# Are Emissions Claims in Jeopardy?

*New Scope 2 requirements could cause recalibration of global goals*

***REsurety and WattTime will launch a calculator to help organizations understand the implications of proposed methodologies on their current renewable claims and goals. This case study walks through a real-world example using the tool. Read on to see what this could mean for you.***

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## INTRODUCTION

The Greenhouse Gas Protocol (GHGP) has recently opened a public comment period for proposed updates to Scope 2 guidance. The impacts could change incentives for corporate clean energy procurement – with lasting impacts on our grids.

As part of this process, the Independent Standards Board (ISB) released two surveys: one focused on revisions to Scope 2, and another introducing a new consequential impact metric. Both surveys are open for public comment until December 19th. While the details of these revisions are up for debate, it's clear that public carbon accounting claims for organizations across the world are about to change.

This case study walks through the considerations of what each potential change means, its impact on an organization's emissions, and how changes might affect incentives for clean power investment activities.

The proposed changes center around the introduction of “hourly matching” within the Market-Based Method (MBM) for Scope 2 accounting, and a parallel consequential (impact) metric. The key is that the consequential impact metric measures impact based on *emissions*, while the hourly matching method measures impact based on *generation matching*.

Organizations set their procurement strategies and clean energy targets based on the GHGP requirements. While the GHGP is a reporting standards body and does not prescribe targets or goals, their role is vital in shaping outcomes. It is therefore essential to consider downstream effects and how an hourly-matched or emissions impact metric standard could change corporate investment strategies that currently support much of the renewable buildout worldwide. Let’s look at a sample procurement story, and how future investment decisions change based on carbon accounting.

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# Current State: Powered by 100% Renewables

Consider CleanCo, a mock company with retail locations distributed across the United States and Europe. They have an annual electricity load of 980 GWh in the United States and 170 GWh in Europe, and to-date have addressed their Scope 2 emissions by aggregating their load across regions and executing 4 PPAs (detailed in Table 1 below). Their load shape follows a standard retail profile. The RECs generated from these PPAs have covered 100% of their load for three of the last five years, and when they have experienced a shortfall, they have purchased unbundled RECs to make up the difference.

CleanCo is analyzing the impact of potential GHGP changes on their renewables claims. Due to data availability, their analysis is based on 2023 data.

### Sample CleanCo Portfolio Inputs

| Load Region | ERCOT | ISONE | CAISO | PJM | SPAIN |
|---|---|---|---|---|---|
| Annual Use (GWh) | 500 | 350 | 100 | 30 | 170 |

| Generation Region | ERCOT | MISO | PJM | NORWAY |
|---|---|---|---|---|
| Annual Generation (GWh) | 500 | 250 | 30 | 250 |

***Table 1. CleanCo’s 2023 Load and Procurement***

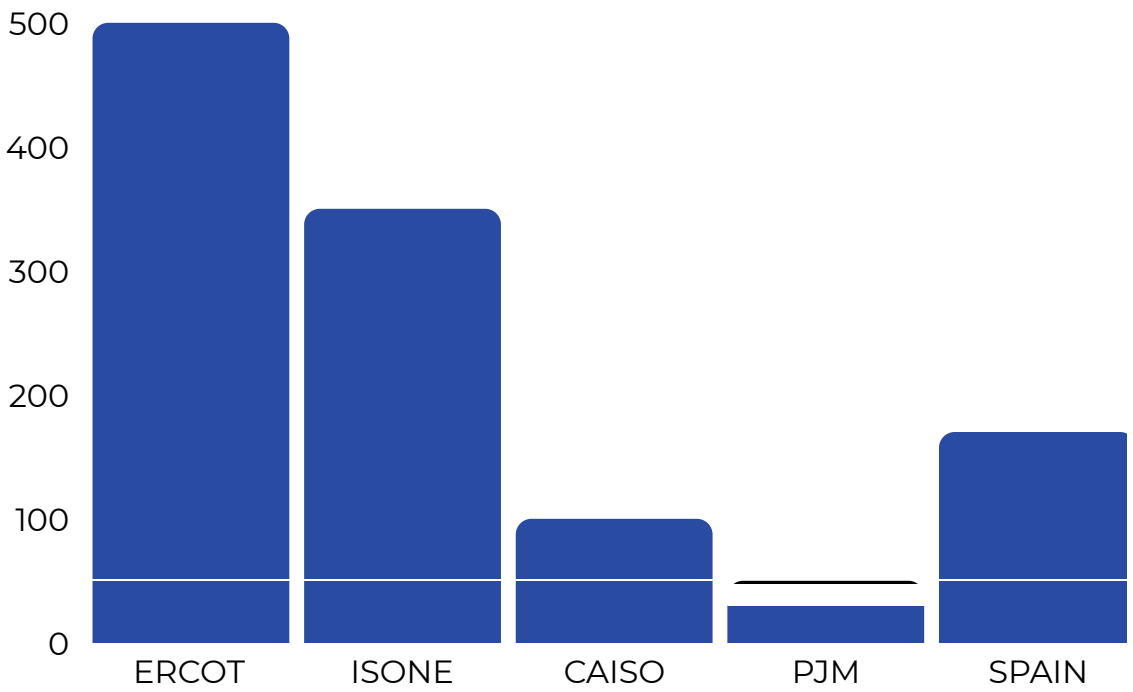
# Planning, Cost, & Carbon Challenges for Hourly Matching - GHGP's Leading Proposal

For hourly matching reporting, CleanCo assumes that deliverability regions will be set by wholesale markets, and the exemption threshold above which hourly matching is required will be 50 GWh / year per region (both the role of wholesale markets and the exemption threshold are currently up for debate in the public consultation).

## Sample Annual Load by Region, CleanCo

***Figure 1. CleanCo's sample annual load consumption in 2023, by region.***

*Line represents proposed 50 GWh exemption.*



**CleanCo would then go through the following steps to report and aggregate their matching results:**

## **Step 1.** Determine Exemptions

CleanCo's PJM load is exempt from hourly matching under the proposed 50 GWh exemption, and may therefore be matched annually. The remaining four regions must be matched with an equal amount of renewable generation for every hour of use within the same grid region.

## **Step 2.** Source and apply SSS data

CleanCo will next need to source and apply Standard Supply Service (SSS) data to its load profile to calculate the hourly load volume it needs to match with renewables. SSS is intended to measure electricity from publicly funded, mandated, or shared resources (i.e., delivered through default utility service or government clean energy programs). Based on the percentage of clean SSS data from each load region's utility, CleanCo can consider that same percentage of its load to be matched in each hour. In regions with a renewable portfolio standard like ISONE, SSS could conceivably lower CleanCo's overall clean energy procurement volume.

However, **SSS data is not currently widely available**, and the impetus would be on CleanCo to reach out to each of its utilities for this data on a case-by-case basis, if a default is not provided by the GHGP. For this analysis, CleanCo assumes 25% of load is met by clean fuels via SSS in all regions, based on EIA renewable electric output, but would need more detailed data for actual reporting.

## **Step 3.** Match hourly load to hourly generation

Given its load, SSS, and PPA mix, **CleanCo's overall hourly matching score in 2023 would be 37% Carbon-Free Energy (CFE)**, with a remaining 400,000 metric tons CO2e of residual fossil emissions from unmatched load. For the remaining 63% of the time, CleanCo is not able to match its hourly load with either SSS or existing clean power procurement - even though its total annual procurement is well sized for their load usage. This is primarily due to the deliverability region component of the hourly matching requirement, causing CleanCo's procurement in both MISO and Norway to no longer be applicable for emissions reductions claims.

CleanCo's load in ISONE, CAISO, and Spain (ES) can't be matched with its current procurement, and can only reach 5% matching from SSS. **Only 50% of CleanCo's current clean power procurement could be applied to its load, and the rest is wasted as overprocurement.**

### Carbon-Free Energy score for CleanCo by region, hourly matching scenario

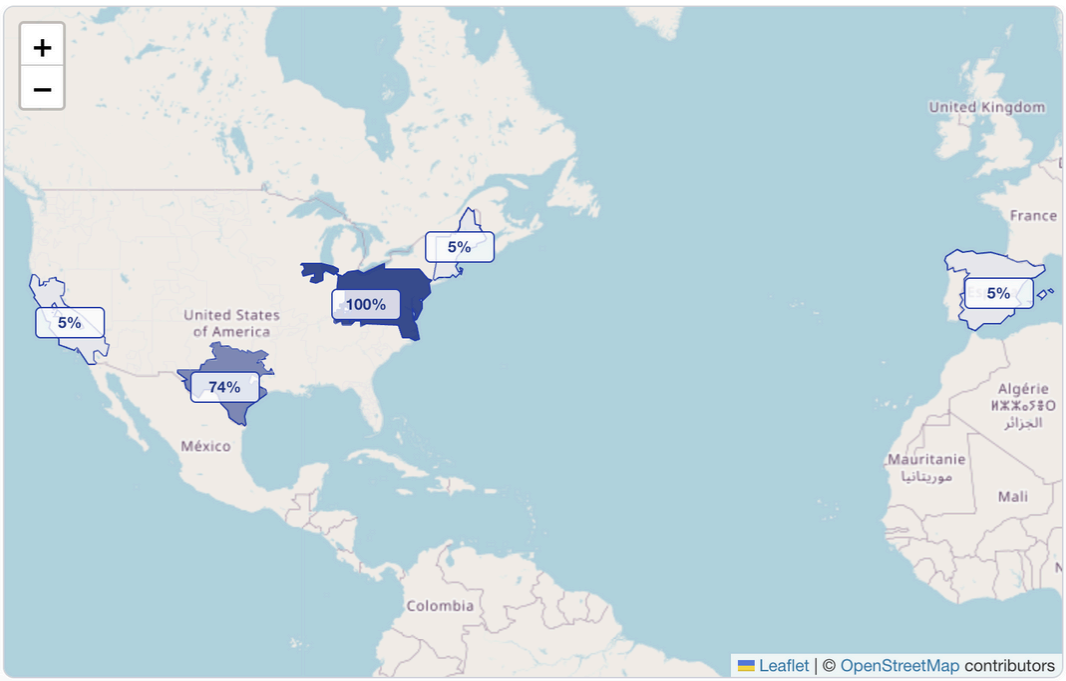



***Figure 2. CleanCo's CFE score by region based on proposed hourly matching criteria. Output is from forthcoming REsurety & WattTime calculator.***

## **Step 4.** Assess current procurement

CleanCo would like to maintain its 100% renewable claims. CleanCo knows it must now procure clean energy in ISONE, Spain (ES) and CAISO. But what next? What are the options in these different markets?

For CAISO, CleanCo's load is "caught in the middle" - too large to be exempt from hourly matching, but too small to fund a PPA on its own [1]. CleanCo would need to band together with many other companies for an aggregated PPA or purchase less impactful unbundled RECs.

In ISONE and Spain (ES), CleanCo has a large enough remaining load gap to consider pursuing additional PPAs. However, **ISONE, Spain, and CAISO are some of the most inefficient locations in the world to procure clean power** in terms of costs for avoided emissions. This is primarily due to the existing heavy build out of renewables in these regions. Even though CleanCo's procurement in MISO is extremely impactful - MISO is one of the highest emitting regions in the United States - CleanCo would be pushed to pour its resources into less impactful investments to comply with hourly matching.

## **Step 5.** Revise procurement strategy

While determining its new procurement strategy, CleanCo will need to weigh multiple considerations as its team pursues internal buy-in for additional PPAs. One consideration is which resource mix to pursue. Hourly-matching above a certain threshold becomes a complex optimization problem, one that is not easy to plan around and best left for central system planners.

While midday hours are CleanCo's largest procurement gap, due to geographical boundaries that block matching, the company still has consistent MWh shortages in shoulder (between peak and off-peak) and evening hours. Does this mean CleanCo would not only need to pursue a solar PPA, but also an additional wind PPA that's located in a slightly different wind resource area and provides additional diurnal coverage? Perhaps a battery could fill in for any shortages as well, but how much battery capacity would CleanCo have to procure? While renewable resource output can vary year-on-year due to above or below average weather years, the hourly variability is much more volatile.

**In order to ensure adequate coverage in each hour, CleanCo would have to significantly overprocure** in terms of overall MW capacity.

## **Step 6.** Determine costs

In addition, CleanCo will need to estimate the cost of revising its procurement strategy. Studies show that reaching a full 100% CFE match is infeasible [2], but how much would it cost to get close, with a score like 98%?

Research shows that costs for hourly matching increase dramatically when aiming to exceed CFE scores above 80-90%. One study found that hourly matching beyond 90% costs 2-4 times more than annual volume matching [3]. Due to the low abatement potential of the regions where CleanCo needs new contracts, CleanCo would save less than 10 kgCO2e per dollar of procurement on average. This is the hidden reality of hourly matching on real-world companies: **getting to 80% CFE provides relatively little carbon reduction, and getting above 80% is very expensive**. [2,3,4,5]

In reality, with so much complexity and additional cost to reach anything above 80-90% CFE, CleanCo would likely turn to unbundled RECs on the spot-market. Instead, an alternative model could incentivize CleanCo to procure long-term contracts that studies have shown are critical for securing project financing and getting new renewable projects built.

**RESULT:**

Only 50% of CleanCo's current clean power procurement counts in hourly matching. The choice: over-procure expensive energy, or cut ambition?

# What if emissions accounting could turn investment dollars towards impactful, less expensive procurement decisions?

Perhaps CleanCo could follow an accounting framework focused on impact. While the company would still need to secure additional clean MWhs in order to cover its remaining emissions, CleanCo would have the freedom to procure clean power wherever it would be the **most impactful and cost effective**.

While the GHGP has not provided as much guidance on the consequential impact accounting methodology, CleanCo can use methods from the proposed consequential metric to start estimating their existing carbon footprint. This involves matching its hourly clean generation procurement data to the marginal emissions rate in each applicable region. Next, to measure impact, CleanCo would need to follow the same method for its hourly load data, and net the impacts between emissions incurred and emissions avoided. This framework seeks to measure both the long-term impact of CleanCo's procurement on the grid (known as build margin), and the actual power plants that ramp up and down based on CleanCo's load or clean generation (known as operating margin).

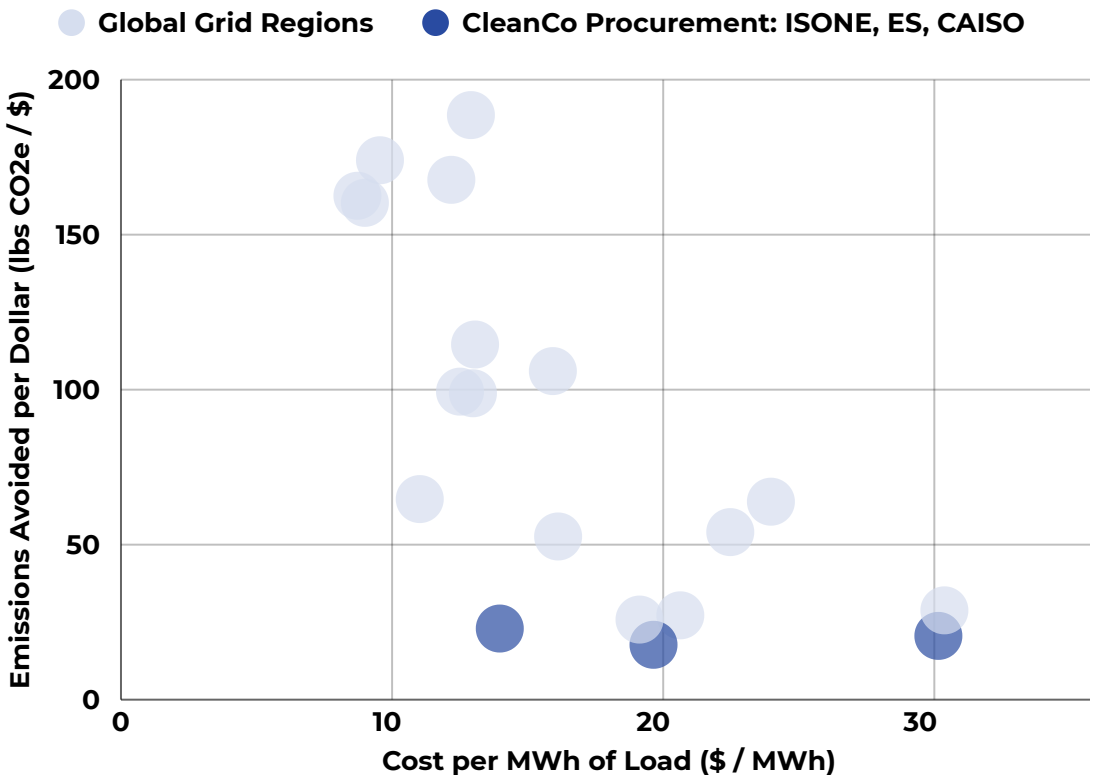
Using this impact method, CleanCo would focus on minimizing its total net emissions. To address its emissions, CleanCo could aggregate its load and procure in the dirtiest regions, where investment is most efficient. For example, in 2023, CleanCo could have procured clean power in other parts of the world for less than half the cost - while cutting 4x more emissions (see Figure 3 below). While

eliminating grid boundaries all together to incentivize investment in the Global South - where renewables would abate the most carbon - is one strategy proponents of impact accounting advocate for, other organizations may still wish to maintain some geographic proximity in their procurement strategy.

In this case, CleanCo would still have increased flexibility and impact to prioritize the lowest-cost and highest-impact project in each region. For example, to mitigate the company's remaining US emissions, CleanCo might choose to procure a solar PPA in MISO instead of procuring in a country where it does not operate. Either way, the impact accounting method would enable one, high-impact PPA to cover the remaining load at a lower cost per ton of carbon abated, rather than fragmenting procurement into the three separate regions required for hourly matching. Companies forced to segregate load that is "caught in the middle" are also more likely to purchase less impactful spot-market RECs at scale, leveraging existing generation capacity instead of new clean development.

## Cost and Abating Potential by Region, by Source Type

### Solar




### Wind

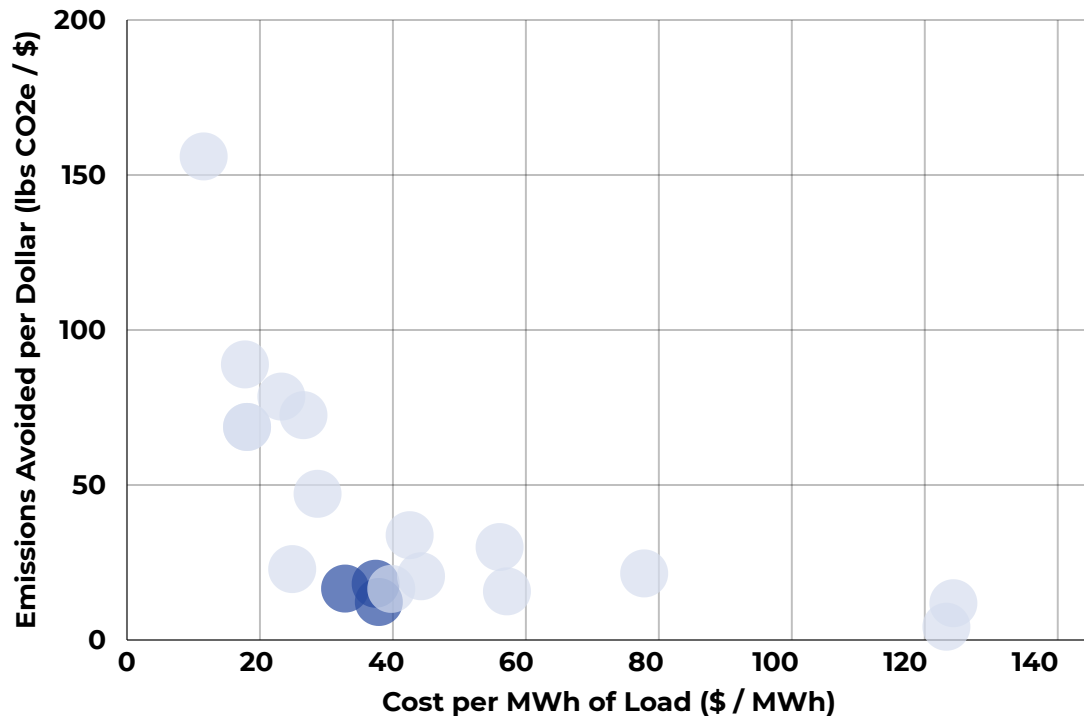



***Figure 3. Cost per MWh of load and associated abatement potential per dollar spent by technology and grid region. Abbreviations reflect country codes. [6]***

**RESULT:** CleanCo cuts four times more emissions and spends responsibly to ensure long-term budget stability

# CONCLUSION

Ultimately, to accelerate the voluntary clean energy transition, the Scope 2 reporting entities must recognize the implications of implementing new accounting requirements from the GHGP, whether it be hourly matching or consequential impact accounting. This sample analysis of CleanCo is just one example highlighting how different accounting structures incentivize different downstream procurement decisions in the pursuit of accounting compliance. The proposed consequential impact metric (if revised to more closely replicate the Scope 2 TWG's proposal and adopted as a complementary option alongside the Location-Based and Market-Based methods) offers a reliable alternative. This metric shifts investment to high-abatement, cost-effective regions where capital achieves up to four times the climate benefit per dollar spent.

As the public consultation period continues, reporting entities should weigh all options when considering how best to accelerate impactful corporate decarbonization, rather than stifle progress.

***Curious how your company's reported emissions would change under these two frameworks?***

*REsurety and WattTime will be launching a GHGP Calculator on December 1 to help organizations understand implications for their current renewable claims and goals.*

# SOURCES

[1] Caught in the Middle How hourly matching reduces impact for distributed loads

[2] GHG Protocol Scope 2 Hourly Matching: Market Analysis and FAQ

[3] Evaluating the Impacts, Costs, and Consequences of Proposed Scope 2 GHG Emissions Reporting Standards

[4] Cost and emissions impact of voluntary clean energy procurement strategies

[5] Review of Research on the Impact of Voluntary Energy Procurement

[6] Derived from the IEA annual world energy model, using capex and opex estimated costs for purchasing each clean generator technology in 2030, annualized by assuming a 25 year lifetime for procurement and a 10% capital cost.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