

An aerial photograph showing a coastal town with a beach and a large wastewater treatment plant. The town is built on a hillside overlooking the ocean. The wastewater treatment plant features several large circular tanks and industrial buildings. A large green diagonal shape is overlaid on the left side of the image, containing the text.

Renewable Gas Certification pilot

Consultation Paper

GreenPower® | February 2022

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1. Introduction

About GreenPower

GreenPower is a national renewable energy accreditation program, administered by the NSW Government on behalf of the National GreenPower Steering Group made up of the New South Wales, Victoria, and South Australia governments, with the Australian Capital Territory, Northern Territory, Tasmania and Queensland governments as observing members.

The program accredits renewable energy products, enabling business and household customers to match their electricity use with renewable energy, which is added to the grid on their behalf. GreenPower has made a significant contribution to the Australian renewable energy industry including facilitating \$900 million of investment into the renewable energy sector, 16 Mt CO₂-e emissions reduction and building consumer trust in renewable electricity products.

GreenPower is now investigating opportunities to support emerging renewable gases, such as biomethane and renewable hydrogen, leveraging its 25 years of experience in voluntary markets and certification.

The Renewable Gas Certification Pilot

There is currently no mechanism to enable the selling, purchasing, and tracking of renewable gases in Australia. Certification schemes for hydrogen and hydrogen derivatives are being developed, but these will not include biomethane in initial phases and may not address hydrogen blending in gas networks.

The Renewable Gas Certification Pilot discussed in this paper aims to test how a voluntary scheme can enable renewable gas purchases to displace fossil fuels and reduce emissions. It will design, deliver, and run a Renewable Gas Certificate (RGC) registry to support the purchase, tracking and surrender of RGCs. It aims to enable network-connected gas customers to buy certificates to match their gas use with renewable gas that is added to the network on their behalf. The pilot was developed in collaboration with Jemena Gas Networks (Jemena) and Energy Networks Australia (ENA), however GreenPower will lead this consultation and deliver the pilot.

The pilot aims to align with new schemes currently under development, and existing schemes and regulatory frameworks. It will explore how a voluntary scheme can drive best practice, and how it can improve transparency to renewable gas users about the origin and impact of their gas use.

It is expected that the pilot will start operating in mid-2022 and run for at least two years. The pilot may be extended but is not intended to operate permanently. Learnings from the pilot could inform a potential permanent renewable gas certification scheme. How a permanent scheme would be administered will be assessed as the pilot progresses.

New projects will be able to join the pilot throughout its implementation and participation will be open to renewable gas projects across Australia.

How to participate

This paper discusses the proposed key design elements of the pilot.

Consultation on this paper aims to determine the appropriateness, feasibility and any unintended impacts of the proposed design and will inform the implementation of the pilot.

Submissions to this consultation close 5pm, 24 March 2022.

To make a submission please fill out the **response form** in conjunction with reading this consultation paper.

In parallel with this consultation process, renewable gas producers are invited to contact GreenPower to discuss participating in the pilot through [the contact us webpage](#).

2. Background

In Australia, natural gas accounted for 27 per cent of the primary energy mix in 2019-20¹. There is a significant opportunity to decarbonise Australia's energy if natural gas is replaced with renewable alternatives such as bioenergy.

Bioenergy is a form of renewable energy generated from the conversion of biomass into heat, electricity, biogas, and liquid fuels. Bioenergy accounts for 47 per cent of Australia's current renewable energy production and 3 per cent of total energy consumption². Modelling for ARENA's Bioenergy Roadmap shows that bioenergy has the potential to provide up to 20 per cent of Australia's total energy consumption by the 2050s.

Electrification of buildings and transport with renewable electricity can increase energy efficiency and reduce emissions. However, electrification is not always available and/or feasible especially in some existing buildings or industrial processes. In those cases, renewable gas can play an important role in supplementing electrification to decarbonise our economy.

Increased production and availability of bioenergy-derived renewable gas, such as biomethane, to Australian consumers could result in readily available emissions reduction. Several European countries, including France, Denmark, the United Kingdom and Germany are already using certification schemes to ensure the traceability of renewable gas exchanged between producers, retailers, and consumers.

Jemena's Malabar Biomethane Injection Project will trial injecting biomethane into the natural gas network in NSW. The demonstration scale project will upgrade biogas produced at Sydney Water's Malabar wastewater treatment plant to biomethane for injection into the Jemena gas distribution network. Similar initiatives are underway across Australia.

This pilot aims to support the emergence of a renewable gas market and provide industry leaders with a platform to substantiate and independently verify the environmental attributes of their renewable gas products.

¹ Australian Government, Australian Energy Update, 2021, <https://www.energy.gov.au/sites/default/files/Australian%20Energy%20Statistics%202021%20Energy%20Update%20Report.pdf>

² ARENA, Australia's Bioenergy Roadmap, November 2021, <https://arena.gov.au/assets/2021/11/australia-bioenergy-roadmap-report.pdf>

3. Which renewable gases are included in the pilot?

The term renewable gas describes gaseous fuels that can be used to complement or replace natural gas, and which have low or zero greenhouse gas (GHG) emissions associated with their production and use. This section describes which renewable gases will be included in the pilot; the following section details the specific feedstocks and producer criteria for projects.

Biogas

Biogas contains methane, carbon dioxide and other gases, and is mostly produced by anaerobic digestion of organic matter in an oxygen-free environment. Biogas can be made using different feedstocks and production pathways³. Common technologies include:

- Biodigesters - airtight systems (e.g. containers or tanks) in which organic material, diluted in water, is broken down by naturally occurring micro-organisms.
- Landfill gas recovery systems – capturing gases from decomposing municipal solid waste under anaerobic conditions at landfill sites.

Biogas is considered a renewable gas because the contained carbon comes from biogenic sources and equivalent carbon dioxide will be captured from the atmosphere when the biomass is regrown. This results in a 'net zero' carbon balance.

Capturing biogas from existing waste streams can reduce methane emissions, displace fossil gas use and lead to circular economy benefits such as digestate replacing other fertiliser products.

Biomethane

Biomethane is a renewable gas composed mostly of methane with only minimal impurities. The primary way of producing biomethane is through upgrading biogas by removing carbon dioxide and other contaminants. The resulting gas is a high purity methane gas with identical properties to natural gas. Biomethane can meet quality standards for injection into natural gas pipelines without changes in transmission and distribution infrastructure or end-user equipment.

The four main ways of upgrading biogas to biomethane are membrane separation, Pressure Swing Adsorption (PSA), amine scrubbing and water wash (or water scrubbing)⁴. Water scrubbing and membrane separation account for the majority of biomethane production globally⁵.

Existing biomass and organic waste streams have the potential to provide significant volumes of biomethane which can be used to displace natural gas or could be used for hydrogen production through Steam Methane Reforming (SMR).

³ International Energy Agency, Introduction to biogas and biomethane: www.iea.org/reports/outlook-for-biogas-and-biomethane-prospects-for-organic-growth/an-introduction-to-biogas-and-biomethane

⁴ www.biocycle.net/basics-biogas-upgrading

⁵ www.iea.org/reports/outlook-for-biogas-and-biomethane-prospects-for-organic-growth/an-introduction-to-biogas-and-biomethane

Biomethane made from biogas is a renewable energy source like wood chips and other types of bioenergy. Due to bioenergy's interaction with land use, food production, water use and other key environmental factors, biomethane production needs to be carefully assessed to avoid unintended social and environmental impacts. Eligible feedstocks to be included in the pilot are outlined in Section 4.

Renewable hydrogen

Renewable hydrogen, or 'green hydrogen', is hydrogen that is produced using renewable energy sources and feedstocks with minimal or zero emissions. This can be done through electrolysis using renewable electricity or by using biomethane SMR. Fossil fuel-derived hydrogen can have significant emissions and may not reduce emissions compared to direct coal or natural gas use.

Electrolysis is a process in which water is split into hydrogen and oxygen using electricity. SMR is a process in which methane is heated with steam and a catalyst to produce syngas, a mixture of carbon monoxide and hydrogen, which reacts further to produce carbon dioxide and hydrogen.

Other renewable gases

There are other renewable gases that could provide a zero emissions alternative to fossil fuel use. Examples include Di-methyl ether and synthetic methane made using renewable hydrogen and carbon dioxide. Technologies and markets for these gases are relatively immature but they may become commercially viable in the medium term.

Which renewable gases will be included in the pilot?

It is proposed that the pilot initially focus on biomethane and renewable hydrogen, as these technologies are relatively mature with projects operational or close to operation. Eligibility criteria for producers and feedstocks are addressed in Section 4.

Certification schemes and trials for hydrogen are being developed by the Australian Government and the private sector. Integrating with those projects is considered preferable to developing a separate hydrogen certification pathway. Non-network connected hydrogen projects are proposed to be excluded from the pilot.

Other renewable gas technologies are less mature and can be considered for inclusion at a later stage, should suitable projects become operational.

Consultation questions

1. Do you agree with the definitions outlined above? If not, what should they be?
2. Do you agree with an initial focus on biomethane? If not, why not?
3. Should the pilot be open to other renewable gases, if so, which and why?

4. Eligibility to participate in the pilot

Producer eligibility criteria

The GreenPower program has strict and clear criteria for its renewable electricity accreditation. These criteria mean accredited projects are industry leading and drive best practice. This builds a positive public perception and increases the commercial value of the accredited renewable electricity products.

For the pilot, GreenPower proposes to apply the same approach and set out clear eligibility criteria for renewable gas producers and projects in line with the values of the program, and with customer expectations. Eligible feedstocks are addressed later in this section.

Proposed criteria include:

- a) must have commenced operation in 2020 or later
- b) must use only waste-derived feedstock and energy sources (discussed further below)
- c) must use an eligible renewable gas production process/technology (described in Section 3)
- d) must displace network gas use, and have approval for the gas network connection, transmission pipeline connection or direct supply pipeline (discussed further below)
- e) must adhere to Ecological Sustainable Development (ESD) principles
- f) all electricity use associated with the production of renewable hydrogen by electrolysis must be matched with accredited GreenPower purchases. Any Scope 1 and 3 emissions must be fully offset using Australian Carbon Credit Units (ACCUs).
- g) must demonstrate best practice compliance with planning approvals and environmental management procedures related to production, transport, injection, and other associated activities.

Consultation questions

4. Do you agree with the above eligibility criteria? If not, why?
5. Are there other eligibility criteria that should be included, and what would they achieve?
6. Which technologies and production processes should be included in the pilot?
7. What factors do you consider essential when defining best practice planning compliance and environmental management?

Other participants

The pilot will include functionality to enable customers, retailers, and traders to access the registry to purchase, trade and sell certificates. Retailers and traders will access the registry to trade and/or surrender certificates on behalf of customers. Relevant retail, financial and trading licenses will be required to participate in the pilot.

Customers will also be able to access to the registry, for example to surrender certificates.

Displacing network gas use as a requirement for the pilot

The pilot aims to enable renewable gas purchases to displace fossil fuels and encourage emissions reductions. To achieve this, renewable gas projects need to displace network gas use.

The simplest way to displace natural gas use is for projects to directly inject renewable gas into the gas network. However, some behind the meter projects also displace network gas use. Behind the meter renewable gas is directly supplied to end users from a gas production facility without injection into and transport via the gas distribution or transmission network.

It is proposed that all network injection projects can participate in the pilot. Behind the meter projects are only eligible if the gas user has a network connection and the project displaces consumption of network-supplied gas. Projects that do not have a gas network connection will not be able to participate.

This approach will ensure the pilot recognises projects that displace network gas either through directly injecting renewable gas into the gas network or reducing the consumption of natural gas use from the network. This is also intended to reduce the risk of overlap with other hydrogen certification schemes.

Consultation questions

8. Do you agree that only projects that displace network gas use should be eligible to participate in the pilot? If not, why not?
9. Should behind the meter production and use projects without a network connection be able to participate in the pilot, and why?
10. If behind the meter projects without network connection were eligible, how could metering and other verification activities be done?
11. Are there any barriers to injecting renewable gas into the network in your jurisdiction that GreenPower should be aware of for the pilot?

Network boundary

The network boundary defines the geographical area within which gas producers and customers can buy and sell certificates and make a renewable gas claim.

One option is a physical network boundary, where the renewable gas customer must be located on the same gas network (transmission and distribution considered) as the renewable gas producer to be able to claim renewable gas use. A participating customer would use gas molecules from the same network into which the renewable gas is injected, making the certificates more tangible and creating a close linkage between the certificates and the emissions intensity of the gas network.

Alternatively, a national network boundary would provide the greatest accessibility for customers to purchase renewable gas from producers. For example, a renewable gas producer in

Queensland who injects gas into the local gas distribution network could sell certificates to a gas customer in Western Australia even though there is no gas pipeline connecting the two parties.

The national network boundary is consistent with the 'book and claim' chain of custody approach. It is also consistent with how renewable electricity certificates are treated and could result in more efficient outcomes, potentially improving end user access to certificates.

It is proposed that a national network boundary is used for the pilot.

Consultation questions

12. Do you agree with the proposed national network boundary approach and if not, why?

Eligible feedstocks for biomethane

Feedstocks for renewable gas can have numerous sources. For biomethane, this can include different organic waste streams, energy crops or hydrogen. GreenPower is proposing to align permitted feedstocks under the pilot with the Clean Energy Regulator's (CER) Emissions Reduction Fund (ERF) methodology for displacement and abatement.

The ERF methodology allows the following sources of biogas for biomethane production:

- Biogas from food waste
- Biogas from wastewater treatment
- Biogas from a combination of these feedstocks

Some biomethane projects are considering using hydrogen to increase the yield of the biogas upgrading process. This is generally done through methanation of the carbon dioxide in the biogas, which typically makes up around 40-50% of the biogas output. Hydrogen used for methanation would have to be renewable hydrogen for the biomethane to be considered renewable under the pilot.

Projects using the above feedstocks would also be assessed against the general eligibility criteria like GreenPower's current criteria for renewable electricity generators. Tentative criteria include a renewable energy input, a requirement that the project must displace natural gas, must have a net environmental benefit⁶, positive consumer perception and meet required local, state, and federal planning and regulatory approvals.

GreenPower is proposing to exclude native forest biomass as an eligible feedstock.

GreenPower is seeking input on the treatment of energy crop use, which is currently proposed to make a project ineligible to participate in the pilot. Energy crops could assist projects with feedstock certainty and to maintain a consistent energy input. Energy crops are an eligible

⁶ Addressing key environmental issues including potential impacts of the project and proposed mitigation, and how the project fits in with the principles of Ecological Sustainable Development (ESD) as defined in the Commonwealth Environment Protection and Biodiversity Conservation Act, 1999

renewable energy source for the creation of LGCs under the *Renewable Energy (Electricity) Act 2000*. For LGC creation, source and supply of energy crops are reported to and assessed by the Clean Energy Regulator. However, allowing the use of energy crops in the pilot could be seen as inconsistent with the principles of Ecological Sustainable Development, for example if the energy crop is grown in monoculture plantations.

Consultation questions

13. Do you agree with the pilot aligning eligible feedstocks with the ERF methodology?
14. Should any other feedstocks be included? Which ones, and why?
15. Do you see any risks of unintended consequences from incentivising anaerobic digestion of waste-derived feedstocks and landfill gas capture? If so, which risks and are there any risk mitigation options?
16. Should the use of energy crops be permitted? Why or why not?
17. If energy crops were eligible, what conditions and considerations would ensure these projects still adhere to the principles of Ecological Sustainable Development?
18. Should methane produced using hydrogen methanation of the carbon dioxide in biogas be included?

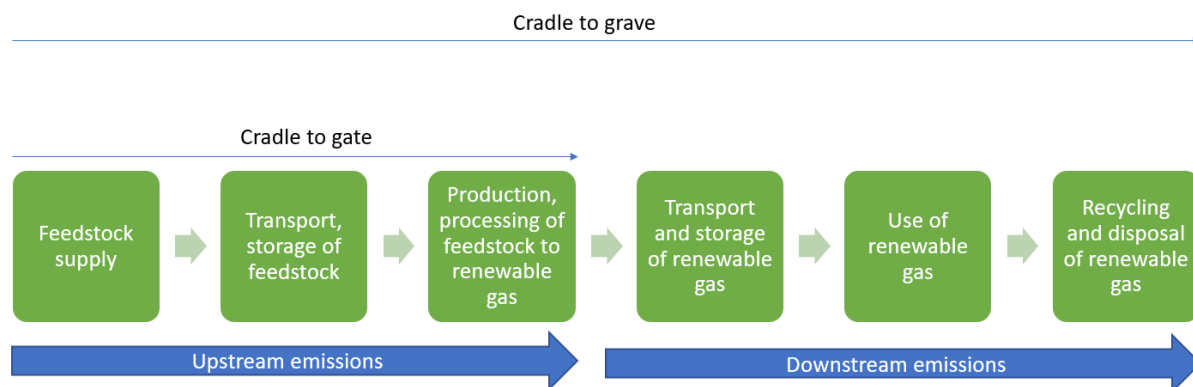
5. Project scope and treatment of emissions

Project scope and life cycle analysis

The scope defines which stages of the life cycle will be assessed and included in a product's life cycle analysis (LCA) to identify the emissions and other impacts associated with the biomethane or hydrogen. LCAs are an important source of evidence and will likely be requested from projects applying to participate in the pilot as part of the assessment process.

Two potential boundaries were considered for project assessment: cradle to gate and cradle to grave. Cradle to gate would incorporate supply⁷ and transport of feedstock, biogas production, upgrading and injection into the gas networks. Cradle to grave additionally includes transport, use, and any recycling and disposal of the product.

The cradle to grave approach would require gas projects to include the gas network and end-use appliances in their LCA. This would be onerous and would result in additional costs for the project. The value of this approach is expected to be limited as renewable gas producers have little to no influence over downstream activities. Furthermore, distribution network operators are liable to purchase unaccounted-for-gas which already addresses losses, and the use of renewable gas is likely indistinguishable from the predominant gas in the network making tracing of molecules unviable.



GreenPower proposes to limit the system boundary to 'cradle to gate' to align with other certification approaches such as the Department of Industry, Science, Energy and Resources (DISER) Hydrogen Guarantee of Origin (GO) scheme.

To provide a clear scope boundary, the point of network injection is proposed as the 'gate' for the LCA and project assessment. This ensures any upstream activities are captured, including upstream emissions from the renewable gas production process. However, it excludes gas network and end-use assessment, as these are considered outside the control of the renewable gas project.

⁷ For example, use of harvesting equipment or pumping of water and/or wastewater for renewable energy production.

GreenPower proposes to develop LCA requirements based on the International Organization for Standardisation (ISO) standards relating to carbon footprint (ISO 14067) and life cycle assessments (ISO 14040 and ISO 14044), the Greenhouse Gas Protocol and ARENA's LCA guidelines.

Consultation questions

19. Do you agree that, for project assessment, the pilot should use the cradle to gate approach? Why or why not?
20. Do you agree with the definition of the gate being the gas network injection point? If not, why not?
21. Are there any other LCA standards or requirements that should be considered?
22. Should there be different requirements for biomethane and hydrogen projects? If so, what should they be?

Fugitive emissions

Fugitive emissions are leaks and other irregular releases of gases, for example from gas network pipelines, from gas extraction activities or renewable gas production.

GreenPower is proposing that fugitive emissions from gas network pipelines are not considered in the project's LCA as they remain the same irrespective of whether the renewable gas project is implemented or not. This assumption is only accurate for low percentages of hydrogen blending and would need to be revisited if large-scale hydrogen blending occurs.

However, upstream fugitive emissions from the renewable gas production process are to be included in the project LCA.

Consultation questions

23. Do you agree with this approach? If not, how should fugitive emissions be treated?

Offsetting emissions

Potential renewable gas customers have noted a preference for a fully carbon neutral renewable gas. This means that any emissions associated with the renewable gas would need to be offset before a RGC is created. There are likely to be some emissions associated with most renewable gas including from production, storage, transport, energy use and upstream fugitive emissions.

Offsetting of upstream emissions could be achieved through renewable gas producers purchasing carbon offsets such as ACCUs. Alternatively, eligibility criteria could be set so that emissions must be negligible (below a specific threshold). A 'negligible' threshold may exclude

projects that use biomass that is difficult to collect or process, even if the feedstock used is fully renewable.

GreenPower proposes that producers offset any emissions before a certificate can be created. It is proposed that only ACCUs can be used to offset emissions. Limiting offsets to ACCUs will ensure project impacts are offset domestically and is expected to result in higher certificate credibility.

The emissions intensity before and after the use of offsets will be reported on the RGC, which is in line with the approach proposed for the Australian Government's hydrogen GO scheme.

The carbon offset aspect of the renewable gas will need to be transparent and clearly communicated to certificate purchasers to avoid confusion between carbon offset fossil gas products and the pilot's renewable gas products.

Consultation questions

24. Do you agree with the proposed approach? If not, why?
25. Should other carbon offsets be permitted to offset upstream emissions?

Baseline emissions

Most existing renewable gas projects are landfill gas and biogas projects that burn waste methane without beneficial use (flaring) or generate electricity. These processes are incentivised through creation of ACCUs and LGCs under the Emissions Reduction Fund and Renewable Energy Target respectively.

When participating in the pilot, existing projects may divert biogas or biomethane from current uses for injection into the gas network. In some cases, this could increase overall emissions, for example if biogas power generation is replaced with coal power generation because the biogas is used for injection into a gas pipeline instead.

To consider the original emissions baseline, projects would need to conduct a cradle to grave LCA, and potentially conduct complex energy market modelling. This would place a high cost burden on applicants and may not result in any added value to the project assessment.

GreenPower is proposing such baseline emissions considerations are outside of the boundary of the LCA and therefore projects should be assessed as new projects.

Consultation questions

26. Do you agree with the proposed approach? If not, why?

6. Interaction with other schemes

Renewable gas supply chains don't exist in isolation. Most gases can be used to produce another gas or fuel. For example, hydrogen can be used to increase the methane output of a biomethane project. Conversely, biomethane can be used to produce renewable hydrogen.

There is no existing certification or certificate scheme for biomethane in Australia. However, there are initiatives in place or underway for hydrogen certification and to incentivise emissions reductions in biogas and waste projects.

The pilot intends to enable multiple production pathways while avoiding duplication of other schemes. GreenPower proposes to limit the scope of the pilot to biomethane and renewable hydrogen that displace network gas use. The interactions of this proposed approach with related schemes are discussed below.

ERF methodologies that incentivise biomethane production

The ERF is a voluntary scheme that provides incentives for organisations and individuals to adopt new practices and technologies to reduce their emissions and receive Australian Carbon Credit Units (ACCUs). The CER is responsible for developing new methodology determinations, known as methods, which are the legislative rules for how projects and activities create ACCUs.

The CER has varied three of the existing waste methane methods to incentivise biomethane production from waste and agricultural processes. Clear guidelines and transaction steps are needed for pilot participants as a renewable gas producer may be eligible to create ACCUs under the ERF as well as participating in the pilot. GreenPower is working with the CER to ensure alignment and avoid double counting of benefits between the pilot and the ERF methods.

Australian Government hydrogen Guarantee of Origin (GO) scheme

The Australian Government is conducting trials to support the design of a potential GO scheme for hydrogen under the National Hydrogen Strategy. The first phase of the trials does not intend to include biomethane.

A 2021 GO scheme consultation paper proposed a coupled approach to chain of custody, meaning certificates are attached to the physical supply of hydrogen molecules. It is proposed that certificates issued under a potential GO scheme will show key attributes of hydrogen to enable international recognition and trade, such as the location and production process for hydrogen and its emissions intensity.

GreenPower's pilot can support a potential Commonwealth GO scheme in three ways. Firstly, the pilot can enable biomethane certification and certificate trading. Secondly, the pilot can test interactions with a potential Commonwealth GO scheme, including the recognition of renewable hydrogen made from natural gas combined with RGCs. Thirdly, the pilot will allow for GreenPower to provide certification of green hydrogen where it is not recognised under a potential Commonwealth GO scheme, if appropriate.

GreenPower is working with the Australian Government on potential collaborations to test interactions between the pilot and a potential Commonwealth GO scheme, including hydrogen certification trials.

Smart Energy Council Zero Carbon Certification Scheme

The Smart Energy Council launched its Zero Carbon Certification Scheme (ZCCS) in late 2020. The ZCCS will initially focus on individual sites, businesses and supply chain certification, with an aim to provide GO certification for renewable hydrogen. There is potential for RGCs issued under the RGCP to be incorporated into the ZCCS certification process for products or businesses, and for the RGCP to recognise the ZCCS certification in project assessments.

GreenPower is working with the Smart Energy Council to determine how to best align the pilot with the scheme's hydrogen and derivative product certifications.

Consultation questions

27. Are there any other new schemes not mentioned here that GreenPower should be aware of?
28. What linkages between these schemes and the pilot should be considered?

Recognition of RGCs by existing schemes

GreenPower is investigating opportunities for recognition of the pilot's RGCs by related programs and schemes. These include the National Greenhouse and Energy Reporting (NGER) scheme, the safeguard mechanism, Climate Active, National Australian Built Environment Rating System (NABERS), Green Building Council Australia (GBCA) and B Corp.

Achieving recognition will vary on a case-by-case basis and may depend on a scheme's eligibility requirements, what methods they use for carbon accounting and other factors.

For example, existing schemes that use the location-based method such as NGER are likely incompatible with the pilot as it is a market-based scheme. A location-based method uses an average emission factor for gas consumption from the network's gas mix, or the specific emissions of physical gas purchases where the molecules are tracked, such as deliveries by truck, train, or dedicated pipeline. Market-based schemes recognise contractual arrangements, which can include purchasing certificates.

GreenPower will continue to investigate and consult with existing schemes and programs. As the pilot is a temporary initiative it is likely that not all relevant schemes will fully recognise RGCs.

Consultation questions

29. What recognition is needed for the pilot to provide value for customers?

30. What design elements of the pilot are most crucial for recognition by other programs and schemes?

7. Transaction steps for pilot certificates

The value and credibility of certificates issued under the pilot relies on a consistent and accurate assessment of project impacts, and related emissions. Interactions with carbon offsets are one of the key elements that impact how and when RGCs are created and surrendered. This section proposes the transaction steps for creation, transfer and surrender of RGCs.

Transaction steps for non-ERF participants and hydrogen projects

GreenPower is proposing the following transaction steps from producer to customer for non-ERF participants and hydrogen projects:

- a) The project injects renewable gas into the gas network or into a pipeline to an on-site customer.
- b) The project surrenders ACCUs to offset any upstream emissions identified as per the project's LCA.
- c) The project completes the RGC request in the pilot registry.
- d) The request is verified, approved and the producer receives an RGC in the registry.
- e) The producer can sell RGCs to traders or customers.
- f) The producer surrenders the RGC on a customer's behalf in the registry, notes the customer's details on the RGC surrender certificate and provides that certificate to the customer.
- g) The customer can then claim their gas use has been matched with renewable gas that was added to the gas network on their behalf. This can be recognised in carbon reporting as either 'zero emissions gas use' or can be converted to an emissions reduction value, such as 'avoided emissions carbon dioxide-equivalent'.

Transaction steps for ERF projects

To avoid double counting of the environmental benefit of displacing natural gas with renewable gas in the network, projects participating in the ERF will need to surrender any ACCUs created in relation to the displacement of fossil fuel gas.

The proposed transaction steps outlined below ensure that an ACCU is surrendered before an RGC is created. This option will mean the producer is responsible for the ACCU surrender and avoids two certificates for the same environmental benefit being active at the same time.

An alternative is that an ACCU remains active and is tied to the RGC until both are surrendered together on behalf of a gas customer. This option may make recognition of the avoided emissions of RGCs easier as the ACCU is surrendered on behalf of the customer, rather than on behalf of the renewable gas producer. However, this requires tracking of ACCUs that are tied to RGCs which could make verification and auditing more complex.

GreenPower proposes to use the first option, with transaction steps from producer to customer as follows:

- a) The project injects renewable gas into the gas network or into a pipeline to an on-site customer.
- b) The project surrenders ACCUs created in relation to the displacement of fossil fuel gas.
- c) The project surrenders ACCUs to offset any upstream emissions identified as per the project's LCA.

- d) The project completes the RGC request in the pilot registry.
- e) The request is verified, approved and the producer receives an RGC in the registry.
- f) The producer surrenders the RGC on a customer's behalf in the registry, notes the customer's details on the RGC surrender certificate and provides that certificate to the customer.
- g) The customer can then claim their gas use has been matched with renewable gas that was added to the gas network on their behalf. This can be recognised in carbon reporting as either 'zero emissions gas use' or can be converted to an emissions reduction value, such as 'avoided emissions carbon dioxide-equivalent'.

Under the alternative second option, step b) would take place at the same time as step f).

Consultation questions

- 31. Do you agree with the proposed approaches for non-ERF and ERF projects? If not, which step should be changed and why?
- 32. Do you agree that any displacement ACCUs should be surrendered before an RGC is created? If not, why not?
- 33. Do you see any risks with the alternative approach of the displacement ACCU being surrendered at the same time as the RGC is surrendered?

8. Other pilot design elements

Chain of custody

The chain of custody is how the physical gas relates to the RGCs. There are two predominant approaches: the coupled (or 'mass balance') and the decoupled (or 'book and claim') approach.

The **coupled approach** ties RGCs directly to the physical gas molecules. When end users purchase the certificate, they are purchasing the renewable gas molecules. This means certificates can only be sold to the purchasers of the physical gas, which is simple to administer if the gas is delivered via trucks or a dedicated pipeline. However, the renewable gas injected into a gas network is blended with other gas that is delivered via the network, making tracking of molecules unviable.

The **decoupled approach** does not directly link the RGCs to the physical gas molecules. Instead, the certificate represents the environmental attributes of the gas, which can then be applied to any gas use within the pilot's network boundary.

This approach matches how Large-scale Generation Certificates (LGCs) and other renewable energy certificates work in the electricity market. It provides greater flexibility as end users can purchase certificates separately to their gas contracts, from producers that are geographically distant and at a different time to when their gas use occurs. This flexibility can be helpful for emerging markets and enable more efficient and lower cost outcomes.

A crucial consideration for the decoupled approach is that if an end user buys renewable gas molecules but not the certificates, then they cannot claim to be using renewable gas. This can be confusing for end users with dedicated pipelines or gas purchasing agreements with renewable gas producers. A rigorous auditing process is needed to ensure there is no double counting.

GreenPower proposes the decoupled approach for the renewable gas certification pilot, and to apply this approach to a national network boundary as discussed in Section 4. As noted above, this approach aligns with the renewable electricity market and will provide the flexibility needed for renewable gas markets to be established, as well as reducing administrative complexity.

Consultation questions

34. Do you agree with the decoupled approach being applied for the pilot?
35. Please specify why you think one or the other is more suitable, and if any other options should be considered.

Registry functionality

The pilot registry will operate similarly to the LGC registry operated by the CER. It will allow for the creation, trading, surrender, or cancellation of RGCs. The registry is used for auditing and reporting purposes and to ensure accountability of projects.

GreenPower will own and operate the pilot registry and deliver auditing, verification, and administration activities such as the collection of fees. GreenPower plans to work with an existing gas registry or platform that can be used for the pilot. There are several providers that are currently being considered.

Key functionality for the registry includes but is not limited to:

- registration of project data including technology type, feedstock and location that is also displayed on certificates
- ability for participants to enter gas production/injection data, upload metering evidence, submit RGC creation requests, trade, and surrender certificates
- administrator control of the creation and approval of certificates
- ability for the administrator to publish registry data for transparency purposes
- ability for producers and traders to surrender certificates on behalf of end-users
- clearly identified status of certificates (active, surrendered, expired etc) with unique identification numbers.

Similarly to the CER registry this will ensure GreenPower can audit and report on certificate activity to ensure accountability of projects and credibility of the pilot.

Consultation question

36. Do you agree with the proposed approach of using an existing registry? If not, why not?
37. Is it important for customers to be able to access the registry and manage their own surrenders?
38. Is there a particular registry functionality you think should be included in the pilot, and why?

Gas attributes captured in the registry certificates

Producers will use the registry and renewable gas certificates to disclose attributes of the produced gas, such as the production location or the feedstock that was used. This information is intended to help end users decide which certificates meet their needs, so that they can be used to support renewable energy claims and for corporate reporting.

Information captured in the registry should be relevant, support purchasing decisions, enable energy and greenhouse gas emissions reporting as well as meet other information needs. It should also enable integration of the pilot with other certification schemes and programs.

GreenPower proposes for the registry and certificates to capture:

- producer details including business name, facility location, postcode, and jurisdiction

- the technology used for production, e.g. dry anaerobic digestion
- the feedstocks and energy sources used in the production process
- the water use per unit of gas, and what type of water (e.g. recycled water)
- the location and gas network where the renewable gas was injected
- the time period over which the renewable gas was injected
- emissions intensity of the produced renewable gas before and after the use of offsets
- what, if any, ACCUs and other offsets or certificates were created and surrendered in relation to the unit of gas

Consultation questions

39. Do you agree with the proposed attributes?
40. Are there any other attributes that should be included?

Functional unit of measurement

A functional unit is a unit of measurement used to represent the primary use of the gas. Defining a functional unit should be in line with market practice, product specific emissions accounting established under ISO standards 14040/14044 and the GHG Protocol Product Life Cycle Standard. The GHG Protocol Product Life Cycle Accounting and Reporting Standard provides requirements and guidance to quantify and report an inventory of GHG emissions and removals associated with a specific product.

The functional unit for renewable gas could be 1 kWh, 1 MWh or 1 GJ of renewable gas. The unit used differs across international schemes as each country has their own units of measurements. Depending on the platform used for the pilot and its functionality, the registry may operate in kWh with a conversion into GJ on the certificate.

GreenPower proposes to include a GJ figure on certificates but notes that the registry may operate in a different unit.

Consultation questions

41. Do you agree with GJ as the functional unit? If not, why?
42. How important is it that the registry is based on GJ in addition to using this unit on the certificate?
43. Should a certificate be issued for each 1 GJ of renewable gas produced, or should certificates be issued incrementally for any volume chosen by the producer?

Certificate period of validity

Internationally, renewable gas certificates are valid for periods between 12 months and 39 months. The purpose of the period of validity is for the gas consumption to occur in a similar timeframe to the production of the gas, which is relevant with the proposed decoupled approach where molecules are not directly linked to the certificate.

Certificates expire if they are not surrendered on behalf of an end user within the validity period. Expired certificates would be invalid and could not be used for environmental claims, including by the renewable gas producer.

GreenPower is not proposing a validity period in the current expected duration of the pilot. If the pilot is extended GreenPower will consider applying a validity period of 36 months to align with the validity requirements for LGCs under Climate Active and general guidance under the GHG Protocol.

Consultation questions

44. Do you agree with the proposed validity period? If not, why?
45. Are there other schemes or programs that the pilot should align with regarding the certificate validity period?

Governance

GreenPower will own the registry, administer the pilot including auditing and reporting and assess applications from projects. This will ensure the pilot is credible and delivers on its objectives.

A third-party service provider will be engaged to provide the registry platform and administer certificate creation and status changes. This will ensure the registry is functional and fit for purpose.

To oversee the pilot's implementation, GreenPower proposes to establish a project steering committee. This steering committee would advise and provide feedback on the design and operation of the pilot, and relevant market developments.

Proposed participants in the steering committee include:

- federal government agencies involved in clean energy and gas schemes and regulation
- state and territory governments
- renewable gas developers
- gas network and pipeline operators
- gas consumers and/or representatives.

While the steering committee will advise and provide feedback, the National GreenPower Steering Group is the ultimate decision-making authority for the GreenPower program including for this pilot.

Consultation question

46. Which organisations should be represented on the project steering committee?

Auditing

Regular auditing of the operation of the scheme and the activities of participants is a critical component of certificate schemes. International examples vary in the nature and level of detail of their auditing frameworks.

For the pilot, GreenPower proposes to audit the sales and surrenders of renewable gas certificates at the end of each defined reporting period. Reporting periods are proposed as calendar years.

GreenPower proposes a similar auditing regime to the current GreenPower program for renewable electricity to build credibility in the pilot's environmental credentials. Participants' certificate creation, trades and surrenders will be audited by an independent auditor to confirm compliance with the pilot's requirements. An annual audit report will provide independent assurance and a record of key statistics.

Consultation question

47. Do you agree with the proposed approach for auditing? If not, why not?

Participation fees and certificate price

GreenPower aims to minimise the cost of participation in the pilot. There will be an annual participation fee per project and it is proposed that there are no certificate creation or surrender fees. This will minimise the administrative complexity of the pilot and enable participants to have certainty regarding participation costs.

Under the ERF, there are no creation or surrender fees. Therefore, if a project needs to surrender ACCUs to offset their emissions for the pilot there will be no additional fees.

The price of an RGC will not be set by GreenPower. This is to enable the market to decide the value of a certificate. Therefore, no price cap or minimum certificate price is proposed, to not encumber commercial arrangements.

Consultation questions

48. What price would you expect for a renewable gas certificate?
49. Do you agree with the proposed approach not to set price caps or minimum prices? If not, why?