

Getting Scope 2 Right: A Path to Improve Accuracy, Preserve Participation, and Accelerate Decarbonization

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Executive Summary

The Greenhouse Gas Protocol (GHGP) first published the Scope 2 emissions reporting guidance in 2015, which solved a real problem at the time. Prior to the guidance, companies had no way to reflect clean energy procurement decisions in their Scope 2 inventories: a buyer signing a wind power purchase agreement (PPA) and a buyer taking default grid supply reported identical emissions. The market-based method introduced a mechanism to give voluntary contractual instruments standing in the inventory, on the theory that if attributes are tracked and retired exclusively, a company's reported emissions can reflect what it chose to buy rather than only what flowed through its meter. That was a reasonable design goal, and it worked: the method is what made corporate clean energy procurement legible to investors, regulators and rating agencies, and it is the reason the voluntary market grew to the scale described in Section 3.

The GHGP is currently undergoing the first revision to Scope 2 rules in over a decade. The proposed changes published by the GHGP would mandate that in order to claim reductions in Scope 2 greenhouse gas emissions, companies would be required to match renewable or clean energy purchases with their electricity usage on an hourly basis (time matching) at very granular locations (deliverability matching). [19] The reasoning behind this is straightforward: GHGP's concern is that annual, region-wide matching lets a company report a zero-emissions inventory while drawing power from a fossil-heavy grid at the hours it actually consumes, and that unbundled certificates from long-amortized existing assets can produce a zero-emissions result without changing what gets built or dispatched. The intent is legitimate- this paper does not dispute the diagnosis. However, the proposed changes, as written, run a significant risk of slowing long-term voluntary clean energy procurement, which has been a significant driver of new project deployment.

Real world experience has shown that adding cost and complexity to long-term voluntary clean energy procurement slows adoption- the author's experience from 23 years in the renewable energy space, leading the team that has advised on roughly 10% of all corporate PPAs ever signed, is relevant here. Very few, if any, of the 25 GW of voluntary corporate PPAs advised would have happened if the corporate buyers had received carbon reduction credit only for the EACs that matched the hours and location of their usage (see Section 4). Getting the rules right is critically important to global climate outcomes. The planned 2027 revision can simultaneously improve credibility without undermining the mechanisms that have driven real-world clean energy deployment at scale.

This paper proposes two primary changes to the foundational concepts at the heart of Scope 2 reporting, and six tangible actions to enable those changes.

When a renewable energy project produces one MWh of electricity it also produces a one MWh energy attribute certificate (EAC), variously called a renewable energy certificate (REC), guarantee of origin (GOO)

or similar, which allows the owner to claim the carbon benefit of the low-carbon electricity. Existing rules allow a company that signs a contract for EACs to claim that they are “using renewable energy.” The first change recommended is to stop asking market instruments that enable renewable energy purchasing and tracking to support an inaccurate “usage” claim. No accounting rule makes an electron traceable, and no amount of temporal or geographic matching makes one traceable either. What a company can credibly say is that it paid for generation to exist and retired the attributes. Removing the usage claim and replacing it with claims about financing and attribute retirement answers most of the academic objection to market-based accounting.

The second change is to differentiate procurement instruments by the function they perform. Scope 2 guidelines should clearly differentiate between (i) short-term, spot-market energy attribute certificate (EAC/REC/GOO) purchases that primarily serve an accounting function and (ii) long-term procurement such as power purchase agreement or direct investments (e.g. tax credit or equity investments bundled with long-term EAC offtake) that primarily serve a financing and market-development function.

If policymakers want to apply tighter temporal and deliverability requirements to spot-market instruments in order to improve claim quality, this can be justified, although it may decrease participation in these markets. However, the proposed changes would inadvertently penalize long-term procurement alongside spot purchases, raising the cost and complexity of the instrument that has driven most new project deployment for over a decade. Forcing long-term PPAs to satisfy the same time and deliverability matching constraints would materially change economics and execution complexity, very likely reducing participation and slowing project financing. To ensure consistent application and clarity, long-term procurement should be defined by a bright-line test rather than by a label: a contract term of ten years or more, with offtake commencing within 36 months of the generating asset’s commercial operation date.

The revised standard should preserve clear inventory accounting for the emissions impact of electricity in both location-based and market-based mechanisms, and report consequential or impact-oriented outcomes in a layer distinct from carbon inventories.

A workable path forward would include six elements. These are addressed primarily to GHGP/ISO, where the market-based method still exists and anchors most corporate reporting.

1. Retire the “usage” claim for market-based instruments and define permissible claims for each action and intervention.
2. Preserve a clear electricity inventory framework for Scope 2 accounting using both the location-based method and the market-based method, with the market-based method continuing to rely on EACs to track the carbon impact of clean energy.
3. Recognize long-term project-backed procurement in connected grids under annual and broader geographic matching rules in the market-based method, subject to a bright-line test consisting of a contract term of ten years or longer with offtake commencing within 36 months of the generating asset’s commercial operation date. Equivalent actions in non-connected grids should receive credit in the consequential accounting layer.
4. Adopt a vintage requirement for spot-market EACs in the market-based method using a generator age limit of fifteen years, adapted from SBTi C31.3 and supported by the modeling literature.
[15][17] This requirement should not apply to long-term contracts that meet the bright-line test.

5. If policymakers want higher-fidelity accounting claims (and can justify the increased cost and complexity), apply tighter temporal and deliverability rules in the market-based method primarily to spot and short-term instruments rather than to long-term PPAs or investments that satisfy the bright-line test.
6. Introduce a separate consequential or impact-oriented disclosure layer to recognize actions that actually change emissions outcomes. Actions that get new generation built, storage, demand flexibility, transmission-enabling investments, and other measurable interventions would fit in this category. These should remain distinct from inventory accounting while supporting specific impact claims.

Much of the debate has been focused on the data center space, as this sector is driving a large percentage of the load growth in certain markets like the US. Given the economic incentive to get data centers built quickly (see Section 7), it is unlikely that any emissions reporting rules will change real-world behavior such as building behind-the-meter gas plants at data centers. The consequential or impact-oriented disclosure layer gives data center companies and hyperscalers a credible path to counterbalance the carbon impact of that gas buildout with additional and impactful actions in locations outside their load deliverability area.

The GHG Protocol is combining carbon standards workstreams with the International Organization for Standardization (ISO). Separately, the Science Based Targets initiative (SBTi) has revised its Scope 2 accounting rules, and the Task Force for Corporate Action Transparency (TCAT) has issued its corporate emissions reporting guidance for public consultation. This creates a critical opportunity to ensure that reporting standards accelerate global decarbonization instead of creating barriers to action.

1. Start with the claim, not the electron

Much of the discourse in the Scope 2 debate comes from defending a claim that was never defensible. The market-based method is widely described, including in GHGP's own consultation materials, as though it reflects the electricity a company consumed, while in reality it reflects the attributes a company purchased and retired.

As it pertains to the physics, William Hogan argues that physical matching of contracted load and generation is a fiction, because power in a meshed network flows on every parallel path between injection and withdrawal, and bilateral contracts need not be known to the system operator at all. [7] Matthew Brander asserts that time and location matching is insufficient to establish that a company used one specific input from a mixed deliverable pool, and the resulting claims carry reputational and litigation risk. [8][9] Neither objection is answered by finer temporal resolution. Hourly matching makes the fiction more expensive without making it true.

This matters because the usage claim is a key element that hourly matching is meant to improve. Remove it and the case for mandatory hourly matching loses much of its purpose, while the case for market instruments as a financing mechanism remains strong. When signing a PPA a company does not need to claim that it is "using renewable energy." It can instead claim that it "enabled a new project to get financed and secured the EAC required to reduce its market-based Scope 2 emissions." That is a smaller claim, is more accurate, and it is the claim buyers actually care about.

In a revised architecture, market-based inventory accounting tracks attributes and is disciplined about related claims.

2. Not all procurement mechanisms are equal

A core mistake in the current debate is treating all procurement instruments as if they serve the same function.

Short-term, spot-market EAC/REC/GOO purchases primarily serve an accounting function. They help match claimed renewable consumption to documented generation attributes, ensure no double-counting of the same generation, and can improve transparency when designed well. They also allow new market entrants, or those with smaller load volumes in a particular market to participate in renewable energy markets. But the evidence repeatedly notes that these instruments often come from existing assets and may not, on their own, drive new investment.

Long-term PPAs play a different role. In addition to providing the EACs required to make credible carbon claims, they transfer risk, provide revenue certainty, and can be instrumental in allowing projects to reach financing and construction. E3 concludes that long-term offtake contracts will continue to be needed to finance the vast majority of clean energy projects, and that significant cost increases from hourly matching could undermine project economics and investment. That study was partially funded by Meta, which reviewed the analysis prior to publication, and readers should weigh it accordingly. [3]

This distinction is also a critical premise of leading models. Gagnon and Brown represent voluntary buyers “as procuring EACs from an unbundled pool,” in which “the supply of all eligible EACs for a given region and time are pooled together, and actors can draw from that pool, instead of engaging in bilateral contracts with individual generators and without contracting for the underlying electricity.” [17] That pooled representation means the results characterize an unbundled attribute market, not the financing and risk-transfer function of a long-term bilateral PPA.

3. Reframe the debate: this is not 24/7 versus no reform

The relevant policy question is not whether more granular procurement can ever reduce emissions. It likely can under certain scenarios and assumptions. Xu, Ricks, Manocha, Patankar and Jenkins find that hourly matching drives significant reductions in system-level CO₂ while annual matching has minimal effect, and that it incentivizes advanced clean firm generation and long-duration storage. [6] Riepin, Jenkins, Swezey and Brown extend that to a technology-pull argument, finding that hourly cost premiums fall 38 to 44% at 10% market participation once advanced resources are available. [24] In both studies, however, the share of load committing to each strategy is a scenario input rather than something that responds to the cost of the rules. Gagnon and Brown note that only two prior efforts had reflected demand elasticity in a study of spatiotemporal accounting at all, and that neither performed power sector modeling within its elasticity analysis. [17]

The real policy question is how accounting rules affect behavior in a voluntary market, or a future compliance market, where participation depends on cost, complexity, and execution risk. A procurement design that looks better in a model holding participation constant may perform worse in practice if the rule

change itself causes companies to scale back ambition, stop signing long-term contracts, or fall back on smaller volumes of lower-risk purchases.

The current magnitude of voluntary clean energy purchases is not trivial- it is a significant market. EPA's market-level analysis of U.S. voluntary renewable demand reports that the voluntary market reached about 319 million MWh in 2023, represented about 44% of all U.S. non-hydropower renewable energy generation, and involved more than 72 GW of long-term contracted wind and solar capacity signed by at least 230 voluntary buyers as of the end of 2024. [1]

Globally, corporations announced power purchase agreements for nearly 200 GW of solar and wind between 2008 and 2023. [16] BloombergNEF reports that global corporate clean power contracting fell 10% in 2025 to 55.9 GW, the first decline in nearly a decade, even as U.S. volumes hit a record 29.5 GW. Four technology companies accounted for 49% of global activity, and the number of unique U.S. corporate buyers fell 51% year on year, to 33. [26] The market is concentrating into a small number of very large buyers while the long tail exits. Any accounting revision that changes participation should therefore be judged not only on precision, but also on whether it preserves the mechanisms that finance new build and on whether it accelerates or slows that concentration.

4. What the evidence shows on cost, impact, and participation

On cost, the estimates are wide and unreconciled. Tabors Caramanis Rudkevich (TCR) model four strategies across five U.S. balancing authority areas and find hourly energy matching costs of \$68 to \$181/MWh, against \$10/MWh for U.S.-wide annual energy matching and \$16 to \$32/MWh for local annual energy matching. They find hourly matching the least cost-effective strategy at reducing emissions, at \$77 to \$161 per tonne of CO₂ displaced, and carbon matching the most cost-effective, at \$4.7 to \$7.6/MWh and \$13 per tonne. They also find that annual energy matching does not guarantee carbon neutrality, which is a finding this paper accepts rather than resists. [2] E3 likewise finds hourly matching creates substantial added cost and market risk, and is harder in practice than capacity expansion modeling captures. [3] Alternatively, EnergyTag asserts that matching above 80% can be cost-competitive with industry retail prices and that operating costs run in the low single-digit percentages of electricity spend. [28] It should be noted that EnergyTag's business model depends on companies wanting to measure EACs at a more granular time and location scale, which is a conflict that should be disclosed alongside the claim, just as Meta's funding of the E3 study is disclosed above. While these positions are not close, all sources point to increased cost to comply with spatial and temporal matching.

On impact, Gagnon and Brown find that moving from the status quo to spatiotemporal accounting increased the impact on U.S. clean generation "in most of the scenarios we studied although the increases were often modest." As noted elsewhere, their model is focused specifically on the spot market for pooled EACs. It is silent on the demand elasticity of long-term bilateral contracts like PPAs if more granular rules are put in place. [17]

While no formal study has been conducted, the author's experience from 23 years in this market, leading the team that has advised on roughly 10% of all corporate PPAs ever signed, is relevant here. Very few, if any, of the 25 GW of voluntary corporate PPAs advised would have happened if the corporate buyers had received carbon reduction credit only for the EACs that matched the hours and location of their usage. Corporate PPA buyers take on significant price risk over a long term, typically 10 to 15 years or more. The

primary motivation for taking on that risk is the ability to meet ambitious carbon reduction targets. In all cases, PPA buyers explored options that would also provide a stronger hedge against rising prices, namely PPAs that more closely matched the time and location of the buyer's electricity consumption. In practice, when comparing options in the market, fewer than 20 out of more than 400 buyers chose the increased cost and complexity required to create an effective hedge. The vast majority chose solutions that allowed them to hit carbon reduction goals, got new additional renewable energy built, and landed in a range of cost outcomes that their CFO could approve.

It could be argued that some share of those buyers would have chosen time and location matched PPAs if that were the only way to get carbon reduction credit. The higher likelihood is that many more would have opted not to sign a PPA at all. That is supported by the sharp reduction in the long tail of companies participating in the U.S. PPA market over the past several years as PPA prices have risen, even for annually matched deals. As the economic risk increased, most buyers simply opted not to participate. Further increasing the cost and complexity of what counts for GHG reduction is likely to make that opt-out problem worse. [26] WattTime, which has argued for stricter, impact-based accounting, has reached a similar conclusion, warning that the cost of mandatory hourly matching could suppress procurement enough to raise long-run emissions. [25]

How much long-term procurement volume would actually fall under a spatially and temporally matched regime has not been measured in this market, to the author's knowledge. Given the real world benefit of these instruments, this paper would recommend an independent study to the extent there remains disagreement on the premise.

5. A targeted policy split, with a boundary that can be audited

Spot-market EACs and long-term procurement should be treated differently in the market-based method. Long-term procurement should continue to count under the current rules of annual matching in a broader geographic area, subject to the bright-line qualifying test described below, while tighter temporal and deliverability criteria, if adopted, should apply to spot-market EACs alone, and only if the benefits justify the added cost and complexity.

If policymakers believe that spot-market instruments should meet tighter criteria for making renewable energy claims, it could be reasonable to apply stronger temporal and deliverability requirements to those instruments, provided the cost-benefit analysis justifies the effort. This could be achieved by making such matching mandatory, or by making it voluntary and giving credit for time or location matching in the consequential accounting framework. The benefits of mandating time and location matching for spot EACs are potentially twofold. First, in theory it could drive more revenue through higher hourly EAC prices to technologies that provide clean energy when the grid has higher carbon emissions per MWh like the early evening. This could encourage investments such as battery storage and load shifting, though whether the promise of future spot-market EAC revenues would be enough to actually finance a new battery project is questionable. Second, spot purchases are the mechanism most associated with low-cost, purely accounting-oriented claims, and if spot EACs become more costly and cumbersome to use, more buyers may be driven to consider the more impactful long-term procurement options and accelerate adoption of those instruments. This second effect may be the larger potential benefit of the two.

Gagnon and Brown's modeling bears on the first effect. They find that allowing incumbent nuclear and hydropower generators to supply voluntary claims weakened or eliminated the increased impact of spatiotemporal accounting, which is the empirical basis for pairing any tightening of spot EAC rules with a vintage requirement. [17] If spot EACs are unlikely to drive significant incremental clean energy, and mandatory spatiotemporal accounting produces only modest gains, policymakers should weigh those gains against the cost, administrative complexity, and infrastructure required to collect, process, verify and retain granular electricity data, including the energy and emissions burden of that data infrastructure.

Long-term PPAs, and comparable structured procurements such as a significant cash or tax equity investment coupled with long-term EAC offtake, should not be forced into the same strict time and deliverability matching constraints. Doing so would change the product from an already complex long-term project-backed contract into a portfolio optimization exercise involving multiple technologies, balancing strategies, and often storage or firming. Even under current annual matching rules, obtaining internal approval for a long-term PPA is difficult. Requiring hourly matching and strict deliverability would shift many buyers into multi-asset portfolio management, frequently sourced from existing assets rather than new build, or out of the market entirely.

If an exemption is created for these more impactful procurement options, it benefits from a clearly defined boundary condition. Two conditions are sufficient: the contract term is ten years or longer, and offtake commences within 36 months of the generating asset's commercial operation date. It can be reasonably assumed that long-term offtake of EACs and/or electricity from a new-build asset is likely to be incorporated into the project financing decision. Whether "new build" is defined as 36 months from commercial operation, or 24 months, or 12 months, is open for discussion. Trying to further litigate tests or higher bars for "additionality" risks adding significant complexity and uncertainty to the market, likely slowing adoption, in a way that a bright line test avoids.

The European Commission's draft data centre rating regulation requires guarantees of origin to be matched to 15-minute production periods in the same bidding zone, but exempts power purchase agreements from those temporal and geographic requirements, on the stated rationale that PPAs guarantee new renewable production facilities are being constructed. [10][11] A bright-line test for long-term offtake solutions also addresses the critique raised by Bjørn, Gebara and Brander- that the central weakness of the market-based method is the absence of any required causal link between the reporting company and the generation it claims. An offtake-term and new-build test does not fully close that gap, but it is a verifiable condition a buyer satisfies at signing, which is more than the current rules ask for. [9]

This bright-line test for what qualifies as long-term offtake should not be conflated with the vintage requirements found in other standards. SBTi V2.0 pairs a fifteen-year generator age limit (C31.3) with a 36-month offtake condition for aggregated load (C30.3(b)), and the European Commission's draft data centre regulation uses a ten-year commissioning limit. [15][22] Those requirements limit the age of the asset from which any EACs, spot or long-term, may be purchased, which is not the same thing as requiring that long-term procurement carry an offtake term of ten years or longer. For spot market purchases, this paper strongly supports including a vintage requirement. However, applying the asset age cap to long-term contracts can create a perverse incentive. A buyer who signs a twenty-year PPA with a new-build asset should get credit for the full term of that contract, yet in the last five years of that contract the asset would be older than fifteen years and would no longer earn credit under a fifteen-year vintage limit. A test based on the offtake term and the asset's age when offtake begins avoids penalizing the long commitments the

market-based method is meant to encourage. SBTi appears to recognize the issue: exceptions to the C31.3 age limit, including for PPAs with new projects, were deferred to guidance expected in Q4 2026. That guidance is where this question will be settled, and the offtake-based test proposed here is a candidate answer. [15]

6. Additionality cannot be cleanly divided

Consequential accounting is intended to recognize actions that drive real-world decarbonization. This should be encouraged, recognized, and celebrated. The debate over how best to recognize the carbon impact of various actions is active within GHGP, SBTi and TCAT, and many stakeholders would like credit for actions such as building new transmission or shifting renewable generation from sunny daytime hours into more fossil-heavy evening hours.

In practice, conferring carbon claims on specific impactful actions becomes murky quickly. An additionality claim around a new renewable project is essentially the claim that “if not for my action, this project would not have been built.” Actions that get a project built should certainly be encouraged and recognized. But it takes many actions from many parties to get a renewable project built. The PPA buyer can credibly claim additionality. So can the equity or tax investor. So can the developer, the landowner, and the utility that built the transmission.

All of those actions are required, or the project would not exist. Dividing the carbon impact among them is a challenging exercise and it is being actively debated in the consequential accounting or Actions and Market Instruments spheres. How exactly this carbon credit is divided in the consequential accounting method is going to be an important driver of actions above and beyond inventory accounting.

7. Data centers as a stress test

A meaningful part of the current debate centers on data centers, and specifically on facilities building behind-the-meter gas generation while supporting renewable energy in a distant location. It is worth asking openly whether data center behavior is likely to be meaningfully influenced by any voluntary GHG accounting framework.

The rush to build data centers for AI is driven largely by the value, or perceived value, created by AI solutions and the profit available from selling compute services. The Compute Heat Rate (CHR) estimates the maximum electricity price at which an AI workload remains economic after non-electricity costs and a required margin. Its Q1 2026 baseline ranges from approximately \$500/MWh for frontier model training to more than \$53,000/MWh for frontier inference, with a blended average of approximately \$6,350/MWh. The framework is a measure of price tolerance rather than a forecast of wholesale prices. It nevertheless suggests that many AI workloads have limited economic incentive to curtail at prices typical of current wholesale markets, often around \$50/MWh, which strengthens the commercial incentive to bring capacity online quickly. [18]

Deloitte reports that AI data centers can create large, concentrated, 24/7 power loads and that some requests for grid connection in the United States currently face waits of up to seven years. [12] Developers are increasingly exploring behind-the-meter generation, often natural gas, fuel cells, storage, or mixed systems, to reduce delays and improve reliability. [13] Independent tracking identifies roughly 90 GW of

behind-the-meter data center capacity, about a quarter of all planned U.S. capacity, of which only about 2 GW, or 2.2%, is operating today, and roughly 60% exists only as announcements. [29]

These dynamics suggest caution in designing economy-wide Scope 2 rules around the data center use case. If a sector faces binding constraints around speed to power and reliability, voluntary accounting rules may have limited influence on core infrastructure choices. In May 2026, Bloomberg reported that Microsoft was weighing whether to delay or drop its 2030 hourly carbon-free energy target. The company has not announced a decision, and its Chief Sustainability Officer reaffirmed both its broader commitments and its 2025 achievement of matching 100% of annual global electricity consumption with renewable energy. [14] Both Amazon and Google have reported sharply rising emissions driven by data center growth. Amazon's 2025 Sustainability Report reports company emissions up 16% year over year, and attributes the increase to data center expansion for AI. [32] Google's 2026 Environmental Report shows total emissions up 18% year over year, with Scope 1 emissions up 20% on data center expansion and associated fuel consumption. [33] These developments are indications of how even some of the most capable buyers in the market with the strongest sustainability goals feel the impacts of the pressure of speed to power.

Current rules allow data centers to counterbalance some of their direct impact with long-term PPAs, even where those are not perfectly matched to location and load. It can reasonably be debated whether a PPA in a connected or distant grid perfectly offsets the impact of a behind-the-meter gas plant. But removing all credit for the PPA would deter the contract without changing the likelihood that the gas plant gets built. A standard focused on accelerating decarbonization outcomes should continue to encourage additional renewable energy in connected grids and should explore beyond-value-chain solutions in other markets. Many of these companies are genuinely trying to balance their carbon impact, and even where that motivation cannot overcome speed-to-power requirements, the right incentives can drive real impact across global electricity and transmission systems.

8. Where the standards are heading

Three separate processes are currently converging on a similar architecture involving multiple statements for Scope 2 emissions accounting. TCAT's Mitigation Action Accounting and Reporting Guidance, in public consultation as Version 1.1, proposes five statements. GHGP's Actions and Market Instruments workstream has four under consideration. SBTi's Corporate Net-Zero Standard Version 2.0, published June 11, 2026 and effective February 1, 2027, anchors target ambition to the physical, location-based inventory (C9.4) and moves market instruments into a separately reported implementation and claims layer, while explicitly retaining long-term electricity contracts, permitting load aggregation across interconnected activity pools in defined circumstances, grandfathering the deliverability of pre-existing long-term contracts, and treating hourly matching as recognition rather than a requirement to meet targets. [4][5][15][20]

On July 29, 2026, GHGP confirmed that its Scope 1, Scope 2, Scope 3, and Actions and Market Instruments workstreams will be consolidated with ISO 14064-1 into a single, co-branded corporate standard delivered in two Parts, with an integrated public consultation estimated for Q2 2027 and final publication estimated for Q4 2028. The Scope 2 consultation summary, drawn from nearly 1,100 responses across 56 countries, records low support for mandatory hourly matching, with 70% of respondents giving little to no support and support falling to roughly 12% among businesses. On deliverability a majority of companies opposed, while NGOs and civil society, government institutions, GHG reporting programs, academia, consultants and data providers were more split. A legacy clause drew near-universal support, at roughly 90% of

respondents. GHGP's Independent Standards Board has called for further work on multiple market-based method reporting approaches reflecting different theories of change, and the Scope 2 technical working group reconvenes in September 2026 to reconcile the comments. [19][20][21][27]

TCAT and GHGP are converging independently rather than jointly. Their structures differ in statement count, naming and granularity, and GHGP's own working materials treat TCAT as a related initiative whose outputs will be considered for integration, not as an agreed architecture. Convergence from separate directions is arguably stronger evidence than coordination would be.

SBTi V2.0 has already made the split operational, and it is an important development for anyone assessing where Scope 2 is heading. All Scope 2 target ambition is anchored to the physical, location-based inventory (C9.4), and market instruments move to a separately reported implementation and claims layer. Within that layer the standard is more accommodating of long-term procurement than either its critics or its supporters generally acknowledge. It explicitly retains physical and virtual PPAs as eligible instruments (C31.1). It permits load across two or more interconnected activity pools to be aggregated under a single PPA within a wide area synchronous grid, where offtake begins within 36 months of the project's commissioning (C30.3(b)). It grandfatheres the deliverability of long-term contracts in place before the February 1, 2027 effective date, though renewal does not extend that treatment (C30.5). And it makes hourly matching optional for target progress while making hourly reporting mandatory above 10 GWh per activity pool, with an explanation owed to SBTi by companies that decline to participate in the recognition program (C32 and C33), and recognition thresholds of 50% until 2030, 75% until 2035, and 90% from 2035 (C34.1). [15] The live question for SBTi has therefore shifted from whether a PPA counts in the market-based number to whether it satisfies deliverability (C30), instrument eligibility and vintage (C31), and what class of claim it supports.

The risk that remains is comparability. If impactful actions are recognized only in a consequential layer, companies will orient toward that layer and the inventory statements become a formality. Given the difficulty of assigning a specific carbon value to distinct actions, discussed in Section 6, that would produce inconsistent and non-comparable metrics across companies. The architecture works only if the inventory statements stay comparable and disciplined while the impact statement carries the actions.

9. Where this argument sits in the current debate

Differentiated treatment of long-term procurement is certainly not an original idea in this paper- it has an established and unusually broad coalition behind it. Gillenwater and Leggett of the Greenhouse Gas Management Institute argued in May 2025 that a blanket hourly mandate would make long-term contracts less attractive and push buyers toward spot instruments that provide minimal project support, and proposed a separate mitigation intervention statement to hold the impact. [23] A coalition of companies writing under the banner "may not shall" published a statement in April 2026 asking GHGP to make hourly and strict deliverability matching in the market-based method optional rather than mandatory, following a "may" rather than a "shall." It carries 66 signatories representing more than 33,500 organizations, including Amazon, Apple, FedEx, General Motors, E3, Tabors Caramanis Rudkevich, WattTime and the author's former employer Schneider Electric, several of whom are cited as sources elsewhere in this paper. [34] Matthew Brander, among the sharpest academic critics of market-based Scope 2 accounting, makes the same structural point from the opposite direction: the current framework fails to distinguish impactful procurement such as a long-term physical PPA from low-cost hourly EACs sourced from existing generation,

and he recommends tiered reporting that differentiates procurement by impact likelihood. [8] The Corporate Energy Buyers Association (CEBA) supports optional granular time and location matching but has stated deep concerns with mandatory matching requirements, reporting that 75% and 66% of surveyed corporate buyers opposed mandatory hourly matching and location matching respectively. [35]

Brander wants tiers so that low-impact procurement is visibly low-impact, not so that long-term contracts are relieved of scrutiny. He would likely reject any tier that lets a PPA claim a zero emission factor without an additionality test. The eligibility conditions proposed in Section 5 are offered in that spirit. They are an additionality proxy that a buyer can satisfy at signing and an auditor can verify, rather than an exemption granted on the strength of the words “long-term.” The same logic applies to Hogan: his critique is a reason to retire the usage claim, as Section 1 argues, not a reason to prefer one attributional instrument over another.

10. Recommended framework

Restating from the executive summary, a workable path forward would include six elements. These are addressed primarily to GHGP/ISO, where the market-based method still exists and anchors most corporate reporting. SBTi has already moved target ambition to the physical inventory, and there the equivalent questions are eligibility, deliverability, and what class of claim a contract supports.

1. Retire the “usage” claim for market-based instruments and define permissible claims for each action and intervention.
2. Preserve a clear electricity inventory framework for Scope 2 accounting using both the location-based method and the market-based method, with the market-based method continuing to rely on EACs to track the carbon impact of clean energy.
3. Recognize long-term project-backed procurement in connected grids under annual and broader geographic matching rules in the market-based method, subject to a bright-line test consisting of a contract term of ten years or longer with offtake commencing within 36 months of the generating asset’s commercial operation date. Equivalent actions in non-connected grids should receive credit in the consequential accounting layer.
4. Adopt a vintage requirement for spot-market EACs in the market-based method, using a generator age limit of fifteen years, adapted from SBTi C31.3 and supported by the modeling literature. [15][17] This requirement should not apply to long-term contracts that meet the bright-line test.
5. If policymakers want higher-fidelity accounting claims (and can justify the increased cost and complexity), apply tighter temporal and deliverability rules in the market-based method primarily to spot and short-term instruments rather than to long-term PPAs or investments that satisfy the bright-line test.
6. Introduce a separate consequential or impact-oriented disclosure layer to recognize actions that actually change emissions outcomes. Actions that get new generation built, storage, demand flexibility, transmission-enabling investments, and other measurable interventions would fit in this category. These should remain distinct from inventory accounting while supporting specific impact claims.

Finally, use the GHGP-ISO consolidation to align Scope 1, Scope 2, Scope 3, and Actions and Market Instruments within one coherent corporate standard, while preserving distinct statements for physical inventory, market-based accounting, and consequential impact.

11. What we still do not know

A number of questions in this debate are open, and no standard should be finalized as though they were settled. Among them:

First, the cost of hourly matching. The published estimates, which model hourly-matched procurement portfolios of pooled or spot-market EACs, differ by roughly an order of magnitude and the parties have not reconciled their definitions. Most analysis does not take into account the increased data burden (and resulting carbon impact) of tracking EACs more granularly. [2][3][28]

Second, the elasticity of long-term corporate procurement with respect to accounting stringency. The values in use focus on the spot market/pooled EACs. No estimate at all exists for long-term bilateral contracts. [17][30][31]

Third, how exactly carbon impact is divided in the consequential method/Actions and Market Instruments among multiple actors on a single project with valid additionality claims.

Fourth, potential impacts of voluntary standards becoming mandatory. Scope 2 accounting is moving from a voluntary system into mandatory disclosure regimes in jurisdiction after jurisdiction. If participation becomes compulsory, the participation argument weakens considerably, because buyers cannot simply exit. But the proportionality and data-burden arguments strengthen at the same rate, because the cost is then imposed on every reporting entity rather than borne by volunteers. [21]

Conclusion

The goal of Scope 2 reform should be to improve credibility without weakening the mechanisms that are already financing real-world decarbonization. The most effective path is not a one-size-fits-all requirement that forces every instrument into strict time and deliverability matching. It is a framework that retires the claim nobody can defend, tightens what inventory accounting is allowed to assert, applies a vintage requirement to spot instruments and a bright-line offtake test to long-term procurement, preserves participation through a boundary an auditor can apply, and separates accounting from impact so that each can be reported credibly.

The GHGP-ISO consolidation raises the stakes and offers a tremendous opportunity to get this right, because the result is intended to become a single global corporate accounting standard. The synchronized Scope 2 and Actions and Market Instruments workstreams create a timely opportunity to embed a differentiated, multi-statement and proportionate approach. The technical working group reconvenes in September 2026. The architecture is still open, and the details of the vintage requirement, the eligibility boundary, and the evidence base for the cost and participation claims are where this will actually be decided. [20][21][27]

Disclosure

The author led Schneider Electric’s global renewable energy advisory business for 23 years, a practice that advised on global renewable energy strategy for many of the largest companies in the world, including advising on more than 25 GW of corporate clean energy power purchase agreements, and resigned from Schneider Electric in 2026. The author has participated in discussions on Scope 2 accounting issues with stakeholders in the “may not shall” coalition, TCAT, SBTi and GHGP and has had direct discussions with many of the authors cited. Reference [18] is a working paper published by a former colleague of the author. That professional history is both the source of the practitioner evidence in this paper and an interest in its outcome, and readers should weigh both when assessing the arguments above.

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