Smart Energy Solutions Drive Building to Grid Market Toward $147.8 Billion

AMI and smart sensors boost building-to-grid tech growth, but high costs hinder it; rising prosumers and VPPs offer new market opportunities.

Allied Analytics

WILMINGTON, DE, UNITED STATES, June 26, 2025 /EINPresswire.com/ -- According to a new report published by Allied Market Research, titled, “Building-to-Grid Technology Market," The building-to-grid technology market size was valued at $54.9 billion in 2024, and is estimated to reach $147.8 billion by 2034, growing at a CAGR of 10.5% from 2025 to 2034.

Building-to-grid (B2G) technology represents a groundbreaking shift in energy management by enabling smart buildings to interact dynamically with the electrical grid. This innovation facilitates a two-way exchange of both energy and data, allowing residential, commercial, and industrial buildings not only to draw power from the grid but also to supply excess energy back or adjust consumption based on real-time grid demands. By integrating intelligent systems, B2G empowers buildings to play an active role in grid stability and efficiency.

> “Building-to-grid technology transforms buildings into active energy players, enabling two-way energy flow and smarter grid interactions for a sustainable future.”
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> *Allied Market Research*

A critical component of B2G systems is the deployment of smart meters and sensors that provide real-time monitoring across building operations. These devices capture essential metrics such as energy usage, generation levels, voltage, frequency, indoor conditions, and occupancy. By continuously transmitting this data to building management systems and utility operators, smart meters support enhanced decision-making and automated energy optimization. The integration of smart grid technology throughout a building improves operational awareness, allowing facility managers to pinpoint inefficiencies, monitor equipment health, and fine-tune energy consumption strategies in line with grid conditions.

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Market Dynamics

The rapid expansion of distributed energy resources (DERs) is one of the primary forces propelling the growth of the building-to-grid (B2G) technology market. DERs refer to localized, small-scale power generation and storage systems that connect to the power grid at the distribution level. These systems allow buildings to generate, store, and manage their own electricity, forming the foundation for smarter and more resilient energy infrastructure. Their integration into the grid is creating new opportunities for B2G technologies to flourish.

DERs include rooftop solar panels, residential wind turbines, battery energy storage systems, microturbines, and combined heat and power (CHP) systems. As these technologies become more affordable and accessible, a growing number of residential, commercial, and industrial buildings are integrating them into their operations. This decentralized generation capability transforms traditional buildings into energy prosumers — entities that can both consume and supply electricity — offering the flexibility to support or stabilize the grid as needed.

The incorporation of DERs into smart infrastructure has enabled building automation systems to take on a more dynamic role. These systems can intelligently manage when and how to use, store, or feed electricity back into the grid. For instance, during peak sunlight hours, rooftop solar installations can significantly reduce a building's reliance on grid electricity. Meanwhile, battery storage allows excess power to be saved and utilized during peak demand periods, blackouts, or when energy prices spike.

Government policies and incentives are also accelerating the growth of DERs and, by extension, the B2G market. In April 2024, the UK government launched initiatives to draw global green investment, including a $375 million (£300 million) fund earmarked for offshore wind development. These moves, alongside high-level energy summits involving more than 60 countries, underscore a worldwide commitment to clean energy and digital grid modernization, further reinforcing the relevance of B2G solutions.

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Overall, the synergy between DERs and B2G technologies marks a significant shift in energy management and infrastructure planning. As DER adoption grows, B2G technologies will become essential for balancing grid supply and demand, increasing energy independence, and promoting sustainability at both building and national levels. This paradigm shift places buildings at the heart of a more flexible and resilient energy future.

Segment Overview

For analytical purposes, the scope of the building-to-grid technology market is segmented by platform, component, end-use, and region. The platform segment includes smart sensing, smart

metering, control technology, energy storage, and others. The market analysis also considers key components such as hardware, software, and services. Based on end-use, the study examines commercial, industrial, and residential sectors. Additionally, it evaluates market trends and growth patterns across key regions, including North America, Europe, Asia-Pacific, and LAMEA.

Regional Analysis
Asia-Pacific is emerging as the fastest-growing region in the building-to-grid (B2G) technology market, projected to grow at a CAGR of 10.9% during the forecast period. The region's rapid urbanization, escalating energy demands, and emphasis on reducing carbon emissions make it a strong contender for B2G technology adoption. Building-to-grid systems enable real-time interaction between buildings and the power grid through demand response, distributed energy resources (DERs), and intelligent control technologies, making them a vital component in the region's energy transition.

Countries such as Japan, South Korea, China, Australia, and Singapore are at the forefront of implementing B2G solutions. Their progress is largely attributed to government-backed smart city initiatives, stringent energy regulations, and large-scale investments in renewable infrastructure. These efforts are creating a supportive ecosystem for integrating advanced energy management technologies, further driving the adoption of building-to-grid systems across the Asia-Pacific region.

Competitive Analysis
The building-to-grid (B2G) market features a strong presence of leading global companies that are driving innovation and deployment of smart energy management solutions. Key players in the industry include Siemens AG, Schneider Electric, ABB Ltd., General Electric, and Honeywell International Inc. These companies are known for their advanced technologies and extensive experience in grid modernization, automation, and building energy systems, allowing them to play a pivotal role in the growth and adoption of B2G technologies.

Other significant contributors to the market include Landis+Gyr Group AG, Enphase Energy, S&C Electric Company, Itron Inc., and Oracle. These firms offer specialized solutions in areas such as smart metering, distributed energy management, grid analytics, and real-time monitoring, which are critical for enabling seamless building-to-grid interaction. Through continuous investment in R&D, partnerships, and smart infrastructure development, these companies are shaping the future of integrated energy systems worldwide.

Key Findings of the Study:
- On the basis of the platform, smart metering dominated the building-to-grid technology market, growing with a CAGR of 10.7% during the forecast period.
- On the basis of component, the software segment was the most lucrative segment, representing the CAGR of 10.8% during the forecast period.

• On the basis of end-use, the commercial segment dominated the building-to-grid technology market in 2024.
• Region-wise, Asia-Pacific dominated the market, accounting for more than one third of the market share in 2024.

David Correa
Allied Market Research
+15038946022 ext.
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