WHITE PAPER

Preparing for Successful and Sustainable Electric Vehicle Market Growth

The electric vehicle (EV) sector is driving the global automotive industry's future, with projections indicating that more than one-third of all lightweight vehicles will be electric by 2030. While the growth is an encouraging trend in the overall movement to address climate change, there are challenges that must be solved if EVs are to reach their full potential.

Across the globe, governments are working on ways to reduce carbon footprints. The extensive adoption of EVs is one of the strategies being embraced.

According to the International Energy Agency (IEA), global electric car sales are projected to reach 14 million vehicles in 2023, an increase of 35% after already record-breaking growth in 2022. In the U.S. alone, the EV market is estimated to reach 40% of all passenger car sales by 2030.

The proliferation of the EV market is being influenced and affected by a myriad of factors, mostly centered on consumer attitudes related to sustainable practices and progress in developing adequate charging infrastructure.

Driving Demand

In the U.S., federal and state government agencies have enacted policies that are driving automakers to design and manufacture vehicles with lower carbon profiles. The efforts are producing results.

The California Air Resources Board, for example, is requiring that automakers deliver an increasing number of zero-emission light-duty vehicles each year beginning with model year 2026. Furthermore, California consumers are encouraged to purchase EVs through a series of incentives enacted under various state policy measures. During the first half of 2023, California broke its own record with EVs accounting for more than 25% of light-duty vehicles sold in the state. The trend indicates that California is well on its way toward meeting its ambitious goal of having EVs account for 100% of all new vehicle sales by 2035.

Other incentives have also been created to increase global EV adoption. In the U.S., the Infrastructure Investment and Jobs Act provides $7.5 billion to build a network of chargers nationwide. Grants and loans for EV battery manufacturing and tax breaks for EV buyers are also in place. Other countries have embraced internal combustion engine bans, tax incentives, the creation of zero-emissions zones and other policies to encourage adoption.

Consumer sentiment is an increasingly important factor driving demand. Early adopters have demonstrated willingness to pay

higher prices for earlier EV models and EV market forecasts now make it clear that more and more consumers are consciously choosing to financially support a more sustainable future by purchasing lower emissions vehicles.

Most utilities are well aware of these trends and are engaged in sophisticated planning and modeling of their service networks to better forecast where EV load will materialize and plan capital investments accordingly.

Obstructions in the Landscape

While the growth of the EV market is expected to begin helping abate carbon emissions globally, there is concern over environmental and social harm that may result because of other hazards.

As demand for electric cars increases, the need for the lithium-ion batteries that power them will grow. According to S&P Global, the global market for lithium-ion batteries is expected to reach 3.7 terawatt hours (TWh) by 2030. Within the auto industry alone, lithium-ion battery output in 2021 was 0.29 TWh.

This trend comes with some costs that may not be entirely visible to ordinary consumers. The commodity minerals and metals that are essential for production of lithium-ion batteries — lithium, cobalt and nickel — require significant volumes of energy and water to extract and process them. A number of countries that are rich sources of these commodities also have questionable records on environmental protections and human rights. Barring new technology breakthroughs that introduce new types of batteries, the risk of pollution to air, water and soil, along with negative consequences for workforces, are likely to increase.

Beyond these production-side risks, many additional gigawatts of power will be required as charging networks are built out to accommodate millions more EVs travelling the roads. Countries that are unable to switch away from fossil fuels for generation plants are ironically likely to realize an increase in emissions despite EV market growth. Other factors like growth in demand from commercial developments, data centers and many other types of new load will create even more strain on aging electrical distribution grids. Most utilities recognize this fact and are forecasting the urgent need for multiple billions of dollars in capital investment to modernize these aging assets over the next decade or so.

The EV industry is susceptible to a variety of potential issues like these and others that must be recognized and planned for.

Mapping Out Solutions

While challenges exist in preparing for and meeting the tremendous growth of the EV market, some areas can be defined now to help responsibly guide the process:

- Tightening regulations in the supply chain can mitigate the environmental risk of EV sourcing and production.
- Communicating eco-friendly practices to suppliers from the outset helps set expectations and stipulates that responsible practices are required.
- Supporting suppliers with training and highlighting best-practice programs for suppliers and miners on recycling directives and green operating initiatives and technologies can elevate operations and reinforce working requirements.
- Enforcing a battery recycling initiative helps automakers reduce raw materials demand for lithium, cobalt and nickel while minimizing the environmental impact of disposed batteries.
- Leveraging solar, wind and hydro renewable sources can help develop net-neutral emissions profiles from charging infrastructure.
- Embracing responsible raw material sourcing and scrutinizing raw material supply chains supports human rights.
- Ratifying laws that enforce fair practices in the supply chain helps reduce and eliminate hazardous working conditions.

Conclusion

The EV sector will have an enormous impact on the future of the automotive industry. Planning a sound, socially responsible and sustainable road forward will help automakers meet expected market growth as a valued partner in achieving global climate goals.

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