Energy storage battery industry analysis 160 kWh

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The global battery energy storage market size was valued at USD 18.20 billion in 2023 and is projected to grow from USD 25.02 billion in 2024 to USD 114.05 billion by 2032, exhibiting a compound annual growth rate (CAGR) of 20.88% from 2024 to 2032. The battery energy storage system market in the U.S. is projected to grow significantly, reaching an estimated value of USD 31.36 billion by 2032, driven by the integration of renewable energy sources like solar and wind, enhancing grid stability and resilience.

Various industry players are constantly innovating to expand their product offerings and enhance their global market acceptance. Likewise, various players are presenting new and advanced BESS units to keep up with the growth across the business. For example, in March 2021, Tesvolt, a German storage system manufacturer, launched a technologically advanced product line, TS-I HV 80 battery, primarily designed to shave load peaks and comply with the demand from business and modern clients.

The shift toward lower gas emissions during power generation has fueled the adoption of cleaner alternatives, including renewable energy sources and BESSs. For instance, in April 2023, RWE Group decommissioned the Emsland nuclear power plant in Germany and invested heavily in BESS projects. The company is working on a large-scale 220 MW Battery Energy Storage System project in North Rhine-Westphalia and is likely to be commissioned in 2024.

The lithium-ion battery segment is projected to lead the industry and is anticipated to hold a significant market share during the forecast period. Increasing deployment of new large-capacity grid infrastructure, along with continuous technological advancements in Li-ion BESS products, will drive the segment growth.

Demand for lead-acid batteries is expected to be bolstered by the transportation sector, which is slated to grow exponentially by the end of 2029 due to increasing hybridization of vehicle fleets. These batteries are valued for their safe & reliable operations in rechargeable systems. Furthermore, various companies are investing in expanding operational capabilities of different types, such as vanadium redox (VRB) flow batteries, to cater to the increasing need across numerous applications.

The off-grid segment dominated the market in 2023 and is expected to continue the same trend during the forecast period. Continuous launch of BESS expansion projects by various large and small scale companies is set to favor the off-grid BESS market size. On-grid segment is expected to witness substantial growth during the forecast period owing to the growing setup of vast electricity networks by public and private utility companies and increasing investments to revolutionize the grid infrastructure are set to favor the segment scenario.

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The utility segment is projected to account for the leading share in the industry due to increasing electrification initiatives to power distant and remote locations. Moreover, rising infrastructure modernization projects, growing integration with renewatble sources and huge power generation capacity of utility stakeholders likely to contribute significantly to the growth of the utility sector.

Clear directives aimed at boosting the integration of storage devices across solar power technologies, coupled with the rapid expansion of residential solar power installation, are set to favor the residential segment size.

The non-residential segment is anticipated to grow steadily due to the setup of new advanced commercial and industrial infrastructures coupled with increasing demand for energy security across the verticals.

Based on ownership, the market is trifurcated into customer-owned, third-party-owned, and utility-owned. The presence of different solutions providers & manufacturers of compact & small renewable energy systems in the region is expected to favor the customer-owned segment to rise.

The utility-owned segment held the largest battery energy storage market share in the global market in 2023. The rise in investment from the government & non-government utility companies will propel the demand for utility-owned BESS units in the coming years. Majority of power negration capacity is owned by utlity stakeholders, hence subsequently is the largest consumer of Battery Energy Storage System solutions in the world.

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