not be cost competitive with NG at this point. The use of the UAFG arrangements should not be seen as a substitute for the full inclusion of renewable gas into regulated gas networks and the associated broad ring-fencing exemptions required to allow gas distributors to facilitate this transition.

Customer protection and engagement

AusNet is supportive of retaining existing customer protections as we transition to renewable gas networks. In Victoria, the Gas Industry Act, the Energy Retail Code and Gas Distribution System Code regulate most customer protection issues. However, the transition to renewable gas presents a set of new customer engagement issues.

- Customers need clear, reliable and future-looking information on gas distributor plans to blend NG equivalents in the network that supplies them. This information will inform their purchasing decisions of assets that could last a long time. Once customers invest in new assets that are capable of consuming renewable gas (e.g. NG equivalents with higher proportions of hydrogen) gas distributors will need to facilitate the production of renewable CG and blending facilities to meet these customers' expectations. These concerns are equally relevant for customers that use gas for commercial or industrial purposes, and small customers using gas for domestic purposes.
- Customers should only pay for the energy that they consume, and the lower energy content of hydrogen should not result in higher gas bills. To prevent such bill impacts, heating values must be accurately applied to customers in reference to blending

characteristics, with assignments informed by regular network monitoring as the blend will vary with seasonal consumption patterns.

- Extensive engagement with communities is required before making significant step changes in gas composition, particularly when transitioning from NG equivalents with less than 10% renewable gas to 100% renewable gas. However, given the nature of gas networks, it would be impracticable to require consent from customers to make these changes. Extensive customer engagement must be allowed to suffice in order to purse these changes, even on a trial basis. This would mirror the requirement on electricity distributors to undertake customer engagement when transitioning electricity customers to stand-alone power systems.[1]

We support the AEMC making the necessary regulatory changes to address and resolve these above three issues. We anticipate undertaking extensive engagement with our customers as we transition to renewable gas networks, a process that we have begun as part of our customer engagement to inform our current Gas Access Arrangement proposal.

If you have any queries on our submission, please do not hesitate to contact Justin Betlehem on 03 9695 6288.

Yours sincerely,

Charlotte Eddy
General Manager Regulatory Strategy and Policy

[1] AEMC, *Review of stand-alone power supplies*, Final report, May 2019, p xiii

Appendix A: Response to selected questions asked in the consultation paper

	AusNet's feedback
Question 3 – Chapter 3 – Supplier access to pipelines	
6. Do you think service providers should be required to publish information on where connections by suppliers of natural gas equivalents or constituent gases would be technically feasible, or should this just be left to negotiations?	AusNet supports the publishing of information and other transparency arrangements on where new connections to suppliers of NG equivalents and CG for blending would be technically feasible. Provision of information should be no more frequent than annually, and additional requests for information be left to negotiations so as to not burden existing gas customers with the cost of proponents' feasibility studies.
7. Do you think that any specific rules are required in the NGR to deal with the risk that service providers may favour their own natural gas equivalents or constituent gas facilities by curtailing other facilities ahead of their own, or do you think this should be dealt with through ring-fencing arrangements?	Issues of equitable curtailment associated with NG equivalents can be avoided with respect to renewable CGs by establishing a requirement for gas distributors to publish curtailment policies, that are subject to review by the AER as part of the access arrangement approval process. This would ensure curtailment of gas injection at blending facilities is done fairly and that gas distributors would not favour their own production. This approach would require NGR changes and would mirror the current queuing policy for shippers.
Question 4 – Chapter 3 – Ring fencing arrangements	
8. Do you think the ring fencing exemptions in the NGR should be amended to accommodate trials by service providers? Why?	As gas networks transition to renewable gas, it is essential that ring fencing does not slow the speed of the transition by impeding the ability of the gas distributors (either in part or in total) to undertake small and large scale trials to learn and understand the asset, planning and operational implications of switching to renewable gas sources. At this early stage while the markets for CG production and uptake of NG equivalents is in its infancy, restrictions on distributors owning gas production and sharing marketing staff may prevent the take up of NG equivalents. There is a material risk that this could impede or preclude gas distributors from developing and bringing CG blends to market (e.g. hydrogen, biofuel methane) and from educating customers about renewable gases.
9. If so, do you think there should be any limit on the volume service providers should be able to produce, purchase or	We consider that ring fencing arrangements should assessed regularly on the basis of

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sell (e.g. up to the unaccounted for gas level)?	determining whether independent hydrogen production for the use in gas networks is cost-competitive with NG or the NG equivalents at the time, and to assess whether the curtailment policies being applied by gas distributors are unfairly impeding market development. The volume of NG equivalents or CG service providers produce should not be a factor.
Question 5 – Chapter 3 – Rules for scheme pipelines	
11. Do you think Part 9 of the NGR should be amended to provide the regulator with additional guidance on how to assess service provider proposals to transition to natural gas equivalents in those cases where a jurisdiction does not mandate the transition? If so, please explain what changes you think need to be made and why.	The AER's 'Regulating gas pipelines under uncertainty' Information Paper indicated that they are able to approve network expenditures necessary to carry natural gas blends, even where there is no regulatory obligation to carry natural gas blends, as long as there is strong consumer support and demand for the natural gas blend. The AER also recognises the regulatory framework provides limited flexibility for the AER in relation to this matter. We recommend that the NGR is clarified to allow the AER to consider the policy intent (which may not yet be mandated) of a jurisdictional government to decarbonise gas networks when assessing network expenditures, as well as the extent of consumer support for this expenditure. This is a critical indicator of future network investment needs.

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Question 7 – Chapter 3 – Pipeline gas information	
16. Do you think service providers should be required to publish information on: • the type of gas they are licensed to transport in their user access guides and, in the case of scheme pipelines, the access arrangement and access arrangement information? Why? • any firm plans to conduct either a trial or to transition the pipeline (or part of the pipeline) to a natural gas equivalents or other gas product? Why?	We are supportive of the same market transparency arrangements also applying to NG equivalents and providing customers with information on firm plans to transition gas pipelines to NG equivalents that where the composition represents an issue for the customers' appliances. These thresholds are yet to be determined. Informing customers too early, when plans are not yet firm, may result in unnecessary concern from customers, and informing customers too late may result in customers buying an appliance that may not operate optimally.
17. Do you think this information should also be reported on the AEMC's Pipeline Register?	We support including this information in the Pipeline Register.
Question 10 - Chapter 5 – Trading natural gas equivalents in the facilitated gas markets	
25. Do you think natural gas equivalents should be traded through the facilitated markets, or outside of the facilitated markets?	We believe NG equivalents in gas distribution networks should be traded through existing facilitated markets, and particularly in Victoria where we operate.
26. What do you consider are the implications of these two options, in terms of required regulatory changes, costs of implementation and potential market inefficiencies?	Initially, while NG equivalents while the volume of CG is relatively low levels (less than 3% of the gas in a network), the UAFG offset could be used by gas distributors to procure renewable gas. This may be a way to avoid some of the wholesale changes to the broader rules and injected gas being treated as negative demand in forecasts. However, this is not our preferred arrangement. Firstly, it is not scalable to the point where renewable gas becomes cost competitive with NG. Hence, it can only be an interim measure, and broader changes would be required to include renewable gas into the markets and frameworks, including broad ring fencing exemptions. Secondly, using the UAFG offset to allow gas distributors to procure renewable gas would require jurisdictional changes to the UAFG

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	arrangements themselves. The Victorian benchmarking arrangements would need to recognise the renewable gas injection offsetting losses. The long settlement timeframes of about 2 years and settlement by differences mean gas distributors would not be confident that they will be adequately compensated for their supplied gas and certainly not in a timely manner.
Question 12 - Chapter 5 – Unaccounted for gas in the facilitated markets	
29. Do you think initial trials involving the injection of natural gas equivalents into the distribution system should be accommodated by amending jurisdictional arrangements for UAFG?	There may some merit in making minor amendments to jurisdictional arrangements for UAFG for initial trials, but these changes should not be seen as a substitute for the full inclusion of renewable gas into regulated gas networks and the associated broad ring fencing exemptions that are required to enable gas distributors to contribute to the transition while renewable gas remains not cost competitive with NG.
31. What changes would be required to UAFG arrangements in the DWGM?	As discussed above in our answers to questions 28 and 29, using the UAFG offset to allow gas distributors to procure renewable gas would require jurisdictional changes to the UAFG arrangements themselves. The Victorian benchmarking arrangements would need to recognise the renewable gas injection offsetting losses. The long settlement timeframes of about 2 years and settlement by differences mean gas distributors would not be confident that they will be adequately compensated for supplied gas and certainly not in a timely manner. Further, using the UAFG arrangements can only be a temporary measure and will cease to be appropriate as renewable gas becomes more cost competitive with NG. Additionally, the DWGM may need to move to global settlements and the timeframe on settlement payments would need to be shortened. These changes should be subject to a full benefit analysis.
Question 14 - Chapter 5 – Metering and heating values in the facilitated markets	
36. Does the NGR restrict distributors' ability to calculate heating values in	We support changes to the NGR to specifically clarify that distributors should calculate heating

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different parts of the distribution system to accommodate the different uses of natural gas equivalent gases in the facilitated markets?	values in different parts of the distribution system to accommodate the different uses of natural gas equivalent gases in the facilitated markets.
Question 21 - Chapter 8 – Regulatory sandbox arrangements	
55. Is it practicable for a retail customer to opt out of a change of product trial? If not: a) should the definition of explicit informed consent be required to provide information that the customer is unable to opt out of the trial for the period of the trial?	Given the nature of gas networks, it is wholly impracticable to achieve consent from 100% of customers to make this change because a single customer's refusal to consent would preclude important trials from taking place. Undertaking extensive customer engagement should suffice as a requirement for proceeding these changes, even on a trial basis. This would mirror the requirement on electricity distributors to undertake customer engagement when transitioning electricity customers to stand-alone power systems.