# Investment in digitalizing global energy grids set to reach $150 billion by 2030



Investments in the digitalization of global energy grids are expected to rise significantly, reaching an estimated US$150 billion by the year 2030. This increase is anticipated as a response to the growing demands for energy capacity and flexibility amid the urgent need for a modernised electric infrastructure. According to a report by ABI Research, the total investment in grid digital transformation is projected to escalate from US$81 billion in 2024 to US$152 billion by 2030.

Dominique Bonte, Vice President of End Markets and Verticals at ABI Research, elaborated on the broad range of benefits associated with the digital transformation of energy grids. He stated, “The benefits of the digital transformation of energy grids are huge and wide-ranging. Most importantly, it enables the real-time management, orchestration, and continuous reconfiguration of increasingly complex and distributed energy networks and assets while unlocking much-needed additional generation and transmission capacity." The transformation is also expected to result in reduced costs related to grid expansion and operational management, enhanced grid resilience that means reduced downtime and quicker fault recovery, along with improved energy quality and efficiency.

Several key technologies are at the forefront of this transition. Digital and virtual energy substations are vital in managing the increasing interaction between static energy supply and variable energy demand. These software-defined low and medium-voltage substations allow for over-the-air functionality upgrades and real-time management of bidirectional energy flow, ensuring grid stability. Major companies like Schneider Electric and ABB are leading providers of virtual substation solutions.

Additionally, the development of digital twins by companies such as Siemens is enabling the design, modelling, and simulation of energy infrastructure, further supporting grid modernisation. The integration of artificial intelligence (AI) and generative AI is becoming increasingly prominent in various applications, serving roles in preventive maintenance, demand-response orchestration, and customer service enhancement. These AI technologies are often referred to as a “Swiss army knife” for their versatility.

Energy management software systems developed by firms like GE Vernova and Hitachi Energy are also contributing significantly to grid digitalization. These solutions include Advanced Distribution Management Systems (ADMS), Distributed Energy Resources Management Systems (DERMS), and Energy Management Systems (EMS).

Connectivity solutions, such as smart metering, are evolving beyond traditional monitoring of energy usage, providing essential intelligence for real-time regulation and stabilization of the grid. Honeywell has emerged as a key player in this space.

Despite the anticipated investment surge, the path to complete grid digitalization is not without challenges. Factors such as lack of financing, stringent regulations, conservative corporate cultures, and cybersecurity threats are considerable barriers to progress. Bonte highlighted the need for energy utilities and tech providers to adopt agile strategies and innovative funding approaches, stating, “There is no room for failure. Others will be ready to invest in and take control of energy assets if needed.”

These insights were detailed in ABI Research’s report titled "Digitalization Challenges in Smart Energy Grids," part of their broader Smart Energy for Enterprises and Industries research service, which provides comprehensive analysis and data on this evolving sector.

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.prnewswire.com/apac/news-releases/global-grid-digitalization-investment-to-hit-us150-billion-by-2030-amid-growing-demand-for-energy-capacity-and-flexibility-302346536.html> - Corroborates the estimated investment of US$150 billion in grid digitalization by 2030 and the benefits outlined by Dominique Bonte of ABI Research.
2. <https://www.prnewswire.com/apac/news-releases/global-grid-digitalization-investment-to-hit-us150-billion-by-2030-amid-growing-demand-for-energy-capacity-and-flexibility-302346536.html> - Details the role of digital and virtual energy substations, digital twins, AI, and energy management software in grid digitalization.
3. <https://www.abiresearch.com/press/global-grid-digitalization-investment-to-hit-us150-billion-by-2030-amid-growing-demand-for-energy-capacity-and-flexibility/> - Provides additional context on the projected investment growth from US$81 billion in 2024 to US$152 billion by 2030 and the challenges faced in grid digitalization.
4. <https://www.prnewswire.com/apac/news-releases/global-grid-digitalization-investment-to-hit-us150-billion-by-2030-amid-growing-demand-for-energy-capacity-and-flexibility-302346536.html> - Highlights the importance of connectivity solutions like smart metering and the role of companies such as Honeywell in this area.
5. <https://www.prnewswire.com/apac/news-releases/global-grid-digitalization-investment-to-hit-us150-billion-by-2030-amid-growing-demand-for-energy-capacity-and-flexibility-302346536.html> - Discusses the barriers to grid digitalization, including lack of financing, stringent regulations, and cybersecurity concerns.
6. <https://www.prnewswire.com/apac/news-releases/global-grid-digitalization-investment-to-hit-us150-billion-by-2030-amid-growing-demand-for-energy-capacity-and-flexibility-302346536.html> - Mentions the need for agile strategies and innovative funding approaches as emphasized by Dominique Bonte.
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