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Memorandum

November 20, 2018

TO: Interested Persons

FROM: Katie Ruedebusch, Senior Research Analyst, 303-866-3001

SUBJECT: Vehicle Tailpipe Emissions Standards

Summary

This memorandum discusses tailpipe vehicle emission standards in the United States and the current regulations for light-duty vehicles.

Regulation of Tailpipe Vehicle Emissions

Transportation is one of the largest sources of greenhouse gas pollution in the United States.¹ Transportation accounts for 28 percent of all greenhouse gas (GHG) emissions, with 60 percent of these emissions coming from light-duty cars and trucks. To combat this, governments regulate tailpipe emissions, or air pollutants, from vehicles. The goal of these standards is to reduce GHG and other tailpipe gas emissions and improve fuel economy for vehicles in future model years. The Environmental Protection Agency (EPA) regulates tailpipe vehicle emissions standards, while the Department of Transportation (DOT) regulates fuel economy standards.

Tailpipe vehicle emissions standards. The EPA regulates two types of tailpipe vehicle emissions: GHG and criteria. GHG emissions reflect the amount of greenhouse gases a vehicle will produce over its lifetime, while criteria emissions represent the amount of pollutants that vehicles emit that form soot and contribute to smog. GHGs emitted by vehicles include carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons. Criteria pollutants include several GHGs, but also include sulfur dioxide and other particulate matter.

History of motor vehicle emissions regulations. The California Air Resources Board issued regulations mandating the use of the nation's first vehicle emissions control technology in 1961, and developed the nation's first vehicle emissions standards in 1966. In 1967, Congress passed the Air Quality Act of 1967, which created federal vehicle emissions standards and preempted states from setting their own vehicle emissions standards. However, the 1967 act specifically exempted California from preemption for GHG vehicle emissions.

¹<https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions>.

Clean Air Act. In order to improve public health, reduce air pollution, and protect the stratospheric ozone layer, Congress passed the Clean Air Act in 1970. Congress passed major updates to the act in 1977 and 1990. According to the EPA, the act requires the EPA to set national air quality standards and requires state, local, and tribal governments to find solutions to achieve those air quality standards.

California exemption. California follows a waiver exemption process to set its own GHG vehicle emissions standard. When California Air Resources Board adopts an updated GHG vehicle emissions standard, the state applies for a waiver from the EPA. Under the current waiver process in Section 209 of the Clean Air Act, the EPA must grant a waiver to California unless the EPA determines that:

- California acted arbitrarily and capricious in creating more stringent standards;
- California does not need its stricter standards to meet compelling and extraordinary conditions; or
- California’s standard conflicts with the Clean Air Act’s vehicle emissions standards.²

Once the waiver is approved, California’s standards take effect. In the past several waiver cycles, the federal and California standard have been harmonized.

Compliance. The main way vehicle manufacturers comply with GHG vehicle emissions standards is to improve a vehicle’s fuel economy. In addition, manufacturers can also improve vehicle air conditioning systems and/or include idle reduction technologies. Manufacturers may also produce more hybrid or electric vehicles, which produce little or no GHG emissions. Finally, manufacturers may receive credits for excess emission reductions in previous years. Manufacturers may then trade and/or sell these credits to another manufacturer or “bank” credits for use in future years. According to the EPA, credits from the 2009 model year and 2016 and later model years may only be carried forward for five years.

Federal Emissions Standards

In 2012, the EPA granted California a waiver for vehicle GHG emissions standards for vehicle model years 2017 through 2025.³ The standard allows vehicles to emit around 163 grams of carbon dioxide per mile by 2025. The rule includes a midterm evaluation review for standards created for model years 2022 to 2025. This final rule is the result of the EPA, DOT, California, and industry stakeholders harmonizing the federal regulation so that light-duty vehicle emissions standards matched fuel economy standards. The current EPA GHG emissions standards for all vehicles can be found here: <https://www.epa.gov/emission-standards-reference-guide/epa-emission-standards-light-duty-vehicles-and-trucks>.

The EPA finalized its midterm evaluations of the GHG emissions standards for model years 2022 to 2025 in January 2017. This evaluation concluded that GHG standards set in 2012 for model years 2022

²42 U.S.C. §7543(b)(1).

³77 FR 62784 (Oct. 15, 2012).

to 2025 are appropriate. However, in 2018, the EPA published notice that the agency is reconsidering its final determination and that GHG emissions standards are not appropriate. The current draft EPA proposal freezes GHG emissions and fuel economy targets at the standards set for model year 2021. California, 16 other states (Connecticut, Delaware, Illinois, Iowa, Maine, Maryland, Massachusetts, Minnesota, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, and Washington) and the District of Columbia have filed suit to halt the EPA's actions.

State Emissions Standards

As stated earlier, the Clean Air Act preempts all states, except California, from enacting emissions standards. However, Section 177 of the Clean Air Act allows other states to follow California's standards. Basically, the federal law disallows states from adopting laws or regulations that are different from either the federal or California standard. Currently, 13 states (California, Connecticut, Delaware, Maine, Massachusetts, Maryland, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington), and the District of Columbia follow California waiver standards.

In-use vehicle emissions testing. Federal vehicle emissions standards do not preclude states and local governments from administering vehicle emissions testing.⁴ These in-use vehicle emissions inspection and maintenance programs are aimed at ensuring that vehicles currently on the road and in-use are maintained properly and will continue to meet emissions performance over a vehicle's lifetime. According to the Colorado Department of Public Health and Environment, state in-use testing and inspection programs are focused on criteria tailpipe emissions, not GHG tailpipe emissions.

Vehicle Emissions in Colorado

Vehicle emissions standards in Colorado. Currently, Colorado follows the federal vehicle emissions standard. However, in June 2018, Governor Hickenlooper issued [Executive Order B 2018-006](#) to adopt California's standards. On November 16, 2018, the Colorado Air Quality Control Commission in the Colorado Department of Public Health and Environment adopted final rules regarding low emission automobile regulations beginning in model year 2022. Preliminary information on the new rules can be found here: <https://www.colorado.gov/pacific/cdphe/aqcc-meeting-materials-nov-15-16-2018>.

In-use vehicle emissions testing in Colorado. In 1980, the Colorado General Assembly created the Automobile Inspection and Readjustment (AIR) Program to achieve better ozone results, reduce vehicle emissions, and meet federal air quality standards. Emissions testing of gas- and diesel-powered vehicles is required when registering or selling vehicles in Boulder, Broomfield, Denver, Douglas, and Jefferson Counties, and in portions of Adams, Arapahoe, Larimer, and Weld Counties. Parts of El Paso County also require diesel vehicles to obtain emissions testing prior to sale. Emissions tests for 1982 or newer motor vehicles are valid for 24 months, and tests for 1981 or older motor vehicles are valid for 12 months. New vehicles are exempt from emissions testing requirements for the first seven model years. New diesel vehicles are exempt for the first four model years, and all electric vehicles are exempt from emissions testing.

⁴40 C.F.R. § 85.