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Victor Albert
Assistant Manager
Department of Industry, Science and Resources

Future Gas Strategy

Dear Victor,

Energy Consumers Australia appreciates the opportunity to provide comments on the Future Gas Strategy consultation paper. As the national voice for residential and small business energy consumers we represent most customers connected to the gas distribution network (households and small businesses make over 97% of customer numbers and over 58% of total demand across the six regulated gas distribution networks on the east coast).[1]

We strongly agree that Australia needs an evidence-based, long-term strategy to inform government, business, and consumer decision-making over the coming two to three decades. As we say in our Stepping Up report[2] and submission to the Senate Economics References Committee Inquiry into Residential Electrification[3], Australia needs a long-term strategy that aligns all levels of government to provide households and businesses with clear information about what is required from them to decarbonise the economy. Please refer to those submissions for more information.

Half of Australian households are connected to the gas distribution network.[4] This is a material number of consumers who will be significantly impacted by the future of the domestic gas industry. The Future Gas Strategy cannot be limited to industry and must put these households and small businesses at its centre.

The evidence shows that the least-cost emissions reduction pathway for households and small business will be through replacing gas-powered appliances with electric ones. The Future Gas Strategy must make this clear and discuss how this transition is to be done in a safe and orderly way.

For this submission, we want to particularly draw attention to the issues relating to the future of the gas distribution network and the last consumers using it. Our research[5] shows that as more and more customers leave the gas distribution network, the remaining customers will face increasing risks.

The Future Gas Strategy must demonstrate the need for a plan to mitigate the risks that result from declining demand. These risks can be exacerbated by a poor Future Gas Strategy or mitigated by an informed and decisive one.

Our submission makes two main recommendations:

1. The Future Gas Strategy must plan for most households and small businesses switching their gas appliances to electric ones over the coming decades.

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[1] Analysis of RIN responses submitted by gas distribution networks regulated by the AER.

[2] https://energyconsumersaustralia.com.au/publications/stepping-up

[3] https://energyconsumersaustralia.com.au/publications/residential-electrification-inquiry-submission

[4] Energy Networks Australia, Reliable and Clean Gas for Australian Homes, July 2021: https://www.energynetworks.com.au/resources/fact-sheets/reliable-and-clean-gas-for-australian-homes-2/

[5] https://energyconsumersaustralia.com.au/publications/stepping-up

2. The Future Gas Strategy should demonstrate the need for a plan to ensure a safe, equitable and least-cost transition away from the gas distribution network, and identify the entity who will develop this plan.

We provide the reasons for our recommendations in the body of our submission below.

Thank you again for the opportunity to provide our comments. If you have any questions about our comments in this submission, please contact Ashley Bradshaw at ashley.bradshaw@energyconsumersaustralia.com.au

Yours sincerely

Brian Spak
Director, Energy System Transition

The Future Gas strategy must plan for most households and small businesses switching their gas appliances to electric ones over the coming decades

Most gas that is consumed by end users domestically is done via large users on the gas transmission network

Gas is consumed by end users on both the transmission and distribution network.[6]

Most gas that is consumed by end users in Australia is done so via the transmission network through electricity generation plants and large industrial loads.[7] Of the gas that is consumed via a connection to the gas distribution network, it is consumed by residential, commercial and small industrial users.

Overall, residential and commercial customers are responsible for around 13% of Australia's total gas consumption.[8]

Emissions from residential and small business gas consumption are a material contributor to Australia's total emissions

Emissions from Australian households burning of fossil gas were 2.6% of Australia's total emissions in 2019.[9] These emissions were greater than Australian greenhouse gas emission from:

- the entire construction sector;
- the rail, air and space transport sectors combined.

The International Energy Agency (IEA) global net zero pathway finds no major long-term role for the use of gaseous fuels in buildings

In September 2023, the IEA provided the 2023 update to their Net Zero Roadmap.[10] The Net Zero Roadmap sets out a feasible pathway for the global energy sector to limit the rise in global temperatures to 1.5ºC. The analysis was undertaken with input and review from a variety of senior government officials and international experts.

IEA outlines the decarbonisation pathway for the three key sectors, industry, transport and buildings. Most relevant to this consultation is industry and buildings, as globally, the transport sector does not rely much on gaseous fuels. The energy consumption from the industry and buildings sectors are defined as:

- **Industry:** The fuel used within the manufacturing and construction industries. Key industry branches include iron and steel, chemical and petrochemical, cement, aluminium, and pulp and paper.
- **Buildings:** The energy used in residential and services buildings. Building energy use includes space heating and cooling, water heating, lighting, appliances and cooking equipment.

IEA finds no major long-term role for gaseous fuels as an energy source for buildings, and that gas demand from buildings needs to reduce significantly. By 2035, total gas demand needs to half with

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[6] https://aemo.com.au/en/learn/energy-explained/energy-101/industry-overview

[7] https://www.energy.gov.au/publications/australian-energy-update-2022

[8] Analysis of https://www.energy.gov.au/publications/australian-energy-update-2022

[9] https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-2019/national-inventory-by-economic-sector-data-tables-and-methodology

[10] https://www.iea.org/reports/net-zero-roadmap-a-global-pathway-to-keep-the-15-0c-goal-in-reach

only small amounts of switching to biomethane and hydrogen. Decarbonisation of buildings will instead be driven mostly by electrification of heating and cooking and improved energy efficiency.

IEA Buildings Energy Consumption in select years – Net Zero Emissions by 2050 Scenario (EJ)

Buildings	**2022**	**2030**	**2035**	**2050**
Total Energy Consumption	133	100	92	89
Electricity	*46*	*48*	*51*	*62*
Liquid Fuels	*13*	*9*	*5*	*1*
Gaseous fuels	***31***	***22***	***15***	***5***
Solid fuels	*32*	*9*	*8*	*6*
Heat	*7*	*7*	*6*	*5*

Gaseous fuels	**31**	**22**	**15**	**5**
Natural gas	*30*	*19*	*11*	*0*
Biomethane	*0*	*2*	*3*	*3*
Hydrogen	*-*	*0*	*0*	*0*

Source: Adapted from IEA Net Zero Roadmap Full report, Table A.2: World final energy consumption.

In contrast, the IEA shows that the decarbonisation pathway of the industrial sector is more complex and will vary by industry type. Like buildings, electrification is forecast to be a key contributor to emissions reduction. However, many industries will have an ongoing reliance on the gas sector. Decarbonisation will therefore be driven by the growth of hydrogen, other renewable gases and carbon capture technologies (such as CCUS).

This shows that the most efficient decarbonisation pathway for most consumers on the gas distribution network will be via electrification, while it will differ by industry type of the gas transmission network.

The IEA's analysis is supported by the evidence

In principle, it is technologically possible to convert existing gas use by households and small business in Australia over to green hydrogen as a decarbonisation strategy. But it is an expensive and dangerous bet, that has few clear upsides and many serious downsides. A few clear facts:

- To produce green hydrogen, you need significant amounts of electricity.[11] Cheap green hydrogen therefore requires cheap clean electricity. If green hydrogen becomes cheap, then so too does electricity, making the benefits of electrification greater.
- Existing gas infrastructure can only safely integrate small blends of hydrogen (potentially as much as 20%). Aspects of the gas network may be able to operate at 100% hydrogen, but much of it cannot.[12] While there are challenges in electrifying gas use, they are only a fraction when compared with the challenges of moving from fossil gas to hydrogen.[13]

[11] https://www.greentechmedia.com/articles/read/green-hydrogen-explained

[12] https://www.bcg.com/publications/2021/whats-in-the-pipeline-for-midstream-gas See section, "Preparing Gas Networks for Hydrogen"

[13] https://energyinnovation.org/wp-content/uploads/2022/04/Assessing-the-Viability-of-Hydrogen-Proposals.pdf

- As today's gas appliances cannot run on 100% hydrogen,[14] the consumer will have to switch appliances regardless. However, electric appliances will be cheaper to run than their hydrogen alternatives.
- Using electric heat pumps to heat homes is significantly more efficient than using green hydrogen (more than 500% more efficient according to some sources).[15] Even if hydrogen became cost competitive with electricity, the end use heating service will still be more expensive, as the hydrogen appliance would require more energy to create the same amount of heat as an efficient electric appliance.
- An ongoing research project that reviews independent studies examining the role of hydrogen for residential heating (that is, studies not carried out by or on behalf of a specific industry such as gas, oil, electricity or manufacturing), has found that that using hydrogen for domestic heating is not cost effective compared to electricity.[16] As of October 2023, an assessment of 45 independent studies concludes that "heating with hydrogen is at best a niche application."[17]

In contrast to hydrogen, 100 per cent biomethane could be directly substituted into existing gas pipelines. However, as Grattan Institute's *Getting off Gas: why, how, and who should pay?*[18] discusses, there are also significant economic and logistical challenges for the long-term role of biomethane in Australia.

A report funded by the Australian Renewable Energy Agency, Clean Energy Finance Corporation, Energy Networks Australia and IEA Bioenergy found that Australia has a total estimated biogas potential of 371 PJ.[19] Unfortunately, this potential is less than a third of current domestic gas supply in Australia (in 2021, total domestic gas consumption was 1,568 PJ).[20] We would expect that Australia's limited biomethane resources be best allocated to the industries that have few technology alternative to reduce emissions.

The Future Gas Strategy should demonstrate the need for a plan to ensure a safe, equitable and least-cost transition away from the gas distribution network, and identify the entity who will develop this plan.

Most customers on the gas distribution network are residential and small business customers and accordingly, most gas distribution costs are recovered from these customers

Across each of the six fully regulated gas distribution networks in the NEM, around 97% of connected customers are households. [21] AER analysis has found that over 90% of Victorian gas distribution network costs were recovered from residential households alone. While industrial users account for

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[14] IRENA, Global Hydrogen Trade to Meet the 1.5°C Climate Goal: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2022/Apr/IRENA_Global_Trade_Hydrogen_2022.pdf?rev=3d707c37462842ac89246f48add670ba

[15] https://www.carbonbrief.org/heat-pumps-up-to-three-times-cheaper-than-green-hydrogen-in-europe-study-finds/#:~:text=Hydrogen%20is%20a%20less%20efficient,same%20warmth%20using%20heat%20pumps.

[16] http://www.janrosenow.com/uploads/4/7/1/2/4712328/is_heating_homes_with_hydrogen_all_but_a_pipe_dream_final.pdf

[17] https://www.linkedin.com/posts/janrosenow_gas-executive-lobbying-to-slow-climate-action-activity-7117494771685675008-jpiF?utm_source=share&utm_medium=member_desktop

[18] https://grattan.edu.au/report/getting-off-gas/

[19] https://www.energynetworks.com.au/resources/reports/biogas-opportunities-for-australia-enea-consulting/

[20] https://www.energy.gov.au/publications/australian-energy-update-2022

[21] Analysis of RIN responses submitted by gas distribution networks regulated by the AER.

around 30% of consumption on the gas distribution network, industrial users only account for 1.3% of recovered network revenue.[22]

When customer numbers decline on a gas distribution network, the remaining customers will face higher bills and could potentially make the network uneconomic to maintain

When electrification efforts begin to happen at scale, disconnection rates will exceed connection rates, and the number of customers connected to the gas distribution network will decrease. Those who remain connected to the gas distribution network will have to pay a greater amount of network charges to recover the lost revenue from those exiting consumers.

This will lead to increased gas bills for the remaining customers, putting added pressure on consumers who are already struggling. These impacts would prompt more consumers to leave the network, creating a self-reinforcing effect.

Once a critical mass of customers leaves the gas distribution network it may become uneconomical for it to remain operational, as the costs per customer will simply be too high. This would force all remaining consumers to switch to electric alternatives (or in some small business cases, a switch to LPG), even if they can't afford to.

A decline in gas customer numbers causes other potential risks for the operation and safety of the distribution network (e.g., difficulty maintaining pressure in gas pipelines).

Not all gas distribution network customers will be able to easily switch

For many consumers, the main barrier to switching will be the upfront costs, and the lack of clear trusted information. Most consumers will likely need access to low-cost financing and a reputable trusted source of information in order to smoothly transition.

Unfortunately, those who are most likely to remain on the gas distribution network will be those who have no other choice, or face significant barriers. These are some of the most vulnerable in our community already.

- Low-income households and small businesses who are struggling financially will not be able to afford (or access the financing required) to switch appliances.
- Rental households will have to rely on their landlord being incentivised to make these changes for them. There are similar issues for small businesses who lease their premises, who in the absence of changes to commercial leasing acts, will not have agency over their decisions.
- Those who live in units will face barriers to switching to electric alternatives, particularly around getting agreement across the entire premises to make the changes required.
- Some small businesses will rely on specific machinery for which there currently exists no alternative, or not be a major market in Australia.

Targeted government support will be needed to help these consumers manage bills during the transition, and then eventually switch when they must.

[22] AER - 2022 Gas Network Performance Report, p. 107

We need to prepare for decreasing gas distribution customer numbers now, before it gets out of hand

Connection growth is slowing

The AER releases quarterly data on the number of retail gas customers in New South Wales, Queensland, South Australia, ACT and Tasmania.[23] This data shows a clear decreasing trend in the growth rate of customers since early 2019.

Annual change in residential retail gas customer numbers in NSW, ACT, QLD and SA – September Quarter 2016 to March Quarter 2023[24]

Source: Analysis of AER retail performance reporting data

Connections growth will continue to slow in some regions

As you know, some jurisdictional governments have introduced their own policies to ban new gas connections. ACT was the first, and Victoria recently announced the same policy.[25]

Community-led electrification initiatives driven by local governments and changing community gas sentiment are also emerging, separate to policy. For example, the City of Sydney announced a proposal to ban new gas connections in buildings, despite the NSW government deciding not to do so.[26]

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[23] https://www.aer.gov.au/retail-markets/performance-reporting

[24] Victoria is not included as the AER does not record this data for this state.

[25] https://www.theguardian.com/australia-news/2023/jul/28/victoria-announces-ban-on-gas-connections-to-new-homes-from-january-2024#:~:text=Last%20month%2C%20the%20ACT%20passed,to%20match%20Victoria's%20gas%20pledge.

[26] https://www.theguardian.com/australia-news/2023/aug/25/sydney-city-council-gas-ban-new-buildings-proposal

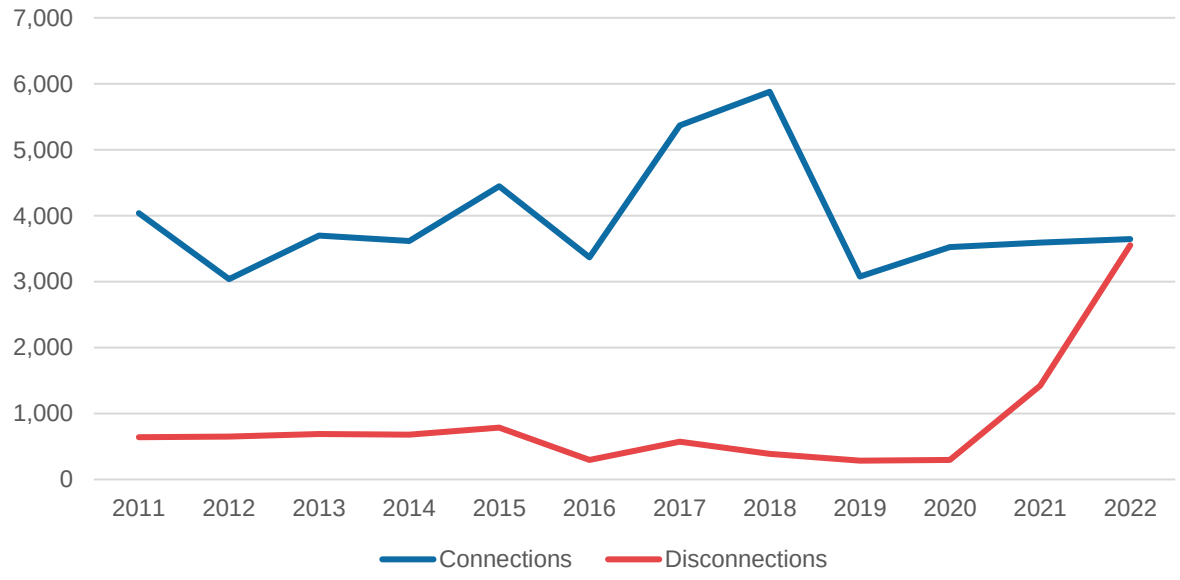
Broader economic factors are also contributing to slowed connections growth generally, with housing approval rates decreasing sharply due to increasing costs and other economic factors.[27] Some developers, absent government policy are also deciding to only build electric homes anyway.[28]

Disconnection rates could soon increase, as they have done in ACT

If there continues to be ongoing government direction and community support for electrification, many consumers may decide to go on the electrification journey themselves. For some consumers with large solar installations, the economic incentive already exists for them to forego gas altogether. This will lead to increases in disconnection rates.

This is already underway in the ACT which currently has the strongest electrification policies of any jurisdiction. As shown below, disconnection rates on the Evoenergy gas distribution network increased significantly in recent years. Disconnection rates will likely exceed connection rates in 2022-23. And per planned ACT regulations, the number of new gas network connections must go to zero by the end of this year.[29]

Evoenergy gas distribution network connections and disconnections per year – by financial year



Source: Analysis of Evoenergy RIN responses.

Someone needs to be responsible for planning the safe, efficient and equitable transition away from the gas distribution network

Given the risks outlined above, there needs to be a coordinated central planning process to manage the risks posed by declining gas distribution customer numbers.

Declining customer numbers completely changes the paradigm under which gas distribution networks will operate, and their associated regulatory roles and responsibilities. For example, the National Gas

[27] https://www.abs.gov.au/statistics/industry/building-and-construction/building-approvals-australia/latest-release

[28] See Preston Place and Arden Homes as examples.

[29] ACT Government – Integrated Energy Plan Position Paper, p. 17

Rules do not mention the words “disconnection” or “abolishment,” but policies governing consumer disconnection must be made. In short, the current regulatory system is not fit for purpose in a rapid electrification environment.

A central body responsible for planning the gas distribution network can also help manage stranded asset risks and ensure the transition is efficient. The body could identify opportunities to remove the need for major gas distribution capex by identifying locations best suited to electrifying first.

The body could also work with communities to ensure that building abolishment costs are minimised. For example, if abolishment is done at the street level, total abolishment costs would likely be lower than the total costs of doing each house on the street individually.

We recognise that gas distribution network planning is outside DISR’s jurisdiction. For this reason, we have not provided detailed comments on what the plan should look like. Instead, we hope this submission demonstrates the immediate need for a plan.

One positive, immediate step DISR could take would be to identify an entity who is responsible for outlining a plan for the future of the gas distribution network. There are many possible entities: one of the market bodies, the Department of Climate Change, Energy, Environment and Water, or a Task Force with expertise from across the sector with clear orders and deadlines. If the Future Gas Strategy clearly states that a plan is required and identifies possible entities, this will be an important step forward and help initiate the allocation of time and resources across the sector to create the plan.

In summary, we recommend that the Future Gas Strategy demonstrates the need for a plan for the safe transition from gas distribution network and identifies who should be responsible for making it. We welcome the opportunity to continue to engage with DISR and other policymakers on this issue in the future.