United States Biomass Power Market Forecast 2024-2032

Market Report | 2024-12-23 | 145 pages | Inkwood Research

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Report description:

KEY FINDINGS
The United States biomass power market is anticipated to rise with a CAGR of 5.79% over the forecasting years of 2024 to 2032, reaching a revenue of $22650.20 million by 2032. In terms of volume, the market was valued at 161.98 million MWh in 2023 and is projected to reach 294.53 million MWh by 2032, growing with a CAGR of 6.96% during the forecasted period.
MARKET INSIGHTS
The country's market's growth is attributed to increasing demand for renewable energy sources, supportive federal and state policies, advancements in biomass conversion technologies, and growing environmental awareness. Improved energy infrastructure and the availability of abundant biomass feedstocks-such as agricultural residues, forestry by-products, and organic waste-also contribute to market expansion. However, the United States biomass power market is likely to be hindered by competition from other renewable energy sources, fluctuating biomass feedstock prices, and stringent environmental regulations.
Further, the market growth in the United States is propelled by federal and state policies that encourage renewable energy adoption, such as tax incentives, renewable portfolio standards, and grants for biomass projects. According to the US Energy Information Administration's (EIA) latest Short-Term Energy Outlook, renewable energy is projected to supply 25% of US electricity generation by 2025, up from 22% in 2023. In 2022, renewables also contributed 22% to the nation's electricity production, with a significant portion derived from biomass power.
Biomass electricity generation is projected to reach 23.5 billion kilowatt-hours (kWh), with an expected increase to 24.6 billion kWh in 2024. The EIA highlights that biomass is a critical renewable resource due to its ability to provide continuous, reliable baseload power, unlike intermittent renewables such as solar or wind. This reliability makes biomass a valuable asset in maintaining grid stability.
SEGMENTATION ANALYSIS
The United States biomass power market is segmented into feedstock, technology, and application. The technology segment is further classified into combustion, anaerobic digestion, gasification, co-firing and (CHP), and landfill gas (LFG).
Combustion is a crucial technology segment in the United States biomass power market. This process involves the direct burning of biomass materials-such as wood chips, agricultural residues, and organic waste-in boilers to produce high-pressure steam. The steam drives turbines connected to generators, producing electricity. Combustion is the most established and widely used method for biomass power generation due to its simplicity and ability to handle a variety of biomass feedstocks.
Advancements in combustion technology have led to improved efficiency and reduced emissions. Modern biomass combustion

systems incorporate technologies like fluidized bed combustion and advanced emission control systems to enhance performance and environmental compliance. Fluidized bed combustion allows for better mixing of biomass fuel and air, resulting in more efficient combustion and lower emission levels. The integration of emission control technologies, such as electrostatic precipitators and scrubbers, helps reduce pollutants like particulate matter, nitrogen oxides, and sulfur dioxide.
COMPETITIVE INSIGHTS
Some of the top players operating in the United States biomass power market include Ameresco Inc, Babcock & Wilcox Enterprises Inc, Cemex, etc.
Ameresco Inc, headquartered in the United States, is a leading cleantech integrator and renewable energy asset developer, owner, and operator. The company specializes in energy efficiency, infrastructure upgrades, asset sustainability, and renewable energy solutions for businesses and organizations across North America and Europe.
In the biomass power sector, Ameresco develops, builds, owns, and operates biomass-to-energy plants that utilize various feedstocks, including wood waste, agricultural residues, and landfill gas. The company provides comprehensive services encompassing project design, engineering, construction, and operation of biomass facilities. Ameresco's biomass projects contribute to reducing greenhouse gas emissions by converting waste materials into renewable energy, thereby supporting environmental sustainability.
Notable projects by Ameresco include the Savannah River Site Biomass Cogeneration Facility in South Carolina, which replaced a coal-powered plant to provide clean steam and electricity for the US Department of Energy, and the Fort Detrick Biomass Plant in Maryland, supplying renewable energy to a US Army installation.

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