

Insight



High-Octane Fuel Standard: Doubling Down on Failed Fuel Standards is Not a Policy Solution

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The idea of creating a separate high-octane fuel standard (HOFS) has bubbled up recently as a politically palatable “solution” to some of the problems caused by the Renewable Fuel standard (RFS). Despite the political appeal of an HOFS, it risks compounding the same problems created by the RFS.

As [American Action Forum research has shown](#), the RFS is a policy failure. The RFS intended to reduce oil imports and pollution by requiring that biofuels (such as corn-based ethanol) be blended with gasoline. Yet the compliance costs of the RFS continue to escalate as hoped-for biofuel production failed to materialize, and AAF estimates the RFS has cost consumers \$76 billion over the past decade. It is thus not surprising that politicians are seeking to fix the RFS in a way that could ease the pains caused by the policy without walking back its promises to biofuel producers.

Proponents of a HOFS contend that high-octane fuels are superior to regular grade gasoline. In fact, high-octane fuels offer better fuel economy, less pollution, and, in most cases, reduced engine knocking—though at a premium price. Ethanol produced from corn, which is the primary fuel mandated by the RFS, is high-octane and could be blended with gasoline to produce such fuels. For politicians concerned with compliance with the RFS, fuel-economy standards, and looking for a way to keep both corn growers and refiners happy, a HOFS seems like a match made in heaven.

Unfortunately, a HOFS is simply not the elegant solution that some contend it is. First, consumers need vehicles with high compression ratio engines in order to take advantage of high-octane fuel. As a result, there are high costs that would need to be incurred (in the form of buying new vehicles) before the benefits of high octane fuels could be realized. Worse, the fuel economy benefits that are supposed to justify such costs would end up [being a wash](#) to consumers. The listed fuel economy for cars is based on an energy-dense fuel blend that is mostly gasoline (potentially with additives for octane), but the expected fuel preferred under a HOFS would be a mixture of gasoline and ethanol. Since ethanol is less energy dense than gasoline it has lower fuel economy, so its reduced energy density wipes out the fuel economy benefits of higher octane fuels—even if the sticker fuel economy for a new car is higher.

Further, a HOFS would likely require many gas stations to purchase “blender pumps” to mix ethanol and gasoline at the time of purchased to avoid damaging older vehicles that cannot accept high-ethanol blends of fuel. Consumers would ultimately pick up the costs of this conversion.

Some proponents of a HOFS assume that prices for fuel would fall because refiners would have a simpler business model. This argument misunderstands pricing, however, and the RFS provides a sobering lesson in this regard. Prices are a product of supply and demand, and they fall when competition is introduced—which a HOFS would not do. A HOFS could conceivably shift some demand away from gasoline and toward ethanol, just as the RFS did. But the RFS did not reduce end-user prices at the pump because the government policy

reduced opportunities for the market to find more efficient ways to meet the unchanged total energy demand.

In fact, the RFS raised prices, and a HOFS would too. The most readily available source of octane currently is corn-derived ethanol, but the RFS has relied on an assumption that producers could create more cellulosic (i.e. non-food-based) ethanol than they have in the past—an assumption that a HOFS would implicitly also make. Yet cellulosic ethanol production has not materialized, and just as the RFS boosted demand for corn, a HOFS would significantly as well. The United States produces 35 percent of the world's corn, and 40 percent of that corn is used for ethanol production. Most gasoline currently bought at the pump is mixed with 10 percent ethanol (E10). Moving to a high-octane ethanol blend of 25 percent (E25) or higher would require even more corn to be used for ethanol, which would then put upward pressure on corn prices—and thus fuel prices. Exactly how much prices would rise depends on future fuel economy improvements and how much more people drive because of the better fuel economy (known as a rebound effect). But even if cars meet fuel-economy standards, an E25 blend would require cars to use **25 percent more** ethanol to travel a mile than they do today.

All of these consequences of a HOFS would create winners and losers. Corn producers and refiners win due to the increased demand for ethanol and premium fuels. Vehicle manufacturers win because they can comply with fuel-economy standards more easily (because their advertised fuel-economy would use fully gasoline high-octane fuel without any ethanol) and the regulation encourages people to retire their older vehicles and buy new ones.

The losers, in contrast, are consumers, who incur high upfront costs to realize marginal long-term benefits and are forced to purchase different (and likely more expensive) fuel types by government fiat. Worse, the consumers whom a HOFS would harm the most are middle- and lower-income Americans, since high-income Americans likely are already purchasing newer vehicles and premium-grade gasoline. Effectively, a HOFS would be a wealth transfer from middle- or lower-income Americans to corn growers and refiners, and a classic example of interest groups using government policies to raise profits.

The key lesson of the RFS was that a policy at odds with the genuine economic incentives tends to be costly. As a result, the benefits need to be huge to offset those costs. A HOFS simply doesn't have those huge benefits. It is underpinned by an assumption that consumers are unaware of or unable to realize the benefits from switching to high-octane fuels. Government policy predicated on the idea that politicians can make better choices for you than you can make for yourself typically does not turn out well.