2015 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 2015.[1] Section 1501(a)(2) of the

Energy Policy Act of 2005 requires that the FTC annually "perform a market concentration

analysis of the ethanol production industry . . . to determine whether there is sufficient

competition among industry participants to avoid price-setting and other anticompetitive

behavior."[2] Pursuant to the statute, the FTC must measure concentration using the Herfindahl-

Hirschman Index ("HHI") and consider all marketing arrangements among industry participants

in preparing its analysis.[3] The FTC's report is due to Congress and the Administrator of the

Environmental Protection Agency ("EPA") by December 1 of each year.[4]

As in previous reports, FTC staff ("staff") analyzed concentration based on production

capacity and actual production. For each analysis, staff calculated HHIs two different ways, first

by allocating market shares among producers and then by allocating market shares among

marketers.[5] Concentration based on producer shares is lower under either calculation than

concentration based on marketer shares. Based on production capacity, the HHIs for the U.S.

ethanol industry range from 343 to 621. Based on actual production, the HHIs range from 332 to

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[1] This Report builds upon Commission reports from previous years. Prior reports contain background information absent from this Report. *See, e.g.*, FTC, Oil and Gas Industry Initiatives, Competition Policy: Reports, *available at* http://www.ftc.gov/tips-advice/ competition-guidance/industry-guidance/oil-and-gas.

[2] Energy Policy Act of 2005, Pub. L. No. 109-58, § 1501, 119 Stat. 1069, 1074, *amended by* Energy Independence and Security Act of 2007, Pub. L. No. 110-140, 121 Stat. 1492. For purposes of this Report, we presume that Congress used the term "price-setting" to mean "price fixing."

[3] *Id*.

[4] *Id*.

[5] Prior to 2014, staff also calculated HHIs by attributing the producer's market share to its marketing firm if the marketing was pursuant to a pooling agreement. *See, e.g.*, 2013 Ethanol Report, *supra* note 1, at 11. The industry largely has abandoned pooling agreements; therefore, staff no longer measures concentration on this basis.

714. HHIs are substantially unchanged from a year ago, with three of the four HHIs for 2015

slightly lower (ranging from 11 to 72 points lower) than in 2014 and the other 10 points higher.

The low level of concentration and large number of market participants in the U.S.

ethanol production industry continue to suggest that the 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 2015 HHIs indicates that the industry is

unconcentrated.[6] At this level of concentration, a single ethanol producer or marketer likely

lacks market power. Successful anticompetitive coordination would require agreement among a

very large number of competitors and thus would be unlikely. Moreover, imports and the

possibility of entry would impede the exercise of market power by any group of domestic firms.

II.   Recent Industry Developments

A.   Renewable Fuel Standard

Since 2005, Congress has required that the national transportation fuel supply contain

a minimum annual volume of renewable fuels, including fuel ethanol.[7] This mandate, known

as the Renewable Fuel Standard ("RFS"), increases every year. In 2007, Congress revised the

RFS, significantly increasing the minimum volumes of ethanol and adding requirements for

advanced biofuels.[8] For 2015, the RFS mandates 20.5 billion gallons of renewable fuel, 15

billion gallons of which can be conventional corn ethanol.[9]

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[6] The Commission and U.S. Department of Justice characterize markets in which the HHI is below 1500 as unconcentrated. U.S. Department of Justice and Federal Trade Commission Horizontal Merger Guidelines (2010) ("Horizontal Merger Guidelines") § 5.3, *available at* https://www.ftc.gov/sites/default/ files/attachments/merger-review/100819hmg.pdf.

[7] *See* Energy Policy Act of 2005 § 1501, 119 Stat. 1069.

[8] "Advanced biofuel" refers to a renewable fuel, other than ethanol derived from corn starch, that has lifecycle greenhouse gas emissions that are at least 50 percent less than the average greenhouse gas emissions of the baseline fossil fuel. 42 U.S.C. § 7545(o)(1)(B)(i). Advanced biofuels include, but are not limited to, cellulosic biofuel and biomass-based diesel. *Id*. § 7545(o)(1)(B)(ii)(I)-(VII).

[9] *Id*. § 7545(o)(2)(B)(i)(I)-(II). The statute sets a target of 5.5 billion gallons of advanced biofuels for 2015, at least 3.0 billion gallons of which must be cellulosic biofuel. *Id*. § 7545(o)(2)(B)(i)(II)-(III).

The annual use of renewable fuels has not kept pace with the Congressional RFS. In 2014, the United States used 15.93 billion gallons of renewable fuels,[10] 2.22 billion gallons less than the target of 18.15 billion gallons.[11] The United States consumed 13.44 billion gallons of the 14.4 billion gallons of conventional corn ethanol that could have counted toward the 2014 RFS.[12] In response to this shortfall, the EPA in June 2015 published proposed annual minimum mandates below those set by Congress.[13] The EPA's proposed total renewable fuels requirement for 2015 is 16.3 billion gallons, 13.4 billion gallons of which can be conventional corn ethanol.[14]

One reason that ethanol use fell short of the Congressional RFS last year was the industry's limited ability to consume fuel blends containing more than 10 percent ethanol ("E10").[15] The industry refers to this limit as the E10 blendwall.[16] A small percentage of U.S. service stations offer higher ethanol blends, such as fuel containing 85 percent ethanol ("E85") and fuel containing 15 percent ethanol ("E15").[17] Overall, however, ethanol use today remains at approximately 10 percent of total fuel consumption.[18]

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[10] Renewable Fuel Standards Program: Standards for 2014, 2015, and 2016, and Biomass-Based Diesel Volume for 2017, 80 Fed. Reg. 33,100, 33,115 (June 10, 2015) (to be codified at 40 C.F.R. pt 80), *available at* http://www.gpo.gov/fdsys/pkg/FR-2015-06-10/pdf/2015-13956.pdf [hereinafter EPA Proposed Requirements].

[11] *Id*.

[12] U.S. Energy Info. Admin., Monthly Energy Review, Table 10.3 Fuel Ethanol Overview, http://www.eia.gov/totalenergy/data/browser/xls.cfm?tbl=T10.03&freq=m (last modified Sept. 25, 2015).

[13] *See* EPA Proposed Requirements, *supra* note 10, at 33122.

[14] *Id*. The EPA's proposal, like the Congressional RFS, sets a target for total renewable fuels and includes a nested requirement for advanced biofuels. Thus, each gallon of fuel that meets the advanced biofuels requirement also counts toward the total renewable fuels requirements. Once obligated parties meet the minimum requirement for advanced biofuels, they may meet any remaining obligation under the total renewable fuels requirement with conventional corn ethanol. *See id*. at 33103.

[15] *Id.* at 33127.

[16] *Id*. at 33102.

[17] Of the approximately 153,000 U.S. fueling stations, approximately 323 offer mid-level fuel blends, which are blends between E10 and E85, and approximately 2,780 stations offer E85. K. Moriaty & J. Yanowitz, Nat'l Renewable Energy Laboratory, Ecoengineering, Inc., E15 & Infrastructure 2 (May 2015), *available at* http://www.afdc.energy.gov/uploads/publication/e15_infrastructure.pdf; Office of Energy Efficiency & Renewable Energy, U.S. Dept. Energy, Ethanol Fueling Station Locations, http://www.afdc.energy.gov/fuels/ethanol_locations.html (last modified June 17, 2015). In 2015, several companies announced plans to begin offering E15 at their fueling stations. *See* PR Newsire, Sheetz to Offer E15 Fueling Option in 2015 (Jan. 20, 2015),

Market participants believe that the U.S. ethanol industry will produce more than the 13.4 billion gallons of conventional corn ethanol that can count toward the EPA's total renewable fuels requirement for 2015.[19] Additional capacity will be necessary, however, to meet the EPA's proposed requirement for cellulosic ethanol, an advanced biofuel. Only three major commercial-scale cellulosic ethanol plants, with a combined nameplate capacity of 75 million gallons per year, are producing or plan to begin producing cellulosic ethanol in the near future.[20] Alone, these plants' combined capacities fall short of the EPA's proposed 2015 requirement of 106 million gallons of cellulosic ethanol. Because of U.S. producers' limited cellulosic ethanol capacity, importers acquired 10.6 million gallons of cellulosic ethanol from Brazil immediately following the EPA's announcement of its 2015 proposed requirement for advanced biofuels.[21] Unless U.S. producers' combined cellulosic ethanol capacity increases in future years, obligated parties will have to continue to import cellulosic ethanol to meet future cellulosic ethanol requirements.

http://www.prnewswire.com/news-releases/sheetz-to-offer-e15-fueling-option-in-2015-300023113.html (Sheetz Convenience Stores plans to sell E15 at 60 stores in North Carolina by Spring 2016); Press Release, Protec Fuel, E15 Expanding Across the Southern U.S., (Sept. 2, 2014), http://www.protecfuel.com/media/protecannc28stations e15.pdf (Protec Fuels will offer E15 and E85 at 28 fuel stations throughout the South and Southeast); Press Release, Kum & Go, Kum & Go to Offer E15 Fuel Options in 2015 (Apr. 27, 2015), http://www.kumandgo.com/2015/04/ e15-fuel-options/ (Kum & Go introducing E15 at more than 65 stores in Arkansas, Colorado, Iowa, Missouri, Nebraska, Oklahoma, and South Dakota).

[18] EPA Proposed Requirements, *supra* note 10, at 33101.

[19] Several market participants opined that total U.S. corn ethanol production will continue to rise and that production in 2015 will exceed the 15 billion gallons of conventional corn ethanol that can count toward the 2015 RFS. Data from the U.S. Energy Information Administration ("EIA") show that from July 2014 to June 2015, the United States produced 14.6 billion gallons of ethanol, a five percent increase over the prior twelve-month period. U.S. Energy Info. Admin., U.S. Oxygenate Plant Production of Fuel Ethanol, http://www.eia.gov/dnav/pet/hist/LeafHandler .ashx?n=pet&s=m_epooxe_yop_nus_1&f=m (last modified Sept. 30, 2015).

[20] *See* U.S. Energy Info. Admin., Commercial-scale Cellulosic Ethanol Plant Opens (Sept. 5, 2014), http://www.eia.gov/todayinenergy/detail.cfm?id=17851.

[21] *See* Reuters, U.S. Buyers Scoop Up Brazilian Ethanol Amid RIN Revival (June 15, 2015), http://www.reuters.com/article/2015/06/15/usa-biofuels-imports-idUSL1N0YR1XO20 150615. For 2015 to date, the United States has imported approximately 13.2 million gallons of cellulosic ethanol from Brazil. U.S. Energy Info. Admin., U.S. Imports by Country of Origin, http://www.eia.gov/dnav/pet/pet_move_impcus_a2_nus_epooxe _im0_mbbl_m.htm (last modified Sept. 30, 2015).

B.   Margins

The U.S. ethanol industry recorded positive margins through the first nine months of 2015. Ethanol prices fluctuated slightly throughout the year, but remained below the prices seen throughout 2014.[22] In December 2014, the price of ethanol reached $2.57 per gallon, driving margins of $1.12 per gallon.[23] Since then, the price of ethanol has fallen, averaging $1.43 per gallon in the first nine months of 2015 and resulting in an average margin of $0.17 per gallon.[24] Over the same period, the net cost of corn – the largest ethanol input cost – remained relatively stable.[25] During the first seven months of 2015, the ethanol industry benefited from high demand for transportation fuel as Americans drove a record 1.82 trillion miles.[26] Chart 1 plots the changes in corn prices, ethanol prices, and plant operating margins for the period January 2010 to September 2015.

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[22] Ethanol prices and margins in 2014 averaged $2.10 and $0.67 per gallon, respectively. *See* Iowa State University, Center for Agricultural and Rural Development, Historical Ethanol Operating Margins (Sept. 30, 2015), http://www.card.iastate.edu/research/bio/tools/hist_eth_gm.aspx.

[23] *Id*. Margins are the difference between the revenue from ethanol plants (including revenue from ethanol and dried distillers grains with solubles) and variable production costs (including corn, natural gas, and labor).

[24] *Id*.

[25] The net cost of corn averaged $0.82 per gallon, with a peak of $1.01 in July 2015 and a trough of $0.72 in May 2015. *Id*.

[26] U.S. Energy Info. Admin., Short-Term Energy & Winter Fuels Outlook 8 (Oct. 6, 2015), http://www.eia.gov/forecasts/steo/pdf/steo_full.pdf.

Fuel-Ethanol Price, Corn Cost, and Operating Margin (per gallon), Jan 2010 to Sep 2015
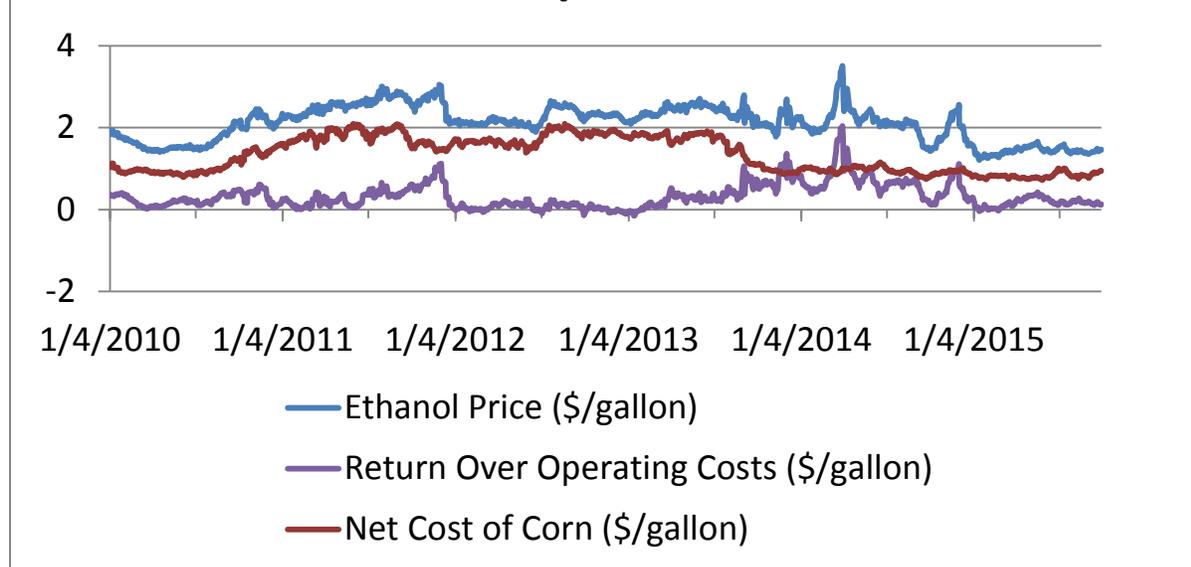
Source: Iowa State University, Agricultural Marketing Resource Center.

III. Summary of Market Trends

Domestic ethanol production and exports increased since last year's Report, while domestic capacity remained the same. Domestic ethanol production from July 2014 through June 2015 increased approximately five percent from the prior 12 months, from 13.9 billion to 14.6 billion gallons.[27] Over that same period, U.S. ethanol exports also increased, climbing from 762 million gallons to 865 million gallons.[28] Domestic ethanol production capacity (including capacity under construction) remained constant at approximately 15.6 billion gallons per year.[29]

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[27] U.S. Energy Info. Admin., 4-Week Avg U.S. Oxygenate Plant Production of Fuel Ethanol, http://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=pet&s=w_epooxe_yop_nus_mbbld&f=4 (last modified Oct. 15, 2015).

[28] *Id.*

[29] Staff's total capacity estimate takes into account information obtained through interviews with market participants and publicly available information, including information published online by the Renewable Fuels Association ("RFA"). *See, e.g.*, RFA, Biorefinery Locations, http://www.ethanolrfa.org/resources/biorefinery-locations/ (last modified Sept. 22, 2015). Interviewees routinely provide staff with operating capacities exceeding their nameplate capacities. Staff used the higher operating capacity when calculating capacity estimates for this Report. Staff's

The number of firms producing ethanol decreased slightly since last year's Report. As of September 2015, 146 firms produce or likely could begin producing ethanol within the next 12 to 18 months, compared to 148 firms in September 2014. The largest ethanol producer's share of domestic capacity is approximately 11 percent, unchanged from its 2014 percent share.[30]

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.[31] HHIs can provide a snapshot of market concentration based upon the number of market participants and their respective sales, production, or capacity.[32] An analysis of competition among market participants using these HHIs assumes that the U.S. ethanol production industry is an appropriate antitrust market.[33] 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

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capacity estimate is slightly higher than the EIA's published total of 14.7 billion gallons. U.S. Energy Info. Admin., U.S. Fuel Ethanol Plant Production Capacity (June 23, 2015), http://www.eia.gov/petroleum/ethanolcapacity/. EIA's capacity data are a snapshot of capacity as of January 1 of each year and exclude plants that were idle, shut down, or still under construction as of that month. *See* U.S. Energy Info. Admin., EIA Releases U.S. Fuel Ethanol Production Capacity Data (Nov. 30, 2011), http://www.eia.gov/todayinenergy/detail.cfm?id=4110 (describing EIA's method for calculating total capacity for its first annual reports).

[30] *See* 2014 Ethanol Report, *supra* note 1, at 8.

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

[32] 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* Horizontal Merger Guidelines, *supra* note 6, § 5.3.

[33] 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 id*., §§4.1-4.2.

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.

This Report presents four HHIs for the ethanol industry, calculated using two different measures of market share – production capacity and actual production – and two different methods of allocating those market shares. First, staff calculated market shares based on domestic ethanol production capacity. Staff then attributed the producer's market share to (1) the producer itself, and (2) the producer or the third-party firm that actually marketed the producer's ethanol output.[34] 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.

Second, EIA staff calculated market shares based on actual production, attributing the market shares as described in the preceding paragraph. Due to the confidential nature of the ethanol production data the EIA collects, staff provided to EIA staff the information necessary to allocate market shares.[35] EIA staff performed each of the two HHI calculations and provided the resulting production-based HHIs.[36]

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[34] In Reports published before December 2014, staff also attributed the producer's market share to third-party marketing firms that marketed the producer's volumes pursuant to a pooling agreement. *See, e.g.*, 2013 Ethanol Report, *supra* note 1, at 11. As with the 2014 Report, this year staff did not attribute market share in this manner because ethanol marketers have largely abandoned the use of pooling agreements. *See* 2014 Ethanol Report, *supra* note 1, at 1-2.

[35] For producers for which EIA maintains production data, staff provided EIA with the identities of those producers' marketers. EIA used this information, in conjunction with its own data on ethanol production, to calculate the HHIs that attribute market share to marketers.

[36] Because the production data are confidential, EIA staff did not disclose the volumes of ethanol attributable to any individual producer or the market shares based on those volumes.

A. Concentration with Market Shares Based on Production Capacity

For each of the HHI calculations described below, staff first calculated producers' market

shares based on their fuel ethanol production capacity.[37] Production capacity provides a useful

and easily confirmable indicator of a producer's competitive significance.[38] In determining each

producer's aggregate capacity, staff included the capacity of existing plants, as well as the

projected capacity of plants currently under construction and plants currently undergoing

expansion.[39] Incorporating capacity from such projects into current market share calculations is

consistent with the approach set forth in the Horizontal Merger Guidelines.[40]

1. *Attributing Market Shares to Producers*

Under the first 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 343, a level regarded as unconcentrated under the Horizontal

Merger Guidelines.[41] This HHI is slightly higher than last year's HHI of 333.[42]

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[37] The RFA's website provides frequently updated data on ethanol plant capacity and capacity expansion plans.
Capacity information is also available on many individual producers' websites, some of which also provide details
of construction and expansion plans.

[38] *See* Horizontal Merger Guidelines, *supra* note 6, § 5.2. In markets for homogeneous products (such as ethanol), a
firm may derive its competitive significance primarily from its available capacity – *i.e.*, its ability and incentive to
increase production in the event of a competitor's price increase or output reduction. *Id.*

[39] Staff included the capacity of these construction and expansion projects only where the producer had finalized
construction plans, received the necessary financing for construction, and begun physical construction. Ethanol
producers frequently announce capacity additions, new plants, plant sales, and cancellations of plans to build new
capacity. These HHI calculations represent staff's best estimate of the industry's concentration as of September
2015, the cut-off date for our analysis unless otherwise indicated. This approach therefore excludes any more recent
publicly available information that might be relevant to industry HHI calculations. These HHI calculations also
might not capture the full complexity of industry ownership structures, especially the degree of control by minority
interests held by marketers or third-party management service firms. However, the HHI resulting from allocating
production to the marketer should capture any such complexity not reflected in the producer HHI.

[40] *See* Horizontal Merger Guidelines, *supra* note 6, § 5.1. Firms that are not currently producing but likely would
respond rapidly in the event of a SSNIP have competitive significance even though they do not currently supply the
relevant market. *Id.*

[41] The Commission and the U.S. Department of Justice characterize markets in which the HHI is below 1500 as
unconcentrated. HHIs between 1500 and 2500 indicate moderately concentrated markets, which may or may not
raise competitive concerns in the context of a horizontal merger or acquisition. Markets with HHIs over 2500 are

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 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.[43]

This approach yields an HHI of 621, unconcentrated under the Horizontal Merger Guidelines. This HHI is less than the corresponding HHI of 693 in 2014.[44]

B.   <u>Concentration with Market Shares Based on Actual Production</u>

Firms that produce more than eight million gallons of oxygenates (such as ethanol) per year must report to EIA their monthly production volumes by product. Using production data is instructive because capacity data have certain limitations, particularly insofar as stated capacity does not necessarily represent actual production capabilities. Ethanol plants often can produce as much as 10 to 15 percent more than their stated design capacities and tend to operate at increasing rates as their owners and operators improve the production process and gain expertise

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highly concentrated, and horizontal mergers or acquisitions in such markets are more likely to pose competitive concerns. *See* Horizontal Merger Guidelines, *supra* note 6, § 5.3.

[42] 2014 Ethanol Report, *supra* note 1, at 12. Some of the change to the HHI may be attributable to a producer's acquisition of another producer's facilities. In several instances, these acquisitions coincided with the restart or reconstruction of an idled facility. Some of the change to the HHI may also be attributable to excluding plants that were converted to other uses, formally closed, or judged unlikely to reopen in the near future.

[43] Some marketers publicly announce new agreements with producers. Where staff could not determine whether a producer marketed for itself or used an outside marketing firm, staff attributed market share to the producer.

[44] 2014 Ethanol Report, *supra* note 1, at 13.

in operating their plants.[45] In this respect, actual production may reflect a market participant's competitive significance more accurately than would its plants' capacities.

There are some limitations on the accuracy of HHIs based on actual production, just as there are limitations on capacity-based HHIs. HHIs based on production over a given period may overstate or understate actual concentration due to entry and exit of firms, expansion of existing capacity, and variations in capacity utilization rates during the relevant period. 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, nor do they fully reflect the concentrating impact of plant closures and idling during the period. In both cases, these facilities will have produced only a fraction of what they otherwise could 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.

These production-based HHIs reflect actual production volumes from July 2014 through June 2015. Where EIA attributed the actual production market share directly to individual producers, the resulting HHI is 332, slightly lower than the 2014 HHI of 343.[46] 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 714, also slightly lower than the 2014 HHI of 743.[47]

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[45] Similarly, some ethanol producers may not be in a position to utilize their full plant capacity. Actual production may be a better indicator of their competitive significance in such cases.
[46] 2014 Ethanol Report, *supra* note 1, at 14.
[47] *Id*.

C.   **Entry and Imports**

The U.S. ethanol industry is unconcentrated today, suggesting that any unilateral or coordinated attempt to exercise market power is highly unlikely. Should the industry become more concentrated, the possibility of new firms entering the domestic market and the responsiveness of ethanol imports to relative changes in domestic ethanol prices would likely provide additional constraints on anticompetitive behavior by domestic firms. Potential entrants can purchase and restart existing production facilities that were idled due to recent economic conditions or can design and build new plants to enter the market.

Ethanol import levels historically have responded to fluctuations in the price of U.S. ethanol relative to foreign ethanol prices, particularly prices for sugar cane-based ethanol from Brazil.[48] This responsiveness would likely restrain any potential exercise of market power by a domestic firm. Additionally, to the extent U.S. prices increase because of exercise of market power among a group of U.S. producers or marketers, it is likely that other producers would react by exporting less to take advantage of more favorable U.S. ethanol prices (thereby increasing U.S. supply).

V.   **Conclusion**

Regardless of the particular measure of market share or the market share allocation method used to calculate concentration, ethanol production remains unconcentrated. The industry is less concentrated today than it was at the time of the first Report on Ethanol Market Concentration in 2005. Furthermore, the possibility of entry 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 ethanol producer or

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[48] Brazil has been the largest exporter of ethanol to the United States every year since 2011. *See* U.S. Energy Info. Admin., U.S. Imports by Country of Origin, *supra* note 21.

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[49]

Concentration Based on Capacity	2014 HHI	2015 HHI
Shares attributed to each producer	333	343
Shares attributed to marketers for all marketing agreements	693	621
Concentration Based on Production	**2014 HHI**	**2015 HHI**
Shares attributed to each producer	343	332
Shares attributed to marketers for all marketing agreements	743	714

Source: Production HHIs from EIA

Note: Capacity for 2014 includes the current capacity as of September 2014 and the capacity additions under construction and expected to be completed within 12 to 18 months after September 2014. Capacity for 2015 includes the current capacity as of September 2015 and the capacity additions under construction and expected to be completed within 12 to 18 months after September 2015. Production data for 2014 are from July 2013 through June 2014; production data for 2015 are from July 2014 through June 2015.

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[49] As discussed in note 41, *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, *supra* note 6, § 5.3.

Figure 2: Historical Fuel Ethanol Capacity and HHIs
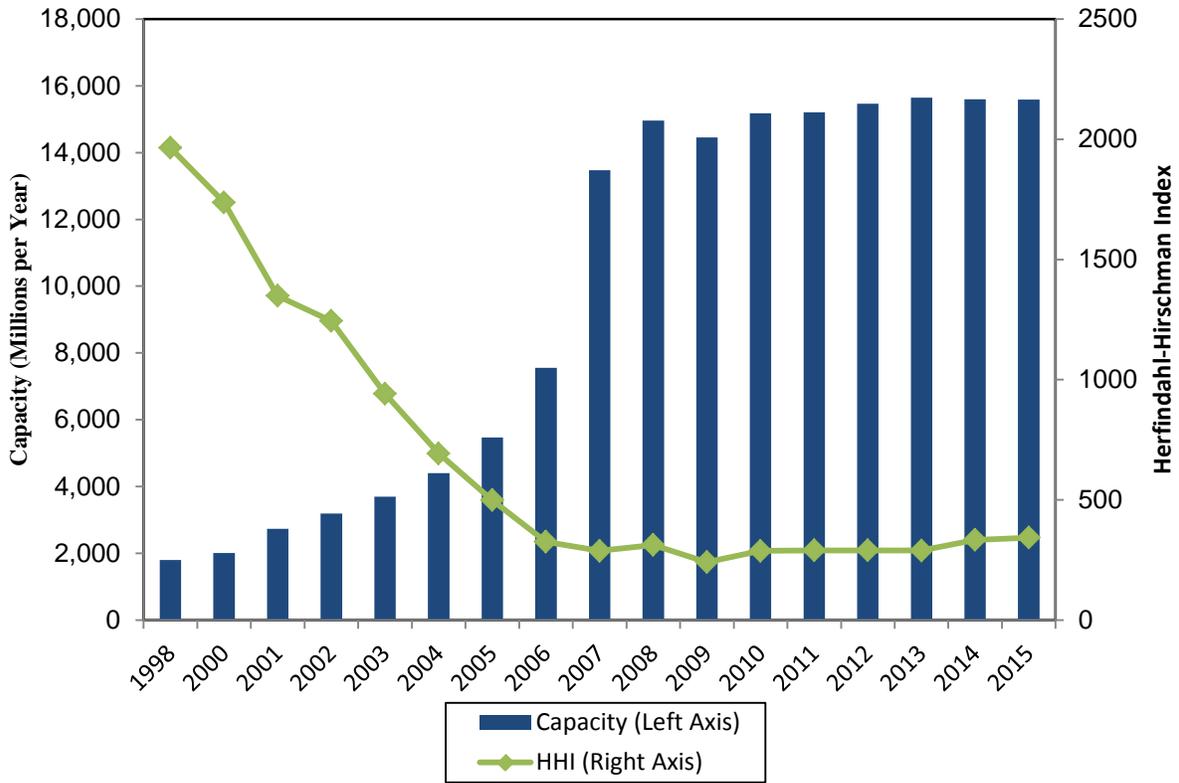
Note: Annual figures are for operable capacity and capacity under construction at year-end for 1998 to 2004, and as of October for 2005 to 2015*. The HHI figures shown are capacity-based, with market share attributed to the producer. (*Completion expected by mid-2016.)