THE IMPACT OF EPA'S POLICIES REGARDING RVOS AND SRES

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I. The Purpose and Structure of the Renewable Fuel Standard

The Renewable Fuel Standard (RFS) was designed to incentivize the replacement of fossil fuel gasoline and diesel with renewable biofuels. Each year, EPA sets the Renewable Volume Obligation (RVO) in gallons for each type of biofuel specified in the statute and converts those requirements to percentages based on estimates of fuel demand. Each producer or importer ("obligated party") must then self-generate or acquire sufficient Renewable Identification Numbers (RINs) to meet their percentage requirements. RINs may be banked for the next compliance year, such that an obligated party who generates excess RINs in a particular year may retain them to enable compliance in the following year or sell them to another obligated party who may be in deficit. Obligated parties also may carry over a RIN deficit from one year to the next, a provision which serves a similar purpose to the bank. EPA may grant exemptions from these standards to certain petitioning small refiners (SREs), which effectively reduce their RVOs gallon-for-gallon.

The price of RINs, determined through trading between obligated parties and other entities, provides information about the cost of the RFS requirements, relative to a scenario without the program. If, for reasons unrelated to the RFS, every obligated party used a sufficient quantity of biofuels in the current year to meet the standard and expected to do so in subsequent years, then the market price for RINs would be zero. A non-zero price for RINs therefore is an indication that at least some fuel producers find the RFS constraints to be binding or expect them to be binding in the future with some positive probability. The RIN price provides an estimate of the marginal cost to the industry of reaching compliance, potentially moderated by expectations of such costs in the future.[1]

Under this regulatory structure, EPA plays a critical role in determining the marketplace outcomes. The impact of EPA's decisions can be seen in the movement of RIN prices. In the short run, the RIN market tends to respond immediately to announcements from EPA that affect the requirements for compliance, such as changes to the RVOs. For example, on August 6, 2013, EPA announced the publication of the 2013 Final Rule and indicated, for the first time, that future volume requirements likely would be adjusted downward to reflect difficulties in surpassing the 10-percent "blendwall" for ethanol in gasoline.[2] By August 8, 2013, D6 RIN prices had dropped 38 cents, still the largest decline over any three-day period in the history of the program. In the longer run, the general level of RIN prices reflects the stringency of the current standards and expectations about those conditions in the future. The size of the RIN bank also provides evidence regarding the feasibility of compliance with the current standards and the market's expectations about future standards.

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[1] The marginal cost of compliance is the cost of converting the last gallon of fossil-based fuel to renewable in order to meet the requirements. The average cost of compliance across the entire industry is necessarily less than the marginal cost.

[2] "EPA Finalizes 2013 Renewable Fuel Standards to Help Promote American Energy Independence, Reduce Carbon Pollution / EPA also announces steps to address concerns about the E10 blend wall," EPA press release, August 6, 2013, available at archive.epa.gov/epapages/newsroom_archive/newsreleases/02592be566ba346685257bbf005a7db2.html. See also, Gabriel E. Lade, C.-Y. Cynthia Lin Lawell, and Aaron Smith, "Policy Shocks and Market-Based Regulations: Evidence from the Renewable Fuel Standard," *American Journal of Agricultural Economics*, v. 100, n. 3, pp. 707-731.

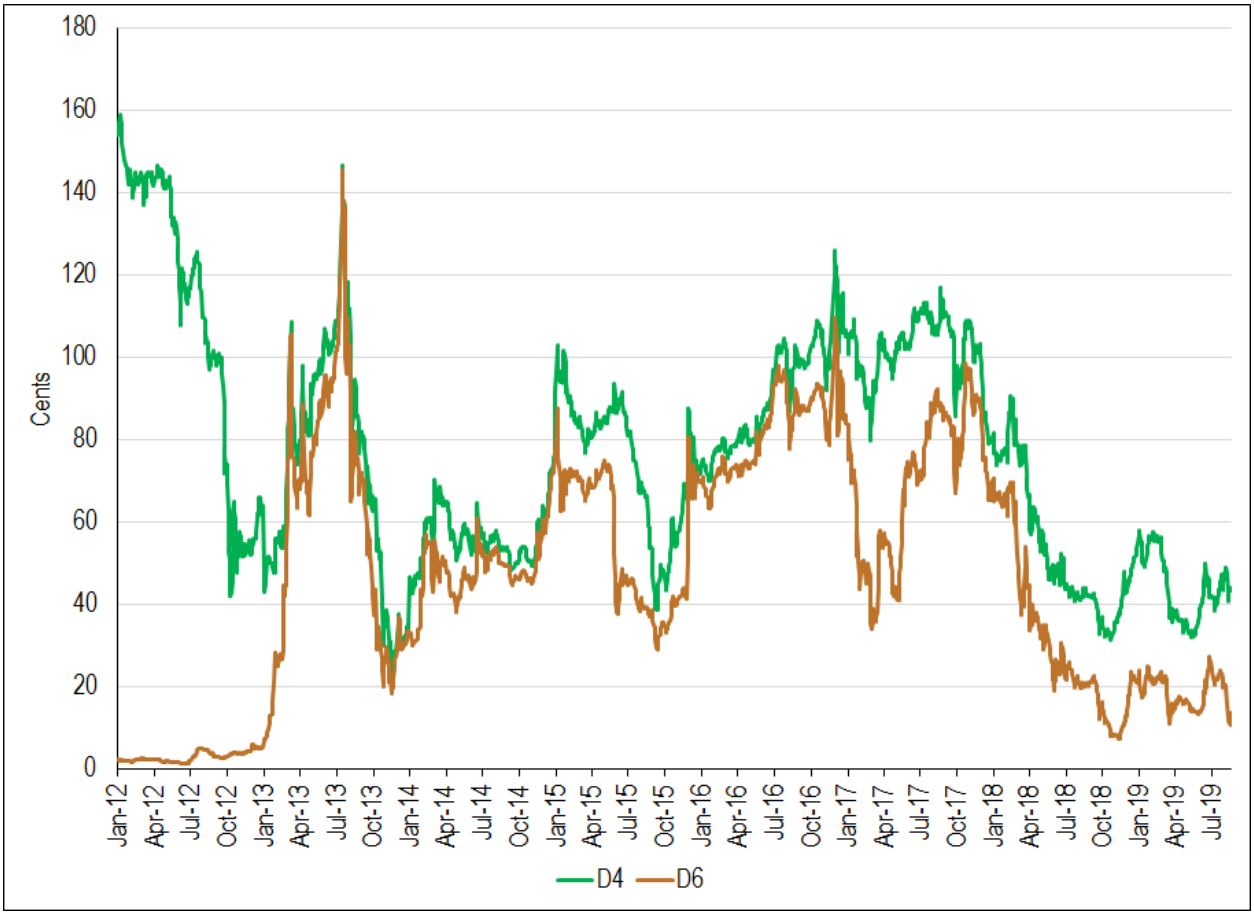
Ultimately, RIN prices are determined by EPA's policies—that is, EPA has the ability to choose the level of RIN prices through its decisions regarding RVOs and the various exemptions and waivers. Moreover, since the RIN market is forward looking, due to the banking and deficit provisions, EPA can recalibrate by adjusting RVOs or waivers in the next year if the RVOs in a particular year turn out to be difficult for industry to meet.

This paper summarizes the relationship between EPA's recent policies regarding RVOs/SREs and the RIN market, as well as current marketplace conditions. This analysis demonstrates that, as of mid-2019, the conditions are such that the RFS is no longer a binding constraint with respect to conventional biofuels. Under these circumstances, the industry will not be incentivized to increase E85 or E15 sales above currently modest levels. However, an increase of the implied conventional RVO for 2020 by 1 billion gallons—from 15 billion to 16 billion—would ameliorate the impacts of the SREs and would be unlikely to cause RIN prices to return even to 2016 levels.

II. The Recent History of EPA Standards, RIN Prices, and Banked RINs

The history of RIN prices and the RIN bank provides context for understanding the relationship between EPA's decisions regarding RVOs and SREs and the marketplace outcomes. Figure 1 shows daily prices for biomass-based diesel (BBD) D4 RINs and conventional D6 RINs.

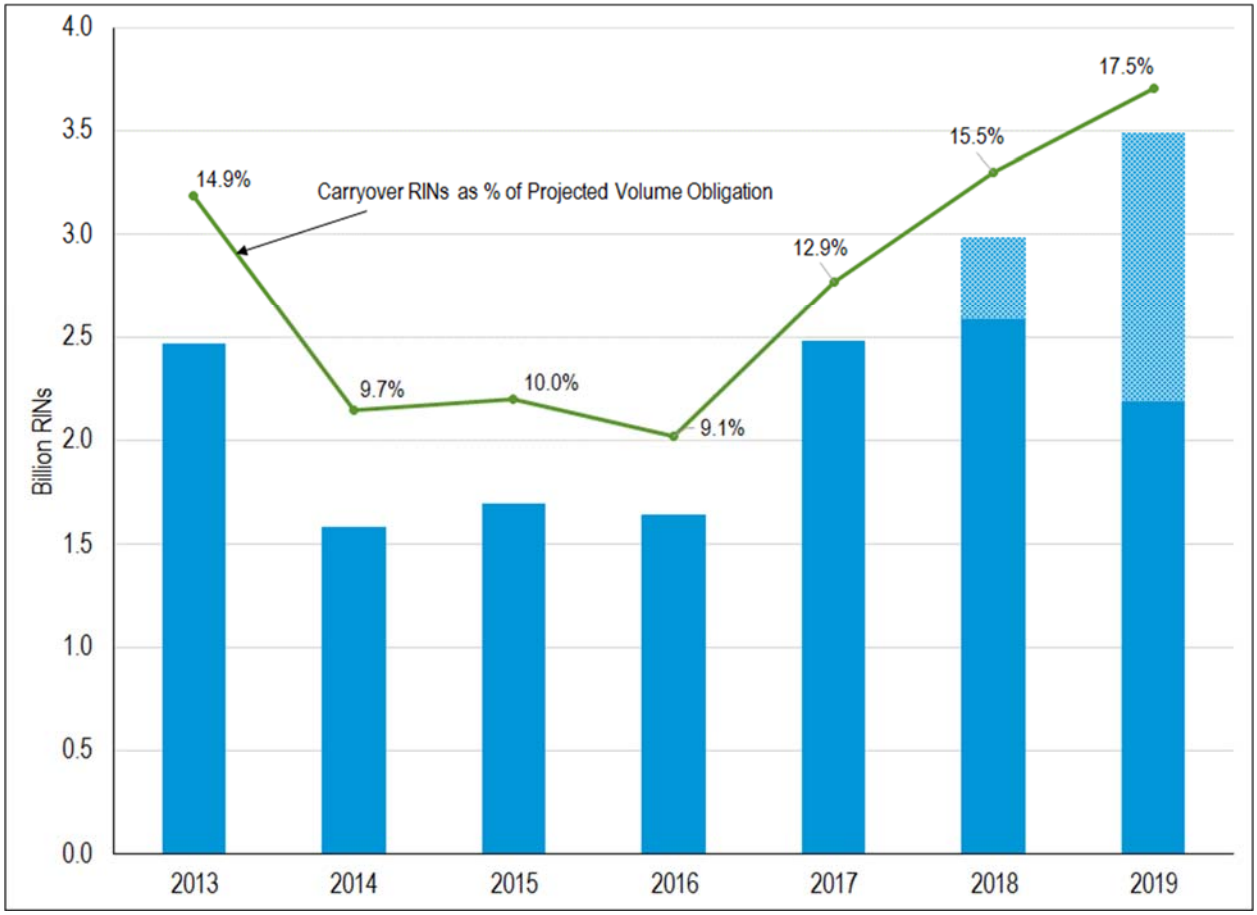
Figure 1
D4/D6 RIN Prices
January 2012 – August 2019



Source: OPIS.

This history indicates three general regimes. During the first regime, prior to 2013, fuel producers were able to fulfill their requirements for gasoline by blending ethanol up to a ratio of 10 percent (E10). Ethanol provides benefits as an oxygenate additive and has been priced competitively with gasoline on a volumetric basis. Thus, during this early period, the requirements of the RFS with respect to conventional biofuels imposed a negligible burden on the industry, as reflected by the near-zero D6 RIN prices. Moreover, since the conventional RVOs during this period fell below the 10-percent blendwall, obligated parties were able to bank a substantial number of RINs. As shown in Figure 2, 2.5 billion carryover RINs had been accumulated by 2013, equivalent to about 15 percent of the total RVO at that time.

Figure 2
Carryover RINs
EPA Calculations Through 2017 Plus Edgeworth Economics Estimates for 2018/2019



Notes: The darker shaded columns represent EPA's figures as reported in November 2018 (for 2013 through 2018) and May 2019 (for 2019). EPA's estimates for 2018 and 2019 do not include the impacts of SREs which were granted retroactively after the dates when the calculations were prepared. The lightly-shaded areas represent Edgeworth Economics estimates of those impacts (see Section IV, below, for a description of the methodology).

Sources: "Carryover RIN Bank Calculations for 2019 Final Rule," EPA Memorandum, November 7, 2018, Docket No. EPA-HQ-OAR-2018-0167; "Carryover RIN Bank Calculations for 2020 NPRM," EPA Memorandum, May 20, 2019, Docket No. EPA-HQ-OAR-2019-0136; and Edgeworth Economics calculations.

The second period began around early-2013 when ethanol blending rates in gasoline neared the 10-percent blendwall.[3] Some other method of compliance, in addition to E10, therefore became necessary to achieve the more stringent requirements imposed by the statute. In general, the options for meeting the conventional RVOs could include blending ethanol into gasoline at a greater ratio than 10 percent—i.e., E15 or E85—or increasing consumption of non-conventional renewable fuels, such as BBD, which offset conventional obligations due to the nested structure of the RFS requirements. E15 sales have been limited due to other regulatory constraints. Thus, the primary available options have been E85 and non-conventional biofuels, both of which historically have required non-zero RIN prices to incentivize production

[3] Scott Irwin, "Small Refinery Exemptions and Ethanol Demand Destruction," *farmdoc daily*, v. 8, n. 170, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 13, 2018.

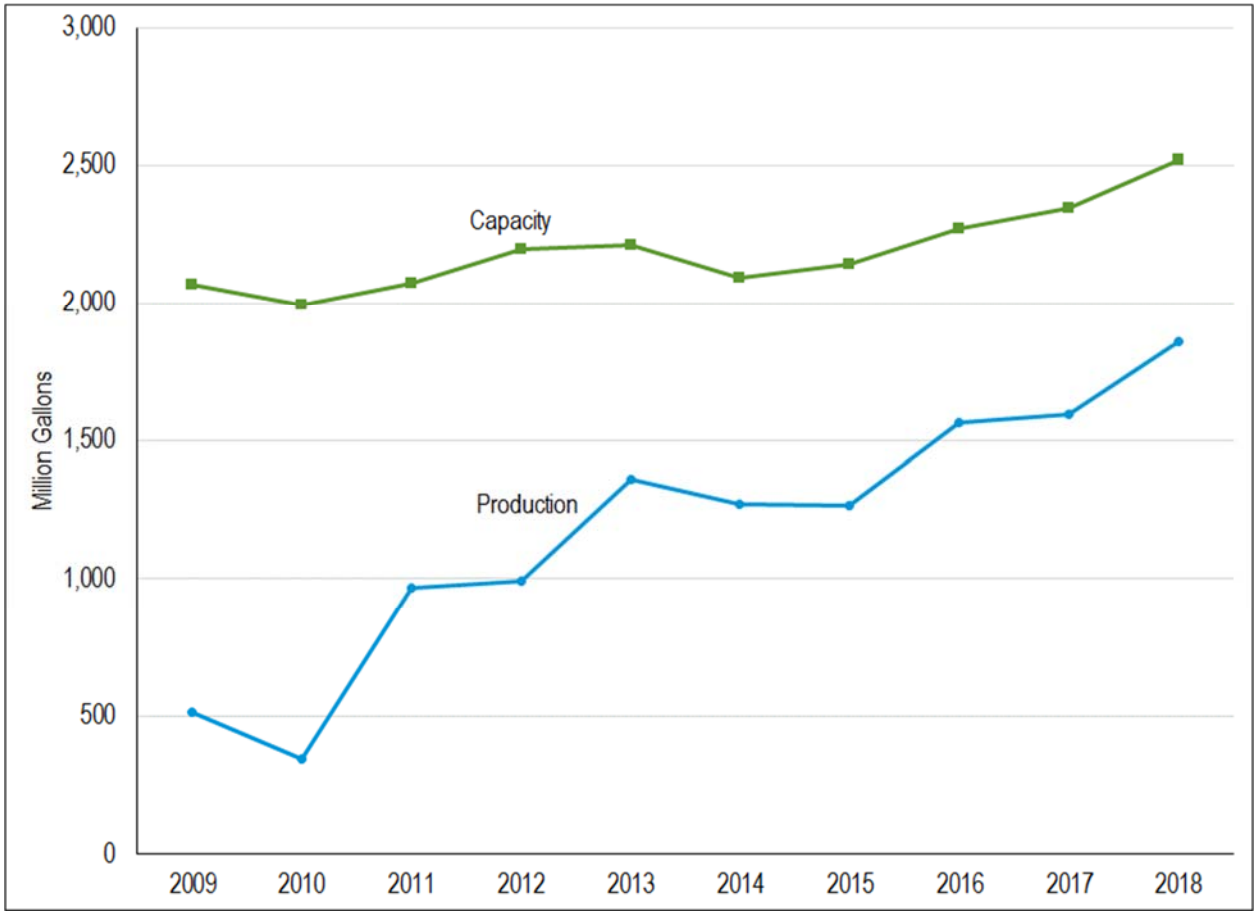
and consumption. In addition, drawing down the RIN bank has always provided another potential means of compliance.

As shown in Figure 1, above, as the blendwall was reached around early-2013, D6 RIN prices increased rapidly. The extent of that increase was driven by the relative costs for the industry to comply with the conventional requirements through means other than E10, as well as the expectation of such costs in future years. The subsidy necessary to incentivize BBD production—i.e., the D4 RIN price—has generally remained below $1.00, averaging $0.72 since January 2013. Given historic ethanol and gasoline prices, this level has been somewhat below the level needed for E85 to attain parity with conventional gasoline on an energy-adjusted basis.[4] Thus, while E85 sales did increase modestly from 2012 to 2013—by about 100 million gallons—those quantities still represented a very small portion of overall motor fuel consumption (less than 0.2 percent).[5] Instead, the marginal compliance method for the conventional requirement became BBD, as evidenced by the synchronization of D6 RIN prices with D4 prices beginning around February 2013. BBD production increased more significantly in 2013, by about 370 million gallons relative to 2012 (see Figure 3). Obligated parties also utilized banked RINs to achieve compliance, as shown in Figure 2, above.

[4] See, for example, Jarrett Whistance, Wyatt Thompson, and Pat Westhoff, "Are RIN Prices High Enough for E85 Expansion?" FAPRI-MU Bulletin 01-15, University of Missouri, January 14, 2015; and Gabriel E. Lade, Sébastien Pouliot, and Bruce A. Babcock, "E15 and E85 Demand Under RIN Price Caps and an RVP Waiver," CARD Policy Brief 18-PB-21, Iowa State University, March 2018.

[5] U.S. Energy Information Administration, Annual Energy Outlook, Table: Petroleum and Other Liquids Supply and Disposition.

Figure 3
Biodiesel Production and Capacity
2009 – 2018



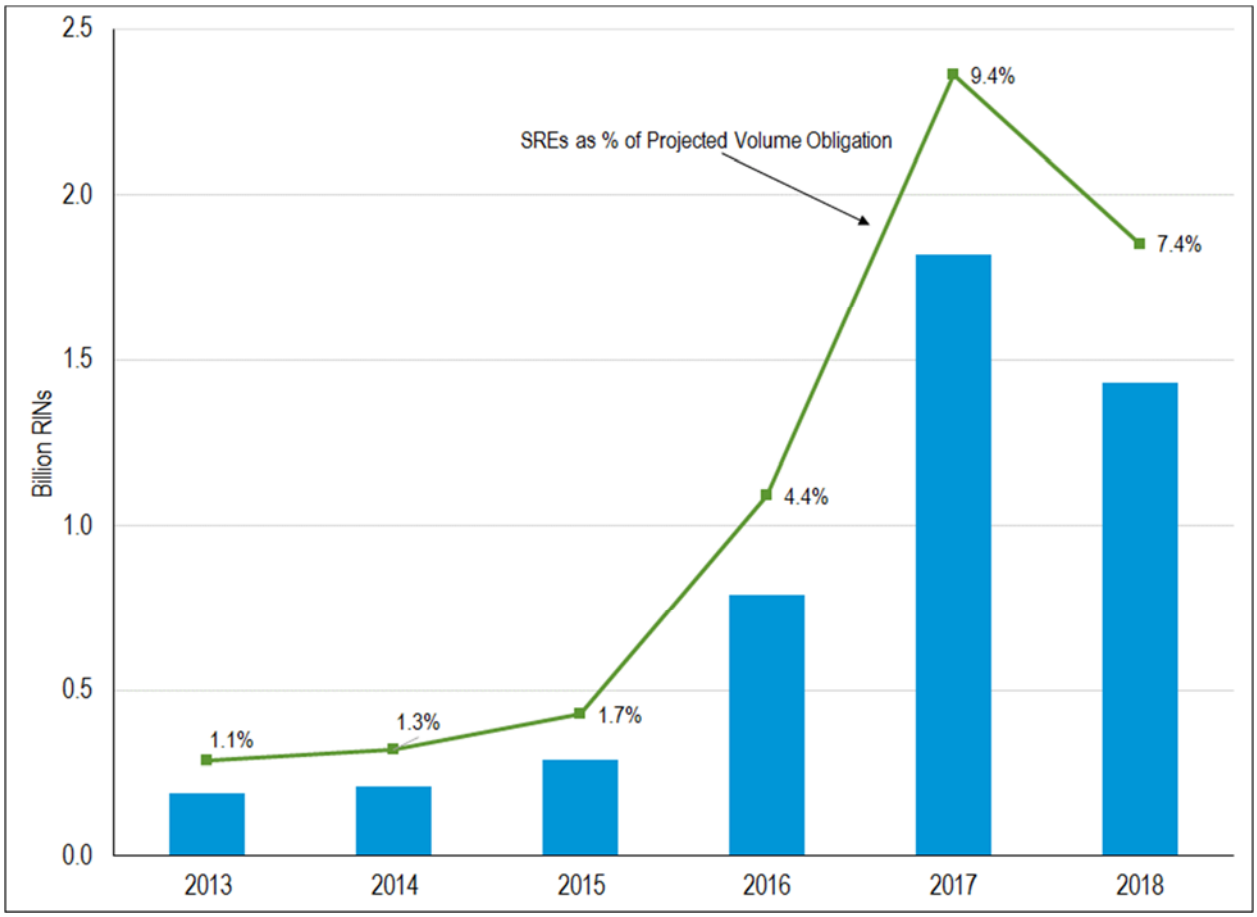
Source: U.S. Energy Information Administration, Form EIA-22M, "Monthly Biodiesel Production Survey."

The conditions remained generally stable for the next three years. As shown in Figure 1, above, the prices of D4 and D6 RINs remained closely linked through 2016—the difference averaged less than 10 percent during 2016. This indicates that BBD remained the marginal method of compliance for the conventional requirements. The RIN bank remained approximately unchanged at about 9-10 percent of the overall RVOs during this period (see Figure 2, above).

The third regime appears around early-2017. At this time, EPA began to increase substantially its granting of SREs, including retroactive SREs for 2016. As shown in Figure 4, for 2016 and 2017 combined, EPA increased exemptions by approximately 2 billion RINs, relative to 2015 levels. This caused a break in the linkage between D4 and D6 RINs. D6 RIN prices declined substantially in early-2017, both in absolute

terms as well as in relation to D4 RIN prices.[6] From January 2017 through mid-August 2019, D6 RINs have sold at an average of a 44-percent discount relative to D4 RINs. This indicates that the RVOs for conventional biofuels are no longer binding, although gasoline blending rates have been maintained near 10 percent due to the value of ethanol as an additive.[7] D6 RIN prices fell as low as $0.07 as of late-2018, the lowest level since 2013, and the RIN bank once again expanded as obligated parties began to generate excess RINs (see Figure 2, above).

Figure 4
Small Refinery Exemptions
2013 – 2018



Source: EPA website, www.epa.gov/fuels-registration-reporting-and-compliance-help/rfs-small-refinery-exemptions.

[6] EPA first began notifying refiners of a change in SRE policy at least as early as May 2017, and news of specific exemptions began to become public around April 2018. It is likely, however, that the market's expectations impacted RIN prices earlier. See, for example, Jarrett Renshaw, "Exclusive: Trump EPA did not await court ruling to loosen biofuel rules for refiners – documents," Reuters, May 16, 2019, available at www.reuters.com/article/us-usa-epa-biofuels-exclusive/exclusive-trump-epa-did-not-await-court-ruling-to-loosen-biofuel-rules-for-refiners-documents-idUSKCN1SM13Z.

[7] Scott Irwin, "Small Refinery Exemptions and Ethanol Demand Destruction," *farmdoc daily*, v. 8, n. 170, University of Illinois at Urbana-Champaign, September 13, 2018.

III. The Impact of Small Refinery Exemptions

The analysis above illustrates the dramatic effect of EPA's policies with respect to SREs, which have returned the industry to essentially the position it maintained as of early-2013, prior to reaching the blendwall. As shown in Figure 4, above, from 2013 to 2015 SREs averaged only about 0.2 billion RINs per year. In contrast, SREs granted (largely retroactively) for 2016 and 2017 totaled about 2.6 billion RINs, with 1.8 billion RINs granted for 2017 alone. The 2017 figure represented almost 10 percent of the overall volume requirement. The recently granted exemptions for 2018 again exceeded 1.0 billion RINs—1.43 billion according to EPA's latest information release.

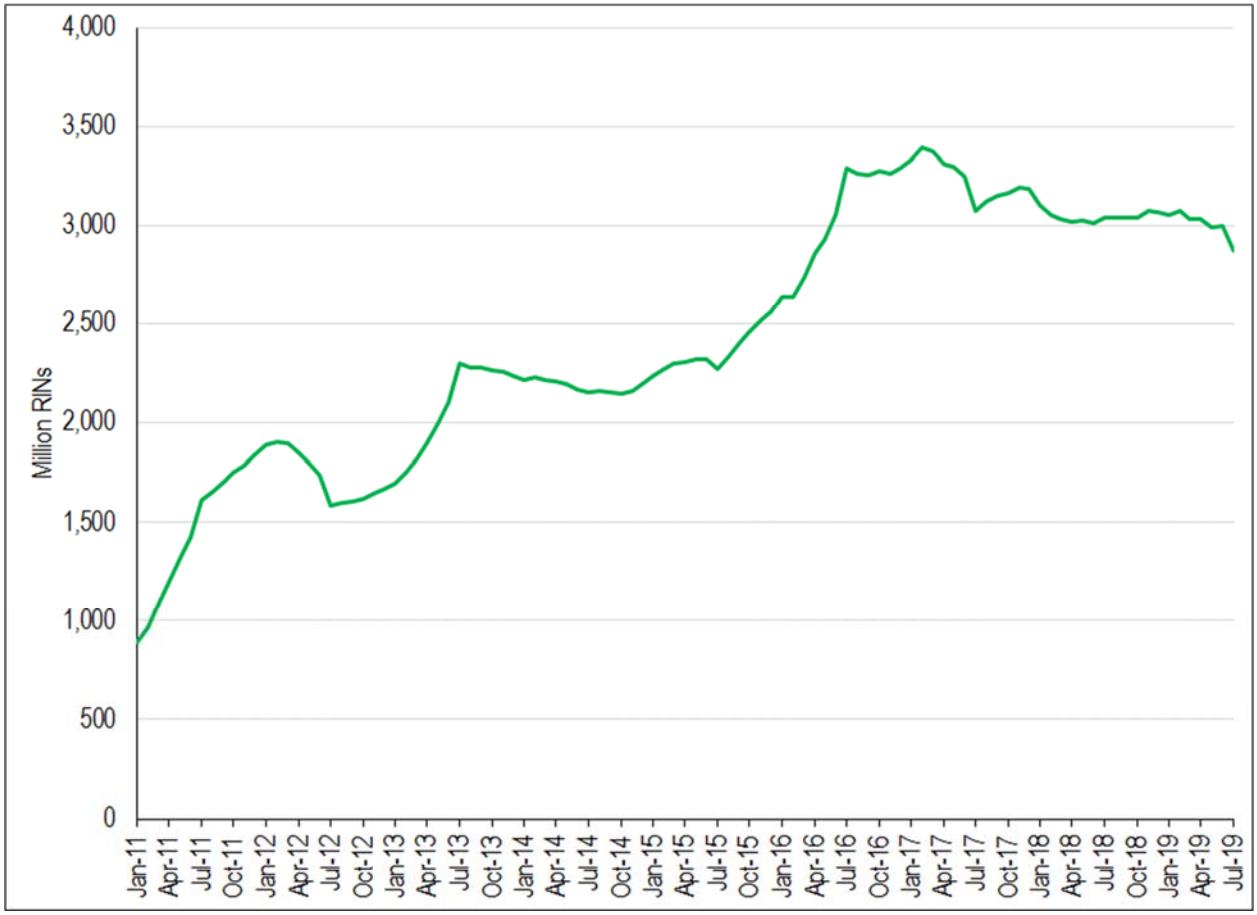
Because EPA has not reallocated exempt volumes, the exemptions effectively reduce the RVOs one-for-one. That is, under EPA's implementation of the SRE program, an exemption that reduces a refiner's obligation by one gallon of biofuel has largely the same impact on the overall marketplace as a reduction of the industry-wide obligation by one gallon. The only differences relate to the timing and the distribution of the burden of compliance.

In a series of papers published in 2018 and 2019, University of Illinois researcher Scott Irwin has shown that the reduced obligations caused by the recent exemptions were accommodated primarily by a reduction in BBD consumption and additions to the RIN bank.[8] Irwin calculates that demand for BBD in 2017 was reduced by 739 million gallons due to SREs. Figure 5 shows that, after several years of increases, D4 RIN generation from BBD has declined since early-2017. As described above, conventional ethanol blending in E10 was largely unaffected, due to the incentives to include ethanol as an oxygenate additive. The decline in RIN values, however, nonetheless adversely affected ethanol demand by reducing the incentive to sell E85.[9] The remaining impact likely was absorbed by the RIN bank, which expanded by almost 1 billion from 2016 to 2017 (see Figure 2, above).

[8] Scott Irwin, "Small Refinery Exemptions and Biomass-Based Diesel Demand Destruction," *farmdoc daily*, v. 9, n. 45, University of Illinois at Urbana-Champaign, March 14, 2019; and Scott Irwin, "Small Refinery Exemptions and Ethanol Demand Destruction," *farmdoc daily*, v. 8, n. 170, University of Illinois at Urbana-Champaign, September 13, 2018.

[9] As noted above (see footnote 4), incentivizing a large percentage of consumers to switch from E10 to E85 would require a consistent RIN subsidy sufficient to cause E85 prices at retail to maintain a level at least with energy-parity to E10. Some consumers, however, have demonstrated a preference for E85 even when the fuel is priced above E10 on an energy-equivalent basis. For this reason, E85 sales grew steadily until 2017 even though D6 RIN prices fluctuated and generally have remained below the level required for E85-E10 price parity on an energy-adjusted basis.

Figure 5
Monthly D4 RIN Generation from BBD (Annualized), 12-Month Moving Average
January 2011 – July 2019



Source: EPA website, www.epa.gov/fuels-registration-reporting-and-compliance-help/rins-generated-transactions.

As shown in Figure 1, above, after the SREs for 2016 and 2017 were granted, D6 RIN prices dropped almost to zero—hitting a low of $0.07. Although prices subsequently increased modestly, reaching $0.27 in June 2019, they dropped again to about $0.10 (and remain near that level at the time of the preparation of this report) as EPA announced the proposed 2020 volume requirements and then the 2018 SREs. In fact, following EPA's announcement of the 2018 exemptions, D6 RIN prices experienced their largest ever three-day decline in percentage terms (41 percent). Given that EPA has reduced the conventional biofuel requirement, net of exemptions, below the blendwall, the only reason D6 RIN prices are not literally zero (or closer to zero as occurred prior to 2013) is that there remains some uncertainty about EPA's decisions with respect to RVOs and SREs going forward.

If EPA continues to set the RVO for conventional ethanol in the range of 10-11 percent of overall gasoline demand, and further continues to issue SREs representing 10 percent or more of the conventional RVO (equivalent to at least 1 percent of overall gasoline demand) without reallocating or otherwise requiring makeup of those exempt volumes, then the effective conventional requirement will remain below the blendwall. This will eliminate any incentive to increase conventional biofuel production and consumption, leading to continued increases in the RIN bank and neutering the original policy mandate. This approach may not cause a substantial decline in ethanol blending in E10, due to the value of ethanol as an

oxygenate additive. This policy, however, does eliminate any incentive to increase E85 sales, and therefore to increase ethanol consumption more generally, so long as penetration of E15 remains limited due to other regulatory or industry constraints.[10]

IV. The Impact of EPA's Policies Regarding the RIN Bank

In the Final Rule for 2019, EPA states, as it has in previous years, that "a significant drawdown of the carryover RIN bank leading to a scarcity of RINs may stop the market from functioning in an efficient manner."[11] EPA cites the potential for a lack of a "sufficient number of reasonably available RINs for obligated parties seeking to purchase them." It is unclear how EPA reaches this conclusion, since the RIN market was designed to equilibrate supply and demand and all evidence indicates it has been functioning properly in that regard.[12] Moreover, EPA retains a variety of mechanisms to adjust the market if RIN prices increase to a level deemed unacceptable, including exemptions, waivers, and subsequent year RVOs.

In the 2019 Final Rule EPA further concludes that it would "not set the 2019 volume requirements at levels that would envision an intentional drawdown in the bank of carryover RINs."[13] Again, this is the same approach EPA has taken in previous years.[14] EPA, however, provides no analysis of what level of RIN bank *would* be "sufficient" to allow a drawdown (other than noting that the statutory carryover limit has not been reached). Thus, the Agency has imposed a ratchet. Under its stated approach, the size of the RIN bank can only increase, barring substantial unexpected changes in the marketplace. As shown in Figure 2, above, that is precisely what has occurred over the last three years.

In the recently issued 2020 NPRM, EPA states the same intention for the 2020 rule—namely, that the Agency will not set requirements based on an expectation of an "intentional drawdown in the bank."[15] EPA justifies this approach, in part, by citing an alleged "400 million RIN decrease in the total carryover RIN bank compared to that projected in the 2019 final rule." EPA asserts that this reduction occurred "despite…the millions of RINs that were not required to be retired by small refineries that were granted hardship exemptions in recent years."

EPA's statements, however, do not present an accurate picture of the changes in the RIN bank over time. A more accurate picture is found in Figure 2, above: net of exemptions, the RIN bank grew from about 1.6 billion in 2016 (i.e., 2015 carryover RINs), to about 2.5 billion in 2017—the year following the first year for which EPA granted a high volume of exemptions—then to about 3.0 billion in 2018, and finally to about 3.5 billion in in 2019. Over that period, not only did the size of the bank grow on an absolute basis, but it also has constituted an increasing percentage of the total volume obligation, rising from 9.1 percent to 17.5 percent. EPA's statements do not address the growth in the bank from 2016 to 2017 and further do not

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[10] EPA's recent extension of the 1-psi Reid Vapor Pressure ("RVP") waiver for E15 eliminates a significant constraint on E15 expansion. The extent to which other constraints, such as state-level regulations and the requirement for investment in new equipment, may continue to limit E15 expansion remains to be seen.

[11] 83 Fed. Reg. 237 (December 11, 2018) at 63,709. See also, 82 Fed. Reg. 237 (December 12, 2017) at 58,493-494.

[12] See, for example, "Economic Issues Associated with a Change of the RFS Point of Obligation," Edgeworth Economics, February 22, 2017, filed with Supplemental Comments by Growth Energy, Archer Daniels Midland, and Biotechnology Innovation Organization on EPA's Proposed Renewable Fuel Standard Program: Standards for 2018 and Biomass-Based Diesel Volume for 2019, Docket # EPA–HQ–OAR–2017-0091.

[13] 83 Fed. Reg. 237 (December 11, 2018) at 63,710.

[14] 82 Fed. Reg. 237 (December 12, 2017) at 58,493-494.

[15] 84 Fed. Reg. 145 (July 29, 2019) at 36,768.

accurately represent the size of the bank in both 2018 and 2019. Although EPA reported in November 2018 that there were about 2.6 billion 2017 RINs available in 2018, more recent reporting by EPA indicated that about 3.0 billion 2017 RINs were used for compliance in 2018 (net of 2017 deficits), and thus the bank in 2018 must have had at least that many 2017 carryover RINs.[16] Similarly, in a May 2019 memo accompanying the 2020 NPRM, EPA stated that there are about 2.2 billion 2018 carryover RINs available for compliance in 2019, but that does not account for the 1.43 billion RINs EPA subsequently exempted for 2018.[17] Because at least 80 percent—and likely more than 90 percent—of those exempt RINs will be unretired and thus added to the bank, we assume that there will be about 3.5 billion 2018 carryover RINs available for compliance in 2019.[18] In sum, after accounting for all SREs granted to date, we estimate that the bank has increased by about half a billion RINs in each of the last two years.

Combined with the impact of the increase in exemptions, EPA's "ratchet" approach to the RIN bank has resulted and will continue to result in a value for D6 RINs of essentially zero. As described above, D6 RIN prices are currently above zero due only to the carryover provision combined with uncertainty about EPA's policy stance in future years. EPA's current approach, under which the RVOs and SREs combine to bring requirement for conventional biofuels below the blendwall, completely eliminates any incentive for increasing E85 consumption or using any of the other pathways to increase ethanol consumption. Moreover, since the conventional requirements are no longer binding for the industry, i.e., E10 alone is once again sufficient to reach full compliance, BBD is no longer the marginal fuel for meeting the conventional standard. Continuing the present course therefore is likely to cause BBD production and D4 RIN generation to fall further, as well.

V. Considerations Related to Biomass-Based Diesel

Given that marketplace conditions have resulted in the utilization of BBD as the marginal compliance method for the conventional standard in recent years, it is important to consider the extent to which an increase in the implied conventional RVO would cause an increase in BBD production, as opposed to increases in ethanol production, and further the impact of such increases in terms of environmental benefits as well as costs.

Based on discussions with EPA personnel and apparent positions indicated in some of EPA's publications, we understand the Agency is concerned that increasing the conventional RVO above the blendwall has and will continue to cause increases in the consumption of BBD rather than of ethanol or other renewable fuels. For example, in its 2019 Statutory Factors Assessment, EPA states that compliance with the RFS requirements using BBD, as opposed to other biofuels, leads to less "favorable" outcomes with respect to

[16] In its May 2019 memorandum, EPA stated that 3.7 billion 2017 RINs were retired for compliance in 2018. In a November 2018 memorandum issued with the 2019 Final Rule, EPA stated that there was a 2017 compliance deficit of about 700 million RINs.

[17] EPA announced SREs for 2018 on August 9, 2019. "EPA Announces Biofuel and Small Refinery Exemption Priorities," EPA press release, August 9, 2019, available at www.epa.gov/newsreleases/epa-announces-biofuel-and-small-refinery-exemption-priorities.

[18] In prior years, EPA performed the exercise of updating historical calculations for the RIN bank. For example, EPA's memo supporting its RIN bank estimates for the 2019 Final Rule (published November 7, 2018) included calculations of carryover RINs available for 2013 through 2017, as well as a projection for 2018. While following an otherwise similar format, EPA's memo for the 2020 NPRM (published May 20, 2019) eliminated that section. It would be helpful if EPA returned to its practice of updating historical RIN bank calculations in the course of setting annual volume requirements.

environmental considerations as well as costs.[19] EPA's position appears to be that increases in the RVOs are problematic specifically because they would cause BBD production to rise, rather than incentivizing compliance through other methods. This position raises multiple concerns.

First, EPA's approach to evaluating the societal cost of BBD consumption raises a concern with respect to the $1.00-per-gallon tax credit that Congress has granted BBD producers. EPA calculates the relative costs of the various biofuels by measuring production costs at the wholesale stage, which the Agency asserts to represent "the approximate costs to society absent transfer payments."[20] EPA's approach therefore excludes the tax credit from the calculation. This is problematic. Presumably, Congress has designated the tax credit for BBD because it deems that production and consumption of that type of biofuel must provide societal benefits that (at least) offset the cost to the Treasury.[21] EPA's calculations, however, ignore any such benefits. By excluding the tax credit from its calculation of societal costs in its assessment and determination of the RVOs, EPA has, in effect, disadvantaged BBD relative to other biofuels, thereby undermining the intent of Congress with respect to the purpose of the tax credit.

Another issue relates to the ability of the marketplace to continue to provide increased BBD production to meet the rising RVOs over time. Available production capacity represents a constraint on the amount of BBD consumption that potentially could be used to comply with the conventional requirements. As shown in Figure 3, above, prior to reaching the blendwall in 2013, BBD capacity exceeded production by about 1.2 billion gallons, for a utilization factor of about 45 percent. That gap fell approximately in half as of 2018—to about 0.7 billion gallons—with utilization rising to about 75 percent. As the industry further approaches full utilization of available capacity, the marginal cost of production increases. This disadvantages BBD as a compliance option for the conventional standard (as well as for the requirements for other biofuels for which BBD represents a compliance option) relative to other biofuels, for example ethanol as a component of E85. Thus, going forward, increases in the conventional RVO or other RVOs within the conventional nesting structure will increasingly be met by options other than BBD. It is likely that E15 and/or E85 will become more significant components of the overall compliance strategy as increases in the required volumes push the industry closer to full utilization of existing BBD capacity and cause a drawdown of the RIN bank.

VI. The Impact of an Increase in the 2020 Implied Conventional RVO Above 15 Billion Gallons

Assuming fuel demand conditions in 2020 similar to 2019, setting an implied conventional RVO for 2020 between 10 and 11 percent (such as set by EPA in each year from 2016 through 2019) combined with continuing the issuance of SREs on the order of 1.5 billion (as EPA has for 2017 and 2018) without any reallocation or other makeup of exempt volumes, will result in a net requirement for conventional fuels in 2020 that will fall well below the blendwall. As described above, this will eliminate any incentive to increase ethanol consumption through means other than E10 and will further reduce the incentive to produce and

[19] "Final Statutory Factors Assessment for the 2020 Biomass Based Diesel (BBD) Applicable Volume," EPA Memorandum, December 11, 2018, Docket No. EPA-HQ-OAR-2018-0167.

[20] "Cost Impacts of the Final 2019 Annual Renewable Fuel Standards," EPA Memorandum, December 11, 2018, Docket No. EPA-HQ-OAR-2018-0167.

[21] In the 2019 Final Rule, EPA notes that the biodiesel tax credit had not yet been extended by Congress and further considers the "possible impact of the expiration" of the credit. In fact, Congress recently did extend the credit and applied it retroactively back to December 31, 2017, just as it has done in most years since the initiation of the policy.

sell BBD and other non-conventional biofuels. However, if the conventional RVO for 2020 instead were set at a higher level, the impact of the SREs could be mitigated.

The recent history of the RFS regulation and RIN marketplace provides context for evaluating the impact of an increase in the RVO for 2020. In particular, the reaction of the industry to EPA's policies in 2017 provides a useful benchmark for this scenario. SREs granted for 2017 exceeded those granted from 2013 through 2015 by about 1.5 billion gallons. Prior to those grants (i.e., in 2016), D6 RIN prices were relatively stable in the range of about $0.70 to $1.00 and the RIN bank was stable at about 1.6 billion. Increasing the conventional RVO for 2020 by 1 billion gallons (and assuming no significant change in the granting of SREs) would cause a partial reversal of the impacts of the 2017 policy changes. The results of such a policy would include primarily a drawdown of the RIN bank and an increase in BBD consumption.[22]

It is unlikely that this policy initially would lead to a large increase in overall ethanol consumption, since BBD likely would remain the marginal compliance option in the near term. D6 RIN prices therefore would continue to be capped by the incremental cost to produce BBD. Since BBD production is still below capacity (see Figure 3, above), that cost likely would be no more than the D6 RIN price as of 2016—i.e., below the range of approximately $0.70 to $1.00. However, to the extent some consumers are sensitive to prices below energy-parity, raising D6 RIN prices modestly above current levels would add a small incentive to reverse the decline in E85 sales.

The cost of this policy would be modest. Consider a scenario in which EPA raised the 2020 conventional RVO back above the blendwall, net of SREs, by 0.5 billion gallons. This would cause D4 and D6 RIN prices to again become synchronized. Given the larger size of the RIN bank at present, compared to 2013-2016, it is likely that RIN prices would, at least until significant drawdown, stabilize well below the prior level. For the purpose of this calculation, assume that level was $0.50. Further assuming the entirety of the excess compliance requirement was met by additional BBD consumption, the incremental cost of that policy would be no more than about $250 million (0.5 billion × $0.50). Distributed across total gasoline sales of about 143 billion gallons[23], that cost would represent a change in fuel prices of only about 0.17 percent, or less than 0.5 cents per gallon. If that cost was spread across the total pool of gasoline plus diesel (about 201 billion gallons), the average increase in fuel prices would be lower—about 0.12 percent. To the extent that compliance with the incremental increase in requirements was met with some drawdown of the RIN bank and/or increase in ethanol consumption through additional E85 and/or E15 sales, then the overall cost could be even lower.[24]

In summary, given the extent of the exemptions granted, EPA's recent policy of disregarding SREs in its process of setting the conventional RVO has effectively eliminated the incentives for increasing consumption of conventional biofuels. If EPA continues to grant SRE extensions at current levels without reallocation or otherwise making up the exempt volumes, raising the conventional RVO above the

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[22] For comparison, note that the conventional RVO for 2018 of 15.0 billion combined with the grant of 1.4 billion SREs resulted in a net increase in the RIN bank of about 0.5 billion relative to the prior year. Increasing that RVO to 16.0 billion, while maintaining all other policies, therefore would be likely to cause a reduction in the RIN bank by approximately 1.0 billion relative to the impact of the existing proposal, resulting in a reduction of 0.5 billion relative the current size of the bank

[23] EIA, Annual Energy Outlook 2019, Table 11, value for 2020, available at www.eia.gov/outlooks/aeo/data/browser/#/?id=11-AEO2019&cases=ref2019&sourcekey=0.

[24] Large increases in E85 consumption are unlikely to occur unless D6 RIN prices reach, or perhaps exceed, a level that provides energy-parity with E10. However, historically there has been some consumer demand for E85 even when priced above parity due to the small segment of consumers that are relatively price-insensitive to E85 (including, for example, government fleets mandated to use E85). Thus, increases in ethanol consumption are likely to provide some part of the overall industry compliance strategy, even when D6 RIN prices remain at or below the marginal cost of increased BBD production.

blendwall is necessary to allow the regulation to continue to incentivize increases in biofuel consumption, consistent with the original intent of the statute.