EPRINC

Response to the Renewable Fuels Association (RFA) Critique of EPRINC's Report, *Ethanol's Lost Promise*

September 20, 2012

On September 18, the RFA issued a response to EPRINC's report entitled *Ethanol's Lost Promise*, which was released on September 14.

EPRINC's report can be downloaded here: http://eprinc.org/pdf/EPRINC-ETHANOL-LOSTPROMISE-2012.pdf

RFA's response here: http://www.ethanolrfa.org/exchange/entry/response-to-eprinc-study-ethanols-lost-promise/

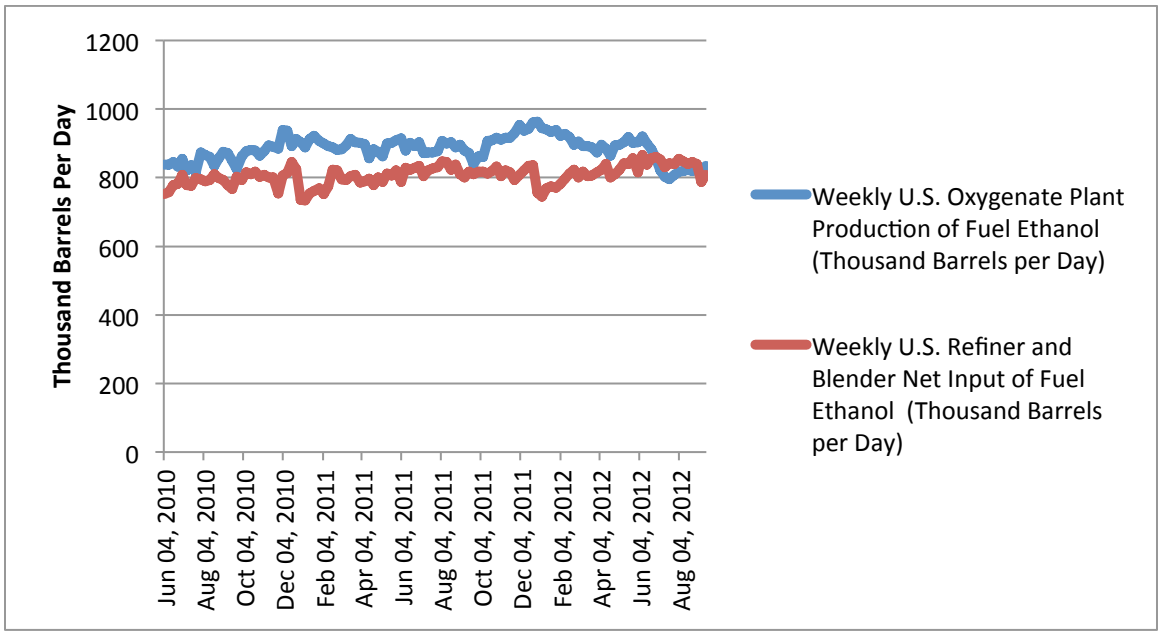
The following is EPRINC's response to RFA's criticism. RFA's comments are in **bold font.**

The paper is rife with internal inconsistencies. For example, the author bemoans that "The RFS' volumetric mandates have created inelastic demand for ethanol," but then acknowledges that ethanol production has plummeted since the beginning of the year "…as high corn prices have caused many ethanol producers to idle production." If the RFS truly created "inelastic demand for ethanol," ethanol and/or RIN prices would have adjusted sufficiently to keep ethanol producers from idling some production. Rather, RIN prices remain at historically normal levels, and ethanol prices remain at a ~$0.50/gallon discount to gasoline.

RFA is confusing production and consumption. Ethanol production has declined substantially but blending has remained relatively constant – this proves our assertion of inelasticity. Obligated parties such as refiners need to blend at as close to 10% as possible in order to generate RINs in the present so that they have an excess to carry forward to 2013 and beyond as RVOs (renewable volumetric obligations) continue to grow and obligated parties face RIN deficits. Demand therefore is stuck at about 10% of the gasoline pool (the blendwall), a bit over 820,000 bbl/d. This is a figment of the RFS – without the RFS, obligated parties would be able to reduce ethanol consumption without facing regulatory and economic consequences in a year or two.

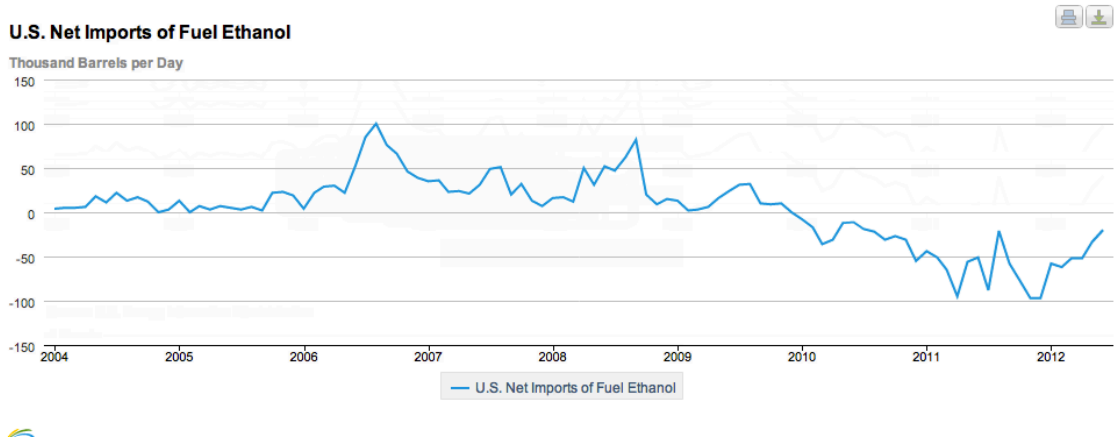
The decline in production has largely resulted in lower exports. We addressed this on page 3, *The U.S. is a net exporter of ethanol, but imports have declined by 80% since the beginning of the year to 20,000 bbl/d.*

Inventories are also being drawn down to offset lower production, although this also is part of a seasonal cycle – this too is discussed in the paper. Regardless, production is lower but it is not coming at the expense of U.S. blending. The following chart shows EIA weekly data for ethanol production and blending through September 14. There has been a small drop in blending during this summer but it is not nearly as large as the sharp drop in production. Blending in 2012 remains on pace to surpass 2011 levels. Given this blending a production data, combined with higher ethanol prices, the U.S. ethanol market appears to be a textbook definition of inelasticity.



Source: EIA Data

The following chart shows monthly net ethanol imports through June (most recent data available). Note the sharp reduction of imports during 2012, coinciding with the production declines shown above.



Ethanol is about $0.50/gallon less than gasoline, but a gallon of ethanol is not the same as a gallon of gasoline. This volumetric differential makes blending economic for many obligated parties up to 10% concentration, but adjusted for energy content ethanol is more expensive than gasoline.

The paper actually makes a strong case for protecting the RFS in the long term. While EPRINC agrees with numerous expert analyses that a one-year RFS waiver would have little or no effect on corn demand or prices, it suggests a "long-term waiver" (2-3 years) could cut ethanol demand in half. Notwithstanding the fact that EPA does not have the authority to grant more than a 1-year waiver, the paper suggests the lost ethanol volume under a multi-year suspension could be offset via several economically impractical and politically infeasible options:

We acknowledged the waiver issue on page 23: *As EPA does not have the authority to waive multiple years of the RFS (and perhaps does not have the intention), a legislative change may be required to alleviate pressure in the grain market and avert a blendwall crisis.*

Demand would be cut in half in a worst-case scenario for ethanol blending. 400,000 bbl/d is the level at which it replaces now phased out MTBE on a 1:1 basis. Before the RFS, this was the likely path, see figure 2 on page 12 of our report. We also acknowledge that given a long-term waiver, the decline might be just 200,000-300,000 bbl/d rather than a 50% decline of 400,000 bbl/d. Page 36, *For example, it is reasonable to believe that U.S. ethanol production would be 100,000 to 200,000 bbl/d higher than the 400,000 bbl/d to which we have limited this scenario.*

Extracting more gasoline and less distillate from each barrel of crude oil. This would, of course, drive heating oil and diesel fuel prices (already at record highs) substantially higher.

The U.S. remains a net exporter of distillate in our 400,000 bbl/d ethanol scenario and the impact on prices would be negligible as the distillate market is a global market. The yields required to make this happen are well within the U.S. refining sector's 10 year range, and NO additional crude oil would be needed. EIA data for feeds to FCCs (Fluid Cat Crackers - primarily a gasoline process) and Hydrocrackers (a more diesel biased process) show that since the RFS feeds to FCCs have declined and Hydrocrackers have increased (make less gasoline, more distillate). This is because the RFS relies disproportionately on substituting ethanol for gasoline, despite that refiners produce a joint product slate. So refiners responded by producing less gasoline. The post-RFS change in processing would need to be partially reversed to offset the loss of 400,000 bbl/d of ethanol, but would not require any additional crude oil. Again, this allows the U.S. to save millions of acres of farmland and put them to market driven uses – not to mention the fossil fuel inputs used in cultivating land for biofuel production.

In their bullet points, RFA did not address some of our other options for recouping the 400,000 bbl/d ethanol shortfall. Page 12, *Running more crude in refineries with spare distillation capacity, both in the U.S. and abroad.* The U.S. has one of the most competitive refining sectors in the world, particularly given access to discounted light-sweet crude out of shale plays such as the Bakken. Should there be a

need for more gasoline or diesel, U.S. refiners could shift yields or incrementally increase crude runs to meet the shortfall. This would reduce runs in other areas, most likely Europe where the refining sector is at a competitive disadvantage because of higher operating costs (low natural gas prices in U.S. vs. Russian oil linked gas pricing) and a reliance on imported, Brent based crude.

U.S. refiners are much more complex and efficient than their European counterparts and on the whole produce only 5% residual fuel (a bottom of the barrel product), in Europe refiners produce about 15%. The 10% difference is largely gasoline production. Running more crude in the U.S. rather than a typical European refinery will provide a larger volume of transportation fuels for every barrel of crude processed.

Adding oil refining capacity in the U.S. Curiously, this recommendation is at odds with EPRINC's *own contentions* that current policy and regulations prevent the building or expansion of additional U.S. oil refining capacity.

This was not a recommendation; it was one of several feasible options presented, and was referred to in the past tense as an alternative to the outlandish what-if scenarios presented in CARD's (Center for Agricultural and Rural Development) study. In our paper, we mention this not because it is needed (it's not, the U.S. a large net exporter of refined product) but because refining capacity growth occurred over the past decade, yet that growth was specifically restricted in the model employed in the CARD study paid for by RFA. We simply wanted to make the point that the industry historically has expanded to meet demand. Our full statement was: *Construction of additional capacity at U.S. refiners. This did occur naturally in addition to ethanol growth, but was not included in CARD's model.*

The EPRINC paper simply re-hashes recent ill-founded criticisms (Knittel & Smith) of a series of studies by the Center for Agricultural and Rural Development (CARD) examining ethanol's impact on gas prices. The CARD authors prepared two detailed responses to Knittel & Smith, ultimately concluding……

Among many critiques, we quoted from the original CARD study – the basis for the famous report which claims ethanol reduced gasoline price by $1.09 per gallon – to show that the study's own authors said the results should not be extrapolated to today's market. We also explained the report's faulty, unrealistic 'what if' assumptions – assumptions made in a backwards looking model at that. These assumptions include eliminating all ethanol growth for a decade (ethanol grew before the RFS to offset MTBE) and restricting all refinery growth during that same time period. In the real world, ethanol grew before and after the RFS was implemented AND the U.S. refining sector added about 1 mm bbl/d of refining capacity plus additional upgrading processes such as hydrocrackers.

The analysis of crop and animal feed markets contained in the EPRINC paper is absurd and misleading. While EPRINC may have expertise in the analysis of oil refining and transportation fuels, it should leave the business of crop and animal feed analysis to those who understand those markets.

Our finding are similar to those of agricultural economists Farmecon (http://www.nationalchickencouncil.org/wp-content/uploads/2012/07/RFS-issues-FARMECON-LLC-7-16-12-FINAL.pdf) as well as Purdue University's FarmFoundation – the webcast is worth watching (STUDY: http://www.farmfoundation.org/webcontent/Potential-Impacts-of-Waiving-Ethanol-Blending-Rules-1841.aspx and WEBCAST: http://www.tvworldwide.com/events/farmfoundation/120816/).

EPRINC demonstrates a total lack of understanding with regard to the value of DDGS. In an attempt to support the false notion that DDGS offer no cost savings relative to corn, the paper includes a terribly misleading chart that shows corn and DDGS prices on separate axes and using separate units. The chart leaves the reader with the idea that corn and DDGS prices have, for the most part, been priced at parity since 2007. However, when properly compared using a $/ton metric for both commodities, it is clear that DDGS have been, on average, $28/ton cheaper than corn since the beginning of 2010.

The price ratio of DDGS to corn declined slightly as RFA points out. But this misses the forest for the trees. The two are largely linked as they always have been. So when corn set price records in 2008, then broke those in 2011, and those in 2012, DDGS set new records as well. The slight discount DDGS has taken to corn relative to pre-RFS levels is more than negated by the rise in corn prices since the RFS was implemented. The actual prices speak for themselves.

Because the ethanol industry is the single largest end-user in the U.S., and most demand growth has occurred in the last 6 years and well outpaced new corn plantings (see table 1, page 30) the ethanol industry has certainly played a role in higher prices corn and therefore DDGS prices.

DDGS has a higher value for certain animals, mostly cattle and to a lesser extent swine. But DDGS may only comprise a portion of those animals' feed mix – it is a supplement to corn and soybean meal. The higher nutritional value is wiped out by the recent high price of DDGS, driven by high corn prices.

It is also worth asking with all of this new DDGS production, why are DDGS prices are so high? Because DDGS is not contributing new supplies of feed, but is only mitigating the loss of corn and soy that have been diverted to biofuels. See chart 9 on page 27. DDGS is not solving a feed issue that existed prior to the RFS. It partially mitigates the loss of corn and soy but reduces flexibility among end users. There are 2 products (corn and soy) being consumed by the biofuels industry and only one product returned – in smaller volumes than the corn and soy inputs, and as a single, imperfect substitute valuable at only certain concentrations of the feed mix for select animals…sort of like ethanol in the gasoline pool.

Farmers are rational economic actors and they make planting decisions based on prospective demand. If a multi-year waiver of the RFS did in fact substantially reduce ethanol output, and in turn corn demand, farmers would respond by planting less corn acres.

Perhaps. But far less corn will be needed. And they might plant more soy, or wheat…whatever the market needs. The RFS dramatically impacted U.S. crop plantings. Corn and soy plantings have increased while wheat has decreased in recent years.

It's worth restating that despite the increase in corn and soy plantings, this increase is smaller than the growth of corn and soy used for biofuels. Biofuel crop plantings have not kept pace with biofuel demand growth. This has resulted in a net decline in corn and soy available for food uses, even after DDGS is accounted for. As with oil, grains are globally traded. The US is a net exporter of corn and other grains. So reducing the supply here reduces it elsewhere.

In fact, recent projections from the Food and Agriculture Policy Research Institute's (FAPRI) and USDA show *corn use for ethanol falling more than corn use for feed in the 2012/13 marketing year*. When compared to 2011/12 levels, FAPRI projects a 10.7 percent cut in the amount of corn used for ethanol and co-products, while corn use for feed is expected to fall 8.2 percent.

This is forward looking projection and USDA has a history of bad forecasting (see this year's "record" crop forecast). But the results are logical given the current high price of corn. Ethanol production is down 10% (mostly coming out of exports and inventories) and slaughter rates are higher than usual as it is very expensive to feed livestock right now – so corn use for feed will decline. This presents a problem: demand for ethanol is strong at current levels because of RFS obligations going forward and production will not fall much further unless more ethanol producers idle production due to poor economics – therefore, the only remaining flexibility is in the food sector, particularly livestock producers. They are suffering from high prices and are thinning their herds as a result – it's not good for business.