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Vehicle Fuel Economy and Greenhouse Gas Standards

On January 20, 2021, President Biden issued Executive Order 13990, "Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis," which directs federal agencies to review regulations and other agency actions from the Trump Administration, including the federal standards that regulate fuel economy and greenhouse gas (GHG) emissions from new passenger cars and light 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). NHTSA and EPA have not released a proposal for a new set of standards at this time.

CAFE Standards

The origin of federal fuel economy standards dates to the mid-1970s. The oil embargo of 1973-1974 imposed by Arab members of the Organization of the Petroleum Exporting Countries and the subsequent tripling in the price of crude oil brought the fuel economy of U.S. automobiles into sharp focus. In an effort to reduce dependence on imported oil, the Energy Policy and Conservation Act (EPCA; P.L. 94-163) established CAFE standards for passenger cars beginning in model year (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 MYs 2005-2007 and MYs 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.

The National Program

In 2010, the Obama Administration brokered an agreement between 13 auto manufacturers, the State of California, the United Auto Workers union, and other interested 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 motor 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 motor vehicles in 2010 (Phase 1) and for MYs 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 agencies' fuel economy and GHG standards apply to the new fleet of passenger cars and light trucks—including most sport utility vehicles, vans, and pickup trucks—sold by a manufacturer within the United States during a given model year. In both the Phase 1 and Phase 2 standards, the agencies 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. These "attribute-based standards" allow auto manufacturers to produce a full range of vehicle sizes. 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 full range of vehicle sizes rather than designing a lighter and smaller vehicle fleet overall to meet the categorical targets.

Under the regulations, manufacturers must report the characteristics of the vehicles they sell in each model year. This information allows 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 each manufacturer's compliance with the applicable standards.

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 flex-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.

Midterm Evaluation and Vehicle Market

As part of the Phase 2 rulemaking, EPA and NHTSA committed to conduct a midterm evaluation of the standards that would apply in MYs 2022-2025. Through the evaluation, EPA was to determine whether the standards were still appropriate given the latest available data and information. In the last days of the Obama Administration, EPA issued a final determination stating that the MY 2022-2025 standards remained appropriate and that a rulemaking to change them was not warranted. However, on March 15, 2017, after President Trump took office, EPA and NHTSA announced their joint intention to reconsider the Obama Administration's final determination. EPA released a revised final determination on April 2, 2018, stating that the MY 2022-2025 standards were "not appropriate and, therefore, should be revised."

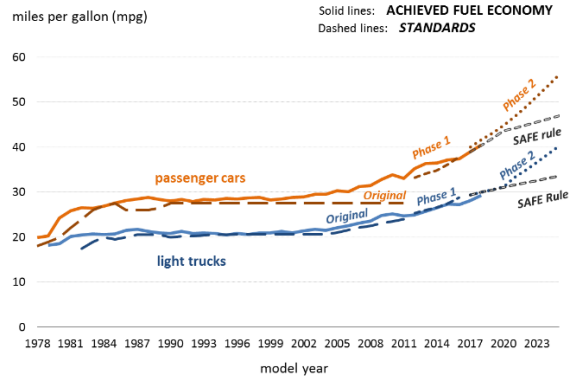
Historically, shifts in the price of gasoline and the composition of the new vehicle market have affected the way an administration approaches the standards. In 2012, at the beginning of Phase 1, gasoline prices were high and smaller sedans and larger sport-utility vehicles and pickup trucks each held 50% of the market. By 2019, during the Trump Administration, gasoline prices were low and the share of sedans had dropped to 28% while larger vehicles increased to 72%. While these shifts do not necessarily affect manufacturer compliance under the regulations, they can influence the overall ambitiousness and design of a national fuel economy and vehicle GHG emission program.

The SAFE Vehicles Rule

The agencies issued their revisions to the CAFE and GHG emissions standards in two parts. On September 27, 2019, the agencies finalized the Safer, Affordable, Fuel-Efficient (SAFE) Vehicles Rule, Part One: One National Program, wherein NHTSA asserted its statutory authority to set nationally applicable fuel economy standards under EPCA, which 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 MYs 2017-2025 vehicles. The waiver withdrawal also affects 13 other states and the District of Columbia, which had adopted California's GHG emission standards; those states comprise more than a third of all U.S new vehicles sales.

The agencies finalized the second part of the SAFE Vehicles Rule on March 31, 2020. The agencies 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 compares to an approximate 5% increase each year under the 2012 Phase 2 standards. The new rule retained many of the flexibilities of the Phase 2 standards, including the credit system and the adjustments for air conditioning improvements, methane and nitrous oxide emission reductions, and off-cycle technologies. **Figure 1** compares CAFE standards to the U.S. fleets' adjusted performance data, as reported by NHTSA, for passenger cars and light trucks.

Figure 1. CAFE Standards and Achieved Fuel Economy



Source: CRS, from EPA and NHTSA.

In their regulatory impact analysis, NHTSA and EPA estimated the changes attributable to the SAFE Vehicles Rule over the lifetime of the vehicles projected to be sold through MY 2029 in comparison to the Phase 2 standards. The agencies estimated that the SAFE Vehicles Rule would reduce total costs by $200 billion (including a $100 billion reduction in automakers' compliance costs), reduce the average price of a new vehicle by $1,000, reduce highway fatalities by 3,300, and increase new vehicle sales by 2.7 million. However, the agencies projected that vehicles will consume an additional 2 billion barrels of oil, emit an additional 867-923 million metric tons of GHG, and cause an additional 440-1,000 premature deaths due to air pollution. Further, the agencies estimated that the rule would reduce auto sector jobs by 10,000-20,000 job-years annually through MY 2030 due to the reduced focus on fuel-saving technologies. NHTSA and EPA estimated that the cumulative effects to society of the SAFE Vehicles Rule could range from a net benefit of $16.1 billion to a net cost of $22.0 billion, dependent upon the program specifics, input assumptions, and discount rate modeled.

Various states, local governments, and environmental and consumer organizations filed petitions for review in the U.S. Court of Appeals for the D.C. Circuit challenging the SAFE Vehicles Rules. On February 8, 2021, the D.C. Circuit granted the agencies' request to pause (hold in abeyance) the litigation challenging the SAFE Vehicles Rule, Part One, pending the conclusion of the agencies' review and potential revision of the National Program.

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