26 September 2024

Re: Jemena's submission to the Inquiry into the Future Made in Australia (Guarantee of Origin) Bill 2024 and related bills

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Jemena welcomes the opportunity to respond to the consultation on the Future Made in Australia (Guarantee of Origin) Bill 2024 and related bills. As an owner and operator of a diverse portfolio of energy assets throughout the northern and east coasts of Australia, Jemena is uniquely positioned to engage and offer productive insights on the Commonwealth government's Guarantee of Origin scheme.

Our assets include the Jemena Gas Network in New South Wales, the Jemena Electricity Network in northwest Melbourne and gas transmission pipelines such as the Eastern Gas Pipeline, Queensland Gas Pipeline and the Northern Gas Pipeline. Our group also includes Zinfra, an energy services business, which provides project management, construction, operations and maintenance services for the electricity and gas sectors.

Jemena's vision is to create sustainable energy solutions with communities. We believe a mix of fuels and services should continue to play an important role as the industry transitions to more renewables in both electricity and gas energy.

Jemena agrees with the Climate Change Authority that biomethane and renewable hydrogen will be required for hard-to-abate industrial users now and into the future. By displacing natural gas with a blend of renewable gases we believe that existing gas infrastructure can play an important role in a more secure and lower-cost transition to net-zero emissions by 2050.

Research undertaken by GHD confirms there is between 30-34 petajoules of biomethane supply available proximate to Jemena's NSW gas network. This would be sufficient to supply approximately 65 per cent of industrial load and 90 per cent of hard-to-abate load connected to the network. The levelised-cost of biomethane across all feedstocks is estimated to be in the range of $6.3 - $17.6/GJ making it a price competitive carbon neutral substitute to natural gas today.

Additionally, 10 per cent hydrogen blends by volume can be injected with no changes being made to our network (with the potential for higher blends of up to 20 per cent feasible with existing gas appliances). This means that with sufficient hydrogen supply, all the hard-to-abate industrial load connected to the NSW network could be supplied with renewable gas through a blend of biomethane and hydrogen.

To demonstrate the potential of these renewable gases, Jemena has developed a green hydrogen project in Western Sydney and a biomethane injection facility in Malabar, with support from the Australian Renewable Energy Agency (ARENA). These are outlined further in the Appendix of our submission.

Learnings from these projects have informed our approach to this consultation, and provide us with strong insights that can assist the government in developing a robust Guarantee of Origin scheme. Acknowledging that the methodology of the Product Guarantee of Origins (Product GOs) are still to be worked through, Jemena is concerned with the legislation barring any future trading of these on the registry. This is in stark contrast to how renewable electricity is treated by the scheme. The government should ensure it considers the role of network infrastructure in transporting hydrogen and other renewable gases, and the limitations placed on these nascent markets should the certificates be untradeable.

Key points

- Biomethane is a cost-effective decarbonisation option, that is available now, and should be included in the Product GO Scheme at the scheme's commencement to accelerate Australia's emission reductions, in particular for hard-to-electrify industrials.
- The Guarantee of Origin Scheme must consider the intricacies of the east coast gas market in its design of Product GOs for renewable gases. Renewable gases will struggle to adopt this form of certification, as it's currently legislated, due to the anonymisation of buying and selling in the east coast gas market. There is a real risk that this design delays the take up of renewable gases through shared infrastructure by industry if not rectified and inhibit the country's efforts to rapidly reduce emissions this decade. Jemena strongly encourages the Senate Committee to support a broad market-based definition of physical link be adopted, with certificates issued at the production gate in energy-based units.

For more information regarding Jemena's submission or to arrange a discussion please contact Joeb Northey, Policy Manager via

Yours sincerely,

Suzie Jakobovits, General Manager Renewable Gas

1. Guarantee of Origin legislation an important first step

Jemena welcomes the introduction of the Future Made in Australia (Guarantee of Origin) and other bills, and supports efforts by the Commonwealth government to establish the foundations of a reliable and low-emission energy system.

The Department of Climate Change, Energy, Environment and Water (DCCEEW) can be commended for its hard work over four years on the scheme, and its commitment to industry consultation.

However, Jemena is concerned about certain aspects of the scheme which may make certifying low-emission gases unworkable within shared-user infrastructure and encourages DCCEEW to further its consultation with industry on this key issue.

This fundamental design flaw has the potential to undermine the success of the scheme, and continue to place renewable gases on unequal footing with renewable electricity. This will ultimately hamper the development of a domestic renewable gas industry.

2. Expand Product GOs to cover biomethane as a matter of priority

We understand that the proposal is to initially apply the Product GO scheme to hydrogen only and the Department is considering the expansion of the scheme to include other renewable gases, including biomethane.

Just as renewable electricity has a range of sources, such as solar, wind and hydro, Jemena believes that the Product GO Scheme needs to explicitly recognise and include all renewable gases; biomethane and biogas alongside hydrogen, to maximise system efficiency, integrity, and least cost emissions reduction.

However as biomethane is available now, Jemena strongly recommends the inclusion of biomethane into the Product GO at the scheme commencement to stimulate the development of a renewable gas market and accelerate Australia's emission reductions through using carbon neutral gas to decarbonise hard-to-abate industrial users.

Industrial users account for 70 per cent of total gas consumption in Australia and will increasingly require lower emission energy solutions to remain in step with emission reduction targets. For many industrial gas users, including high-grade heating and industrial feedstock, electrification is impossible or forecast to be prohibitively expensive.

In order to remain competitive in Australia, most of these 'hard -to- electrify' users will require immediate solutions to reduce emissions in the most cost-effective way. Renewable gas, particularly biomethane, provides this opportunity.

Biomethane is entirely compatible with existing gas infrastructure, consumer appliances and industrial processing facilities. So, unlike hydrogen, no further investment is required by the end user. According to the Clean Energy Regulator, biomethane "is derived from biogenic sources such as organic solid waste or wastewater. Combusting biomethane releases the carbon absorbed by the biogenic material from the atmosphere during its life, and on this basis biomethane is often considered to have net-zero carbon emissions. This is consistent with the approach used by the Intergovernmental Panel on Climate Change (IPCC) in guidelines for national greenhouse gas inventory reporting and accounting for bio-based energy sources."

As Jemena's Malabar Biomethane project demonstrates, biomethane can be injected directly into the network. If biomethane was included in the Product GO Scheme and the Scheme were to recognise GreenPower Renewable Gas GOs, producers and consumers could immediately benefit from utilising renewable gas certification. For these reasons, inclusion of biomethane into the Product GO scheme should be prioritised with urgency to create incentives to use it as a direct low carbon substitute for network gas. This approach would support the Climate Change Authority's recent Technology Sectoral Pathways report that highlights the important role biomethane will play in reducing hard-to-abate industries.

3. Design (and/or legislation) must amend stapling of Product GO certificates

Jemena notes that under the initially proposed design, Product GOs will use a mass balance chain of custody approach, which allows tracking and tracing of attributes from production to delivery gate applied on a batch or consignment basis. This requires a reasonable physical link be demonstrated between the certificate and a physical product consignment. This is different to the proposed 'book and claim' model for the renewable electricity guarantee of origin (REGO) certificate mechanism, where emissions are measured through a market-based approach that does not require any physical link between the production and consumption.

In our previous submissions we supported an equivalent 'book and claim' mechanism for the Product GO, which we believe would best enable a faster uptake of renewable gases and development of a domestic market. Jemena believes that certification for all energy carriers for a domestic market should follow the same standards making the harmonisation of tracking certificates easier and energy carrier conversion convenient. In this regard, the Product GO should adopt a fair, technology-agnostic, and workable treatment of all Renewable Energy "RE" sources, whether they be distributed in the form of electricity or gas. To achieve this, all GO Scheme certificates should be from the point at which the "RE" unit is generated to the point of distribution, as opposed to tracking that RE unit all the way to its final end-use.

Jemena is concerned by the legislation stipulating Product GOs will not be tradable on the registry, and in effect limiting the scheme to a mass balance chain of custody approach. Not allowing the trading of certificates will significantly limit the use of Product GOs from renewable gases, and may lead to perverse outcomes whereby producers and consumers prioritise alternative schemes (i.e GreenPower).

Jemena is aware through consultations with the Department that it has attempted to solve the issue of renewable gases being used through shared infrastructure with Subdivision B, sections 57-59 of the bill. While Product GOs themselves are not tradeable and are required to be stapled to the product, these provisions include measures by which consumption profiles can be transferred. This creates a mechanism where customers who are connected to shared infrastructure – in this case, the east coast gas market – can pay retailers for the right to complete the embodied emissions information for PGO certificate.

This fails to consider how the east coast gas market operates and is a critical flaw reflecting a misunderstanding of the fundamental nature of gas markets, and how gas operates in shared infrastructure. As a facilitated market, sellers and buyers of physical quantities of gas are anonymised. It is largely not possible for customers to know which entity produced the gas they are consuming.

Additionally, molecules of gas in a multi-user pipeline are not functionally different to electrons of renewable electricity. Individual molecules cannot be tracked where they are pooled in a network before reaching users. This is exactly how renewable hydrogen and biomethane are being delivered to many customers today. For example, Origin has entered into an offtake agreement with us for our

production of biomethane at Malabar. Because that biomethane is injected into the network, functionally this means that Origin has purchased the right to claim the emissions reduction of that biomethane – but they do not necessarily receive the physical molecules of biomethane for their exclusive consumption.

Hence it is not clear why Product GOs are treated differently from Renewable Energy GOs. The justification in the explanatory memoranda appears to be that electrons cannot be tracked while gas molecules can:

> "Renewable electricity certificates decouple claimable attributes of the electricity from its physical delivery, reflecting the reality that electrons cannot be tracked, and most generated electricity is pooled in a network before reaching users. PGOs, on the other hand, would not be tradeable, but track the embodied emissions of a product to the point of its delivery to a consumer."

Jemena strongly encourages the Senate Committee to recommend amendments to the design of the GO Scheme's Product GOs to enable the development of an effective and liquid market for renewable gases. This can help accelerate Australia's decarbonisation by getting renewable gases quickly to those hard-to-electrify industrial users. Jemena recommends the Department continue working with industry to design a mechanism that full reflects the nature of gas markets in Australia, while remaining true to its chain of custody parameters required of the GO Scheme.

Appendix A - Jemena's renewable gas projects

Western Sydney Green Hydrogen Hub

The $15 million ARENA co-funded Western Sydney Green Hydrogen Hub is a demonstration project which includes a 500kW electrolyser (to produce green hydrogen using renewably sourced electricity from the grid), a 335-metre buffer pipeline (to demonstrate green hydrogen storage in the gas network), a hydrogen injection panel (which is blending to 2% green hydrogen into the Jemena gas network) and power generation equipment (to test the production of electricity using hydrogen). The project demonstrates the potential to store renewable energy as green hydrogen using a dedicated hydrogen pipeline. This green hydrogen can then be blended into the gas network or produce electricity utilising the onsite fuel cell and microturbine for export into the national electricity grid.

Malabar Biomethane Demonstration Project

Our Malabar Biomethane Demonstration Project, a partnership with Sydney Water, began converting biogas from Sydney Water's largest wastewater plant to biomethane as part of Australia's first biomethane network injection project in June 2023. The ARENA co-funded project is injecting high-quality biomethane gas from Jemena's gas upgrader facility directly into Jemena's New South Wales distribution network. 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.

In March 2023 Jemena took another significant step in the activation of an Australian renewable gas market, by signing an agreement with retailer Origin Energy for the sale and purchase of gas produced at the Malabar Biomethane Demonstration Project.

In August 2023 the NSW Government's GreenPower launched their renewable gas certification pilot to help commercial and industrial gas users directly support renewable gas projects and reduce emissions from energy use. Jemena is very pleased that the Malabar Biomethane Injection Plant, which is scheduled to become the first renewable gas facility registered under the certification, is helping to build a voluntary market for renewable gases.