

BATTERY ENERGY STORAGE – AN OVERVIEW

Energy storage is a game-changer for California’s clean energy. It allows the state to store energy for later use, increasing reliability, controlling consumer costs, and ultimately helping build a more resilient grid.

As California moves toward its goal of achieving 100% clean electricity by 2045, renewable energy sources such as wind and solar will play an increasingly important role in meeting the state’s energy needs. However, these sources are intermittent and unable to provide continuous power generation, especially during calm winds or when the sun sets. Energy storage systems can tackle this challenge by capturing renewable power when it is generated and dispatching it later when needed. The deployment of energy storage will be essential to the success of California’s renewable energy transition.

Benefits of battery energy storage include:

- **Enhanced grid reliability** – Energy storage enhances reliability, ensuring the seamless delivery of electricity to consumers and businesses.
- **A more flexible, nimble power grid** – Storage increases the grid's flexibility and helps provide uninterrupted power for consumers, businesses, and other users.
- **Reduced consumer costs** – Storage can offset costs by storing energy when prices are low and discharging it during peak periods when rates are higher.
- **Protecting productivity** – During outages, on-site energy storage can help businesses avoid costly disruptions and continue normal operations.
- **Minimizing power outages** – Energy storage protects consumers from spoiled food, medicines, and other inconveniences caused by electrical blackouts.
- **Making clean energy more viable** – Energy storage enables us to power the grid using renewables like solar and wind, even when the sun is down, or the wind is not blowing.

Supports Economic Vitality & Pays Taxes

A safe and reliable grid is critical to support state and local economic growth, providing businesses with a reliable power supply. **As energy-intensive industries, such as data centers, biotechnology, and high-tech manufacturing, continue to grow, a consistent and reliable power supply is key to economic growth.**

Battery energy storage facilities also pay substantial taxes to the State of California and county and municipal governments.

California Leads the Way

California is a world leader in energy storage, with the second largest fleet of grid-connected batteries in the world. Energy storage is essential to support grid reliability and complement the state's abundant renewable energy resources. According to the California Energy Commission:

- From 2018 to 2024, battery storage capacity surged from 600 megawatts (MW) to over 13,300 MW, with a forecasted need of 52,000 MW by 2045.
- The California Energy Commission's [dashboard](#) provides comprehensive data on residential, commercial, and utility-scale installations, showcasing California's progress in each domain.

How Battery Energy Storage Works

The basic units of a battery energy storage system are battery cells, which are bundled together to form modules. Several modules are paired with a battery management system to form a rack. Finally, multiple racks are grouped into an enclosure. These enclosures typically store 4 to 5 megawatt-hours, enough to power an average California home for 8 or 9 months.

