



14 November 2023

## **Submission: Guarantee of Origin Scheme Emissions Accounting**

The Australian Pipelines and Gas Association (APGA) represents the owners, operators, designers, constructors and service providers of Australia's pipeline infrastructure, connecting natural and renewable gas production to demand centres in cities and other locations across Australia. Offering a wide range of services to gas users, retailers and producers, APGA members ensure the safe and reliable delivery of 28 per cent of the end-use energy consumed in Australia and are at the forefront of Australia's renewable gas industry, helping achieve net-zero as quickly and affordably as possible.

APGA welcomes the opportunity to contribute further comments to the Guarantee of Origin (GO) Scheme on its Emissions Accounting Approach consultation paper.

Current Hydrogen Product GO certificate emissions tracking design is incompatible with trading hydrogen certificates across existing gas markets. Not addressing the impact of this design risks impeding development of an Australian hydrogen certificate market.

APGA supports a net zero emission future for Australia by 2050. Renewable gases represent a real, technically viable approach to lowest-cost energy decarbonisation in Australia. As set out in Gas Vision 2050, APGA sees renewable gases such as hydrogen and biomethane playing a critical role in decarbonising gas use for both wholesale and retail customers. APGA is the largest industry contributor to the Future Fuels CRC, which has over 80 research projects dedicated to leveraging the value of Australia's gas infrastructure to deliver decarbonised energy to homes, businesses, and industry throughout Australia.

APGA has flagged that risk that current Product GO design risks impeding domestic trading of green hydrogen in past submissions. This is best solved at a high level by providing the option for both well-to-delivery gate or well-to-production gate certificate creation options. While less ideal, the challenge could also be solved at a calculation level.

To this point, this submission will unpack:

- How enabling hydrogen trading in existing domestic gas markets enables the simplest, quickest, and cheapest foundation of an Australian hydrogen certificate market.
- How the requirement to access infrastructure emissions data risks impeding the creation of Product GO certificates for trading across existing domestic gas markets.
- How this risk can be mitigated through emissions accounting method design.

### **Value of hydrogen trading in domestic gas markets**

Producing Product GO certificates from hydrogen blended into the domestic gas market provides the quickest, easiest, and cheapest way to create a hydrogen certificate market in

Australia. Customers which need to decarbonise would receive a blend of hydrogen and natural gas but be able to fully decarbonise by purchasing hydrogen Product GO certificates to cover their total gas demand. This approach reflects the purchase of Large Generation Certificate (LGC) or Renewable Energy GO (REGO) certificates for renewable electricity generation supplied via the majority-fossil electricity grid.

Allowing gas customers access to hydrogen certificates from blending would be the quickest, easiest, and cheapest way for many gas customers to decarbonise:

- Customers purchasing hydrogen certificates wouldn't need to purchase new appliances right away, reducing time and cost to uptake.
- Hydrogen production location could be optimised to reduce hydrogen cost.
- Hydrogen production could rely on the natural gas supply chain to secure supply rather than investing in enabling 100% production up time.

In comparison, creating a hydrogen certificate based market upon only 100% hydrogen users would be slower, harder and more expensive as:

- Existing gas customers would have to purchase hydrogen certificates and hydrogen appliances, or completely new hydrogen customers would have to develop entire hydrogen using facilities.
- Hydrogen production would either need new dedicated hydrogen infrastructure or be located alongside consumers, which is less likely to be the lowest cost location to develop hydrogen production.
- Hydrogen production would need to be able to have 100 per cent or near 100 per cent production up time to provide energy security for the customer, necessitating greater investment in excess hydrogen production capacity and storage.

Hydrogen blending is in no way the intended end point of the hydrogen market. Rather, it is a way to begin developing a currently non-existent certificate market by learning from what worked in developing the renewable electricity supply chain. This is the case regardless of whether the gas supply chain is decarbonised via electrification or renewable gas uptake.

### **Size of the opportunity**

Considering the nascent state of the Australian hydrogen industry, the size of this opportunity is also significant. Australian Hydrogen Centre (AHC) analysis shows around 670MW of electrolysis could be deployed delivering a 10 per cent by volume blend to Victorian and South Australian distribution networks alone.<sup>1</sup> These networks could take 4.7PJpa of hydrogen, representing a one-hundred-fold increase to existing green hydrogen production capacity. And this is just the beginning – a 10 per cent by volume blend in all gas used domestically would represent almost 50PJpa or almost 350kT hydrogen.

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<sup>1</sup> Australian Hydrogen Centre, 2023, *10% Hydrogen Distribution Networks: Victoria Feasibility Study*, available at <https://arena.gov.au/assets/2023/09/AHC-10-Hydrogen-Distribution-Networks-Victoria-Feasibility-Study.pdf>

Australian Hydrogen Centre, 2023, *10% Hydrogen Distribution Networks: South Australia Feasibility Study*, available at <https://arena.gov.au/assets/2023/09/AHC-10-Hydrogen-Distribution-Networks-South-Australia-Feasibility-Study.pdf>

## Access to infrastructure emissions data impedes certificate creation

Current Hydrogen Product GO certificate design appears perfectly suited to tracking well-to-delivery gate emissions for hydrogen through simple hydrogen supply chains with few, simple infrastructure assets. This reflects the original design which focused on certification for export supply chains. However, Hydrogen Product Go certificates also need to facilitate hydrogen trading across the more complex existing gas markets to support the simplest, quickest, and cheapest foundation of a renewable hydrogen certificate market in Australia.

The challenge of using the existing design comes from the need to access pipeline emission data on the Transport and Storage – Hydrogen tab of the EAAC. This impracticality of this requirement becomes clear when viewed through the lens of how Hydrogen Product GO certificates will be traded.

Hydrogen Product GO certificates will be traded in three ways.

1. Alongside each commercial hydrogen transaction via existing market mechanisms
2. Between producers and customers around markets assuming the shortest route; or
3. Between third party certificate traders as seen in the successful LGC market.

These trading options do not pose a challenge in a simple producer – pipeline – customer/exporter supply chain. This is because in each instance at least one party to every transaction has a direct connection to access emissions data for the pipeline infrastructure involved in transporting the hydrogen.

**Importantly, this is not the case when transporting hydrogen across existing gas markets.**

Existing gas markets are highly complex systems comprising of multiple pipelines and multiple facilitated gas markets. This makes it frequently impractical and often impossible to access the necessary pipeline emission information to create a Hydrogen Product GO certificate.

## Certificates tracked alongside traded hydrogen

Producers in existing gas markets frequently do not know which customer ultimately consumes their product. Customers in existing gas markets often do not know where their gas came from. This is due to the existence of facilitated gas markets in which gas supply and demand is anonymised<sup>2</sup>. A large proportion of gas passes through these markets obscuring the supply and demand pathway for any individual unit of energy – be it natural gas or hydrogen – passing through it.

If hydrogen certificates are traded alongside hydrogen traded across existing gas markets, and producers and customers are unable to identify where hydrogen is going or has come from, then it is not possible for certificate creators to access the necessary information to produce a Hydrogen Product GO certificate as per the EAAC.

## Certificates traded between producers and customers around markets

To avoid the above problem, hydrogen producers could theoretically provide certificates directly to a certificate purchaser. In doing so, they could identify the shortest infrastructure

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<sup>2</sup> AEMO, 2023, Gas Markets Webpage, available at <https://aemo.com.au/en/energy-systems/gas>

route between supply and demand location. However, with no commercial relationship with infrastructure service providers, there is no way for either producer or consumer to identify the emissions of the infrastructure in between.

With no commercial right to emissions data from infrastructure service providers, the pipeline emission data section of the EAAC cannot be completed and Hydrogen Product GO Certificates cannot be created.

### **Certificates traded between third party certificate traders**

The success of the LGC market is in part due to the successful creation of a liquid trading market between third party certificate traders. However, third party traders will not have a commercial right to pipeline emissions data either. The obligation to track pipeline emission data could be handed back to the ultimate customer or producer once the final owner chooses to surrender the certificate, however this returns to the above two problem cases.

### **Conclusion – current design prevents foundation of hydrogen trading market**

Trading of hydrogen through existing gas markets represents the quickest, easiest, and cheapest way to found a hydrogen certificate market in Australia. However, current design requires access to data to complete the EAAC – data which Hydrogen Product GO certificate creators cannot access. Therefore, current EAAC design prevents the quickest, easiest, and cheapest way to found a hydrogen certificate market in Australia.

### **Mitigating risk through emissions accounting method design**

It is APGA's understanding that the intent of the current Hydrogen Product GO EAAC design is not to prevent the quickest, easiest, and cheapest way to found a hydrogen certificate market in Australia. The following advice considers how to mitigate this risk.

There is one simple and one more complex approach to resolving challenges with Hydrogen Product GO certificate and EAAC designs to enable certificate trading in existing gas markets:

1. Providing the option to use a default gas infrastructure emissions intensity factor for use on the *Transport & Storage – Hydrogen* tab (less simple). This option should be provided in addition to the options currently available.
2. Learn from the renewable electricity sector and allow the option to produce a well-to-production gate certificate (simple).

### **Optional use of a default gas market infrastructure emissions value**

Providing the option to use a default infrastructure emissions value would provide certificate creators with the missing information they need to produce a Hydrogen Product GO certificate in close to the format as currently designed.

A default gas infrastructure emissions intensity factor for East Australian and West Australian gas markets could be produced from NGER data by:

1. Summing all Scope 1 emissions from all gas infrastructure in the East Australian and West Australian gas markets (each market is sufficiently unique and not interconnected);
2. Summing all energy transported via each market; and

3. Dividing the sum of emissions from each market by the sum of energy transported by each market to get an average emissions per unit energy transported.
4. Converting this number into units used in Hydrogen Product GO certificates.

Using this factor would likely lead to overcounting of infrastructure emissions. However, the ability to create and effectively trade a hydrogen Product GO certificate would likely have a greater value than the negative impact of certificates displaying artificially high infrastructure emissions for certificates traded for domestic purposes. This overcounting would also incentivise producers to use the current methods where supply chains are sufficiently simple to calculate infrastructure emissions.

### **Optional creation of well-to-production gate Hydrogen Product GO certificates**

Allowing the option to produce either a well-to-delivery gate or well-to-production gate Hydrogen Product GO certificate would enable full end to end tracking where customers desire this information and avoid the complexity of tracking where customers do not value this information. Optionality does not undermine the intent to provide well-to-delivery gate information while enabling the quickest, easiest, and cheapest way to found a domestic hydrogen certificate market in Australia in the simplest way.

### **APGA Recommendations**

APGA recommends that Hydrogen Product GO development undertake the following:

1. Develop an average Scope 1 emissions intensity for the East Coast and West Coast gas networks, calculated annually. This would likely be best undertaken under NGER legislation.
2. Provide the option to use this figure for hydrogen transported via the East Coast and West Coast gas networks on the Transport for infrastructure emissions alongside the current method.

APGA reiterates that both the risk to hydrogen market development posed by the current design and the need for this more complex solution is avoidable by providing certificate producers the option to produce either well-to-delivery-gate or well-to-production-gate certificates.

To discuss any of the above feedback further, please contact me on +61 422 057 856 or [jmccollum@apga.org.au](mailto:jmccollum@apga.org.au).

Yours Sincerely,



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