Key Terms Glossary

BESS Lockout/Tagout Essential Vocabulary • OSHA 1910.147 & NFPA 70E

📖 UNIVERSAL LOCKOUT/TAGOUT TERMS

Energy Isolating Device

A mechanical device that physically prevents the transmission or release of energy. Must be capable of being locked in the safe (off) position.

> ***Examples:*** *Circuit breakers, disconnect switches, line valves, blocks, line blinds*

NOT Energy Isolating Devices: Push buttons, selector switches, and control circuit devices—these only control energy flow, they don't physically block it.

Lockout Device

A device that uses a positive means (lock with key or combination) to hold an energy isolating device in the safe position, preventing the equipment from being energized.

> ***Examples:*** *Personal padlocks, lockout hasps (for group lockout), valve lockout devices, circuit breaker lockouts*

Requirements: Must be durable, standardized (color/shape/size), substantial enough to prevent removal, and identifiable (shows who applied it).

Tagout Device

A prominent warning device (tag and attachment means) securely fastened to an energy isolating device indicating that equipment may not be operated until the tag is removed.

> ***Required Information:*** *Employee name, date applied, reason for lockout, "DO NOT OPERATE" warning*

Important: Tags alone provide NO physical protection. They must be used WITH locks. Tags are warnings only—they cannot prevent equipment startup.

Capable of Being Locked Out

An energy isolating device that has a hasp or other attachment point for a lock, or can accept a locking mechanism without being dismantled or rebuilt.

OSHA Requirement: After January 2, 1990, ALL new or replaced equipment must be capable of being locked out. Non-compliant equipment must be retrofitted.

Authorized Employee

A person who locks out or tags out machines or equipment to perform servicing or maintenance. Receives comprehensive training on procedures and energy control methods.

> ***Examples:*** *Maintenance technicians, electricians, instrumentation specialists*

Affected Employee

A person whose job requires operation or use of equipment being serviced under lockout/tagout, or who works in an area where such procedures are being performed.

> ***Examples:*** *Equipment operators, control room personnel, process technicians*

📖 UNIVERSAL LOCKOUT/TAGOUT TERMS (continued)

Servicing and/or Maintenance

Workplace activities including constructing, installing, setting up, adjusting, inspecting, modifying, maintaining, and servicing machines or equipment where unexpected energization could cause injury.

> ***Includes:*** *Lubrication, cleaning, unjamming, adjustments, tool changes, sensor replacement, BMS updates*

Normal Production Operations

The use of equipment to perform its intended production function. Lockout/tagout is NOT required for normal operations—only for servicing and maintenance.

For BESS: Normal charging/discharging = no lockout required. ANY maintenance work (even "quick" tasks) = full lockout/tagout required.

Stored Energy

Residual energy remaining in equipment after shutdown and isolation, including energy in capacitors, springs, elevated components, rotating flywheels, and pressurized systems.

> ***Traditional Examples:*** *Compressed springs, elevated machine parts, hydraulic pressure, pneumatic pressure, spinning flywheels*

BESS Critical: Battery cells contain continuous stored chemical/electrical energy that CANNOT be "released" like traditional stored energy. See "Stranded Energy."

BESS-SPECIFIC TERMS

Stranded Energy

Energy that remains in a battery or energy storage device even after it has been isolated from external circuits. Unlike traditional stored energy, stranded energy in batteries CANNOT be released or dissipated.

Critical Understanding: Opening a DC disconnect stops current flow but does NOT eliminate voltage at battery terminals. Batteries remain dangerous. You must verify zero energy at your WORK POINT, not just at the disconnect.

System Owner

The entity responsible for operation, maintenance, and safety of the battery energy storage system. May be the facility owner, battery manufacturer, or third-party operator.

Requirement: ALL lockout/tagout activities on BESS equipment require system owner approval BEFORE proceeding. This is mandatory, not optional.

DC Disconnect

A manually operated switch that interrupts DC current flow between battery racks and inverters or between battery modules. This is the primary energy isolating device for battery equipment.

What it does: ✓ Stops current flow ✓ Can accept a lockout device
What it does NOT do: ✗ De-energize batteries ✗ Eliminate voltage at terminals

Battery Management System (BMS)

Electronic system that monitors and manages battery performance including voltage, current, temperature, state of charge, fault detection, and cell balancing.

> **Lockout Consideration:** BMS must remain ACTIVE during maintenance to monitor temperature and detect early warning signs of thermal runaway. Do NOT lock out BMS during battery work.

Thermal Runaway

A condition where increasing battery temperature causes exothermic reactions that further increase temperature, creating a self-sustaining cycle that can lead to fire, explosion, or toxic gas release.

> ***Warning Signs:*** *Rising temperature alarms, smoke, off-gassing, sweet/chemical odors, hissing or popping sounds, cell swelling*

> **If Suspected:** EVACUATE immediately to 100+ feet. Do NOT investigate. Do NOT attempt to remove locks. Call emergency contacts.

Grid Operator

The entity responsible for managing the electric grid's stability and reliability. In Texas: ERCOT (Electric Reliability Council of Texas).

> **Coordination Required:** Inverter lockout requires 24-48 hour advance notification to grid operators because BESS facilities provide critical grid services.

Qualified Electrical Worker

A person who has received training in and demonstrated skills and knowledge in the construction and operation of electrical equipment and the hazards involved. (Per OSHA 1910.399 and NFPA 70E)

> **For BESS Work:** Must be a qualified electrical worker AND complete BESS-specific lockout/tagout training. General electrical qualifications alone are NOT sufficient.

Quick Reference: Is It an Energy Isolating Device?

Device	Energy Isolating Device?	Can Be Locked Out?
Circuit breaker	**YES**	**YES**
DC disconnect switch	**YES**	**YES**
Manual valve	**YES**	**YES**
Push button	**NO**	**NO**
Selector switch	**NO**	**NO**
Control circuit relay	**NO**	**NO**
BMS shutdown command	**NO**	**NO**