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Grid Intelligence & Smart Power Infrastructure Market Forecasts to 2032 – Global Analysis By Component (Hardware, Software and Services), Infrastructure Layer, Communication Technology, Intelligence Function, Deployment Environment, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Grid Intelligence & Smart Power Infrastructure Market is accounted for $29.91 billion in 2025 and is expected to reach $66.12 billion by 2032 growing at a CAGR of 12.0% during the forecast period. Smart Power Infrastructure powered by Grid Intelligence marks a transformative shift in modern electricity networks, emphasizing efficiency, dependability, and eco-friendliness. These infrastructures employ AI, IoT, and real-time analytics to actively manage and optimize energy distribution. Automated monitoring, intelligent sensors, and predictive maintenance allow rapid responses to demand changes, system faults, and potential outages. They also enable smooth integration of renewable energy, battery storage, and decentralized generation, ensuring consistent power delivery with minimal energy loss. By combining automation, analytics, and adaptive control, grid intelligence evolves conventional grids into dynamic, resilient, and sustainable networks, capable of meeting growing energy demands while supporting a cleaner and smarter power ecosystem.

According to the IEA, global investment in electricity grids reached a record $337 billion in 2023, driven by the urgent need for digitalization, grid expansion, and modernization. The agency emphasizes that smart grids—enabled by digital technologies like sensors, smart meters, and automation—are essential for integrating variable renewables, improving reliability, and enabling demand-side flexibility.

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Market Dynamics:

Driver:

Rising demand for reliable power

Rising electricity demand worldwide is driving the need for Grid Intelligence and Smart Power Infrastructure. Accelerated industrial growth, urban expansion, and digital transformation have heightened energy consumption, emphasizing the importance of efficient grid operations. Intelligent systems enable continuous monitoring, automated fault management, and rapid response, ensuring reliable power supply with minimal interruptions. Such reliability is critical for sectors like healthcare, manufacturing, and data centers, where downtime can lead to major disruptions. Adaptive grid solutions also help manage peak loads, prevent outages, and maintain consistent voltage levels. As businesses and consumers increasingly rely on uninterrupted electricity, smart grids are essential to meet these expectations while enhancing overall operational performance and efficiency.

Restraint:

High initial investment costs

The substantial upfront costs associated with Grid Intelligence and Smart Power Infrastructure act as a major market restraint. Implementing smart meters, intelligent sensors, automated systems, and AI-based platforms demands significant capital, which can be challenging for utilities, particularly in less-developed areas. Retrofitting existing grids to accommodate these advanced technologies increases financial pressures. Continuous expenses for maintenance, software upgrades, and component integration further amplify costs. Smaller utilities or budget-constrained regions may postpone or forego smart grid investments. These financial challenges limit rapid adoption and slow the transition from conventional electricity networks to intelligent, adaptive, and efficient energy systems worldwide, affecting market growth potential.

Opportunity:

Expansion of renewable energy integration

Rising deployment of renewable energy, including solar, wind, and hydroelectric power, creates substantial growth opportunities for Grid Intelligence and Smart Power

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Infrastructure. Smart grids facilitate smooth incorporation of these variable energy sources into existing networks, maintaining consistent and efficient electricity delivery. Predictive analytics, automated controls, and advanced energy storage help utilities effectively balance supply and demand. By supporting environmental sustainability and decreasing dependency on fossil fuels, intelligent grid solutions align with global clean energy initiatives. With nations increasingly adopting renewable energy policies, the requirement for smart infrastructure capable of managing decentralized renewable resources is expected to grow significantly, presenting lucrative prospects for technology providers worldwide.

Threat:

Rapid technological obsolescence

Rapid innovation in AI, IoT, automation, and energy management presents a potential threat to Grid Intelligence and Smart Power Infrastructure. Cutting-edge technologies can quickly make existing systems, devices, and software outdated, necessitating frequent upgrades and additional investments. Utilities and technology vendors may face difficulties keeping up with changing standards, integration protocols, and hardware requirements. This obsolescence increases operational expenses, creates compatibility issues, and shortens the effective lifespan of infrastructure. The need to adopt the latest technology can strain budgets, delay projects, or result in suboptimal implementations. Balancing technological advancement with cost-effectiveness remains a significant challenge for stakeholders in the smart grid market.

Covid-19 Impact:

The COVID-19 outbreak significantly affected the Grid Intelligence and Smart Power Infrastructure market by causing supply chain disruptions, postponing projects, and slowing investment in smart energy solutions globally. Restrictions and lockdown measures reduced the production of critical components such as smart meters, sensors, and automation equipment. Utilities also faced workforce shortages, delaying installations, upgrades, and maintenance work. However, the pandemic underscored the need for robust, adaptive, and intelligent power systems to sustain remote operations, digital services, and critical healthcare infrastructure. Consequently, recovery efforts have led to increased emphasis on grid modernization, digital integration, and enhanced investment in smart infrastructure to secure reliable, efficient, and resilient energy supply worldwide.

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The IoT & LPWAN segment is expected to be the largest during the forecast period

The IoT & LPWAN segment is expected to account for the largest market share during the forecast period. Low Power Wide Area Network (LPWAN) technologies, including LoRaWAN and NB-IoT, are favored for smart grid implementations because of their energy efficiency, extensive coverage, and capacity to handle numerous devices simultaneously. These features make LPWAN technologies ideal for tasks such as remote monitoring, asset management, and environmental data collection, which are essential for the effective functioning of smart grids. Additionally, the increasing proliferation of IoT devices contributes to the growing prominence of this segment within the market.

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

Over the forecast period, the residential communities segment is predicted to witness the highest growth rate. This surge is attributed to rising consumer interest in energy conservation, the widespread adoption of smart home devices, and the incorporation of renewable energy solutions such as rooftop solar panels and battery storage systems. Government incentives and policies promoting energy efficiency further bolster this trend. As homeowners increasingly aim to lower energy expenses and minimize environmental impact, the residential sector is experiencing rapid expansion, leading in market growth compared to other segments.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share. Key drivers of this leadership include extensive investments aimed at upgrading outdated grid systems, favorable regulatory policies, and a strong technological infrastructure. In the United States, significant funding has been allocated to bolster grid resilience and facilitate the integration of renewable energy sources. The rising adoption of electric vehicles and the increasing demand for dependable and efficient energy solutions further bolster the region's position in the smart grid sector. Collectively, these factors establish North America as a global leader in smart grid innovation and implementation.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest

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CAGR. This surge is attributed to factors such as rapid urbanization, industrial expansion, and proactive government policies focused on upgrading energy systems. Nations like China, India, and Japan are dedicating substantial resources to the deployment of smart grid technologies to boost energy efficiency, facilitate the integration of renewable energy, and enhance grid resilience. Furthermore, the escalating electricity demand and the imperative for sustainable energy solutions are accelerating the implementation of smart grid infrastructures throughout the region. Consequently, Asia-Pacific is emerging as a dominant force in the global smart grid sector.

Key players in the market

Some of the key players in Grid Intelligence & Smart Power Infrastructure Market include Itron, Hitachi, ABB, Schneider Electric, Honeywell, Siemens, General Electric, IBM, Cisco, Oracle, Enel X, LEM, Ericsson, Eaton and Landis+Gyr.

Key Developments:

In October 2025, Itron, Inc. has announced its definitive agreement to acquire Urbint, Inc., a Miami-based, privately held Software Company. This acquisition marks a significant step for Itron as it continues to expand its portfolio and leverage advanced technologies to help utilities navigate the evolving energy and infrastructure landscape. The acquisition is valued at $325 million and will be funded using Itron’s available cash. The transaction is expected to close in the fourth quarter of 2025.

In October 2025, ABB has been awarded a contract by SSAB to deliver the main electrical infrastructure for the steelmaker’s new fossil-free mini-mill in Lule?, Sweden. The order includes the design, supply, installation and commissioning of the main power distribution, ensuring reliable delivery of electricity across all areas of the new site. The project represents a major step in SSAB’s transformation to fossil-free steel production.

In July 2025, Hitachi Energy announces a new deal worth up to $700 million USD with E.ON to deliver transformers across the German energy grid to bolster energy security, resilience and affordability in the country. The deal is part of a new procurement initiative by E.ON for core grid expansion components. As part of the long-term agreement, Hitachi Energy will leverage its footprint, investments, and partnerships to reserve capacity and lead industry efforts to address the global shortage in transformers, a critical component of power grid infrastructure.

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Components Covered:

- Hardware
- Software
- Services

Infrastructure Layers Covered:

- Transmission Systems
- Distribution Networks
- Microgrid & Off-grid Systems
- Energy Storage Interfaces

Communication Technologies Covered:

- IoT & LPWAN
- 5G & Fiber Optics
- Satellite & Mesh Networks

Intelligence Functions Covered:

- Real-time Monitoring & Control
- Fault Detection & Isolation
- Load Forecasting & Optimization
- Demand Response Execution

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- Renewable Energy Integration

Deployment Environments Covered:

- Urban Smart Grid Zones
- Rural Electrification Projects
- Industrial Campuses & SEZs
- Disaster-resilient Energy Islands

End Users Covered:

- Utility Providers & Grid Operators
- Industrial & Commercial Enterprises
- Residential Communities
- Government & Municipal Authorities

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany

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- UK
- Italy
- France
- Spain
- 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

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UAE

Qatar

South Africa

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

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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 Middle East & Africa Regions are also represented in the same manner as above.

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