



# GRIDWORKS

## Project Overview

**What:** The attached spreadsheet provides recommendations for the *minimum* cohesive greenhouse gas (GHG) reporting metrics essential to addressing the needs of Western day-ahead energy market operators and participants, state regulatory agencies, and clean energy buyers. These entities could use the recommended metrics for the following purposes:

- Understanding the GHG impacts of market design and operations decisions;
- State regulatory tracking towards clean energy goals and potential compliance with climate regulations; and
- Clean energy buyers' tracking of emissions performance and associated clean energy procurement.

These recommendations are intended to support the following shared objectives with respect to GHG accounting across the West:

- Promote a shared understanding and standard for accounting
- Ensure fair and accurate allocation
- Avoid double counting of both emissions and non-emitting generation

These metrics are intended to serve multiple needs by providing publicly accessible information for any stakeholder to leverage. For example, they could be used to address seams in GHG reporting between markets, identify and evaluate platforms to host West-wide GHG reporting, or support regulators looking to identify metrics for their resource planning processes. These metrics would be calculated and reported consistently across the West.

- This list of metrics is intended to be holistic; stakeholders can choose to leverage the list in its entirety or select which portions of it are relevant to them. Each recommendation may prove more pertinent to certain stakeholders than others.
- The recommendations are intended to satisfy the needs of entities regardless of the market structure (e.g., CAISO's EDAM and SPP's Markets+) and/or state regulatory reporting requirements (e.g., GHG reporting and emissions reduction programs in states like CA,<sup>1</sup> CO,<sup>2</sup> NM,<sup>3</sup> NV,<sup>4</sup> OR,<sup>5</sup> and WA<sup>6</sup>) under which the entity operates.

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<sup>1</sup> <https://ww2.arb.ca.gov/mrr-regulation>

<sup>2</sup> <https://cdphe.colorado.gov/environment/air-pollution/climate-change#reporting>

<sup>3</sup> <https://www.srca.nm.gov/parts/title17/17.009.0572.html>

<sup>4</sup> [https://puc.nv.gov/Renewable\\_Energy/Portfolio\\_Standard/](https://puc.nv.gov/Renewable_Energy/Portfolio_Standard/)

<sup>5</sup> <https://www.oregon.gov/deq/ghgp/pages/ghg.aspx>

<sup>6</sup>

<https://ecology.wa.gov/Air-Climate/Reducing-Greenhouse-Gas-Emissions/Tracking-greenhouse-gases#:~:text=We're%20working%20to%20reduce.in%20Washington%20every%20two%20years.>



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- Certain reporting platforms may have additional functionality beyond what is proposed in this work product. However, this initiative focused on the *minimum* reporting requirements needed to meet the needs of at least one stakeholder group.

**Why:** As the Western Interconnection regionalizes wholesale electricity markets, a transition to robust and centralized West-wide GHG emissions reporting is essential to meet the data needs of numerous stakeholders. This is especially critical with the development of multiple day-ahead markets that may operate in the West in the near future.

**Why Now:** The proposal processes for EDAM and Markets+ are currently underway, offering stakeholders an opportunity to shape their tariffs and market design elements. This effort is intended to complement, not duplicate those efforts.

In addition, laws and regulations requiring companies to report their GHG emissions are also emerging which will increase the need for access to consistent GHG emissions information. The Securities and Exchange Commission is expected to announce its Climate Related Disclosure requirements before the end of 2023. In addition, California recently passed Senate Bill (SB) 253 requiring companies with annual revenue in excess of \$1,000,000,000 to report their Scope 1, 2, and 3 emissions.<sup>7</sup>

**Process:** An Advisory Group consisting of technical experts, utility staff, regulators, environmental advocates, and other stakeholders reviewed and provided feedback on the reporting metrics.

### Out-of-Scope:

- This initiative focused on developing recommended GHG reporting metrics day-ahead markets. The proposal processes for EDAM and Markets+ are currently underway, offering stakeholders an opportunity to shape their tariffs and market design elements. This initiative did not focus on energy imbalance markets (EIMs) because they account for a fairly small portion of overall electric load and these systems are already established. To the extent stakeholders would like to use elements of this work product to propose improvements to any EIMs, they are welcome to do so.
- **REC Accounting:** This deliverable *does not* propose changes to any existing Western state Renewable Energy Certificate (REC) policies and counting rules. This initiative focused on recommendations for GHG reporting, not alterations to existing renewable tracking systems. The two may have some overlap, but are not synonymous. We acknowledge that load-based GHG accounting involves renewable energy tracking and our recommendations are not intended to interfere with that process.

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<sup>7</sup> [https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill\\_id=202320240SB253](https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=202320240SB253)



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- Market Dispatch: These metrics are not intended to replace or modify market dispatch methodologies.
- Reporting Platform: The stakeholders involved in this initiative chose not to recommend a specific GHG reporting platform at this time.
- Bilateral Contracts: At this time, these recommendations do not include tracking emissions resulting from energy generated and delivered under bilateral contracts. The entities involved in these bilateral contracts should ensure that the necessary GHG accounting data is provided at the appropriate intervals to their respective regulators and customers. While some of this information is currently publicly available in aggregate (e.g., utility reporting of Scope 1, 2, and 3 emissions and state-level reporting of GHG emissions), ideally it will become more granular in the future.
- Unspecified Emissions: This initiative recognizes that some, but not all, states in the West have developed their own unspecified emissions rates and is not suggesting any modifications to those at this time. Nor does it intend to propose which rates CAISO and SPP should use.
- Imports and Exports: How a market operator should classify energy as imports into and/or exports out of its territory.

**Project Team:** This project was funded via a partnership between Western Resources Advocates (WRA), GridLab, and the Clean Energy Buyers Association (CEBA) with support from Northwest Energy Coalition and Renewable Northwest. These groups share a common interest in identifying minimum cohesive GHG reporting metrics to support expansion of electricity markets across the West. Gridworks, a non-profit facilitation organization, served as a neutral third party to guide these conversations, develop project materials, and incorporate feedback. Energy and Environmental Economics (E3) evaluated the final proposed recommendations. This initiative is intended to be the launching point for future work on this topic.

### Linkage with Other Related Efforts

While related, this initiative is not intended to duplicate or interfere with market-specific efforts underway in the West (e.g., Markets + and CAISO). These market-specific efforts are primarily focused on GHG data needed to ensure equitable and efficient market dispatch within their market. As noted above, this initiative is NOT concerned with affecting dispatch decisions, but is rather focused on the reporting of GHG emissions data regarding which resources were eventually dispatched. Furthermore, this initiative is not focused on any particular electricity market. This initiative was instead interested in what GHG emissions reporting needs to be common across all markets in the West as many stakeholders will participate in and/or need information from more than one market. This initiative received support from numerous, diverse Western stakeholders.



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### Proposed GHG Reporting Metrics

The attached spreadsheet includes a proposed list of GHG reporting metrics that should be common across all electricity markets in the West. In addition, we recommend creating a region-wide accounting system for tracking the information needed to support development of these metrics. This accounting system would operate in parallel with the actual dispatch of resources, but not interfere with the dispatch process. Such accounting could take the form of a generation certificate akin to those produced under NYGATS and PJM. This could be implemented via expansion of an existing reporting platform or creation of a new system.

#### Purpose of the Proposed Metrics

The proposed GHG metrics are primarily intended to be used for GHG reporting—providing information about the GHG emissions from electric power generation as an output from market operations (without impacting system dispatch decisions or market price formation). Reported information can support stakeholders in understanding and evaluating the impact of incremental decisions they may make regarding resource development/procurement and electricity consumption. From the perspective of an individual consumer, *marginal emissions rates* are typically the most effective and appropriate metrics for evaluating the GHG emissions impact of the consumer's decisions (such as incremental renewable energy procurement or new load on the grid).

Another use case for these recommended GHG emissions metrics is accounting—an exercise in counting every ton of CO<sub>2</sub>e emitted and attributing each ton to a producer or consumer. Accounting for all CO<sub>2</sub>e emissions requires calculating total emissions and typically requires the use of *average emissions rates* for attributing emissions to various consumers.

These two purposes (reporting and accounting) inherently use different metrics (marginal vs. total and average emissions) appropriate for the conceptual framework applied.

#### Primary Reporting Entity for GHG Metrics: Market Operator

The market operator is best situated to provide information on system-wide resource mixes and marginal emissions. It is likely more feasible for the market operator to make assignments to states, but it is important to recognize some of the complexities of doing so (e.g., CAISO's current boundaries extend into southern Nevada and include certain renewable and other generators located in Nevada). It is important to be clear on whether that should be assigned to California (since it's in CAISO) or NV because the generator is in Nevada. Likely the destination of the load consuming the power is the best metric here.

#### Locational Granularity

At this time, location-specific reporting metrics should be assessed at the level of a Balancing Authority for vertically integrated markets and a transmission zone for organized markets (e.g. SP15, NP15, ZP26 in CAISO at the most granular level of detail). As utilities' and markets'



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capabilities evolve, we encourage that this approach be revisited to become more granular over time. Nodal data, for example, is not currently available across the entire West. Furthermore, unless transmission constraints exist, the average (and marginal) emissions rates on this grid in any one time interval (e.g. hour, month, year, etc.) are the same at all locations. This does not change even if some of the load were to move to be ‘co-located’ with the wind generation—as long as there is no impact on congestion. While some locations can tend to experience more transmission congestion than others, the frequency and duration of the constraint can vary.

### Imports and Exports

For imports and exports, the point of generation is best defined by the generator source and point of delivery is best defined as the point of import (e.g. intertie location).

### Treatment of Demand Response and Storage Resources

Demand Response is best treated as equal to the marginal generator but only in hours in which the resource was dispatched (called upon to respond). Otherwise, the resource is excluded from a given hour just like any other generator which is not generating.

For the purposes of reporting metrics, two approaches to accounting for storage could potentially co-exist to meet the needs of different stakeholders.

- Regulators and other government bodies are most interested in the sum of total emissions produced and/or consumed within their jurisdictions. For their purposes, storage-related emissions reporting could be calculated using an average emissions rate for charging and no rate for discharging.
- Clean energy buyers, on the other hand, are most concerned with the impact their investment decisions have on the overall grid. Therefore, a marginal emissions-based approach would prove most suitable. In this case, the carbon intensity of a storage resource’s charging would be equal to the marginal emissions factor during charging hours while its discharge would be equal to the marginal emissions factor.

### Key Variables

A handful of key variables can impact the results emerging from calculating the recommended metrics. These variables include, but are not limited to:

- Differences in unspecified emissions rates (e.g., Washington and California)
- How imports and exports into a specific geographic region are tracked and assigned
- How emissions are “assigned” to specific geographic regions via production-based or consumption-based (aka load-based) approaches

