

Utility scale ESS capital expenditure estimate 2025





Overview

What are base year costs for utility-scale battery energy storage systems?

Base year costs for utility-scale battery energy storage systems (BESSs) are based on a bottom-up cost model using the data and methodology for utility-scale BESS in (Ramasamy et al., 2023). The bottom-up BESS model accounts for major components, including the LIB pack, the inverter, and the balance of system (BOS) needed for the installation.

What is the energy CAPEX forecast for 2028?

While the aggregate energy capex forecast for 2028 is \$172 billion, the level is likely to be revised significantly upward as utility companies solidify their future project plans in early 2025 disclosures. Several factors are anticipated to drive an increase in utility capex over the coming years.

How much money will energy utilities spend in 2022?

This represents a 12% increase from the \$166 billion spent in 2023, and a nearly 30% rise compared to the \$144 billion invested in 2022. ► Aggregate energy utility investments are projected to hit new highs of \$202 billion in 2025, \$206 billion in 2026 and \$211 billion in 2027.

How much will energy utilities spend in 2024?

Projected capital expenditures for 2024 among the 45 energy utilities in Regulatory Research Associates' representative sample of publicly traded, US-based utilities are forecast to reach nearly \$187 billion. This represents a 12% increase from the \$166 billion spent in 2023, and a nearly 30% rise compared to the \$144 billion invested in 2022.

Will storage futures lead to cost reductions in 2021?

The Storage Futures Study report (Augustine and Blair, 2021) indicates NREL, BloombergNEF (BNEF), and others anticipate the growth of the overall battery industry—across the consumer electronics sector, the transportation sector,



and the electric utility sector—will lead to cost reductions in the long term.

Why do we use a single cost for 2024?

Although there is uncertainty in the 2024 cost (which is discussed later), we use a single cost for 2024 for convenience as we apply these costs in our long-term planning models (applying the same costs in 2024 means that the 2024 solution will not change as we shift from a “high” to a “mid” to a “low” cost projection for storage).



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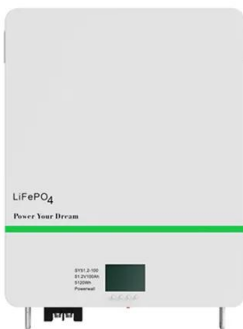
Utility-Scale Energy: Insights for Developers and ...



The USA's utility-scale energy sector is rapidly evolving with technological advancements and shifting economic fundamentals. For developers, investors, policymakers, and consultants, understanding the ...

Q1 2025: ESS Accounts For 64% Utility-Scale Tendering Activity

India's Standalone Energy Storage Systems (ESS) are becoming the backbone of India's utility-scale ESS auctions, accounting for 64% of the total tenders issued between ...



The Standalone Energy Storage Market in India

In the first quarter of 2025, Standalone ESS tenders reached 6.1 gigawatts (GW), which accounted for 64% of all utility-scale energy storage tenders, which included all other use ...

A 2025 Update on Utility-Scale Energy Storage ...

While the energy storage market continues to rapidly expand, fueled by record-low battery costs and robust policy support, challenges still loom on the horizon--tariffs, shifting tax incentives, and supply chain uncertainties ...



Updated Capital Cost Estimates for Utility Scale Electricity ...

In 2010, EIA commissioned an external consultant to develop up-to-date cost and performance estimates for utility-scale electric generating plants for AEO 2011.1 This information allowed ...

A 2025 Update on Utility-Scale Energy Storage ...

Another year of growth in the utility-scale storage market also marked a second consecutive year of record lows in the installed cost of lithium-ion batteries. However, trade actions and changes to tax policy have the ...



51.2V 300AH

U.S. Energy Storage Market Size, Forecast 2025-2034

U.S. Energy Storage Market News In February 2025, GridStor a utility-scale battery energy storage systems manufacturer acquired 150 MW battery storage project, Texas from Balanced Rock Power. The acquisition will help company ...





The Real Cost of Commercial Battery Energy Storage ...

But what will the real cost of commercial energy storage systems (ESS) be in 2025? Let's analyze the numbers, the factors influencing them, and why now is the best time to invest in energy storage.



[2025 Energy Storage ESS Analysis](#)

Utility-Scale Growth: Utility-scale energy storage is expected to lead the sector, with projections indicating significant expansion to support grid stability and renewable integration.

The Standalone Energy Storage Market in India 1

Key Findings Standalone Energy Storage Systems (ESS) are rapidly emerging as a key market, with 6.1 gigawatts of tenders issued in the first quarter of 2025 alone, accounting for 64% of the ...



Energy Storage Systems Market Size, 2025-2034 Forecast

Energy Storage Systems Market Size The global energy storage systems market was estimated at USD 668.7 billion in 2024 and is expected to reach USD 5.12 trillion by 2034, growing at a ...



Utility-Scale Energy: Insights for Developers and Investors

The USA's utility-scale energy sector is rapidly evolving with technological advancements and shifting economic fundamentals. For developers, investors, policymakers, ...



System Topology



The Real Cost of Commercial Battery Energy Storage in 2025

Discover the true cost of commercial battery energy storage systems (ESS) in 2025. GSL Energy breaks down average prices, key cost factors, and why now is the best time ...

[Fall 2024 Solar Industry Update](#)

DOE estimates that, in Q1 2024, utility-scale PV systems cost approximately \$1.12/Wdc (i.e., modeled market price, or MMP). Without market distortions, such as tariffs or nonsustainable ...



- ✓ ALL IN ONE
- ✓ 100Kw/174Kwh High Capacity
- ✓ Intelligent Integration

U.S. electric utilities CAPEX outlook 2024, Statista

Industry capital expenditure of shareholder-owned electric utilities in the United States from 2010 to 2022, with a forecast until 2025 (in billion U.S. dollars)



Utility-Scale Battery Storage , Electricity , 2022 , ATB

In this way, the cost projections capture the rapid projected decline in battery costs and account for component costs decreasing at different rates in the future. Figure 3 shows the resulting utility-scale BESS future cost projections for the ...

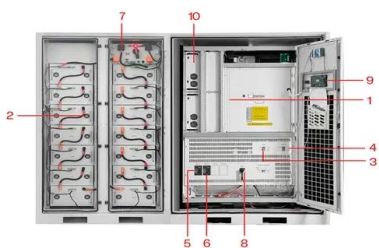


Energy utility capex projected to eclipse \$790B from 2025 ...

While the aggregate energy capex forecast for 2028 is \$172 billion, the level is likely to be revised significantly upward as utility companies solidify their future project plans in early 2025 ...

Sungrow Showcases Wide Range Of ESS Solutions At SNEC 2025

During the SNEC 2025 exhibition in Shanghai, China, Sungrow showcased its comprehensive portfolio of application-specific energy storage systems (ESS), including ...



- 1 PCS Module
- 2 Battery room
- 3 Grid side circuit breaker
- 4 Load side circuit breaker
- 5 OPV1 side circuit breaker
- 6 OPV2 side circuit breaker
- 7 High Volt Box
- 8 BAT side circuit breaker
- 9 LCD display screen
- 10 MPPT

Levelized Costs of New Generation Resources in the Annual ...

Introduction This paper presents average values of levelized costs for new generation resources as represented in the National Energy Modeling System (NEMS) for our Annual Energy ...



Utility-Scale Battery Storage , Electricity , 2021 , ATB

Capital Expenditures (CAPEX) Definition: The bottom-up cost model documented by (Feldman et al., 2021) contains detailed cost components for battery only systems costs (as well as combined with PV). Though the battery pack is a ...



Photo courtesy of Tesla Energy

What are the projected cost trends for utility-scale ...

The cost trends for utility-scale energy storage, particularly focusing on battery technologies like lithium-ion, are evolving due to several factors including technological advancements, policy changes, and market ...



Utility-Scale Battery Storage in 2025: Navigating Tariffs, Tax

As of mid-2025, none of these rescinded orders have been replaced by equivalent initiatives. This rollback ends key interagency programs that supported clean energy and equity-focused ...



Capital Cost and Performance Characteristics for Utility ...

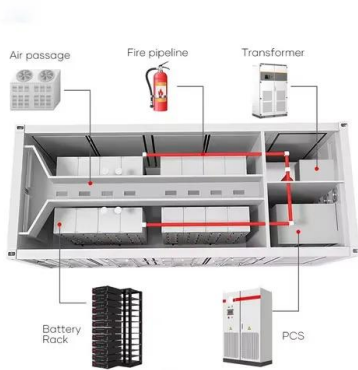
To accurately reflect the changing cost of new electric power generators in the Annual Energy Outlook 2025 (AEO2025), EIA commissioned Sargent & Lundy (S& L) to evaluate the overnight ...





Solar, battery storage to lead new U.S. generating capacity ...

We expect 63 gigawatts (GW) of new utility-scale electric-generating capacity to be added to the U.S. power grid in 2025 in our latest Preliminary Monthly Electric Generator ...



US Tariffs To Lift Cleantech Costs Up to 11%, Except Utility-Scale ESS

Based on these scenarios, Wood Mackenzie estimates most types of technologies will experience cost increases of 6% to 11%, with utility-scale storage the ...

[Energy Storage Cost and Performance Database](#)

Additional storage technologies will be added as representative cost and performance metrics are verified. The interactive figure below presents results on the total installed ESS cost ranges by technology, year, power capacity (MW), ...



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Energy utility capex projected to eclipse \$790B from 2025 ...

To access the most recent previous capex report, refer to Energy utility capex plans on track to all-time highs from 2025 to 2027. Note: This report is designed to identify capital expenditure ...



Utility-Scale Renewables: An Analysis of Pricing ...

Intelligent Investment Utility-Scale Renewables: An Analysis of Pricing Inputs By: Miro Sutton, Global Head of Energy & Renewables, and Kevin Arritt, Senior Managing Director, CBRE Energy & Renewables December 12, ...

Australian-made vanadium flow battery project could ...

Australian Vanadium Limited has moved a vanadium flow battery project to design phase with the aim of developing a modular, scalable, turnkey, utility-scale battery energy storage system (BESS).



[What Does Green Energy Storage Cost in 2025?](#)

In 2025, you're looking at an average cost of about \$152 per kilowatt-hour (kWh) for lithium-ion battery packs, which represents a 7% increase since 2021. Energy storage systems (ESS) for four-hour durations exceed \$300/kWh, marking the ...



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<https://www.vdbconstruction.co.za>