



CONSUMER **POLICY**
C E N T E R

FIFTY YEARS OF VEHICLE EFFICIENCY STANDARDS AND CLIMATE CHANGE: THE PROMISE AND THE REALITY

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OCTOBER
2025

Why Transportation Matters for the Earth's Climate

This year became a historic turning point for vehicle fuel efficiency standards. In July, an American president pushed through legislation, known as the Big Beautiful Bill, that eliminated all civil penalties for producing passenger cars and light trucks not meeting fuel economy requirements, effectively killing off a critical component of long-time U.S. energy policy.

Ironically, this December will mark the 50th anniversary of the legislation that established mileage efficiency standards for new motor vehicles sold in the United States, providing a half-century of experience that can be used to evaluate the strengths and weaknesses of such standards.

When Congress enacted fuel efficiency standards for cars and light trucks in 1975, its primary goal was to reduce imports of foreign oil. In later decades, however, the role of these standards expanded, with a growing focus on environmental protection. Most notably, efforts to reduce the use of motor fuels since the 1990s have emphasized lowering carbon dioxide emissions that alter the Earth's climate -- which is the focus of this report.

Transportation is currently the largest source of U.S. carbon dioxide emissions, a very long-lasting greenhouse gas. Moreover, this sector's share of total emissions is rising, increasing from 29% of emissions from energy consumption in 1975 to 39% in 2024.¹ As a result, it is difficult to conceive how the country could achieve previously announced climate protection goals without a steep decline in emissions from carbon-intensive cars and trucks.

An examination of available data suggests that fuel efficiency standards, although reducing oil consumption and trade deficits since 1975 from what they would have been otherwise, have fallen short of their potential to reduce greenhouse gas emissions. Indeed, since the first law on automobile efficiency was enacted, U.S. carbon dioxide emissions from transportation have increased by 44%.² In recent years, these emissions have decreased slightly with some temporary assistance from the COVID-19 pandemic. However, the United States has not yet achieved the substantial reductions needed, in conjunction with additional steps taken worldwide, to prevent average global temperatures from rising 2 degrees Celsius (3.6 degrees Fahrenheit) above pre-industrial levels, or even less ambitious goals.

Currently, U.S. transportation is arguably the weakest, relatively easy-to-fix link in the global effort to rein in the emissions of greenhouse gases. This sector lags behind efforts in other prosperous nations – a problem that the current administration's draconian cuts in clean energy programs will exacerbate. This lag has a substantial impact, given that the

¹ U.S. Energy Information Administration, *Monthly Energy Review*, Tables 11.1, Table 11.5, and [Illustration 11.2](#).

² EIA, *Monthly Energy Review*, [Table 11.5](#).

United States, with 4.2 percent of the world's population, currently consumes approximately one-third of the world's motor gasoline, thereby playing a significant role in global carbon emissions.³

This report challenges the rationale for eliminating vehicle efficiency standards, often expressed by ardent critics of government regulation, that mileage efficiency standards have proved overly onerous, significantly limited consumer choices in vehicle selection, and made drivers less safe -- all allegations easily refuted by available data. The study also contradicts claims, often from those advocating such regulation, that highly publicized standards provide an accurate gauge of what is happening on the road and the benefits achieved, leading to the conclusion that future standards will need to be stronger, not weaker.

Vehicle efficiency standards can play a significantly greater role in combating climate change, without the problems critics have suggested, primarily due to advances in automotive technologies. However, to achieve environmental and other objectives, new legislation or tighter federal regulations will have to correct flaws in the setting of previous standards. Policymakers will also need to consider additional strategies that can supplement efficiency requirements.

Action and Inaction: The History of Auto Efficiency Mandates

On December 22, 1975, President Gerald Ford signed the Energy Policy and Conservation Act – a set of measures responding to the earlier Arab Oil Embargo and the success of the Organization of Petroleum Exporting Countries (OPEC) in driving world oil prices to unprecedented heights. Among its numerous initiatives, the Act established the nation's first Corporate Average Fuel Efficiency (CAFE) standards. The law required that new cars achieve an average of 27.5 miles per gallon (mpg) by 1985 – about double the efficiency of cars on the road at the time; it allowed the standard for “light trucks” to be set by rule.

At the time, efficiency standards were not the only option for reducing motor fuel use. Policymakers considered other measures, including lowering speed limits and imposing gasoline taxes. The nation had already adopted a 55-mile-per-hour speed limit to constrain the higher velocities that increased fuel use and, concurrently, road fatalities. In contrast, efforts to hike gasoline taxes, despite some early momentum, fell far short of securing the needed votes. In effect, mileage efficiency standards became a Plan B that, regardless of their relative policy merits, created less political backlash than gasoline taxes. With efficiency mandates, consumers would pay more for their vehicles but recoup initial costs with reduced fuel consumption.

In 1977, President Jimmy Carter's Department of Transportation issued regulations to implement the recent legislation. As permitted by the statute, the administration moved up

³ See EIA, *International Energy Statistics*, [“Annual Refined Petroleum Products Consumption.”](#)

the deadline for achieving the bulk of the goal to 1983, thus accelerating the expected benefits but rankling automakers, who were also adapting to stricter safety requirements. Transportation adopted a lower standard for light trucks – a less publicized 19.5 miles per gallon. The light truck category moderated the impact of the standards on the overall vehicle fleet. In addition, it also created a disparity between the widely advertised standard for cars (which included station wagons) and the more consequential combined standard (which also included pickup trucks, vans, and sport utility vehicles). Carter planned to issue additional rules to strengthen efficiency gains beyond 1985, but failed to complete the process before leaving office.⁴

In 1990, following the lack of executive action to update fuel-use standards by rule and the repeal of the 55-mph speed limit, Congress revisited the topic of vehicle efficiency.⁵ Senator Richard Bryan (D-NV) introduced a bill requiring a 40% increase in new car efficiency by 2001. During its consideration, American troops entered Saudi Arabia as a prelude to repelling Iraq’s invasion of Kuwait – a timely reminder of the dangers of reliance on Middle Eastern oil.

During the deliberations, climate change emerged as a prominent concern. The same year, the Intergovernmental Panel on Climate Change issued its first report on potential policy responses, which highlighted the role that enhanced vehicle efficiency could play in reducing damage to the atmosphere. On the floor, Senator Slade Gorton (R-WA) exclaimed: “It is truly difficult to imagine that we in the Congress could be presented with a proposal which would decrease our dependence on foreign oil, reduce the trade deficit, save money for consumers all across the country, cut the emissions of greenhouse gases, and reduce smog, all in a single bill, and have anything other than an overwhelming show of support.” The first procedural vote to send the Bryan bill to the floor yielded 68 ayes, far above the threshold needed to avoid a filibuster. But opponents continued to insist that tighter standards would make cars less safe. To the surprise of many observers, intense lobbying by the George H.W. Bush White House, car companies, auto unions, and the National Association of Manufacturers flipped enough votes to table the bill and discourage later attempts to resurrect it.⁶

By 2006, U.S. net oil imports had risen to 60%, and the September 11 attacks of 2001 by Saudi Arabian terrorists still lingered in the public consciousness. In response, Congress overwhelmingly passed the Energy Security and Independence Act of 2007, which further tightened efficiency requirements. From 2010 to 2020, the standard for all new vehicles rose from 25 miles per gallon to 35 (the “ten-in-ten” policy). The largely bipartisan legislation, signed by President George W. Bush, ended a thirty-year hiatus in significant

⁴ Jay Hakes, *Energy Crises: Nixon, Ford, Carter, and Hard Choices in the 1970s* (Norman: University of Oklahoma Press, 2021), pp. 223, 317.

⁵ There were a few relatively minor changes in the requirements for light trucks by rule over the years, but these are not discussed unless they had a substantial impact.

⁶ Jay Hakes, *The Presidents and the Planet: Climate Change Science and Politics from Eisenhower to Bush* (Baton Rouge: Louisiana State University, 2024), pp. 229-36.

fuel efficiency policy initiatives. According to Senator Ted Stevens (R-AK), principal author of the final compromise: “Setting fuel economy standards is one avenue toward limiting our Nation’s dependence on foreign oil and significantly reducing greenhouse gas emissions.”⁷

Another breakthrough in vehicle efficiency occurred in 2007. In April, the U.S. Supreme Court issued its opinion in *Massachusetts v. EPA*, allowing for potentially more stringent environmental standards for new vehicles. The Court found that greenhouse gases emitted by motor vehicles fell under the 1970 Clean Air Act’s definition of pollutants, giving the Environmental Protection Agency authority to regulate them.⁸ Henceforth, two federal agencies would regulate vehicle efficiency, each with its own legislative authorization and arcane tools for setting standards.

Under President Barack Obama, the EPA and the Department of Transportation began joint rulemaking. After negotiations with auto manufacturers, the government promulgated standards in 2010 and 2012 to reduce greenhouse gas emissions from most new passenger cars, sport utility vehicles, vans, and pickup trucks by approximately 50% by 2025, compared to 2010. These reductions would require the “equivalent” of 54.5 miles per gallon for cars, although other measures could be used as offsets, and the standards for light-duty trucks were considerably lower.⁹ At least on paper, the Obama regulations were considerably more ambitious than the 2007 legislation and helped convince other nations that the United States was committed to global action to slow climate change.

In 2017, President Donald Trump reopened the Obama-era rules, complaining that the earlier assumptions about gasoline prices, technology costs, and consumer acceptance “were optimistic or have significantly changed.” In 2019, the administration promulgated revisions to weaken but not eliminate existing vehicle efficiency standards. The changes resulted in a new target of a 1.5% annual increase in fuel economy from 2021 to 2026, compared to the 5% under the withdrawn Obama standards.¹⁰

President Joe Biden (2021-2025) negotiated extensively with auto manufacturers and unions in shaping his vehicle efficiency regulations. During his last year in the White House, the Department of Transportation issued rules that raised the standard for new cars to an average of 65 miles per gallon by 2031, compared to what it claimed was the current 49

⁷ Jay Hakes, *A Declaration of Energy Independence: How Freedom from Foreign Oil Can Improve National Security, Our Economy, and the Environment* (New York: Wiley & Sons, 2008), pp. 87-88; *Congressional Record*, [December 13, 2007](#), p. S15424.

⁸ Richard Lazarus, *The Rule of Five: Making Climate History at the Supreme Court* (Cambridge, Massachusetts: Belknap Press of Harvard University, 2020).

⁹ Congressional Research Service, “[Vehicle Fuel Economy and Greenhouse Gas Standards: Frequently Asked Questions](#),” [updated June 1, 2021](#); Union of Concerned Scientists, “[A Brief History of U.S. Fuel Efficiency Standards: Where we are—and where are we going?](#)” [updated Dec 6, 2017](#).

¹⁰ Congressional Research Service, “[Vehicle Fuel Economy](#).” Another point of contention was the waiver for California to adopt stricter standards, an important topic not addressed in this paper.

miles. Light trucks had to achieve 45 miles per gallon, up from 35 miles; heavy-duty pickup trucks had to attain 35, up from 19 miles.¹¹ To bolster compliance with the new rules, Biden's Inflation Reduction Act of 2022 provided substantial subsidies for the purchase or leasing of some qualified plug-in hybrid electric and fully electric vehicles. In addition, other incentives were created to accelerate the use of non-carbon sources for the electricity that would fuel the new cars and trucks. However, Biden's protectionist policies made the goals more challenging to meet.

After weakening vehicle efficiency standards during his first term, President Donald Trump moved quickly to terminate them upon his return to the Oval Office. In July 2025, Congress passed his Big Beautiful Bill, which, among other provisions, eliminated existing civil penalties for failing to meet fuel economy standards.¹² In addition to this historic U-turn in U.S. energy and environmental policy, Trump has taken additional steps that would, directly or indirectly, increase the carbon footprint of U.S. transportation. These include undermining the scientific basis of EPA regulation of carbon dioxide emissions, removing financial incentives for the purchase of electric vehicles, and chopping funding for advanced technologies. In September 2025, Trump told the United Nations General Assembly that renewable sources of energy were "a joke" and that prevailing climate science was "the biggest con job ever perpetrated on the world," belittling the efforts of other nations to improve vehicle efficiency and other programs that reduce greenhouse gas emissions.

At this point, the U.S. policies developed over the past fifty years to promote fuel efficiency and reduce atmospheric pollution from transportation lay in shambles.

Results Matter More Than Exaggerated Claims

Two major questions loom over the debate on fuel efficiency. First, have there been onerous adverse effects from the standards, such as a reduction in the variety of vehicles available to consumers? Second, how well have results on the road aligned with the program's stated claims?

Regarding the first question, the argument whether efficiency requirements have severely restricted consumer options for new purchases has become a long-standing part of the debate over standards. In the 1970s, the automobile industry began to argue that efficiency standards would allow only a few stripped-down models to survive. More recently, President Trump, at the beginning of his second term, asserted that he was abandoning government efficiency standards to "promote true consumer choice" in the marketplace. Anti-regulation voices in the media have repeated this refrain. The *Wall Street Journal* editorial board, for instance, praised the president's deregulatory stance, saying, "This will

¹¹ Coral Davenport, "[U.S. Tightens Car Mileage Rules](#), Part of Strategy to Fight Climate Change," *New York Times*, June 7, 2024.

¹² Adam Raviv, "Congress Eliminates Corporate Average Fuel Economy (CAFE) Penalties for Passenger Cars and Light Trucks," *Sibley Austin LLP*, July 8, 2025.

make it harder for the feds to dictate what kind of car or lawn-mower you can buy.”¹³ According to these versions of reality, the poor shopper just didn’t have much to pick from.

In reality, an auto buyer has a stunning variety of choices when purchasing a new vehicle – witness *Consumer Reports’* 2025 annual auto issue, containing capsule summaries of 224 models evaluated during the previous year.¹⁴ It described options big and small, aerodynamic and boxy. The overwhelming majority had traditional gasoline engines, with an increasing number embracing hybrid battery technology to improve performance and mileage. However, sixty models were either all-electric or plug-in hybrid electric. For those in the compact market, the 165-inch-long Kia Soul was easy to park in tight spaces. Despite its noisiness during rapid acceleration, the magazine recommended this gasoline-powered car for its versatility, “good fuel economy” (28 mpg in actual road tests), and reasonable starting price of \$20,290. For those seeking much greater versatility, the 218-inch-long Rubicon version of the Jeep Gladiator pickup truck featured “suspension and wheels optimized for rock climbing” and impressive hauling capability, although advanced safety features were available only as options. The Gladiator offered eleven colors and starting prices ranging from \$38,100 to \$51,100. According to *Consumer Reports*, another alternative, the Volkswagen ID.Buzz all-electric van was “a nostalgic tribute to the classic Minibus.” The three-row vehicle had a modest range of 230 miles but offered an optional massage feature for the front seats. Across the board, auto manufacturers have been regularly adding new features to keep up with the competition. Clearly, the options available to consumers have become considerably more robust than they were before the advent of efficiency regulations fifty years ago.

The variety of options in the vehicle marketplace is about to expand even further. For example, in August 2025, Dodge (a subsidiary of Stellantis) announced its 2026 lineup would include the Durango SRT Hellcat Jailbreak, a “muscle SUV” featuring a 710-horsepower Hemi V-8 engine. According to the manufacturer, the Jailbreak will offer more than 6 million (this is not a typo) potential combinations for customization with multiple wheel choices, interior seat colors, seat belt colors, and exterior colors and designs. It will provide seating options for five, six, or seven passengers.¹⁵

The myth that car shoppers have only sparse model choices due to mileage efficiency standards doesn’t mesh with the inventories at car lots across the country. Hence, it does not provide a convincing basis for objecting to such standards. One reason the auto dealer offerings are so broad is that efficiency standards were based on averages, allowing gas-guzzling vehicles to still fit in the overall mix as long as the manufacturer offered enough fuel-sipping models. Until recently, manufacturers could also purchase credits from

¹³ [Joan Claybrook testimony](#), U.S. Senate, Committee on Commerce, Science, and Science, January 24, 2002; The White House, Presidential Actions, “Unleashing American Energy,” January 20, 2015; “Climate Regulation Liberation Day,” *Wall Street Journal*, July 28, 2025.

¹⁴ April 2025.

¹⁵ Ali McCadden, “Dodge Unveils Additions to 2026 Muscle Car Lineup: ‘It’s about Choice,’” [CNBC](#), August 8, 2025.

companies with averages that exceeded the required minimum. As a result, large, less efficient vehicles could survive even as standards became more demanding.

Another reason for the disconnect between the myth of the choice-strapped customer and the variety of available vehicles is the power of technology. Innovation has allowed American cars to substantially increase acceleration, the number of standard features, available upgrades, and overall performance over the fifty years that federal efficiency standards have been in effect. The ability of auto manufacturers to tweak traditional technologies and add new ones, despite often proclaiming how difficult it is to do so, is impressive.

Even if critics of regulations concede that today's car buyers, indeed, have many choices, they may argue that surely future tightening of standards would eventually reduce options to an unacceptable level. This prediction is also suspect because advances in technology are very likely to continue.

For instance, in August 2025, Ford announced a \$5 billion investment to build a new mid-sized electric truck with a starting price of \$30,000. The company plans to revolutionize the production process, which it called "the most radical change in how we design and how we build vehicles at Ford since the Model T." The announcement touted the truck as "a mobile power plant" with outlets that could provide electricity for tools, refrigerators, and serve as a backup power source for the house. It also claimed that the vehicle would have 20% fewer parts than a traditional one. Ford has a mixed record with the introduction of all-electric models and admitted its bold move was risky. However, the new truck had progressed well beyond the concept car stage. Moreover, manufacturers worldwide are seeking to utilize innovation to produce vehicles that consume less fuel and offer more features at affordable prices.¹⁶ As Wayne Gretzky once recommended, we should skate not to where the puck is, but where it is going to be.

There are, in fact, some cars that American consumers cannot purchase legally. For instance, standards for protecting passengers have tightened considerably due to a series of safety regulations. Thus, car buyers are denied the choice of vehicles that don't perform well in crash tests or lack airbags. Trade barriers against many foreign cars and trucks also limit market choices. As China builds higher-quality electric vehicles at highly competitive prices, American drivers may struggle to purchase them due to recent protectionist policies. To date and likely in the future, it's hard to argue that auto efficiency standards have significantly impeded consumer choices. Indeed, it is ironic that some who complain about the loss of choice in the marketplace have adopted protectionist policies that significantly limit such choices.

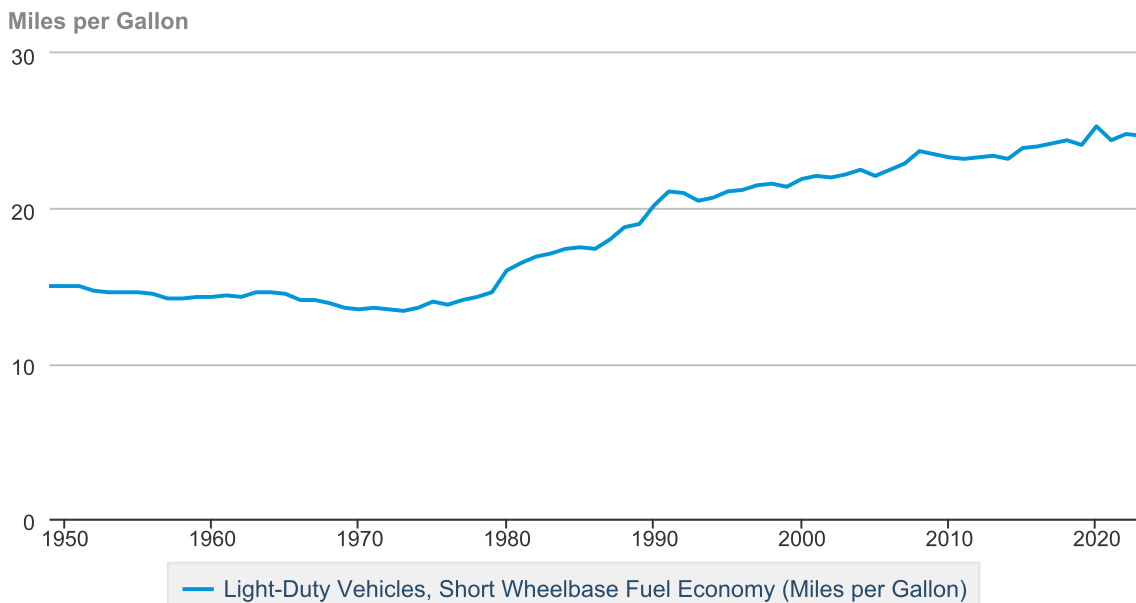
On the other pivotal question, it is clear that efficiency regulations have, since their adoption, reduced the use of motor fuels from what would have been the case without

¹⁶ Mary Cunningham, "Ford Says It's Investing \$5 billion in EV Production," [CBS News](#), August 11, 2025.

them. One careful study of the period 1975 to 2018 estimated: “Cumulatively, fuel economy improvements due to the standards have reduced fuel consumption by well over one and a half trillion gallons, saved consumers trillions of dollars, and avoided 14 billion tons of GHG [greenhouse gas] emissions.”¹⁷ However, such multi-decadal data are not inconsistent with the view that the benefits of such standards, while genuine, have been considerably less than advertised, even before the two Trump administrations’ frontal attacks on fuel efficiency.

Historical data indicate that the on-road performance of motor vehicles has fallen far short of various fuel-efficiency goals set by laws and regulations. For example, in 2023, the average fuel efficiency of passenger cars, light trucks, vans, and sport utility vehicles, based on actual driving, was only 24.7 miles per gallon. Even after accounting for the delay between new car sales and fleet-wide changes, as well as data inconsistencies, the result remains underwhelming, regardless of the baseline year used for comparison.¹⁸ For instance, the 2007 legislation’s ten-by-ten initiative aimed to increase efficiency from 25 to 35 miles per gallon by 2020.

Light Duty Vehicle Fuel Economy, 1950-2023



Data source: U.S. Energy Information Administration

¹⁷ David Greene, Judith Greenwald, and Rebecca Ciez, “U.S. Fuel Economy and Greenhouse Gas Standards: What Have They Achieved and What Have We Learned?” *Energy Policy*, Vol. 146 (November 2020).

¹⁸ EIA, *Monthly Energy Review*, [Table 1.8](#). These time series data do not allow for exact comparisons, since the Department of Transportation has changed vehicle definitions several times. These changes, however, do not affect the overall thrust of the calculations in this report.

Based on the persistent differences between the laboratory testing used by the EPA to assign vehicle mileage rankings and expected performance on the road, the Energy Information Administration's long-term energy projections discount EPA's results by about a quarter. In other words, if a new vehicle earns a rating of 40 miles per gallon in lab testing, it is likely to achieve about 30 miles per gallon on the road.¹⁹ Such qualifications usually appear in appendices or footnotes. Regrettably, it is the lab tests that have the greater impact on what gets displayed on the vehicle windows at the car lot and how the public perceives potential purchases. However, it is actual driving that more accurately measures national security, economic, and environmental benefits.

The data on driving experience help provide one explanation for the disappointing carbon reductions so far. At the 2015 Paris climate conference, the U.S. abandoned the 1990 baseline agreed to earlier and replaced it with 2005 as the year from which it would make promised reductions. From 2005 to 2024, carbon emissions from U.S. transportation fell 7%, hardly a pace over almost two decades that would convince the world Americans were firmly committed to climate protection.²⁰ To provide context, emissions from the residential sector fell 33% over this same period, while for the commercial sector, the decline was 29%.

The relative success of residential and commercial buildings in meeting climate protection goals derives from their use of electricity for power and the dramatic decline of coal, the dirtiest of the fossil fuels, for electric generation. Improvements in building codes, as well as in the efficiency of appliances and lighting, also contributed to this progress. In the future, the electrification of vehicles and an electric grid utilizing more solar, batteries, wind, and nuclear energy could help transportation move more briskly toward achieving climate protection goals. So far, however, early adopters of electric vehicles have tended to drive less than non-adopters – not surprising given the range limitations of current EV offerings. Longer-range batteries and faster charging could greatly enhance the appeal of EVs to the broad consumer market. Thus, advances in technology can help lower greenhouse gas emissions, minimize inconvenience for drivers, and improve overall performance. However, it is very risky to base a climate strategy solely on the gradual market penetration of all-electric vehicles, after a half-century of lagging results in reducing carbon emissions. The delay to date in achieving more impressive results creates the need for a greater sense of urgency and multiple strategies.

Lapses and Loopholes as Barriers to Improved Efficiency

Strengthening vehicle efficiency standards for the future requires an understanding of why they have, to date, fallen short of expectations. One obvious reason for the failure of standards to meet original aspirations was a huge gap between the original ones

¹⁹ EIA, *Annual Energy Outlook 2025*, [Reference Case Projections Table 7](#), Transportation Sector Key Indicators and Delivered Energy Consumption. City and highway road testing by *Consumer Reports* also show efficiency levels well below EPA's lab results.

²⁰ With the original baseline, U.S. carbon emissions from transportation rose 17 percent.

promulgated in 1977 and the new Congressional mandate of 2007. In the interim, anti-regulatory forces successfully blocked any new action, other than minor tweaking.

This extended passivity led to the existing standards becoming increasingly ineffective. The symbol of regulatory weakness became the Hummer, a multi-purpose jeep/truck first sold commercially in the early 1990s. It was adapted from the military's Humvee, a prominent symbol of American might during the 1990-91 Persian Gulf War. The model availability in American showrooms combined 37-inch tires with 16 inches of ground clearance, enabling it to handle bumpy off-road conditions. It was as wide as an eighteen-wheel heavy truck, adding to its stability off pavement. Estimated miles per gallon were 9.²¹ This new product appeared to be a prime candidate for inclusion in federal fuel-efficiency averages. However, when the Department of Transportation adopted rules in 1977, few could imagine that a passenger vehicle weighing almost 7,000 pounds would be sold for use on American highways. The Hummer failed to achieve much popularity with customers, but did demonstrate that there were loopholes to be found in aging efficiency standards.

More impactful was the rise of Sport Utility Vehicles (SUVs). Many drivers who previously drove sedans or station wagons transitioned to new SUVs because their higher elevation provided improved visibility and off-road capability. Their transfer from the "car" category with its tighter mileage standards to "light trucks" with more lenient requirements lowered the average of the overall fleet. Moreover, manufacturers were given considerable leeway in determining whether a vehicle was classified as a car or a light truck. They employed their latitude to rebrand vehicles previously called cars as SUVs, sometimes making cosmetic modifications to justify the redefinition, further weakening the standard for the overall fleet.²²

The prolonged period of inaction following the Ford/Carter administrations' original standards in the 1970s had severe consequences for the Earth's climate. First, it missed opportunities to take advantage of normal stock turnover – a critical factor, as it is rarely environmentally friendly to discard functioning vehicles due to the emissions associated with manufacturing. Second, the gap was responsible for an enormous addition to atmospheric carbon dioxide, a gas that warms the Earth for more than a hundred years. Third, inaction on auto efficiency also contributed, along with falling U.S. oil production, to a massive increase in U.S. oil imports.

Even when three presidents in the twenty-first century oversaw consequential updates of vehicle efficiency standards, the new rules intentionally included offsets that functioned as loopholes for carmakers. A typical rule ran hundreds of pages and contained numerous details that softened the impact of the new standards announced in bold headlines. The

²¹ Ben Stewart, "The Hummer's 40-Year Journey from Military Hero to Electrified Future Truck," *Popular Mechanics*, [October 25, 2020](#).

²² Keith Bradsher, *High and Mighty: SUVs: The World's Most Dangerous Vehicles and How They Got That Way* (New York: Public Affairs, 2002), especially pp. 353-59.

complexity of rulemaking created a fertile environment for automobile industry lobbyists, who won many small victories that, when combined, substantially reduced their compliance burden.

Offsets hidden in the fine print of regulations were often less evident to the public. One such offset was a credit that cars could receive for having dual-fuel capacity that would facilitate the greater use of corn-based ethanol. Including this feature was easy to do and very inexpensive. Thus, it was attractive for manufacturers who wanted to lessen the impact of higher mileage standards (and for the farmers producing the corn). Moreover, the credit was available for cars even when many purchasers never used higher blends of ethanol.

Another offset was the availability of extra credit for all-electric vehicles. All-electric vehicles helped manufacturers meet their fleet averages because they didn't use gasoline, and because each electric car sold counted as two cars. The double credit encouraged the expanded purchase of electric vehicles, but it also loosened overall fleet requirements for efficiency and facilitated the increased sale of trucks. Whatever the motivation, the double credit was just one of many details that widened the gap between advertised and actual vehicle efficiency.²³

Another detail in efficiency rules little understood by the general public was the discount rate (7% in the Bush 43 administration, 3% under Obama) used in cost/benefit calculations.²⁴ Higher rates tended to produce model results that mimicked market behavior when consumers estimated their personal cost/benefit ratios without considering impacts on the commons (including the atmosphere). Discount rates at any level create serious barriers for climate action, since there is a compounding effect on costs that eliminates most long-term benefits of reducing a pollutant with a very long residency in the atmosphere.²⁵

Heavyweights on the Highway

Aside from the failure to update vehicle efficiency standards on a regular basis, the biggest barrier to reducing greenhouse gas emissions from transportation has been the increasing share of SUVs and other "light trucks" on American highways. The shift away from more fuel-efficient sedans and station wagons has occurred despite federal fuel-economy mandates, and, to some extent, because of these mandates.

The trendlines in vehicle share constitute one of the most dramatic stories in modern American energy history. In 1975, cars dominated the passenger vehicle market with 81%,

²³ Testimony of John Graham, U.S. Senate Subcommittee on Regulatory Affairs and Federal Management, March 19, 2015.

²⁴ Testimony of John Graham, U.S. House, Committee on Oversight and Government Reform, September 14, 2011.

²⁵ Hakes, *The President and the Planet*, pp. 145-48, 298-300.

compared to 19% for light-duty trucks. By 2024, the numbers had moved sharply toward larger vehicles. Light-duty trucks commanded 63% of the market, as cars fell to 37%. The transition was long-term, but most rapid after 2012.²⁶

As a result of this massive shift to light-duty trucks, each category of vehicle could achieve significant mileage gains while the overall fleet did not.

U.S. fuel economy regulations have consistently established laxer standards for light trucks and SUVs. However, the gap between the two vehicle classes has widened. In 2000, cars had to be 7 miles per gallon more efficient than light-duty vehicles. By 2020, the difference was 12 miles per gallon. Based on the rules in place when President Biden left office, the gap would have reached 19 miles per gallon by 2030.²⁷

As light trucks gained market share, they also became heavier. Among the now less light “light duty vehicles,” pickup trucks gained the most weight, up 30 percent from 1975 to 2023, compared to a 10% drop in the sedan/station wagon category. As a consequence, the growing weight of light-duty vehicles created a much greater disparity between the poundage of vehicle classes on the highway.²⁸ Car drivers who observed that they were increasingly surrounded by ever larger vehicles had plenty of data to confirm what their eyes were telling them. Once again, empirical evidence from the road contradicts theories that efficiency standards significantly limit consumer choices.

All other things being equal, additional weight results in increased energy consumption and pollution.²⁹ To offset these societal costs, 21st-century regulators often defended the laxness of controls on vehicle weight with countervailing concerns about passenger safety. For a considerable time, there have been objections that heavier vehicles may not, in fact, advance overall highway safety.³⁰ Still, it is hard to argue against the laws of physics. When two cars collide, the driver of the heavier one is less likely to suffer injury or death, while the driver of the smaller one is considerably more vulnerable. However, this finding does not end the debate about the wisdom of weakening mileage standards to promote highway safety.

Upon closer examination, the conventional safety argument is found to be fundamentally flawed, although it has long guided federal policy. As David Zipper, a senior fellow at the MIT Mobility Initiative, has observed, “A vehicle’s design affects not just the safety of its

²⁶ U.S. Environmental Protection Agency, *Automotive Trends Report* (2024), [Table 3.1](#).

²⁷ U.S. Department of Energy, Alternative Fuels Data Center, [“Vehicle Fuel Efficiency \(CAFE\) Requirements by Year.”](#)

²⁸ EPA, *The 2024 EPA Automotive Report* (November 2024), pp. 22-25.

²⁹ One exception to the general rule that extra weight increases fuel consumption arises when batteries, which make cars heavier, are used to reduce fuel use.

³⁰ E.g., Bradsher, *High and Mighty* (2002); Kevin Case, “Tanks in the Street: SUVs, Design Defects, and Ultrahazardous Strict Liability,” *Chicago-Kent Law Review*, Vol. 81 (2006).

occupants, but also people walking, biking, or inside other cars. Although seemingly obvious, this basic truth had eluded federal regulators for decades.”³¹

In September 2024, the *Economist* magazine’s massive examination of crash data from fourteen American states led it to conclude, “Big cars take many more lives than they save.”³² Police reports showed that passengers in the heaviest vehicles suffered 4.1 “own-car deaths” per 10,000 crashes, compared to 6.6 for cars in the middle and 15.8 for the lightest vehicles – data supporting the idea that drivers of large cars reduced their vulnerability in high-impact crashes. But the numbers are even more stunning when comparing the damage to heavy vehicles with the damage caused by heavy vehicles. The heavyweight category of vehicles was responsible for 37 “partner-car deaths” per 10,000 crashes, compared with 5.7 for middleweight and 2.6 for lightweight. The magazine calculated that, overall, “For every life that the heaviest SUVs and trucks save, more than a dozen are lost in other vehicles.”

However, even the drivers of heavy vehicles cannot feel entirely comfortable if the trend for “light trucks” to increase their size and weight continues unchecked. According to Zipper and others, the adverse effects of “car bloat” can be measured by more than fatality numbers. The negative side effects also include constant competition to outweigh others on the road, increased tire pollution, reduced “through-put” on busy highways, **faster deterioration of road pavement, and reduced parking capacity.**

Based on available evidence, market booster economists are entitled to argue that a rational buyer concerned only about their personal safety should tilt toward heavier vehicles. However, societies often face situations where the personal benefits of individual actions pale in comparison to the harm inflicted on others. That is why successful societies ranking high in quality of life have rational laws and regulations based on overall impacts.

Drivers Matter

Even well-designed vehicle efficiency regulations updated regularly can fall short of meeting climate protection goals if drivers do not take some personal responsibility for their emissions. Decisions about which car to purchase, compliance with speed limits, and the use of the “Eco” button, which some cars have, to improve miles per gallon, belong to vehicle owners and operators. The automobile industry lobbyists deserve to be held accountable for erecting roadblocks to vehicle efficiency, as do policymakers who have

³¹ David Zipper, “The Reckless Policies that Helped Fill our Streets with Ridiculously Large Cars,” *Vox*, April 28, 2024. Zipper’s criticism of federal regulations included those for both safety and mileage efficiency.

³² “American Cars: Dangerously Heavy,” *Economist*, September 7, 2024; the cover headline read “America’s Killer Cars.” See also Michael Anderson and Maximilian Auffhammer, “Pounds That Kill: The External Cost of Vehicle Weight,” *National Bureau of Economic Research Working Paper Series*, No. 17170 (2011).

devised a labyrinth of rules that often fail to deliver on their claims. But the general public has also been a substantial contributor to the problem of fuel waste.

In the 1970s, television viewers could hardly miss public service ads advising them, “Don’t be Fuelish.” Indeed, careful drivers who complied with the then 55-mile-per-hour speed limit contributed to sizeable reductions in oil consumption at the time. Vigorous consumer education about the links between driving behavior and climate change has been a rare ingredient in current efforts to slow climate change.

The Road Ahead

Recent efforts to overturn all vehicle efficiency standards in the United States have created a massive gap in long-time energy and environmental policy. However, unless there is a general willingness to throw in the towel on slowing climate change, such regulations will need to be a vital part of ongoing discussions and any action agenda down the road.

In certain respects, the damage of the U.S. policy reversal on vehicle pollution cannot be undone. The extra carbon dioxide emissions from U.S. transportation will remain in the atmosphere for over a hundred years, and direct-air carbon capture appears unfeasible at the scale necessary to offset the additional pollution.³³ Moreover, so far, it seems that many federal laws, appropriations, regulations, permits, and contracts can be terminated by the decision of a single individual based on the vague rationale of “administration priorities.” As a result, if federal regulation of vehicle carbon emissions returns, it may lack credibility with long-term investors, as subsequent administrations might overturn new policies without the due process previously assumed to be necessary.

Nonetheless, a shift to electric vehicles is likely to continue, even without the U.S. government's encouragement. EVs already provide a quiet ride, smooth acceleration, and lower operating costs that are superior to those of internal combustion cars and trucks. Substantial progress is underway to upgrade batteries and other critical technologies. Thus, customers of the future should be able to purchase EVs without range anxiety or inflated prices. Countries that create policy incentives will see more rapid adoption of electric vehicles. Still, even in the United States, EVs are likely to develop a broader customer appeal as technology continues to advance.

Likewise, the rapid penetration of solar, wind, and large-scale batteries in power generation is likely to continue, making electric vehicles increasingly effective for reducing greenhouse gases. Thus, the current momentum will likely allow carbon emissions from transportation to decline, albeit not as rapidly as they would have without recent reversals in environmental policy.

³³ Direct air capture should be used as much as possible. Even limited extraction and burial would have positive benefits, just not enough to offset the massive pollution at current rates.

However, a gradual expansion of the share of electric vehicles and power from wind and solar, without significant federal support, does not adequately address the challenges of a warming planet. That is because the pace of change toward more energy-efficient vehicles matters a lot. Past advances in technology have often been offset by new demands for energy services that reduce or eliminate the reductions in fuel use that might have otherwise resulted from greater efficiency. U.S. cars and trucks have undergone considerable mission creep, extending beyond their original role of transporting people and goods from Point A to Point B. If future customers increasingly regard a car as their home away from home, with some seeking features like a refrigerator for food storage or a larger play area for pets, gasoline demand will drop more slowly. Thus, a gradual public acceptance of electric vehicles wouldn't eliminate the need for efficiency standards, in part because of the challenge of dealing with the ongoing escalation of vehicle size.

The recent U.S. termination of policy carrots and sticks that help reduce greenhouse gas emissions from transportation could lead to several vastly divergent scenarios. One possibility would be a long-term continuation of recently announced policies that dismiss the need for vehicle efficiency standards and favor coal over wind as a power source for electrified vehicles. As part of this scenario, the U.S. might maintain stiff barriers to competition from foreign automakers and continue to build ever-larger vehicles. U.S. isolation from international cooperation to fight climate change and increased trade barriers could lead to the creation of two separate car markets. On one side, fuel-efficient, affordable transportation may advance more rapidly in Asian and European nations, who may see advantages in robust trade among themselves and may be better positioned than their U.S. competitors to capture sales in Latin America and Africa. These nations couldn't do as much to restrain climate change as they would with U.S. cooperation. But they could achieve quite a lot, while profiting from an expanding market for their cars and trucks. This future might not be what U.S. automakers should hope for. American cars are already considered less reliable than those made elsewhere and are often too large for paved roads around the globe.³⁴ Moreover, American drivers will constitute a shrinking share of the world market. An inability of American cars to compete in foreign markets, exacerbated by protectionism and lax efficiency requirements, could have increasingly adverse consequences for the American economy.

On the other hand, there could be a strong rebound reaction to the current move to eliminate rules that protect the environment. New policies might not simply replicate those of the past, but instead move toward more effective approaches. Fuel efficiency regulations would be more straightforward, more honest about expected results, and less encouraging of large vehicles. The rules would be based more on comprehensive safety data and less on the tenets of anti-regulatory faith. A careful study of history reveals that the problem with previous fuel efficiency regulations is not that they have been too demanding. Instead, the lesson for future policymakers is that, when you read the fine

³⁴ Jonathan Linkov, "The Most and Least Reliable Cars," *Consumer Reports* (March 2025), pp. 50-53; Tom Randall, "America's Car Bloat," *Bloomberg Green*, August 12, 2023.

print, they have been too weak. Those who assert that strong regulations have reduced consumer choice should be asked to produce their evidence.

In this second scenario, with the United States rejoining the fight against climate change, efficiency regulations shouldn't have to shoulder the entire burden of reducing U.S. carbon dioxide emissions from transportation. A multi-pronged approach that includes trade with countries that produce climate-friendly products, mass transit, adjusting gasoline taxes to overall inflation since they were last updated, driver education, enforcement of speed limits, and investments in climate-friendly technologies will deliver optimal results. There will, of course, be some expenses associated with slowing the rate of climate change. However, there are also substantial costs, quantifiable and non-quantifiable, for current and future generations that will be forced to adapt to the escalating risks of a changing climate.