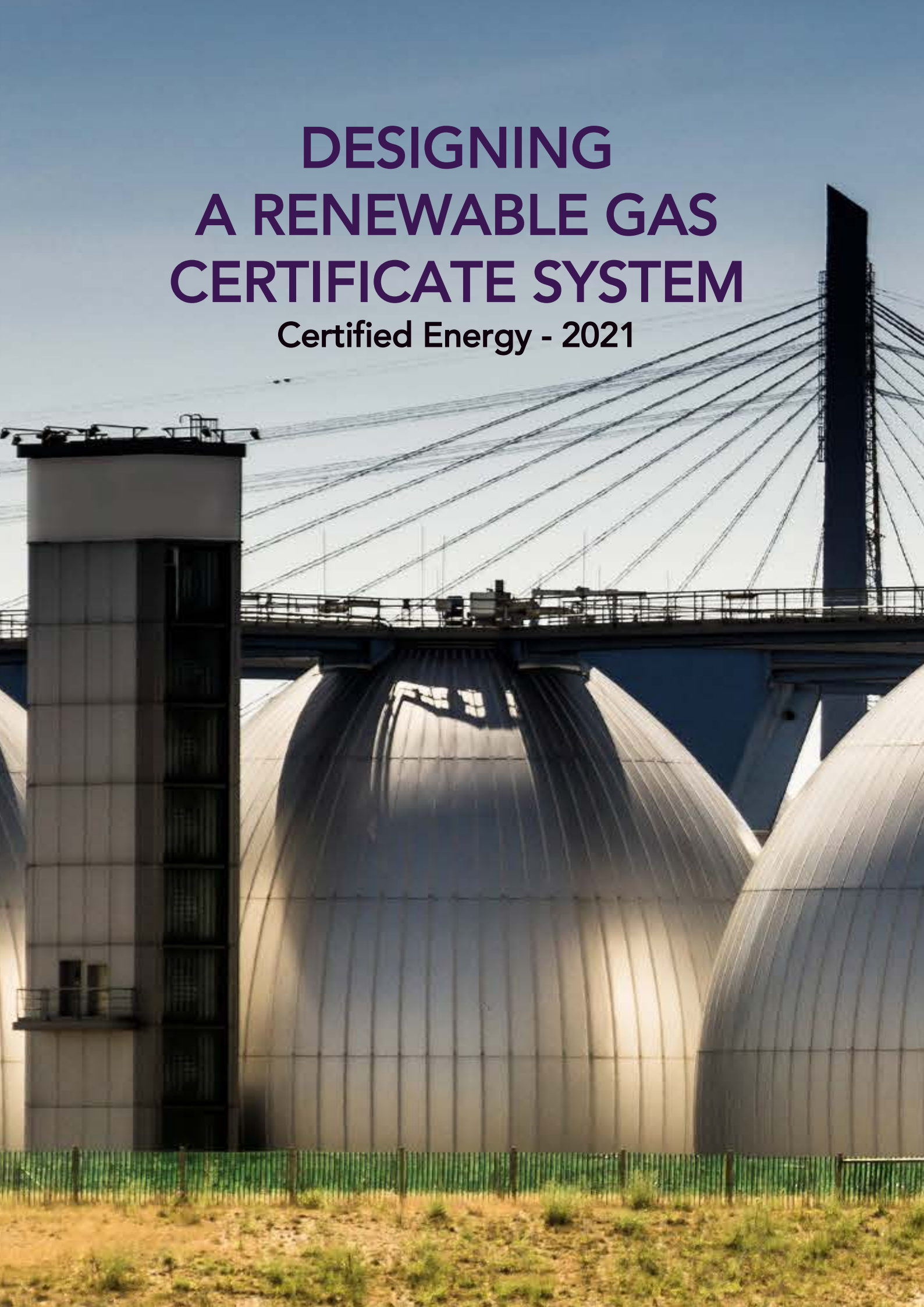
DESIGNING A RENEWABLE GAS CERTIFICATE SYSTEM

Certified Energy - 2021



Certified Energy
New Zealand Gas Certificate System

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1. Introduction

Certified Energy has prepared this discussion paper to introduce key concepts in the development of a high-quality certification system for renewable gas in New Zealand. Feedback on the topics laid out in this document will help this system to properly support the emerging renewable gas market in New Zealand.

Certified Energy is the operator and administrator of the New Zealand Energy Certificate System[1] (NZECS), a system for the certification of renewable electricity production. As a specialist provider of energy certification systems and services, Certified Energy is well placed to establish and provide a system for renewable gas certification.

1.1 Consultation process

This discussion paper is part of a broader consultation process being undertaken by Certified Energy that will directly result in the introduction of a certification system for renewable gas in New Zealand. This process firstly puts forward a proposed approach to certification of renewable gas in New Zealand for discussion and will result in the publication of initial system rules to set a framework for initial applications of certification.

This consultation process will happen through the following steps and over the following timeframe:

Process	Target date
Discussion paper released	End April
Supporting webinar(s)	7, 14 May
Consultation period on discussion paper closes	23 May
Draft rules published	5 July
Consultation on draft rules ends	18 July
Initial rules set for certification system published	2 August

The system rules will govern renewable gas certification activities within the New Zealand market. They will be precise and easy to conform to, measurable and knowable in advance. In our view it is important to lead with a set of system rules, such that parties can begin to understand how their participation in this market can be achieved.

[1] www.certifiedenergy.co.nz

Beyond the launch of the initial rules, we will develop supporting structures and assets, including factsheets, guides, and with the potential for a local certification standard. Further to the rules, a standard would provide additional detail as to how to attain the level of quality required to be compliant with the system rules. As such, a standard can be more detailed and is more likely to develop over time as clarification occurs and as applications of certification develop.

QUESTION 1: Is the proposed consultation process appropriate? Do you have any suggestions as to how to improve the process?

2. Background

Certified Energy believes that a system for the certification and trade of renewable gas production attributes would be a valuable support for the development of renewable gas production capacity in New Zealand. Specifically, as the market develops for the purchase of renewable gas products, it will be increasingly important that renewable gas production be able to be distinctly tracked and differentiated from that of natural gas.

This differentiation enables the premium attributes of renewable gas production to be identifiable and transferable across an interconnected transmission and distribution system – such as is in existence in the New Zealand gas market currently.

Enabling the trade of production attributes in addition to the trade of renewable gas enables the producer to recoup maximum financial return from their production asset, over and above that achieved by non-renewable gas producers. This financial return is derived from the purchaser's ability to record their gas consumption as low-carbon or zero-carbon, contributing to organisational decarbonisation for the purposes of risk mitigation or building organisational value.

Further, certification can play a role in signalling the preferences of the market to developers or suppliers. Certificate systems support the development of clear price signals, with the potential to accelerate project development and bring forward increases in production capacity. In addition, price signals can show market preferences between other attributes beyond simply carbon, such as location, etc.

QUESTION 2: Does this adequately summarise the role that renewable gas certification can play in New Zealand? What additional value would this system bring?

3. Definition of renewable gas

Renewable gas is a simplified term referring to biogas & biomethane and expanded to include green hydrogen (hydrogen produced using renewable processes). Additional gas types may also be included.

3.1 Biomethane

Biomethane has generally the same molecular composition as natural gas – primarily methane – but is produced from renewable processes, such as digestion of agricultural waste or recapture of methane from wastewater treatment. Biomethane is differentiated from biogas by its adherence to natural gas quality standards.

Where natural gas is replaced with biomethane from eligible feedstocks and production methods, the CO2 emissions are deemed to be biogenic. The biogenic CO2 emissions that were captured during the growth phase of the biomass are to be reported separately to Scopes 1, 2 or 3.

Another aspect for consideration is whether or not fugitive emissions from CH4 and N20 are recorded on production certificates, or whether they are seen to be zero based on the fact that the volumes will be negligible. The GHG Protocol requires fugitive CH4 and N2O emissions from biomethane combustion to be reported under Scope 1 as these emissions were not captured during the growth of the biomass. The Carbon Disclosure Project (CDP) proposes that it is pragmatic to report these as zero under scope 1, due to the low volumes being considered.

We will also need to determine a method for the classification of biomethane. Generally speaking, in order for renewable gas to be considered a renewable fuel, feedstocks must be sustainably managed. Agreed lists of acceptable feedstocks, such as that provided by the European Commission in the 2018/2001 Renewable Energy Directive (RED II), are available for reference, however we see it as preferable that a local classification is agreed.

QUESTION 3: Is this the right definition for both renewable gas and biomethane?

QUESTION 4: Should we treat CH4 and N20 as zero on certificates below a certain threshold? If so, what should that threshold be?

QUESTION 5: How should we determine the acceptable feedstocks for biomethane?

3.2 Green hydrogen

'Green hydrogen' is hydrogen that has been produced from low- or zero-carbon processes, such as electrolysis. Where the electricity that goes into the electrolysis

process has been certified as having zero emissions, the resulting gas product is seen to be 'zero-carbon'.

As demand for low-carbon alternatives to natural gas and other fossil fuels is likely to outstrip supply, at least in the near-term, we expect that there will be interest for low-carbon hydrogen. Low-carbon hydrogen may be produced from low-carbon electricity, such as geothermal, and while being responsible for some emissions, this would be far lower than the alternative fuel. For this reason, creation of a certificate class differentiating low-carbon gas from the default natural gas supply but also from a zero-carbon hydrogen product may have value.

Many international certification systems have taken the approach of including a low-carbon certificate class, including the recently formulated European Standard – CertifHy. The argument for a low-carbon gas certificate class recognises and encourages the value of this production type in displacing more emissions intensive fuels. The counterargument is that allowance of low-carbon gas certificates may detract from the production zero-carbon gas, thus slowing the potential overall reduction of emissions.

If a low-carbon certificate class is supported, the question remains of what threshold the low-carbon certificate class should allow. A threshold for low-carbon certificates should be as stringent as possible, without limiting the potential for emissions displacement.

Finally, we recognise that low-carbon gas certificates may have a role when considered for export. International inter-operability is important, and that we recognise that even when low-carbon gas production is less useful in New Zealand it may still play a useful role in the decarbonisation of other nations.

Based on our impact principle, it is logical that renewable gas certification supports low-carbon gas production for as long as renewable gas demand exceeds supply. However, we recognise that zero-carbon renewable gas is preferable and should be promoted as such.

In addition, we believe that there is likely to be value in the export of low-carbon gas, and so in principle support the idea of a low-carbon renewable gas certificate class if this assists exports to be easily determinable within international frameworks.

QUESTION 6: Is this the right definition of green hydrogen?

QUESTION 7: Should low-carbon gas production be included within the definition 'renewable gas'?

QUESTION 8: Is creation of a separate certificate class for hydrogen from low-carbon processes a useful addition to the system?

QUESTION 9: What international opportunities exist for the export of low-carbon versus zero-carbon gas?

3.3 Other renewable gas types

We recognise also that this definition of renewable gas may be too narrow and may need to be broadened over time to support production in New Zealand. For example, creation of synthesis gas (SNG) from sustainably sourced biomass using pyrolysis or gasification may qualify under some circumstances.

QUESTION 10: Are there other types of gas / production process that needs to be catered for from the outset?

QUESTION 11: Should we allow for expansion of rules to incorporate new technologies? If so, how?

4. Principles of gas delivery

The existing high pressure transmission system in New Zealand provides for gas to be received into the pipeline by 'Shippers' (users of the pipeline service) and for those Shippers to deliver gas to one or more delivery points where gas is taken from the pipeline. As only gas conforming to NZS 5442:2008 (the specification for reticulated natural gas) may enter the transmission system, and as the gas in the transmission system is a varying mixture of gases from producers and a number of receipt points, it is impossible to deliver from the pipeline a specific set of purchased molecules.

Instead, injecting a volume of gas into the system provides title to an equivalent volume of gas and allows one to extract amounts of gas from one or more delivery points totalling this volume. One unit of gas provided through the transmission / distribution system is therefore fungible, with its source not directly relevant from the perspective of use.

While all delivered gas is homogenous this is not a problem, but as renewable gas production increases it becomes more important to be able to differentiate supply by production attributes such as carbon intensity. Given the interconnected nature of the gas transmission system, it is not an adequate method for determining the production characteristics of delivered gas, and so use of a renewable gas certificate is necessary. Redemption gives the user title to the contained attributes and allows them to describe their usage as having those attributes.

Again, a buyer of renewable gas certificates cannot guarantee they are burning renewable gas at their plant. However, having a unit of renewable gas injected into the pipeline will, in

effect, displace a unit of fossil-fuel gas that would otherwise have entered the pipeline, and negate its emissions output.

Given the above, we conclude that the existing pipeline accounting and title-transfer systems are suitable platforms for the implementation of renewable gas certificates.

> QUESTION 12: Are the underlying processes that facilitate gas delivery and retail supportive of a supplementary gas certificate system? What are the problems?

4.1 Gas balancing

Gas balancing is a slightly different issue to consider. No Shipper knows for certain how much gas their customers will use on a given day. So, they will arrange to ship a volume of gas that is their best estimate of the aggregate demand of their customers. In addition, as the day progresses, they will likely finetune that volume in response to information from customers, observation of pipeline conditions, and any other relevant information (e.g. information on the prior day's energy balance for that Shipper). The process of certification seeks to intentionally and accurately apply attributes from a volume of produced gas to an equivalent volume of consumed gas. If there is an imbalance in supply and demand, there will be a corresponding mismatch in the allocation of attributes via certificate.

As per section 6.4, using a year as the initial reconciliation time period will enable these short-term inter-temporal issues to be managed. If there is a mismatch between the volume of renewable gas supplied (shipped) and the volume of gas used, this can be corrected within following days / weeks to enable 100% coverage over the time period. If / when the system moves to a more granular reconciliation time period (i.e. day) we will need to further consider the interplay between consumption and supply.

> QUESTION 13: Is the balancing of gas an issue that needs to be considered in the short-term? If so, why?

5. The New Zealand Gas Certificate System (NZGCS)

Certified Energy proposes to establish and operate a system for the certification of renewable gas. In line with our existing system for the certification of renewable electricity, the system would be called the New Zealand Gas Certificate system, or NZGCS.

This section outlines a number of structural, principal and design factors that will influence the eventual nature of the system.

5.1 Operational structure

We propose to operate the renewable gas certificate system as a parallel system to the NZECS, termed the New Zealand Gas Certificate System, or NZGCS. This separation recognises the fundamentally different natures of the New Zealand electricity and gas markets at the current time and recognises therefore that certificate standards may need to be formulated differently in order to function effectively in these different markets. It is a goal to align certificate systems and standards where possible.

The NZGCS will encompass trade in certificates from all recognised renewable gas types, as discussed in section 3.

> QUESTION 14: Is it important that the system for renewable gas certification be structurally aligned to the system for renewable electricity certification? Are there any issues with the two systems operating separately?

5.2 Voluntary participation

Participation in the NZGCS is currently anticipated to be voluntary - there is no mandatory obligation for a gas user to purchase and redeem renewable gas certificates against their consumption. Renewable gas certificates are a voluntary instrument, used to support renewable gas production, apply specific production attributes to purchased gas, and enable explicit claims and communications to the market.

There is the technical potential for a purchase obligation to be applied to gas users in the future, using renewable gas certificates as the basis for accounting for the achievement of this obligation. Certified Energy, in its submission to the Climate Change Commission draft package of advice, proposed this an option in pursuit of the stated objective of avoiding carbon emissions from combustion of natural gas.

> QUESTION 15: Would you support a mandatory purchasing obligation for renewable gas certificates? For all gas users? Why?

5.3 Principles of development

In developing the NZGCS we will be guided by a number of key principles. These principles provide a basis for the establishment and evaluation of future development options, and also help participants to form expectations on the nature of the system in the future.

Principle 1: Overall impact on carbon emissions

With the overarching need to actively and intensively address carbon emissions, we are providing this system to support the development of gas types with a lower overall carbon emissions contribution than existing supply.

Our focus then, at each stage of development, is on making choices that promote the best emissions outcomes based on the technology that is available at that point in time.

Principle 2: Reliability, accuracy and informational completeness

The attribute transfer taking place through the use of renewable gas certificates is still a reasonably new concept in New Zealand, and so it is especially important that the system for transfer has the ability to capture and verify all associated data points.

Further, it is important that the capture and verification of information, as well as all subsequent processes, is known to be rigorous, effective and at low risk of failure.

Principle 3: Adherence to international best practice

The interest in renewable gases as a decarbonisation tool is global. As such, there are a number of international systems and standards in various stages of development. In addition, there are a number of pre-existing reporting standards that relate to reporting processes that we expect purchasers of renewable gas certificates to be interested in. Throughout the development of the NZGCS, we propose to take into consideration the approach of similar systems around the world.

Principle 4: Independence

It is important that the system for renewable gas certification be independent of any particular industry group, so that the decisions regarding certification system operation and development can be trusted to be in the best interests of the system and the industry as a whole. All aspects of the market will be given a voice and will have the opportunity to present their perspectives on the design and operation of the system.

Principle 5: Flexible and fit for purpose

As the market for renewable gas is developing, so should the system for renewable gas certification. Not only does this principle relate to the need to continually develop the system to reflect the changing needs of the market, but it relates also to the need for the initial system for certification to adequately reflect the emerging nature of the renewable gas market in New Zealand.

QUESTION 16: Are these principles complete and accurate? Would you propose any additions / changes?

6. Elements of system design

We intend to apply a number of design criteria to a system for renewable gas certification. These key elements are as follows:

6.1 'Book and claim' accounting approach

A basic tenet of energy certification is the ability for a participant in a system to claim title to an attribute in a virtual sense, without being required to take ownership of the physical product. This approach, referred to as 'book and claim' is different to other chain-of-custody concepts, such as mass balancing or identity preservation.

Use of the 'book and claim' approach to energy certification gives maximal flexibility and opportunity for development, and in the case of New Zealand's geographical isolation is the preferred approach.

6.2 Uniqueness of claims

Where an attribute of production is captured and transferred via energy certificate, it cannot be sold any other way. This relates to all transfer scenarios. For example, where a gas user is directly connected to a renewable production facility, and these attributes are sold separately to the gas (unbundled) the gas user will not claim those attributes. On the other side of this scenario, if a producer of renewable gas sells the attributes it will not also be sold via any other means.

6.3 Involvement of purchasing / reporting entity

Where an attribute is transferred and redeemed against an entity, this entity will be required to be involved in the transfer, at least to the level of declaration of awareness. It is important to the concept of disclosure that the energy user is explicitly aware of the nature of its consumption emissions.

6.4 Production year time period

It is our intention that certificates will need to originate from production that took place within the same production year as the consumption against which it is to be redeemed. This creates the concept of a time-boxed accounting period, removing the possibility for stockpiling of certificates and ensuring that all production and consumption attributes can be reconciled over this time period.

Potential exists for this reconciliation time-period to be changed, if it is deemed that this decision would have merit. A change to this time period would need to improve the system with regards to the development principles, for example if a shorter time period was likely to have a greater net effect on gas industry emissions.

It is worth noting that the "gas year" in New Zealand runs from 1 October through 30 September and it will make sense for the production year time period to be aligned with the gas year (particularly for any renewable gas that is being transported via the high-pressure transmission network).

6.5 System market boundary

We see it as preferable that renewable gas certificates for redemption against domestic gas consumption be sourced from production located within a defined market boundary, proposed to be the geographical boundary of New Zealand. Definition of boundary and use of boundary as a constraint is intended to ensure that there is a connection between certification (and underlying production) of renewable gas and displacement of natural gas that is supplied via existing pipelines.

Renewable gas is somewhat unique as it may be transferred physically between countries. Where the gas is transported, as well as the certificate, this could be seen to be an exception to the market constraint.

Further consideration of this topic can be found in section 7.

6.6 Residual Supply Mix (RSM)

in support of section 6.2, Certified Energy will produce a national 'Residual Supply Mix' (RSM) on at least an annual basis. Where a production attribute is redeemed against a particular point of consumption, it will be removed from the total supply mix and become unavailable to any other gas user to 'claim'. This adjustment results in the Residual Supply Mix.

As renewable gas production for pipeline injection is developed, it is likely that some of this volume will go uncertified. The attributes of this injected renewable gas will affect the GHG emissions of the pipeline supply, captured and communicated to consumers effectively through the creation and publication of the RSM.

6.7 Unbundled certificate supply

We see it as generally preferable that there is no requirement for a gas user to purchase the underlying gas in order to be able to purchase the associated production attributes. Generally, enabling sale separately will increase the ability for producers to market their certificates, providing the greatest return.

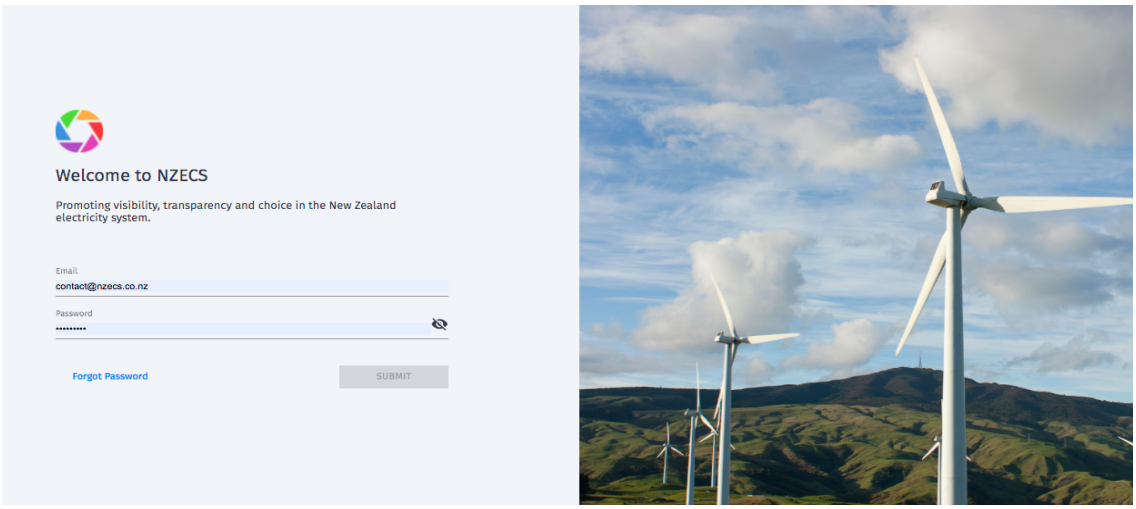
6.8 Roles

We propose to carry through existing system roles, comprising:

- Registrant as issuer of renewable gas certificates: The Registrant is the system term for the party that has responsibility for issuing and transacting the renewable gas certificates. The Registrant is generally the operator of the Production Device but does not need to be. The Registrant must have authority to transact ownership of production characteristics.
- Production Devices (PD): The Production Device is the facility at which the renewable gas is produced.
- Participant as trader or retailer of renewable gas certificates: The Participant is any party who may wish to buy and sell gas certificates, without the ability to issue their own. This role could be played by a retailer, broker, or an energy user themselves. The participant will primarily perform the key certification functions such as transfer and redemption against an energy user account.
- Energy users: An energy user has responsibility for a volume of consumed gas, and generally will represent the purchaser of the certificate. Creation of an energy user within the Registry enables the capture of information around the point of consumption against which certificates will be allocated, in order for an understanding of the final consumption emissions to be maintained.

6.9 Use of Registry

Activities comprising the NZGCS will take place within a dedicated registry system. The Registry will be cloud-hosted, with the main structures comprised within a postgreSQL database. The Registry provides the ability to connect numerous data sources with layers of processing / analysis, and a flexible, custom-built user interface, providing an advanced, built-for-purpose solution.



The NZECS Registry homepage – the existing platform for electricity certification transactions.

This Registry system ensures that activities taking place within the constraints of the system will be 100% accurate and verifiable. Moreover, it gives the system the ability to efficiently support significant transaction activity, while also enabling the foundation for ongoing system development.

6.10 Device verification

One of the primary functions of the certification system will be to verify the attributes of renewable gas production. To this end, verification of the Production Device, against which renewable gas certificates are to be issued, is highly important. The process of verification not only enables a review of technology, process and inputting feedstock against certificate standard, but it provides a deeper level of understanding of registered facilities, helpful for system operation.

For these reasons, we propose the requirement to perform a physical site 'audit' at the point of registration of a new production device. In instances where the nature of the Production Device is apparent, we may allow for the requirements of the audit to initially be met remotely, however even in these cases we prefer to have completed a physical audit within the first year of registration.

A suitable process of audit, complete with requirements for information capture and testimony, is yet to be finalised.

6.11 Transaction steps

Given the market structure, we see the same two actions being of value as is the case with electricity certification. These actions are the primary steps for the Registrant and Participant respectively:

- Issuance: production of renewable gas from a registered Production Device will create a volume of 'available production' against which certificates can be issued in order to enable transaction.

- Redemption: issued certificates can be redeemed against an energy users gas consumption. The process of redemption will allocate the characteristics of the originating gas production to the corresponding units of consumption.

In addition to these two primary actions, it should be possible to make as many transfers as required between parties without cost.

6.12 Transaction of property rights

To support the uniqueness of claims, and the avoidance of double-counting, it is important that attributes be transacted with clear recognition of the underlying change of ownership. This is required to be done through legal contract, with a template contract provided by the NZGCS or provided by either transacting party.

6.13 Units of measurement

Certificates will need to reflect a standard unit of gas production. We propose that one renewable gas certificate reflects 1MWh of gas production, with consideration to a number of factors, including:

- gas at the wholesale level tends to be measured in Joules rather than watt-hours, with common denominations being GJ, TJ and PJ;
- retail gas bills for domestic and commercial customers tend to use the same units as electricity, i.e. kWh, whilst invoices for larger customers (e.g. industrial) are denominated in GJ;
- increased granularity in certification is a likely trend, with a potential future requirement being that certificates represent a much smaller volume of gas (e.g. kJ / kWh); and

It will be convenient for the units of certificates match the units of energy that are used on certificate-holders bills. As large users may well have the consumption volumes in their gas bills denominated in units of GJ, it would be a simple matter to convert to or from GJ to MWh.

6.14 Measurement of gas consumption

For the sake of accuracy, it is preferred that redemption of certificates matches the consumption of the redeeming user. For that to work, it is necessary for consumption data to be provided, and that this data be accurate and complete to the best of one's knowledge.

Section 6.4 discusses the need to contain certification activity within a production year timebox. Where certificates are redeemed within that period to cover 100% of the relevant user's consumption, and then this position changes after the close of the Production Year, the user may find themselves matched to less or more than 100%. A retrospective change to consumed volumes would require allowing the user to adjust their redeemed certificate total to match their updated consumption volume, requiring corresponding changes to a number of subsequent processes. This would be highly operationally burdensome.

Prioritising certificate use as a means to enable climate action (as per principle 1) places importance on ensuring certificates are a robust measure for greenhouse gas reporting. From a user perspective, it is likely to be important that they are able to redeem sufficient certificates to ensure that their consumption is 100% covered even after possible changes to consumption volumes over time. To this end, we propose that energy users be able to redeem certificates in excess of their known consumption.

6.15 Included attributes

At a minimum, the attributes that need to be recorded on the certificate relate to the production technology and the Production Device itself. For example:

- Information on the production technology:
    - identification of the technology of conversion, e.g. anaerobic digestion;
    - the feedstock and its source, e.g. biomass for biomethane production via anaerobic digestion technology from municipal wastewater; and
    - GHG emission intensity expressed in grams of CO2-e per MJ lower heating value (LHV) or in grams of CO2-e per MWh LHV.

- Information on the Production device:
    - facility location,
    - network receipt point,
    - ownership, or
    - public funding received.

In addition, more broad information can be measured and communicated via the certificate, for example:

- use of certificate sale proceeds, or
- emissions avoided due to project development.

Any factor that differentiates a production device from others within New Zealand can be captured and communicated to potential buyers.

6.16 Complete attribute capture

Where non-energy attributes are traded, it is our position that this must take place via the energy certificate. Breaking non-energy characteristics via numerous means will only result in the potential for double-counting and confusion.

For this reason, the renewable gas certificate will have the ability to capture and communicate numerous attributes, rather than just GHG emissions rate. Additional attributes, such as potential social co-benefits, may be required to be recognised over time, and these requests will be addressed as they arise.

7. Certification of 'off-grid' production or consumption

In some cases, a user may be supplied directly from a renewable gas production facility without connection to the shared gas transmission system. When there is no grid connection, there is both a strong link between the facility and the user, and a weak link to volumes of

gas transacted via the grid. In such cases, production certificates may still be able to be transferred, under certain circumstances.

It is generally seen to be likely that the user of the produced gas would have had the option to also purchase the associated renewable gas certificates. If they choose not to acquire these certificates, in accordance with our impact principle we propose that the certificates can be redeemed by another party where there is an explicit swap of attributes, or where the net result is a reduction in total natural gas consumed i.e. the off-grid production is additional.

This section builds on comments made in section 6.5.

In addition to the question of allowance of issuance and redemption of certificates, there is the matter of the nature of gas produced from a stand-alone facility. Unlike a shared transmission system (where all gas that enters has to meet NZS 5442:2008 - the gas specification) a stand-alone facility may produce gas that is outside the gas specification[2] – provided that the gas supplied is "...of a specification that is suitable and safe for [use]" (R41(1) of the Gas (Safety and Measurement) Regulations 2010). It is possible for a renewable gas certificate to be issued for 1MWh of non-cleaned biogas, and that certificate be transferred for allocation against 1MWh of pipeline-delivered 'spec' gas.

QUESTION 18: Should the certificate system market boundary be constrained to those connected to the gas pipeline?

QUESTION 19: If not, under what circumstances should non-connected facilities be allowed to issue and trade certificates?

8. Initial trading activity

During the initial stages of the market for renewable gas certificates, it is likely that counterparties will require some support in order to effectively complete certificate transactions. Certified Energy is willing to provide this support as other service providers are established.

Some areas in which support from Certified Energy is likely to be valuable are:

- general education - provide broad ranging guidance and information to potential participants on:
    - how renewable gas certificates may be used by them to achieve their renewable or carbon zero goals,

[2] Reticulated natural gas must meet the gas specification (r41(2) of the Gas (Safety and Measurement) Regulations 2010, but gas produced by other means (e.g. biomethane or hydrogen) is not natural gas and, therefore, is not subject to that regulation.

    - how to access and use the registry (NZGCS),
- administrative guidance - explain and assist with the operational process for trading renewable gas certificates, including:
    - registration of a trading account,
    - registering Production Devices and completing the audit,
    - issuance, transfer, redemption and expiry of renewable gas certificates,
    - provision of standard from contracts, such as a template sale & purchase agreement.
- price discovery, and
- match-making – maintain a list of interested buyers and sellers of renewable gas certificates.

There will likely always be a valuable role for Certified Energy to provide general education and administrative guidance to participants that are entering the market for the first time. However, as the market develops it is hoped that specialised participants such as brokers and other information providers will enter the market. Until this occurs, Certified Energy is willing to provide these services on the following basis, Certified Energy:

- will not disclose confidential information
- will provide information on an unbiased, non-favouritism basis
- will endeavour to provide accurate and complete information but will not be held liable for any errors or omissions in the information provided.

QUESTION 20: Does it make sense for Certified Energy to provide these services in the infancy of the renewable gas certificate market?

QUESTION 21: What other options might there be for ensuring this support is available?

QUESTION 22: Will the market require any other support whilst establishing?

9. International interoperability.

One of the areas of potential for green hydrogen is its ability to be transported, and therefore its ability to act as a medium for the international transportation of renewable energy. A number of countries are considering the role of green hydrogen imports as a means to achieve their own decarbonisation ambitions. This potential demand is leading subsequently to many other countries evaluating their capacity to produce green hydrogen for export.

Renewable gas certification is key to the transport of energy via hydrogen, given the otherwise homogeneous nature of the gas. Only with accompanying transfer of a complying

certificate instrument can the purchasing nation claim the environmental benefits of green hydrogen.

Export of green hydrogen and accompanying certificates leads to a number of challenges from the perspective of managing a country's attribute ledger. Exported volumes and certificates may potentially be treated as separate to production that takes place within a system market boundary, however there are risks that local production may be seen by some parties as resulting in local consumption.

Given the potential for international trade of hydrogen however, it is important that New Zealand's certification system be interoperable with parallel systems in countries that are potential hydrogen trade partners. This interoperability relates to:

- methods and standards for certification,
- format and content of certificates, and
- the ability to account for international attribute transfer,

While there are a number of projects underway to develop internationally unified product definitions, we anticipate that there will be an additional process of harmonisation relating to certification. As an independent certification entity, with strong relationships, connections and experience internationally, Certified Energy is well placed to facilitate these requirements.

QUESTION 23: What green hydrogen projects, currently being scoped or developed, have a significant export component?

QUESTION 24: For any potential trades being discussed, what is required from hydrogen certification to support the transaction?

QUESTION 25: Which countries are likely to be hydrogen trade partners in the short to mid-term?

10. On-going system development and assurance

Certified Energy is committed to providing a certification system that is as impactful as it is credible and robust. As such, it is our intention that this system be subject to continuous development, either as new technologies emerge, as the market develops, or as a result of many other potential changes in the industry.

While some improvements may be implemented, at least some developments will almost certainly require rule changes, and / or have significance for stakeholders and participants in the system. We propose to operate an on-going system development process, facilitating the involvement of the industry in this process.

10.1 Technical committee for advice

To ensure that there is strong engagement in developing the system, there may be value in convening a group whose purpose it is to input into suggested improvements and other questions of system design. Such a group could be a key part of a change process as mentioned above. Its role could be to accelerate the process of designing proposed changes to address issues that may be identified in the early stages.

Potential members of such a group might include:

- a representative of Certified Energy (who may also provide the secretariat for the group);
- representative(s) of renewable gas producers;
- one or more members who are purchasers of certificates (e.g. large users);
- subject matter experts who may assist the group with design matters; and
- an independent party to chair the group (e.g. a representative from the Gas Industry Company (GIC)).

10.2 Achieving overall assurance

This same approach may be work well to provide users and stakeholders in the system with assurance that the system is performing well in line with key objectives. This level of oversight and subsequent trust is important for enabling high levels of participation and subsequent impact.

We are very interested in defining and completing a process to ensure that the operation of the NZGCS is seen to be highly credible. To this end, a technical committee as discussed in section 10.1 could also serve to receive and independently review documentation related to system performance.

QUESTION 26: Who should have the ability to suggest changes to the system rules?

QUESTION 27: How should we evaluate suggested changes?

QUESTION 28: Who should decide if a structural change (such as a change to the system rules) is required?

QUESTION 29: Would a representative technical committee be an appropriate mechanism to aid engagement and consultation? Would your organisation like to be a representative on this committee?

QUESTION 30: How should implementation of requested / required changes be funded?