



SERVICE SHEET

ENERGY STORAGE

Energy storage enables you to manage when and how your energy is used.

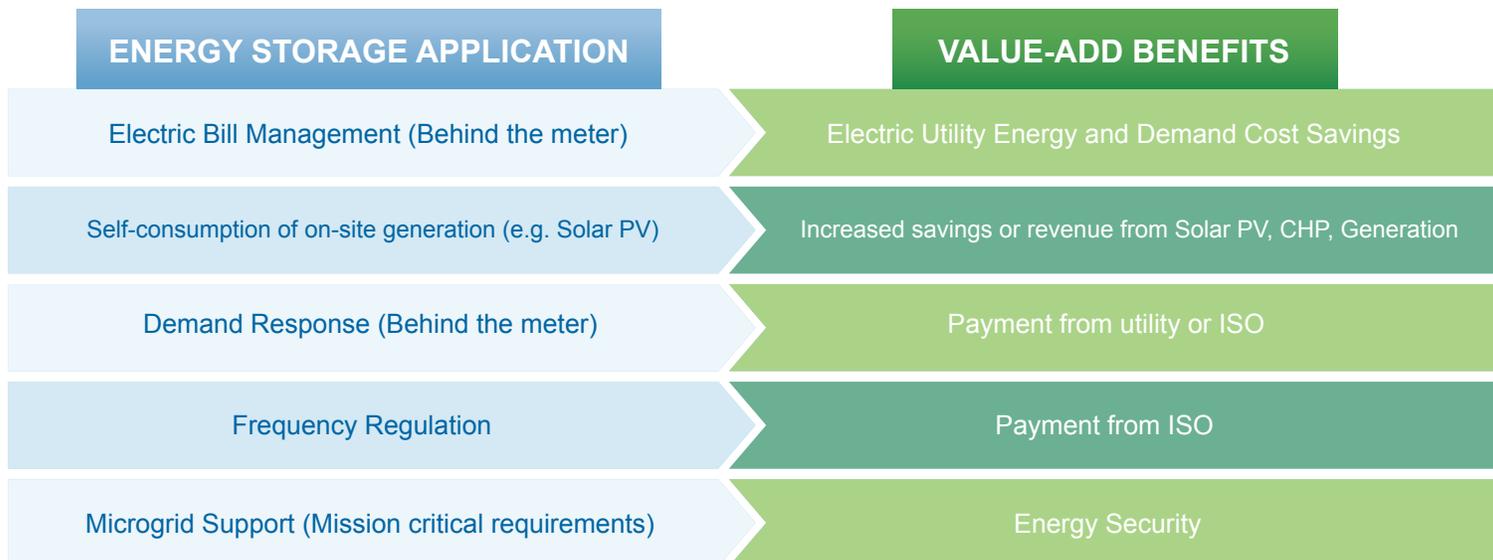
Energy Storage Systems (ESS) have emerged as a promising, versatile technology that can provide solutions to many electric-grid challenges. Without the ability to store large amounts of energy, conventional power systems have been reliant on matching supply and demand in real-time. However, with recent advances in storage technology and significant cost reductions, energy storage has never been simpler.

Commercially available storage technologies today (excluding GW scale hydro) include Lithium Ion Batteries, Lead Acid Batteries, Flow Batteries and Mechanical Flywheels. Lithium Ion Batteries are the most deployed energy storage method in the U.S.

There are a wide-variety of applications for energy storage, including:

- **Electric Bill Management** – Store energy when it's inexpensive, and use it during peak times when demand is high.
- **Consumption of Onsite Generation** – Sites with Solar PV, CHP, Wind or other onsite renewable generation that can exceed site load can store the excess energy for later use. This is advantageous if self-consumption of the energy is more valuable than selling it to an off-taker, or if a connection to the utility grid is not available.
- **Demand Response** – Energy storage can serve as a viable resource to support demand response programs and can discharge when called upon by the utility in exchange for payment.
- **Backup Power/Microgrid Support** – If utility power is lost, energy storage can play a pivotal role in conjunction with microgrid controls and/or onsite generation to continue serving loads. Energy storage can bridge to back-up generation or help maintain power quality of an islanded distribution system.
- **Ancillary Services** – Independent System Operators (ISOs) are responsible for ensuring reliable operation of regional electric grids. They constantly need to balance supply and demand on the system to avoid blackouts, brownouts, and other power quality issues. Some ISOs have implemented ancillary services programs, such as Frequency Regulation, where storage can participate. The fast response and reliable nature of storage makes it well suited for these applications.

Energy Storage Benefits



Energy Storage System Considerations

Advanced energy storage systems enable users to store excess energy to be used at a later time. The systems are rechargeable and allow for electrochemical, mechanical, or thermal energy storage. To determine whether a facility would be a good candidate for energy storage, the following considerations should be addressed:

- **Total electric consumption and peak kW demand** - What is the current total annual usage (kWh), peak demand (kW), and cost for electricity?
- **Local or regional utility or ISO programs** - Does the local electric utility have programs in place to support grid stability such as demand response, frequency regulation, or other ancillary services?
- **Current electric rate structure** - What is the cost of monthly peak demand (kW), is demand determined based on the highest kW consumption over the year ("ratchet clause"), how do on-peak and off-peak rates differ?
- **Energy security** - Has the facility experienced utility outages lasting longer than 30 minutes over the past three years? What percent of the total site electric load is comprised of mission-critical operations that cannot be interrupted? What value does the facility place on energy security?
- **Hourly electric usage profile** - How does consumption differ hour-by-hour, are demand (kW) peaks "spikey" or relatively flat, how does electric consumption vary by season?
- **Renewable on-site generation** - Is there existing on-site renewable energy generation or the potential to design and install such new capacity?

CONTACT US

Ameresco's team of energy experts can assist you in identifying the solution that fits your needs. For more information about Ameresco and our full-range of energy efficiency and renewable energy solutions, please call **1-866-AMERESCO** or visit ameresco.com