



April 5, 2013

Honorable Fred Upton  
Chairman  
Honorable Henry Waxman  
Ranking Member  
House Committee on Energy and Commerce  
[RFS@Mail.House.Gov](mailto:RFS@Mail.House.Gov)

Dear Sirs,

Thank you for organizing this important and timely review of the Renewable Fuel Standard (RFS). We are pleased to comment on two questions posed in your March 20, 2013 White Paper on Blend Wall Challenges.

Sincerely,

Marlo Lewis, Senior Fellow  
Anthony Ward, Research Associate

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As enumerated in the White Paper, those questions are:

- 1. To what extent was the blend wall anticipated in the debate over the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007?*
- 6. Could the blend wall be delayed or prevented with increased use of E-85 in flexible fuel vehicles? What are the impediments to increased E-85 use? Are there policies that can overcome these impediments?*

#### Comment on Question 1

Based on preliminary research, we find that RFS proponents anticipated the blend wall in the debate on the Energy Independence and Security Act. This finding is not surprising. They wanted to displace as much oil consumption as possible with ethanol, and it is self-evident that an E10 blend wall limits ethanol's share of the U.S. motor fuel supply to about 10%.

Typically, these advocates viewed the RFS as just one component of a more comprehensive plan combining production quota for ethanol with production quota for flex-fuel vehicles and incentives to install infrastructure capable of handling high-ethanol blends. Examples follow.

**Next Generation of Biofuels: Cellulosic Ethanol and the 2007 Farm Bill**, Hearing before the Subcommittee on Energy Science and Technology, of the Committee on Agriculture, Nutrition and Forestry, U.S. Senate, April 4, 2007, Statement of Reid Jensen, President, South Dakota Corn Growers, p. 13, <http://www.gpo.gov/fdsys/pkg/CHRG-110shrg37885/pdf/CHRG-110shrg37885.pdf>:

Currently, 85 percent of the ethanol is shipped via rail, and the remaining 15 percent relies on trucks and barges. As we increase ethanol capacity over the next 10 to 20 years, we will need greater railroad capacity, access, and expansion in order to meet the needs of a booming biofuels industry. Combine rail and road constraints with the need for more pumps and more cars, ethanol could hit a wall. Without these infrastructure improvements and addressing head-on these obstacles, ethanol will hit a saturation point, a blend wall near 15 billion gallons. At 15 billion gallons, yes, we will be blending 10 percent of all gasoline; however, we cannot pass this law without investment in renewable fuel infrastructure as well as getting more pumps at the station, more flex-fuel vehicles on the road, and higher blends to the market, like E20. We appreciate greatly Senator Thune's efforts to get E20 online and his work with the EPA on this matter. In the end, these limitations could stunt any progress on key issues that need to be looked at as we push forward our domestic energy security agenda.

**Farm Bill Policy Proposals Relating to Farm and Rural Energy Issues and Rural Development**, Hearing before the Committee on Agriculture, Nutrition, and Forestry, U.S. Senate, May 9, 2007, Response of Robert Grabarski, National Council of Farmer Cooperatives, to Sen. John Thune, p. 23, <http://www.gpo.gov/fdsys/pkg/CHRG-110shrg35054/pdf/CHRG-110shrg35054.pdf>:

Sen. THUNE: But in terms of the overall big picture policy, increasing the RFS, going from E10 to E20, which of those things makes the most sense in terms of this Committee or the Energy Committee or other committees that are going to be dealing with this issue? I am a big believer that we need to go from E10 to E20. The car manufacturers are pushing back against that. And if we increase the RFS beyond 2012, what should we increase it to?

Mr. GRABARSKI. If there is a priority, I would guess that it would be to increase it from E10 to the next level. That may not be E20. It may be E15; it may be E20. I do not know.

Sen. Charles Grassley, *Congressional Record*, May 23, 2007, S. 6539,  
<http://www.gpo.gov/fdsys/pkg/CREC-2007-05-23/pdf/CREC-2007-05-23-pt1-PgS6539-2.pdf#page=1>:

Ethanol's contribution is a significant net increase to our Nation's fuel supply. But as the industry grows, it is imperative that higher ethanol blends be available to consumers. When I say higher ethanol blends, I mean beyond the 10 percent mixture that we have right now. We even have cars right now that can burn up to 85 percent ethanol. That is why we refer to it as E85. That is what we are talking about, increasing the 10 percent as cars are manufactured, to be able to consume it without hurting the engine. That is where the automobile companies are headed. That is where the ethanol industry is headed to back it up. But the point I will make in a minute is that the distribution for E85 is a problem, and it looks to me like big oil is a major part of that problem. That is what I am going to point out.

We are quickly approaching a time when ethanol will be produced in a quantity greater than that needed for the blend market as we continue down the road that has been pioneered by Brazil--and that is the best example—to use cars that will, in fact, burn 100 percent ethanol. For sure, we must continue on this path of reducing foreign oil dependence and greater renewable fuel use. To do that, then, it is critical that we develop the infrastructure and the demand for E85, an alternative fuel comprised of 85 percent ethanol, 15 percent gasoline.

Sen. Byron Dorgan, *Congressional Record*, October 16, 2007, S12892,  
<http://www.gpo.gov/fdsys/pkg/CREC-2007-10-16/pdf/CREC-2007-10-16-pt1-PgS12891.pdf#page=1>

We use about 140 billion gallons or 145 billion gallons of fuel a year. If every single gallon of fuel were blended with ethanol, our total market for ethanol would be about 14.5 billion gallons. The President says let's go to 35 billion gallons. I agree with that. So do most of my colleagues. The Senate has already voted on a bill to produce 36 billion gallons. But how are we going to use 36 billion gallons if we are only blending ethanol at 10 percent? We have to have the E85 pumps. They are producing flex-fuel vehicles in Detroit now, and they have said they are going to get to 50 percent of all the vehicles they produce being flex-fuel vehicles so we can run a fuel that is 85 percent ethanol. E85 they call it.

We are going to need to pump E85 percent ethanol. We are going to need to have blend pumps that blend 30 percent, 40 percent, and 50 percent blends of ethanol and

gasoline. We have to do all these things if this country is determined to move in a direction that makes us less dependent on foreign oil.

We have to make things happen. An infrastructure bill that says if we are going to produce biofuels—and we are, and if we are going to aspire to get 36 billion gallons of biofuels—and we should, then you have to have a plan by which you market that. If you produce it and don't market it, the market for that particular energy collapses, and it will set us back decades.

**Energy Market Effects on Recently Passed RFS**, Hearing before the Committee on Energy and Natural Resources, U.S. Senate, February 7, 2008, Response of Robert J. Meyer, Principal Deputy Administrator, Office of Air and Radiation, EPA, to Questions from Sen. John Barrasso, pp. 70-71, <http://www.gpo.gov/fdsys/pkg/CHRG-110shrg42123/pdf/CHRG-110shrg42123.pdf>

Question 2. Some individuals speculate that the ethanol industry is facing a de facto “blend wall” due to the practical limit of a ten percent blend, which some experts estimate to be in the range of 11 to 12 billion gallons. I understand these claims are made in part due to a combination of small engine warranty concerns for ethanol blends above ten percent, and statewide air quality caps, such as those imposed in California. What is EPA’s opinion of these potential practical barriers, in terms of increasing and assimilating future ethanol production?

Answer. EPA is aware of the concerns about a practical limit on the total volume of E10 that can be used in the market. EPA is also aware of the potential barriers to widespread distribution of E85 and use of mid-level ethanol blends (ethanol-gasoline blends with greater than 10 percent ethanol content). EPA’s primary concern rests with the effect such mid-level blends may have on the emissions and components of gasoline-powered vehicles and engines. Although modern vehicles and engines are designed to operate on E10, concerns exist that levels of ethanol over 10 percent in non-flex-fuel vehicles and engines might result in durability and performance problems and increases in emissions. There are also specific concerns regarding the use of such blends in small engines, such as those used in lawn and garden equipment, which typically are less able to adjust properly to changes in fuel composition.

Alexander Karsner, Assistant Secretary, Office of Energy Efficiency and Renewable Energy, DOE, gave a similar answer to Sen. Barrasso’s question (p. 83):

Answer. Today the vast majority of the nation’s ethanol is marketed for use in vehicles and engines as a blend up to 10 percent (E10) in gasoline. The only other way of using ethanol is in the form of E85 in specially designed flexible fuel vehicles. However, less than one percent of all ethanol used in U.S. transportation fuel comes in the form of E85. Given the new renewable fuel standard requirements for significant increases in

biofuels as well as increased domestic production of ethanol, the E10 market is becoming saturated and may in fact reach the “blend wall” in the next 24 to 36 months—the equivalent of 10 percent of all gasoline sold. There are two paths to increase ethanol markets beyond the 12 to 14 billion gallons (which the “wall” represents), which are being pursued in parallel: Expand E85 markets at a significantly accelerated pace, including maximizing flexible fuel capability across the vehicle fleet amongst all manufacturers that serve the US market as well as E85 fueling stations; and certify intermediate gasoline blends to use up to 15 or 20 percent ethanol (i.e., E15, E20), letting market forces drive ethanol supply distribution (based on successful engine/emissions testing and EPA approval).

### Comment on Question 6

Increased blending of E85 is not a viable strategy to remove, or delay hitting, the blend wall. Under the RFS, refiners earn RIN credits only for gallons of ethanol sold. There is very little consumer demand for E85, and for good reason – mile per mile, it is more costly than gasoline.

A gallon of ethanol is cheaper than a gallon of gasoline.<sup>1</sup> However, ethanol has about one-third less energy than gasoline<sup>2</sup> and does not make up the difference in price. Consequently, the higher the ethanol blend, the worse mileage your car gets, and the more money you spend to drive a given distance.

FuelEconomy.Gov, a Web site jointly administered by the U.S. Environmental Protection Agency (EPA) and the Department of Energy (DOE), calculates how much a typical motorist would spend in a year to fill up a flex-fuel vehicle with either E85 or regular gasoline.<sup>3</sup> The exact bottom line changes as gasoline and ethanol prices change. The big picture, though, is always the same: *Ethanol is a net money loser for the consumer.*

At today’s prices, it costs an extra \$400-\$650 a year to switch from regular gasoline to E85 (see images below). This price differential, which hit \$750-\$900 in February, is the principal barrier to market penetration of E85 and other high ethanol blends. Even if everybody owned a flex-fuel vehicle, and every service station installed E85 blender pumps, few willing customers would buy the fuel. Lower energy content, inferior fuel economy, and higher cost also explains why the “choice” to buy ethanol must be mandated.

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<sup>1</sup> Government of Nebraska, Ethanol and Unleaded Gasoline Rack Prices, <http://www.neo.ne.gov/statshtml/66.html>

<sup>2</sup> California Energy Commission, Ethanol as a Transportation Fuel, <http://www.consumerenergycenter.org/transportation/afvs/ethanol.html>

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<http://www.fueleconomy.gov/feg/PowerSearch.do?action=alts&year1=2012&year2=2013&vfuel=E85&srctype=ne wAfv>

<input type="checkbox"/>	<b>2012 Ford Focus SFE FWD FFV</b> 2.0 L, 4 cyl, Auto(AM6), Regular Gasoline or E85						
Compare		Gas	<b>28</b> City	<b>33</b> Combined	<b>40</b> Highway	23.5 <a href="#">Show Details</a>	\$1,650 per year
		E85	<b>20</b> City	<b>23</b> Combined	<b>28</b> Highway		\$2,050 per year
		<a href="#">Safety Ratings</a>					
<input type="checkbox"/>	<b>2013 Ford Focus SFE FWD FFV</b> 2.0 L, 4 cyl, Auto(AM6), Regular Gasoline or E85						
Compare	© Ford Motor Company 	Gas	<b>28</b> City	<b>33</b> Combined	<b>40</b> Highway	Not Available	\$1,650 per year
		E85	<b>20</b> City	<b>23</b> Combined	<b>28</b> Highway		\$2,050 per year
		MSRP: \$16,200 - \$24,200				<a href="#">Safety Ratings</a>	

<input type="checkbox"/>	<b>2012 Chevrolet Equinox FWD</b> 3.0 L, 6 cyl, Automatic 6-spd, Regular Gasoline or E85						
Compare		Gas	<b>17</b> City	<b>20</b> Combined	<b>24</b> Highway	Not Available	\$2,750 per year
		E85	<b>12</b> City	<b>14</b> Combined	<b>18</b> Highway		\$3,400 per year
		MSRP: \$23,530 - \$29,220				<a href="#">Safety Ratings</a>	
<input type="checkbox"/>	<b>2012 GMC Terrain FWD</b> 3.0 L, 6 cyl, Automatic 6-spd, Regular Gasoline or E85						
Compare	© GM Corp. 	Gas	<b>17</b> City	<b>20</b> Combined	<b>24</b> Highway	Not Available	\$2,750 per year
		E85	<b>12</b> City	<b>14</b> Combined	<b>18</b> Highway		\$3,400 per year
		MSRP: \$25,560 - \$31,260				<a href="#">Safety Ratings</a>	