+357 96 030922
info@marketpublishers.com

Long Duration Energy Storage Market Forecasts to 2032 – Global Analysis By Type (Pumped Hydro Storage (PHS), Compressed Air Energy Storage (CAES), Flow Batteries, Flywheel Energy Storage, Thermal Energy Storage (TES) and Other Types), Storage Duration, Application, End User and By Geography

https://marketpublishers.com/r/L3003B3EC981EN.html
Date: April 2025
Pages: 150
Price: US$ 4,150.00 (Single User License)
ID: L3003B3EC981EN

Abstracts

According to Stratistics MRC, the Global Long Duration Energy Storage Market is accounted for $5.5 billion in 2025 and is expected to reach $14.2 billion by 2032 growing at a CAGR of 14.6% during the forecast period. Long Duration Energy Storage (LDES) describes energy storage systems designed to store and discharge electricity over extended periods, ranging from several hours to days or even weeks. These systems help balance intermittent renewable energy sources like solar and wind by providing a reliable backup during periods of low generation. LDES technologies, such as advanced batteries, pumped hydro, or thermal storage, can support grid stability and ensure a steady power supply. They are critical for enhancing energy resilience, reducing reliance on fossil fuels, and enabling a sustainable, low-carbon energy future.

According to the Solar Energy Industries Association (SEIA), the U.S. installed 32.4 GW of solar energy in 2023, a 51% increase from 2022.

Market Dynamics:

Driver:

Integration of Renewable Energy

+357 96 030922
info@marketpublishers.com

The integration of renewable energy into the market plays a crucial role in stabilizing power grids and enhancing energy reliability. By storing excess energy generated from renewable sources like solar and wind, LDES systems provide a sustainable solution for intermittent generation. This integration helps balance supply and demand, ensuring consistent power availability during periods of low renewable output. As the demand for clean energy increases, LDES technologies enable a seamless transition to a low-carbon, renewable-powered future.

Restraint:

Competition from other energy storage solutions

Competition from other energy storage solutions, such as lithium-ion batteries or pumped hydro storage, can hinder the growth of the market. These alternative technologies, often with lower upfront costs and faster deployment, may overshadow LDES solutions despite their longer storage capabilities. As a result, LDES might face challenges in securing investment and market share, limiting its potential to address energy storage needs for extended periods and delaying the transition to more sustainable, reliable energy systems.

Opportunity:

Energy Independence and security

Energy independence and security in the market are vital for creating a stable and sustainable energy future. LDES technologies store renewable energy for extended periods, ensuring a consistent power supply even when generation is low. This reduces dependence on fossil fuels and enhances grid reliability. As demand for cleaner energy grows, LDES plays a critical role in securing energy supply, mitigating disruptions, and supporting the transition to a more resilient and self-sufficient energy system.

Threat:

Regulatory and policy uncertainty

Regulatory and policy uncertainty can significantly impede the growth of the market. Inconsistent or unclear regulations can create investment risks, discouraging companies from committing resources to LDES projects. Without clear policy support, such as

+357 96 030922
info@marketpublishers.com

incentives or subsidies, LDES technologies may struggle to compete with established solutions. This uncertainty can also slow down innovation and delay the widespread adoption of LDES, ultimately hindering the transition to a more resilient, sustainable energy infrastructure.

Covid-19 Impact

The COVID-19 pandemic had a disruptive impact on the market. Supply chain interruptions, labor shortages, and delays in manufacturing and installation slowed the development of LDES technologies. Additionally, reduced investment in renewable energy projects and shifting priorities during the pandemic hindered market growth. However, the pandemic also highlighted the need for resilient energy systems, sparking renewed interest in LDES solutions as a key element in ensuring long-term energy security and sustainability post-pandemic.

The flywheel energy storage segment is expected to be the largest during the forecast period

The flywheel energy storage segment is expected to account for the largest market share during the forecast period. By storing energy in the form of rotational kinetic energy, flywheels offer rapid response times and long cycle lives. They are well-suited for balancing intermittent renewable energy sources and providing grid stability over extended periods. With minimal maintenance and high efficiency, flywheel systems can contribute to energy security, reduce dependence on fossil fuels, and support the transition to a sustainable, resilient energy grid.

The residential segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the residential segment is predicted to witness the highest growth rate. LDES technologies, such as advanced batteries and flywheels, enable homeowners to store excess renewable energy for use during periods of low generation or power outages. These solutions offer extended storage durations, improving grid resilience and reducing reliance on fossil fuels. As demand for sustainable energy solutions grows, residential LDES will play a crucial role in creating self-sufficient, energy-efficient homes.

Region with largest share:

+357 96 030922
info@marketpublishers.com

During the forecast period, the Asia Pacific region is expected to hold the largest market share driven by increasing demand for renewable energy. Countries like China, Japan, and India are investing heavily in LDES technologies to support their clean energy transitions. With abundant renewable resources and the need for reliable energy storage, LDES solutions such as advanced batteries and pumped hydro are key to overcoming intermittent power generation, improving grid resilience, and achieving sustainability goals in the region.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR. The reduction in costs associated with energy storage technologies, including batteries, flow batteries, and thermal storage systems, has made LDES more financially viable. Additionally, Governments at both federal and state levels in North America are increasingly supporting energy storage through subsidies, grants, and tax incentives. For instance, the U.S. Inflation Reduction Act includes provisions for supporting energy storage technologies, which benefits LDES development.

Key players in the market

Some of the key players profiled in the Long Duration Energy Storage Market include Alsym Energy Inc., Ambri Incorporated., CMBlu Energy AG., Energy Vault, Inc., Eos Energy Enterprises, ESS Tech, Inc., Form Energy, GKN Hydrogen, Highview Power, Invinity Energy Systems, QuantumScape Battery, Inc., RheEnergise Limited., SFW., Sumitomo Electric Industries, Ltd., VFlowTech Pte Ltd. and VoltStorage.

Key Developments:

In February 2025, Sumitomo Electric Industries Ltd (TYO:5802) has launched a project to install a 4-MW/12.5-MWh redox flow battery system in Ama Town, in Japan’s Oki Islands.The project is a joint effort between Chugoku Electric Power Transmission & Distribution Co Inc, Ama Town, and como-gomo.company, supported by a subsidy from Japan’s ministry of the environment.

In January 2024, Sumitomo Electric Industries, Ltd. announced that its redox flow battery (hereinafter “RF battery”) has been selected as a grid-scale battery for a power system stabilization project by SHIN-IDEMITSU Co., Ltd. (Headquarters: Hakata-ku, Fukuoka; President and Group CEO: Yasunori Idemitsu; hereinafter “IDEX”). Construction for this project has now commenced in Kumamoto.

+357 96 030922
info@marketpublishers.com

Types Covered:

- Pumped Hydro Storage (PHS)
- Compressed Air Energy Storage (CAES)
- Flow Batteries
- Flywheel Energy Storage
- Thermal Energy Storage (TES)
- Other Types

Storage Duration Covered:

- Short Duration (up to 4 hours)
- Medium Duration (4-12 hours)
- Long Duration (12+ hours)

Applications Covered:

- Grid Energy Storage
- Renewable Energy Integration
- Peak Shaving
- Frequency Regulation
- Backup Power Supply
- Off-Grid Power Systems

+357 96 030922
info@marketpublishers.com

- Other Applications

End Users Covered:

- Utilities
- Commercial & Industrial (C&I)
- Residential
- Transportation
- Telecommunications and Data Centers
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain

+357 96 030922
info@marketpublishers.com

- Rest of Europe

Asia Pacific

- Japan
- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil
- Chile
- Rest of South America

Middle East & Africa

- Saudi Arabia
- UAE
- Qatar
- South Africa

+357 96 030922
info@marketpublishers.com

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

+357 96 030922
info@marketpublishers.com

Contents

+357 96 030922
info@marketpublishers.com

5 GLOBAL LONG DURATION ENERGY STORAGE MARKET, BY TYPE

5.1 Introduction
5.2 Pumped Hydro Storage (PHS)
5.3 Compressed Air Energy Storage (CAES)
5.4 Flow Batteries
5.5 Flywheel Energy Storage
5.6 Thermal Energy Storage (TES)
5.7 Other Types

6 GLOBAL LONG DURATION ENERGY STORAGE MARKET, BY STORAGE DURATION

6.1 Introduction
6.2 Short Duration (up to 4 hours)
6.3 Medium Duration (4-12 hours)
6.4 Long Duration (12+ hours)

7 GLOBAL LONG DURATION ENERGY STORAGE MARKET, BY APPLICATION

7.1 Introduction
7.2 Grid Energy Storage
7.3 Renewable Energy Integration
7.4 Peak Shaving
7.5 Frequency Regulation
7.6 Backup Power Supply
7.7 Off-Grid Power Systems
7.8 Other Applications

8 GLOBAL LONG DURATION ENERGY STORAGE MARKET, BY END USER

8.1 Introduction
8.2 Utilities
8.3 Commercial & Industrial (C&I)
8.4 Residential
8.5 Transportation
8.6 Telecommunications and Data Centers
8.7 Other End Users

+357 96 030922
info@marketpublishers.com

9 GLOBAL LONG DURATION ENERGY STORAGE MARKET, BY GEOGRAPHY

10 KEY DEVELOPMENTS

+357 96 030922
info@marketpublishers.com

11 COMPANY PROFILING

+357 96 030922
info@marketpublishers.com

List Of Tables

LIST OF TABLES

+357 96 030922
info@marketpublishers.com

Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

+357 96 030922
info@marketpublishers.com

I would like to order

Product name: Long Duration Energy Storage Market Forecasts to 2032 – Global Analysis By Type (Pumped Hydro Storage (PHS), Compressed Air Energy Storage (CAES), Flow Batteries, Flywheel Energy Storage, Thermal Energy Storage (TES) and Other Types), Storage Duration, Application, End User and By Geography

Product link: https://marketpublishers.com/r/L3003B3EC981EN.html

Price: US$ 4,150.00 (Single User License / Electronic Delivery)

If you want to order Corporate License or Hard Copy, please, contact our Customer Service:
info@marketpublishers.com

Payment

To pay by Credit Card (Visa, MasterCard, American Express, PayPal), please, click button on product page https://marketpublishers.com/r/L3003B3EC981EN.html