RENEWABLE NORTHWEST

BESS in Montana

A practical tool for reliability, affordability, and better use of Montana's energy resources

What is BESS?

Battery energy storage systems, often referred to as BESS, store electricity for later use. When electricity generation exceeds demand, electricity from all energy sources, including wind, solar, hydropower, geothermal, and natural gas, can be stored in batteries and discharged when additional power is needed.

Montana's Energy Needs are Changing

Montana has long been an energy-producing state. Hydropower, wind, natural gas, coal, solar, and other resources all help serve homes, farms, ranches, schools, hospitals, businesses, and industry.

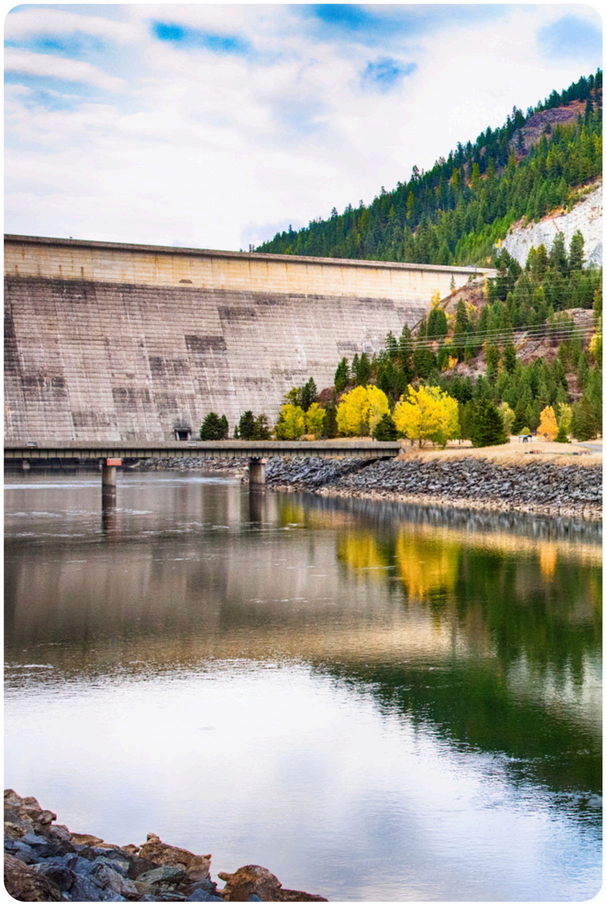
But the electric grid is changing. Communities need reliable power during winter cold snaps, summer peaks, wildfire conditions, and other periods of grid stress. Utilities are also planning for aging infrastructure, resource retirements, regional power market uncertainty, and the need to keep electricity affordable for customers.

BESS is one tool that can help. It is not a replacement for generation, transmission, energy efficiency, or other grid investments. It is a flexible resource that helps utilities store electricity when it is available and deliver it when it is needed most.

Why BESS Fits in Montana

BESS can help Montana make better use of the energy system it already has. By storing electricity and delivering it during higher-demand hours, BESS can help utilities reduce strain on the grid, and may help avoid or defer certain infrastructure investments, depending on the project's purpose and how it is integrated into utility planning. Over time, that can help reduce upward pressure on future customer rates.

BESS can also support Montana's energy resources. Montana has significant hydropower and wind resources, and additional wind and solar projects are being developed or considered across the region. BESS does not replace those resources. It helps make them more useful by adding flexibility to the grid and helping deliver power when customers need it.



Montana's Review and Permitting Pathways

Montana BESS projects may move through different review and permitting pathways depending on project size, location, ownership, interconnection, and whether the battery system is part of a larger energy facility. In many cases, local governments may play an important role through land use review, building and electrical permits, fire code compliance, site design standards, public meetings, and coordination with emergency responders.

Other agencies or entities may also be involved depending on the project, including utilities, rural electric cooperatives, the Montana Public Service Commission, the Montana Department of Environmental Quality, federal land managers, transportation agencies, Tribes, and environmental regulators. Local governments should ask early which approvals apply, who has jurisdiction over each part of the project, how emergency responders will be engaged, and what information the applicant must provide.

PROJECT SPOTLIGHT

Glacier Battery System

Montana is already seeing this technology in practice. The Glacier Battery System near Ethridge is a 75-megawatt, two-hour BESS facility designed to provide grid support, strengthen reliability, and help balance supply and demand.

The project also shows how BESS can fit within a broader energy-producing landscape. BHE Montana operates wind facilities in the region and has also begun development of the Glacier Solar Park. The Glacier Battery System adds a flexible resource that can support regional energy operations and help make nearby energy infrastructure more useful.

Safety Standards Provide a Framework

BESS projects are reviewed against established national safety standards.

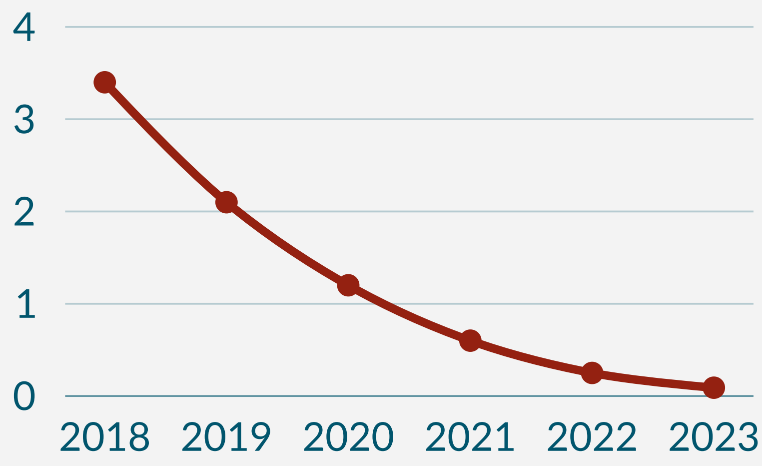
- **National Fire Protection Association (NFPA) 855** provides the primary framework for safe installation, including siting, separation, ventilation, emergency planning, and coordination with local emergency responders.
- **UL 9540A** testing helps evaluate how BESS performs under thermal runaway conditions and informs project design, fire protection, and emergency response planning.

These standards help ensure that project design, local permitting, and emergency planning are informed by current fire-safety testing and real-world failure scenarios.

The Electric Power Research Institute (EPRI) publicly tracks reported BESS failure incidents. Its data show **the global BESS failure rate per deployed capacity dropped 97% from 2018 to 2025** as lessons from earlier projects were incorporated into newer designs and best practices. EPRI also notes that incident data has limitations and may not capture every relevant incident.

BESS Incident Rates Have Declined 97% Since 2018

Reported fire and thermal-runway incidents per GWh of deployed battery energy storage capacity



Source: EPRI Battery Energy Storage System Failure Incident Database

Key drivers in the decline of safety incidents:

- Stronger safety standards and fire-code requirements
- Large scale testing, such as UL 9540A and broader use of NFPA 855
- Improvements in battery management systems, enclosure design, and thermal controls
- Lessons learned from earlier projects incorportated into newer designs and operations

Key Considerations for Decision-Makers

When reviewing a BESS proposal, local leaders do not need to become technical experts. They should expect clear information that connects the project's purpose, site design, safety standards, community benefits, and long-term responsibilities.

Decision Making Checklist:

- [ ] **Need:** What grid or local reliability need is the project intended to serve, including support during periods of high demand?
- [ ] **Affordability:** How could the project help make better use of existing infrastructure, support reliability, or avoid more expensive upgrades? (BESS is one tool among several for meeting future energy needs.)
- [ ] **Site fit:** Why was this location selected, and how will local impacts be addressed?
- [ ] **Safety:** How will the project meet established safety standards, what project-specific testing has been or will be conducted, and have local officials and emergency responders been engaged early in the process?
- [ ] **Community value:** What local benefits may result — such as tax revenue, construction or contracting opportunities, or long-term operations and maintenance work — and how do factors like project size, location, ownership, and local tax structure shape those benefits?
- [ ] **Long-term responsibility:** Who is responsible for ongoing operations, maintenance, and eventual decommissioning?