

Global Power System State Estimator Market Size Study & Forecast, by Type (Static State Estimator, Dynamic State Estimator), by Application (Transmission Network, Distribution Network, Microgrid), by Deployment Mode (On-Premise, Cloud-Based), by End User (Utilities, Transmission System Operators, Distribution System Operators), by Technology (Weighted Least Squares, Maximum Likelihood, Bayesian Estimation, Artificial Intelligence (AI)) and Regional Forecasts 2025-2035

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Abstracts

The Global Power System State Estimator Market is valued at approximately USD 2.83 billion in 2024 and is poised to register a moderate yet steady CAGR of 3.64% over the forecast period 2025-2035. A power system state estimator serves as the brain of modern grid control centers, enabling real-time visibility into the operational health of electric grids. As power infrastructure grows increasingly complex—with the influx of distributed energy resources, bidirectional energy flow, and renewable integration—utilities and grid operators are turning to state estimators to derive actionable insights from noisy, incomplete, or outdated data. These software-driven tools improve operational awareness, ensure optimal grid performance, and support the implementation of advanced distribution and transmission automation strategies. Furthermore, regulatory authorities and energy agencies worldwide are intensifying grid modernization mandates, thereby accelerating demand for next-generation estimators tailored for dynamic, AI-driven grid environments.

The surge in demand for renewable integration, decentralized power generation, and grid flexibility is fueling the adoption of state estimation technologies. Dynamic state estimators are gaining traction due to their ability to provide near real-time analytics, which is essential for managing unstable grids and frequency variation—challenges increasingly common in wind and solar-dominated networks. Cloud-based solutions are also disrupting the traditional on-premise model by offering scalable, cost-efficient deployment and seamless data aggregation from sensors, smart meters, and phasor measurement units (PMUs). Meanwhile, utility operators are deploying artificial intelligence and machine learning algorithms for predictive grid analytics, anomaly detection, and voltage stability forecasting. As electric vehicles and prosumer behavior reshape load patterns, grid stakeholders are under mounting pressure to adopt intelligent systems that not only estimate, but also anticipate system states.

From a geographical standpoint, North America currently holds a dominant position in the global market, underpinned by a mature grid infrastructure, proactive smart grid policies, and aggressive deployment of renewable energy. The United States, in particular, is leading innovation in real-time grid monitoring with high adoption of PMUs and synchrophasor technologies. Europe follows closely, with widespread adoption driven by the EU's clean energy directive and rising investments in interconnection projects and smart substations. Countries like Germany and the UK are focusing heavily on digitalizing transmission infrastructure to improve cross-border grid reliability. Meanwhile, the Asia Pacific region is projected to exhibit the fastest growth rate through 2035, propelled by large-scale electrification efforts, urban energy management reforms, and the integration of AI in grid planning. Countries such as China, India, and Japan are investing heavily in transmission upgrades and pilot projects involving dynamic estimation and AI-enabled power quality monitoring. Latin America and the Middle East & Africa are gradually adopting power system state estimators due to expanding electrification efforts, smart grid funding, and national grid modernization blueprints.

Major market player included in this report are:

ABB Ltd.

Siemens AG

General Electric Company

Schneider Electric SE

Oracle Corporation

Hitachi Energy Ltd.

Mitsubishi Electric Corporation

ETAP (Operation Technology, Inc.)

Open Systems International, Inc. (OSI)

Itron Inc.

Schneider Electric DMS NS

Nexant Inc.

Grid4C

Eaton Corporation

GE Grid Solutions

Global Power System State Estimator Market Report Scope:

Historical Data – 2023, 2024

Base Year for Estimation – 2024

Forecast period – 2025-2035

Report Coverage – Revenue forecast, Company Ranking, Competitive Landscape, Growth factors, and Trends

Regional Scope – North America; Europe; Asia Pacific; Latin America; Middle East & Africa

Customization Scope – Free report customization (equivalent up to 8 analysts' working hours) with purchase. Addition or alteration to country, regional & segment scope*

The objective of the study is to define market sizes of different segments & countries in recent years and to forecast the values for the coming years. The report is designed to incorporate both qualitative and quantitative aspects of the industry within the countries involved in the study. The report also provides detailed information about crucial aspects, such as driving factors and challenges, which will define the future growth of the market. Additionally, it incorporates potential opportunities in micro-markets for stakeholders to invest, along with a detailed analysis of the competitive landscape and product offerings of key players.

The detailed segments and sub-segments of the market are explained below:

By Type:

Static State Estimator

Dynamic State Estimator

By Application:

Transmission Network

Distribution Network

Microgrid

By Deployment Mode:

On-Premise

Cloud-Based

By End User:

Utilities

Transmission System Operators

Distribution System Operators

By Technology:

Weighted Least Squares

Maximum Likelihood

Bayesian Estimation

Artificial Intelligence (AI)

By Region:**North America**

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

Rest of Europe

Asia Pacific

China

India

Japan

Australia

South Korea

Rest of Asia Pacific

Latin America

Brazil

Mexico

Middle East & Africa

UAE

Saudi Arabia

South Africa

Rest of Middle East & Africa

Key Takeaways:

Market Estimates & Forecast for 10 years from 2025 to 2035.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market.

Contents

CHAPTER 1. GLOBAL POWER SYSTEM STATE ESTIMATOR MARKET REPORT SCOPE & METHODOLOGY

- 1.1. Research Objective
- 1.2. Research Methodology
 - 1.2.1. Forecast Model
 - 1.2.2. Desk Research
 - 1.2.3. Top Down and Bottom-Up Approach
- 1.3. Research Attributes
- 1.4. Scope of the Study
 - 1.4.1. Market Definition
 - 1.4.2. Market Segmentation
- 1.5. Research Assumption
 - 1.5.1. Inclusion & Exclusion
 - 1.5.2. Limitations
 - 1.5.3. Years Considered for the Study

CHAPTER 2. EXECUTIVE SUMMARY

- 2.1. CEO/CXO Standpoint
- 2.2. Strategic Insights
- 2.3. ESG Analysis
- 2.4. Key Findings

CHAPTER 3. GLOBAL POWER SYSTEM STATE ESTIMATOR MARKET FORCES ANALYSIS (2024–2035)

- 3.1. Market Forces Shaping The Global Power System State Estimator Market
- 3.2. Drivers
 - 3.2.1. Increasing demand for real-time monitoring of electric grid systems
 - 3.2.2. Growth in renewable energy integration and decentralized generation
- 3.3. Restraints
 - 3.3.1. High capital investment and complexity in system upgrades
 - 3.3.2. Cybersecurity threats and data privacy concerns
- 3.4. Opportunities
 - 3.4.1. Rising adoption of AI and machine learning in grid optimization
 - 3.4.2. Cloud-based deployment models enabling scalable and cost-effective

implementation

CHAPTER 4. GLOBAL POWER SYSTEM STATE ESTIMATOR INDUSTRY ANALYSIS

- 4.1. Porter's 5 Forces Model
 - 4.1.1. Bargaining Power of Buyer
 - 4.1.2. Bargaining Power of Supplier
 - 4.1.3. Threat of New Entrants
 - 4.1.4. Threat of Substitutes
 - 4.1.5. Competitive Rivalry
- 4.2. Porter's 5 Force Forecast Model (2024–2035)
- 4.3. PESTEL Analysis
 - 4.3.1. Political
 - 4.3.2. Economical
 - 4.3.3. Social
 - 4.3.4. Technological
 - 4.3.5. Environmental
 - 4.3.6. Legal
- 4.4. Top Investment Opportunities
- 4.5. Top Winning Strategies (2025)
- 4.6. Market Share Analysis (2024–2025)
- 4.7. Global Pricing Analysis and Trends 2025
- 4.8. Analyst Recommendation & Conclusion

CHAPTER 5. GLOBAL POWER SYSTEM STATE ESTIMATOR MARKET SIZE & FORECASTS BY TYPE 2025–2035

- 5.1. Market Overview
- 5.2. Global Power System State Estimator Market Performance - Potential Analysis (2025)
- 5.3. Static State Estimator
 - 5.3.1. Top Countries Breakdown Estimates & Forecasts, 2024–2035
 - 5.3.2. Market Size Analysis, by Region, 2025–2035
- 5.4. Dynamic State Estimator
 - 5.4.1. Top Countries Breakdown Estimates & Forecasts, 2024–2035
 - 5.4.2. Market Size Analysis, by Region, 2025–2035

CHAPTER 6. GLOBAL POWER SYSTEM STATE ESTIMATOR MARKET SIZE &

Global Power System State Estimator Market Size Study & Forecast, by Type (Static State Estimator, Dynamic Sta...

FORECASTS BY APPLICATION 2025–2035

- 6.1. Market Overview
- 6.2. Global Power System State Estimator Market Performance - Potential Analysis (2025)
- 6.3. Transmission Network
 - 6.3.1. Top Countries Breakdown Estimates & Forecasts, 2024–2035
 - 6.3.2. Market Size Analysis, by Region, 2025–2035
- 6.4. Distribution Network
 - 6.4.1. Top Countries Breakdown Estimates & Forecasts, 2024–2035
 - 6.4.2. Market Size Analysis, by Region, 2025–2035
- 6.5. Microgrid
 - 6.5.1. Top Countries Breakdown Estimates & Forecasts, 2024–2035
 - 6.5.2. Market Size Analysis, by Region, 2025–2035

CHAPTER 7. GLOBAL POWER SYSTEM STATE ESTIMATOR MARKET SIZE & FORECASTS BY DEPLOYMENT MODE 2025–2035

- 7.1. Market Overview
- 7.2. On-Premise
- 7.3. Cloud-Based

CHAPTER 8. GLOBAL POWER SYSTEM STATE ESTIMATOR MARKET SIZE & FORECASTS BY END USER 2025–2035

- 8.1. Market Overview
- 8.2. Utilities
- 8.3. Transmission System Operators
- 8.4. Distribution System Operators

CHAPTER 9. GLOBAL POWER SYSTEM STATE ESTIMATOR MARKET SIZE & FORECASTS BY TECHNOLOGY 2025–2035

- 9.1. Market Overview
- 9.2. Weighted Least Squares
- 9.3. Maximum Likelihood
- 9.4. Bayesian Estimation
- 9.5. Artificial Intelligence (AI)

CHAPTER 10. GLOBAL POWER SYSTEM STATE ESTIMATOR MARKET SIZE & FORECASTS BY REGION 2025–2035

- 10.1. Global Market Snapshot
- 10.2. Top Leading & Emerging Countries
- 10.3. North America Power System State Estimator Market
 - 10.3.1. U.S.
 - 10.3.1.1. Type Breakdown Size & Forecasts, 2025–2035
 - 10.3.1.2. Application Breakdown Size & Forecasts, 2025–2035
 - 10.3.2. Canada
 - 10.3.2.1. Type Breakdown Size & Forecasts, 2025–2035
 - 10.3.2.2. Application Breakdown Size & Forecasts, 2025–2035
- 10.4. Europe Power System State Estimator Market
 - 10.4.1. UK
 - 10.4.2. Germany
 - 10.4.3. France
 - 10.4.4. Spain
 - 10.4.5. Italy
 - 10.4.6. Rest of Europe
- 10.5. Asia Pacific Power System State Estimator Market
 - 10.5.1. China
 - 10.5.2. India
 - 10.5.3. Japan
 - 10.5.4. Australia
 - 10.5.5. South Korea
 - 10.5.6. Rest of Asia Pacific
- 10.6. Latin America Power System State Estimator Market
 - 10.6.1. Brazil
 - 10.6.2. Mexico
- 10.7. Middle East & Africa Power System State Estimator Market
 - 10.7.1. UAE
 - 10.7.2. Saudi Arabia
 - 10.7.3. South Africa
 - 10.7.4. Rest of Middle East & Africa

CHAPTER 11. COMPETITIVE INTELLIGENCE

- 11.1. Top Market Strategies
- 11.2. ABB Ltd.

- 11.2.1. Company Overview
- 11.2.2. Key Executives
- 11.2.3. Company Snapshot
- 11.2.4. Financial Performance (Subject to Data Availability)
- 11.2.5. Product/Services Port
- 11.2.6. Recent Development
- 11.2.7. Market Strategies
- 11.2.8. SWOT Analysis
- 11.3. Siemens AG
- 11.4. General Electric Company
- 11.5. Schneider Electric SE
- 11.6. Oracle Corporation
- 11.7. Hitachi Energy Ltd.
- 11.8. Mitsubishi Electric Corporation
- 11.9. ETAP (Operation Technology, Inc.)
- 11.10. Open Systems International, Inc. (OSI)
- 11.11. Itron Inc.
- 11.12. Schneider Electric DMS NS
- 11.13. Nexant Inc.
- 11.14. Grid4C
- 11.15. Eaton Corporation
- 11.16. GE Grid Solutions

List Of Tables

LIST OF TABLES

- Table 1. Global Power System State Estimator Market, Report Scope
- Table 2. Global Market Estimates & Forecasts by Region 2024–2035
- Table 3. Global Market Estimates & Forecasts by Type 2024–2035
- Table 4. Global Market Estimates & Forecasts by Application 2024–2035
- Table 5. Global Market Estimates & Forecasts by Deployment Mode 2024–2035
- Table 6. Global Market Estimates & Forecasts by End User 2024–2035
- Table 7. Global Market Estimates & Forecasts by Technology 2024–2035
- Table 8. U.S. Market Estimates & Forecasts, 2024–2035
- Table 9. Canada Market Estimates & Forecasts, 2024–2035
- Table 10. UK Market Estimates & Forecasts, 2024–2035
- Table 11. Germany Market Estimates & Forecasts, 2024–2035
- Table 12. France Market Estimates & Forecasts, 2024–2035
- Table 13. Spain Market Estimates & Forecasts, 2024–2035
- Table 14. Italy Market Estimates & Forecasts, 2024–2035
- Table 15. Rest of Europe Market Estimates & Forecasts, 2024–2035
- Table 16. China Market Estimates & Forecasts, 2024–2035
- Table 17. India Market Estimates & Forecasts, 2024–2035
- Table 18. Japan Market Estimates & Forecasts, 2024–2035
- Table 19. Australia Market Estimates & Forecasts, 2024–2035
- Table 20. South Korea Market Estimates & Forecasts, 2024–2035
- Table 21. Rest of Asia Pacific Market Estimates & Forecasts, 2024–2035
- Table 22. Brazil Market Estimates & Forecasts, 2024–2035
- Table 23. Mexico Market Estimates & Forecasts, 2024–2035
- Table 24. UAE Market Estimates & Forecasts, 2024–2035
- Table 25. Saudi Arabia Market Estimates & Forecasts, 2024–2035
- Table 26. South Africa Market Estimates & Forecasts, 2024–2035
- Table 27. Rest of Middle East & Africa Market Estimates & Forecasts, 2024–2035

List Of Figures

LIST OF FIGURES

- Figure 1. Global Power System State Estimator Market, Research Methodology
- Figure 2. Global Power System State Estimator Market, Market Estimation Techniques
- Figure 3. Global Market Size Estimates & Forecast Methods
- Figure 4. Global Market Key Trends 2025
- Figure 5. Market Growth Prospects 2024–2035
- Figure 6. Market Dynamics: Drivers, Restraints & Opportunities
- Figure 7. Global Market, Porter’s Five Forces Analysis
- Figure 8. Global Market, PESTEL Analysis
- Figure 9. Value Chain Analysis
- Figure 10. Market by Type, 2025 & 2035
- Figure 11. Market by Application, 2025 & 2035
- Figure 12. Market by Deployment Mode, 2025 & 2035
- Figure 13. Market by End User, 2025 & 2035
- Figure 14. Market by Technology, 2025 & 2035
- Figure 15. North America Market, 2025 & 2035
- Figure 16. Europe Market, 2025 & 2035
- Figure 17. Asia Pacific Market, 2025 & 2035
- Figure 18. Latin America Market, 2025 & 2035
- Figure 19. Middle East & Africa Market, 2025 & 2035
- Figure 20. Company Market Share Analysis, 2025

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