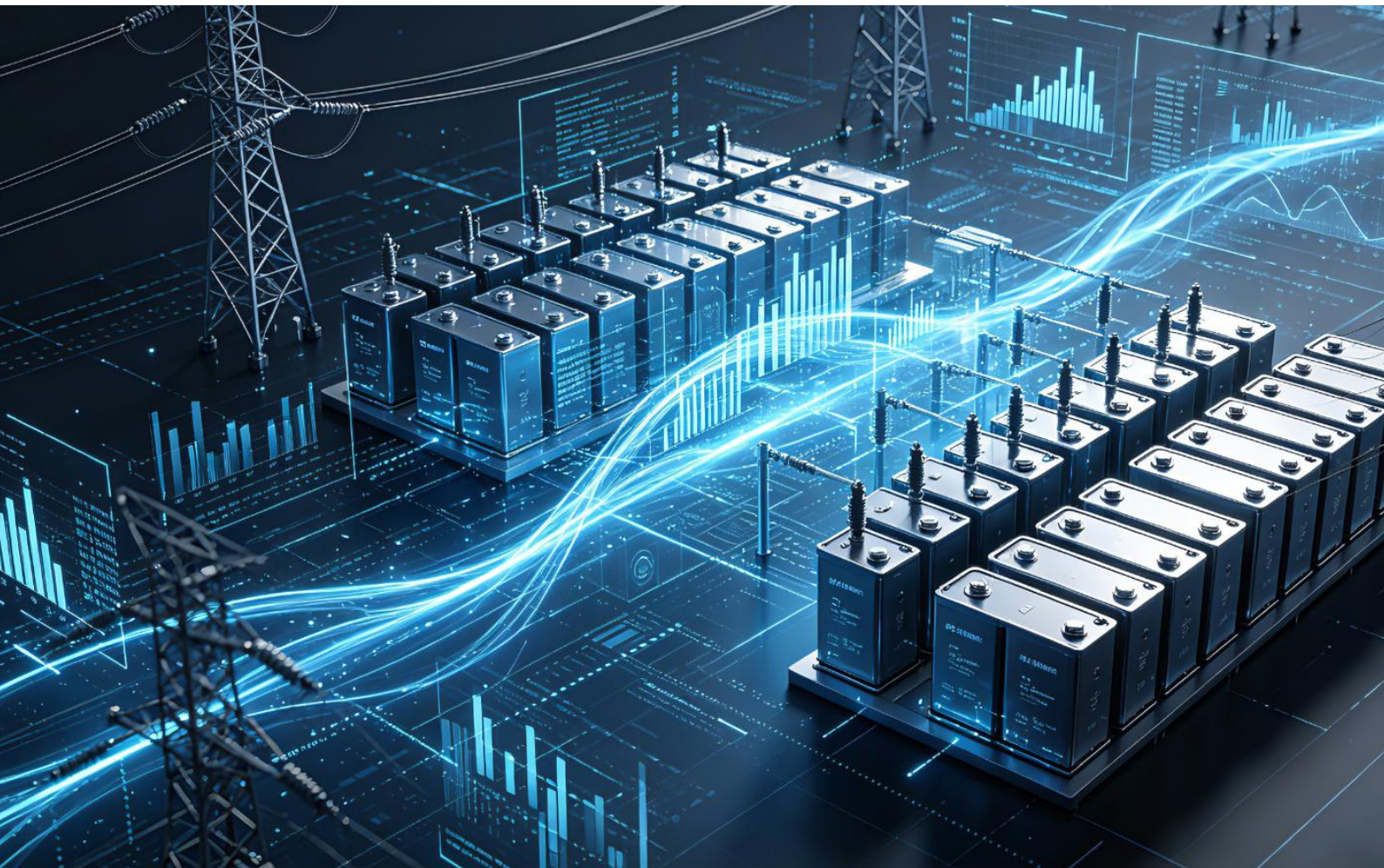


**CIC 灼识**



# **Global Multi-use ESS Solution Industry Report**

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## Executive Summary

Driven by policy support, cost efficiency and AI-enabled optimization, the global multi-use ESS solution industry has posted explosive growth, focusing on large-scale and C&I scenarios while China leads the market and the industry maintains strong expansion momentum.

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## 1. Market Overview

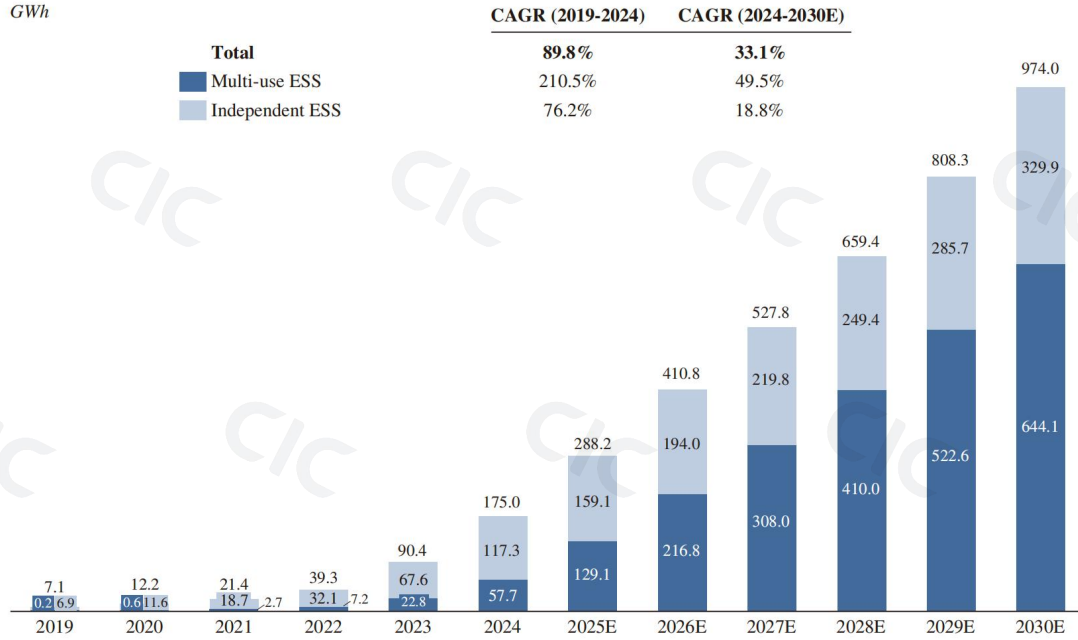
### 1.1 Market Definition

Multi-use ESS solution is an innovative advanced energy storage model developed against the problems of low profitability and utilization in self-built storage systems under policy support and electricity market liberalization, which is invested, used, developed and operated by multiple entities like renewable energy producers, grid operators, commercial and industrial users and third-party investors. It provides diversified energy storage services including peak shaving, frequency regulation and backup power, boosts ESS utilization and lowers individual users' investment costs, mainly serving large-scale and C&I ESS users and being distinct from independent ESS solutions that cover residential applications.

### 1.2 Market Size and Growth

From 2019 to 2024, the global newly installed multi-use ESS capacity grew from 0.2 GWh to 57.7 GWh, with a CAGR of 210.5%. It is expected to increase to 644.1 GWh in 2030, with a CAGR of 49.5%. The penetration rate of multi-use ESS was 2.8% in 2019 and later reached 33.0% in 2024. The penetration rate is projected to reach 66.1% in 2030.

## Global newly installed ESS capacity, 2019-2030E

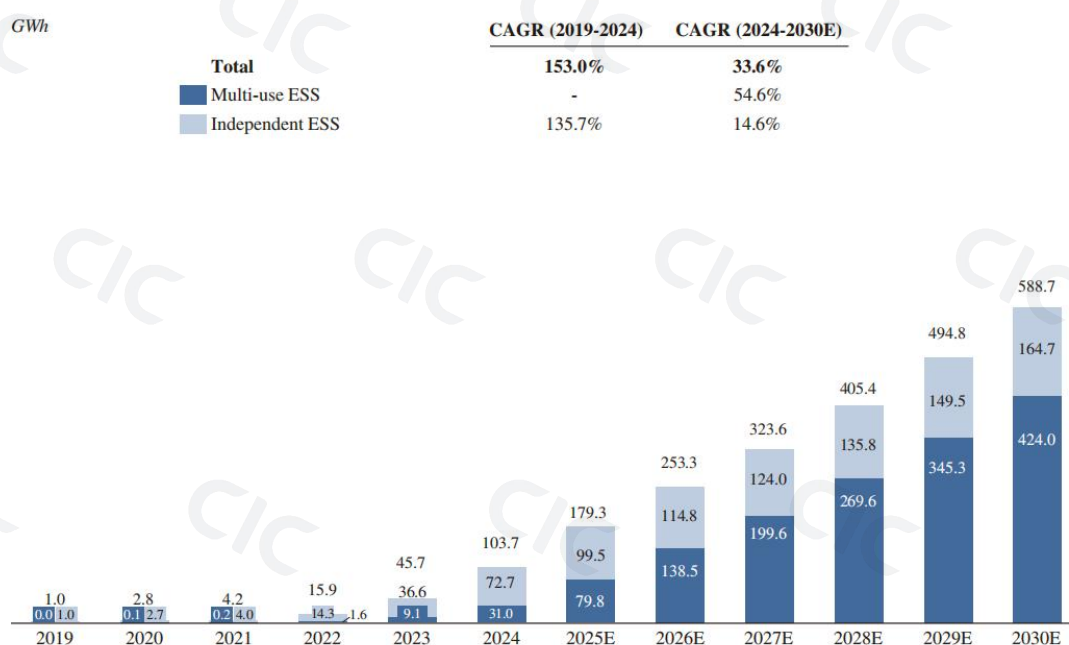


*Note: Non-electrochemical storage technologies, such as pumped hydro, flywheel, and compressed air energy storage are not included.*

*Source: BNEF, CIC Reports*

China's multi-use ESS sector experienced significant growth since 2022, and in 2024, newly installed multi-use ESS capacity reached 31.0 GWh. The market is expected to continue expanding rapidly, with a projected CAGR of 54.6% from 2024 to 2030, reaching 424.0 GWh by 2030.

China's newly installed ESS capacity, 2019-2030E



Note: Non-electrochemical storage technologies, such as pumped hydro, flywheel, and compressed air energy storage are not included.

Source: BNEF, CIC Reports

## 2. Key Growth Drivers and Trends

### 2.1 Key Drivers and Trends

#### **Policy supports and market liberalization**

Government incentives, regulatory frameworks and electricity market liberalization are creating a favorable environment for the growth of multi-use energy storage, making it more economically viable and attractive for various market players.

#### **Cost efficiency and resource optimization**

Multi-use energy storage maximizes the utilization of storage resources, reducing the need for large-scale individual storage investments and enabling better cost-efficiency for all parties involved.

#### **Increasing market penetration**

The penetration rate of multi-use ESS will expand across largescale and C&I sectors. This growth is driven by the need to improve resource utilization and economic efficiency in energy storage plants.

#### **Decentralized energy systems**

The push towards decentralized energy systems will continue, with

multi-use energy storage playing a key role in enabling local energy communities, supporting microgrids, and providing backup power in remote or underserved areas.

## 2.2 AI Application in the Multi-use ESS

### Intelligent Dispatch Optimization

AI dynamically adjusts charging and discharging strategies based on grid load, renewable generation forecasts, and user demand, maximizing asset utilization and reducing idle capacity.

### Price Forecasting and Market Optimization

AI analyzes historical pricing, supply-demand fluctuations, policy changes and other factors that might affect price to predict electricity prices and optimize energy trading strategies for higher returns.

### Multi-User Smart Matching

AI helps predict and manage the diverse energy demands of different users, including grid operators, renewable energy providers and industrial consumers. By optimizing resource allocation and dispatch strategies, AI improves utilization efficiency and maximizes overall system profitability.

## Renewable Generation Forecasting and Storage Coordination

AI predicts wind and solar power output using weather and historical generation data, optimizing battery operations to stabilize grid fluctuations and enhance energy integration.

### 2.3 Future Outlook

The global multi-use ESS solution industry will maintain strong long-term growth and become the mainstream development model for large-scale and commercial & industrial (C&I) energy storage systems. With deepening innovative business models and cross-value chain cooperation, multi-use ESS will maintain clear differentiation from independent ESS (mainly for residential scenarios) and serve as a key pillar for the high-quality development of the global energy storage industry.



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All statistical data presented is verifiable and grounded in information available as of the date of this report.



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Extracts are refined summaries of in-depth CIC industry research reports, highlighting supply and demand trends, key growth drivers, R&D trends and future outlook, etc. of various segmented fields, integrating multi-dimensional insights such as expert interviews, market surveys and industry data analysis.

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