

Good Intentions, Bad Policy, and the Threat to the Clean Energy Transition

Why Additionality Should Not Be a Requirement for
Corporate Clean Energy Goals

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Yuri Horwitz
Chief Executive Officer

Susanne Fratzscher
Vice President Strategic Solutions

Andrew Grin
Senior Vice President, Enterprise
& Impact Solutions

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What Is At Stake

Electricity generation accounts for approximately 25% of global carbon dioxide emissions, and one of the most important tools that corporations have to lower their carbon footprint is to procure clean energy. The Greenhouse Gas (GHG) Protocol, managed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), establishes the 'rules of the road' for carbon emissions accounting and disclosure for these corporations globally. These rules are currently set to be updated by WRI through a stakeholder process in 2025.¹ The stakes are high for the global clean energy transition, and specifically for America's clean energy industry and its corporate buyers.

America has the largest economy by nominal GDP in the world, and U.S. businesses use a tremendous amount of electricity (around 2.38 million GWh or about 60% of all retail sales²). Data centers alone consume around 2.5% of the nation's power and are expected to triple their usage by 2030.³ Thousands of businesses have committed to purchasing their electricity from renewable energy sources by 2025, 2030 and 2040, and many have also committed to more sustainable supply chains.⁴ These commitments have driven companies to contract for over 77 GW of clean energy in the U.S. since 2014 – equivalent to over 25% of the country's total installed (non-hydro) renewable energy capacity.⁵ In 2023, the corporate sector procured over 46 GW of new clean power capacity globally, with over 20 GW in the U.S. alone.⁶

These corporations measure, report, and account for their renewable energy procurement and its impact on their carbon footprint through the Scope 2 and Scope 3 Guidance of the GHG Protocol.⁷ These rules influence the development of hundreds of billions of dollars in clean energy infrastructure and hundreds of thousands of clean energy jobs in the U.S. alone, while also impacting the entirety of the clean energy economy globally. Moreover, GHG Protocol rules are becoming increasingly impactful as many market challenges, including significant grid connection backlogs,⁸ make it more difficult and expensive to bring new projects online and expand clean energy.

Regrettably, WRI appears to have focused its efforts revising its Guidance on positions largely shaped by academic papers unmoored from the fundamentals of the renewable energy market, and has largely ignored

many of the most important perspectives, such as the thousands of practitioners working to develop, finance, and build global clean energy infrastructure.

The potential results are (1) policy designs that set such a high standard that many organizations cannot fulfill or choose to not enter the market at all; (2) a resulting reduction in corporate procurement of clean energy; and (3) the potential collapse of current market-based incentives that support present and planned renewable energy infrastructure. We know these are not the outcomes that WRI or any of the academics are seeking to achieve.

Sol Systems has helped build (with many others) the renewable energy industry for the better part of two decades and has shaped a number of environmental commodity markets. **For the last two years, we have worked to aggregate and synthesize industry perspectives on these issues. This paper attempts to summarize those perspectives and inform (and hopefully influence) the WRI process.**

What is the Clean Energy Practitioners' Perspective?

We have met with dozens of corporate partners and industry practitioners to gather their perspectives on this debate. While it is impossible to perfectly represent the hundreds of thousands of individuals and companies involved in developing, financing, building, owning, operating, and procuring clean energy infrastructure in the U.S., we believe these three basic principles represent broad consensus among them.



1. Market-Based Instruments are Critical:

Market-based instruments, such as VPPAs and unbundled RECs, are critical to enable and motivate corporations to meet both GHG Protocol Scope 2 and Scope 3 emissions accounting requirements.



2. An Additionality Requirement Is Not Reasonable:

A binary 'additionality test' should not be a prerequisite for making a GHG Protocol Scope 2 emissions reduction claim but could voluntarily be disclosed alongside such a claim.



3. Time and Location Data Tracking Are Critical:

Time and location data associated with customer load and renewable energy generation are essential for Scope 2 and Scope 3 emissions accounting guidance to match, measure, and account for the underlying emissions impacts.



1. Why Market-Based Instruments are Critical

Market-based accounting frameworks (like for Scope 2) create environmental markets in which environmental commodities associated with clean energy infrastructure can be measured, created, traded, and monetized. The GHG Protocol uses Energy Attribute Certificates (EACs) – Renewable Energy Certificates (RECs) in the U.S. and Canada, Guarantees of Origin (GOs) in the EU – as a mechanism to account for zero-carbon electricity use. Because electricity is fungible once injected into the grid, market-based accounting plays an indispensable role in ensuring that emission reductions are attributed and documented with precision and transparency.

A REC represents the clean energy attributes associated with the generation of 1 MWh of renewable electricity. The REC market enables renewable energy project owners (Sellers) to sell the associated ‘clean energy claim’ separate from the electricity they generate to the thousands of states, municipalities, corporations, schools, and non-profits interested in buying renewable energy (Buyers). Unbundled REC markets enable a diverse set of buyers and sellers, large and small, to transact across geographies with flexibility and efficiency.

Market-based accounting and REC markets provide the backbone for physical or virtual Power Purchase Agreements (VPPAs) or REC purchases that organizations voluntarily take to meet their decarbonization commitments.⁹ These purchases are critically important tools that enable and motivate corporations to take energy-related climate action beyond ‘riding the grid’. The adaptability of market-based accounting is most significant in a world where renewable energy projects differ widely in scope, scale, technology, and geographical distribution. And above all, these market-based rules are not created just for the sake of accounting, the purpose and value of the rules are that they enable the voluntary reduction of emissions by industry practitioners.

Why Current Critiques Fall Short:

True Facts about REC Markets

A number of academics have released articles criticizing corporations for buying unbundled RECs or buying RECs from existing renewable energy projects to meet their Scope 2 emissions reduction goals. They argue that these purchases neither incentivize new renewable energy generation nor fundamentally change the underlying energy grid. Instead, they insist that corporations and other renewable energy buyers enter into a bilateral and bundled transaction with a renewable energy project in order to use the RECs from that project for their Scope 2 emission reduction goals. This would usually be done through a VPPA or a contract for physical delivery of electricity between an organization and a project.

While these contracts are critical to the industry, they cannot be the only instrument for organizations to purchase clean energy. Nor can VPPAs exist without RECs. Here is why.

First, not all Buyers are capable of purchasing renewable energy through a VPPA or alternative. Each VPPA requires significant procurement volumes, negotiation and sophistication, long-term commitments,

and willingness to take on wholesale power market risks from such fixed-for-floating financial transaction, and therefore excludes many organizations.

For example, a market entrant may not be accepted as a creditworthy VPPA-counterparty or may be unable to take on wholesale electricity market risk, but through the purchase of unbundled RECs they can still support renewable energy. The same is true for organizations challenged to embrace VPPAs (e.g. due to utilizing IFRS accounting rules), companies with highly volatile loads, a small family business, a farming operation, a leased retail store, or an urban law firm. Unbundled REC markets dramatically simplify the transaction of renewable energy between Buyers and Sellers, removing barriers and enabling access for diverse buyers.

Second, bundled transactions are not possible in a number of regulated energy markets.¹⁰ Unbundled REC markets enable renewable energy developers and owners to sell their project's electricity and RECs separately. The splitting of RECs and electricity expands project deployment and REC availability.

For example, a developer who is trying to finance a project in an economically challenging regulated energy market where the local utility is the only possible offtaker, needs additional revenue to finance and build their project. The developer and the financing community standing behind this project count on the revenues from the unbundled project-RECs for 20+ years to underwrite the project at a decent cost of capital. Without the unbundled sale of project-RECs, many of these projects would not be built because they would be uneconomic for both the purchaser of electricity and for the developer. In this example, if the electricity and RECs were bundled, the purchaser of renewable energy would expect to lose money in the long run, and the developer would be unable to raise enough funds to construct the project with a positive return on investment.

Third, unbundled REC markets enable corporations to 'fill in' gaps where they cannot bilaterally procure RECs from projects or to sell off excess RECs when they have purchased or self-generated too many. REC markets offer the flexibility needed to engage in the clean energy transition efficiently and effectively rather than staying on the sidelines. And keeping the market-based accounting method in the GHG Protocol is key to motivate voluntary clean energy purchasing efforts over passively 'riding the grid'.

Finally, academics who argue that RECs must be purchased through bilateral VPPAs may overlook that **VPPA transactions are REC transactions.** A VPPA is a financial swap where the electricity is sold into the grid at real time pricing, while the associated RECs are decoupled from the electricity and sold to the actual corporate or utility buyer. Because VPPAs are REC transactions, corporations currently have the ability to sell surplus RECs or acquire RECs if they have a shortfall. This flexibility is critical for corporations to manage their own inventory, risk, and exposure.

Not only do unbundled REC markets help drive new renewable energy generation, but these markets also create critical flexibility that enables multiple participants, with differing levels of sophistication, load sizes and resources to participate and support renewable energy. This drives and enables additional demand and scale for the clean energy transition overall. It is imperative that both these markets and the market-based accounting method remain in place, even as they continue to evolve and develop around more accurate carbon accounting, i.e. through hourly and locational data tracking (as discussed below).



2. Why An Additionality Requirement Is Not Reasonable

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The concept of ‘Additionality’ is an economic and legal ‘test’ of sorts, which asks whether ‘but for one action, would an outcome occur’. With respect to renewable energy development, the inquiry generally seeks to test whether ‘but for’ a specific decision to invest in (or procure) from a renewable energy project, would the project have been built.¹¹

Some academics have suggested that unless a corporation purchases renewable energy from a new project, they are not incentivizing the development and construction of that project; and therefore should not be allowed to make a GHG Protocol claim associated with the RECs from such an existing project. They argue that a number of corporations are purchasing inexpensive RECs from operating wind and hydroelectric generation assets, and that these purchases are not driving new renewable energy generation and are not fundamentally changing the mix of the energy grid.

Why Current Critiques Fall Short:

True Facts about Additionality

The first problem with an ‘additionality requirement’ is that it seeks to simplify a multifaceted decision-making matrix into a singular binary query. It is virtually impossible to stipulate that one specific procurement or financing action is the decisive factor in the ecosystem of inputs that enable renewable energy projects to be developed and built. Different technologies with different applications and in different geographies have vastly diverse circumstances that either enable or limit renewable energy project development.

The second problem is that such a requirement would undermine the flexibility and depth of current REC markets that enable the different project offtake and project finance arrangements necessary to support this matrix of project development environments.

For example, developers can develop and finance a fully merchant solar project without any VPPA in Texas in some circumstances because of the underlying voluntary REC market and the ability to separate the RECs from the project’s electricity generation. These developers can then sell the electricity forward through a hedge to a company that wants to stabilize its power cost exposure and the unbundled RECs to another company that wants to decarbonize. In this instance, it is not a bundled VPPA that provides the critical contracted revenues to enable the development of the project, it is the financial hedge and the unbundled REC offtake. The RECs enable the project’s green attributes to flow to a corporate customer because this buyer is paying a premium for them, and those economics flow directly to the project.

Alternatively, developers in the Carolinas might develop a project with only a 5-year PPA because they know that afterwards they can monetize years 6 to 20 of the unbundled RECs with a corporate buyer.

A project might also sell its bundled energy and RECs on a forward 5-year agreement upfront and then contract simultaneously to hedge the ‘tail’ in years 6 to 20. Based on our practical experience financing, developing, and owning projects in these markets, the hedge or offtake in years 6 to 20 may be just as critical economically to the project’s existence as those in years 1 to 5 despite what some may claim.

We have been involved in developing, financing, constructing and owning projects just like these. We have also provided REC hedges for similar projects that have enabled the projects to be financed and constructed. None of these projects would exist in a world in which only new-build project-RECs or only bundled PPAs could be used for Scope 2 emission reduction claims. In both instances, the claim flows with the RECs, and the claim represents carbon-free electricity. In both cases, unbundled RECs play a critical role in enabling new renewable energy deployment.

We support policies and frameworks that incentivize the addition of new renewable energy capacity. However, new renewable energy projects quickly become operating projects, and the GHG Protocol must continue to account for the zero-carbon benefits and incentivize both. Requiring additionality as part of Scope 2 emissions accounting is a mistake and removing certain market-based instruments, like unbundled RECs, would be catastrophic for the clean energy transition.



3. Why Time and Location Data Tracking is Critical

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A corporate carbon footprint changes depending on where and when a corporation uses its electricity and depending on where it buys its renewable energy from. A data center in Wyoming generally has a larger carbon footprint than one in Texas because the underlying electricity grid is more carbon intensive. Conversely, a wind farm in Wyoming will generally displace more carbon than one in Texas for the same reason. Similarly, producing renewable energy during the day in Indiana generally offsets more carbon than at night given there is generally more coal-fired generation on the grid mid-day.

Luckily, there is broad consensus and support now for adapting guidance for Scope 2 and Scope 3 emissions accounting so that renewable energy markets, and REC markets in particular, better reflect the underlying carbon intensity or avoided emissions – a concept referred to as ‘emissionality’.¹² Corporations should be enabled to disclose and promote the impacts of their emission reduction claims in updated or new leadership programs.¹³ Many of our recommendations to integrate emissionality into REC markets and into Scope 2 requirements, which we shared in 2023 in our perspective on “**Reimagining REC Markets**”, are now in discussions to be implemented.¹⁴ We work with dozens of the largest corporations in the world, and they support the same concept – as illustrated by the ‘Emissions First Partnership’¹⁵ and the large coalition of members of the independent non-profit EnergyTag¹⁶ that works on setting a standard for hourly and locational tagging of emissions to EACs globally, including RECs in North America.

A Call to Action and Path Forward

First and foremost, we recommend that **WRI more actively engages with practitioners** – specifically the Solar Energy Industries Association (SEIA), the American Council on Renewable Energy (ACORE), the American Clean Power Association (ACP), the Clean Energy Buyers Association (CEBA) and their affiliated members – on how to design GHG Protocol guidance and disclosures to optimize carbon-free energy deployment and properly reflect the environmental benefits. WRI’s stakeholder process has not prioritized seeking practitioners feedback from these organizations and their members who often lack the bandwidth to write peer-reviewed articles or to engage directly in the stakeholder process. We think such dialogue would be enlightening.

We call on the clean energy practitioner community to continue actively engaging in this critical debate and sharing their true facts and insights. Only if the practical perspectives of those who develop, finance, build, operate, invest in or purchase from renewable energy projects are incorporated in future policies will the clean energy transition accelerate as urgently needed.

In terms of design, we recommend that **Scope 2 and Scope 3 emissions reduction claims ultimately integrate carbon intensity** into any report on an organization’s electric usage and into any claim around renewable energy procurement or investment. We recognize there are various approaches to do so, one focused on 24/7-hourly matching and another focused on locational marginal emissions. We see these as complementary, and corporations should be given the option to use either depending on their capabilities.

Similarly, companies should have the **flexibility of differentiating the impact of their emissions reduction claims through a hierarchy of voluntary contractual instruments under market-based accounting** so long as they retire the RECs associated with their renewable energy procurement or investment and then disclose their strategy. Larger corporations could disclose that their action was tied to a new clean energy project, while smaller organizations could communicate that they bought renewable energy from an existing project – and both would be able to make a legitimate carbon reduction claim.

Reframing ‘additionality’ (and ‘emissionality’) as a disclosure feature gives buyers additional recognition (and advertising) benefits and allows for transparency and flexibility. Disclosing the additionality characteristics of a renewable project, in tandem with other pivotal attributes, such as its locational and temporal emissionality benefits, empowers potential buyers to make informed decisions. Such a model fosters transparency and competition, and widens the market landscape, allowing companies the discretion to determine (and disclose) the value and significance of ‘additionality’ and/or ‘emissionality’ to the impact of their engagement in the clean energy transition.

Endnotes

- 1 Ongoing updates on proposed revision of the GHG Protocol accounting guidance for Scope 2 and Scope 3 emissions can be found at <https://ghgprotocol.org/blog>.
- 2 U.S. Energy Information Administration, Monthly Energy Review, data for 2022 March 2023.
- 3 Grid Strategies, The Era of Flat Power Demand is Over, December 2023.
- 4 Commitments to decarbonize an organization’s operational footprint typically cover goals to reduce direct emissions from controlled or owned sources such as fuel combustion in boilers, furnaces, and vehicles (Scope 1) and indirect emissions (Scope 2) from purchases of electricity, steam, heat or cooling, while commitments to decarbonize the upstream and downstream supply chain for these organizations are referred to as Scope 3 emission reduction goals.
- 5 Includes publicly announced corporate clean energy procurement through power purchase agreements, green tariffs, tax equity investments, and project ownership in the U.S. from 2008-2023; excludes onsite generation <20 MW. Clean Energy Buyers Association (CEBA), May 2024.
- 6 Corporate PPA Deal Tracker: March 2024, Bloomberg New Energy Finance, April 2024.
- 7 The Greenhouse Gas Protocol (GHGP) **Corporate Standard** is the world’s leading greenhouse gas (GHG) accounting standard for companies to account for and disclose emissions and emissions reduction strategies, including clean energy procurement. Scope 2 Guidance: <https://ghgprotocol.org/scope-2-guidance>; Scope 3 Standard and Technical Guidance: <https://ghgprotocol.org/scope-3-calculation-guidance-2>
- 8 Lawrence Berkley National Laboratory, Grid connection backlog grows by 30% in 2023, dominated by requests for solar, wind, and energy storage, April 2024.
- 9 In parallel, location-based accounting within the Scope 2 Guidance reflects the overall grid carbon intensity of their electricity use without singling out specific corporate initiative.
- 10 Regulated markets are markets in which the utility owns much of the generation, and as such, often does not allow third party energy producers to effectively participate in the market. Regulated markets include much of the U.S. Southeast and Southwest.
- 11 In a climate context, the concept of additionality came about to address offsets, not renewables development, and consequently was founded on a completely different set of criteria, measurements, and quantification.
- 12 We support guidance that provides corporations with the flexibility to either (1) co-locate their load and their procurement or (2) procure renewable energy based on a locational marginal emission (LME) concept. In either case we suggest using a relevant hub to co-locate or measure emissionality, recognizing that more granular approach would be more precise but more challenging to implement.
- 13 Next Generation Carbon-Free Electricity Procurement Activation Guide’ (https://cebi.org/wp-content/uploads/2022/10/Community-Guide_Oct31st_v1.pdf), Clean Energy Buyers Institute, 2022.
- 14 Reimagining REC Markets: Integrating Additionality and Emissionality into a New Carbon-Free Paradigm (www.solsystems.com/reimagining-rec-markets), Sol Systems, 2023.
- 15 The ‘Emissions First Partnership’ (www.emissionsfirst.com/principles) was created by practitioners – companies working to reduce their emissions with impactful clean energy projects today – to contribute to standards that can improve emissions accounting accuracy and ensure clean energy investments maximize electricity decarbonization.
- 16 EnergyTag (www.energytag.org) promotes ‘granular accounting’ that ensures consumption is matched with clean energy in the same hour from a location where electricity can be delivered and encourages new clean energy supply.