CLEAN ENERGY ACCOUNTING PROJECT

Accounting for Standard Delivery Renewable Energy

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CRS

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Executive Summary

More companies and communities are setting 100% renewable electricity and carbon neutral goals. At the same time, renewable energy resources continue to expand market share as governments, electricity providers, and consumers drive the clean energy transition for all.

Consumers actively managing their electricity procurement to meet energy and greenhouse gas (GHG) emissions targets are finding that **there are different approaches to accounting for renewable energy that they do not actively procure.** This electricity, termed Standard Delivery Renewable Energy in this report, is typically delivered as a result of a load serving entity's (LSE's) own renewable energy or carbon targets, a state government's renewable or clean energy standard, or circumstances where renewables are a cost-effective resource. Inconsistencies in accounting for Standard Delivery Renewable Energy by both LSEs and consumers may create reputational risk for consumers committed to demonstrating their progress and can influence their ability to lead in their sectors and communities.

Clean Energy Accounting Project (CEAP)

CEAP develops standardized, stakeholder-reviewed clean energy and GHG emissions accounting guidance to address outstanding questions in voluntary and regulatory markets.

Learn more at resource-solutions.org/ceap

In 2020, Center for Resource Solutions (CRS) facilitated a series of virtual workshops through its Clean Energy Accounting Project (CEAP) to identify areas of consensus and quantification best practices.[1] Workshop participants included leading renewable energy and GHG accounting non-governmental organizations, government representatives, electric utilities, large corporate energy buyers, renewable energy market brokers, and consultants.[2] This report is an outcome of their discussion. It is intended to advance electricity market best practice when taken together with other standards such as the GHG Protocol Corporate Accounting and Reporting Standard[3] and associated Scope 2 Guidance.[4]

1 This effort focused on the US market, but key principles may be applied in other markets that support the trading of renewable energy attributes.

2 A complete list of contributors can be found in Appendix A.

3 The GHG Protocol Corporate Accounting and Reporting Standard provides requirements and guidance for companies and other organizations preparing a GHG emissions inventory. Available online at: https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf.

4 The Scope 2 Guidance standardizes how corporations measure emissions from purchased or acquired electricity, steam, heat, and cooling (called "scope 2 emissions"). Available online at: https://ghgprotocol.org/sites/default/files/standards/Scope%202%20Guidance_Final_Sept26.pdf.

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Participating stakeholders came to a strong consensus that consumers can claim to be using Standard Delivery Renewable Energy when renewable energy attributes and other requirements for credible renewable electricity usage claims are substantiated using credible data.

Unfortunately, there is limited data available that transparently documents Standard Delivery Renewable Energy. In some cases, data sources may not be sufficiently credible to support accurate renewable energy delivery and consumption accounting. Even when data is reliable, consumers should consider additional quality characteristics when evaluating products and data sources. This report proposes a framework of credibility criteria and quality considerations that may be used to evaluate data sources available to customers.

When credible Standard Delivery Renewable Energy data sources are available, additional questions about how to integrate this information into renewable energy reporting remain. As a first step, this report provides guidance on how to report active procurement and Standard Delivery Renewable Energy together when calculating renewable energy use. Recommendations are also offered for the next steps necessary to fully and accurately account for renewable energy use.

Key Questions

1. Under what circumstances can customers claim to be consuming renewable energy that they do not actively procure?
2. What data sources can customers use to account for this renewable energy consumption?
3. How should different types of renewable energy consumption be reported?

Introduction

Today's electricity consumers, LSEs, and regulators can follow established best practices[5] to account for the consumption[6] and delivery of actively procured renewable energy. However, as more consumers, LSEs, and governments work to achieve increasingly ambitious renewable electricity and carbon goals, new guidance addressing credible renewable energy use claims for all delivered renewable energy is needed; specifically, (1) under what circumstances customers can claim to be consuming renewable energy that they do not actively procure (Standard Delivery Renewable Energy), (2) what data sources can customers use to account for this renewable energy consumption, and (3) how should different types of renewable energy consumption be reported?

Accurate generation source information for all consumed electricity is valuable to consumers working to achieve different objectives. These objectives may include increasing the amount of renewable energy consumed; reducing GHG emissions associated with purchased electricity; purchasing from and investing in generation resources that avoid or reduce emissions on the grid; financing new renewable generation sources; supporting local jobs in renewable

5 See Braslawsky et al. (April 2016). *Making Credible Renewable Electricity Usage Claims.* Published by RE100. Available online at: https://www.there100.org/sites/re100/files/2020-09/RE100%20Making%20Credible%20Claims.pdf

6 Electricity consumption represents the amount and type of electricity a customer uses from the grid and other on-site generation. Accounting for consumption from different generation sources on the grid requires the allocation of generation attributes to a customer's electric load, which are not physically delivered. This differs from accounting for electricity production or generation, which is simply measured where it is generated.

Standard Delivery Renewable Energy may be credibly reported by a customer as consumed renewable energy and by a provider as delivered renewable energy ***when the attributes of the renewable energy are retained or retired on behalf of the customer*** *(or a group including the customer), and other established requirements for credible renewable electricity usage claims are met.*

energy; managing both load and procurement to support the integration of more variable zero-carbon resources; and supporting renewable energy, emissions reduction, and grid decarbonization policies to increase Standard Delivery Renewable Energy.

Accounting for Consumption of Renewable Energy

Energy generation attributes[7] are not physically delivered to customers on a shared electric grid. Instead, they are delivered using contractual instruments that are traceable back to a particular generation source. Renewable energy generation attributes in the US are conveyed in Renewable Energy Certificates (RECs), which are issued in one of several regional tracking systems or defined in contracts. Active purchasers of renewable energy retire or otherwise cancel these RECs or have them retired or canceled specifically on their behalf to substantiate renewable energy use claims.

In contrast to active procurement, Standard Delivery Renewable Energy is provided to all customers. Here RECs are being retired on behalf of a collective group, often to comply with a government mandate. Therefore, consumers lack documentation showing that RECs have been retired specifically for them. This lack of specific documentation does not mean that consumers are not using Standard Delivery Renewable Energy.

Standard Delivery Renewable Energy may be credibly reported by a customer as consumed renewable energy and by a provider as delivered renewable energy when the attributes of the renewable energy are retained or retired on behalf of the customer (or a group including the customer), and other established requirements for credible renewable electricity usage claims are met.[8]

Consumers and leadership recognition programs may require that renewable energy consumption used to meet a target meet additional criteria. Examples of additional criteria include the generation resource type, when a generation facility was built, generation or individual attributes that are surplus to regulation, and active procurement.

7 Characteristics of an electric generation source's production such as fuel source and emissions.

8 These criteria can be found in Braslawsky *et al.* (April 2016). *Making Credible Renewable Electricity Usage Claims*. Published by RE100. Available online at: https://www.there100.org/sites/re100/files/2020-09/RE100%20Making%20Credible%20Claims.pdf.

Standard Delivery Renewable Energy Data

When companies are actively procuring renewable energy, there is typically reliable information available to ensure that credible renewable electricity consumption claims are substantiated.[9] Although it is possible to make valid claims about the delivery and consumption of Standard Delivery Renewable Energy, information needed to substantiate credible claims is inconsistent and often unavailable.

Various data source categories have been used to document Standard Delivery Renewable Energy and associated GHG emissions. In the US, these include:

- **Supplier-specific information:** GHG emissions or the resource mix representing the portfolio of resources delivered by an LSE to retail customers. This information may be mandated by states or voluntarily provided by LSEs.
- **Renewable Portfolio Standard (RPS) compliance data:** Documentation of LSE or state-wide compliance with regulatory mandates to supply a percentage of retail sales with renewable resources.
- **Regional residual mixes:** Representations of untracked, unclaimed, or other energy and associated emissions that can be viewed as standard or publicly shared generation.[10]
- **Grid-average emissions factors:** Representations of the generation occurring within a geographic area. May include renewable energy resources delivered by default to customers and all other renewable energy located in the area.

This patchwork of information is complicated by variability across data format, included energy resources, the description of delivered electricity or generation, quantification methodologies, verification, transparency, scope, and frequency. **At a basic level, differentiation in some of these characteristics may mean that consumers cannot use a particular data source to support credible claims of Standard Delivery Renewable Energy use.** Consumers with additional preferences or requirements for their renewable energy consumption claims should also understand how the data sources they use address these issues.

Some areas of variability for Standard Delivery Renewable Energy information include:

DATA FORMAT AND UNIT

Data sources typically provide either the mix of resources supplying customers, a default renewable percentage, or the direct GHG emissions factor associated with delivered electricity.[11] GHG emissions can reflect either just carbon dioxide (CO_2) or a CO_2 equivalent, which normalizes all GHG emissions against the global warming potential of CO_2.

INCLUDED ENERGY RESOURCES

The types of resources that qualify as renewable energy vary across states and programs.[12] As a result, resources counted as renewable in one data source may not align with renewable resources in another data source, a consumer's understanding, or renewable energy goals. "Clean" energy resources (which may include resources like nuclear and large-scale hydroelectricity, for example) are also generally reflected in GHG emissions factors as having zero emissions.

9 Renewable energy providers, generators and third-party certifiers typically provide information about REC retirements and projects to support credible claims.

10 A residual mix may include some standard delivery renewable energy, where it is not claimed in compliance or voluntary markets.

11 These emissions factors typically reflect only the direct emissions associated with the generation of electricity. More comprehensive lifecycle emissions factors that include GHG emissions associated with producing and transporting a resource are also available for many activities.

12 For example, there is wide variability in the acceptance of specific biomass and waste-derived resources.

While appropriate for accounting for the emissions associated with a standard offer, relying only on an emissions factor to account for renewable energy consumption may overstate renewable energy use.

CONSUMER DELIVERED ELECTRICITY VS. ELECTRICITY PRODUCTION

Some data sources are not designed to reflect the attributes of consumer delivered electricity. For example, grid-average emissions factors reflect the attributes of electricity generated within a region, which may be exported to another region or transacted to specific customers within the region. Other data source categories that commonly convey information about sources or supply of electricity may reflect generation, capacity, prospective delivery, or compliance with a regulatory program that includes multiple compliance pathways. Core to determining whether data can credibly support a renewable energy consumption claim is if the reported data represents delivered electricity and reflects transactions of specified generation and attributes (e.g., RECs) to other customers as well as imports and exports of power.

METHODOLOGIES

The most variable and complex area of differentiation across data sources is the methodologies used to develop them. GHG emissions from biomass may be reported as zero, based on an assumption that it is emitting the same carbon that was captured as the biomass grew. Some resources may remove generation that has been unbundled from its attributes (i.e., "null power") instead of assigning it emissions. In some cases, firmed-and-shaped and unbundled attributes are reported differently, assigned emissions, or excluded. Data may not account for the impacts of imported and exported power. There may be different or no limitations on the date or date range of the generation that may be included. Finally, regulatory compliance data may reflect policy tools, including credit multipliers, alternative compliance payments, and waivers.

VERIFICATION

Some data sources are third-party verified. Others may have undergone significant internal review. Data developed for regulatory compliance (such as a mandated product content label) typically reflect some agency review, and there are often penalties levied for incorrect reporting. Some regulations stipulate that data used to develop a resource mix or emissions factor go through external verification. Data generated by tracking systems (e.g., system residual mixes) typically rely on automated protocols built into the tracking system itself, and many states rely on this information in their programs.

TRANSPARENCY

In many cases, transparency into how data sources are calculated is publicly available, either in standalone program guidance, technical notes, or regulations. Where data are reported to a regulator, registry, or database, there may be variability in quantification methods due to the degree of standardization programs require. The use of different quantification methods may not always be disclosed, although in some cases, LSEs have the option to provide additional information about their approach. Methodology transparency is also necessary when evaluating aggregated data sets, such as residual mixes, to ensure consistency with accounting best practices.

SCOPE

There is currently no universal data source that reflects Standard Delivery Renewable Energy to consumers. Instead, the scope of different data sources is generally limited to specific geographies, the LSE's total delivered electricity, or an LSE's unique product to a customer group. Often the scope of different data sources will overlap. Temporal scopes also vary as information reflects different periods of time. Today, most provide annual or quarterly data. In the future, more granular data may start to be available. Consumers with operations across LSE service

territories may need to rely on multiple data sources with different characteristics.

FREQUENCY

Finally, data sources are published on different timeframes, and these may or may not align with customer reporting objectives. A common reporting approach includes annually with a one-year lag to facilitate verification activities. Some, like grid averages, may be more delayed due to the complex data aggregation that must occur before emissions factors are developed. On the other hand, all-attribute tracking systems may publish residual mix information more frequently and in closer temporal proximity to electricity consumption.

Potential Standard Delivery Renewable Energy Data Criteria and Considerations

Navigating the wide array of variations described above may be challenging. Criteria and considerations could be developed to help consumers determine which data sources should be used to account for Standard Delivery Renewable Energy. A potential framework for this is described below. This framework could be applied to data sources or categories within a data source, if sufficiently homogeneous, or to individual resource mixes and emissions factors. Where information is available, this framework could help identify circumstances where Standard Delivery Renewable Energy offers the consumer a credible renewable energy use claim and where it might not.

At a minimum, data sources being used to quantify Standard Delivery Renewable Energy must be credible. The following credibility criteria may be used to assess whether a particular data source meets this requirement. These concepts represent REC market best practices and are aligned with the GHG Protocol Scope 2 Guidance's Scope 2 Quality Criteria for the market-based method and RE100's Making Credible Renewable Energy Usage Claims paper.[13]

Credibility Criteria: data must meet the following criteria to support credible claims:

A. Describes delivered electricity
B. Generation information within the data is accurate
C. All ownable attributes that define the generation being claimed are aggregated[14]
D. Attributes are exclusively owned by or retired on behalf of the consumer (or a group including the customer)[15] and not double counted[16]
E. Attributes are not double claimed[17]
F. Generation occurs in the same market[18] and relative timeframe[19] as consumption

13 Available online at: https://www.there100.org/sites/re100/files/2020-09/RE100%20Making%20Credible%20Claims.pdf

14 For example, GHG emissions benefits have not separately been sold.

15 For example, when a standard delivery product retires RECs to comply with a Renewable Portfolio Standard on behalf of its customers.

16 The sale or use of the same attributes from one unit of renewable electricity to or by more than one person or entity.

17 Multiple claims on the same renewable energy or GHG emissions attribute by more than one end-user—for example, where one party claims the REC, and another claims the "null power" from the same generation as renewable.

18 Market boundaries are generally areas of production and consumption that are physically connected by a grid with sufficiently consistent laws and regulatory framework governing the electricity sector. The United States and Canada are typically considered a single market for renewable electricity sourcing and reporting.

19 There is no universally accepted definition of the "same relative timeframe," and it may vary between markets. In the US voluntary market, use of a 21-month vintage window (including the year of consumption, the 6 months prior, and the 3 months after) for credible claims has become common practice, or alternatively calendar year or fiscal year.

Consumers choosing between multiple credible data sources or managing a portfolio that requires the use of many credible data sources will need to evaluate and weigh the impact of characteristics like those discussed in the previous section, which may vary by source. It may be necessary to consider alignment with corporate goals, the reduction of reputational risks,[20] and tradeoffs between different characteristics, such as accuracy and consistency.

Quality Considerations: consumers should additionally take the following characteristics into account when evaluating available credible data sources:

A. Oversight
B. Transparency of methodology
C. Data scope and specificity
D. Included renewable resources and their environmental quality
E. Publication frequency
F. Publication age
G. Consistency with other utilized data sources[21]

Reporting Actively Procured and Standard Delivery Renewable Energy

Until the grid is 100% renewable, it will be important to consider how to report consumed renewable energy that is actively procured together with consumed renewable energy that is not. For the specific purpose of accounting for consumed renewable energy, provided that data are credible, they are equivalent and may be summed.[22]

Consumers that source electricity from multiple LSEs should assign the percentage of attribute-supported renewable energy in each product to the MWh of each product consumed (e.g., load). Products delivering both renewable and non-renewable attributes can be disaggregated into respective categories based on the share of each in the product. The ability to do this will depend on the information available to the consumer.[23] Where consumers are procuring renewable energy attributes separate from electricity,[24] they can choose to assign the renewable attributes to an equivalent number of MWhs of non-renewable generation delivered as part of a purchased electricity product (e.g., a standard offer).[25]

20 Reputational risks include how closely claims align with the outcome of actions and comparisons with the goals and strategies of other active renewable energy purchasers.

21 Temporal, scope and methodological consistency should all be considered.

22 Different renewable energy purchases will have different impacts, including any net change in emissions on the grid due to the generation (avoided emissions), but avoided emissions are not necessary for a credible renewable energy consumption claim.

23 Note that consumers will need to understand what resources are factored into an LSE's calculation of its load or, in some cases, its regulatory obligation, in order to accurately apply a provided renewable percentage. One source of this information may be an electric product disclosure label that lists resource types and the percentage of each delivered to customers.

24 For example, virtual power purchase agreements and unbundled RECs.

25 In the US voluntary market, and in some states, it is standard practice to limit use of unbundled RECs to be paired with non-renewable generation with an emissions factor that is less than or equal to the regional grid average. See Sec. IV.B(b) of the *Green-e® Renewable Energy Standard for Canada and the United States* (available at https://www.green-e.org/docs/energy/Green-e%20Standard%20US.pdf). This excludes RECs paired with specified "dirty" power, where the regional grid average represents a threshold for "specified dirty," in order to facilitate "fair" accounting (i.e., to avoid reallocating specified, greater-than-average emissions to utilities, customers, and states that did not specifically purchase from those resources.

The following example demonstrates how to aggregate different electricity products into a renewable energy consumption total when precise, credible information is available.

> ***Example:*** *A small U.S.-based company with a single manufacturing facility consumes 3000 MWh of electricity/year and purchases and retires the RECs from a grid-connected solar project that provides 20% of the facility's electricity. The remainder of the facility's electricity is provided by a local utility's standard offer product. 30% of this product comes from wind, and the utility retires RECs on behalf of its customers to document this. Finally, the company purchases and retires 1,000 MWh of unbundled RECs annually.*

Step 1: Identify Amount of Each Resource

	%	=	MWh
Annual Electric Use	100% of use	=	3,000
Grid-connected Solar	20% of use	=	3,000 x 20% = 600
Renewable Utility Supply	30% of utility product	=	(3,000 – 600) x 30% = 720
Unbundled RECs	30% of use	=	1,000

Step 2: Calculate Renewable Energy Consumption Total

	MWh Electricity Use	MWh RE Use	% RE
Grid-connected Solar	600	600	100%
Utility Supplied RE	720	720	100%
Utility Supplied non-RE matched with unbundled RECs	1,000	1,000	100%
Utility Supplied without unbundled RECs *(2,400 – 720 – 1000)*	680	-	0%
Total	3,000	2,320	77%

Where GHG emissions information can be disaggregated to align with generation resource types, a consistent approach can be used to quantify GHG emissions from consumed electricity. Disaggregating emissions associated with renewable energy from emissions associated with non-renewable energy in a supplier-specific emissions factor creates an emissions factor for the remaining non-renewable portion of the delivered electricity. In order to develop an accurate non-renewable emissions factor, the information about resource type and GHG emissions must typically be provided from the same source, and the methodologies used by that source must be applied consistently.

GHG emissions information in a customer disclosure is often insufficient to accurately allocate emissions to different resources. As a result, different approaches may need to be used to calculate renewable energy consumption and associated GHG emissions. Consumers interested in maintaining consistency across reported GHG emissions and renewable energy consumption may choose not to disaggregate energy attributes by resource type.

Recommendations for next steps:

1. LSEs should disclose disaggregated information on all delivered resources and emissions based on a consistent and transparent methodology.
2. Guidance should be developed that describes how to demonstrate conformance with the data credibility criteria proposed in this report.
3. A data quality evaluation system should be designed to provide credible and consistently applicable data prioritization guidance within and across organizations.
4. Further analysis should be conducted to understand how time-based (e.g., hourly) renewable electricity accounting might impact this report's findings.
5. Guidance on communicating renewable energy claims should be updated to explicitly recognize delivery and consumption that includes Standard Delivery Renewable Energy, actively purchased renewable energy, and voluntary renewable energy.

Conclusion

While it is possible to claim consumption of Standard Delivery Renewable Energy, data availability and design may limit consumers' ability to do so in practice. Consumers seeking to reflect Standard Delivery Renewable Energy in renewable energy and GHG targets should have a strong understanding of the data sources being used and confidence that each source accurately demonstrates the delivery of attributes. Where multiple data sources are available, consumers should develop a consistent approach to selecting attribute delivery information. Similar decisions may be necessary when reporting Standard Delivery Renewable Energy and active renewable energy procurement.

Appendix A

CONTRIBUTORS

CRS would like to acknowledge and thank the individuals who contributed to this report's development. Their expertise and perspective were critical to the project's objectives and outcomes.

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