

Review of Large Energy Users connection policy (CRU/2024001) Consultation Response

Introduction	1
A Strong Real-Time Net Zero Definition is Crucial	3
Responses to Relevant Questions	6
Section 3.2 - Transition period	6
Q.3	6
Q.4	7
Q.5	7
Q.6	8
Section 3.3 - Measuring Performance	9
Q.7	9
Q.8	13
Q.9	14
Q.10	14
Q.11	14
Q.12	15
Annex	18
Annex 1 - Hourly Carbon Intensity of Irish Grid 2023	18

Introduction

EnergyTag welcomes the opportunity to respond to this consultation on the Connection Policy for Large Energy Users. We focus our response on the questions where our expertise in the technical and regulatory implementation of real-time¹ net-zero electricity accounting are most relevant. In particular, we focus on Section 3.2 and 3.3 of the consultation.

EnergyTag² is an independent not-for-profit organisation focused on promoting and enabling robust real-time electricity accounting standards globally. EnergyTag maintains the world's only voluntary standard detailing how hourly certificates (i.e. Granular Certificates/Timestamped GOs) can be issued and used to robustly verify hourly matching claims, including claims of

¹ Note in this document we use real-time, hourly and sub-hourly accounting interchangeably to refer to electricity accounting where LEU consumption is match with zero-emissions contracted sourcing in a same period of one hour or less.

² EnergyTag Ltd. has registered offices at 86-90 Paul Street, London, United Kingdom.

deliverability and incrementality. Our standards are supported and developed alongside major stakeholders working on implementing granular electricity accounting including United Nations Energy, multiple EU TSOs (Energinet, Elia, 50 Hertz), Google, Clean Air Task Force, PWC, and Microsoft amongst over one hundred other organisations.

EnergyTag has been involved in advising both the European Commission³ and the US Government⁴ on implementation of their rules for the emissions frameworks for green hydrogen production where real-time (i.e hourly or less) net-zero emissions accounting requirements are proposed. We have helped spearhead the campaigns in the EU⁵ and the US⁶ for strong accounting requirements for green hydrogen alongside leading academics, companies and civil society organisations. The same ***principles used by EU/US regulators for green hydrogen can be applied to the LEU Connection policy***, as both policies seek to mitigate significant system-level emissions increases from large new grid loads.

To facilitate the granular certificate market and promote a global approach for hourly energy tracking, EnergyTag has developed the GC Scheme Standard⁷ and Matching Standard⁸, provide detailed criteria that can be used to ensure robust implementation of hourly electricity carbon accounting. These standards have been formulated following numerous working group meetings involving energy producers, energy certificate issuers, corporate consumers, and software developers specialised in matching technologies worldwide.

In terms of feasibility, hourly matching is already underway, with organisations worldwide adopting the EnergyTag Standard. Figure 6 below illustrates several ongoing hourly matching projects across the globe, collectively covering over 1 terawatt-hour (TWh) of electricity and involving leading organisations such as Google, Microsoft, AES, Flexidao, and Granular Energy. Certain jurisdictions, like Taiwan, exclusively permit hourly matching for clean energy claims, a practice they have adhered to for years.

³ EnergyTag received a formal letter of thank you from the European Commission for our contributions.

⁴ [US Treasury - Quotation from EnergyTag on US Clean Hydrogen Rules](#)

⁵ [Coalition Letter on EU Renewable Hydrogen Rules](#)

⁶ [Coalition Letter on US Clean Hydrogen Rules](#)

⁷ [EnergyTag - Granular Certificate Scheme Standard](#)

⁸ [EnergyTag - Granular Certificate Matching Standard](#)

A Strong Real-Time Net Zero Definition is Crucial

- EnergyTag notes the CRU’s dual desire for this consultation to achieve an optimal LEU connection policy that helps Ireland achieve its binding emissions reduction target of a 51% emissions reduction by 2030 while enabling economic growth and investment. This will require a robust net-zero emissions accounting framework, ensuring that LEU connections do not lead to significant system-level emissions increases.
- As noted in the consultation documents, the electricity demand from Large Energy Users, Data Centres in particular, is set to grow significantly in Ireland by 2030. If this load growth is met with large increases in emissions-intensive electricity supply there will be significant emissions consequences⁹. Therefore, there is **strong justification for a robust, evidence-backed emissions accounting framework** to help ensure this demand growth is met with new zero-emission electricity supply.

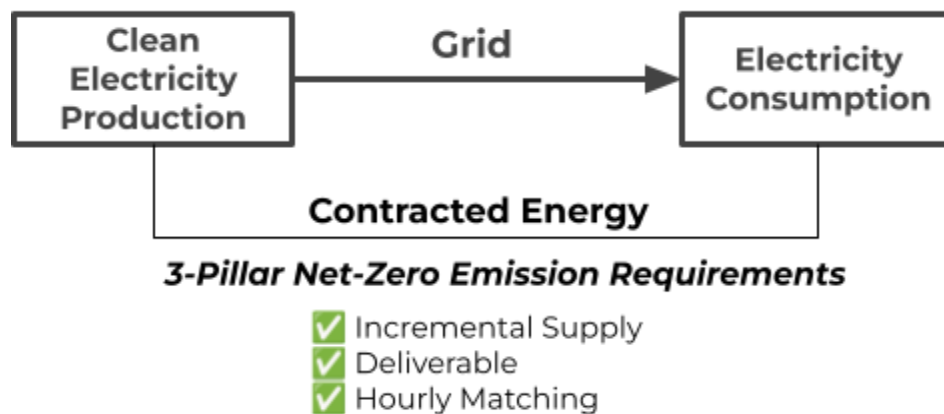


Figure 1 - Robust 3-Pillar Net Zero Emissions Framework

- A robust real-time net-zero framework is the only emissions accounting framework that can justifiably be used to ensure that new load created by Large Energy Users is “net-zero”. A robust framework should require that LEUs contract clean power that adheres to the following 3-pillar emissions accounting¹⁰ criteria¹¹:
 - **Incremental supply:** Incremental LEU Demand must be met with new (i.e 3 years older than LEU load) clean supply. If not, fossil supply will likely be increased to meet this load.
 - **Deliverability:** This new supply must be sufficiently deliverable (i.e Island of Ireland¹²) to load. If not, fossil generators will be ramped up to meet new demand.

⁹ See MaREI response to the Call for Evidence on LEU connection for details of these consequences

¹⁰ 3-pillar is sometimes referred to 24/7 Carbon Free Energy, see the UN’s 24/7 Compact for more

¹¹ See [this explainer from US Department of Energy](#) on why 3-pillar accounting is needed

¹² Or 1) within the local bidding zone should Ireland move to split bidding zones in future 2) from another bidding zone (e.g UK/FR) provided there is proof of interconnector booking and tracking of the clean power across borders.

- **Hourly matching:** New supply must be matched hourly¹³ to new demand. If not, at time of LEU demand fossil generation may be required to meet load, especially in hours of low renewable penetration.
- There is ***strong scientific evidence on the necessity for the “3-pillar” accounting approach*** - over a dozen power system modelling exercises looking at the system-level emissions implications of various emissions accounting frameworks for corporate consumers and green hydrogen production. The studies from the Technical University of Berlin¹⁴, Princeton^{15,16}, the IEA¹⁷, and MIT¹⁸ all demonstrated the necessity of all 3-pillar accounting in ensuring that system-level emissions increases are effectively controlled by placing procurement requirements on demand. They also demonstrate the ***significant emissions consequences should any of these 3-pillars be removed***. In addition, these studies demonstrate that the 3-pillars have a number of additional system benefits, including the creation of signals for short and long-duration energy storage and demand flexibility. This TU Berlin study¹⁹ analysis how 3-pillar accounting incentives data centre demand flexibility and this study²⁰ from the same authors describes how the decarbonisation impact of real-time vs annual matching targets becomes more pronounced as grids get cleaner.
- When considering the hourly matching requirement, it is sometimes asserted that daily or monthly matching are sufficiently precise to ensure effective accounting. This is not the case, as emissions intensity of electricity production vary very significantly during the day, making hourly accounting essential to an effective emission reporting framework. This is certainly the case for Ireland (See Graphic Annex 1) where carbon intensity of the grid varies significantly across days and months. Modelling²¹ has shown that even daily accounting is not accurate enough to ensure a robust emissions' framework.
- The ***3-pillar framework is emerging as the standard regulatory best practice*** for electricity accounting of large new load with regulators in the European Union²² and United States²³ requiring this it for hydrogen to be considered renewable or “clean”. Any deviation from this in the Irish LEU context would see Ireland diverge from emerging regulatory best practices for emissions accounting pertaining to large new demand.
- The EU’s Transmission System Operators (**ENTSO-E**) **have unanimously called²⁴ for time matching and deliverability requirements** to be put on Guarantees of Origin to ensure more effective signals for renewable deployment, indicating the preference of the EU’s grid operators for real-time net-zero accounting.

¹³ or at 5/15/30 minute basis in line with the prevailing electricity market settlement period

¹⁴ [Technical University Berlin - On the means, costs, and system-level impacts of 24/7 carbon-free energy procurement](#)

¹⁵ [Princeton University - "System-level Impacts of Voluntary Carbon-free Electricity Procurement Strategies"](#)

¹⁶ [Princeton University - Enabling grid-based hydrogen production with low embodied emissions in the United States](#)

¹⁷ [IEA - Advancing Decarbonisation Through Clean Electricity Procurement](#)

¹⁸ [MIT - The influence of additionality and time-matching requirements on the emissions from grid-connected hydrogen production](#)

¹⁹ [Technical University Berlin - The value of space-time load-shifting flexibility for 24/7 carbon-free electricity procurement](#)

²⁰ [Technical University Berlin - On the means, costs, and system-level impacts of 24/7 carbon-free energy procurement](#)

²¹ [Princeton University - Enabling grid-based hydrogen production with low embodied emissions in the United States](#)

²² [European Commission - Delegated Act on Renewable Hydrogen](#)

²³ [United States Department of the Treasury - Section 45V Credit for Production of Clean Hydrogen: Section 48\(a\)\(15\) Election To Treat Clean Hydrogen Production Facilities as Energy Property](#)

²⁴ [ENTSO-E - Views on a Future-Proof Market Design for Guarantees of Origin](#)

- **The costs of achieving a 100% real-time net-zero goal** (also known as 24/7 Renewables) has been analysed extensively. Researchers at TU Berlin²⁵ have done the most extensive analysis for the European case, modelling costs across various levels of hourly matching for Ireland, Denmark, Poland, and Germany. They model three different technology pallets for years 2025 and 2030. They conclude that **“90%–95% 24/7 CFE targets have only a small cost premium over 100% annual renewable matching”** With costs increasing more significantly for the last 5%, in particular when only li-ion battery storage is available. The premium of the last 5% can be mitigated with demand flexibility and the emergence of new technologies over time such as Long-duration energy storage with bring the premiums down significantly.
- ***When considering the costs of real-time Net Zero, it's also crucial to keep in mind the hedging benefits*** that consumers get from signing long-term Power Purchase Agreements that cover most of their load with clean power at fixed price. Analysis from Eurelectric²⁶ has shown that PPAs that deliver high levels of clean power hourly matching hedge consumers from the price volatility of wholesale electricity markets with very significant benefits.
- ***Given the robust evidence, support and regulatory precedent²⁷, any final end goal “Net-Zero” definition for LEU should satisfy these 3-pillar requirements, with flexibility only being offered in transitioning to being 100% Real-time Net Zero under this definition.***

²⁵ [Technical University Berlin - On the means, costs, and system-level impacts of 24/7 carbon-free energy procurement](#)

²⁶ [Eurelectric & Pexapark - 24/7 CFE Hedging Analysis](#)

²⁷ Note that EnergyTag [maintains a live database](#) of various research, regulations, reports on real-time net zero accounting

Responses to Relevant Questions

Section 3.2 - Transition period

Q.3

Comments are invited from interested parties on the proposed use of a transition period/glide path in relation to (i) the changing requirements at time of connection on the transition to zero real time emissions, and (ii) once connected, the changing requirements as the project transitions closer to real time zero e.g. from non-firm connection to firm connection linked to milestones.

- As stated above, ensuring data centres are 100% real-time net-zero based on the 3-pillar emissions accounting approach is crucial.
- However, EnergyTag notes the CRU's desire to offer a glide path given certain constraints with reaching real-time net-zero today. EnergyTag believes that the transition period on "Measuring Performance" should be split between:
 - i) Reporting - Where LEUs should be required to report their emissions on a ***monthly and hourly basis from the time of connection***. This provides flexibility while ensuring that hourly reporting is required from the time of connection in order to track progress to real-time net zero emissions.
 - ii) Targets - where LEUs should be required to be "100 % Net Zero" on a monthly basis (from new deliverable clean energy assets) in the transitory phase and then on an hourly basis (from new deliverable clean energy assets) thereafter. This provides flexibility in early stages of implementation where being 100% on a real-time basis may be challenging, but also ensures the integrity of the reporting framework in maintaining with a clear transition to hourly 100% Net Zero target which must be the final goal of any credible Net-Zero definition.

Q.4

Please provide views on the proposed timing of different options.

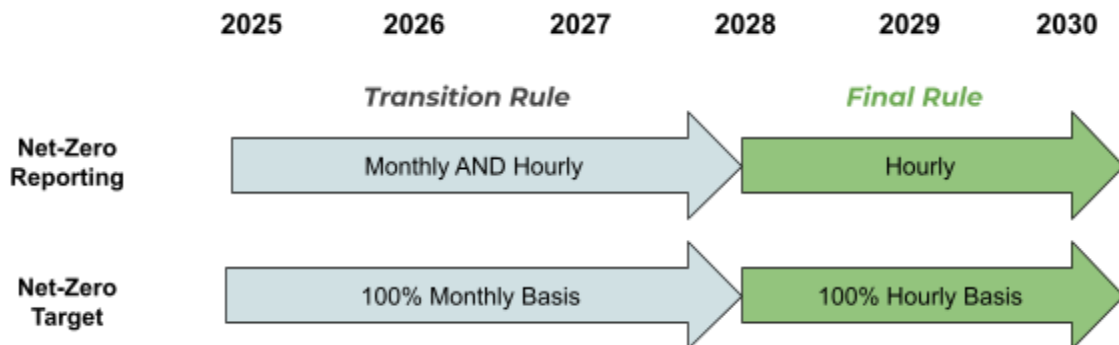


Figure 2 - Proposed Timeline on Measuring Performance - i) reporting and ii) targets

- As mentioned above, a transition phase should allow flexibility in how the reporting and target of net-zero is measured. Incrementality and deliverability should be required for targets in all cases with flexibility only on the temporal component.
- During the transition phase (before 1 January 2028), the following should be required of LEUs:
 - Reporting: Net Zero emissions on a monthly (based on GOs) and hourly basis.
 - Target: 100% Net Zero on a monthly basis.
- After the transition phase, for the final rule:
 - Reporting: Net Zero emissions on an hourly basis based on time-stamped Guarantees of Origin.
 - Target : 100% Net Zero on an hourly basis.
- This is in line with the EU’s renewable hydrogen rules which require monthly accounting until 2030 and hourly accounting for targets thereafter.

Q.5

Should optionality be maintained in allowing a menu of different options to perspective LEUs, with the end net zero emissions target becoming more binding as the glide path advances?

- The net-zero emissions target should not have excessive optionality, as there is only one credible final target that can deliver the desired emissions outcomes.
- Options for the final rule would create confusion and create a misleading impression that any of the options would reach the desired outcomes of the reporting framework.
- The only flexibility offered on Measuring Performance should be offered in the form of “monthly” instead of hourly accounting requirements for a transitional period before 2028.

Q.6

Comments are invited on how compliance and enforcement with required provisions can be effectively implemented in the operation of a transition period/glide path approach

- Regarding Measuring Performance, for the transition period compliance should be enforced by a 3rd-party Qualified Verifier (QV) that confirms that :
 - Reporting: For monthly reporting, see below. For hourly reporting, the LEU should provide hourly data relating to the Guarantees of Origin that have been cancelled for production claimed in the same month so that the hourly emission can be calculated.
 - Target Compliance : Energy consumption per month is 100% matched with clean energy production in the same months, as demonstrated by the cancellation of Guarantees of Origin from assets that are no more than 3-years older than the LEU consumption site and located in Ireland.
 - Further details on implementation of Measuring Performance are provided in Q7 below.

Section 3.3 - Measuring Performance

Q.7

Comments are invited on the approaches used to account for net zero emissions. This could include timestamped GOs or renewable certificates. Please provide reasons and rationale for any views provided.

Final Rule

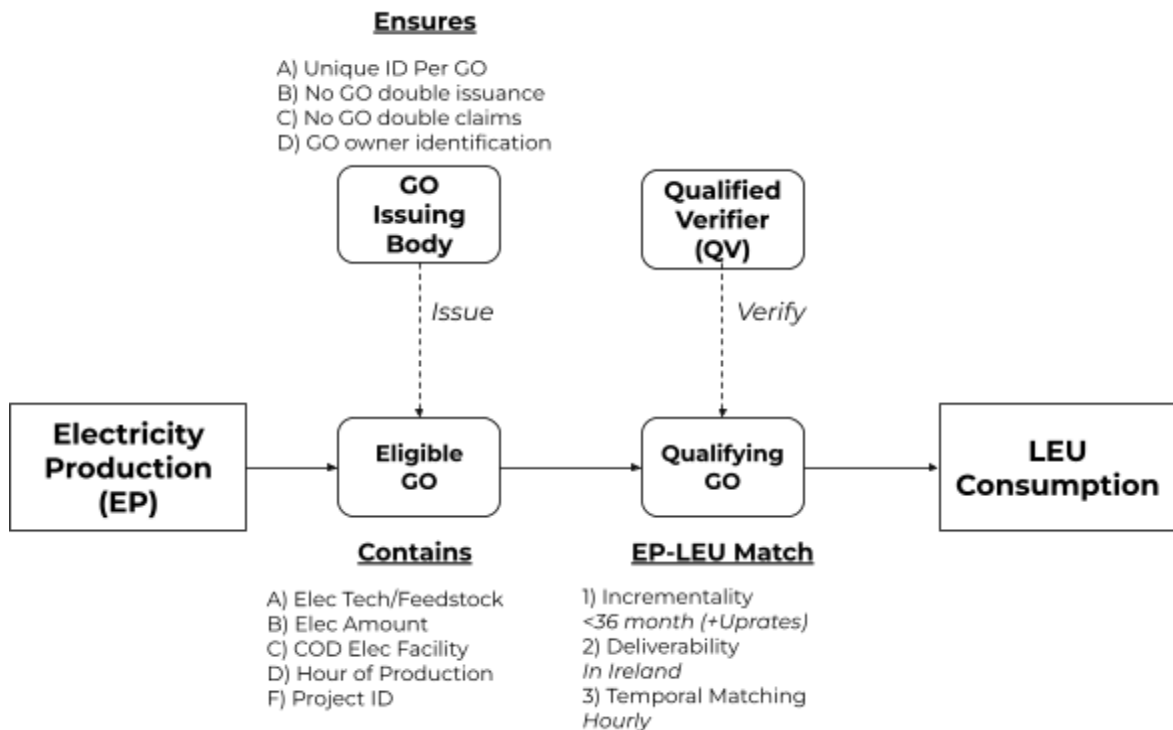


Figure 3 - Suggested Verification Scheme for Hourly Net-Zero in Final Rule

- As electricity flows cannot be physically tracked across the grid, Energy Attribute Certificates (EACs), known as Guarantees of Origin in Europe, were created to represent the attributes of purchased electricity and create an accounting structure to track that electricity production. GOs have traditionally tracked physical energy production on a monthly or annual basis, but new tools have been created in the EU and elsewhere to track and verify purchased electricity on an hourly basis through time-stamped GOs, also known as Granular Certificates (GCs).
- **As described above, the final rule should require 3-pillar hourly matching to meet the 100% Net Zero Target. This should be accounted for using timestamped Guarantees of Origin** which contain all necessary attributes to verify each pillar:
 - Incrementality : Clean Energy Production Device Commercial Operating Date
 - Deliverability: Clean Energy Production Device Location
 - Hourly Matching: Time (i.e to the hour or less) of clean energy production.

- Figure 3 illustrates how the attributes on time-stamped GOs can be used to check eligibility criteria and to become a “qualifying GO” that counts as zero-emission electricity supply for LEUs in the 100% real-time net-zero framework. Regarding the temporal correlation requirements, the key requirement is that the eligible GO, issued by the GO Issuing Body, be stamped with the hour of production beginning in 2028, and that the Qualified Verifier verify that this GO corresponds to the hour of LEU consumption.
- The most recent revision of the EU’s Renewable Energy Directive (RED 3)²⁸ defines and encourages the implementation of time-stamped GOs across the EU. RED 3 details how²⁹ GOs may be issued in units smaller than the standard GO size of 1 MWh and how the timestamping should be aligned with the imbalance settlement period of the local electricity market.
- Therefore, the **CRU should proceed as soon as possible to establish a timestamped GO system in Ireland** in line with the definitions of RED 3. The transition phase to 2028 is ample time for the implementation of this system. The concept of time-stamped GOs is technically demonstrated and has been under development for a number of years. For example, EU TSOs Energinet, Elia and Elering are already offering time-stamped Granular Certificates as part of the Energy Track and Trace Initiative³⁰ and EnergyTag offers an open source set of standards³¹ detailing their implementation.
- Any consumption that cannot be proven to come from contracted zero-emission sources should be counted at the grid residual mix³² for that hour. Given that no hourly residual mix yet exists, **the CRU should proceed to establishing an hourly residual mix in coordination with the EU Association of Issuing bodies**. In the absence of an hourly residual mix, the hourly average grid mix should be used, as this data is widely available.

²⁸ “In the context of a more flexible energy system and growing consumer demand, there is a call for a more innovative, digital, technologically advanced and reliable tool to support and document the increasing production of renewable energy. To facilitate digital innovation in that field, Member States should, where appropriate, enable issuing guarantees of origin in fractions, and with a closer to real time timestamp.” [Renewable Energy Directive III - Recital 48](#).

²⁹ Renewable Energy Directive III - Article 19

³⁰ <https://energytrackandtrace.com/>

³¹ <https://energytag.org/standards/>

³² <https://www.aib-net.org/facts/european-residual-mix>

During the Transition Phase

100% Monthly Net-Zero and Monthly Reporting Tracking

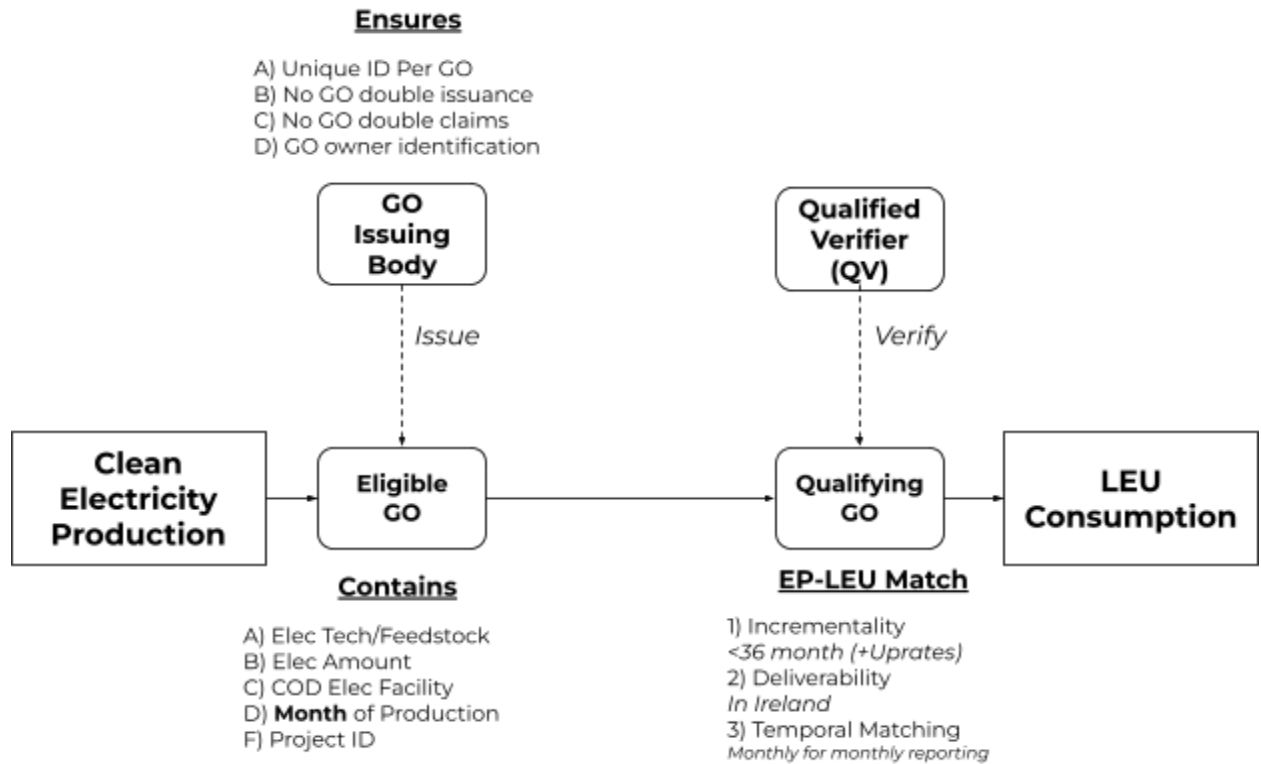


Figure 4 - Suggested Verification Scheme for Monthly Net-Zero Target For Transition

- During the Transition phase when 100% monthly net-zero is required, this should be demonstrated by cancelling the equivalent amount of Guarantees of Origin for consumption within the same month.

Hourly Reporting Requirement

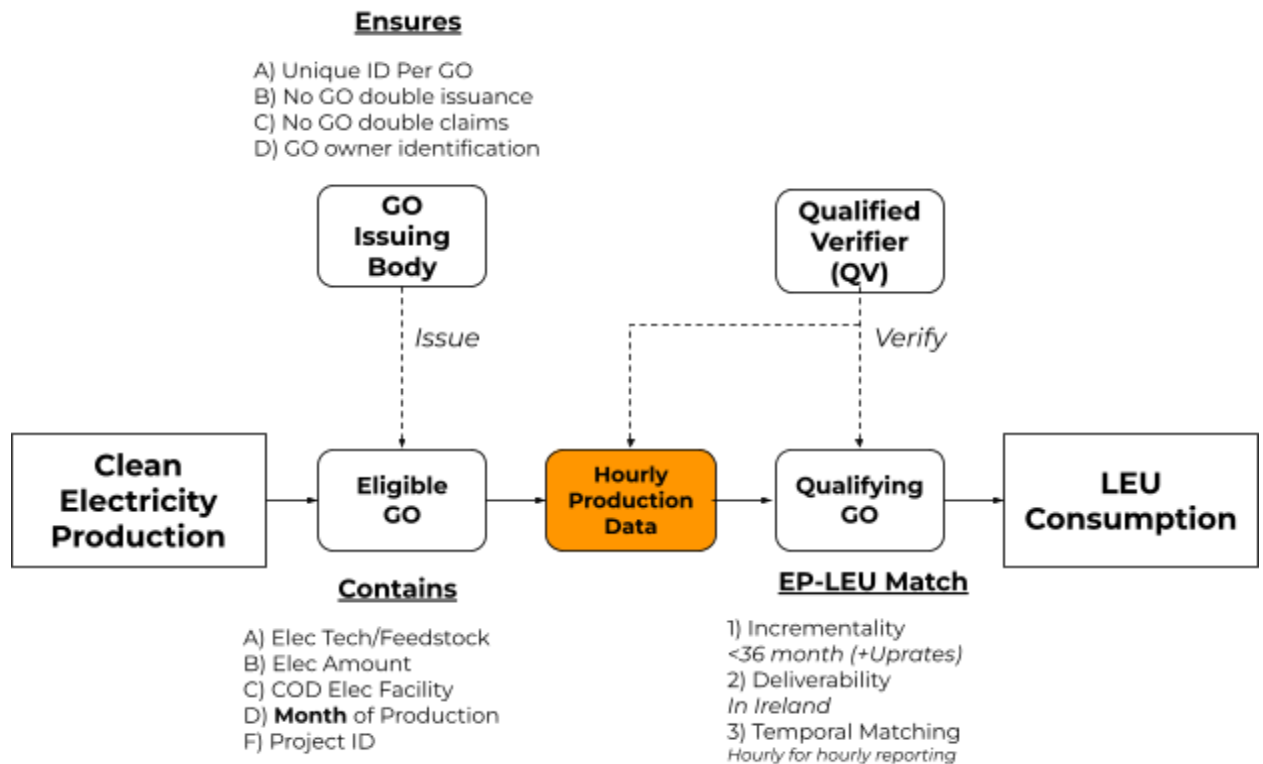


Figure 5 - Suggested Verification Scheme for Hourly Net-Zero Reporting For Transition

- Reporting and verification of hourly reporting for Net Zero emissions is possible as of today using a combination of GOs with month of production information (to ensure no double counting) and hourly data that should be made readily available for all clean electricity production being used for Net Zero emission claims. Figure 5 above shows how this can be performed and verified by the Qualified Verifier today based on the principles of the EnergyTag Granular Certificate Standards³³
- Requiring hourly reporting from the beginning is important as it will ensure that the LEUs, electricity suppliers and other key stakeholders are ready for a smooth transition to hourly real-time net-zero requirements after the transition phase is over.
- This method of combining monthly GOs with hourly data is the standard method used by dozens of organisations today to demonstrate hourly matching. The map below (Figure 6) shows some hourly matching projects underway across the world, which collectively cover over 1 terawatt-hour (TWh) of electricity and involve some of the world's leading organisations focussed on hourly matching, such as Google, Microsoft, Statkraft, Nordpool, Flexidao and Granular Energy. Some jurisdictions, such as Taiwan, only permit hourly matching for clean energy claims and have done so for years.

³³[EnergyTag - Standards](#)

- The EnergyTag Standards provide a detailed open source voluntary framework for demonstrating hourly matching today, where Granular Certificates can be Issued (by combining Monthly GOs and hourly data) and used to match clean energy production to load on a (sub)hourly basis. The CRU is free to contact us for details of how our standards could be used to facilitate robust hourly reporting as of today, and how this can enable Ireland to implement a complete hourly GO system for the final rule phase.

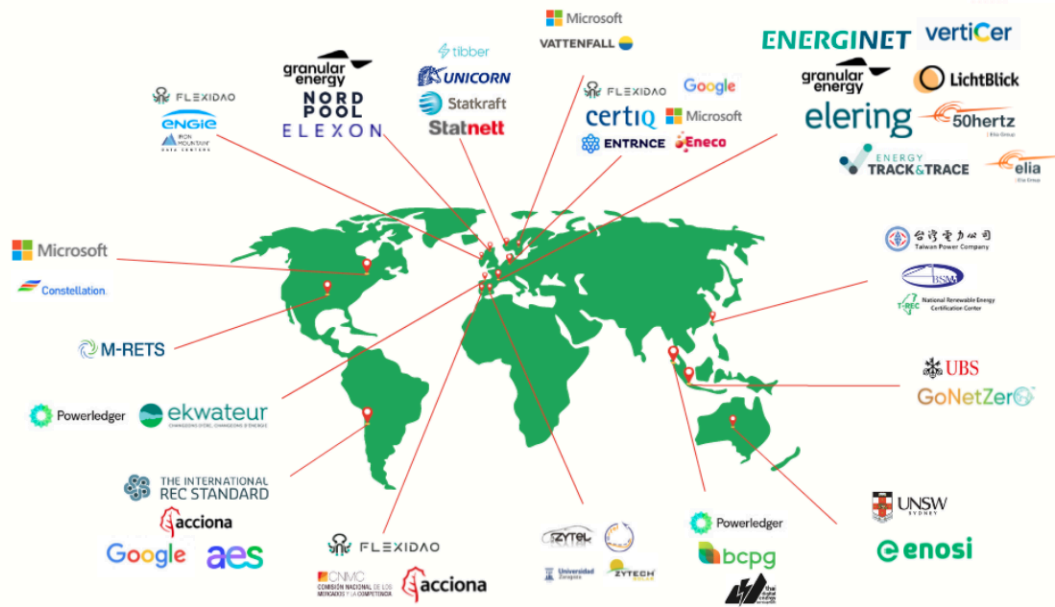


Figure 6 - EnergyTag Case Studies of Hourly Matching Globally³⁴

Q.8

Should the end target/goal be real time zero emissions? Do respondents have other suggestions as to how this can be demonstrated? Please provide reasons and rationale for any views provided.

- Yes. As detailed above, based on the evidence, a 100% real-time (i.e (sub)hourly) net-zero target is the only approach that can be used to justify call data centres net-zero.
- We are aware of no other accounting approaches that are sufficiently robust, and therefore any alternatives would damage the integrity and effectiveness of this policy.

³⁴ https://energytag.org/case_studies/

Q.9

Comments are invited on the use of a glide path to implement the basis on which net zero emissions are determined. This could entail starting with measuring net zero performance on an annual basis and moving closer to more real time arrangements in incremental steps.

- As detailed above. We believe that there should be a transition period where 100% Net Zero is calculated on a monthly basis, possible from today, and then on an hourly basis from 2028. This provides flexibility in early stages while ensuring a robust end goal.

Q.10

Comments are invited on the use of self-reporting based on best available data/methodology and transitioning to a more robust formal framework over time when it becomes available.

- We believe that hourly reporting should be required from the beginning, even if this is based on monthly GOs and hourly clean electricity data production data as reported by the LEU for hourly reporting. We believe that reporting should be verified by a Qualified Verifier in all cases (monthly and hourly). However, we understand that for the hourly reporting in the transition phase prior to 2028, the CRU may want to refrain from having this reporting verified and permit self-reporting.

Q.11

Comments are invited on the requirement for indigenous sources of renewable energy e.g. renewable electricity feeding into the Irish system and for gas secure sufficient renewable gas credits feeding into Irish system.

- Ensuring a sufficient degree of deliverability between electricity production and load is crucial to a robust emissions accounting framework. As Ireland is an island grid with low interconnection, only renewable energy sources from Ireland should be permitted.
- However, in cases where interconnector booking capacity is demonstrated, the CRU should permit clean electricity imports to be claimed provided they meet the hourly matching and incrementality requirements. This ensures there is an incentive for increased interconnection which would benefit the system as a whole while preventing claims of zero-emissions consumption that in reality would drive increased fossil dispatch in Ireland.

Q.12

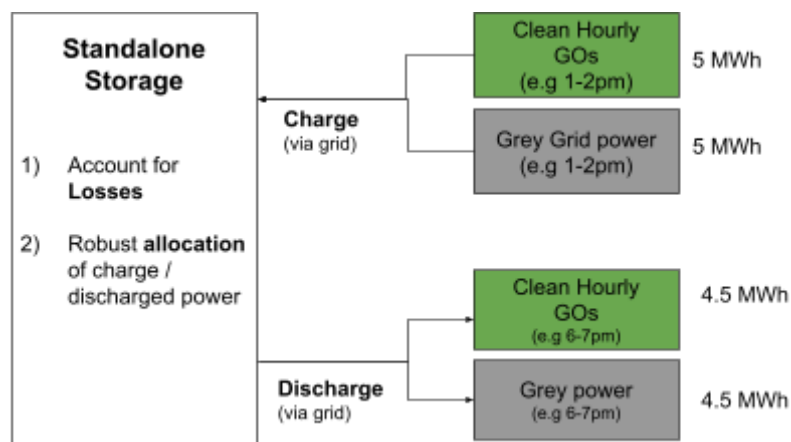
Comments are invited on how the storage of renewable energy is captured by any measurement system when this stored renewable energy is used.

- The ability of storage to time shift clean energy is central to energy consumers with hourly matching targets who have signed contracts with high levels of hourly matching³⁵.
- Hourly matching systems for storage have been tested on real world batteries³⁶ and are being addressed by global standard organisations such as EnergyTag
- Where storage is co-located behind the metre, with either the renewable energy production facility or the LEU, it should be permitted and is relatively easy to track.

Guidance on Implementing Standalone Storage Tracking

- For standalone storage, a number of requirements have to be met in order to ensure robust tracking and integrity of the accounting framework. EnergyTag has held various working groups on this topic with global experts over the past years and further detail is provided in section 1.6 of our Granular Certificate Scheme Standard³⁷. We offer the following guidance on how to ensure storage is tracked effectively.

- Process for Temporal Matching



Hourly Storage Tracking Process

- Charging: Hourly GOs from the production of clean electricity are retired during the same hour as the storage charge. The volumes of GOs charged into the storage in an hour cannot exceed the physical electricity charged into the storage in that hour.

³⁵ [AES-Google 24/7 PPA including storage for 90% hourly matching](https://www.aes-google.com/2023/09/24/aes-google-24-7-ppa-including-storage-for-90-hourly-matching)

³⁶ see Quinbrook's case study <https://www.quintrace.com/hourly-case-study>

³⁷ <https://energytag.org/wp-content/uploads/2023/09/Granular-Certificate-Scheme-Standard-V2.pdf>

- Storage: Hourly GOs Attributes are stored in the battery (i.e. reservoir) over time. Losses are applied to all types of energy in the reservoir on an hourly basis (as detailed below).
- Discharge: Hourly GOs are re-issued as discharge from the storage and matched to the consumption of the LEU in the same hour as storage discharge. GO volumes discharged from the battery must never exceed electricity discharged from the battery at any given hour.
- Accounting for losses
 - The energy lost while the electricity is stored must be accounted for using Round-trip efficiency (RTE) applied each hour to the electricity charged into the storage system and applied proportionately to both clean GOs and grey (i.e grid) energy charged into the battery.
 - The RTE should be calculated on an hourly basis based on measured hourly charge and discharge and battery state of charge data. Hourly calculations are important to avoid large discrepancies between real losses and hourly GO losses.
 - Where RTE is not or cannot be calculated using metre data, the manufacturer default value for the asset should be used but only for an initial period of 6 months only, following the start-up of a Storage System.
 - If neither measured hourly RTE nor storage system default values are available, a default RTE value for the storage technology may be used. This default list should be provided in the CRU guidance and should reflect conservative estimates to encourage real measurement of RTE.
- Attribute allocation
 - A robust, consistent, and auditable methodology must be used to ensure a physically representative flow of clean/grey energy attributes in and out of the storage device.
 - One of the methods used for storage tracking could be:
 - Weighted average → Discharge hourly GO and grey power based on a weighted average of attributes in storage at the time of discharge.
 - First in First out → Discharge hourly GO and grey power based on the order in which they were charged into the storage device
 - Clean First → Prioritise discharging clean power first and grey power second for each hour, which gives the operator the most certainty of when clean energy will be used by the LEU.
 - Storage operator decides → No specific restrictions over which attributes are discharged from the battery at any specific time. This gives the most flexibility to the battery operator but could lead to an imbalance in clean to grey attribute charge and discharge from the storage system.

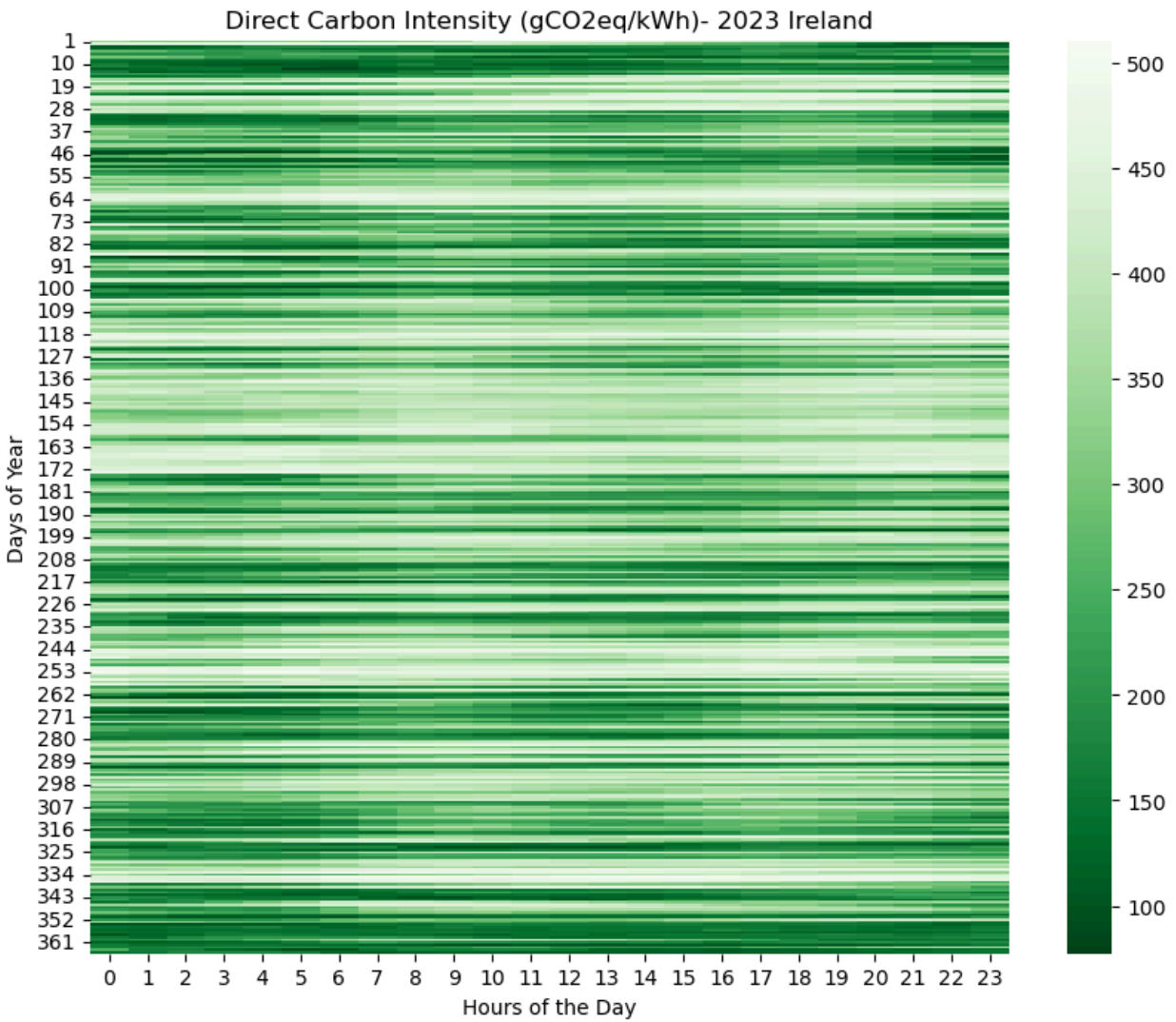
Q.14

Comments are invited on who should have responsibility for measuring LEUs emissions and emissions abatement performance?

- A Qualifier Verifier should be required to verify the emissions reported by the LEU.
- This verifier should be sufficiently qualified to verify such emissions reporting, for example through relevant 'ISO/IEC 17065' or equivalent conformity assessment and should be independent of the LEU.

Annex

Annex 1 - Hourly Carbon Intensity of Irish Grid 2023



Electricity Carbon Intensity by Hour - (Source: [ElectricityMaps](#))