30 August 2024

NSW Department of Climate Change, Energy, the Environment and Water

Via: renewablefuelscheme@environment.nsw.gov.au

Opportunities for a renewable fuel industry in NSW

Energy Networks Australia (ENA) welcomes the opportunity to make a submission to the *Opportunities for a renewable fuel industry in NSW* Discussion Paper, August 2024.

ENA represents Australia's electricity transmission and distribution and gas distribution networks. Our members provide over 16 million electricity and gas connections to almost every home and business across Australia.

Key messages

- ENA supports the proposed Strategy's objectives of achieving NSW emission reduction targets, decarbonising hard-to-abate sectors, driving economic development in regional NSW and improving fuel security.
- To achieve these objectives, further development of national policy is required to recognise the opportunities for a market-based approach to renewable gases when blended into the gas network. ENA understands that this work (under the NGER scheme) is being progressed for biomethane and additional work will be needed for hydrogen.
- ENA proposes that the NSW Renewable Fuel Scheme be expanded to include other renewable fuels, especially biomethane.
- In expanding the fuels, the liable parties should be reviewed. ENA recommends that the liable parties are those that gain benefits from the renewable fuels by being able to reduce their emissions.
- ENA supports using a fuel agnostic renewable gas target to achieve abatement at the lowest cost. Further support mechanisms may also be needed to develop other renewable gas supply chains, such as hydrogen.
- ENA recommends that a domestic renewable fuel market is established to support longer term opportunities for export markets. Furthermore, local bioenergy resources should be prioritised to decarbonise the domestic market, and only surplus fuels should be offered to the export market.

ENA decarbonisation priorities

ENA supports the four strategic objectives of the NSW Government to guide the development of policies and actions for a growing renewable fuel industry.

- Achieve NSW's emissions reduction targets
- Decarbonise hard-to-abate sectors
- Drive economic development in regional NSW
- Improve fuel security

ENA also supports reaching net zero emissions by 2050 or earlier, which requires coordinated actions across all sectors. Australia will need to play a vital role to both decarbonise its domestic economy and its emission intensive resources.

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Reducing emissions comes at different costs and complexities across sectors. Some sectors are able to reduce emissions in the near term, while other sectors require further technology or deployment cost breakthroughs. The Australian government is currently consulting on decarbonisation pathways in different sectors and aiming to develop a national action plan by the end of 2024.

ENA's member businesses are key enablers to decarbonise the energy sector. ENA's priorities for decarbonising the Australian economy are focused on the greatest emissions impact for effort. They are:

- Continue the switch from coal-fired electricity generation to renewables. This will be supported by effective investments in transmission infrastructure to connect new sources of renewable electricity generation with customers.
- Encourage the uptake of electric vehicles. Smarter use of the distribution grid can encourage renewable generation during the day to be used to replace fossil fuels for cars.
- Develop renewable gas solutions for industry. Many industrial and commercial businesses do not have practical alternatives to the use of gaseous fuel. The volume of fuel required shows a clear pathway for gas networks' key role in decarbonising the energy system.

A focus on decarbonisation of industry will help to achieve economies of scale and accelerate the transition of the rest of the economy. Prioritising renewable electricity generation, EV's, energy efficiency and renewable gas for industry builds the national capability to decarbonise other sectors, such as the built environment, heavy freight, and agriculture.

We would welcome the opportunity to work with the NSW government on the opportunities for a renewable fuel industry in NSW. If you wish to discuss any of the matters raised in this response further, please contact Dennis Van Puyvelde, Head of Renewable Gas, via: dvanpuyvelde@energynetworks.com.au.

Yours sincerely,

Dominic Adams

General Manager Networks

Attachment 1: ENA response to Consultation Questions

QUESTION	THEME
Renewable fuel policy objectives	
1. Do you support these primary objectives? Are there other objectives renewable fuel policies should address?	ENA supports NSW's guiding principles of achieving emission reductions targets, decarbonising hard-to-abate sectors, driving economic development in regional NSW and improving fuel security.
Existing policies and programs	
2. What actions can the NSW Government take to continue support for hydrogen production in NSW?	ENA considers that additional support is required from the NSW Government to enable the renewable fuels industry to develop and assist NSW to achieve its primary objectives. ENA notes the NSW Hydrogen Strategy, in particular up to $3 billion of incentives through 60 industry development actions, including the NSW Hydrogen Hubs Initiative and the production incentives. However, this scheme does not include biomethane in its coverage. Development of the biomethane industry in NSW is intrinsic to NSW reaching its climate goals, particularly in the hard-to-abate industrial sectors. A state-based Hydrogen Headstart program, similar to that of the Commonwealth Government but including biomethane, would help the renewable gas industry to expand in NSW, thereby assisting NSW to reach its climate goals and support NSW's hard-to-abate industries.
3. What could be implemented or learnt from existing policies and programs?	To get the best outcome for NSW, it is important that Government continues to consult and engage with industry. In times of transition, technologies and circumstances can change quickly. Industry must be adaptable and agile to be able to factor in these changes. Alongside this, government policy needs to provide industry with certainty and an environment conducive to ongoing investment. Deployment incentives will have an important role in supporting Australia's green hydrogen and biomethane industries to move down technology cost curves more quickly and achieve the scale of production needed to contribute to decarbonisation pathways. The Commonwealth's Renewable Energy Target (RET) is an example of a deployment policy which began at modest scale and helped to drive down the cost of renewable electricity generation.

	A Renewable Gas Certificate (RGC) Scheme could be set up by NSW Government. Under an RGC Scheme there is an annual renewable gas production target calculated from an estimated proportion of forecast gas consumption. Participating producing entities would receive a RGC for each 1 TJ of renewable gas supplied to the market. To reach the target, liable entities would be required to purchase a proportion of RGCs in line with their forecasted share of total natural gas consumption. Targeted production volumes should be sufficient to lead to cost reductions based on reasonable assumptions on scale and learning effects. NSW's Renewable Fuel Scheme is effectively an RGC Scheme for green hydrogen only. This should be expanded to biomethane. ENA supports using a fuel agnostic renewable gas target to achieve abatement at the lowest cost to consumers. This will likely see the deployment of the lowest cost renewable gas - biomethane from land fill gas. However, additional support mechanisms may also be needed to develop other renewable gas supply chains such as hydrogen and higher cost feedstock biomethane, that will be needed to decarbonise natural gas supply. ACIL Allen found in its modelling underpinning its recent Renewable Gas Target report for ENA, that decarbonising domestic gas use in Australia would require both biomethane and hydrogen as well as some electrification.
Infrastructure	
4. How can the NSW Government support infrastructure reuse and development that delivers efficient, low-cost renewable fuel supply chains across the state?	Renewable fuels need access to gas networks, in particular their infrastructure. Gas infrastructure is already in place and designed to meet peak demand and includes built in storage. Repurposing existing infrastructure for renewable gas optimizes customers' investments. Existing infrastructure is able to deliver renewable gases across the network. This will enable NSW to reach its decarbonisation goals in a cost-effective way and without community disruption and time associated with new infrastructure projects. Gas distribution networks are early adopters of renewable gas, as well as among the first to initiate renewable hydrogen production in Australia and can continue to expand Australia's hydrogen industry. There are hydrogen blending projects underway in Perth, Adelaide and Sydney with more planned in Victoria and Queensland in the future. These projects will deliver renewable gas blends to around 50,000 homes and businesses. There are advantages of blending hydrogen in gas networks:

	The networks can already carry 10% hydrogen blends (by volume) and with supportive government policy could start to upgrade materials that are capable of safely transporting higher blends of hydrogen to customers. Testing of appliances by Future Fuels CRC has shown that the addition of hydrogen up to 20 per cent by volume to natural gas has little effect on appliance safety and performance. Creating hydrogen opportunities in different gas networks enables the technical and economic regulators, and communities to become engaged in the supply of hydrogen and to inform themselves of the opportunities for longer term decarbonisation. The distributed nature enables additional sectors to access hydrogen, for example as hydrogen refuelling stations to support hydrogen buses and trucks, or as industry connected to the gas distribution network. Reducing the cost of hydrogen will both be driven by the global demand for electrolysers, which will bring those costs down through learning, as well as localisation experience and the deployment of cheap renewable electricity. This local experience will increase when deploying hydrogen production capacity across a broader part of the community allowing broader access to more technical trades people, regulators, customers and investors. Deploying via gas networks creates a greater potential to bring down localisation cost compared to a focussed deployment for a specific sector (e.g. hydrogen for export). Furthermore, gas distribution networks are the first to have delivered biomethane as part of the natural gas supply in Sydney. The project has an initial capacity of 95 terajoules of renewable gas per annum. This is about equivalent to the average annual gas usage of 6,300 NSW homes. Biomethane offers advantages in that it is interchangeable with natural gas, meaning there are no blending limits required, and can be used without the emissions from natural gas. ENA notes that gas distribution networks are already delivering renewable gas to customers around Australia and recommends the use of these networks (with their gaseous demand) to develop commercial opportunities to support renewable gas targets. Networks are also necessary infrastructure to aggregate diverse renewable gas projects including both hydrogen and biomethane that can inject into the network at different locations.

5.	How can the NSW Government support regional renewable fuel supply? Is there an opportunity to aggregate feedstocks at existing regional facilities such as landfills or wastewater treatment plants to create hubs for renewable fuel production?	There are a range of studies that identify the potential of feedstocks and opportunities to aggregate these. A report by FFCRC (RP1.2-04 – *National scale assessment of viable bio-methane locations in Australia*[1]) identified regions with high value and low cost opportunities for biomethane. The following regions were identified as good opportunities for NSW: • Griffith • Tamworth • Bathurst • Wagga Wagga • Dubbo Together, those regions could provide around 13.5 PJ of biomethane per year. The NSW Government Sustainable Aviation Fuel prospectus also identifies those same areas and others as areas of high potential bioenergy resources. The infrastructure resource map in that document (page 10) should be updated to also include NSW's gas infrastructure as that can potentially bring those resources to market as biomethane. Further to this, wastewater plants and landfill sites also represent good opportunities to produce biomethane and blending it into the gas network, as demonstrated by Jemena at its Malabar biomethane injection facility[2].
6.	Would support for feasibility and front-end engineering and design studies assist with reaching final investment decisions? If so, how is this best delivered?	No comment.
7.	What action would best support investment in these projects or a NSW renewable fuel industry? Are there example projects where	Jemena successfully operates the Malabar Biomethane Facility where biomethane is produced and injected into the gas network. The project was part funded by ARENA, and has an initial capacity of 95 terajoules of renewable gas per annum. This is equivalent to the average annual gas usage of 6,300 NSW homes.

[1] https://www.futurefuelscrc.com/wp-content/uploads/RP1.2-04-BiomethaneViability_summary.pdf
[2] https://www.jemena.com.au/future-energy/future-gas/Malabar-Biomethane-Injection-Plant/

	this would accelerate development?	The Malabar Biomethane Injection Plant is the first renewable gas facility registered under the GreenPower Renewable Gas Certification scheme. The biomethane and certificates are sold to market currently coupled whereby the off taker of the biomethane, in this case Origin, has the ability to surrender the renewable gas certificates for end users of the natural gas network. There remains a commercial gap between renewable gas and natural gas. The NSW Government could support the development of the renewable gas market by: • Introducing a RET type scheme to increase demand for renewable gas (see Question 3 above). • Set an internal target for NSW government buildings and businesses to procure renewable gas to reduce their own emissions. This could be supported by a feed in tariff or contracts for difference mechanism. • Support the development of a national market-based approach to recognize renewable gases blended in networks (via NGER). • Support introduction of necessary regulation to enable markets in digestate (a side product from biomethane production) • Articulate the government's priorities for bioenergy resources.
8.	Should the NSW Government establish renewable fuel demonstration projects? If so, what would be the best model to support these projects?	There are no further demonstration projects needed. Industry has proven technology that can deliver renewable gas in networks. This has been shown through demonstration projects. In NSW there is the Jemena Malabar Injection Plant and the Jemena Western Sydney Green Hydrogen Hub project. The technology works as shown in Australia (GV 2050 report) and internationally. There is a clear need, however, for support to scale up production and bring renewable gases down the technology and cost curves.
9.	Are there current technology gaps or barriers to establishing renewable fuel facilities. If so, what are they and how could they be addressed?	Technology exists to produce renewable gas. There are always new technologies being developed (eg FFCRC RP1) and they will provide improvements in efficiency and cost over time. However, technological advancements are not necessarily barriers to RG production and uptake.
Supporting demand		

10.	How can the NSW Government accelerate the use of renewable fuels?	As discussed in question 3 and 7 above, a Renewable Gas Certificate (RGC) Scheme could be set up by NSW Government, to include both biomethane and hydrogen. This Scheme would encourage the production and uptake of renewable gases. Additionally, the Commonwealth Government is currently undertaking a review of the National Greenhouse and Energy Reporting Scheme (NGERs) to include biomethane and hydrogen in the Scheme's scope. This will enable Safeguard Mechanism facilities to utilise renewable gases, both green hydrogen and biomethane, to meet their legislated requirements. This will further encourage development of the renewable gas market.
11.	Should the NSW Government set, or redesign existing mandates for the use of renewable fuels? If so, what industries or fuels should be prioritised?	As noted in question 3, a renewable gas target would support the introduction of renewable gases. A market-based mechanism would allow all gas users to purchase renewable gas, including industry, businesses and households. Many industrial facilities are already covered by the Safeguards Mechanism, so these industries are looking at opportunities to decarbonise their businesses. Renewable fuels to be supported should be broad ranging to include biomethane, hydrogen and potentially renewable e-methane (made from biogenic CO2 and green hydrogen). Unless the NSW Government sees a need to intervene, ENA does not recommend prioritising specific industries or fuels.
12.	Would renewable fuel purchase requirements for the NSW Government's assets support investment in production facilities?	Yes, this would create a demand for renewable gas and a demand for renewable gas in the networks.
13.	Should the NSW Government set targets for renewable fuel use? If so, should these targets be broad or fuel and industry specific?	It is generally accepted that there will be a role for renewable gases as we strive towards net zero emissions. Particularly, for industrial processes that either use gaseous fuel as feedstock, such as ammonia or fertiliser production, or use it to achieve high temperatures such as cement and brick kilns. Gas distribution networks are early adopters of renewable gas, as well as among the first to initiate renewable gas production in Australia. A practical deployment of renewable gas would provide a gradual build-up for production where lessons from each project completed can be taken forward to reduce the costs of future projects and scale up the industry. However, renewable gases are currently generally uncompetitive with natural gas so

		aspirational targets set by governments are needed to create a demand for renewable gas. ENA supports using a fuel agnostic renewable gas target to achieve abatement at the lowest cost. This will likely see the market initially drive the deployment of the lowest cost renewable gas - biomethane from land fill gas. However, additional support mechanisms may also be needed to develop other renewable gas supply chains such as hydrogen and biomethane from higher cost feedstocks, that will be needed to decarbonise natural gas supplied. ACIL Allen found in its modelling underpinning its recent Renewable Gas Target report for ENA, that decarbonising domestic gas use in Australia would require both biomethane and hydrogen as well as some electrification.
14.	What incentives can the NSW Government put in place to accelerate the use of renewable fuels?	There are several mechanisms/incentives that could be utilised by the NSW Government to encourage the acceleration of renewable gases. Contracts for difference (CfD) incentivise renewable gas production by providing price certainty to developers. Under CfD agreements, the government covers any shortfall between the market price and the agree reference or 'strike' price. Some designs include upside risk sharing, where the government will receive the difference between the strike price and market price when the market price is higher. CfD policies are designed so that the fiscal liability is self-eliminating over time, as market prices increase. This avoids risks of lock-in to subsidies that can be challenging to unwind once established. Another incentive that could be employed is a Feed-in-Tariff (FiT). Under a FiT, project developers receive a fixed amount for renewable gas production over an established period. FiT's are typically paid on the volume of renewable gas supplied to the network. The aim of a FiT is to incentivise production by providing a premium above fossil fuel competitors for renewable gases. FiT's have been used extensively to establish markets for renewable energy sources including rooftop solar PV, biogas and biomethane. The choice of incentive approach will determine the nature of the risks faced by renewable gas project developers, and is a decision that should be made Ongoing research, development and demonstration is needed to bring forward emerging technologies across the energy transition supply chain.

15.	What support do asset owners need to refurbish or upgrade existing assets for renewable fuel usage?	Gas distribution networks are already delivering renewable gas blends to customers. There are hydrogen blending projects underway in Sydney, Perth and Adelaide, with more planned in Victoria and Queensland in the next two years. These projects will deliver renewable gas to around 50,000 homes and businesses. Gas distribution networks are the first to have delivered biomethane as part of the natural gas supply in Sydney. The project has an initial capacity of 95 terajoules of renewable gas per annum. This is about equivalent to the average annual gas usage of 6,300 homes. Biomethane offers advantages in that it is interchangeable with natural gas and can be used without the emissions from natural gas. ENA notes that gas distribution networks are already delivering renewable gas to customers around Australia and recommends the use of these networks (with their gaseous demand) to develop commercial opportunities to support renewable gas targets. Networks are also necessary infrastructure to aggregate renewable gas projects including both hydrogen and biomethane that can inject into the network at different locations. With this aggregated network, there will be a requirement to redesign some aspects. This will include possible reverse flow of pipelines and compression from regional networks to move the biomethane into demand centres. Policy and funding support would be beneficial for networks to start to design and implement these changes, so when the industry is developed the pipelines can facilitate the offtake of all the available flow.
Accelerating supply		
16.	What funding mechanisms or support should the NSW Government consider to support research and innovation and improve the commercial viability of renewable fuel production?	Ongoing research and development is needed to bring forward emerging technologies across the energy transition supply chain. The Future Fuels CRC (FFCRC) (of which the NSW Government is a member) is due to finish in the near term. The FFCRC has delivered over $92 million worth of applied research focussed on renewable gas blending in gas infrastructure, industrial facilities and appliances. The energy transition will require application of renewable gases including biomethane and green hydrogen. These gases will have different roles across the economy. Industry-led research can build on the results of the FFCRC to develop new technologies to achieve this transition at lowest cost.

		ENA recommends continued government co-funding of industry-led research to support the large-scale deployment of renewable gases.
17.	Should the Renewable Fuel Scheme be expanded to support other renewable fuels?	ENA and its members support an expansion of the Renewable Fuels Scheme to include other renewable fuels including biomethane, and in the longer-term renewable e-methane. Inclusion of these gases will assist NSW in meeting its climate targets at lowest cost to energy consumers.
18.	If the Renewable Fuel Scheme is expanded to include other renewable fuels, who should be the liable parties and why?	ENA notes that the liable parties should also be able to benefit from the use of renewable fuels and that natural gas customers should not provide a cross subsidy to other sectors.
19.	Should the Renewable Fuel Scheme incentivise fuels that offer short-term emission reduction, longer-term emission reduction or a combination?	The Renewable Fuel Scheme should incentivise all fuels that support NSW's climate targets. This should be a combination of fuels that offer short-term emission reduction and longer-term emission reduction.
20.	How can the NSW Government support feedstock producers for local renewable fuel production (regulatory, research, financial, etc)? What are the potential risks that should be considered?	No comment
21.	For feedstock producers and businesses currently exporting biomass crops, tallow and used cooking oils for overseas renewable fuel production, would an incentive scheme support the local sale of these important feedstocks?	No comment
22.	Should a reservation policy be used to keep feedstock on shore to	Feedstock is a limited resource with a range of different demand for its end use. As noted in the discussion paper, half of Australia's canola crop is exported to the European biofuels market.

	support the local industry?	The NSW Government should consider whether the domestic use of this crop to decarbonise Australia provides a better overall economic outcome compared to exporting it. The NSW Government should identify whether any reservations should be allocated to feedstock for different markets. Ideally, the market will provide the right price signals to convert different feedstocks into different fuels for consumers.
23.	In setting guidelines for renewable fuels, what sustainability measures should be considered? Including food availability, lifecycle emissions calculations, changes in market prices for agricultural and waste products.	No comment
24.	Should a hierarchy of use for bio-feedstocks be enforced to prioritise feedstocks for applications where there is no available alternative for decarbonisation?	Please see Q22
Value of NSW communities		
25.	Would a NSW Government-sponsored outline of export opportunities and volumes assist with investment?	No comment
26.	Should there be a limit on financial support for renewable fuel export projects? If so, what is that limit and when should it apply?	No comment
27.	How can the NSW Government ensure that the export of renewable fuels benefits NSW communities? Are	No comment

	royalties an appropriate mechanism?	
28.	How can the NSW Government, education providers and industry best support the development of skills,training and the workforce needed in a renewable fuel industry?	No comment
Managing market risks		
29.	How can the NSW Government support companies and industries with cross-border markets to decarbonise?	Australia should adopt a national approach to decarbonisation and avoid border mechanisms between states.
30.	How can the NSW Government encourage a fuel transition that aligns with technological advancement?	No comment
Building community understanding		
31.	What information should be provided to industry and the community to build an understanding of renewable fuels? How is this information best delivered?	No comment