2012 Report on Ethanol Market Concentration

I. Introduction

Section 1501(a)(2) of the Energy Policy Act of 2005, as codified at 42 U.S.C. § 7545(o), requires the Federal Trade Commission ("Commission" or "FTC") each year to "perform a market concentration analysis of the ethanol production industry using the Herfindahl-Hirschman Index [("HHI")] to determine whether there is sufficient competition among industry participants to avoid price-setting and other anticompetitive behavior."[1] The statute also requires the FTC to consider all marketing arrangements among industry participants in preparing its analysis.[2] The FTC must report its findings to Congress and the Administrator of the Environmental Protection Agency ("EPA") by December 1.[3] This report presents the FTC's concentration analysis of the ethanol production industry fo

allocated under three different approaches, for a total of six HHI calculations.[6] Based on production capacity, the HHIs for the domestic ethanol production industry range from 290 to 608, depending on the method of market share allocation. Based on actual production, the HHIs range from 328 to 686. Four of the six resulting HHIs for 2012 are higher than those calculated for the 2011 Ethanol Report, indicating increased concentration. The other two HHIs for 2012 are lower than those calculated for the 2011 Ethanol Report, indicating decreased concentration. All of the 2012 HHIs, however, reflect that the domestic ethanol industry remains unconcentrated, as it has been in each year during the life of the Commission's reporting obligations under the statute.

These figures indicate that the U.S. fuel ethanol production industry is unconcentrated,[7] assuming domestic fuel ethanol production is a re[8]

gasoline additives and (2) a relevant geographic market broader or narrower than the United States. Nonetheless, the level of concentration in the U.S. ethanol industry does not justify a presumption that a single ethanol producer or marketer or a group of such firms could exercise market power to set prices or coordinate on price or output levels.

II. Recent Industry Developments

Since 2005, Congress has required the domestic consumption of a minimum annual volume of renewable fuels, including ethanol, be blended into motor fuels. The Energy Policy Act of 2005 originally established this minimum, the Renewable Fuel Standard ("RFS"), and set out escalating annual requirements for 2006 through 2012. The 2005 RFS required the use of 6.8 billion gallons of renewable fuels in 2010, rising to 7.5 billion gallons in 2012.[9] In the Energy Independence and Security Act of 2007, Congress expanded the RFS, significantly increasing the volume minimums – including a revised 2012 requirement of 15.2 billion gallons – and extending the annual mandate to a peak requirement of 36 billion gallons in 2022.[10]

Ethanol demand has increased steadily year-over-year since the FTC's first Report on Ethanol Market Concentration in 2005.[11] This trend has held over the past year: for each month from July 2011 to June 2012, the industry blended

prior year,

ethanol,[17] and on June 15, 2012, EPA approved the first applications to register gasoline blends of up to 15 percent ethanol, or E15, for use in light-duty motor vehicles of model year 2001 and later.[18] However, the industry faces significant hurdles before higher ethanol blends can be consumed in significant volumes. According to industry participants, these include securing coverage under car manufacturers' warranties for E15 use and establishment of E15 distribution infrastructure.[19] Due to limits on the ability to distribute or use ethanol gasoline blends containing more than 10 percent ethanol, the domestic ethanol market is reaching the saturation point, known as the "blend wall."[20] Additional reductions in gasoline demand will further limit E15's ability to affect the blend wall.

Additives: Gasohol, 44 Fed. Reg. 20777 (Apr. 6, 1979). This 10 percent blend, E10, is now prevalent in the marketplace.

[17] See Partial Grant of Waiver Application to Increase the Allowable Ethanol Content of Gasoline to 15 Percent, 75 Fed. Reg. 68094 (Nov. 4, 2010) (granting Clean Air Act waiver to allow sales of E15 for use in model year 2007 and newer light-duty motor vehicles); Partial Grant of Waiver Application to Increase the Allowable Ethanol Content of Gasoline to 15 Percent, 76 Fed. Reg. 4662 (Jan. 26, 2011) (granting Clean Air Act waiver to allow sales of E15 for use in model year 2001 through 2006 light-duty motor vehicles).

[18] See EPA, Alphabetical List of Registered E15 Ethanols, available at http://www.epa.gov/otaq/fuels/registrationfuels/web-e15.htm (last modified Sept. 28, 2012) (listing the companies that can legally sell E15); see also EPA, E15 (a blend of gasoline and ethanol), http://www.epa.gov/otaq/regs/fuels/additive/e15/ (last modified June 15, 2012) (describing the need to register E15 and meet conditions of the partial waivers to the Clean Air Act).

[19] See EIA, This Week In Petroleum: Developments in U.S. Ethanol Exports (July 18, 2012), http://www.eia.gov/oog/info/twip/twiparch/120718/twipprint.html. According to industry participants, the model year restriction on EPA's E15 waiver means that retailers need separate storage tanks and pumps for E10 and E15 because they must continue to offer E10 for vehicles older than model year 2001. Blender pumps that dispense varying percentages of ethanol and gasoline blends create a risk of misfueling.

[20] See EIA, This Week In Petroleum: Ethanol Blend Wall: Are We There Yet? (Nov. 23, 2011), http://www.eia.gov/oog/info/twip/twiparch/111123/twipprint.html; see also EIA, This Week In

As in prior years, fuel ethanol prices have been volatile throughout the reported period, leading to wide variations in margins. Margins were strong through the second half of 2011 due to high export demand for U.S. ethanol[21] and the anticipated expiration of the Volumetric Ethanol Excise Tax Credit ("VEETC") on December 31, 2011.[22] VEETC provided a $0.45 tax credit to refiners for every gallon of ethanol they blended with gasoline, which encouraged greater levels of blending. Refiners sought to maximize the benefit of the tax credit before its expiration, leading to an increase in ethanol demand in the second half of the year.

Margins deteriorated in the first half of 2012, primarily due to an abundance of ethanol, lower overall gasoline demand, and high corn prices (higher ethanol input costs). Ethanol producers were slow to decrease production after the expiration of VEETC, leading to excess ethanol supplies.[23] EIA notes that drought conditions in the Midwest reduced corn harvests,

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Petroleum: Developments in U.S. Ethanol Exports (July 18, 2012), http://www.eia.gov/oog/info/twip/twiparch/120718/twipprint.html.

[21] See EIA, This Week In Petroleum: Developments in U.S. Ethanol Exports (July 18, 2012), http://www.eia.gov/oog/info/twip/twiparch/120718/twipprint.html; EIA, Today In Energy: Record U.S. Ethanol Exports In 2011 Helped Offset Brazil's Production Decline (Mar. 6, 2012), http://www.eia.gov/todayinenergy/detail.cfm?id=5270. Decreased ethanol production in Brazil in 2011 resulted in a record level of U.S. ethanol exports to Brazil and other countries that

resulting in higher corn prices.[24] According to industry participants, the resulting low-margin environment has prompted some producers to reduce operating rates or shut down less efficient plants.[25]

Although sufficient ethanol production capacity exists to meet the 2012 RFS requirements, additional capacity will be necessary to fulfill future RFS mandates set out in the Energy Independence and Security Act of 2007, including volume requirements for advanced biofuels (defined as cellulosic ethanol and other fuels derived from feedstocks other than corn starch).[26] One plant is currently producing commercial-grade cellulosic ethanol, and another plant has completed construction and obtained the required EPA registration to start production

[24] See EIA, Today In Energy: Drought Increases Price of Corn, Reduces Profits to Ethanol Producers (Aug. 31, 2012), http://www.eia.gov/todayinenergy/detail.cfm?id=7790# (noting a 35 percent rise in the price of corn from June 18 to August 29, 2012).

[25] See EIA, This Week In Petroleum: Corn Ethanol Issues Not Expected to Significantly Impact Gasoline Prices in 2012 (Aug. 8, 2012), http://www.eia.gov/oog/info/twip/twiparch/120808/twipprint.html; Ethanol Producer Magazine, RFS under Scrutiny (Sept. 11, 2012) available at http://www.ethanolproducer.com/articles/9099/rfs-under-scrutiny

[26] See Energy Independence and Security Act of 2007 § 202(a)(2), 42 U.S.C. § 7545(o)(2)(B)(i)(II)-(IV) (2009) (providing specific volume requirements for advanced biofuels, including biodiesel and cellulosic biofuel). The advanced biofuels minimums apply from 2009 to 2022. The biodiesel requirement began in 2009 with volume minimums specified through 2012. The cellulosic requirement took effect in 2010 and extends until 2022. However, EPA reduced the cellulosic biofuel standard for 2012, as it did in 2011 and 2010, because the projected volume of cellulosic biofuel production was less than the minimum volume set out by statute. See 2012 Renewable Fuel Standards, 77 Fed. Reg. 1320, 1323 (Jan. 9, 2012) (codified at 40 C.F.R. pt. 80); 2011 Renewable Fuel Standards, 75 Fed. Reg. 76790, 76791 (Dec. 9, 2010) (codified at 40 C.F.R. pt. 80); and Changes to Renewable Fuel Standard Program, 75 Fed. Reg. 14670, 14675 (Mar. 26, 2010) (codified at 40 C.F.R. pt. 80). EPA anticipates it will also reduce the cellulosic biofuel standard for 2013. See EPA, Newsroom: EPA Finalizes 2012 Renewable Fuel Standards (Dec. 27, 2011), http://yosemite.epa.gov/opa/admpress.nsf/0/a7ce72844710be0a85257973006a20f3

decreased slightly to approximately 14.9 billion annualized gallons as of September 2012 from 15.2 billion annualized gallons as of September 2011.[32] [33]

The number of firms producing ethanol has decreased since last year's report. As of September 2012, 154 firms currently produce ethanol or likely will begin producing ethanol within the next 12 to 18 months, as compared to 164 firms in 2011.[34] The largest ethanol producer's share of domestic capacity is 11.1 percent, a slight decrease from its 11.5 percent share in 2011 and below its 12 percent share in 2010.[35] This figure is comparable to the largest producer's capacity share of 11 percent in 2008 and 2009, and it remains below the largest producer's capacity shares of 16 percent in 2007, 21 percent in 2006, and 26 percent in 2005.[36]

IV. Analysis[37]

Section 1501(a)(2) of the Energy Policy Act of 2005 instructs the Commission to measure concentration in U.S. ethanol production using HHIs.[38] HHIs can provide a snapshot of

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[32] RFA, Biorefinery Locations, http://ethanolrfa.org/bi-refinery-locations/ (last modified Sept. 25, 2012).

[33] See 2011 Ethanol Report at 8. Unless indicated otherwise, measures of capacity in this report represent both current capacity and capacity under construction.

[34] Id.

[35] Id.

[36] Id.

[37] The background information in this section regarding HHI calculations and their relevance is consistent with the background information presented in last year's Report on Ethanol Market Concentration. See id. at 9.

[38] Energy Policy Act of 2005 § 1501(a)(2), supra note 1. 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.

market concentration[39] based upon the number of market participants and their respective sales, production, or capacity. 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.[40]

To calculate the HHIs that Section 1501(a)(2) requires, we mu

As in previous years, this report presents six HHIs for the ethanol industry, calculated using two different measures of market share and three different methods of allocating those market shares. First, FTC staff calculated each producer's market share based on the producer's domestic ethanol production capacity. FTC staff then performed three separate HHI calculations, attributing the producer's market share: (1) to the producer itself; (2) to the producer or to the third-party firm that actually marketed the producer's ethanol output; and (3) to 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, EIA staff calculated market shares derived from confidential ethanol production data. Using the market share allocation methods described above, EIA staff then performed each of the HHI calculations and provided the resulting production-based HHIs to FTC staff.[42]

Four of the six HHIs calculated for this report are higher than those calculated in 2011, reflecting a relatively minor increase in concentration. The other two calculations yielded HHIs just below those calculated for the 2011 Ethanol Report, indicating a decrease in concentration. In all cases, the 2012 HHIs, like the 2011 HHIs, indicate that the domestic ethanol production industry remains unconcentrated.

[42] FTC staff provided EIA staff with the information necessary to attribute market shares to marketers where appropriate. EIA staff provided only the aggregated HHI figures to FTC staff and did not disclose the underlying confidential data or market shares.

other producers sell their output directly. For those producers that engage in direct sales, staff attributed the market shares to the producers themselves.[47]

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 a measure of industry concentration that captures this aggregation.

This approach yields an HHI of 608, unconcentrated under the Horizontal Merger Guidelines. This HHI is slightly higher than the corresponding HHI of 585 in 2011.[48]

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

Staff's final approach to concentration calculation attributes a producer's market share to its third-party marketer only when the marketer sells the producer's output under the terms of a pooling agreement. Under a pooling agreement, a marketing firm sells its client producers' volumes in common rather than individually, which allows the marketing firm to make more significant decisions for its client producers than a traditional marketing agreement. Although the specific terms of pool marketing agreements vary, pool marketers generally sell ethanol to customers, and assign a client plant or plants to fulfill each sale obligation. Each producer receives a prorated share of the common revenue pool based on the volume it contributes. The output from each plant generally earns an identical return, sometimes adjusted to reflect the cost of transportation from a plant to its customer's destination. Each producer under a pooling

producers. By contrast, under a non-pooling marketing arrangement, the marketer sells its producers' volumes on a plant-specific basis and can present each producer with offers from multiple buyers.

Because individual producers within a pooling arrangement do not participate directly in negotiating the sale of their output, competition among the members of a given pool is limited if present at all. Buyers deal only with the single marketer, which then allocates the production capacity within its client portfolio to fulfill its output obligations. Therefore, attributing production capacity to marketers only for the producers in pooling arrangements may capture more accurately the competitive significance of firms in the ethanol industry. Under this

expertise in operating their plants.[50] In this respect, actual production may reflect a market participant's competitive significance more accurately than would its plants' capacities.

There are some limitations to the accuracy of HHIs based on actual production, just as there are limitations to HHIs based on production capacity. HHIs based on production over a given period may overstate or understate actual concentration due to entry and exit of firms, construction of new capacity, and variations in capacity utilization rates during the relevant time frame. Specifically, the production-based HHIs provided below do not fully reflect the deconcentrating impact of new facilities that began production during the last 12 months and plant improvements that increased capacity 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 expansion, construction, and capacity-enhancing improvement projects that are not yet in operation.[51]

EIA provided FTC staff with the final production-based HHIs contained in this report. Firms that produce over eight million gallons of oxygenates (such as ethanol) per year must report to EIA their monthly production volumes by product. These production data are confidential. Therefore, EIA provided only the aggregated HHIs to FTC staff and did not disclose the volumes of ethanol attributable to any individual producer or the market shares

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based on those volumes.[52] These production-based HHIs reflect actual production volumes from July 2011 through June 2012.

Where EIA attributed the actual production market share directly to individual producers, the resulting HHI is 328, an increase from the 2011 HHI of 284.[53] The production-based HHI calculated by attributing the market share of each producer to the firm that markets for that producer results in an HHI of 686, an increase from the 2011 HHI of 601.[54] Attributing a producer's market shares to its marketing firm only when the marketing is pursuant to a pooling agreement yields an HHI of 368. This HHI is higher than the HHI of 328 in last year's report.[55]

C. Ease of Entry and Imports

Today, the U.S. ethanol industry is unconcentrated, suggesting that an attempt to exercise market power is unlikely. Should the industry become more concentrated in the future, an increase in the price of ethanol resulting from anticompetitive conduct would likely remain unsustainable due to both (1) the ease of entry into the ethanol industry and (2) the responsiveness of imports to fluctuations in the U.S. ethanol price relative to foreign prices.

The U.S. ethanol production industry currently lacks significant barriers to entry. Potential entrants can purchase and re-start existing production facilities that are currently idle as a result of recent economic conditions such as low margins and high corn prices. In addition,

[52] For producers for which EIA maintains production data, FTC staff provided EIA with the identity of those producers' marketers and whether those producers entered into pooling agreements with their marketers. EIA used this information, in conjunction with its own data on

construction of cellulosic ethanol plants and expansion of existing plants – through improved plant processes – continue in the industry today, albeit at a reduced rate. An increase in supply resulting from new entry likely would make any exercise of market power unsustainable.

The probable influx of ethanol imports also would likely restrain any potential exercise of market power by a domestic firm. Ethanol import levels are responsive to fluctuations in the price of U.S. ethanol relative to foreign ethanol prices, particularly prices for sugar cane-based ethanol from Brazil. The expiration of the ethanol import tariff of $0.54 per gallon at the end of 2011[56] reduced the costs of importing ethanol relative to domestic production. If U.S. ethanol prices were to increase due to the exercise of market power by a domestic firm or group of firms,[57] currently exported ethanol could remain in the domestic market,[58] and imports would

Even if domestic ethanol production were more concentrated than it is, the ease with which new firms can enter the domestic market and the responsiveness of ethanol imports to relative price changes likely would constrain anticompetitive behavior by domestic firms.

V. Conclusion

Ethanol production has remained unconcentrated over the last year. Regardless of the particular measure of market share or the market share allocation method used to calculate concentration, the low concentration levels that characterize the U.S. ethanol production industry have persisted. Although some of the 2012 HHIs reflect an increase in concentration from 2011, the industry remains less concentrated than it was at the time of the first Report on Ethanol Market Concentration in 2005. Furthermore, the ease of entry by new firms and the availability of ethanol imports provide additional constraints on the exercise of market power by current industry participants. These dynamics make it relatively unlikely that a single ethanol producer or marketer or a group of such firms could exercise market power to set prices or coordinate on price or output levels.

Figure 1: Domestic Fuel Ethanol Concentration[60]

Concentration Based on Capacity	2011 HHI	2012 HHI
Shares attributed to each producer	291	290
Shares attributed to marketers for all marketing agreements	585	608
Shares attributed to marketers only for pooling agreements	342	325
Concentration Based on Production	**2011 HHI**	**2012 HHI**
Shares attributed to each producer	284	328
Shares attributed to marketers for all marketing agreements	601	686
Shares attributed to marketers only for pooling agreements	328	368

Source: Production HHIs from EIA
Note: Capacity for 2011 includes the capacity as of September 2011 and the capacity additions under construction and expected to be completed within 12 to 18 months after September 2011. Capacity for 2012 includes the current capacity as of September 2012 and the capacity additions under construction and expected to be completed within 12 to 18 months after September 2012. Production data for 2011 are from July 2010 through June 2011, and production data for 2012 are from July 2011 through June 2012.

[60] As discussed in note 8, *supra*, the Commission and the Department of Justice characterize markets with HHIs below 1500 as unconcentrated. HHIs between 1500 and 2500 indicate moderately concentrated markets, and HHIs over 2500 indicate highly concentrated markets that are more likely to pose competitive concerns. An increase in the HHI of less than 100 points is unlikely to have adverse competitive effects. Horizontal Merger Guidelines § 5.3.


16,000
14,000
2,000