

Energy Storage 101



Energy storage – providing energy on demand

Energy storage is becoming an integral part of our electrical infrastructure. The ability to store energy and release it when needed is vital to delivering a secure, reliable, and modern electrical grid.

Many of the battery energy storage systems (BESS) operating across the country today use lithium-ion (Li-ion) technology. Li-ion batteries are already commonly used in a wide range of consumer devices such as laptop computers, cellphones, toys and handheld power tools, as well as in electric vehicles.

Maximizing the supply of affordable energy with BESS

Without a way to store power, electricity has to be used the instant it's created. Our nation's electrical grids are carefully managed by grid operators that constantly ensure the supply of electricity exactly meets demand. Under normal circumstances, this is accomplished by the grid operator telling individual power plants to increase or decrease their production of electricity, sometimes on a minute-by-minute basis. If supply exceeds demand, individual power plants may have to curtail their production.

When demand spikes, it can drive up electricity prices, and if demand exceeds supply, brownouts or blackouts can occur. BESS help reduce or avoid price spikes and supply shortfalls by storing extra power and releasing it when demand increases.

Energy storage delivers a more reliable grid

Energy storage provides an advantage to our grid because it can release power on demand. Grid operators are trained to maintain a well-balance system, provide frequency regulation, and voltage support. BESS in strategic locations makes the grid stronger by allowing operators to pull from saved sources when in need.

Energy Storage FAQs



Are battery energy storage systems (BESS) safe?

Yes. BESS use the same technology found in many widely used consumer products, tools, and electric vehicles. Well-designed BESS are safe and reliable, and we pride ourselves on using only the safest and best batteries available. To reduce the risk of fire and ensure the safety of the system, each BESS is equipped with automatic fire suppression equipment, and its own air conditioning or cooling system to ensure it operates within the ideal temperature range. Fires involving BESS can occur, but only in extreme conditions. Vesper Energy will work with local fire departments and emergency responders to ensure they have adequate training and equipment to respond to any safety issues that may arise. It is important to note that all of our systems will be monitored 24/7, so any potential issues will be identified quickly and dealt with swiftly.

How big are BESS installations?

BESS installations are relatively small (usually between 1-5 acres) and are typically located close to a utility substation or connected directly to a transmission or distribution line. BESS installations typically look like storage containers. They have a relatively low profile (usually between 8-15 feet in height), so they have minimal visual impact.



Do BESS contain hazardous materials?

No. Used lithium-ion batteries are not considered hazardous waste by the U.S. Environmental Protection Agency (EPA). They are considered “universal waste,” and their responsible disposal and recycling is addressed by the U.S. EPA’s universal waste regulations.

Can the batteries be recycled?

Widespread adoption of BESS is still relatively new, so recycling opportunities are currently limited. However, the renewable energy and energy storage industries are working to develop recycling opportunities to meet future demand. A report from the consultancy Circular Energy Storage tells us global battery-recycling capacity will surge nearly 10 times from 2021 to 2025, and is expected to surpass available scrap supply this year.

Another option is to “downcycle” batteries and give them a second life in a different application when their performance falls below the level needed for a utility-scale power plant.

About Vesper Energy

Vesper Energy is an innovative energy company that develops, owns, and operates utility-scale renewable energy and energy storage assets across North America. Vesper Energy’s mission is to develop, construct, own, and operate solar energy and energy storage facilities that contribute to a sustainable energy future while respecting and contributing to local communities.

Find out more about Vesper Energy and our projects at www.vesperenergy.com.