

CESO 

Electrifying Highways

**The Surge of
Electric Vehicles**



A Surging Market

The number of electric vehicle (EV) owners is surging, as more and more people are transitioning from traditional diesel and gasoline-powered vehicles to EVs. As EV charging infrastructure continues to expand, charging time decreases, and longer-range vehicles enter the market, this shift is expected toward electric mobility to continue. With fuel prices reaching record highs, individuals are exploring alternatives, and EVs are proving to be a popular option. In 2023, over 20 manufacturers established significant electrification goals for the future, reinforcing the trend towards electric vehicles (EVs). This momentum is driving a growth rate of 40% or more, making EVs the preferred choice by 2030, especially among brands like Honda, GM, Volvo, and others.



2.4M+

**BEV & PHEV
vehicles in the U.S.**

explodingtopics.com

2023

30M+

**BEV & PHEV
vehicles in the U.S.**

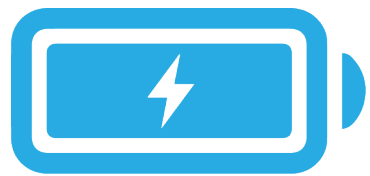
nrel.gov

2030

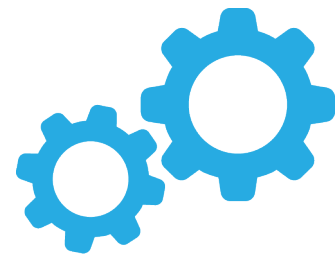
Empowering Accessibility

Prices are easing with EVs purchases and becoming more affordable. As of December 2023, CarEdge.com reported the average price for a new EV was \$50,798, marking a 25% reduction within a year. The trend of EV prices converging with those of traditional gas-powered vehicles continues to persist. The Washington Post also reported that by 2027, the cost of manufacturing EVs could fall to the same level as gas-powered vehicles. We are already seeing this trend with Ford, which is working on an EV with a starting price of \$25,000.

The price of EVs will continue to decrease due to factors such as:



Advancements in battery technology



Increased production scale



Growing competition



Significant cost decreases for EV batteries are a trend. The Department of Energy's (DOE's) Vehicle Technologies Office reports an 89% decline in the cost of lithium-ion battery packs for EVs between 2008 and 2022, indicating a substantial long-term decrease in battery costs. Goldman Sachs Research forecasts a further drop to \$99 per kWh of storage capacity by 2025, marking a 40% decrease from 2022. This downward trend in battery costs can be attributed to advancements in battery technologies and chemistries, increased production volumes, and falling prices of raw materials used in EVs.

Unleashing Tomorrow's Power

Over time, the charging speed of EVs has seen a significant boost. In 2023, MotorTrend performed fast-charging tests on 37 distinct electric vehicles. Some of the fastest charging EVs can add over 150 miles of range in the time it takes to stop at a convenience store and grab a snack. The enhancement in charging speed is attributed to advancements in charging technology, including the emergence of ultra-fast charging stations and increased battery capacity. The overall trend indicates a considerable rise in EV charging speeds. Consequently, EV owners can now cover longer distances and spend less time waiting for their vehicles to charge.

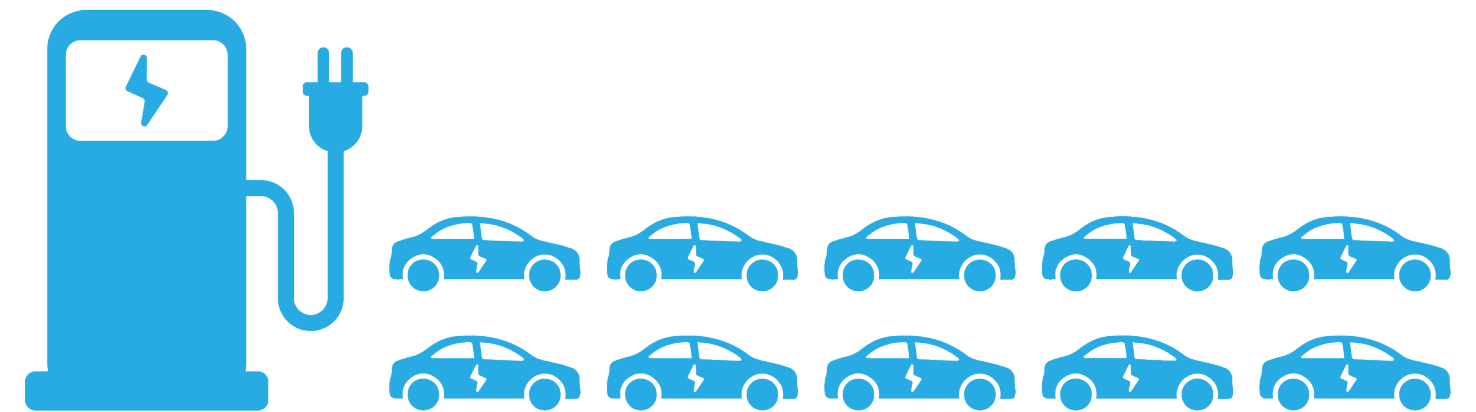
It is projected that by 2027, charging up to 200 miles will take a mere 4 minutes.

Ark Invest



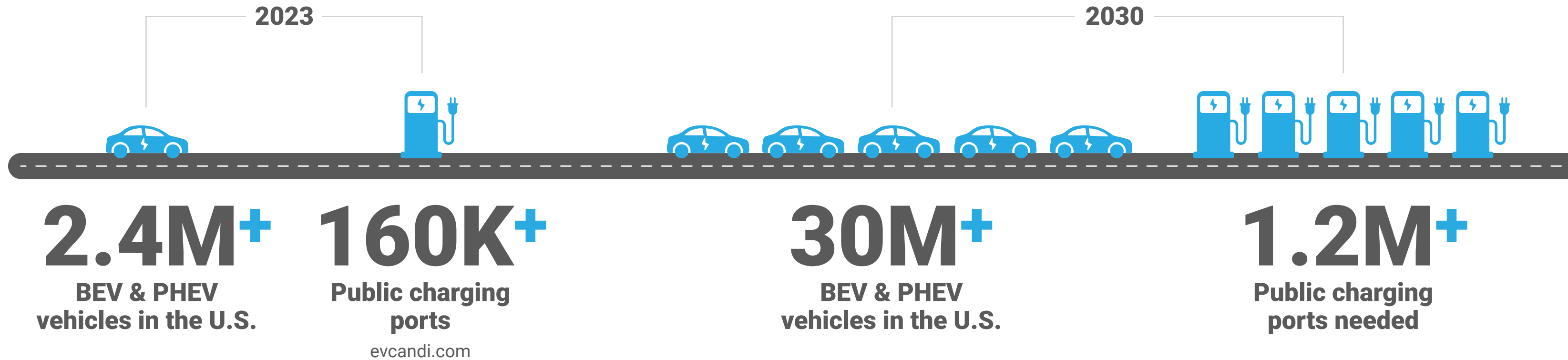
Optimizing Access

The accessibility of charging infrastructure for EVs is on the rise. Public charging stations are increasingly sought after, often due to their potential speed and necessity during long trips. Local governments and community-led electricity providers are playing a pivotal role in broadening the reach of EV charging infrastructure. They are adopting strategies such as community involvement in charger location decisions, prioritizing public charging infrastructure in areas lacking charging options and near multi-family residences, expanding curbside charging in urban locales, enhancing pricing transparency, and facilitating charging for other e-mobility forms. These initiatives are vital in ensuring an equitable and inclusive transition to electric vehicles.



An IBM case study suggests that having **one charging station for every ten vehicles is essential to provide adequate charging services to the nation's EV owners.**

Fast charging stations along highways and urban charging networks are becoming increasingly common. Various stakeholders, including governments, corporations, and communities, are investing in the expansion of EV charging infrastructure to cater to the growing fleet of electric vehicles. This expansion also includes the incorporation of renewable energy sources, such as solar power, into some charging stations, aiming to minimize the environmental impact of EV charging.



Following the passage of the Infrastructure Bill a couple of years ago, which allocated a total investment of \$10 billion, the NEVI Formula and Discretionary Programs demonstrate nationwide support for infrastructure to facilitate EV adoption in communities. Companies that seize this opportunity to utilize state and federal funding for EV charging infrastructure could position themselves as dependable partners for EV charging services. The continuous collaboration between automakers, providers of charging infrastructure, and governments are steadily expanding to establish universal standards and protocols. The goal of this standardization is to enhance interoperability and make the EV charging process more user-friendly.

As urban centers and highways become more saturated with electric vehicles, the current inadequacy of charging infrastructure poses a significant barrier to that growth. With the anticipated addition of over 25 million electric vehicles to the roads by 2030, there is a pressing need for easily accessible public charging ports. Drawing conclusion from IBM's case study, which recommends one charging port for every ten cars, it becomes evident that implementing 1.2 million charging ports by 2030 is not merely a numerical target but a critical step toward fostering a sustainable and efficient electric transportation ecosystem.



CESO wants to partner with you on your EV charging station projects. Do not miss our follow-up piece sharing how we can assist you from site selection to rollout.

For more information about CESO's capabilities, please visit our website at ceso.com.

