

# **Smart Grid Infrastructure Market Forecasts to 2034 – Global Analysis By Component (Smart Meters, Sensors, Control Systems, Communication Networks and Energy Storage Systems), Grid Type, Technology & Communication, Application, End User and By Geography**

<https://marketpublishers.com/r/SD89630AFA11EN.html>

Date: April 2026

Pages: 200

Price: US\$ 4,150.00 (Single User License)

ID: SD89630AFA11EN

## **Abstracts**

According to Statistics MRC, the Global Smart Grid Infrastructure Market is accounted for \$42.0 billion in 2026 and is expected to reach \$126.2 billion by 2034 growing at a CAGR of 14.7% during the forecast period. Smart grid infrastructure refers to the digitally enhanced electricity network ecosystem integrating advanced metering systems, distributed sensor networks, automated control platforms, two-way communication architectures, and grid-scale energy storage systems to create an intelligent, self-monitoring power delivery network capable of real-time load balancing, fault detection, renewable energy integration, and consumer demand response management. It encompasses smart meters, grid sensors, distribution automation controllers, supervisory control and data acquisition platforms, communication network gateways, virtual power plant management software, and microgrid control systems that collectively enable bidirectional power flow management across transmission, distribution, and customer-side grid endpoints.

### **Market Dynamics:**

#### **Driver:**

Renewable Energy Grid Integration Demand

Renewable energy grid integration demand is the primary driver compelling smart grid infrastructure investment as rapidly growing solar and wind generation capacity creates variable power supply characteristics that require advanced grid intelligence for reliable electricity system management. Intermittent renewable generation requires real-time demand response, distributed energy storage dispatch, and automated grid switching capabilities that conventional grid infrastructure cannot provide. Government clean energy mandates and utility decarbonization commitments are generating multi-billion-dollar grid modernization investment programs across North America, Europe, and Asia Pacific that are sustaining double-digit annual procurement growth for smart grid technology suppliers.

**Restraint:****Cybersecurity Vulnerability Concerns**

Cybersecurity vulnerability concerns are constraining smart grid infrastructure deployment rates as utility operators recognize that network-connected grid assets expand the attack surface for adversary cyber intrusion that could disrupt power supply to critical infrastructure customers including hospitals, water treatment facilities, and emergency services. High-profile grid cyberattacks on utility networks in multiple countries have elevated regulatory scrutiny and compliance cost requirements for smart grid communication security. Utilities are implementing prolonged security validation and penetration testing requirements before new smart grid system deployments that extend procurement and implementation timelines significantly beyond initial project planning estimates.

**Opportunity:****Electric Vehicle Grid Integration**

Electric vehicle charging load management represents a transformational smart grid infrastructure opportunity as rapidly growing EV fleet adoption is creating substantial new unmanaged electricity demand that threatens distribution grid overloading without intelligent load control and vehicle-to-grid integration capabilities. Smart grid infrastructure enabling managed EV charging schedules, bidirectional vehicle battery discharge for grid support, and real-time transformer loading optimization is generating strong utility procurement interest. Government EV infrastructure investment programs are incorporating smart grid connectivity requirements that are creating demand for advanced metering and demand response technologies beyond existing utility customer

base deployment levels.

### **Threat:**

#### Regulatory Approval and Utility Capex Constraints

Regulatory cost recovery approval timelines and utility capital expenditure budget constraints represent structural investment pacing limitations for smart grid infrastructure deployment, as utility companies must obtain rate case approvals from public utility commissions before recovering smart grid capital investment costs from customers through regulated tariff increases. Commission approval processes often extend 12–24 months and may disallow portions of claimed smart grid investments, creating financial risk that discourages utilities from committing to aggressive smart grid deployment programs. Competing demands on utility capital expenditure budgets from aging conventional infrastructure replacement, renewable energy integration, and storm hardening programs constrain incremental smart grid investment allocations.

### **Covid-19 Impact:**

COVID-19 highlighted smart grid infrastructure strategic value by demonstrating how remote monitoring, automated switching, and distributed energy management capabilities enabled utilities to maintain power delivery reliability with reduced field personnel deployment during lockdown periods. Pandemic-era economic recovery stimulus programs in the United States, European Union, and major Asian economies incorporated substantial grid modernization investment provisions that are generating accelerated smart grid procurement. Demonstrated operational resilience benefits of smart grid infrastructure during pandemic disruptions have strengthened utility board investment case justifications for accelerated deployment programs.

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

The energy storage systems segment is expected to account for the largest market share during the forecast period, due to rapidly growing deployment of grid-scale battery storage and distributed residential energy storage to support renewable energy integration, peak demand shaving, and grid stability services that are generating the largest single smart grid infrastructure capital investment category. Lithium-ion battery cost declines are enabling grid-scale storage economics at utility scale that generate compelling return on investment without subsidy support in high-electricity-cost markets.

Federal energy storage incentives in the U.S. Inflation Reduction Act and equivalent programs in Europe are substantially accelerating procurement timelines for grid-connected storage systems.

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

Over the forecast period, the transmission grid segment is predicted to witness the highest growth rate, driven by large-scale investment in high-voltage transmission capacity expansion required to connect remote renewable energy generation sites to load centers, combined with wide-area monitoring system deployment for real-time transmission system visibility and protection. Grid congestion from renewable energy expansion is compelling substantial transmission investment that incorporates advanced monitoring, switching, and dynamic line rating technologies classified as smart grid infrastructure. Offshore wind transmission connection investment in Europe and the United States is generating significant smart transmission system procurement across monitoring sensors, substation automation, and SCADA platforms.

#### **Region with largest share:**

During the forecast period, the North America region is expected to hold the largest market share, due to large-scale U.S. grid modernization investment stimulated by the Inflation Reduction Act grid infrastructure provisions, substantial utility smart meter rollout programs, and leading smart grid technology company ecosystem. U.S. Department of Energy Grid Deployment Office funding programs are generating significant federal co-investment in advanced grid technology deployment. Companies including Siemens AG, ABB Ltd., and Schneider Electric maintain strong North American utility customer relationships that support sustained smart grid solution procurement.

#### **Region with highest CAGR:**

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, due to massive electricity system expansion requirements in China, India, and Southeast Asia incorporating smart grid technology as a baseline infrastructure standard, government investment in national grid modernization programs, and rapidly growing renewable energy integration requirements that compel advanced grid intelligence investment. China's State Grid Corporation smart grid investment programs represent the world's largest single smart grid infrastructure deployment initiative, with

investment levels exceeding any other national grid modernization program.

### **Key players in the market**

Some of the key players in Smart Grid Infrastructure Market include Siemens AG, ABB Ltd., Schneider Electric, General Electric, Hitachi Energy, Itron Inc., Landis+Gyr, Cisco Systems, IBM Corporation, Honeywell, Eaton Corporation, Oracle Corporation, Mitsubishi Electric, Fujitsu, Wipro, Capgemini, Accenture, and Toshiba.

### **Key Developments:**

In February 2026, Itron Inc. launched its next-generation Gen 3 smart meter with integrated distributed energy resource management and edge computing capabilities for utility demand response programs.

In February 2026, Hitachi Energy completed commissioning of a grid-scale BESS integrated with its e-mesh power store smart grid management platform for a leading European renewable energy operator.

In January 2026, Landis+Gyr announced a multi-year contract expansion with a major Asia Pacific utility for advanced metering infrastructure deployment covering 5 million residential and commercial endpoints.

### **Components Covered:**

Smart Meters

Sensors

Control Systems

Communication Networks

Energy Storage Systems

### **Grid Types Covered:**

Transmission Grid

Distribution Grid

Microgrids

Virtual Power Plants

Off-grid Systems

Technology & Communications Covered:

AMI (Advanced Metering Infrastructure)

Distribution Automation

SCADA Systems

AI & Analytics

IoT Integration

Wired Communication

Wireless Communication

Hybrid Communication Networks

Applications Covered:

Residential

Commercial

Industrial

Utilities

## Renewable Integration

### End Users Covered:

T&D Operators

Government

Industries

Commercial Buildings

Residential Users

### Regions Covered:

North America

United States

Canada

Mexico

Europe

United Kingdom

Germany

France

Italy

Spain

Netherlands

Belgium

Sweden

Switzerland

Poland

Rest of Europe

#### Asia Pacific

China

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)

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

### **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



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