## Sma energy storage



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Industrial-scale energy storage solutions have become mature technology, incorporated into utility scale power plants to serve in many different applications. One major area of application is providing ancillary grid services that provide generation capacity and support grid stability.

Frequency is held to a very strict tolerance, therefore, deltas in frequency must be mitigated. Renewable energy can introduce fluctuations in grid frequency. Energy storage, specifically battery storage, is an ideal way to solve this issue due to its nearly instantaneous reaction time to frequency events. Enhanced inverter controls and rapid response times make for a great combination.

Fluctuations in grid voltage, especially at the far ends of distribution feeders, can cause damage to loads and utility equipment. Battery inverters can provide full, four-quadrant support to help maintain voltage levels at points of interconnection by utilizing the volt-var function or a voltage droop.

If demand within a distribution network increases to the point that an asset upgrade is required, it can be extremely expensive for the grid operator. Adding energy storage, at a fraction of the cost of the upgrade, can alleviate the stress on the network caused by the demand increase.

Energy arbitrage can be a great tool for grid operators without the need of renewable generation being in the network. By charging the energy storage system either at night or during another time when energy rates are low, the grid operators have the ability to discharge later on in the day to meet demand and reduce the need for peaker plants to be utilized.

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