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Via EngageVictoria

## Geelong Sustainability Submission to Victoria's Renewable Gas Consultation Paper

Geelong Sustainability welcomes the opportunity to provide a response to Victoria's Renewable Gas Consultation Paper (the Paper). We recognise the importance of developing policy to progress decarbonisation on Victoria's difficult-to-abate sectors, and the importance of developing technologies, including green hydrogen and other renewable gases, that may fulfil this role.

Geelong Sustainability is a not-for-profit community association and registered charity. Our vision is for people and our planet to thrive within sustainable limits. Our mission is to empower people to regenerate and protect the planet. To achieve this, we deliver projects that are focused on four strategic priorities - Climate Change, Renewable Energy, the Circular Economy and Sustainable Cities.

As a leading organisation focused on the continual transition towards net zero emissions, Geelong Sustainability believes that policies that support renewable gas should enable the development of these technologies within an optimal pathway for Victoria's decarbonisation: ie, one that delivers fast and efficient emissions reductions while safeguarding energy affordability and equity.

### Electrification is preferred to decarbonise residential gas use (Q2.1)

The (Issues Paper) states "Renewable gas is … unlikely to have a role in residential and most commercial buildings. Any policy mechanism should ensure that renewable gases are reserved for the hard-to-abate industrial sector."

We strongly support a focus on priority use cases. We recommend that infrastructure planning, including the Renewable Gas Strategy and the updated Victorian Gas Substitution Roadmap, should be clear that residential gas will be decarbonised through electrification, rather than future gases.

It's important to clarify Victoria's commitment to electrification for residential use, for the following reasons:

- Available research shows that electrification is more likely to be a practical and cost-effective alternative to residential gas appliances,[1]

[1] Australian Sustainable Built Environment Council (2022), 'Unlocking the pathway: why electrification is the key to net zero buildings', https://www.asbec.asn.au/wordpress/wp-content/uploads/2022/12/ASBEC-Unlocking-the-pathway.pdf.

- Information provided by Victorian gas network owners shows that the electrification of residential gas appliances can be achieved according to a much faster timeframe than future gases (even when adopting an optimistic time-frame for future gas reticulation),[2]
- Safeguarding energy affordability and energy equity as consumers leave the network, particularly for vulnerable and low-income households, will require active and coordinated management of the migration. An effective framework that avoids wasted spending will require a commitment to electrification, and it will include a clear and early signal to consumers regarding the electrification pathway.

In summary, we support the consultation paper's identification of electrification as the most viable pathway for residential gas appliances, and encourage this position to be formally articulated in future policy.

**Renewable gas policy should focus on priority use cases for renewable gas (Q2.1)**

We agree with the general approach of developing policy around the use cases summarised in the Paper's Table 1 as being expected to be priority applications for renewable gases, rather than basing policy more broadly on all current uses of fossil methane in Victoria. The approach is in line with the consensus of the majority of independent energy and hydrogen experts around the world,[3] and is likely to support progress towards the optimal decarbonisation pathway in Victoria.

The paper proposes that the Renewable Gas Scheme will focus on the industrial sector, for high heat applications and feedstock.

In particular, we support the clarity this approach brings to the expected pathway for residential and small commercial gas use - given the importance of developing a framework to manage the ongoing electrification of these sectors, as cited above.

**Renewable gas policies should target specific technologies, rather than be neutral (Q 3.1)**

The Paper notes the significant differences between hydrogen and biomethane: in terms of the limitations and barriers that apply to these technologies, their technical maturity, their use cases, and their environmental impacts. Both are expected to occupy specific and different niches in a fully decarbonised economy, with some areas of potential competition.

Green hydrogen, in particular, is not yet a mature commercialised solution - there are still competing electrolyzer technologies, and key industrial processes that are anticipated to rely on hydrogen for decarbonisation are still in research and trial phases.[4]

Biomethane faces limitations of a different nature, most relating to the availability of sustainable feedstock, and its transportation. These limitations are less likely to be overcome through a learning

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[2] Chessell (2023), 'Why blending hydrogen into the gas supply is still just a pipe dream', *RenewEconomy* https://reneweconomy.com.au/why-blending-hydrogen-into-the-gas-supply-is-still-just-a-pipe-dream/

[3] International Renewable Energy Agency (2022), Geopolitics of the energy transformation: The Hydrogen factor https://www.irena.org/publications/2022/Jan/Geopolitics-of-the-Energy-Transformation-Hydrogen

[4] International Energy Agency (2023,) 'Electrolyzers', https://www.iea.org/energy-system/low-emission-fuels/electrolysers

rate linked to the speed of deployment, implying the need for different policies to support its development.

Given these key qualitative differences, a 'technology neutral' policy approach is unlikely to deliver the best outcome for Victoria's transition, in terms of discovering the most efficient and cost-effective decarbonisation pathway.

A targeted and technology-specific approach is preferred, to allow Victoria's renewable gas policy to adequately accommodate the barriers facing each technology in particular.

**A government and industry funded approach is preferable to a broad market-based policy (Q 3.2)**

Renewable gas policy in Victoria must be developed in a way that does not threaten energy affordability for Victorian households as the transition away from residential gas continues. Renewable gas measures should be funded by those sectors who will be beneficiaries of these policies, with some public funds also justified in recognition of the social co-benefits (as listed in the Paper's Table 12).

A market-based policy that incurs costs for residential gas users should be avoided for two reasons:

1. the medium-term affordability of residential gas is under threat due to the likelihood of a 'disconnections spiral', and as such, is not an acceptable or practical source for funding renewable gas development, and
2. residential households are not the direct beneficiaries of this policy.

Victorians will receive co-benefits from the development of renewable gas, as summarised in Table 12 of the Paper. The primary beneficiaries will be those industries identified as priority users.

As such, a sharing of costs between public funds and those sectors who will benefit will be an important principle for designing this policy.

The Paper recognises the general risk of raising costs for existing gas users at a time when there's the potential for a disconnections spiral to develop. However, it's important for policymakers to attempt to quantify the extent of this risk facing gas users. Modelling undertaken by distribution network owners to inform the most recent access arrangements indicated that, depending on gas market prices and other external factors, there's a potential (depending on circumstances) for a disconnections spiral to gather pace in the relatively near term.[5]

The self-propelling nature of a disconnections spiral event will make this outcome difficult to forecast with accuracy - and external events, such as gas market price spike, have the potential to instigate its development.

[5] Brotherhood of St. Laurence (2022), Brotherhood of St Laurence - 2023-28 Victorian gas distribution access arrangements - Draft decision and revised proposals - February 2023 ( PDF 765.41 KB ) https://www.aer.gov.au/system/files/Brotherhood%20of%20St%20Laurence%20-%20%202023-28%20Victorian%20gas%20distribution%20access%20arrangements%20-%20Draft%20decision%20and%20revised%20proposals%20-%20February%202023.pdf

**Renewable gas policy must be developed in a way that does not increase risks for residential gas consumers (Q 3.2)**

In recent decisions, the Australian Energy Regulator (AER) has acknowledged that gas distribution and transmission infrastructure faces a substantial stranding risk, and there's a potential for a 'disconnections spiral' to develop.[6] This possibility may lead to unaffordable energy prices for households without the agency to quit gas, especially renters, in the absence of an adequate policy framework to address emerging risks. The regulator's decision to transfer network owners' stranding risk to consumers, in the form of 'accelerated depreciation' charges, increases the risk of unaffordable gas prices emerging for consumers.[7]

In this context, it's now important to actively monitor the affordability of residential gas in Victoria, and to avoid measures that will increase costs for consumers. All new energy policy should be developed in a way that mitigates rather than exacerbates the serious risks now threatening affordability for this essential service.

Market-based measures for future gas development that would incur new additional costs for residential gas costs must be avoided, given this context.

The Paper recognises this risk, and suggests that low income households, those vulnerable to energy stress and renters might be excluded. However, affordability for all residential consumers must be managed in the context of a gas infrastructure migration - all residential gas consumers should be considered to be vulnerable to the emergence of unaffordable energy costs.

**All residential gas consumers should be considered as being vulnerable to energy stress, when considering the cost impact of renewable gas policy (Q3.4)**

The consultation paper lists: low income and vulnerable households, households experiencing or at risk of energy hardship, tenant, business and large industrial users, as groups who may be impacted by increased costs incurred by future gas policies.

We agree with the implications listed for the consumer types listed, including the recognition that renters are particularly vulnerable through the gas transition, in the absence of a satisfactory risk mitigation framework.

However, it's important to consider, in the context of the migration from gas already underway, that the risk of unaffordable energy prices now faces all gas users. As noted above (see response to Q2.2), the AER has acknowledged the stranding risk facing gas networks, and the material risk that a 'disconnections spiral' may emerge.

In this scenario - and with a lack of a framework in place to manage the migration - all current residential gas users should be recognised as being already at risk. The prospect of spiralling gas

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[6] Australian Energy Regulator (2022), AER - Final decision - AusNet 2023–28 - Overview - June 2023 ( PDF 756.94 KB )
https://www.aer.gov.au/system/files/AER%20-%20AusNet%202023-28%20-%20Final%20Decision%20-%20Overview%20-%20June%202023.pdf

[7] Brotherhood of St. Laurence (2022), Brotherhood of St Laurence - 2023-28 Victorian gas distribution access arrangements - Draft decision and revised proposals - February 2023 ( PDF 765.41 KB )
https://www.aer.gov.au/system/files/Brotherhood%20of%20St%20Laurence%20-%20%202023-28%20Victorian%20gas%20distribution%20access%20arrangements%20-%20Draft%20decision%20and%20revised%20proposals%20-%20February%202023.pdf

prices has the potential to affect all remaining households still on the network. (Consumers are already facing increased energy stress caused by the bill impacts that have followed the 2022 energy crisis.)

It's important that all new energy and climate policy in Victoria is developed to address, and not exacerbate risk. Residential gas users are not an appropriate source of funding for the development of future gas capabilities in these circumstances.

**Renewable gas policy, including targets, should be developed in consideration to the constraints of Victoria's gas distribution network (Q3.5)**

Throughout the Paper the assertion is repeated that hydrogen can be blended into the distribution, and possibly transmission networks, at a concentration of up to 10% (by volume). This assumption applies particularly to the design of a potential target, or measures like a feed-in-tariff.

This assertion contradicts information supplied by Victorian transmission and distribution network businesses through the most recent access arrangements as detailed below. Distribution and transmission business proposals state that blends aren't able to be accommodated in Victoria until 2030 in most places (at the earliest, if at all), that blending may drive major replacement costs at a time when the stranding risk is extant, and that injections into much of the distribution network will threaten the safety of the transmission network.

Hydrogen blends can't be injected into most Victorian distribution networks (even below 10%) because:

- Legacy cast iron mains in Victoria are not only susceptible to embrittlement from hydrogen blends above a certain pressure, but deterioration as a result of their age means they will need to be replaced before hydrogen blends could be introduced at any concentration.[8] [9]

  Distribution networks have had replacement expenditure approved to undertake the replacement of legacy cast iron pipelines, but this won't be completed until 2030, which is the target date nominated by these businesses for readiness to carry blends. [10]

  Multinet was awarded a large amount of capital expenditure in the last determination to replace these assets (in excess of $400m) - and the network business cited hydrogen readiness as well as safety as an advantage of these works. As gas consumption continues to decline on the network, it will be important to continue to monitor the need for major pro-active replacement projects.[11]

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[8] AGIG (2022) 'AGIG Network Adaptation Strategy – Renewable Gas Final Plan 2023/24 – 2027/28' https://www.aer.gov.au/system/files/MGN%20%28Vic%29%20-%20Attachment%209.10%281%29%20-%20AGIG%20Network%20Adaptation%20Strategy%20%E2%80%93%20Renewable%20Gas%20-%20July%202022%20PUBLIC.pdf p7.

[9] AGIG (2022), 'Final Regional Towns Study Ballarat' p18 https://arena.gov.au/assets/2022/07/ballarat-australian-hydrogen-centre-regional-towns-study.pdf

[10] MGN (2023), 'Revised final plan - Access Arrangement 2023–28 - January 2023' https://www.aer.gov.au/system/files/MGN%20-%20Revised%20Final%20Plan%202023-28%20-%20Overview%20-%20PUBLIC.pdf

[11] Multinet (2022), MGN (Vic) - Final plan - Access Arrangement 2023–28 - July 2022, https://www.aer.gov.au/system/files/MGN%20%28Vic%29%20Final%20Plan%202023-28%20-%20July%202022.pdf p4

The total cost of mains replacement is very high - and given the stranding risk acknowledged for the networks, and the accelerated depreciation costs already being borne by consumers - proactive replacement should arguably be being scaled-down where possible to do so safely, rather than accelerated.

- Victoria's distribution network is not entirely isolated from the transmission network, due to the transmission system's lower pressure 'inner ring main' through metro Melbourne. In most networks, a constant pressure gradient separates distribution gases from transmission , but in Victoria, the low-pressure sections of the transmission network through metro areas, means it's hard to be sure that gases injected into most distribution lines won't contaminate transmission gases. [12] [13]

  Even at low concentration, hydrogen can drive significant damage to assets at the high pressures at which the transmission network operates.[14]

It can't be injected into most Victorian transmission network because:

- The Victorian Transmission System is made up of a wide range of different pipeline types, some of which must be tested separately before it can be determined whether hydrogen can be accommodated at any volume, according to APA.[15]

  APA applied for $19M of funding at the last access arrangement to research the impact of hydrogen blending on their different asset types (these funds were proposed to cover half the cost of a 10-year study to be completed in 2032.)[16]

  Without the completion of this work APA is unable to give any indication of the costs involved to prepare their network for accommodating hydrogen blends, the timelines before which hydrogen blends might be accommodated, or any other concessions that might be required (for example, limiting operating pressures).[17]

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[12] APA (2022), 'Business Case – Capital Expenditure Evaluating and mitigating hydrogen safety and integrity risks on the VTS'
https://www.aer.gov.au/system/files/APA%20VTS%20-%20Access%20Arrangement%202023-27%20-%20Business%20Case%20200%20-%20Hydrogen%20Safety%20and%20Integrity%20-%20December%202021.pdf

[13] Energy Safe Victoria (2022), 'Energy Safe Victoria - Information Request – Hydrogen Safety – 17032022'
https://www.aer.gov.au/system/files/Energy%20%20Safe%20Victoria%20-%20Response%20to%20AER%20Information%20Request%20%20Hydrogen%20safety%20-%2017%20March%202022.pdf p1

[14] APA (2022), 'Business Case – Capital Expenditure Evaluating and mitigating hydrogen safety and integrity risks on the VTS'
https://www.aer.gov.au/system/files/APA%20VTS%20-%20Access%20Arrangement%202023-27%20-%20Business%20Case%20200%20-%20Hydrogen%20Safety%20and%20Integrity%20-%20December%202021.pdf

[15] APA (2022), 'Business Case – Capital Expenditure Evaluating and mitigating hydrogen safety and integrity risks on the VTS'
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[16] AER (2022), 'Final Decision APA Victorian Transmission System (VTS) Access Arrangement 2023 to 2027 (1 January 2023 to 31 December 2027) Attachment 5 Capital Expenditure'
https://www.aer.gov.au/system/files/AER%20-%20Final%20Decision%20-%20APA%20VTS%202023-27%20Access%20Arrangement%20-%20Attachment%205%20-%20Capital%20Expenditure%20-%20December%202022.pdf

[17] Energy Safe Victoria (2022), 'Energy Safe Victoria - Information Request – Hydrogen Safety – 17032022'
https://www.aer.gov.au/system/files/Energy%20%20Safe%20Victoria%20-%20Response%20to%20AER%20Information%20Request%20%20Hydrogen%20safety%20-%2017%20March%202022.pdf p1

The AER did not approve funding for this spending, because there is not yet a government requirement in Victoria for networks to accommodate hydrogen (similar justification was made for the AER's decision not to approve proposed distribution spending on hydrogen readiness.)[18]

APA has said that blends as low as 1% hydrogen could risk the safety of their assets.[19]

It may be possible that blends can be injected in some regional distribution networks in Victoria, to which the technical limitations listed above don't apply.

However, constructing a policy, such as a target or feed in tariff, that assumes the distribution networks supplying industry can all be used for blending, might lead to inefficient investment to address existing limitations. It may be more suitable to develop policy that does not require the use of existing distribution or transmission networks - or that investigates the specific cost impacts for all the distribution and transmission assets likely to be impacted, before implementation.

**Renewable gas policy, including targets, should avoid incurring network capex costs for current gas users (Q3.5)**

Renewable gas policy should not drive capital expenditure in gas infrastructure unless it is borne entirely by beneficiaries - it should not be borne by current gas consumers, especially households. This point is distinct from the argument made above, regarding the costs of the scheme itself. However, the key reason infrastructure costs should not be incurred for general gas users are the same: these have an unacceptable potential to increase energy costs and increase risks associated with an unmanaged disconnections spiral.

As outlined above, upgrading gas infrastructure to accommodate blends has the potential to incur significant spending on distribution and transmission infrastructure (Q3.5).

The AER's decision to reject APA's proposal for a $19M 'hydrogen safety study' cited the lack of a government requirement in Victoria at this stage, for reticulated hydrogen blending.[20]

This demonstrates the potential for Victorian government renewable gas policy to drive inefficient investment - the extent of which is currently difficult to gauge, but which has the potential to be very high.

The Paper states that 'Policy must carefully balance the risks of over-investment and asset stranding.' Given the low likelihood, acknowledged by the Paper, that most of the current network infrastructure

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[18] Australian Energy Regulator (2022), 'Final Decision APA Victorian Transmission System (VTS) Attachment 5 Capital Expenditure' p32 https://www.aer.gov.au/system/files/AER%20-%20Final%20Decision%20-%20APA%20VTS%202023-27%20Access%20Arrangement%20-%20Attachment%205%20-%20Capital%20Expenditure%20-%20December%202022.pdf

[19] APA (2022), 'Business Case – Capital Expenditure Evaluating and mitigating hydrogen safety and integrity risks on the VTS' https://www.aer.gov.au/system/files/APA%20VTS%20-%20Access%20Arrangement%202023-27%20-%20Business%20Case%20200%20-%20Hydrogen%20Safety%20and%20Integrity%20-%20December%202021.pdf

[20] AER (2022), 'Final Decision APA Victorian Transmission System (VTS) Access Arrangement 2023 to 2027 (1 January 2023 to 31 December 2027) Attachment 5 Capital Expenditure' https://www.aer.gov.au/system/files/AER%20-%20Final%20Decision%20-%20APA%20VTS%202023-27%20Access%20Arrangement%20-%20Attachment%205%20-%20Capital%20Expenditure%20-%20December%202022.pd

will be used to transport higher proportions of hydrogen, spending to accommodate blends is at high risk of being proven to be imprudent.

Consumers are already being charged to compensate distribution and transmission businesses for this asset stranding risk. The AER acknowledges that this has the potential to add to the impetus for a disconnections scenario, increasing consumer risks as well as costs.

In these circumstances, current gas users, particularly residential consumers, should not be exposed to the cost of any infrastructure development to accommodate future gases.

Policy measures like renewable gas targets, a feed in tariff, or other mechanisms should be designed in such a way that does not drive inefficient investment, or increase costs for existing gas users.

**Concluding remarks**

Geelong Sustainability supports the development of a renewable gas policy focused on the priority use cases for renewable hydrogen and biomethane in the decarbonisation of Victoria's economy. Renewable gas policy should not add to gas costs for current residential gas users - either to directly fund the measures, or by driving network expenditure - because of the risk of high gas prices emerging as consumers leave the gas network.

Geelong Sustainability welcomes the opportunity to further discuss the contents of this submission.

Yours Sincerely,

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