

GREENHOUSE GAS ACCOUNTING BASICS



There are two primary methods of greenhouse gas accounting:

- Consumption-based (also known as flow-based or load-based accounting)
- Production-based (also known as generation-based or resource-based accounting)

Consumption-based Accounting

How it works: Consumption-based accounting tracks electricity through the grid to its point of consumption and assigns the associated greenhouse gas emissions to the end user. This accounting employs different methods based on the type of energy used. Thermal energy requires tracking to assign it a specific emissions rate. Various tools and methods can accomplish this, including the use of e-tags for resource-specific transactions with purchased transmission paths and assigning average or residual rates for energy dispatched or imported by a market operator in a wholesale market. For renewable energy, the use of Renewable Energy Certificates, e-tags and contractual purchases of energy provide the means for accounting the generated renewable energy.

Advantages

- Removes the need to track physical power flows, allowing for more efficient market operations
- Allows for varying levels of tracking to meet policy requirements in different states

Challenges

- Requires informational coordination when transactions occur
- Can be complex to integrate into a market unless all entities are participants of such a system

Production-based Accounting

How it works: Production-based accounting measures greenhouse gas emissions at the generator level, combining the emissions of generators in a given geographic area to determine overall emissions associated with electricity generation. To collect emissions data, production-based accounting relies on data reported to federal or state agencies as part of mandatory reporting for generators. The information flow of this data begins with reports directly from generators, specifically their emissions data sent to the U.S. Environmental Protection Agency (EPA) for its mandatory Greenhouse Gas Reporting Program, which requires generators to report their emissions annually. This data becomes the foundation for eGRID, an annual EPA database of greenhouse gas intensity. Reported emissions rates from eGRID, coupled with a given generator's total production in megawatt hours, give a figure for the actual greenhouse gas emissions.

Advantages

- Can incorporate electricity imported and exported for an accurate measure of emissions in a geographic area or market
- Can be customized to meet states' targets for utilities to be in compliance

Challenges

- Can pose a challenge for policy compliance with deliverability requirements
- Usually requires membership in a tracking database or system, which can be difficult to implement if not all market participants are members of such a system