

This analysis reflects the regulatory situation as of April 2026. It has since been partially superseded — notably by the BNetzA decision of 27 May 2026 (FID cut-off for §118 grandfathering). It is published here as an archived record of our evolving analysis. For the current assessment, see the latest analysis above.

BESS Investment Analysis Under Regulatory Uncertainty



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Key Finding: Quantifying Investment Risk

When the current grid charge exemption under §118 EnWG expires (scheduled for August 2029), standalone BESS bankability drops from 65% to below 15% — regardless of the exact BNetzA pricing method. This abrupt drop illustrates how a single variable can dominate the entire investment case.

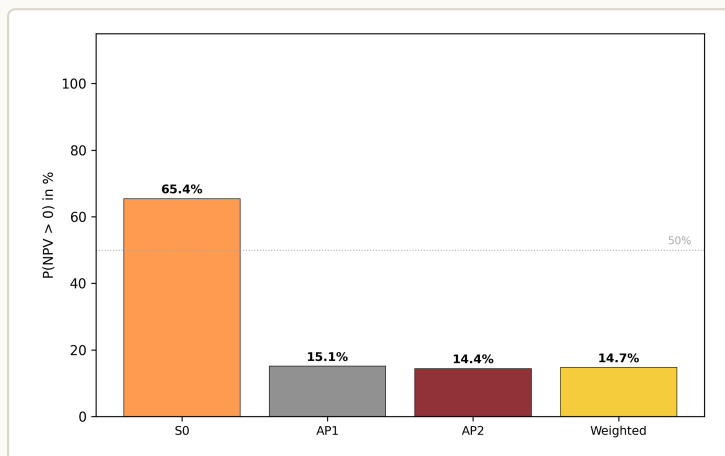


FIG. 1 Share of bankable scenarios per regulatory framework (S0: Baseline §118, AP1: AP1-only, AP2: AP2-only, Weighted: Dynamic Weighting; Monte Carlo, 1,000 paths).

Beyond Regulation: A Universal Framework

Regulatory scenarios are just the starting point. The underlying simulation framework evaluates the full spectrum of investment risks: from site selection and battery sizing (MW/MWh) to CAPEX sensitivities and market condition stress-tests.

Market Context: Day-Ahead Price Dynamics

A strong winter bias is visible in the price distribution, representing a market risk entirely independent of the regulatory framework.

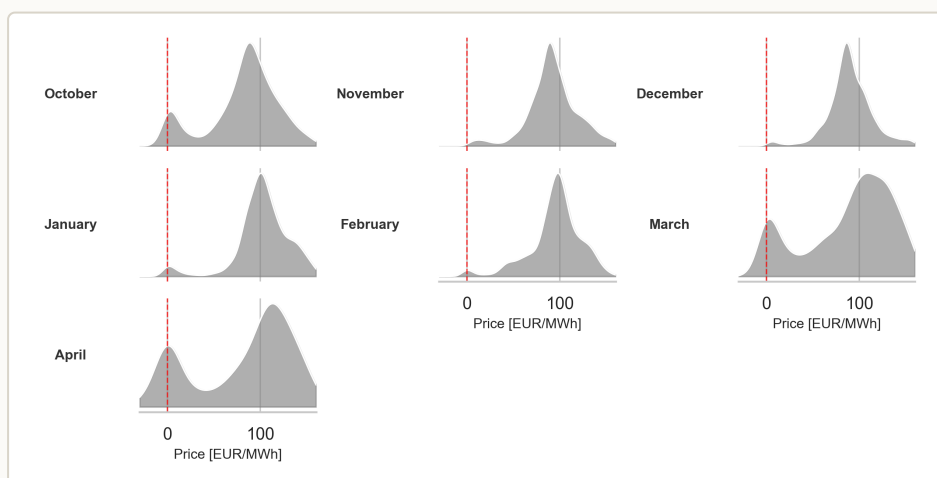


FIG. 2 Day-ahead price distribution DE-LU, October 2025 – April 2026.

What the Model Does

A Python-based model evaluates BESS arbitrage profitability under extreme uncertainty by replacing static assumptions with empirical market data. It enables custom sensitivity runs for specific site constraints or off-take structures.

Core methodology:

Theoretical Revenue Ceiling (TRC)	LP optimization under perfect foresight over 20 years — mathematical upper bound, not a forecast. If NPV is negative at TRC, the project is not bankable regardless of operator skill.
Stochastic Simulation	Monte Carlo engine (1,000 scenarios). 20-year revenue paths are generated via block-bootstrap resampling on the 7-month dataset; seasonality coverage expands with future data.
Market Data Engine	Utilizing SMARD SDAC 15-min (CC BY 4.0) DE-LU day-ahead prices (Oct 2025 – Apr 2026) as a conservative lower bound for potential revenue.

Output: NPV/IRR distributions and downside metrics like Revenue at Risk (RaR) / Value at Risk (VaR) — translating market and regulatory uncertainty into hard financial KPIs.

BESS Risk & Investment Services

Quantitative Due Diligence	Financial valuation (NPV/IRR) of BESS investments under deep uncertainty.
Custom Sensitivities	Beyond-regulation testing on site, sizing, or CAPEX structures to de-risk specific project setups.
Portfolio Stress Testing	Re-underwriting existing assets against revised market benchmarks.
Regulatory Impact Analysis	Quantifying the financial effect of upcoming market design changes (e.g., §118 EnWG).

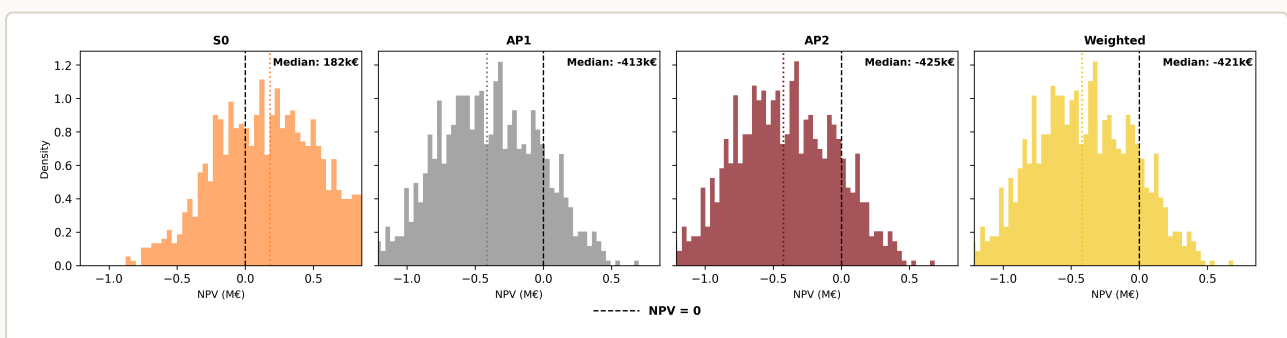


FIG. 3 NPV distribution across regulatory scenarios. 5%-VaR (S0): -449k€, 5%-VaR (Weighted): -1018k€.

Background

MBA Energy Management (TU Berlin, 03/2026) · MSc Statistics (HU Berlin) · Diploma in Economics (Hohenheim) · 20+ years of experience in analytical consulting · Specialized in Energy Data Science · Appstam Consulting GmbH, Berlin.

Available for project-specific briefings. Contact below.

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