



— Making credible renewable electricity usage claims

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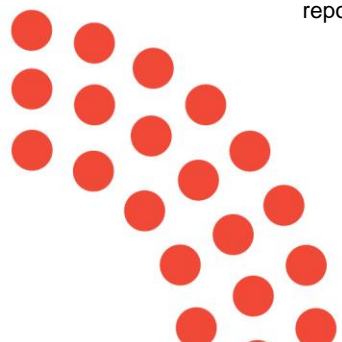
Foreword

The RE100 Technical Advisory Group provides RE100 companies with best practice guidance on the use of renewable power, to help them progress their journeys to being 100% powered by renewable electricity. Group members are energy experts working for a number of leading non-profit organizations and initiatives.

Introduction

Companies can make a variety of statements about renewable electricity (RE) relating to its development, generation, use, and environmental and social benefits and impacts. But the ability to demonstrate and claim use or delivery of RE on shared electricity distribution network, or, “grid”, requires the support of markets and contractual instruments that meet the specific criteria to be credible.

This briefing note provides a set of criteria that RE sources and purchasing mechanisms must meet in order to support credible RE usage and delivery claims. These criteria can be applied across a range of local electricity market conditions and RE market development levels. This briefing also provides guidance for verification, reporting and communication of RE use.



1. Claiming use of renewable electricity

RE usage claims are claims by a specific grid customer or group of customers to be receiving or consuming RE, and/or claims by a supplier or distributor to be delivering or supplying RE to a specific grid customer or group of customers. In other words, these are an electricity user's claims to specified renewable generation. For example:

- “ Our company uses renewable electricity.”
- “ Our company uses wind energy to make this product.”
- “ This facility is solar powered.”
- “ This group of customers is receiving renewable electricity.”
- “ We procured renewable electricity for all our operations.”

Making claims around the use of RE requires the defining of renewable “attributes” of generation, or that which defines the manner of production as renewable. Attributes include everything that identifies the generation source and all non-power outputs, including the fuel type, location, greenhouse gas (GHG) emissions and the other environmental and social impacts and benefits of the electricity generation. Defining and allocating generation attributes contractually is essential since physical electricity is indistinguishable based on how it was produced and untraceable on a grid with many different connected generation sources. In other words, generation attributes are not physically delivered or knowable, and use of specified electricity on a shared grid can only be determined contractually.

Therefore, making credible RE use claims depends largely on effectively tracking RE attributes, verifying exclusive delivery by generators and suppliers, and verifying exclusive ownership of attributes by grid customers buying RE.

1.1 Markets for attributes and certificates

Allocating RE generation to specific grid customers requires contractual instruments to convey attribute information from generation to end-use. These contractual instruments make specified-source purchasing on the grid credible and verifiable. The ability of consumers to know and choose the sources and attributes of their electricity is the underlying premise of most market liberalization and electricity supplier disclosure rules, and allows consumer demand to influence RE supply over time. Energy attribute certificates are a type of contractual instrument that fulfils these functions, but other instruments may also be used.

- **Energy attribute certificates:** These are the most sophisticated of these instruments. Energy attribute certificates, or just “certificates”, embody the generation attributes of one megawatt-hour (MWh) of RE. Certificates not only make attribute ownership verifiable, they also make attributes easily tradable – they enable markets for generation attributes. These markets for generation attributes or certificates – commonly called renewable energy markets – are used by grid consumers to substantiate claims to RE. In this case, where the certificate instrument meets the quality criteria explained in this document, certificate ownership (or certificate retirement on one's behalf) determines a credible RE usage claim. Examples include the North American renewable energy certificate (REC) and the Guarantee of Origin (GO) in Europe.
- **Other contractual instruments:** Credible RE usage claims may be possible in areas without established attribute certificate markets using other contractual instruments and arrangements between generators and/or suppliers and individual users. This is possible providing there is sufficient verification that the transfer of attributes is legally enforceable within the context of existing electricity and RE policies and legal frameworks, and that there is no existing or other claim on the generation or attributes. For example, in some countries where differentiated electricity product options are not available for most consumers, certain large electricity consumers may nevertheless be able to buy directly from a local generator or make special arrangements with the electricity supplier to purchase specified source electricity. In this case, delivery and

ownership of the attributes may be specified as a part of a contractual arrangement, along with verification against claims by other parties to support a RE usage claim.

Off-grid RE use

Where a company is not connected to the grid but is using RE through a direct connection with a RE generator that is not connected to the grid, verification of the attributes of the RE is required to make a credible claim.

Where electricity cannot be differentiated and generation attributes cannot be contractually delivered, and off-grid use is not feasible, grid customers may only be able to claim the grid average or default mix of generation attributes, which may include some portion of RE. Also, in these cases, other claims (other than standardized RE usage claims, for example about social or environmental impacts) may be possible depending on what arrangements can be reached between the government, generator, supplier, and consumer, and what attributes can be verifiably delivered and owned. In many cases, general claims to be supporting RE can be made.

1.2 GHGs from purchased electricity (Scope 2) claims

Companies increasingly purchase RE in order to claim the use of low or zero-emissions electricity and thereby reduce their carbon footprint. Most RE sources/technologies, including wind, solar, geothermal, hydropower, ocean, and others, do not directly emit GHGs to generate electricity.¹

RE procurement therefore allows the consumer to claim to be using zero-carbon electricity, and thereby reduce the portion of their carbon footprint associated with purchased electricity. The emissions associated with purchased electricity are categorized as “Scope 2” emissions by the World Resources Institute’s (WRI’s) and World Business Council for Sustainable Development’s (WBCSD’s) Greenhouse Gas Protocol Corporate Standard.²

The Scope 2 Guidance revision to the Corporate Standard requires companies to report Scope 2 emissions according to two methods: location-based, using grid average emission factors; and market-based, using supplier and product specific emissions factors. The latter will be contractually defined and in certain markets based on certificates for RE, either bought separately from electricity, delivered through an electricity supplier’s product, or consumed from on-site generation. Each of these methods represents a way of allocating emissions to consumers.

Under the location-based allocation methodology, the consumer has no choice as to specific attributes and is required to report the average of all attributes within a geographic grid in which they consume electricity – an emission factor called “the grid average”. Contractual attribute allocation (and within this, energy attribute certificates) allows individual electricity consumers choice of electricity products and attributes.

GHG emission attributes

- **Direct GHG emissions factor:** All electricity production has an associated GHG emissions factor, expressed in metric tons of carbon dioxide-equivalent (tCO₂e) per MWh of generation (tCO₂e/MWh). For most renewable electricity generators the calculation of the emissions factor is straightforward since, with the exception of biomass, there are no onsite GHG emissions – they have an emission factor of 0 tCO₂e/MWh at the point of generation (upstream emissions associated with fuel, technology or transmission and distribution losses are accounted and reported in Scope 3).
- **Avoided grid GHG emissions:** In addition to the GHG emissions factor, which is used for Scope 2 calculations and claims, there is typically a second GHG attribute ascribed to RE generation: the GHG emissions avoided on the grid as renewable generation displaces emitting generation (“avoided grid emissions”).

Every generation facility on a given grid exists within a dispatch order established by the grid operator, and any MWh of energy generation from a given facility, be it renewable or not, as well as energy conservation or efficiency interventions that avoid generation, can be analyzed in terms of its relationship to, and impact on, other emitting facilities on the grid. Therefore, in certain markets and circumstances, RE purchasers can

claim that the generation of their electricity displaced or avoided the need for an equivalent MWh from emitting power plants on the grid. Quantifying this benefit involves establishing what emitting resources were likely displaced by the renewable generation and calculating emissions avoided using the emissions factor of those resources. These total avoided grid emissions can be reported as supplemental information (i.e. outside of the scope 2 calculation) where RE purchasing has such an effect, but should not be deducted from an organization's overall footprint.

Where emissions from the power sector are restricted by policy or are "capped" and there is no mechanism in place to restore the avoided emissions claim to the voluntary RE buyer, avoided emissions effectively equal zero (e.g. in the EU). Also, where carbon offsets have been issued to a RE project, the avoided grid emissions are being claimed, credited and sold to the offset buyer for a global emissions reduction claim. See below for attribute aggregation requirements for RE usage claims.

Distinction from offsetting claims

The GHG emissions claims described above relate to a company's own electricity use and its corresponding GHG emissions impact or "footprint", and are not equivalent to claims about the amount of RE or greenhouse gas emissions on the grid or globally. In other words, they are not equivalent to carbon offset claims, which demonstrate global emission reductions on the grid beyond a baseline.

Without testing for offset quality criteria such as "additionality", renewable generation and avoided grid emissions are not necessarily caused by the consumer's purchase and are not necessarily occurring beyond a baseline. Additionality is not required to claim use of RE that avoids emissions on the grid. Hence, RE usage can only be used to reduce the portion of one's corporate carbon footprint associated with purchased electricity (Scope 2 marketbased method), whereas a carbon offset is a standalone, global emissions reduction beyond a baseline that can be used to address any emissions in the gross corporate GHG inventory.

2. Making credible renewable electricity usage claim

The requirements for a credible RE usage claim and the criteria for contractual allocation of attributes (including energy attribute certificates) are as follows:

1. Credible generation data;
2. Attribute aggregation;
3. Exclusive ownership (no double counting) of attributes;
4. Exclusive claims (no double claiming) on attributes;
5. Geographic market limitations of claims; and
6. Vintage limitations of claims.

2.1 Credible generation data

Accurate generation data is critical as the basis for any RE usage claim. Static data (e.g. fuel type, location, date of first operation, etc.) should be third-party verified, a common practice of attribute tracking systems. Dynamic data (quantity of generation) is best when metered using a "revenue-grade meter" and independently used as the basis for determining the quantity of attributes and certificate issuance.

Companies should be cautious of making claims where static data cannot be verified by third-parties and/or generation data is not metered.

2.2 Attribute aggregation

A RE usage claim is not supported by any individual attribute, but rather by all attributes that define the generation being claimed. Therefore, making a credible RE usage claim requires ownership of all environmental

and social attributes associated with the generation that can be owned, and that none of these attributes have been sold off, transferred, or claimed elsewhere.

The conditions of attribute aggregation vary by country and legal/regulatory framework for the electricity sector. Where a single multi-attribute instrument, such as a U.S. REC exists, assurance of all relevant attribute aggregation is simplified. If separate instruments have already been created for different attributes of power generation (e.g. carbon attributes), attribute aggregation can be achieved by bringing these instruments together – by demonstrating ownership and retirement of all instruments that make up a RE usage claim. Where there is not an existing market for RE, or where electricity is not typically differentiated, attribute aggregation may require engagement with local electricity suppliers. Companies should also take account of the in-country policy context of the generation (existing practices, policies, and legal frameworks that determine how electricity and RE is or can be transacted in different markets).

Where certain attributes (e.g. GHG emissions), cannot be owned or are equivalent to zero due to policy (e.g. the effect of a GHG cap-and-trade program on the avoided grid emissions attribute), and where attributes are not sold off separately, a RE usage claim may nevertheless be possible, provided that the RE purchaser owns all other generation attributes and that the remaining owned attributes are sufficient to define use of the resource according to market development, consumer expectation, and stakeholder feedback.³

Companies should disclose any attributes that are not included in the instrument or transaction. In addition, different standards and certifications (e.g. Green-e) may have different or additional requirements for a “fully aggregated” RE instrument or group of instruments.⁴ Companies should also abide by any local laws and regulations pertaining to RE claims (e.g. the U.S. Federal Trade Commission’s “Green Guides” in the U.S.⁵).

2.3 Exclusive ownership

Exclusive ownership of RE generation attributes consists of legal enforceability, tracking (exclusive issuance, trading, and retirement), and exclusive sales and delivery.

2.3.1 Property rights

Legally enforceable contractual instruments must include “property rights” to environmental and renewable attributes of generation – that is, there must be a legally enforceable contract in place to back the exchange of attributes as property rights. Legal enforceability does not necessarily require governmental programs or legislation to create or recognize a market or energy attribute certificate, only that the mechanism for definition and conveyance/transfer of the attributes (e.g. contract, energy attribute certificate in a tracking system, etc.) is legally enforceable.

2.3.2 Tracking

Claims must be substantiated by attributes that have been reliably tracked from a generator to a consumer.

Where attributes are transacted without energy attribute certificates, the transfer of attributes must be clearly articulated in a legally enforceable contract or series of contracts that link the generator to the end user, and claims must be based on the permanent end-use ownership or final use of those attributes, which also must be specified in a contract.

Where energy attribute certificates are used, the certificates must be reliably tracked. This, again, can be done using contracts. However, the most sophisticated mechanism for tracking energy attribute certificates is an electronic attribute “tracking system”, in which certificates are electronically serialized and issued to generators with accounts on the system, tracked between account holders in the system where they are traded, and ultimately permanently retired or cancelled electronically by the entity making the claim or on behalf of an end-user making a claim.

Attribute tracking systems provide exclusive issuance, trading, and retirement of attributes to markets for RE to support credible claims. Where tracking systems exist, transactions outside of the tracking system are usually

limited to special cases (e.g. where participation in the tracking system is too costly for very small generation units).

While tracking systems have developed independently of each other in different jurisdictions around the globe, there are a few elements that all credible tracking systems have in common. These include:

- **Standardized certificate information:** Tracking systems issue certificates in MWh, and include the same basic information on each certificate:
 - Resource/fuel Type (e.g. wind, solar, etc.)
 - Serial ID
 - Generator ID
 - Generator Name
 - Generator Location
 - Vintage (date of generation)
 - Issuance Date
- **Certificates are issued for all RE generated from registered generators:** Certificates are issued to the RE generator. Some tracking systems require that certificates be issued for all production that is put onto the grid by registered generators. In others, such as those in Europe, registered generators have the right to request certificates issuance for selected production, in which case the attributes associated with production that is not issued certificates are allocated to the residual mix. In both cases, no energy attribute certificates from registered generators should be traded outside of the tracking system, in order to avoid potential double counting.
- **Defined geographical footprint:** To prevent double registration and issuance of certificates, tracking systems must be clear on the geographic boundaries within which generators have access to the tracking system, and ensure, through cooperation with other tracking systems, that generation facilities register in only one tracking system for certificate issuance.
- **Independence and transparency:** Independence and transparency of tracking systems help to maintain the integrity of the attribute market. Best practices include:
 - The tracking system operator does not act as a market player trading, selling or redeeming certificates;
 - Tracking systems should have transparent and non-discriminatory issuance criteria and operating rules;
 - Tracking system operators should follow defined procedures to identify and prevent conflicts of interest;
 - The tracking system should provide access to regulators and system auditors and allow for independent consumer claim verifications. To the extent possible, full disclosure of unit attributes and status should be made public;
 - Frequent independent third party audit of the tracking system should be conducted by a credible and competent organization, verifying the factual static and dynamic data contained within the tracking system, and preferably made public;
 - The system should be open and accessible to new participants.

Examples of RE attribute tracking systems are provided in the appendix.

2.4 Exclusive claims

To the extent that tracking systems prevent double issuance and other forms of double counting, tracking systems alone will not necessarily ensure exclusive claims, i.e. that there are no other claims being made on either the attributes (including emissions) or electricity as renewable. Where energy attribute certificates can be sold separately from electricity, the electricity buyer does not have an exclusive RE use claim unless they own and retire the certificates, and likewise the certificate buyer does not have an exclusive usage claim where the

electricity is also being claimed/reported as renewable or individual attributes are being claimed/transacted in another way. This requires that all RE instruments or instruments representing individual generation attributes (e.g. carbon offsets issued for renewable energy generation) have been retired by or on behalf of the same entity and that there are no other usage claims being made on the generation or attributes, for example, by the electricity supplier to meet a RE delivery target or in marketing that RE is being delivered to customers.

2.5 Geographic market boundaries

Attributes (and certificates) must be sourced and purchased from within the same defined geographic region that constitutes a “market” for the purpose of transacting and claiming attributes. Ideally this “market boundary” would be clearly defined, but in general it refers to an area in which the laws and regulatory framework governing the electricity sector are sufficiently consistent between the areas of production and consumption. As such, transactions that are both international and intercontinental are not usually appropriate unless there is physical interconnection (indicating a level of system-wide coordination between countries) and ideally if these countries’ utilities or energy suppliers recognize each other’s instruments. Within a single country or multiple countries in a common regulatory framework (e.g. U.S. and E.U. respectively), there may be multiple grid distribution regions where electricity is physically delivered. Because of the regulatory consistency, the geographic market for attributes is not necessarily constrained to the area in which it is possible to physically deliver electricity within the grid. There are advantages to larger market boundaries that allow consumers to source RE where it may be less expensive to create, while other programs or companies may prioritize sourcing from the same grid region as their consumption in order to support more local jobs or economic development.

2.6 Vintage limitations

To make a credible RE claim, the vintage of the attributes (and certificates) – that is, when the generation occurred – must be reasonably close to the reporting year of the electricity consumption to which it is applied. There is no official consensus on what is “reasonable” in this case, and it may vary between markets. Companies can refer to certification standards, claim verification and recognition programs (see next pg), and/or GHG inventory reporting systems to ensure that the vintage of generation does not occur too far in advance or after consumption. This will also depend in part on the technical requirements of the tracking system and the market in which the consumer is active. Certain certification programs may enforce their own criteria for what is considered “reasonable”, such as Green-e’s requirement of a 21-month vintage eligibility window for certified sales of RE in a given year.

3. Correlation of credible RE claims and scope 2 criteria

The best practice requirements for making a credible RE claim are listed alongside the Scope 2 Quality Criteria in the table below for reference.⁶

Best practice requirements for credible RE usage claim	Scope 2 quality criteria
Ensuring accurate generation and attribute information	
<ul style="list-style-type: none"> • Credible generation data • Attribute aggregation 	<ul style="list-style-type: none"> • Convey GHG emission rate
No double counting of generation or attributes between instruments	
<ul style="list-style-type: none"> • Exclusive ownership (no double counting) 	<ul style="list-style-type: none"> • Convey GHG emission rate • Be the only instrument that conveys that GHG emissions rate • Tracked, redeemed, cancelled by or on behalf of reporting entity
In addition, no double claiming between users	
<ul style="list-style-type: none"> • Exclusive claims (no double claiming) 	<ul style="list-style-type: none"> • Requirement to use the residual mix or document its absence • Utility specific requirements • Direct purchasing requirements
Matching generation to usage geographically	
<ul style="list-style-type: none"> • Geographic market boundary limitations 	<ul style="list-style-type: none"> • Market boundary limitations
Matching generation to usage temporally	
<ul style="list-style-type: none"> • Vintage limitations 	<ul style="list-style-type: none"> • Vintage limitations

4. Verification of RE requirements and claims

The requirements for credible RE usage claims should be verified by an independent third party. Some requirements for credible claiming are done automatically through the use of a recognized tracking system and other requirements require third-party certificate programs to verify claims.

Tracking system operators are able to verify generation data, attribute aggregation and exclusive ownership. In some jurisdictions, programs exist to verify these claims on behalf of the tracking system operator. Verification of vintage limitations and geographic market limitations are the responsibility of the consumer making the claim. These claims can often be verified by trained third-party auditors or through the use of “Claim Verification Programs”, where these programs exist.

Green-e Marketplace will verify the use of Green-e Energy, Green-e Direct certification and other onsite use as well as vintage and geographic market requirements for corporate purchasers of RE. In addition, these programs can often verify “percent-of-use” claims.

For example, a company may wish not only to claim use of RE, but more specifically that 60% of their operations are powered by RE. Verifying this claim involves not only demonstrating that the company may credibly claim use of RE in accordance with the requirements in the previous section, but also that the amount of RE purchased (quantity of attributes) equals 60% of their operations, which involves calculations of overall consumption.

Where specific claim verification programs do not exist, the consumer may work with independent and experienced third-party auditors to ensure credible RE claims or percent of-use claims.

5. Communicating claims

It is important that public claims about RE, whether through the company website, social media, annual reports, sales materials or other, accurately reflect the actions taken by the company. This means that claims should be specific enough to ensure reasonable understanding of the materiality of the RE purchase. For example, it may be accurate for a company to state “we buy renewable electricity”, but if the purchase only represents 1% of the company’s total global electricity use, the lack of specificity may lead to confusion.

When making a public claim, companies should consider:

- The purchasing option that was employed (e.g. consumption from an owned, onsite facility, direct purchase by way of Power Purchase Agreement (PPA), retail purchase from an energy supplier, purchase of unbundled certificates, etc.);
- The boundary of the consumption being addressed with the purchase (e.g. consumption at a local facility, for the totality of operations within a country, for manufacturing of a specific product, etc.);
- The type of RE used/represented by the purchase (e.g. wind, geothermal, etc.);
- The amount or percentage of RE purchased;
- The timeframe of the purchase, i.e. the period of consumption covered by the purchase;
- The length of the company’s commitment to purchasing or consuming RE;
- Any certifications used.

Guidance for RE claims in the U.S.

In the U.S., the Federal Trade Commission (FTC) has published Guides for the Use of Environmental Marketing Claims (Green Guides), which contain guidance specifically regarding claims related to the use of RE.⁷ In the U.S., companies making environmental claims that fail to comply with the Green Guides risk facing an FTC action.

Any public or marketing statement regarding use or purchase of RE should be substantiated and ideally meet the best practice requirements for a credible claim described above, including retention/acquisition of attributes. For example, the FTC Green Guides reinforce that REC ownership includes the exclusive right to make a marketing statement about RE use associated with particular generation.

Companies should also be advised that the accuracy of public and marketing claims might not be the only criterion used by these agencies. For example, the FTC Green Guides advise that claims to be “hosting” a RE facility are likely to mislead customers if the company has sold off its RECs, despite the potential accuracy of such a claim for some companies. The FTC may still bring actions against parties that have onsite RE installations even if they are only making truthful claims about owning an onsite installation, if such statements would lead customers to believe that the host is using RE when in fact, the host is selling off the RECs.⁸ In general, the FTC looks for the overall impression a piece of marketing material may present and therefore may not be satisfied with a small print disclaimer to ensure accuracy.⁹

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As Deputy Secretary-General of RECS International Jared works on the consumer-driven market for renewable electricity in Europe and around the world. He is a leading expert in the market for Guarantees of Origin and other electricity tracking instruments. Recently Jared began the International REC Standard Foundation, which implements and standardizes attribute-tracking systems around the globe. Jared is an active member of a number of technical working groups and advises companies on issues related to attribute and emissions accounting.

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Appendix

Examples of energy attribute tracking systems

Reliable RE tracking systems are independent, transparent and robust. These systems have taken different forms to adhere to the different regulations in each country or region where they are active. The three tracking systems described below, and their subsequent energy attribute certificates, are reliable mechanisms for attribute delivery and individual consumer claims.

- **North American REC tracking systems**

Electricity markets in the U.S., Canada and Northern Baja California are served by a variety of geographically-defined tracking systems.¹⁰ These systems were developed primarily to meet the needs of state-level RE programs (renewable portfolio standards or RPS), and to facilitate electricity supply disclosure information (proof of sources of power) for load serving entities in deregulated (competitive) electricity markets. They also serve voluntary RE market participants.

All of the systems, with one exception¹¹, were developed and originally funded by governmental or quasi-governmental agencies interested in using the systems for regulatory compliance. North American tracking systems can be differentiated as either all-generation certificate tracking systems or systems that limit participation to RE generation, RECs.

There are two all-generation tracking systems, both in the Northeast of the U.S. (NEPOOL GIS and PJM-GATS). The rest are RE only. Some of the systems in the U.S. track generation within a single state (e.g., North Carolina and Texas), but the majority of states using tracking systems participate in tracking systems designed to cover a multi-state footprint.

- **European energy certificate system Guarantee of Origin (EECS-GO)**

Guarantee of Origin certificates are a European-wide requirement used to prove the share of energy from renewable sources to the final consumer. The mandate for national GO tracking system implementation is embedded in European law. This requirement however does not mandate the necessary technical systems to ensure that the GO is a reliable energy attribute certificate.

National adoption of the European Energy Certificate System or EECS Standard by national GO issuers ensures the standardization of consumer claims and the robustness of the energy attribute certificate. EECS-adherent countries represent a large majority of the European member states. Within EECS countries, certificates can be electronically transferred to any other EECS country for subsequent cancellation and proof of electricity consumption in that area.

Most European countries, and all EECS-adherent countries, mandate that consumer electricity usage claims be verified by GO cancellation. These countries ensure electricity supplier products are factual through frequent audits of their delivered electricity products. In Switzerland and Austria the verification of consumer claims with the GO is mandated for all supplier-delivered electricity products, regardless of if it is a renewable or non-renewable product. This increasingly popular policy trend is called full-disclosure and is being discussed in a number of other EU member states.

- **The International REC Standard (I-REC Standard)**

The International REC Standard is a stakeholder-led organization that provides a list of rules, regulations and best practices which together form the "I-REC Standard".

The I-REC Standard provides the blueprints for a standardized tracking system that can be easily implemented in any country or region. An I-REC standardized tracking system will provide an internationally recognized method for electricity attribute allocation in regions that lack this reliable or transparent tool. Together with governments, policy makers and informed stakeholders the I-REC Standard provides a simple method for the voluntary or compliance implementation of a tracking system, depending upon the needs of the local authorities.

It is also possible to voluntarily implement an I-REC standardized tracking system in regions without an available system, assuming the I-REC Standard organization can provide reliable attribute transfers and claim exclusivity. For this reason, the legislative basis for I-REC certificate issuance will be different in each country where an I-REC standardized tracking system is active.

In order to make a reliable system a central registry system is used by all I-REC standardized tracking systems. This ensures the system is easily understood by its users and claims can be easily audited by third-parties. Local issuance of I-REC certificates is administered by an independent local issuer preferably acting with the recognition or support of local governmental authorities. The issuer controls the registration of electricity production facilities while verifying the reporting of electricity production data, issuing IRECs based on the verified production.

Glossary of terms

- **ADDITIONALITY:** A quality criterion for GHG emissions reduction (carbon offset) projects stipulating that the project would not have been implemented in a baseline or “business-as-usual” scenario.
- **ATTRIBUTE AGGREGATION:** The extent to which electricity generation attributes are transacted together or are included in a single instrument.
- **AVOIDED GRID EMISSIONS:** The GHG emissions avoided on the grid as renewable generation displaces emitting generation.
- **CAPPED EMISSIONS:** A situation in which emissions from a sector or specific sources within a sector are limited by regulation, law, or voluntary agreement.
- **CLAIM VERIFICATION PROGRAM:** A program that verifies the accuracy of renewable energy usage claims.
- **CONTRACTUAL ALLOCATION:** Allocation of specified generation to specific grid consumers based on contractual instruments.
- **CONTRACTUAL INSTRUMENT:** Any contract or energy attribute certificate used for contractual allocation, that stipulates the transaction of generation attributes or is used for said transaction.
- **CORPORATE STANDARD:** The GHG Protocol Corporate Standard was introduced by the World Business Council for Sustainable Development (WBCSD) to provide standards and guidance for companies and other organizations preparing a GHG emissions inventory. It covers the accounting and reporting of the six greenhouse gases covered by the Kyoto Protocol – carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆).
- **ELECTRICITY ATTRIBUTE CERTIFICATES:** Certificates that embody the generation attributes of one megawatt-hour (MWh) of RE.
- **ELECTRICITY MARKET:** A system enabling the purchase and sale of electricity as a commodity.
- **GRID:** Shared distribution network for electricity at a regional or national level, with many different connected generation sources.
- **PERCENT OF USE CLAIM:** A renewable electricity usage claim in which renewable electricity consumption is reported as a percentage of overall electricity consumption.
- **RENEWABLE ELECTRICITY (RE):** The electricity generated from biomass (including biogas), geothermal, solar, water and wind energy sources. Note: This is RE100’s definition useful for RE usage claims. Scope 2 emissions claims in accordance with the GHG Protocol also require zero emissions at the point of generation. The GHG Protocol may therefore use a more selective definition, excluding renewable sources like biomass that are not zero emissions.
- **RENEWABLE ELECTRICITY ATTRIBUTES:** The characteristics of that electricity source that deem it renewable, for example the fuel type, location, associated GHG emissions – and potentially other environmental and social impacts and benefits of the electricity generation.
- **REVENUE-GRADE METER:** An electricity meter that meets the applicable ANSI C-12 Standard or its equivalent.
- **SCOPE 1-3 GUIDANCE:** The GHG Protocol Corporate Standard classifies a company’s GHG emissions into three ‘scopes’. Scope 1 emissions are direct emissions from owned or controlled sources. Scope 2 emissions are indirect emissions from the generation of purchased energy. Scope 3 emissions are all indirect emissions (not included in scope 2) that occur in the value chain of the reporting company, including both upstream and downstream emissions.

¹ For RE usage claims, RE100 considers renewable the electricity generated from biomass (including biogas), geothermal, solar, water and wind energy sources. This definition includes sources like biomass that are renewable, but not zero carbon. In order to also make valid zero scope 2 emissions claims in accordance with the GHG Protocol, electricity shall be both from renewable sources and emissions-free at the point of generation.

² Greenhouse Gas Protocol, WRI & WBCSD, viewed February 01 2016, <http://www.ghgprotocol.org/standards/corporate-standard>.

³ For example, the avoided grid emissions attribute is included in the U.S. for U.S. RECs, and is critical to RE usage claims in the U.S. This is not the case in Europe, where the EU ETS has capped emissions from the power sector and as a result, avoided grid emissions associated with renewable energy equal zero. RE usage claims may be made in both markets.

⁴ See section 7.5.2 of the GHG Protocol Scope 2 Guidance http://www.wri.org/sites/default/files/Scope_2_Guidance_Final.pdf and pg. 24 of CDP Accounting of Scope 2 emissions 2015 Criteria for Appropriate Tracking Instruments & Certification Systems <https://www.cdp.net/Documents/Guidance/2015/Accounting-of-scope-2-emissions.pdf> for more information about demonstrating attribute aggregation for these programs.

⁵ Federal Trade Commission, Guides for the Use of Environmental Marketing Claims (Green Guides) viewed 01 February 2016, <https://www.ftc.gov/policy/federal-register-notice/guides-use-environmental-marketing-claims-green-guides>.

⁶ The Scope 2 Guidance represents a technology-neutral emissions accounting framework, and therefore the Scope 2 Quality Criteria focus on the GHG emission factor attribute of generation. In order for contracts for renewable, fossil fuel, or other energy generation to be eligible for Scope 2 accounting, the GHG emissions factor of the generation must be exclusively conveyed, delivered, and claimed by the reporting entity, and the generation must be located in the same market and have occurred recently. Often, substantiating this also demonstrates a credible use claim according to the criteria in this document (i.e. credible data is often also used for other attributes and impacts associated with the generation, which are also exclusively conveyed). The reverse can also be true. For example, if a fully-aggregated RE attribute instrument meets the exclusive ownership and exclusive claims criteria for RE usage, it will by definition represent the only instrument that conveys the GHG emission rate. RE instruments have typically been developed as part of larger programs and policies to promote exclusive RE claims and an understanding of the benefits of RE.

⁷ Federal Trade Commission Guides For the Use of Environmental Marketing Claims 16 C.F.R. § 260.15 (2015), viewed February 01, 2016, <https://www.ftc.gov/enforcement/rules/rulemaking-regulatory-reform-proceedings/guides-use-environmental-marketing-claims>. Also see Federal Trade Commission Federal Proposed Revisions to the Green Guides, 152 (Oct. 2010), viewed June 10, 2015 <http://www.gpo.gov/fdsys/pkg/FR-2010-10-15/html/2010-25000.htm>.

⁸ Robin Quarrier and John P. Rose, Defining the Intangible: Renewable Energy Certificate Claims and Ownership in the Green Guide Era Renewable, Alternative, and Distributed Energy Resources Committee Vol 2. No. 2 February 2014, 4 Newsletter, viewed February 01 2016, <http://apps.americanbar.org/dch/comadd.cfm?com=NR252300&pg=2>

⁹ Ibid

¹⁰ Map of North American tracking systems: <http://www.etna.org/images/PDFs/ETNNA-Tracking-System-Map.pdf>

¹¹ The North American Renewables Registry is a privately developed and administered tracking system that offers certificate tracking to generators in regions where there is not a tracking system established by state agencies or a regional transmission or system operator.