

POLICY BRIEF

The Renewable Fuel Standard

October 5, 2020

Summary:

Most motor gasoline sold in the United States contains up to 10 percent ethanol (E10). Under free market conditions, some ethanol is added to gasoline for its value as an oxygenate, creating a cleaner burning fuel and raising the octane rating of motor gasoline, which is useful in today's higher compression, more efficient engines. The Renewable Fuel Standard, combined with other subsidies and mandates from both state and federal governments, has increased the amount of ethanol blended into the nation's fuel supply beyond what would occur in a free market.

The use of ethanol can be problematic. Ethanol is corrosive to rubber and certain metals and can damage the fuel lines of boats, lawnmowers, and other small engine equipment. Ethanol also attracts and bonds with water from the air, and that water can separate inside a fuel tank, forming a brown goo that can clog pumps and filters. For this reason, there are regulations and guidelines for which engines can tolerate varying percentage ethanol in fuels. Newer vehicles are generally designed to tolerate lower percentage ethanol blends.

Renewable Fuel Standard

The Renewable Fuel Standard (RFS) was created in 2005, and expanded in 2007. The program mandates that increasing volumes of biofuels be blended into the nation's transportation fuel supply. Under the law, the EPA sets annual quotas for conventional renewable fuel (usually corn-based ethanol), advanced ethanol alternatives made from non-edible material and biodiesel. These quotas are then translated into blending requirements for individual refiners. Companies that do not meet their blending mandates must

buy Renewable Identification Numbers (RINs) to cover the difference, unless they are a small refinery that qualifies for a hardship waiver. While one of the stated purposes of the RFS was to reduce greenhouse gas emissions from fuel, subsequent study has found no reduction¹ in lifecycle greenhouse gas emissions from ethanol use.

¹ Rusco, Frank. "Renewable Fuel Standard: Information on Likely Program Effects on Gasoline Prices and Greenhouse Gas Emissions." U.S. Government Accountability Office (U.S. GAO), U.S. Government Accountability Office (U.S. GAO), 3 June 2019, www.gao.gov/products/GAO-19-47.

The original statute lists specific volumes of each biofuel category through the year 2022. In subsequent years, annual mandates will be set at the discretion of the EPA.

E15 Availability

E15 is currently available in 30 states at just over 2,000 stations.² Although most new fueling stations have installed equipment that is E15 compliant, older stations that are just E10 compliant may need to install new equipment to accommodate the more corrosive nature of E15 gasoline blends. Retrofits may be cost-prohibitive if they require major equipment overhauls, such as underground storage tanks, to be replaced.

On May 31, 2019, the U.S. Environmental Protection Agency (EPA) issued a final rule³ allowing the year-round sale of motor gasoline blends containing up to 15 percent ethanol (E15) and thereby increasing the availability of E15 blends in the United States. Prior to that, E15 was not sold during the summer months, defined as June 1 to September 15, to limit evaporative emissions that contribute to ground-level ozone.

² "Alternative Fuels Data Center." Alternative Fuels Data Center: E15, Department of Energy, afdc.energy.gov/fuels/ethanol_e15.html.

³ "EPA Delivers On President Trump's Promise To Allow Year-Round Sale Of E15 Gasoline And Improve Transparency In Renewable Fuel Markets." EPA, Environmental Protection Agency, 31 May 2019, www.epa.gov/newsreleases/epa-delivers-president-trumps-promise-allow-year-round-sale-e15-gasoline-and-improve.

In September of 2020, the Trump administration announced it would lift regulatory restrictions on dispensing E15 fuel through E10 compliant equipment. Both the E15 summertime waiver and the equipment waiver have been or will be challenged in court.

U.S. Gets Most of Its Ethanol from Corn

U.S. ethanol facilities use about 40 percent of the total U.S. corn crop,⁴ according to the Department of Agriculture. Ethanol now accounts for over 10 percent of U.S. gasoline usage—an increase from less than one-tenth of 1 percent in 1993.⁵

The United States produces its ethanol from corn while countries such as Brazil produce it from sugar cane. Corn has a lower ethanol yield than ethanol derived from sugar cane. Ethanol also yields about a third less energy⁶ per gallon than gasoline, so mileage drops off with more ethanol usage.

Ethanol Requirements Raise the Cost of Transportation Fuel

Fuel costs for Americans are artificially inflated due to the low energy content of ethanol, and also by the high costs

⁴ Vaughan, Carson. "Ethanol Market Is Disturbing to American Farmers. And Now There's Covid-19." *Successful Farming*, Successful Farming, 30 Mar. 2020, www.agriculture.com/news/business/ethanol-market-is-disturbin-g-as-hell-to-american-farmers-and-now-there-s-covid-19.

⁵ Bloomberg. "E15 Vs. E10: Here's What Trump's Ethanol Deregulation Push Means." *Fortune*, Fortune, 11 Oct. 2018, fortune.com/2018/10/11/ethanol-gas-e15-trump/.

⁶ Carter, Colin, and Henry Miller. "Giving In to Big Corn." *City Journal*, 12 July 2019, www.city-journal.org/epa-15-percent-ethanol.

faced by fuel companies trying to comply with ill-conceived fuel regulations, such as the need to buy RINs if they have not blended sufficient ethanol into gasoline. The Congressional Budget Office found⁷ that raising the mandated use of corn ethanol results in higher motor-fuel prices.

Higher ethanol blends such as E15 sell for lower prices relative to E10 because the price of ethanol is generally lower than gasoline blend stock. Presently, E15 is sold at a 3 to 10 cent per gallon price discount⁸ relative to E10, or 87 octane blends, in most markets. However, ethanol is less energy dense than gasoline, so a vehicle travels fewer miles per gallon as the ethanol percentage of the fuel increases.

Conclusion

The Renewable Fuel Standard forces refiners to blend ethanol into gasoline or purchase sufficient RINs to comply with the mandate, thereby increasing the cost of motor gasoline due to ethanol's lower efficiency and the cost of RINs. Due to ethanol's corrosive properties and affinity for water, consumers need to be aware, particularly when using ethanol blends in boats, lawn mowers, and other small engines.

⁷ "EPA Delivers On President Trump's Promise To Allow Year-Round Sale Of E15 Gasoline And Improve Transparency In Renewable Fuel Markets." EPA, Environmental Protection Agency, 31 May

2019, www.epa.gov/newsreleases/epa-delivers-president-trumps-promise-allow-year-round-sale-e15-gasoline-and-improve.

⁸ "New EPA Ruling Expands Sale of 15% Ethanol Blended Motor Gasoline." Energy Information Administration, Energy Information Administration, 16 July 2019, www.eia.gov/todayinenergy/detail.php?id=40095.