

ELECTRIC VEHICLE MARKET AND POLICY DEVELOPMENTS IN U.S. STATES, 2023

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In 2023, sales of new electric light-duty vehicles in the United States reached about 1.4 million, up from nearly 1 million in 2022, resulting in a sales share of about 9%. Across the country, the electric vehicle (EV) market has grown at different rates in different states. This spotlight summarizes key metrics related to EV market growth at the state level through 2023, including annual sales and sales shares, charging infrastructure deployment, state purchase incentives, and model availability.

Figure 1 summarizes EV uptake (both battery-electric and plug-in hybrid electric), charging infrastructure deployment, battery-electric vehicle (BEV) purchase incentives, and EV model availability in 2023 in the 50 U.S. states and the District of Columbia, ordered from highest to lowest EV sales share. Markets categorized as “ZEV states” (solid bars) have adopted California’s zero-emission vehicle (ZEV) regulations, while those marked as “non-ZEV states” (hashed bars) have not. As of the end of 2023, 17 states and the District of Columbia had adopted California’s ZEV regulations. As shown in the figure, 15 of the 20 markets with the highest EV sales shares in 2023 were all ZEV states. The top 10 markets (nine states and the District of Columbia) also had EV sales shares greater than 11% and are all ZEV states.

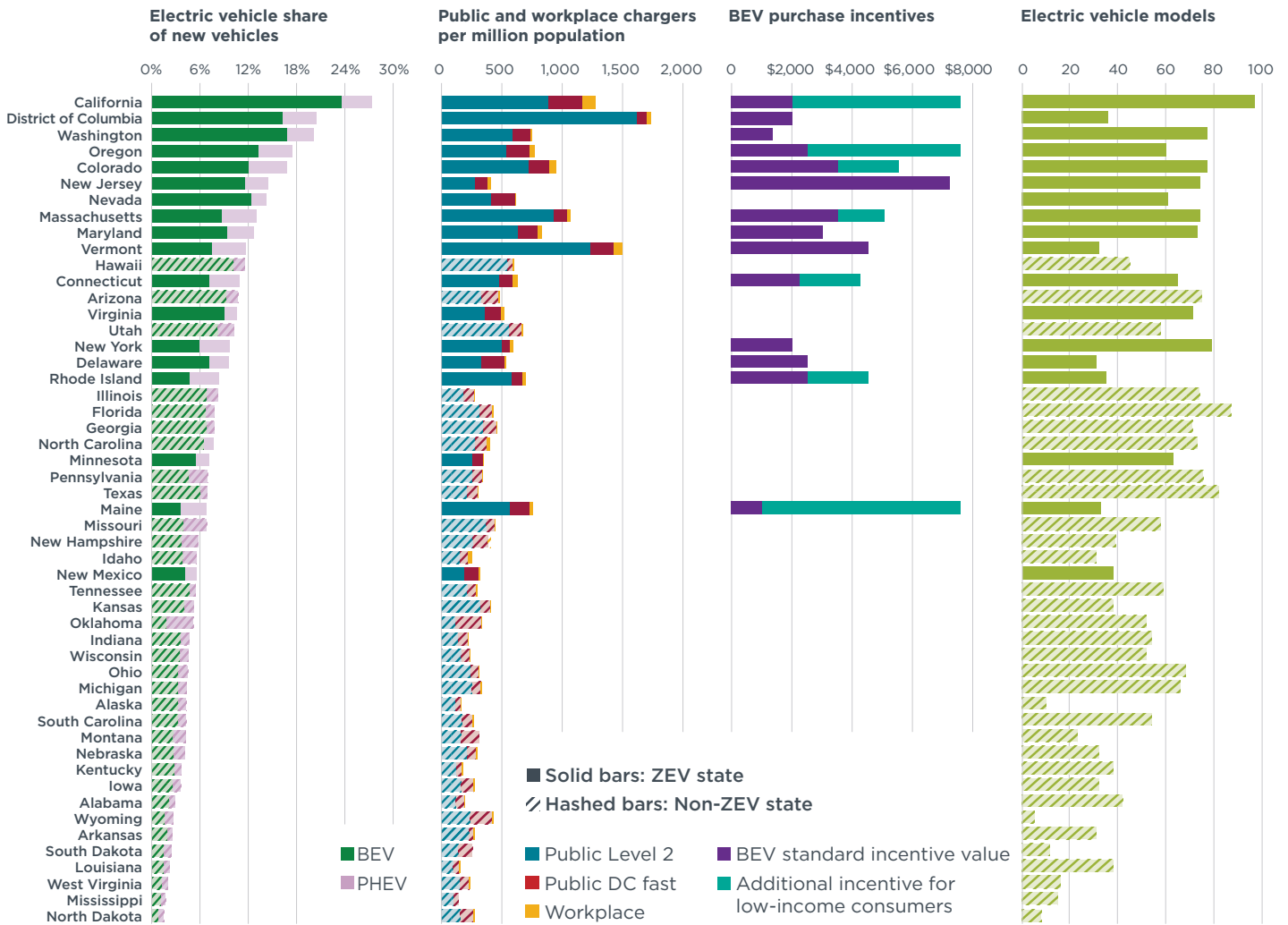
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Figure 1

Electric vehicle sales share, charging infrastructure deployment, purchase incentives, and model availability in U.S. states and the District of Columbia, 2023



Notes: Markets are ordered from highest to lowest EV sales share in 2023. The purchase incentive amounts are for BEVs only and exclude PHEV amounts.

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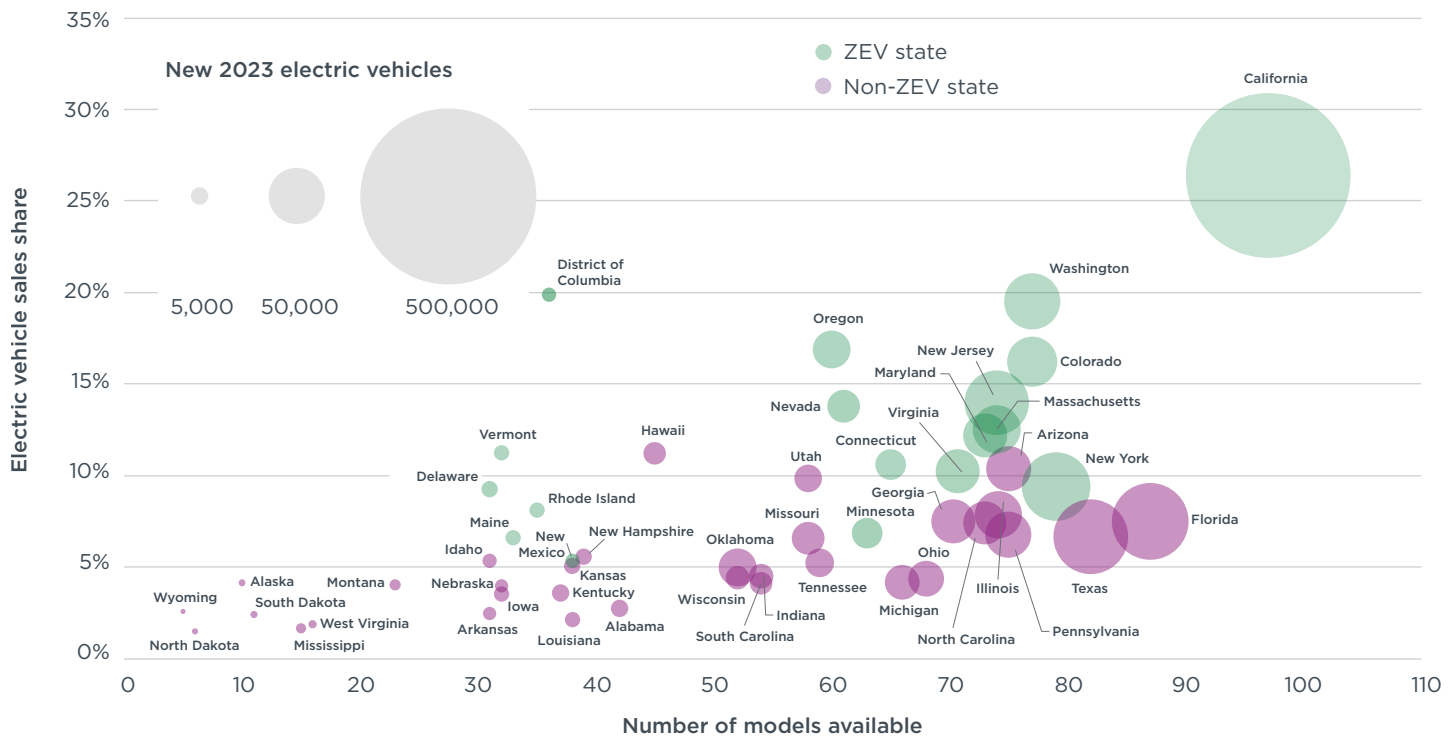
Areas with high EV sales shares tended to have a high concentration of public and workplace chargers. The 10 markets with the highest EV sales share had close to 980 public and workplace chargers per million residents, on average. All ZEV states had close to 780 chargers per million residents on average, while non-ZEV states had around 320. The top 10 markets with the highest number of chargers per million residents in 2023—California, the District of Columbia, Washington, Oregon, Colorado, Massachusetts, Maryland, Vermont, Rhode Island, and Maine—have all implemented ZEV regulations. These markets also had more than 2 times as many chargers per million residents compared with the non-ZEV state average.

Figure 1 also shows that most ZEV states offered purchase incentives for BEVs, whereas non-ZEV states did not. The 10 markets with the highest EV sales shares have all adopted ZEV regulations, and nine offered BEV purchase incentives. Four of these

markets also offered additional purchase incentives to low-income consumers. Fourteen of the 18 markets with ZEV regulations offered BEV purchase incentives with an average value of around \$2,000. Three of the 33 non-ZEV states (Illinois, Pennsylvania, and Texas) offered purchase incentives in 2023 but these programs made only 500 to 3,000 rebates available, despite these markets being among the largest in terms of total light-duty vehicle (LDV) sales. Thus, the incentives for these three states are not shown in the figure.

The connection of ZEV regulations and model availability follows a similar trend. All ZEV states had, on average, 60 models available compared with 46 models in non-ZEV states. Figure 2 illustrates the relationship between state-level model availability and EV uptake for the 50 U.S. states and the District of Columbia. The bubble size is proportional to the 2023 new electric vehicle sales in each state, and the color indicates ZEV states (green) and non-ZEV states (purple). The figure shows that states with the highest number of EV models tended to have the highest EV sales and sales shares. Two thirds of ZEV states had 60 or more models available and sales shares of 7% or greater. Six of the top 10 markets by EV sales (California, New York, New Jersey, Washington, Colorado, Massachusetts), representing about 50% of U.S. EV sales, are ZEV states with 74 or more models available. The states with the fewest models available tended to have comparatively fewer EV sales and lower sales shares.

Figure 2
Electric vehicle sales shares of new vehicles and model availability in U.S. states and the District of Columbia, 2023



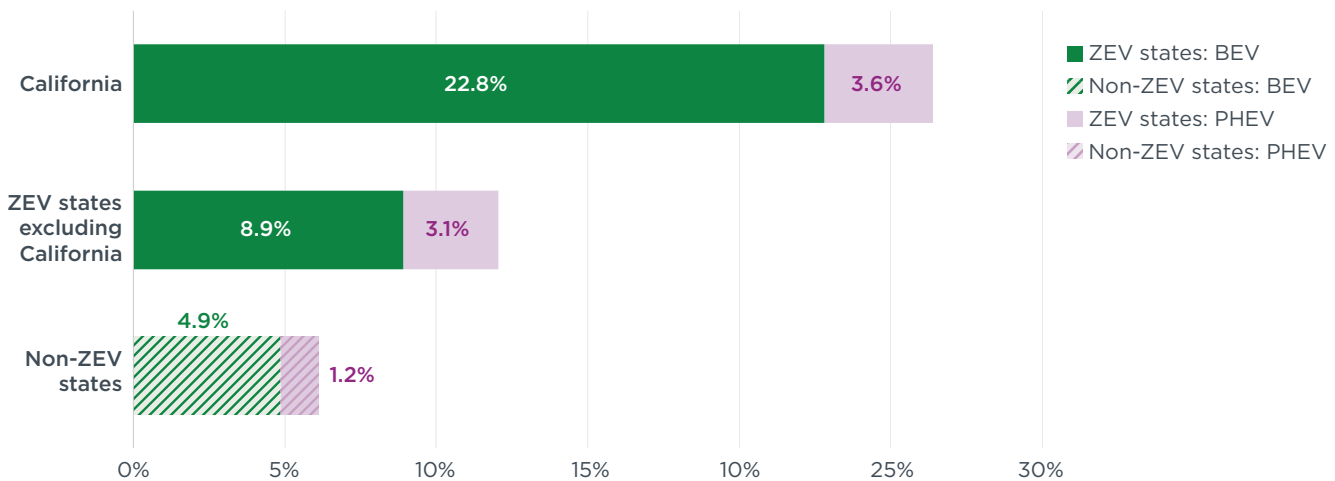
Note: Only models with sales of more than 20 vehicles are shown.

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There are some exceptions to the relationships observed between ZEV regulation adoption, EV model availability, and high EV sales. Texas, Florida, Pennsylvania, and Illinois are non-ZEV states with relatively high EV model availability. These four states are among the top six largest LDV markets in the country in terms of annual sales, and therefore are more likely to have more models available compared to states with lower annual sales. The LDV markets in these states were 11 to 22 times larger than those of Delaware, Maine, Rhode Island, and Vermont, and they had about twice the number of EV models available. Delaware, the District of Columbia, Maine, New Mexico, Rhode Island, and Vermont have adopted ZEV regulations but model availability in these states is close to the average of all states. The LDV markets in these states are relatively small and thus are more likely to have fewer EV models available than states with relatively higher populations and total LDV sales. However, compared with EV model availability in non-ZEV states with similar total LDV sales, such as Alaska, Montana, North Dakota, South Dakota, West Virginia, and Wyoming, these ZEV states had 1.3 to 13 times the EV sales shares of the non-ZEV states, and 1.3 to 7.5 more models available.

Overall, EV sales shares in ZEV states in 2023 were higher than non-ZEV states, as shown in Figure 3. California had the highest EV market share in 2023 with a 26.4% sales share. When California is excluded, the EV sales share of total LDV sales in ZEV states was around 12.0%, twice the percentage observed in non-ZEV states of around 6.1%.

Figure 3
Electric vehicle sales shares in California, other ZEV states, and non-ZEV states, 2023



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DEFINITIONS, DATA SOURCES, METHODOLOGY, AND ASSUMPTIONS

Electric vehicles (EVs): Include both battery-electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs).

Model availability: Includes models that automakers offered in the market in 2023 with more than 20 new sales.

California's ZEV regulations: These regulations, which can be adopted by other states via provisions in the Clean Air Act, include the Advanced Clean Cars (ACC) regulation for model years 2015–2025 and the Advanced Clean Cars II (ACC II) regulation for model years 2026–2035. The implementation year of ZEV regulations adopted in other states varies. More information can be found on this map (<https://theicct.org/viz-us-state-clean-vehicle-standards-may24>) that tracks states' adoption and implementation year of California's ZEV regulations for light-duty and medium- and heavy-duty vehicles.

Data sources: EV sales information is taken from the Alliance for Automotive Innovation's Electric Vehicle Sales Dashboard, <https://www.autosinnovate.org/EVDashboard>. Public and workplace charger data is from the Alternative Fueling Station Locator run by the U.S. Department of Energy's Alternative Fuels Data Center, <https://afdc.energy.gov/stations/#/find/nearest>. Purchase incentive data also comes from the Alternative Fuels Data Center, <https://afdc.energy.gov/laws/state>. Estimated 2023 population information for each state is sourced from the U.S. Census Bureau, <https://www2.census.gov/programs-surveys/popest/tables/2020-2023/state/totals/>. Model availability data is from the Automakers Dashboard, part of Atlas Public Policy's online EV Hub, <https://www.atlasevhub.com/materials/automakers-dashboard/>.

Purchase incentives: Rebates for PHEV purchases are excluded from Figure 1 because PHEV sales accounted for about one fifth of total EV sales in 2023 and several states have phased out PHEV rebates. For example, Massachusetts no longer offered a PHEV rebate as of July 2023, New Jersey has not offered a PHEV point-of-sale incentive since January 2023, and Maryland did not qualify PHEVs for an excise tax credit starting in July 2023.



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