Battery 101

Utility Scale BESS: Battery Energy Storage Systems
The Black & Veatch Solution

Cape San Blas Plan view
Florida

BESS Overview: Battery-to-Transmission Grid

BESS Layout w/Constraints

**Power:** Two (2) 2.25 MW power conversion, 5.5 MW installed.

**Energy:** Six (6) 3.7 MWh enclosures, 22 MWh installed, 15 MWh guaranteed, 2.5 hours of operation.

**Interconnect Voltage:** 12.5 kV

The Black & Veatch Power Grid BESS Solution

Cross Section of Black & Veatch Storage Solution
Render for visualization purposes
**BESS Basics**

**Energy & Flow**
Flow rate is like power. Tank size is like energy, that is the duration of power. Energy is like Tank Flow.

**LFP vs NMC**
LFP is the Black & Veatch preferred method for safety, power, and long-life. NMC is sometimes client specified for energy and cost savings.

**Thermal Runaway**
LFP is safest by far.
The Black & Veatch engineered BESS solution focuses on critical battery parameters while addressing client specific needs (applications and use cases).

- Rated Power and Energy (duration of power)
- Equipment Life, as affected by
  - Cycling and throughput
  - Time spent at a state of charge
- Round-trip-efficiency at the interconnection
- Use cases highly dependent on client
  - Utility vs Developer
  - Generation vs Wires
  - Rate-based vs Merchant

The Black & Veatch Difference:
- Safe
- Secure
- Flexible
- Dynamic
- Long lived
- Responsive
- Cost effective

*A true, new utility asset*