BESS in Oregon

A practical tool for reliability, affordability, and better use of Oregon'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.

Oregon's Energy Needs are Changing

As Oregon plans for growing electricity demand amid aging infrastructure, wildfire risk, extreme weather, and clean energy requirements, utilities need tools that can help keep power reliable, flexible, and affordable

Under HB 2021, Oregon's electric utilities must reduce emissions associated with serving retail electricity customers by 80% below baseline emissions by 2030, 90% by 2035, and 100% by 2040. Additionally, HB 2021 directs clean energy planning toward an electric system that is affordable and reliable, using tools such as clean energy generation, energy efficiency, and demand response.

Oregon has made significant progress toward that vision. As of 2024, the state has 51 utility-scale solar and 48 utility-scale wind projects operating across 18 counties. But generating clean energy is only part of the equation. The grid also needs to deliver electricity when customers need it.

That's where BESS comes in. BESS helps utilities get more value from existing energy resources by storing electricity when it is available and releasing it when demand is high.

Why BESS Fits in Oregon

BESS works alongside Oregon's energy resources. It does not generate electricity on its own. Instead, it helps store electricity from resources such as wind, solar, hydropower, geothermal, and natural gas, then delivers that electricity when demand is higher or the grid needs additional flexibility.

That flexibility is especially useful in a state with growing renewable energy development, rural energy-producing counties, constrained transmission, wildfire and extreme-weather risks, and communities working to balance economic development with land use, safety, and environmental priorities.

BESS will not eliminate the need for new generation, transmission, energy efficiency, demand response, or other grid investments. It is one tool that can help Oregon utilities and communities make better use of the resources and infrastructure already in place while planning for long-term energy needs.

Oregon Permitting and Review Pathways

Oregon BESS projects may move through different review and permitting pathways depending on project size, location, configuration, and whether the battery system is part of a larger energy facility.

Some projects may be reviewed through local land use and permitting processes, while certain large energy facilities are reviewed through Oregon's Energy Facility Siting Council process.

Local governments should ask early which pathway applies, what local permits or approvals may be needed, and how land use and environmental review will be handled. The key is to understand both the grid purpose and the community value of a proposed project, and how emergency responders, utilities, state agencies, Tribes, and community members will be engaged.

PROJECT SPOTLIGHT

Wheatridge Renewable Energy Facilities

The Wheatridge Renewable Energy Facilities in Morrow County show how BESS can work alongside other energy resources in Oregon. The project combines wind, solar, and battery storage, including 30 megawatts of battery storage. The battery system stores electricity that is not immediately used and delivers it when additional power is needed.

Wheatridge also illustrates how energy projects can connect grid value with local value. Public project information describes construction jobs, long-term operations jobs, tax revenue, and local infrastructure connections, including transmission access through the Bonneville Power Administration system.

Safety Standards Provide a Framework

BESS projects are reviewed against established national safety standards.

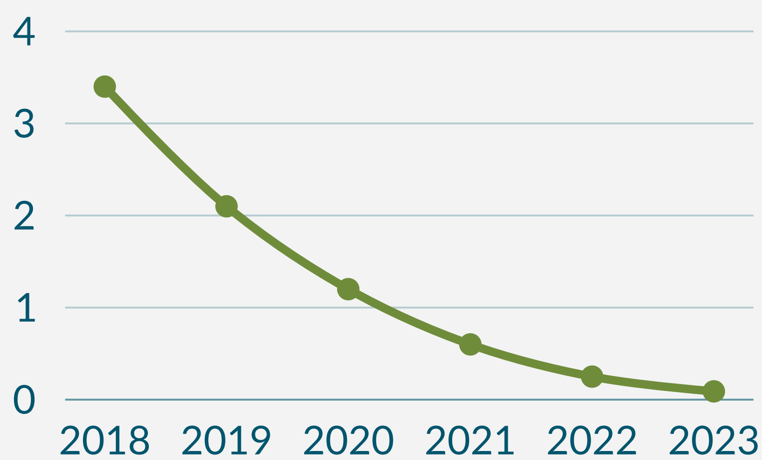
- **National Fire Protection Association (NFPA) 855** provides the primary framework for safe installation, including siting, separation, ventilation, emergency planning, and coordination with local emergency responders.
- **UL 9540A** testing helps evaluate how BESS performs under thermal runaway conditions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