

Submitted via: www.regulations.gov

July 5, 2023

U.S. Environmental Protection Agency
EPA Docket Center
Office of Air and Radiation
Docket No. EPA-HQ-OAR-2022-0829
Mail Code 28221T
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Comments to Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles

I am an Associate Professor of Law at the University of Oregon School of Law and a faculty member in its Environmental and Natural Resources Law Center. I have worked on clean air and energy policy for nearly three decades. Most recently, I served as the Chief Counsel to the Senate Environment and Public Works Committee in 2021 and 2022. Prior to my current appointment, I was the Vice President for Energy and Environmental Policy at the Center for American Progress, a leading Washington, DC think tank. Prior to that I worked for Rep. Henry A. Waxman in the U.S. House of Representatives for more than 18 years, holding senior positions on the House Oversight Committee and the House Energy and Commerce Committee. I worked extensively on energy and environmental policy during my years of service in the U.S. Congress.

I am writing to provide comments on the Environmental Protection Agency's (EPA) proposed rule, entitled "Multi-Pollutant Emissions Standards for Model Years 2027 and Later Light-Duty and Medium-Duty Vehicles." My comments reflect my experience in Congress working on policy as well as research I have conducted on energy policy over the years.

I. Introduction

The era of the electric vehicle has arrived and it has been decades in the making. While some may attempt to cast the impending dominance of EVs to EPA regulation, the reality is that Congress has supported this transition in explicit policy terms for many decades. As these comments explain, 47 years ago Congress launched an electric vehicle technology development program, upon which it has periodically built over the years. Congress invested billions of dollars into the technology and leveraged billions more in private sector funds. Then, as electric vehicle technology became viable, Congress devoted billions of dollars to its deployment in order to unleash its skyrocketing growth. Understanding Congress' efforts over these many

decades, which can be seen in the nation's research, energy, and tax policy, is important context because it is distinct from, but complementary to, the federal clean air regulatory programs and demonstrates that the U.S. EPA's proposal is merely one element in carrying out Congress' longstanding intention to transition to a cleaner, more secure transportation system. While the EPA's proposal is critically important to this transition, it is also simply the next logical step for the agency in accordance with the history of the Clean Air Act and in harmony with billions of dollars in investments from Congress and from the private sector to make this important transition a reality.

One needs only to assess the growing importance of EVs to the automotive industry prior to EPA's proposal or the agency's most recent final rule strengthening standards through model year 2026¹ to see the momentum in this transition. Prior to EPA's issuance of its proposed rule in August 2021 –

- The Ford Motor Company had announced that all of the vehicles it sells in Europe would be electric vehicles by 2030.²
- Jaguar announced it would go electric in 2025.³
- Volvo announced that it would sell only electric cars by 2030.⁴
- Volkswagen announced its plan to increase its sales of electric vehicles by 2030, such that 70 percent of the vehicles it sells in Europe and 50 percent of the vehicles it sells in the U.S. and China would be electric.⁵
- Honda announced plans for 40 percent of its sales to be zero-emission vehicles by 2030, 80 percent by 2035 and 100 percent globally by 2040.⁶
- Mini announced its transition to electric vehicles.⁷

¹ U.S. Environmental Protection Agency, Revised 2023 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions Standards, Final Rule, 86 Fed. Reg. 74434 (Dec. 30, 2021).

² Ford, Press Release, Ford Europe Goes All-In On EVs On Road To Sustainable Profitability; Cologne Site Begins \$1 Billion Transformation (Feb. 17, 2021) <https://media.ford.com/content/fordmedia/feu/en/news/2021/02/17/ford-europe-goes-all-in-onevs-on-road-to-sustainable-profitabil.html>.

³ Jaguar Website, Reimagine, <https://www.jaguarlandrover.com/reimagine>.

⁴ Volvo Press Release, Volvo Cars to be fully electric by 2030 (Mar. 2, 2021) <https://www.media.volvocars.com/global/en-gb/media/pressreleases/277409/volvo-cars-to-befully-electric-by-2030>.

⁵ Volkswagen Press Release, Volkswagen is accelerating transformation into software-driven mobility provider (Mar. 5, 2021) <https://www.volkswagen-newsroom.com/en/pressreleases/volkswagen-is-accelerating-transformation-into-software-driven-mobility-provider-6878>.

⁶ Aaron Gold, MotorTrend, Honda Plans to Dump Internal-Combustion Engines by 2040 (Apr.23, 2021) <https://www.motortrend.com/news/honda-electric-vehicles-2040/>.

⁷ Viknesh Vijayenthiran, Motor Authority, Mini to go Electric, Launch Last Car with Internal-Combustion Engine in 2025 (Mar. 17, 2021) https://www.motorauthority.com/news/1124463_mini-to-go-electric-launch-last-car-with-internal-combustion-engine-in-2025.

- General Motors had announced its intent to produce only electric vehicles by 2035.⁸
- The leading trade association for the auto sector had declared that it was committed to “net zero carbon transportation” and believed that the nation that leads development and adoption of electrification and other innovative technologies will “shape supply chains, define global standards, and potentially, reshape the international marketplace.”⁹
- The Alliance for Automotive Innovation, United Autoworkers, and the Motor & Equipment Manufacturers Association had further stated in a joint letter that business and labor were “committed to working toward a netzero carbon transportation future that includes a shift to electric-drive vehicles.”¹⁰

At the same time that automakers were making these announcements, national and subnational jurisdictions around the world were announcing policies to eliminate sales of emitting vehicles. For example, the United Kingdom had announced in November 2020 that it would ban fossil fuel powered vehicles by 2030.¹¹ Dozens of other jurisdictions had also announced commitments to electrification.¹²

All of these developments, again, *predated* EPA’s even proposing its rule regarding Model Year 2023-2026 standards.

These developments were not attributable to any one government policy, technological breakthrough, or private sector action. Instead, momentum for these developments swelled in national parliaments, corporate boardrooms, research laboratories, and automakers’ showrooms. These comments will not attempt to apportion responsibility for today’s EV boom among these various important factors. Additionally, these comments will not discuss EPA’s clear and longstanding authority under the Clean Air Act to drive the deployment of advanced-technology

⁸ General Motors, Press Release, General Motors, the Largest U.S. Automaker, Plans to be Carbon Neutral by 2040 (Jan. 28, 2021), <https://media.gm.com/media/us/en/gm/home.detail.html/content/Pages/news/us/en/2021/jan/0128-carbon.html>.

⁹ Alliance for Automotive Innovation, Auto Innovation Agenda (Dec. 2020) <https://www.autosinnovate.org/about/advocacy/AutosInnovationAgenda12152020.pdf>; Testimony of John Bozzella, Alliance for Automotive Innovation (Feb. 2021) <https://www.autosinnovate.org/posts/testimony/minnesota-clean-car-rulemaking>.

¹⁰ Letter to President Joe Biden from John Bozzella, Alliance for Automotive Innovation, Rory Gamble, United Autoworkers International Union, and Bill Long, Motor & Equipment Manufacturers Association (Mar. 29, 2021).

¹¹ Henry Edwardes-Evans, SPG PLatts, UK government brings forward ban on new ICE cars 10 years to 2030 (Nov. 18, 2020) <https://www.spglobal.com/platts/en/market-insights/latestnews/electric-power/111820-uk-government-brings-forward-ban-on-new-ice-cars-10-years-to-2030>.

¹² Hongyang Cui, Dale Hall, and Nic Lutsey, International Council on Clean Transportation, Update on the global transition to electric vehicles through 2019 (July 2020) <https://theicct.org/sites/default/files/publications/update-global-EV-stats-sept2020-EN.pdf>.

vehicles. Instead, they will explain Congress' multi-decade effort to support and incentivize the development and deployment of electric vehicles. This will demonstrate that EPA's proposal to require reductions in greenhouse gas emissions from light- and medium-duty vehicles and thereby likely increase the deployment of zero-emission vehicles is neither in isolation from, nor in conflict with, Congress' long-term efforts to make electric vehicles a common form of personal transportation in the United States.

II. Research, Development and Demonstration of Electric Vehicles

The U.S. Government's first high-profile foray into the world of encouraging electric vehicles through federal research began with a special message to Congress from President Richard Nixon in 1970.¹³ Observing that “[a]ir is our most vital resource, and its pollution is our most serious environmental problem” the President focused attention on the pollution from motor vehicles, as “[a]bout half [of U.S. air pollution] is produced by motor vehicles.” The President explained that to control air pollution it might become necessary to move away from internal combustion engines and it was therefore prudent to develop a pollution free alternative to the internal combustion engine. He announced a new program that would marshal government and private sector research with “the goal of producing an unconventionally powered, virtually pollution free automobile.”¹⁴ This program became known as the Alternative Automotive Power Systems Program and was housed at the U.S. Environmental Protection Agency. The EPA issued its first report on the topic in 1974, which included a discussion of electric and hybrid engines.¹⁵ Shortly after issuing this report, in 1975 Congress transferred the program to the new Energy Research and Development Administration, the predecessor to the U.S. Department of Energy.¹⁶ Congress nurtured this embryonic program over the next 48 years into a robust research, development, and demonstration program for electric vehicles.

¹³ President Richard M. Nixon, Special Message to the Congress on Environmental Quality (Feb. 10, 1970) available online at <https://www.presidency.ucsb.edu/documents/special-message-the-congress-environmental-quality>. In the Clean Air Act context, Congress had contemplated the necessity of “pollution-free” vehicles even earlier, including during consideration of the Air Quality Act of 1967.

¹⁴ *Id.*

¹⁵ U.S. Environmental Protection Agency, Current Status of Alternative Automotive power Systems and Fuels, EPA-460/3-74-013-a (July 1974).

¹⁶ Sec. 104(g) Energy Reorganization Act of 1974, Pub. L. No. 93-438 (1974).

A. Congress Adopts a Policy to Promote the Substitution of Electric Vehicles for Gasoline-powered Vehicles.

With the Arab Oil Embargo of the 1970's, oil dependence became another reason for focus on the potential benefits of electric vehicles. Congress quickly appreciated that electric vehicles could address the energy security concerns raised by the nation's dependence on oil. In establishing the corporate average fuel economy standards in 1975, Congress required the executive branch to examine whether electric vehicles should be included in the new program.¹⁷ Although the Energy Reorganization Act of 1974¹⁸ and the Federal Nonnuclear Energy Research and Development Act of 1974¹⁹ provided authority for federal research into battery technology and alternatives to the internal combustion engine, Congress wasted no time in establishing a dedicated program to develop electric vehicles for commercialization.

In September 1976, Congress enacted the Electric and Hybrid Vehicle Research, Development, and Demonstration Act of 1976 (EHVRDDA) to establish a 5-year, \$160 million program on electric and hybrid vehicles.²⁰ In this Act, Congress found that the nation's consumption of petroleum was harmful from a national security perspective and that "expeditious introduction" of electric and hybrid vehicles could not only help substantially reduce the nation's use of oil and dependence on petroleum but would also reduce pollution.²¹ Congress declared in statute that it was "the policy of Congress" to support accelerated research, development, and demonstration of these vehicles, to facilitate and remove barriers to their use and to "promote the substitution of electric and hybrid vehicles for many gasoline- and diesel-powered vehicles..."²² This statutory policy statement has never been amended or repealed. See 15 USC § 2501(b)(4).

As the name of the law suggests, EHVRDDA provided for research, development, and demonstration of the vehicles, while also offering loan guarantees and encouragement for electric and hybrid vehicles to be used by government and small business. Once passed by Congress,

¹⁷ Sec. 512(b), Energy Policy and Conservation Act (EPCA), Pub. L. No. 94-163, 89 Stat. 871 (1975), available at <https://www.govinfo.gov/content/pkg/STATUTE-89/pdf/STATUTE-89-Pg871.pdf>. In 1980, Congress amended the fuel economy law to provide details regarding how electric vehicles should be incorporated into corporate average fuel economy standards. Sec. 18, The Chrysler Corporation Loan Guarantee Act of 1979, Pub. L. No. 96-185 93 Stat. 1336 (1980), available at <https://www.congress.gov/96/statute/STATUTE-93/STATUTE-93-Pg1324.pdf>.

¹⁸ Pub. L. No. 93-438.

¹⁹ Pub. L. No. 93-577 (sec. 6(b)(3)(A)(iii) authorizes the Department to investigate the "the full range of alternatives to the internal combustion engine").

²⁰ Pub. L. No. 94-413 (1976).

²¹ *Id.* at Sec. 2(a).

²² *Id.* at Sec. 2(b).

however, President Ford vetoed the bill, announcing his preference for additional federal research into electric vehicle batteries under existing research authorities.²³ Congress, however, felt so certain about the need for a specific electric vehicle and hybrid program that it overrode President Ford's veto to enact the legislation.²⁴

Over the ensuing years, the Department of Energy sent annual reports to Congress on the implementation of EHVRDDA.²⁵ In the 1995 report for fiscal year 1994, DOE stated that “[t]he Department remains focused on the technologies that are critical to making electric and hybrid vehicles commercially viable and competitive with current production gasoline-fueled vehicles in performance, reliability, and affordability.” There had been “significant progress” DOE reported “toward fulfilling the intent of Congress.”²⁶

The Department further reported that Congress had grown the program's annual budget to \$73 million.²⁷ The Department also detailed the program's achievements in the past fiscal year: significant electrode, battery, and ultracapacitor advancements, the first U.S.-built fuel cell powered bus, the use of a DOE-developed electric drivetrain in the electric Ford Ecostar minivan, the creation of a coalition of electric utilities known as “EV America” for demonstration of electric vehicle use, and other concrete efforts to develop and demonstrate electric and hybrid vehicle technology.

Congress returned to the topic of electric vehicles, beyond support through annual appropriations, during the Persian Gulf War. Crafted during the war and finalized in its aftermath, the Energy Policy Act of 1992²⁸ (EPAcT 1992) was comprehensive energy legislation with the goal, in part, of reducing “the costly, impending rise in U.S. oil imports” and “reduc[ing] our use of oil-based fuels in our motor vehicle sector.”²⁹ To help achieve this

²³ President Gerald R. Ford, Veto of the Electric and Hybrid Vehicle Research, Development and Demonstration Bill, Sept. 13, 1976, available online at <https://www.presidency.ucsb.edu/documents/veto-the-electric-and-hybrid-vehicle-research-development-and-demonstration-bill>.

²⁴ See Legislative Actions on H.R. 8800 for the 94th Congress, <https://www.congress.gov/bill/94th-congress/house-bill/8800/all-actions?overview=closed#tabs>.

²⁵ DOE produced annual reports on the program through fiscal year 1994. The annual reporting requirement was suspended in 1995, along with many other annual reports from other agencies, as part of a government reform effort. Pub. L. 104–66, title I, § 1051(o), Dec. 21, 1995, 109 Stat. 717.

²⁶ Annual report for fiscal year 1994. <https://www.osti.gov/servlets/purl/91943>.

²⁷ *Id.*

²⁸ Pub. L. No. 102-486, 102nd Cong. (1992), https://epact.energy.gov/pdfs/epact_titles_3-4-5-6-19.pdf.

²⁹ Comprehensive National Energy Policy, House Energy and Commerce Committee, H.Rept. 102-474 Part 1 at 132 (102nd Cong.) (accompanying H.R. 776).

outcome, among other provisions, the law contains numerous provisions designed to promote the development and adoption of electric vehicles.³⁰

The House Science Committee reported that electric vehicles offered an opportunity to address smog and climate change while displacing petroleum use.³¹ With such significant environmental and energy benefits available, the Committee stated that “it is important to expedite the development of electric vehicles. Overcoming such barriers as technical uncertainty, customer acceptance and the numerous institutional issues are key to accelerated adoption of electric vehicles.”³² Accordingly, some methods of promoting electric vehicles included demonstration programs, fleet programs, and incentive programs.³³

While EPCA 1992 contained electric vehicle-specific provisions, such as the Electric Motor Vehicle Commercial Demonstration Program³⁴ and the Electric Motor Vehicle Infrastructure and Support Systems Development Program,³⁵ the legislation relied heavily on establishing requirements for federal, state, and private fleets to increasingly use alternative-fueled vehicles as a way to expand deployment of new alternative automotive technology.³⁶ As crafted, vehicles capable of operating on any of a large variety of alternative fuels would satisfy this requirement including ethanol, natural gas, propane, electricity, and biodiesel. While research into electric vehicles and other alternative fuel technologies continued under the EPCA 1992, Congress’ effort to increase deployment of EVs and other vehicles through the fleet-based approach ultimately proved ineffective. U.S. DOE determined that the “prevalent view during passage of EPCA [1992], that the fleet vehicle market could act as a catalyst to spur the entire market, was not accurate.”³⁷ In fact, in 1994, just 10 of 15,000 planned alternative fueled vehicle purchases for the federal fleet were for electric vehicles.³⁸

In 1994, the General Accounting Office (GAO) found that the future of electric vehicles was uncertain and that “technical and program supports appear to be less than what would be

³⁰ See Pub. L. 102-486, *supra* note 28.

³¹ Comprehensive National Energy Policy, House Committee on Science, Space, and Technology, H.Rept. 102-474 Part 2 at 69 (102nd Cong.) (accompanying H.R. 776).

³² *Id.*

³³ *Id.*

³⁴ 42 U.S.C. § 13281.

³⁵ 42 U.S.C. § 13291.

³⁶ See 42 U.S.C. § 13257(o).

³⁷ General Accounting Office, Energy Policy Act of 1992: Limited Progress in Acquiring Alternative Fuel Vehicles and Reaching Fuel Goals, at 33 (Feb. 2000) available at <https://www.gao.gov/assets/rced-00-59.pdf>.

³⁸ General Accounting Office, Electric Vehicles: Likely Consequences of U.S. and Other Nation’s Programs and Policies, at 73 (Dec. 1994) available at <https://www.gao.gov/assets/pemd-95-7.pdf>.

required for success.”³⁹ GAO concluded “[i]n sum, in direct contrast to many of the countries we visited, the United States has devoted proportionately less of its money and attention to comprehensive EV demonstration and promotion programs or infrastructure needs assessment and development.”⁴⁰

This shortfall in funding changed dramatically as congressional spending on electric vehicle programs ramped up during the Clinton, George W. Bush, and Obama administrations.

B. Increased Congressional Funding for Electric Vehicles Programs

As U.S. EPA is aware, there are close relationships between battery-electric vehicles (referred to in these comments as “electric vehicles”), hybrid electric vehicles, and fuel cell electric vehicles (referred to in these comments as “fuel cell vehicles”). Both an electric vehicle and a fuel cell vehicle rely solely upon an electric propulsion system. While an electric vehicle uses a battery to power that system, a fuel cell vehicle generates electricity with a fuel cell from a fuel carried onboard the vehicle, typically hydrogen. A hybrid electric vehicle uses an internal combustion engine in conjunction with an electric motor to propel the vehicle. A hybrid electric vehicle therefore uses both a battery and an electric propulsion system, but the size of the battery and the capability of the propulsion system can vary greatly. The relationship between these technologies is useful to recognize because it shows how certain federal investments to commercialize fuel cell vehicles would also facilitate electric vehicles and vice versa. For example, when the Bush Administration announced its fuel cell initiative in 2002, which is discussed in detail below, the director of advanced technology portfolio management at a major automaker noted that fuel-cell car research isn’t just about fuel cells themselves, but also about the electric drive technologies that fuel-cell cars require to work.⁴¹ These electric drive technologies – ranging from improved batteries to brakes that help recharge those batteries – are useful for fuel cell, electric, and hybrid electric vehicles. EPA’s proposal is prudent to focus on emissions reductions, rather than choosing one technology over another, as expectations of the promise of these technologies has changed over time and by class of vehicle, as demonstrated below.

³⁹ General Accounting Office, *Electric Vehicles: Likely Consequences of U.S. and Other Nation’s Programs and Policies*, at 73 (Dec. 1994) available at <https://www.gao.gov/assets/pemd-95-7.pdf>.

⁴⁰ General Accounting Office, *Electric Vehicles: Likely Consequences of U.S. and Other Nation’s Programs and Policies*, at 73 (Dec. 1994) available at <https://www.gao.gov/assets/pemd-95-7.pdf>.

⁴¹ Alan Leo, *FreedomCAR: Will it Drive?*, MIT Technology Review, January 28, 2002, <https://www.technologyreview.com/2002/01/28/235265/freedomcar-will-it-drive/>.

In September 1993, the Clinton Administration announced the Partnership for a New Generation of Vehicles (PNGV).⁴² This public/private partnership between the federal government and the major domestic automakers was established to improve domestic automobile manufacturing and significantly increase the fuel efficiency of family cars, while maintaining performance, safety, and affordability. On the federal level, the program simply coordinated previously authorized research among agencies. It operated between 1993 and 2002. The federal government spent approximately \$250 million annually for research related to PNGV.⁴³ The auto manufacturers were estimated to have spent approximately \$800 million annually.⁴⁴

While the PNGV program's focus on diesel/electric hybrid vehicles received the most public attention, the program research also supported a host of technology areas, including fuel cells, lithium-ion batteries, power electronics and electric drive systems, energy storage, and structural materials.⁴⁵ In reviewing the PNGV program in 2000, the National Research Council (NRC) noted the "substantial accomplishments in virtually every technical area of the PNGV program" and was particularly complementary of the work of the power electronics and electrical systems research which indicated that "improved performance and reduced cost were feasible."⁴⁶ The NRC found that significant barriers – specifically relating to cost, emissions, and fuel infrastructure – remained to achieving a principal goal of PNGV, developing technologies for vehicles to achieve fuel economies up to three times those of a comparable 1994 sedan.⁴⁷

Increased congressional spending on automotive technology to substitute for the traditional internal combustion engine continued during the George W. Bush Administration, although the public emphasis shifted from hybrid electric vehicles to fuel cell vehicles. In January 2002, the Bush Administration announced the "FreedomCar" program, which replaced the PNGV

⁴² Congressional Research Service, The Partnership for a New Generation of Vehicles: Status and Issues, RS20852 (Updated Jan. 22, 2003), available online at https://www.everycrsreport.com/files/20030122_RS20852_45384fa93764404210695783b732baab92cf58f1.pdf.

⁴³ Congressional Research Service, The Partnership for a New Generation of Vehicles: Status and Issues, RS20852 (Updated Jan. 22, 2003), available online at https://www.everycrsreport.com/files/20030122_RS20852_45384fa93764404210695783b732baab92cf58f1.pdf.

⁴⁴ *Id.*

⁴⁵ National Academies of Sciences, Engineering, and Medicine. 2000. Review of the Research Program of the Partnership for a New Generation of Vehicles: Sixth Report. Washington, DC: The National Academies Press. <https://doi.org/10.17226/9873>.

⁴⁶ National Academies of Sciences, Engineering, and Medicine. 2000. Review of the Research Program of the Partnership for a New Generation of Vehicles: Sixth Report. Washington, DC: The National Academies Press. <https://doi.org/10.17226/9873>, <https://nap.nationalacademies.org/read/9873/chapter/2>.

⁴⁷ *Id.*

program.⁴⁸ In announcing the program, U.S. Department of Energy Secretary Spence Abraham stated that “the long-term results of this cooperative effort will be cars and trucks that are more efficient, cheaper to operate, pollution-free and competitive in the showroom.”⁴⁹ A goal of the FreedomCAR program was “[e]lectric drive systems with a 15-year life and significantly reduced hardware costs.”⁵⁰

In 2003, President Bush launched a complementary initiative to ensure hydrogen fuel would be available for fuel cell vehicles. The express objective of these initiatives was to promote technological alternatives to the traditional internal combustion engine. President Bush stated in his 2003 State of the Union address that fuel cell cars would emit “only water, not exhaust fumes.”⁵¹ He stated, “With a new national commitment, our scientists and engineers will overcome obstacles to taking these cars from laboratory to showroom, so that the first car driven by a child born today could be powered by hydrogen, and pollution-free.”⁵²

According to the White House at the time, “Through partnerships with the private sector, the hydrogen fuel initiative and FreedomCAR will make it practical and cost-effective for large numbers of Americans to choose to use clean, hydrogen fuel cell vehicles by 2020. This will dramatically improve America’s energy security by significantly reducing the need for imported oil, as well as help clean our air and reduce greenhouse gas emissions.”⁵³

After hearing the President describe a vision of automobiles that were no longer tied to internal combustion engines, Congress continued to show their support for the goal by appropriating \$1.558 billion for these two initiatives between fiscal year 2003 and fiscal year 2008.⁵⁴

⁴⁸ Neela Banerjee, “U.S. Ends Car Plan on Gas Efficiency; Looks to Fuel Cells,” *The New York Times*. January 9, 2002. p. A1.

⁴⁹ US DOE starts Freedom CAR, retires PNGV, Jan. 12, 2002, <https://dieselnet.com/news/2002/01doe.php>.

⁵⁰ BRENT D. YACOBUCCI, CONG. RSCH. SERV., RS21442, HYDROGEN AND FUEL CELL VEHICLE R&D: FREEDOMCAR AND THE PRESIDENT’S HYDROGEN FUEL INITIATIVE 4 (2007).
https://www.everycrsreport.com/files/20070405_RS21442_98b968117304fee0e8c6a24a446da3b4796aa969.pdf

⁵¹ President George W. Bush, State of the Union Address (Jan. 28, 2003) <https://georgewbush-whitehouse.archives.gov/news/releases/2003/01/20030128-19.html>.

⁵² *Id.*

⁵³ *Fact sheet: Hydrogen Fuel: A Clean and Secure Energy Future*, THE WHITE HOUSE OFF. OF PRESS SEC’Y (Feb. 6, 2003), <https://georgewbush-whitehouse.archives.gov/news/releases/2003/02/20030206-2.html#>.

⁵⁴ BRENT D. YACOBUCCI, CONG. RSCH. SERV., RS21442, HYDROGEN AND FUEL CELL VEHICLE R&D: FREEDOMCAR AND THE PRESIDENT’S HYDROGEN FUEL INITIATIVE 2 (2008).
https://www.everycrsreport.com/files/20080320_RS21442_def83efaf421f30ed5ebce86a4855602703a4160.pdf

C. New Legislation to Promote Alternative Vehicles

In 2005, Congress passed, and President Bush signed, the Energy Policy Act of 2005 (EPAct 2005). This Act included numerous provisions to promote research and development of both hydrogen-powered vehicles and other types of alternative fuel vehicles.⁵⁵ In addition to providing funding for research and development, Congress also included new consumer tax credits for hybrid electric vehicles and fuel-cell vehicles to encourage individual consumers to purchase alternative-fuel vehicles and encourage car manufactures to produce more alternative fuel vehicles.⁵⁶

EPAct 2005 included The Joint Flexible Fuel/Hybrid Vehicle Commercialization Initiative to improve technologies for the commercialization of hybrid electric/flexible fuel vehicles and plug-in hybrid electric/flexible fuel vehicles.⁵⁷ Congress authorized \$40 million to be appropriated between fiscal year 2006 and fiscal year 2009 for this initiative.⁵⁸

The Spark M. Matsunaga Hydrogen Act was included in EPAct 2005 to expand on the President's past hydrogen initiatives by pushing for continued research and development of hydrogen fuel cell technology and related infrastructure needed to commercialize the use of hydrogen in vehicles.⁵⁹ The overall goal of the program was to build a "mature hydrogen economy" in order to create "fuel diversity in the . . . transportation sector . . . and sharply decrease the dependency of the United States on foreign oil."⁶⁰ Congress authorized \$1.06 billion in federal funds for appropriation between fiscal year 2006 and fiscal year 2010 to be spent on projects related to this program.⁶¹

EPAct 2005 also included new grant programs for state and local governments to fund projects aimed at acquiring alternative fuel and fuel cell vehicles and the infrastructure to fuel them.⁶²

In his 2006 State of the Union address, President Bush announced a new initiative to increase funding for vehicle battery technology, and in so doing, articulated clearly the enduring goal of

⁵⁵ Energy Policy Act of 2005, Pub. L. No. 109-58 (2005), <https://www.govinfo.gov/app/details/PLAW-109publ58>.

⁵⁶ *Id.* at Sec. 1341-42.

⁵⁷ *Id.* at Sec. 706.

⁵⁸ *Id.*

⁵⁹ *Id.* at Sec. 802.

⁶⁰ *Id.*

⁶¹ *Id.*

⁶² *Id.* at Sec. 721 & 731.

moving beyond the internal combustion engine. He stated, “We must also change how we power our automobiles. We will increase our research in better batteries for hybrid and electric cars, and in pollution-free cars that run on hydrogen.”⁶³

In 2007, Congress passed, and President Bush signed into law, the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act (America COMPETES Act).⁶⁴ This legislation has boosted research on electric vehicles. It established the Advanced Research Projects Agency—Energy (ARPA-E) in order to “overcome the long-term and high-risk technological barriers in the development of energy technologies.”⁶⁵ Congress gave ARPA-E the explicit goal of enhancing the economic and energy security of the United States through the development of energy technologies that result in “reductions of imports of energy from foreign sources,” and “reductions of energy-related emissions, including greenhouse gases.”⁶⁶ This goal has matched the promise of electric vehicles, which is demonstrated in the research projects undertaken by ARPA-E over the years.

Congress provided ARPA-E with its first appropriation of \$400 million in 2009.⁶⁷ ARPA-E has launched numerous projects to accelerate the development of electric vehicles. For example, ARPA-E funded 15 projects in the Advanced Management and Protection of Energy Storage Devices Program to focus on battery management and thus enable a new generation of electric vehicles.⁶⁸ ARPA-E also funded 12 projects in the Batteries for Electrical Energy Storage in Transportation Program in order to develop “better batteries for electric and plug-in hybrid vehicles (EV/PHEV) to truly compete with gasoline-powered cars.”⁶⁹ Among other EV relevant programs,⁷⁰ ARPA-E is currently funding 12 projects in the Electric Vehicles for American Low-Carbon Living Program which will “increase EV market share by developing next-generation

⁶³ President George W. Bush, State of the Union Address (Jan. 31, 2006) <https://georgewbush-whitehouse.archives.gov/stateoftheunion/2006/>.

⁶⁴ Public Law No. 110-69.

⁶⁵ *Id.* at Sec. 5012; 42 USC. 16538.

⁶⁶ *Id.*

⁶⁷ *ARPA-E History*, U.S. DEP’T OF ENERGY, <https://arpa-e.energy.gov/about/arpa-e-history> (last visited July 4, 2023).

⁶⁸ *AMPED: Advanced Management and Protection of Energy Storage Devices*, U.S. DEP’T OF ENERGY, (Aug. 12 2012), <https://arpa-e.energy.gov/technologies/programs/amped>.

⁶⁹ *BEEST: Batteries for Electrical Energy Storage in Transportation*, U.S. DEP’T OF ENERGY, (Apr. 29, 2010), <https://arpa-e.energy.gov/technologies/programs/beest>.

⁷⁰ *Search Our Programs*, U.S. DEP’T OF ENERGY, <https://arpa-e.energy.gov/technologies/programs> (last visited July 4, 2023).

battery technologies to significantly improve EV affordability, convenience, reliability, and safety.”⁷¹

III. Deploying Electric Vehicles

As research, development, and demonstration continued, Congress increased its support for deployment of electric vehicles in a major way in 2007. With the Energy Independence and Security Act of 2007, Congress adopted policies to help automakers modernize their manufacturing facilities to produce electric vehicles of various types. In the Energy Improvement and Extension Act of 2008, Congress established billions of dollars in consumer tax incentives to help ensure electric vehicles would move from the company’s showroom to the consumer’s driveway.

A. Energy Independence and Security Act of 2007

In December 2007, Congress passed, and President Bush signed the Energy Independence and Security Act of 2007 into law.⁷² The legislation established a host of programs designed to support the auto industry’s transition to electric vehicles. These programs include the following:

- Grants to state and local entities to support plug-in electric drive vehicles⁷³
- Grants for “qualified electric transportation projects”⁷⁴
- Domestic manufacturing conversion grant program⁷⁵
- Provisions to encourage fleet ownership of electric vehicles⁷⁶
- Loan guarantees for fuel-efficient auto parts manufacturing⁷⁷
- Advanced battery loan guarantee program⁷⁸
- Advanced technology vehicles manufacturing incentive program⁷⁹

These financing provisions along with improvements to the original loan guarantee provisions at the U.S. DOE established in 2005, had a significant impact on EV manufacturing in the U.S. For example, DOE awarded Tesla a \$465 million loan to bring the Model S EV to market.⁸⁰ Nissan

⁷¹ *EVs4All: Electric Vehicles for American Low-carbon Living*, U.S. DEP’T OF ENERGY, (May 3, 2022), <https://arpa-e.energy.gov/technologies/programs/evs4all>.

⁷² Pub. L. No. 110-140 (2007).

⁷³ *Id.* at Sec. 131.

⁷⁴ *Id.*

⁷⁵ *Id.* at Sec. 132.

⁷⁶ *Id.* at Sec. 133.

⁷⁷ *Id.* at Sec. 134.

⁷⁸ *Id.* at Sec. 135.

⁷⁹ *Id.* at Sec. 136.

⁸⁰ *Tesla*, LOAN PROGRAMS OFF., <https://www.energy.gov/lpo/tesla> (last updated June 2017).

received a \$1.45 billion loan to bring the LEAF EV to market.⁸¹ Ford received a \$5.9 billion loan to upgrade 13 facilities to prepare, in part, for plug-in vehicle production.⁸²

B. Energy Improvement and Extension Act of 2008

In 2008, Congress established tax credits to broaden EV deployment.⁸³ These tax credits were available for purchasers of new battery electric and plug-in hybrid EVs, and ranged from \$2,500 to \$7,500, depending on the capacity of the EV's battery. All battery electric vehicles were eligible for the full \$7,500, whereas some plug-in hybrids with smaller batteries received a reduced amount.

The tax credits were capped at 200,000 vehicles per manufacturer. Once a manufacturer's EV sales exceed 200,000, the available tax credit entered a phase out period that began with full rebate amounts in that quarter and the following quarter.⁸⁴ After this grace period, the tax credit was cut in half for the next two quarters. Then the amount was cut in half again for a final two quarters before it is phased out completely. This approach provided an incentive for each manufacturer to enter the EV market at their own pace with their own strategy.

Tesla, which sells only electric vehicles, hit the 200,000 sales threshold in the summer of 2018.⁸⁵ General Motors crossed that threshold later that same year.⁸⁶ While Toyota has been slow to bring EVs to market, its production of plug-in hybrid vehicles helped the company sell its 200,000 plug-in vehicle in 2022.⁸⁷ Nissan and Ford were close to the sales threshold prior to enactment of the Inflation Reduction Act.⁸⁸

⁸¹ Nissan, LOAN PROGRAMS OFF., <https://www.energy.gov/lpo/nissan> (last updated Sept. 2017).

⁸² Ford, LOAN PROGRAMS OFF., <https://www.energy.gov/lpo/ford> (last updated June 2022).

⁸³ Sec. 205 of Division B, Public Law 110-343 (establishing sec. 30D of the tax code) available at <https://www.govinfo.gov/content/pkg/PLAW-110publ343/pdf/PLAW-110publ343.pdf>.

⁸⁴ This provision was originally enacted with a 250,000-vehicle threshold, but Section 1141-1144 of the American Recovery and Reinvestment Act of 2009 modified the tax credit so that it would phase out for each manufacturer after 200,000 qualified plug-in electric-drive vehicles have been sold by that manufacturer for use in the United States, rather than phased out once the total number of qualified vehicles sold by all manufacturers reaches 250,000. Additionally, ARRA added a 10% tax credit for qualified low-speed electric vehicles, electric motorcycles, three-wheeled electric vehicles, and electric vehicle conversions.

⁸⁵ Nick Carey, Sonam Rai, Tesla Hits 200,000 cars, meaning lower tax credit for buyers, Reuters (July 12, 2018) <https://www.reuters.com/article/us-tesla-tax-credit-idUSKBN1K222F>.

⁸⁶ David Shepardson, GM sold 200,000 electric vehicles in U.S. by 2018, triggering tax-credit phaseout: source, Reuters, Jan. 2, 2019, <https://www.reuters.com/article/us-gm-electric-idUSKCN1OW1BO>.

⁸⁷ Andrew Hawkins, Toyota will be the third automaker to lose the EV tax credit in the US, The Verge, July 6, 2022, <https://www.theverge.com/2022/7/6/23196712/toyota-ev-tax-credit-phaseout-cap>.

⁸⁸ *Id.*

The Joint Committee on Taxation estimated the cost of these tax credits, along with a one-year extension of some energy efficiency tax credits and an expansion of the advanced coal project and coal gasification investment credits would cost \$15.7 billion.⁸⁹ Congress' large financial commitment to encouraging consumer sales of EVs was a powerful springboard for automakers to launch their EV programs.

C. American Recovery and Reinvestment Act

In February 2009, Congress enacted the American Recovery and Reinvestment Act (ARRA).⁹⁰ Intended to counter a major economic downturn that began in 2008, Congress took the opportunity to invest heavily in the transition to electric vehicles.

ARRA provided more than \$2 billion toward grants for advanced battery systems and electric vehicle components manufacturing to support domestic manufacturing of advanced lithium-ion batteries and hybrid electric systems and components.⁹¹ Specifically, the U.S. Department of Energy made the following awards pursuant to ARRA:

- \$1.5 billion to produce lithium-ion batteries and expand battery recycling.
- \$500 million for the development and production of electric drive vehicle components, including motors and drive train components.
- \$400 million for the demonstration and deployment of plug-in hybrid and all-electric vehicles, including installation of charging infrastructure and workforce training to support the transition to electric transportation systems.⁹²

The Act provided \$6 billion towards the Loan Guarantee Program, authorized by Section 1705 of EPAct 2005. A \$10 million portion of these funds supported the administrative expenses of the Advanced Technology Vehicles Manufacturing Loan Program.⁹³

ARRA provided \$3 billion for acquiring more fuel-efficient vehicles for the federal fleet. The funds were intended to increase the federal fleet's fuel efficiency and reduce emissions while

⁸⁹ Congressional Budget Office, Cost Estimate, H.R. 6049, Energy and Tax Extenders Act of 2008, at 4, available online at <https://www.cbo.gov/sites/default/files/110th-congress-2007-2008/costestimate/hr60490.pdf>.

⁹⁰ Pub. L. No. 111-5 (2009). For a summary of the vehicle related provisions of ARRA, see <https://afdc.energy.gov/laws/arra.html>.

⁹¹ *Id.* at Division A, Title IV Energy and Water Development.

⁹² Center for Climate and Energy Solutions, U.S. Department of Energy's Recovery Act Investments, updated Jan. 5, 2012, at 9 available online at <https://www.c2es.org/wp-content/uploads/2013/01/arra-brief-feb-2013.pdf>.

⁹³ *Supra* note 90 at Division A, Title IV Energy and Water Development.

stimulating the market for advanced technology vehicles such as hybrid electric, battery electric, and plug-in hybrid electric vehicles.⁹⁴

ARRA also included new tax incentives for EV manufacturing and fueling infrastructure. Congress temporarily increased the alternative fuel infrastructure tax credit to 50% of the cost of the equipment.⁹⁵ ARRA created a 30% tax credit to encourage investment in advanced energy property manufacturing facilities.⁹⁶ The credit applies to facilities that manufacture clean energy technologies, including electric vehicles, components of electric vehicles, and energy storage systems for use with electric vehicles.

IV. Accelerating the Transition to Electric Vehicles

President Obama martialed an impressive collection of federal actions that aimed to accelerate commercial adoption of the electric vehicle.⁹⁷ These actions were centered on a set of “Guiding Principles to Promote Electric Vehicles and Charging Infrastructure.”⁹⁸ The government-wide effort focused on scaling up the number of electric vehicles on the road and increasing the amount of alternative fueling infrastructure to support the additional vehicles.⁹⁹ Among these actions, the executive branch offered \$4.5 billion dollars in loan guarantees for commercial-scale deployment of innovative electric vehicle charging facilities.¹⁰⁰ The U.S. Department of Transportation, at the direction of Congress, launched the process of identifying alternative fuel corridors where the government could create a national network of electric vehicle fast-charging stations.¹⁰¹

Federal work on electric vehicles continued during the Trump Administration, although electric vehicles occupied a less prominent role in the executive branch’s agenda. For instance, Congress

⁹⁴ *Supra* note 90 at Division A, Title V Financial Services and General Government.

⁹⁵ *Supra* note 90 at Sec. 1123, Division B, Part III Energy Conservation Incentives.

⁹⁶ *Supra* note 90 at Sec. 1302, Division B, Part VII Rules Relating to Ownership Changes.

⁹⁷ Press release, The White House, Obama Administration Announces New Actions To Accelerate The Deployment of Electrical Vehicles and Charging Infrastructure (Nov. 3, 2016) <https://obamawhitehouse.archives.gov/the-press-office/2016/11/03/obama-administration-announces-new-actions-accelerate-deployment>. During the Obama Administration, U.S. EPA also began recognizing zero emission vehicles as a compliance mechanism for emissions requirements established pursuant to the Clean Air Act. *See* U.S. Environmental Protection Agency, Control of Air Pollution from Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards, 79 Fed. Reg. 23414 (April 28, 2014).

⁹⁸ U.S. DOE, Public Plug-In Electric Vehicle Infrastructure Guiding Principles, available online at <https://www.energy.gov/eere/vehicles/public-plug-electric-vehicle-infrastructure-guiding-principles>.

⁹⁹ *Id.*

¹⁰⁰ *Supra* note 97.

¹⁰¹ Pub. L. No. 114–94 (2015), div. A, title I, § 1413(a).

provided ARPA-E with increased funding during the Trump Administration¹⁰² and the agency's work on electric vehicles continued.¹⁰³

Electric vehicles returned to the forefront during the Biden Administration, as Congress enacted two hugely consequential bills to usher in mainstream deployment of electric vehicles.

A. Infrastructure Investment and Jobs Act

In November 2021, President Biden signed the Infrastructure Investment and Jobs Act (IIJA).¹⁰⁴ This sprawling infrastructure legislation signaled Congress' understanding and support that electric vehicles had long since surpassed any previous status as a niche technology. Congress recognized that electric vehicles were now ready for every state and demonstrated support for this by establishing new federal funding programs to deploy EV charging infrastructure in every state.

The IIJA included a new National Electric Vehicle Infrastructure Formula Program that will provide funding to each state for the development of a national electric vehicle charging network.¹⁰⁵ This program provides \$5 billion over five years for this purpose. Funds have been announced for FY22¹⁰⁶ and FY 23.¹⁰⁷

Moreover, Congress made clear that it did not see EVs as an amenity that would be limited to the affluent or to urban communities. The IIJA included a new \$2.5 billion program to fund EV charging in communities on public roads and other publicly accessible locations.¹⁰⁸ Congress deemed electric vehicle charging to be so important that DOT is authorized to fund EV charging infrastructure at locations that aren't even associated with the national highway system with priority directed to rural areas, low- and moderate- income neighborhoods, and areas with multi-

¹⁰² *Science*, Trump, Congress approve largest U.S. research spending increase in a decade, Mar. 23, 2018, available online at <https://www.science.org/content/article/updated-us-spending-deal-contains-largest-research-spending-increase-decade> (reporting that Congress provided DOE's Office of Science and ARPA-E with more funding than requested by the Administration).

¹⁰³ *See, i.e.*, Blog post, ARPA-E, The Long and Winding Road – ARPA-E Retrospective with Program Director Chris Atkinson, Dec. 18, 2019, <https://arpa-e.energy.gov/news-and-media/blog-posts/long-and-winding-road-arpa-e-retrospective-program-director-chris>.

¹⁰⁴ Public Law 117–58 (2021).

¹⁰⁵ *Id.* at Title VIII, Division J.

¹⁰⁶ U.S. Department of Transportation, Federal Highway Administration, press release, President Biden, USDOT and USDOE Announces \$5 Billion over Five Years for National EV Charging Network, Made Possible by Bipartisan Infrastructure Law Feb. 10, 2022).

¹⁰⁷ Notice, Federal Highway Administration, Apportionment of Fiscal Year (FY) 2023 Highway Infrastructure Program Funds for the National Electric Vehicle Infrastructure Formula Program Pursuant to the Infrastructure Investment and Jobs Act, Oct. 6, 2022, available online at <https://www.fhwa.dot.gov/legsregs/directives/notices/n4510873.cfm>.

¹⁰⁸ *Supra* note 104; 135 Stat. 551.

family housing.¹⁰⁹ The legislation also contained an array of programs to support deployment of electric buses.¹¹⁰

B. Inflation Reduction Act of 2022

In August 2022, Congress passed the Inflation Reduction Act¹¹¹ (IRA) and demonstrated its support for widespread, unlimited deployment of electric vehicles. The IRA accomplishes this by establishing a suite of programs and tax credits that incentivize EV manufacturing, EV purchases, and deployment of EV charging infrastructure.

The IRA establishes or funds a number of efforts to support EV manufacturing, including:

- \$2 billion for the Domestic Manufacturing Conversion Grant Program to provide grants for “domestic production of efficient hybrid, plug-in electric hybrid, plug-in electric drive, and hydrogen fuel cell electric vehicles.”¹¹²
- \$3 billion for the Advanced Technology Vehicle Manufacturing program for “reequipping, expanding, or establishing a manufacturing facility in the United States to produce, or for engineering integration performed in the United States of, advanced technology vehicles.”¹¹³
- A new Advanced Manufacturing Production Credit in Section 45X of the tax code to incentivize production of batteries, including EV batteries.¹¹⁴ Acknowledging the important role of IRA incentives, a leading global battery manufacturer recently stated that the U.S. battery market is “the world’s largest and fastest-growing [battery] market...”¹¹⁵ This manufacturer announced that it would increase its battery manufacturing capacity in the United States by a factor of more than 55 by 2027.¹¹⁶

The IRA establishes tax credits to encourage consumers to purchase of electric vehicles:

¹⁰⁹ *Supra* note 104.

¹¹⁰ *Supra* note 104 at Sec. 71101.

¹¹¹ Pub. L. No. 117-169 (2022).

¹¹² *Id.* at Sec. 50143.

¹¹³ *Id.* at Sec. 50142.

¹¹⁴ *Id.* at Sec. 50142.

¹¹⁵ Julian Spector, *LG Kicks Off Colossal Ramp-up of US Factories for EV and Grid Batteries*, CANARY MEDIA (June 26, 2023), <https://www.canarymedia.com/articles/batteries/lg-kicks-off-colossal-ramp-up-of-us-factories-for-ev-and-grid-batteries>.

¹¹⁶ *Id.*

- The section 30D tax credit provides up to \$7,500 for consumers who purchase electric vehicles. Congress lifted the previous cap of availability for EV tax credits that had applied to 200,000 vehicles per manufacturer, allowing those manufacturers who had depleted the opportunity for EV tax credits, such as Tesla and GM, to now have tax credits through 2032.¹¹⁷ Congress imposed certain conditions for full availability of the credit, such as requiring a vehicle to be assembled domestically and use domestically sourced materials (or sourced from certain trading partners).
- The IRA established a new tax credit in Section 25E for the purchase of used electric vehicles to ensure that EVs are available to low- and moderate-income consumers.¹¹⁸ This provision provides a credit worth the lesser of \$4,000 or 30% of the sale price of the used vehicle.
- The IRA also established the section 45W commercial clean vehicles tax credit.¹¹⁹ This credit provides \$7,500 for vehicles under 14,000 pounds and up to \$40,000 for all other vehicles. Because leased vehicles remain the property of the auto manufacturer, this provision will be widely available for leased vehicles even if they don't meet the domestic assembly and sourcing requirements required under section 30D.

The IRA extended the section 30C tax credit for EV charging equipment.¹²⁰ This provision provides a 30% tax credit on the purchase of EV charging equipment and also expands the availability of the credit to bidirectional charging equipment. The credit is available for charging infrastructure installed in areas that are not considered “urban” by the Secretary of Commerce.

Congress also took steps to ensure that the tax incentives described above for electric vehicles and their charging equipment would be available to entities that have not historically been able to avail themselves of these types of incentives. The IRA included “direct pay” provisions that will allow state, tribal, and municipal governments, along with non-profits, to elect to receive the value of a tax credit in the form of a direct payment from the federal government.¹²¹ This important provision has the potential to result in even more EV deployment than would be anticipated with a tax credit-only approach by encouraging tax exempt entities to take advantage of the time-limited incentives.

¹¹⁷ *Supra* note 111 at Sec. 13401.

¹¹⁸ *Supra* note 111 at Sec. 13402.

¹¹⁹ *Supra* note 111 at Sec. 13403.

¹²⁰ *Supra* note 111 at Sec. 13404.

¹²¹ *Supra* note 111 at Sec. 13801.

The joint Committee on Taxation estimated that the demand for tax credits for clean vehicles and their charging/refueling equipment amounted to more than \$14 billion over 10 years.¹²²

It is already apparent that Congress' effort to encourage electric vehicles through incentives in the IRA has been successful. According to one analysis, the automobile industry has invested more than \$120 billion in electric vehicle manufacturing in the U.S.¹²³ Moreover, Congress has increased these incentives even while preserving and ratifying EPA's Clean Air Act authority to require further reductions in greenhouse gas emissions from mobile sources.¹²⁴

V. Conclusion

In seeking to spur the development and deployment of electric vehicles in its recently proposed rule, the U.S. EPA is not acting in isolation or conflict with Congress. Instead, Congress has insisted on the development of electric vehicles since 1976 and has provided many billions of dollars for EV research, development, demonstration, and deployment. With recent enactment of the IIJA and the IRA, Congress has clearly demonstrated its support for the widespread adoption of electric vehicles in the years to come. Given the substantial public resources devoted to developing mature electric vehicle technology and bringing those electric vehicles to market, it would be absurd for EPA to finalize emissions standards for light- and medium-duty vehicles that do not fully realize the opportunity and benefits of zero emission vehicles.

¹²² Congressional Budget Office, Cost Estimate, Estimated Budgetary Effects of Public Law 117-169 to Provide for Reconciliation Pursuant to Title II of S. Con. Res. 14 at 12 (Sept. 7, 2022).

¹²³ Environmental Defense Fund, Report Finds Investments in U.S. Electric Vehicle Manufacturing Reach \$120 Billion, Create 143,000 New Jobs, Mar. 14, 2023, <https://www.edf.org/media/report-finds-investments-us-electric-vehicle-manufacturing-reach-120-billion-create-143000> (finding that more than 40 percent of these investments were announced in the six months after passage of the IRA).

¹²⁴ For a discussion of how Congress ratified the Clean Air Act's regulatory structure for mobile source greenhouse gas reductions in the Inflation Reduction Act, see Dotson, Greg and Maghamfar, Dustin, *The Clean Air Act Amendments of 2022: Clean Air, Climate Change, and the Inflation Reduction Act* (January 1, 2023). Environmental Law Reporter, Vol. 53, No. 10017, 2023, Available at SSRN: <https://ssrn.com/abstract=4338903>.