

Challenges to overcome the E10 Blendwall

Blendwall Problem

EPA regulations limit ethanol in gasoline to a maximum of 10% for all vehicles except "flexible fuel vehicles" (FFVs) which are approved by EPA to operate on up to 85% ethanol. Since FFVs only comprise about 3% of vehicles on the road today, the volume of 85% ethanol fuel used is very small. For example, in 2008 the U.S. used 9.6 billion gallons of ethanol, however, only 0.1% (12 million gallons) was used by FFVs as "E85" (a blend of 85% ethanol).ⁱ

Given current projections of gasoline use, and the biofuels growth mandated by the 2007 Energy Independence and Security Act (EISA), EPA anticipates that the maximum amount of ethanol that can be legally blended in gasoline will be reached in 2013. After 2013, the volumes of ethanol mandated by EISA will be in excess of the market's capability to absorb under current regulations. This is referred to as the E10 blendwall problem. If gasoline demand falls (as it is currently doing), there will be even less gasoline volume to absorb ethanol, and the blendwall would come sooner.

Two solutions have been proposed to move beyond the blendwall: E85 and mid-level blends (i.e. blends between E11 and E15). Both raise a number of challenges as they are new fuels which our nation's supply, fuelling, and vehicle infrastructure has not been designed for. As such, either huge sums of money need to be invested in new infrastructure or research must be completed to prove that current infrastructure can use the new fuel.

Vehicle Fleet

The majority of today's vehicle fleet has been designed to handle up to 10% ethanol (in fact, vehicles are still certified with 0% ethanol). Raising ethanol concentrations cause problems both with material compatibility (i.e. parts that break down more quickly when in contact with ethanol) and with the way the vehicles burn the fuel and the operation of the emission control devices. It should be noted that these issues also apply to other uses of gasoline like lawn equipment and marine engines. Furthermore, our nation's current retail infrastructure would be unable to manage both E10 and E11-E15 at the same site, so proposals to move only newer vehicles to a mid-level blend are currently infeasible.

Before an E11-E15 solution can be used with the current fleet of vehicles, substantial testing needs to be completed to ensure that the whole legacy vehicle fleet is in fact compatible with the new fuel. Long-term material compatibility and emissions system durability are serious concerns. Failing to prove compatibility could cost automakers and consumers billions of dollars if repairs are required after extended use of the new fuel.

In an E85 solution, the technical concerns of material compatibility and emissions control have already been addressed in the design of the FFV. The issue is getting enough of these vehicles into the fleet. Even if the domestic automakers meet public commitments to make 50% of their

new vehicles as FFVs by 2012, there will be an insufficient number of FFVs in operation to address the E10 blend wall problem.

Retail Dispensing

Like the vehicle barriers for E11-E15, the equipment at retail sites has only been approved for use with up to 10% ethanol. Because this equipment is heavily regulated (OSHA, State Fire Marshals, EPA, CARB etc.), there will be several regulatory issues that will need resolution in order to enable retail site owners to maintain compliance. These regulations are designed to protect consumer and worker safety as well as the environment.

Retail availability of E85 relies on retail site owners voluntarily choosing to invest in E85 dispensing equipment. (Compliant equipment for E85 is not currently available but should be in the future). The cost to retrofit a service station to handle E85 can run from \$20,000 to more than \$200,000, and Federal tax credits cover only part of these costs. More than 90% of the nation's 165,000 retail service stations are owned by independent businessmen and women. The decision whether to sell E85 is made by these independent businessmen and women individually assessing the economic cost and anticipated return of such a decision. Today, few can justify investment in E85 even with the available tax credits because of the small number of consumers that are interested in the product.

Consumer Acceptance

Finally, there are significant consumer issues associated with E85. FFVs typically experience a 25-30% loss in fuel economy relative to gasoline when they are operated on E85 due to the much lower energy content of the E85ⁱⁱ. This requires consumers to refuel much more frequently than with E10. In addition, historically the energy adjusted price of E85 has been much higher than E10. For these reasons, use of E85 fuel by FFV owners is low. EPA's own studies support this.

- EPA estimates that FFV owners only tapped into about 0.2% of their vehicles' E85 ethanol usage potential last year.ⁱⁱⁱ
- EPA also estimates that even those owners with adequate access to E85 fueling stations only fueled with E85 about 5% of the time.^{iv}

Conclusions

There are no easy answers to the E10 blendwall problem. Stakeholders are actively engaged in the problem solving process to determine the best solution, and it will take ongoing cooperation of industry, regulators, and legislators to ensure that renewable fuel goals are met without disrupting fuel supply or adversely affecting consumers.

ⁱ US Environmental Protection Agency, May 2009, "Regulation of Fuels and Fuel Additives: Changes to the Renewable Fuel Standard Program," Preamble, p. 249

ⁱⁱ <http://www.fueleconomy.gov/feg/FEG2009.pdf>

ⁱⁱⁱ US Environmental Protection Agency, May 2009, "Regulation of Fuels and Fuel Additives: Changes to the Renewable Fuel Standard Program," Preamble, p. 250

^{iv} Ibid