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US Advanced Battery Market - Strategic Insights and Forecasts (2026-2031)

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Abstracts

The US Advanced Battery market is forecast to grow at a CAGR of 18.5%, reaching USD 90.3 billion in 2031 from USD 38.7 billion in 2026.

The US advanced battery market is undergoing a fundamental structural transformation, shifting from a technology consumer to an emerging production powerhouse. This transition is being aggressively accelerated by federal policy, most notably the Inflation Reduction Act and the Bipartisan Infrastructure Law, which together mobilise billions of dollars in incentives, grants, and tax credits across the domestic battery supply chain from critical mineral processing to cell manufacturing. The US Department of Energy's National Blueprint for Lithium Batteries codifies a strategic objective to secure a domestic supply chain, foster next-generation battery innovation, and reduce reliance on Asian manufacturing. The market sits at a pivotal convergence of decarbonisation mandates, energy security imperatives, and industrial policy, making it one of the most strategically significant advanced materials markets in the global economy.

Market Drivers

Federal policy is the single most powerful and immediate growth driver. The IRA's consumer and manufacturing tax credits directly lower the effective cost of electric vehicles and energy storage systems, accelerating EV uptake and creating a guaranteed baseline demand signal for advanced automotive battery cells. The Section 45X advanced manufacturing production credit incentivises the domestic production of battery cells, modules, and components, compelling manufacturers to locate new gigafactory capacity within the United States to qualify for programme benefits. The DOE's loan and grant programmes further de-risk private sector investment in first-of-a-kind production facilities, accelerating both near-term lithium-ion capacity and longer-

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term next-generation battery chemistries.

Electric vehicle adoption is the primary volume driver at the application level. Consumer preference for larger vehicles, including SUVs and trucks, results in average battery pack sizes substantially above the global norm, translating into elevated per-vehicle demand for high-energy density cells. High-nickel cathode chemistries, including NMC and NCA, are the primary beneficiaries of this demand profile, while Lithium Iron Phosphate is gaining share as manufacturers seek to reduce cost and supply chain exposure to volatile nickel and cobalt pricing.

Grid-scale energy storage is the second major demand vector, driven by utility-scale renewable energy mandates and the imperative for grid stability. High-capacity battery solutions above 200 Ah are specifically required for utility-scale deployments, creating a distinct and rapidly growing procurement channel separate from the automotive segment. Residential and commercial and industrial energy storage applications represent additional demand streams as distributed energy adoption accelerates.

Market Restraints

Critical mineral supply chain concentration is the most structurally significant constraint. The United States remains heavily dependent on foreign processing and refining capacity for battery-grade lithium, cobalt, nickel, and graphite, exposing domestic manufacturers to geopolitical instability and significant commodity price volatility. Lithium carbonate price swings between 2021 and 2023 illustrated the direct commercial risk this creates for battery pack cost management. This dependency is driving accelerated investment in domestic and allied-nation mineral processing, but supply chain localisation remains a multi-year transition.

Raw material price volatility directly impacts the cost competitiveness of domestically produced batteries relative to lower-cost Asian manufacturers, creating ongoing margin pressure for US-based cell producers. Regulatory and safety compliance requirements, underscored by the January 2025 battery storage facility fire at Moss Landing, California, are increasing operational complexity and cost for large-scale energy storage deployments and generating growing demand for specialised battery recycling, safety, and disposal services.

Technology and Segment Insights

By technology, lithium-ion batteries dominate current market volume, with high-nickel

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NMC and LFP variants capturing the majority of automotive and energy storage demand respectively. Solid-state batteries represent the highest-priority next-generation technology segment, supported by targeted DOE R&D investment. Their superior safety profile and theoretical energy density advantage make them the preferred long-term candidate for premium EV and aerospace and defence applications, though scaling challenges continue to limit near-term commercial deployment. Sodium-ion, flow, and nickel-metal hydride batteries serve niche and specialised applications, with sodium-ion gaining attention as a critical mineral-resilient chemistry for stationary storage.

By capacity, high-capacity cells above 200 Ah are the fastest-growing category, driven by utility-scale energy storage system demand. By application, automotive accounts for the largest share by value, followed by energy storage systems, consumer electronics, industrial, and aerospace and defence. By sales channel, OEM represents the dominant procurement route for automotive and utility-scale applications.

Competitive and Strategic Outlook

The competitive landscape is characterised by a concentrated group of global leaders, primarily headquartered in Asia, rapidly expanding their US manufacturing footprint to comply with IRA domestic content requirements. LG Energy Solution, Samsung SDI, Panasonic, BYD, and SK Innovation are the primary global players establishing or expanding US gigafactory capacity. Panasonic's announced USD 4 billion facility in Kansas, targeting over 30 GWh of annual cylindrical cell output, exemplifies this strategy. Freyr Battery differentiates through semi-solid lithium-ion technology and sustainable manufacturing positioning, targeting both automotive and stationary energy storage segments.

The US strategy of friend-shoring and onshoring critical mineral processing is gradually reshaping the upstream supply chain, with the DOE's September 2024 announcement of over USD 3 billion across 25 projects in 14 states representing the most recent large-scale capital allocation across mineral processing, cell manufacturing, and recycling infrastructure. Battery recycling and circular economy capabilities are emerging as a strategically important competitive dimension, driven by both regulatory pressure and the economic case for recovering critical minerals from end-of-life battery packs.

Key Takeaways

The US advanced battery market is positioned for exceptional growth through 2031, underpinned by federal policy commitment, EV adoption acceleration, and grid-scale

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energy storage expansion. Supply chain localisation, next-generation technology commercialisation, and battery recycling infrastructure development will be the defining strategic challenges and opportunities shaping the market's long-term trajectory.

Key Benefits of this Report

Insightful Analysis: Gain detailed market insights across regions, customer segments, policies, socio-economic factors, consumer preferences, and industry verticals.

Competitive Landscape: Understand strategic moves by key players to identify optimal market entry approaches.

Market Drivers and Future Trends: Assess major growth forces and emerging developments shaping the market.

Actionable Recommendations: Support strategic decisions to unlock new revenue streams.

Caters to a Wide Audience: Suitable for startups, research institutions, consultants, SMEs, and large enterprises.

What businesses use our reports for

Industry and market insights, opportunity assessment, product demand forecasting, market entry strategy, geographical expansion, capital investment decisions, regulatory analysis, new product development, and competitive intelligence.

Report Coverage

Historical data from 2021 to 2025 and forecast data from 2026 to 2031

Growth opportunities, challenges, supply chain outlook, regulatory framework, and trend analysis

Competitive positioning, strategies, and market share evaluation

Revenue growth and forecast assessment across segments and regions

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Company profiling including strategies, products, financials, and key developments

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11.3. Samsung SDI Co., Ltd.
11.4. Panasonic Holdings Corporation
11.5. BYD Company Limited
11.6. SK Innovation Co., Ltd.
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