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United States Electric Bus Market By Seating Capacity (Up to 30-Seater, 31-40 Seater, Above 40), By Battery Type (Lead Acid, Lithium Ion), By Application (Intercity, Intracity, Airport Bus), By Bus Length (6-8m, 9-12m, Above 12m), By Region, Competition, Forecast and Opportunities, 2028

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Abstracts

United States Electric Bus Market is expected to grow in the forecast period, 2024-2028F.

The adoption of electric buses is increasing in the country as it supports efforts to reduce local air pollution, the diesel buses emit dangerous substances such as particulate matter and nitrogen oxides (NOx). The advantages of electric buses over the other buses are that they provide energy security and increase transport fuel diversity. In United States the dependence on imported fossil fuel makes transport system more vulnerable to oil price changes and shortage. In country, the government has introduced the policy that no new diesel buses will be purchased in the coming decades for the inner-city routes.

In United States the number of electric buses is increasing. As of March 2022, more than 37 states of United States and 415 districts (or private fleet operators) committed to procure 12,275 electric school bus in the coming years.

Electric buses have the potential to reduce operations and maintenance costs for fleets and emit no tailpipe emissions in comparison to the standard diesel-powered bus. Electric buses have huge batteries that can store and distribute energy to power structures and other equipment, supporting higher resilience, including the incorporation

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of renewable energy. The cost of recharging the electric buses is low compared to refueling the diesel bus. By the adoption of electric bus owners can save their money of refueling, making it profitable for them to own buses, and save environment by reducing the pollution. Even though the adoption of electric buses is in its infancy stage, technological development should be made widely accessible.

Government Initiative Towards the Adoption of Electric Buses and Technology Advancement in The Electric Bus

The environmental advantages of electric buses over diesel alternatives, including reduced exhaust emissions and improved air quality, outweigh their lower total cost of ownership (TCO). Although presently the cost of the battery still contributes to a higher overall acquisition price, the lower TCO is a result of the lower cost per km for running on electricity compared to fuel. Due to these advantages, governments are setting goals to hasten its adoption. For example, the US government has mandated that all public transport buses sold must be zero emission vehicles (ZEV) by 2030, and that all ZEV fleets must be 100% ZEV by 2040, replacing all fossil fuel vehicles. With the endorsement of the United States Clean Bus Deployment Initiative, cities, regions, manufacturers, and transportation organizations at the regional level adopted a shared goal to hasten the deployment of clean buses. In addition to battery-powered buses, fuel cell buses that use green hydrogen are regarded as environment friendly.

Numerous improvements and price reductions are being made to battery chemistry and charging infrastructure. Total Cost of Ownership (TCO) parities can be reached or even surpassed in the upcoming years with improved performance and lower capital expenditure (CapEx). TCO study at the route and depot levels may offer more accurate recommendations for technology adoption. For various O&M requirements, several technological solutions, particularly those involving batteries, charging infrastructure, and power supply are beneficial. During the early years of the adoption of electric buses, using a variety of technologies can be helpful. This would promote improved capacity building for the adoption of electric buses and could make good commercial sense.

Buses are a more space, energy, and emissions efficient form of transportation than cars, regardless of the type of powertrain (mechanisms for generating bus propulsion) that is employed (UITP - Union International des Transports Publics, 2011). For instance, a diesel bus2 operating at 20% of its capacity emits around one-third less CO_2 emissions per passenger kilometer than the equal number of private vehicles3 necessary to carry the same number of passengers. The reduction in CO_2 emissions

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rises to more than 90% when the bus is at capacity.

While diesel buses are more efficient than private automobiles, they still contribute significantly to GHG emissions, which might be greatly decreased by using electric buses. This is the first reason to think about using electric buses instead of diesel buses. As a result, numerous national and regional governments worldwide are looking at ways to cut GHG emissions from their fleets of public transport by investing in alternative powertrains. The fact that electric buses contribute to efforts to lower local air pollution makes them appeal. Urban air quality is receiving more attention globally, and during the next 10 years, some international towns plan to outlaw diesel vehicles from inner city roads. Nitrogen oxides (NOx) and particulate matter are harmful byproducts that are released by even modern, efficient diesel engines.

Electric Buses by Different Mode

In some major cities throughout the world, rules are being implemented that highlight the benefits of electric buses. Several public transportation networks across the world are using hybrid electric, fuel cell electric, and fully electric buses. In the electric bus the electrical energy produced and stored vary into several forms of electric bus technology. Specifically, Diesel engines are used inside hybrid electric buses (HEBs) to produce power while they are in motion. Fuel cell electric buses (FCEBs) operate with power produced onboard by hydrogen fuel cells. Electricity is stored within battery-operated buses (BEBs), which are charged overnight. HEBs are powered by both an electric motor (EM) and an internal combustion engine (ICE), which is often a diesel engine.

Growing Demand of Electric School Bus in the Country

The country is now being prepared for electric bus adoption by several factors. Electric bus feature zero tailpipe emissions and the potential to reduce fleet operations and maintenance expenses as compared to conventional diesel-powered school buses. Electric buses can offer extra advantages if they include bidirectional charging technology, like possibly serving as portable generators in an emergency. These advantages have influenced communities and policymakers to support electric buses, which has led to commitments to electrification. Grants and incentives are used to lower the upfront cost of the buses.

Existing producers are increasing production to keep up with the rising demand for electric buses. Many electric bus manufactures have started to manufacture the second, third, or even fourth iteration of the electric bus models and increasing their production

capacity to keep up with the demand in the market. One of the electric school bus manufacturing companies, Blue Bird Corporation, became the first electric bus manufacturer to produce 800 electric-powered buses in the country. Blue Bird Corporation, in late 2020 has doubled their production capacity for the 800 electric school buses order, post this order of electric buses, the company has witnessed about 250 percent increase in sales over the past year, 2018-2019.

Electric Grid Readiness

Because capital investment needs downstream revenue flows to make profits, transmission capacity often lags demand. While OEMs ramped up production, the nation's grid can be quickly expanded to accommodate the millions of anticipated future electric automobiles. The electrical grid will invest where there is a shortage of resources in response to the growing popularity of electric vehicles. Lead times for installing a vehicle charging system might be anywhere from six months and more than a year.

Increasing Charging Infrastructure for Electric Buses

The accessibility of charging infrastructure is one of the primary worries and sources of uncertainty for fleets considering the deployment of battery electric vehicles. Fleets considering the usage of electric vehicles can follow a roadmap to ensure they have a charging plan that is both effective and economical, even though there isn't a charging solution that works for everyone.

When planning their charging infrastructure, fleets must take three separate but related factors into consideration: hardware, software/networking, and maintenance. Hardware needed to recharge electric cars is referred to as 'charging stations' or 'electric vehicle supply equipment' (EVSE). The most common kind of EVSE is one that employs a plug-in charging station. There are currently a variety of competing connector types, and charging station connectors are not currently standardized.

Electric Bus as an alternative Solution Over the Fuel Based Buses

Due to increasing levels of goods transit and growing aspirations for cleaner transport, the bus industry is seeing an increase in demand for near-zero or zero-emission solutions. The availability of alternative fuels and associated powertrains has increased as a result, and these technologies are moving closer to being used in vehicles that are suitable for mass production. Although battery electric vehicles and more contemporary

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technologies like fuel cells are receiving current investment, natural gas powertrains have historically been the market leader.

Technological Advancements

Advanced driver assistance systems (ADAS), which use various sensors and cutting-edge technology to provide all the features including adaptive cruise control, collision avoidance, park assistance, lane departure warning system, rear cross traffic assistance, automatic speed limit, etc., are now standard equipment on many modern buses. Today's utilization of advanced driver assistance technologies opens new possibilities and paves the way for more sophisticated autonomous capabilities. These choices, which come in various levels, not only increase the comfort and convenience of electric bus drivers while they drive, but they also increase the safety of the bus by allowing it to always keep an eye on the road.

Innovative battery technology for electric buses has recently been developed. The most typical method is an automatic battery heater. A battery that could 'self-heat' was created by scientists to lessen power loss brought on by subfreezing temperatures during severe weather. When charged at temperatures below 10 degrees Celsius, lithium-ion batteries may degrade very quickly. This could lead to 'lithium plating,' which reduces cell performance and could potentially result in risky battery conditions like power surges.

In contrast to conventional batteries, which are damaged when heated at a high temperature for an extended period, self-heating batteries can swiftly heat up and cool themselves to provide the ideal charging conditions.

Market Segmentation

The United States Electric Bus Market is divided based on seating capacity, battery type, application, bus length, and region. Based on seating capacity, the market is divided into up to 30-seater, 31–40-seater, and above 40. Based on battery type, the market is divided into lead acid and lithium ion. Based on application, the market is divided into intercity, intracity, and airport bus. By bus length, the market is segmented into 6-8m, 9-12m, and above 12m. The market is divided based on regions such as West region, Northeast region, Midwest region, South region.

Market Players

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Major market players in the United States Electric Bus Market are Proterra Inc., BYD Motors Inc, NFI Group Inc, AB Volvo, Green Power Motor Company Inc., Gillig LLC, Blue Bird Corporation, Isuzu Motors Ltd, Nova Bus Corporation, MAN Truck & Bus AG.

Report Scope:

In this report, the United States Electric Bus Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

United States Electric Bus Market, By Seating Capacity:

Up to 30-Seater

31–40-Seater

Above 40

United States Electric Bus Market, By Battery Type:

Lead Acid

Lithium Ion

United States Electric Bus Market, By Application:

Intercity

Intracity

Airport Bus

United States Electric Bus Market, By Bus Length:

6-8m

9-12m

Above 12m

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United States Electric Bus Market, By Region:

West

Northeast

Midwest

South

Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the United States Electric Bus Market.

Available Customizations:

Tech Sci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

Company Information

Detailed analysis and profiling of additional market players (up to five).

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Contents

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6. UNITED STATES ELECTRIC BUS MARKET OUTLOOK

7. UNITED STATES ELECTRIC BUS UP TO 30-SEATER MARKET OUTLOOK

8. UNITED STATES ELECTRIC BUS 31- 40-SEATER MARKET OUTLOOK

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