

Understanding BESS: Why It Powers the Grid

INVESTOR INSIGHTS | OPPORTUNITY & MARKET BASICS

What is BESS?

A Battery Energy Storage System (BESS) is a type of infrastructure that stores electrical energy for later use. These systems function much like a phone battery: energy is stored when it's readily available and discharged when it's needed.

Unlike a home battery, however, BESS operates at a commercial or utility scale. It doesn't matter how the energy was originally generated; solar, wind, or from the grid. What matters is when that energy is stored and when it's used.

BESS is increasingly important because it solves a key problem in modern power systems: mismatch between supply and demand. Renewable sources like solar and wind are intermittent, meaning they don't always generate electricity when demand is highest. BESS enables that energy to be saved and deployed exactly when it's most useful.

What is Energy Arbitrage?

One of the primary revenue models for battery storage is energy arbitrage. The idea is straightforward:

1. **Buy or store electricity when demand (and prices) are low.** For example, in the middle of the night.

2. **Sell or deploy that electricity during peak hours**, when demand (and prices) are significantly higher.

This is not speculative trading; it's a structural feature of how electricity markets work. Utilities often generate more power than needed during off-peak times but lack the infrastructure to store it. BESS operators like Charge step in to provide that storage and supply capacity.

How Charge Uses BESS

Charge develops and operates strategically located BESS facilities. These systems are integrated into the local utility environment and energy markets in such a way that they can:

- Absorb excess electricity from the grid when demand is low.
- Discharge that electricity back to the grid when demand is high.
- Generate revenue by capturing the price difference (i.e., through energy arbitrage.)

Charge's BESS systems can also support other revenue-generating services like frequency regulation and grid balancing, but the foundation of the model is built on reliable, repeatable arbitrage.

This approach helps utilities manage their load more efficiently, reduces strain on the grid during peak hours, and adds stability to a system increasingly powered by renewables.

A Broader Trend in Infrastructure

The growth of BESS isn't isolated. It's part of a broader trend in grid modernization and energy transition. As of 2023, the U.S. had over 16 GW of installed utility-scale battery capacity, and that figure is expected to double by 2025 (EIA, 2024).

16 GW? *16 gigawatts is enough to power roughly 12 million homes for an hour.*

“Momentum is clearly building among developers and also among investors as they realize energy storage has been the missing piece in the renewable energy puzzle.”

— Jay Balasubramanian, JLL (2023)

This “missing piece” comment captures a key insight: **Renewables alone are not enough.** Without a way to store and shift their output, the full value of clean energy cannot be realized.

Wrapping Up

Battery energy storage is a critical part of the evolving energy grid. It allows for better use of renewable resources, supports grid stability, and offers a clear, infrastructure-based revenue model through energy arbitrage. Charge's work in this space reflects both the technical opportunity and the market need, grounded in practical applications, not just theory.

By building and operating BESS projects, Charge contributes to a more resilient and flexible energy system; one that adapts to changing energy patterns, regulatory shifts, and climate realities.