

# NEW ENERGY STORAGE SURVEY



Lithium-ion batteries currently dominate the market, with record-low prices fueled by a global oversupply in battery manufacturing, but a group of new energy storage technologies may be about to



Energy storage hit another record year in 2022, adding 16 gigawatts/35 gigawatt-hours of capacity, up 68% from 2021. We increased our China forecast by 66% to account for new provincial energy storage targets, power market reforms and industry expectations supporting significant new capacity. In contrast, project delays continue to slow a?|



A hybrid energy-storage system (HESS), which fully utilizes the durability of energy-oriented storage devices and the rapidity of power-oriented storage devices, is an efficient solution to managing energy and power legitimately and symmetrically. Hence, research into these systems is drawing more attention with substantial findings. A batterya??supercapacitor a?|



Study shows that long-duration energy storage technologies are now mature enough to understand costs as deployment gets under way. New York/San Francisco, May 30, 2024 a?? Long-duration energy storage, or LDES, is rapidly garnering interest worldwide as the day it will out-compete lithium-ion batteries in some markets approaches and as decarbonization a?|



The data on existing US grid energy storage capacity, which is determined by cross-referencing Energy Information Administration (EIA) and Department of Energy (DOE) Global Energy Storage Database, is shown in Figure 1 A. 17, 18 These data show that the current cumulative energy storage capacity is around 200 GWh, which is less than 1% of what may be a?|

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BloombergNEF's annual battery price survey finds a 14% drop from 2022 to 2023. New York, November 27, 2023 a?? Following unprecedented price increases in 2022, battery prices are falling again this year. The price of lithium-ion battery packs has dropped 14% to a record low of \$139/kWh, according to analysis by research provider BloombergNEF (BNEF).



a?c 3,000+ MW of storage installed across all segments, 74% increase from Q2 2023 a?c Second-highest quarter on record for total installations. HOUSTON/WASHINGTON, October 1, 2024 a?? The U.S. energy storage market experienced significant growth in the second quarter, with the grid-scale segment leading the way at 2,773 MW and 9,982 MWh deployed.. a?|



Energy storage system costs stay above \$300/kWh for a turnkey four-hour duration system. In 2022, rising raw material and component prices led to the first increase in energy storage system costs since BNEF started its ESS cost survey in 2017. Costs are expected to remain high in 2023 before dropping in 2024.

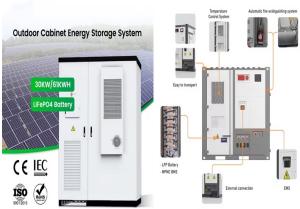


Prices for a fully installed, four-hour, utility-scale storage system this year range from \$235 to \$446/kWh, based on responses to BloombergNEF's industry survey. The wide range highlights the number of variables that affect prices, such as storagea?|



The New Energy Outlook presents BloombergNEF's long-term energy and climate scenarios for the transition to a low-carbon economy. Anchored in real-world sector and country transitions, it provides an independent set of credible scenarios covering electricity, industry, buildings and transport, and the key drivers shaping these sectors until 2050.

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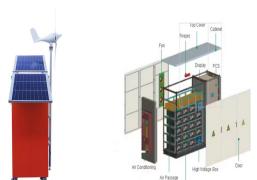
Current Year (2022): The current year (2022) cost estimate is taken from Ramasamy et al. (Ramasamy et al., 2023) and is in 2022 USD. Within the ATB Data spreadsheet, costs are separated into energy and power cost estimates, which allows capital costs to be calculated for durations other than 4 hours according to the following equation:  $\text{Total System Cost} = a + b \cdot \text{Duration}$



The case for long-duration energy storage remains unclear despite a flurry of new project announcements across the US and China. Global energy storage's record additions in 2023 will be followed by a 27% compound annual growth rate to 2030, with annual additions reaching 110GW/372GWh, or 2.6 times expected 2023 gigawatt installations.



MITEI's three-year Future of Energy Storage study explored the role that energy storage can play in fighting climate change and in the global adoption of clean energy grids. Replacing fossil fuel-based power generation with power generation from wind and solar resources is a key strategy for decarbonizing electricity. Storage enables electricity systems to remain in a?| Read more



The interest in effective long-duration energy storage (LDES) is rising globally as demand for clean firm capacity grows. BloombergNEF's inaugural LDES cost survey covers a wide variety of storage technologies a?? electrochemical, thermal and a??



Subsurface CO<sub>2</sub> storage could significantly impact reduction of CO<sub>2</sub> emissions to the atmosphere, but the economics and potential risks associated with the practice must be understood before implementing extensive programs or regulations. Utilization of other energy-related gases such as helium (He), if separated and concentrated

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Turnkey energy storage system prices in BloombergNEF's 2023 survey range from \$135/kWh to \$580/kWh, with a global average for a four-hour system falling 24% from last year to \$263/kWh. Following an unprecedented increase in 2022, energy storagea?|



Recently, the National Energy Administration held a press conference to release the energy situation and renewable energy grid operation in H1, introduce the development of new energy storage and the issuance of green certificates, and share survey cases on the deployment and effectiveness of new energy storage this year.



TES systems are divided into two categories: low temperature energy storage (LTES) system and high temperature energy storage (HTES) system, based on the operating temperature of the energy storage material in relation to the ambient temperature [17, 23]. LTES is made up of two components: aquiferous low-temperature TES (ALTES) and cryogenic



Some long-duration energy storage (LDES) technologies are already cost-competitive with lithium-ion (Li-ion) but will struggle to match the incumbent's cost reduction potential. That's according to BloombergNEF (BNEF), which released its first-ever survey of long-duration energy storage costs last week.



In January 2022, Governor Kathy Hochul announced New York State's new goal of 6,000 MW of Energy Storage deployments by 2030. This new goal doubles the previous Energy Storage Roadmap and CLCPA deployment target of 3,000 MW and initiates a new round of planning and program development. The original Energy Storage Deployment Programs at NYSERDA

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53 New York 57 Oregon 59 Appendix A: States Survey 62 Appendix B: Industry Survey (FTM) and BTM energy storage. Survey results show a wide variety in state energy storage objectives, scopes, applications, and overall maturity of policies a?



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Electric Grid Energy Storage Use Case. Long Duration Energy Storage (LDES) 2 a?c U.S. grid has ~200 GWh storage capacity (2023) a?c Energy storage need increases with additions of renewables a?c lack of current LDES market demand a?c greatest LDES need comes if renewables > ~80% of grid a?c potentially ~150x more grid energy storage capacity in



Womble Bond Dickinson (WBD)'s 2024 Energy Transition Outlook Survey Report points to a new phase in the multi-generational journey to Net Zero. These same technologiesa??biofuels/biomass (energy from waste), energy efficiency, carbon capture, energy storage and EVsa??ranked in the top five across all geographiesa??except Latin America



Energy Storage Market Evaluation Final Survey Report Prepared for: New York State Energy Research and Development Authority Albany, New York Dana Nilsson Project Manager understand the actors and dynamics that drive the energy storage market in New York State as the market grows from its current nascent state. 8

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These identified innovations show incredible promise to achieve the Long Duration Energy Shot cost goals. By summarizing the Storage Innovations" specific and quantifiable research, development, and deployment (RD& D) pathways to achieve the Storage Shot goals, this report is a useful tool to analyze the most impactful combinations of a?|



Three quarters (75%) of respondents in Jabil's energy storage survey are motivated by lower long-term energy costs when developing ESS solutions. Energy storage is especially useful for saving money in times of high energy demand. Demand charges make up, on average, 30a??70% of a commercial customer's energy bill.



Battery energy storage technology is a way of energy storage and release through electrochemical reactions, and is widely used in personal electronic devices to large-scale power storage 69.Lead



Explore battery energy storage systems for sustainable energy solutions. Optimize power storage with our advanced technology. Phone: +55 654 541 17. Email: Energia@7oroof . Survey no. 276 & 290/C, Shakti Logistic Park, a?|

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California Energy Storage System Survey California is a world leader in energy storage with the largest fleet of batteries that store energy for the electricity grid. Energy storage is an important tool to support grid reliability and complement the state's abundant renewable energy resources. deferring the need for new fossil-fueled



The global energy storage market is set for another record year. BloombergNEF expects 69GW/169GWh of additions in 2024, up 76% in gigawatt-hours from 2023. China continues to lead installations thanks to provincial co-location mandates, but a slighta?|