

The Price of RINs: How High! How Stupid!¹

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This paper focuses on the price of Renewable Identification Numbers or RINs. A RIN is a thirty-eight digit designation associated with batches of renewable fuels. The EPA introduced RINs when it implemented the renewable fuels mandate passed by Congress. The law stipulates how much renewable fuels must be blended into gasoline and diesel fuels each year. The initial legislation passed in 2005. Under it, the United States had to use 7.5 billion gallons of ethanol in 2012 (five hundred thousand barrels per day). Then in 2007, Congress responded to President Bush calling the US an oil addict by upping the ante. The Energy Independence and Security Act of 2007 (EISA) raised the 2012 requirement to 15.2 billion gallons (roughly one million barrels per day). It also set a standard of 16.55 billion gallons for 2013 (approximately 1.1 million barrels per day).

In its infinite wisdom, Congress also established standards for cellulosic ethanol and advanced biodiesel as part of the requirements for 2010 and the years after. In 2012, refiners must blend in 0.5 billion gallons of cellulosic ethanol and two billion gallons of advanced biofuels.

Congress set these mandates expecting US gasoline and diesel fuel use to rise. Legislators no doubt relied on the 2006 EIA long-term forecast, which put 2013 US gasoline use at 10.37 million barrels per day and diesel at 4.87 million barrels per day. In this scenario, total gasoline and diesel consumption would have been around fifteen million barrels per day. Had the forecast been realized, the Congressional mandate would have required ethanol to be blended into approximately seven percent of the US fuel mix. As noted below, the EIA was wrong. The government's error had substantial consequences.

The renewable fuels mandate sailed through Congress with the strong backing of that industry and agricultural interests despite the oil industry's objections. Indeed, complaints from the oil sector were ignored. As always, the US petroleum industry has little or no influence on Congress because it lacks public respect. Polls by Harris Interactive reveal that the oil and tobacco industries have the least trust from the general populace. In the 2012 survey, just three percent of those surveyed stated they trusted the tobacco industry and six percent petroleum firms. In the

¹ No single source exists where one can collect the needed data. I thank Markus Wimmer and Adrian Binks of Argus Media for providing detailed information on ethanol and RIN pricing. It is Argus, not the EIA, that one turns to for such data, which are essential for analyzing oil market moves. I also thank Tom Kloza and Fred Rozell of the Oil Price Information Services (OPIS) for providing data on retail gasoline and E85 prices. OPIS, not the Department of Energy, is the one reliable source for up-to-date retail information.

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2007 poll, taken as EISA passed, the oil industry had the trust of only five percent of those surveyed.²

Congress gave EPA the job of implementing the Renewable Fuel Standard (RFS) set by EISA. After meeting with the various parties subject to the mandates, the agency introduced RINs. Under the RIN system, “obligated parties” (ethanol producers, fuel blenders, and marketers) must demonstrate compliance with the law by producing or accumulating RINs. Ethanol producers would sell fuel with RINs “attached.” The specific thirty-eight-digit number indicated the identity of the firm producing the RIN, the renewable fuel type, and the amount. At the end of each calendar year, the firms selling fuel must have RINs showing they blended sufficient ethanol to meet the RFS requirement or acquired credits from other firms that blended more ethanol than needed.

To illustrate, as the system was designed, a firm could buy ethanol with the associated RINS to satisfy its obligation. If it used more ethanol than required, it could sell the excess RINs. If it failed to acquire enough ethanol, it could buy national RIN credits from firms that blended more ethanol into fuels than required.

To provide flexibility, EPA allows firms to carry excess RINs forward to the next year. In other words, they can use 2012 RINs to satisfy 2013 requirements. The carry forward is limited to one year and no more than twenty percent of the previous year’s RINs.

This program had no problems until this year. In prior years, the ethanol mandates set by Congress were low enough to make RINs essentially worthless. The situation has changed dramatically in 2013 and will be worse in 2014.

The problem developed because the EPA determined that, in 2013, all gallons of diesel fuel and gasoline would have to contain, on average, 9.6 percent of renewable fuels by volume³, that is, every gallon must be almost ten percent ethanol.

In determining these numbers, the EPA uses the EIA’s projection of 8.72 million barrels per day for gasoline demand and 3.43 million barrels per day for diesel. The total consumption of the two fuels used to calculate the EPA percentage standard is 12.15 million barrels per day, or approximately eighty percent of the amount Congress expected to be used when it enacted specific volume requirements.

Had the EIA forecast Congress used been correct, the percentage requirement would be eight percent, not 9.6 percent, and there would be no problem.

² See “Oil, Pharmaceutical, Health Insurance, Tobacco, Banking, and Utilities Top the List of Industries that People Would Like to See More Regulated,” Harris Interactive, December 18, 2012 [<http://goo.gl/zjow0>].

³ Environmental Protection Agency, “40 CFR Part 80: Regulation of Fuels and Fuels Additives, 2013 Renewable Fuels Standards: Proposed Rules,” *Federal Register* 78, No. 26 (February 7, 2013), p. 9304 [<http://goo.gl/gp5jY>].

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The Price of RINs

The requirement that motor fuels contain, on average, 9.6 percent renewable fuels and in addition perhaps 1.6 percent advanced biofuels has created difficulties in the industry. Suddenly almost all firms expect to be just balanced or slightly short of RINs in 2013 and quite probably very short of RINs in 2014. Firms have responded in classic fashion by hoarding RINs. Consequently, the price has surged from mere pennies to more than \$1 per RIN (see Figure 1, supplied courtesy of Argus Media).

Buyers are bidding up the RIN price for 2013 and for 2012. Now some readers believe 2012 is over. They are correct except in the tortured world of US regulations. Under the renewable fuels program, a marketer or refiner (those obligated parties mentioned earlier) can meet requirements for the current year by using up to twenty percent of the RINs created in 2012. The 2012 RINs cannot, however, be used to satisfy 2014 obligations.

This “flexibility” granted by the EPA provides an opportunity. Confronted with the rising RIN requirements for 2014 and 2015, firms today should do everything they can to satisfy their 2013 obligations with the maximum number of 2012 RINs and as few 2013 RINs as possible. The unused 2013 RINs can then be used to meet 2014 requirements.

This situation has created strong demand for 2012 RINs in 2013. As can be seen from Figure 2 (again supplied courtesy of Argus Media), the price of 2012 and 2013 RINs has jumped. The rise in 2012 RIN prices indicates an effort by firms subject to the statute to accumulate as many 2012 RINs as allowed.

At the same time, most firms seem to be holding (hoarding) their 2013 RINs. Firms that will need 2013 RINs are desperately looking for them—hence, the price increase.

I attribute the price increase to a “shortage mentality,” something seen often in the past in many economic sectors in almost every nation. Bosworth and Lawrence describe the phenomenon in connection to a commodity price surge:

Commodity users keep inventories just as householders keep groceries in the pantry to save on shopping trips and to be prepared for unexpected guests. When the probability of supply shortfalls increases, the precautionary demands for inventories will increase. Supply and demand interact to make price extremely volatile. For example, when the supply of oil is reduced because of an embargo, the ex-ante demand for oil inventories will rise. Thus the short-run effect of the inward shift in the supply curve may well be an outward shift in the demand curve—both of which drive prices upward. Conversely, inventory demand will decline when the probability of interruptions in supplies is lowered. The response of users to supply changes in managing their inventories thus contributes to the short run instability of commodity markets. Hoarding by users may be as important as speculation by investors.⁴

⁴ See Barry P. Bosworth and Robert Z. Lawrence, *Commodity Prices and the New Inflation* (Washington, DC: Brookings Institution, 1982), p. 35.

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This description applies to the current situation. Firms obligated to hold RINs now worry that future supply will not be sufficient and are thus adding to their holdings, which contributes to price volatility. (In this instance, speculators have not caused the price rise. They are barred from trading RINs.)

Bosworth and Lawrence wrote their analysis thirty years ago. In the subsequent three decades, we have learned that efficient futures markets can moderate price fluctuations.⁵ Despite this, the EPA has gone out of its way to keep an efficient market from being built.

Recent price behavior suggests the EPA has not succeeded in discouraging firms from treating RINs as a commodity. Hoarding is occurring. No doubt the largest companies—particularly Exxon, Shell, Valero, and Tesoro—are leading the effort.

The Political Fight

Refiners, especially Valero and Tesoro, are pushing to get the Renewable Fuel Standard (RFS) relaxed. In an attempt to stir panic among policymakers, they have promoted studies by the Energy Policy Research Foundation, a research organization the industry controls.⁶ More recently *The Wall Street Journal* entered the fray, calling on the EPA to reduce RFS requirements because gasoline use has been less than predicted:

The fix here is obvious. The EPA has the authority to revise the ethanol requirement, and if they did so tomorrow the price of gas would quickly fall by about five to 10 cents a gallon. If the EPA won't act, Congress can and should suspend the ethanol blending mandate to give consumers a break.⁷

To add pressure on the Obama administration, refiners have also threatened to reduce gasoline volumes supplied to US customers, choosing to export the product instead. A March 12 *Financial Times* article lets Valero explain:

“Refiners could try to avoid the extremely high cost of RINs by moving more barrels out to export markets, where there is no RIN requirement,” says Valero, a refiner. “If that happens, you theoretically could see price increases at the pump, probably first in areas like the Northeast.”⁸

As this shows, refiners have resorted to “export blackmail” rather than try other solutions. One of these would be sales of E85 (85:15 ethanol/gasoline), which would alleviate the problem.

⁵ This “we” obviously does not apply to everyone. Many US senators and the Commodity Futures Trading Commission’s chairman and most of its staff do not recognize this relationship.

⁶ See Ben Montalbano, “Oil Market Study Group: RFS, The Blend Wall, & Refinery Issues,” Energy Policy Research Foundation, October 15, 2012 [<http://goo.gl/qoc23>].

⁷ “The Ethanol Gas-Pump Surcharge,” *The Wall Street Journal*, March 12, 2013 [<http://goo.gl/9HOiz>].

⁸ Gregory Meyer, “Cut in Fuel Use Reignites Ethanol Debate,” *Financial Times*, March 11, 2013 [<http://goo.gl/Misk2>].

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The E85 Solution

As noted, the obvious solution to the RIN price problem involves no EPA intervention and no regulatory action at this point. It simply calls for boosting E85 sales. While E85 is not as widely available as gasoline or diesel fuel, it is sold at enough US stations to allow OPIS to compute a national average price. This price appears each day in the American Automobile Association's Daily Fuel Gauge Report.⁹

Refiners and marketers could meet their RFS requirements by boosting E85 sales. Indeed, a little algebra shows this would cut the needed percentage of renewable fuels in diesel and gasoline from 9.6 percent to 7.6 percent in 2013 if the E85 market share could be boosted from zero to five percent. Table 1 shows this calculation.

The benefit of increased E85 sales with regard to the RFS program is simple. Each gallon of E85 generates 0.85 RINs. Thus a ten-gallon sale of E85 creates 8.5 RINs. Because the law requires refiners to have 0.92 RINs per ten gallons, a sale of ten gallons of E85 produces a surplus of 7.58 RINs. At today's prices, these RINs are worth \$5.70. This means a marketer selling E85 could theoretically deduct \$0.57 per gallon from the cost of components (ethanol and the gasoline blend stocks) in determining the product price. I dub this the E85 "RIN benefit."

Presumably, consumers owning flex-fuel vehicles would be more than willing to purchase E85 if they received the RIN benefit. However, the data suggest it is not being offered to them and thus they are not buying E85.

I provide support for this conclusion in Figures 3 through 6. Figure 3 shows our calculation of E10 and E85 spot prices. Using data supplied by Argus Media, I computed the E10 spot price on the US Gulf as the weighted average of ninety percent of the RBOB spot price and ten percent of the E85 spot price. I calculated the implied E85 spot price as fifteen percent of the RBOB spot price plus eighty-five percent of the ethanol spot price less seventy-five percent of the RIN price. The graph shows the spot price of the two fuels. Also shown at the bottom of the graph is the difference in prices in cents per gallon. This variance has reached almost \$1 per gallon twice: once last spring and again during March 2013.

Figure 4 shows the retail price for regular gasoline and E85 as published by OPIS. Also shown is the E85 equivalent price. The latter adjusts for the fact that each gallon of E85 contains less energy, that is, fewer Btu. Here I increase the E85 price thirty-three percent to reflect the efficiency difference. Not surprisingly, E85 has always been more expensive than conventional gasoline when the adjustment for efficiency is made. Also not surprisingly, E85 sales have been few and far between. Flex-fuel vehicle owners know they are better off using regular gasoline.

However, E85 prices could drop to where flex-fuel owners might shift. This could happen if those marketing E85 passed on the RIN benefit. Figures 5 and 6 show the hypothetical effect.

⁹ See <http://goo.gl/BNVKR>.

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Figure 5 shows the gross margin available to those who market conventional gasoline and E85. I calculate this margin as the difference between the retail price and the spot price computed for E10 and E85 above. Note that the E85 margin has risen from \$0.80 to \$1.40 per gallon, while the conventional gasoline margin has remained relatively constant.

Figure 6 shows the E10 retail price and the Btu-adjusted E85 price that assumes marketers pass on the RIN benefit shown in Figure 5. I calculated the Btu-adjusted number under the assumption that marketers and blenders accept the same gross margin for E10 and E85. (Figure 6 shows these margins.) I also corrected the Btu-adjusted figure for the lower heat content of E85.

One can observe from Figure 6 that E85 offers a better value to consumers owning flex-fuel vehicles today with RINs selling for \$0.70 to \$1 than conventional gasoline if they receive the RIN benefit. Should RIN prices rise to \$2, as some suggest they will, the Btu-adjusted cost of E85 will drop to \$2.60 per gallon, roughly sixty-five percent of the conventional gasoline price.

The situation is so convoluted that it would pay marketers to give E85 away should the RIN price rise to around \$5. At that level, every gallon of E85 delivered for free would generate \$3.75 in RIN credits.

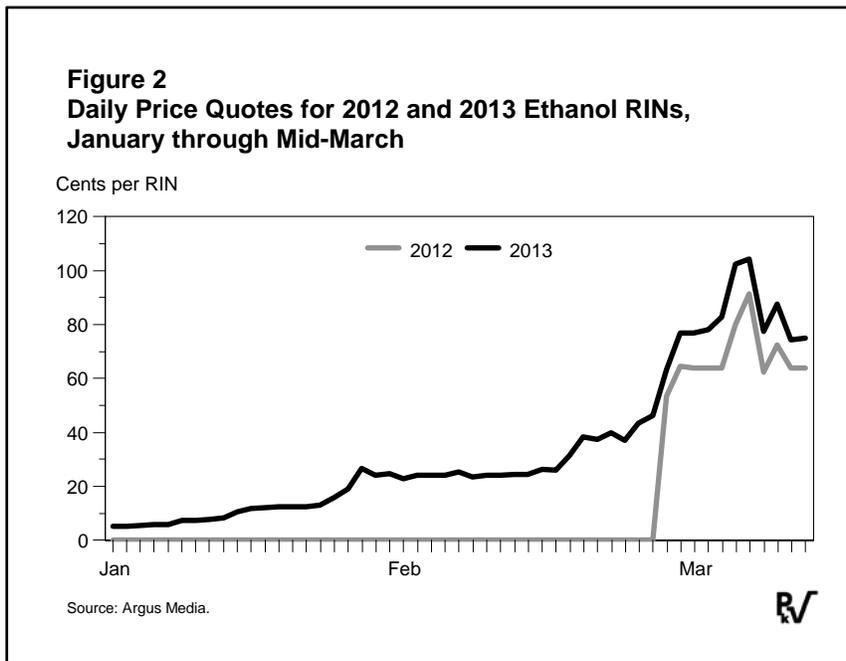
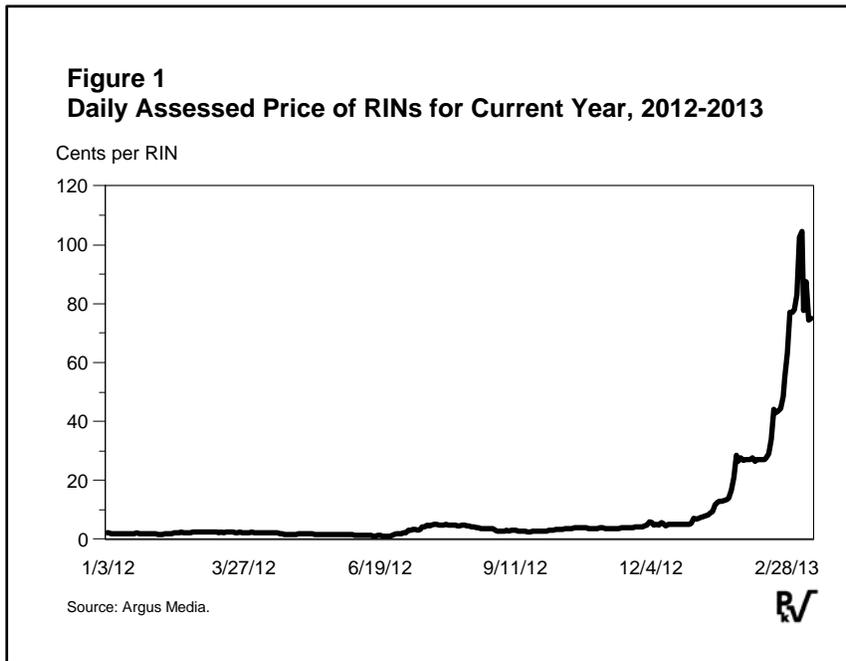
Obviously, E85 sales would take off if prices dropped to such a low level. Every flex-fuel vehicle owner would switch entirely to E85 if the product were available. Furthermore, auto dealers would experience a run on E85 models and mechanics would see a surge in demand for converting standard vehicles to flex-fuel.

Refinery owners undoubtedly fear such a development. A rapid shift to E85 could reduce conventional petroleum-based gasoline demand significantly. Half of US refining capacity might need to be shut should RIN prices remain so high.

However, RIN prices will not do this. Instead, an E85 market penetration of, say, two percent of the gasoline pool will provide more than sufficient flexibility for the RFS program for the next two years. Additional market penetration of, say, five percent will likely provide flexibility to 2018.

In short, no RIN problem exists. Instead, the trouble has been created by the stubborn resistance of some refining companies—particularly Valero—to the RFS program. One would think Valero might reconsider its public relations approach following its utter trashing by California voters after it spent millions to promote repeal of the state's Global Warming Solutions Act of 2006 (AB 32). Instead, the company keeps beating its head against the wall to the detriment of its shareholders.

Figures and Tables



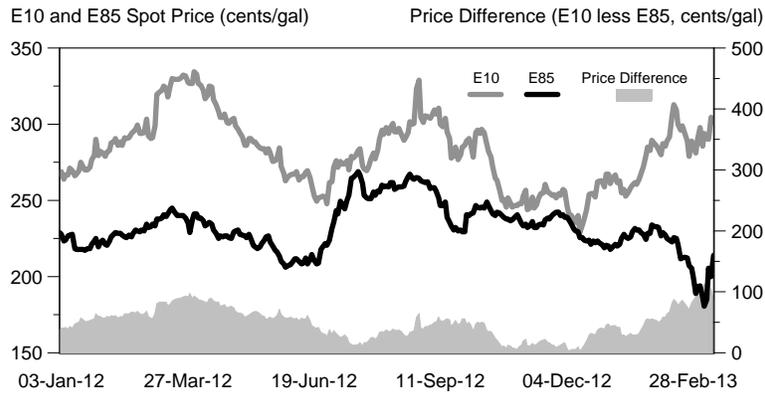
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Table 1. Renewable Fuels Required to be Blended in Motor Fuels at Various E85 Penetration Levels (Percent)

E85 Penetration Percentage	2013	2014
0	9.6	10.6
1	9.2	10.2
2	8.8	9.8
3	8.4	9.4
4	8.0	9.0
5	7.6	8.6

Source: PKVerleger LLC.

Figure 3
E10 Spot Price on US Gulf Coast vs. Calculated E85 Spot Price including RIN Credit



Note: E10 price computed as 90-percent RBOB and 10-percent ethanol.
 Source: Argus Media; PKVerleger LLC.



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Figure 4
National Average Retail Prices for Regular, E85, and the Energy Equivalent E85

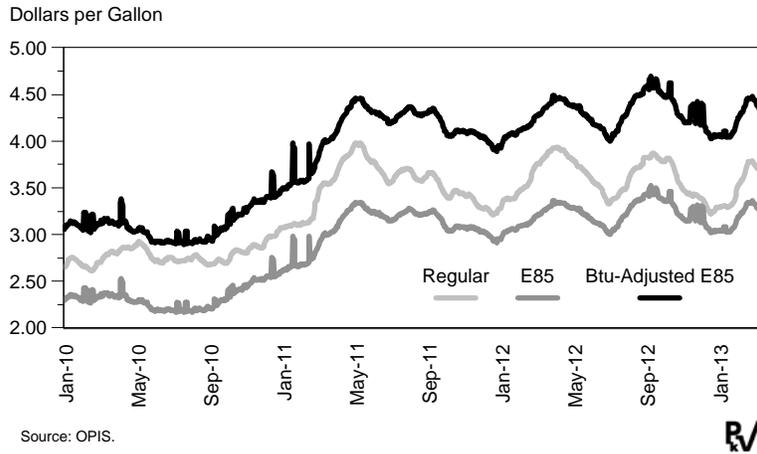
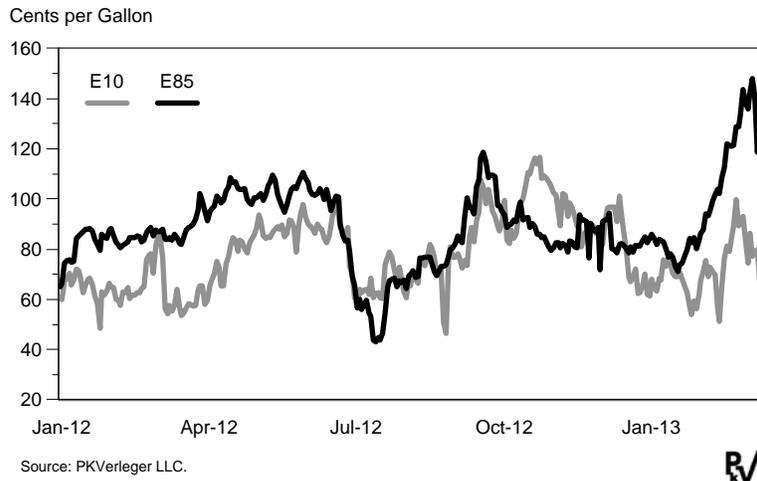


Figure 5
Retail to Spot Margins for E10 and E85



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