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Smart Grid and Grid Modernization Solutions Market Forecasts to 2034 – Global Analysis By Solution (Advanced Metering Infrastructure (AMI), Distribution Automation Systems, Energy Storage Integration, Grid Cybersecurity Solutions and Demand Response Platforms), Technology, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Smart Grid and Grid Modernization Solutions Market is accounted for $41.4 billion in 2026 and is expected to reach $102.6 billion by 2034 growing at a CAGR of 12.0% during the forecast period. Smart grid and grid modernization solutions use advanced digital infrastructure, automation, and real-time data exchange to upgrade conventional electricity networks for improved performance and sustainability. They provide bidirectional communication between energy providers and users, enabling efficient load balancing, faster fault identification, and more effective power distribution in both urban and rural areas. These systems facilitate renewable energy integration, minimize energy losses during transmission, enhance grid stability, and enable predictive maintenance through AI and IoT-based monitoring. Overall, they convert traditional power infrastructure into an intelligent, adaptive, and highly efficient energy ecosystem supporting future demands enabling cleaner and smarter energy systems globally.

According to the International Energy Agency (IEA), more than 80 million kilometers of grids must be added or refurbished worldwide by 2040, equal to the size of the entire existing global grid network.

Market Dynamics:

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Driver:

Increasing integration of renewable energy sources

A key factor driving the smart grid and grid modernization market is the rising adoption of renewable energy like solar and wind power. Since these energy sources are intermittent and spread across multiple locations, they are difficult to manage using conventional power grids. Smart grid technologies address these challenges by offering real-time data tracking, automation, and predictive analysis for better energy balancing. They allow efficient incorporation of distributed renewable systems while ensuring stable electricity supply. The global shift toward cleaner energy is encouraging utilities to upgrade grid systems to enhance sustainability and decrease reliance on traditional fossil fuel-based power generation.

Restraint:

High initial investment costs

A key barrier to the growth of the smart grid and grid modernization market is the substantial upfront cost associated with implementation. Modernizing traditional power systems requires large investments in smart devices, communication networks, automation technologies, and digital infrastructure. Many utility companies, particularly in developing economies, struggle with limited financial resources, restricting widespread adoption. The integration of renewable energy sources and advanced digital tools further adds to overall expenses. Moreover, the extended time needed to recover investments reduces attractiveness for stakeholders. As a result, these high initial costs significantly slow the pace of smart grid deployment across global energy markets.

Opportunity:

Advancements in AI, IoT, and big data analytics

Rapid progress in artificial intelligence, IoT, and big data analytics offers strong opportunities for the smart grid and grid modernization market. These technologies allow continuous monitoring of energy systems, predictive maintenance, and optimized electricity management. IoT sensors gather real-time grid information, while AI processes this data to improve energy distribution and quickly identify system issues.

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Big data tools enhance forecasting accuracy and operational performance. Together, these innovations improve grid reliability, reduce costs, and increase efficiency. As the energy sector undergoes digital transformation, demand for technology-enabled smart grid solutions is expected to grow significantly across global markets in the coming years.

Threat:

Cyber security attacks and system vulnerabilities

Cybersecurity risks represent a major threat to the smart grid and grid modernization market. As electricity networks become more digital and connected, they face increased exposure to hacking attempts, malware infections, and ransomware attacks. Such incidents can severely disrupt power distribution, damage essential infrastructure, and lead to large-scale outages affecting both businesses and households. The growing use of IoT devices and cloud platforms further increases system vulnerability. In addition, safeguarding consumer energy data adds another layer of complexity. Continuous investment in advanced security systems is required, raising costs and making cybersecurity one of the most significant challenges for the industry.

Covid-19 Impact:

The COVID-19 outbreak affected the smart grid and grid modernization market in both negative and positive ways. In the early stages, lockdowns disrupted supply chains, reduced workforce availability, and delayed infrastructure development projects across many regions. Lower electricity consumption from industries and commercial sectors also reduced utility revenues, slowing investment in modernization efforts. However, the crisis emphasized the need for reliable and resilient electricity systems to support hospitals, remote work, and digital services. This led to increased awareness of smart grid benefits. Consequently, governments and utilities shifted focus toward digital infrastructure and resilient energy systems during the recovery period, supporting long-term market growth.

The advanced metering infrastructure (AMI) segment is expected to be the largest during the forecast period

The advanced metering infrastructure (AMI) segment is expected to account for the largest market share during the forecast period because it plays a key role in enabling real-time energy tracking, two-way communication, and accurate electricity billing. It

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consists of smart meters, communication systems, and data platforms that help utilities monitor power consumption and optimize grid operations. AMI improves demand management, lowers operational expenses, and reduces energy losses across the network. Its widespread deployment by utilities, along with strong government support for smart meter installation, strengthens its leading position. It also enhances outage detection and customer interaction, making it the most widely adopted segment.

The software & analytics platforms segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the software & analytics platforms segment is predicted to witness the highest growth rate, driven by increasing digitalization in the energy industry. These platforms support advanced data analysis, real-time monitoring, predictive maintenance, and smarter decision-making in grid management. Utilities are progressively adopting software-based systems to handle complex electricity networks, incorporate renewable energy sources, and improve demand response efficiency. The rising use of artificial intelligence, machine learning, and big data technologies is further boosting this segment's expansion. Growing requirements for improved efficiency, automation, and reliable grid operations are fueling strong global demand for software-driven smart grid solutions.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share because of its well-developed energy infrastructure, strong policy support, and early implementation of smart grid technologies. The region has made significant investments in upgrading its outdated power systems using digital technologies, smart meters, and automation tools. The United States dominates the market, supported by efforts to integrate renewable energy, enhance grid stability, and improve energy efficiency. Utilities are widely adopting advanced metering systems and cyber security solutions. Strong technological innovation, high awareness levels, and continuous funding from both government and private sectors reinforce North America's leading position.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, driven by rapid urban growth, increasing power demand, and extensive infrastructure expansion. Major economies like China, India, Japan, and South Korea

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are investing significantly in upgrading their electricity networks to enhance efficiency and reliability. Strong government support for renewable energy adoption and smart city development is further boosting market expansion. The region is also experiencing widespread deployment of smart metering systems, digital communication technologies, and grid automation solutions. Rising electricity usage, industrial development, and favourable policies position Asia Pacific as the fastest-growing regional market.

Key players in the market

Some of the key players in Smart Grid and Grid Modernization Solutions Market include Itron, Inc., Cisco Systems, Inc., IBM Corporation, Landis+Gyr, Schneider Electric SE, Wipro Limited, General Electric Company, Honeywell International Inc., ABB Ltd, Oracle Corporation, Eaton Corporation plc, Fujitsu Limited, Open Systems International Inc., Siemens Energy, Hitachi Energy, Tantalus Systems Corp., eSmart Systems AS and S&C Electric Company.

Key Developments:

In November 2025, Schneider Electric announced a two-phase supply capacity agreement (SCA) totaling $1.9 billion in sales. The milestone deal includes prefabricated power modules and the first North American deployment of chillers. The announcement was unveiled at Schneider Electric'sInnovation Summit North America in Las Vegas, convening more than 2,500 business leaders and market innovators to accelerate practical solutions for a more resilient, affordable and intelligent energy future.

In November 2025, Siemens Energy has signed a contract to design and deliver the power conversion system for Oklo's Aurora powerhouse reactors. The contract will see Siemens Energy conduct detailed engineering and layout activities for a condensing SST-600 steam turbine, an SGen-100A industrial generator, and associated auxiliaries to support Oklo’s first advanced reactor, the Aurora powerhouse at Idaho National Laboratory.

In November 2025, Hitachi Energy India and Bharat Heavy Electricals Ltd (BHEL) have executed a novation agreement that transfers contractual rights and obligations for the Rajasthan HVDC project from Rajasthan Part I Power Transmission Ltd (RPPTL) to an Adani Group entity. The agreement, completed, formalises the replacement of RPPTL with AESL Projects Ltd (APL) as the contracting party.

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Solutions Covered:

- Advanced Metering Infrastructure (AMI)
- Distribution Automation Systems
- Energy Storage Integration
- Grid Cybersecurity Solutions
- Demand Response Platforms

Technologies Covered:

- Communication Networks
- Power Electronics
- Sensors & Monitoring Devices
- Software & Analytics Platforms

Applications Covered:

- Transmission Modernization
- Distribution Modernization
- Renewable Energy Integration
- EV Charging Infrastructure

End Users Covered:

- Utilities

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- Industrial
- Residential & Commercial

Regions Covered:

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - United Kingdom
  - Germany
  - France
  - Italy
  - Spain
  - Netherlands
  - Belgium
  - Sweden
  - Switzerland
  - Poland
  - Rest of Europe

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- Asia Pacific
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  - Japan
  - India
  - South Korea
  - Australia
  - Indonesia
  - Thailand
  - Malaysia
  - Singapore
  - Vietnam
  - Rest of Asia Pacific
- South America
  - Brazil
  - Argentina
  - Colombia
  - Chile
  - Peru
  - Rest of South America
- Rest of the World (RoW)

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Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of 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 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- 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

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

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  - 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

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Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) Regions are also represented in the same manner as above.

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