

Department of Climate Change,
Energy, the Environment and Water


Renewable Fuel Scheme



Rule 1 consultation summary report

July 2024





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Introduction

The [Renewable Fuel Scheme](#) (RFS) is a new certificate scheme that creates a financial incentive to increase the production of renewable fuels. As currently designed, the RFS sets a target for green hydrogen production that will increase to 8 million gigajoules (GJ) by 2030.

Under the RFS, hydrogen producers can create certificates based on the amount of green hydrogen they produce and sell them to liable parties. Each certificate will represent one GJ of green hydrogen that is produced. The additional revenue that hydrogen producers receive from selling the certificates will reduce the cost of green hydrogen.

Liable parties under the scheme are natural gas retailers and large users that do not purchase gas through a retailer. The liable parties will need to buy and surrender certificates to meet their obligations.

Purpose of this report

This report summarises feedback we received from the public consultation and helps readers understand how the draft RFS rule might impact them. It outlines:

- our current position on the proposals in the [RFS Rule 1 consultation paper](#) (the consultation paper) and any changes
- analysis of key issues raised during consultation
- how we have responded to feedback.

It should be read with the consultation paper. We have also published an updated draft RFS rule on our website to reflect our current position on the proposals.

Consultation process

The public consultation was held between 18 December 2023 and 2 February 2024. Feedback submissions were received from a range of stakeholders including hydrogen producers, natural gas retailers and industry associations.

Delivering the scheme rule

The RFS rule will be published in the [NSW Government gazette](#) before the start of scheme liability for green hydrogen.

Core concepts

This part of the report explains our current position on core concepts of the draft RFS rule.

Renewable energy

Summary of current position

Renewable energy is the ‘eligible renewable energy sources’ as defined in the forthcoming ‘*GO Act 2024 (Cth)*’.

This position represents no change to the proposal in the consultation paper.

Future considerations

After the proposed [Guarantee of Origin](#) (GO) scheme is legislated via the ‘*GO Act 2024 (Cth)*’, we will review the definition of ‘eligible renewable energy sources’ to ensure it meets the RFS requirements.

Issue analysis

During the development of the RFS rule, we received initial industry feedback in support of aligning the definition of renewable energy with the forthcoming ‘*GO Act 2024 (Cth)*’. This is because the GO scheme will endure beyond the [Renewable Energy Target](#) scheme, which is set to expire in 2030.

Feedback from our public consultation was generally supportive of this approach.

Stakeholders suggested that aligning the definition of renewable energy to the ‘*GO Act 2024 (Cth)*’ would support integration between the RFS and the GO scheme to create efficiencies.

Some stakeholders noted that aligning definitions may create uncertainty because the GO scheme has not been legislated. After it is legislated, we will review the definition of ‘eligible renewable energy sources’ in the ‘*GO Act 2024 (Cth)*’ to ensure it meets the RFS requirements.

Integration with Product GO

Summary of current position

Product GO certificates will be required to create renewable fuel certificates.

This position represents no change to the proposal in the consultation paper.

Future considerations

We will continue to work with the Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW) and the Clean Energy Regulator (CER) on the design and delivery of the RFS and the proposed Product GO. We will also investigate the potential to integrate the RFS with the GreenPower Renewable Gas Guarantee of Origin (RGGO) as part of our future reviews and updates to the RFS rule.

Issue analysis

Information from Product GO certificates will be used as inputs to create renewable fuel certificates under the RFS. This includes emissions data, information on renewable energy certificates, and hydrogen production quantity. During the development of the RFS rule, we received initial industry feedback in support of taking an integrated approach with the Product GO to create efficiencies.

Feedback from our public consultation was generally supportive of this approach. Some stakeholders noted that under the proposed GO scheme design, producers that inject hydrogen into the network can only trade Product GO certificates with end users on the same network. We have communicated this feedback to the Commonwealth DCCEEW and the CER and will continue to work with them on the design and delivery of the RFS and the Product GO.

To increase flexibility for producers, some stakeholders suggested integrating the RFS with the GreenPower RGGO, in addition to the Product GO. We will investigate the potential for integration as part of our future reviews and updates to the RFS rule.

A stakeholder suggested that integrating the RFS with the GO scheme and GreenPower could be complex. We acknowledge the need for a simple and streamlined certification process between these different programs to ensure participating in the RFS is simple. Using verified information about hydrogen from the Product GO and renewable electricity from GreenPower will ensure a robust certification process for the RFS. It will also help minimise additional data and verification requirements as well as administrative complexity.

Eligible production method

Summary of current position

The eligible production method is the electrolysis of water using renewable electricity.

This position represents no change to the proposal in the consultation paper.

Future considerations

We will investigate the potential to include other hydrogen production technologies as part of our future reviews and updates to the RFS rule.

Issue analysis

Electrolysis is one of the most established green hydrogen production technologies.

Stakeholder feedback from our public consultation generally supported prescribing electrolysis as a scalable pathway for green hydrogen production. This would also create an investment signal for increased electrolyser capacity.

Some stakeholders suggested that steam methane reforming (SMR) of renewable gases such as biomethane or biogas should be an eligible production method. It is not an eligible production method under the RFS because:

- SMR is already a mature technology for hydrogen production
- a Product GO certificate pathway for hydrogen produced from SMR of biomethane will not be initially available under the Product GO.

Stakeholders suggested that future reviews of the RFS rule should consider other hydrogen production technologies. We will investigate the potential to include other technologies as part of our future reviews and updates to the RFS rule. This will be informed by:

- ensuring incentives are provided to appropriate production technologies
- ability to integrate production technologies with the Product GO or another certification framework
- support from industry on the inclusion of production technologies.

You can read more about it in the [consultation paper](#).

RFS emissions boundary

Summary of current position

The RFS emissions boundary is the hydrogen ‘production boundary’ as defined in the forthcoming ‘GO Act 2024 (Cth)’.

This position represents no change to the proposal in the consultation paper.

Future considerations

After the proposed GO scheme is legislated via the ‘GO Act 2024 (Cth)’, we will review the definition of ‘production boundary’ to ensure it meets the RFS requirements.

Issue analysis

The RFS emissions boundary sets the scope of emissions under the RFS. It includes upstream emissions and hydrogen production emissions which are described in the consultation paper.

The RFS emissions boundary is focused on the emissions data for hydrogen up to and including production. The Product GO will capture emissions data across the hydrogen value chain, including production. Emissions data for the RFS will be obtained from the Product GO. This will ensure the integrity and transparency of the emissions data used for the RFS.

Some stakeholder feedback from our public consultation suggested that the RFS emissions boundary could consider tracking emissions beyond production and across the value chain, like the Product GO. The objective of the RFS is to increase the production of renewable fuels, so the emissions boundary does not consider emissions data for hydrogen after it is produced. This also streamlines compliance processes.

Some stakeholders noted that aligning definitions may create uncertainty because the GO scheme has not been legislated. After it is legislated, we will review the definition of ‘production boundary’ in the ‘GO Act 2024 (Cth)’ to ensure it meets the RFS requirements.

Local use

Summary of current position

The local use factor is one for all green hydrogen produced in NSW.

This position represents no change to the proposal in the consultation paper.

Future considerations

We will monitor the end use of hydrogen and adjust the factor as needed. We will also continue to consider how to implement the factor and what constitutes the end use.

Issue analysis

Local use is an important consideration to maximise the local benefits of the RFS. It refers to the end use of hydrogen in NSW or for NSW Government-funded projects.

The local use factor is an adjustment to the calculation of renewable fuel certificates to account for NSW and non-NSW use of hydrogen. Initially, all green hydrogen produced in NSW is deemed to have local use which means that the factor is one. Stakeholder feedback from our public consultation generally supported this approach.

In the future, we will monitor the end use of hydrogen and adjust the factor as needed. This means that a hydrogen producer who is mostly exporting hydrogen interstate or internationally, would create fewer renewable fuel certificates for the hydrogen they produce. As the hydrogen industry matures, we will continue considering how to implement the factor and what constitutes the end use. Feedback from our public consultation was generally supportive of this approach. The end use considerations are described in the consultation paper and include hydrogen derivatives as well as refuelling stations and corridors.

Stakeholder suggestions also included:

- the factor may discourage investment in hydrogen production in NSW by reducing incentives for exporting hydrogen
- extending local use considerations nationally could minimise complexity and drive best practices for small and large-scale production
- activating the factor once projects are commissioned and offtake agreements are known.

Potential impacts of adjusting the factor would be considered before they are made. The principles described in the consultation paper will be used to adjust the factor over time.

Green hydrogen purity

Summary of current position

Green hydrogen must have a minimum purity of 99.0vol% at the point of exit from the RFS emissions boundary.

This position represents a change to the proposal in the consultation paper as follows:

- minimum purity is changed from 99.9vol% to 99.0vol%.

Future considerations

We will consider the potential impact of specifying purity for other renewable fuels that may be incentivised by the RFS in the future.

Issue analysis

The purity specification has been changed to 99.0vol% at the point of exit from the RFS emissions boundary.

A purity requirement ensures that comparable grades of hydrogen are incentivised by the RFS. Stakeholder feedback from our public consultation generally supported this approach.

A stakeholder suggested that a minimum purity of 99.0vol% would provide greater flexibility and be less restrictive for an emerging hydrogen industry. This specification would still suit most applications and could reduce energy costs for purifying hydrogen. Our subject matter experts advised that a purity of 99.0vol% or more is in line with most methodologies.

A stakeholder also suggested considering the potential impact of specifying purity on the viability of projects if the RFS incentivises other renewable fuels in the future.

Accredited Certificate Providers

Summary of current position

IPART will only accredit green hydrogen producers to create renewable fuel certificates.

This position represents no change to the proposal in the consultation paper.

Future considerations

We will consider the potential for third-party Accredited Certificate Providers (ACPs) under the RFS.

Issue analysis

Hydrogen producers will typically have robust corporate reporting systems that allow them to be accredited and manage their own projects as ACPs. During the development of the RFS rule, we received initial industry feedback supporting this approach. Producers as ACPs can minimise pass-through costs from creating certificates.

Some stakeholder feedback from our public consultation suggested third-party ACPs can ensure the integrity of certificate creation. The integrity of certificate creation by producers as ACPs is ensured given that Product GO certificates will be required to create renewable fuel certificates. The Product GO will provide a robust mechanism that tracks and verifies the carbon emissions associated with hydrogen production.

Some stakeholders also suggested that if the RFS incentivises other renewable fuels in the future, the use of aggregators could help reduce certification costs for businesses. Aggregators are typically external organisations that would create certificates on behalf of producers. In the future, we will consider the potential for other ACPs under the RFS.

A stakeholder suggested considering waiving the fees associated with creating renewable fuel certificates. However, the fees support the NSW Government to recover costs associated with operating the scheme. This approach is consistent with other certificate schemes under the [NSW Energy Security Safeguard](#).

Green hydrogen requirements

This part of the report explains our current position on green hydrogen requirements set out in the draft RFS rule.

Demonstrating the production of green hydrogen

Summary of current position

To produce green hydrogen:

- electricity emissions must be zero by matching the electricity use with an equivalent number of renewable energy certificates
- direct combustion emissions must be less than 2.5% of total production emissions.

This position represents no change to the proposal in the consultation paper.

Future considerations

After the proposed GO scheme is legislated via the 'GO Act 2024 (Cth)', we will review the requirements for proposed Renewable Electricity Guarantee of Origin (REGO) certificates to ensure it meets the RFS requirements.

For direct combustion emissions, we will continue to work with the Commonwealth DCCEEW, the CER and hydrogen producers and update the threshold, if needed, based on empirical data.

Issue analysis

Requirement on electricity emissions

The use of renewable energy certificates to demonstrate the procurement of renewable energy aligns with standard practice.

In feedback from our public consultation, a stakeholder suggested that emissions from renewable electricity sources may not always be zero, such as emissions linked to the REGO. This should be clear after the GO scheme is legislated. After the GO scheme is legislated, we

will review the requirements for REGO certificates in the 'GO Act 2024 (Cth)' to ensure they meet the RFS requirements.

Requirement on direct combustion emissions

This requirement caps direct combustion emissions for green hydrogen production.

In feedback from our public consultation, a stakeholder suggested that the requirement may be exceeded in some cases, for instance, the emissions associated with water sourcing. A stakeholder also suggested that the combustion of renewable gases should be recognised in the emissions accounting methodology. The intention of this requirement is to ensure that the RFS drives best practices for scope 1 emissions and procurement of renewable electricity. We will continue to work with the Commonwealth DCCEEW, the CER and hydrogen producers to update the threshold, if needed, based on empirical data.

Renewable energy certificates

Summary of current position

Renewable energy certificates:

- only include certificates eligible under the GreenPower Program Rules
- involve the surrender of certificates through an accredited GreenPower product.

This position represents no change to the proposal in the consultation paper.

Issue analysis

[GreenPower](#) is a renewable energy certification initiative. It ensures that any GreenPower purchases by electricity consumers are matched with accredited renewable electricity added to the grid on their behalf. As described in the consultation paper, verification under GreenPower is beneficial for the RFS because it will:

- provide a nationally recognised and independent, government-accredited renewable electricity certification
- align with requirements for [green hydrogen electricity concessions](#) for producers
- align with the broader [Net Zero Plan Stage 1: 2020-2030](#) and drive the sourcing of renewable electricity from new generators.

Stakeholder feedback from our public consultation suggested that behind-the-meter renewable electricity should not require the surrender of renewable energy certificates. This approach is consistent with the Product GO emissions accounting principles.

Some stakeholders also suggested that renewable energy certificates could also include certificates under the GO scheme such as REGO certificates. GreenPower is currently considering incorporating REGO certificates.

A stakeholder suggested considering adequate supply and additional costs of GreenPower. GreenPower is a requirement for producers to be eligible for green hydrogen electricity concessions. GreenPower also [exempts producers from GreenPower program fees](#).

Renewable fuel certificates

This part of the report explains our current position on renewable fuel certificates set out in the draft RFS rule.

Calculation of renewable fuel certificates

Summary of current position

The number of renewable fuel certificates is calculated using Equation 1 and Equation 2 set out in the draft RFS rule.

This position represents no change to the proposal in the consultation paper.

Future considerations

We will investigate the nature and frequency of a true-up process with the RFS administrator for the rounding of renewable fuel certificates.

Issue analysis

In feedback from our public consultation, stakeholders generally supported the calculation.

To avoid misalignment for renewable fuel certificates being used for voluntary reporting purposes, a stakeholder suggested that the lower heating value (LHV) used in the calculation should align with the energy content factor for hydrogen in the [National Greenhouse and Energy Reporting \(Measurement\) Determination 2008](#). The LHV used in the calculation conforms to international standards as described in the consultation paper. In addition, renewable fuel certificates can only be used to meet liabilities under the RFS. They cannot be used to claim the purchase or use of hydrogen. This eliminates the potential for double counting environmental benefits by those who purchase certificates for compliance purposes. We note that Product GO certificates would enable producers to make claims about the hydrogen they produce.

The number of renewable fuel certificates will be rounded to one decimal place. A stakeholder suggested that this should be supported by a true-up process. We will investigate the nature and frequency of this process with the RFS administrator.

Production period

Summary of current position

The duration of the production period is not less than the Product GO batch period and not greater than 12 months.

This position represents no change to the proposal in the consultation paper.

Issue analysis

During the development of the RFS rule, we received initial industry feedback supporting this approach. The production period allows producers to create renewable fuel certificates at a frequency that works for them.

Annual baseline production

Summary of current position

The sites listed in clause 9.4 of the draft RFS rule can only create renewable fuel certificates for producing green hydrogen above their annual baseline production.

Clause 9.4 now includes an annual baseline production for the Western Sydney Green Hydrogen Hub site. The amount is 50,000 kilograms per year.

Future considerations

We will update the annual baseline production, as needed, using the latest information on production quantities as part of our future reviews of the RFS rule.

Issue analysis

The annual baseline production limits the participation of sites identified as operational before the RFS starts. This ensures that the RFS incentivises green hydrogen production in addition to what would have existed without it. During the development of the RFS rule, we received initial industry feedback supporting this approach.

Based on assessments of production quantities for the Western Sydney Green Hydrogen Hub site, the annual baseline production for the site is 50,000 kilograms per year. This means that the site can only create renewable fuel certificates for hydrogen production that is above this amount. Stakeholder feedback ranged from excluding the site from participating in the RFS to allowing the site to create certificates below an annual baseline production if it transitions to commercial hydrogen production. We can update the annual baseline production using the latest information on production quantities as part of our future reviews of the RFS rule.

Future work

This part of the report explains our current position on future work items for the RFS.

Summary of current position

We will investigate the future work items described in the consultation paper. The timeframes for working on these items are yet to be established and may inform future updates to the RFS rule as the hydrogen industry matures.

In the future, we will investigate:

- options to expand the RFS to incentivise other renewable fuels
- inclusion of other hydrogen production technologies in the RFS rule
- how the RFS can complement other incentive schemes
- a total emissions intensity threshold in the RFS
- time of use matching in the RFS
- the practicality of implementing local use and further define what constitutes the end use of hydrogen. We will also investigate updates to the local use factor after monitoring the end use
- the need for a market transformation factor as the hydrogen supply and value chain matures
- inclusion of hydrogen produced at a lower purity in the RFS rule and account for purity in the creation of renewable fuel certificates
- leveraging data from the REGO
- sustainable use of water in electrolysis
- compliance requirements with relevant standards.

Issue analysis

The future work items are in addition to the future considerations outlined in the previous sections of this report, which we identified from our public consultation. We sought general comments on the future work items, which are summarised below.

Expanding the RFS

Stakeholders generally supported investigating options to expand the RFS to incentivise other renewable fuels such as biomethane, renewable diesel and sustainable aviation fuel.

A stakeholder suggested that production targets for other renewable fuels should not reduce existing green hydrogen production targets. A stakeholder also suggested that alignment between the RFS and the GO scheme may not work for other renewable fuels if the Product GO certificate pathways are not available for those fuels.

Other hydrogen production technologies

Stakeholders supported investigating the potential to include other hydrogen production technologies in the RFS rule. This includes production technologies where a Product GO certificate pathway may not be available.

Supporting other policies and programs

Stakeholders supported investigating how the RFS can complement other incentive schemes and how incentives can be stacked to maximise benefits.

Total emissions intensity threshold and requirements for other emission sources

Stakeholders supported investigating a total emissions intensity threshold later in the RFS. For example, as the hydrogen industry matures and if the RFS incentivises other renewable fuels in the future.

Time-of-use matching

Stakeholders generally supported investigating the potential to include time-of-use matching requirements later in the RFS and as the hydrogen industry matures. This involves matching electricity demand from producing hydrogen with renewable electricity generation in real time. Some stakeholders suggested that matching requirements could align with the REGO, which is expected to facilitate matching through time-stamped electricity certificates.

Local use factor

Refer to the local use section on page 9 of this report.

Market transformation

A stakeholder suggested that any investigation of a market transformation factor should consider potential impacts on the viability of established projects. Another stakeholder suggested that the RFS should be reviewed over time to reflect market conditions.

Purity

Refer to the purity section on page 10 of this report.

Renewable Electricity Guarantee of Origin

Stakeholders supported investigating the potential to use information from the REGO for the RFS, including for time-of-use matching.

Water source requirements

A stakeholder supported investigating potential requirements.

National and international standards

A stakeholder supported investigating potential requirements.

Appendix

Appendix A: Acronyms

Acronym	Full name
ACP	Accredited Certificate Provider
CER	Clean Energy Regulator
Commonwealth DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
GJ	Gigajoules
GO	Guarantee of Origin
LHV	Lower Heating Value
REGO	Renewable Electricity Guarantee of Origin
RFS	Renewable Fuel Scheme
RGGO	Renewable Gas Guarantee of Origin
SMR	Steam methane reforming



For more information

To learn more about the Renewable Fuel Scheme, please visit or contact:

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