3 February 2023

Leonie Horrocks
Branch Manager
Energy Branch
Department of Climate Change, Energy, the Environment and Water

Via: https://consult.dcceew.gov.au/neps-consultation-paper

## Energy Networks Australia's response to National Energy Performance Strategy

Energy Networks Australia (ENA) welcomes the opportunity to respond to the National Energy Performance Strategy.

ENA is the national industry body representing Australia's electricity transmission and distribution and gas distribution networks. Our members provide more than 16 million electricity and gas connections to almost every home and business across Australia.

This submission is made on behalf of our gas distribution network members.

ENA agrees there are significant benefits to be gained from improving energy efficiency, including supporting emissions reductions to help reach Australia's Net Zero targets. ENA is supportive of policies in this space that are technology neutral and do not discriminate between fuels, i.e., electricity and gas. Gas networks are on their own decarbonisation journey, transitioning alongside electricity towards a net zero future. Electrification policies should not be implemented as the sole strategy for energy efficiency upgrades as this does not account for the significant role that renewable gas plays in decarbonisation. Further policy support is also needed to facilitate the decarbonisation of the gas sector, including the introduction of a renewable gas target that would effectively mirror the support already provided for renewable electricity.

## Networks delivering a net zero energy system

The mandate to decarbonise is clear. Governments, investors and consumers across Australia and globally are driving a target of net zero by 2050. The energy sector will need to move earlier, accelerating pathways for other sectors to decarbonise.

ENA's Energy Vision seeks to define a single vision of how transmission, distribution and renewable gas networks will work together in the energy grid of the future to enable greater customer choice and flexibility and support system security and reliability to enable energy decarbonisation at lowest possible cost to customers.

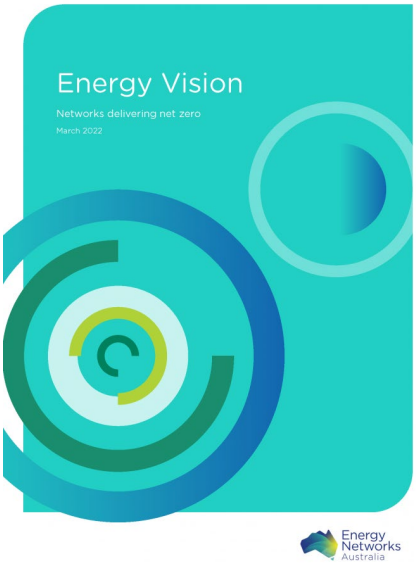



*Figure 1: ENA's Energy Vision*

The shared vision will allow networks to articulate a collective pathway to net zero, identifying the activities, investments and timeframes necessary to reliably and affordably deliver the future energy system.

## Gas networks delivery renewable gas

While the decarbonisation journey for electricity, including the need for investment in networks to enable new renewables to connect, is well known, it is less well known that gas networks are on their own decarbonisation journey. Customers tell us that they are seeking a clean energy future and are engaged in achieving emission reductions from gas use.

New renewable fuels, such as hydrogen and biomethane, can use existing energy infrastructure to decarbonise the gas sector in line with Australia's emission reduction targets. Our gas networks are leading the development of renewable gas projects and blending renewable hydrogen in the Adelaide and Sydney gas distribution networks, with further projects under development for Victoria, Western Australia and Queensland.

Australian gas distribution networks are continuing to complete testing with Future Fuels CRC for networks materials and components on hydrogen blends and 100 per cent hydrogen. Testing of appliances in Australia has been completed up to 10 per cent and has found that these appliances can safely continue to perform with a blend of 10 per cent hydrogen. Gas networks in Australia are already blending renewable gas.

Australia's gas distribution networks are leading the development of renewable gas demonstration. Both renewable hydrogen and biomethane projects are under development. Of particular interest are the following projects:

- **Hydrogen Park, SA[1]:** Renewable hydrogen is produced using a 1.25MW electrolyser with water and renewable electricity. The renewable hydrogen is blended with natural gas at volumes of up to 5 per cent and supplied to nearby homes (over 700 homes) via the existing gas network.
- **Western Sydney Green Hydrogen Hub[2]:** Hydrogen is carbon neutral and a 500kW electrolyser installed as part of the Western Sydney Green Gas Project. The project is expected to reach 23,500 residential customers, 100 commercial customers, and seven industrial customers.
- **Malabar Biomethane Project[3]:** This Sydney-based project aims to produce renewable biogas from wastewater which will be upgraded to meet the specifications of natural gas allowing it to be injected and blended into the natural gas distribution system. Renewable biomethane is expected to be injected into Jemena's natural gas network in early 2023.

These projects are demonstrating a pathway to deliver renewable gas to homes and businesses.

## The availability of 100 per cent hydrogen appliances

A common concern expressed about the role of hydrogen is the availability, suitability and safety of hydrogen appliances. Existing gas appliances are only suitable to take a blend of hydrogen (up to 10 or 20% as mentioned above) and modifications to appliances will be needed for them to operate safely and efficiently on 100 per cent hydrogen.

The Hy4Heat program in the UK has developed certified household appliances that work on 100 per cent hydrogen. These appliances include cooktops, space heaters, boilers, hot water heaters and meters. UK's major boiler manufacturers have advised that they will be able to deliver hydrogen boilers at similar, if not lower, costs as gas boilers. This creates significant cost savings compared to electrification, which requires more expensive boilers.

Australia's gas appliance manufacturers are actively engaged in the appliance research program[4] at Future Fuels CRC and are also independently pursuing the development of hydrogen appliances for the domestic market. For example, Rinnai recently announced a hydrogen hot water heater for the Australian market.[5]

## A systems approach to decarbonisation

Decarbonising the economy requires both renewable electricity and renewable gas. These energy vectors can work together in the energy system to continue to provide reliable energy to households, businesses and industry.

Gas plays an important role in ensuring energy security, providing an alternative fuel source when there are disruptions to the electricity grid. The IEA recognises the role of hydrogen, particularly hydrogen storage, to support system security to balance fluctuations in supply from variable renewable energy,

[1] https://www.agig.com.au/hydrogen-park-south-australia
[2] https://jemena.com.au/about/newsroom/media-release/2021/first-green-hydrogen-for-new-south-wales-homes-and
[3] https://jemena.com.au/about/innovation/malabar-biomethane-project
[4] https://www.futurefuelscrc.com/program_area/compatibility-of-end-user-equipment-with-future-fuels-rp1-4/
[5] https://www.rinnai.com.au/blog/rinnai-australia-unveil-new-revolutionary-renewable-energy-technologies/

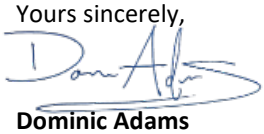
such as solar and wind.[6] Moreover, in case of supply disruptions; like trade conflicts, unforeseen outages, and natural disasters.

Home heating is extremely seasonal and peaky and gas infrastructure is well placed to handle these peaks, given the significant capacity for energy throughput on the gas system. Electrification of heating, via subsidies for heat pumps, creates additional pressure for the electricity distribution and transmission networks. This in turn will require additional investment, which may not be needed if gas networks are repurposed to deliver renewable gas. Additionally, gas networks provide inherent storage of energy, which can complement the growing level of renewable generation for the electricity system, which must balance in real time.

Electrification is a potential pathway to reduce greenhouse gas emissions once the electricity grid is decarbonised. However, claimed cost savings from electrification commonly ignore the costs of electricity infrastructure upgrades, and commonly assume declining electricity costs while renewable gas costs are assumed to increase. Additional work is required to better understand the comparative costs of the full supply chain for electrification and/or renewable gas. Fuel-switching to electricity is not the only option and fuel switching from natural gas to biomethane or hydrogen gas can provide reductions in emissions alongside electrification strategies where it is cost-competitive (e.g., electric vehicles). Customer choice should also be considered as many households who are using gas appliances are doing so because they provide a better service to those households.

Should you have any queries please contact ENA's Head of Renewable Gas, Dr Dennis Van Puyvelde, dvanpuyvelde@energynetworks.com.au.

Yours sincerely,



**Dominic Adams**

General Manager, Networks

[6] https://www.iea.org/reports/global-hydrogen-review-2022