BESS OPTIMIZATION

PRE - COD

POST - COD

PROJECT LOCATION

Identify locations
with line capacity that
have existing or
forecasted volatility.



PROJECT MODELING

Technoeconomic tool that maximizes project value that balances CAPEX, OPEX and revenue



CONTROLS

Vertical controls platform that includes software, controllers, and integration



MONITORING / O&M

Real-time human monitoring and asset management, including remote troubleshooting and system restoration



BID OPTIMIZER

Optimize between revenue and costs, then submit offers automatically to the QSE.



ANALYTICS

Tools that identify anomalous batteries, predict equipment failures and create automated reports

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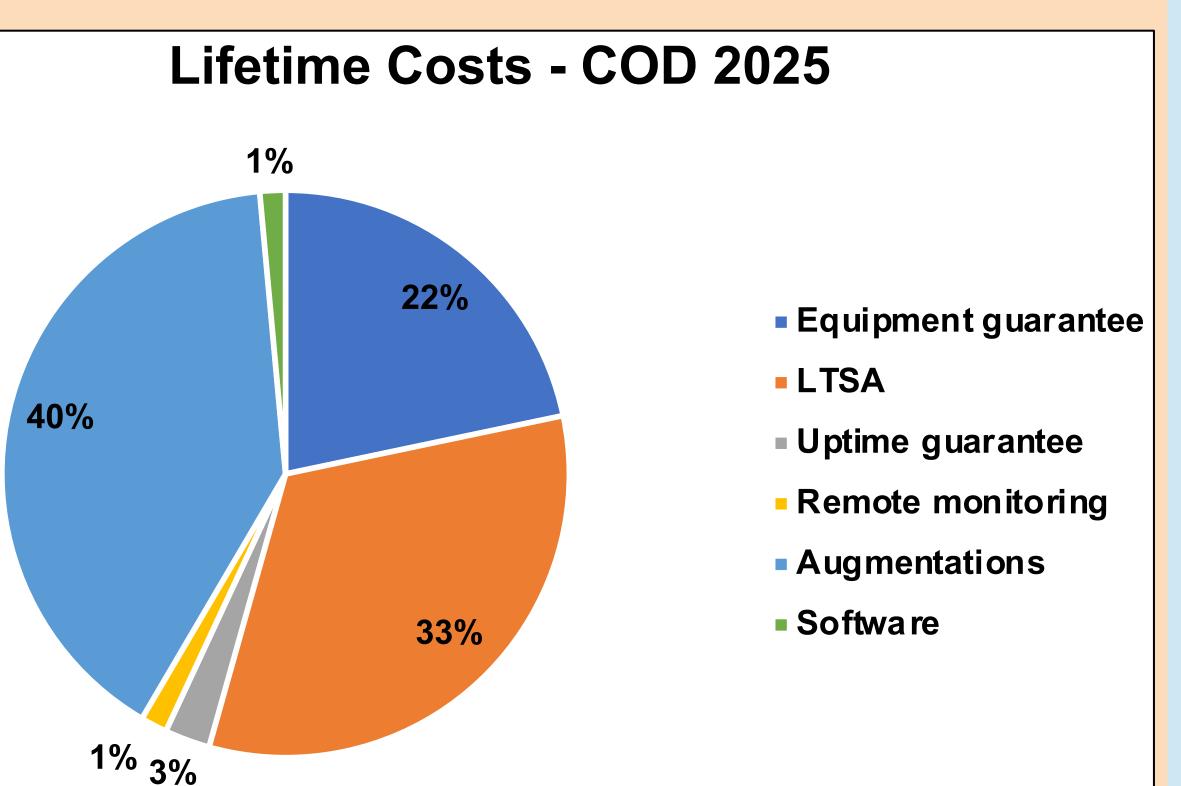
BatteryOS
BatterySIMM
PowerDev

Ascend Analytics Fractal Model

DEVELOPMENT

5 MOST COMMON MISTAKES

- 1. Improper Sizing: Goldilock's don't buy too little or too much
- 2. Underestimating OPEX Costs



- 3. Miscalculating Degradation
- 4. Inadequate EMS; look for these key features:
 - A. Real-time Visualization / Historian
 - B. SCADA with substation operability
 - C. Networking
 - D. Cyber-Security

5. Contract Negotiations

- E. Warranties Get a Custom Warranty
- F. Performance Guarantees (Availability, Capacity (Power and Energy), RTE)
- G. Liquidated Damages Delay Delivery, Guaranteed COD
- H. Performance Scope of Work & Testing

Fluence
Fractal EMS
NextEra
Wartsila GEMS

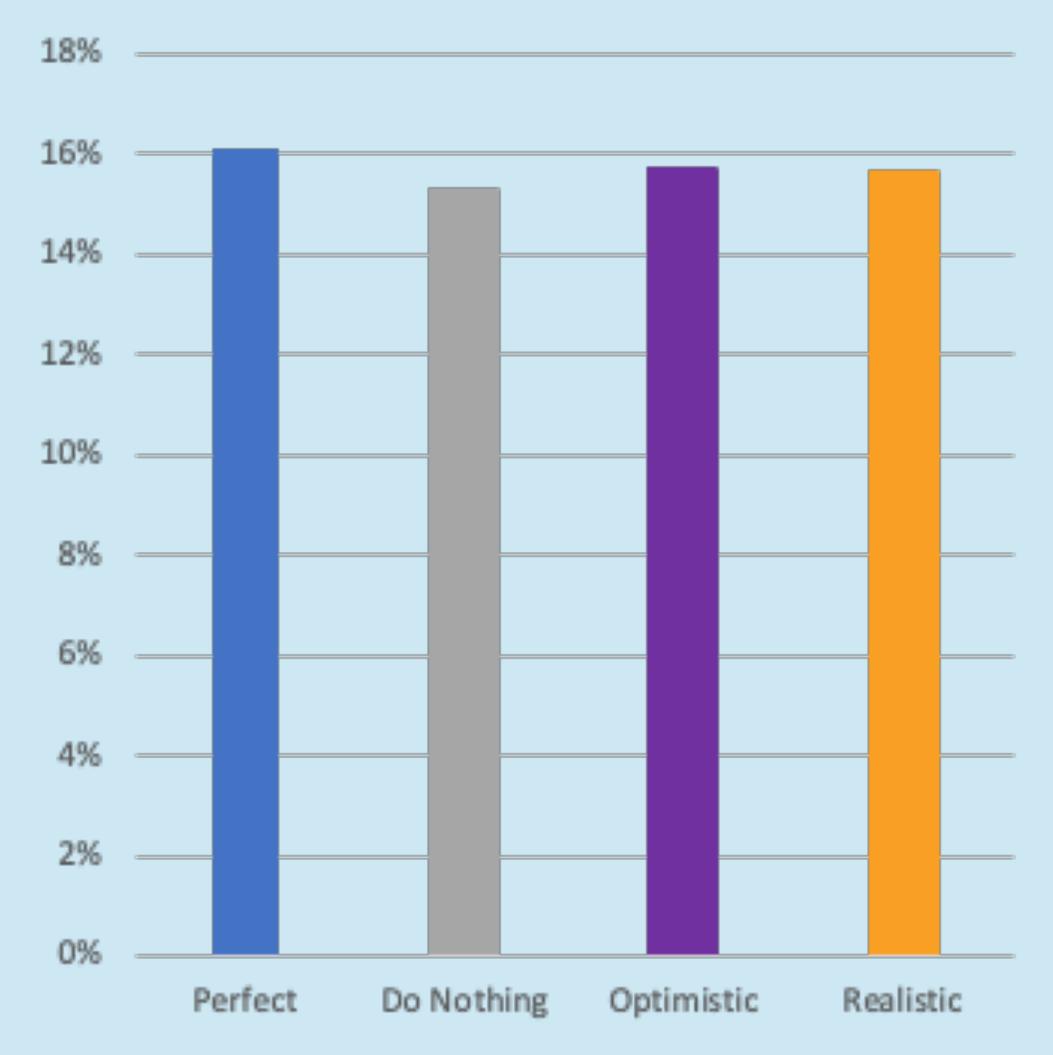
Fractal O&M Novasource Fractal Optimizer
Tesla Autobidder
Tenaska

CES

Fractal Reports
Twice
Voltaic

OPERATION

BID OPTIMIZATION



Perfect (unattainable): → 16.1% IRR 99% Availability → 100% perfect, 0% fees

Do nothing (no bid opt): → 15.3% IRR 99% Availability → 95% perfect, 0% fees

Optimistic (not realistic): → 15.72% IRR 99% Availability → 99% perfect, 1% fees

Fractal (realistic): → 15.65% IRR 99% Availability → 98% perfect, 0.5% fees

PROCUREMENT OPTIMIZATION

Purchasing the BESS with a 15% integrator premium can reduce project IRR by 5.5%

