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Vehicle Fuel Economy and Greenhouse Gas Standards

On March 31, 2020, the Trump Administration finalized amendments to 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).

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. The fleet-wide fuel economy of new passenger cars had declined from 15.9 miles per gallon (mpg) in model year (MY) 1965 to 13.0 mpg in MY 1973. 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 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 for its entire fleet of vehicles sold in the United States in each model year. CAFE standards, and new vehicle fuel economy, rose steadily through the late 1970s and early 1980s. After 1985, Congress did not revise the legislated standards for passenger cars for several decades, and they remained at 27.5 mpg until 2011. The light truck standards were increased to 20.7 mpg in 1996, where they remained until 2005. NHTSA promulgated two sets of standards in the mid-2000s for MYs 2005-2007 and MYs 2008-2011, increasing light truck standards to 24.0 mpg. In 2007, Congress enacted the Energy Independence and Security Act (P.L. 110-140), mandating a phase-in of increased CAFE standards reaching 35 mpg by 2020. This mandate was incorporated into the design of the One National Program (see below).

GHG Standards

Whether and how EPA could regulate GHGs through existing Clean Air Act (CAA) authority was debated for more than a decade before the agency took action. 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 CAA. In the 5-4 decision, the Court determined that GHGs fit within the CAA's "unambiguous" and "sweeping definition" of *air pollutant*. The Court's majority concluded that EPA must, therefore, 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 One National Program: Phase 1

Based on EPA's 2009 findings, and amidst a global economic recession, the Obama Administration brokered an agreement among major stakeholders in the automotive and truck industries, the states, 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, President Obama directed EPA to work with NHTSA to align the GHG standards with the CAFE standards.

EPCA and 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." EPA granted California a waiver for its state's inaugural GHG standards in July 2009, and President Obama directed EPA and NHTSA to align the federal GHG and fuel economy standards with those developed by California. The agencies finalized a joint rulemaking for MY 2012-2016 light-duty motor vehicles on April 1, 2010 (Phase 1 standards). The Obama Administration referred to the coordinated effort as the One National Program.

The One National Program: Phase 2

EPA and NHTSA promulgated a second phase of CAFE and GHG emission standards for vehicle MYs 2017-2025 on October 15, 2012 (Phase 2 standards). As with the Phase 1 rulemaking, the Phase 2 standards were preceded by a multiparty agreement, brokered by the Obama Administration, including the State of California, 13 auto manufacturers, and the United Auto Workers union. The manufacturers agreed to reduce GHG emissions from their fleets by about 50% by 2025 compared to 2010, with fleet-wide fuel economy rising to nearly 50 mpg.

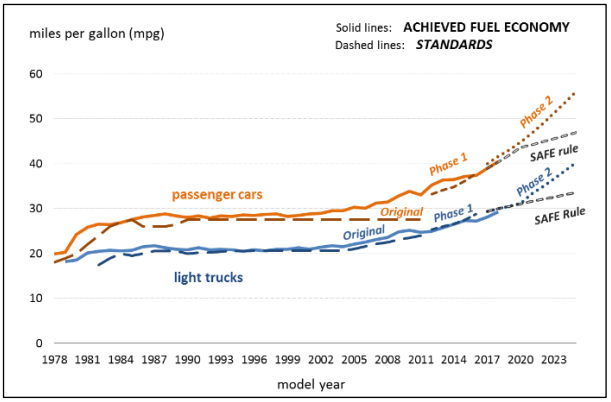
The agencies' fuel economy and GHG standards apply to the new fleet of passenger cars and light trucks—including most sport utility vehicles, vans, and pickup trucks—sold by a manufacturer within the United States during a given model year. In both the Phase 1 and Phase 2 standards, the agencies used the concept of a vehicle's "footprint" to set differing targets for different-sized vehicles. These "attribute-based" standards differ structurally from the original CAFE standards, which grouped domestic passenger cars, imported passenger cars, and light trucks into three broad categories. Generally, the larger the vehicle

footprint, the lower the corresponding vehicle fuel economy target and the higher the CO_2-equivalent emissions target. This allows auto manufacturers to produce a full range of vehicle sizes as opposed to focusing on making the entire fleet lighter and smaller to meet categorical targets.

Manufacturers comply with the standards by reporting to the agencies annually with information regarding their MY fleet production and sales numbers, their MY fleet characteristics, and the fuel economy and emissions results from the EPA-approved test cycles. This information allows the agencies to calculate each manufacturer's CAFE and GHG standards given their specific fleets. The agencies compare the calculated standards against the manufacturer's fleet-wide adjusted test results 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 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, trade, and transfer these credits both within their own fleets and among other manufacturers. **Figure 1** compares CAFE standards for both passenger cars and light trucks against the U.S. fleets' adjusted performance data as reported by NHTSA.

Figure 1. CAFE Standards and Achieved Fuel Economy



Source: CRS, from EPA and NHTSA.

Midterm Evaluation

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 these standards were still appropriate given the latest available data and information. The Obama Administration's EPA issued a final determination on January 12, 2017, 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. After receiving more than 290,000 comments, 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." As a result, on August 24, 2018, EPA and NHTSA proposed amendments to the CAFE and GHG emission standards for MY 2021-2026.

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 clarified 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 granted to California in January 2013 as it relates to the state's GHG and Zero Emission Vehicle programs. The waiver withdrawal also affects the 14 CAA Section 177 states and the District of Columbia that adopted California's GHG emission standards.

The agencies finalized the second part of the SAFE Vehicles Rule on March 31, 2020. The new rule requires a 1.5% increase in fuel economy each year from MY 2021 to MY 2026, attaining a projected fleet-wide fuel economy target of 40.4 mpg in MY 2026. (This compares to an approximate 5% increase each year under the Phase 2 standards.) The new rule retains 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. The new rule phases out the GHG credit multiplier for electric vehicles in MY 2022 (as did the Phase 2 standards). However, it extends the multiplier for natural gas vehicles through MY 2026.

In their regulatory impact analysis, NHTSA and EPA estimate 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 estimate that the SAFE Vehicles Rule will 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 project 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 estimate that the SAFE Vehicles 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. In summary, NHTSA and EPA estimate 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.

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