

BLACKMOUNTAIN ENERGY STORAGE

Bufflehead BESS

June 2023

OVERVIEW CORPORATE OVERVIEW



- Founded in 2007 by Rhett Bennett
- Headquartered in Fort Worth, TX
 - BMES headquartered in Austin, TX
- Family of entrepreneurial companies experienced in sourcing, developing, and operating assets
- Through their experience at the Black Mountain Entities, members of management have overseen investment of >\$1.35B in various assets and ventures
- Flat organizational structure with hands-on executive management
- Deep expertise within every vertical to create long-term value for customers and stakeholders

HISTORIC & CURRENT INVESTMENTS

Essential Commodities



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POTASH







Energy Transition Applications

BATTERY

STORAGE

Infrastructure & Logistics





Produced Water Management

(Byproduct of O&G Production) **Economic Material Extracted** Throughout Process

ROYALTY

VEHICLES

Financial Vehicles



FUNDS



SPACS

BLACK MOUNTAIN BY THE NUMBERS





Upstream Transactions Executed



19,605 Wells Planned

And Monitored



3,108 Wells Drilled And Frac'd

B

USD transacted since 2007





Tons of Frac Sand Mined



Businesses

Built Since 2007

9



300+Years Of Combined

Experience

OVERVIEW BATTERY ENERGY STORAGE SYSTEMS



Utility-scale BESS facilities are connected directly to the electric grid and consist of:

- Lithium-ion batteries & battery racks
- Non-walk-in battery enclosures
- Inverters to convert DC to AC electricity
- Medium-voltage transformers to step up to substation voltage
- Energy Management System (EMS) controls and monitors equipment
- Safety equipment and HVAC systems



Wall-Mounted HVAC One unit installed on each end of the enclosure Pre-integrated cable tray Collects the DC cable, AC cable and Comms to each stack

Deflagration Vents installed on every enclosure





RESOLVE TRANSMISSION CONGESTION & SUPPORT GROWTH

Unparalleled operational flexibility allows battery storage to resolve congestion brought on by growth in intermittent renewable resources and increasing industry



INCREASE ELECTRIC RELIABILITY

Battery energy storage is uniquely positioned to improve grid resilience via fast response to system needs, preventing conditions that can lead to outages and helping to smooth out wholesale price spikes for local utilities



SIGNIFICANT TAX CONTRIBUTOR





GOOD NEIGHBORS

Black Mountain is all about putting down roots within our communities; our goal is to give back to the community by delivering economic opportunities and outreach support for local causes

PROJECT OVERVIEW PROJECT LOCATION





PROJECT OVERVIEW BUFFLEHEAD BESS - 24INR0274

LAND

- Land Control: 9.1 acres (purchase option)
- Location: Collin County, Texas

INTERCONNECT

- Proposed Size: 200MW x 2h
- Proposed POI: Oncor 138kV Lavon Switch Substation
- Filing Date: 2/17/2022
- Estimated IA Execution: 10/1/2023
- Estimated COD: Q3 2025

ENVIRONMENTAL / PERMITTING

- Critical Issues Analysis: Complete no concerns
- Field Environmental Studies: Complete no concerns
- Current Zoning: Agriculture SUP required (initiated)
- **Platting:** Required City of Wylie (initiated)
- Estimated Filing of Major Permits: Q1 2024

ENGINEERING / CONSTRUCTION

- Preliminary Layout: Complete
- Field Engineering Studies: Ongoing
- Estimated Construction Start: Q3 2024

MARKET THESIS

Lavon Switch is deep inside the Dallas load pocket and will experience high side congestion as solar attempts to flow toward load. This site is ideally positioned to capture high side binding from solar imports from various directions.





SITE CONFIGURATION



PRELIMINARY SITE DESIGN (200MW / 400MWh)*



*Preliminary design, final facility design subject to change

FIRE SAFETY STANDARDS NATIONAL SAFETY STANDARDS

The project will meet or exceed all applicable national safety standards including:

Standard	Description (Project Context)	Scope
UL 9540	Safety standard for energy storage systems and equipment. Aggregation of 1973, 1741, and fire safety at a system level, not just stand-alone equipment	Cell, Module, Rack
UL 9540A	Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems, prescribes procedure to perform cells – large scale fire testing	DC Block
UL 1973	Safety standard for batteries used in stationary applications. Includes mechanical, electrical, and fire tests at cell level	Cells, modules
UL 1741	Complement to IEEE 1547 – Interconnection of DR, functional, performance, and safety requirements for inverters	Inverter
NFPA 855	Standard for the installation of energy storage systems and references UL9540A test method	System / Facility





UL9540 - Cell Level



UL9540 - Module Level

FIRE SAFETY STANDARDS SAFETY FEATURES ARE DESIGNED TOGETHER ON A PROJECT SPECIFIC LE

- Layout Separation Distance UL 9540a requires minimum separation distance between enclosures to prevent fire propagation
- Module and Enclosure batteries are encased in metal shells and enclosures to reduce propagation. Each module includes voltage and current sensors to notify the operator of instantaneously of any abnormal operation within the enclosure
- Battery Management System continuously monitors health and safety of battery and provides controlled shutdown in abnormal conditions to provide early-fault detection
- **Smoke and heat detectors** may be designed either internally or externally to enclosure, provides detection and annunciation
- Gas Ventilation / Deflagration Panels prohibits the buildup of gases reaching unsafe conditions or allows controlled release of gases
- Fire suppression different fire suppressants may be utilized to control fire propagation
- Electrical safety design devices such as fuses, circuit breakers, surge protection device, insulation monitoring device and others protect the electrical system from a fault condition
- Redundant Design multiple sets of redundancy build into the design to ensure safety















SITE EXAMPLE BATTERY ENERGY STORAGE FACILITY – PFLUGERVILLE, TX





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