Granular Energy GC Scheme Protocol

This document aims to describe the Granular Certificate (GC) Scheme protocol of the Issuer Granular Energy. It enables assessment with a view of becoming accepted as an EnergyTag Compliant Granular Certificate Issuer by proving compliance with the EnergyTag Granular Certificate Scheme Standard.

Identification

GC Issuer	Granular Energy
Address	229 rue Saint Honoré, 75001 Paris, France
Contact	bruno@granular-energy.com
Geographic Coverage	UK and EU countries with AIB-accredited EAC registry
Certificate Type	Config 3 Granular Certificates
Energy Carriers/Technology	Electricity; Renewable (wind, solar PV, etc.)

Granular Energy's GC Scheme Overview

Functional Overview

- **Foundation on Cancelled EACs:** The scheme's integrity is built upon the use of EACs (GOs in Europe or REGOs in the UK) that have already been cancelled in their respective official registries. This ensures that the primary environmental attribute has been claimed and the EAC is retired from further circulation.
- **Supplier's Role (Client & Measurement Body):**
    - Energy suppliers are Granular Energy's primary clients and play a crucial role. They provide the details of these cancelled EACs.
    - The supplier is also designated as the Measurement Body for both the (sub)hourly production data from generation assets and the (sub)hourly consumption data for the end consumers. Importantly, because suppliers perform the role of the Measurement Body it is necessary to create a GC scheme for each supplier that wants to issue GCs.
    - Suppliers are contractually obligated to ensure the accuracy and integrity of this metering data and the validity of the EAC cancellation information they provide.
- **Data Linkage via `AllocationVolume`:**
    - **The Granular Energy platform combines metering data (production and consumption) along with EAC data to create "Allocations" of production (either EAC only or an EAC enriched with production metering data) to a consumer's consumption.**
    - The Granular Energy platform utilises an `AllocationVolume` database entity. This entity is central to Granular Energy's GC process - a single AllocationVolume with a "cancelled" status represents a single GC.
    - Each `AllocationVolume` representing a GC covers a single sub(hourly) timestep and a variable volume of energy.
    - Each `AllocationVolume` serves to link:
        - (Sub)hourly metered production data from a specific generation device for a specific timestamp.
        - (Sub)hourly metered consumption data for an end consumer for a specific timestamp.
        - The corresponding details of the cancelled EAC(s) that the supplier has allocated to this production and consumption.
- **GC Issuance and Immediate Cancellation:**
    - A Granular Certificate (GC) within this scheme is considered issued at the point when an `AllocationVolume`'s status is set to "executed". This "executed" status signifies that the linkage between the granular meter data and the cancelled EAC is finalised.
    - Crucially, in adherence with EnergyTag Config 3, the GCs that are represented by this "executed" `AllocationVolume` are **immediately and automatically cancelled upon issuance**.
    - The beneficiary of this GC issuance and cancellation is identical to the beneficiary named on the underlying cancelled EAC. Typically, this will be the energy supplier, who can then use this granular information for their reporting to the end consumer. If an EAC was cancelled in the name of the end consumer, the GC will reflect this.
- **Non-Transferability:** GCs issued under Granular Energy's Config 3 scheme are non-transferable by design, further ensuring they cannot be double-counted or create parallel claims.
- **Audit Trail:** Each GC (represented by the "executed" `AllocationVolume`) carries a unique identifier and is linked to the unique identifiers of the underlying cancelled EACs, creating a clear and auditable trail from the granular claim back to the original EAC.

- **Geographic Scope:** Initially, the scheme will focus on the UK and AIB countries, leveraging REGO and GO EACs respectively.
- **Exclusion of Storage:** For the initial accreditation, energy storage functionalities are explicitly excluded from the scope.

The above approach allows Granular Energy to provide a robust and verifiable system for time-stamped energy claims, layering additional temporal detail onto the established and legally recognised EAC frameworks without creating new, tradable environmental assets.

Legal/regulatory Framework

Description of (interaction with) legal framework for energy certificates

- Granular Energy's Config 3 GC scheme operates by leveraging existing, legally recognized Energy Attribute Certificate (EAC) systems:
    - In Europe, this involves EECS-accredited Guarantees of Origin (GOs) as defined under European Directive 2018/2001/EC and transposed into national laws. The EECS programme is managed by the Association of Issuing Bodies (AIB).
    - In the UK, these are Renewable Energy Guarantees of Origin (REGO). The REGO scheme is managed by Ofgem.
- Our GCs are derived from these *cancelled* EACs. The legal basis of the underlying EAC (e.g., its validity for renewable energy claims under specific legislation) is the foundation for Granular Energy's GCs. Granular Energy does not create a parallel legal instrument but provides additional temporal granularity to claims already substantiated by an existing EAC cancellation.

How does the interaction with the legal framework avoid double counting?

- Double counting is avoided because Config 3 GCs are only issued against *already cancelled* EACs for a specific, named beneficiary. The GCs themselves are then immediately cancelled for the *same* beneficiary.
- Each GC issued by Granular Energy carries a unique ID that is linked to the unique ID or ID ranges of the underlying cancelled EAC(s). This creates a clear audit trail.
- The process ensures that the energy attributes from the original EAC are claimed only once by the designated beneficiary, with our GCs merely adding the (sub)hourly time dimension to that claim.
- The EnergyTag standard requires that for Config 3, an agreement is in place with the EAC Account Holder specifying that no other claim is made using the EACs for which GCs are being issued, for any other beneficiary than the one of the GCs. Granular Energy will implement this via supplier GC terms.

Known areas for further improvement

Area for Further Improvement	Intended Implementation Timeline
Greater direct integration or API access with national EAC registries to streamline the verification of EAC cancellation details.	Ongoing effort. Dependent on the capabilities and willingness of individual registry operators. Granular Energy will pursue these opportunities as they arise.
Standardization of EAC cancellation statements across different registries to	Longer-term goal. Granular Energy will support this through industry collaboration and advocacy.

consistently and clearly identify the ultimate beneficiary.	The timeline is not solely within Granular Energy's control.
Enhanced clarity in legal frameworks regarding the explicit recognition of granular (sub-hourly) claims, even when based on existing EACs.	Longer-term goal. Granular Energy will support this through industry collaboration and advocacy. The timeline is not solely within Granular Energy's control.

Purpose of the Certificate System

This scheme is designed to provide enhanced temporal granularity to energy attribute claims by linking (sub)hourly energy data with existing, cancelled Energy Attribute Certificates (EACs). The core objective is to enable consumers to make verifiable claims about the time-specific origin of their energy consumption.

The second order purpose of Granular Energy's GC scheme is to incentivise the creation of energy production or the reduction of demand at times when there is a deficit of renewable energy on the grid at a specific point in time.

Market set-up and level of market liberalization

- **Market Description:**
  - Granular Energy's GC scheme operates within existing liberalised electricity markets in the UK and AIB countries where EACs (REGOs in the UK, GOs in AIB countries) are established.
  - The purchase of GCs is voluntary, and the market design complies with wider contract law in the chosen jurisdictions and the regulations of the overarching EAC schemes.
  - Our system primarily serves energy suppliers who wish to offer their end-consumers temporally matched energy claims.
  - Under Granular Energy's Config 3 approach, GCs are cancelled immediately upon issuance with the supplier (or their designated consumer) as the beneficiary; these GCs are non-transferable.
- **Support of Trustworthiness and Double Counting Avoidance by Market Model:**
  - Yes, the market model supports the certificate system's trustworthiness and avoidance of double counting.
  - The reliance on established, often regulated or independently audited, EAC systems as the foundation provides inherent trustworthiness.
  - The Config 3 mechanism – using *cancelled* EACs as input and immediately cancelling the resultant GCs for the *same* beneficiary – directly prevents double counting of energy attributes
  - The non-transferable nature of Config 3 GCs further limits opportunities for fraudulent reuse or double claiming.
- **Harmonisation of GC Schemes with Interconnected Markets:**
  - Granular Energy's GCs are designed for use within the UK and AIB countries, leveraging the existing harmonisation of EACs (REGOs and AIB-member GOs) within these interconnected markets.

    - The GCs primarily add temporal granularity to attributes already defined by the underlying EACs.
    - The EnergyTag standard itself, to which this scheme adheres, promotes a base level of harmonisation for GC schemes.
    - Granular Energy's GCs are not intended for transfer or cross-scheme recognition beyond the foundational reliance on the underlying EAC.
- **Linkage with Public/Financial Support Systems:**
    - Granular Energy's Config 3 GCs are not designed to directly access or qualify for public financial support systems (e.g., feed-in tariffs, subsidies).
    - The primary purpose of these GCs is for disclosure and making credible temporal energy claims.
    - Granular Energy's GCs will not be used to receive public support.
- **Avoidance of Cross-Purpose Double Counting through Certificate/Market Design:**
    - Cross-purpose double counting is avoided by the rules governing the underlying EAC scheme, which dictate how EACs can be used in relation to support mechanisms and disclosure.
    - EnergyTag Config 3 builds on this by tying the GC to a *cancelled* EAC for a single, specific beneficiary and a specific claim (disclosure of origin).
    - The immediate cancellation of the GC for this same beneficiary prevents its use for any other purpose or by any other party.
    - Agreements with EAC Account Holders will stipulate that no other claim is made using the EACs for which GCs are being issued, for any other beneficiary than the one of the GCs.

GC Scheme Configuration

Underlying EAC System Description

- Granular Energy's Configuration 3 GC scheme operates upon established Energy Attribute Certificate (EAC) systems.
- In scope EACs include Guarantees of Origin (GOs) in Europe's AIB region and Renewable Energy Guarantees of Origin (REGO) in the UK. Additional geographic regions may be persuaded in the future, but these are out of scope for this accreditation.
- Avoidance of double counting within the EAC system is ensured by the fundamental technical and legal design of the registries. Specifically:
    - **Unique Identification:** Each EAC possesses a unique serial number for individual tracking.
    - **Centralized Registries:** Electronic registries manage the lifecycle (issuance, transfer, cancellation) of EACs, providing an audit trail.
    - **Definitive Cancellation:** Cancellation permanently removes an EAC from circulation, preventing its re-transfer or reuse.
    - **Exclusive Issuance:** Designated Issuing Bodies have exclusive authority to issue a specific EAC type within their domain for a given MWh, preventing issuance of multiple EAC types for the same energy for identical claims.
- Specific third-party audits and approval dates pertain to individual EAC schemes and their Issuing Bodies, not directly to Granular Energy. Granular Energy relies on the established credibility and oversight of these recognized underlying EAC systems. For example:
    - European GO Issuing Bodies/AIB members undergo audits (e.g. Production Audits) under EECS rules.
    - UK REGO guidelines require suppliers to retain records for audit purposes and REGOs can be revoked if metering data is determined to be inaccurate during an audit.

Granular Energy's GC Scheme Configuration and EAC System Interaction

- Granular Energy implements an EnergyTag Configuration 3 GC scheme.
- The process uses *already cancelled* EACs as its foundation. Clients (energy suppliers) provide details of EACs they have *cancelled for* a specific beneficiary.
- The Granular Energy platform hosts `AllocationVolume` database entities, linking:
    - Metered (sub)hourly production data.
    - Metered (sub)hourly consumption data.
    - Details of the corresponding *cancelled* monthly EACs.
- GCs are effectively issued and *simultaneously cancelled* when the `AllocationVolume` status is set to "executed" (i.e., when *cancelled* EACs are processed and linked).
- The beneficiary of this GC issuance and cancellation is identical to the beneficiary on the underlying *cancelled* EAC.
- Granular Energy's Config 3 GCs are non-transferable by design.

Configuration-Specific Requirements: Agreements and IT

- **Necessary Agreements:**

    - Primary agreements are with clients (energy suppliers/EAC Account Holders).
    - These "Supplier GC terms" will confirm EAC cancellation validity, designate Granular Energy as the sole GC issuer for those EACs, and affirm no other claims will be made against them for different beneficiaries.
    - Agreements will also cover supplier responsibilities as a Measurement Body, including the requirement that suppliers comply with audit requests from Granular Energy, at the discretion of Granular Energy. These audits may be run by either Granular Energy or an external third party with relevant credentials.
- **EAC Evolution into GC:**
    - This is not applicable; Config 3 uses outputs from distinct, existing EAC systems.
- **IT Connection GC-EAC Functionality:**
    - Config 3 does not require a push/pull API data integration between GC and EAC registries. The Granular Energy GC system instead relies on CSV uploads of EACs that have already been cancelled.
    - Interaction involves ingesting data of *already cancelled* EACs, typically client-provided (either via CSV uploads or via Granular Energy's certificate ingestion APIs).
    - The Granular Energy system links this EAC data to granular meter data, creating and cancelling the GCs internally. The Granular Energy platform's integrity checks ensures no reuse of a cancelled EAC for multiple GC issuances within our platform.

Interaction with Other Certificate Systems & Exclusivity

- **Exclusivity of GC and Related EAC Systems:**
    - **EAC Systems:** Underlying EAC Issuing Bodies in the UK and AIB regions hold exclusivity for EAC issuance and cancellation within their domains.
    - **Granular Energy GCs:** Our GCs are derivative; we do *not* issue EACs. GC issuance builds upon cancelled EACs from these exclusive systems. GC cancellation is an internal process aligning with Config 3 rules.
- **Other Certificate Systems in Domain:**
    - Operations are within established EAC frameworks (i.e., AIB GOs, UK REGOs). We do not engage with unofficial or duplicative EAC systems for EnergyTag GC issuance.
    - If and when existing EAC issuers move to a (sub)hourly GC system, Granular Energy's GC scheme will be retired in favour of the official scheme.
- **Supervisory Authorities for Energy Source Disclosure:**
    - The jurisdictions Granular Energy's GCs will be operating in have authorities overseeing energy disclosure within the EAC system.
- **Informing Authorities of GC Cancellations:**
    - Supervisory authorities track the *underlying EAC cancellation* in official registries, which substantiates the primary attribute claim.
    - Granular Energy's Config 3 GC creation and cancellation occur *subsequent* to this official EAC cancellation, adding temporal detail for the *same* beneficiary's claim.
    - Reporting of Granular Energy's individual GC cancellations to these authorities is not part of the Granular Energy GC issuance process, as GCs are voluntary instruments building upon official EAC actions.
    - The GC beneficiary is responsible for using the GC data to substantiate specific (sub)hourly claims in their disclosures, supported by Granular Energy's audit trail. We will cooperate with clients to provide necessary information to authorities if required.

Governance and Role Allocation

Role Descriptions & Liabilities

- **GC Issuer:** Granular Energy SAS is the designated GC Issuer. Granular Energy administers the GCs (represented by `AllocationVolume` entities) and their lifecycle, from creation based on linked cancelled EACs and meter data to immediate cancellation.
- **GC Registry Operator:** Granular Energy SAS also acts as the GC Registry Operator, managing the database for `AllocationVolume` (GC) records, linked EAC details, and associated production/consumption data. As the registry operator, Granular Energy SAS is responsible for the maintenance of GC record integrity.
- **Production Registrar:** Granular Energy SAS undertakes Production Registrar responsibilities, managing how production device information (from cancelled EACs and supplier inputs) is linked with GCs.
- **Measurement Body (Production & Consumption):** The energy supplier (Granular Energy's client) is the designated Measurement Body for both production and consumption data, responsible for its accuracy and reporting. Supplier-specific contracts with Granular Energy will enforce these responsibilities. Additionally, the energy supplier is responsible for providing the records of the underlying cancelled EACs for GC derivation. Energy suppliers must comply with data sampling audits of both metering data and cancelled EACs at Granular Energy's discretion. These data sampling audits may be run by Granular Energy or an external third party with relevant credentials.
- **Authorised Data Collector:** *the public or private entity responsible for collecting metering data from metering points. This may be* ***a DSO/TSO (distribution/transmission system operator) or a licensed metering data management entity****. Data from the authorised data collector is used during annual audits*.
- **Account Holder:** The primary "Account Holder" for GCs in Granular Energy's Config 3 model is the energy supplier. GCs are issued and immediately cancelled for this beneficiary (or their specified end consumer, in the limited situations where an end consumer is named as the beneficiary of a cancelled EAC). Traditional GC account transfer functions are not applicable due to the non-transferable nature of Config 3 GCs.
- **EAC Issuing Body:** This role is external, fulfilled by existing national/regional EAC Issuing Bodies. Granular Energy uses the outputs (cancelled EACs) from these bodies.
- **Production Device Inspections:** Granular Energy does not directly conduct production device inspections, relying on underlying EAC scheme processes and supplier attestations.
- **Claim Verify:** Formal external verifications for GCs depends on market/regulatory specifics. The supplier and end-consumer are responsible for final claims based on Granular Energy's data.

Interaction of Roles and System Trust

Trust is established through:

- Reliance on established EAC Issuing Bodies for foundational, verified EACs.
- Contractual frameworks defining supplier responsibilities as the Measurement Body, including data accuracy accountability.
- Transparent GC issuance linked to client-provided cancelled EACs and meter data, with traceable unique IDs.
- Immediate cancellation of non-transferable Config 3 GCs for the identical EAC beneficiary, preventing GC misuse.

- The requirement for suppliers acting as Measurement Bodies to submit to data sampling audits to verify data accuracy.

Issuer Independence from Commercial Interests in Trading and Producing Certificates

- **Ownership Structure of Granular Energy:**
  - Granular Energy is a private company, with legal entities in the UK and France. Our financial backers include leading VCs such as Seedcamp and Powerhouse Ventures.
- **Integrity and Independence of Issuer:**
  - Granular Energy, as GC Issuer, is independent of energy production and the issuance of underlying EACs (performed by official Issuing Bodies).Granular Energy's commercial focus is its software platform and services for granular energy tracking, including Config 3 GC issuance. Granular Energy also does not trade EACs and is not a market participant.
  - As Config 3 GCs are non-transferable and immediately cancelled, Granular Energy does not engage in or benefit from their trading. Any trading of underlying EACs is external to Granular Energy's GC issuance role.
  - The role as a technology/service provider, combined with the non-tradable nature of Config 3 GCs, ensures independence from the production, trade, and supply of GCs themselves.

Liability Framework

- **Issuer's Liability (Granular Energy):**
  - Granular Energy's liability focuses on the correct platform operation for GC issuance and immediate cancellation per Config 3 and EnergyTag standards.
  - This includes maintaining GC record integrity (unique IDs, EAC links) and issuing GCs only from valid client-provided inputs.
  - As Config 3 GCs lack market value distinct from the claim they support, "loss of certificate value" in a trading sense is not applicable. Value lies in claim credibility.
- **Account Holders' Liability (Primarily Energy Suppliers):**
  - The energy supplier (client and often Measurement Body) is liable for:
    - Accuracy and validity of provided cancelled EAC information.
    - Accuracy and integrity of provided (sub)hourly production and consumption meter data.
    - Rights to use specified EACs for GC derivation for the stated beneficiary.
    - Compliance with applicable regulations regarding their energy supply, claims, and data.
    - Adherence to contractual terms with Granular Energy, including Measurement Body obligations.

Granular certificate issuing

Production registration

- When enrolled in our GC scheme, the supplier provides Granular Energy with necessary production device metadata, as defined in EnergyTag's Config 3 requirements.
- Critically, each production asset must have at least one metering point with a unique identifiifier.
- A production device's metadata is linked to an `AllocationVolume` in the Granular Energy relational database.

Metering data provision

- Measurement data is reported through the following channels:
    - Secure API connections
    - Structured CSV data imports
- **Issuance only for Net (of auxiliaries) energy production**
    - In alignment with the underlying EAC systems, Granular Energy's GC scheme only issues certificates for net energy production
    - Supplier agreements explicitly require that all provided metering data represents net energy production values
- **Process of measurement registration ensures the correct volumes to be measured**
    - Our measurement registration process relies on suppliers' established metering infrastructure. Suppliers are contractually required to:
        - Implement appropriate verification procedures
        - Maintain calibrated meters
    - Suppliers are required to submit to data sampling audits, at Granular Energy' discretion:
        - Validate reported volumes against expected production patterns
        - Verify alignment with underlying EAC values
        - Identify potential discrepancies
    - The Granular Energy platform implements automated validation rules that check for:
        - Completeness of metering data
        - Alignment between EAC and production metering data volumes
    - Anomalies trigger validation checks which prevent (i) the upload of incomplete data and (ii) the creation of finalised `AllocationVolume` entities where EAC volumes do not match production metering data volumes

Verification of energy source

- **Reliable process in place to ensure the verification of the energy source**
    - Energy source verification relies on:
        - The underlying EAC system's validation processes
        - Cross-checking production patterns against typical generation profiles for the claimed technology
        - Requiring suppliers to maintain documentation of physical inspections
        - Periodic random verification of production assets through third-party services
- **In case of biomass/biogas: fraud-proofness mechanisms for energy source reporting**

    - For biomass/biogas sources, as the Measurement Body a supplier is required to provide additional evidence including:
        - Tracking of fuel input quantities and characteristics
        - Documentation of fuel supply chain
        - Regular independent audits of biomass/biogas procurement processes
        - Cross-verification with regulatory compliance reports
- **Type of energy eligible for GC issuing**
    - All types of renewable electricity generation technologies are eligible, including:
        - Solar PV
        - Wind (onshore and offshore)
        - Hydropower
        - Geothermal
        - Biomass/biogas (subject to additional verification)
        - Marine energy (tidal, wave)

Double Counting Avoidance within the GC Scheme

Issuance and Double Counting Avoidance

- **Configuration Description and Issuance Process:**
  - Granular Energy operates under EnergyTag Config 3. GCs (represented as `AllocationVolume` entities within the Granular Energy platform) are issued exclusively based on evidence of previously cancelled Energy Attribute Certificates (EACs).
  - Issuance occurs when a client (typically an energy supplier) provides details of cancelled EACs, which are then linked to corresponding (sub)hourly production and consumption data within an `AllocationVolume`. This `AllocationVolume` then has its status set to "executed", signifying GC issuance.
  - The temporal granularity of each GC will be specific to the scheme, based on the agreed granularity of the metering data. Typically, this will be either 15m, 30m, or 1h granularity.
  - Each `AllocationVolume` (GC) is linked to specific cancelled EAC unique identifiers, ensuring a direct tie-back to an attribute that has already been claimed and removed from circulation in the primary EAC system.
  - A GC can only be issued for the same period for which the associated EAC has been cancelled.
  - The volume of GCs issued for a given period will not exceed the volume of the corresponding cancelled EACs backing them.
  - GC issuance only takes place for energy production attributes that are not otherwise claimed or marketed, as they are derived from EACs already cancelled for a specific beneficiary.

Transfer of Ownership Facilitation

- **Unique Ownership Registration of Every Certificate:**
  - Config 3 GCs issued by Granular Energy are **non-transferable** as per the EnergyTag Standard (requirement 1.2.48).
  - Ownership is established at the point of issuance (when the `AllocationVolume` status is set to "executed") and is tied to the beneficiary named on the underlying cancelled EAC. As GCs are immediately cancelled, ownership is effectively fixed and terminal.
- **Visualisation of Ownership:**
  - The ownership of a GC is aligned with the beneficiary of the EAC which in most cases is the supplier. The link between the GC (represented by a cancelled `AllocationVolume`) and the supplier is clear, because the cancelled `AllocationVolume` is stored in a supplier-specific Postgres database schema.
  - Given immediate cancellation and non-transferability, complex visualisation of ongoing ownership or transfer history is not applicable. The record shows the final beneficiary for whom the granular attributes are claimed.
- **IT Set-up for Avoiding Duplication During Transfer:**
  - Not applicable, as Config 3 GCs are non-transferable.
- **International Transfer, Cross-Registry Transfer:**
  - Not applicable for Granular Energy's Config 3 GCs, which are non-transferable. The underlying EACs may have been subject to international transfer before their cancellation, according to the rules of their respective EAC schemes.

- **Reach of Transfer and Control:**
  - Not applicable, as Config 3 GCs are non-transferable.
- **Money-Laundering and Tax Fraud Prevention (in relation to transfer):**
  - Risks associated with certificate transfer for money laundering or tax fraud are inherently minimised for the GCs themselves, as they are non-transferable.

Cancellation

- **Unique Registration of Cancellation of Every Certificate:**
  - Granular Energy's Config 3 GCs are **immediately cancelled upon issuance**.
  - An `AllocationVolume` status can be:
    - `draft`,
    - `pending` – before a cancelled certificate has been uploaded
    - `executed` – after a cancelled certificate has been uploaded
  - The act of setting the `AllocationVolume` status to "executed" signifies both issuance and simultaneous cancellation for the designated beneficiary.
  - Each `AllocationVolume` has a unique immutable ID, ensuring the unique registration of its creation and cancelled status.
- **Unique Visualisation of Allocating a GC Cancellation to a Beneficiary:**
  - The `AllocationVolume` record clearly links the (sub)hourly data, the underlying cancelled EAC(s), and the beneficiary for whom the GC is cancelled.
  - The beneficiary is the same as the one stated in the EAC cancellation statement, ensuring a unique and unambiguous allocation for the granular claim.
- **Cancellation for Usage in Another Domain:**
  - Config 3 GCs are non-transferable and are cancelled for a specific beneficiary within the Granular Energy system. They are not "transferred" for cancellation in another domain in the way tradable certificates might be.
  - The claim associated with the cancelled GC is specific to the consumption and beneficiary details recorded. Transparency is maintained through the audit trail linking the GC to the original EAC cancellation.

Expiry and Validity

- **Description of Expiry Rule for GC:**
  - As Granular Energy's Config 3 GCs are cancelled immediately upon issuance, they do not have a "validity period" during which they can be traded or held before cancellation. Their lifecycle is effectively instantaneous from issuance to cancellation for a claim.
- **GCs Expire in Accordance with the Standard:**
  - The EnergyTag Standard requirement (1.7.1) that GCs shall not be valid longer than their underlying EACs is met because the GCs are based on already cancelled EACs and are themselves immediately cancelled.
  - The underlying EAC would have been subject to its own validity and expiry rules within its native scheme prior to its cancellation. Our GCs adopt the attributes of an EAC that was valid at the time of its cancellation.
  - Records relating to issued and cancelled GCs (`AllocationVolume` data) will be retained for a minimum of 5 years after their cancellation, or longer if required by stakeholders (aligning with EnergyTag standard 1.7.3).
- **GCs Expire No Later than the Expiry Date of the Underlying EACs:**

- This is inherently met. Since GCs are created from EACs that are already cancelled (i.e., have already been used within their validity period or at their point of expiry for cancellation), the GCs themselves are not subject to a separate, forward-looking expiry date post-issuance.

GC Attributes

- **List and Description of Attributes on GCs:**
  - Granular Energy's GCs (represented by `AllocationVolume` entities) will, at a minimum, contain references to mandatory attributes specified in section 1.3 of the EnergyTag GC Scheme Standard. These include, but are not limited to:
    - Unique GC identification number (from the `AllocationVolume` UUID).
    - Production/storage discharge interval start timestamp (UTC) and duration (i.e. 15M, 30M, 60M).
    - GC issuance date: the datetime `AllocationVolume` status is set to "executed" (2025-07-08T14:30:00+02:00 – in this example +02:00 represents the offset that is used to describe the difference in hours and minutes between a particular time zone and UTC)
    - Technology of produced energy (e.g., wind, solar).
    - Name of the Production Device.
    - Unique ID of the Production Device.
    - Capacity of the Production Device.
    - Country/region of issuance.
    - Geographical location of the Production Device.
    - Commercial operating data of Production Device
    - Reference to the underlying cancelled EAC(s).
    - References to any certificate labels or schemes the underlying EAC is associated with (see C3.5.4 in EECS rules for details of the AIB description of labels)
    - Beneficiary of the cancelled GC (i.e. the supplier)
    - Indication of the GC Scheme Config 3.
  - Other attributes which are unchanged across all of Granular Energy's GCs will be described in the schema's process documentation:
    - Energy carrier (electricity).
    - Face value (volume of energy in Wh, rounded down).
    - Identity of the GC Issuer (Granular Energy SAS).
    - Indication if issued from production or storage (currently excluding storage from scope).
  - Energy unit will be kWh with 3 decimal places (i.e. at Wh precision) (EnergyTag standard 1.3.16, 1.3.18).
- **Mandatory Attributes Availability:**
  - All attributes required by the EnergyTag Standard (section 1.3) are available on Granular Energy GCs, either directly replicated from the underlying EAC or supplemented by data from the supplier or Granular Energy's system via relationship database foreign key links (e.g., GC issuance date, GC unique ID).
- **GC Immutability:**
  - Once an `AllocationVolume` (GC) is set to "executed" (i.e., issued and simultaneously cancelled), its core attributes as listed above are immutable. No database-level changes to finalised, accredited allocations will be permitted that would alter these attributes.
- **Replication of Underlying EAC Attributes:**

  - GCs issued by Granular Energy will replicate all relevant attributes found on the underlying cancelled EACs to ensure consistency and traceability. This data will be stored directly on the `AllocationVolume` that represents a GC or via relational database foreign key links. This includes technology, production device details, etc.
- **UTC Time Zone for Production Timestamp:**
  - All production and consumption timestamps associated with GCs on the Granular Energy platform, including the start and end of the (sub)hourly production interval, are expressed in UTC (Coordinated Universal Time) with offset, aligning with EnergyTag standard 1.4.1.

Double Claim Avoidance – Disclosure Framework

- **Prevention of Multiple Claims for Same Attributes:**
  - Double claims are primarily avoided because Granular Energy's Config 3 GCs are issued *only* against EACs that have already been verifiably cancelled in a recognised EAC registry for a specific beneficiary. This EAC cancellation signifies the primary claim of the attributes.
  - The GCs are then *immediately cancelled upon issuance* for the *exact same beneficiary* as the underlying EAC. This ensures the GC only serves to add temporal granularity to the already singular claim, not create a new, independent claim opportunity.
  - Each GC (represented by an `AllocationVolume`) has a unique ID and is directly linked to the unique ID(s) of the underlying cancelled EAC(s), preventing the same EAC cancellation from being used to generate multiple GCs within the Granular Energy system.
  - Contractual agreements with suppliers (EAC Account Holders) will reinforce that they cannot use the same cancelled EACs to seek GCs from another issuer or make duplicate environmental claims for a different beneficiary.
  - The non-transferable nature of Config 3 GCs further prevents them from being circulated or sold, eliminating the risk of them being used by multiple parties for disclosure.
- **Maximum Age of GCs for Consumption Claims:**
  - As Granular Energy's Config 3 GCs are cancelled immediately upon issuance, they do not "age" in a way that would allow them to be used for consumption claims at a later date. The consumption claim is effectively made at the point of GC issuance/cancellation.
  - The underlying EAC would have been valid at the time of its cancellation. The temporal matching itself links consumption to production within a (sub)hourly period, making the "age" of the GC post-issuance irrelevant for this purpose.

Fraud Prevention and Detection Measures

- **Metering Fraud Prevention (Production/Consumption):**
  - Granular Energy designates the client (energy supplier) as the Measurement Body. Suppliers are contractually obligated to ensure the accuracy and integrity of the (sub)hourly production and consumption meter data they provide.
  - As per EnergyTag standard 1.1.35, where the Measurement Body (supplier) is not independent of production, trade, and supply, they will be subject to independent audits at Granular Energy’s discretion to demonstrate the accuracy of provided meter. See “Audit” section below.
  - Reliance is also placed on the existing controls within underlying EAC schemes, which use data from regulated TSOs/DSOs or certified metering.

- **Energy Source Reporting Fraud Prevention:**
    - Beyond metering data, the GC's source data is derived from the underlying cancelled EAC, which has been issued by an official EAC Issuing Body based on their verification processes for the production device.
    - Granular Energy's system ensures that the GC attributes faithfully replicate those of the verified, cancelled EAC.
- **Registry Data Manipulation Prevention:**
    - Granular Energy employs robust IT security measures (detailed in "IT Security" section) to protect its platform and database against unauthorised access and manipulation.
    - This includes access controls, data encryption, regular security assessments, and audit trails for changes to critical data like `AllocationVolume` status.
    - The immutability of GCs once issued and cancelled further mitigates risks from data manipulation.
- **VAT Carousel Fraud, Money Laundering, Market Manipulation Prevention:**
    - Since Config 3 GCs are non-transferable and immediately cancelled, they offer minimal utility for VAT carousel fraud or market manipulation schemes that rely on the trading of certificates.
    - Money laundering risks are primarily addressed through Know-Your-Customer (KYC) procedures during the onboarding of supplier clients, in line with general AML/CFT best practices. Granular Energy schemes are designed for a small number of suppliers and are does not open accounts for other types of organisations. Finally, given the scheme process involves issuing GCs from existing EACs and immediately cancelling them, the scope for money laundering is limited.
- **Adequacy of Fraud Prevention Measures:**
    - The combination of Config 3 design (reliance on cancelled EACs, immediate GC cancellation, non-transferability), contractual obligations on suppliers for data accuracy, planned independent audits for non-independent Measurement Bodies, and IT security measures provides an adequate framework for fraud prevention and detection relevant to the GC scheme.

Area for Further Improvement	Intended Implementation Timeline
Developing more sophisticated automated anomaly detection for submitted meter data.	Ongoing improvement area. Data anomaly detection features will be developed iteratively.
Strengthening collaboration with clients to ensure their understanding and adherence to fraud prevention best practices.	Ongoing improvement area. Client collaboration is a continuous process.

Supplier Auditing Approach

Granular Energy employs a light-touch but targeted audit model to ensure the accuracy and integrity of the inputs used for GC issuance. Audits are primarily focused on supplier-provided metering data and the validity of underlying EAC cancellations.

The auditing process includes the following elements:

- **Audit Type:** Audits are conducted on a sampling basis.**Frequency:** Audits will take place at least annually. Additionally, ad hoc audits will be triggered if anomalies are detected during allocation validation (e.g. gaps, mismatches with cancelled certificate volumes, etc.)
- **Audit Scope:** The audit may include checks on:
    - Accuracy and completeness of (sub)hourly metering data
    - Accuracy and completeness of consumption and production site metadata, including unique metering point references. Ensuring alignment with EAC data.
    - Validity of EAC cancellation details and match to energy volumes.
    - Data alignment between metered volumes and EAC-backed claims.
    - Documentation supporting fuel type and technology, especially for biomass or biogas assets.
    - Alignment with billing data to confirm that quantities of energy purchased from the producer are in conformity with the bill that confirms the purchase for the corresponding production period. Where bills do not include hourly shape data, the check is at a monthly aggregate level.
    - To the extent possible, alignment with underlying metering data as collected by the authorised data collector.
- **Execution:** Audits may be carried out by Granular Energy or an independent third-party auditor with relevant domain credentials.
- **Data Access:** Suppliers are required by contract to retain relevant records for a period of at least five years and to cooperate fully with any request for data review.
- **Follow-Up:** Where issues are identified, Granular Energy reserves the right to void erroneous GCs, re-issue corrected certificates, and escalate for further investigation where warranted.

Error Handling

- **Error Handling/Correction Measures in Place For:**
    - **Erroneous Measurement:** A certificate revocation process will be used to manage corrections to (sub)hourly meter data (production or consumption) provided by the supplier post-GC issuance.
    - **Erroneous Issuing:** If GCs (`AllocationVolume` records) are found to be issued incorrectly due to internal system error or incorrect input data not caught by validation, the certificate revocation process will be applied.
    - **Erroneous Transfers:** Not applicable, as Config 3 GCs are non-transferable.
    - **Erroneous Producer Data:** If attributes of the production device (e.g., technology, location) linked to a GC are found to be incorrect post-issuance due to errors in the underlying EAC data or supplier information, a correction process will be followed.
- **Description of Error Handling Procedures:**
    - Upon identification of an error, Granular Energy will investigate its cause and impact.
    - **Corrections to Meter Data Post-GC Issuance:**
        - If corrected production data is higher than initially recorded for issued GCs, additional GCs *may* be issued for the difference for the same production period, provided corresponding valid cancelled EACs cover this additional volume and the supplier requests it.
        - If corrected production data is lower:
            - Since Config 3 GCs are immediately cancelled and non-transferable, they cannot be "withdrawn" from an account in the traditional sense.

        - The primary approach is to encourage suppliers to finalise allocations only after adjustment periods close, minimising ex-post corrections.
        - Where significant discrepancies are found post-cancellation that invalidate the basis of the GC, Granular Energy will work with the supplier to rectify the claim. This may involve:
            - Marking the original `AllocationVolume` (GC) as erroneous or void in the Granular Energy system.
            - If substitute EACs and correct meter data for a comparable period are available, a new, corrected GC could be issued and cancelled.
            - The principle will be to ensure no net unjust enrichment and to maintain the integrity of claims. The specific approach will align with EnergyTag Standard section 1.13.3 and 1.13.4, adapting them for the non-transferable, immediately cancelled nature of Config 3 GCs (e.g., if comparable correction is needed, it would be a matter of record adjustment for future overall balancing rather than subtracting from a "next issuance batch" of tradable certificates). Contractual obligations will require suppliers to notify Granular Energy of ex-post corrections.
    - **Erroneous Issuing (e.g., wrong beneficiary, incorrect EAC link):** The erroneous GC (`AllocationVolume`) record will be flagged as void in the system. If correct data is available, a new GC record will be created and immediately cancelled with the correct information.
    - **Erroneous Producer Data:** Similar to erroneous issuing, the incorrect GC record will be marked as void. If correct data is provided, a new record with accurate producer data can be created and cancelled.
- **Annulment of Unjust Enrichment:**
    - The core principle is that no party should be unjustly enriched due to errors.
    - Since Config 3 GCs are not traded and are linked to specific claims, unjust enrichment typically relates to making an incorrect environmental claim.
    - Correction procedures will focus on rectifying the claim. If GCs were issued for a volume not covered by valid cancelled EACs or accurate meter data, the corresponding claim would be invalid. Granular Energy will provide corrected information to the supplier to ensure their disclosures are accurate.
    - Any financial implications (e.g., related to the cost of EACs) are primarily between the supplier and their counter-parties, but Granular Energy will provide accurate GC data to support resolution.
- **Complaint Procedure and Contact Data:**
    - Clients (suppliers) can submit complaints or report errors via their designated Granular Energy account manager or a dedicated support email address: support@granular-energy.com.
    - Complaints will be logged, investigated, and addressed in a timely manner. A detailed complaints handling procedure will be documented in the full GC Scheme Protocol and made available to clients.

Storage

- **Data Management of Stored Energy and Double Claim Avoidance:**

    - Not Applicable. Storage is explicitly excluded from the initial scope of this accreditation application. Requirements 1.6.1 through 1.6.24, and 1.5.30-1.5.39 relating to storage data are therefore not currently implemented.
- **Registers Charging/Discharging Records (SCRs/SDRs):**
    - Not Applicable.
- **Matches Cancelled GCs with SCRs:**
    - Not Applicable.
- **SDR Allocation to Beneficiary:**
    - Not Applicable.
- **Handling Losses:**
    - Not Applicable.
- **Process Description (Storage):**
    - Not Applicable.
- **Clear and Transparent Handling (Storage):**
    - Not Applicable.

IT Security

- **Adequacy of IT Security Measures:**
    - Granular Energy maintains adequate IT security measures to protect the integrity, availability, and confidentiality of its GC registry platform and associated data. These measures include (but are not limited to):
        - Secure cloud hosting infrastructure with industry-standard physical and network security under ISO 27001 and SOC2 Type 2 standards.
        - Access controls, authentication, and authorisation mechanisms to restrict system and data access to authorised personnel and clients.
        - Data encryption at rest and in transit.
        - Regular security patching and vulnerability management.
        - System monitoring and logging to detect and respond to security incidents.
        - Regular backups and disaster recovery procedures.
        - Periodic security assessments and penetration testing (as per EnergyTag Standard 1.9.4 recommendation).
        - Compliance with prevailing security and privacy standards (e.g., GDPR in Europe) across served territories (EnergyTag Standard 1.8.2).

Account Holder Behaviour Control and Transparency

- **Conditions to Become an Account Holder (incl. Who Can Be):**
    - In the context of Granular Energy's Config 3 scheme, the primary "Account Holder" is the energy supplier client who wishes to use the platform to generate GCs for their energy allocations.
    - Conditions include:
        - A valid service agreement with Granular Energy.
        - Agreement to abide by the terms of the Granular Energy GC Scheme Protocol, including responsibilities as a Measurement Body.
        - Successful completion of Granular Energy's Know-Your-Customer (KYC) and due diligence procedures.
- **Engagement of Account Holder:**
    - Upon admission, Account Holders (suppliers) engage to:

        - Provide accurate and verifiable information regarding cancelled EACs.
        - Provide accurate (sub)hourly production and consumption meter data.
        - Comply with all requirements set forth in the Granular Energy GC Scheme Protocol and the EnergyTag Standard applicable to their role.
        - Cooperate with any required audits, especially concerning their role as a Measurement Body.
        - Utilise the GCs only for valid and non-misleading environmental disclosure claims.
- **Prevention of GC Transfer Outside the Registry:**
    - This is inherently prevented by the design of Granular Energy's Config 3 GCs:
        - They are marked as non-transferable within the system.
        - They are cancelled immediately upon issuance.
        - There is no mechanism or functionality provided within the Granular Energy platform to transfer these Config 3 GCs to another account or an external registry.
- **Link to Account Holder User Manual:**
    - A user manual for the Granular Energy platform, detailing relevant functionalities for managing data inputs and viewing `AllocationVolume` (GC) records, will be provided to all onboarded supplier clients.
- **Process for Becoming an Account Holder:**
    - Expression of interest by the prospective supplier.
    - Initial discussion and scoping with Granular Energy.
    - Completion of due diligence checks.
    - Execution of a service agreement and GC Scheme Protocol adherence agreement.
    - Onboarding to the Granular Energy platform, including system training.
- **Information Displayed to Account Holder Regarding GCs:**
    - Suppliers will have access via the Granular Energy platform to view their `AllocationVolume` (GC) records.
    - The platform makes it possible to view all relevant attributes of the GC (as listed in the "GC Attributes" section), such as linked production/consumption data, underlying cancelled EAC details, beneficiary, timestamps, volume, and unique ID.
- **Process for Account Holders to Initiate Transfer:**
    - Not Applicable. Config 3 GCs are non-transferable.
- **Process for Account Holders to Initiate Cancellation:**
    - Not Applicable in the traditional sense. GCs are automatically and immediately cancelled upon issuance (when `AllocationVolume` status is set to "executed") by the Granular Energy system as a core part of the Config 3 process. The supplier's action of finalising the data inputs that lead to the "executed" status effectively triggers this.
- **Alerts for Upcoming Expiry of Certificates:**
    - Not Applicable for the GCs themselves, as they are immediately cancelled and do not have a post-issuance validity period.
    - The underlying EACs would have had their own expiry dates managed within their respective registries prior to being cancelled and used as input by the supplier. Granular Energy does not manage the lifecycle of active EACs.

Appendix

1. GC Scheme Supplier Operating Agreement (GCSOA)

Below is an early draft of the GCSOA, which still needs to be reviewed by legal counsel. Included as an indicative document to support the rest of the Protocol.

GC Scheme Supplier Operating Agreement (GCSOA)

This GC Scheme Supplier Operating Agreement ("Agreement") sets forth the roles, obligations, and responsibilities of the energy supplier ("Supplier") participating in Granular Energy's Config 3 Granular Certificate (GC) Scheme, as administered by Granular Energy SAS ("Granular Energy").

1. Purpose

This Agreement ensures compliance with the EnergyTag Config 3 standard, establishes the Supplier's role as a Measurement Body, and defines the conditions under which Granular Energy will issue Config 3 GCs based on cancelled Energy Attribute Certificates (EACs) provided by the Supplier.

2. Designation and Responsibilities

2.1 Measurement Body Role

- The Supplier is formally designated as the Measurement Body for both production and consumption data.
- The Supplier must ensure the accuracy, completeness, and verifiability of all (sub)hourly metered energy data submitted.
- To ensure that production and consumption are accurately matched, consumption data must be provided with a period and location
- Production metering data must represent **net energy production from a utility meter**, consistent with the requirements of the underlying EAC systems.
- Production metering data must only cover energy which has been injected into a regulated distribution/transmission system. Unless explicitly stated in a specific supplier's GC scheme, Granular Energy GCs are not issued for energy which is consumed by the operator of a production device or injected into private grids.

2.2 EAC Provision and Validity

- The Supplier must submit records of **cancelled EACs** clearly linked to a single, named beneficiary.
- Each EAC submitted must be verifiably cancelled in an accredited registry (REGO, GO) and must not be used to support any other environmental claim.
- The Supplier agrees and warrants that no duplicate or parallel claim will be made for the same EACs, whether through another GC issuer or for another beneficiary.

2.3 GC Exclusivity and Issuance Authority

- The Supplier designates Granular Energy as the **sole entity authorised to issue Config 3 GCs** on the basis of the submitted cancelled EACs.
- In regions where GCs are being developed, it is the Supplier's responsibility to ensure that asset and time periods that are covered by other GC schemes are not used in Granular Energy's Config 3 scheme.
- GCs will be created and automatically cancelled upon issuance within the Granular Energy platform for the same beneficiary as named in the cancelled EACs.
- GCs issued under this Agreement are **non-transferable** and intended solely for time-based disclosure and reporting.

3. Data Integrity and Audit Compliance

3.1 Metering and EAC Audit Rights

- The Supplier shall retain full records of all metering data and underlying EACs provided.

Granular Energy reserves the right to conduct random or targeted data sampling audits at its discretion, to verify the details set out in the "Supplier Auditing Approach" section of the Granular Energy GC Scheme document.

3.2 Additional Evidence for Biomass/Biogas

- Where the energy source includes **biomass or biogas**, the Supplier must provide:
    - Fuel input tracking documentation.
    - Supply chain attestations.
    - Third-party audits of fuel sourcing.
    - Regulatory compliance documentation.

4. Error Handling and Corrective Action

- The Supplier must notify Granular Energy of any material discrepancies in submitted data post-GC issuance.
- In the case where GCs have already been issued and cancelled, and production data is later corrected downward, Granular Energy will:
    - Apply an offset: The erroneous volume will be subtracted from a comparable generation hour in a future issuance batch. This ensures no net overclaim, in line with the Config 3 principle of immediate cancellation and immutability post-issuance. This mirrors the EnergyTag protocol (1.13.3) adapted for Config 3's non-transferable nature.
    - Cooperate with the Supplier to ensure corrected disclosure and prevent unjust enrichment.

5. Legal and Regulatory Compliance

- The Supplier affirms compliance with all applicable legal and regulatory requirements governing:
  - Energy metering.
  - Environmental disclosure.
  - Claims substantiation.
- The Supplier acknowledges that Config 3 GCs **do not constitute a new legal instrument**, but rather enhance existing claims via temporal granularity.

6. Confidentiality and Data Security

- The Supplier shall treat all platform access credentials, APIs, and data interfaces as confidential.
- Granular Energy will implement best-practice IT security measures as outlined in the main Protocol to ensure platform integrity.

7. Onboarding, Engagement, and Termination

7.1 Conditions to Participate

- The Supplier must:
  - Successfully complete onboarding and KYC procedures.
  - Execute a primary service agreement with Granular Energy.
  - Accept this GC Scheme Supplier Operating Agreement.

7.2 Ongoing Engagement

- The Supplier agrees to engage in good faith, cooperate with any investigations or audits, and utilise the GCs exclusively for authorised disclosure.

7.3 Termination

- Granular Energy reserves the right to suspend or terminate participation in the scheme for material breach, including data misrepresentation or refusal to cooperate with audits.

8. Contact and Complaints

All queries and complaints related to this Agreement should be directed to:

Granular Energy Support
Email: support@granular-energy.com

2. Minor deviations from standard

1.3.8 – GCs shall state the GC Issuance date-stamp (UTC "YYYY-MM-DD").
Granular Energy GC database entities record the issuance date. The technical work to record this value has been scoped and will be turned on at the start of a GC scheme's operation.

1.3.16 – GCs shall use Wh as the base unit rather than a multiple (kWh, MWh etc.) unit.
While Granular Energy displays energy quantities in kWh with 3 decimal places, this provides Wh-level precision (e.g., 1.234 kWh = 1234 Wh). This approach ensures usability for reporting while retaining exactness, aligning with the intent of the EnergyTag standard .

1.3.19 – GCs shall state the identity of the GC Issuer.
This information is invariable across all Granular Energy GCs, and will be recorded in scheme documentation rather than on each database entity.

1.3.20 – GCs shall state whether it is Issued from production or release from storage.
This information is invariable across all Granular Energy GCs (all GCs are for production, not storage), and will be recorded in scheme documentation rather than on each database entity.

1.3.25 – GCs may record whether support has been received and, if so, whether for investment, production or both.
This information is not recorded. Granular Energy's Config 3 GCs are not designed to directly access or qualify for public financial support systems. Granular Energy's GCs will not be used to receive public support. This information may be present on the underlying EAC.

1.3.27 – GCs may record dissemination level of the physical energy.
This information is invariable across all Granular Energy GCs (by default, all GCs are for production which is injected into regulated grids), and will be recorded in scheme documentation rather than on each database entity.

1.5.28 – [relating to 1.5.23], Interval Start Timestamp (UTC "YYYY-MM-DDThh:mm:ssZ" interval starting, E.g. "2023-10-03T00:00:00Z"), and
Granular Energy GCs record start datetime in UTC and "duration" (e.g. 15M, 30M). The end datetime can be inferred from the combination of these values.

1.5.29 – [relating to 1.5.23], Interval End Timestamp UTC "YYYY-MM-DDThh:mm:ssZ" interval ending, "2023-10-03T00:14:95Z"), and
Granular Energy GCs record start datetime in UTC and "duration" (e.g. 15M, 30M). The end datetime can be inferred from the combination of these values.

1.8.1 – GC IT Systems should follow the EnergyTag API data specification, providing for system interoperability via API, unless they are stand-alone systems, and
Under Config 3, Granular Energy GCs are issued and cancelled in the same operation. This negates the need to have a number of the APIs outlined in the data specification.

1.9.2 – On-site audits of Production Devices shall be carried out by GC Issuers (or other delegated entities) to ensure the veracity of the technical specifications declared by the Producer and the adequate connection to metering devices.
Granular Energy does not directly conduct on-site audits of production devices. Instead, it relies on the validation procedures of the underlying EAC systems and contractual obligations with suppliers

to maintain inspection documentation. Random verifications by third parties may be conducted where needed, particularly for biomass/biogas sources, as outlined in the protocol.

1.12.1 – GCs shall state the dissemination level (for electricity Certificates) of the physical energy for which the Certificate is Issued.
This information is invariable across all Granular Energy GCs (by default, all GCs are for production which is injected into regulated grids), and will be recorded in scheme documentation rather than on each database entity.

1.12.2 – [relating to 1.12.1] This attribute may be absent from the GC only where it is ensured that GCs are only issued for energy that is made available to the market for trade
See explanation for 1.12.1 above.

3. International Coverage

Granular Energy's Config 3 scheme allows for issuance in most regions, except for a small number of countries where regulation prevents issuances (China) or where tracking is already at the ≥30 min granularity (Taiwan).

In countries where GCs are being developed, clause 2.3 in the GCSOA is used to ensure double counting is avoided for the assets and time periods which are covered by non-Config 3 schemes.

Country	Registry	Config 3 Enabled	Notes
Argentina	Evident I-REC	YES	
Australia	Evident I-REC	YES	
Austria	E-Control	YES	
Belgium	VREG (Flanders)	YES	
Belgium	VREG (Wallonia)	YES	
Belgium	VREG (Brussels)	YES	
Brazil	Evident I-REC	YES	
Canada	M-RETS & WREGIS	YES	
Chile	Evident I-REC	YES	
Chile	CER (CNE)	YES	
Colombia	Evident I-REC	YES	
Croatia	HROTE	YES	
Czech Republic	OTE	YES	
Denmark	Energinet	PARTIAL	GC issuance partially available. Granular only issues under Config #3 when no GCs have been issued for the asset and period – see GCSOA for details.
Ecuador	Evident I-REC	YES	
Egypt	Evident I-REC	YES	
Estonia	Elering	YES	
Finland	FinExtra	YES	
France	EEX	YES	
Germany	UBA	YES	
Greece	DAPEEP	YES	
Hungary	MEKH	YES	
India	Evident I-REC	YES	
India	REC (CERC)	YES	
India	TIGR	YES	
Indonesia	Evident I-REC	YES	

Indonesia	TIGR	YES	
Ireland	SEMO	YES	
Italy	GSE	YES	
Japan	Evident I-REC	YES	
Japan	GEC	YES	
Japan	J-credits	YES	
Japan	NFC (EMSC)	YES	
Latvia	Augstpriegumatikls	YES	
Lithuania	Litgrid	YES	
Luxembourg	ILR	YES	
Malaysia	Evident I-REC	YES	
Malaysia	TIGR	YES	
Mexico	Evident I-REC	YES	
Mexico	CEL	YES	
Netherlands	Verticer	YES	
New Zealand	Evident I-REC	YES	
Norway	NECS	YES	
Peru	Evident I-REC	YES	
Philippines	Evident I-REC	YES	
Philippines	TIGR	YES	
Poland	TGE	YES	
Portugal	REN	YES	
Russia	Carbon Zero	YES	
Singapore	Evident I-REC	YES	
Singapore	TIGR	YES	
Slovakia	OKTE	YES	
South Korea	RECs (Korea Energy Agency)	YES	
South Korea	TIGR	YES	
Spain	CNMC	YES	
Sweden	Energimyndigheten	YES	
Switzerland	Pronovo	YES	
Taiwan	Evident I-REC	YES	
Taiwan	TIGR	YES	
Thailand	Evident I-REC	YES	
Thailand	TIGR	YES	
United Kingdom	Ofgem	YES	

United States	M-RETS	YES	
United States	PJM-GATS	PARTIAL	GC issuance partially available. Granular only issues under Config #3 when no GCs have been issued for the asset and period – see GCSOA for details.
United States	NARR	PARTIAL	GC issuance partially available. Granular only issues under Config #3 when no GCs have been issued for the asset and period - – see GCSOA for details
United States	WREGIS	YES	
United States	ERCOT	YES	
United States	NC-RETS (APX)	YES	
United States	MIRECS	YES	
United States	NEPOOL-GIS	YES	
United States	NC-RETS (APX)	YES	
United States	NVTREC	YES	
United States	NYSERDA	YES	
Vietnam	Evident I-REC	YES	
Vietnam	TIGR	YES	