



WattTime Comments in Response to CARB's Draft Regulatory Materials for California Climate Disclosure Legislation: Senate Bill 253

WattTime is encouraged that the California Air Resources Board (CARB) is [proposing implementation guidelines](#)¹ for [Senate Bill 253](#),² which requires large companies to report their corporate emissions according to the GHG Protocol, accompanied by emissions reduction information. We appreciate the opportunity to provide these comments.

Conduct academic review of Scope 1 methane emissions factors

A company's Scope 1 emissions are the simplest form of emissions to verify, because they in most cases should equal the total physical emissions observed at sites owned or operated by that company. WattTime, a founding member of the Climate TRACE coalition, has compared many companies' reported Scope 1 emissions to independent satellite observations of the emissions at those facilities. Our observation is that self-reported Scope 1 emissions for companies generally match independent satellite observations fairly closely, increasing confidence in the accuracy and validity of current Scope 1 reporting systems.

However, CARB may wish to be aware that a notable exception is the oil and gas industry, in which surprisingly many companies have at times reported Scope 1 emissions substantially lower than was estimated by independent third parties for those same locations. Many oil and gas emissions monitoring systems seem to be potentially assuming significantly lower levels of methane leakage than actually occur. We recommend that the 2027 academic report mandated by SB253 examine, in part, whether on average the methane emissions factors companies are using are generally consistent with estimates from reputable third-party sources. Such sources might include, for example, California's OPGEE model or the Carbon Mapper project CARB itself contributed to, both of which are peer reviewed and highly respected by the academic community.

Scope 3 reporting should use a de minimis threshold

CARB could lower implementation costs without meaningfully affecting environmental impact by ensuring Scope 3 reporting has a de minimis threshold. Corporate supply chains can be very involved, and even relatively small companies have observed that without any de minimis thresholds, fully reporting Scope 3 could require tracking millions of extremely small emissions sources. CARB should either exempt, or allow rough estimates of, very small emission sources.

Possible future hourly matching and deliverability requirements proposed in the Scope 2 Market-Based Method are not scientifically credible and should not be adopted

For Scope 2 Market-Based Method emissions, CARB should use the current GHGP guidance, which uses annual megawatt-hour matching.

¹ <https://ww2.arb.ca.gov/sites/default/files/2026-03/SB%20253%20March%202026%20Workshop%20Slides%20Final.pdf>

² https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB253



The [most recently proposed updates to the GHG Protocol's Scope 2 Guidance](#),³ are not scientifically credible. The proposed changes were initially justified on the basis that if GHGP were to adopt the “Three Pillars” of mandatory hourly matching, mandatory deliverability, and mandatory additionality, it could potentially lead to greater real-world emissions reductions if companies continued to pursue net zero goals.

However, the proposal currently does not include the crucial third “pillar” of mandatory additionality. Peer-reviewed academic research consistently demonstrates that without mandatory additionality, adding mandatory hourly matching and mandatory deliverability to Scope 2 does *not* drive greater real-world emissions reductions. This literature includes:

1. A WattTime [study](#)⁴ that found this point.
2. A research [review](#)⁵ linking to and analyzing every single academic study on this subject. Of the 36 academic papers on this subject, *none* found evidence that hourly matching and deliverability *without* additionality would reduce emissions.
3. [Statements](#)⁶ from 54 various experts reinforcing this same point, including in numerous peer-reviewed studies.

Without an additionality requirement, which ensures that clean energy procurement leads to the construction of new clean energy generators, the proposed changes to Scope 2 would not lead to greater real-world emissions reductions.

This decision to advance deliverable, hourly matching without additionality is not supported by any scientific evidence related to decarbonization. WattTime therefore submitted a formal complaint, cosigned by several leading academics in this field, to the GHG Protocol on this concerning neglect of carbon impact and lack of scientific evidence, which can be read [here](#).⁷

Because of these limitations, CARB should use the current GHG Protocol definition of Scope 2 emissions and not adopt potential future hourly matching and deliverability requirements.

The possible future Scope 2 hourly matching and deliverability requirements would also increase the cost of building renewables; another reason they should not be adopted.

Academic research also consistently shows that adding mandatory hourly matching and deliverability requirements to Scope 2 increase the cost for a company to build enough clean energy to reach net zero emissions. These cost increases have been estimated as anywhere from 100% to an astonishing 1,200%.^{8,9}

³ <https://ghgprotocol.org/sites/default/files/2025-10/GHG-Protocol-Scope2-Public-Consultation.pdf>

⁴ <https://watttime.org/news-and-insights/hourly-matching-without-additionality-has-little-to-no-impact-on-emissions-reductions/>

⁵ <https://img1.wsimg.com/blobby/go/15907343-a52a-4fb2-acha-527a9dd22090/Carbon%20Accounting%20Research%20Map%20Final-d130b05.pdf>

⁶ <https://docs.google.com/spreadsheets/d/1IH8opIQGAN7bIAUJSiYSJFDE9lXLEy2umsg9744tp0U/edit?usp=sharing>

⁷ <https://watttime.org/news-and-insights/watttimes-formal-complaint-to-the-greenhouse-gas-protocol-on-the-scientific-merit-of-its-scope-2-proposal-claim-s/>

⁸ https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5375940

⁹ <https://watttime.org/news-and-insights/analysis-mandatory-hourly-matchings-high-costs-would-likely-kill-so-much-clean-energy-procurement-it-would-increase-total-long-run-emissions/>

There are many reasons to believe this could lead to a major drop in voluntary renewable energy procurement by companies, including:

- Empirical analysis: [empirical studies](#) of past voluntary clean energy procurement finds the market is highly price sensitive, with price increases typically being associated with significant drops in volume.¹⁰
- Survey data: in the largest [market survey of major clean energy buyers](#)¹¹ to date, 75% opposed mandatory hourly matching and mandatory deliverability, and are unsure they would be able to continue procuring clean energy at the same levels.
- Direct report: a large majority of the over 100 companies WattTime has spoken with indicated that they would likely respond to mandatory hourly matching and mandatory deliverability by abandoning their net zero targets. One renewable energy developer told us they are not aware of a single major company that would continue with its net zero targets if Scope 2 accounting did decide to adopt mandatory hourly matching and mandatory deliverability.
- Actual market activity: In 2025, corporate renewable energy procurement fell, with many companies citing uncertainty over the direction of Scope 2 carbon accounting as a key reason. Google, the leading advocate for hourly matching, just announced a new data center in Texas will be powered by private natural gas turbines. Cleanview notes this is an increasing trend in the industry.¹²

This is unfortunate because [ZeroGRID research](#)¹³ indicates that under a full Three Pillars approach to Scope 2, emissions would fail to be lower than under the status quo unless companies increased their level of renewable energy procurement to upwards of 80% hourly matching in order to drive emissions reductions further than the current annual matching framework. In fact, even Google, one of the strongest advocates of hourly matching, in their most recently available records have only achieved 66% percent hourly matching.¹⁴

Instead of requiring hourly matching as proposed in the revised Scope 2 Market-Based Method, CARB should continue to retain the current Market-Based Method rules in combination with avoided emissions reporting to sustain corporate participation in clean energy procurement and retain procurement flexibility.

Attributional accounting does not measure real world emissions reductions

SB 253 requires reporting entities to measure and disclose greenhouse gas emissions using the GHG Protocol Corporate Standard, justifying these requirements by stating that “Accurate and comprehensive data ... is required to determine a company’s direct and indirect GHG emissions, also known as its carbon footprint, and to effectively identify the sources of the emissions and develop means to reduce the same.”¹⁵ However, the GHG Protocol itself acknowledges that its framework — built on attributional accounting — does not accurately

¹⁰<https://watttime.org/news-and-insights/analysis-mandatory-hourly-matchings-high-costs-would-likely-kill-so-much-clean-energy-procurement-it-would-increase-total-long-run-emissions/>

¹¹https://ceba.org/wp-content/uploads/2025/05/CEBA_Letter-to-Greenhouse-Gas-Protocol-15-May-2025.pdf

¹²<https://cleanview.co/content/google-power-strategy-report>

¹³https://zerogrid.org/wp-content/uploads/dlm_uploads/2025/05/jai-review-research-voluntary-energy-procurement.pdf

¹⁴<https://procurementmag.com/news/google-environmental-report-2025-procurement>

¹⁵https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB253

measure reductions in emissions, explaining that “Reductions in indirect emissions (changes in scope 2 or 3 emissions over time) may not always capture the actual emissions reduction accurately.”¹⁶ Attributional accounting only allocates responsibility for emissions within a company's defined boundary, excluding transfers of emissions to other entities. As a result, there is no evidence that reported reductions in Scope 2 emissions under this framework correspond to actual decreases in global emissions.

This gap between reported and real-world emissions reductions is not theoretical. As Professor Matthew Brander notes, attributional methods can mislead organizations into "implementing actions that lower their entity's attributed emissions while inadvertently increasing global emissions." A clear example is Vattenfall's 2017 sale of a German coal plant, which allowed the company to report a 15MT reduction in attributed emissions — yet the plant continued operating and Climate TRACE data confirms atmospheric emissions remained unchanged.

Because Scope 1, 2, and 3 methods are fundamentally ill-suited to driving actual emissions reductions, CARB should continue to offer an emissions reduction reporting pathway.

CARB should continue to include reporting of emissions reductions

SB 253 tasks CARB with quantifying and causing emissions reductions using the GHG Protocol. As established in the preceding section, Scope 1, 2 and 3 reporting are not sufficient for this purpose. However, CARB allows reporting of emissions reduction in the SB253 reporting template. CARB should ensure that this reporting option continues to be available.

An emissions reduction framework that measures the systemic impact of a clean energy decision, regardless of when and where that clean energy decision is made, helps companies prioritize actions that reduce global atmospheric emissions. An accurate measurement of system impacts inherently leads to higher impact decisions by enabling companies to make better emissions reduction decisions.

By using this approach, a reporting entity is able to report the actual system change in GHG emissions caused by that activity- emphasizing *hourly optimization* over hourly matching. Many accounting and recognition bodies- including PCAF, TCAT, and Article 6 of the Paris Agreement- are adopting frameworks informed by the avoided emissions methodology.

This approach is already being successfully implemented in California. The Self-Generation Incentive Program (SGIP) already requires that any energy storage system receiving an incentive use an avoided emissions methodology to assess performance to determine the incentive level, which caused energy storage systems to change from [increasing emissions to reducing emissions](#).¹⁷ The CEC's MIDAS program also already distributes a greenhouse gas signal to distributed grid resources around the state to help them optimize their electricity consumption timing to cleaner periods. A similar approach would be effective for SB 253 because it does not carry the same cost burden as deliverable, hourly matching, leads to

¹⁶ <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

¹⁷ <https://www.vox.com/energy-and-environment/2019/12/2/20983341/climate-change-california-batteries-emissions-watttime>



system optimization, has resulted in significant emissions reductions in California Programs, and would rely on a framework already being advanced in California.

To comply with the regulatory intent, WattTime recommends incorporating the avoided emissions methodology in [The GHG Protocol for Project Accounting](#)¹⁸ (Project Protocol) or the WBCSD [Guidance on Avoided Emissions](#)¹⁹ as the recommended reporting methodology for the emissions reduction line in the reporting template. The Project Protocol establishes methods for measuring the global impact of different actions and the [Guidelines for Quantifying Emissions Reductions from Grid-Connected Electricity Projects](#)²⁰ establishes guidance specific to the electricity sector. In fact, the GHG Protocol Corporate Standard reinforces this, stating that “In cases where accuracy is more important, it may be appropriate to undertake a more detailed assessment of the actual reduction using a project quantification methodology.”²¹ The Scope 2 Guidance already allows the reporting of avoided emissions, stating “Companies can report the estimated grid emissions avoided by low-carbon energy generation and use, separately from the scopes...quantifying avoided emissions provide several technical and strategic benefits, including: Identifying where low-carbon energy generation can have the biggest GHG impact on system, based on the operating margin.”²² This framework applies an avoided emissions methodology to a reduction-against-baseline strategy to measure real-world decarbonization.

WattTime has spoken with many companies that have indicated that they would reduce more emissions if more mechanisms were in place to count emissions reductions against their climate targets. CARB should continue to allow the reporting of emissions reductions to enable companies to begin setting targets against this metric.

¹⁸ <https://ghgprotocol.org/project-protocol>

¹⁹ <https://www.wbcsd.org/resources/guidance-on-avoided-emissions-helping-business-drive-innovations-and-scale-solutions-toward-net-zero/>

²⁰ <https://ghgprotocol.org/sites/default/files/2022-12/Guidelines%20for%20Grid-Connected%20Electricity%20Projects.pdf>

²¹ <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>

²² <https://ghgprotocol.org/sites/default/files/2023-03/Scope%202%20Guidance.pdf>