# ECONOMIC ISSUES ASSOCIATED WITH A CHANGE OF THE RFS POINT OF OBLIGATION

Edgeworth Economics

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## I. Introduction

Over the last two years, a number of companies and industry groups with interests in refining businesses have petitioned EPA to change the rules governing the RFS.[1] The petitioners have asked EPA to designate blenders or position holders as the entities obligated under the regulation, rather than refiners/importers as specified by the current rule.[2] The petitioners have offered a number of justifications for their requests, including various arguments based on economic theory or financial analysis. The primary economics-based arguments of the petitioners and their supporters can be summarized as follows:

- RIN costs represent a financial burden to merchant refiners and a windfall to blenders, and a change in the Point of Obligation would eliminate that discrepancy.[3]
- Shifting the Point of Obligation would improve incentives to invest in biofuel infrastructure and increase blending.[4]
- The current regulatory structure leads to various inefficiencies in the RIN market, which would be reduced by shifting the Point of Obligation.[5]
- Shifting the Point of Obligation would reduce fraud in RIN markets.[6]
- Shifting the Point of Obligation would not increase the regulatory burden due to any change in the number and/or sophistication of the obligated parties, and could reduce such burden.[7]

On November 10, 2016, EPA responded to the petitions with a proposed denial.[8] EPA addressed some of these assertions made by the petitioners in its proposal, but not all of them. Growth Energy has retained Edgeworth Economics to evaluate the economic arguments put forward by the petitioners as well as EPA's responses in the proposed denial, and to provide independent opinions regarding the economic issues raised by all the parties.[9] This report is provided as an adjunct to comments introduced into the public record by Growth Energy.

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[1] See, for example, Letter to EPA re: Petition for Rulemaking, submitted by Valero Energy Corporation, June 13, 2016 ("Valero Petition"); Letter to EPA re: Petition for Rulemaking, submitted by HollyFrontier, September 2, 2016 ("HollyFrontier Petition"); and Letter to EPA re: Petition for Rulemaking, submitted by American Fuel & Petrochemical Manufacturers, August 4, 2016 ("AFPM Petition").

[2] "Notice of Opportunity to Comment on Proposed Denial of Petitions for Rulemaking to Change the RFS Point of Obligation," *Federal Register*, v. 81, n. 225, November 22, 2016, pp. 83776-777. The various petitioners have proposed somewhat different definitions for the proposed obligated parties. In this report, we refer to those proposed to be obligated entities as "blenders."

[3] Valero Petition, pp. 13-18; HollyFrontier Petition, pp. 3-4 and AFPM Petition, pp. 12-16.

[4] Valero Petition, pp. 19-23; and HollyFrontier Petition, p. 4.

[5] Valero Petition, pp. 23-27; and AFPM Petition, p. 17.

[6] Valero Petition, pp. 23-27.

[7] Valero Petition, pp. 35-37; and AFPM Petition, pp. 17-18.

[8] EPA, "Proposed Denial of Petitions for Rulemaking to Change the RFS Point of Obligation," EPA-420-D-16-004, November 10, 2016 ("EPA Proposed Denial").

[9] Edgeworth Economics is an independent consultancy of professional economists, specializing in microeconomic and statistical analysis. The preparation of this report was directed by Jesse David, Ph.D. See https://edgeworthconomics.com/about-us.

## II. RINs – Neither a Windfall nor an Out-of-Pocket Cost

A primary argument put forward by the petitioners for shifting the RFS Point of Obligation is that the current structure creates "disparities in RIN-access that highly prejudices merchant refiners" and "windfalls for others" (namely, non-integrated blenders).[10] Other parties, including some financial analysts as well as individuals with interests in merchant refineries, have made similar arguments. For example, in a November 2016 letter to OMB, Carl Icahn (majority owner of CVR Refining) stated that merchant refiners "incur a cost that the others do not have – the price of purchasing a RIN," while "blenders and 'Big Oil' players reap a windfall because they can blend without a compliance obligation."[11] Essentially, these parties argue that any company with a net position in RINs—whether it be a long position for a blender with relatively little refining or importing operations, or a short position for a refiner with relatively little presence at the rack—experiences a one-for-one impact from RIN trades on the company's bottom-line profitability. That is, RIN purchases represent a cost with no offsetting benefit, while RIN sales generate revenue with no offsetting cost. The petitioners argue that such a situation unfairly disadvantages merchant refiners, relative to integrated refiners, since merchant refiners generally purchase separated RINs to meet their RFS obligations, while integrated refiners purchase ethanol with RINs attached.

As this argument has been perhaps the leading reason for a change in the regulation put forth by the petitioners and their supporters, EPA addressed these claims directly and at length in its proposed denial. EPA concluded that RIN transactions do not represent windfall gains to non-integrated blenders and integrated refiners, nor do they represent discriminatory costs to merchant refiners. The Agency's responses are all on point, namely:

- Non-integrated blenders and integrated refiners *do* incur a cost to acquire RINs, notwithstanding the fact that the cost does not show up in their financial statements as a discrete line item. Rather, the cost of RIN acquisition for blenders is integrated in their cost to acquire ethanol—ethanol with RINs attached costs more than ethanol without RINs.[12] EPA also points out that integrated refiners experience a cost associated with RINs when they sell blended E10, as the wholesale price for E10 is less than the combined prices of the component fuels—petroleum blendstock plus ethanol.[13]
- Because prices of gasoline blendstocks sold at wholesale reflect RIN values, merchant refiners recoup their costs to acquire RINs when they sell their gasoline products.[14] This conclusion has been confirmed by EPA as well as independent researchers in academia. For example, economists at Iowa State University recently concluded that, conditional on the presence of competition in the markets for blendstocks, gasoline, and RINs (a caveat we address further, below), "moving the point of obligation would have little-to-no impact on the distribution of gains and losses from high RIN prices or on the overall effectiveness of the program."[15] In another recent paper, which Valero cites repeatedly for other purposes, a group of academics performed a

[10] Valero Petition, p. 13. See also, HollyFrontier Petition, p. 4; and AFPM Petition, p. 10.
[11] Letter from Carl Icahn to Shaun Donovan, Director of the Office of Management and Budget, November 3, 2016 ("November 2016 Icahn Letter"), p. 3. Of course, "'Big Oil' players"—i.e., vertically-integrated refiners with retail operations—*do* face a compliance obligation under the current RFS structure. Mr. Icahn's point appears to be completely misplaced with respect to these entities.
[12] EPA Proposed Denial, p. 17.
[13] EPA Proposed Denial, p. 18.
[14] EPA Proposed Denial, pp. 17-19.
[15] Bruce A. Babcock, Gabriel E. Lade, and Sébastien Pouliot, "Impact on Merchant Refiners and Blenders from Changing the RFS Point of Obligation," CARD Policy Brief 16-PB 20, December 2016, p. 9. See also, Dallas Burkholder, "A Preliminary Assessment of RIN Market Dynamics, RIN Prices, and Their Effects," EPA, May 14, 2015.

statistical analysis of fuels prices and concluded that "an obligated party with a net RIN obligation, such as a merchant refiner, is able to recoup their RIN costs on average through the prices they receive in the wholesale market."[16]

- The anecdotal evidence cited by the petitioners from financial filings of merchant refiners and retailers is flawed.[17] EPA addressed the fact that some publicly traded blenders report line items in their financials for RIN revenues, but nothing for RIN costs, while some merchant refiners show costs for RIN acquisition, but no specific reporting for offsetting revenues. EPA noted that the offsetting effects show up in other financial categories, and therefore the RIN acquisition costs (for merchant refiners) or RIN revenues (for non-integrated blenders) do not represent a net impact on bottom lines of those companies. In fact, public statements by executives at both types of companies contradict the petitioners' positions. For example, Valero cites a news article in its petition as support for a claim of "windfalls" and the "clear disparity among obligated parties"; yet, in that same article, an executive from Valero is quoted as saying that "much or all" of Valero's cost of RIN acquisition was "passed on to consumers."[18] Similarly, despite the fact that retailers such as Murphy USA have reported revenues associated with RIN sales as a distinct line item in their financial statements, they also have indicated that their bottom-line profitability has been consistent across years with both low and high RIN prices.[19]

Notably, although this argument about discriminatory impacts was one of the lead reasons cited by Valero in support of its petition, Valero's economists at the independent consulting firm, NERA, provide no support for it in their recent paper, submitted with Valero's petition.[20] In the section of NERA's report titled "Excess Burdens on Refiners that Do Not Blend," the authors devote two sentences to the topic, citing only "uncertainty of future RVOs and the price volatility of RINs," "transaction costs," and "portfolio management costs."[21] NERA makes no attempt to quantify such costs, and provides no analysis on the issue of RIN acquisition costs at all. This is in contrast to the estimates of tens or hundreds of millions of dollars in annual costs/windfalls purportedly identified by the petitioners.[22]

However, in a 2013 paper by NERA submitted to the EPA in support of an earlier petition by another merchant refiner (Monroe Energy), NERA did make claims that high RIN prices would adversely affect the profitability of merchant refiners.[23] According to NERA in that earlier paper, as of 2013, "merchant refiners

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[16] Christopher R. Knittel, Ben S. Meiselman, and James H. Stock, "The Pass-Through of RIN Prices to Wholesale and Retail Fuels under the Renewable Fuel Standard," National Bureau of Economic Research working paper No. 21343, July 2015, p. 20. Valero cites Knittel, et al. (2015) at length in its petition to support its argument that "the RFS is not functioning properly." [Valero Petition, pp. 12, 18, and 19] However, the conclusions of this paper regarding a lack of full RIN pass-through to consumers relate only to retail markets for E85, which represents only a fraction of one percent of total fuel sales in the U.S. Knittel, et al. make clear that their findings for E10 do not support the petitioners' allegations.

[17] EPA Proposed Denial, pp. 18-20.

[18] Valero Petition, p. 14, citing Cezary Podkul, "The Tally Is in: Ethanol 'Blend Wall' Cost Refiners at Least $1.35 Billion," *Business News*, March 31, 2014.

[19] EPA Proposed Denial, p. 20, citing financial statements of Murphy USA, Inc. and Casey's General Stores, Inc.

[20] NERA Economic Consulting, "Effects of Moving the Compliance Obligation under RFS2 to Suppliers of Finished Products," prepared for Valero Corporation, July 27, 2015.

[21] NERA (2015), pp. 20-21. NERA does assert that the presence of a bid-ask spread and the requirement to pay commissions when trading in the market for RINs puts merchant refiners at a "strategic disadvantage" to integrated refiners (p. 33). Such costs represent impacts that would be at least an order of magnitude less significant than the costs cited by the petitioners. Moreover, shifting the Point of Obligation would not eliminate such costs—it would merely shift them to other parties.

[22] See, for example, Valero Petition, pp. 14-16; November 2016 Icahn Letter; and "The Winners and the Losers," available at CVR Energy website, http://fixtherfs.org/wp-content/uploads/2016/10/Winners-and-Losers-Absolute-RIN-Purchases-2.pdf.

[23] NERA Economic Consulting, "Analysis of RFS2 RIN Markets," prepared for Monroe Energy LLC, October 15, 2013.

are currently absorbing the higher cost of RINs and therefore are losing money"[24] and, as a result, "over time, some merchant refiners will have to exit the market."[25] In support of these claims, NERA cited financial metrics for various merchant refiners, including the "cash operating margin" for certain refineries and asserted that: "The average 8 ¼ cent reduction in the margin due to the RIN requirement in 2013 would more than wipe out this margin. It would more than wipe out the margin in many prior years as well."[26]

In its 2013 report, NERA calculated another financial metric—"net income per gallon of crude capacity"—for nine merchant refiners. This metric showed a range between 1 cent and 25 cents as of 2011/2012, a period when RIN prices were close to zero. Citing escalating RIN prices in mid-2013, NERA stated that "[p]aying the average RIN price in 2013 for every gasoline gallon produced will substantially impact the profitability and viability of refiners."[27] NERA concluded:

> The most likely outcome of continuing a regulatory system that systematically raises the cash operating costs of merchant refiners relative to Integrated Refiner/Blenders is that *the structure of the industry will change and merchant refiners could disappear*.[28]

Valero cites this prediction—now over three years old—in its petition, but none of the petitioners or their economists perform any analysis to check its validity. In fact, NERA's 2013 report offered a specific test for measuring the impact of RIN costs on merchant refiners: Over the last three years, as RIN prices escalated significantly above 2012 levels, did the profitability of merchant refiners decline and did any of those entities actually "disappear"? Table 1 shows the financial metric identified by NERA for the same group of merchant refiners analyzed in the 2013 report, with new data for 2013-2015. As seen here, none of these refiners "disappeared" after 2012, despite the dramatic increase in RIN prices. Moreover, while average profitability did fall somewhat in 2013 across the industry as a whole[29], in 2014 it increased back to essentially the same level as 2012 and in 2015 profitability continued to increase above 2012 levels. In fact, Valero, the largest refiner in the group, reported profitability in 2015 at a level more than two times that in 2012. Although this analysis cannot rule out any impact of the RFS on the profitability of merchant refiners, since many other factors also influence their businesses, it is clear that the supposedly devastating impacts predicted by the petitioners and their economists failed to materialize.

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[24] NERA (2013), p. 36.
[25] NERA (2013), p. 41.
[26] NERA (2013), p. 43-44.
[27] NERA (2013), p. 43-44.
[28] NERA (2013), p. 45 (emphasis in original).
[29] In their public filings, merchant refiners reported factors such as decreasing spreads in the crude oil market and increasing refinery capacity as the reasons for this trend from 2012 to 2013. See, for example, HollyFrontier Corp., 2013 Form 10-K, p. 34; Phillips 66, 2013 Form 10-K, p. 31; and Marathon Petroleum Corp., 2013 Form 10-K, p. 44.

**Table 1**
**Net Income per Barrel Crude Capacity for Merchant Refiners**
**2011-2015**

| | *Net Income per Barrel Crude Capacity (cents per gallon)* | | | | |
|---|---|---|---|---|---|
| **Refiner** | **2011** | **2012** | **2013** | **2014** | **2015** |
| HollyFrontier | 19.6 | 25.4 | 10.8 | 7.7 | 13.0 |
| Marathon | 13.1 | 18.5 | 8.0 | 9.6 | 11.8 |
| Phillips 66 | 13.2 | 12.0 | 10.8 | 14.3 | 12.4 |
| Western Refining | 5.7 | 17.2 | 11.8 | 20.6 | 15.8 |
| Tesoro | 5.4 | 7.2 | 3.2 | 6.7 | 12.9 |
| PBF Energy | 2.9 | 0.0 | 0.5 | 4.5 | 3.6 |
| Valero | 5.2 | 4.9 | 6.3 | 9.9 | 12.1 |
| Delek | 7.4 | 12.7 | 5.5 | 11.6 | 0.7 |
| Alon USA | 1.2 | 2.1 | 0.7 | 1.2 | 1.6 |
| **Average (weighted by annual throughput)** | **9.5** | **10.5** | **7.5** | **10.4** | **11.5** |
| | **D6 RIN Price – Average of Daily Values (cents per gallon)** | | | | |
| | 2.6 | 2.9 | 59.9 | 48.6 | 55.0 |

Sources: HollyFrontier Investor Presentation, August 2016, p. 27 (available at investor.hollyfrontier.com/events.cfm); company annual reports; and OPIS.

One might ask, why have the adverse impacts on merchant refiners predicted by Valero's economists failed to appear? There are two general explanations. First, as documented above, changes in RIN prices do not represent a one-for-one impacts on refiner profitability and may, in fact, have no impact at all, due to offsetting movements in fuel prices. Second, refiners may have mitigated any residual impact through adjustments to their supply chains and downstream sales arrangements. For example, expertise in blending can be acquired, and merchant refiners can purchase ethanol directly. If physical acquisitions are costly or difficult, contractual arrangements can be used. In the proposed denial, EPA properly identified all of these possibilities as potential compliance options for obligated parties under the existing regulatory structure.[30]

## III. Incentives to Invest in Biofuel Infrastructure and Increase Blending

Another purported benefit that the petitioners have cited as justification for shifting the Point of Obligation is the potential to improve the incentives to blend ethanol and other biofuels.[31] The petitioners' position on this issue is relatively straightforward. They state that the current regulatory structure "discourages blending higher volumes of renewable fuel" because some of the parties that actually undertake blending are not themselves obligated and therefore have "little incentive to make the necessary level of investment" in blending infrastructure.[32] The petitioners also state that the current structure "subsidiz[es] exports" to the detriment of U.S. consumers.[33]

The RFS's mechanism for signaling an incentive to increase blending is the RIN price. This price provides a consistent incentive to generate new RINs, whether realized as revenue when a blender sells a

[30] EPA Proposed Denial, pp. 24-25.
[31] Valero Petition, pp. 12-13 and 18-23; and HollyFrontier Petition, p. 4.
[32] Valero Petition, p. 21; and NERA (2015), p. 32.
[33] Valero Petition, p. 27; and NERA (2015), p. 22.

separated RIN or as a cost when a refiner acquires a RIN to meet its obligation. Thus, the petitioners' argument in essence relies on a critical assumption: The generation of RINs and/or the transfer of RINs from RIN-generators to obligated parties (to the extent those parties are different) is not functioning in a competitive manner. For example, HollyFrontier states in its petition that "by limiting renewable fuel blending, rack sellers can increase RIN prices and maximize profit."[34] Similarly, Valero states that expanding blending infrastructure "would be contrary to the blenders' financial interest, as the more renewable fuel the blender purchases and blends, the more RINs will be created and those excess RINs will decrease the value of RINs."[35] The problem with this strategy for a blender, however, is the same problem facing a supplier in any market with multiple suppliers—it works only if other blenders follow the same strategy. If one blender stockpiles RINs or reduces blending in order to drive up the price of RINs, there would be an incentive for other blenders to increase their generation of RINs in response. Such a response could be avoided only by collusion among blenders. The petitioners, however, have provided no evidence of any such anticompetitive activity.

The petitioners also make the general, theoretical point that the distance in the supply-chain between blenders who separate RINs and obligated parties (refiners) attenuates the incentive presented by the RIN price. Valero's economists at NERA offer two versions of this argument. Their more simplistic version is a plain assertion that "blenders and retailers have little incentive to make the necessary level of investment because under RFS2 they do not have any obligation to blend fuels with higher concentrations of renewable fuels."[36] This assertion is false. Blenders and retailers have the same incentive to expand the use of renewable fuels as any other party in the supply-chain—the value of the generated RINs. Since RINs can be sold on an open market, realizing that value is not contingent on having a legal obligation under the regulation.[37] To the extent that the market price for RINs exceeds the cost of blending additional renewable fuel, that differential represents a potential source of profit for obligated and non-obligated blenders alike.

NERA's second argument is at least rooted in economic theory. NERA notes that, in general, it can be more effective to place the burden of a regulation on the parties located closest to the consumer decision point that drives the ultimate level of compliance. NERA states that the current policy is "blunt" due to the "separation between the party needing RINs and the party producing the RINs" and that shifting the point of obligation could "improve the efficiency of the regulation."[38] However, as demonstrated across a wide range of economic research on the theory and practice of environmental regulation, this effect will not be significant in a market with low elasticity of demand, such as gasoline, unless there exist other major frictions, such as high transactions costs or lack of competition.[39] As stated in a recent paper on greenhouse gas emissions trading: "As long as conditions are competitive and prices pass efficiently through the chain, the point of regulation does not affect the incentive or ability of any party to mitigate."[40]

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[34] HollyFrontier Petition, p. 4.

[35] Valero Petition, pp. 21-22, citing NERA (2015), pp. 18-19.

[36] NERA (2015), p. 32.

[37] As noted by EPA, the petitioners' argument here is in direct contradiction with their other argument that the current regulatory structure leads to "windfall" profits from RIN revenues for non-integrated blenders. If generating RINs as a non-obligated party resulted in "windfall" profits, that obviously would represent a significant incentive to expand blending of renewable fuels.

[38] NERA (2015), p. 33.

[39] See, for example, Gabriel E. Lade and James Bushnell, "Fuel Subsidy Pass-Through and Market Structure: Evidence from the Renewable Fuel Standard," Center for Agricultural and Rural Development, Iowa State University, Working Paper 16-WP 570, December 2016, p. 1.

[40] Suzi Kerr and Vicki Duscha, "Going to the Source: Using an Upstream Point of Regulation for Energy in a National Chinese Emissions Trading System," Motu Economic and Public Policy Research, Working Paper 14-09, September 2014. See also, for example, Carolyn Fischer, et al., "Using Emissions Trading to Regulate U.S. Greenhouse Gas Emissions: An Overview of Policy

In this case, as described above, economists have demonstrated that the markets for the components of gasoline, including petroleum blendstocks and ethanol, operate competitively and efficiently, with the value of RINs reflected in the wholesale prices of fuel components at all points in the supply chain. Moreover, as pointed out by EPA, export prices have adjusted such that refiners now earn higher prices on domestic supply, which offsets the difference in RFS obligations for exported volumes relative to domestically-consumed volumes.[41]

The case of E85 does represent somewhat of an anomaly in this respect, and the petitioners rely heavily on conditions in the retail marketplace for E85 to support their broader arguments. For example, Valero cites a paper published in June 2015 which found, in contrast to the market for E10, "a near absence of pass-through of RIN prices to retail E85 prices."[42] There are several problems, however, with relying on this finding as a basis for changing the Point of Obligation. First, as pointed out by EPA in the proposed denial, evidence indicates that *wholesale* markets for E85 are operating efficiently.[43] The problem of a lack of pass-through is confined to the *retail* marketplace, which would be unaffected by a change in the Point of Obligation. Specifically, to the extent that retail markets for E85 are failing to pass on RIN value to consumers, that is a consequence of the competitive conditions in the market for gasoline retailing, not the markets for RINs or fuel components. As EPA points out, the historic lack of competitive pricing for E85 at the retail level has been due to the fact that, even with full pass-through, RIN prices have been insufficient to bring E85 prices down to parity (energy adjusted) with E10.[44] As a result, the number of stations offering E85 has remained low, and consumers who have purchased the fuel generally are not price sensitive. These conditions are not conducive to competition at the retail level. They are, however, unrelated to the Point of Obligation, but rather are related to general RIN price levels and the uncertainty of future levels, due to the decisions of EPA and conditions in fuels markets. As noted by Babcock, et al. (2016), the solution to this problem is greater certainty on future renewable fuel volume obligations (RVOs), not a brand-new change in the regulatory structure.[45]

Valero's reliance on conditions in the retail market for E85 as a basis for changing the Point of Obligation is flawed for additional reasons. As pointed out by EPA, gasoline stations that have relationships with the obligated refiners are *less* likely to offer E85 for sale than independent stations or stations owned by non-obligated blenders.[46] This empirical finding contradicts the petitioners' claims that parties without an obligation under the RFS have no incentive to increase blending of renewable fuels and that shifting the Point of Obligation to blenders would increase E85 penetration.

More recent research has found that pass-through in even retail E85 markets may be improving, perhaps due to the more sustained, elevated levels of RIN prices during the last few years. A paper published in December 2016 by researchers at the University of California at Davis and Iowa State University concluded that "pass-through of the ethanol subsidy [i.e., RINs] is, on average, complete," although "full pass-through takes four to six weeks and that local market structure of gasoline stations influences both the speed and

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Design and Implementation Issues," Resources for the Future, Discussion Paper 98-40, July 1998, p. 3; and Tim Hargrave, "US Carbon Emissions Trading: Description of an Upstream Approach," Center for Clean Air Policy, March 1998.

[41] EPA Proposed Denial, pp. 21-22.

[42] Valero Petition, p. 18, citing Knittel, et al. (2015), p. 20.

[43] EPA Proposed Denial, pp. 30-31.

[44] EPA Proposed Denial, p. 30. See also, Babcock, et al. (2016).

[45] Babcock, et al. (2016), p. 14.

[46] EPA Proposed Denial, pp. 34-36.

overall level of pass-through."[47] Thus, the problems with the retail markets for E85 appear to be dissipating.

## IV. Purported Inefficiencies and "Speculation" in the RIN Market

The petitioners have identified various purported conditions in the trading market for RINs—such as high volatility, a lack of liquidity, a lack of market efficiency, and high transactions costs—as justification for shifting the Point of Obligation to blenders. For example, in its petition, Valero cites "high levels of speculation," "price volatility," and "artificially high values."[48] Valero's economists similarly cite "high volatility," a "thin market," and a "larger bid-ask spread" as problems with the market for RINs.[49] Other commenters have cited the simply the current level of RIN prices—compared to past levels—as evidence of market manipulation. For example, the CEO of CVR Refining recently asserted that "exempt parties" and "speculators" were "driv[ing] prices to confiscatory levels" and that the "market may be cornered."[50] None of the petitioners, however, provide any analysis or cite any data to support their allegations about conditions in the RIN market, nor do they offer any evidence to support their claim that shifting the Point of Obligation would improve those conditions.

In fact, there is little empirical evidence of any of these problems in the market for RINs, particularly D6 RINs which are the focus of the petitioners' arguments. Key characteristics of any trading market include *efficiency* (the degree and rapidity with which prices reflect new information) and *liquidity* (the extent to which a market allows large quantities of trades at stable prices).[51] These characteristics depend on factors such as the number of traders, the volume of trades, and any differences in information available to the various market participants. Evidence for RINs, however, shows that the marketplace is generally functioning well along these dimensions. For example, economists at Iowa State University recently published a paper in which they pointed out that collusion to restrict the availability of RINs would lead to a situation in which at least some of those RINs were left to expire; yet, that has not happened.[52] The authors also noted the difficulty in maintaining collusion to restrict supply in the face of potential punishment as well as cheating within the conspiracy. They concluded: "[O]ur assumption of competitive markets is much more plausible than assuming collusion is what determines RIN prices."[53]

Other recent research has confirmed the fact that movements in RIN prices reflect changes in the fundamental, underlying characteristics of fuels markets, combined with EPA's stance on the RVOs. For example, research by economists at the University of Illinois demonstrates that recent volatility in D6 RIN prices can be tied directly to conditions in the markets for soybeans and biodiesel:[54]

> The key takeaway point from this review of RINs prices is that if you want to understand the movement of ethanol RINs prices, which garner most of the headlines, then you have to first understand the movement of biodiesel RINs prices.

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[47] Lade and Bushnell (2016), Abstract.
[48] Valero Petition, p. 25-26.
[49] NERA (2015), p. 34.
[50] "CVR Refining Reports 2016 Second Quarter Results," CVR Refining press release, July 28, 2016.
[51] See, for example, Financial Sector Assessment: A Handbook, The World Bank and The International Monetary Fund, 2005, pp. 18-20, available at http://www.imf.org/external/pubs/ft/fsa/eng.
[52] Babcock, et al. (2016).
[53] Babcock, et al. (2016), p. 13.
[54] Scott Irwin, "What's Up with RINs Prices," *farmdoc daily*, v. 6, n. 188, October 5, 2016. See also, Scott Irwin, "Clues from the RINs Market about the EPA's RVO Proposals for 2014, 2015, and 2016," *farmdoc daily*, v. 5, n. 98, May 28, 2015.

and

> A review of the relevant data shows that the increase in RINs prices seen in 2016 is likely due to the looming expiration of the $1 per gallon biodiesel tax credit at the end of the year. Uncertainty about extension of the blenders credit increases the odds that blending losses will be larger in future years, which shows up as an increase in the time value of the RINs "option." This component of RINs prices in 2016 is either similar to or smaller than what was observed in previous years when the tax credit also was scheduled to expire. So, while one cannot say with certainty that the RINs market has not been manipulated, there is a logical economic explanation for the credit price increases seen this year.

Additional evidence for the efficiency and liquidity of the market for RINs can be found in trading information collected by brokers and data aggregators. Three examples of reports from these sources are attached as Appendix A. As shown in these reports (and confirmed in discussions with various market participants), bid-ask spreads—a typical measure of both the efficiency and liquidity of a trading market[55]—for RINs have been low. Published estimates are generally in the range of 0.5-2 cents, and estimates by market participants fall in the range of one-quarter to one-half a cent during most trading periods, with slight expansions during times of high volatility (for example, surrounding an EPA announcement regarding RVOs). These reports also show that intra-day trading ranges tend to remain very tight, with even large trades causing little movement in prices—additional indicators of an efficient and liquid market.

In general, to the extent that "speculation" does occur (i.e., participation in the RIN market by parties for purposes other than disposing of excess RINs or acquiring RINs for retirement), such practices are entirely legal and can be undertaken by any party, including the petitioners. The petitioners offer no evidence that such activity has caused RIN prices to get out of line from fundamentals for any extended period. Even more relevant to the present discussion, however, is the fact that the petitioners offer no evidence that shifting the Point of Obligation would affect any market inefficiencies due to trading practices or other reasons, to the extent that such problems do exist at all.

In its 2015 paper, NERA asserts that the market for RINs has become "increasingly thin," and that shifting the Point of Obligation would reduce the number of required transactions and "tighten the bid-ask spread."[56] NERA provides no data or even anecdotal evidence supporting any of these claims. In fact, a reduction in the number of a transactions in the marketplace, which Valero and NERA advocate for, would represent, by definition, a shift to a *less* liquid—i.e., "thinner"—market.[57] Reducing the number of transactions would be expected to reduce the extent of price discovery, leading to *higher* bid-ask spreads and a *greater* likelihood that a single entity or a group of colluding parties could manipulate the market.

## V. Ability to Monitor Counterparties and Reduce Fraud

Petitioners have identified the potential for fraud in the market for RINs as a reason to shift the Point of Obligation to blenders.[58] In a recent report prepared for Valero and now available on a CVR Refining website, Doug Parker, former Director of EPA's Criminal Investigation Division, identified cases with "documented fraud loss" related to counterfeit RINs.[59] Mr. Parker asserts that these incidents occurred

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[55] See, for example, The World Bank and The International Monetary Fund (2005), pp. 19-20.
[56] NERA (2015), p. 34.
[57] The World Bank and The International Monetary Fund (2005), p. 20.
[58] Valero Petition, pp. 23-27.
[59] Doug Parker, "White Paper Addressing Fraud in the Renewable Fuels Market and Regulatory Approaches to Reducing this Risk in the Future," September 4, 2016, available at CVR Refining website, http://fixtherfs.org/supporting-information.

because the obligated parties "simply do not have the investigative expertise or the leverage to conduct such oversight based on where they sit in the production chain."[60]

These allegations, however, provide little support for the argument to shift the Point of Obligation, for a variety of reasons. First, the documented instances of fraud represent a tiny fraction of the total volume of RIN transactions. Mr. Parker cites a figure of $271 million in "documented fraud loss."[61] However, from 2010 through 2014, more than 200 billion RINs changed hands, as documented by EPA's EMTS system.[62] Mr. Parker's estimate represents less than one half of 1 percent of the value of those transactions.[63]

Equally as important, however, is that not a single one of these instances has related to D6 (conventional ethanol) RINs, which are the focus of the petitioners' arguments. Every one of the eight examples cited by Mr. Parker relate to biodiesel.[64] In its petition, Valero cites a single news article on the subject, which refers to one of those instances.[65] In contrast, the parties that participate in the market for conventional ethanol RINs are generally much better known to one another, since they are primarily large ethanol producers, retailers, oil refiners, and other established parties. Such parties have less incentive to engage in fraudulent behavior, since they repeatedly interact with one another in the market for RINs and have significant assets at stake if fraudulent behavior were to be detected and prosecuted.

Moreover, to the extent any such fraud exists, or even the potential for such fraud, the petitioners have provided no analysis to support the argument that shifting the Point of Obligation from refiners to blenders would reduce it. As noted above, Mr. Parker asserts that the refiners do not have "the investigative expertise or the leverage" to conduct oversight into their counterparties in the RIN market.[66] However, it is unclear that blenders, to the extent that they are different from the refiners, would have any greater resources or knowledge to perform such activities. To the contrary, non-integrated blenders are generally smaller and less sophisticated than the refiners, and therefore are likely to have *less* expertise and resources to dedicate to this issue. Moreover, to the extent that the current obligated parties have developed expertise to deal with counterparty risk, that expertise would be lost if the responsibility was shifted to a new set of entities, whatever their level of sophistication or the resources available to them.

In its petition, Valero notes that many parties who trade in the RIN markets are neither generators of RINs nor obligated parties; they include, for example, investment banks.[67] To date, however, none the parties that have been accused of actual fraud—as opposed to legal "speculation"—have been in this category; rather, they all have been producers (or purported producers) of biodiesel. Any policy that might reduce the participation of parties without a direct stake in the regulation would have had no impact on the actual cases of fraud documented to date.

As noted above, Valero also asserts in its petition that that shifting the Point of Obligation to blenders would reduce the number of transactions in the RIN market, since the entities creating the RINs often would be the obligated parties themselves. Valero asserts that this would reduce the potential for fraud and cause

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[60] Parker (2016), p. 5.
[61] Parker (2016), p. 7.
[62] EPA EMTS website, https://www.epa.gov/fuels-registration-reporting-and-compliance-help/annual-rin-salesholdings-summary
[63] Based on total transactions each year multiplied by the average of daily RIN prices within the year. [EPA EMTS website, https://www.epa.gov/fuels-registration-reporting-and-compliance-help/annual-rin-salesholdings-summary; and OPIS]
[64] Parker (2016), pp. 8-10. All of the enforcement actions brought by EPA to date have related to biodiesel RINs. [EPA website, https://www.epa.gov/enforcement/civil-enforcement-renewable-fuel-standard-program#ngl]
[65] Valero Petition, pp. 25-26, citing Bryan Sims, "Biodiesel RIN fraud causes industry, obligated parties anxiety," *Biodiesel Magazine*, November 29, 2011.
[66] Parker (2016), p. 5.
[67] Valero Petition, pp. 24-25.

RIN prices to "stabilize."[68] Valero appears to be conflating the counterfeiting of RINs with the entirely legal activity of speculation in RIN markets by parties that may or may not have substantial interests in blending or refining operations. We address the questions about speculation, above. With regard to actual fraud, however, there is no evidence that reducing the number of transactions would reduce the incentive to generate fraudulent RINs. That incentive relates primarily to the value of RINs in relation to the penalties for being caught and prosecuted. As we discuss above, the value of RINs is determined in the marketplace based on fundamental features of fuels markets (supply and demand) interacting with the market participants' views regarding EPA's statements and promulgations related to the RVOs. Changing the Point of Obligation would have no impact on those factors. Moreover, as EPA notes in its proposed denial, shifting the Point of Obligation to blenders would make it more difficult for EPA to detect and prosecute non-compliance and fraud by obligated parties.[69] The petitioners' proposed changes in the RFS regulations therefore would, at best, have no impact on the generation of fraudulent RINs, and could make the situation worse.

## VI. Regulatory Burden and the Number and Sophistication of Obligated Parties

Finally, the petitioners have asserted that shifting the compliance obligation from refiners/importers to blenders would reduce the overall regulatory burden of the RFS program in terms of the costs of record keeping and reporting to the EPA, or at least not increase that burden, due to a reduction in the number of obligated parties.[70] For example, Valero states:[71]

> No analysis has found that moving the Point of Obligation as Valero suggests would increase the number of obligated parties at all, and certainly not in any significant way. More likely, even with some new obligated parties and others dropping off, the total number of obligated parties would decrease.

and

> Thus, contrary to the 2010 expectation of ballooning numbers [of obligated parties], changing the Point of Obligation to the Rack Seller will not increase the administrative burden.

In support of these claims, Valero attached to its petition two estimates of the number of potential obligated parties under the proposed realignment, based on lists of entities that post prices at the rack and various other sources.[72] Valero identified approximately 100 to 200 entities that it believes would comprise the universe of obligated parties if the Point of Obligation was shifted to blending and noted that these figures were equal to or less than EPA's estimate of 200 current obligated parties.

In its proposed denial, EPA devoted a considerable portion of its analysis to addressing this issue, providing two primary responses.[73] First, EPA disputed Valero's analyses of potential obligated parties and noted that the original intention of the regulatory design—i.e., to minimize the number of obligated parties—remains valid.[74] As EPA stated in the 2010 Final Rule:[75]

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[68] Valero Petition, p. 26.
[69] EPA Proposed Denial, pp. 42-44.
[70] Valero Petition, pp. 35-37.
[71] Valero Petition, p. 36.
[72] Valero Petition, Attachments D and E.
[73] EPA Proposed Denial, pp. 22-24 and 37-42.
[74] EPA Proposed Denial, p. 38, citing the 2010 Final Rule (75 *Federal Register* 14669-904, March 26, 2010), at pp. 14721-722.
[75] 2010 Final Rule (75 *Federal Register* 14669-904, March 26, 2010), at p. 14722.

> When the RFS1 regulations were drafted, the obligations were placed on the relatively small number of refiners and importers rather than on the relatively large number of downstream blenders and terminals in order to minimize the number of regulated parties and keep the program simple.

EPA's own analysis found that the number of entities which take ownership of motor fuel at the point of blending could range from 350 to "over 1,000," according to one approach for identifying such entities, and "over 1,100" based on a second approach.[76] Our understanding of the tasks necessary for compliance is that some of the costs involved for obligated parties are "fixed"—for example, a requirement to hire a single, new regulatory officer. Thus, increasing the number of obligated parties would result in an increase in total costs borne by industry. Moreover, EPA pointed out that its own costs to monitor the regulation also would increase as the number of obligated parties increase, particularly if those new parties are not currently regulated by EPA.[77]

EPA's second response relates to differences between the types of entities that are currently obligated parties and those that would become obligated parties under the petitioners' proposal. EPA pointed out that current obligated parties include primarily large refiners, which have significant resources as well as expertise in regulatory compliance generally, whereas some blenders do not have those characteristics.[78] In addition, EPA noted that, to the extent that current obligated parties who would become non-obligated under the proposal have developed specific expertise to deal with RFS compliance, some of that expertise would be lost (and then duplicated by new obligated parties) if the Point of Obligation were shifted to blenders.[79] Thus, shifting the Point of Obligation would result in additional, unnecessary costs.

A further burden would be introduced if blenders were made the obligated parties due to the increase in the number of transaction points for obligated volumes. In the U.S., there are approximately 10 times as many petroleum product terminals as there are refiners.[80] Thus, a requirement to track fuel volumes purchased by blenders, as proposed by the petitioners, would represent a greater administrative burden than a requirement to track volumes produced by refiners.

## VII. Conclusions

In summary, the petitioners have offered a variety of justifications to shift the RFS Point of Obligation from refiners/importers to blenders. In general, the petitioners' arguments that relate to the economic or financial circumstances of the affected parties have been presented without either empirical or theoretical support. A closer examination of those arguments reveals a variety of flaws, some of which already have been addressed by EPA in its proposed denial. Our primary conclusions regarding the petitioners' arguments are as follows:

1) *RIN values represent neither windfalls for blenders nor out-of-pocket costs for refiners.* Notwithstanding the fact that some companies report RIN expenses or RIN revenues as distinct line items in their financial statements, the overall impacts of RIN generation and sales (for non-integrated blenders) and RIN acquisitions (for merchant refiners) are largely or perhaps completely

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[76] EPA Proposed Denial, pp. 40-42.
[77] EPA Proposed Denial, pp. 37-39 and 43-44.
[78] EPA Proposed Denial, pp. 23, 39, and 43-44.
[79] EPA Proposed Denial, p. 23.
[80] The Association for Convenience & Fuel Retailing website, http://www.nacsonline.com/YourBusiness/FuelsReports/2015/StatisticsAndHistoricalContext/Pages/The-US-Petroleum-Industry-Statistics-Definitions.aspx.

offset by countervailing costs or revenues experienced by the companies in their transactions of component fuels. This conclusion has been supported by the findings of multiple academic researchers and is consistent with economic theory. Moreover, an analysis of the margins earned by merchant refiners since RIN prices began to escalate in 2013 demonstrates no adverse impact. The petitioners' argument therefore provides no justification for shifting the Point of Obligation.

2) *Shifting the Point of Obligation would have no impact on the incentives to invest in biofuel infrastructure or increase blending of renewable fuels.* RIN prices already provide a direct incentive for all parties in the supply-chain to promote renewable fuels. The only conditions that could impede this incentive would be anticompetitive activities or a malfunctioning RIN market. Although the petitioners offer various assertions about such conditions, they have provided no evidence to support those claims. The petitioners also cite circumstances in the retail market for E85 which could indicate a lack of pass-through of RIN value to the final consumer. Those conditions, however, relate primarily to the historic and current levels of the RVOs, as well as uncertainty regarding future levels, and would be unaffected by a shift in the Point of Obligation.

3) *RIN markets are, for the most part, operating efficiently and competitively; moreover, a change in the Point of Obligation would have no beneficial impact on those conditions.* The petitioners have made various allegations about RIN markets, including claims of either unilateral or collusive hoarding, high transactions costs, and excess volatility, among others. However, they provide no evidence to support any of their claims. In fact, research by academic economists as well as direct evidence from trading data indicate that RIN markets are functioning as designed, with prices changing in response to fundamentals and trading costs remaining relatively low. To the extent that the petitioners' proposal would reduce the total number of RIN transactions, any inefficiency or illiquidity in the market would only *increase*, not decrease as the petitioners claim.

4) *Changing the Point of Obligation would have no impact on fraud in RIN markets.* The only documented cases of actual fraud in the market for RINs relate to counterfeiting of biodiesel RINs. These instances have represented a relatively small cost compared to the overall value of RIN transactions, and have not affected the market for conventional ethanol RINs at all. To the extent that such fraud does exist, there is no reason to believe that blenders would have greater expertise or resources available to them to police such activities, relative to refiners. Moreover, changing the Point of Obligation would have no impact on the incentive to engage in RIN fraud.

5) *The petitioners' proposal would result in an increase in the number of obligated parties and an increase in the overall administrative burden of the RFS.* EPA's analyses have demonstrated that the current regulatory design is consistent with the original intent to minimize the number of obligated parties and the associated costs of administering the program. Shifting the Point of Obligation to blenders would not provide any improvement and likely would result in an increase in such costs. Moreover, such a shift would require new parties to develop expertise, essentially duplicating costs already expended by the current obligated parties.

# Appendix A

## Reports from RIN Brokers and Data Aggregators

PLATTS
McGRAW HILL FINANCIAL

# BIOFUELSCAN

Volume 4 / Issue 216 / November 3, 2015

## Platts key daily ethanol assessments

| | | low-high | midpoint | Change |
|---|---|---|---|---|
| **United states (¢/gal)** (PBF page 210) | | | | |
| Ethanol Chicago (terminal) | AALRI00 | 155.20-155.30 | 155.25 | -1.50 |
| Ethanol swap Chicago (Dec) | ESCM001 | 152.45-152.55 | 152.50 | -1.00 |
| **Brazil Cargo assessments ($/cum)** (PBF page 220) | | | | |
| Ethanol FOB Santos Cargo | AAWFO00 | 529.95-530.05 | 530.00 | +0.00 |
| **northwest europe (€/cum)** (PBF page 1210) | | | | |
| Ethanol T2 FOB Rotterdam | AAYDT00 | 641.00-642.00 | 641.50 | -4.00 |
| **asia Pacific ($/cum)** (PBF page 2210) | | | | |
| Bioethanol CIF Philippines | AAWAA00 | 527.00-529.00 | 528.00 | -4.00 |

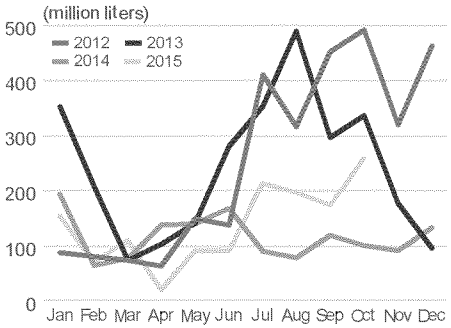
## Platts key daily Biodiesel assessments

| | | low-high | midpoint | Change |
|---|---|---|---|---|
| **northwest europe ($/mt)** (PBF page 1310) | | | | |
| FAME 0 (RED) FOB ARA | AAWGI00 | 796.75-801.75 | 799.25 | +24.75 |
| RME (RED) FOB ARA | AAWGK00 | 908.75-913.75 | 911.25 | +5.25 |
| **northwest europe premiums ($/mt)** (PBF page 1313) | | | | |
| FAME 0 (RED) FOB ARA | AAXNT00 | 328.50-333.50 | 331.00 | +12.50 |
| RME (RED) FOB ARA | AAXNU00 | 440.50-445.50 | 443.00 | -7.00 |
| **United states (¢/gal)** (PBF page 310) | | | | |
| Biodiesel B100 SME Chicago | AAURR00 | 236.55-236.65 | 236.60 | +6.00 |
| **asia ($/mt)** (PBF page 2310) | | | | |
| Biodiesel FOB Southeast Asia | AAVSV00 | 599.90-600.10 | 600.00 | -9.00 |

## tUesday's highlights

- US biodiesel jumps on rising heating oil futures
- Ethanol Europe CEO urges NGOs to support biofuels
- Brazil spot ethanol export discussions muted on record domestic prices
- US Ethanol prices continue to fall despite rebounds in corn and gasoline futures

## BRazil ethanol exPoRts




Source: SECEX

## achieving volumes in RFs mandate would be difficult: CBo

*Washington*—Mandating the statutory biofuels volumes in the Renewable Fuel Standard will be difficult to achieve due to the blend wall and potentially cause US diesel prices to rise 25-45 cents/gal and E10 gasoline prices to rise 15-30 cents/gal, the Congressional Budget Office said in a report Tuesday. Repealing the RFS could cause diesel prices to fall 5 cents/gal, with a negligible impact on E10 prices, the CBO said. The findings, presented to two House of Representatives subcommittees, could give added ammunition to lawmakers seeking to repeal or reform the RFS. "Full compliance with the mandates in [the RFS statute] poses significant challenges," Terry Dinan, a senior adviser to the CBO, testified. If the statutory

(continued on page 10)

## argentina cuts biodiesel export taxes, lowers some prices

*Buenos Aires*—Argentina's Energy Secretariat said Tuesday it has cut biodiesel export taxes and reduced biodiesel prices for large producers, effective retroactively from September 1. On its website, the department said it reduced export taxes to 8.6% in September compared with 9.82% in August. It also reduced the price of biodiesel supplies paid by oil refiners for a 10% blend in diesel to Pesos 5.213/mt ($0.549) for output from large integrated producers. That down 0.25% from Pesos 5.226/mt in August. The price for output from non-integrated large producers was raised 0.34% to Pesos 6.161/mt from Pesos 6.14/mt over the same period. Prices for small and medium-sized producers were raised to Pesos 6.971-7.081/mt compared with Pesos 6.943-7.051/mt in August, the department said. The biodiesel industry has warned that high taxes and low prices are slowing production, as are a slower-than-expected increase in the blend in diesel beyond 10% and restrictions on exporting product to the EU. The Argentine Biofuels and

(continued on page 11)

## Contents

## ethanol maRket CommentaRy

### Unitedstates

**market analysis** (PBF page 299) US ethanol prices continued to fall Tuesday, despite rebounds in underlying CBOT corn and NYMEX RBOB gasoline futures. CBOT December corn futures rose 4 cents to $3.8050/bushel, while November RBOB gasoline futures rose 7.02 cents from Monday to $1.4455/gal. Chicago Argo was assessed at $1.5525/gal, down 1.5 cents from Monday. New York harbor any-November was assessed at $1.6625/gal, down 3.7 cents, while any-December fell to $1.6250/gal from Monday, down 1 cent. Rule 11 ethanol was assessed at $1.5750/gal for this-week delivery, down 2.5 cents. The Houston ethanol assessment fell 5.2 cents to $1.6250/gal. The California ethanol assessments fell to $1.7350/gal for prompt delivery, without receiving either a bid or offer during the Platts Market on Close assessment process. The RIN markets were largely up day on day, as ethanol RINs were assessed at 40.50 cents/RIN ,up 50 points from Monday; advanced RINs were assessed at 49 cents/RIN, down 4.5 cents from Monday; and biodiesel RINs were assessed at 57.5 cents/RIN, up 2 cents from Monday.

**US Chicago and nyh ethanol assessment rationale:** (PBF page 295) Chicago Argo ethanol was assessed at $1.5525/gal Tuesday. By the 3:15 pm EST (2015 GMT) assessment close, there were eight trades in the Chicago Argo ethanol Platts Market On Close assessment process for November 8-18 delivery. During the MOC process, Koch sold 20,000 barrels to ADM and Shell at $1.5525/gal. Koch then sold 10,000 barrels to Shell at $1.5525/gal. Next, Koch sold 15,000 barrels to Valero at $1.5525/gal. Trading activity concluded when CHS sold 5,000 barrels to Valero at $1.5525/gal. The window concluded with an outstanding bid at $1.55/gal from LDM and an outstanding offer of $1.5550/gal from Koch. New York Harbor ethanol for any-November was assessed at $1.6625/gal, while NYH any-December was assessed at $1.6250/gal. New York Harbor any-November was traded once at $1.6625/gal, when Shell purchased 25,000 barrels from Valero. The New York Harbor any-November window concluded with an outstanding bid of $1.65/gal from ADM and an outstanding offer of $1.6725/gal from Rolmpus. New York Harbor any-December concluded with an outstanding bid of $1.61/gal from Shell without an outstanding offer, but was heard at a bid/ask range of $1.62-$1.63/gal prior to the MOC process.

The above commentary applies to the following market data codes: AALRI00, AAMPF00.

**Rin assessment rationale:** (PBF page 195) Ethanol (D6) RINs for 2015 were assessed Tuesday at 40.5 cents/RIN, between the outstanding bid-ask range of 40-41 cents/RIN. Ethanol RINs for 2014 were assessed at 40.75 cents/RIN, moving in line with 2015 ethanol RINs. Ethanol RINs for 2016 were assessed at 40.75 cents/RIN, moving in line with 2015 ethanol RINs. Biodiesel (D4) for 2015 were assessed at 57.5 cents/RIN, the last traded level. Biodiesel RINs for 2014 were assessed at 56 cents/RIN, moving in line with 2015 biodiesel RINs. Biodiesel RINs for 2016 were assessed at 65 cents/RIN, moving in line with 2015 biodiesel RINs. Advanced (D5) RINs for 2015 were assessed at 49 cents/RIN, as they were last heard bid at a 4-cent discount to 2015 biodiesel RINs. Advanced RINs for 2014 were assessed at 44 cents/RIN, moving in line with 2015 advanced RINs. Advanced RINs for 2016 were assessed at 53.5 cents/RIN, as they were last heard bid at a 3.5-cent premium to 2015 advanced RINs.

### US ethanol PRiCe assessments

| | | low-high | midpoint | Change |
|---|---|---|---|---|
| **United states (¢/gal)** (PBF page 210) | | | | |
| Ethanol Chicago (terminal) | AALRI00 | 155.20-155.30 | 155.25 | -1.50 |
| Ethanol Chicago (Rule 11) | AAVWD00 | 157.45-157.55 | 157.50 | -2.50 |
| Ethanol swap Chicago (Dec) | ESCM001 | 152.45-152.55 | 152.50 | -1.00 |
| Ethanol swap Chicago (Jan) | ESCM002 | 150.45-150.55 | 150.50 | -1.60 |
| Ethanol NYH Barge (Nov) | AAMPF00 | 166.20-166.30 | 166.25 | -3.70 |
| Ethanol NYH Barge (Dec) | AAUEG00 | 162.45-162.55 | 162.50 | -1.00 |
| Ethanol Houston 5-15 Tank | AATGJ00 | 162.45-162.55 | 162.50 | -5.20 |
| **southern California Rail Barge assessments (¢/gal)** (PBF page 210) | | | | |
| Ethanol prompt 7-14 | AAMNK00 | 173.45-173.55 | 173.50 | -1.00 |
| Ethanol forward 15-30 | AAMNN00 | 171.45-171.55 | 171.50 | -1.00 |
| **northern California Rail Barge assessments (¢/gal)** (PBF page 210) | | | | |
| Ethanol Prompt 7-14 | AAMFT00 | 173.45-173.55 | 173.50 | -1.00 |
| Ethanol Forward 15-30 | AAMFZ00 | 171.45-171.55 | 171.50 | -1.00 |

### US dRied distilleRgRains PRiCe assessments ($/st) (PBF page 501)

| | | low-high | midpoint | Change |
|---|---|---|---|---|
| CIF New Orleans barge | AADDG00 | 157.95-158.05 | 158.00 | 0.00 |
| FOB Chicago truck | ACDDG00 | 140.45-140.55 | 140.50 | +1.00 |

The above commentary applies to the following market data codes: RINCY01, RINCY02, BDRCY01, BDRCY02, ABRCY01 and ABRCY02.

**ddg market analysis** (PBF page 504) The US DDGS market was dead on arrival Tuesday as trading dropped off. "This is the least I've ever seen DDGS trade," one Midwest source said. That assessment was confirmed by another source: "No one seems to care much out in the marketplace today." The market has been dismal in terms of activity for the last several days. Some sources have argued that mild fall weather has stalled domestic demand as beef herds remain in the pastures and out of feedlots. Other sources have argued that forward concerns from possible Chinese customers are stymieing the market. Either way, everyone agrees that nothing is happening in the market now. Looking ahead, the US Energy Information Administration will release its weekly ethanol production and stock estimates on Wednesday. In competing products, corn rallied on Tuesday, as front-month CBOT corn futures settled 4 cents higher as $3.8050/bushel. Soybean meal, however, finished 90 cents lower, with front-month CBOT futures settling at $301.30/st.

**ddg assessment rationale** (PBF page 504) Chicago FOB DDGS were assessed at $140.50/st with an additional $15 charge for containerizing after being heard bid at $137/st and offered at $144/st. New Orleans CIF DDGS for October were assessed at $158/st as they were last heard bid at $156/st and last heard offered at $160/st at the market close.

The above commentary applies to the following market data codes: AADDG00 and ACDDG00.

**Us ethanol bids/offers/trades** (PBF page 209)

- MOC bids: Chicago: Ethanol: LDM bids $1.55/gal,Nov 8-18, ITT Argo, 5Kb; Chicago: Ethanol: ADM bids $1.57/gal,Nov 8-18, R11, 145Kb; Houston: Ethanol: Shell bids $1.61/gal,Nov 8-18, Houston, 10Kb; New York: Ethanol: ADM bid $1.65/gal, any-Nov, NYH, 25Kb; New York: Ethanol: Shell bids $1.61/gal, any-Nov, NYH, 25Kb.

## Renewable identification number (Rin)

| (¢/Rin) | Rolling code | Calendar code | dw-high | midpoint | Change |
|---|---|---|---|---|---|
| **ethanol (d6)** (PBF page 201) | | | | | |
| RIN Calendar-Year 2014 | RINCY01 | RD62014 | 40.70-40.80 | 40.75 | +0.50 |
| RIN Calendar-Year 2015 | RINCY02 | RD62015 | 40.45-40.55 | 40.50 | +0.50 |
| RIN Calendar-Year 2016 | RINCY03 | RD62016 | 40.70-40.80 | 40.75 | +0.50 |
| **Biodiesel (d4)** (PBF page 301) | | | | | |
| RIN Calendar-Year 2014 | BDRCY01 | RD42014 | 55.95-56.05 | 56.00 | +2.00 |
| RIN Calendar-Year 2015 | BDRCY02 | RD42015 | 57.45-57.55 | 57.50 | +2.00 |
| RIN Calendar-Year 2016 | BDRCY03 | RD42016 | 64.95-65.05 | 65.00 | +1.00 |
| **advanced biofuel (d5)** (PBF page 201) | | | | | |
| RIN Calendar-Year 2014 | ABRCY01 | RD52014 | 43.95-44.05 | 44.00 | -4.50 |
| RIN Calendar-Year 2015 | ABRCY02 | RD52015 | 48.95-49.05 | 49.00 | -4.50 |
| RIN Calendar-Year 2016 | ABRCY03 | RD52016 | 53.45-53.55 | 53.50 | -1.50 |
| **Cellulosic biofuel (d3)** (PBF page 201) | | | | | |
| RIN Calendar-Year 2014 | CBRCY01 | RD32014 | 48.95-49.05 | 49.00 | +0.00 |
| RIN Calendar-Year 2015 | CBRCY02 | RD32015 | 63.95-64.05 | 64.00 | +0.00 |

The calendar codes indicate the traditional full calendar year codes for Platts RINs assessments, while the supplementary rolling codes are unique to the specific calendar-year RINs.

## Platts Us Renewable Volume obligation – Calculated Values (PBF page 302)

| | | ¢/gal | | %/gal | | | |
|---|---|---|---|---|---|---|---|
| | | | Change | Biodiesel | ethanol | advanced Biofuel | Cellulosic |
| 2014 RVO (Jan 1, 2014 – Jan 31, 2015) | RVOY014 | 4.1575 | +0.0413 | 1.1300 | 8.1200 | 0.4860 | 0.0040 |
| 2015 RVO (Jan 1, 2014 – Jan 31, 2016) | RVOY015 | 4.1791 | +0.0414 | 1.1300 | 8.1200 | 0.4860 | 0.0040 |
| 2016 RVO (Jul 1, 2015 – Jan 31, 2016) | RVOY016 | 4.3060 | +0.0446 | 1.1300 | 8.1200 | 0.4860 | NA |

RVOs are Renewable Volume Obligation values. RVO is the aggregate cost of the Renewable Identification Number percentages per gallon of transportation fuel for biodiesel, ethanol, advanced biofuel, and cellulosic ethanol as mandated by US Environmental Protection Agency in Renewable Fuel Standard Program (RFS2). Platts calculates these RVO values factoring the value of biodiesel, ethanol, advanced biofuel and cellulosic biofuel RIN credits as assessed by Platts for the respective RVO years; RINs are assessed as cents/RIN.

## ethanol PRiCes at key RaCk loCations (¢/gal)

| | Chippewa Falls | des moines | grand Forks | kansas City | minneapolis | omaha | sioux Falls |
|---|---|---|---|---|---|---|---|
| Cenex | DE312FX 167.31 | DE059FX 162.86 | DE175FX 172.76 | | | DE256FX 198.99 | |
| Dale Pet | | | DE175AT 169.00 | | | | |
| FI Hills | | DE059IF 175.00 | DE175IF 173.00 | DE099IF 170.00 | DE141IF 185.00 | DE185IF 169.00 | DE256IF 164.00 |
| Minnlowa | | DE059CW 164.00 | | | DE141CW 185.00 | DE185CW 163.00 | DE256CW 161.00 |
| Sapp Bros | | | | | | DE185EA 162.90 | |
| Western | | DE059FN 169.00 | DE175FN 175.00 | DE099FN 169.00 | DE141FN 168.00 | DE185FN 171.00 | DE256FN 166.00 |

Prices effective as of 12:01 am EST 03NOV15, provided by DTN.

- MOC offers: Chicago: Ethanol: Koch offers $1.5550/gal,Nov 8-18, ITT Argo, 10Kb; Houston: Ethanol: Vitol offers $1.64/gal,Nov 8-18, Houston, 10Kb; New York: Ethanol: Rolympus offers $1.6725/gal, any-Nov, NYH, 25Kb.
- MOC trades reported: Koch-ADM, $1.5525/gal, Chicago Argo,Nov 8-18, 10Kb; Koch-Shell, $1.5525/gal, Chicago Argo,Nov 8-18, 10Kb; Koch-Shell, $1.5525/gal, Chicago Argo,Nov 8-18, 5Kb; Koch-Shell, $1.5525/gal, Chicago Argo,Nov 8-18, 5Kb; Koch-Valero, $1.5525/gal, Chicago Argo,Nov 8-18, 5Kb; Koch-Valero, $1.5525/gal, Chicago Argo,Nov 8-18, 5Kb; Koch-Valero, $1.5525/gal, Chicago Argo,Nov 8-18, 5Kb; CHS-Valero, $1.5525/gal, Chicago Argo,Nov 8-18, 5Kb; Shell-Valero, $1.6625/gal, New York Harbor, any-Nov, 25Kb. Other trades reported: None.

**US ethanol exclusions** (PBF page 209)

- No data was excluded from the assessment.

The above price indications apply to the following market data codes: AALRI00, AAMPF00.

**US RIN bids/offers/trades** (PBF page 206)

- MOC bids: None.
- MOC offers: None.
- MOC trades reported: None. Other trades reported: None.

**US RIN exclusions** (PBF page 206)

- No data was excluded from the assessment.

The above price indications apply to the following market data codes: RINCY01, RINCY02, BDRCY01, BDRCY02, ABRCY01, ABRCY02.

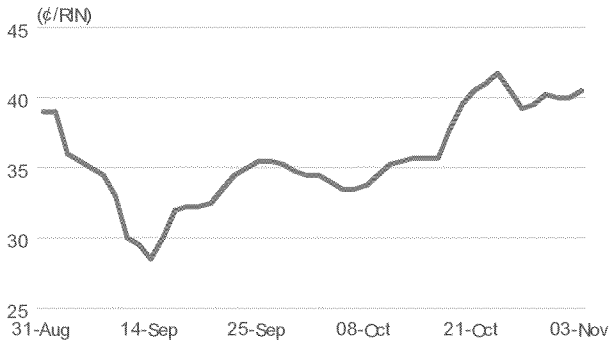
## Brazil (PBF page 289)

**Commentary:** Domestic hydrous ethanol prices in Center-South Brazil surged Tuesday, following the country's long weekend that kept the market closed Monday. The Platts hydrous assessment increased Real 80/cu m to Real 1,950/cu m on an ex-mill Ribeirao Preto basis, in line with the last deals heard Tuesday. The price is an all-time high. Despite the surge, market participants saw good volumes trading at this level. Rains forecasted for the whole week translated into higher offers on Tuesday, sources said. "Producers are very bullish," a broker said. On exports, discussions remained quiet due to strength in domestic prices. "Everything is at standstill for spot shipments. Everyone is focused on the domestic market," a trader said. "There are no spot offers -- rains are hampering the harvest," a broker said. Only an offer for Grade B for the next crop, 2016-17, was heard at $420/cu m on an FOB Santos/Paranagua basis. Despite weeks of quiet spot discussions, Brazilian ethanol exports in October reached a 2015 record of 259.1 million liters, up 49% from

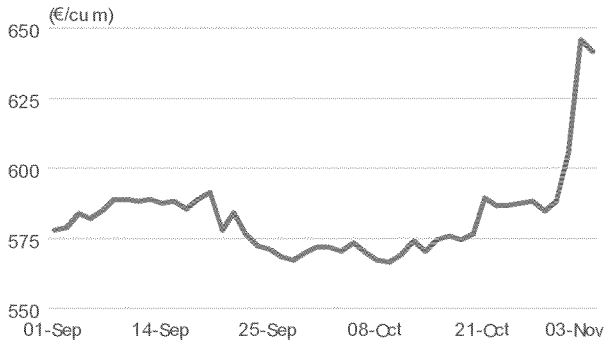
### Brazil ethanol price assessments

| | | low-high | midpoint | Change |
|---|---|---|---|---|
| **Brazil Cargo assessments** (PBF page 220) | | | | |
| Ethanol FOB Santos Cargo (¢/gal) | AATAE00 | 208.15-208.25 | 208.20 | +7.60 |
| Ethanol FOB Santos Cargo ($/cu m) | AAWFO00 | 529.95-530.05 | 530.00 | +0.00 |
| Ethanol FOB Santos Cargo (Real/cu m) | AAWFP00 | 2073.25-2073.35 | 2073.30 | +28.10 |
| **hydrous anP** (PBF page 223) | | | | |
| Domestic Ex-mill Ribeirao with taxes (Real/cu m) | AAXNQ00 | 1945.00-1955.00 | 1950.00 | +80.00 |
| FOB Santos/Paranagua ($/cu m) | AAXNR00 | 487.50-492.50 | 490.00 | +20.00 |
| **anhydrous anP** (PBF page 223) | | | | |
| Domestic Ex-mill Ribeirao with taxes (Real/cu m) | AAXNN00 | 1895.00-1905.00 | 1900.00 | +20.00 |
| **grade B** (PBF page 223) | | | | |
| FOB Santos/Paranagua ($/cu m) | AAXNS00 | 497.50-502.50 | 500.00 | +20.00 |
| **daily Prices** (PBF page 226) | | | | |
| Spot Ex-mill Ribeirao Hydrous expressed as Raw Sugar equivalent (basis 96 degrees pol) (¢/lb) | AAXOA00 | 13.94-13.96 | 13.95 | +0.80 |
| Spot FOB Anhydrous direct to FOB NY (inc. D5 value) ($/gal) | AAXNO00 | 1.83-1.85 | 1.84 | +0.12 |
| Spot FOB Anhydrous direct to FOB NY (inc. D5 value) ($/cu m) | AAXNP00 | 483.44-488.72 | 486.08 | +31.70 |

### RIN d6 ethanol 2014




### ethanol t2 FoB RotteRdam



# PFL MARKETS DAILY

**Desk: 239-390-2885** **July 24, 2014**

| CBOT ETHANOL | | | | RBOB | | | | CRUDE | | | | NYH ULSD Futures | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Settle | Prev | Chg | Month | Settle | Prev | Chg | Month | Settle | Prev | Chg | Month | Settle | Prev | Chg |
| Aug 14 | 2.1070 | 2.109 | (0.002) | Aug 14 | 2.8368 | 2.8601 | (0.0233) | Sep 14 | 102.07 | 103.12 | (1.05) | Aug 14 | 2.8709 | 2.8754 | (0.0045) |
| Sep 14 | 2.0120 | 2.015 | 0.004 | Sep 14 | 2.8130 | 2.8388 | (0.0258) | Oct 14 | 100.72 | 101.65 | (0.93) | Sep 14 | 2.8792 | 2.8857 | (0.0065) |
| Oct 14 | 1.9210 | 1.927 | (0.002) | Oct 14 | 2.6711 | 2.6917 | (0.0206) | Nov 14 | 99.86 | 100.73 | (0.87) | Oct 14 | 2.8902 | 2.8970 | (0.0068) |
| Nov 14 | 1.8400 | 1.848 | (0.003) | Nov 14 | 2.6432 | 2.6624 | (0.0192) | Dec 14 | 99.12 | 99.95 | (0.83) | Nov 14 | 2.9013 | 2.9086 | (0.0073) |
| Dec 14 | 1.7650 | 1.773 | (0.008) | Dec 14 | 2.6256 | 2.6440 | (0.0184) | Jan 15 | 98.47 | 99.24 | (0.77) | Dec 14 | 2.9117 | 2.9198 | (0.0081) |
| Jan 15 | 1.7220 | 1.726 | (0.004) | Jan 15 | 2.6204 | 2.6382 | (0.0178) | Feb 15 | 97.85 | 98.57 | (0.72) | Jan 15 | 2.9195 | 2.9281 | (0.0086) |

| CORN | | | | SOYBEANS | | | | WHEAT | | | | NATGAS | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Settle | Prev | Chg | Month | Settle | Prev | Chg | Month | Settle | Prev | Chg | Month | Settle | Prev | Chg |
| Sep 14 | 361.50 | 362.50 | (1.00) | Aug 14 | 1207.50 | 1201.00 | 6.50 | Sep 14 | 528.75 | 530.75 | (2.00) | Aug 14 | 3.847 | 3.762 | 0.085 |
| Dec 14 | 369.50 | 370.75 | (1.25) | Sep 14 | 1111.50 | 1101.75 | 9.75 | Dec 14 | 550.25 | 554.50 | (4.25) | Sep 14 | 3.850 | 3.776 | 0.074 |
| Mar 15 | 381.25 | 382.50 | (1.25) | Nov 14 | 1084.75 | 1076.50 | 8.25 | Mar 15 | 572.75 | 577.75 | (5.00) | Oct 14 | 3.859 | 3.787 | 0.072 |
| May 15 | 389.50 | 390.25 | (0.75) | Jan 15 | 1091.50 | 1083.75 | 7.75 | May 15 | 588.25 | 593.75 | (5.50) | Nov 14 | 3.906 | 3.839 | 0.067 |
| Jul 15 | 397.00 | 397.50 | (0.50) | Mar 15 | 1097.50 | 1090.75 | 6.75 | Jul 15 | 600.50 | 607.00 | (6.50) | Dec 14 | 3.985 | 3.921 | 0.064 |
| Sep 15 | 404.00 | 405.00 | (1.00) | May 15 | 1103.50 | 1097.00 | 6.50 | Sep 15 | 613.00 | 619.50 | (6.50) | Jan 15 | 4.054 | 3.995 | 0.059 |

| Ethanol Crush Spread Pricing (per Bu.) | | | |
|---|---|---|---|
| Aug 14 | 2.4953 | Q1 14 | 1.454 |
| Sep 14 | 2.2198 | Q2 14 | 1.122 |
| Oct 14 | 1.9559 | Q3 14 | 0.998 |
| Nov 14 | 1.6410 | Q4 14 | 0.902 |
| Dec 14 | 1.4235 | Q1 15 | 0.832 |

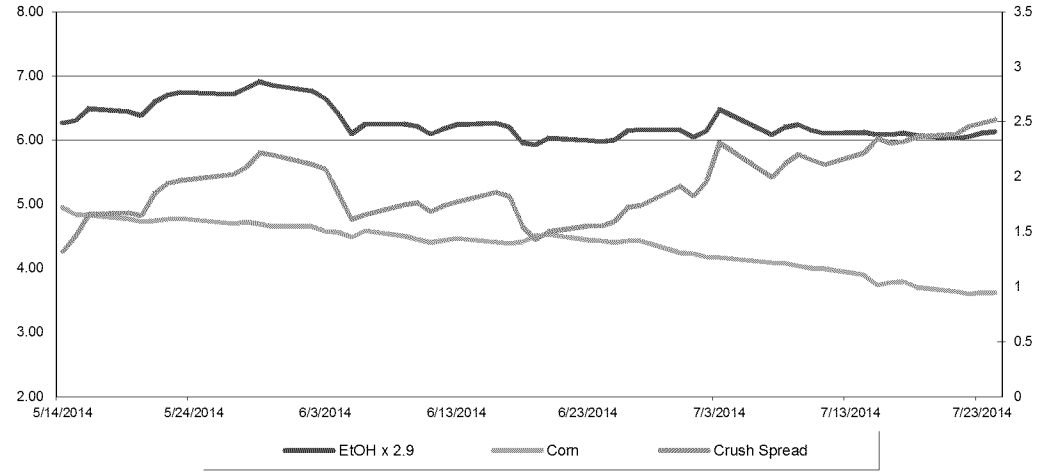
| Nationwide Ethanol Indicative Pricing | | |
|---|---|---|
| **Location** | Bid | Ask |
| Argo ITT | 2.140 | 2.155 |
| NYH Barge | 2.240 | 2.260 |
| Gulf Coast | 2.160 | 2.200 |
| NorCal | 2.220 | 2.260 |

Equities shook off a 20% drop in new home sales in June from the original May print, but WTI futures sold-off leading a decline in petroleum markets. RBOB futures closed lower for a third consecutive day and September traded down to two and half month lows. Soybeans added to yesterday's gains and touched a one week high after weekly export sales came in at 2.5 million tonnes, most of which was for the 14/15 marketing year. Corn, however, could not get any traction and finished down, settling near its four year lows set on Tuesday. Ethanol futures posted small losses with the biggest decline, of 0.8 cents, coming in the November and December contracts. Physical markets were little changed as Argo traded $2.145 and August New York Harbor barges were indicated $2.25 late. D4 RINs were well bid this morning and looked set to breakout, but the rally fizzled in afternoon trade and the market went out around 55.5 cents, after trading up to 56 earlier. LCFS credits held steady in upper 20's as buyers balked at paying $30.

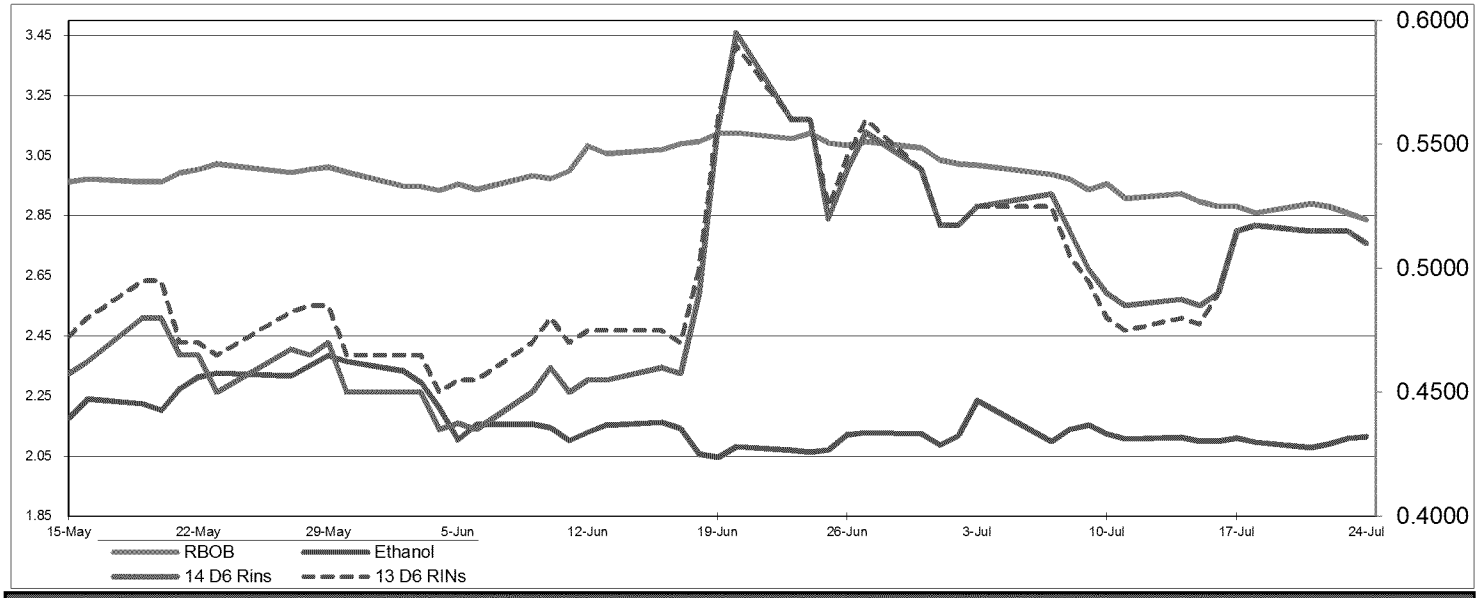
| DOE Storage (mbbl) | | | |
|---|---|---|---|
| Periods | Crude | Gasoline | Distillate |
| This Week | 371.1 | 217.9 | 125.9 |
| Last Week | 375.0 | 214.5 | 124.3 |
| Last Year | 364.2 | 222.7 | 126.5 |
| Difference | -4.0 | 3.4 | 1.6 |

| F/X | | NEAR MARKET SUMMARY | |
|---|---|---|---|
| USD Index | 80.80 | *Energy* | |
| Brazilian Real | 2.218 | WTI (Cash) | 101.96 |
| Canadian Dollar | 1.0727 | Brent | 107.16 |
| Euro | 1.3462 | NYMEX Crude | 102.07 |
| Japanese Yen | 101.49 | B100 SME Chicago | 3.57 |
| | | B100 SME Gulf Co. | 3.57 |
| | | B100 FAME Chicago | 3.43 |
| | | B100 FAME Gulf Co. | 3.50 |
| | | *Ag Products* | |
| | | White Grease (cnt/lb) | 38.00 |
| | | Yellow Grease (cnt/lb) | 32.00 |
| | | Tallow (cnt/lb) | 40.00 |
| | | Soybean Oil (cnt/lb) | 36.24 |
| | | Soybean Meal ($/ton) | 395.30 |
| | | Canola (CAD/tonne) | 440.70 |
| | | Sugar (cnt/lb) | 17.05 |
| | | DDGS-Chicago(wkly) | 150.00 |
| | | *Market Indices* | |
| | | CRB Index | 298.19 |
| | | DJ Industrials | 17083.80 |
| | | NASDAQ | 4472.11 |
| | | S&P 500 | 1987.98 |
| | | Gold | 1294.80 |

**Front Month Ethanol Crush Spread**



## RBOB/Ethanol/RINs




## 2012 - 2014 RIN Pricing in cents/RIN & LCFS in dollars/credit

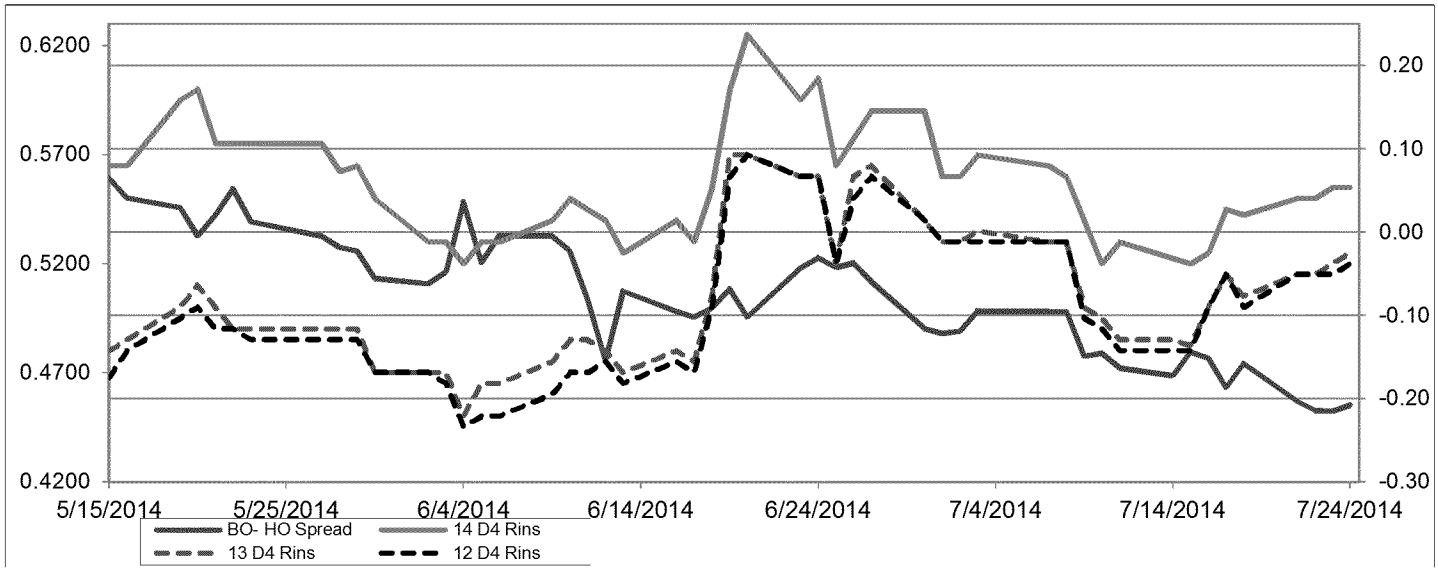
| Year | Type | Bid | Ask | Year | Type | Bid | Ask |
|---|---|---|---|---|---|---|---|
| 2012 | D4 | 52.00 | 53.00 | 2012 | D6 | 51.00 | 515.00 |
| 2013 | D4 | 52.50 | 53.00 | 2013 | D6 | 51.00 | 51.50 |
| 2014 | D4 | 55.00 | 56.00 | 2014 | D6 | 51.00 | 51.50 |
| 2012 | D5 | 51.50 | 52.00 | 2013 | D3* | - | 42.00 |
| 2013 | D5 | 51.50 | 52.00 | | | | |
| 2014 | D5 | 52.00 | 54.00 | 2014 Prompt Dlvd | LCFS | $28.00 | $30.00 |

D4 = Biomass Based Diesel RIN D5 = Sugarcane Based Advanced Fuel RIN D6 = Corn Ethanol Based RIN

D3* = Cellulosic Waiver fixed by EPA LCFS Credits (1 Credit = 1 MT of CO2)

| | RBOB | CBOT Ethanol | Diff | CU Ethanol Swaps | | Nationwide Etoh Pricing | | |
|---|---|---|---|---|---|---|---|---|
| Month(s) | Settle | Settle | Implied | Month(s) | Settle | Location | Bid | Ask |
| Aug 14 | 2.8368 | 2.1070 | (0.7298) | Aug 14 | 2.0550 | Chicago Rule 11 | 2.110 | 2.130 |
| Sep 14 | 2.8130 | 2.0120 | (0.8010) | Sep 14 | 1.9583 | FOB NE BN | 2.000 | 2.020 |
| Oct 14 | 2.6711 | 1.9210 | (0.7501) | Oct 14 | 1.8733 | FOB NE UP | 2.020 | 2.040 |
| Nov 14 | 2.6432 | 1.8400 | (0.8032) | Nov 14 | 1.8000 | Tampa | 2.260 | 2.280 |
| Dec 14 | 2.6256 | 1.7650 | (0.8606) | Dec 14 | 1.7542 | Pacifc Northwest | 2.240 | 2.280 |

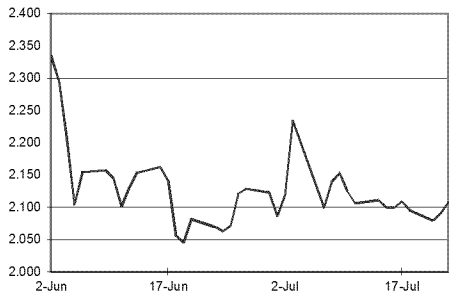
## Soybean Oil-NYH ULSD Futures/Biodiesel RINs



# PFL BIOFUEL MARKETS DAILY COMMENTARY

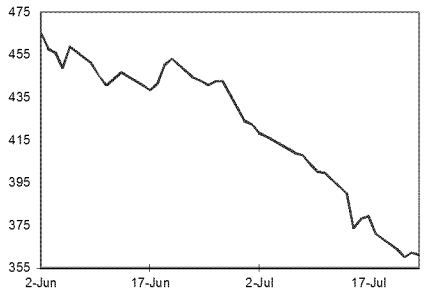
**July 24, 2014**

## ETHANOL CHART



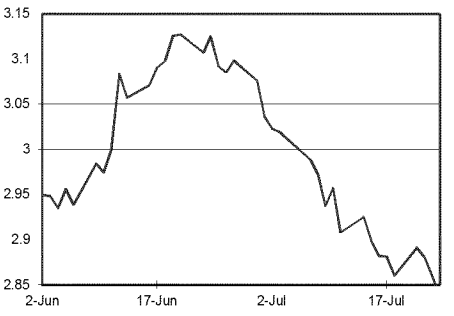

| | |
|---|---|
| R3 | 2.266 |
| R2 | 2.218 |
| R1 | 2.172 |
| S1 | 2.046 |
| S2 | 2.007 |
| S3 | 1.969 |
| 5DMA | 2.098 |
| 20DMA | 2.118 |
| 50DMA | 2.164 |

## CORN



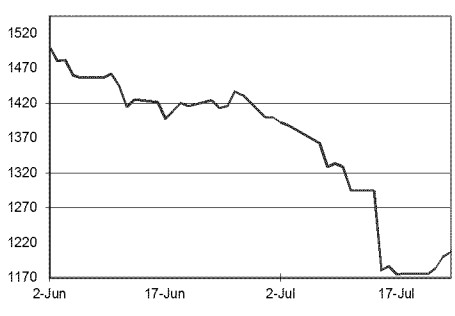

| | |
|---|---|
| R3 | 380.5 |
| R2 | 375.0 |
| R1 | 368.9 |
| S1 | 354.4 |
| S2 | 348.3 |
| S3 | 343.0 |
| 5DMA | 363.9 |
| 20DMA | 396.6 |
| 50DMA | 434.4 |

## RBOB



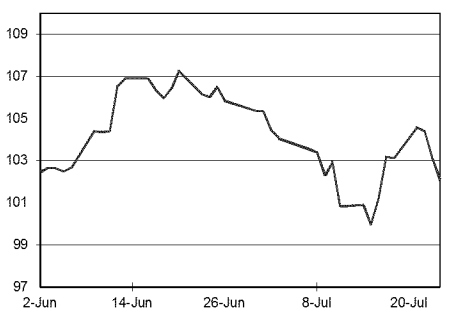

| | |
|---|---|
| R3 | 3.0179 |
| R2 | 2.9550 |
| R1 | 2.9245 |
| S1 | 2.7542 |
| S2 | 2.7017 |
| S3 | 2.6512 |
| 5DMA | 2.8659 |
| 20DMA | 2.9512 |
| 50DMA | 2.9913 |

## SOYBEANS



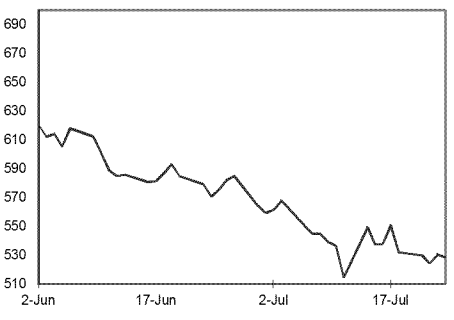

| | |
|---|---|
| R3 | 1273.7 |
| R2 | 1250.0 |
| R1 | 1232.1 |
| S1 | 1183.8 |
| S2 | 1167.8 |
| S3 | 1141.3 |
| 5DMA | 1189.0 |
| 20DMA | 1294.3 |
| 50DMA | 1393.9 |

## CRUDE



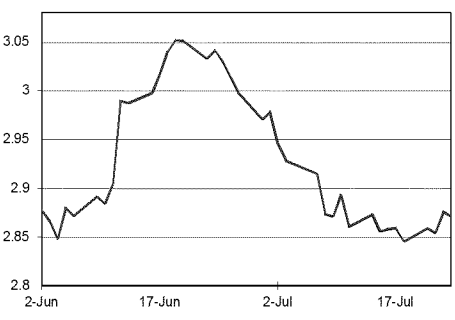

| | |
|---|---|
| R3 | 113.41 |
| R2 | 108.59 |
| R1 | 105.23 |
| S1 | 99.10 |
| S2 | 96.29 |
| S3 | 92.79 |
| 5DMA | 103.47 |
| 20DMA | 103.32 |
| 50DMA | 103.88 |

## WHEAT



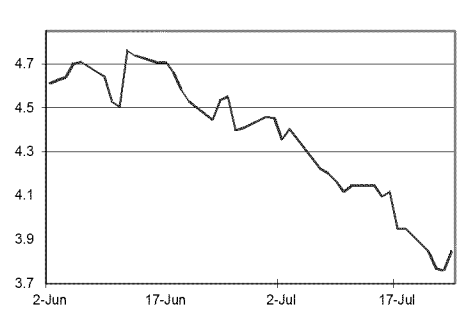

| | |
|---|---|
| R3 | 571.0 |
| R2 | 562.5 |
| R1 | 550.8 |
| S1 | 508.4 |
| S2 | 498.8 |
| S3 | 752.2 |
| 5DMA | 529.3 |
| 20DMA | 546.3 |
| 50DMA | 590.4 |

## NYH ULSD Futures




| | |
|---|---|
| R3 | 3.0364 |
| R2 | 2.9521 |
| R1 | 2.9072 |
| S1 | 2.8355 |
| S2 | 2.8009 |
| S3 | 2.7303 |
| 5DMA | 2.8609 |
| 20DMA | 2.8999 |
| 50DMA | 2.9310 |

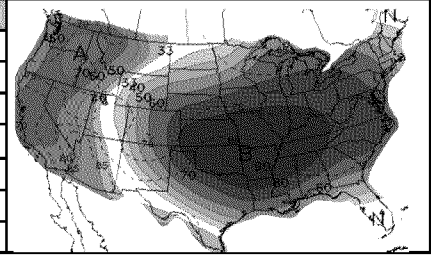
## NATURAL GAS




| | |
|---|---|
| R3 | 4.182 |
| R2 | 4.049 |
| R1 | 3.926 |
| S1 | 3.772 |
| S2 | 3.664 |
| S3 | 3.607 |
| 5DMA | 3.836 |
| 20DMA | 4.143 |
| 50DMA | 4.396 |

## WEATHER

| City | H/L |
|---|---|
| Chicago | 75/57 |
| New York | 80/67 |
| Houston | 96/76 |
| Los Angeles | 90/69 |
| Washington D.C. | 82/67 |
| St. Louis | 82/65 |
| Naples, Florida | 90/73 |



Except for some lingering showers along the immediate coast, Thursday will be noticeably cooler and drier behind the cold front across much of the region. A pleasant late July surface high pressure brings a dry Thursday across the Great Lakes and Ohio Valley region. Scattered thunderstorms will develop today along a cold front from Virginia to the Gulf Coast and Florida Peninsula. Less coverage of rain today with only isolated to scattered thunderstorms expected in eastern Montana and eastern Wyoming and scattered showers in northern Washington.



PFL FUEL SERVICES

argus

argusmedia.com

# Argus Americas Biofuels

Incorporating Argus US Ethanol

Issue 16-184 | Friday 23 September 2016

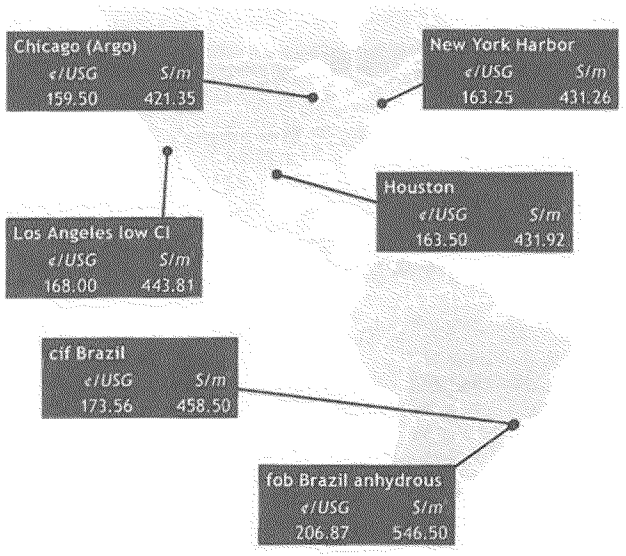
## OVERVIEW

- US ethanol prices continued to find upward momentum Friday despite weaker CBOT corn and RBOB gasoline futures as traders eyed robust export demand and tumbling inventories and production.

- The RINs market was mostly higher Friday as the D4/D6 spread climbed to just off a ten-month high.

- US biodiesel premiums gained Friday as D4 RIN prices ticked upward, but outright prices fell as the Nymex plunged nearly 4.75¢.

Americas ethanol prices




## Contents



## PRICE SUMMARY

### Ethanol

| | ¢/USG | ± | $/m³ | ± |
|---|---|---|---|---|
| Chicago (Argo) | 159.50 | +1.13 | 421.35 | +2.99 |
| New York Harbor | 163.25 | +1.00 | 431.26 | +2.64 |
| fob Brazil anhydrous | 206.87 | 0.00 | 546.50 | 0.00 |
| Los Angeles low CI | 168.00 | -3.00 | 443.81 | -7.93 |
| Cbot ethanol | 154.60 | +1.10 | 408.41 | +2.91 |

### RINs

| | Timing | Price | ± | ¢/RIN Less 2015 |
|---|---|---|---|---|
| Renewable fuel (ethanol) | 2016 | 87.00 | -0.13 | -0.50 |
| Biomass-based diesel | 2016 | 98.50 | +0.25 | -1.75 |
| Advanced biofuel | 2016 | 97.50 | +0.25 | -1.50 |
| RVO ¢/USG | 2016 | 9.15 | -0.01 | +0.57 |

### Biodiesel

| | Price | ± |
|---|---|---|
| SME New York Harbor B100 ¢/USG | 320.98 | -4.44 |
| SME Houston fob B100 ¢/USG | 311.48 | -4.44 |
| SME Chicago fob B100 ¢/USG | 327.98 | -4.44 |
| SME fob Paranagua $/t | 815.00 | +4.00 |
| SME fob Argentina upriver $/t | 727.21 | -9.92 |
| Cbot soybean oil ¢/lb | 33.31 | -0.65 |

### Biofuel spreads

| | Spread | ± |
|---|---|---|
| Ethanol crush spread $/bushel | +0.96 | +0.03 |
| Heating oil/soybean oil spread ¢/USG | -1.09 | 0.00 |
| Houston less Chicago ethanol ¢/USG | +4.00 | 0.00 |
| New York Harbor less Chicago ethanol ¢/USG | +3.75 | -0.13 |
| Los Angeles less Chicago ethanol ¢/USG | +8.50 | -4.13 |
| Los Angeles less Nebraska ethanol ¢/USG | +25.00 | -3.00 |
| Rule 11 less Nebraska ethanol ¢/USG | +12.50 | -0.50 |

### Key California carbon prices

| | Vintage | Price | ± |
|---|---|---|---|
| Credits $/t | | | |
| California carbon allowances (CCA) | 2016 | 12.96 | 0.00 |
| Low-carbon fuel standard (LCFS) | 2016 | 95.00 | -0.50 |
| Price per gallon ¢/USG | | | |
| CCA price for regular Carbob | 2016 | 10.43 | 0.00 |
| LCFS price for regular Carbob | 2016 | 3.35 | -0.02 |

## ETHANOL

### US

US ethanol prices continued to find upward momentum Friday despite weaker CBOT corn and RBOB gasoline futures as traders eyed robust export demand and tumbling inventories and production.

CBOT corn futures were slightly lower after China's Ministry of Commerce announced a 33.8pc anti-dumping duty on all US distiller's dried grains effective immediately.

Ethanol export activity continues to underpin the market as a 15,000m3 shipment is scheduled to depart from Saint Rose, Louisiana for Brazil in the second half of September. A 10,000t shipment is scheduled to depart from the US west coast for China sometime in September, while an 8,000t shipment is scheduled to depart from the US Gulf coast for Korea between 2-12 October.

At Kinder Morgan's Argo ethanol hub, prompt barrels reached a near three-month high after a deal was done at 159¢/USG, while a deal was heard done early at 160¢/USG. September any availabilities remained flat to the prompt barrels as a market was seen between 159¢ and 160¢/USG.

## ANNOUNCEMENT

### Argus completes and extends annual Iosco assurance review

Argus has completed its fourth external assurance review of its price benchmarks, extending the scope of the process to cover petrochemicals and fertilizers for the first time, as well as again covering crude, products, biofuels, thermal coal, coking coal, natural gas and biomass benchmarks. The review was carried out by professional services firm PwC. Annual independent, external reviews of oil benchmarks are required by international regulatory group Iosco's Principles for Oil Price Reporting Agencies, and Iosco encourages extension of the reviews to non-oil benchmarks. For more information and to download the review visit our website: http://www.argusmedia.com/About-Argus/How-We-Work

**Ethanol deals done**

| Market | Timing | Price ¢/USG | Volume '000 bl |
|---|---|---|---|
| Chicago Argo | 28 Sep-8 Oct | 159.00 | 5 |
| New York Harbor | Any Sep | 164.00 | 25 |

**Ethanol**

| | Low | High | ± |
|---|---|---|---|
| Chicago | | | |
| Argo prompt ¢/USG | 159.00 | 160.00 | +1.13 |
| Weighted average | | 159.00 | |
| Argo any Sep ¢/USG | 159.00 | 160.00 | +1.13 |
| Rule 11 prompt ¢/USG | 154.00 | 157.00 | -0.50 |
| New York | | | |
| Any Sep ¢/USG | 162.50 | 164.00 | +1.00 |
| US Gulf coast/south | | | |
| Houston ¢/USG | 163.00 | 164.00 | +1.13 |
| Tampa ¢/USG | 177.00 | 178.00 | +1.13 |
| Atlanta ¢/USG | 170.00 | 171.00 | +1.13 |
| Dallas ¢/USG | 161.00 | 162.00 | +1.13 |
| Nebraska | | | |
| Union Pacific ¢/USG | 141.50 | 144.50 | 0.00 |
| Burlington Northern ¢/USG | 141.50 | 144.50 | 0.00 |
| US west coast | | | |
| Los Angeles low CI ¢/USG | 167.00 | 169.00 | -3.00 |
| Brazil | | | |
| fob anhydrous $/m³ | 470.00 | 623.00 | 0.00 |
| fob anhydrous BRL/m³ | 1,517.91 | 2,012.04 | +12.62 |
| fob hydrous $/m³ | 455.00 | 582.00 | 0.00 |
| fob hydrous BRL/m³ | 1,469.47 | 1,879.63 | +11.98 |
| cif anhydrous $/m³ | 431.00 | 486.00 | +0.50 |
| cif anhydrous BRL/m³ | 1,391.96 | 1,569.59 | +12.20 |
| fob Santos industrial grade* $/m³ | 460.00 | 585.00 | +12.50 |
| fob Santos industrial grade* BRL/m³ | 1,485.62 | 1,889.32 | -26.54 |
| Asia | | | |
| cfr Asia South Korea B grade $/m³ | 610.00 | 620.00 | -25.00 |

**assessment is as of 23 Sep*

**Ethanol forward curves** ¢/USG

| | Chicago, low-high | New York, low-high |
|---|---|---|
| Sep | 159.00-160.00 | 162.50-164.00 |
| Oct | 150.25-151.25 | 161.50-162.50 |
| Nov | 143.50-144.50 | 153.50-154.50 |
| Dec | 139.50-140.50 | 149.00-150.00 |

**Related markets** ¢/USG

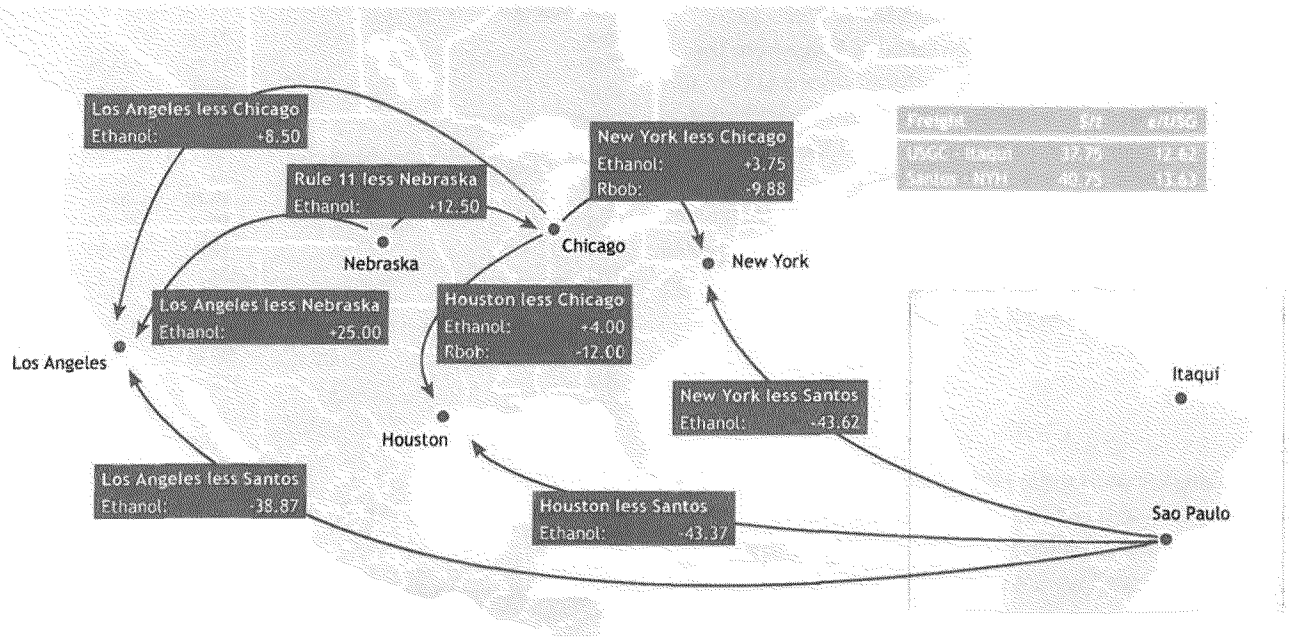
| | Low | High | ± |
|---|---|---|---|
| Spot | | | |
| New York Rbob barge 83.7 | 138.19 | 138.44 | -3.99 |
| New York Cbob barge 83.7 | 138.44 | 138.94 | -3.62 |
| Houston Rbob Colonial 83.7 | 135.69 | 136.69 | -2.99 |
| Houston Cbob Colonial 85 | 135.44 | 136.69 | -3.62 |
| Los Angeles Carbob 84 month | 155.07 | 156.07 | -2.61 |
| Mont Belvieu natural gasoline | 96.50 | 101.00 | -1.44 |
| Settlement | | | |
| Nymex Rbob settlement, Oct | | 137.69 | -2.49 |
| Nymex Rbob crack spread, Nov $/bl | | +12.46 | +0.87 |

**Current month-to-date averages, Sep**

| | Averages |
|---|---|
| Chicago (Argo) prompt ¢/USG | 152.96 |
| New York Harbor prompt ¢/USG | 157.33 |
| Los Angeles low CI ¢/USG | 166.31 |
| fob Brazil anhydrous $/m³ | 537.28 |
| cif Brazil anhydrous $/m³ | 446.47 |

## ARGUS MARKET MAP: ETHANOL

¢/USG




New York Harbor values remained at a ten-week high after September barges were traded at 164¢/USG, while a heard traded went through early at 162.5¢/USG. The October barges lost a quarter-cent after being discussed between 161.5¢ and 162.5¢/USG without trade.

Chicago Rule 11 railcars shipping next week were discussed between 154¢ and 157¢/USG, but transactions were not reported.

Fob Nebraska Union Pacific railcars shipping this week were unchanged after a trade was heard done at 143¢/USG.

Arizona railcars shipping this week were heard traded at 162¢ and 163¢/USG.

At the west coast, NorCal cars shipping this week were heard traded at 168¢/USG, down 3¢ on the day.

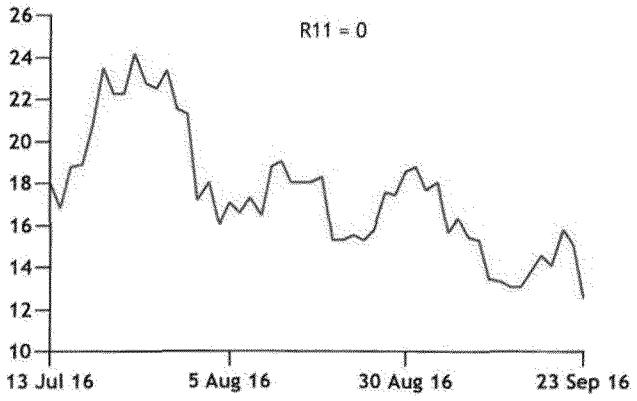
### Brazil

The Brazilian ethanol market ended the week on a quiet note Friday as both delivered and domestic prices stabilized.

Selling levels for cif Brazil deliveries ticked $1/m³ to $486/m³ in thin commerce as firm buying interest failed to materialize.

LA ethanol vs Chicago ethanol ¢/USG


Los Angeles ethanol vs Rule 11 ¢/USG



Discourse was also limited on the export front as high domestic valuations worked against waterborne economics. Anhydrous fuel ethanol hovered in the $470-623/m³ range, while the hydrous fuel specification failed to bulge from the $455-582/m³ levels. Korean B grade ethanol gained $13/m³ to $460-585/m³ in weekly comparison as stouter domestic valuations and a stronger Brazilian currency lifted the industrial grade specification over the course of the week.

In Sao Paulo, ex-mill truckloads of hydrous fuel ethanol with 12pc ICMS tax stabilized in the R1,950-1,960/m³ range in a fairly illiquid session Friday as weak demand and limited supply kept a lid on commerce in Ribeirao Preto.

## RINS

The RINs market was mostly higher Friday as the D4/D6 spread climbed to just off a ten-month high.

The 2016 vintage D4 biomass-based diesel RINs rose by a quarter-cent as deals were done at 98.5¢/RIN, widening the B16/E16 spread by more than a quarter-cent to 11.5¢/RIN.

Current year D6 ethanol credits were slightly lower as commerce was done between 86.75¢ and 87.25¢, while the E16/E17 spread was talked at +0.25¢/+0.4¢ without trade. The 2015 vintage D6 credits edged higher after credits exchanged hands at 87.5¢/RIN

The 2016 vintage D3 cellulosic RINs shed two cents as commerce was done for QAP credits at 203¢/RIN. The 2014 vintage

**RINs deals done**

| Market | Timing | Price ¢/RIN | Volume '000 RINs |
|---|---|---|---|
| Biodiesel | 2016 | 98.50 | 500 |
| | 2016 | 98.50 | 250 |
| | 2016 | 98.50 | 675 |
| Cellulosic | 2016 | 203.00 | 100 |
| Ethanol | 2015 | 87.50 | 3000 |
| | 2016 | 86.75 | 500 |
| | 2016 | 86.75 | 500 |
| | 2016 | 86.75 | 350 |
| | 2016 | 87.00 | 500 |
| | 2016 | 87.00 | 500 |
| | 2016 | 87.00 | 1000 |
| | 2016 | 87.25 | 1000 |
| | 2016 | 87.25 | 500 |
| | 2016 | 87.25 | 2000 |
| | 2016 | 87.25 | 3000 |
| | 2016 | 87.25 | 500 |
| | 2016 | 87.25 | 2000 |

**RINs** ¢/RIN

| | Low | High | ± |
|---|---|---|---|
| Renewable fuel (ethanol) | | | |
| 2014 | 87.25 | 87.75 | +0.13 |
| 2015 | 87.25 | 87.75 | +0.13 |
| 2016 | 86.75 | 87.25 | -0.13 |
| Weighted average | | 87.15 | |
| 2017 | 86.50 | 86.85 | -0.20 |
| Biomass-based diesel | | | |
| 2014 | 98.25 | 98.75 | +0.25 |
| 2015 | 99.75 | 100.75 | +0.25 |
| 2016 | 98.25 | 98.75 | +0.25 |
| 2017 | 100.25 | 102.25 | +0.25 |
| Cellulosic biofuel | | | |
| 2014 | 123.00 | 125.00 | -2.50 |
| 2015 | 159.00 | 161.00 | 0.00 |
| 2016 | 202.00 | 204.00 | -2.00 |
| Advanced biofuel | | | |
| 2014 | 98.25 | 98.75 | +0.25 |
| 2015 | 98.75 | 99.25 | +0.25 |
| 2016 | 97.25 | 97.75 | +0.25 |
| Renewable Volume Obligation (RVO) ¢/USG | | | |
| 2015 | | 8.58 | +0.02 |
| 2016 | | 9.15 | -0.01 |

**RIN spreads** ¢/RIN

| | Today | ± | Prior day | 5-day avg |
|---|---|---|---|---|
| Category spreads, 2015 | | | | |
| Biodiesel D4-ethanol D6 | 12.75 | +0.13 | 12.62 | 12.65 |
| Biodiesel D4-advanced biofuel D5 | 1.25 | 0.00 | 1.25 | 1.25 |
| Advanced biofuel D5-ethanol D6 | 11.50 | +0.13 | 11.38 | 11.40 |
| Category spreads, 2016 | | | | |
| Biodiesel D4-ethanol D6 | 11.50 | +0.38 | 11.12 | 11.20 |
| Biodiesel D4-advanced biofuel D5 | 1.00 | 0.00 | 1.00 | 1.00 |
| Advanced biofuel D5-ethanol D6 | 10.50 | +0.38 | 10.12 | 10.20 |
| Vintage spreads, 2015-2016 | | | | |
| Biodiesel D4 | 1.75 | 0.00 | 1.75 | 1.75 |
| Advanced biofuel D5 | 1.50 | 0.00 | 1.50 | 1.50 |
| Ethanol D6 | 0.50 | +0.25 | 0.25 | 0.30 |

Advanced RINs vs ethanol RINs (current year) ¢/RIN