The U.S. EV Market: Poised for Growth in the Next Decade

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- With the Biden administration announcing its goal to achieve 50% EV sales by 2030 and deploying 500,000 chargers as part of the American Jobs Plan, it comes as no surprise that forecasts suggest that the U.S. EV market could expand dramatically in the next 10 to 15 years.
- The EV-to-Charge Point ratio is a good measure to identify the best states in which to adopt an EV as well as to easily locate an available charger to charge said EV.
- To help encourage investment in the EV charging infrastructure, there is a wide range of federal, state, and local tax credits as well as other incentives

In the world of clean energy, very few areas are as dynamic as the electric vehicles (EV) market. The number of electric vehicles sold in 2021 reached 6.6m, more than twice of that put on the road in 2020, a new high despite the Covid-19 pandemic and supply chain challenges, including semiconductor chip shortages. Nearly 10% of global car sales were electric in 2021, four times the market share in 2019.

China, Europe, and the U.S., which are markets that boast the most supportive policies for EVs, made up more than 90% of global EV sales in 2021. EV sales in the U.S., for the year 2021, saw a 100% year-on-year growth. With the Biden administration announcing its goal to achieve 50% EV sales by 2030 and deploying 500,000 chargers as part of the American Jobs Plan, it comes as no surprise that forecasts suggest that the U.S. EV market could expand dramatically in the next 10 to 15 years.

The State of EVs and Charging Infrastructure by State

At the end of 2021, the U.S. had 2.3m EVs on the road and an EVSE network of 115,000 charging points. However, both the EVs and public charging network are unevenly distributed and insufficient in most U.S. states at the moment. Described below is the progress of different states in the U.S. with respect to their EV landscape.

- California leads the U.S. market in terms of EVSE deployment, boasting around 35,000 public charge points. The state also boasts the highest number of EVs, amounting to 1 Million, on the road.

- Florida, New York, and Texas follow California as the next biggest states in terms of EV adoption. Although there is a special push for EV uptake in these states, higher EV adoption in these states correspond to higher car sales in total. These states also rank on top in terms of EVSE deployment, as they offer an array of EVSE incentives, which effectively aid their active growth in EVSE deployment.

- States with Zero Emission Vehicle (ZEV) targets and extensive grant and rebate programs show higher electrification rates and charging infrastructure deployment.

- California has the highest number of charging points in the U.S.. However, a better statistic to understand would be the EV-to-Charge Point ratio. This is a good measure to identify the best states in which to adopt an EV, in addition to easily locating an available charger to charge said EV. From an EV-to-Charge Point perspective, states with most charging points are not necessarily the best states to have an EV and charge it. In fact, lower EV-to-Charger ratios are identifiers of the best states to own an EV in. This can be observed from Figure 1, below.

State	Registered EVs	Charging Points	EV-to-Charger Ratio
California	992,197	36,241	27.23
Florida	123,072	6,052	19.27
New York	114,726	6,943	16.19
Texas	89,528	5,213	15.89
Washington	86,391	3,929	21.35
New Jersey	75,176	1,775	41.34
Georgia	57,290	3,806	14.23
Massachusetts	56,120	4,604	12.61
Illinois	54,139	2,462	22.1
Colorado	52,779	3,606	14.2

Figure 1: The EV-to-Charger Ratio for U.S. States.

- From the identified states above, Massachusetts can be listed as the best state in terms of adopting an EV. The state has 56,000 EVs on the road and a public charging network of 4,600 charging points to support them.
- It can be observed that New Jersey has a very high EV adoption rate compared to available chargers, which lag behind. In order to truly promote EVs, sufficient growth must take place in the deployment of charging infrastructure.
- States like Florida, Texas, and New York are moderate in terms of EV adoption and infrastructure deployment. This is due to extensive electrification plans and policies, as well as the availability of incentives and grants in these states.

Incentives Supporting E-Mobility

Expanded EVSE infrastructure is important in reducing range anxiety and to support national goals to increase EVs' share of vehicle sales. Public chargers are particularly important for EV owners without access to private garages, and to encourage the overall adoption of electric vehicles. To help encourage investment in the EV charging infrastructure, there is a wide range of federal, state, and local tax credits as well as other incentives. The U.S. EVSE market is on the rise, and state-wise plans, policies, rebates, and incentives play a vital role in the development of this market.

- The National Electric Vehicle Infrastructure (NEVI) Formula funding under the Bipartisan Infrastructure Law is expected to be the main driver for the public EVSE market in the U.S.. The program allocates USD 5b over a period of 5 years for the installation, operation, and maintenance of chargers (mainly along Alternative Fuel corridors).
- As part of the Bipartisan Infrastructure Law, a funding of USD 1.25b has been allocated as part of the 'Community Grants' program. This will be used to install electric vehicle charging and alternative fuel in locations on public roads, schools, parks, and in publicly accessible parking facilities. These have been assumed to be mostly AC chargers.
- Multiple community programs throughout the U.S. are in place for the deployment of charging infrastructure at disadvantaged/underdeveloped localities.
- Utility companies are at the forefront of EVSE deployment in the country, investing millions of dollars in the process. The utilities provide rebates to customers to install chargers at homes or workplaces. Many utilities also provide time-of-use rates for residential customers, incentivizing charging at certain periods when the load on the grid is low.
- There are many rebates and tax incentives for the purchase and installation of EV chargers. These vary by nature and state. Currently, there are more than 200 such incentives available throughout the country. Some of the states with the greatest number of available incentives are California, Massachusetts, New York, New Jersey, and Texas. State incentives have a range of eligibility requirements for differing incentives. These include "make-ready" incentives that pay for a share of the grid upgrade cost necessary to connect a Level 2 or Level 3 charger to the grid and discounts on electricity costs, but most are rebates or tax credits for a residential or commercial purchase of an EV charger.

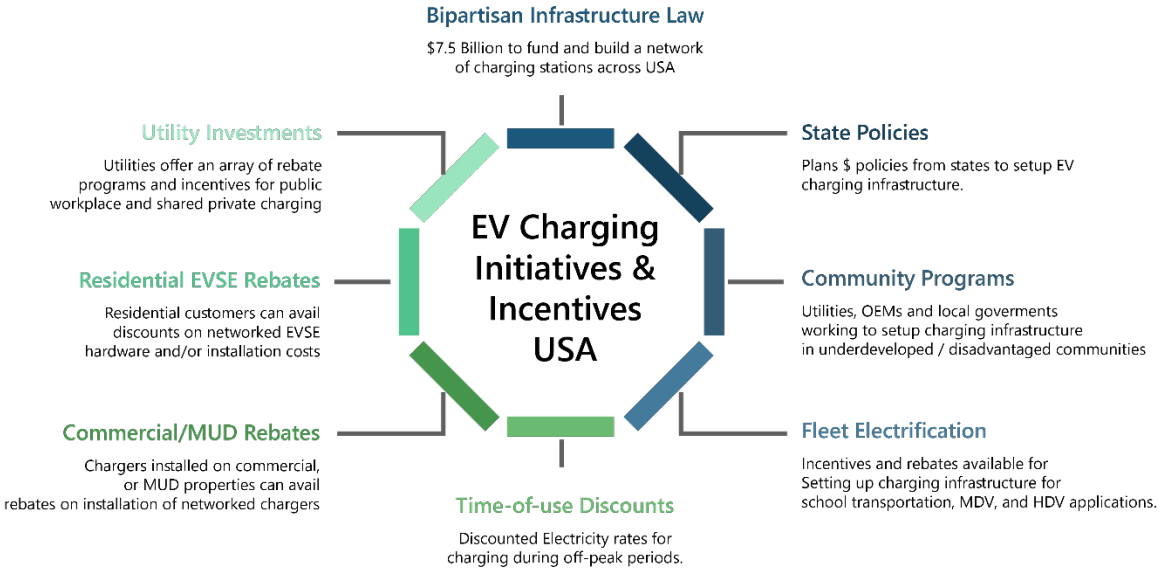

Figure 2: Available Incentives and Rebates for the Purchase and Installation of EV Chargers.

- The recently enacted Inflation Reduction Act (IRA) law provides nearly USD 370b in climate change investments to help reduce carbon emissions by 40% by 2030. It provides significant tax breaks for businesses that purchase new or used medium- and heavy-duty electric vehicles and new chargers. These include:
    1. A Clean Commercial Vehicle Credit for 30% of the difference between the cost of the clean vehicle and its gas-powered counterpart – up to USD 40,000 per medium/heavy duty commercial EV.
    2. An Alternative Fuel Vehicle Refueling Property Credit for 30% of total costs of purchase and installation of charging equipment—up to USD 100,000 per charger
    3. A renewal of the existing USD 7,500 Clean Vehicle Credit for passenger and light-duty vehicles
    4. A Previously-Owned Clean Vehicles Credit of USD 4,000 or 30% of the vehicle sale price (whichever is lower) for used EVs.

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