



Background: EVs Are Coming. Will They Be Made in the USA?

The global auto industry is at a crossroads. New technologies, new market entrants, and an industry committed to decarbonization means that change is accelerating. Over the next decades, the industry will make a historic shift away from internal combustion engines towards electric vehicles (EVs). Consider these projections:

- By 2025, industry analysts predict sales of all-electric vehicles (known as battery electric vehicles) are likely to reach 7 percent of all U.S. auto sales and 21 percent by 2030.¹
- By 2035, General Motors has set a goal to sell only EVs and other zero-emission vehicles.²
- By 2040, Bloomberg New Energy Finance predicts electric vehicles will be a majority of new worldwide passenger car sales, reaching a 58 percent global market share.³

■ WILL EVS BE MADE IN THE USA?

The transformation of the global auto industry presents both opportunities and threats for America's manufacturing workers and communities. Projections about future adoption of EVs depend on a range of factors including but not limited to cost, development of charging infrastructure, model availability, and customer adoption. Public policies regarding energy, climate, trade, labor, and manufacturing will also play a significant role.

There is little doubt, however, that the auto industry of the future will look quite different than it does today. This means an opportunity to create a high-road, high-value, far more equitable strategy that avoids past mistakes and redresses past harms. Previous

short-sighted private investment decisions and public policy choices led to an **overreliance on outsourcing and offshoring**, a **proliferation of imported vehicles and critical components**, a **decline in the living and working standards of U.S. auto and manufacturing workers**, and **lost access to family-supporting careers for the most impacted communities**

To provide perspective for affected workers, policy makers, and community leaders, **The Economic Policy Institute** is undertaking a detailed study of the jobs impact associated with the shift from conventional to electric vehicles, forthcoming in the spring of 2021.

This background, from the **BlueGreen Alliance**, **UAW**, **United Steelworkers**, and the **AFL-CIO Industrial Union Council**, reviews the factors likely to drive U.S. job gains and job losses related to electrification of the U.S. and global vehicle fleet. We also examine the key role the auto sector plays in the U.S. economy and preview policy options that can make electrification a winning strategy for U.S. workers, industries, and the communities that need it most. Our focus is on sustaining, creating, and improving access to good-paying, secure jobs with safe working conditions.

■ WHAT WILL DRIVE THE FUTURE OF U.S. AUTO JOBS?

Potential EV Job Gains

Rapid growth of EVs will create jobs producing key components such as batteries, electric motors, electronics, regenerative braking systems, and semiconductors.⁴ Producing the materials, components, and technology that go into vehicles

makes up more than half of jobs in auto manufacturing. There is intense global competition for this high-value manufacturing work, and potential benefits for U.S. workers and communities will be lost if EVs and key components are imported, or shifted to low-wage, insecure jobs.

Maintaining and adding U.S. vehicle assembly capacity will be a central factor in the location of supply chain jobs. To reduce shipping costs and improve logistics and engineering integration, auto manufacturers often purchase or produce key auto components from locations near final assembly plants. Without major assembly facilities, it is difficult to build and maintain the advanced supplier networks necessary for globally competitive advanced manufacturing technology. To capture more domestic supply-chain jobs, the United States must reduce the market share of complete vehicle imports, which stood at 48% in 2017, and address persistent offshoring of key materials.⁵

Widespread adoption of EVs will create new demand for electricity generation and transmission, and EV charging stations, yielding opportunities for skilled electricians, power line installers, construction workers, and the manufacturing workers who will produce the equipment for EV infrastructure.

Potential EV job losses

Battery-powered propulsion systems in electric vehicles have fewer parts than in traditional ICE vehicles. In an electric vehicle, complex internal combustion engines and transmissions are replaced with batteries and motors that have fewer parts, meaning fewer labor hours per car to produce components and assemble them.⁶

Engines are often built here. Battery cells are not—yet. Manufacture of internal combustion engines and key components currently supports tens of thousands of high-skill U.S. union jobs in the United States.⁷ These workers will be at risk without a proactive strategy that treats advanced vehicle technology as a key strategic building block of the U.S. manufacturing economy, emphasizing domestic production of critical propulsion and other technology to maintain and grow U.S. jobs.

If the U.S. does not become a major location for assembly of electric vehicles, many more jobs are at risk: As noted above, auto assembly typically anchors the production of component parts—and for EVs, this production is rapidly being established outside the U.S. If assembly plants are also relocated, the U.S. will lose

not only jobs in those facilities, and in EV batteries and cells, but also in other supplier industries: steel and aluminum, glass, tires, seats, and many others.

■ U.S. AUTO JOBS DEPEND ON U.S. LEADERSHIP

The auto industry drives the U.S. manufacturing economy. Over 900,000 workers are directly employed by U.S. auto manufacturers and parts suppliers,⁸ and one job in an auto assembly plant creates an additional 7.4 jobs from upstream and downstream economic activity.⁹ The auto sector is also a major driver of spending on research and development, patents and technological innovation.¹⁰

American auto workers, steel workers, aluminum workers, rubber workers, and others know all too well what happens when the U.S. market, industry, and policy falls behind the rest of the world. For many years U.S. trade and currency policies failed to match what other countries were doing to support core industries, often sacrificing domestic production of key technologies and materials.

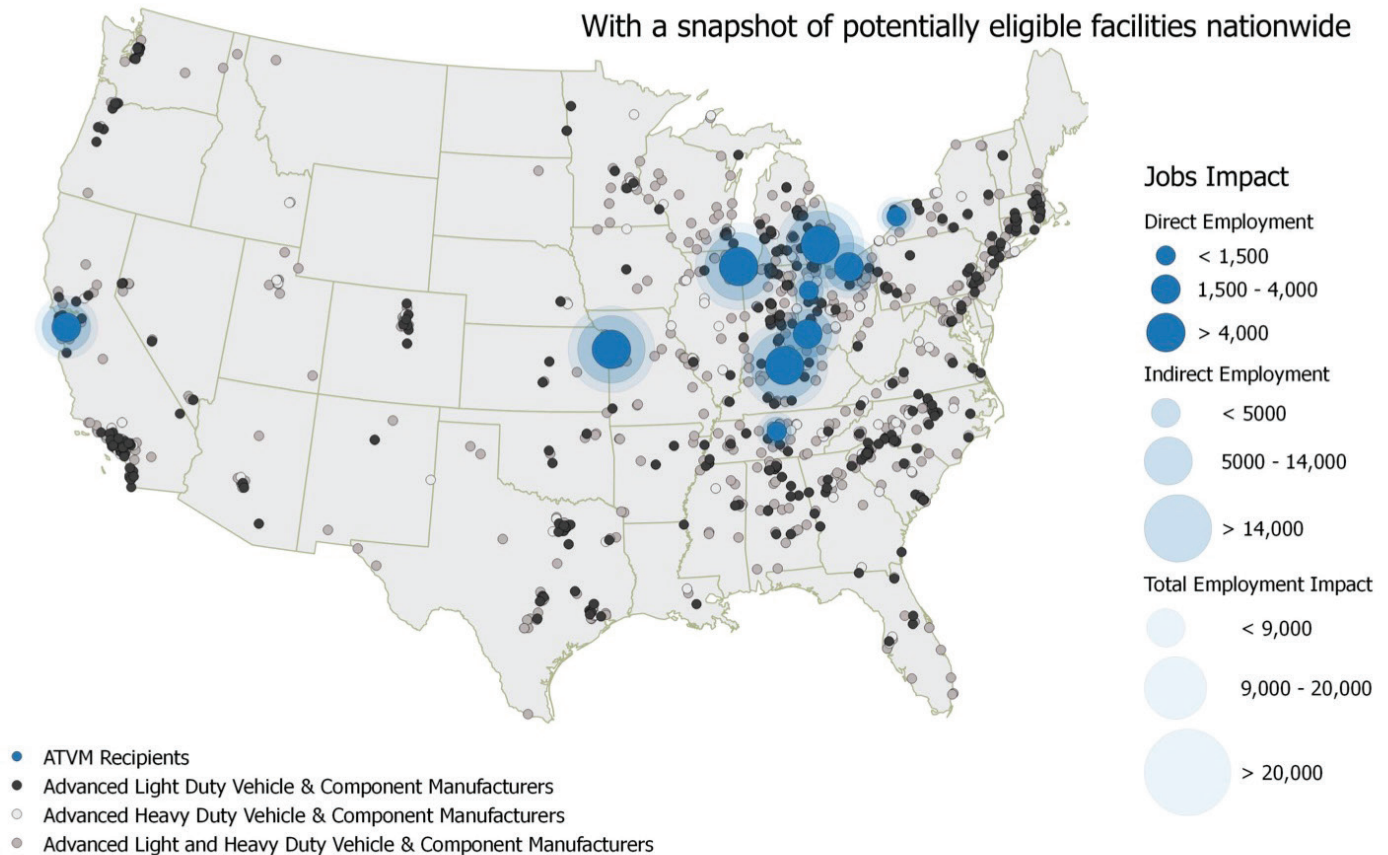
Meanwhile, at several critical junctures—in the 80's, and again in the early 2000's—U.S.-based automakers lost market share, and autoworkers lost jobs when the domestic industry failed to innovate to meet global trends particularly in improved fuel economy.

By contrast, however, industry-wide fuel economy and vehicle greenhouse gas standards adopted by the **U.S. Environmental Protection Administration (EPA)** and **National Highway Traffic Safety Administration (NHTSA)** in 2010 and 2012 positioned the industry to compete with imports, even in the face of volatile oil prices. The standards, which delivered significant benefits to consumers, were complemented by policy to aid retooling U.S. manufacturers. The resulting race for cleaner, more fuel-efficient engines and vehicles spurred enhanced investment in advanced technological innovation and production in the U.S., aiding a recovery in U.S. auto jobs from the 2008-2009 recession.¹¹

While the dynamic of potential job gains and losses are different for electrification of vehicles than for fuel economy improvements, the future of the industry still depends on building vehicles here in the U.S. that lead globally in technological and environmental performance.

FIGURE 1: MANUFACTURING LOANS, GRANTS AND TAX INCENTIVES SHOW CLEAR BENEFIT

Example: Employment Impacts of Advanced Vehicle Technology Manufacturing (ATVM) Loans



Source: BlueGreen Alliance, [Advance Technology Vehicles Manufacturing Loans: Employment Impacts](#), 2016

■ ADDRESSING THE LONG-TERM DECLINE IN THE QUALITY OF U.S. AUTO JOBS

Technological progress on its own does not guarantee quality job opportunities for the workers or communities who help create it. Unwise tax, trade and labor policies have hollowed out U.S. manufacturing, encouraging the outsourcing and offshoring of jobs and leaving remaining workers with less compensation and deteriorating working conditions. As the Center for American Progress reports, “many of the new auto manufacturing jobs created in the past decade have been non-union or temporary positions, which come with lower wages and benefits, fewer job protections, and little opportunity for growth.”¹²

Unfortunately, this includes EVs. Initial indications are that major automakers are not pursuing a high-road, family-wage strategy for new jobs in EV assembly and core components, and are instead resorting to offshoring, outsourcing, and the use of low-wage, non-union labor for even the most advanced manufacturing operations.¹³

Shortsighted public policy, tolerating low-wage jobs in high value-added manufacturing industries, is costly to taxpayers. Half of all temporary workers in manufacturing receive some form of public assistance, because low wages and inadequate non-cash compensation (such as sub-standard health insurance) are not sufficient to support themselves and their families.¹⁴

The decline of family-wage U.S. manufacturing jobs is not an accident or the result of impersonal “market” forces. Government and industry leaders made deliberate choices which cost U.S. workers their livelihoods. As the auto industry goes through a major

transformation, we can make different choices this time around.

■ WHERE WE STAND NOW: THE U.S. LAGS FAR BEHIND GLOBAL COMPETITORS

The Biden administration has pledged to reinvigorate American manufacturing and re-establish the U.S. as a leader in action on climate change. The U.S. has already re-joined the Paris Agreement, but four years of inaction have put the U.S. far behind other nations in public and private investments needed to make the U.S. a competitive player in vehicle electrification (see Figure 2).

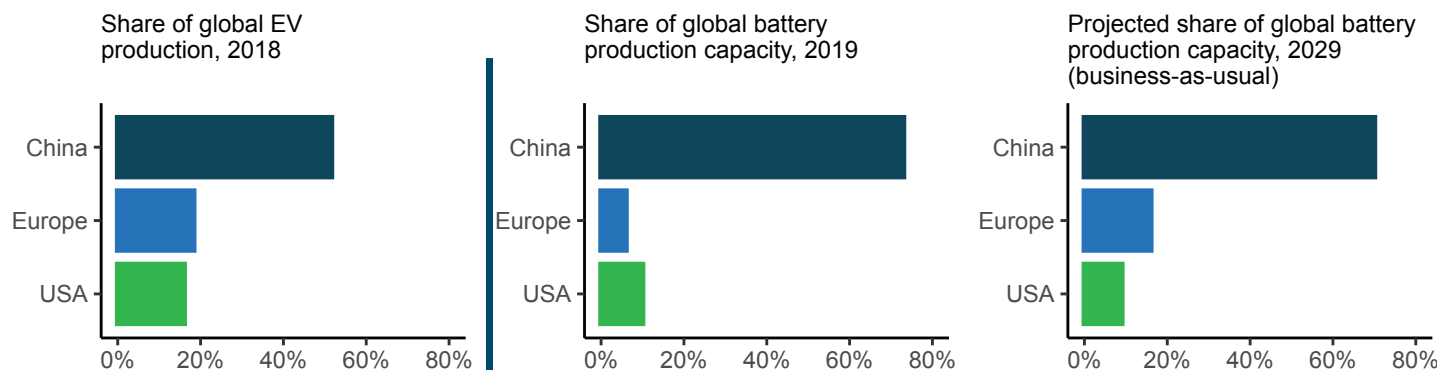
- ▶ **China** has invested more than \$60 billion to support EV manufacturing. Chinese firms, either owned or supported by the Chinese government, currently produce 60 percent of passenger EVs sold around the globe and produce almost 70 percent of battery cells.¹⁵ China also controls some 80 percent of the supply of rare earth

minerals—which are essential for aerospace, defense, and EV production—and may impose export controls on these vital materials.¹⁶

- ▶ **The European Union (EU)** has established the European Battery Alliance to promote production of batteries and key components within EU countries¹⁷ and recently approved \$3.5 billion to support battery research and production.¹⁸
- ▶ **South Korea** is home to LG Chem, the world's largest producer of lithium-ion batteries for electric vehicles, with a 24.6% market share. The company has plans to triple its battery production and is currently considering where to locate that capacity.¹⁹

If the U.S. fails to make public investments and adopt smart public policies to encourage and attract investment in the growing electric vehicle market, companies will locate production and supply facilities in countries that *are* making these investments.

FIGURE 2: COMPARISON OF GLOBAL EV AND BATTERY PRODUCTION CAPACITY



Sources: The International Council on Clean Transportation, "[Power play: Canada's Role in the Electric Vehicle Transition](#)," April 2020; Benchmark Mineral Intelligence, [Written Testimony of Simon Moores](#), Managing Director, Benchmark Mineral Intelligence, For US Senate Committee on Energy and Natural Resource, June 24, 2020.

POLICY PRIORITIES: A HIGH-ROAD STRATEGY FOR WORKERS, COMPANIES, AND COMMUNITIES

In the coming months and years, global auto manufacturers will make decisions about where to locate hundreds of billions of dollars of investment in production of EVs, batteries, battery materials, and other components of the EV supply chain. Now is the time for U.S. policy makers to implement and build on the major plans laid out by the Biden-Harris

administration, to ensure U.S. workers, companies, and communities will see gains from these emerging and advanced technologies.

Urgent steps include:

- **Ensure a coordinated industrial policy** centered on maintaining and growing high-quality union jobs in U.S. manufacturing while combating climate change

and advancing equity. This must feature equally robust manufacturing, procurement, trade, tax, and energy policies working together to promote clean energy and U.S. industrial production—with a specific focus on advanced vehicle technology manufacturing.

- **Return to smart vehicle standards:** A decade of strong fuel economy and clean vehicle standards, jointly developed with labor, community, environmental, and industry groups at the table, drove both innovation and job creation while reducing greenhouse gas emissions. The rollback of these successful standards in 2020 put manufacturing jobs directly at risk. One of President Biden's first executive orders directs the EPA to consider "suspending, revising, or rescinding" this rollback. Now a new generation of standards should put the U.S. back in a leadership role as a market for advanced vehicle deployment and production.
- **Invest to retool American manufacturing** to safeguard and create jobs building EVs and key components. This includes:
 - **Expand the funding and scope** of existing advanced vehicle manufacturing loans, grants, and tax incentives. This will support reshoring, expansion, retooling of domestic manufacturing across EVs, key components, and the related supply chain.
 - **Focus on manufacturing conversion of plants at risk of closure** and to bring new manufacturing into existing plants, directly tracking the status of plants producing components that are exclusive to ICEs.
 - **Target investments to rebuild manufacturing communities**, strengthen supplier networks, and improve job quality, equity, and environmental outcomes throughout the supply chain; and to ensure impacted, low-income and communities of color see both environmental and economic benefits and real pathways into family-supporting manufacturing careers.
 - **Tax credits, loans and other public subsidies must be contingent** on acceptance of high-road employment strategies, including fair compensation, upholding civil rights and health and safety protections, and freedom of association.
- **Make strategic investments and coordinate to fill gaps in essential supply chains**, including semiconductors and battery cells, as well as environmentally and socially responsible production, reclamation, and recycling of critical EV materials—such as lithium and cobalt.
- **Enforce and strengthen policies to leverage the U.S. advantage in basic research.** The United States is still a leader in the research that drives clean-energy breakthrough. We should enhance this leadership through programs such as the proposed Biden "Earthshots", and do more to ensure we produce the technology we invent. Our top competitors have very active programs to develop or acquire new technology for home country manufacturing advantage, while the United States does not enforce even the weak provisions it has on the books.
- **Take a new approach to trade agreements, and trade enforcement** focused on protecting workers, consumers, and the environment instead of protecting the right of corporations to shift jobs and resources to low-cost, low-regulatory environments throughout the manufacturing supply chain and stem offshoring and the leakage of jobs—and pollution—overseas.
- **Boost incentives** especially for low-and-moderate income households, for purchase of domestically manufactured EVs and charging stations, and for low and moderate income households and make major investments to **rapidly and equitably increase availability of electric vehicle charging** to further expand the domestic market.
- **Electrify publicly owned vehicle fleets at all levels of government.** The U.S. government owns or leases more than 640,000 vehicles, allowing efficiencies of scale when transitioning to electric vehicles and building out charging stations. The federal government can set high-quality environmental, labor and safety standards for manufacturing, operations and maintenance as a benchmark for similar transitions by state and local governments and private industry.

■ A PROACTIVE STRATEGY TO MAINTAIN AND EXPAND U.S. JOBS AND CRITICAL SECTORS

A focused effort to win a significant share of the growing vehicle electrification market will be essential to maintain and create jobs for U.S. workers and preserve a strong U.S. manufacturing base. A pro-active strategy to sustain core manufacturing industries is also essential to U.S. national security, and to maintaining U.S. leadership in research and development, innovation and new technologies.

The Biden-Harris administration has already taken important steps to prioritize well-paying jobs across the clean economy and commit to a new generation of energy, manufacturing and infrastructure investments that deliver clear economic and environmental benefits particularly in the most impacted communities and ensure equity and diverse workforce.

Taking action now to promote leadership in the next generation of vehicles, manufacturing, high-road, high-wage U.S. jobs will be a critical to meeting these goals.

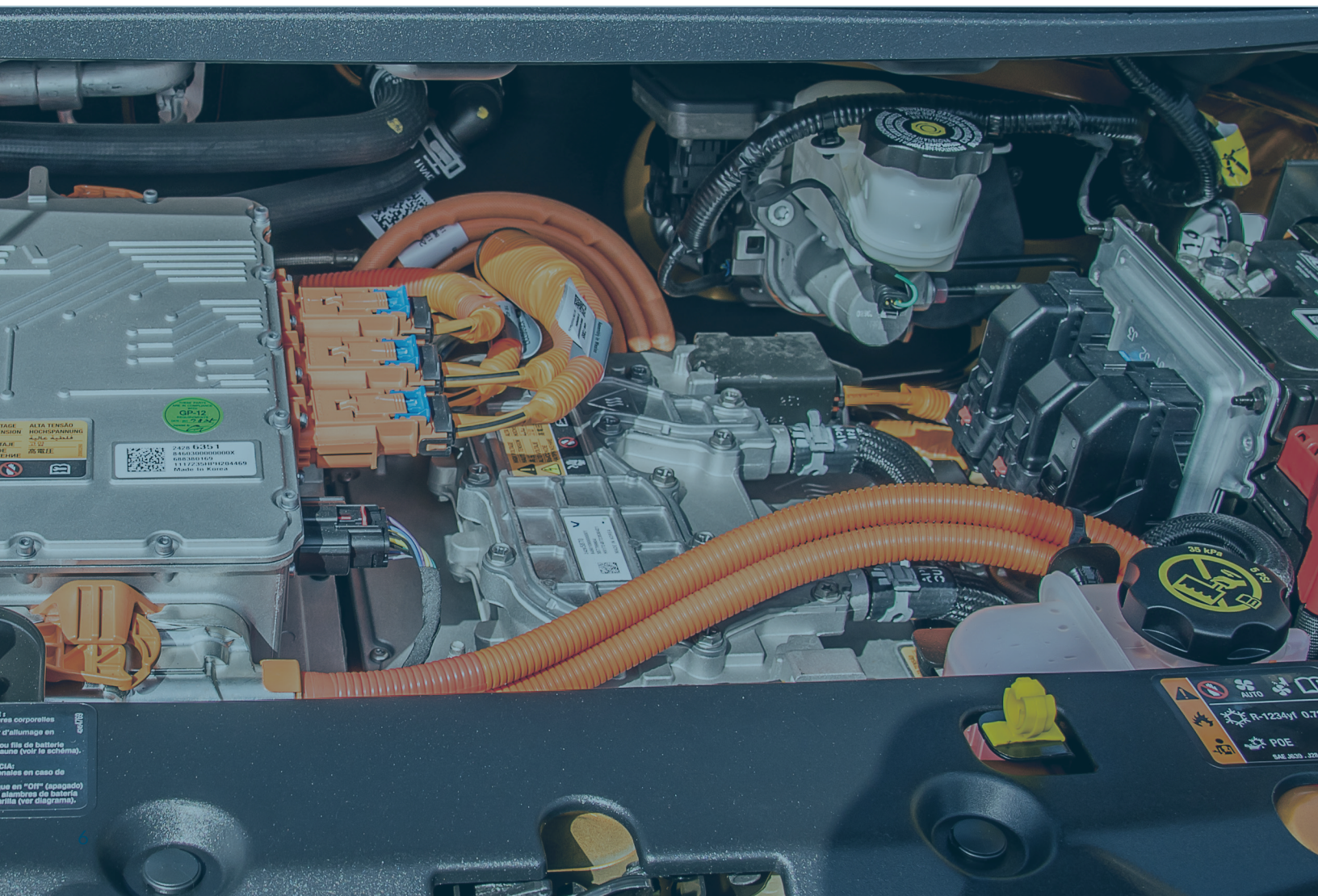
Aggressive, coordinated action is needed to increase and sustain investment, production, jobs, and equitable outcomes in a critical U.S. manufacturing sector, and in manufacturing communities across America.

With the right policy choices, that avoid and address the mistakes of the past, these goals are achievable and will deliver the results working people across the nation need on jobs, equity, and climate change.

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ABOUT

The **AFL-CIO Industrial Union Council (IUC)** brings together manufacturing unions to develop strategies and promote policies to revitalize the U.S. manufacturing industries. The IUC takes a leadership role in issues related to the global economy, Chinese currency manipulation, clean energy, and development of green jobs.

The **BlueGreen Alliance** unites labor unions and environmental organizations to solve today’s environmental challenges in ways that create and maintain quality jobs and build a clean, thriving, and equitable economy.

The **International Union, United Automobile, Aerospace and Agricultural Implement Workers of America (UAW)** is one of the largest and most diverse unions in North America, with members in virtually every sector of the economy.

The **United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union (USW)** represents 850,000 workers in metals, mining, pulp and paper, rubber, chemicals, glass, auto supply and the energy-producing industries, along with a growing number of workers in health care, public sector, higher education, tech and service occupations.