



Australian Government

Department of Climate Change, Energy,
the Environment and Water

Australia's Guarantee of Origin scheme

Policy position paper

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Executive summary

The recent swell of global emissions reduction ambition along with disruptions to energy security are lifting demand for renewable energy and clean products worldwide. Separately, nations, regions and the private sector are tightening their criteria for the use of such products and the associated environmental and emissions claims. These conditions present a clear and pressing need for a transparent, consistent, and trusted emissions accounting framework to underpin the creation, use and export of renewable energy and clean products.

In the 2022-23 Budget, the Government provided \$2.2 million for the Department of Climate Change, Energy, the Environment and Water to develop and consult on a Guarantee of Origin (GO) certificate scheme to meet this need. This paper presents a proposed design of a GO scheme to measure, track and verify a range of attributes, including greenhouse gas emissions, for products across the supply chain. The scheme provides a broad framework comprising of: a product-based emissions accounting framework, and certification of renewable electricity.

Increasingly, households, businesses and investors seek robust information to verify claims made in relation to low carbon or green products. The GO scheme is designed to meet this informational requirement. The scheme utilises internationally aligned methodologies to enable market participants to specify products that meet their needs.

The GO scheme will help unlock economic opportunities for Australian industry to meet growing domestic and international demand for verified renewable energy and clean products. The scheme will help quantify market value for the clean attributes of these products, enabling industry to make robust, credible emissions claims and unlocking trade and decarbonisation opportunities.

The scheme will be voluntary and is proposed to be established under new legislation administered by the Clean Energy Regulator (CER). It will commence with coverage of hydrogen, hydrogen energy carriers (e.g. ammonia) and renewable electricity, but is proposed to expand. Over time new products such as metals, biofuels and other materials could be incorporated in line with a prioritisation processes proposed in the paper.

The GO scheme is designed to align internationally and integrate with existing and emerging domestic frameworks. Domestically, this includes industry-led and state and territory schemes that could use information from the GO scheme to provide certifications or incentives for low carbon or carbon neutral products.

To support international trade, it is critical that emissions accounting is aligned with international approaches. To ensure this alignment with regards to hydrogen, the Australian Government is an active participant in the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE), to develop internationally agreed carbon accounting methodologies. The IPHE has released two working papers covering methodologies for hydrogen production and hydrogen energy carriers and the proposed scheme closely aligns with this work. The Department proposes to undertake similar engagement as new products are added to the scheme to provide continued assurance and alignment of the framework.

Generally, discussions are underway in numerous forums to establish standards for products such as hydrogen, against criteria including emissions, supply chain integrity and biodiversity impacts. These discussions are beyond the scope of this paper, which is confined to establishing arrangements to robustly and transparently report information on emissions.

In addition to product emissions accounting methodologies, the scheme will create an enduring certificate mechanism for renewable electricity, both as an input into hydrogen and other products covered by the GO scheme, and for users across the economy and overseas seeking to make credible renewable electricity claims. This will build on the effective and well-understood certificate framework under the Renewable Energy Target (RET) scheme to create a renewable electricity GO that is fit-for-purpose for growing voluntary uses, including potential international export of renewable electricity.

The GO scheme will create two new certificate types: Product GOs, and Renewable Electricity GOs (REGOs). All certificates will be housed on public registers managed by the CER with the ability for participants to share specific additional, private information with other scheme participants.

Product GOs will verify the carbon intensity of products across the product's lifecycle. It will capture emissions associated with the supply of raw materials, production, and transport and storage to the point of consumption or international departure. This system boundary is called *well-to-user*.

For Product GOs, there will be no minimum product eligibility requirements for their creation (e.g. emissions intensity thresholds). All businesses would be able to opt in to the scheme where they see value; provided that there is a methodology covering the relevant product.

Similar to LGCs, REGO certificates can be traded independently from the electricity that created them. In contrast, Product GOs will use a provenance approach where certificates would, in principle, be traded alongside the product itself while having the flexibility to recognise that molecules may be interchangeable in certain situations e.g. during storage and transport. Further discussion of REGOs can be found in the accompanying Renewable Electricity Certification paper.

The scheme's integrity and positive perception is important to its success, but this must be balanced against the regulatory burden and cost on participants. The CER is proposed to administer the scheme, managing applications and certificate creation and undertaking compliance monitoring and enforcement. The paper outlines a streamlined, upfront reporting model that minimises administrative burden for participation while maintaining accuracy and flexibility.

The scheme's design has been developed through international engagement with partner countries, and extensive consultation with industry including through a previous discussion paper [A Hydrogen Guarantee of Origin Scheme for Australia](#) and trials led by the CER.

Following consultation, next steps to establish the scheme will include the release of draft legislation and methodologies. The Government will continue engaging internationally through IPHE and with trading partners to ensure international alignment as markets and certification schemes evolve.

The scheme is intended to be legislated by the start of 2024.

How to have your say

The Department of Climate Change, Energy, the Environment and Water are seeking feedback on the proposed approach for a Guarantee of Origin scheme for Australia. Responses to this discussion paper can be provided directly through the Department of Climate Change, Energy, the Environment and Water [consultation hub](#).

What we are seeking feedback on

We are seeking stakeholder views on the proposed policy positions outlined in this paper to design a product-based emissions accounting framework and tracking mechanism for products and renewable electricity.

We also wish to understand any stakeholder considerations resulting from the proposed expansion of the GO scheme beyond hydrogen and its derivatives to incorporate various low emissions products and industries. As part of this, we would like an indication of which products should be prioritised for future methodology development and the suitability of the proposed expansion mechanism.

This paper details the regulatory framework, including integrity provisions, underpinning the proposed GO scheme. This design has been informed by extensive industry consultation regarding hydrogen. As such, we seek feedback from sectors that may participate in the GO scheme in the future to ensure the framework is fit for purpose.

1 Introduction

1.1 Context

International and domestic demand for renewable energy and clean products is growing in response to global commitments to achieve net zero emissions targets and concerns about energy supply and energy security. There is a significant economic opportunity for Australian industry to meet this demand with renewable energy and clean products that support both domestic decarbonisation efforts and exports.

To ensure these markets support decarbonisation goals, regions are setting requirements on the renewable energy and clean products produced and imported. These requirements currently differ between countries and regions.

In addition, multilateral international forums are continuing discussions around applying emissions intensity thresholds for clean energy projects to access export credits or other financial assistance. Private sectors are also creating standards that take into account the broader environmental, social and governance requirements for clean energy projects.

Australia's ambitions to be a global exporter and preferred supplier of these products means that we must demonstrate our products meet the differential needs of clean energy markets. Despite these differential requirements, these markets rely on transparent, verifiable and consistent emissions accounting data to underpin the products they purchase.

To ensure comparison between different countries trading these goods, it is important that the emissions accounting frameworks applied to clean energy products is internationally aligned.

The Australian industry requires a trusted, internationally-aligned framework for measuring emissions across commodity supply chains to establish and support claims for renewable energy and clean products.

This paper outlines an internationally aligned Guarantee of Origin framework that will support the development of markets for renewable energy and clean products, beginning with clean hydrogen and renewable electricity.

1.2 Background

The Department has been working domestically and internationally since the release of the [National Hydrogen Strategy](#) to develop a Guarantee of Origin scheme for hydrogen. This includes:

- Preliminary domestic industry consultation on the important scheme components in 2020, which set the broad framework used to develop the policy.
- Ongoing and active participation through the International Partnership for Hydrogen and Fuel Cells in the Economy (IPHE) to develop internationally agreed accounting methodologies (discussed further below).
- A discussion paper released in June 2021 exploring approaches to emissions accounting for the production of hydrogen across the three production pathways.
- Undertaking trials of a GO scheme for hydrogen to test the practical application of the emissions accounting methodologies from the IPHE and the Australian Government's discussion paper.
- Working bilaterally and multilaterally with energy trading partners on alignment, acceptance and recognition of the GO scheme to enable the trade of Australian hydrogen globally.

Further details on this work can be found in the [Discussion Paper on an Australian Hydrogen Guarantee of Origin scheme and the Consultation summary and next steps](#). Throughout this process it has become clear that the GO scheme needs to be designed to facilitate the development of markets for other products over time.

International engagement – emissions accounting methodology

The IPHE is the most advanced multilateral government-to-government forum for international collaboration on the challenges facing the global hydrogen industry. The IPHE has over 23 member countries, including almost all of Australia's priority trading partners. IPHE has established a taskforce where emissions accounting methodologies for different hydrogen production pathways and supply chain components is being discussed and agreed. This is the main forum for developing internationally aligned emissions accounting methodologies and ensuring international alignment of Australia's Guarantee for Origin scheme.

Australia has played a leadership role in the development of many of the methodologies developed by the IPHE. The aim of the IPHE is to provide the agreed methodologies to the International Organisation for Standardisation (ISO) to be formally adopted as an international standard.

IPHE published a [first working paper in October 2021](#) covering four production pathways for hydrogen (electrolysis with renewable electricity, steam methane reformation, coal gasification) and by-product hydrogen). Australia played a lead role in the development of the first three of these methodologies, and they were included in the Guarantee of Origin discussion paper released in June 2021. IPHE has released a second working paper in November 2022 covering methodologies for additional production pathways and energy carriers such as ammonia and liquefied hydrogen.

The Department's participation and leadership in the IPHE has helped to ensure Australia's GO scheme will be internationally aligned and keep pace with developments in international markets. The specific benefits for the Australian industry include:

1. Ensuring consistency across emissions accounting internationally to level the playing field for the global hydrogen market.
2. Providing a forum to understand the perspectives of other countries in relation to emissions associated with the hydrogen supply chain.
3. Enabling a forum to voice and influence outcomes in a manner that is beneficial for Australian industry.
4. Accelerating the development of emissions accounting methodologies for use in Australian GO scheme without needing to wait for a formal ISO standard.

The Department intends to seek or look to create similar inter-governmental forums for agreeing emissions accounting methodologies for all clean energy and renewable products the GO scheme will cover in the future.

Domestic engagement – consultation and trials

To build on and inform the work of the IPHE, the Department has been engaging closely with industry through public consultations and domestic trials.

Across 2020 and 2021, the Department conducted industry engagement to understand preferences on scheme design and the accuracy and practicality of the IPHE methodologies.

Table 1: summary of industry feedback and the impact on proposed policy

Domestic industry feedback	Impact on policy design and process
A unanimous need for the scheme to be aligned with and responsive to international developments.	Deepening work through the IPHE and with bilateral energy trading partners.
High importance placed on transparency to consumers about all attributes of hydrogen production.	Exploring the practicality and limitations of providing all information across the supply chain.
Support for an initial focus on hydrogen, but the need for the scheme to quickly expand to cover other components of the supply chain and other products.	Creating a GO framework that can be readily applied to other industries.
Support for a government-led scheme, but with a strong emphasis on industry consultation.	Government is continuing to develop the GO scheme with strong industry engagement through public consultation papers and GO trials.

Outcomes from the Guarantee of Origin Trials

The Department has been working with the Clean Energy Regulator (CER) to conduct trials of the GO scheme. These commenced in early 2022 to test and refine policy settings for an effective GO scheme. Trial workshops focused on the GO scheme concepts presented in the Department’s GO discussion paper and the IPHE published working paper. The trials also functioned to collect qualitative, and where possible, quantitative data to inform scheme and emissions accounting methodology design.

The trials involved 19 industry participants representing the three hydrogen production pathways of interest (electrolysis, steam methane reforming and coal gasification).

Trial participants confirmed previous views that commercialisation would be aided by a high integrity government-backed GO scheme that can demonstrate emissions credentials to hydrogen buyers, providing market certainty and underpinning commercial arrangements.

1.3 Principles

The principles below outline the approach to designing the GO scheme. These have emerged from domestic and international engagement.

1. *Trustworthy* – The scheme has high integrity and the information provided is trusted.
2. *Transparent* – The scheme clearly articulates relevant emissions information to scheme and market participants.
3. *Practical* – The scheme is practical for scheme participants, being commercially effective to interact with and minimising regulatory burden.
4. *Consistent* – The scheme is able to be recognised by domestic and international schemes and markets.
5. *Flexible* – The scheme can evolve with changing consumer needs, technology, and international market developments.

The proposals throughout this paper have been considered with regard to these principles to ensure they are contributing to the scheme’s purpose. Feedback is sought from stakeholders, especially where they consider that scheme design choices are not in accordance with the principles listed above.

1.4 GO scheme purpose

The Guarantee of Origin scheme is designed to be a product-based emissions accounting framework that measures and tracks emissions and associated information across the value chain.

It will set the foundation for participation in new markets and provide a streamlined process for reporting emissions information based on robust internationally aligned emissions accounting methodologies.

The use of 'Guarantee of Origin' to describe the Australian Government's scheme is a purposeful one. The scheme would provide necessary information about a product's origin, life cycle emissions and attributes. It would not categorise the emissions intensity through definitions such as 'green' or 'low-emissions' at this stage. This approach allows the GO scheme to be used to demonstrate Australian products meet requirements for low-emissions products used by various markets both domestically and internationally.

This framework is designed to complement existing and emerging schemes. This includes Australia's existing emissions accounting and reporting schemes, schemes providing carbon neutral certification, and schemes providing incentives for the uptake of technologies or fuel sources. The interaction between the GO scheme and other schemes is detailed in section 3.

The GO scheme is expected to provide benefits to producers, consumers, investors and third-party service suppliers such as transport and storage facilities. The GO scheme is expected to:

- Lay the foundation for long-term contractual arrangements between producers and consumers of clean energy products.
- Support market creation by allowing products to be valued differently based on their emissions and attributes.
- Reduce information asymmetry and double counting of emissions claims to ensure compliance and competitiveness of Australian products.
- Incentivise innovation for the reduction of emissions across the entire supply chain.
- Accelerate commerciality of low-emissions products.
- Minimise regulatory burden on industry by providing a single emissions accounting framework that can be readily used by other schemes.

The scheme will initially cover hydrogen, hydrogen energy carriers and renewable electricity. However, international and domestic trends show a clear need for emissions accounting beyond these initial products to cover other products, such as metals, biofuels and other materials. It is intended that the scheme could expand and evolve over time to include other clean products.

Terminology around standards

Given the evolving international and domestic movement towards emissions accounting for products a number of terms have been used interchangeably. In this document the terms have been used in the following way:

International standards – Set through the International Organisation for Standardisation (ISO), these standards are not legally binding but are internationally agreed 'formulas' as the best way of doing a wide variety of activities. The ISO does not provide certification or conformity assessments for their standards.

Domestic standards – Set for Australia through Standards Australia, which is the representative agency for Australia within the ISO and ensures alignment between domestic and international standards.

Industry standards and certification – These are not formal standards recognised by ISO or Standards Australia. They could build on the GO scheme and the ISO to set a standard for defining green or low emissions hydrogen. Two examples are the Green Hydrogen Organisation’s Green Hydrogen Standard and Smart Energy Council’s Zero Carbon Certification scheme.

2 Scheme design

2.1 Legislative overview

The scheme is proposed to focus on providing a product-based emissions accounting framework and a mechanism for tracking renewable electricity. Before discussing the more detailed scheme design elements, it is important to provide an overview of the potential legislative design of the scheme.

The GO scheme is proposed to be established as a new legislation administered by the Clean Energy Regulator. Establishing the scheme as new legislation will ensure scheme credibility and clearly reflect its role as an emissions accounting framework for products.

This approach reflects the stakeholder responses to the *previous discussion paper*, which showed a preference for new legislation administered by the CER, over an amendment to the *National Greenhouse and Energy Reporting Act 2007 (NGER Act)*.

The proposed legislative framework for the GO scheme is outlined in Figure 1.

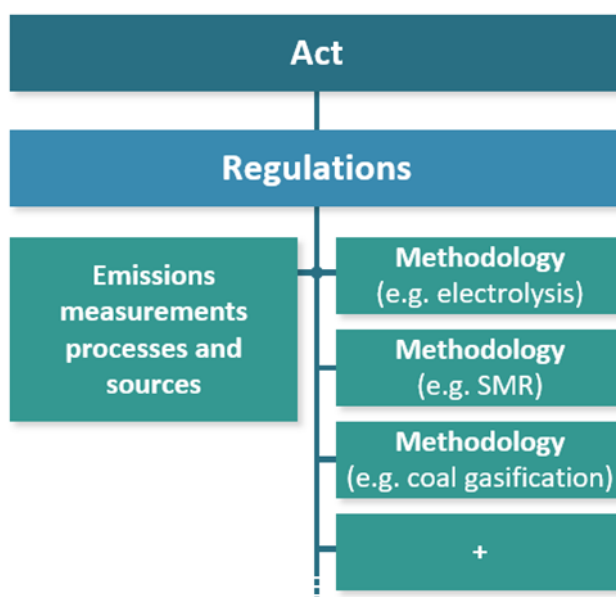


Figure 1: Proposed legislative framework

The core scheme design, administration and integrity controls discussed throughout this section would be covered in the Act and Regulations. Beneath these would sit other legislative instruments which provide guidance for how to calculate emissions intensity for the product-based emissions accounting framework. There would be two components to these legislative instruments:

- A general library of emissions measurement processes, definitions, and sources for the various types of emissions used by the specific methodologies. This would draw from the [NGER measurement determination](#) that is used for reporting of emissions under the National Greenhouse Energy and Reporting (NGER) scheme, [National Greenhouse Accounts Factors](#), and other sources.

- Individual emissions accounting methodologies that cover each product and production pathway. These were consulted on in the previous *discussion paper* and will be based on the [IPHE methodologies](#).

The library would provide a single source for all measurement guidance, which is then called up by the individual methodologies. For example the individual methodology for hydrogen via electrolysis will specify that water sources must be accounted for, then the library will provide specific advice for how this source is to be measured and estimated.

The process for developing the library and future methodologies to cover other products, such as metals, biofuels and other materials is discussed in section 4 of this paper.

Policy position proposal 1: The scheme will be covered under new legislation administered by the CER.

Scope for products

The product-based emissions accounting framework will focus on emissions accounting throughout the supply chain of products covering the supply of raw materials, production, and transport and storage to the point of consumption or international departure. This system boundary is called *well-to-user* and is outlined in Figure 2.

Initially a *well-to-gate* boundary was proposed in the [A Hydrogen Guarantee of Origin scheme discussion paper](#). Stakeholders were generally in favour of this approach as it was most likely to be adopted by international schemes noting it was the initial scope of the IPHE. However, stakeholders noted that there may be a need to revise this initial scope to include broader supply chain emissions.

The initial position has been revised to reflect recent international developments, with the IPHE currently developing a methodology to cover the transport and storage of hydrogen and hydrogen energy carriers. The revised scope of the scheme will ensure greater consistency with international frameworks, ensuring the requirements of international partners can be met.

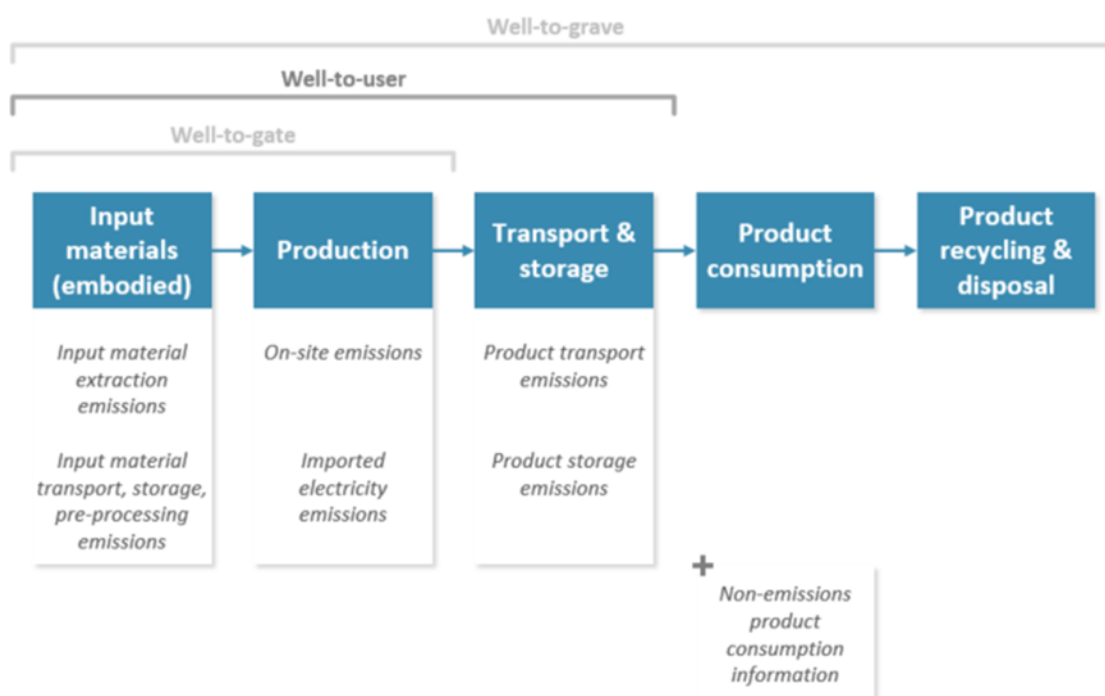


Figure 2: Scope of emissions information captured for the scheme (system boundary)

It is worth noting how this scope differs from existing emissions accounting frameworks like the NGER scheme. NGER supports and informs Australia's greenhouse gas inventory, which is prepared to meet Australia's international reporting obligations under the United Nations Framework Convention of Climate Change. The scope of NGER is most closely aligned with the Production box (or *gate-to-gate*) system boundary in Figure 2. Interactions between the GO scheme and NGER are discussed in more detail in section 3.

Policy position proposal 2: The Product GOs will cover the well-to-user system boundary.

Eligibility

It is proposed that participation with the GO scheme will be voluntary for eligible renewable electricity power stations and producers of hydrogen and hydrogen energy carriers.

Producers will be eligible to participate if they are using a production pathway covered under an emissions accounting methodology in the GO scheme. No minimum emissions intensity thresholds are proposed for participation. Eligibility was discussed throughout the GO Trials. Stakeholders showed a preference for not setting eligibility requirements based on emissions intensity. Stakeholders considered it was unlikely to damage the trustworthiness of the scheme as all emissions information would be transparently reported.

It is proposed that power stations will be eligible to create certificates if they generate electricity from a defined renewable energy source and meet other criteria for accreditation (see the Design section of the Renewable Electricity Certification paper).

Those who choose to participate in the GO scheme will need to meet obligations set out in the scheme legislation including regulatory approvals, fit and proper person checks and data reporting accuracy.

Establishing a voluntary scheme with no emissions intensity eligibility requirements will enable producers to opt-in where they see value in the scheme. This is in keeping with the principle of the scheme to provide transparency of emissions. This may encourage producers undertaking incremental emissions reductions to participate, where the setting of thresholds may otherwise reduce the incentive to do so.

Policy position proposal 3: There will be no minimum emissions intensity requirements for Product GOs and participation will be voluntary for both Product GOs and REGOs.

Cost recovery

Cost recovery will be an element of the GO scheme. Cost recovery for scheme participation will consider the level of industry maturity and will be adjusted over time.

For Hydrogen, it is anticipated that cost recovery would not commence until the industry has matured and becomes competitive with existing energy sources. This will be explored as part of the scheme review process detailed below.

The cost recovery program will be developed in alignment with the Department of Finance's [Cost Recovery Guidelines](#). There will be an opportunity to provide feedback on the proposed cost recovery program during consultation on the exposure draft of the GO scheme legislation.

Policy position proposal 4: The GO scheme will be cost recovered in line with Australian Government policy.

Scheme review

The GO scheme is proposed to be subject to an initial review commencing in 2025 and ongoing reviews every 5 years thereafter.

The initial review will take place after the first two years of scheme operation. It will focus on the effectiveness of the scheme design and any potential amendments to improve functionality. It will likely also involve assessing and developing cost recovery options for hydrogen and hydrogen energy carriers. Finally, these reviews will ensure that the scheme continues to remain aligned with international developments.

The ongoing reviews are proposed to start in 2030 and take place every five years from then. These reviews will assess the ongoing integrity, effectiveness and efficiency of the GO scheme and identify any potential amendments.

Policy position proposal 5: The scheme will be reviewed in 2025 and every five years thereafter to ensure it is fit for purpose and able to support the industry.

2.2 GO certificates

GO certificates will summarise the core information collected about the renewable electricity or the product. The GO scheme will create two types of GO certificates:

- Renewable Electricity GOs (REGOs) associated with tracking renewable electricity generation, and
- Product GOs associated with the product based emissions accounting framework. These will initially cover hydrogen and hydrogen energy carriers.

Both types of GO (REGOs and Product GOs) certificates are proposed to be housed on a public register with general information. Scheme participants will also be able to select more detailed GO information to be shared with other specified participants.

The registry for GO certificates will be designed to enable integration with systems used by other schemes. These schemes are explored in more detail in section 3 below.

Interoperability between products covered under the scheme

There will be interactions between products covered under the GO scheme, where some are inputs into the supply chain of others. For example, renewable electricity will be used in the production of hydrogen via electrolysis, while hydrogen will be used in the production of ammonia. By issuing certificates for each product, the GO scheme will enable emissions to be tracked using a consistent emissions accounting framework across the supply chain.

Policy position proposal 6: Product GOs and REGOs will be housed on a publicly visible register with general information and the ability to share specific information with other scheme participants. Feedback is sought on the information that should be publicly visible on REGOs (e.g. time of generation, grid location, commissioning date, end user, etc) and the information that should be publicly visible on Product GOs? (emissions intensity, volume, relevant inputs, etc).

REGOs

Consultation on the Department's discussion paper in 2021 showed support for a Guarantee of Origin scheme for renewable electricity. This support was conditional on further consultation with industry on the design and market implications of such a scheme. The Department has been undertaking detailed, targeted consultation throughout 2022 on the design of REGOs (refer to the *Renewable Electricity Certification paper*).

REGOs will provide a mechanism for tracking and verifying renewable electricity use both as an input into Product GOs and more broadly to support renewable claims. A REGO is proposed to represent 1 megawatt hour (MWh) of renewable electricity and contain additional information detailed in the Electricity Attributes section of the *Renewable Electricity Certification paper*.

REGOs are proposed to be a certificate that can be traded separately to the renewable electricity they were produced alongside. This approach is consistent with how Large-scale Generation Certificates work currently and is discussed more in the *Renewable Electricity Certification paper*.

Information proposed to be contained on REGOs includes time of generation, location of generation, commissioning date of the power station and the end consumption.

Product GOs

Product GOs will enable scheme participants to measure and track accurate information about the emissions incurred across the supply chain of products. A Product GO is proposed to represent a standard 1 kilogram unit of the product that has been produced and require information about emissions, production inputs, transport and storage and end consumption.

Certificate units ranging from 1 tonne to 1 gram were explored in the Department's discussion paper last year. 1 kilogram was selected as the final unit given its scalability and usability for both large and small-scale production facilities.

Product GOs are proposed to use a provenance approach, whereby they will follow the product from its production, to its transport and storage and then will note the end consumption of the product which will enable environmental claims.

Where products like clean hydrogen are combined with other products, like methane or emissions intensive hydrogen, the GO will need to follow the supply chain but will not need to be bundled with the specific clean hydrogen molecules. Instead there will need to be a reasonable physical link established between the clean hydrogen and the Product GO.

For example, clean hydrogen may be injected into a natural gas network and mixed with methane. The end consumption of the clean hydrogen could be assigned to any users within this network. However, the end consumption of the clean hydrogen would not be able to be attributed to consumers outside of this network.

This is expected to reduce the possibility of companies seeking to 'trade' clean certification between products – known as green or 'clean' washing while enabling flexibility in models for hydrogen trade. A more broadly tradeable approach to Product GOs would be more complicated as emissions associated with the product are unique to the supply chain.

Public information shared on Product GOs are proposed to include a summary of the facility, product quantity, emissions intensity and any inputs relevant to emissions intensity such as water source.

A deeper dive on the provenance approach

Stakeholder feedback during the GO Trials on the approach to Product GO certificates was mixed.

There was a clear view from stakeholders in favour of the provenance approach described above as it would increase the trustworthiness of the scheme and was more aligned with the concept of a Guarantee of Origin. They considered it an appropriate mechanism for making trusted environmental claims about their products.

Those in favour of a more broadly tradeable approach considered it could provide more flexibility in business models. However, there was a diverse range of prospective business models that were being considered by these stakeholders that would require distinct approaches.

Other stakeholders noted that a provenance approach could be chosen initially and alternative approaches could be developed later as needs become clearer.

The provenance approach will keep the scheme simple and support the broadest possible number of early stakeholder needs. It will provide environmental information to support the export of low emissions products, underpin contracts and support claims about low emission products.

This will support low emission product markets as they develop by providing a robust framework for emissions accounting.

In the future, this framework could be used to develop broader mechanisms for exchanging emissions claims if there are clear needs for this and if the risks to the credibility of the scheme are low. It is worth noting that some State and Territory Governments are looking to develop broader mechanisms based on the GO scheme.

Policy position proposal 7: Product GOs will use a provenance approach, while REGOs are able to be traded independently of the electricity they were created alongside.

2.3 Scheme participation

To reduce regulatory burden and enable the timely assessment and creation of GOs, those wishing to participate in the scheme will be able to register and report most of their information upfront. This information will then be used throughout the certificate creation and claim process.

Upfront reporting model

There are two types of data which are proposed to be reported in the GO scheme:

- **Profile data** is data that can and must be submitted when registering products and supply chain steps throughout the system boundary. This is facility level data could include information such as facility details, input sources, type of transport, and marginal loss factors or emissions factors as required. These will only need to be updated if the details change.
- **Batch data** is data that is specific to a GO creation batch, and is submitted periodically. This data includes information, such as the volume of inputs and outputs, directly measured emissions and renewable electricity certificate use (where applicable). This information will be provided throughout the process for creating GOs after the product or renewable electricity has been produced.

The upfront reporting model for the GO scheme was consulted on with GO Trial participants. The approach was contrasted with one where detailed data would be submitted and assessed by the CER for every batch of GO certificates claimed. Participants preferred the upfront reporting model as it was more practical, provided any risks to scheme trustworthiness could be addressed through the scheme integrity controls, discussed in Section 2.5 below.

A detailed breakdown of the potential information requirements for Product GOs and REGOs is available in Attachment A.

Policy position proposal 8: An upfront data reporting model will be implemented to provide a practical reporting process.

Participant roles and responsibilities

The upfront reporting model is proposed to be implemented through the use of GO ‘profiles’ to capture information relating to various stages in the product’s life cycle.

There are three broad categories of profile:

1. Product profiles, covering production information and emissions (where applicable).
2. Transport profiles and storage profiles, covering emissions associated with transporting and storing the product (for Product GOs only).
3. Consumption profiles, covering information about the end use of the product (not including combustion emissions).

There are four roles that have been identified for entities that may engage with the GO scheme and manage or create profiles, these are summarised in Table 1 below.

Table 2: GO scheme participant roles

Role	Description	Permissions
GO Producer	These participants create products or electricity certified under the GO scheme.	GO Producers will be able to create and manage all types of profiles and has the ‘licence to create’ GO certificates.
GO Intermediary – Product GOs only	These participants neither create nor use products certified under the GO scheme. However they may transport or store certified products.	GO Intermediaries will be able to create and manage transport and storage profiles and consumption profiles,
GO Agent – REGOs only	These participants may trade or consume certificates on behalf of other participants	GO Agents will be able to create and manage consumption profiles on behalf of other participants.
GO Consumer	These participants use or consume the GO certified product or electricity.	GO Consumers will be able to create and manage consumption profiles

Stakeholders that meet the description of one or more of these roles will be able to register to participate in the GO scheme. All stakeholders wishing to participate in the scheme will be required to pass a fit and proper person check. Registration obligations will differ based on the type of account.

GO Producers will face the highest registration requirements as they will have the ability to create GO certificates and all types of profiles. They will need to have the legal right to the product and demonstrate they have operational control of the production facility. They will also be obligated to register their product and operate their facility in line with scheme requirements.

GO Intermediaries will have fewer registration requirements and will only have the ability to create transport and storage or consumption profiles. They will be required to update their profiles following any changes and ensure reported data is in line with scheme requirements.

Both GO Producers and Intermediaries will be required to comply with the integrity controls in section 2.4

GO Consumers and GO Agents will only be able to create consumption profiles. They will be required to provide contact details and basic identity verification to register in the scheme.

There may be overlap between the roles where individual scheme participants have responsibilities and permissions throughout supply chains. Participants will be able to register across multiple roles during registration as necessary. For example, a hydrogen producer may also be a GO Consumer of REGOs, or a GO Consumer for hydrogen production may be a GO Producer for ammonia.

Policy position proposal 9: There will be four scheme participant roles with differing responsibilities and permissions.

GO creation process

The GO Producers with registered Product profiles have a 'licence to create' GO certificates (both for REGOs and Product GOs). The CER will be able to validate GO creations after physical production or generation has occurred. The process will combine the upfront profile data with batch specific data to create GOs. The CER will validate creation applications meet the information requirements under the scheme.

The initial creation process can be done over a period that meets the commercial needs of the producer. It is proposed that the maximum length of a batch claim period will be 12 months, and the minimum period would be one-hourly batches.

Feedback from the GO Trials indicated that some prospective scheme participants would prefer GO certificates to be validated in real time support their business to operations. The CER is exploring opportunities to facilitate high volume and high frequency GO certificate creations.

The use of pre-assessed profiles reduces the need for the CER to investigate each batch of certificates and hence has the potential to reduce processing times.

Policy position proposal 10: The creation process will be implemented which combines batch data with the upfront profiles to create certificates. The creation period for GOs can range from a single hour to a year.

Feedback is sought on whether the certificate creation period range is suitably practical for businesses.

Completing and surrendering GO certificates

The process for completing the information required on GOs differs between Product GOs and REGOs. Product GOs are intended to demonstrate the provenance of the related product and require more information along the supply chain. REGOs may be traded independently of the renewable electricity.

The process for surrendering GOs once they have been completed is expected to be similar between Product GOs and REGOs.

Product GOs

The Product GOs will require information to be added about the transport and storage of the related product where relevant. This information can be added by the GO Producer or a GO Intermediary.

The Product GOs can be surrendered by the GO Consumer, or it can be surrendered by the GO Producer or GO Intermediary on their behalf. When surrendering the Product GOs, consumption information will be required this could include nominating a GO Consumer to which the surrender relates.

The GO Consumer will need to be reasonably linked to the related product in alignment with the provenance approach. For example, if a Product GO is associated with hydrogen blended into a gas distribution network the GO Consumer will need to also be connected to the same network.

This will effectively take Product GOs out of circulation and prevent them from being used again.

Policy position proposal 11: Product GOs are proposed to require creation and transport and storage information to be complete. Product GOs can then be surrendered and report consumption information.

REGOs

The REGOs do not have the same downstream information requirements as Product GOs, and once validly created they will be complete. They can then be traded freely between GO Producers, GO Agents and GO Consumers independently of the related electricity.

The REGOs can be surrendered by the GO Consumer, or it can be surrendered by a GO Producer or GO Agent on their behalf. When surrendering REGOs, consumption information will be required which could also include nominating a GO Consumer to which the surrender relates. More detail on the additional consumption information that needs to be reported is provided in section 4.3 of the Renewable Electricity Certification paper.

Similarly to Product GOs, this will take REGOs out of circulation and prevent them from being used again.

Policy position proposal 12: REGOs are proposed to be available to be traded or surrendered after being validly created.

2.4 Integrity controls

Robust integrity controls are paramount to ensure the success of the GO scheme. Integrity controls need to strike a balance between ensuring the scheme is trustworthy and the costs for participants are reasonable. The GO scheme will be designed with strong upfront controls around profile registration and a lighter touch for validating creation applications.

The CER as the administrator of the GO scheme will also have a range of compliance controls to ensure risks to scheme integrity will be identified and addressed. This will include an Annual Reconciliation Check (ARC) process to ensure compliance with the scheme over the previous year.

Managing compliance

The CER will need to manage compliance to ensure scheme participants meet the requirements of the GO scheme.

The proposed compliance monitoring approach is based on the CER's existing processes used for the Emissions Reduction Fund and Large-scale Renewable Energy Target. The CER will conduct ongoing compliance monitoring which is supplemented by the reporting requirements of the GO scheme. This includes:

- assessment and ongoing review of GO certificate validation claims incorporating third-party data sources and supporting data analytics
- direct engagement with registered participants, including site visits and ad-hoc inspections
- usage of a risk-based CER audit program
- usage of information gathering powers where necessary, and
- administration of GO annual reconciliation checks (ARC) as a periodic review checkpoint.

Where non-compliance is detected the CER will be able to take action in accordance with the agency's compliance and enforcement approach. This may involve suspending a registered participant for failing to meet ongoing accreditation requirements under the legislation. It could also include other compliance and enforcement powers such as enforceable undertakings, infringement notices and court action.

Policy position proposal 13: The CER will undertake compliance monitoring and will have regulatory powers to address non-compliance.

Audits and third-party assurance

Audits and third-party assurance mechanisms are key tools that underpin the effectiveness and integrity of emissions accounting frameworks. The IPHE methodology recommends that on-site verification should occur after any material changes in the process covered by the methodology.

For the GO scheme, Limited Scope Technical Reviews (LSTRs) are proposed instead of limited assurance audits. The CER will be able to provide a limited scope for LSTRs with a specific list of matters that need to be reviewed. This is expected to maximise the value of assurance and reduce costs.

There are two types of LSTRs that are being proposed, summarised in Table 2 below.

Table 3: Types of Limited Scope Technical Reviews

LSTR type	Focus	Occurrence
Registration	Ensuring relevant product and transport and storage profiles are accurate. This would include auditing the accuracy of metering and source-specific emissions factors where relevant	<ul style="list-style-type: none"> - On registration of the product and related profiles. - Following significant changes.
ARC	Ensuring ongoing measurement and reporting information is accurate and reflects any production changes since the previous LSTR.	<ul style="list-style-type: none"> - During the first year. - Every five years thereafter. - Where the CER has significant compliance concerns.

The obligation of LSTRs would fall on the GO Producer, who will need to collaborate with relevant intermediaries to ensure their profile information is accessible.

The front loading of LSTRs is important because of the upfront reporting model proposed for this scheme. It may contribute to higher initial costs, however after this the requirements decrease, supporting a ‘light touch’ model for low risk scheme participants.

Alignment of GO audit requirements with NGER and LRET requirements is being considered to improve efficiency and reduce participation costs where there are overlaps in scheme participation.

Policy position proposal 14: LSTRs will provide third-party assurance of the information reported under the GO scheme. The need for LSTRs will be front-loaded requiring less as time goes on and participants demonstrate compliance with the requirements of the scheme.

GO annual reconciliation check (ARC)

An ARC is proposed to be the final step in the compliance process to identify and address any errors made in measurement or changes in inputs. It is proposed to take place following the end of the financial year consistent with NGER reporting timeframes.

The GO system will provide an ARC summary report that collates information provided by the scheme participant during the previous 12 months. This summary will include information about the annually aggregated metering data, LGC and REGO use, and total emissions associated with the scheme participant. Information required for the REGO ARC will be simpler than that required for other GO products and will be based on the [Renewable Energy Target’s electricity generation return](#)¹ process.

The scheme participant would then be required to review information in the summary and provide evidence supporting claims and data, such as through invoices and other records. They will need to declare the information remains true and correct and may be required to submit ARC LSTRs.

¹ <https://www.cleanenergyregulator.gov.au/RET/Scheme-participants-and-industry/Power-stations/Compliance-and-reporting>

ARCs would only be required for scheme participants that are responsible for product or transport and storage profiles. An ARC will not be required by GO Consumers or for GO Agents that were only trading REGOs.

The CER will assess the information supplied through the ARC. Any corrections to GO certificates arising from the ARC will be applied before it is considered approved.

A GO certificate will be marked as finalised through the ARC process. Finalised GO certificates form a record of the product's well-to-user lifecycle that has been validated through the ARC process.

The CER may have the discretion to invalidate any GO certificates that are unable to be finalised through the ARC process.

Corrections

The information reported on Product GOs and REGOs may be incorrect after initial creations due to errors in either profile data or batch specific data. For example, there may be changes at the facility or discrepancies in metered data. Errors may be self-identified by scheme participants, third parties or detected as part of an audit or ARC process.

The proposed correction processes differ between Product GOs and REGOs.

Product GO certificate amendment

Where an error has occurred prior to or as part of the ARC process, the Product GO is proposed to require an amendment process. This process will include updating the GO with the most up to date and accurate information, notifying other relevant scheme participants of the change and adding a note detailing the changes.

An alternative approach could involve amending a future Product GO for any errors contained on a current Product GO. However, this approach would result in neither Product GO being an accurate representation of the emissions associated with the related products. This could result in the transparency and trustworthiness of the GO scheme being undermined.

In contrast, the proposed amendment approach will ensure information is transparent and trustworthy. However, it will require scheme participants to manage the risk of incorrect information through commercial arrangements outside of the GO scheme. The Department and CER will work through the impacts in more detail and provide additional support and education to support businesses.

If an error has occurred after the GO has been finalised as part of the ARC process, the Product GO will not be updated. However, the CER may take other compliance actions to address the error.

Policy position proposal 15: Where Product GOs have incorrect information, they will be updated to reflect the most up to date information. After the ARC process, Product GOs will be finalised and not subject to further amendments.

REGO - amendment and reconciliation

Due to the nature of REGO certificates the process for correcting errors will differ to prevent disruption to the REGO market. REGO certificates will not be amended once they have been validly created. Instead they will follow an 'unders' and 'overs' reconciliation process.

Following an error being detected, the GO Producer will be required to provide the corrected data to the CER. In addition to providing this corrected data the discrepancy will be reconciled through either:

- If REGOs have been over issued compared to renewable energy produced, then a REGO producer is obligated to surrender an equivalent quantity of time-matched REGO certificates from a future batch. For example, if a REGO producer traded 3 MWh worth of REGO certificates for a time period of 1-2 pm on a Sunday but it is later discovered through reconciliation or adjusted meter data that it only generated 2 MWh over that time period, the producer would be required to voluntarily surrender 1 REGO that was produced during a 1-2 pm Sunday timeslot.
- If fewer REGOs were issued than electricity generated then the REGO producer would be entitled to be issued additional certificates for the same time period(s), for example, an extra REGO for the Sunday 1-2 pm period.

This reconciliation process will ensure that over a given year, the number of REGOs created aligns with renewable electricity generation.

Policy position proposal 16: Where REGOs have incorrect information, they will not be updated and instead will follow an ‘unders’ and ‘overs’ reconciliation process to minimise impacts on the renewable electricity certificate market.

3 Interactions with other schemes

The design of this scheme acknowledges there are a number of existing schemes with a purpose or foundation in emissions accounting. The differentiating factor between the GO scheme and other schemes is two-fold. First, the GO scheme is product-based where many other emissions-accounting based schemes are facility or company level. Secondly, the GO scheme is proposing the broadest level of coverage – focused on measuring and tracking emissions across the supply chain where other schemes are focused on only parts of the supply chain.

Centralising supply chain product-based emissions accounting into a single Government-led framework allows other industry and government schemes to leverage information from the GO scheme to deliver their own product or legislative objectives. This can reduce the costs of other schemes. It also increases alignment of emissions accounting methodologies between schemes.

The GO scheme is expected to interact with the following:

- National emissions accounting schemes
- Schemes that provide incentives for carbon abatement
- Voluntary Australian Government schemes to demonstrate carbon neutrality
- Industry schemes that provide branding or labelling of products
- International requirements

This section will examine how the GO scheme will interact within the broader environment. A more detailed comparison of the GO scheme and other schemes is available in Attachment B. For a more detailed explanation of how the REGO specifically will interact with other schemes see section 2 of the Renewable Electricity Certification paper.

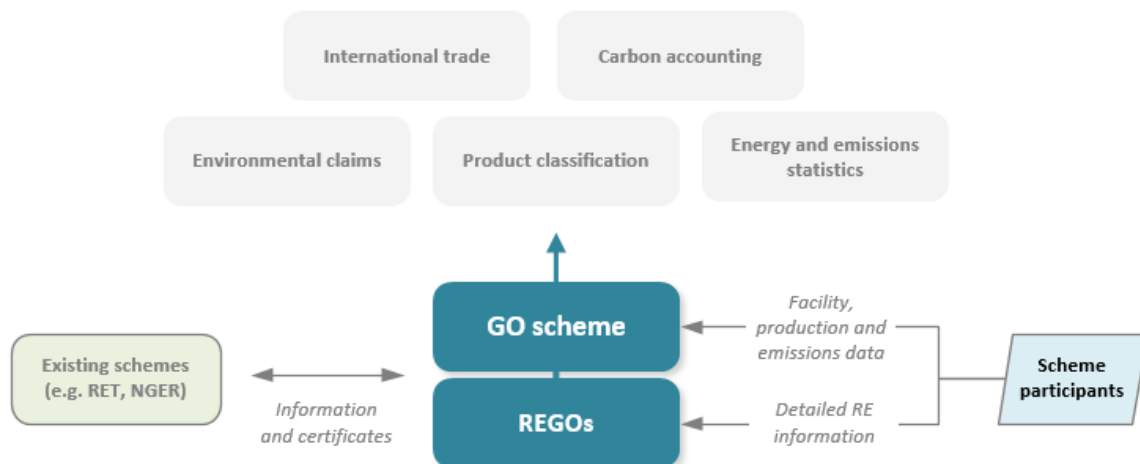


Figure 3: GO scheme interactions, and GO scheme role as underlying data input

3.1 National emissions accounting

There are two mandatory national emissions accounting schemes which overlap with elements of the GO scheme. These are the National Greenhouse and Energy Report (NGER) scheme and the Safeguard Mechanism. These two schemes are mandatory for facilities throughout Australia that meet certain threshold requirements.

Interaction: The GO scheme, NGERs and Safeguard Mechanism will align emissions accounting methodologies where relevant and possible.

National Greenhouse and Energy Reporting (NGER)

The NGER is a national emissions accounting framework which covers emissions produced by a facility. It is designed to produce Australia's greenhouse gas inventory to track progress towards international commitments. Some facilities that are required to report under NGER may also seek to participate in the GO scheme.

To reduce regulatory burden across the two schemes, where there is an overlap in reporting obligations the measurement and emissions approach will be aligned with the NGER prescribed approach. This is consistent with feedback received on the June 2021 Discussion Paper on a [Hydrogen Guarantee of Origin Scheme for Australia](#). However, some emissions covered under the GO scheme will be outside of a facilities scope for NGER reporting obligations (such as upstream and downstream emissions).

This additional information will represent a higher reporting burden for facilities and the NGER approach may need to be amended for these emissions to ensure the GO scheme remains practical.

Safeguard Mechanism

The Safeguard Mechanism leverages the facility emissions data produced through the NGER to provide a framework for Australia's largest emitters to measure, report and manage their emissions. The Safeguard Mechanism requires Australia's largest greenhouse gas emitters to keep their net emissions below an emissions limit (a baseline).

Where participants are required to report emissions under the GO scheme and comply with the Safeguard mechanism there may be overlap in coverage. As the Safeguard Mechanism relies on the NGER scheme, the GO scheme will similarly align with the Safeguard Mechanism.

The GO scheme may be able to be used by Safeguard liable entities to demonstrate the use of hydrogen gas instead of natural gas. However, the emissions information about the hydrogen is unlikely to be relevant for Safeguard liable entities, as only scope 1 emissions (in this case combustion) are within scope for the Safeguard Mechanism.

Policy position proposal 17: The Department proposes the GO scheme methodologies will align where possible with the NGER and the Safeguard mechanism.

3.2 Incentive schemes

There are schemes developing domestically which are designed to encourage consumption of hydrogen. The NSW Government is developing their Renewable Fuel Scheme (RFS), the WA Government are developing a Renewable Hydrogen Target, and GreenPower is developing the Renewable Gas Certification pilot.

Interaction: These incentive schemes will be able to use information on the GO certificate to determine whether hydrogen complies with their eligibility requirements. There may be opportunities to establish formal data sharing arrangements between the CER and the bodies responsible for administering these schemes to streamline operation between these schemes.

Policy position proposal 18: The CER will be able to establish formal data sharing arrangements with the administrators of these schemes to streamline the creation process.

NSW's Renewable Fuel Scheme

The NSW Government is developing an RFS to create a financial incentive for the production and consumption of 'green' hydrogen within NSW. It will be a tradeable certificate scheme that commences in 2024 and sets a target for hydrogen production for each compliance period. Gas retailers and end users that are not retail customers will be required to purchase and surrender RFS certificates to demonstrate compliance with a mandatory renewable gas target. The RFS is proposing to integrate with the GO scheme to support accreditation and certificate generation.

WA's Renewable Hydrogen Target

The WA Government is developing a Renewable Hydrogen Target to require a percentage of electricity generated in the South West Interconnected System to be fuelled by renewable hydrogen. The WA Government is currently consulting on the setting of a target, however they are also investigating developing a Renewable Hydrogen Electricity Generation Certificate for the SWIS which would be created for every MWh of electricity generated via the combustion of renewable hydrogen.

GreenPower's Renewable Gas Certification Pilot

GreenPower is a government-managed program that lets individuals and businesses voluntarily support renewable energy generation. GreenPower is developing a Renewable Gas Certification pilot which is proposed to create Renewable Gas Certificates (RGCs) that represent gigajoules of bio methane and potentially green hydrogen. These RGCs will be able to be traded and surrendered to demonstrate the use of renewable hydrogen nationally.

3.3 Voluntary carbon accounting schemes

Domestically there are also voluntary emissions accounting schemes that enable businesses to demonstrate their climate action. The Department is responsible for administering Climate Active, while the Clean Energy Regulator administers the Corporate Emissions Reduction Transparency Report (CERT). Participation in these schemes is voluntary, however they may be able to use information produced through the GO scheme.

Interaction: Voluntary carbon accounting schemes will be able to use GO scheme information where relevant.

Climate Active

Climate Active is an ongoing partnership between the Australian Government and Australian businesses to drive voluntary climate action. Businesses are able to surrender renewable electricity certificates and offsets to reduce their net emissions and demonstrate carbon neutrality. Climate Active provides carbon neutral certification across organisations, buildings, events, precincts, products and services.

Businesses participating in Climate Active may be able to use information produced through the GO scheme to support their carbon neutral claim. Any potential use of REGOs or Product GOs under Climate Active would be tracked under the GO scheme as part of the certificate's consumption information.

Corporate Emissions Reduction Transparency report

CERT is a voluntary initiative for eligible companies to present a snapshot of their climate-related commitments, progress and net emissions position. Businesses are able to show their use of renewable electricity and of carbon offsets through CERT.

The GO scheme may be an input into the CERT reporting process where the commodity associated with the GO has been consumed by a reporting entity.

3.4 Industry standards and certification

The hydrogen industry has been developing industry-led standards and certification schemes for low emission hydrogen. The Green Hydrogen Organisation has launched its Green Hydrogen Standard, and the Smart Energy Council is operating a Zero Carbon Certification scheme.

Interaction: These industry initiatives will be able to leverage the GO scheme once it commences operation to provide additional branding.

Green Hydrogen Standard

The Green Hydrogen Organisation's Green Hydrogen Standard is intended to provide certainty and transparency to stakeholders over the definition of green hydrogen. The standard details several requirements across the environmental, social and governance characteristics of hydrogen production. Where hydrogen is determined to be compliant with the requirements of the standard, they will be licensed to use the "GH2 Green Hydrogen" label.

Zero Carbon Certification scheme

The Smart Energy Council has been operating the Zero Carbon Certification Scheme (ZCCS) as a pilot since the end of 2020. It is an industry-led scheme intended to promote the uptake and distribution of renewable hydrogen products and their derivatives both domestically and overseas. The ZCCS currently assesses the embedded emissions in hydrogen produced within Australia.

3.5 International trade

The global nature of the energy and climate crises has led to increasing considerations by energy trading partners on the emissions intensity of the products they are importing. This is particularly important in the case of the growing international demand for renewable energy and clean products.

Interaction: The GO Scheme will be used to demonstrate adherence to international market requirements.

International markets are moving towards setting emissions based thresholds to define clean or renewable hydrogen in their markets. Examples include the European Commission's delegated regulation on the production of renewable transport fuels – share of renewable electricity (requirements) and United States' Inflation Reduction Act that places an emissions intensity threshold on the clean energy production that is eligible for tax exemption. Australia's main trading partners within Asia such as Japan and Korea are also looking at certification schemes that will measure and report emissions associated with clean hydrogen and ammonia produced domestically and imported.

The GO scheme will be a critical component in supporting international offtake of Australian renewable energy and clean products. The GO scheme will directly enable producers to demonstrate adherence to emissions intensity requirements that may be required by other markets. The GO scheme will also enable producers to display information across other attributes, such as water source or renewable electricity requirements that will not only demonstrate compliance with requirements, but could position Australian hydrogen to be more competitive across a number of areas such as environmental sustainability.

4 Emissions accounting

The emissions accounting approach outlined in this section is proposed to apply to all products included in the GO scheme. The approach is consistent with the IPHE methodologies and has been further developed through the co-design process with industry and informed by learnings from the GO Trials. This section does not apply to REGOs which only track renewable electricity, however REGOs and LGCs are discussed as an input into the emissions accounting approach for Product GOs.

As introduced in Section 2.1, this general approach would be specified in legislation as a library of emissions measurement processes, definitions, and sources, but the GO scheme will also include detailed, product- and pathway-specific methodologies for calculating product-related emissions. As the scheme expands, more methodologies will be prioritised, developed and incorporated to cover new industries, activities, products, and production pathways. If a product (such as hydrogen) has multiple common production pathways (e.g. electrolysis, steam methane reformation) each pathway will have its own methodology.

Draft methodologies for the initial production pathways included in the GO scheme are planned to be released for feedback in parallel with scheme legislative development. These methodologies will cover hydrogen produced via electrolysis, steam methane reformation or coal gasification.

Other methodologies targeted for inclusion close to scheme commencement would cover production of hydrogen energy carriers including ammonia, methylcyclohexane and liquefied hydrogen; and transport and storage of hydrogen and hydrogen energy carriers.

These emissions accounting methodologies will continue to be developed through the GO Trials process to ensure domestic applicability and international alignment. Prioritisation and development of product-specific methodologies is outlined in Section 4.4.

4.1 General emissions accounting approach

Scope 1 emissions

Scope 1 emissions are direct emissions from the product process. Scope 1 emissions can be accounted in accordance with the [National Greenhouse and Energy Reporting \(Measurement\) Determination 2008](#) determination framework.² For each activity, there are four emissions estimation methods:

- Method 1 – basic estimation method with use of default emissions factors.
- Method 2 – site-specific sampling and use of Australian or international standards or their equivalent for analysis of fuels and raw materials.
- Method 3 – like Method 2 but Australian or equivalent documentary standards must be used for sampling and analysis of fuels and raw materials.
- Method 4 – direct or continuous emissions measurement.

A facility would need to measure or meter relevant quantities in-line with NGER requirements, with higher order NGER methods generally providing more accurate and robust emissions estimates.

² More information on NGER measurement methods is available in the Clean Energy Regulator's [Methods and measurements guideline](#).

Upstream emissions

Upstream emissions are the relevant scope 3 emissions from extraction, processing and transport of production inputs. It is proposed that, in-line with the IPHE guidelines, upstream emissions must be accounted for within the system boundary. If these activities are integrated with production, they are to be accounted for as Scope 1 emissions as described above.

The GO producer can determine upstream emissions using supplier-specific emissions data, or using a default emissions factor approach:

Upstream emissions approach	<i>Supplier-specific emissions data</i>	<i>Default emission factors</i>
Estimation method	Suppliers provide detailed emissions data, e.g. coal fugitive emissions obtained from continuous emissions monitoring in-line with NGER approach. It is proposed that emissions would be allocated on a pro-rata basis proportionate to the quantity of upstream input supplied to the hydrogen facility.	GO producer applies conservative default emissions factors, e.g. the scope 3 emissions factor for natural gas in the National Greenhouse Accounts factors document.

Government will determine which supplier-specific emissions data and default emission factors should be used as part of the methodology development process and trials. Default emissions factors would be included in the legislation.

Scope 2 emissions

Producers must account for the scope 2 emissions associated with the electricity consumed through producing a product covered by the scheme. Details of the proposed market-based approach to scope 2 accounting are included in Section 4.3. At a high level high-level this includes:

1. Metering the total relevant electricity consumption.
2. Determining the renewable component of electricity use. The scheme will recognise direct and indirect surrender of 'market-based' instruments (e.g. LGCs and REGOs) and eligible 'behind the meter' electricity use where certificates are surrendered or not created. Discussed in more detail in Section 4.3 below.
3. Determining residual emissions from residual electricity use that is not demonstrated as renewable, using an appropriate Residual Mix Factor (RMF).
4. Determining emissions from non-grid, non-renewable electricity (e.g. off-grid or co-located generation) using relevant emissions factors.

Metering

The metering of electricity, gas flows and other relevant quantities must meet relevant Australian standards. For most scope 1 emissions measurement, this will be consistent with the relevant NGER metering requirements. This ensures international compliance and promotes alignment when the same information is being reported across multiple schemes, for example as part of facility reporting in NGER.

GO Trial participants indicated primary metering onsite according to NGER standards should be possible. However, they noted that secondary metering for upstream emissions could be more problematic.

Where standards and frameworks for hydrogen metering are not yet fully formed, the Department will seek out alternative approaches that may be used until they are developed. For example, the NGER framework does not currently explicitly address hydrogen metering.

For facilities that produce electricity on-site (including both renewables and non-renewable generation) electricity production, consumption and flows will need to be metered. This includes generation both for on-site consumption and any electricity export.

Co-products

Co-products are products resulting from the production process that have demonstrable value from being on-sold or reused in the production facility. An example is in the hydrogen via electrolysis production process, oxygen is often produced alongside the hydrogen. This oxygen could then be on-sold or reused in the production facility.

Emissions from the upstream and production process will be able to be allocated between the product covered under the GO scheme and the co-product. However, it is proposed that evidence of the sale or use of co-products will be required to validate it has been used.

In line with IPHE requirements, where carbon dioxide is a co-product of the production process it will need to be permanently stored to be removed from the product's emissions intensity. If the carbon dioxide is used, emissions will not be able to be allocated separately to it.

The appropriate approach to allocating emissions between co-products will be determined as part of the methodology development process.

Materiality

A materiality threshold is a limit below which an emissions source does not need to be measured as it is considered immaterial. A materiality threshold can reduce participation burden by limiting excessive measurement, but may introduce risks to perceived scheme integrity.

A list of material emissions sources that must be measured would be included in the product- and pathway-specific methodologies. The list of material sources will be informed by whether they contribute at least 2.5 per cent of total emissions per source. This threshold was supported by most respondents to the previous consultation paper.

If an emissions source is required to be estimated under the NGER scheme and it is within the GO scheme's scope it must be reported even if it is below the materiality threshold.

This proposed approach to materiality thresholds will provide sufficient scheme integrity while reducing ambiguity and administrative burden. Most GO Trial participants were divided between a materiality threshold of less than 1 per cent or between 2 and 5 per cent. However, they noted it should ultimately be informed by international and domestic customer preferences.

Policy position proposal 19: Material emissions sources that must be measured for each product and production pathway will be specified in the methodologies. The sources will be selected based on materiality threshold of 2.5% of total emissions per source.

4.2 Treatment of offsets and double counting

Offsets issued for activities within the system boundary

To avoid double counting and achieve consistency with integrated schemes, offsets, namely ACCUs, will be required to be surrendered where they are issued in relation to emissions reductions incurred within the system boundary. If these emissions reductions are issued ACCUs that are not surrendered, the associated emissions reduction would be either added back on to the emissions intensity of the process or the emissions reduction process itself would be excluded from the carbon accounting. For example, if a GO producer is using a Carbon Capture and Storage (CCS) process within their system boundary and the process receives ACCUs as part of [Emissions Reduction Fund](#), the ACCUs must be surrendered to the Government for the carbon intensity of the product to be reduced. At the point of GO certificate creation if the associated ACCUs are not shown as surrendered, because they have been sold to a third party, the CCS activity would be excluded from accounting.

Beyond CCS, other emission reduction activities throughout the system boundary may be eligible for ACCUs and would also have to be surrendered. This could include eligible emission reductions in the water treatment, landfill gas and transport processes. This approach aims to reduce double counting and is consistent with existing schemes such as Climate Active and CERT.

Offsets issued outside the system boundary

Offsets from third parties cannot be used to reduce emissions on the GO certificate. This includes ACCUs issued for emissions reductions outside of the system boundary and international offsets. Inclusion of offsetting was raised in the [Hydrogen Guarantee of Origin Scheme Discussion Paper](#) and received a mixed response with 36 percent of respondents against the inclusion of offsets and 30 percent of respondents in favour of their inclusion.

Respondents against the inclusion of offsets cited that it may not be internationally aligned and could reduce investment in emission reduction technologies. Therefore it may increase the risks to perceived scheme integrity. Those in favour of their inclusion considered it could support customer choice and provide a transitional period to low emissions.

International schemes established or under development do not include offsets. There is also greater complexity under Article 6 of the Paris Agreement, where offsets are surrendered against products that are then exported. Countries would need to collaborate to ensure offsets are not double-claimed across borders.

Domestically, there are separate frameworks such as Climate Active that could provide carbon neutral certification for products covered under the GO scheme (see Section 3: interactions with other schemes for more information).

Offsetting of product emissions intensity will not be allowed within the GO scheme due to the lack of established demand domestically or internationally, and the risks of impacting scheme integrity and credibility. However, should a clear need be identified, the scheme's design will allow this functionality to be built on at a later stage.

Policy position proposal 20: ACCUs issued from within the system boundary will need to be surrendered for the emissions reductions to be recognised under the GO scheme. ACCUs or other carbon offsets cannot be used to reduce the emissions intensity of products listed on GO certificates.

4.3 Tracking renewable electricity

Surrender of renewable electricity certificates, either LGCs or REGOs, will be the mechanism used to claim the zero emissions attributes of renewable electricity as part of the GO scheme. GO producers will need to measure the gross consumption of electricity generated onsite and grid electricity imports that contribute to the production processes using [RET compliant metering approaches](#). In keeping with the market-based approach, all electricity used as part of the production process will first be summed and then eligible renewable electricity deducted (treated as zero emissions), with emissions from any residual electricity use calculated using an RMF.

Market-based accounting

The market-based method accounts for emissions from electricity use based on an entity's use of contractual instruments that represent renewable electricity. Contractual instruments include renewable electricity certificates such as LGCs or REGOs.

Market-based accounting recognises voluntary purchases of renewable electricity including direct surrender of renewable electricity certificates like LGCs or REGOs; indirect surrender (e.g. through contribution to the Large-scale Renewable Energy Target's [Renewable Power Percentage](#)³); and other renewable electricity use (e.g. from eligible behind-the-meter electricity use for which no certificates were created).

Where eligible renewable electricity certificates are surrendered against electricity use (directly or indirectly) an emissions factor of zero is applied. A residual mix factor (see below for details) is used to calculate emissions from any remaining electricity consumption.

Surrendered LGCs and REGOs will be the only way to evidence *imported* renewable electricity use and demonstrate the associated zero emissions value. This can be through direct surrender by the GO producer associated with the facility, or through indirect surrender via other market-based instruments on the facility's behalf. This occurs when:

- Liable entities (typically electricity retailers) surrender LGCs to meet their obligations towards the Large-scale Renewable Energy Target's [Renewable Power Percentage](#) (RPP) for electricity use that is not exempted, (i.e. [emissions intensive trade exposed](#) activities).
- Electricity retailers surrender LGCs to match any GreenPower purchase made by an electricity consumer.
- Jurisdictional surrenders of LGCs towards jurisdictional renewable electricity targets (e.g. as part of the Australian Capital Territory's 100 per cent target). The GO scheme will utilise the approach proposed recently by the Clean Energy Regulator's for the Corporate Emissions Reduction Transparency (CERT) report⁴ for the accounting of jurisdictional renewable electricity percentages, once finalised.

Renewable electricity generated and consumed *onsite* ('behind the meter') in the production process can be treated as renewable if the LGCs or REGOs associated with that generation are

³ Except for electricity use associated with an Emissions Intensive Trade Exposed activity which has been exempted from the Large-scale Renewable Energy Target

⁴ For more information see the Clean Energy Regulator's [website](#).

surrendered or none will be created,⁵ metered and sub-metered appropriately, and if the generation is either:

- from small-scale renewable electricity generation that created Small-scale Technology Certificates (the certificates do not need to be surrendered), and/or
- uses an eligible renewable energy source as defined in the *Renewable Energy (Electricity) Act 2000*.

Policy position proposal 21: LGCs and REGOs will be used to demonstrate renewable electricity use. Behind the meter or directly supplied renewable electricity will not require certificate surrender if none were created.

Residual Mix Factor

A residual mix factor will be incorporated into the GO scheme to account emissions for imported electricity use not claimed by a renewable electricity certificate (REGOs or LGCs). An RMF is a critical component of market-based scope 2 accounting as it accounts for the emissions from all unclaimed electricity generation. Use of an appropriate RMF prevents double counting of renewable electricity within and across market-based accounting schemes.

Emissions factors and residual mix factors

A standard electricity emissions factor for a region or grid would be calculated by dividing the total emissions from electricity generation by the total electricity consumption.

An RMF is an emissions factor where the zero emissions renewable generation (and associated consumption) that can be purchased and claimed is removed. This 'residual mix' then represents only the emissions from the remaining non-renewable generation and consumption (e.g. coal and gas), and unclaimed renewables. With the zero emissions generation and consumption removed, the emissions factor increases.

An RMF is used in market-based accounting (where participants surrender RECs to demonstrate renewable electricity use) to calculate the emissions associated with residual electricity (any imported electricity not matched with a REC). The RMF should consider all the generation and consumption covered by the market. In Australia, this is the entire country as LGCs can be purchased and claimed anywhere

The GO scheme will require an RMF to be calculated. It is anticipated that this will be calculated as part of National Greenhouse Accounts (NGA) emissions factor calculations and included within NGER scheme legislation. Calculating this value centrally means that associated market-based frameworks like Climate Active's carbon neutral certification, or the Clean Energy Regulator's Corporate Emissions Reduction Transparency Report can reference the same emissions factors, increasing alignment and transparency.

If a transition period is required, the GO scheme could utilise the scope 2 + 3 National RMF used by Climate Active as part of its accounting approach.

⁵ Noting that onsite generation should be considered with scope 1 emissions, however as it is zero emissions it is included with other electricity use for simplicity.

Policy position proposal 22: A new RMF will be calculated for use within the GO scheme that is updated frequently and can be accessed by other market-based frameworks.

REC eligibility requirements for the GO scheme

It is proposed that REGOs and LGCs used to demonstrate renewable electricity use will have a 12 month vintage. This means that when a product GO is being created, any RECs surrendered against the associated electricity use must have been issued within 12 months of the production.

No additional eligibility requirements (e.g. spatial or hourly time-matching) will be placed on LGCs or REGOs utilised within the GO scheme to demonstrate use of renewable electricity. However, it is proposed that additional attributes such as location and time of generation be captured on REGO certificates. Please see the accompanying Renewable Electricity Certification paper for the proposed policy position.

Requirements for time matched renewables (e.g. where renewable generation occurs in the same hour as the hydrogen production) is emerging internationally in certain regions and through some private corporate demand. The GO scheme does not require time matching to be demonstrated, however participants could voluntarily produce or source LGCs or REGOs that demonstrate this. For example, a producer may source grid and/or time-matched renewables generation to meet consumer demand and price products at a premium. This information would be publicly-verifiable based on attributes included on REGO certificates.

In time, CER could include additional attribute tags on Product GOs to identify when spatial and temporal conditions have been matched.

Policy position proposal 23: RECs used to demonstrate renewable electricity usage in production of a GO product must have been issued within the previous 12 months. Additional information will be captured on REGOs to allow for voluntary time matching at a more granular level.

4.4 Development of product-specific methodologies

International and domestic trends have shown a clear need for emissions accounting certification beyond the products initially prioritised for inclusion in the scheme (hydrogen and hydrogen energy carriers). Additional products that could be incorporated into the scheme include metals, biofuels and other materials. This paper proposes a high-level process for developing and incorporating new emissions accounting methodologies to expand the scheme over time.

The key stages of the methodology development process would be:

1. prioritisation of new methods based on industry needs and government priorities,
2. international alignment and review
3. governance and implementation

Prioritisation

The sequencing of scheme expansion must balance the diverse requirements and readiness of industry; existing government priorities; international trends; and future needs of the Australian economy.

The Government will outline a process to prioritise products and production processes that could be added to the scheme. This will include regular public consultation to understand and gauge requirements, as well as opportunities for industry to pitch products for consideration against

certain eligibility criteria (e.g technological readiness, trade or economic opportunity, ease of implementation and availability of existing standards).

Existing methodologies will be updated and amended as required based on learnings from implementation, scheme operation and industry feedback.

International alignment and review

To date, methodologies for hydrogen have been developed by translating and trialling international methods developed as part of the IPHE for a domestic context. This process will continue for relevant hydrogen products and derivatives. New methodologies developed through relevant international forums for other products could be applied in Australia through a similar process, with the government drafting and co-designing a domestically-applicable version.

The Government will continue to engage with international partners and forums to develop supporting methodologies, as well as addressing evolving trade requirements (e.g. compliance with Carbon Border Adjustment Mechanism).

International harmonisation is critical to ensure ongoing relevance of the GO scheme, however international methodologies to determine emissions intensity for new products or processes may not exist for all products deemed to be a priority. In this case, the government could co-design the methodologies with industry (and optionally partner countries) as first movers and then either seek existing or create appropriate international, government-to-government fora to facilitate and ensure broader alignment. This alignment could also be as part of bilateral or multilateral arrangements with hydrogen partner countries. For methodologies developed from scratch and where there may not be an existing international forum to provide assurance on the international suitability and applicability of the approach, a non-government body could be engaged to provide this assurance, against certain established principles.

Policy position proposal 24: The GO scheme will expand over time by incorporating new product-specific methodologies. A prioritisation, development and review process with industry input and international engagement will be established to ensure domestic applicability, international alignment, and continued suitability of legislation.

Governance and implementation

Once drafted, the new or amended product-specific methodologies will be released for final public review and finalised.

Depending on the precise legislative drafting of the GO scheme, the authority to sign-off new or amended methodologies will likely rest with the Minister for Climate Change and Energy. Authority to sequence methodology development will also rest with the Minister, but could be delegated.

5 Next steps

Following the release and consultation on this paper, the Department will undertake several work streams throughout 2023 to finalise development the GO scheme.

The Department will undertake the following next steps:

- Summarise feedback on this paper and develop legislation to give effect to the GO scheme,
- Work with international forums to continue developing internationally aligned methodologies,
- Continue to test the international methodologies through the GO Trials phase 2, and
- Develop domestic applications of the international methodologies into subordinate legislation.

5.1 Legislative development

Following the consultation period, a summary of the responses and how they impact final policy positions will be released. These final policy positions will then be used to inform the drafting of the GO scheme legislation.

This legislation is expected to cover the core scheme design and methodology development process.

The exposure draft consultation will detail the specific elements of the scheme design and make clear the legal obligations and rights conferred on scheme participants.

The scheme is intended to be legislated by the start of 2024.

5.2 International work

The Department will continue working with the IPHE to develop internationally aligned methodologies covering energy carriers and transport and storage of hydrogen and energy carriers. The IPHE published a working paper covering energy carriers on XX November 2022, and is expected to release their working paper covering transport and storage in XXX 2023.

Beyond this, the IPHE is also exploring developing methodologies that cover other production pathways for hydrogen and energy carriers.

The Department will continue to work with the IPHE to ensure that the emissions accounting methodologies being developed for the GO scheme are internationally aligned. The International Organisation for Standardisation (ISO) has also signalled interest in developing the IPHE agreed methodologies into formal international standards.

Alongside the work through IPHE, the government will work through other multilateral forums and bilaterally with trading partners to ensure interoperability of Guarantee or Origin or certification schemes.

5.3 GO Trials Phase 2

Consistent with the approach taken in phase 1, phase 2 of the GO trials will aim for further refinement of methodologies for hydrogen production pathways and to test the methodologies for hydrogen energy carriers, storage and transport in an Australia context. The Clean Energy Regulator will be targeting additional industry participants who have experience, expertise or

significant interest in these areas, and interested parties can register interest in this stage of the trials by sending an email to CER-GO@cer.gov.au.

The CER is developing a “beta” technology prototype that will pilot how participants might register and claim GOs under a legislated scheme. This is scheduled for late 2022, with the trial participants invited to participate in the “beta” prototype with the learnings informing a full scale GO policy and design scheme.

5.4 Methodology development

The Department will continue to develop the initial emissions accounting methodologies to cover:

- Hydrogen produced via electrolysis, steam methane reformation or coal gasification,
- Liquid organic energy carriers including ammonia, methylcyclohexane and liquefied hydrogen, and
- Transport and storage of hydrogen and hydrogen energy carriers.

Further consultation will be undertaken on the draft methodologies before developing them into [regulations/methodologies] subordinate to the GO legislation.

6 Glossary of terms

Term	Definition
ACCUs	Australian Carbon Credit Units – a unit representing one tonne of carbon dioxide equivalent (tCO ₂ -e) stored or avoided by eligible activities undertaken as part of the Australian Government’s Emissions Reduction Fund.
ARC	Annual Reconciliation Check is an electronic report submitted through the CER GO system to confirm or correct all reported information from the previous year.
ANREU Act	Australian National Registry of Emissions Units (ANREU) Act.
Carbon Offsets	Units generated representing one tonne of carbon dioxide equivalent net abatement generated by projects that reduce, remove or capture emissions from the atmosphere such as reforestation, renewable energy or energy efficiency.
CCS	Carbon Capture and Storage - the process of capturing and permanently storing carbon emissions
CER	Clean Energy Regulator
CERT	The Corporate Emissions Reduction Transparency report is a voluntary initiative for eligible companies to present a snapshot of their climate-related commitments, progress and net emissions position, published by the CER.
Clean products	Products that may be created using renewable electricity, and/or processes that result in them having lower embodied emissions.
Climate Active	An ongoing partnership between the Australian Government and Australian businesses to drive voluntary climate action. Climate Active certifies business that have credibly reached a state of carbon neutrality by measuring, reducing and offsetting their carbon emissions. Certification is available for organisations (business operations), products and services, buildings, events and precincts.
CO ₂ -e	Carbon dioxide equivalent
Electrolysis	The process of using electricity to split water into hydrogen and oxygen. This reaction takes place in a unit called an electrolyser
Emissions factor	The average emission rate of a given source, relative to units of activity or process/processes.
Gasification	A process that converts fossil fuel based materials into gases.
GHG Protocol	Greenhouse Gas Protocol – An initiative by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), the GHG Protocol establishes comprehensive global standardized frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations, value chains and mitigation actions.
GreenPower	GreenPower is a government accredited renewable energy product offered by most electricity retailers to households and businesses in Australia.
IPHE	International Partnership for Hydrogen and Fuel Cells in the Economy - an international government-to-government partnership whose goal is to promote the advancement of technical hydrogen industry standards and

	protocols that are expected to underpin future trade and investment in hydrogen.
ISO	International Organization for Standardization
LGCs	Large-scale Generation Certificates
LSTR	Limited scope technical reviews are a third-party assurance process over the life cycle emissions and associated metering of each GO-certified product.
MWh	A unit of energy equal to the work done by a power of a million watts in one hour.
NGA factors	National Greenhouse Accounts (NGA) factors provide methods that help companies and individuals estimate greenhouse gas emissions. These are published by the Department of Industry, Science, Energy and Resources each year
NGERs	National Greenhouse and Energy Reporting scheme - A single national framework for reporting company information about greenhouse gas emissions, energy production and energy consumption. The NGER Scheme is administered by the Clean Energy Regulator.
PPA	Power Purchase Agreement
Product GOs	Guarantee of Origin certificates which cover products such as hydrogen and ammonia, and may include future products covered under the scheme
REC	Renewable Electricity Certificate , e.g. an LGC or REGO.
REGOs	Guarantee of Origin certificates which cover renewable electricity generation
RFS	Renewable Fuel Scheme is a scheme developed by the NSW government to create a financial incentive for the production and consumption of green hydrogen within NSW.
RGC	Renewable Gas Certificates that represent gigajoules of bio methane and potentially green hydrogen, being developed as part of GreenPower's Renewable Gas Certification pilot.
RET	Renewable Energy Target scheme
RMF	A Residual Mix Factor is an emissions factor where the zero emissions renewable generation (and associated consumption) that can be purchased and claimed through the use of corresponding contractual instruments is removed.
Scope 1 emissions	Emissions released into the atmosphere as a direct result of an activity or series of activities.
Scope 2 emissions	Indirect emissions from consumption of purchased electricity, heat or steam. Most scope 2 emissions represent electricity consumption from a grid, but can include other forms of energy transferred across facility boundaries.
Scope 3 emissions	Indirect greenhouse emissions other than scope 2 emissions that are generated in the wider economy. They occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business. Some examples are extraction and production of purchased materials, transportation of purchased fuels, use of sold products and services, and flying on a commercial airline by a person from another business.

Standards Australia	The representative for Australia within the ISO, ensuring alignment between domestic and international standards.
STCs	Small-scale Technology Certificates
SMR	Steam Methane Reforming is a method to extract hydrogen using natural gas.
System boundary	A system boundary is the scope within which emissions sources are accounted for a product across its supply chain.
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System boundary	A system boundary is the scope within which emissions sources are accounted for a product across its supply chain.

7 Attachment A: Data requirements

A principle of the GO scheme is that information will be submitted to the CER for assessment and validation in advance of physical production or generation. This attachment is intended to provide additional context about the types of data that will be required to register profiles as well as the data that will be required to create certificates.

There are two types of data required:

- **Profile data** is data that can and must be submitted when registering supply chain steps. This type of data is specific to the production facility or supply chain step, but is not dependent on actual production information. It is anticipated that pre-fill data will describe the key attributes of each supply chain step, including emissions sources and how they will be determined. Assessment of pre-fill data at profile registration – backed up by evidentiary documents and third-party assurance where applicable – gives the CER and scheme participants good confidence in the accuracy of information that will be reported in that profile during GO certificate creation, supporting upfront scheme integrity.
- **Batch data** is data that is specific to a GO certificate creation batch, and is submitted at the point of certificate creation. Batch data is necessary to inform the specifics of a particular GO certificate creation batch – how many certificates are created, what are the precise emissions intensities and so forth.

The table below identifies types of pre-fill and batch data that are anticipated to be associated with each profile type for both Product GOs and REGOs. When a GO certificate is created, both pre-fill and batch data will be used to populated certificates.

Table 4: GO profile types and details

GO profile type	Profile data	Batch data
Product Profile	Profile Overview – This profile relates to the product for which the GO is being created. Product GOs will cover the well-to-gate boundary, including any transport emissions associated with production inputs. REGOs will only cover the renewable electricity being generated.	

GO profile type	Profile data	Batch data
<i>Product GOs</i>	<ul style="list-style-type: none"> • Product type • Production method • Production location <ul style="list-style-type: none"> » Facility details • Production inputs <ul style="list-style-type: none"> » May require source locations or suppliers • Metering information • Production outputs – products and co-products • For each emissions source – emissions estimation methods <ul style="list-style-type: none"> » Nomination of emissions calculation method to be used » Selection of emissions factors if used » Information about non-default emissions factors if used • Onsite storage capacities 	<ul style="list-style-type: none"> • Metered input consumption • Metered product output • Input certificate consumption <ul style="list-style-type: none"> » LGCs/REGOs etc. • Where metering data is not used, production date is required
<i>REGOs</i>	<ul style="list-style-type: none"> • Energy source • Facility details <ul style="list-style-type: none"> » Location » Grid connection • Metering information • Marginal loss factors 	<ul style="list-style-type: none"> • Metered renewable electricity output
Transport Profile	<p>Profile Overview – This profile is related to the transportation of product to the end consumer. A Product GO may have more than one transport profile if the product moves through multiple intermediaries. Please note these profiles will not apply to REGOs.</p>	

GO profile type	Profile data	Batch data
	<ul style="list-style-type: none"> • Transport type • Transport provider • Transport start and end locations <ul style="list-style-type: none"> » This must match information provided in the upstream and downstream profiles – for example the start may be the facility in the product profile, and the end may be the consumer profile facility. • Recipient • For each emissions source – emissions estimation methods <ul style="list-style-type: none"> » Nomination of emissions calculation method to be used » Selection of emissions factors if used » Information about non-default emissions factors if used • Relevant data for selected factor 	<ul style="list-style-type: none"> • Confirmation of pre-filled destination or consumer • Measured product input • Measured product output • Relevant batch claim data <ul style="list-style-type: none"> » Relevant data will depend on method used • Loss/leakage/consumption rates during transport
<i>Transport Profile notes</i>	<ul style="list-style-type: none"> • If emissions are estimated using fuel consumption – fuel type and consumption monitoring details will be required. • If emissions are estimated using a cost-based method –detailed contract information to determine emissions factors will be required. 	<ul style="list-style-type: none"> • Blended loads will require methods to allocate emissions associated with the GO product.
Storage Profile	Profile Overview – This profile is related to the downstream storage of the product as an intermediary to the final consumer. Please note these profiles will not apply to REGOs.	

GO profile type	Profile data	Batch data
	<ul style="list-style-type: none"> • Storage facility location • Storage method • Storage operator • Leak detection processes • For each emissions source – emissions estimation methods <ul style="list-style-type: none"> » Nomination of emissions calculation method to be used » Selection of emissions factors if used » Information about non-default emissions factors if used 	<ul style="list-style-type: none"> • Actual loss/leak rate • Duration of storage • Measured product input • Measured product output • Percentage allocation of storage costs • Next destination and transport method (requires a subsequent transport profile)
Consumer Profile	<p>Profile Overview – This profile denotes the end of the GO lifecycle, and indicates the final consumption of product, as a feedstock, fuel, or consumer product. These profiles will relate to both Product GOs and REGOs</p>	
	<ul style="list-style-type: none"> • Consumer details – could be a registered GO Consumer • Consumption purpose (including export) 	<ul style="list-style-type: none"> • Acknowledgement of receipt of product • Consumption date

8 Attachment B: Comparisons between GO Scheme and other schemes

Table 5: National Emissions Accounting schemes summary

	NGER	Safeguard Mechanism
Scheme purpose	A key role of the NGER scheme is to support and inform Australia's greenhouse gas inventory and international reporting obligations under the UNFCCC. This is also used to track progress towards emissions reduction commitments and help to inform on emissions reduction policy, programs and activities.	The Safeguard Mechanism requires Australia's largest greenhouse gas emitters to keep their net emissions below an emissions limit.
Scheme coverage	The NGER scheme is a national emissions accounting framework which covers emissions produced at a facility-level.	Leverages NGER scheme data but only references scope 1 emissions
Similarities to GO scheme	An emissions accounting function	Enables emissions reporting to support companies who are looking to reduce emissions.
Differences to GO scheme	<ul style="list-style-type: none"> • NGER scheme is facility level emissions accounting whereas GO scheme is product-level emissions accounting. • Thresholds are in place for NGER facilities, exceeding this threshold means you are legally obligated to provide information to NGERs. 	<ul style="list-style-type: none"> • Focuses only on scope 1 emissions whereas GO incorporates measurement and reporting across scope 1, scope 2 and partial scope 3. • Sets a baseline for scope 1 facility emissions, emissions over this baselines need to be offset.
Interactions with GO scheme	<ul style="list-style-type: none"> • Where there is an overlap between the GO scheme and NGER for a facility reporting under both schemes, we will look to align the measurement and emissions approach with the NGER prescribed approach. • However, upstream information will represent a higher reporting burden for facilities and we may need to amend the approach for these emissions under the GO scheme 	<ul style="list-style-type: none"> • Where measurement through the Safeguard Mechanism leverages NGER measurement, the GO scheme will align. • Facilities looking to reduce emissions by purchasing low-emissions products such as clean hydrogen instead of natural gas, may use the GO scheme to buy products that achieve their emissions reduction goals.

Table 6: Incentive schemes summary

	NSW Renewable Fuel Scheme	WA Renewable Hydrogen	GreenPower Renewable Gas Certification Pilot
Scheme purpose	To create a financial incentive for the production and consumption of green hydrogen within NSW	To require a percentage of electricity generated in the South West Interconnected System to be fuelled by renewable hydrogen.	To establish a voluntary market for renewable gases starting with biogas, biomethane and renewable hydrogen.
Scheme coverage	<ul style="list-style-type: none"> • Sets a target for hydrogen production in each compliance period • Creates a tradeable certificate. • Gas retailers and end users that are not retail customers will be required to purchase and surrender RFS certificates to demonstrate compliance with a mandatory target. 	<ul style="list-style-type: none"> • Currently under consultation but have proposed to include a Renewable Hydrogen Electricity Generation Certificate for the SWIS which would be created for every MWh of electricity generated via the combustion of renewable hydrogen 	<ul style="list-style-type: none"> • Will enable network-connected commercial and industrial gas customers to offset their gas use with Renewable Gas Certificates (RGCs).
Similarities to GO scheme	These schemes and the GO scheme will support investment in production projects.		
Differences to GO scheme	These schemes are not emissions accounting schemes, they are intended to incentivise a specific low emissions activity.		
Interactions with GO scheme	The GO certificates will be an input into these schemes, providing a mechanism to identify hydrogen that is eligible for participation and create unbundled certificates based on the GO certificate information.		

Table 7: Voluntary carbon neutral schemes summary

	Climate Active	Corporate Emissions Reduction Transparency Report
Scheme purpose	Climate Active is an ongoing partnership between the Australian Government and Australian businesses to drive voluntary climate action. Climate Active provides carbon neutral certification across organisations (in relation to business operations), buildings, events, precincts, products and services.	Corporate Emissions Reduction Transparency (CERT) report is a new voluntary initiative for eligible companies to present a snapshot of their climate-related commitments, progress and net emissions position.
Scheme coverage	Businesses can surrender renewable electricity certificates to reduce their electricity emissions and retire eligible offsets to achieve carbon neutrality.	Voluntary participation for NGER participants above the reporting threshold (50kt combined scope 1 and scope 2 emissions)
Similarities to GO scheme	<ul style="list-style-type: none"> Emissions accounting is the foundation of the scheme 	<ul style="list-style-type: none"> Enables emissions reporting to support companies who are looking to reduce emissions and demonstrate performance against their emissions reduction targets. Pilot covers NGER facilities
Differences to GO scheme	<ul style="list-style-type: none"> Climate Active only certifies carbon neutral claims Climate Active has no role in issuing tradeable certificates 	Covers scope 1 and 2 emissions aligned with reporting under the NGER scheme.
Interactions with GO scheme	Information produced under the GO scheme may be used as part of a business' carbon neutral claim under Climate Active.	The GO scheme may be an input into the CERT reporting process where the commodity associated with the GO has been consumed by a reporting entity.

Table 8: Industry standards and certification summary

	Green Hydrogen Standard	Zero Carbon Certification Scheme
Scheme purpose	<p>The Green Hydrogen Organisation's Green Hydrogen Standard is intended to provide certainty and transparency to stakeholders over the definition of green hydrogen. The standard details several requirements across the environmental, social and governance characteristics of hydrogen production. Where hydrogen is determined to be compliant with the requirements of the standard, they will be licensed to use the "GH2 Green Hydrogen" label.</p>	<p>The Zero Carbon Certification Scheme is intended to promote the uptake and distribution of renewable hydrogen products and their derivatives both domestically and overseas.</p>
Scheme coverage	<ul style="list-style-type: none"> • Defines 'Green Hydrogen' as hydrogen produced through electrolysis with renewable electricity with less than or equal to 1 kgCO₂-e per 1 kgH₂ (averaged across a year) based on IPHE emissions accounting methodologies. • Sets requirements across all areas of hydrogen projects. 	<ul style="list-style-type: none"> • Will certify hydrogen and hydrogen derivatives under their scheme.
Similarities to GO scheme	Emissions accounting informed by IPHE methodologies.	
Differences to GO scheme	<ul style="list-style-type: none"> • Sets a definition for 'green hydrogen' • Sets criteria for participation broader than emissions. 	<ul style="list-style-type: none"> • Sets a criteria for 'zero carbon hydrogen and hydrogen derivatives'.
Interactions with GO scheme	The GO scheme will inform the emissions accounting aspects of these schemes.	