

## **Artificial Intelligence in Energy Market worth USD 58.66 billion in 2030**

According to a research report "[Artificial Intelligence in Energy Market](#) by Application (Energy Demand Forecasting, Grid Optimization & Management, Energy Storage Optimization), End Use (Generation, Transmission, Distribution, Consumption) - Global Forecast to 2030" published by MarketsandMarkets, the AI in energy market is expected to reach USD 8.91 billion by 2024 from USD 58.66 billion in 2030, at a Compound Annual Growth Rate (CAGR) of 36.9% from 2024 to 2030. AI can help decarbonize and reduce the energy demands of the construction of buildings themselves. Cement, as the primary building material used today, represents 7-8% of global carbon emissions, according to a report published by the United States Department of Energy. AI can be used to design and optimize low-carbon cement designs, enabling accelerated materials formulation and innovation. AI can also be used to identify efficiencies in building construction. The planning and sequencing steps for building construction are a manual process and can be optimized with AI to unlock process efficiency and reduce waste at construction sites.

**Based on application, the grid optimization & management segment is expected to hold the largest market size during the forecast period.**

AI in grid optimization and management enhances the strength, robustness, and efficiency of energy systems in distribution. It scans very large amounts of real-time data to detect inefficiencies, predict demand patterns, and engage in load balancing to prevent overload and the possibility of short-circuit outages. It adjusts grids dynamically, introduces renewable sources of energy in a very efficient manner, and minimizes energy losses in the transmission process. Moreover, AI-based automation enables faster responses to disruptions to ensure energy supply and efficiently maintain grid infrastructure. It is one of the applications paving the way toward the modernization of the energy network and a move toward smart grids.

**The distribution segment is expected to have the highest growth rate during the forecast period.**

AI in energy distribution improves efficiency and reliability in power delivery by optimizing grid management and reducing losses. Real-time monitoring and predictive analytics help AI detect faults, anticipate equipment failure, and smooth out the flow of electricity across the grid. It can allow utilities to balance supply and demand better, ensuring steady power delivery, even during peak usage periods. AI algorithms may also optimize voltage regulation so that power is delivered efficiently and within safe limits. Also, AI facilitates the integration of renewable energy sources into the distribution network; it balances intermittent generation sources such as solar and wind with grid needs. With improved forecasting and dynamic control from AI, waste energy is minimized, operations respond better, and it is possible to automate some features of grid maintenance, thus bringing downtime and the cost of operations down. In general, AI is revolutionizing the energy distribution system to be smarter and more dynamic.

**Asia Pacific is expected to hold the highest growth rate during the forecast period.**

State Power Rixin Technology, in collaboration with Huawei and China Huadian Corporation, launched a new energy meteorological power prediction solution in October 2024 in China that enhanced the prediction accuracy performance at a reduced operating cost for power plants. AI is also utilized to generate new energy efficiently and predict extreme weather impacts on

renewable sources. Suola wind farm in Hebei province uses AI for intelligent control and management of wind and solar stations to become more efficient with low-cost manpower, thus achieving efficiency in service operations. In September 2024, KIER finalized its research on Urban Electrification with AI. This decreases the use of fossil fuel through integrated renewable energy in the source of energy from the city, for example, building-integrated solar technology. AI Energy Management Algorithms in Model weather and human behavior optimize energy sharing and stabilize power grids during Low-probability High-impact Events. In June 2024, CSIRO collaborated with CoreLogic in launching RapidRate, the rate of AI-enabled estimation of the energy efficiency of existing homes. The CSIRO RapidRate AI tool assesses the energy efficiency of dwellings with minimal input. Utilizing a set of key factors based on floor area, orientation, and building materials, RapidRate applies the power of machine learning techniques to determine an indicative star rating consistent with the Nationwide House Energy Rating Scheme (NatHERS).

### **Market Players**

The major vendors covered in the AI in energy market are Schneider Electric SE (France), GE Vernova (US), ABB Ltd (Switzerland), Honeywell International (US), Siemens AG (Germany), AWS (US), IBM (US), Microsoft (US), Bidgely (US), and Oracle (US).

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