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Vehicle Fuel Economy and Greenhouse Gas Standards

On August 5, 2021, the Biden Administration proposed amendments to the federal standards that regulate fuel economy and greenhouse gas (GHG) emissions from new light-duty vehicles—a category that includes passenger cars and most sports utility vehicles, vans, and pickup trucks. These standards include the Corporate Average Fuel Economy (CAFE) standards promulgated by the National Highway Traffic Safety Administration (NHTSA) and the Light-Duty Vehicle GHG emission standards promulgated by the U.S. Environmental Protection Agency (EPA).

President Biden also signed Executive Order 14037, "Strengthening American Leadership in Clean Cars and Trucks," which (1) requires EPA and NHTSA to begin work on future rulemakings for multipollutant and fuel efficiency standards for both light-duty vehicles and heavy-duty vehicles and engines that would take effect beginning in model year (MY) 2027, and (2) sets a nonbinding electrification goal that "50 percent of all new passenger cars and light trucks sold in 2030 be zero-emission vehicles, including battery electric, plug-in hybrid electric, or fuel cell electric vehicles."

CAFE Standards

In an effort to reduce dependence on imported oil, the Energy Policy and Conservation Act of 1975 (EPCA; P.L. 94-163) established CAFE standards for passenger cars beginning in MY 1978 and for light trucks beginning in MY 1979. The standards required each auto manufacturer to meet a target for the sales-weighted fuel economy of its entire fleet of vehicles sold in the United States in each model year. Under EPCA, CAFE standards and new vehicle fuel economy rose steadily through the late 1970s and early 1980s. After 1985, Congress did not revise the legislated standard for passenger cars for several decades, and it remained at 27.5 miles per gallon (mpg) until 2011. The light truck standard was increased to 20.7 mpg in 1996, where it remained until 2005. NHTSA promulgated two sets of standards in the mid-2000s for MY 2005-2007 and MY 2008-2011, increasing the light truck standard to 24.0 mpg. In 2007, Congress enacted the Energy Independence and Security Act (P.L. 110-140), mandating a phase-in of higher CAFE standards reaching 35 mpg by 2020. This was the last legislation to set fuel economy goals.

GHG Standards

In the April 2007 decision *Massachusetts v. EPA*, the Supreme Court held that EPA has the authority to regulate GHGs from new motor vehicles as "air pollutants" under the Clean Air Act (CAA). In the 5-4 decision, the Court's majority concluded that EPA must decide whether GHG emissions from new motor vehicles contribute to air pollution that may reasonably be anticipated to endanger public health or welfare or provide a reasonable explanation why it cannot or will not make that decision. On December 15, 2009, EPA promulgated findings that GHGs endanger both public health and welfare and that GHG emissions from new motor vehicles contribute to that endangerment. With these findings, the CAA required the agency to establish standards for emissions of the pollutants.

The National Program: Rulemakings

In 2010, the Obama Administration brokered an agreement between 13 auto manufacturers, the State of California, the United Auto Workers union, and other parties to develop and implement vehicle GHG emission standards. Because carbon dioxide (CO_2) from vehicle fuel combustion is a major source of GHG emissions, EPA aligned its standards with NHTSA's CAFE program.

EPCA and the CAA generally preempt states from adopting their own fuel economy and emission standards for new motor vehicles. However, CAA Section 209(b) allows the State of California to request a preemption waiver for its vehicle emission standards provided that they are at least as stringent as federal standards and, among other things, are necessary to meet "compelling and extraordinary conditions." In 2009, EPA granted California a waiver for its GHG standards, and EPA and NHTSA aligned the federal GHG and fuel economy standards with those developed by California. The agencies referred to the joint standards as the National Program. The agencies finalized joint rulemakings for MY 2012-2016 light-duty vehicles in 2010 (Phase 1) and for MY 2017-2025 vehicles in 2012 (Phase 2). Under Phase 2, the manufacturers agreed to reduce GHG emissions from their MY 2025 fleet by about 50% compared to MY 2010.

The Trump Administration revised the MY 2022-2025 standards, asserting that key assumptions in the Obama-era rulemakings—including gasoline prices, technology costs, and consumer acceptance—"were optimistic or have significantly changed." In 2019, the agencies finalized the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule, Part One: One National Program, wherein NHTSA asserted that EPCA preempts state and local GHG standards because they are "related to" fuel economy standards. Further, EPA withdrew the CAA preemption waiver it had granted to California in January 2013 as it relates to the state's GHG and Zero Emission Vehicle programs for MY 2017-2025 vehicles. The waiver withdrawal affected 14 other states and the District of Columbia, which have adopted California's GHG emission standards; those states account for more than a third of all U.S. new vehicle sales.

The agencies finalized the second part of the SAFE Vehicles Rule on March 31, 2020. They projected that the new rule would increase the average fuel economy of vehicles sold by 1.5% each year from MY 2021 to MY

2026. This compared to an approximate 5% increase each year under the 2012 Phase 2 standards.

The National Program: Attributes

The agencies' fuel economy and GHG standards apply to the new fleet of passenger cars and light trucks sold by a manufacturer within the United States during a given model year. Starting with the 2010 Phase 1 standards, the agencies have used the concept of a vehicle's "footprint" to set differing targets for different-sized vehicles. Generally, the larger the vehicle footprint, the lower the corresponding vehicle fuel economy target and the higher the CO_2-equivalent emissions target. This concept differs from the original CAFE standards, which grouped domestic passenger cars, imported passenger cars, and light trucks into three broad categories. The "attribute-based standards" enable manufacturers to produce a range of vehicle sizes rather than designing a lighter and smaller vehicle fleet overall to meet categorical targets. About 70% of vehicles sold domestically are sport utility and pickup trucks; less than 30% are smaller, more fuel-efficient sedans.

Manufacturers must report vehicle characteristics sold each model year. These data allow EPA and NHTSA to calculate each manufacturer's CAFE and GHG targets under the standards given the specific pattern of sales. The agencies compare the calculated targets against the vehicles' fuel economy and emissions results from EPA-approved test cycles to determine compliance.

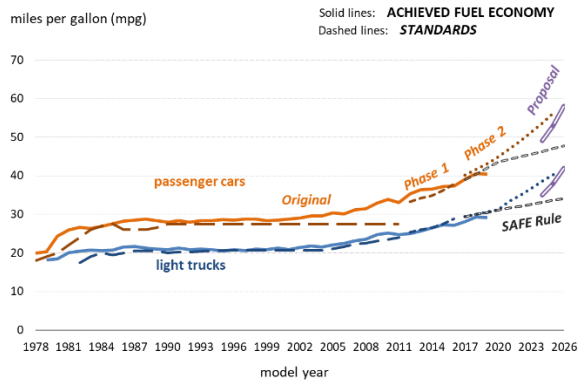
To facilitate compliance, the agencies provide manufacturers various flexibilities under the standards. A manufacturer's fleet-wide performance (as measured on the test cycles) can be adjusted through the use of alternative fuel vehicles, air conditioning efficiency improvements, and "off-cycle" technologies (e.g., active aerodynamics, thermal controls, and idle reduction). Further, manufacturers can generate credits for over-compliance with the standards in a given year. They can bank, borrow, and transfer these credits within their own fleets or trade them with other manufacturers to achieve compliance.

The 2021 Proposed Rules

The August 2021 proposal is not a joint rulemaking. EPA and NHTSA released their proposals separately, with different MY requirements, target stringencies, and compliance flexibilities. NHTSA points to a difference in statutory authorities between the agencies as the reason for the uncoupling. NHTSA's proposal would revise the current CAFE standards finalized under the Trump Administration beginning in MY 2024. The proposed standards would increase in stringency for both passenger cars and light trucks by 8% per year over MYs 2024-2026. NHTSA projected that the proposed standards would require, on an average industry fleet-wide basis, roughly 48 mpg in MY 2026. **Figure 1** compares CAFE standards to the U.S. fleets' adjusted performance data.

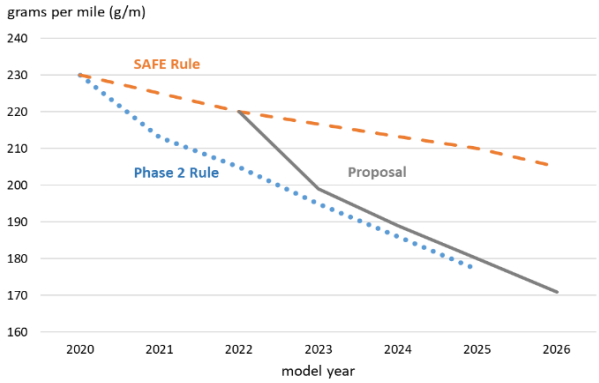
EPA's proposal would revise the current vehicle GHG standards beginning in MY 2023. The standards would increase in stringency each year through MY 2026. The increase would be about 10% in the first year, followed by a nearly 5% increase annually from MYs 2024-2026. This would achieve a projected fleet-wide, sales-weighted fuel economy equivalent of 52 mpg in 2026. **Figure 2** compares EPA's proposed GHG emission targets, projected through MY 2026, with the projected targets under the 2012 Phase 2 and 2020 SAFE Vehicles rules.

Figure 1. CAFE Standards and Achieved Fuel Economy



Source: CRS, from EPA and NHTSA.

Figure 2. EPA Proposed Average Fleet-Wide, Sales-Weighted CO_2 Compliance Targets, MYs 2020-2026



Source: CRS, from EPA.

Many of the program incentives and compliance flexibilities are retained by both proposals, and others that were removed under the SAFE Vehicles rule would be restored. These include a restoration of the advanced technology vehicle multiplier credits for electric vehicles, fuel cell vehicles, and plug-in hybrids; a restoration of the full-size pickup truck incentives for strong hybrids; and an increase in the credits for "off-cycle" technologies. EPA estimates that the proposal would result in 2.2 billion tons of avoided CO_2 emissions, save $120 to $250 billion in fuel costs, and provide $86 and $140 billion in net benefits through 2050. The agency estimates that on average, the cost to auto manufacturers to comply with the standards would be about $1,000 per vehicle in MY 2026.

Further, in April 2021, NHTSA proposed to fully repeal the SAFE Vehicles Rule, Part One: One National Program. EPA has also announced that it is reconsidering the 2019 withdrawal of the CAA preemption waiver.

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