

## 2013 Report on Ethanol Market Concentration

### I. Introduction

This report presents the Federal Trade Commission's ("Commission" or "FTC") concentration analysis of the ethanol production industry for 2013. Section 1501(a)(2) of the Energy Policy Act of 2005 requires the FTC ~~year~~ to "perform a market concentration analysis of the ethanol ~~com~~ industry using the Herfindahl-Hirschman Index to determine

2012, the level of concentration in the U.S. ethanol industry in 2013 is essentially unchanged. Three of the six HHIs for 2013 are lower (ranging from 4 to 22 points lower), one of the 2013 HHIs is one point higher, and two of the 2013 HHIs are the same.

The level of concentration and the large number of market participants in the U.S. ethanol production industry suggest that exercise of market power to set prices or coordination on price or output levels is unlikely. As has been the case each year since the Commission began reporting, each of the 2013 HHIs indicates that the industry is unconcentrated. At this level of concentration, a single ethanol producer or marketer lacks market power. Successful anticompetitive coordination would require agreement among a very large number of producers and thus would be unlikely. Import and ease of entry would also act as a serious impediment to the exercise of market power by any group of domestic firms.

## II. Recent Industry Developments

Since 2005, Congress has required the domestic consumption of a minimum annual volume of renewable fuels, including ethanol blended into motor fuels (also known as fuel ethanol)<sup>5</sup>. The Energy Policy Act of 2005 originally established this minimum, the Renewable Fuel Standard ("RFS"), and set out estimated annual requirements for 2006 through 2012. In the Energy Independence and Security Act of 2007, Congress amended the RFS, significantly increasing the volume minimums – including the 2013 requirement of 16.55 billion gallons – and

The EPA uses Renewable Identification Numbers (“RINs”) to track compliance with the RFS. A unique RIN is assigned to each gallon of ethanol produced in or imported into the United States. Refiners or importers, as obligated parties under the statute, can meet RFS requirements by (1) blending ethanol themselves or (2) purchasing RINs (from another blender) generated in that year and the previous year. Up to 20 percent of the total renewable RFS requirements for a given year can be met with RINs generated in the previous year.

Ethanol demand has increased each year since the FTC’s first Report on Ethanol Market Concentration in 2005.<sup>8</sup> The industry blended 12.8 billion gallons of ethanol between July 2012 and June 2013, compared to 12.7 billion gallons blended in the prior 12 months.<sup>9</sup> However, ethanol consumption was below the RFS-mandated level for 2012 of 15.2 billion gallons. To meet the 2012 RFS, the industry used carryover RINs for the first time.<sup>11</sup> The industry will likely need to draw from banked RINs to meet the 2013 RFS.<sup>12</sup> Based on projections for future ethanol consumption, the EPA anticipates that it will need to adjust the 2014 RFS downward.<sup>13</sup>

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<sup>8</sup> See Department of Energy’s Energy Information Administration (“EIA”), Today in Energy, RINs and RVOs are Used to Implement the Renewable Fuel Standard (June 3, 2013), <http://www.eia.gov/todayinenergy/detail.cfm?id=11511>

<sup>9</sup> See EIA, Annual U.S. Refinery and Blender Net Input of Fuel Ethanol, [http://www.eia.gov/dnav/pet/hist/Leadfinder.ashx?n=PET&s=MFERIUS1&f=\(last modified Mar. 15, 2013\).](http://www.eia.gov/dnav/pet/hist/Leadfinder.ashx?n=PET&s=MFERIUS1&f=(last modified Mar. 15, 2013).)

<sup>10</sup> See EIA, Monthly U.S. Refinery and Blender Net Input of Fuel Ethanol, [http://www.eia.gov/dnav/pet/hist/Leadfinder.ashx?n=pets&s=mferius1&f=\(last modified Aug. 29, 2013\).](http://www.eia.gov/dnav/pet/hist/Leadfinder.ashx?n=pets&s=mferius1&f=(last modified Aug. 29, 2013).)

<sup>11</sup> See EIA, Today in Energy, U.S. Ethanol Production and the Renewable Fuel Standard RIN Bank (June 5, 2013), <http://www.eia.gov/todayinenergy/detail.cfm?id=11551> Prior to 2012, U.S. ethanol production exceeded RFS-mandated levels, resulting in excess RINs that were banked for future compliance.

<sup>12</sup> See EIA, Today in Energy, What Caused the Runup in Ethanol RIN Prices During Early 2013? (June 13, 2013), <http://www.eia.gov/todayinenergy/detail.cfm?id=11671>

<sup>13</sup> See 2013 Renewable Fuel Standards, Fed. Reg. 49794, 49798 (Aug. 15, 2013) (to be codified at 40 C.F.R. pt. 80).

The annual RFS mandate for renewable fuels is increasing faster than the industry's ability to consume higher ethanol-gasoline blends and the growth in demand for gasoline containing 10 percent ethanol ("E10"). Today, nearly all gasoline sold in the United States is E10.<sup>14</sup> In 2012, the EPA approved gasoline blends that have 15 percent et

As in prior years, fuel ethanol prices have been volatile throughout the reported period, leading to wide variations in margins. The industry faced a challenging production environment in the second half of 2012 and first half of

levels increased as a result.<sup>27</sup> The industry anticipates that the corn harvest this year will be abundant, resulting in lower input prices towards the end of this year.<sup>28</sup>

Additional capacity will be necessary to fulfill future RFS requirements, particularly for advanced biofuels (defined as cellulosic ethanol and other biofuels derived from feedstocks other than corn starch).<sup>29</sup> The total volumes of cellulosic production to date have been small as the industry continues to face challenges in developing commercial-scale facilities. Consequently, the EPA has set the cellulosic biofuel volumes for 2013 at a rate significantly below the statutory levels. The EPA anticipates it will reduce the cellulosic biofuel volume for 2014.<sup>30</sup>

### III. Summary of Market Concentration Trends

Domestic ethanol production decreased since last year's Report, while production capacity increased slightly. Domestic ethanol production decreased between eight and nine percent for the July 2012 through June 2013 period, to 12.8 billion gallons from 14.0 billion gallons for the prior 12 months.<sup>31</sup> Domestic ethanol production capacity (including capacity

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<sup>27</sup> See Iowa State University, Agricultural Marketing Resource Center, [supranote 26](#); EIA, Weekly U.S. Oxygenate Plant Production of Fuel Ethanol, [supranote 26](#).

<sup>28</sup> See, e.g. United States Department of Agriculture, World Agricultural Supply and Demand Estimates 1-2 (Sept. 12, 2013), available at <http://www.usda.gov/oce/commodity/wasde/latest.pdf>

<sup>29</sup> See Energy Independence and Security Act of 2007, 42 U.S.C. § 7545(o)(2)(B)(i)(II)-(IV) (2013) (setting specific volume requirements for cellulosic biofuel, biomass-based diesel, advanced biofuel, and total renewable fuel).

<sup>30</sup> See 2013 Renewable Fuel Standards, [supranote 13](#), at 49800-801, 49823.

<sup>31</sup> See EIA, Monthly U.S. Oxygenate Plant Production of Fuel Ethanol, [http://www.eia.doe.gov/dnav/pet/hist/leafHandler.ashx?n=p&s=m&epooxe\\_yop\\_nus\\_1&f=m](http://www.eia.doe.gov/dnav/pet/hist/leafHandler.ashx?n=p&s=m&epooxe_yop_nus_1&f=m) (last modified Aug. 29, 2013). However, cellulosic production increased about 800 percent between 2000 and 2012. See RFA, Battling for the Barrel 2013 Ethanol Industry Outlook 3 (2013), available at <http://ethanolfoundation.org/page/-/PDFs/RFA%202013%20Ethanol%20Industry%20Outlook.pdf?nocdn=1>

under construction) increased slightly to approximately 15.6 billion gallons per year as of September 2013, from approximately 15.5 billion gallons per year as of September 2012.<sup>32</sup>

The number of firms producing ethanol has increased slightly since last year's report. As of September 2013, 156 firms currently produce ethanol, which likely will begin producing ethanol within the next 12 to 18 months, as compared to 154 firms in 2012. The largest ethanol producer's share of domestic capacity is 10.9 percent, a slight decrease from its 11.1 percent share in 2012 and below its share in prior years.<sup>33</sup>

#### IV. Analysis

Section 1501(a)(2) of the Energy Policy Act of 2005 instructs the Commission to measure concentration in the U.S. ethanol production industry using HHIs.<sup>34</sup> HHIs can provide a snapshot of market concentration based upon the number of market participants and their respective sales, production, or capacity.<sup>35</sup> An analysis of competition among market participants using these HHIs assesses that the U.S. ethanol production industry is an appropriate

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<sup>32</sup> These figures take into account information obtained through interviews with market participants and publicly available information, including information from the RFA website. See, e.g., RFA, Biorefinery Locations, <http://ethanolrfa.org/bi-refinery-locations/> (last modified Sept. 7, 2013).

<sup>33</sup> This figure is comparable to the largest producer's capacity share of 11.5 percent share in 2011 and 11 percent in 2008 and 2009. It remains below the largest producer's capacity shares of 16 percent in 2007, 21 percent in 2006, and 26 percent in 2005. See 2012 Ethanol Report, supra note 16, at 9.

<sup>34</sup> Energy Policy Act of 2005 § 1501, 119 Stat. at 1074. A given market's HHI is the sum of the squares of the individual market shares of all market participants. For example, a four-firm market with market shares of 30 percent, 30 percent, 20 percent, and 20 percent has an HHI of 2600 [(30\*30) + (30\*30) + (20\*20) + (20\*20) = 2600]. HHIs range from 10,000 in a one-firm (pure monopoly) market to a number close to zero in a highly unconcentrated market.

<sup>35</sup> The Commission and the U.S. Department of Justice regularly use HHIs to measure concentration in a relevant antitrust market as part of their analysis of the likely effects of a merger or acquisition on competition in that market. See

antitrust market.<sup>36</sup> This assumption precludes consideration of a broader relevant product market that includes other gasoline blending components that might be economically viable and environmentally acceptable substitutes for ethanol in the event that ethanol competes with other blending components, HHIs based on a fuel ethanol market would understate the amount of competition in the industry. This assumption also precludes consideration of a broader or narrower relevant geographic market than the United States that could provide further insight about competition in ethanol.

As in previous years, this report presents six HHIs for the ethanol industry, calculated using two different measures of market share: production capacity and actual production – and three different methods of allocating those market shares. First, staff calculated the market shares based on domestic ethanol production capacity. Staff attributed the producer's market share to: (1) the producer itself; (2) the producer or the third-party firm that actually marketed the producer's ethanol output; and (3) the third-party marketing firm only if that firm marketed the producer's volumes pursuant to a pooling agreement (and, absent such a pooling agreement, to the producer). Second, staff calculated market shares based on actual production, attributing the market shares in the same ways. Due to the confidential nature of the ethanol production data the EIA collects, staff provided to EIA staff the information necessary to

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<sup>36</sup> A relevant antitrust market has both product and geographic aspects. A relevant product market is a product or group of products such that a hypothetical profit-maximizing firm that was the only seller of those products likely could profitably impose at least a small but significant and nontransitory increase in price ("SSNIP"). If such a price increase would not be profitable because of the loss of sales to other products, the product or group of products would not be a relevant product market. Similarly, a relevant geographic market is a region such that a hypothetical profit-maximizing firm that was the only seller of the relevant product in that region likely could impose at least a SSNIP above the competitive level. If such a price increase would not be profitable because of the loss of sales to sellers outside the region, the region would be too narrow to be a relevant geographic market. See Horizontal Merger Guidelines, supra note 35, §§ 4.1-4.2.



allocate market shares<sup>37</sup>. Using the methods described above, EIA staff performed each of the three HHI calculations and provided the resulting production-based HHIs to staff<sup>38</sup>. Staff relied on publicly available information and interviews with producers, marketers, and other industry participants to determine the production capacity of each ethanol plant and to calculate the market shares based on marketing arrangements.

The resulting HHIs for 2013 are either lower or about the same as those staff calculated for the 2012 Ethanol Report, indicating the market is essentially unchanged. The 2013 HHIs, like the 2012 HHIs, indicate that the domestic ethanol production industry is unconcentrated<sup>39</sup>.

#### A. Concentration with Market Shares Based on Production Capacity

For each of the HHI calculations described above, staff first calculated producers' market shares based on their ethanol production capacity<sup>40</sup>. Production capacity provides a useful and easily confirmable indicator of a producer's competitive significance<sup>41</sup> in determining the

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<sup>37</sup> For producers for which EIA maintains production data, FTC provided EIA with the identity of those producers' marketers and whether those producers entered pooling agreements with their marketers. EIA used this information, in conjunction with its own data on ethanol production, to calculate the HHIs that attribute market shares to marketers.

<sup>38</sup> Because the production data are confidential, staff did not disclose the volumes of ethanol attributable to any individual producer or the market shares based on those volumes to the FTC staff.

<sup>39</sup> The Commission and the U.S. Department of Justice characterize markets in which the HHI is below 1500 as unconcentrated. HHIs between 1500

aggregate capacity of each producer staff included the capacity of existing plants, as well as the projected capacity of plants currently under construction and plants currently undergoing expansion.<sup>42</sup> Incorporating capacity from such projects into current market share calculations is consistent with the approach set forth in the Horizontal Merger Guidelines.<sup>43</sup>

### 1. *Attributing Market Shares to Producers*

Under the simplest approach to market concentration, staff allocated market share to each producer based on the producer's percentage of total production capacity. This method of calculation yielded an HHI of 290, unconcentrated under the Horizontal Merger Guidelines.<sup>44</sup> This HHI is unchanged from last year's HHI of 290.<sup>45</sup>

### 2. *Attributing Market Shares to Marketers*

Many producers enter into marketing agreements with third parties to market their ethanol to blenders and end users while other producers sell their output directly. An ethanol marketer may represent and make limited decisions for multiple individual producers, essentially aggregating these producers' capacities under a single entity. For purposes of competitive analysis, attributing production capacity to marketers rather than to the actual producers provides

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ability and incentive to increase production in the event of a competitor's price increase or output reduction, i.e., its available capacity.

<sup>42</sup> Staff included the capacity of these plants under construction and expansion projects only where the producer had finalized construction plans, received the necessary financing for construction, and begun physical construction.

<sup>43</sup> See Horizontal Merger Guidelines, *supra* note 35, § 5.1. Firms that are not currently producing but likely would respond rapidly in

a measure of industry concentration that captures this aggregation. For those producers that engage in direct sales, staff attributed the market shares to the producers themselves.<sup>46</sup>

This approach yields an HHI of 586, concentrated under the Horizontal Merger Guidelines. This HHI is lower than the corresponding HHI of 608 in 2012.<sup>47</sup>

### 3. *Attributing Market Shares to Marketers with Pooling Agreements*

Under a pooling agreement, the marketing firm sells its client producers' volumes in common rather than individually, which allows the marketing firm to make decisions that are more significant for its client producers than under a traditional marketing agreement. Each producer receives a prorated share from the common revenue pool based on the volumes it contributes.<sup>48</sup> Each producer under a pooling agreement receives purchase offers only from its marketer, which also represents other producers. By contrast, under a non-pooling marketing arrangement, the marketer sells its producers' vo

more accurately the competitive significance of firms in the ethanol industry. Under this allocation approach, production volumes sold under non-pool marketing arrangements contribute to the producer's market share rather than to the non-pool marketer's share. Measured in this way, the HHI is 321, unconcentrated under the Horizontal Merger Guidelines. This HHI represents a slight decrease from last year's HHI of 325.<sup>49</sup>

B. Concentration with Market Shares Based on Actual Production

At staff's request, EIA staff calculated industry concentration using market shares based

deconcentrating impact of new facilities that began production during the last 12 months, nor do they fully reflect the concentrating impact of plant closures and idlings during the period. In both cases, these facilities will have produced only a fraction of what they otherwise would produce in a full year, leading to an understatement (in the case of new facilities) or an overstatement (in the case of idled facilities) of their competitive significance in the market. Similarly, the HHIs below do not account for the effects on concentration of plant expansions within the last 12 months and capacity-enhancing improvement projects that are not yet in operation.

EIA staff provided FTC staff with the firm production-based HHIs contained in this report. These production-based HHIs reflect actual production volumes from July 2012 through June 2013. Where EIA attributed the actual production market share directly to individual producers, the resulting HHI is 328, unchanged from the 2012 HHI. The production-based HHI calculated by attributing the market share of the producer to the firm that markets for that producer results in an HHI of 687, virtually unchanged from the 2012 HHI of 686. Attributing a producer's market shares to its marketing firm only when the marketing is pursuant to a pooling agreement yields an HHI of 359. This HHI is lower than the HHI of 368 in last year's report.<sup>51</sup>

### C. Ease of Entry and Imports

Today, the U.S. ethanol industry is unconcentrated, suggesting that any unilateral or coordinated attempt to exercise market power is highly unlikely. Should the industry become more concentrated in the future, the ease with which new firms can enter the domestic market and the responsiveness of ethanol imports to price changes in domestic ethanol prices likely would constrain anticompetitive behavior by domestic firms.

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<sup>51</sup> See 2012 Ethanol Report, supra note 16, at 17.

The U.S. ethanol production industry lacks significant barriers to entry. Potential entrants can purchase and re-start existing production facilities that are currently idle, some of which are idle due to recent economic conditions. An increase in supply resulting from new

and the availability of ethanol imports provide additional constraints on the exercise of market power by current industry participants. These dynamics make it extremely unlikely that a single

Figure 1: Domestic Fuel Ethanol Concentration<sup>54</sup>

Concentration Based on Capacity	2012 HHI	2013 HHI
Shares attributed to each producer	290	290
Shares attributed to marketers for all marketing agreements	608	586
Shares attributed to marketers only for pooling agreements	325	321
Concentration Based on Production	2012 HHI	2013 HHI
Shares attributed to each producer	328	328
Shares attributed to marketers for all marketing agreements	686	687
Shares attributed to marketers only for pooling agreements	368	359

Source: Production HHIs from EIA

Note: Capacity for 2012 includes the current capacities of September 2012 and the capacity additions under construction and expected to be completed within 12 to 18 months after September 2012. Capacity for 2013 includes the current capacity as of September 2013 and the capacity additions under construction and expected to be completed within 12 to 18 months after September 2013. Production data for 2012 are from July 2011 through June 2012, and production data for 2013 are from July 2012 through June 2013.

<sup>54</sup> As discussed in note 39, *supra*, the Commission and the Department of Justice characterize markets with HHIs below 1500 as unconcentrated. HHIs between 1500 and 2500 indicate moderately concentrated market



