Zemo Partnership
Accelerating Transport to Zero Emissions

Technical Guidance

Renewable Fuels Assurance Scheme – Technical Guidance

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1. Introduction

The Renewable Fuels Assurance Scheme (RFAS) provides commercial vehicle fleet and non-road mobile machinery (NRMM) operators with independent assurance of the life cycle greenhouse gas (GHG) emissions and feedstock sustainability performance of renewable fuels sold in the UK and Europe. The RFAS works alongside national renewable transport fuel regulations, such as the UK Renewable Fuel Transport Obligation, providing a mechanism for guaranteeing that fleet operators are purchasing bulk supplies of sustainable low carbon fuels. The scheme facilitates fleet operators receiving renewable fuel supply chain-specific GHG emissions data, thereby ensuring accurate and representative information for company carbon reporting[1]. Furthermore, credible GHG emissions data will help inform decision-making processes regarding vehicle fleet decarbonisation options by demonstrating the merits of sustainable low carbon fuels. The RFAS is managed by Zemo Partnership.

1.1 Objectives of the Scheme

- To verify claims made by companies supplying renewable fuels and blends, regarding their product's life cycle GHG emissions savings and provenance of raw material feedstocks.
- To encourage greater use of renewable fuels by heavy duty vehicle and NRMM plant operators, and establish a unique approach to raising the profile and credibility of sustainable low carbon fuels.
- To ensure the provision of reliable, accurate, robust and transparent GHG emissions data reported to vehicle fleet operators by renewable fuel suppliers.

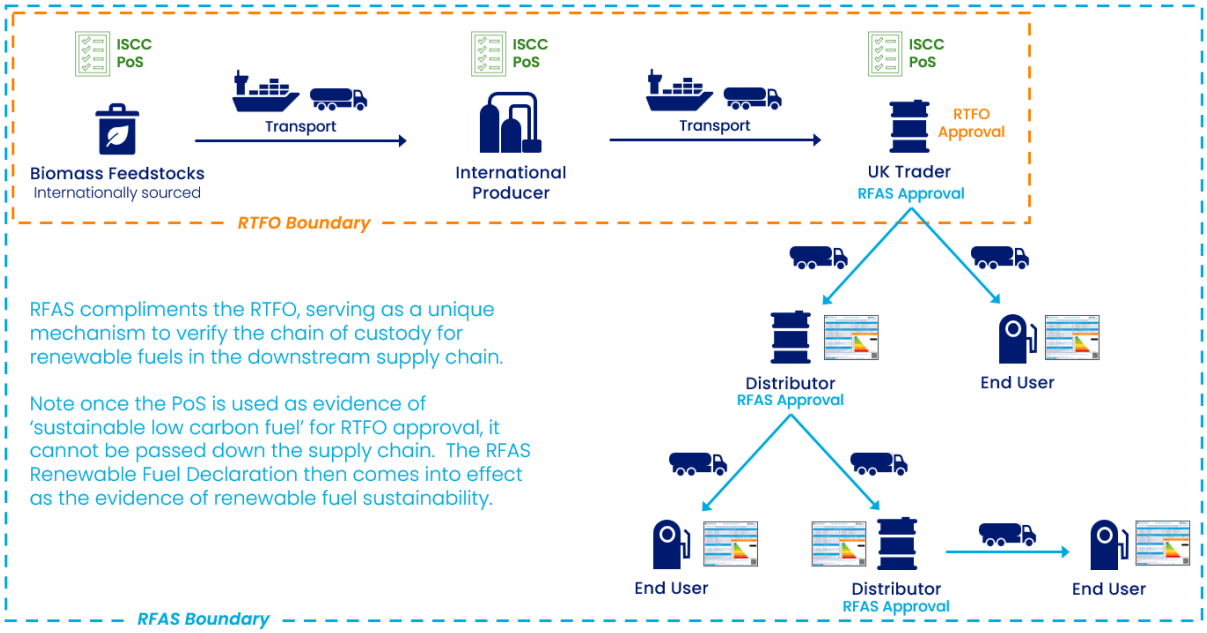
1.2 RFAS Scope

The RFAS is open to companies supplying renewable fuels and blends such as biodiesel B20, renewable diesel including hydrotreated vegetable oil, biomethane, renewable hydrogen, bio-propane and advanced renewable fuels. The scheme specially covers renewable fuels supplied through the RTFO in the UK, or similar regulatory frameworks in other countries, and as such is open to producers and suppliers of renewable fuels in addition to traders and distributors. Transport sectors covered by the scheme are road vehicle and heavy duty off-highway, notably non-road mobile machinery. Figure 1 illustrates the links between the UK RTFO and RFAS.

The RFAS encompasses the complete renewable fuel supply chain from feedstock cultivation or waste raw material collection, production and distribution of the final product to the customer. This is commonly referred to as the upstream fuel supply chain. In the case for renewable hydrogen the fuel pathway would cover primary energy source, hydrogen production plant, storage, distribution, dispensing at the refuelling station plus fugitive emissions.

[1] https://ghgprotocol.org/corporate-standard

Figure 1: Example supply chain to show RFAS and RTFO boundaries



RFAS was initially developed for the UK to verify the chain of custody for renewable fuels, and blends, sold after the point of duty (RTFO end point). The RFAS is now expanding outside of the UK. However the scheme can only be adopted in countries which have a regulatory framework associated with national quotas and incentives for renewable fuel supplied to decarbonise road transport, such as:

- RTFO scheme in the Republic of Ireland.
- Sistema Nacional de Verificación de la Sostenibilidad in Spain.
- Treibhausgas-Minderungsquote (THG-Quote), GHG Reduction Quota in Germany.
- Bundesgesetz über die Sicherstellung einer nachhaltigen Nutzung von Biokraftstoffen und anderer flüssiger und gasförmiger erneuerbarer Energieträger im Verkehr, referred to as the Biofuels Act (Biokraftstoffgesetz), in Austria.

Because the GHG emissions savings associated with renewable fuel approved under RFAS are counted towards transport renewable fuel targets (e.g. UK RTFO), the fuel should not be used for other applications, such as stationary generators, heating or marine vessels (this is not permitted under the RTFO). RFAS declarations cannot be used to provide evidence of sustainability for other purposes. Renewable fuel suppliers who wish to provide declarations to customers in these markets can apply to Zemo to become approved under the 'RFAS Heat-Power-Marine' RFAS extension[2]. RFAS Heat-Power-Marine declarations have been approved by the Environment Agency for providing evidence of the use of bioliquid fuels in stationary combustion units, as a route to reducing GHG emissions for regulated industrial facilities, where permitted under the UK Emissions Trading Scheme (ETS).

1.3 RFAS Performance Standards

The RFAS comprises of three performance standards which companies approved under the scheme are required to meet.

[2] The additional compliance requirements for RFAS Heat-Power-Marine are specified in an Annex to this Technical Guidance document.

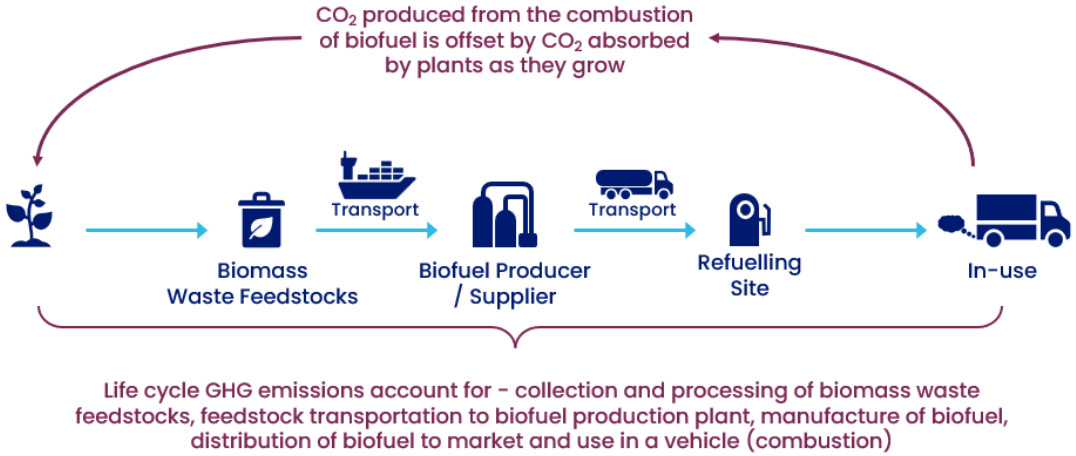
Greenhouse Gas (GHG) Emissions Savings Threshold

Renewable fuels shall meet the following minimum GHG emissions savings threshold compared to the fossil fuel comparator:

- 65% GHG savings for biofuels and renewable fuels of non-biological origin.
- 10% GHG savings for the total blend of fossil and renewable fuels[3].

Calculations must be based on a life cycle methodology; refer to Appendix D for details. Fossil fuel comparator carbon intensity can be found in Table D2 within Appendix D. These standards were initially developed for the UK market however they are well suited to worldwide implementation.

Figure 2: Example biofuel supply chain life cycle



Feedstock Sustainability

- Protection of land and biodiversity: energy crops, and forest products, shall not be cultivated on land of high biodiversity value or high carbon stock such as wetlands and peatland.
- Use of waste as a resource: a chain of custody will be required to demonstrate provenance of the biomass waste and residues and exclusively those covered under the approved lists of the relevant national quotas (e.g. the 'RTFO list of feedstocks including wastes and residues').
- Use of renewable energy and resources for renewable fuels of non-biological origin (RFNBOs): these fuels shall only be produced using energy from renewable sources. Production of renewable hydrogen via electrolysis shall demonstrate additionality with regards to renewable electricity supply. In the case of CO_2 as a feedstock, this shall arise from waste fossil sources, biological or atmospheric or naturally-occurring geothermal sources. Applicable requirements are set out in Appendix E.

Supply Chain Traceability

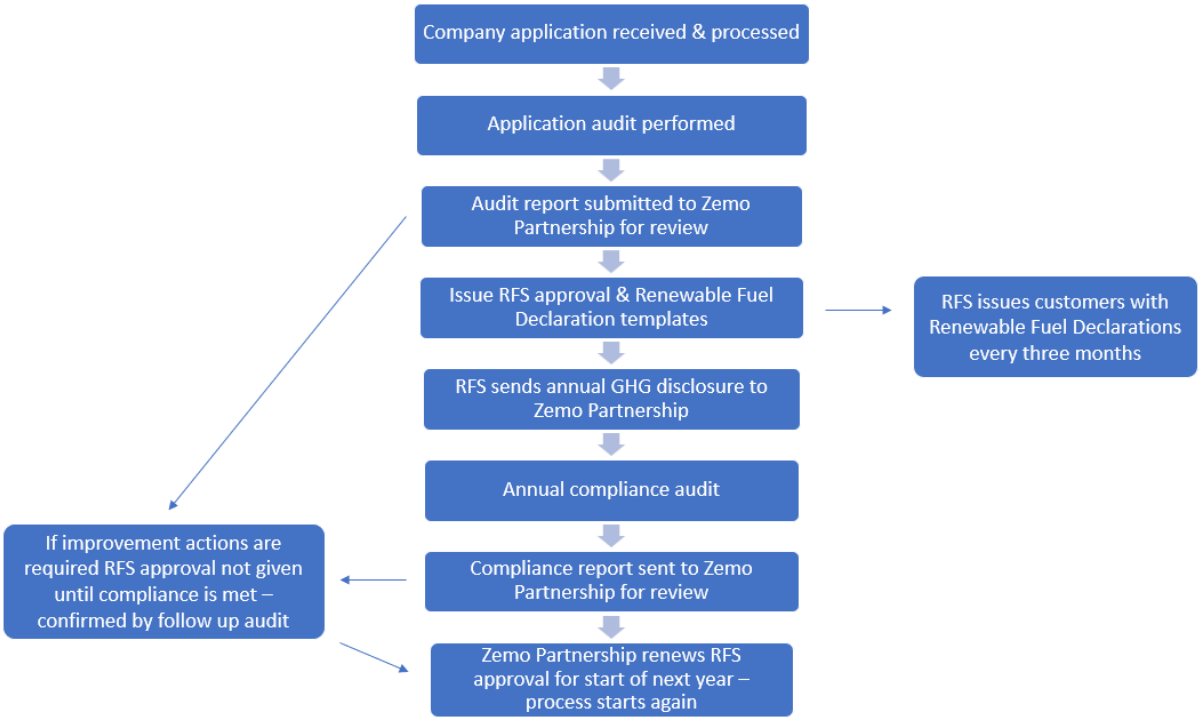
- The renewable fuel supply chain shall be traceable from feedstock origin to customer in terms of greenhouse gas emissions and sustainability performance (see Figure 1).
- When national quotas apply (e.g. UK RTFO), the GHG emissions and feedstock sustainability characteristics presented on Renewable Fuel Declarations shall correspond to the renewable fuel volumes submitted, or to be submitted, under the relevant national-quota reporting system for the same period, and to the batches of renewable fuel physically supplied to fleet operators. Alignment shall be demonstrated using data submitted to the reporting platform (e.g. RTFO Operating system, ROS) rather than the subsequent issuance of certificates or approvals.

[3] To ensure significant savings and limit the use of high carbon fuels, such as fossil synthetic fuels (e.g. GTL).

2. RFAS Application Process and Compliance Requirements

Companies selling renewable fuels are required to make an application to Zemo to become an approved Renewable Fuel Supplier (RFS) and submit evidence demonstrating compliance with the RFAS performance standards as per Section 2.2. This will require independent verification by an approved auditor. Once approved, the RFS will be required to submit on-going evidence of compliance with the scheme performance criteria, including an annual audit report and an annual 'GHG emissions and sustainability disclosure'. The RFS is required to issue their customers with Renewable Fuel Declarations in accordance with batches of renewable fuel sold. Figure 3 shows how the scheme operates.

Figure 3: Renewable Fuels Assurance Scheme process flow diagram



2.1 RFAS Application

To become an approved Renewable Fuel Supplier, a company will need to complete the RFAS application form and sign the RFAS agreement once approved.

An 'Application Audit' against the RFAS performance standards will be undertaken by the approved auditor appointed by Zemo. The Application Audit will be arranged between the Renewable Fuel Supplier and the auditor within one month of submitting the application. The aim of the audit will be to assess the capacity and readiness to comply with the Performance Standard (see Section 2.2 for guidance on the information that may be required for the audit, where applicable).

Once the audit is completed an RFAS Application Audit Report will be sent to the RFS and Zemo. The application audit will entail a review of the RFS records for the last six months.

Zemo will approve the application within two weeks of the paperwork being submitted. The following will be issued to the RFS once the application is approved:

- RFS approval document including a unique identifier reference for the company (Appendix A). This document shall identify the type and blends of renewable fuels supplied by the supplier.
- RFAS agreement letter signed by the RFS. This document will present a set of conditions that the supplier is requested to agree to.
- Renewable Fuel Declaration template with the unique identifier reference (Appendix B).
- GHG and Sustainability Disclosure template for annual reports (Appendix C).

2.2 Compliance Audits and Ongoing Monitoring

Renewable Fuel Supplier Compliance Monitoring

'Compliance Audits' against the RFAS Performance Criteria will be conducted by Zemo's appointed auditor on an annual basis. The aim of these audits will be monitoring compliance against the RFAS performance standard and will include a sample of the declarations issued to customers. A Compliance Audit Report will be prepared by the auditor and sent to Zemo and the RFS within ten working days of the audit. Zemo recommends the first compliance audit is undertaken between seven and nine months after the RFS approval document has been issued.

If nonconformities are raised, the RFS has forty days to take action and provide evidence to the auditor to close the nonconformities. In some cases this may require a follow-up audit to demonstrate compliance. The RFS will be required to cover any additional auditor costs for closing nonconformities (potentially where there are multiple and/or more complex nonconformities). If action is not taken, approval under the RFAS can be terminated.

Based on findings of the compliance audit, the supplier will be categorised as Low, Medium or High Risk. If the supplier is categorised as Medium Risk the next audit should be conducted onsite, in nine months time (instead of the usual twelve months). For High Risk suppliers an additional six-month compliance audit must be conducted onsite. The annual participation fee includes one compliance audit per year; the RFS will be required to cover the cost of an additional audit if Zemo deems this necessary. Once Zemo is satisfied that the RFS has demonstrated full and consistent compliance with the scheme, the frequency of compliance audits will revert to one audit per year.

Zemo shall issue each company a new RFS Approval Document at the start of the second year of RFAS, once the compliance audit has been reviewed and approved. This process will continue each year.

The information to be provided during the compliance audit can include:

- Written procedures.
- Mass balance of renewable fuel against customer sales.
- Mass balance of incoming Renewable Fuel Declarations against customer sales.
- GHG emissions of renewable fuels and blends, including calculation of GHG emissions intensity and savings.
- Proof of sustainability documentation (applicable to Category A suppliers reporting under a national quota).
- Voluntary sustainability scheme certification.
- Supplier list, including address, certification status, date of status validation, and certification expiry date.
- Supplier confirmation that supplied material has not been used under any similar scheme and that measures have been implemented to prevent multiple counting (applicable to Category A suppliers).

- Sales documents, including supplier and sales invoices.
- Incoming documents, including renewable fuel purchases (if applicable).
- HMRC records for duty payment (applicable to Category A suppliers).
- Duty payment confirmation (applicable to Category A suppliers).
- National quotas reported quantities and approval (e.g. RTFO Operating System submissions and RTFCs issued; applicable to Category A suppliers).
- RFAS Application and RFAS T&Cs.
- RFAS logos and claims.
- Renewable Fuel Declarations.
- Renewable Fuel Declaration log, including any recalls.
- GHG and Sustainability Disclosures.
- Complaints procedure and complaints log.
- Record retention.
- Markets supplied – the RFS shall inform the auditor if they supply renewable fuel to markets other than road transport and NRMM (these volumes must be segregated from renewable fuel approved under RFAS).

Annual GHG and Sustainability Disclosure

Once approval is awarded it is the responsibility of the RFS to send an annual 'GHG and Sustainability Disclosure' to Zemo by 30th April of the following calendar year. The report should be populated periodically throughout the year, with the data for each quarter being compiled within four months of the end of that quarter. Complete and partial reports may be required during the compliance audit. Category A suppliers reporting under a national quota should provide confirmation of whether certificates have been awarded, along with the volume of certificates issued. If this information is unavailable at the time, a six-month extension may be requested to provide confirmation of the certificate award.

Zemo will send an acceptance email following review and follow-up on any queries. The information to be submitted is presented in Appendix C. This information will assist Zemo in monitoring the high blend renewable fuels market as well having robust well-to-tank GHG emissions data for internal analysis.

2.3 Renewable Fuel Declarations

Once approved under the RFAS, Zemo will issue Renewable Fuel Declaration templates with a unique reference number specific to the RFS. RFS are required to use a unique declaration number for each declaration issued and have a record keeping system that enables customers to be matched with these specific numbers.

By default the RFS can only issue declarations for renewable fuel sold after the approval date, as shown in the RFS approval document. If the RFS had previous mass balance data available and was able to demonstrate full compliance during the application audit, Zemo will permit the RFS to issue Renewable Fuel Declarations from the start of the quarter in which they are approved. Written evidence of this permission will be required during the first compliance audit.

Zemo recommends that declarations be issued to each customer on a monthly basis although the maximum permitted timeframe is quarterly.

Declarations shall reflect the lifecycle GHG emissions and feedstock sustainability performance of the renewable fuel sold. The information to be included, covering each period, is: customer name and

address, renewable fuel or blend sold, GHG emissions savings, GHG emissions intensity, description of feedstocks, countries of origin of the feedstocks and status regarding voluntary sustainability scheme certification. Example declarations can be found in Appendix B, along with guidelines for completing declarations.

Category A suppliers (those reporting under a national quota) should source the information for RFD issuance from PoS (Proof of Sustainability) documentation, which must be linked to the submissions made under the national reporting system (e.g. ROS submissions for RTFO approval). Category A suppliers must obtain written approval from Zemo for any deviations from this process.

Category B suppliers should source the GHG and sustainability related information for RFD issuance from the RFDs they receive from their suppliers. Category B suppliers must not issue RFDs for renewable fuel purchased from non-RFAS approved suppliers.

To reduce the risk of RFD recalls due to errors in reporting (e.g. incorrect country of origin), Zemo strongly recommends that Category A suppliers carry out an internal peer review prior to RFD issuance. If it is feasible to do so, Category A suppliers should consider issuing RFDs per transaction, to limit the number of RFDs that need to be recalled if an error is discovered after submission under the national quota.

Declarations are mandatory for customers receiving more than 10,000 kg or 16,000 litres of renewable fuel or blends over a quarterly period – this threshold is intended to mitigate the administrative burden for fuel suppliers with many customers purchasing small volumes. Zemo recognises that RFDs may be particularly important for some low volume customers; suppliers should contact Zemo to obtain written approval for any deviations from this threshold.

Category A suppliers shall not issue declarations to customers receiving less than 6,000 kg or 10,000 litres of renewable fuel or blends over a quarterly period – this threshold is intended to provide a 'buffer' to mitigate the risk of RFD recalls due to discrepancies between submissions and approvals under the national quota, which could have a significant knock-on effect in the downstream supply chain. Zemo recognises that the appropriate minimum volume threshold for RFD issuance may vary from supplier to supplier; Category A suppliers should contact Zemo to obtain written approval for any deviations from this threshold.

If there are any issues with national quota approvals (e.g. RTFC issuance) that might impact of RFDs issued, the Category A supplier should contact Zemo to determine what steps should be taken.

It is essential that the most recently issued declarations are communicated with customers to provide the robust and representative GHG emissions data, in order that they can be used in company carbon reporting.

RFS can only issue Renewable Fuel Declarations to their customers, they cannot be traded or transferred to another renewable fuel supplier. Declarations are only valid for the periods they cover and are specific to each customer. The customer named on a declaration must be the entity buying the fuel and the volumes should align with invoicing records. RFS cannot issue declarations to a company physically receiving the fuel if the RFS is delivering it on behalf of another supplier. In the event of an RFS selling renewable fuel or blends to an intermediatory company (e.g. a fuel distributor, trader or buying group), the intermediatory will need to become an approved RFS in its own right if it wishes to benefit from the scheme and issue declarations to its customers. It is expected that all RFS customer-facing personnel are briefed on this, to ensure customers are well informed. Issuing

Renewable Fuel Declarations to non-customers will result in the Renewable Fuel Supplier being automatically suspended from the RFAS.

The GHG and feedstock sustainability information presented on the RFAS Declaration is not transferable to any other scheme or activity related to decarbonising road vehicles or NRMM. The life cycle GHG emissions values, and information pertaining to renewable fuel feedstocks, cannot be separated in any capacity from the volume of renewable fuel, or blend, purchased by the customer. Any alternation of the Zemo template and/or manipulation of the data presented on Renewable Fuel Declarations once issued, will result in the Renewable Fuel Supplier being automatically withdrawn from the RFAS, and their approval terminated.

The RFS mass balance and record keeping system shall allow traceability throughout the process for each declaration raised. The declarations shall be made available to the auditor at the time of the compliance audit for a sample to be taken and compliance assessed.

2.4 Group Approvals

RFS may operate through multiple legal entities; each being responsible for different parts of the renewable fuel and blends supply chain. For example:

- A parent company responsible for the renewable fuel bulk buying and selling (Company X).
- A subsidiary responsible for distributing to filling stations (Company Y).
- Another subsidiary responsible for fleet operators management services (Company Z).

In order to avoid the cost and complexity of multiple applications, the group might opt for a joint approval and operate as an RFS Group. The application and compliance audit will follow the same principles as individual approvals, however, all the steps within the supply chain covered by the group may need to be audited. In order to ensure sufficient time is allocated, the following information must be provided in the RFAS RFS Group Approval application form:

- Names of all legal entities to be included in the group.
- Description of the operational overview of each entity. This is required to understand the group structure from an administration perspective and in terms of the physical flow of the renewable fuel. All legal entities will be listed in the RFAS register and website as a group. If for any reason there are contractual sensitivities for one or more legal entities to be signposted on the RFAS website, Zemo will consider identifying only one company.
- One legal entity shall be nominated as the RFS Group Lead and provide the umbrella for RFAS approval. It is recommended that the RFS Group Lead be the parent company, or the legal entity with access to the purchasing information for the renewable fuel and/or blends. Where the group includes a Category A entity (see Table 1), this entity should be the RFS Group Lead. Other RFAS Group structures shall be discussed and agreed with Zemo before the application audit takes place.
- Explanation of the group structure including:
    - Document and evidence availability to demonstrate compliance (centralised or available at each individual entity).
    - Management structure.

In order to operate as an RFS Group, the following conditions shall be met:

- All legal entities must be part of the same renewable fuel supply chain.
- Only one Category A legal entity can be included in the RFS Group (see Table 1).

- RFS Group Lead shall have access to end customer physical transactions/renewable fuel sales.
- RFS Group Lead shall issue all Renewable Fuel Declarations. RFS Group Members can be included in conjunction with the RFS Group Lead, in the entry for Renewable Fuel Supplier on the declarations: e.g. Company X via Company Z.
- Each RFS Group Member shall have individual mass balances related to their specific operations.
- Annual disclosure reports shall be provided by the RFAS Group Lead and must include the split for all RFS Group Members included in the application.
- Agreement between the RFS Group Lead and RFS Group Members shall specify:
    - Member trading arrangements;
    - Supply chain operations;
    - Cooperation during RFAS compliance audits and provision of documentation required for continuous compliance with RFAS.
- RFAS Group Lead to approve all uses of RFAS logos and claims.

<u>An example of evidence required to demonstrate compliance under RFAS</u>

In addition to the requirements set out in Section 2.2, the RFS Group Lead shall:

- Provide evidence of national quota reporting (where applicable) for the volumes of renewable fuel supplied to the RFS Group Members. This needs to include information reported to the quota and the associated characteristics of the renewable fuel including: quantity of renewable fuel, GHG emissions intensity, feedstock type and country of origin.
- Maintain a mass balance specifically for renewable fuel volumes supplied to each RFS Group Member. The RFS Group Member will need access to this mass balance. The volumes of national quota approved renewable fuel supplied by the RFS Group Lead need to be linked to equivalent volumes sold by the RFS Group Members.

In addition to the annual compliance audits, the RFAS auditor may carry out interim checks remotely, if nonconformities in data flow and management are identified. The frequency of the checks will be agreed by the RFAS Technical Lead and Zemo, based on the findings from the compliance audits. Failure to meet the compliance criteria or provide sufficient information to satisfy the auditor, could result in suspension from the scheme.

3. RFAS Performance Standard – Compliance Requirements

A company's capability to successfully comply with this standard will be verified as part of the 'Application Process'. 'Compliance Audits' will be conducted annually and actual performance against the RFAS will be assessed.

The RFAS focuses on the volumes of renewable fuel reported under the RTFO, therefore the reporting periods and submissions will be based on a calendar year.

3.1 Renewable Fuel Supplier Operations

In order to allow characterization within the RFAS and assess compliance requirements, as part of the initial RFS application companies shall define their RFAS category type, operations and fuels as follows:

Table 1: Category type

Category A	Category B
Company is distributing fuel to fleet operators and/or fuel traders and registered and reporting under the national quota and/or products purchased and received as certified under one of the RTFO or EC approved Voluntary Schemes.	Company is purchasing sustainable low carbon fuel from an approved RFS and distributing fuel to fleet operators and/or fuel traders.
Basis of Evidence for Compliance	
Evidence of compliance will relate information pertaining to national quota reporting or issuance of RTFCs and mass balancing of verified renewable fuel against customer sales.	Evidence of RFAS approval will be required. Declarations supplied from the existing RFS, and declarations issued to customers shall be clearly traceable through record keeping and mass balance.
Compliance Audit Frequency	
Annual (this may be increased to two audits per year if substantial nonconformities are raised)	

Renewable fuels and blends

Biodiesel	Bio-propane
Renewable Diesel	Hydrotreated Vegetable Oil (HVO)
Compressed Biomethane (CBG)	Renewable Hydrogen
Liquified Biomethane (LBG)	Others not already listed

Processes related to their business activities

Cultivation of feedstocks	Renewable fuel production
Collection of feedstocks	Storage
Feedstocks processing	Blending
Feedstocks transport	Distribution
Trading	Customer/refuelling Station
Activity sectors covered (fuel, heat, marine)	

Category A suppliers shall identify the national quota followed if applicable.

The RFS must notify Zemo in writing of any changes that occur regarding:

- Category type.
- Renewable fuels or blends supplied.
- Supply chain specific processes.
- Suppliers of renewable fuel to the RFS.
- An increase in the number of fuel bunkering and distribution sites.

3.2 System Procedures, Responsibilities and Record Control

The RFS shall implement and maintain written procedures appropriate to its size and complexity to ensure its continuous conformity with the RFAS. These shall include but might not be limited to activity procedures, renewable fuels, blends and key responsibilities.

All employees with key responsibilities must be adequately briefed on their RFAS obligations. Documentation of these briefings, such as training records and meeting minutes, must be maintained and made accessible for audit purposes.

Records demonstrating conformity with the scheme criteria shall be up-to-date and maintained for a period of at least five years or longer as defined by legislation.

3.3 Greenhouse Gas Emissions Performance

The RFS shall provide GHG emissions intensity and emissions savings figures for renewable fuels, and blends, covered by the scheme.

The methodology used to calculate the GHG emissions and supporting data shall be aligned with the Lifecycle Analysis (LCA). See Appendix D.

The RFS shall define their procedure for calculating and reporting GHG emissions per renewable fuel product supplied, and maintain all relevant records.

The RFS shall inform Zemo if there are material changes in the storage and distribution of gaseous renewable fuels impacting the carbon intensity above or below 20% of the figures reported during audits and/or via communication with Zemo. This is most relevant for renewable hydrogen.

When the RFS undertakes GHG emission calculation amendments following a compliance audit, Zemo shall be informed and agree to the changes prior to declarations being issued to the customer.

3.4 Feedstock Sustainability Performance

Protection of land and biodiversity

Evidence of RTFO or RED approved voluntary sustainability scheme certification[4] shall be provided for energy crop cultivation and forest products.

Use of biomass waste as a resource

Identification of biomass wastes and residues used for producing renewable fuels is required. Traceability of wastes and residues needs to cover the whole chain of custody, going back to the origin of the material. This could include voluntary sustainability scheme certification and 'Proof of Sustainability' documentation. Categorization of wastes and residues shall be aligned with the UK RTFO 'List of feedstocks including wastes and residues'[5] as default, or the applicable national quota if preferred.

Use of renewable energy and resources for RFNBOs

Identification of RFNBO feedstocks is required including type of renewable energy for power, heat and/or cooling. Evidence of development fuel RTFCs will suffice as evidence for compliance with

[4] This could include ISCC-EU, REDCert, RSB scheme.

[5] https://www.gov.uk/government/publications/rtfo-and-saf-mandate-feedstock-materials-used-for-creating-low-carbon-fuels

requirements for 'additionality' with regards to renewable electricity generation. However, if these are not in place, please refer to further applicable requirements in Appendix E.

3.5 Supply Chain Traceability

To maintain traceability of GHG emissions and sustainability of a renewable fuel throughout the supply chain, from the feedstock origin to the customer's depot, the following shall be met:

3.5.1 Supplier Control

The RFS shall maintain an approved supplier list for their inputs, including:

- Supplier name;
- Applicable registration identifier;
- Feedstocks and/or renewable fuel supplied;
- Date of approval status check.

The approved supplier list shall be monitored at least on an annual basis to ensure the information is up to date.

Incoming transaction documentation shall be checked upon receipt for completeness. Information relevant to the applicable scheme(s) shall be included, or as minimum:

- Supplier's name and address;
- Date and location when the document is issued;
- Quantity and type of feedstock and renewable fuel;
- Land criteria compliance if applicable.

If supplier documentation is not compliant, a complaint shall be raised with the fuel supplier.

Measures must be implemented to prevent double accounting, such as the same fuel volumes being reported in different sectors. Additionally, for Category A suppliers, confirmation must be obtained from their supplier to ensure that the fuel purchased has not been reported under any other initiative or scheme.

3.5.2 Mass balance

The RFS shall establish a mass balance system to ensure:

- Output quantities of sustainable material sold do not exceed input quantities;
- Total renewable fuels and/or blend volumes sold are aligned with the material purchased and/or reported under the national quota.[6]

The mass balance shall:

- Be per legal entity registered.
- Be per site.
- Be reconciled over a maximum period of three months.
- Consider conversion factors as well as any gains or losses that may occur during production or storage processes.
- Allow the physical movement of renewable fuels and/or blends to be traced between site locations.
- Allow Renewable Fuel Declaration traceability.

[6] The sustainability ID of renewable fuels and blends purchased must not be allocated to other fuel types sold.

- Allow consignment identification per feedstock, origin, blend (if applicable) and GHG emissions intensity.
- Exclude renewable fuel volumes not supplied to the road transport and NRMM market (unless approved under RFAS Heat-Power-Marine, in which case the mass balance must be recorded per market).
- Volume deviations of±0.5% are considered nonmaterial and therefore can be disregarded. This applies to transactions as well as stock reconciliations.
- If storage applies, reconciliation of sustainability and physical stock must occur in line with mass balance timeframe. If deviations exceed ±0.5%, sustainable volumes must be reconciled based on the most conservative approach.
- For companies operating multiple distribution and bunkering locations, sustainability allocation can be made directly from input to output, subject to Zemo's approval. In such cases, all sustainability ID (combination of GHG emissions intensity, feedstocks, countries of origin and production, etc.) reported to customers must be traceable to a single input location and must be physically feasible.

The following data shall be used for the mass balance:

- Input inventory;
- Output inventory;
- Conversion factor (if applicable);
- Stock levels (if appliable).

The data used shall be accurate, consistent, and reliable in terms of source, fuel volumes, and measurement units.

Sustainable characteristics are not transferable to non-sustainable products, and such circumstances will be classed as a major breakdown of the RFAS process which could result in suspension.

See Appendix G for additional notes on the mass balance. Further guidance on establishing a mass balance system can be provided by Zemo.

3.5.3 Renewable Fuel Declarations

Renewable Fuel Declarations shall be issued to all customers as per RFAS Guidance Section 2.3. The RFS shall use the Renewable Fuel Declaration templates issued by Zemo and complete the required fields (examples in Appendix B). If changes are required, Zemo approval must be sought.

Declarations shall cover information pertaining to volumes of the renewable fuel which has been approved under a national quota of a maximum of three months previous. GHG emissions intensity and saving are recommended to be presented as the overall average of the Renewable Fuel Declaration reporting period or as the actual value from the allocated input consignment. Companies are permitted to transfer over batches for national quota reported fuel from one period to the next; the mass balancing of this renewable fuel with customer sales must be completely transparent. Biomethane batches must be reconciled within a twelve month period.

RFAS declarations cannot be used as evidence of chain of custody verification for any other sector than road transport. Issuing declarations for this purpose could result in the RFS being suspended or withdrawn from the scheme.

Appendix F provides further information regarding how GHG emissions intensity data reported under the RFAS may be useful for company carbon reporting activities. Zemo has created a calculator to

help fleet operators quantify their vehicle fleet WTW GHG emissions using RFAS data. Please visit www.zemo.org.uk/RFAS to download the latest version of the calculator and user guide (this will be updated annually).

RFAS deadlines for issuing the renewable fuel declarations are as follows:

Table 2: Declaration and disclosure report deadlines

Month	Renewable Fuel Declaration Deadline (effective from Q3 2025 onwards)			GHG and Sustainability Disclosure Deadline	
	Period	Category A	Category B	Period	All
Jan	Q1	31st May	10 working days after receiving all RFDs from supplier(s)	Q1, Q2, Q3, Q4	30th Apr (following year)
Feb					
Mar					
Apr	Q2	31st Aug	10 working days after receiving all RFDs from supplier(s)		
May					
Jun					
Jul	Q3	30th Nov	10 working days after receiving all RFDs from supplier(s)		
Aug					
Sep					
Oct	Q4	28th Feb (following year)	10 working days after receiving all RFDs from supplier(s)		
Nov					
Dec					

Any supplier who cannot meet the deadline for RFD issuance should notify Zemo and any customers who are RFAS approved. Category B suppliers should contact their supplier and notify Zemo if they have not received RFDs from their Category A supplier by the deadline shown above, or if they have not received RFDs from their Category B supplier by one month later than the deadline shown above.

Declaration Recall Process

Where renewable fuels have been delivered and/or sold with inaccurate information, the RFS shall:

- Notify the customer and Zemo within five working days;
- Analyse the root cause and implement corrective action;
- Implement measures to avoid reoccurrence;
- Use new declaration numbers for any reissued/corrected declarations (a new version of the previous declaration number is recommended, e.g. Ref001 might become Ref001_v2).

The RFS shall maintain records of all sustainability declarations and recall situations. These will be subject to inspection during the compliance audit.

3.6 Logos and Claims

3.6.1 Product and Company Statements

Renewable Fuel Suppliers might be interested in marketing their RFS status and renewable fuels approved under the RFAS. In order to do this, the following disclaimers can be used:

- Company 'x' is an approved Renewable Fuel Supplier under the RFAS, our reference number is XXXXX.
- Company 'x' follows the RFAS requirement to supply renewable and/or low carbon fuels. Our RFAS reference number is XXXXX.

- The 'RFAS APPROVED FUEL' supplied conforms to RFAS requirements. Our Renewable Fuel Supplier reference number is XXXXX.
- Our 'RFAS APPROVED FUEL' is assured under RFAS. Our Renewable Fuel Supplier reference number is XXXXX.

Renewable Fuel Suppliers shall be mindful of their marketing claims and avoid misleading life cycle GHG emissions savings for renewable fuels, and blends, approved under RFAS. Whilst there will be variability in life cycle GHG emissions over the course of the year, Renewable Fuel Suppliers are advised to promote the average life cycle GHG emissions savings reported in the RFAS annual disclosure report.

3.6.2 RFAS Logo Use

The RFS will be issued with the RFAS logo. The following requirements shall be met:

- The RFS reference number shall be included wherever the logo is used to allow a validity verification.
- The following actions are not allowed:
  - Changing the proportions of the design, the content, or the colour.
  - Changing the logo orientation.
  - Combining any logos or designs in a way that implies association.

The logo can only be used by the RFS and signposted on their company website and reports, such as corporate sustainability reports.

3.7 Complaints

The RFS shall ensure that complaints received regarding the RFAS compliance are adequately considered, processed, and monitored, including the following:

- Acknowledge receipt of the complaint to the complainant within five working days of receiving the complaint.
- Investigate the complaint and specify its proposed actions in response to the complaint within one month. If more time is needed to complete the investigation, an agreement between relevant parties shall be reached.
- Take appropriate actions with respect to complaints and any weaknesses found in processes.
- Notify the complainant and Zemo when the complaint is successfully addressed and closed.

Records of complaints shall be maintained, to demonstrate that appropriate action was taken. These will be subject to inspection during compliance audits.

4. Governance

Zemo is responsible for managing the day-to-day delivery of the scheme and engagement with relevant stakeholders, which include RFAS approved suppliers, auditors, technical team and RFAS Technical Committee. Zemo is an independent not-for-profit partnership, working with government and their members to inform and shape net zero road transport policy, and create influential transport initiatives to reduce GHG emissions.

The scheme delivery will aim to:

- Maintain integrity, transparency and robustness in the supply of renewable transport fuels.
- Ensure a homogeneous audit approach.
- Easily embed compliance requirements in common systems and processes.
- Establish a harmonised and consistent approach for the RFS to report renewable fuel GHG emissions and sustainability information to their customers.
- Raise confidence in the life cycle GHG emissions and sustainability credentials of renewable fuels sold to HDV and NRMM operators.

4.1 RFAS Technical Committee

The RFAS Technical Committee is the decision-making body that oversees the technical management and delivery of the Scheme. The RFAS Technical Committee is made up of Zemo, Technical Lead, the Renewable Fuel Transport Association and SCE Limited (both members of Zemo Partnership).

4.2 RFAS Guidance Updates and Consultation

The Technical Guidance document includes the general requirements that all RFAS Scheme stakeholders need to follow. In the event of requirement improvement, alternation, inclusion or removal, Zemo will engage, communicate, and gather feedback before final approval to all relevant stakeholders. The consultation process procedure is as follows:

- The RFAS Technical Committee will discuss and agree RFAS Technical Guidance changes.
- Technical Lead will prepare the consultation questionnaire.
- Zemo will distribute and arrange meetings with RFS members when requested.
- Results will be collated, analysed and approved by the RFAS Technical Committee.
- Newsletters will be sent to all relevant stakeholders detailing changes, validity starting date and transitional period, if applicable.

The Consultation process will not apply to adjustments required to ensure legal compliance and error corrections.

4.3 Record Retention

Zemo will keep all documents and records related to RFAS scheme for at least seven years, including but not necessarily limited to:

- Scheme membership application;
- Complaints and appeals;
- Ongoing monitoring;
- RFAS audits;
- Suspension documentation;
- Withdrawal.

Zemo will keep all information submitted by RFS as confidential, unless advance agreement is made regarding how to share and use specific information.

4.4 Complaints and Appeals

Zemo will ensure that complaints and appeals received in relation to audit check results, fees, suspension and withdrawals are considered, processed and monitored. The following steps will be followed:

- Acknowledge receipt of the complaint or appeal to the complainant within five working days of receiving the complaint.
- Investigate the complaint and specify its proposed actions in response to the complaint within one month. If more time is needed to complete the investigation, an agreement between the relevant parties shall be reached.
- Take appropriate action with respect to complaints and any weaknesses found in processes.
- Notify the complainant when the complaint is successfully addressed and closed.

4.5 Renewable Fuel Supplier Suspension and Withdrawal

Suspension

Failure to comply with the clauses stipulated in the RFAS agreement signed by each Renewable Fuel Supplier (RFS) once approved under the RFAS may result in suspension from the scheme.

The Renewable Fuel Supplier approval will be suspended if any of the following scenarios arise:

- Renewable fuels and/or blends sold by the RFS are no longer in compliance with the RFAS. This can be due, but not limited to, failure to close corrective action requests or the fuel no longer meeting the RFAS criteria.
- Evidence of serious misuse and/or fraudulent behaviour against RFAS requirements during verification audit checks, or ongoing monitoring.
- Failure to provide the documents required for on-going monitoring.

Documentation related to major non-compliances shall be collated by Zemo. This includes RFAS compliance audit reports, correspondence between Zemo and the RFS, or any information provided by the RFS in relation to the non-compliant matters. Deadlines for meeting RFAS compliance shall be clearly identified, in conjunction with the nonconformities.

Zemo shall trigger a concern regarding a RFS's failure to meet compliance and recommend RFAS suspension to the Technical Committee. All relevant documentation related to the non-compliance shall then be forwarded to the Technical Committee. The group shall determine whether the suspension should be approved. The review period is fourteen days.

At the end of the fourteen-day period, the RFS shall be informed of the suspension in writing, and within seven days of the suspension notice the company will be removed from the RFAS website and prohibited from issuing Renewable Fuel Declarations. The RFAS logo must be removed from the company website and all marketing materials.

The RFS shall be offered fourteen days to appeal the suspension in writing. This shall be emailed to rfas@zemo.org.uk. If a written appeal is not received, RFAS members who are the RFS's distributors shall be informed of the suspension and provided with guidance on how to issue their next round of Renewable Fuel Declarations. If a written appeal is submitted, the Technical Committee shall review any new evidence and make a recommendation to the RFAS Technical Committee as to whether the suspension shall remain in place or be retracted.

The RFAS Technical Committee shall determine whether to uphold the suspension or not, as the final decision. This shall take twenty-one days. If the RFS is permitted to return to the RFAS following their appeal, the company will be required to go through the formal RFAS application process including a compliance audit. The RFAS application fee will apply.

Zemo will review the suspension with the RFAS Technical Committee and RFAS Technical Lead. If all parties agree on suspension being the best course of action, the RFS will be notified within five working days of the decision being taken. Once notified, the RFS will have ten working days to appeal. Upon appeal receipt, Zemo will distribute the appeal to the RFAS Technical Committee and RFAS Technical Lead so that a final decision can be reached based on the evidence provided in the RFAS appeal and input received from RFAS Technical Committee and RFAS Technical Lead.

Once the suspension decision is taken and appeal process finalised, Zemo will formalise the suspension and update their records to show 'suspension date DD/MM/YYYY'. A final letter will be sent to the RFS and the RFS will remove all logos and RFAS references from all marketing material within five working days of the suspension date. The RFS suspension date will be shown on the Zemo website for a period of six months. The RFS will not be eligible for a refund of the RFAS participation fee.

Withdrawal

In the event a Renewable Fuel Supplier does not intend to continue being approved under RFAS, written notification shall be sent to Zemo, at least two months before the RFAS approval renewal date. The withdrawal will be processed within ten days. Zemo will update their records to show the RFS has withdrawn its participation in the scheme 'withdrawn date DD/MM/YYYY'. The RFS will remove all logos and RFAS references from all marketing material within thirty days of the date of a signed confirmation of withdrawal letter from Zemo. The RFS' withdrawal date will be presented on Zemo's website for a period of six months. The RFS will not be eligible for a refund of the RFAS participation fee.

4.6 Public Information - Website

Zemo will make the following information publicly available on their website:

- Renewable Fuel Supplier company name and renewable fuel blend(s) sold;
- Renewable Fuel Supplier reference number.

4.7 RFAS Application and Participation Fees

The RFAS requires companies to pay an application fee and annual participation fees to maintain on-going approval under the scheme. This includes the auditor compliance checks.

4.8 RFAS Information

RFAS application forms, GHG and Sustainability Disclosures and other enquires should be sent to rfas@zemo.org.uk.

5. Responsibilities and Competencies

5.1 Zemo Partnership

- Processing RFS application approval.
- Processing RFS suspension and withdrawal.
- Liaising with relevant stakeholders to harmonise the approach with RFAS.
- Providing and/or engaging with technical support when required.
- Informing Renewable Fuel Suppliers of Technical Guidance updates.
- Processing complaints and appeals as per RFAS Technical Guidance Section 4.4.
- Managing public information shared on the website.
- Appointing audit providers.
- Ongoing monitoring, including the annual disclosure report and compliance audit checks.

5.2 RFAS Technical Committee

- Providing Zemo with support on matters related to RFAS performance standards, compliance requirements and any regulatory changes influenced by national renewable fuels regulations.
- Commenting on consultation exercises Zemo undertakes and provide a sounding board for agreeing any revisions to RFAS Technical Guidance and RFAS application process.
- Supporting Zemo in determining any amendments required to the RFAS to allow the scheme to be managed more efficiently and evolve as membership expands.
- Providing independent review of non-compliance issues raised by Zemo.
- Reviewing evidence related to a Renewable Fuel Supplier's RFAS approval being suspended, and if the company wishes to appeal to the Technical Committee, they shall review mitigation attempts and if deemed appropriate, approve suspension from the scheme.

5.3 Renewable Fuel Supplier

- Making its application to the scheme.
- Engaging with the audit provider.
- Ensuring on-going compliance with RFS performance standards.
- Informing Zemo about any changes affecting their status, such as contact personnel, company name, change in operations or similar.
- Ensuring compliance audit checks and annual reporting are conducted within the timeframes.
- Determining corrective actions and sending evidence to the auditor for nonconformity closure.
- Reporting to Zemo any complaints received related to the compliance and performance within the scope of the scheme operations.

5.4 RFAS Audit Provider

- Conducting application and compliance audits.
- Providing opportunities for improvement.
- Raising nonconformities when RFAS requirements are not met.
- Reviewing corrective actions and related evidence for nonconformities closure within forty days of issuance.
- Reporting to Zemo any complaints or concerns relating to the scheme, that could compromise the reputation of the RFAS and/or Zemo.

Audit Provider Competencies:

- Knowledge and skills regarding ISCC-EU and the RTFO or other national renewable fuel policies, including GHG emissions calculations, mass balance and chain of custody requirements.
- Knowledge and audit skills (Lead Auditor Certificate).
- Experience in conducting audits following assurance engagement standard (ISAE 3000, AA1000).
- Audit experience for bespoke schemes and standards in line with RFAS.

Zemo appoints auditing companies to undertake impartial compliance verification for RFAS and RFAS Heat-Power-Marine. The audit provider accreditations may include: ISO17065, ISO14064, or other applicable standards, UKAS accreditation (or equivalent) in related fields. Auditors follow ISO19011 or similar standards.

5.5 RFAS Technical Lead

- Remaining up to date with legislation and applicable standards.
- Train and approve RFAS auditors.
- Conducting application and compliance audit reviews.
- Monitoring RFAS Audit Providers.
- Preparing consultation documentation when updates in the Guidance are done.
- Examining audit complaints and investigating as appropriate following Section 4.4 within the guidance.

Appendix A: Renewable Fuel Supplier Approval Document

Zemo Partnership

Renewable Fuels Assurance Scheme

Renewable Fuel Supplier Approval

<CompanyName>,
<CompanyAddress>

<ComapnyName> is approved under the Renewable Fuels Assurance Scheme, reference number #, to supply <RenewableFuelType> with #% renewable fuel content in the UK.

Approval period
#st Month 2025 to #st Month 2026

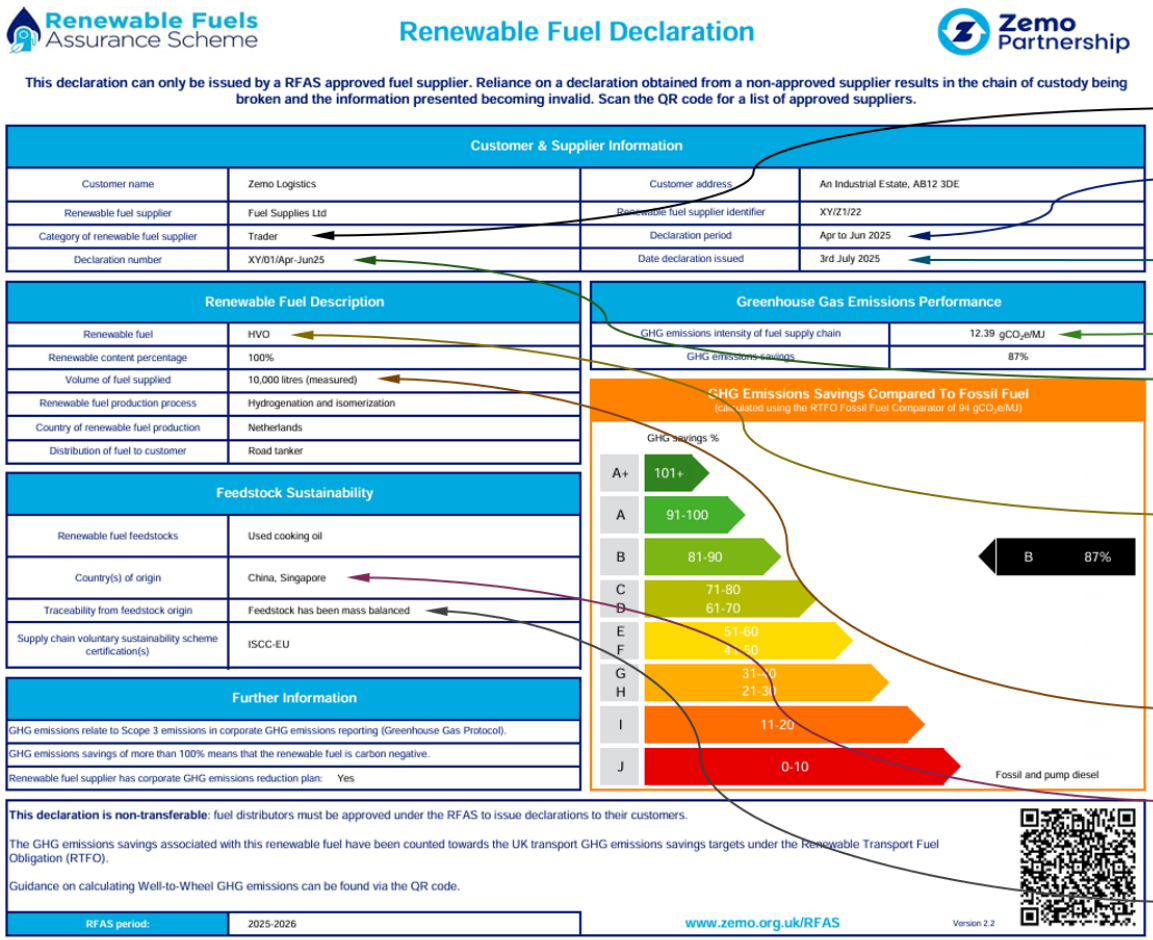
Zemo Partnership signature
Gloria Esposito, Director of Sustainable Business

<signature>

Approval date: #th Month 2025

Appendix B: Renewable Fuel Declaration Examples

Example 1: Liquid or Gaseous Biofuels



Renewable Fuels Assurance Scheme

Renewable Fuel Declaration

Zemo Partnership

This declaration can only be issued by a RFAS approved fuel supplier. Reliance on a declaration obtained from a non-approved supplier results in the chain of custody being broken and the information presented becoming invalid. Scan the QR code for a list of approved suppliers.

Customer & Supplier Information

Customer name	Zemo Logistics	Customer address	An Industrial Estate, AB12 3DE
Renewable fuel supplier	Fuel Supplies Ltd	Renewable fuel supplier identifier	XY/Z1/22
Category of renewable fuel supplier	Trader	Declaration period	Apr to Jun 2025
Declaration number	XY/01/Apr-Jun25	Date declaration issued	3rd July 2025

Renewable Fuel Description

Renewable fuel	HVO
Renewable content percentage	100%
Volume of fuel supplied	10,000 litres (measured)
Renewable fuel production process	Hydrogenation and isomerization
Country of renewable fuel production	Netherlands
Distribution of fuel to customer	Road tanker

Greenhouse Gas Emissions Performance

GHG emissions intensity of fuel supply chain	12.39 gCO_2e/MJ
GHG emissions savings	87%

GHG Emissions Savings Compared To Fossil Fuel

(calculated using the RTFO Fossil Fuel Comparator of 94 gCO_2e/MJ)

GHG savings %

A+ 101+
A 91-100
B 81-90
C 71-80
D 61-70
E 51-60
F 41-50
G 31-40
H 21-30
I 11-20
J 0-10

B 87%

Fossil and pump diesel

Feedstock Sustainability

Renewable fuel feedstocks	Used cooking oil
Country(s) of origin	China, Singapore
Traceability from feedstock origin	Feedstock has been mass balanced
Supply chain voluntary sustainability scheme certification(s)	ISCC-EU

Further Information

GHG emissions relate to Scope 3 emissions in corporate GHG emissions reporting (Greenhouse Gas Protocol).

GHG emissions savings of more than 100% means that the renewable fuel is carbon negative.

Renewable fuel supplier has corporate GHG emissions reduction plan: Yes

This declaration is non-transferable: fuel distributors must be approved under the RFAS to issue declarations to their customers.

The GHG emissions savings associated with this renewable fuel have been counted towards the UK transport GHG emissions savings targets under the Renewable Transport Fuel Obligation (RTFO).

Guidance on calculating Well-to-Wheel GHG emissions can be found via the QR code.

RFAS period:	2025-2026

www.zemo.org.uk/RFAS

Version 2.2

The intended entry for the 'Category of renewable fuel suppler' is typically 'Supplier', 'Producer', 'Distributor' or 'Trader' (not Category A or B).

The first declarations issued may be for a partial period, starting from the date of approval.

Date declaration issued is the date the RFD is sent to the customer (±2 days is acceptable if declarations are generated in batches).

Use 2 decimal places for GHG emissions intensity.

Each RFD must have a unique declaration number: the format can be determined by the RFS.

Suppliers of renewable diesel may market this as renewable diesel or HVO. Category B suppliers can enter 'renewable diesel' here, even if the RFDs they receive list 'HVO'. However, if the received RFD lists 'renewable diesel' the Category B RFS must check with their supplier to confirm that the renewable diesel is HVO, before entering 'HVO'. The production process and feedstocks also give a good indication of whether the renewable diesel is HVO.

Remember to include the units for fuel volume. For liquid fuels (except biomethane) the supplier should specify 'litres (measured)' or 'litres (standard at 15°C)'.

Write countries in full (common abbreviations such as UK and USA are acceptable) rather than using country codes. Contact Zemo if there is insufficient space to list all countries.

In most cases, the entry for 'Traceability from feedstock origin' should be 'Feedstock has been mass balanced'.

Example 2: Blends of Liquid or Gaseous Biofuels

Renewable Fuels Assurance Scheme

Renewable Fuel Declaration

Zemo Partnership

This declaration can only be issued by a RFAS approved fuel supplier. Reliance on a declaration obtained from a non-approved supplier results in the chain of custody being broken and the information presented becoming invalid. Scan the QR code for a list of approved suppliers.

Customer & Supplier Information

Customer name	Zemo Logistics	Customer address	An Industrial Estate, AB12 3DE
Renewable fuel supplier	Fuel Supplies Ltd	Renewable fuel supplier identifier	XY/Z1/22
Category of renewable fuel supplier	Trader	Declaration period	Apr to Jun 2025
Declaration number	XY/01/Apr-Jun25	Date declaration issued	3rd July 2025

Renewable Fuel Description

Renewable fuel	HVO
Renewable content percentage	50% HVO, 50% fossil diesel
Volume of fuel supplied	10,000 litres (measured)
Renewable fuel production process	Hydrogenation and isomerization
Country of renewable fuel production	Netherlands
Distribution of fuel to customer	Road tanker

Feedstock Sustainability

Renewable fuel feedstocks	Used cooking oil
Country(s) of origin	China, Singapore
Traceability from feedstock origin	Feedstock has been mass balanced
Supply chain voluntary sustainability scheme certification(s)	ISCC-EU

Further Information

GHG emissions relate to Scope 3 emissions in corporate GHG emissions reporting (Greenhouse Gas Protocol).

GHG emissions savings of more than 100% means that the renewable fuel is carbon negative.

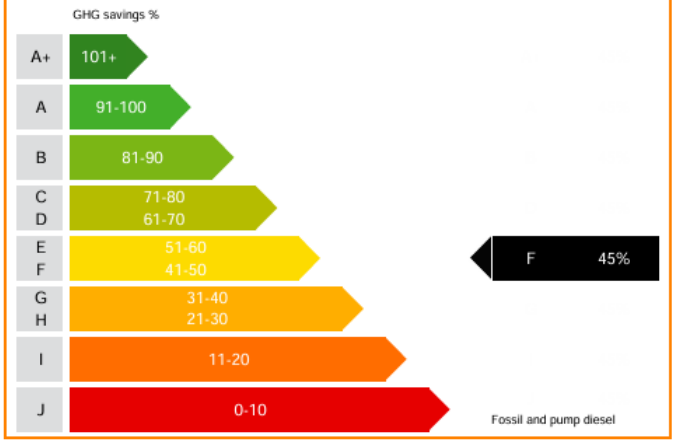
Renewable fuel supplier has corporate GHG emissions reduction plan: Yes

Greenhouse Gas Emissions Performance

GHG emissions intensity of fuel supply chain	52.16 gCO_2e/MJ
GHG emissions savings	45%

GHG Emissions Savings Compared To Fossil Fuel

(calculated using the RTFO Fossil Fuel Comparator of 94 gCO_2e/MJ)



This declaration is non-transferable: fuel distributors must be approved under the RFAS to issue declarations to their customers.

The GHG emissions savings associated with this renewable fuel have been counted towards the UK transport GHG emissions savings targets under the Renewable Transport Fuel Obligation (RTFO).

Guidance on calculating Well-to-Wheel GHG emissions can be found via the QR code.

RFAS period:	2025-2026

www.zemo.org.uk/RFAS

Version 2.2

Example 3: Renewable Hydrogen

Renewable Fuels Assurance Scheme

Renewable Fuel Declaration

Zemo Partnership

This declaration can only be issued by a RFAS approved fuel supplier. Reliance on a declaration obtained from a non-approved supplier results in the chain of custody being broken and the information presented becoming invalid. Scan the QR code for a list of approved suppliers.

Customer & Supplier Information

Customer name	Zemo Logistics	Customer address	An Industrial Estate, AB12 3DE
Renewable fuel supplier	Fuel Supplies Ltd	Renewable fuel supplier identifier	XY/Z1/22
Category of renewable fuel supplier	Trader	Declaration period	Apr to Jun 2025
Declaration number	XY/01/Apr-Jun25	Date declaration issued	3rd July 2025

Renewable Fuel Description

Renewable fuel	Hydrogen
Renewable content percentage	100% renewable
Volume of fuel supplied	10,000 kg
Renewable fuel production process	Electrolysis
Depot based or centralised production	Centralised production
Country of renewable fuel production	UK
Distribution of fuel to customer	HGV tube trailer - compressed
Dispensing	350bar compressed gas

Feedstock Sustainability

Renewable fuel feedstocks	Renewable electricity
Method of renewable electricity generation	Wind turbines
Country(s) of origin	UK
Supplier certified under international H2 certification scheme	No

Further Information

GHG emissions relate to Scope 3 emissions in corporate GHG emissions reporting (Greenhouse Gas Protocol).

GHG emissions savings of more than 100% means that the renewable fuel is carbon negative.

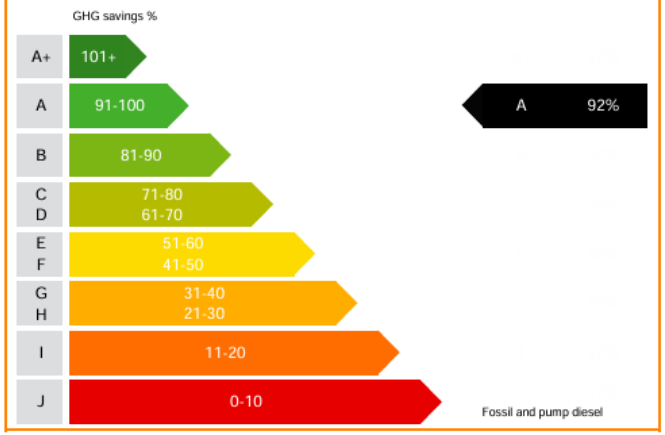
Renewable fuel supplier has corporate GHG emissions reduction plan: Yes

Greenhouse Gas Emissions Performance

GHG emissions intensity of fuel supply chain	7.22 gCO_2e/MJ
GHG emissions savings	92%

GHG Emissions Savings Compared To Fossil Fuel

(calculated using the RTFO Fossil Fuel Comparator of 94 gCO_2e/MJ)



This declaration is non-transferable: fuel distributors must be approved under the RFAS to issue declarations to their customers.

The GHG emissions savings associated with this renewable fuel have been counted towards the UK transport GHG emissions savings targets under the Renewable Transport Fuel Obligation (RTFO).

Guidance on calculating Well-to-Wheel GHG emissions can be found via the QR code.

RFAS period:	2025-2026

www.zemo.org.uk/RFAS

Version 2.2

Example 4: Non-UK

Renewable Fuels Assurance Scheme

Renewable Fuel Declaration

Zemo Partnership

This declaration can only be issued by a RFAS approved fuel supplier. Reliance on a declaration obtained from a non-approved supplier results in the chain of custody being broken and the information presented becoming invalid. Scan the QR code for a list of approved suppliers.

Customer & Supplier Information

Customer name	Zemo Logistics	Customer address	An Industrial Estate, AB12 3DE
Renewable fuel supplier	Fuel Supplies S.A.U.	Renewable fuel supplier identifier	XY/Z1/22
Category of renewable fuel supplier	Trader	Date or period of fuel renewable fuel supply	Apr to Jun 2025
Declaration number	XY/01/Apr-Jun24	Date declaration issued	3rd July 2025

Renewable Fuel Description

Renewable fuel	HVO
Renewable content percentage	100%
Volume of fuel supplied	10,000 litres (measured)
Country of renewable fuel supply	Spain
Renewable fuel production process	Hydrogenation and isomerization
Distribution of fuel to customer	Road tanker

Feedstock Sustainability

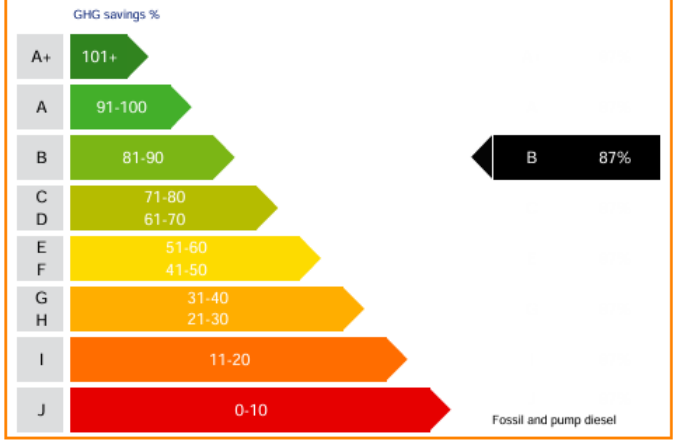
Renewable fuel feedstocks	Used cooking oil
Country(s) of origin	China, Singapore
Traceability from feedstock origin	Feedstock has been mass balanced
Supply chain voluntary sustainability scheme certification(s)	ISCC-EU

Greenhouse Gas Emissions Performance

GHG emissions intensity of fuel supply chain	12.39 gCO_2e/MJ
GHG emissions savings	87%

GHG Emissions Savings Compared To Fossil Fuel

(calculated using a fossil fuel comparator of 94 gCO_2e/MJ)



Further Information

The GHG emissions intensity of the fuel supply chain is calculated on a Well-to-Wheel basis using the Renewable Energy Directive 2018/2001/EU (RED II) methodology. The methodlogy accepts Tank-to-Wheel GHG emissions to be zero.

GHG emissions savings of more than 100% means that the renewable fuel is carbon negative.

The GHG emissions savings associated with this batch of renewable fuel have already been taken into account in the calculation of the share of renewable energy in an EU member state or under a similar mandate in another country (e.g. UK, Norway).

This declaration is non-transferable: fuel distributors must be approved under the RFAS to issue declarations to their customers.

RFAS period:	2025-2026

www.zemo.org.uk/RFAS

Version 2.2

Appendix C: GHG and Sustainability Disclosure

The RFS shall submit the following information per renewable fuel approved under the RFAS to Zemo on an annual basis.

Renewable Fuels Assurance Scheme

Greenhouse Gas and Sustainability Disclosure Report			
Renewable fuel supplier name			
Renewable fuel supplier identifier			
Company contact name			
Company contact email			
Date of submission	Date sent to Zemo - update if amendments are made.		
Declaration reporting period			
Renewable fuel types and blends sold			
Volumes of each renewable fuel type and blend sold or dispensed	Volume of RFAS approved fuel sold. Category A and B volumes should be listed separately.		
Volume units (litres, kg or kWh)	Select units from drop down.		
Proportion of each renewable fuel blend going to road vehicle fleet	Do not enter values with % symbol. Ensure values sum to 100% or the total volume above. Customer volumes can be allocated based on business type (e.g. fuel suppliers allocated to 'distributors / other').		
Proportion of each renewable fuel blend going to NRMM			
Proportion of each renewable fuel blend going to distributors / other			
Units for proportion of fuel to road / NRMM / other (litres, kg, kWh or %)	Select units from drop down.		
Average GHG emission intensity for each renewable fuel blend (gCO2e/MJ)	If combining data, use a weighted average to calculate the GHG emissions intensity and savings.		
Average GHG emission savings* for each renewable fuel blend (%)			
Renewable fuel feedstocks			
Number of customers receiving each renewable fuel type and blend			
List (or provide the range for) the renewable fuels declaration unique reference numbers raised over the last 6 months (e.g. REF/001-REF/010)	RFD ref numbers can be provided below the table, or in a separate sheet if more convenient.		
List your renewable fuel suppliers for this period (applicable to Category B suppliers)			
Volume of certificates awarded under a national quota (applicable to Category A suppliers)			
Volume units (litres, kg or kWh)	Select units from drop down.		
Data should be prepared separately following each quarter. Partial and full disclosure reports may be requested during compliance audits. A report containing Q1, Q2, Q3 and Q4 should be emailed to Zemo Partnership (rfas@zemo.org.uk) by 30th April of the following calendar year.			

Version 3.0

* based on Fossil Fuel Comparator of 94 gCO2e/MJ

Appendix D: Fuel Lifecycle Greenhouse Gas Emissions Calculations

The following GHG emissions values are required for the RFAS:

- Renewable fuel: GHG emissions intensity (gCO_2e/MJ) and GHG emissions savings (%).
- Renewable fuel blends: GHG emissions intensity (gCO_2e/MJ) and GHG savings (%).

This can entail using a default value for the renewable fuel or calculating the fuel lifecycle GHG emissions applying actual values. The following fuel lifecycle parameters shall be used and calculated in accordance with D1 – D4. These are based on the RTFO Guidance 2, therefore please refer to the guidance for further details.

Table D1: Fuel Supply Chain Parameters for Calculating Total GHG Emissions (E)

E_{ec}	Extraction or cultivation of raw materials.
E_l	Annualized over twenty years GHG emissions from carbon stock change due to land use change.
E_p	Renewable fuel production process.
E_{td}	Transport and distribution - includes downstream emissions for distribution up to and including the filling station. Compression or liquefaction of gaseous fuels and distribution by road tanker, marine vessel or distribution through dedicated pipeline (including UK and European gas grid in the case of biomethane).
E_u	Fuel in use (CO_2 treated as zero).
E_{sca}	Savings from soil carbon accumulation via improved agricultural management.
E_{ccr}	Savings from carbon capture and replacement.
E_{ccs}	Savings from carbon capture and geological storage - this shall take into account GHG emissions associated with abatement technology and transport and distribution of CO_2 to storage.
E_{fh}	Fugitive hydrogen emissions specifically related to hydrogen losses in RFNBO supply chains.

Under RFAS it is possible to apply a GHG emissions offset for biomethane produced from biogenic waste feedstock comprising of manure and slurry (consistent with the REDII framework). This 'manure credit' recognises the capture of fugitive methane emissions. Evidence of the GHG emissions calculation verification will be requested during the compliance audit, e.g. Proof of Sustainability documentation.

Calculating GHG emissions intensity of renewable fuel

D.1 Biofuels

GHG emissions intensity calculation: $E = E_{ec} + E_l + E_p + E_{td} + E_u - E_{sca} - E_{ccs} - E_{ccr}$

D.2 RFNBO Fuels

GHG emissions intensity calculation: $E = E_{ec} + E_p + E_{td} + E_u - E_{ccs} + E_{fh}$

D.3 Default & Disaggregated GHG values

The RTFO Guidance 2 allows for use of default and disaggregated default values as long as these are available for the renewable fuels, feedstock and specific processes. Please refer to the guidance for further details. However, when these figures are not available, actual calculations will be required.

- Any direct land-use change must be taken into account and the additional emissions added to the default value.
- Any fossil fuel not listed in this appendix, will need an LCA for savings calculation purposes.
- There are no default factors under RED and RTFO for liquified biomethane, only compressed. Therefore, a separate calculation shall be performed for bio-LNG. A GHG intensity value for liquification and road tanker distribution to a refuelling station will need to be determined, with the fuel life cycle calculation evidenced. This shall be added to the GHG intensity for CBG, taking into account AD plant operation, grid injection and any grid fugitive losses, in cases where biomethane is mass balanced through the gas grid.

Calculating GHG emissions intensity of renewable fuel blends

GHG emissions intensity calculation:

$$E = \left(E_{FF} \times \frac{Q_{FF}}{Q_{Fuel}}\right) + \left(E_{RF} \times \frac{Q_{RF}}{Q_{Fuel}}\right)$$

- E_{FF}: GHG emissions intensity from fossil fuel used. See Table D2
- Q_{FF}: Fossil fuel quantity
- Q_{Fuel}: Total renewable fuel quantity
- E_{RF}: GHG emissions from renewable fuel used
- Q_{RF}: Renewable fuel quantity

Table D2: Fuel Supply Chain Parameters for Calculating Total GHG Emissions (E) in Net CV

Fossil Fuel	Carbon Intensity (gCO_2e/MJ)
CNG[7]	67.90
LNG[7]	76.85
Diesel (fossil)[7]	91.94
Petrol (fossil)[7]	88.53
Gas-To-Liquid (Synthetic Diesel)[8]	94.0

In relation to fossil synthetic fuels not listed, the source of the fuel lifecycle carbon intensity shall be identified. Evidence shall be provided of the final GHG emissions savings for different GTL and renewable fuel blends following the same calculation.

Calculating GHG emissions savings

$$\text{GHG savings} = \frac{(\text{FFC}_{CI} - F_{CI})}{(\text{FFC}_{CI})} \times 100$$

- FFC_{CI}: Fossil Fuel Comparator carbon intensity (94 gCO_2e/MJ)

F_{CI}: Carbon intensity for fuel to be reported under RFAS (as a blend or as 100% renewable)

[7] DESNZ (2025) UK Government GHG Conversion Factors for Company Reporting (Scope 1 + Scope 3)
[8] JEC (2020) Well To Tank Pathways

Appendix E: RFAS Compliance Requirements for Renewable Hydrogen Supply Chains (RFNBOs)

Chain of custody and mass balance

Requirements as set out in Section 3 'RFAS Performance Standard – Compliance Requirements' within the RFAS Guidance documents must be followed in addition to the following sector specific requirements:

E.1 System procedures shall specify the production technique, process flow, hydrogen purity and production energy sources.

E.2 Feedstock categorisation shall be aligned with the RTFO 'List of feedstocks including wastes and residues'[9].

E.3 Hydrogen shall meet the following criteria for under RFAS:

a. Produced using electricity and/or heat and/or cooling from wind, solar, aerothermal, geothermal or water (including hydrothermal sources, waves and tides).
b. Energy production must not be derived from biomass, landfill gas, sewage treatment plant gas or biogases.
c. Guarantees of origin (GoO) may be used to provide evidence that a given share or quantity of energy required to produce hydrogen was generated from renewable sources. In this scenario, Guarantees of Origin and the production unit can be connected through the national electricity grid. A Power Purchase Agreement between the renewable electricity producer and the hydrogen producer shall be in place.

E.4 The feedstock and process energy type shall be given, e.g. water and solar electricity.

E.5 For part RFNBO, part non-RFNBO:

a. Renewability methodology at production plant level shall be included in the application form and approved by Zemo;
b. The same GHG intensity is applied to both the RFNBO and non-RFNBO parts of the fuel;
c. The GHG emissions intensity shall be calculated for the RFNBO (renewable) and non-RFNBO (fossil) fractions;
d. Only the RFNBO fraction shall be claimed as renewable;
e. Quantities shall be monitored and supporting evidence maintained.

E.6 Mass balance requirements must:

a. Follow clause '3.5.2 Mass balance' within the RFAS Guidance and shall incorporate purity information and supporting evidence shall be provided (e.g. production reports, analysis);
b. The mass balancing period shall not exceed three months;
c. Electricity and GoOs shall be allocated equally to the overall production within the plant and all biproducts;
d. Renewable Fuel Credits can be transferred into the next mass balance period if the equivalent amount of material is physically available. Transferring credits between materials is only allowed for one mass period and for products with similar physical characteristics;

[9] https://www.gov.uk/government/publications/rtfo-and-saf-mandate-feedstock-materials-used-for-creating-low-carbon-fuels

e. GoO must be obtained aligning with the mass balance period. A maximum of one rolled over is allowed;
f. Renewable hydrogen approved under the RFAS must not be double counted through any other hydrogen certification scheme (e.g. EU CERTIFHY) the producer and/or supplier is associated with. Hydrogen certificates for batches of RFAS approved hydrogen must not be traded and should be cancelled. Evidence of cancelled hydrogen certification will be checked in the audit.

E.7 Hydrogen distribution:

a. Hydrogen can be mixed in the transmission and distribution infrastructure (e.g. pipeline), provided that the infrastructure is interconnected. This means the same infrastructure can be used for renewable hydrogen and non-renewable hydrogen. However, the quantity and quality of the hydrogen fed into and taken out of the distribution infrastructure shall be monitored and shall be verifiable. At the end of the respective mass balancing period, the quantity of hydrogen taken out of distribution infrastructure shall not exceed the quantity of hydrogen fed into it;
b. Documents issued by the respective distribution infrastructure authority providing evidence that the quantities have been monitored and verified must be made available to the auditor.

Calculating hydrogen supply chain GHG emissions

The formulae below shall be used to determine the greenhouse gas emissions performance of the hydrogen supply chain; each element of the production pathway being associated with a carbon intensity (gCO_2e/MJ). The full calculation shall be provided by renewable fuel supplier.

GHG emissions intensity = production + storage + distribution + dispensing at refuelling station + fugitive H_2 emissions.

$$(E = E_{ec} + E_p + E_{td} + E_u - E_{ccs} + E_{fh})$$

Table E1: Elements of hydrogen life cycle GHG emissions calculation

Production	Relates to plant used to produce hydrogen (i.e. electrolyser) and purification.
Storage - compression /liquefaction	Hydrogen requires compression or liquefaction for bulk transport, this can be at various pressures. The total volume that can be stored compressed and transported on a tube trailer will vary from 350–1000 kg. For liquid hydrogen this rises to 3500kg.
Distribution	Entails transporting compressed or liquified hydrogen from point of production to the end customers. Typically undertaken using truck tube trailer. There may be situations when hydrogen is supplied from outside of the UK, arriving by ferry or ship, either as compressed or liquefied hydrogen. Compressed hydrogen can also be distributed by pipeline. Distance and volume of hydrogen transported is required, assuming return journey for road and sea transportation.
Dispensing at the refuelling station (350 bar)	This entails compression and cooling. Hydrogen can also be stored as liquid hydrogen, with compressed gas dispensing.
Fugitive H_2 emissions	Hydrogen losses can arise across the supply chain, a default factor of 1.4 gCO_2e/MJ shall be used for fugitive H_2 emissions. A GWP of 5.8 is applied to hydrogen.

Hydrogen production, storage, distribution and dispensing have an energy requirement (kwh/kg H_2) and an associated GHG emissions intensity. Energy consumption data should be provided alongside GHG emissions data sets. All values shall be associated with the lower heating value for hydrogen.

GHG emissions factors for energy use and feedstocks

Zemo has defined various emissions factors which should be adopted for calculating GHG emissions associated with grid electricity, diesel, natural gas and biomethane – Table E2.

If hydrogen is produced outside of the UK, any use of grid electricity for the production plant, and compression or liquefaction units, shall adopt the electric grid GHG emissions factor of the country where this takes place. The grid electricity factor chosen, and its source, shall be disclosed. Any other source of primary energy shall be identified, with associated GHG emissions factors stated, for example compression or liquefaction equipment.

Table E2: Recommended GHG emissions factors

Grid Electricity	DESNZ GHG Conversation Factors for Company Carbon Reporting 2025: generation and consumption, including WTT (primary fuel production emissions) and transmission and distribution losses – Scope 2 and 3 for UK production only.
Natural Gas /Biomethane	DESNZ GHG Conversion Factors for Company Carbon Reporting 2025: Scope 1 (combustion emissions) and Scope 3 (fuel production emissions) for UK production only.
Diesel	DESNZ GHG Conversion Factors for Company Carbon Reporting 2025: Scope 1 (combustion emissions) and Scope 3 (fuel production emissions).
Renewable Electricity	Assumed to have a carbon intensity of zero.
Nuclear electricity	3.8 gCO_2e/MJ (JEC 2020 Well-To-Tank Report v5).

Additional assumptions and data sources:

- Fuel economy value for a diesel HGV trailer (44t) transporting hydrogen is: 33 L/100km.
- Ferry transportation: DESNZ Company Carbon Reporting (2025) for freighting goods by RoRo Ferry, Scope 3 emissions.

Hydrogen as a by-product – allocation of production (EP) energy and GHG emissions

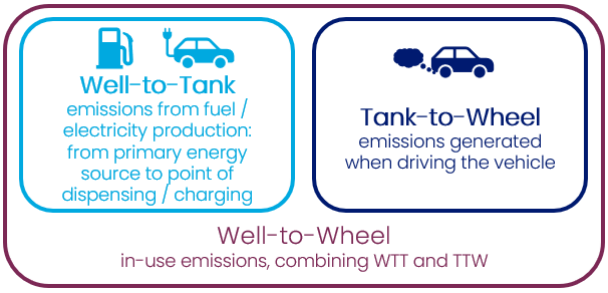
Low carbon hydrogen can be produced as a by-product from certain industrial processes such as chlor-alkali when using renewable electricity. RFAS will only approve industrial plants which derive a proportion, or all, of the electrolyser primary energy from renewable power. The carbon intensity must be calculated using the total energy consumption for the electrolyser – this may involve a combination of grid electricity and renewable electricity. The fraction of renewable electricity used to power the electrolyser shall be identified and distributed to all products produced equally.

The electrolyser energy demand, and GHG emissions, associated with the hydrogen by-product can be accounted for through an allocation procedure. This takes into consideration the environmental burden across all the end products. There are various approaches including mass (weighed average), economic, molecular and system expansion allocation methods. The renewable fuel supplier can choose an approach and provide calculations to demonstrate how the electrolyser energy use, and GHG emissions, have been allocated to each product. The calculation of GHG emissions shall account for the primary energy sources of the plant's electrolyser. The allocation method chosen cannot be changed, it must remain consistent throughout RFAS approval. The carbon intensity of electrolyser using both renewable and grey hydrogen shall be supplied in cases with mixed primary energy sources, the associated energy demand for the plant shall also be provided.

Appendix F: RFAS GHG Emissions and Company Carbon Reporting

The RFAS Renewable Fuel Declarations provide the customer with GHG emissions intensity data for the fuel supplied in gCO_2e/MJ, which may be useful in their company reporting activities. It is the customer's responsibility to ensure that they comply with company reporting requirements[10].

Figure F1: Well-to-Tank, Tank-to-Wheel and Well-to Wheel



The GHG emissions intensity of the renewable fuel, or blend, provided in the Renewable Fuel Declaration is based on a fuel lifecycle methodology. The methodology is aligned with the RTFO methodology, whereby all GHG emissions from the combustion of renewable fuels (or the renewable fuel component of a blend) are accepted as zero.

This differs slightly from the GHG Protocol methodology used in company carbon reporting, whereby the Scope 1 (vehicle in-use or Tank-to-Wheel) GHG emissions for biofuels are based on N_2O and CH_4 emissions, while CO_2 emissions are set to zero. (CO_2 from combustion is offset by the CO_2 absorbed by the biomass feedstock during growth as per Figure 2.)

Thus, the renewable fuel specific carbon intensity found on the declarations could be used to calculate the supply chain specific Well-to-Tank emissions, in lieu of the Scope 3 (WTT) company reporting emissions factor. The Scope 1 (TTW) emissions factor can be sourced from DESNZ company reporting data, updated annually.

Zemo has produced a simple calculator to help fleet operators use this data to estimate their vehicle fleet Well-to-Wheel (WTW) GHG emissions in $kgCO_2e$. The calculator uses emissions factors and LHV (Lower Heating Value) data, sourced from the company GHG reporting conversion factors published annually by the UK Government Department for Energy Security and Net Zero (DESNZ) where available. The calculator displays three values for the WTW GHG emissions ($kgCO_2e$) using:

1. RFAS declaration data only (as per RTFO methodology)
2. RFAS declaration and Scope 1 company reporting data
3. Scope 3 and Scope 1 company reporting data.

The calculator also shows the WTW GHG emissions savings compared to conventional fuels. Please visit www.zemo.org.uk/RFAS to download the latest version of the calculator and user guide (Zemo plans to update the calculator in July each year, following the publication of the DESNZ company GHG reporting conversions factors).

Disclaimer: whilst every effort has been made to ensure the accuracy of this tool, Zemo Partnership take no responsibility or liability whatsoever for the results provided.

[10] Companies should contact the relevant body (e.g. Streamline and Energy Reporting, SECR, administration team reporting@DESNZ.Gov.UK) for approval for use of alternative emissions factors.

Appendix G: Mass Balance Considerations

The following information relates to the mass balance, and supplements the requirements set out in Section 3.5.2. The purpose of the mass balance is to demonstrate that, for each batch of fuel with a specific sustainability ID, no more renewable fuel has been sold than purchased.

If the mass balance includes both red and white renewable diesel, these must be identified as such. Renewable fuel sold to markets other than road transport and NRMM should not be included in the RFAS mass balance.

Building a mass balance

The first step in preparing the mass balance is to compile an input register and an output register, listing the transaction ID, date, site, quantity, fuel type and blend, for each purchase and sale of renewable fuel. Next the RFS should decide on the mass balance reconciliation period (maximum three months). Stock readings must be taken for the opening and closing mass balances. After this, the mass balance report can be built. New RFAS applicants will receive an example mass balance spreadsheet, but should be aware that this is for guidance only, and adjustments are likely to be required depending on the format of the input data. When applying sustainability ID to transactions, RFS should use their own data-management system as the baseline and use the data already collected. Then, the RFAS data fields and sustainability IDs can be added. This own-system-first approach is more robust and minimises duplicate data handling.

The RFS shall log all fuel purchases and sales (per site) in the mass balance: each delivery received from their supplier(s) and each delivery made to their customers, even if the delivery was made by a third-party or directly by their supplier. Each sale / delivery is assigned a sustainability ID (fuel type, GHG emissions intensity and feedstock information). This can be done in bulk when the RFS receives Renewable Fuel Declarations (RFDs) from their supplier(s), and when they issue RFDs to their customers. The sustainability ID reported on the RFDs issued must align with the availability within the period it relates to.

The mass balance should show any volumes of renewable fuel purchased from non-RFAS approved suppliers (if applicable), even though Renewable Fuel Declarations cannot be issued to customers for these volumes and the volumes should not be included within the GHG and Sustainability Disclosure Reports submitted to Zemo.

Sustainability ID approach

RFS may opt to apply one of three options for the approach used in the mass balance, but must use a consistent approach from one mass balance reconciliation period to the next.

1. First-in-first-out (FIFO) approach. This is generally more straightforward and may enable a more timely issuance of RFDs, hence is the recommended approach. In this case, the sustainability ID for the opening stock is used for the RFDs for the first x customers, then the sustainability ID for next delivery of fuel received in the period is used for the next x customers, etc. First-in-first-out refers to the mass balance period as a whole: the initial batch of fuel does not have to be assigned to the customers receiving the first deliveries within the period. Customers can be assigned the same sustainability ID for the entire mass balance period, even if they received multiple deliveries. In many cases, small residual volumes with a particular sustainability ID can be allocated to deliveries to customers not receiving RFDs (where the volume sold is less than 16,000 litres or 10,000 kg). However, in some instances, it might be necessary for one customer to receive an RFD with a weighted average

GHG emissions intensity (based on the volume from each batch) and combined feedstock information. In the next period, the sustainability ID for any fuel remaining from the previous period is used first, to prevent some sustainability ID data being 'stuck' in the mass balance indefinitely.

2. Weighted average approach. For this approach, the sustainability ID for the volumes sold in the period are combined and the GHG intensity is calculated as a weighted average for all customers. Weighted average GHG intensity = (volume 1 * intensity 1 + volume 2 * intensity 2 + volume 3 * intensity 3 + … etc.) / (volume 1 + volume 2 + volume 3 + … etc.).

3. Conservative approach. For this approach, the sustainability ID for the volumes sold in the period are combined and the GHG intensity is always the highest value received within a mass balance period.

Note that the above descriptions are for a single site (a separate mass balance is required per site). Hence if a customer receives a single RFD for deliveries from multiple sites, it will be necessary to use a weighted average GHG emissions intensity (based on the volume from each site) and combine the feedstock information.

The following worked example illustrates the difference between the three approaches. Note: this example is for illustration only and does not list all of the sustainability information required.

1. First-in-first-out (FIFO) approach:
Initial stock and receipts:

- 22,000 litres (Batch 1), 15 gCO_2e/MJ, feedstock: UCO.
- 70,000 litres (Batch 2), 16 gCO_2e/MJ, feedstock: tallow.

Sales to customers:

- Customer A: 20,000 litres, declaration issued with 15 gCO_2e/MJ, feedstock: UCO (Batch 1).
- Customer B: 25,000 litres, declaration issued with 16 gCO_2e/MJ, feedstock: tallow (Batch 2).
- Customer C: 35,000 litres, declaration issued with 16 gCO_2e/MJ, feedstock: tallow (Batch 2).
- Customer D: 3,000 litres, no declaration issued as small volume.

  Notes: Customer D is assigned the remaining 2,000 litres from Batch 1 and 1,000 litres from Batch 2. If Zemo's approval were given to issue a declaration to Customer D, the declaration would be issued with a weighted average GHG intensity of 15.33 gCO_2e/MJ and feedstocks: UCO and tallow. The declarations show the total volume supplied to each customer: may be multiple deliveries. Customer A is not necessarily the first customer to receive a delivery.

Carry-over to next quarter:

- Remaining 9,000 litres (Batch 2), 16 gCO_2e/MJ, feedstock: tallow.

2. Weighted average approach:
Initial stock and receipts:

- 22,000 litres (Batch 1), 15 gCO_2e/MJ, feedstock: UCO.
- 70,000 litres (Batch 2), 16 gCO_2e/MJ, feedstock: tallow.

Weighted average calculation:

- Total volume sold is 83,000 litres.
- $\left(15 \times \frac{22{,}000}{22{,}000+61{,}000}\right) + \left(16 \times \frac{61{,}000}{22{,}000+61{,}000}\right) = 15.73$ gCO_2e/MJ
- Feedstocks: UCO and tallow

Sales to customers:

- Customer A: 20,000 litres, declaration issued with 15.73 gCO_2e/MJ, feedstocks: UCO and tallow.
- Customer B: 25,000 litres, declaration issued with 15.73 gCO_2e/MJ, feedstocks: UCO and tallow.
- Customer C: 35,000 litres, declaration issued with 15.73 gCO_2e/MJ, feedstocks: UCO and tallow.

- Customer D: 3,000 litres, no declaration issued as small volume.

Note: If Zemo's approval were given to issue a declaration to Customer D, the declaration would be issued with 15.73 gCO_2e/MJ and feedstocks: UCO and tallow.

Carry-over to next quarter:

- Remaining 9,000 litres (Batch 2), 16 gCO_2e/MJ, feedstock: tallow.

3. Conservative approach:

Initial stock and receipts:

- 22,000 litres (Batch 1), 15 gCO_2e/MJ, feedstock: UCO.
- 70,000 litres (Batch 2), 16 gCO_2e/MJ, feedstock: tallow.

Sales to customers:

- Customer A: 20,000 litres, declaration issued with 16 gCO_2e/MJ, feedstock: UCO and tallow.
- Customer B: 25,000 litres, declaration issued with 16 gCO_2e/MJ, feedstock: UCO and tallow.
- Customer C: 35,000 litres, declaration issued with 16 gCO_2e/MJ, feedstock: UCO and tallow.
- Customer D: 3,000 litres, no declaration issued as small volume.

Note: If Zemo's approval were given to issue a declaration to Customer D, the declaration would be issued with 16 gCO_2e/MJ and feedstocks: UCO and tallow.

Carry-over to next quarter:

- Remaining 9,000 litres (Batch 2), 16 gCO_2e/MJ, feedstock: tallow.

Table G1: Sustainability ID approaches in mass balance

Approach	GHG intensity	Feedstock details	Complexity	Remaining stock	Content
First-in-first-out	Varies by batch	Batch based	High	Remaining batch(es)	Best for detailed tracking and compliance
Weighted average	Uniform	Combined	Medium	Combined batch	Balances simplicity with accuracy
Conservative	Uniform	Combined	Low	Combined batch	Easiest to implement but may inflate GHG reporting

Standard versus bulk or measured litres

Category A suppliers of liquid fuels typically use 'standard litres' (the fuel volume in litres at 15°C) as the units in their mass balance, as this is the volume reported under national quotas. For Category B suppliers of liquid fuels, it is often more practical to use 'bulk' litres' (the fuel volume at the temperature when the volumetric measurement is made). If using measured litres when issuing RFDs, Category B suppliers receiving RFDs in standard litres from Category A suppliers, must align the incoming RFDs with loading receipts or similar in their mass balance, to minimise the deviations from fuel-in to fuel-out due to the difference in units. If they do not have a loading receipt, they should contact their Category A supplier to request the volume in bulk litres (this can be provided alongside the RFD). When issuing RFDs, all renewable fuel suppliers of liquid fuels (excluding biomethane) must specify whether the volume recorded is in 'litres (measured)' or 'litres (standard at 15°C)'. The units must also be specified in the mass balance: some suppliers may need to include the volumes in both standard and measured litres to align with the RFDs and other incoming and sales documentation.

Renewable diesel with 98 or 99% renewable content

In some cases (due to taxation laws in the USA) renewable diesel has 98 or 99% renewable content, rather than 100%. RFS approved to supply 100% renewable diesel may supply this fuel without applying to Zemo for a change to their approval. (Note: RFS are not permitted to create a blend, or supply renewable diesel blends with less than 95% renewable content, unless their approval documents specifically show this.) Any fuel batches less than 100% renewable content must be properly accounted for in the mass balance and Renewable Fuel Declarations. Category A suppliers should issue declarations stating the actual renewable fuel percentage in the blend. The recommended approach for Category B suppliers, is to show the blend in their mass balance and use this on the corresponding declarations issued. However, if this is impractical (e.g. where the fuel is mixed in a tank containing 100% renewable diesel and a weighted average approach is used for determining the GHG emissions intensity) the RFS should adjust the volumes to compensate. This approach can only be used if there are sufficient volumes of renewable diesel for the customers issued with declarations. The following worked example illustrates the difference between the two approaches.

1. Recommended approach:

Initial stock and receipts:

- 62,000 litres (Batch 1), 99.0% renewable diesel.
- 40,000 litres (Batch 2), 100% renewable diesel.

Entry in mass balance:

- 62,000 litres (Batch 1), 99.0% renewable diesel.
- 40,000 litres (Batch 2), 100% renewable diesel.

Sales to customers:

- Customer A: 35,000 litres, declaration issued with 99.0% renewable diesel (Batch 1).
- Customer B: 25,000 litres, declaration issued with 99.0% renewable diesel (Batch 1).
- Customer C: 40,000 litres, declaration issued with 100% renewable diesel (Batch 2).
- Customer D: 2,000 litres, no declaration issued as small volume.

  Note: Customer D is assigned the remaining 2,000 litres from Batch 1. If Zemo's approval were given to issue a declaration to Customer D, the declaration would be issued with 99.0% renewable diesel.

2. Alternative approach:

Initial stock and receipts:

- 62,000 litres (Batch 1), 99.0% renewable diesel.
- 40,000 litres (Batch 2), 100% renewable diesel.

Entry in mass balance:

- 61,380 litres (Batch 1), 100% renewable diesel.
- 40,000 litres (Batch 2), 100% renewable diesel.

  Notes: 99% x 62,000 = 61,380. The input register should record 2 consecutive entries for Batch 1: 61,380 litres of 100% renewable diesel and 620 litres of fossil diesel, to allow alignment with supplier invoices and documentation.

Sales to customers:

- Customer A: 35,000 litres, declaration issued with 100% renewable diesel.
- Customer B: 25,000 litres, declaration issued with 100% renewable diesel.
- Customer C: 40,000 litres, declaration issued with 100% renewable diesel.
- Customer D: 2,000 litres, no declaration issued as small volume.

  Note: in this case Customer D cannot receive a declaration (even if the RFS has sought Zemo's permission to issue declarations for small volumes) because there is insufficient renewable diesel to cover the volume purchased.

Appendix H: Terms and Conditions

The RFS agrees to the following Terms of Reference:

1) Acknowledges and agrees with the general obligations and responsibilities for participation in the RFAS, as stipulated in the RFAS Technical Guidance Document including appendices. This includes annual payment of RFAS participation fee.

2) Agrees to conform to all applicable requirements and contractual obligations, corrective actions and related data requests within the RFAS scope.

3) Acknowledges and agrees to provide records as requested by the RFAS and the appointed auditor to demonstrate compliance with the scheme.

4) Commits to and agrees that the quantities of renewable fuel covered by the scheme have only been accounted for under one initiative scheme.

5) Acknowledges and agrees that the Zemo Partnership and RFAS names and logos will not be used:
   - In a way that could cause confusion, misinterpretation, or loss of credibility.
   - In a way that implies Zemo Partnership endorses, participates in, or is responsible for activities performed by the Company, outside the scope of RFAS.

6) Acknowledges and agrees that suspension of RFAS participation may occur if:
   - Renewable fuels covered and systems are not in compliance with the Renewable Fuel Performance Standard.
   - Evidence of misuse and/or fraudulent behaviour regarding RFAS requirements is detected.
   - It fails to provide the documents required for ongoing monitoring.

Appendix I: Definitions

Batch: Specific amount of material with the same sustainability characteristics within a mass balance period.

Feedstock: Raw material used to produce renewable fuel. Approved feedstocks under this scheme are aligned with the RTFO[11] (or applicable national quota if preferred).

HVO: Hydrotreated vegetable oil is a renewable diesel, made by the hydrotreatment of vegetable oils or other lipids. HVO can be referred to as renewable diesel, but not all renewable diesel should be described as HVO.

Mass balance: Monitoring system to ensure renewable fuel quantities are controlled. Please refer to RTFO Guidance 2 Section 8 for a detailed explanation.

Non-Road Mobile Machinery (NRMM): Defined by the RTFO as any vehicle which falls within the scope of Regulation (EU) 2016/1628 and includes any mobile generator, machinery (including construction and loading vehicles), tractor, rail vehicle, inland waterways vessel (excluding ferries) or inshore pleasure craft (that does not need a maritime safety certificate) which makes use of an internal combustion engine. Mobile generators are only considered NRMM if they are truly mobile and are regularly moved (rather than simply "moveable").

Organisation: The person or legal entity applying for compliance with RFAS.

Renewable Diesel: Renewable paraffinic diesel, including HVO.

Renewable Fuel: A fuel from a source that is either inexhaustible or can be indefinitely replenished at the rate at which it is used. For the purposes of this document, it refers to biofuels, advanced fuels and renewable fuels from non-biological origin (RFNBOs).

Renewable Fuels of Non-Biological Origin (RFNBOs): A type of renewable fuel where all the energy of the fuel comes from the input process energy (with no feedstock energy), and all of this process energy is from renewable sources other than bioenergy. A partially renewable fuel is one where part of the energy content of the fuel is from renewable sources and part is from non-renewable sources. Wholly and partially renewable fuels can be either liquid or gaseous.

Renewable Supplier Identifier: This is a unique reference number linked to one operator, traceable to a validity status under a certification or a scheme.

Renewable Transport Fuel Certificates (RTFC): Obligated fuel suppliers under the RTFO are required to redeem a number of RTFCs in proportion to the volume of fossil fuel and unsustainable renewable fuels they supply. RTFCs may be earned by any company supplying sustainable renewable fuels. They may also be bought or sold on an open market.

Renewable Transport Fuel Obligation (RTFO): UK Government's low carbon fuel policy for reducing greenhouse gas (GHG) emissions from road transport.

Site: One geographical location with precise boundaries within which products can be mixed.

Supplier: An individual, company or other legal entity providing feedstocks or low carbon fuels to an organisation.

Sustainability ID: The sustainability information relating to a batch of renewable fuel, including GHG emissions intensity, feedstocks, countries of origin and production.

[11] https://www.gov.uk/government/publications/rtfo-and-saf-mandate-feedstock-materials-used-for-creating-low-carbon-fuels