26 November 2021

Mr Sean Sullivan
Chair
Energy Senior Officials
Department of Industry, Science, Energy and Resources
GPO Box 2013
Canberra, ACT, 2601

Via email to: renewablegas@industry.gov.au

Dear Mr Sullivan

Consultation paper: Extending the national gas regulatory framework to hydrogen blends and renewable gases

Thank you for the opportunity to provide a submission to the Energy Officials' Consultation Paper on Extending the national gas regulatory framework to hydrogen blends and renewable gases.

Evoenergy owns and operates the gas distribution networks in the Australian Capital Territory (ACT) and Queanbeyan–Palerang Regional Council local government area (LGA) of New South Wales (NSW), and in the Shoalhaven City Council LGA of NSW. Together, these networks provide gas connections to approximately 162,000 gas customers.

Energy Ministers have agreed that the national gas regulatory framework should be amended to bring biomethane, hydrogen blends and other renewable gases within its scope; and the amendments should initially focus on Natural Gas (NG) equivalents and be expedited so regulatory barriers do not restrict proposed investments in NG equivalent projects; and existing regulatory arrangements and protections continue to work as intended.

Evoenergy welcomes this direction. We consider that there are no material issues with the injection of NG equivalents into our network – and no material changes needed other than to expand the National Gas Law/Rules to include NG equivalents.

The main challenge facing networks is that upstream and downstream markets for renewable gases do not exist. The Australian Energy Market Operator's (AEMO's) current forecast in all net-zero scenarios is that there will be no or minimal natural gas use by 2050 – that is, without the progression of a market for renewable gases, our gas network assets will be stranded.

The ACT Government has legislated for net zero greenhouse gas emissions in the territory by 2045 and has implemented measures to prevent expansion of our ACT gas network beyond its current footprint, to prohibit new gas connections, and to provide incentives for current gas users to transition to electric appliances. However, we believe that there is a future for our gas network transporting green gas, and that we must progress initiatives to decarbonise the gas supply in the ACT by investing in green gas opportunities. This ensures optionality for the ACT in the long-term interests of customers, particularly those industries and customers that absolutely need to use gas.

In order to support decarbonisation of the gas network, we need to be able to advance commercialised renewable gas projects at a scale that contributes to the ACT's net zero interim targets and demonstrates the viability of the gas network to allow for the possibility of green hydrogen and other zero-emission gas alternatives. For example, we currently operate a testing facility that produces hydrogen to ascertain the suitability of our network facilities for operation with hydrogen blends and pure hydrogen.

While we acknowledge policy makers' concerns about market power issues, we believe that care needs be taken the ensure that policies to address these risks do not stifle our ability to move away from the current default path of asset stranding. Such a careful approach is consistent with the task given to policy makers by Energy Ministers – to future proof the regulatory framework without causing unintended consequences.

To achieve this, the definitions relevant to the integration of NG equivalents and other gases within the National Gas Law framework need to be adjusted to ensure operators are provided with adequate flexibility to facilitate a renewable gas market that is appropriate and adaptable for both their individual circumstances and the changing energy system.

We are still considering the implications of hydrogen being directly injected into our networks (where our networks will effectively perform a blending function) and what needs to occur for 100 per cent hydrogen networks to be covered to inform what National Gas Law/National Gas Rules changes are needed or not needed, and when.

In terms of a model for the application NG equivalents, we wish to draw the attention of officials to Australian Standard (AS) 4564:2020 – Natural Gas Quality Specifications, the operation of which is summarised in an Attachment to this submission. The Standard already contemplates landfill and biogas. It also has the capacity to accommodate hydrogen through 'other sources'. However, the Standard will not permit high percentages of hydrogen and our view is that consideration of the requirements for this should be dealt with separately to this review.

For 'Natural Gas Equivalents' our view is that the appropriate test should be conformance with the Standard. Applying that test will ensure that existing appliances, networks and pipelines can operate safely and without modification. It will allow blending of hydrogen up to a certain maximum, to be determined.

ActewAGL House 40 Bunda Street Canberra ACT 2600 I GPO Box 366 Canberra ACT 2601
t 13 23 86 | **evoenergy.com.au**

Should you wish to further discuss matters raised in this submission, please contact Chris Bell, Economic Regulatory Manager, at chris.bell@actewagl.com.au.

Yours sincerely

Peter Billing
General Manager Evoenergy

ATTACHMENT

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t 13 23 86 | **evoenergy.com.au**

Attachment: Summary of Australian Standard 4564:2020 – Natural Gas Quality Specifications

AS 4564:2020 (the Standard) was prepared by a committee comprising representatives from the Australian Energy Council, AEMO, producers, pipelines, networks, appliance manufacturers and technical regulators. The Standard was first published in 2003, then revised in 2005 and 2011 and prior committees also included consumer groups.

Natural gas sourced from different gas fields has differing ratios of the primary constituents of natural gas. These are methane (CH_4), ethane (C_2H_6), propane (C_3H_8), carbon dioxide (CO_2) and nitrogen (N_2). Other compounds in trace amounts include butanes (C_4), pentanes (C_5) and C_{6+}. The objective of the Standard is to provide certainty of gas quality and performance for designers, manufacturers, and users of appliances, particularly in the context of an interconnected gas grid where multiple sources of gas is piped to multiple markets.

The scope of the Standard states that it "... applies to natural gas that is from petroleum, landfill, biogas, coal seam and other sources ..." for general purpose customers' appliances as well as natural gas vehicles, compressors and refuelling facilities.

The approach taken in the Standard to specifying performance outcomes allows for a broad range of gas mixtures allowing each production plant to achieve the most economic operating conditions. The other parameters in the table reproduced in the attachment to this submission, other than odour intensity, specify maximum allowable concentrations of 'undesirable' components: oxygen, nitrogen, CO_2, sulphur compounds and water vapour count towards the maximum limit total of 'Total inert gases' of 7 per cent as they provide no energy in combustion.

The main parameters that General Purpose Natural Gas must conform to are Higher Heating Value and Wobbe Index. These are gross performance parameters rather than specifying how much methane, ethane etc. must be present. Higher Heating Value is the amount of energy, in megajoules per cubic metre (MJ/m^3), released when 1 cubic metre (m^3) of gas is burnt and includes the energy released when water, as a combustion product, condenses (typically, 38.5 MJ/m^3). The Wobbe Index (WI) is related to combustion energy output of a burner and is calculated by dividing heating value by the square root of the relative density (RD) of the gas, being the density of the gas compared to dry air (typically 0.65).

The standard also defines general prohibition of dusts, waxes, gums, unsaturated and aromatic hydrocarbons for safety and operability reasons. All of these components may be found in well gas. It might be advisable that siloxanes, which are prevalent in landfill gas, be specifically mentioned in the Standard as, when combusted, siloxanes result in silicon dioxide (glass) deposition, which impinges on burner operation.

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Table 4.1 of AS 4564:2020 – Limitations of gas properties

Characteristics and components		Limit
Wobbe Index	Minimum	46.0 MJ/m^3
	Maximum	52.0 MJ/m^3
Higher heating value	Maximum	42.3 MJ/m^3
Oxygen	Maximum	0.2 mol %
Hydrogen sulfide	Maximum	5.7 mg/m^3
Odour intensity	Minimum	Where required, detectable at a level not exceeding 20 % LEL
Total sulfur	Maximum	50 mg/m^3
Water content	Maximum	Dewpoint 0 °C at the highest MAOP in the relevant transmission system (in any case, no more than 112.0 mg/m^3)
Hydrocarbon dewpoint	Maximum	2.0 °C at 3500 kPa gauge
Total inert gases	Maximum	7.0 mol %
Oil	Maximum	20 mL/TJ

The sulfur level upstream of the point(s) of addition of odorant shall be such as to allow for any increase due to the odorant.

NOTE 1 m^3 means 1 m^3 of dry gas at the standard conditions (see 3.13).

NOTE 2 mol % means the mole faction of gas expressed as a percentage.

NOTE 3 Where odorization is required, the odorant content required to satisfy the detectability at 20 % LEL needs to account for variations in the odorant used and residence time and may be subject to specific jurisdictional requirements.

NOTE 4 Figure A.1 shows the dewpoint at zero degrees Celsius with water content plotted against pressure.

NOTE 5 See Appendix A for further information on characteristics and components of natural gas.