

Accounting for Clean Energy Storage Initiative Proposal | September 2024

1. Problem Statement

Bulk power markets have been historically constrained by the need to constantly balance supply and demand in real-time. Grid-scale storage of power was often deemed too difficult and too expensive to implement at scale. However, technology prices have plummeted, and battery storage capacity is expected to nearly [double between 2023 and 2024](#) alone, signaling that storage of bulk power is becoming a practical reality.

Large-scale storage of clean energy resources allows clean power to be transmitted and distributed more cheaply and efficiently based on market dynamics rather than physical constraints, providing much greater flexibility in grid operations and many more options for delivering customizable electricity services to consumers at every level.

Utility-scale storage achieves many advantages, but also raises several accounting challenges, including how to account for environmental attributes of clean power that are claimed long before the electricity is actually consumed, how to account for losses incurred during storage, and how to accurately allocate attributes when renewable generation can be dispatched at will to displace whatever power would otherwise be consumed.

Consistent and accurate accounting methods must be developed to fully expand the deployment of utility-scale storage capacity and speed the transition to a cleaner and more flexible bulk power grid. This initiative will address challenges in tracking the sources of electricity input to storage, in accounting for energy conversion losses, and in identifying and allocating non-energy attributes while preventing double-counting and double-claiming.

2. Proposal Summary

This initiative will create credible methods of accounting for utility-scale stored clean power and suggest rigorous standards for the use of market-based instruments associated with storage of renewable generation. After gathering background research describing the current state of tracking and reporting stored clean energy, the initiative will produce final guidance on accounting principles, storage losses, time-stamped charging and discharging, and managing market instruments associated with clean power stored in and discharged from electrochemical battery storage systems.

Anticipated results will clearly outline when and how market instruments associated with battery-stored clean power should be utilized and will answer specific questions regarding:

- Accounting for stored RE to avoid double counting
- Accounting for storage losses
- Managing market instruments
- Time-stamping instruments within the charge and discharge process

- Accounting for battery-stored clean power in the context of state renewable portfolio standards (RPS) and renewable energy standards (RES)
- Physical orientation of equipment or metering relative to generation or contractual relationship of the battery to the generator
- Whether battery-stored renewable energy inevitably “unbundles” the attributes of clean power from the underlying electricity
- How to properly allocate unbundled attributes
- Load-matching battery-stored clean power

3. Summary Table

The following table specifies goals and outcomes and will inform the working group as it further defines the scope and parameters of this initiative.

Scope Limitations:	<ul style="list-style-type: none"> - Will not evaluate environmental consequences of battery storage - Will not instruct battery operators or clean power procurers on how to use market instruments to achieve their objectives - Will not prescribe implementation of tracking system functionality - Is not intended to guide claims supported by market instruments
Potential Outcomes:	<ul style="list-style-type: none"> - Best accounting practices for battery-stored renewable generation - Clarify the relationship between battery storage and non-energy attributes - Evaluate most effective allocation methods - Achieve consensus on the best methods for accounting for battery-stored clean power
Reasons for Urgency:	<ul style="list-style-type: none"> - load growth accelerating new battery storage capacity - Increased scrutiny of corporate sustainability efforts and claims - Growing interest in granular load-matching - Increasing interactions between grid-tied, behind-the-meter battery energy storage systems (BESS) and utility-scale storage - Expanding deployment of bidirectional, grid-tied electric vehicles
Anticipated Deliverables:	<ul style="list-style-type: none"> - Background materials addressing the current state of battery storage, tracking, and accounting - White paper providing consensus-based rules on how to manage battery-stored clean electricity, particularly the use of market instruments and proper allocation of attributes - Guidance for communicating the attributes of battery-stored clean energy
Other Relevant Initiatives:	<ul style="list-style-type: none"> - EnergyTag and Quinbook Private Energy partnered on “software to perform hourly tracking of energy across batteries”, enabling batteries to time-shift Granular Certificates (GCs) to improve accuracy in tracking conversion losses. - Massachusetts’ Clean Peak Standard cut emissions and incentivized the use of battery storage to reduce peak demand. The standard has resulted in a new 45 megawatts battery storage project set to be online in 2025. - The Southwest Power Pool (SPP) Energy Storage Report calculated the capacity credit of energy storage and found that using a Preserve Reliability method is optimal to using an Economic Arbitrage model.

Relation to existing CEAP initiative:	<ul style="list-style-type: none"> - CRS suggests launching this initiative after the 2025 CEAP initiative on hourly matching, which will further explore a market for secondary transactions of hourly-matched energy
Available Resources:	<ul style="list-style-type: none"> - Deloitte. Update on Renewable Power Issues. - Department of Energy (DOE). Energy Storage Grand Challenge. - EnergyTag. Hourly Matching for Utility Scale Batteries. - SPP. Energy Storage Study. - Smart Electric Power Alliance. Energy Storage Working Group. - CRS. REC Issuance for Renewable Generation report. - CEC working group resources - California Energy Commission. Long Duration Energy Storage (LDES). - WREGIS working group about the needs and requirements of stakeholders in western (WECC) states. - CRS. Comments on CAISO GHG Coordination Working Group.
Potential Challenges:	<ul style="list-style-type: none"> - May need to consider new uses for market instruments, such as when they should be issued and whether they should expire - Characterizing battery storage as “generation” or “load” - Risks of double counting
Key Working Group Stakeholders:	<ul style="list-style-type: none"> - Grid, storage, and market operators - Data center operators and other load-heavy users - Energy storage experts - 24/7 clean power matching advocacy organizations - Regulators and tracking system executives (e.g. FERC, CPUC, M-RETS, WREGIS) - Policymakers (e.g. state/federal)