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The American EV Transition: Looking Ahead While Lagging Behind

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Feb. 2026

The United States trails China substantially in electric vehicle adoption, facing persistent affordability gaps and infrastructure limitations. Drawing on market data and comparative analysis across both nations, this memo examines structural barriers hindering the U.S. EV transition and proposes coordinated policy and industry strategies to preserve American automotive competitiveness in the global marketplace.

Context

The global transition from Internal Combustion Engine Vehicles (ICEVs) to Plug-in Electric Vehicles (PEVs) has accelerated sharply in recent years, and China has outpaced others as the world leader in overall PEV sales. In 2024, China's PEV sales, including Battery Electric Vehicles (BEVs) and Plug-in Hybrid Vehicles (PHEVs), reached 12.9 million and comprised 46.7% of Chinese new vehicle sales (see Figure 1). China has also become a net vehicle exporter in recent years, with PEV exports rapidly growing to 1.28 million vehicles in 2024. These impressive metrics reflect over 15 years of effort by Chinese automakers and suppliers, supported by strong government backing, to build a competitive domestic PEV industry ecosystem that now delivers affordable, high quality PEVs rivaling the ICEVs of incumbent multinationals.

The United States, in contrast, lags in PEV adoption and manufacturing scale and remains less mature than those in China and Europe. In 2024, U.S. PEV sales reached only 1.3 million, or 8.1% of new vehicle sales. Charging infrastructure also lags, with the U.S. having just 200,000 charge points compared to China's 3.6 million. Looking ahead, the gap between the U.S. and Chinese PEV industries appears poised to widen further as the Republican-controlled U.S. Congress acted in the 2025 Reconciliation Legislation (H.R.1, also known as the "One Big Beautiful Bill Act"), to remove most of the tax incentives designed to support the U.S. PEV industry in the 2022 Inflation Reduction Act (IRA). Without strategic action, the U.S. risks falling even further behind China's lead in the global PEV industry.

In China, PEV sales grow while ICEV sales slow

After peaking in 2017, internal combustion engine vehicle (ICEV) sales have declined for 7 straight years

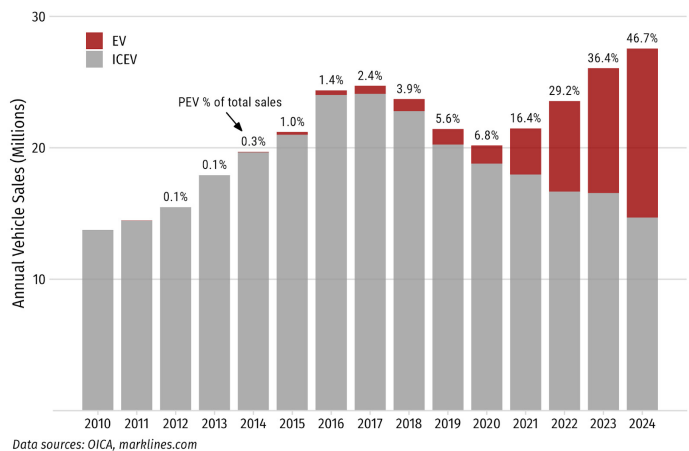


Figure 1: Annual PEV and ICEV sales in China from 2010 - 2024. For the past 7 years, PEV sales in China have increased while ICEV sales have decreased. Data from OICA and marklines.com.

Analysis

The analysis presented here focuses on the U.S. PEV market in comparison to that of China.

The Affordability Gap

The U.S. PEV market has an affordability problem. While China offers BEVs at diverse price points, ranging from mini city cars under \$5,000 to luxury vehicles, the U.S. market remains concentrated in premium segments. Figure 2 indicates that this pattern has changed little over time. In 2024, the share of vehicle listings below \$45,000 was just 2.2% in the new market and 3.6% in the used market.

BEVs have gained market share most rapidly in higher price segments, but these segments are much smaller markets, which limits overall BEV adoption. The largest portions of the vehicle market are new cars priced between \$30,000 and \$45,000 and used cars priced between \$15,000 and \$30,000. In 2024, BEVs comprised just 4% and 3.8% of listings in these segments, respectively.

Beyond the price tag, U.S. BEVs also offer less driving range per dollar compared to Chinese BEVs. In 2024, BEV offerings in China were more affordable and more diverse in available driving range compared to the limited price and range combinations available in the U.S. For example, under the \$40,000 price threshold, the U.S. market offered just 4 BEVs with an average range of 169 miles; China's market offered 130 models with an average range of 239 miles, after accounting for differences in how BEV driving range is estimated (see Figure 3).

Chinese automakers are also pushing the boundary of BEV driving ranges and charging speeds. In 2024, 41 models were available at or above 300 miles of range compared to 19 in the U.S. The highest range BEV offered in China is the 2023 Zeekr 001 (140 kWh battery), with a range of 496 miles and an MSRP of \$56,426 (autocango.com 2025). In the U.S., by comparison, the highest range BEV is the the Lucid Air (118 kWh battery), with a range of 512 miles and an MSRP of \$114,900 (Carsheet.io 2025). Furthermore, both BYD and CATL (Contemporary Amperex Technology Co., Limited) have batteries capable of charging at rates as high as 1 MW, which translates to 190 to 250 miles of range in just 5 minutes of charging. While the necessary charging infrastructure to support such high-powered charging is still in development, these proof of concept batteries show that higher battery charging speeds are coming.

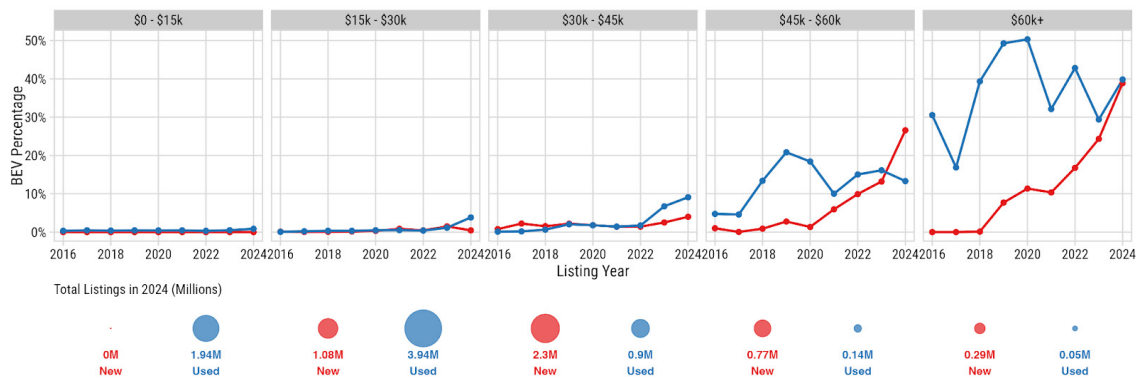


Figure 2: Battery Electric Vehicle (BEV) market share by price segment, 2016 to 2024. The chart shows the BEV percentage of all vehicle listings across five price categories for the new (red) and used (blue) markets. Higher-priced segments show the strongest growth, while BEV listings in segments below \$45,000 remain minimal. Data source: marketcheck.com.

Price vs. Range for all Model Year 2024 BEVs in China and the USA

China offers more affordable options across all range categories

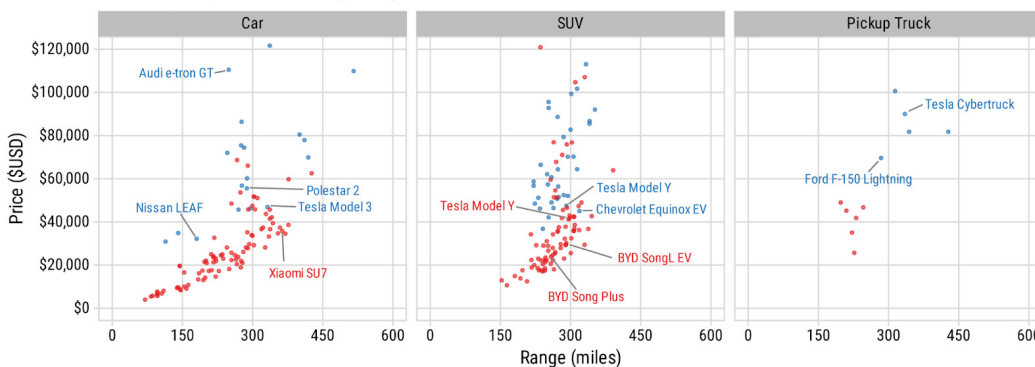


Figure 3: Manufacturer-suggested retail price (MSRP) versus driving range for model year 2024 BEVs available in the U.S. and China. Chinese automakers offer a greater variety of BEVs at more affordable prices and driving ranges. Chinese range data in the figure were reduced by 30% to account for differences in range estimation methods between the US and China. Data sources: U.S. from carsheet.io and China from autocango.com.

Different Consumers

There are many reasons why Chinese automakers are leading in PEV sales. While government support for PEVs is commonly cited, consumer preferences are also important and should not be discounted. Evidence from studies conducted over 10 years ago already suggested that Chinese consumers would be more willing to purchase a PEV compared to U.S. consumers (Helveston, 2015). These patterns are clearly visible today in the top-selling models in each market. China's bestsellers from 2025 include three domestic brands of BEVs (the Xiaomi SU7, BYD Song, and Geely Xingyuan) and Tesla's Model Y. The U.S. market, in contrast, remains dominated by traditional ICEVs, including two small SUVs (the Toyota RAV4 and Honda CRV), and two pickup trucks (the Ford F-150 and Chevrolet Silverado).

The prices for these models reinforce this contrast. For example, the lowest-price vehicle among the top four in China (the Geely Xingyuan) starts at just \$9,615 to \$13,667. In the U.S., the lowest-priced top-seller (the Toyota RAV4) starts at \$29,250. These figures point to quite different market orientations. Chinese consumers are purchasing affordable BEVs across multiple price points while U.S. consumers continue to favor conventional ICEVs, particularly larger and more expensive models such as the F-150 at \$44,095 to \$79,005 and the Silverado at \$42,700 to \$70,000 (see Figure 4). These divergent preferences underscore a central challenge for the U.S. transition to PEVs, since consumer demand remains anchored in traditional vehicle categories and price expectations.

Top 4 Selling Vehicles in **China**



Top 4 Selling Vehicles in **USA**



Figure 4: Top four selling vehicle models in China and the U.S. in the first quarter of 2025. In China, the most popular vehicles are sleek BEVs with minimalist interiors and large touch screens, available across wide price ranges. In the U.S., the most popular vehicles are small SUVs and pickup trucks with traditional interiors, with higher overall pricing compared to Chinese BEVs.

PEV Availability

A final point worth highlighting in the U.S. is that PEVs are not equally available in all regions of the country, which could exacerbate delays in more rapid adoption across the country. One particular pattern is the concentration of PEVs in states with more favorable policy support, such as states that have adopted a Zero Emission Vehicle (ZEV) mandate, and states with higher gasoline prices (see Figure 5). While the gap in PEV availability across different states has persisted over time, in recent years the share of dealerships with at least one PEV has increased rapidly across all states. PEVs are now prevalent at dealerships in the new market nationwide, with 80% of dealers carrying at least one PEV. In the used market, however, PEVs remain less prominent, with only 40% of dealerships nationwide carrying a used PEV in 2024.

Percentage of dealerships with at least one PEV listing

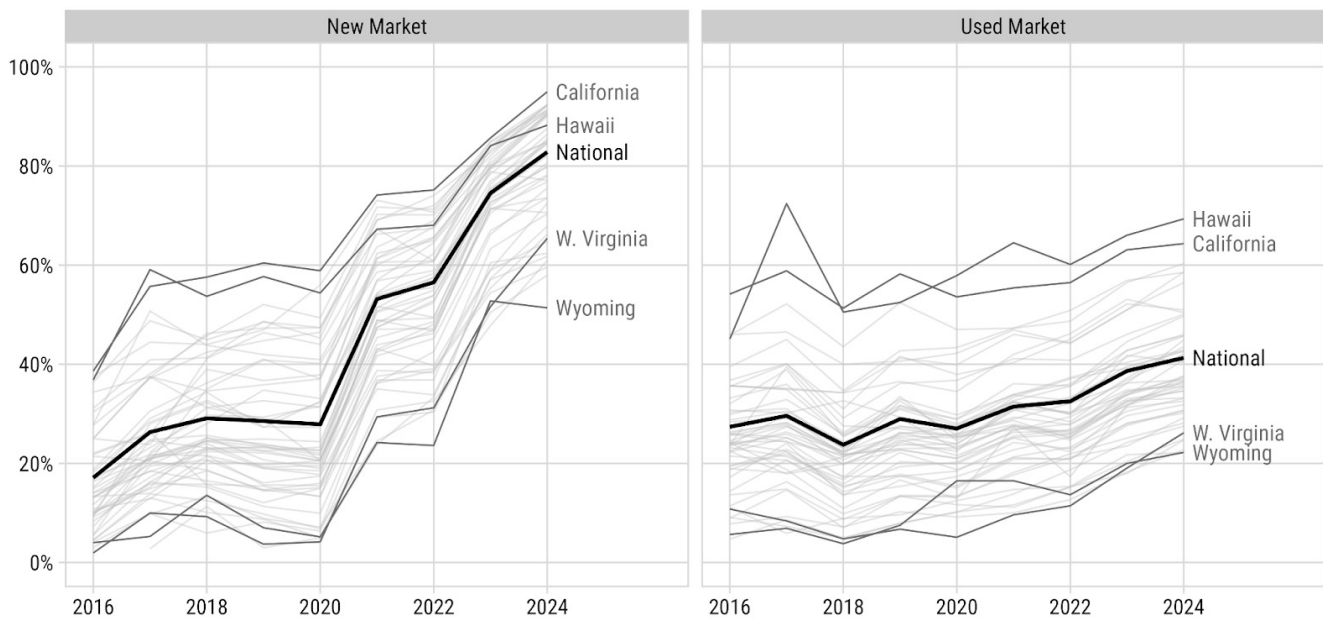


Figure 5: Percentage of dealerships with at least one PEV. States with more supportive policies and higher gasoline prices have maintained a higher portion of dealerships with PEVs, with California leading. In recent years, states with less supportive local policies have begun catching up, with 80% of dealerships in the new market having at least one PEV in 2024 nationally. PEV inventories in the used market lag, reaching only 40% of dealerships having at least one used PEV in 2024 nationally. Data source: marketcheck.com.

BEVs are also not as easily accessible across all regions of the U.S. Figure 5 compares the additional travel time required to reach the nearest dealership with at least one BEV listed under \$25,000 (new or used) relative to the closest dealership with a comparable ICEV. In 2016, large swaths of the country could be characterized as “BEV deserts,” with additional travel times exceeding 60 to 80 minutes. By 2024, these areas had contracted significantly, with coastal regions in particular showing improved accessibility. Regional disparities persist nonetheless, with many central U.S. census tracts and some in the central-southern states still requiring substantial travel time to reach a PEV at a dealership. Across all census tracts, longer travel times are typically associated with more rural areas and with lower incomes.

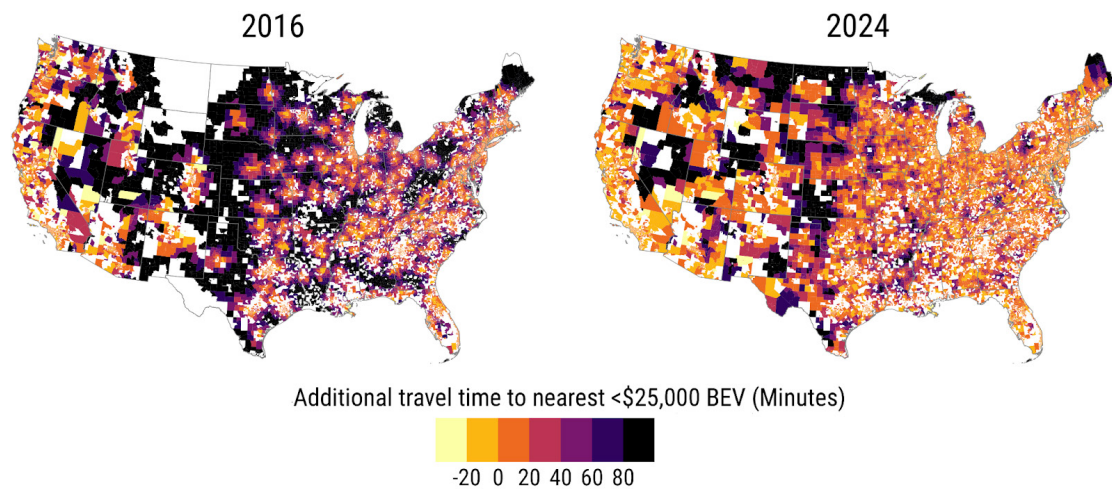


Figure 6: Map of additional travel time to the nearest BEV listed under \$25,000 beyond the nearest comparable ICEV. While long travel times to a PEV were common in large areas in 2016, these regions have contracted by 2024, with the longest travel times still persistent in parts of the central and southern U.S. Data source: marketcheck.com.

Recommendations

The current trajectory of PEV leadership in China threatens the long-term viability of the U.S. as a global automotive leader. Domestic protectionism in the form of import tariffs may insulate the U.S. from Chinese competition at home, but it does not prevent global market share erosion abroad as Chinese PEVs expand internationally. The risks extend beyond market share to employment. The auto sector supports approximately 10.1 million American jobs directly and indirectly, representing about 5% of private-sector employment and generating \$730 billion in annual paychecks. This massive employment ecosystem could face substantial contraction if the U.S. is unable to compete in the PEV transition. Trade dynamics also raise vulnerability. While the U.S. is currently a net automobile exporter, a lack of competitive PEV offerings could put this position at risk. For example, if Canada (the largest importer of U.S.-made vehicles) decided to turn to more affordable PEVs from China, the U.S. may lose a vital export market for autos.

The evidence is clear. China has established a commanding lead in the PEV transition, while the U.S. market continues to struggle with affordability, availability, and policy uncertainty. Without coordinated action from industry and government, the U.S. auto sector risks a long-term retraction in the global marketplace. This is not only about preserving one industry; it is about maintaining U.S. economic competitiveness, technological leadership, and manufacturing capabilities in a critical sector. The window for effective intervention remains open, but it is rapidly narrowing. A multi-pronged strategy is therefore needed, with policy and industry actions designed to increase scale, reduce costs, and accelerate technology development:

- **North American integration to reach scale.** Deepen integration with Canada and Mexico to create sufficient scale for competitive manufacturing. Avoid fracturing trade relationships that would reduce U.S. imports and leave U.S. factories at a smaller scale with higher unit costs.
- **Sustained policy support through the transition period.** Re-institute (and potentially expand) IRA incentives through this critical period of transition. Reduce short-term policy uncertainty so capital investment is not derailed as acceleration is needed, and use continued protection from Chinese PEV competition to catch up while focusing on cost reduction.
- **Battery manufacturing as a strategic focus.** Prioritize domestic battery production as a strategic imperative. Strengthen the manufacturing base for PEVs and create platforms to commercialize next-generation technologies from U.S. research institutions before overseas competitors capture them.
- **Targeted innovation where U.S. strengths can translate into advantage.** Focus R&D on breakthrough technologies where China does not yet have insurmountable leads, including solid-state batteries, advanced materials, and AI-integrated vehicle systems. Fund demonstration-scale efforts to commercialize early technologies central to the EV ecosystem.
- **Strategic partnerships with private Chinese businesses under clear conditions.** Leverage access to the U.S. market to form partnerships with leading PEV technology businesses in China, including battery investments and technology licensing. Use these arrangements as stepping stones to improve U.S.-made PEV performance, including higher ranges at lower cost, while supporting U.S. workers.

[1] Different testing cycles (EPA in U.S., CLTC in China) produce different range estimates, with the CLTC test tending to over-estimate range by approximately 30% compared to the EPA test.

About the Author

John Paul Helveston is an Associate Professor in the Department of Engineering Management and Systems Engineering at The George Washington University. His research focuses on low-carbon technology adoption, electric vehicle markets, and U.S.-China clean energy competition. He has extensive experience in choice modeling and has advised policymakers on electric vehicle incentive design.



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