WHITE PAPER

OCTOBER 2018 | WORKING PAPER

Documentation Requirements for Supplier-Procured Renewable Energy

Application of Renewable Energy and GHG Reduction Claims by Downstream Beneficiaries

In collaboration with

REBA
Renewable Energy Buyers Alliance

BSR®

Future of Internet Power

Contents

Abstract

This white paper outlines the information and documentation that may be required to verify co-located data center (colo) client greenhouse gas inventories as it relates to renewable energy procured by colo vendors for their data centers. The information presented represents the collective understanding of a stakeholder group that includes colo clients, colo vendors and GHG emissions verifiers convened by BSR's Future of Internet Power in 2018. While the subject of this white paper is the colo data center industry, the findings can be applied to other tenant-landlord scenarios.

About the Future of Internet Power

Founded in 2012, the Future of Internet Power is a group of leading companies that develop and promote best practices to maximize renewables at data centers. In 2018, Future of Internet Power members included Adobe, Akamai Technologies, Autodesk, Bank of America, CA Technologies, eBay, Facebook, Hewlett Packard Enterprise, Salesforce, Symantec, and Workday.

Introduction

This white paper focuses on the specific situation of colocation (colo) data center clients and colo vendors. However, its findings are generally applicable to most tenant-landlord scenarios. We recommend that the colo client use the white paper's findings as the basis for conversation with their GHG inventory verifier to confirm the verifier's information and documentation requirements relating to colo vendor-procured renewable energy, and with colo vendor(s) to set expectations about information and documentation that the colo client will need from the colo vendor for its colo-related GHG inventory The reader's understanding of this white paper's premise and findings requires knowledge of the GHG Protocol Scope 2 Guidance.

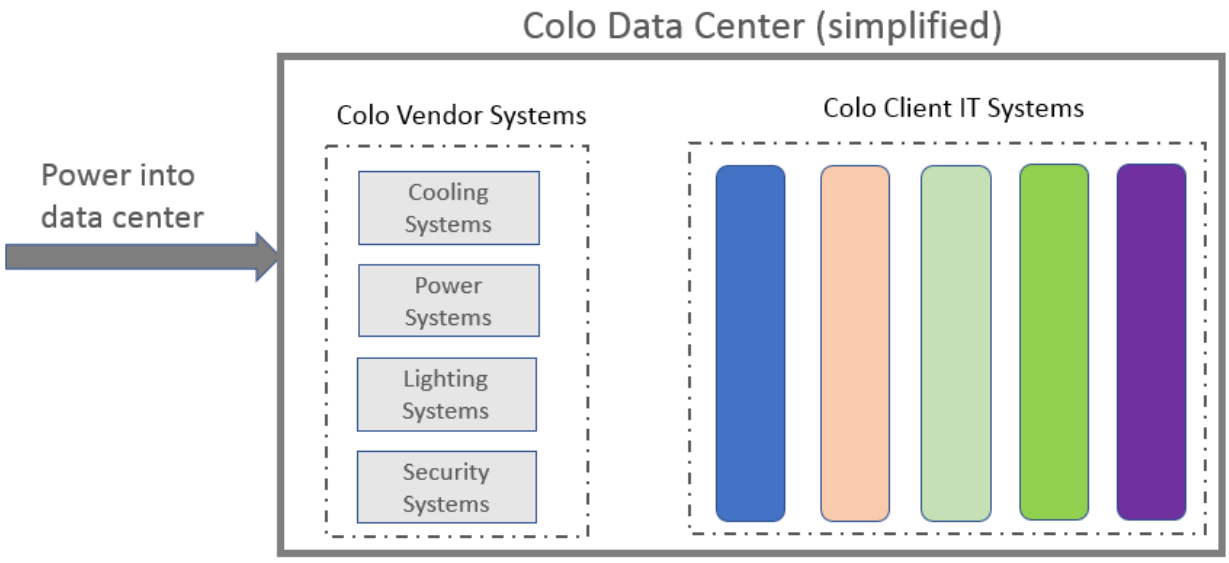
Increasingly, large colo data center clients are setting corporate decarbonization, GHG reduction, and renewable energy goals, joining organizations such as Renewable Energy Buyers' Alliance (REBA) and BSR's Future of Internet Power (FOIP) to move towards greater renewable energy procurement. Some colo clients are extending their renewable energy and GHG reduction goals to cover their supply chain, including colocation data centers which can represent a material amount of a company's annual energy consumption. To both satisfy this demand for renewable energy from their client base, and to achieve their own sustainability goals, some colocation vendors procure renewable energy for their data center facilities.

Vendor-procurement of renewable energy for the colo vendor's data center facilities reduces the procurement burden on colo clients, who do not control energy procurement decisions for vendor facilities and facilitates the achievement of GHG reduction and/or renewable energy goals for those clients. This is because, technically, both colo vendor and client(s) can leverage the "renewable" and zero-carbon attributes of the renewable energy powering a facility. However, current standards for GHG accounting and verification do not specify what information and documentation is required in order that colo clients can legitimately account for zero-CEF (carbon emission factor) energy sources procured by their colo vendors in their verified scope 2 and scope 3 market-based emissions inventories and in their renewable energy percentage calculations.

The intent of this document is to outline how colo-vendor procured renewable energy can support colo clients' sustainability goals and, importantly to provide guidance as to the type of information and documentation that might be required by a colo client's verifier in order that colo clients can realize these benefits. The findings in this document are directly relevant to other scenarios in which a vendor (e.g. landlord) controls energy procurement decisions for a facility with one or more users (e.g. tenants).

Renewable Energy Procurement

The diagram below shows a conceptual schematic of a simplified colo data center. The colo vendor operates the data center systems in support of colo client-owned IT systems and is the party responsible for procuring electricity for the entire facility. In most cases the colo vendor owns the relationship with the local electricity provider, and is therefore, in a better position than colo clients to procure renewable energy, whether through a utility green tariff offering, power purchase agreement (PPA) or virtual PPA, to cover the electricity consumption of its colo clients.



There are various means by which a colo vendor can procure renewable energy for its facility. Here we define renewable energy procurement, technically, as having ownership of and/or a contractual claim to the renewable energy certificates (REC)[1], or equivalent, e.g., Guarantee of Origin (GO, RE-GO), IREC, and that those certificates are retired or cancelled using an appropriate tracking system to eliminate the possibility that the renewable energy attributes conveyed by the certificate are applied to a different megawatt hour. Procurement mechanisms include, but are not limited to unbundled RECs, power purchase agreement (PPA), sleeved PPA, virtual PPA (vPPA) or contract for differences (CFD), utility green power tariff/products, and on-site systems[2]. In the scenario where colo *vendors* procure renewable energy, colo *clients* are neither the owner of nor do they generally have direct claims to RECs (or equivalent). This situation introduces challenges for colo clients in developing their market-based GHG inventory in the form of securing verifiable evidence of renewable energy procured by the vendor which covers the client's consumption in a collocated data center facility.

1 Henceforth, we reference "REC", but the discussion is applicable to all equivalent renewable energy contractual instruments such as Guarantee of Origin (GO, RE-GO), IREC.

2 In the case of on-site renewable energy generation, RECs may or may not be generated.

GHG ACCOUNTING STANDARDS DOCUMENTATION REQUIREMENTS

Section 7.5 of the WRI/WBCSD GHG Protocol – Scope 2 Guidance document sets out quality criteria for determining appropriate emission factors to apply, including in respect of contractual instruments such as RECs or equivalent in the case of renewable electricity purchases. Table 7.1 of the Scope 2 Guidance summarizes these criteria. Details for each criterion can be found in Section 7.5 of the Scope 2 Guidance. When completing the verification process, verifiers seek sufficient evidence that each of the applicable quality criteria are met by their client's GHG inventory and supporting documentation.

Table 7.1 Scope 2 Quality Criteria

Further explanation on select Scope 2 Quality Criteria can be found in Section 7.5.

All contractual instruments used in the market-based method for scope 2 accounting shall:
1. Convey the direct GHG emission rate attribute associated with the unit of electricity produced. 2. Be the only instruments that carry the GHG emission rate attribute claim associated with that quantity of electricity generation. 3. Be tracked and redeemed, retired, or canceled by or on behalf of the reporting entity. 4. Be issued and redeemed as close as possible to the period of energy consumption to which the instrument is applied. 5. Be sourced from the same market in which the reporting entity's electricity-consuming operations are located and to which the instrument is applied.
In addition, utility-specific emission factors shall:
6. Be calculated based on delivered electricity, incorporating certificates sourced and retired on behalf of its customers. Electricity from renewable facilities for which the attributes have been sold off (via contracts or certificates) shall be characterized as having the GHG attributes of the residual mix in the utility or supplier-specific emission factor.
In addition, companies purchasing electricity directly from generators or consuming on-site generation shall:
7. Ensure all contractual instruments conveying emissions claims be transferred to the reporting entity only. No other instruments that convey this claim to another end user shall be issued for the contracted electricity. The electricity from the facility **shall not** carry the GHG emission rate claim for use by a utility, for example, for the purpose of delivery and use claims.
Finally, to use any contractual instrument in the market-based method requires that:
8. An adjusted, residual mix characterizing the GHG intensity of unclaimed or publicly shared electricity shall be made available for consumer scope 2 calculations, or its absence shall be disclosed by the reporting entity.

Stakeholder Findings

The section below summarizes the findings of the stakeholder group consisting of colo clients, colo vendors and GHG emissions reporting verifiers with experience with verification of data center-related GHG inventories, about what information and documentation would likely need to be provided by colo clients to their verifiers to validate their market-based GHG inventory accounting of colo vendor-procured renewable energy.

These findings are based on the group's collective understanding and interpretation of the Scope 2 Quality Criteria about what information and evidentiary documentation should and/or could be provided by colo clients to their verifiers. This information and documentation will vary somewhat depending on the level of verification sought by the colo client and the renewable energy procurement mechanism(s) used by the colo vendor. The materiality of a client's colo data center energy use relative to their total energy use may also factor into what information and documentation is required. Ultimately, what is required will be at the discretion of a colo client's verifier. Furthermore, the colo vendor may or may not be able or willing to provide all requested information and documentation to a colo client. If the colo vendor is unable or unwilling to provide the information and documentation required by the colo client's verifier, the client may not be able to apply a zero-carbon emission factor rate to its market-based GHG inventory, potentially negating the value of the colo vendor-procured renewable energy to the colo client.

GENERAL FINDINGS

The following provide general findings regarding information and documentation relating to colo vendor-procured renewable energy.

» Verifiers would need to be confident that the Scope 2 quality criteria are met and would treat the colo vendor's renewable energy purchase as they would a direct renewable energy purchase by the colo client in terms of documentary evidence requested. A written attestation about the renewable energy purchase from the colo vendor without supporting documentation would not be sufficient.

» The level of scrutiny of the quality and extent of the information and documentation required would be a function of the level of verification being provided, e.g., limited versus reasonable, and the materiality of the colo client's renewable energy procurement relative to the client's total, organizational level electricity consumption. Materiality, in this case, is an assessment of the importance and relevance of a colo client's data center energy use relative to the client's organizational level energy use. If the assessment is one of "not material" then no evidentiary documentation is required unless requested by the verifier.

» A written attestation by a colo vendor's verifier regarding the existence and quality of required information and documentation may be sufficient, in lieu of providing individual information and documentation outlined in items 9-16 below, if the level of verification sought by a client is the same

or lower than the verification obtained by the colo vendor. Such an attestation could potentially be provided as part of a colo vendor's ISO 50001 certification.

» The information and documentation requirements will be more straightforward if a facility's electricity consumption is covered by a single type of renewable energy procurement, e.g., a PPA, rather than a mix, and when the renewable energy procured covers 100% of a facility's annual electricity consumption.

» Demonstrating 100% coverage at a facility level may be more challenging to prove if renewable energy procurement is executed at the corporate level to cover multiple facilities rather than on a facility-by-facility basis.

» The colo client should only claim renewable energy consumption and a zero-emission factor associated with colo facility operations where the client's energy use for colo operations is included in the colo client's GHG inventory boundary/ies, i.e., Scope 2 and/or Scope 3.

» Colo client should avoid claiming more renewable energy from a colo facility than the colo client uses at that facility either directly (IT hardware use) or indirectly (e.g. data center HVAC use). As a check, a colo client should multiply its colo electricity that it includes in its inventory by the colo vendor's documented percent renewable energy. For example, if a colo vendor procures renewable energy that covers 50% of the facility's electricity usage for the entire year, to be evenly distributed across all users of the facility and the colo client's electricity usage for the year was 10,000 MWH, then it can claim that 50% x 10,000 MWH = 5,000 MWH was renewable energy powered for that year.

» It is legitimate for a colo client to contract with a colo vendor for renewable energy procurement at a specific percent coverage for the colo client, that exceeds the data center's percent renewable energy coverage. For example, a colo client's data center electricity consumption could represent 10% of the facility's total electricity usage. The colo vendor could procure renewable energy that covers just 10% of the facility's electricity usage and apportion 100% of that renewable energy to that colo client, leaving zero percent for the other clients.

INFORMATION AND DOCUMENTATION

Renewable Energy Coverage

» A written attestation from the colo vendor that the renewable energy covers 100% of the facility's electricity usage should be sufficient, without needing to show the total electricity usage for the facility (often confidential information). Some verifiers may require documentation of total colo vendor renewable energy purchases and total colo facility electricity consumption to substantiate the claimed percentage, whether 100% or less than 100%.

» If the renewable energy coverage is less than 100% of the data center's annual electricity usage, then evidence of allocation of the renewable energy to the data center's electricity usage and colo clients' IT usage, must be documented, to negate double counting. If the coverage is evenly split

among the facility's data center operations and colo clients' IT operations, e.g., everyone gets 40%, this documentation could be in the form of an attestation such as discussed in item 8 above. Contractual agreements with colo clients to procure renewable energy on their behalf may mean that those colo clients get a higher percentage of the renewable energy than other colo clients. For example, 100% of the renewable energy procured is allocated to colo clients with a contractual obligation, and 0% to those colo clients without a contractual obligation.

CONTRACTUAL CLAUSES FOR RENEWABLE ENERGY PROCUREMENT

These items address situations in which the colo vendor has a contractual agreement with the colo client, electricity supplier, or a REC broker for renewable energy procurement.

» It is recommended that colo vendors and clients contractually agree in writing that renewable energy will be procured to cover the client's energy consumption at a specific facility or set of facilities in accordance with the scope 2 quality criteria. However, a verifier would still require evidentiary documentation that the renewable procurement has taken place in accordance with these criteria including, but not limited to, renewable energy percent coverage and quantity, coverage period, proof of REC ownership and retirement, facility address and the CEF of the renewable energy supplied.

» An unbundled REC contract generally comes with documentation from the REC supplier or broker that would likely be sufficient if it includes the following: 1) receiving facility, 2) specific MWh amount (# of RECs), 3) vintage, 4) coverage period, 5) renewable energy source/type 6) region (e.g., PJM, national), 7) Green-e certification or similar (proof of quality), 8) percent coverage and 9) proof of retirement. If the documentation doesn't include percent coverage for the facility's electricity consumption by the REC purchase, there will need to be additional proof of this as it relates to a specific colo client, for example, the facility's annual electricity consumption so that a percent coverage can be determined, or an attestation by the colo vendor.

PROOF OF RETIREMENT

Until RECs are retired, to prevent resale, a zero CEF cannot be applied. In the absence of a contractual agreement described in items 10 and 11 above, the following documentation about proof of retirement would be required.

» The colo vendor should provide proof of retirement of RECs (or equivalent). In addition, for a facility with less than 100% coverage, there may be a need for the colo vendor to show that RECs have been retired on behalf of specific colo clients, even if the renewable energy is evenly shared among the data center and all the colo clients.

Tracking systems provide a mechanism to show chain of custody and disposition of RECs. Demonstration of the final ownership and disposition (i.e., retired) of the RECs may be necessary.

OTHER

While not directly related to renewable energy procurement and documentation, the following items are recommended information for colo vendors to provide to colo clients. This information can aid in the colo client's ability to estimate electricity consumption associated with its IT operations and associated colo data center operations. Where the facility's renewable energy coverage is less than 100%, the information will help with calculating market-based GHG emissions. Provision of this information should not be an undue burden to the colo vendor, as these items would be the same for all colo clients in a facility.

» The reader should reference BSR FOIP's white paper GHG Emissions Accounting, Renewable Energy Purchases and Zero-Carbon Reporting regarding recommendations for scope categorization of colo data center-related GHG emissions.

» The colo vendor should provide the facility's Power Usage Effectiveness (PUE) to enable the colo client to calculate the electricity consumption, distinguish between data center and IT equipment electricity consumption, and quantify scope 2 and scope 3 emissions. Disclosure of a facility's PUE to colo clients is a component of the FOIP Corporate Colocation and Cloud Renewable Energy Buyers' Principles, to support data transparency and energy and GHG accounting accuracy.

» Where available from the electricity supplier, the colo vendor should provide the delivered electricity carbon emission factor.

The Renewable Energy Procurement Information and Documentation Matrix attempts to summarize the various information and evidentiary documentation that may be required by a colo client's verifier for different types of procurement mechanisms, as described in items 1-15 above. The requirement is at the discretion of the colo client's verifier.

APPENDIX: RENEWABLE ENERGY PROCUREMENT INFORMATION AND DOCUMENTATION MATRIX

This matrix attempts to summarize the various information and evidentiary documentation that may be required by a colo client's verifier for different types of procurement mechanisms, as described in items 1-15 above. The requirement is at the discretion of the colo client's verifier.

Renewable Energy Procurement Type	Unbundled RECs	Off-Site Generation			On-Site Generation	
		PPA / Sleeved PPA	Virtual PPA	Green Power Tariff	RECs Generated	No RECs Generated
Procurement Information	**Documentation Type**					
Verifier Attestation	Attestation from colo vendor verifier confirming renewable energy procurement for identified facilities at a specified coverage using a specific procurement mechanism(s).					
Colo Vendor Contractual Agreement for Renewable Energy Procurement	Contract with REC supplier / broker			Contract with facility electricity supplier		
	Contract with colo client for renewable energy procurement					
Percentage of Colo Facility Energy Covered	Example: Document from REC provider or colo vendor re %, or facility's annual MWH consumption	Example: Document from colo vendor re %, or facility's annual MWH consumption	Example: Attestation from colo vendor re %, or facility's annual MWH consumption and REC coverage	Example: Electricity supplier contract; if less than 100%, document from colo vendor re %, or facility's annual MWH consumption	Example: Document from colo vendor re %, or facility's annual MWH consumption	Example: Document from colo vendor re %, or facility's annual MWH consumption

Renewable Energy Procurement Type	Unbundled RECs	Off-Site Generation			On-Site Generation	
		PPA / Sleeved PPA	Virtual PPA	Green Power Tariff	RECs Generated	No RECs Generated
Procurement Information	**Documentation Type**					
REC/GO Ownership by Colo	Document from REC provider	PPA contract terms	vPPA contract terms	Electricity supplier contract terms; invoice	Tracking system; Green-e certification	N/A
Allocation of RE/ REC/ GO to client if <100% (and if different than % coverage stated above) *Requires that client has specifically contracted with colo to procure renewable energy. Allocation ≠ transfer.*	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause)	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause); tracking system retirement on behalf of client	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause); tracking system retirement on behalf of client	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause	Attestation from colo vendor about allocation of RECs (ideally stipulated in a contract clause	Likely not allowed; RE should be reflected ine facility's effective CEF based on behind-the-meter generation and consumption versus grid consumption
Generation (REC / GO) Vintage	Document from REC provider	Tracking system ledger	Tracking system ledger	Not required	Tracking system ledger; Green-e certification	
REC / GO Serial Number(s)	Document from REC supplier/broker (not required if documentation states % coverage)	Tracking system	Tracking system	Not required	Tracking system; Green-e certification	N/A
Evidence of Retirement / Cancellation	Document from REC supplier/broker	Tracking system; Green-e certification	Tracking system; Green-e certification	Not required	Tracking system; Green-e certification	N/A

Renewable Energy Procurement Type	Unbundled RECs	Off-Site Generation			On-Site Generation	
		PPA / Sleeved PPA	Virtual PPA	Green Power Tariff	RECs Generated	No RECs Generated
Procurement Information	**Documentation Type**					
RE Source / Type	Document from REC supplier/broker	PPA contract terms	vPPA contract terms	Electricity supplier contract terms; invoice; documented CEF	Attestation from colo vendor	
RE Project(s) Location(s)	document from REC supplier/broker	PPA contract terms	vPPA contract terms	Not required	Attestation from colo vendor	
Total RE (MWH)	document from REC supplier/broker	Tracking system	Tracking system	Electricity contract terms; invoice	Tracking system; Green-e certification	RE metering system documentation
Facility's utility electricity carbon emission factor (if RE coverage is <100%)	Documentation from electricity supplier					Based on behind-the-meter generation and consumption versus grid consumption
Facility PUE (to aid in estimating data center electricity consumption associated with client IT consumption)	Documentation from colo vendor					

AUTHORS

» Nicola Peill-Moelter, Akamai Technologies
» Emma Armstrong, Symantec
» Natasha Tuck, VMWare

» Jennifer Ruch and Bruce Frandsen, Equinix
» Jay Dietrich, IBM
» Vinh Thong, InterXion
» Aaron Binkley, Digital Realty

» Kristin Sterling, Ernst & Young
» Derek Markolf, LRQA
» Brennen Walsh, WSP

» Berkley Rothmeier, BSR
» Michael Rohwer, BSR

CONTRIBUTORS AND REVIEWERS

BSR wishes to thank the following companies for participating in the development and peer review of this document:

» Louisa McGuirk, Facebook
» Shengyuan Su, Salesforce
» Erik Hansen, Workday
» Mercy Manning, Aligned Energy
» Kevin Hagen, Iron Mountain
» Trevor Donaghu, Bureau Veritas