TECHNICAL ANALYSIS REPORT

Manufacturing Facility BESS Feasibility

Battery energy storage feasibility assessment for a mid-size manufacturing facility (sample scenario).

SAMPLE STUDY

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Executive Summary

This report assesses the technical and financial viability of a battery energy storage (BESS) investment for a mid-size manufacturing facility profile: roughly 12 GWh annual consumption, 2.5 MW peak demand, and 1 MWp existing solar PV (sample values).

After validating 12 months of 15-minute consumption and generation data, peak shaving, arbitrage, and hybrid operating scenarios were compared in a single dispatch model. The hybrid scenario yielded a preliminary payback of 4–6 years; the result was found to be most sensitive to the tariff/market price projection.

Data Inputs

The study was built on the following inputs; data was validated first, then tariff components were broken down:

- 12 months of 15-minute consumption data (validated)
- Solar generation and surplus (15-minute resolution)
- Tariff components: energy, distribution, and demand charge
- Battery technical assumptions: power/capacity, efficiency, annual degradation

ANALYSIS

Scenario Comparison

Three operating scenarios were compared on the same facility data. Preliminary payback is expressed as a range depending on data and assumptions, not a single number.

Scenario	Power / Capacity	Peak impact	Preliminary payback
Peak shaving	1.0–1.5 MW / 2–3 MWh	2.5 → ~1.9 MW	6–8 years
Arbitrage	1.5–2.0 MW / 3–4 MWh	limited	7–9 years
Hybrid (peak + arbitrage)	1.5–2.0 MW / 3–4 MWh	2.5 → ~1.9 MW	4–6 years

The highlighted row (hybrid) is the operating mode giving the best result in this sample scenario.

Sensitivity

Preliminary payback is most sensitive to the electricity price/market projection, then to battery CAPEX. The effects of annual degradation and the demand charge are more limited. Before an investment decision, clarifying the tariff projection and the solar expansion plan is recommended first.

LIMITS

Assumptions and Limits

- Results depend on the sample facility profile and the default tariff scenario; a different load profile changes the result.
- Preliminary payback is expressed as a range depending on data and scenario, not a single number.
- Battery price and degradation assumptions must be updated to market conditions.
- The study is a feasibility assessment, not an investment decision, guarantee, or firm savings commitment.

This document is a sample study. All figures within it are representative and do not belong to a real customer. It does not form the basis of an investment decision; a firm assessment is made with facility-specific data.