



Good Policy Will Drive Electric Vehicle Adoption:

We Need to Get This Right

by Evan Belser and Chris Whitehead

A look at federal, congressional, and state policies to reduce emissions from the transportation sector through the widespread adoption of electric vehicles.

Fossil-fuel derived transportation is the largest source of greenhouse gas emissions in the United States, emitting over half of the total ozone- and particle-forming oxides of nitrogen (NOx) emissions.¹ President Joe Biden hopes to make electric vehicles (EVs) account for 50% of all new passenger vehicles sold in this country by 2030.² Currently, EVs and hybrids account for a rapidly growing portion of the domestic fleet (see Figure 1). A recent Bloomberg study concludes that, at about 5% EV adoption, countries reach a tipping point and head toward mass EV adoption. The United States has surpassed the 5% threshold.³

State and federal policy will be primary determinants of the rate of transportation electrification and are interconnected to other primary determinants, including intrinsic growth in demand for EVs and EV production cost declines.⁴ While vehicle manufacturers are making historic investments in EVs because there is a strong business case to do so (above and beyond what's necessary for compliance), public policy can further validate those investments.

The widespread transition to zero-emission transportation technologies could produce emission reductions in 2050 that could yield \$72 billion in avoided detrimental health impacts, annually saving approximately 6,300 lives and avoiding more than 93,000 asthma attacks and 416,000 lost workdays.⁵ Figure 2 shows projected health and climate benefits that would result from meeting EV rollout goals.

Federal Policy Opportunities

Federal regulation should help support the industry's shift toward EVs, unlock value for customers, and modernize the nation's transportation infrastructure including the electric

grid. First, emission standards for air pollution will be critically important. When it comes to new light-duty vehicles, the U.S. Environmental Protection Agency (EPA) sets emission standards for greenhouse gases (GHGs), NOx, particulate matter, hydrocarbons, and carbon monoxide.⁶ These are numeric mass-per-distance standards that vary based on the type of vehicle, and for which automakers demonstrate compliance on a fleet-wide basis.⁶ EPA just finalized GHG standards for light-duty vehicles for 2023–2026 model years. These standards are tough, but achievable, and are a return to the trajectory the industry was on for many years (the GHG standards were temporarily relaxed for 2020–2021 model years in most states).⁷ Now, the agency is preparing to propose GHG standards for 2027 model year and beyond.⁸ With the advent of EVs, EPA has the opportunity to establish a schedule by which tailpipe emission standards reach zero. Europe and California target 2035 as the deadline to cease sales of new light-duty vehicles that emit air pollution, and EPA is being challenged to keep up.⁹

Second, EPA has an opportunity to recognize EVs in the Renewable Fuel Standards (RFS) Program. Congress created the RFS Program as a national policy to reduce GHG emissions and expand the nation's renewable fuels sector, while reducing reliance on imported oil within the transportation sector.¹⁰ EVs achieve all these objectives, especially when the electricity used to charge EVs is generated from renewable sources.

Besides EPA's regulation of air pollution, federal agencies have a role in infrastructure. Abundant EV charging stations and a robust electric grid are both fundamental to the future integrity of our nation's transportation infrastructure. A joint effort by the U.S. Department of Energy and the Department

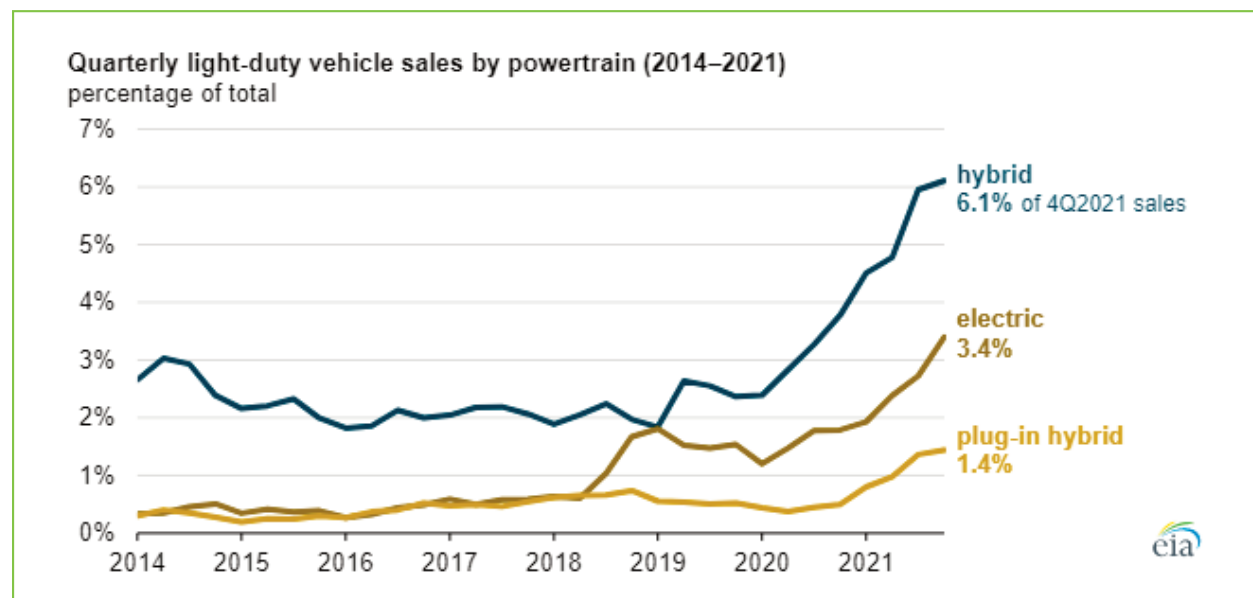


Figure 1. Quarterly light-duty vehicle sales by powertrain, 2014–2021.

Source: <https://www.eia.gov/todayinenergy/detail.php?id=51218>

American Lung Association Healthy Transportation Scenario Results

Health Benefits in 2050			Value of Benefits in 2050	
Premature Deaths Avoided	Asthma Attacks Avoided	Lost Work Days Avoided	Health Benefits	Climate Benefits
6,300	93,000	416,000	\$72 Billion	\$113 Billion

Figure 2. American Lung Association health and climate projections for EV adoption.

Source: American Lung Association. *Road to Clean Air: Benefits of a National Transition to Electric Vehicles*; Executive Summary, 2020.¹

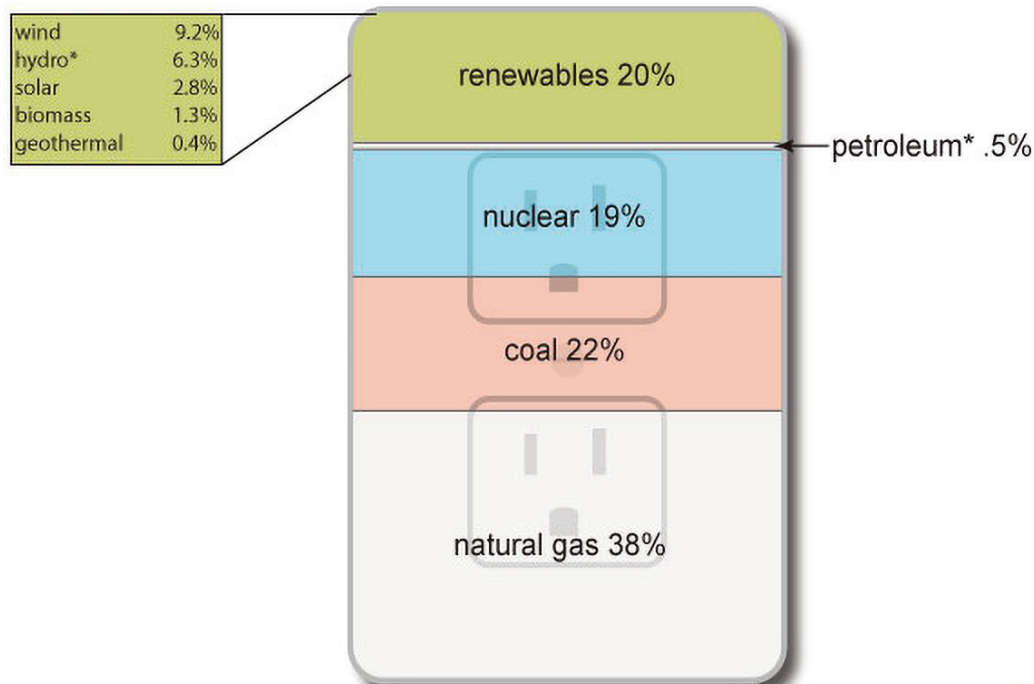
of Transportation is directing \$5 billion in funding to states to install chargers along highways, helping foster a positive experience for EV drivers coast-to-coast. And the agencies are also distributing \$2.5 billion in competitive grants to grow charging networks where it will help communities that are overburdened with air pollution and lack of access to clean energy.¹¹

From an air quality and climate perspective it matters what

energy supply EVs use to charge. Last year, coal and natural gas accounted for roughly 60% of all electric generation in the United States (see Figure 3). Future EPA regulation of the power generation sector and the growth of renewable energy will help reduce emissions, but many currently proposed largescale renewable projects will not be feeding the grid until around 2030. A large portion of this energy would come from offshore wind projects which also rely on upgrades to our existing electric grid.¹²

Sources of U.S. electricity generation, 2021

Total = 4.12 trillion kilowatthours



Data source: U.S. Energy Information Administration, *Electric Power Monthly*, February 2022, preliminary data

Note: Includes generation from power plants with at least 1,000 kilowatts of electric generation capacity (utility-scale).

*Hydro is conventional hydroelectric. *Petroleum includes petroleum liquids, petroleum coke, other gases, hydroelectric pumped storage, and other sources.



Figure 3. Sources of U.S. electricity generation, 2021.

Source: <https://www.eia.gov/energyexplained/electricity/electricity-in-the-us.php>

Congressional Opportunities

Ultimately, whether the United States becomes a leader on EVs depends on Congressional action. Earlier this year, with bipartisan support Congress passed the CHIPS and Science Act of 2022, which will enhance domestic supply of semiconductors which, among many other uses, are crucial for automotive manufacturing. Also with bipartisan support, Congress passed the Infrastructure Investment and Jobs Act of 2021, and as mentioned above federal agencies are moving money to states to build out our nation's EV charging network.

Most recently, Congress passed the Inflation Reduction Act of 2022 (IRA), albeit without bipartisan support. The IRA includes historic measures to support the industry's transition to EVs, and clean energy broadly. It opens up private investment opportunities for creating and maintaining new EV charging infrastructure. The IRA also provides tax credits to lower the up-front cost of commercial and retail EVs. This will help unlock the significant savings EV owners enjoy as compared to owning a vehicle with an internal combustion engine (including lower fueling and maintenance costs), and further accelerate consumer interest in EVs.¹³ The law also includes manufacturing production credit for those who manufacture EV batteries, loan programs for EV manufacturing, and other measures to establish strong domestic manufacturing.

The societal benefits from zero-emission transportation would be overwhelming. Recent Congressional action will

yield some of these benefits, but that is only a start. Congress must continue to act. Besides addressing air pollution and climate change, there are many policy goals that could motivate future EV-focused legislation and earn bipartisan support. These goals include growth in domestic manufacturing, robust supply chains, lower energy bills, reliable infrastructure, and global economic competitiveness.

Last, in what could be a highly effective and durable national policy, Congress could enact a carbon border adjustment. This could take various forms, with or without a price on carbon, but would ultimately address differences between trading partners on climate-related policy and the emissions intensity of the traded commodities. Several carbon border adjustments have been introduced recently by Congressional Democrats, and prominent Republicans have endorsed the concept of a carbon border adjustment.¹⁴ Such legislation would align with well-established methods of using trade law to ensure competition in the market and the advancement of our nation's values.

State Policy Opportunities

With or without federal action, states can be instrumental in growing the national fleet of EVs.

California has a unique role rooted in decades of work to address some of the worst air quality in the nation.¹⁵ Approximately 17 states have adopted California standards for light-duty vehicles, accounting for approximately 40% of the new-vehicle market.¹⁶ While California's zealous vehicle

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regulatory programs can be controversial, and currently the target of legal challenges,¹⁷ history shows that California and the other states that elect to adopt its standards will help decarbonize personal mobility. Insofar as the federal requirements continue to modulate between regulatory and de-regulatory efforts by successive administrations, these states can help provide stability and a level playing field for vehicle manufacturers and spur continued investment in EVs and the infrastructure to support them.

Next, states have public utility commissions (PUCs) or similar and have significant opportunities to ensure capital investments and management decisions align with the EV

future.¹⁸ For example, state PUCs can make it easier and cheaper for businesses and homeowners to install charging equipment. PUCs could welcome the ability for some EVs to discharge electricity back to the house or even back to the grid (“bidirectional”).¹⁹ Bidirectional EVs show promise to balance the grid, ensure it is resilient in the face of severe weather events, and reduce the need to rely on expensive (and fossil-fuel intensive) power production methods used to meet peak demand.

The widespread electrification of transportation is underway. This is good for air quality, the domestic economy, and consumers. Public policy at all levels should embrace this evolution, and ensure we get this right. **em**

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