THIRD WAY

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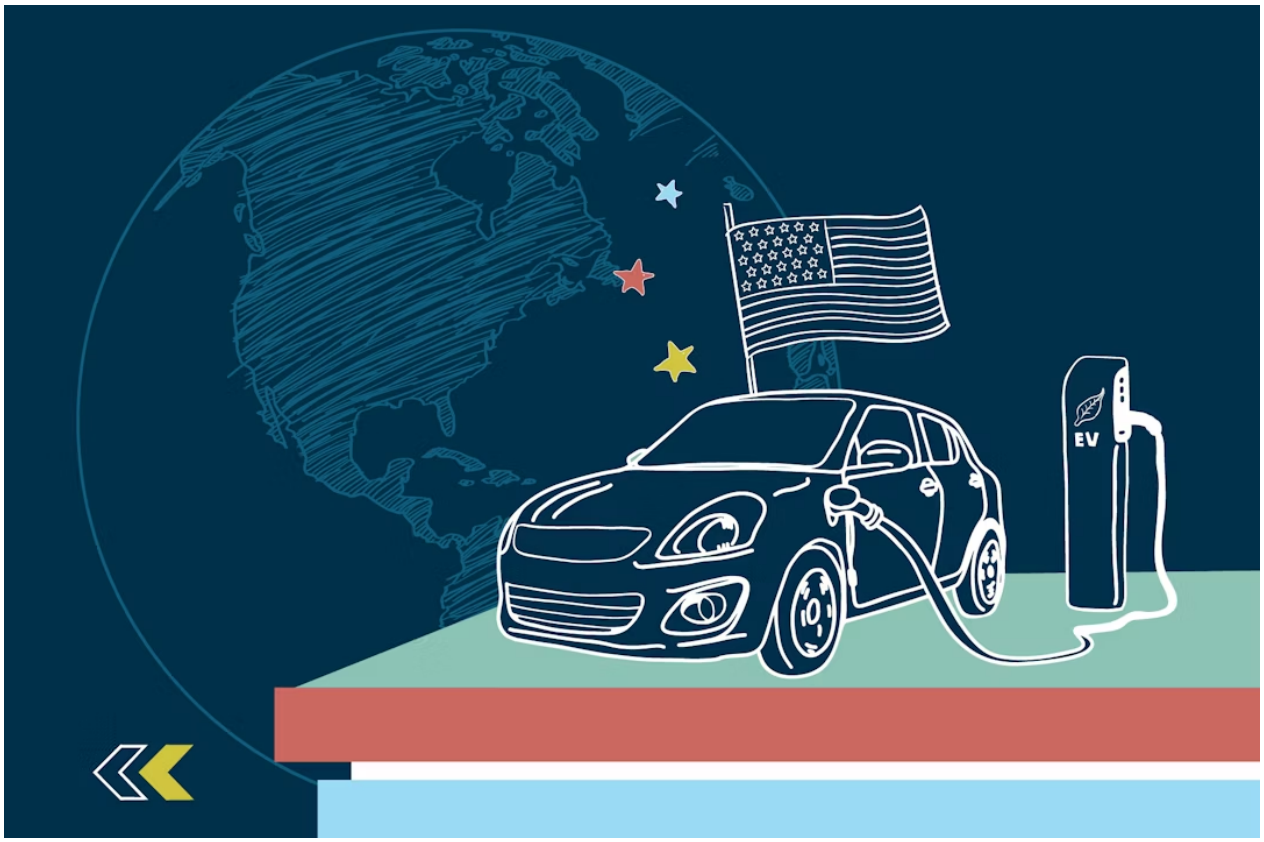
Status Report: American Competitiveness in Electric Vehicles



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Electric vehicles (EVs) are capturing growing shares of global auto sales each year, with over 14 million new EVs on the road in 2023. That's an increase of 35% over the previous year. The future of the global auto industry is electric. With the right policies in place, America can win a significant share of the emerging EV market and reap serious benefits for workers and consumers. Electrifying the auto sector will not only safeguard America's existing $750 billion auto industry, but also tap into trillions of dollars in global market potential, and create thousands of new jobs through 2050.

This memo highlights key federal policies that are helping drive EV investment in the US and offers specific milestones and examples of America's growing competitive edge in the EV sector.

How Federal Investments are Boosting the American EV Industry

Through a trifecta of legislation—the Bipartisan Infrastructure Law (BIL), Inflation Reduction Act (IRA), and the CHIPS and Science Act—the federal government is giving auto firms confidence that America is serious about electrification while equipping them with the tools they need to achieve it. These incentives, which will be distributed over the course of several years, are helping auto manufacturers shift production to EVs while also making it easier and more affordable for American consumers to purchase one and keep it charged. Some of the most impactful federal incentives include:

- $2 billion in grants and up to $40 billion in loans to help retool or expand existing auto manufacturing facilities to transition to manufacturing EVs and their components or to build entirely new facilities; [1]
- $12.5 billion in tax credits designed to promote the domestic production and purchase of EVs; [2]
- $7.5 billion in funding and $1.7 billion in tax credits to build a national network of convenient and reliable EV charging infrastructure. [3]

These federal investments will be distributed over the next decade and will continue to pay dividends long after. And based on our analysis of Rhodium Group and MIT CEEPR's Clean Investment Monitor, it's clear that these policies are already working. Public and private investment in EV sales and the manufacturing of EVs and charging infrastructure, as well as battery manufacturing, in just the past three years has surpassed $278 billion. [4]

Road to Victory: Growing US EV Leadership

Competition in clean energy is fierce, but as our research shows, the potential payoff is well worth it. Third Way's landmark analysis, in partnership with Breakthrough Energy and Boston Consulting

Group, found that there are 5 segments of the EV supply chain where the US should make the most effort to build or maintain its advantage. [5] These segments were identified based on their market size and the potential for American leadership. And we're already seeing substantial progress in these crucial areas of the EV value chain.

But America is not just participating in the race; we're leading. Our strategic investments and clean energy industrial strategy are already generating tangible wins in each of these value chain segments and strengthening our competitive edge. Let's break that down:

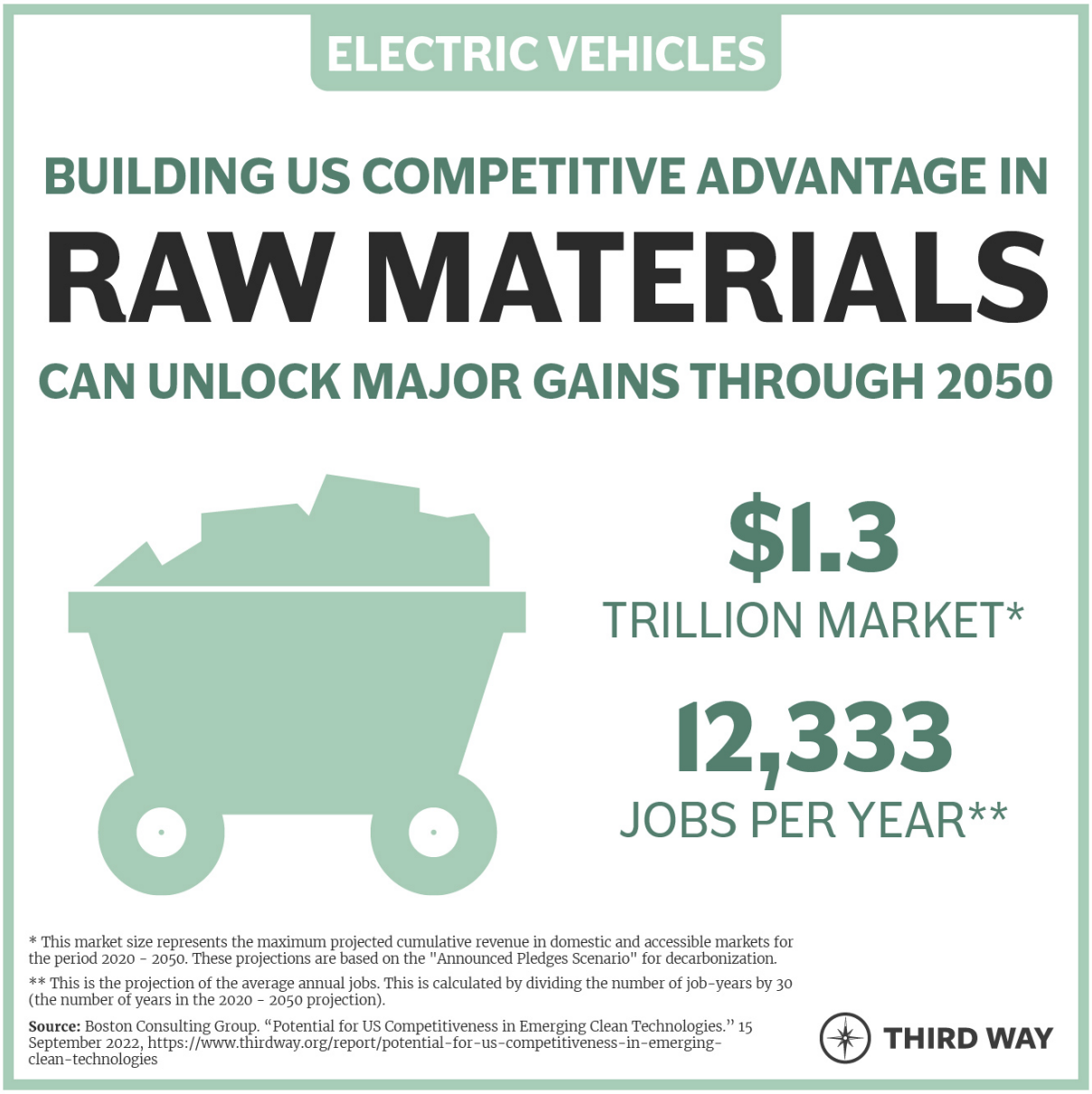
Raw Materials

China currently dominates production and processing for critical minerals used in EV batteries, including lithium, nickel, graphite, cobalt, and copper, leaving the US susceptible to supply chain disruptions. By securing access to mineral extraction—at home and from trusted trade partners—and building an independent processing industry, the US can de-risk key supply chains while creating 12,333 jobs every year and tapping into a global market worth $1.3 trillion between now and 2050. With $3.5 billion in grants from the Bipartisan Infrastructure Law to support innovation in critical minerals production and processing and manufacturing production tax credits covering 10% of production costs, the US is already beginning to excel in this arena: Here are some examples of how we're already winning in this value chain segment:

- **Building Domestic Lithium Production:** A new lithium carbonate processing plant at Thacker Pass in Humboldt County, Nevada will produce 40,000 metric tons of battery-grade lithium annually to support 800,000 EVs.

- **Boosting American Expertise in Critical Minerals:** The Colorado School of Mines, supported by a BIL grant, is boosting US expertise in critical minerals by launching a new Energy and Minerals Research Facility to tackle critical mineral and supply chain issues.

- **Cutting Reliance on China:** With a $102.1 million loan from the Department of Energy, Syrah Technologies is expanding its Vidalia Facility to produce graphite-based active anode material for EV batteries, helping the US cut reliance on Chinese-dominated supply chains.



Battery and Powertrain Manufacturing

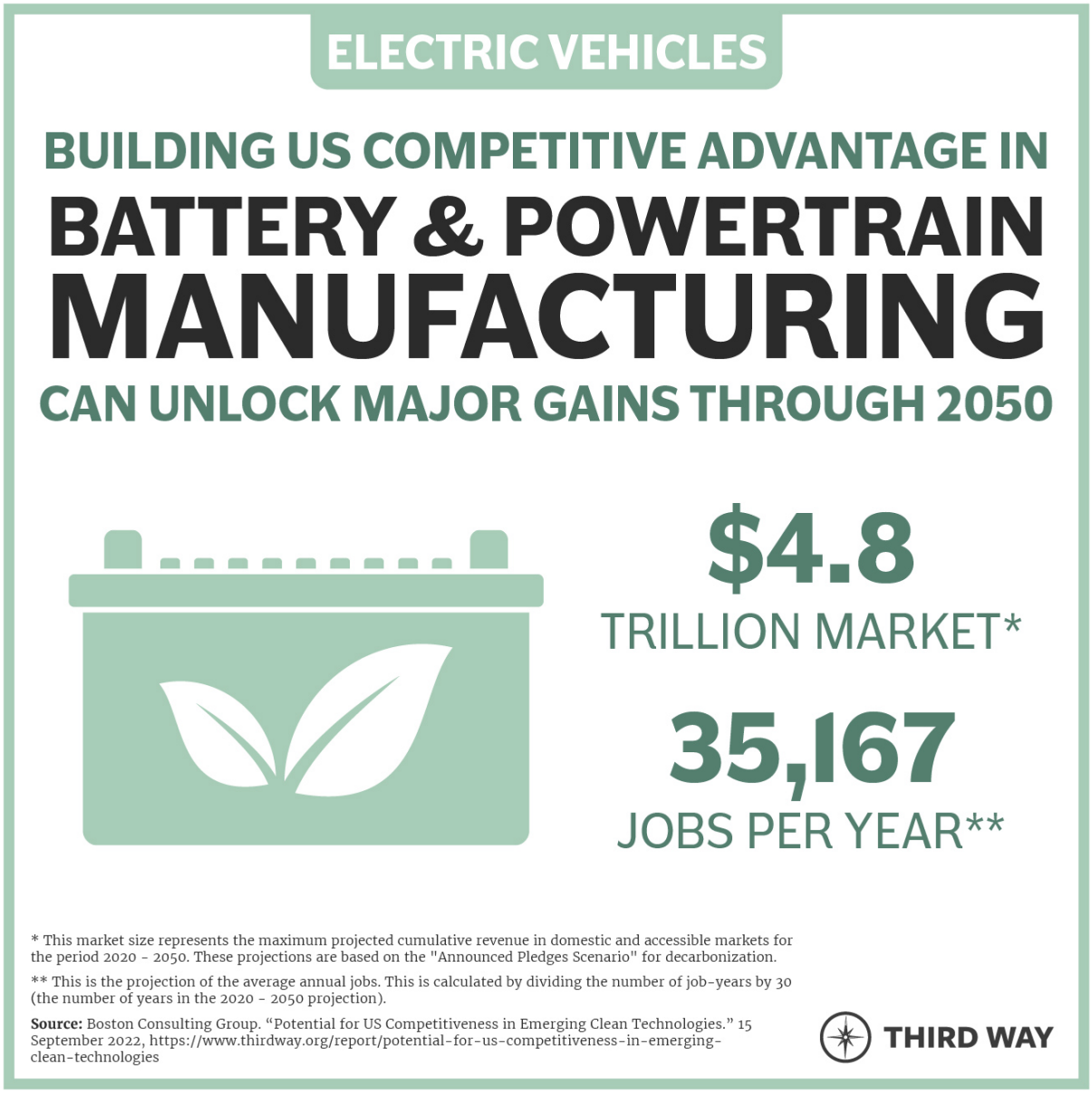
While the US is behind in battery and powertrain manufacturing–producing essential components like battery cells, battery packs, and electric motors—our lead in domestic research and battery chemistry patents gives us an opportunity to grow our competitiveness and establish a solid lead on next generation technologies. By supporting growth and empowering US manufacturers, we can carve out a sizeable piece of a $4.8 trillion global market and create up to 35,000 new jobs every year through 2050. In the past three years, we've made big strides, backed by a $3 billion grant from BIL for battery recycling and production, as well as tax credits that incentivize battery cell and module manufacturing:

- **Building a Skilled American Workforce:** The Departments of Energy and Labor launched the Battery Workforce Initiative to standardize training for battery workers and support registered apprenticeships for careers in the battery industry, ensuring the US cultivates the skilled workforce needed to meet this rapidly growing industry.

- **Attracting Foreign Investment:** Drawn by IRA tax incentives, Norwegian battery startup Freyr is investing $2.5 billion in a new battery plant in Coweta County, Georgia—solidifying America's position as a prime destination for global investment.

- **Loosening China's Chokehold:** American Battery Factory is building the nation's largest lithium iron phosphate battery cell gigafactory in Tucson, Arizona, offering a domestic alternative to China's near-monopoly on products crucial to advancing EV technology.

- **Counteracting Unfair Chinese Trade Practices:** The Biden Administration is implementing a 100% tariff on all EVs and key components imported from China, including permanent magnets, lithium-ion batteries, and critical minerals. This measure protects American manufacturers from unfair Chinese trade practices and boosts domestic production, giving American companies the opportunity to scale up and offer EVs at competitive prices in global markets.



Original Equipment Manufacturing (OEM)

Building on the storied legacy of American auto manufacturing, the transition to EVs gives US automakers the opportunity to leverage deep-rooted manufacturing expertise, automaker supply base, and an established, highly skilled workforce to lead a $30 trillion market and create 188,000 US jobs every year through 2050. And with over $7 billion in grants for manufacturing, we've already started making progress:

- **Sending Demand Signals:** The Biden Administration's new tailpipe emission standards are generating strong demand signals, providing OEMs and their suppliers with clear, regulatory certainty that the US is committed to cleaner transportation, empowering long-term investment in EV technology.

- **Ensuring a Just Transition:** Nissan is investing $500 million to pivot its Canton, Mississippi assembly plant to EV production and retrain 2,000 workers currently manufacturing gas-powered vehicles to adapt and thrive in an evolving industry.

- **Drawing in International Capital:** Driven by IRA incentives, Hyundai and other Korean auto firms are fast-tracking an EV production complex in Georgia, attracting companies that span nearly the entire EV value chain to the US.

Software Development

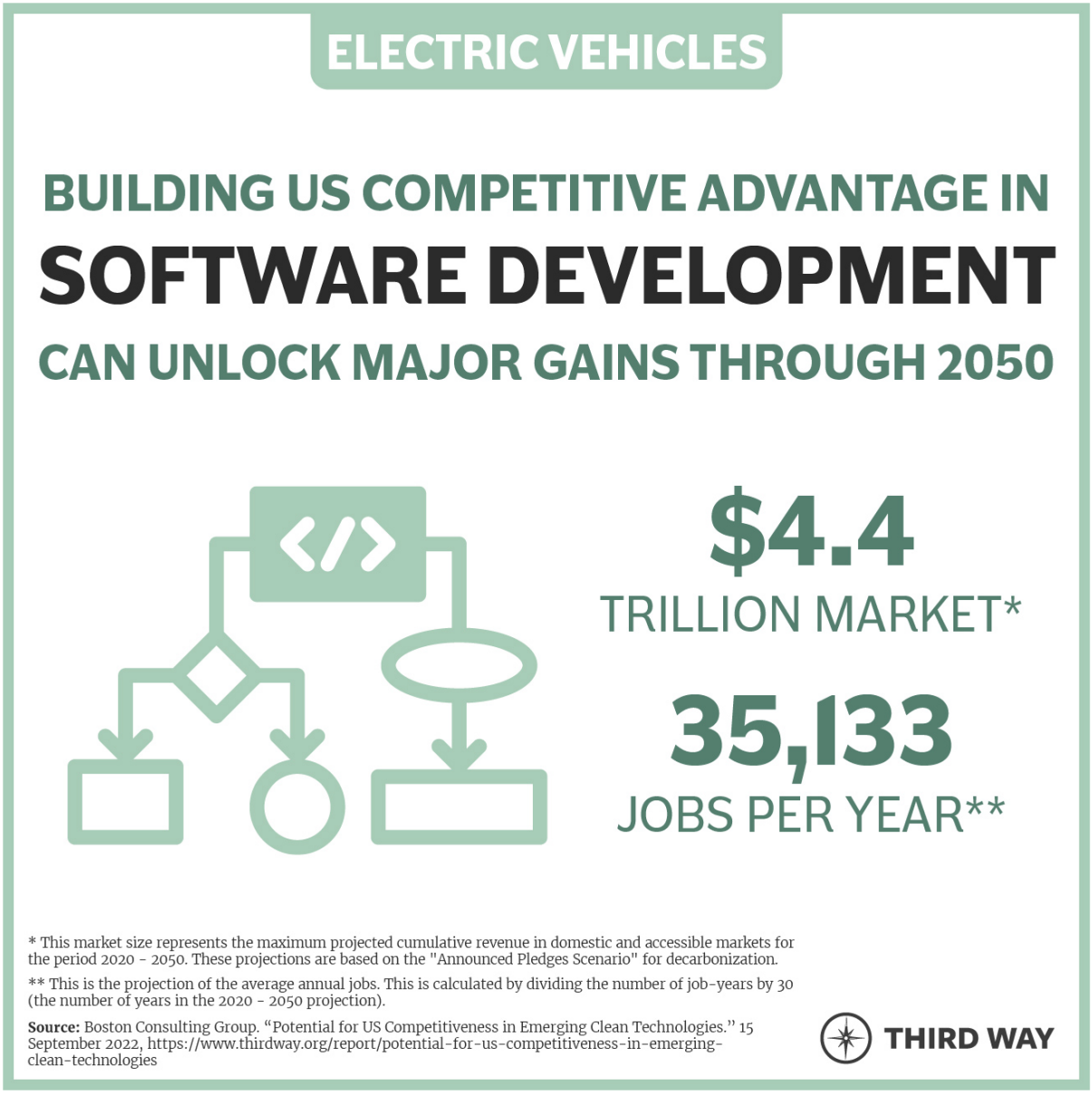
As consumers demand more high-tech, software-enabled features in their cars, software development has quickly become the backbone of vehicle innovation. US companies already lead the

world in developing features like Advanced Driver Assistance Systems (ADAS) and in-vehicle infotainment, and are setting global standards for emerging EV software like battery management and range optimization. As we look ahead, US firms are uniquely positioned to lead the global market and secure a significant share of the $4.4 trillion market while creating over 35,000 US jobs every year through 2050.

- **Maintaining US Leadership in Autonomous Vehicles:** The autonomous vehicle (AV) industry released a first-ever "State of AV" report, highlighting the significant growth in AV usage, rising consumer interest in more advanced vehicle automation, and the opportunity for US firms to capitalize on this momentum to become a global frontrunner in AV technology.

- **Advancing US Innovation in Auto Software:** GM is launching SDVerse, an innovative software marketplace developed in partnership with Magna and Wipro to connect buyers and sellers of automotive software and to help accelerate the adoption of new technologies at lower costs.

- **Addressing Cybersecurity Concerns**: The US Department of Commerce is investigating the cybersecurity risks of Chinese-made connected vehicles, scrutinizing how technology from navigation tools to driver assistance devices collect driver information and devising strategies to best protect driver information.

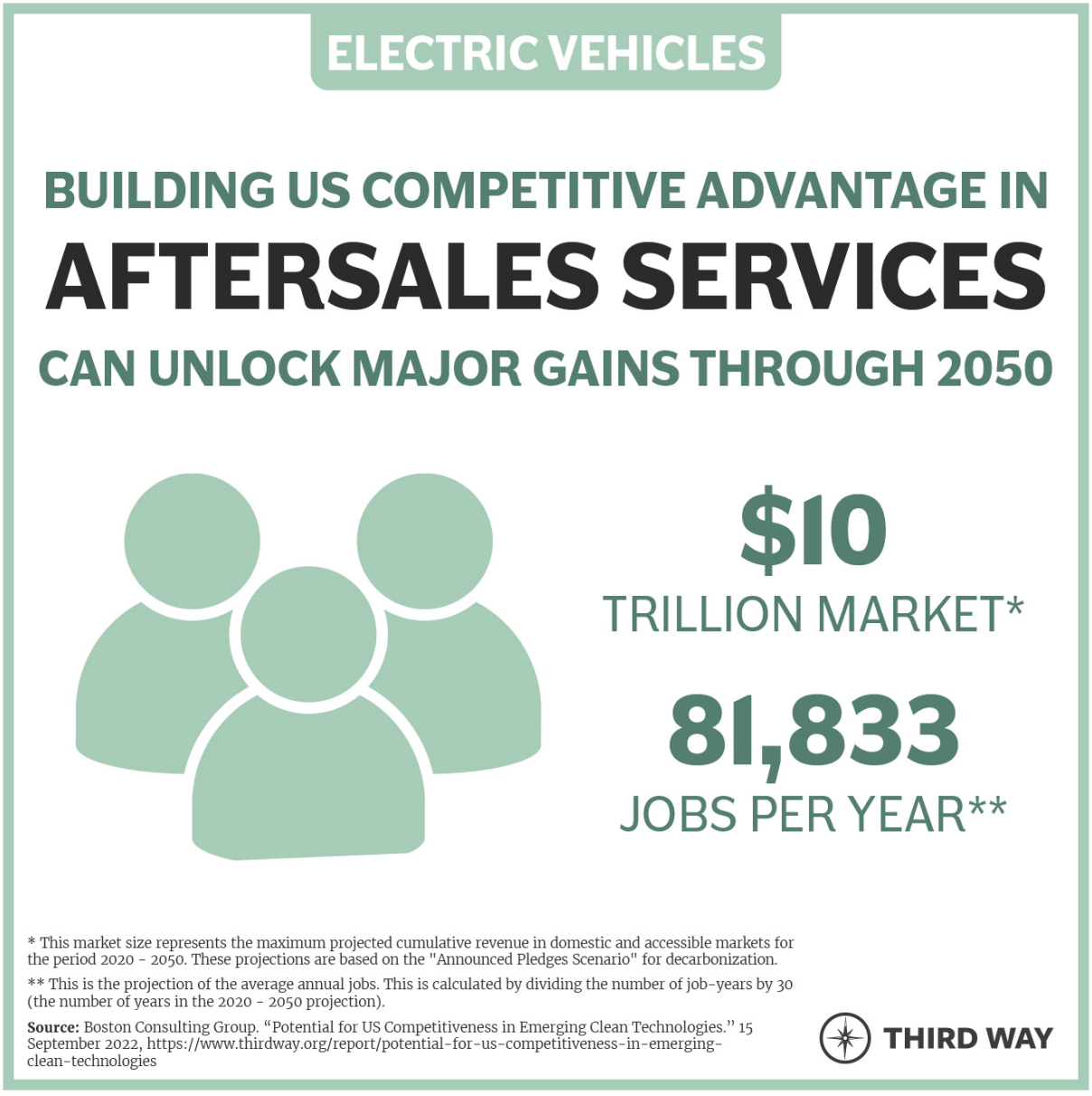


Aftersales Services

As EV adoption accelerates, so does demand for aftersales services like direct-to-consumer software updates, car apps, and increasing levels of vehicle automation. US firms are already ahead of other market players, but by doubling down on our advantage, we can seize a substantial share of a global market valued at $10 trillion and create over 80,000 US jobs every year through 2050—many of which do not require a college degree. We've already started to make significant inroads:

- **Advancing US Leadership in Vehicle Technology:** Ford's BlueCruise has been approved in Germany, enabling drivers to use the advanced driver assistance system (ADAS) on certain high-speed roads and underscoring the US's edge as a leader in delivering high-value technology to global markets.

- **Revolutionizing EV Maintenance:** Over-the-air (OTA) update technology, pioneered by Tesla over a decade ago, is revolutionizing EV maintenance by delivering improved features like bug fixes and performance upgrades directly to vehicles, setting American-made technology as a global standard.



Other Value Chain Segments

As a whole, the American EV industry has several overarching wins worth noting:

- **Cutting Costs and Foreign Dependence:** GM is partnering with Wisconsin-based Niron Magnetics to develop electric motor magnets that can be made without rare earth elements, reducing the cost of EV motors and cutting US dependence on Chinese supply chains.

- **Onshoring EV Chargers:** Bolstered by BIL funding and IRA tax incentives, over 30 companies are now producing EV chargers in the US, with a dozen more poised to join.

So, What's Next?

Competition in the global EV industry is fierce, but over the past three years, the US has made remarkable strides. From manufacturing breakthroughs to advancements in critical minerals, the US has demonstrated our capacity to compete and win.

To sustain and build on our competitive edge in the global EV market—and outpace foreign competitors like China—we have to sustain and expand our investments in EV manufacturing and deployment, maintaining a consistent commitment to leading this growing market. Policy switchbacks create volatility and uncertainty, wasting resources and fostering hesitancy in investors and industry leaders. Consistent, thoughtful policymaking will keep the US on track for enduring leadership in the EV space.

TOPICS

COMPETITIVENESS AND COMMERCIAL DIPLOMACY 30

ENDNOTES

1. This includes the $2 billion in conversion grants appropriated by Section 50143 of the Inflation Reduction Act and $40 billion in Advanced Technology Vehicles Manufacturing Program (ATVM) loans enabled by Section 136 of the Energy Independence and Security Act of 2007 and by Section 40401 of the Infrastructure Investment and Jobs Act.

2. This includes Section 13401 of the Inflation Reduction Act (the 30D Clean Vehicle Credit), Section 13402 of the Inflation Reduction Act (the 36E Previously-Owned Clean Vehicle Credit), and Section 13403 of the Inflation Reduction Act (the Qualified Commercial Clean Vehicles 45W Credit).

3. This includes $2.5 billion for charging and fueling infrastructure grants authorized in Section 11401 of the Infrastructure Investment and Jobs Act, $5 billion for the National Electric Vehicle Infrastructure Program appropriated in Division J, Title VIII of the Infrastructure Investment and Jobs Act, and $1.7 billion through the 30C Alternative Fuel Vehicle Refueling Property Credit, extended and modified by the Inflation Reduction Act.

4. Sourced from Rhodium Group/MIT-CEEPR Clean Investment Monitor data spanning from Q1 2021 to Q1 2024.

5. While our analysis with Boston Consulting Group and Breakthrough Energy did not identify raw materials as a value chain segment where the US holds a competitive advantage, we include it given the importance of a domestic raw material market for the EV supply chain and risks associated with China's dominance in this value chain segment.