GE VERNOVA

2025 TECHNOLOGY INNOVATION LEADER

Enhancing Customer Impact Through Powerful Technology Integration

RECOGNIZED FOR BEST PRACTICES IN THE NORTH AMERICAN HIGH VOLTAGE ELECTRIC GRID INDUSTRY

FROST & SULLIVAN

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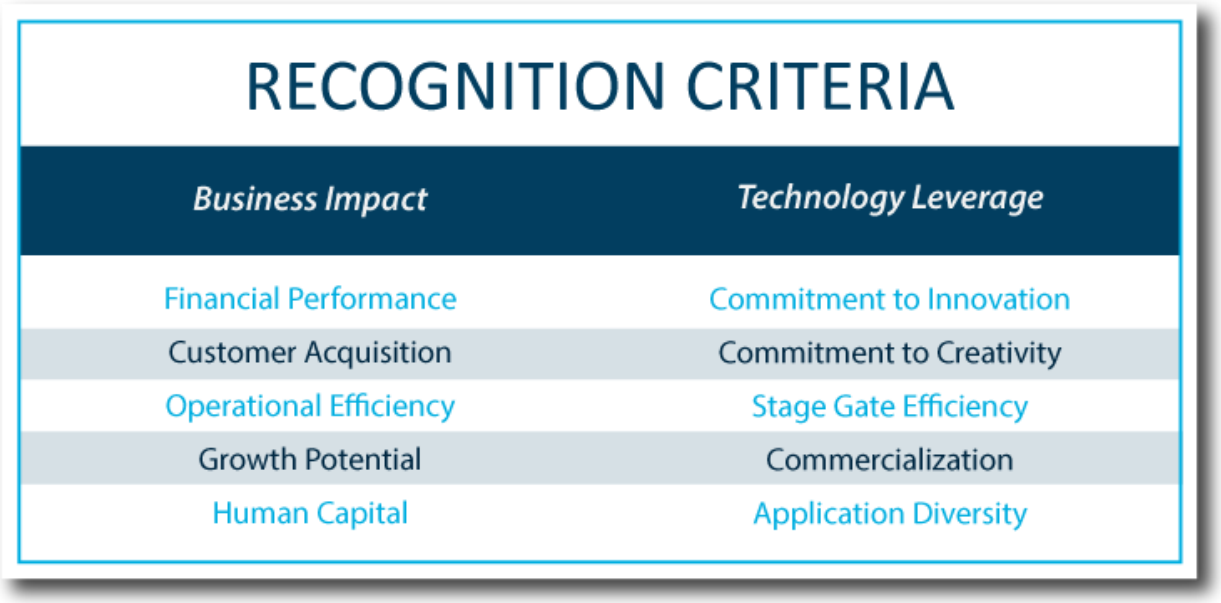
Best Practices Criteria for World-class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each recognition category before determining the final recognition recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. GE Vernova excels in many of the criteria in the high voltage electric grid space.



The Transformation of the Electric Grid Industry

The high voltage electric power sector is undergoing a profound and rapid transformation. The high voltage transmission network serves as the backbone of the US economy, delivering reliable power to industries, businesses, and homes, and enabling economic activity nationwide. Trends such as escalating load growth from data centers, the pressing need to address aging infrastructure,[1] and the critical imperative of bolstering resilience against weather-induced disruptions,[2] all present risks to the current transmission network.

The United States anticipates a surge in electricity demand in the coming two to three decades. Data center load is projected to reach 12% of total US electricity consumption by 2030, a significant increase from today's approximately 4%. Between 2024 and 2030, overall power demand is expected to increase by 300 TWh. Low-cost renewable energy is often considered as a viable source to fill this gap between generation and demand. These are usually located far from the demand center, risking and burdening the already at max capacity transmission network.[3]

[1] 70% of transmission lines and transformers are more than 25 years old, 60% of circuit breakers are more than 30 years old, according to Report Card for America's Infrastructure.
[2] Between 2000 and 2023, 80% of all major US power outages were due to weather, according to Weather-related Power Outages Rising | Climate Central
[3] Between 2024 and 2034, more than 28,000 miles of transmission development are expected. This will mostly be for connecting to new-generation sources, according to the Report Card for America's Infrastructure.

Furthermore, the growing presence of renewables introduces the critical issue of inertia cost, as intermittent sources, such as wind and solar, typically lack the inherent mechanical inertia of traditional power plants. This issue is being further compounded by the underutilization of existing transmission infrastructure, hindering the efficient delivery of power and the integration of new, often remote, renewable generation sources.[4]

The Department of Energy (DOE) estimates that the United States will need to expand its transmission system by 60% by 2030 and triple this capacity by 2050. While expansion of the transmission network is necessary, it is also economically cost prohibitive. Infrastructure CAPEX for transmission expansions is usually figured into rate cases. Hence, the cost of these investments will most likely increase the cost of electricity if not addressed through alternative approaches.

Ergo, making a steadfast commitment to innovation, particularly to digital and AI-enabled solutions, is not merely beneficial, but existentially critical. In this evolving landscape, GE Vernova plays an instrumental role with GridOS® as the unifying digital platform for utilities to manage their operations. At its core, GridOS AEMS delivers mission critical modular network and generation applications and advanced transmission simulation capabilities to optimize reliability and accelerate decision making. Additive solutions such as GridOS DDLR, GridOS WAMS and Inertia Management address discrete capacity, stability, data center and renewable integration challenges. Together these enable utilities to unlock hidden capacity, enhance resilience and defer heavy CAPEX investments in grid buildouts.

Commitment to Innovation

> *"In this evolving landscape, GE Vernova plays an instrumental role with platforms such as GridOS® and specialized applications, including Advanced Energy Management Systems (AEMS)."*
>
> ***– Farah Saeed, Industry Director Energy and Environment Advisory***

GE Vernova's commitment to innovation is evident. In 2025, the company is increasing its annual R&D investment by 20% and is doubling its internal investment in AI programs; it is committed to investing ~$5B cumulatively in R&D from 2025 through 2028 and expects increased future R&D investments in its Electrification businesses. The company has R&D and engineering sites across various regions, with a particularly strong presence in Europe and the United States. The company expects to create 1,800new US jobs and invest more than $700 million in U.S. factories, including the creation of new engineering and technical roles to support both manufacturing and innovation.

To tap into rising talent and cutting-edge thought leadership, GE Vernova's R&D collaborates with over 420 technology collaborators, universities, and government entities. It also appears to have a proactive merger and acquisition strategy. GE Vernova announced its acquisition of Alteia SAS to accelerate its GridOS® Visual Intelligence. Currently, the application is primarily used for AI workflows, providing real-world visualization into power networks to assess asset damage, support asset inspection programs, wildfire mitigation and vegetation management. With the acquisition finalized in August 2025, GE Vernova expects to expand efficient integration across the GridOS application portfolio to deliver visual context

[4] Queued Up… But in Need of Transmission | Department of Energy

and insight to operations data and workflows including Advanced Distribution Management Systems (ADMS) and Advanced Energy Management Systems (AEMS).

More recently, GE Vernova announced they will acquire the remaining fifty percent stake of Prolec GE, a leading grid equipment supplier for $5.3B. This enhances GE Vernova's ability to serve customers – particularly North America – by expanding its manufacturing capacity and reinforcing its position as one of the largest transformer manufacturers. The deal strengthens GE Vernova's integrated high voltage grid offering positioning the company to meet the growing demand for reliable and critical grid modernization.

For Transmission operations, GE Vernova is actively evolving its AEMS to align with its next-generation GridOS platform, built on a composable, containerized architecture enabling incremental adoption of new capabilities to avoid disruptive, multi-year upgrade cycles. This modular AEMS solution facilitates a continuous, efficient exchange between planning studies and live operations to apply generated insights directly to real-time control room decision-making.

By investing in grid orchestration software which GE Vernova has said it sees as a critical part of its future, the company is enabling utilities to not only optimize existing (often underutilized) assets, but also help to ensure a more resilient, efficient, and intelligent grid.

Commercialization Success

GE Vernova has a highly successful strategy for commercialization. The company has implemented a comprehensive customer engagement approach and established deep customer trust through co-creating, piloting, and solution testing with utility customers. GE Vernova and customers adopting GridOS AEMS and integrated applications engage through quarterly technical product showcases and UI/UX workshops. Additionally, focused workgroups solutioning on specific needs and challenges ensures product innovation relates directly to customers' operational priorities with cross country collaboration to surface best practice and experiences. As a market veteran and an American icon, drawing on a legacy of more than 130 years of electrifying the nation and the world, GE Vernova has consistently stayed ahead of the curve in terms of exceeding customer expectations and building customer trust. Today 95% of power transmission utilities in the world are equipped with components from GE Vernova's Electrification segment. These customer relationships have been established over decades of experience in engineering and building mission-critical, high-voltage grid infrastructure and their associated data and systems. Its breadth of successful commercial solutions extends to power transformers, switchgear, circuit breakers, instrument transformers, bushings, surge arresters, and is complemented by highly current critical digital solutions. GE Vernova's dedication to outcome-based engineering is exemplified by being one of the top companies that have successfully executed high voltage direct current (HVDC) transmission systems, ensuring long-distance transmission and integrating large-scale renewables. As renewable penetration accelerates, tight customer collaboration has resulted in the deployment of GE Vernova's Volt-DAR Dispatch (VDS) systems, which optimizes and automates voltage controls to maintain safe operating grid conditions with high levels of solar generation. Similarly, its Inertia Management solution is helping operators reduce curtailment costs in high-renewable systems by enhancing stability and enabling more efficient utilization of clean energy resources.

Given the drastic transformation of the grid infrastructure, GE Vernova is taking a more agile and adaptable approach to delivering and developing grid orchestration software. The GridOS® platform is designed to help utilities move beyond grid management to more intelligent and adaptive grid orchestration. This enables proactive decision making, faster responses and more resilient operations and is powered by the following technological components:

- Federated grid data fabric with GridOS Data Fabric + GridOS Connect which unifies data and grid models: the platform combines energy data from disparate sources (SCADA, PMUs, weather, planning sources and others) into a consistent, standards based unified view, facilitating a grid twin for better visibility and analytics
- Enables intelligent operations: powering a suite of intelligent grid applications that leverage AI and machine learning for proactive and automated grid planning and operations.
- Supports hybrid cloud architecture: Allowing for flexible deployment on premises, in the cloud, or at the edge.
- Zero Trust grid security model, purpose-built for the grid to protect resources from inside and outside threats.

GE Vernova is an early adopter of leveraging AI and grid analytics for grid optimization, stability, and resilience. Building on its GridOS® software platform, GE Vernova's AEMS is a solution for transmission operators, combining modular core transmission and generation capabilities with integration with adjacent applications such as wide area monitoring system (WAMS), and analytics applications including GridOS DDLR. These applications enable utilities to avoid up to 40% in inertia management costs for large gridswith high renewable penetration[5] and increase line capacity by 33%. These applications deliver grid insights seamlessly into GridOS AEMS or to 3rd party EMS tools.

Application Diversity

GridOS® supports a variety of applications for cross-grid planning, grid operating, and energy transactions. Customers can also decide whether to deploy on-premises, in the cloud, or at the edge—a major bonus for customers looking to optimize and leverage their existing IT/comms network. The company employs a Zero Trust cybersecurity approach to protect its critical infrastructure, operational technology environment, and digital assets. GE Vernova is among the earliest adopters to operationalize Zero Trust principles for control-room grade deployments. Zero Trust means that security is built into the software, rather than relying on external measures surrounding it. This ensures any two components that communicate or interact via GridOS®, such as UI with analytics or a database, must be authorized, authenticated, and encrypted. Its Zero Trust cybersecurity approach is based on industry standards such as the NIST Cybersecurity Framework and IEC 62443.

Commitment to Creativity

Creative thinking is essential in a highly evolving industry. GE Vernova anticipates emerging transmission needs while securing and safeguarding reliability required for daily operations. The company draws on their established global customer base, its high-voltage engineering legacy alongside outsized investment in digital grid solutions. Reimagined grid orchestration is achieved through emphasis on operator centric

[5] Data based on a single demonstration project - NG ESO in UK. Results may vary based on utility's generation mix

and modular solution design ensuring GridOS® solutions incrementally complements, without disrupting, existing systems. The company's approach proves that even the most established industries require bold, transformative innovations to navigate evolving challenges and secure future prosperity.

Operational Efficiency

Operational efficiency is at the center of GE Vernova's commitment to the high voltage utility sector, both internally and externally. Internally, the company continues to leverage GE legacy era LEAN principles and is focused on continuous improvement to boost productivity and plant safety. The company holds Kaizens throughout the year alongside Kaizen Week, a week-long workshop series to brainstorm improvements to industrial processes. Through this deliberate activity, the GE Vernova team has been able to speed up production of its largest circuit breaker by shaving off two-thirds of the time it usually takes to build the circuit breaker. Customer operational efficiency has also been demonstrably achieved in critical large-scale utility operations with GE Vernova's Real-Time System Restoration Manager (RTSRM). RTSRM has improved the speed and accuracy of outage planning and execution with the AEMS platform able to make an auto-restoration plan in less than 10 seconds for an area covering 3.5 million people[6].

Financial Performance

GE Vernova's Electrification segment remains its fastest growing with robust demand, significant revenue growth and margin expansion. Its Electrification equipment backlog has more than tripled since the end of 2022, led by the Grid Solutions business, and believes its addressable market today for Electrification products is between $125 billion and $150 billion. Year-to-date, GE Vernova has secured $600 million of orders direct with the hyperscalers for Electrification equipment. The company sees growth opportunities beyond hyperscaler demand in countries like Saudi Arabia, Algeria, and Korea.

Conclusion

GE Vernova embodies the spirit of an American icon, drawing on a more than 130-year legacy of electrifying the nation and the world. Its deep roots trace back to the foundational contributions in power generation and transmission. Today, this iconic legacy powerfully extends into the future through its electrification offerings for the high voltage market, notably the cutting-edge GridOS® platform and AEMS applications. Its advanced software is instrumental in addressing the critical challenges of surging data center loads, complex renewable integration, and increasing weather disruptions. Cutting-edge solutions, such as GridOS® are vital for optimizing existing infrastructure, ensuring grid resilience, and managing crucial elements, including inertia. GE Vernova not only supplies solutions, but it is also fundamentally transforming and safeguarding the very backbone of the US economy.

With its strong overall performance, GE Vernova earns Frost & Sullivan's 2025 North American Technology Innovation Leadership Recognition in the high-voltage electric grid industry.

[6] Data based on a single demonstration project – PG&E, USA

What You Need to Know about the Technology Innovation Leadership Recognition

Frost & Sullivan's Technology Innovation Leadership Recognition is its top honor and recognizes the market participant that exemplifies visionary innovation, market-leading performance, and unmatched customer care.

Best Practices Recognition Analysis

For the Technology Innovation Leadership Recognition, Frost & Sullivan analysts independently evaluated the criteria listed below.

Technology Leverage

Commitment to Innovation: Continuous emerging technology adoption and creation enables new product development and enhances product performance

Commitment to Creativity: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

Stage Gate Efficiency: Technology adoption enhances the stage gate process for launching new products and solutions

Commercialization: Company displays a proven track record of taking new technologies to market with a high success rate

Application Diversity: Company develops and/or integrates technology that serves multiple applications and multiple environments

Business Impact

Financial Performance: Strong overall business performance is achieved in terms of revenue, revenue growth, operating margin, and other key financial metrics

Customer Acquisition: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

Operational Efficiency: Company staff perform assigned tasks productively, quickly, and to a high-quality standard

Growth Potential: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

Human Capital: Leveraging innovative technology characterizes the company culture, which enhances employee morale and retention

Best Practices Recognition Analytics Methodology

Inspire the World to Support True Leaders

This long-term process spans 12 months, beginning with the prioritization of the sector. It involves a rigorous approach that includes comprehensive scanning and analytics to identify key best practice trends. A dedicated team of analysts, advisors, coaches, and experts collaborates closely, ensuring thorough review and input. The goal is to maximize the company's long-term value by leveraging unique perspectives to support each Best Practice Recognition and identify meaningful transformation and impact.

		VALUE IMPACT	
STEP		WHAT	WHY
1	**Opportunity Universe**	Identify Sectors with the Greatest Impact on the Global Economy	Value to Economic Development
2	**Transformational Model**	Analyze Strategic Imperatives That Drive Transformation	Understand and Create a Winning Strategy
3	**Ecosystem**	Map Critical Value Chains	Comprehensive Community that Shapes the Sector
4	**Growth Generator**	Data Foundation That Provides Decision Support System	Spark Opportunities and Accelerate Decision-making
5	**Growth Opportunities**	Identify Opportunities Generated by Companies	Drive the Transformation of the Industry
6	**Frost Radar**	Benchmark Companies on Future Growth Potential	Identify Most Powerful Companies to Action
7	**Best Practices**	Identify Companies Achieving Best Practices in All Critical Perspectives	Inspire the World
8	**Companies to Action**	Tell Your Story to the World (BICEP*)	Ecosystem Community Supporting Future Success

*Board of Directors, Investors, Customers, Employees, Partners

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The Growth Pipeline Generator™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

Learn more.

Key Impacts:

- **Growth Pipeline:** *Continuous Flow of Growth Opportunities*
- **Growth Strategies:** *Proven Best Practices*
- **Innovation Culture:** *Optimized Customer Experience*
- **ROI & Margin:** *Implementation Excellence*
- **Transformational Growth:** *Industry Leadership*

The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- Megatrend (MT)
- Business Model (BM)
- Technology (TE)
- Industries (IN)
- Customer (CU)
- Geographies (GE)