

BUILDING PARTNERSHIPS | GROWING MARKETS

2017 ETHANOL INDUSTRY OUTLOOK



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At the 2016 National Ethanol Conference in New Orleans, Democratic operative Paul Begala presciently noted that the political elites in the nation's capital were viewing the election from the wrong end of the telescope. "We were looking at the candidates," he said, "not the electorate." And the electorate was angry with Washington, frustrated with partisan gridlock, and demanding change. On November 8, America delivered that change.

For ethanol that change can be a good thing; not just because candidate Trump spoke frequently about the need for American energy, American jobs, ethanol and the RFS, but because a Trump Administration will be committed to eliminating the regulatory shackles that have impeded growth, denied consumer choice, increased cost, and stifled innovation. Thus, while 2016 was another record year for the U.S. ethanol industry, with record production, unprecedented demand, and growing exports, the outlook for 2017 is even brighter as we look forward to working with a new Administration to release the unlimited potential of homegrown, renewable fuels like ethanol.

Realizing that potential will require a fresh mindset, new goals, updated messaging, and hitting the reset button with past allies with whom recent policy battles have caused tension. Thus, the theme for this year's Outlook is **"Building Partnerships and Growing Markets."** That must be our abiding mission as the U.S. ethanol industry looks beyond today's market reality to one shaped by higher octane fuels, increased world demand, and state clean fuel programs. The future also likely means higher fuel economy standards that will suppress fuel demand, reduced flex fuel vehicle production as automakers respond to changing federal incentives, and increased competition from electric vehicles as technology improves.

Almost since the day the Renewable Fuel Standard (RFS) was signed into law, we have been engaged in an epic struggle to protect it from unrelenting attack. We have succeeded; and the program has flourished in building a formidable renewable energy industry that has revitalized America's rural economy, encouraged investment in new technologies and infrastructure, lowered consumer gasoline prices, provided meaningful choice at the pump, reduced our dependence on imported oil, and established ethanol as the most successful low carbon transportation fuel on the planet. That's a pretty good place to start the discussion on how best to continue the growth and evolution of the ethanol industry.

The RFA, America's corn farmers, and the oil industry partnered in the passage of the first RFS. The environmental community joined us to pass RFS2. Securing a future for ethanol that empowers consumers, encourages innovation and new technologies, and grows demand at home and abroad will necessitate a whole new conversation. The RFA intends to be at the center of that discussion again.

This Outlook, which celebrates the tremendous accomplishments of the U.S. ethanol industry this past year, also provides a harbinger of the coming year's policy and marketplace challenges and opportunities. It is, in effect, a roadmap for future fuel policy discussions and a handbook for Building Partnerships and Growing Markets.

Sincerely,

A handwritten signature in black ink that reads "Bob Dinneen".

Bob Dinneen, President & CEO

2016 ETHANOL PRODUCTION

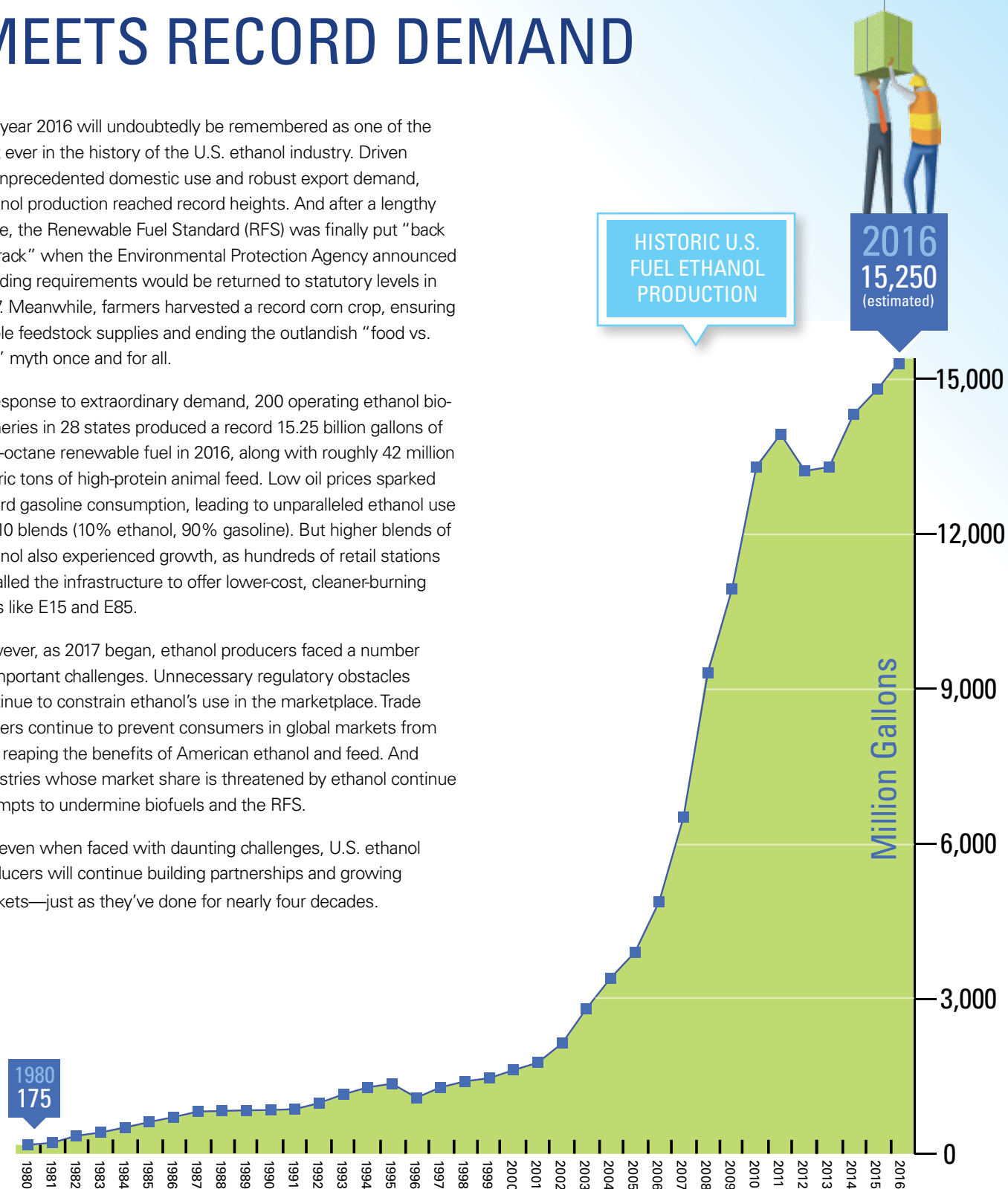
SURGING OUTPUT MEETS RECORD DEMAND

The year 2016 will undoubtedly be remembered as one of the best ever in the history of the U.S. ethanol industry. Driven by unprecedented domestic use and robust export demand, ethanol production reached record heights. And after a lengthy battle, the Renewable Fuel Standard (RFS) was finally put “back on track” when the Environmental Protection Agency announced blending requirements would be returned to statutory levels in 2017. Meanwhile, farmers harvested a record corn crop, ensuring ample feedstock supplies and ending the outlandish “food vs. fuel” myth once and for all.

In response to extraordinary demand, 200 operating ethanol bio-refineries in 28 states produced a record 15.25 billion gallons of high-octane renewable fuel in 2016, along with roughly 42 million metric tons of high-protein animal feed. Low oil prices sparked record gasoline consumption, leading to unparalleled ethanol use in E10 blends (10% ethanol, 90% gasoline). But higher blends of ethanol also experienced growth, as hundreds of retail stations installed the infrastructure to offer lower-cost, cleaner-burning fuels like E15 and E85.

However, as 2017 began, ethanol producers faced a number of important challenges. Unnecessary regulatory obstacles continue to constrain ethanol’s use in the marketplace. Trade barriers continue to prevent consumers in global markets from fully reaping the benefits of American ethanol and feed. And industries whose market share is threatened by ethanol continue attempts to undermine biofuels and the RFS.

But even when faced with daunting challenges, U.S. ethanol producers will continue building partnerships and growing markets—just as they’ve done for nearly four decades.



Source: U.S. Dept. of Energy and RFA

U.S. ETHANOL PRODUCTION CAPACITY BY STATE

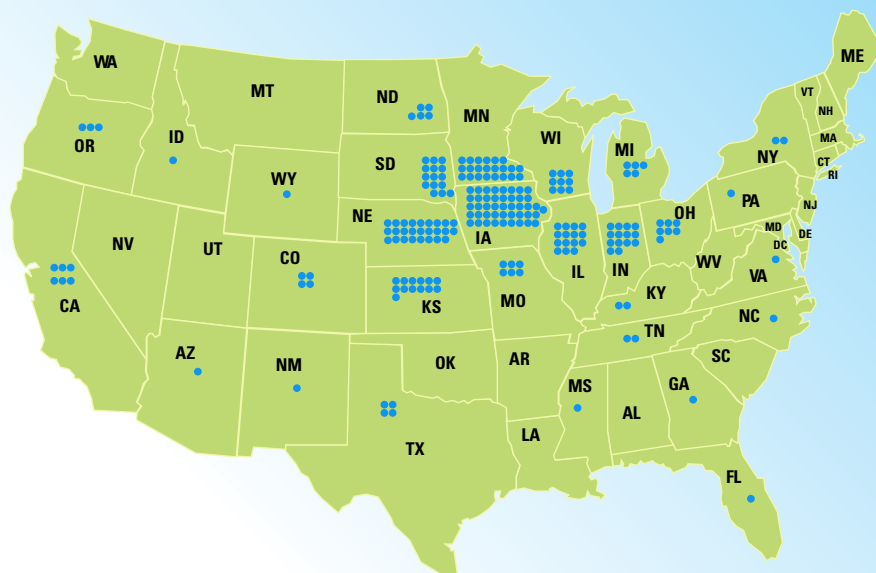
PRODUCTION FACILITIES

(Million Gallons/Year)

	Production Capacity	Operating Production	Under Constr./Expansion	Total	Installed Ethanol Biorefineries	Operating Ethanol Biorefineries	Biorefineries Under Constr./Expansion
Iowa	4,072	4,016	-	4,072	44	43	-
Nebraska	2,182	2,129	10	2,192	26	24	1
Illinois	1,785	1,747	-	1,785	15	14	-
Minnesota	1,204	1,164	-	1,204	22	20	-
Indiana	1,173	1,173	-	1,173	14	14	-
South Dakota	1,059	1,059	-	1,059	15	15	-
Kansas	552	502	-	552	13	11	-
Ohio	548	548	-	548	7	7	-
Wisconsin	547	547	-	547	9	9	-
North Dakota	475	475	-	475	5	5	-
Texas	390	390	-	390	4	4	-
Michigan	300	300	68	368	5	5	1
Missouri	271	256	-	271	6	6	-
Tennessee	225	225	-	225	2	2	-
California	223	218	-	223	6	5	-
New York	147	147	13	160	2	2	1
Oregon	150	42	-	150	3	2	-
Colorado	127	127	-	127	4	4	-
Georgia	120	120	-	120	1	1	-
Pennsylvania	110	110	-	110	1	1	-
Idaho	60	60	-	60	1	1	-
Virginia	60	60	-	60	1	1	-
North Carolina	60	-	-	60	1	-	-
Mississippi	54	54	-	54	1	1	-
Arizona	50	50	-	50	1	1	-
Kentucky	36	36	-	36	2	2	-
Wyoming	10	-	-	10	1	-	-
Florida	8	-	-	8	1	-	-
TOTAL U.S.	15,998	15,555	91	16,089	213	200	3

U.S. FUEL ETHANOL BIOREFINERIES BY STATE

● INSTALLED ETHANOL PLANT



THE ETHANOL PROCESS

EVOLUTION OF AN INDUSTRY

Ethanol's use as a motor fuel dates back to the days of the Model T. In fact, Henry Ford and Alexander Graham Bell were among the first to recognize that the plentiful sugars and starches found in plants could be easily and inexpensively converted into clean-burning, renewable alcohol fuels.

While the concept is the same today as it was then, the ethanol industry has come a long way since those days. Today, sophisticated biorefineries use state-of-the-art technologies to convert grains, beverage and food waste, cellulosic biomass, and other feedstocks into high-octane ethanol. Roughly 90% of the grain ethanol produced today comes from the dry milling process, with the remaining 10% coming from wet mills.

In dry milling, the entire grain kernel is first ground into "meal," then slurried with water to form a "mash." Enzymes are added to the mash to convert starch to sugar. The mash is cooked, then cooled and transferred to fermenters. Yeast is added and the conversion of sugar to alcohol begins. After fermentation, the resulting "beer" is separated from the remaining "stillage." The ethanol is then distilled and dehydrated, then blended with about 2% denaturant (such as gasoline) to render it undrinkable. It is then ready for shipment. The stillage is sent through a centrifuge that separates the solids from the solubles. These co-products eventually become distillers grains, as well as corn distillers oil.

In wet milling, the grain is first separated into its basic components through soaking. After steeping, the slurry is processed through grinders to separate the corn germ. The remaining fiber, gluten and starch components are further segregated. The gluten component (protein) is filtered and dried to produce animal feed. The remaining starch can then be fermented into ethanol, using a process similar to the dry mill process.

"There is fuel in every bit of vegetable matter that can be fermented."

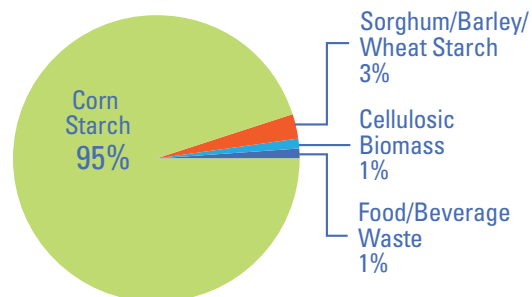
— Henry Ford, 1925



Ethanol is "a wonderfully clean-burning fuel that can be produced from farm crops, agricultural wastes, even garbage."

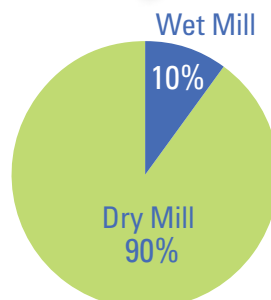
— Alexander Graham Bell, 1917

U.S. ETHANOL PRODUCTION CAPACITY BY FEEDSTOCK TYPE



Source: RFA based on data from U.S. Dept. of Agriculture

U.S. GRAIN ETHANOL PRODUCTION BY TECHNOLOGY TYPE



Source: U.S. Dept. of Agriculture

DRY MILL PRODUCT YIELDS

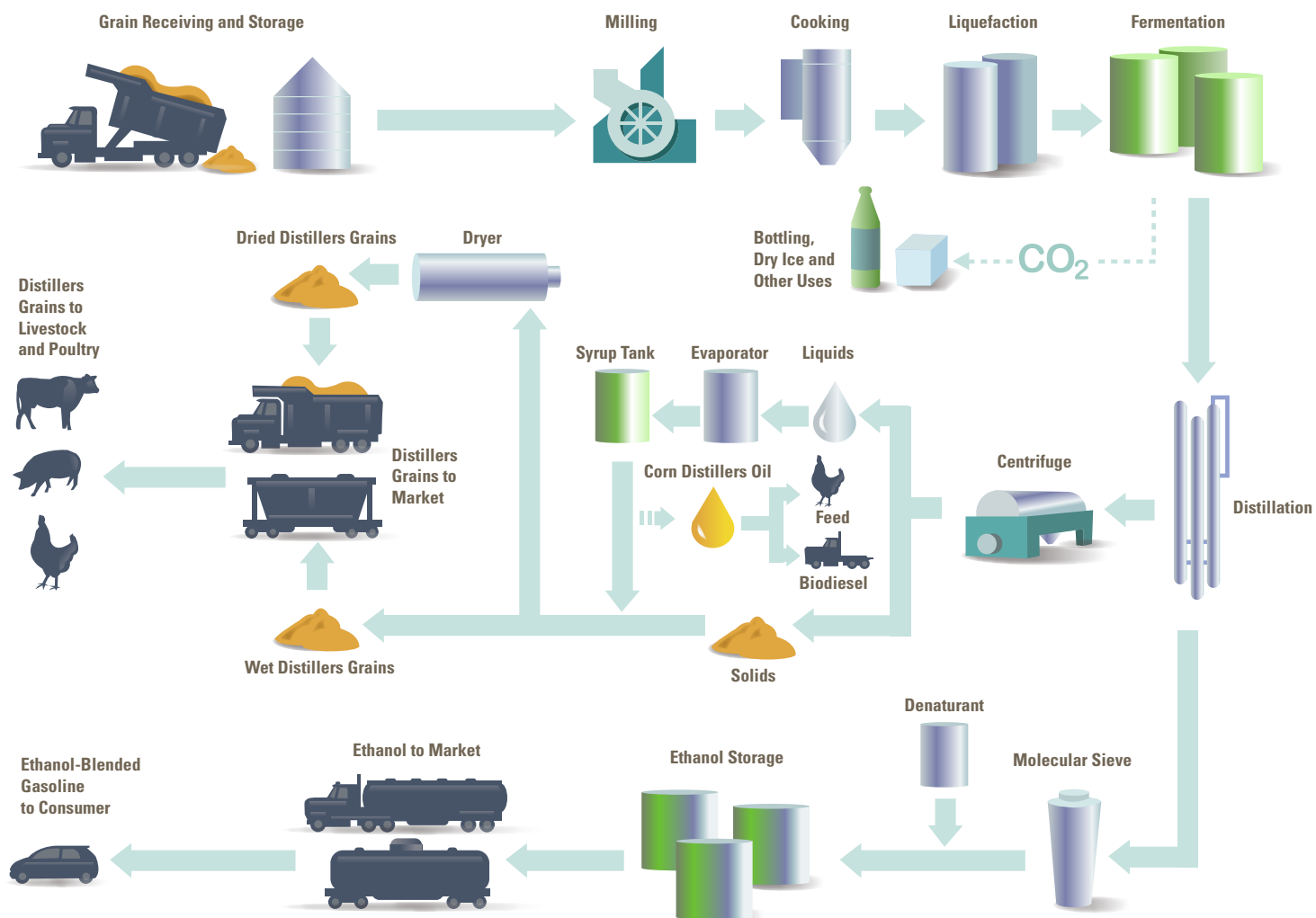
On average, 1 bushel of corn (56 pounds) processed by a dry mill ethanol biorefinery produces:

- 2.85 gallons denatured ethanol
- 16.5 pounds of distillers grains animal feed (10% moisture)
- 0.65 pounds of corn distillers oil
- 17 pounds of biogenic carbon dioxide



Source: RFA and U.S. Dept. of Agriculture

DRY MILL ETHANOL PROCESS



Source: RFA

ETHANOL'S ECONOMIC IMPACT

GROWING THE ECONOMY

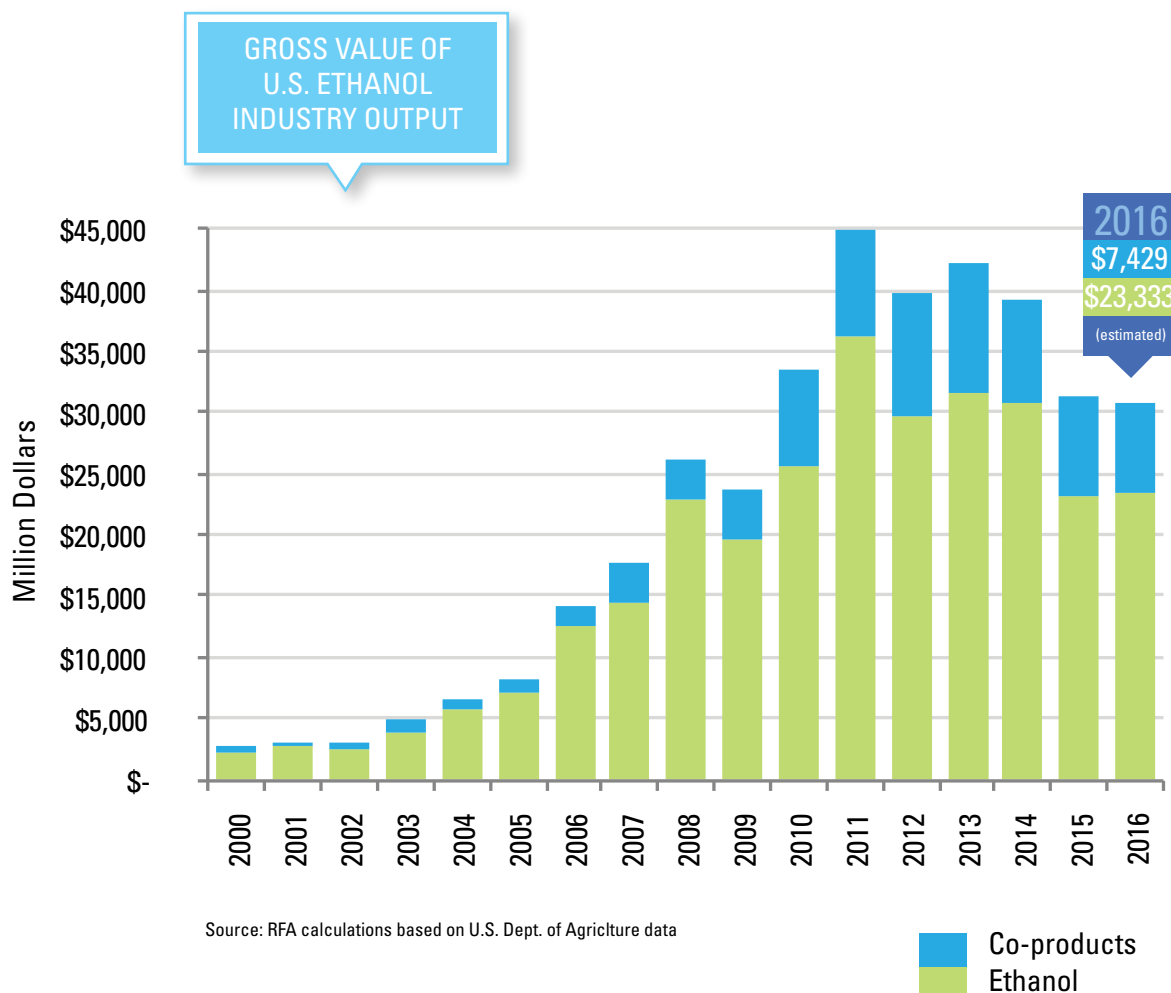
Net farm income fell to a seven-year low in 2016, causing concern across rural America about the state of the agricultural economy. In fact, 2016 net farm income was just roughly half of the record level experienced in 2013.

Fortunately, in communities across the heartland, ethanol continued to spur vital economic activity and support high-paying jobs. Indeed, the downturn in the farm economy would have been far worse without the ethanol industry's stabilizing effects.

In 2016, the production of a record 15.25 billion gallons of ethanol supported 74,420 direct jobs in renewable fuel production and agriculture, as well as 264,756 indirect and induced jobs across all sectors of the economy.

The industry added \$42 billion to the nation's Gross Domestic Product (GDP) in 2016 and paid roughly \$9 billion in taxes. The sector's economic activity and job creation helped raise household income by \$23 billion. Meanwhile, U.S. ethanol producers spent \$25 billion on raw materials, inputs, and other goods and services.

The extended reach of U.S. ethanol in global markets is also supporting the economy here at home. Growing exports of both ethanol and co-products are helping to not only reduce the U.S. trade deficit, but also support jobs and income levels in the domestic economy.



In 2016, the production of 15.25 billion gallons of ethanol and 42 million metric tons of co-products had substantial economic impacts, including:

- 74,420 direct jobs
- 264,756 indirect and induced jobs
- \$42 billion contribution to GDP
- \$23 billion in household income
- \$9 billion in tax revenue

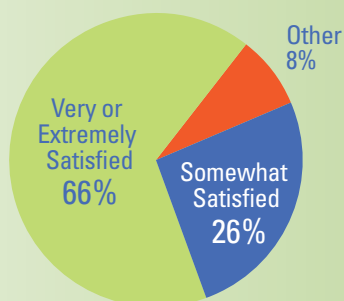
“We find that counties with high and medium levels of ethanol production capacity show higher employment and wages than non-producing ethanol counties.”

– Pepperdine University

U.S. ethanol and co-product exports in 2016 supported:

- 14,940 direct, indirect, and induced jobs
- \$3 billion contribution to GDP
- \$4 billion reduction in the U.S. trade deficit

**ETHANOL INDUSTRY
JOB SATISFACTION**



Source: *Ethanol Producer Magazine*

A recent survey of ethanol industry employees found more than nine out of 10 workers are satisfied with their jobs.

“A wide variety of workers are needed to research and produce biofuels, making them an important aspect of the green economy.”

– U.S. Department of Labor



ETHANOL EXPORTS AND IMPORTS

BUILDING GLOBAL MARKETS

As the world's lowest-cost producer, the United States continues to emerge as the international market's most reliable and affordable source of high-octane ethanol. U.S. ethanol exports rose to more than 1 billion gallons in 2016, the second-highest annual total on record.

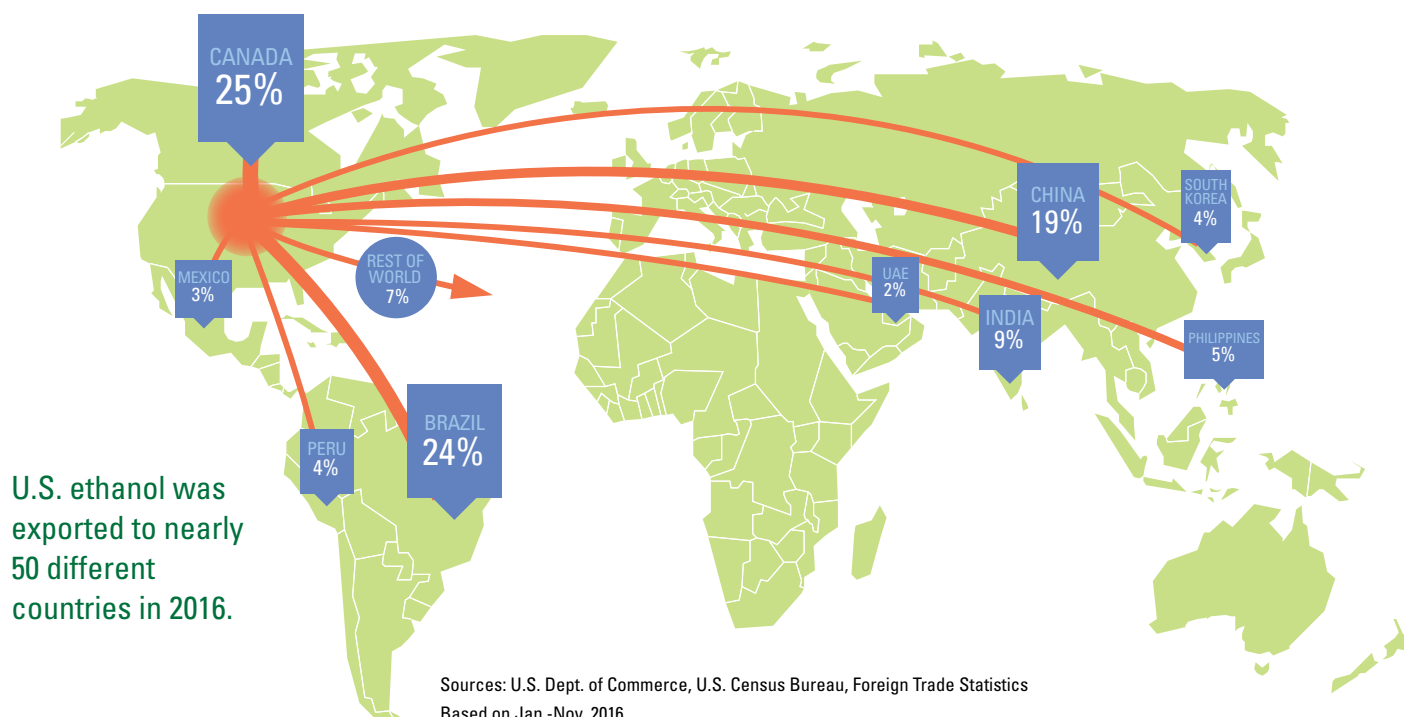
Canada and Brazil remained as the U.S. ethanol industry's top export customers in 2016, with the two countries combining to receive roughly half of total shipments. Exports to Brazil swelled in 2016, as the world's second-leading ethanol producer faced relatively high sugar feedstock prices and struggled to keep up with domestic demand. Shipments to China surged as well, as the country increasingly recognized the value of U.S. ethanol as a solution to worsening urban air pollution. India, Peru, and South Korea were other top markets in 2016.

In the meantime, U.S. fuel ethanol imports hit a six-year low, registering at less than 40 million gallons. In fact, it was the third straight year that imports were less than 100 million gallons, despite the demand pull from California's Low Carbon Fuel Standard and the RFS advanced biofuel standard.

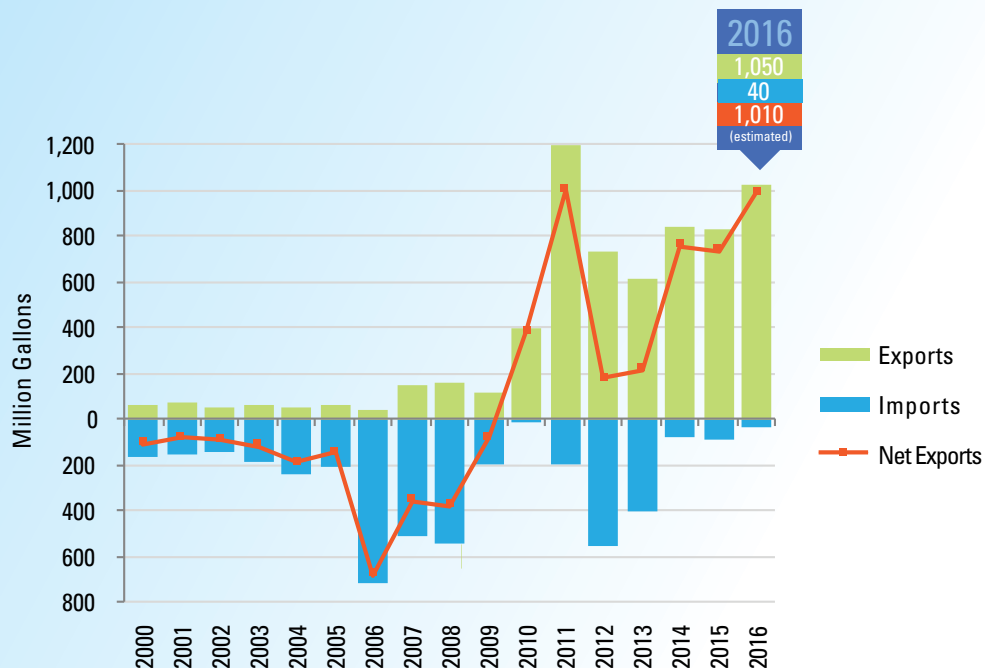
Ethanol trade policy was back in the spotlight in 2016. A European Union General Court annulled the EU's protectionist 9.5% anti-dumping duty on ethanol imported from the U.S., giving a glimmer of hope that the market may soon re-open. However, the decision was appealed and remained unresolved as the New Year began. Elsewhere, Mexico adopted fuel regulations officially allowing ethanol blends up to 5.8% ethanol in the nation's fuel supply. However, ethanol blending remains prohibited in three of the country's major urban markets—Mexico City, Guadalajara and Monterrey. Finally, China substantially raised import duties on U.S. ethanol as 2017 began, which is expected to sharply curtail exports to that nation.

RFA continues working with its partners, both in industry and the federal government, to overcome these trade barriers and facilitate growth in the world market for U.S. ethanol.

TOP DESTINATIONS FOR U.S. ETHANOL EXPORTS IN 2016



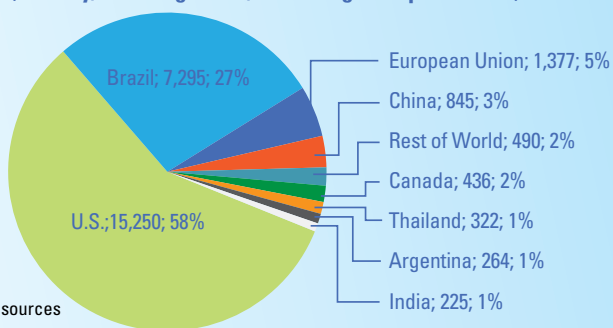
U.S. ETHANOL EXPORTS AND IMPORTS



Sources: U.S. Dept. of Commerce, U.S. Census Bureau, Foreign Trade Statistics
*2016 estimated based on Jan.-Nov. 2016

2016 GLOBAL FUEL ETHANOL PRODUCTION BY COUNTRY

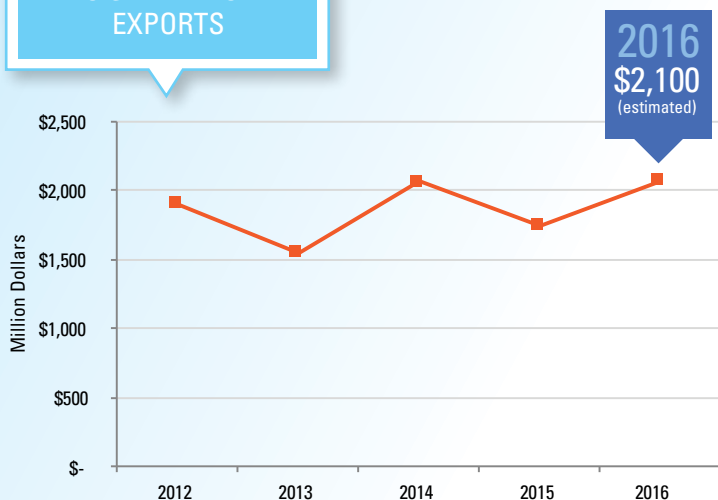
(Country, million gallons, share of global production)



The United States retained its position as the top ethanol producer in the world in 2016, accounting for nearly 60% of global production.

Source: RFA analysis of public and private data sources

VALUE OF U.S. ETHANOL EXPORTS



Sources: U.S. Dept. of Commerce, U.S. Census Bureau, Foreign Trade Statistics
2016 estimated based on Jan.-Nov. 2016

“Promoting the use of ethanol in gasoline will bring environmental, economic and social benefits to China, especially in the Beijing-Tianjin-Hebei region, which suffers from a big smog problem.”

— Fan Bi, deputy director of China’s State Council General Research Office

CO-PRODUCT OUTPUT AND EXPORTS

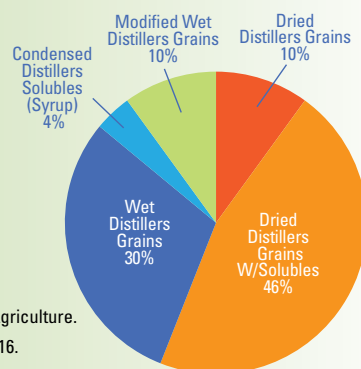
FLOURISHING FEED PRODUCTION

Though it is often overlooked, the U.S. ethanol industry produces a tremendous amount of animal feed. In fact, ethanol plants churned out more feed in 2016 than the entire U.S. soybean crushing industry, one of the largest segments of the global feed market.

One-third of every bushel of grain that enters the ethanol process is enhanced and returned to the feed market, most often in the form of distillers grains, corn gluten feed and corn gluten meal. Only the starch portion of the grain is made into ethanol; the remaining protein, fat and fiber pass through the process. These nutrient-dense co-products are fed to livestock, poultry and fish around the world.

As domestic ethanol production continued to creep higher in 2016, the output of these feed co-products achieved a new record of nearly 42 million metric tons (mmt). Dry mill ethanol plants also extracted roughly 2.9 billion pounds of corn distillers oil (CDO), a high value co-product used as a feed ingredient or feedstock for biodiesel production.

DISTILLERS GRAINS PRODUCTION BY TYPE



Source: U.S. Dept. of Agriculture.
Based on Jan.-Nov. 2016.

Types of Distillers Grains

Dried Distillers Grains (DDG)

Dried Distillers Grains w/Solubles (DDGS)

Wet Distillers Grains (WDG)

Condensed Distillers Solubles (CDS or "Syrup")

Modified Wet Distillers Grains (MWDG)

Typical Moisture Content

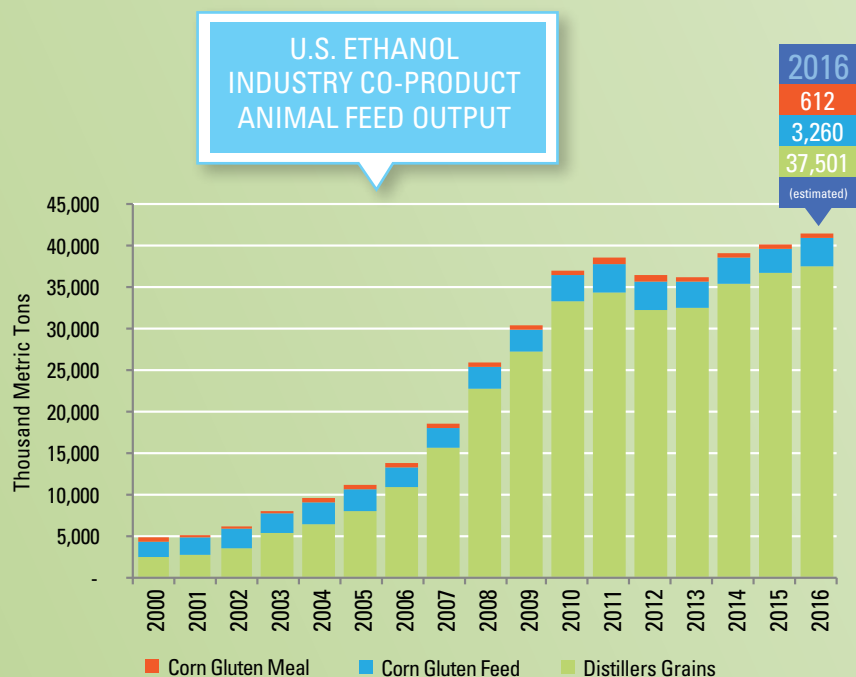
10-12%

10-12%

65% or more

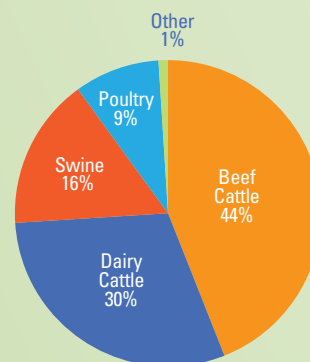
70-80%

40-64%



Source: RFA calculations based on USDA Data. Note: All co-products converted to 10% moisture basis

DISTILLERS GRAINS CONSUMPTION BY SPECIES



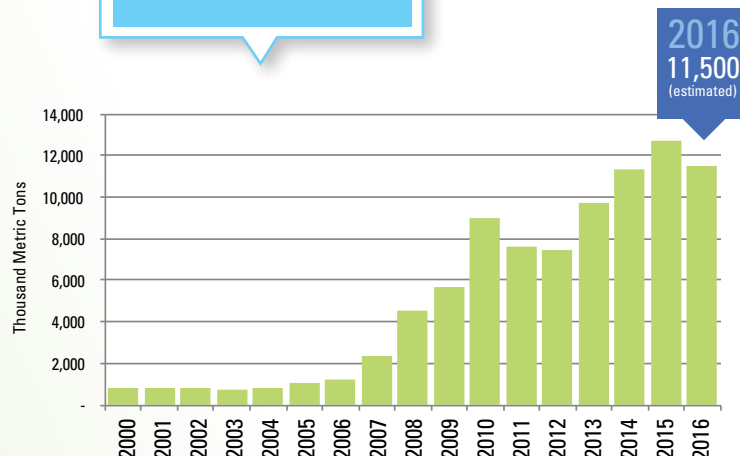
Source: Distillers grains marketing companies

FEEDING THE WORLD

American ethanol producers exported roughly 11.5 mmt of distillers grains in 2016, down slightly from 2015 but still the second-highest export volume on record. Lower distillers grains prices relative to competing feedstuffs encouraged increased inclusion rates in livestock, poultry and fish rations across the globe. China, Mexico, and Vietnam were the top three export markets, receiving approximately half of total U.S. shipments. South Korea, Turkey, Thailand, Canada, and Indonesia were other leading markets.

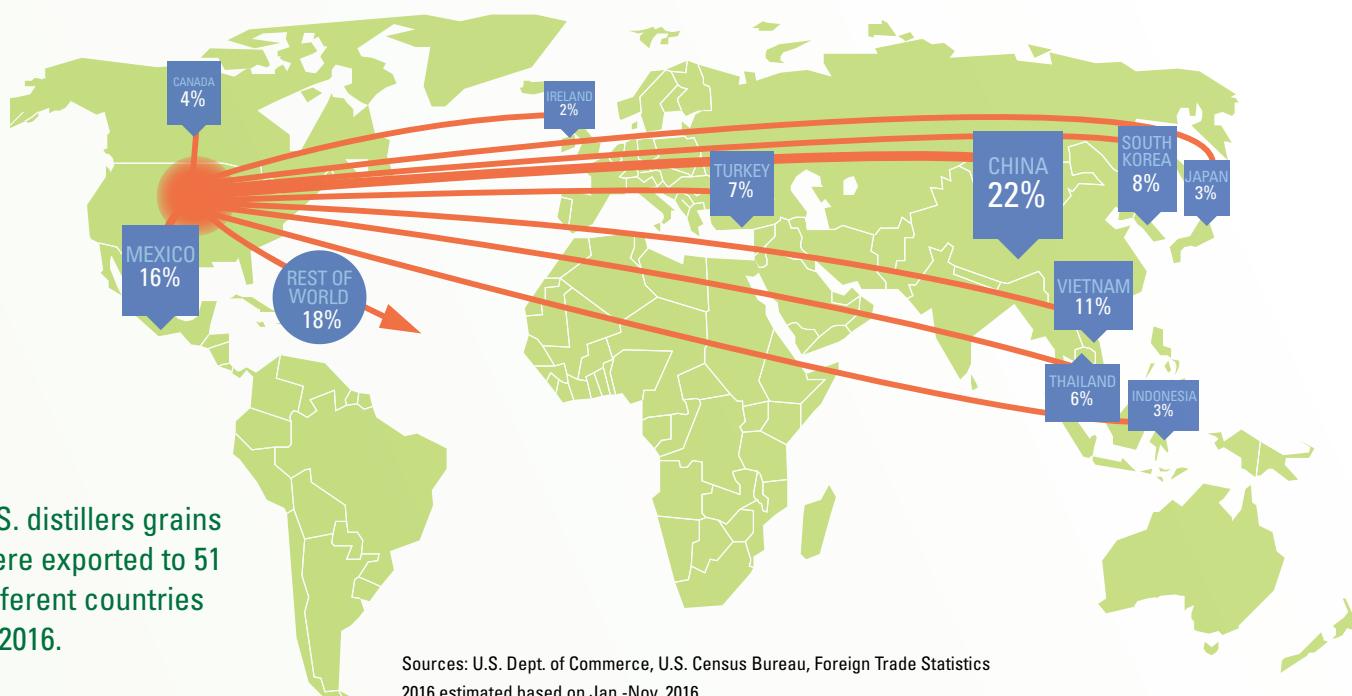
While China remained the top market for U.S. distillers grains exports in 2016, the country's imposition of anti-dumping and countervailing duties against U.S. distillers grains led to substantial erosion in that market. Exports to China peaked at roughly 1 mmt per month during the summer of 2015, but had fallen by more than 80% by the end of 2016. Exports to China are expected to diminish further in response to implementation of the duties.

U.S. DISTILLERS GRAINS EXPORTS



Sources: U.S. Dept. of Commerce, U.S. Census Bureau, Foreign Trade Statistics
2016 estimated based on Jan.-Nov. 2016

TOP DESTINATIONS FOR U.S. DISTILLERS GRAINS EXPORTS IN 2016



U.S. distillers grains were exported to 51 different countries in 2016.

Sources: U.S. Dept. of Commerce, U.S. Census Bureau, Foreign Trade Statistics
2016 estimated based on Jan.-Nov. 2016

ETHANOL'S OCTANE BENEFIT

A CRUCIAL COMPONENT

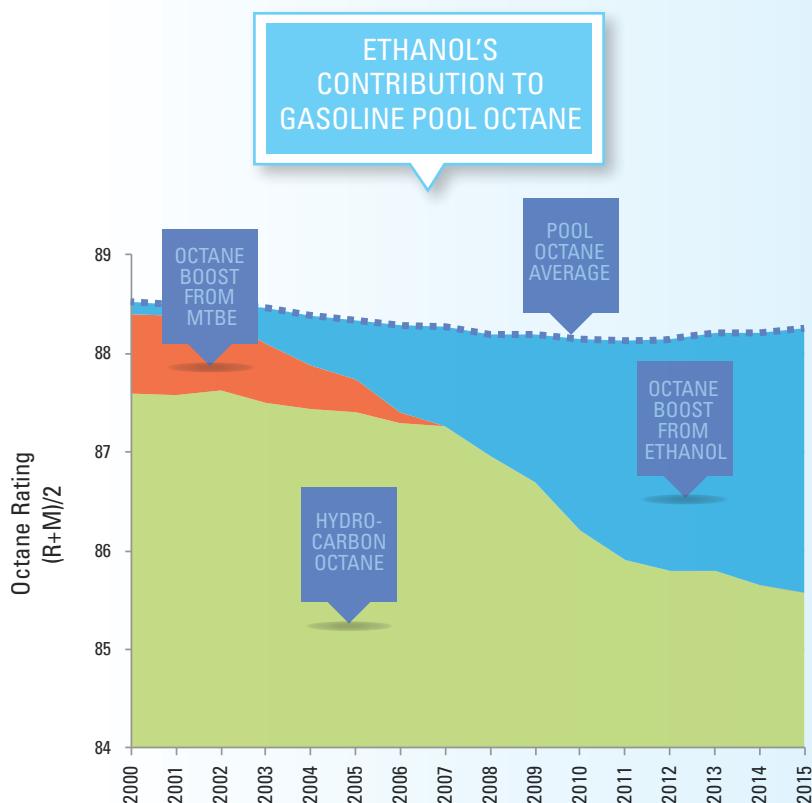
The nation's gasoline pool is growing thirstier for more octane, and ethanol continues to deliver. With a blending octane rating of 113, American-made ethanol is the cleanest and most affordable source of octane on the global market today.

In the past, gasoline refiners produced all the octane they needed from petroleum hydrocarbons. But refinery processes to increase octane production are costly and energy intensive. Thus, as ethanol availability has grown, refiners have optimized their operations to reduce hydrocarbon octane production and take advantage of ethanol's superior clean octane properties.

Most refiners today produce gasoline blendstock with an octane rating of 83 or 84, then upgrade it to 87 (the minimum allowed in most states) by adding 10% ethanol. This offers significant cost savings and reduced energy use and emissions at the refinery.

Ethanol's role as an octane source has an even brighter future. Demand for higher-octane gasoline is growing, as automakers are introducing more vehicles that require or recommend the use of premium. Moreover, a high-octane, mid-level ethanol blend like E20-E40 can deliver the same—or better—fuel economy as regular gasoline when paired with an optimized engine, but with less energy expended per mile and far fewer emissions. That's why many automakers view ethanol-based high-octane fuels as a winning strategy for compliance with future fuel economy and emissions standards.

In addition to ethanol's economic benefits as an octane source, it is also the cleanest and safest option available. Ethanol displaces aromatic hydrocarbon octane boosters like benzene and MTBE, which are toxic to humans and harmful to air and water resources.



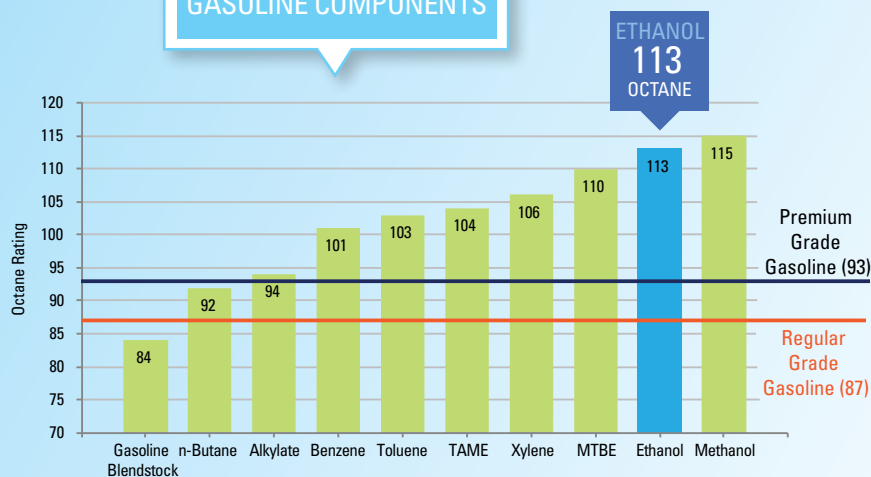
Source: MathPro, Inc.

WHAT IS OCTANE AND WHY IS IT IMPORTANT?

A fuel's octane rating is the measure of its ability to resist "knocking" in the engine, which is caused when the air/fuel mixture detonates prematurely during combustion. According to the Department of Energy, "Using a lower octane fuel than required can cause the engine to run poorly and can damage the engine and emissions control system over time. It may also void your warranty."



"BLENDING OCTANE" RATINGS OF VARIOUS GASOLINE COMPONENTS



Source: U.S. Dept. of Energy and Industry Sources

"Higher octane is necessary for better engine efficiency. It is a proven low-cost enabler to lower CO₂."

– General Motors

"...it appears that substantial societal benefits may be associated with capitalizing on the inherent high octane rating of ethanol in future higher octane number ethanol-gasoline blends."

– Ford Motor Company

"If we could optimize engines only to operate on premium fuel, then life would be a lot easier for us and we'd be able to see much more of a benefit in terms of efficiency. ...if ethanol was widely available then our life as developers of gasoline engines would become easier."

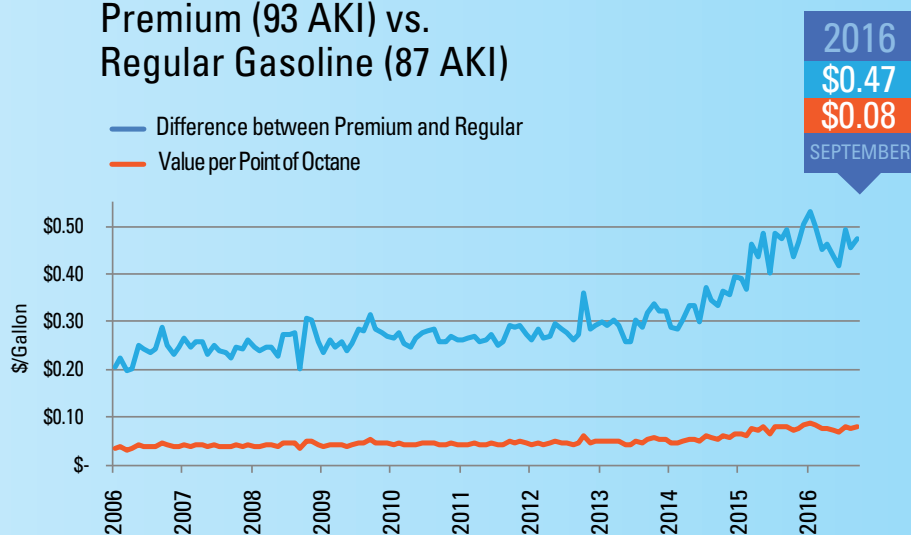
– AVL Powertrain Engineering

"(High octane fuels), specifically mid-level ethanol blends (E25-E40), could offer significant benefits for the United States. These benefits include an improvement in vehicle fuel efficiency in vehicles designed and dedicated to use the increased octane."

– U.S. Department of Energy

WHOLESALE PRICE DIFFERENTIAL

Premium (93 AKI) vs. Regular Gasoline (87 AKI)



Source: U.S. Dept. of Energy

RENEWABLE FUEL STANDARD BACK ON TRACK

The Renewable Fuel Standard (RFS) is unquestionably one of the greatest success stories in the history of energy, environmental, and agricultural policy. By any measure, the RFS has lived up to its enormous promise; it has reduced oil imports, created jobs and sparked economic activity, decreased harmful emissions from the transportation sector, enhanced competition, and increased consumer access to lower-cost fuel options.

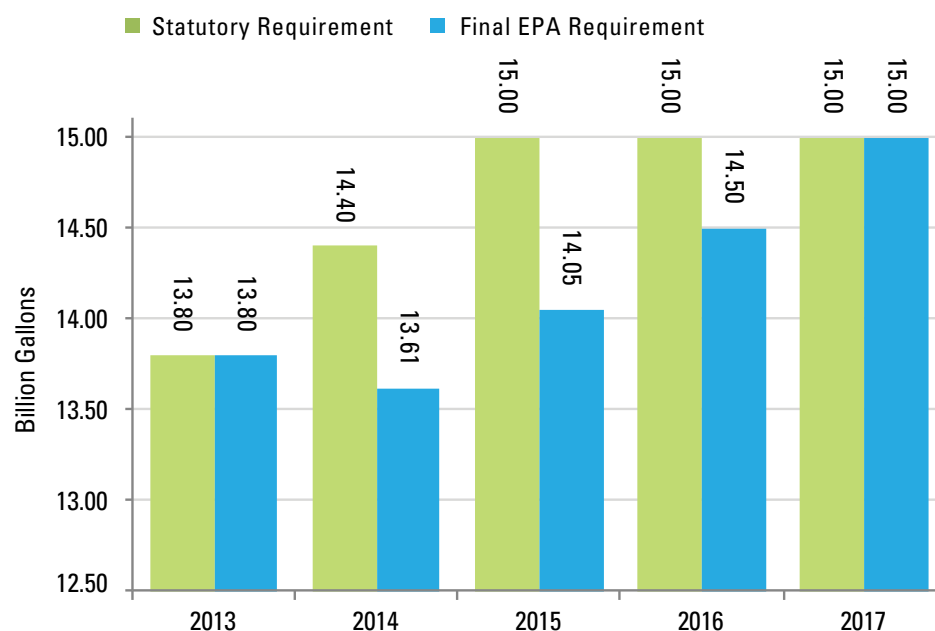
Given this impressive track record, the Environmental Protection Agency's (EPA) decision in 2015 to reduce RFS blending requirements for 2014-2016 was a bewildering setback for biofuel producers, farmers, and consumers alike. But after that frustrating three-year detour, the EPA finally put the RFS back on track in late 2016 by finalizing conventional renewable fuel blending requirements for 2017 at the statutory levels established by Congress.

In May 2016, EPA proposed a 2017 conventional renewable fuel blending requirement of 14.8 billion gallons—just shy of the 15-billion-gallon volume established by Congress. However, EPA listened to the tens of thousands of farmers, ethanol industry employees, and others who encouraged the Agency to follow the law in setting the final 2017 volumes.

Not only did EPA's 2017 final rule include a 15-billion-gallon requirement for conventional renewable fuel, but it also increased blending obligations for advanced biofuels. Overall, the total renewable fuel volume required is set to grow by 1.2 billion gallons from 2016 to 2017, a 6 percent increase.

In the end, the final rule for 2017 RFS blending requirements marked a major win for the biofuel and agriculture sectors, and firmly restored a healthy and certain growth trajectory for the industry.

RFS CONVENTIONAL RENEWABLE FUEL VOLUME REQUIREMENTS



Source: U.S. Environmental Protection Agency

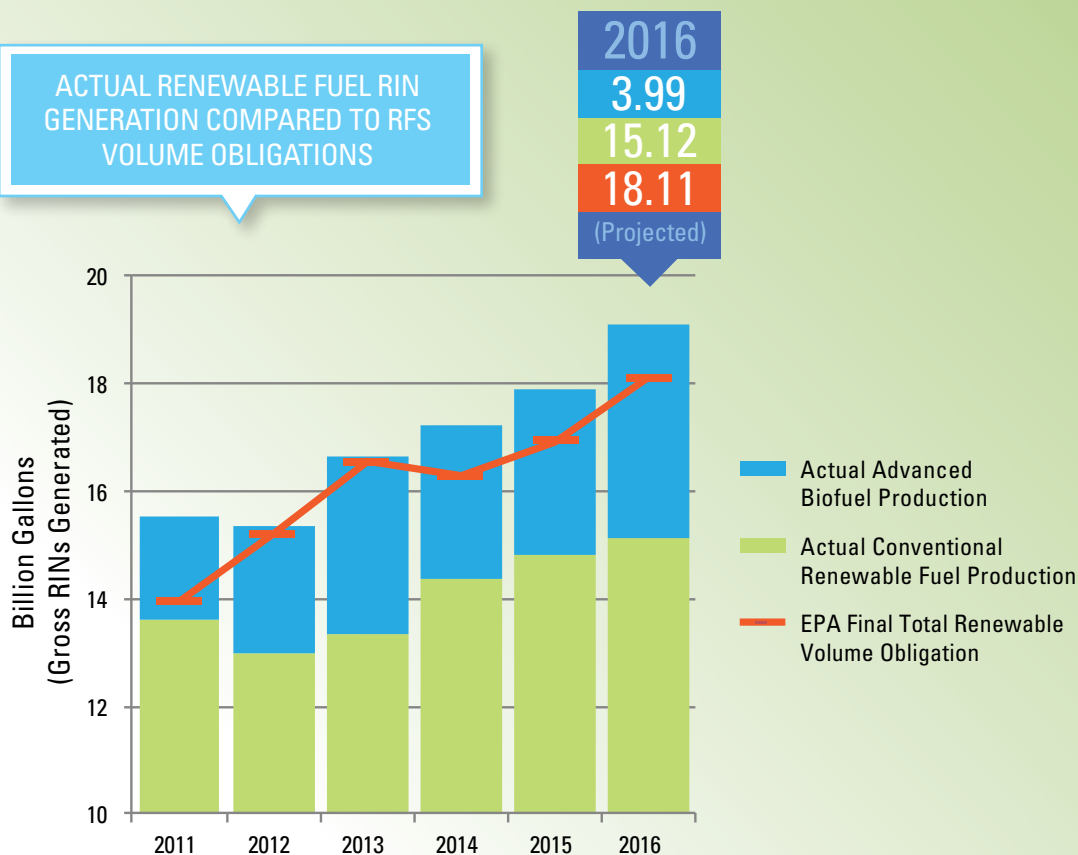
What is a RIN Credit?

A Renewable Identification Number (RIN) is a numbered credit assigned to each gallon of biofuel for the purpose of tracking its production and use under the RFS. Obligated parties (refiners and importers) turn in RINs to EPA to demonstrate that they fulfilled their annual renewable fuel blending obligations. Obligated parties who do not wish to blend renewable fuels may instead purchase RINs from other parties who blended more than their obligated volume. As RFS requirements escalate, RIN supplies tighten and RIN prices rise. This creates greater incentive to blend more renewable fuels.

"We continue to believe that the constraints associated with the E10 blend wall do not represent a firm barrier that cannot or should not be crossed. Comments received in response to the proposed rule provided no compelling evidence that the nationwide average ethanol concentration in gasoline cannot exceed 10.0%."

– U.S. EPA, final rule for 2017 RFS blending requirements

ACTUAL RENEWABLE FUEL RIN GENERATION COMPARED TO RFS VOLUME OBLIGATIONS



Advanced Biofuels includes Biomass-Based Diesel and Cellulosic Biofuels
Source: U.S. Environmental Protection Agency. Estimate based on Jan.-Nov. 2016

E15 MARKET UPDATE

BOOSTING CONSUMER CHOICE

Consumer choice at the pump got a shot in the arm in 2016, as the number of stations selling E15 rapidly expanded into new markets. Thanks in large part to the U.S. Department of Agriculture's Biofuels Infrastructure Partnership grant program and ethanol industry initiatives like Prime the Pump, E15 is now available at nearly 400 retail gas stations across 28 states. Many more stations are on the way.

Innovative retailers like Thorntons, Kum & Go, Sheetz, RaceTrac, and Murphy USA continued to lead the industry in adopting E15 in 2016, while HWRT Oil Company became the first terminal operator to offer pre-blended E15 at wholesale terminals in Illinois, Indiana and Arkansas.

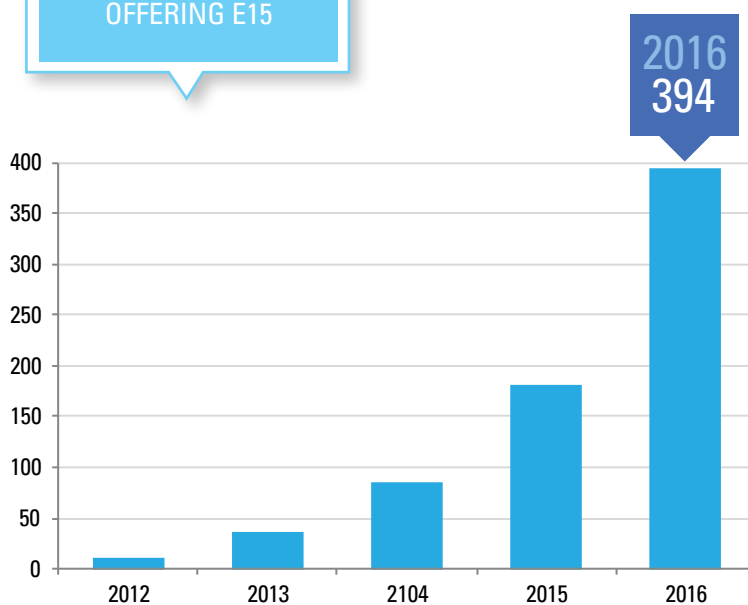
There was also significant progress on automaker approvals for the fuel. Manufacturers of more than 80% of model year 2017 vehicles list E15 as an approved fuel, including Hyundai and Kia for the first time. They join Fiat-Chrysler, Ford, General Motors, Honda, Toyota, and Volkswagen as major automakers that explicitly approve the use of E15. Meanwhile, EPA's fuel waiver allowing the use of E15 in all vehicles built in 2001 or later means approximately 90% of the vehicles on the road today are legally approved to use the higher-octane, lower-cost fuel blend.

In the five years since E15 was formally approved by EPA, American drivers have logged nearly 400 million miles on the fuel—the equivalent of 800 trips to the moon and back—without a single reported case of “engine damage,” misfueling, or inferior performance. E15 is primed for an even bigger year in 2017, as the RFS is back on track, retailers continue to invest in infrastructure, and more and more automakers are standing behind the use of E15 in their vehicles.

E15 “...provides an octane rating of 88, and is the most widely-tested fuel ever introduced to consumers. This fuel typically costs less than regular unleaded, and is believed to deliver better performance and fewer harmful emissions.”

– Matt Thornton, CEO of Thorntons




U.S. RETAIL STATIONS
OFFERING E15



Source: RFA



**E15 APPROVAL STATUS
FOR CONVENTIONAL
(NON-FFV) AUTOMOBILES**

	E15 Approved by Automaker in All Models
	E15 Approved by Automaker in Some Models
	E15 Approved by EPA only; Not Approved by Automaker

*Motor Intelligence (Jan.-Oct. 2016)

**Mini approves the use of up to 25% ethanol blends

***Except Hyundai Sonata and Toyota 86



	MY 2012	MY 2013	MY 2014	MY 2015	MY 2016	MY 2017	U.S. Market Share*
BMW Group							
BMW							1.8%
Mini**							0.3%
Daimler Group							
Mercedes-Benz							2.1%
Smart							0.1%
Fiat-Chrysler Automobiles							
Chrysler							13.1%
Dodge							
Fiat							
Jeep							
Ram							
Ford Motor Company							
Ford							15.0%
Lincoln							
General Motors							
Chevrolet							17.1%
Buick							
Cadillac							
GMC							
Honda Motor Company							
Honda							9.4%
Acura							
Hyundai Motor Company							
Hyundai***							4.5%
Kia							3.7%
Mazda							1.7%
Nissan Motor Corporation							
Infiniti							9.0%
Nissan							
Subaru							3.5%
Tata Motors							
Jaguar							0.2%
Land Rover							0.4%
Toyota Motor Corporation***							
Lexus							13.9%
Toyota							
Volkswagen Group							
Audi							1.2%
Porsche							0.3%
Volkswagen							1.8%
All Others							0.9%

Source: RFA

ETHANOL FLEX FUELS

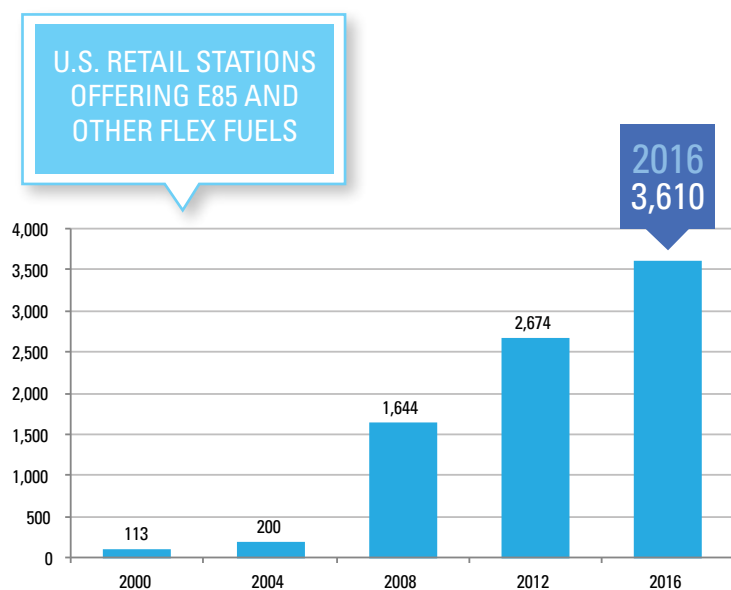
PARTNERSHIPS AT THE PUMP

Ethanol flex fuels like E85 continued to spread across the country in 2016, as the U.S. Department of Agriculture's Biofuel Infrastructure Partnership (BIP) and the industry-led Prime the Pump program helped fund the adoption of blender pumps at hundreds of new retail stations. When completed, the BIP program alone is expected to help underwrite the installation of some 5,000 pumps at roughly 1,400 gas stations in 21 states.



By year's end, E85 was being sold at more than 3,600 stations in 2,149 cities and towns across the nation, offering more than 20 million drivers of flex fuel vehicles (FFVs) a low-cost, low-emissions fuel option. Many of these stations also offered mid-level flex fuel blends like E20, E30, and E40, which many FFV drivers consider to be the "sweet spot" for taking advantage of ethanol's unique properties.

Unfortunately, however, new challenges to flex fuel growth emerged in 2016. Data from EPA confirmed that automakers are beginning to scale back FFV production because the fuel economy credits previously associated with FFV production are being phased down. At the same time, EPA proposed regulations in 2016 that would create new reporting and recordkeeping requirements for flex fuel producers and could restrict the gasoline blendstocks available for flex fuel blending.

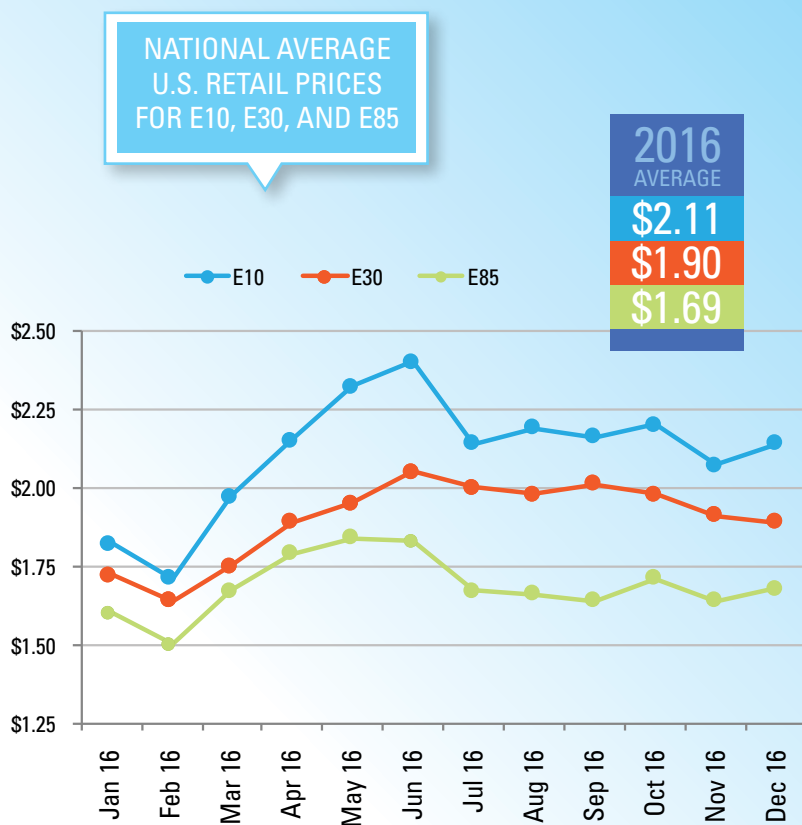


Source: U.S. Dept. of Energy and E85Prices.com



Can You Flex Fuel?

Still, consumption of E85 and other flex fuels is on track to continue expanding in 2017. EPA finally committed to enforcing the statutory RFS volumes for conventional renewable fuels, meaning E10 blends alone won't allow refiners to comply with RFS requirements. For the first time ever, the 2017 RFS will truly break the so-called "blend wall"—and E85 and other flex fuels are poised to serve as the wrecking ball.



Source: E85Prices.com

The following model year 2017 vehicles are available as FFVs

CHRYSLER/DODGE/JEEP

Chrysler 200 (2.4L, 3.6L)
 Chrysler 300 (3.6L)
 Dodge Charger (3.6L)
 Dodge Grand Caravan (3.6L)
 Dodge Journey (3.6L)
 Dodge Ram 1500 (3.6L)
 Jeep Cherokee (2.4L)
 Jeep Renegade (2.4L)

FORD/LINCOLN/MERCUY

Ford Escape (2.5L)
 Ford Explorer (3.5L)
 Ford F-150 (3.5L, 5.0L)
 Ford F-Series Super Duty (6.2L)
 Ford Focus (2.0L)
 Ford Taurus (3.5L)
 Ford Transit Connect (2.5L)
 Ford Transit T-150 (3.7L)

GENERAL MOTORS

Chevrolet Equinox (2.4L)
 Chevrolet Impala (3.6L)
 Chevrolet Silverado (4.3L, 5.3L, 6.0L HD)
 Chevrolet Silverado HD (6.0L)
 Chevrolet Suburban (5.3L)
 Chevrolet Tahoe (5.3L)
 GMC Sierra (4.3L, 5.3 L)
 GMC Sierra HD (6.0L)
 GMC Terrain (2.4L)
 GMC Yukon (5.3L)
 GMC Yukon XL (5.3L)

OTHER

Audi A5 Quattro (2.0L)
 Audi A5 Cabriolet Quattro (2.0L)
 Audi Q5 Quattro (2.0L)
 Bentley Continental Flying Spur & Speed (6.0L)
 Bentley Continental GT & GT Speed (6.0L)
 Mercedes-Benz CLA250 (2.0L)
 Mercedes-Benz GLA250 (2.0L)
 Mercedes-Benz GLE350 (3.5L)
 Nissan Frontier (4.0L)
 Toyota Sequoia (5.7L)
 Toyota Tundra (5.7L)

The makes and models listed above may not be offered with FFV capability in all locations. Consult with auto dealer to confirm FFV capability.

ETHANOL AND THE 2016 ELECTION

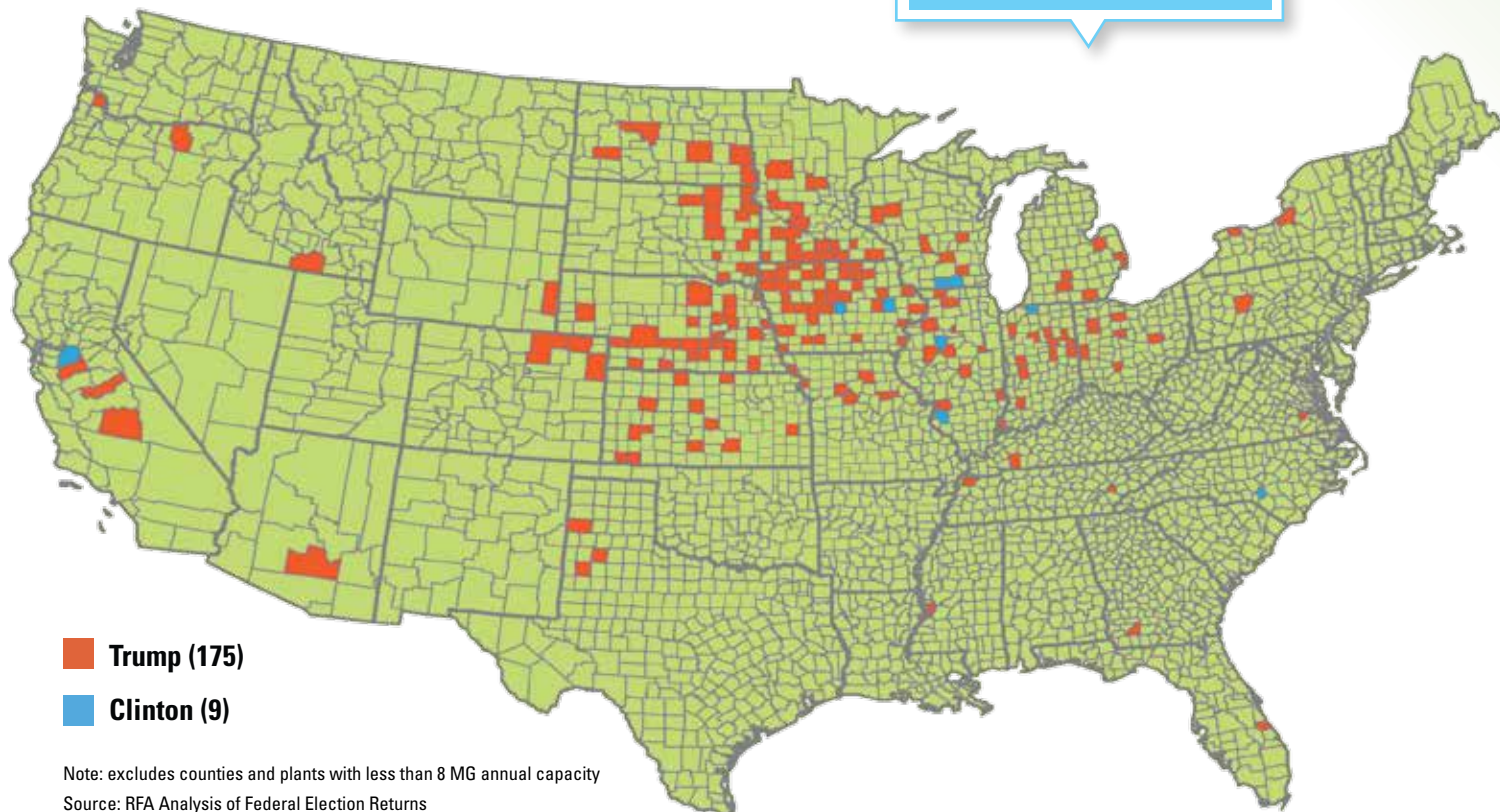
RURAL AMERICA ROARS

In the flood of post-election analysis, much credit was given to disenfranchised factory workers in the Rust Belt for delivering Donald Trump's surprising swing state victories on Election Day.

However, a detailed examination of election returns tells a different story about who may have actually turned the tide and sealed Trump's historic win. Contrary to the popular narrative, the Corn Belt may have been more instrumental in swinging key states to Trump than the Rust Belt. A majority of the counties that voted for President Obama in 2012 but flipped to Trump in 2016 actually have very little heavy industry. Rather, farming and agricultural processing are the predominant employers in many of these "swing counties."

In fact, the 218 counties that flipped from Obama in 2012 to Trump in 2016 produced 1.97 billion bushels of corn in 2015 valued at \$7.1 billion. Those counties are also home to 33 ethanol plants that produced 2.8 billion gallons of renewable fuel in 2015 worth roughly \$4.9 billion. Nationwide, 175 of the 184 counties with ethanol plants—95 percent—voted for Trump. Those 175 counties were responsible for 93 percent of total ethanol production in 2015.

COUNTIES WITH AT LEAST
ONE ETHANOL PLANT:
HOW DID THEY VOTE?



Across the nation, 184 counties are home to 205 ethanol plants with at least 8 million gallons of annual capacity. Of these counties, 175 (95%) voted for Trump. These 175 counties were responsible for 93% of total ethanol production in 2015.

In 2016, 8 of the top 10 ethanol-producing states voted for Trump. In 2012, only 5 of the top 10 ethanol-producing states voted for the Republican candidate.

115th UNITED STATES CONGRESS BALANCE OF POWER

So, why did farmers and the ethanol industry turn out in droves to vote for Trump on Election Day, ultimately helping him win key swing states like Iowa, Michigan, Ohio, Pennsylvania, and Wisconsin? The answer is simple. During his campaign, Trump pledged to support ethanol and the RFS. He promised to end nonsensical regulatory barriers that restrict growth in ethanol use. He committed to unraveling the burdensome red tape that is holding back America's farmers. And he vowed to protect and enhance job opportunities in communities across the Heartland, many of which have experienced economic hardship over the past several decades. These are messages that clearly resonated with a forgotten group of voters in rural America.

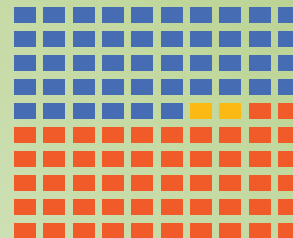
"The RFS...is an important tool in the mission to achieve energy independence. I will do all that is in my power as President to achieve that goal. As president, I will encourage Congress to be cautious in attempting to change any part of the RFS. As president, I would encourage regulators to end restrictions that keep higher blends of ethanol and biofuel from being sold."

– President Donald Trump during the 2016 campaign

The 2016 elections also saw Republicans retain majorities in both the House and Senate.

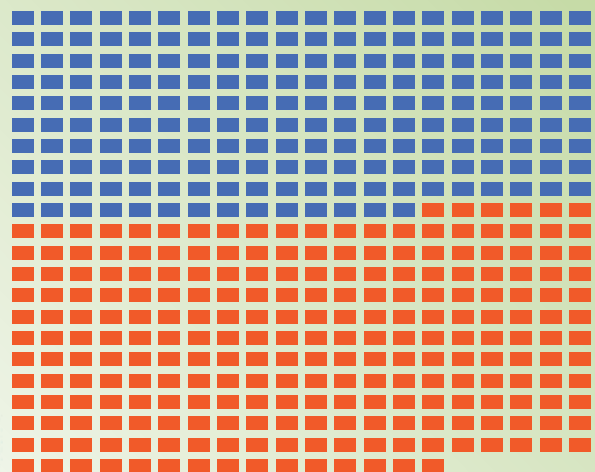
U.S. Senate

■ Democrat (46)
■ Independent (2)
■ Republican (52)



U.S. House of Representatives

■ Democrat (194)
■ Independent (0)
■ Republican (241)



Source: U.S. Senate and House of Representatives

CELLULOSIC AND ADVANCED BIOFUELS BUILDING MOMENTUM

Ethanol's evolution continued in 2016, as plants across the country adopted new technologies allowing them to process new feedstocks and produce new low-carbon biofuels and bio-products.

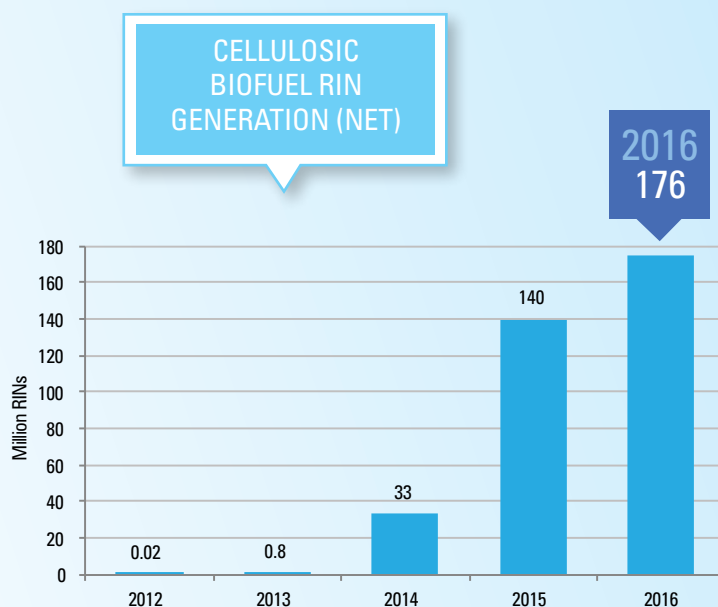
Quad County Corn Processors (QCCP) near Galva, Iowa—the first plant to produce commercial volumes of cellulosic ethanol from corn kernel fiber—surpassed the 5-million-gallon (mg) threshold for cellulosic ethanol production in September 2016.

Other ethanol producers, including Pacific Ethanol, Little Sioux Corn Processors, and Flint Hills Resources, also adopted “bolt-on” technologies in 2016 that will allow them to produce both starch-based and cellulosic ethanol from the same corn kernel.

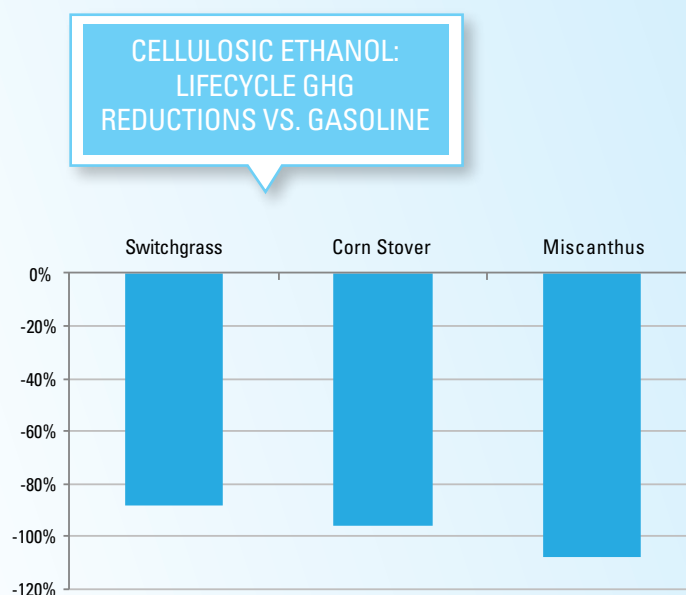
Some other companies—like Adkins Energy and CHS—used onsite technologies to convert corn distillers oil into biodiesel, an advanced biofuel under the RFS. Meanwhile, East Kansas Agri-Energy completed construction on its co-located facility that integrates refining technologies like hydrocracking and isomerization to convert corn distillers oil into renewable diesel and naphtha. In Minnesota, Green Biologics finished its conversion of a small corn ethanol plant into a facility producing n-butanol.

Finally, progress toward full commercial production continued at stand-alone cellulosic ethanol facilities owned by DuPont and POET-DSM. DuPont's facility near Nevada, Iowa, has the capacity to produce 30 mg per year, while the POET-DSM plant at Emmetsburg, Iowa, has the capacity to make 20 mg annually.

EPA's finalization of strong RFS blending requirements for cellulosic and advanced biofuels in 2017 injected some badly needed certainty into the marketplace and finally restored a positive investment signal. Against that backdrop, 2017 promises to be a big year for cellulosic and advanced biofuels.



Source: U.S. Environmental Protection Agency



Source: Argonne National Laboratory

East Kansas
Agri-Energy produces
renewable diesel from
corn distillers oil at
its facility in Garnett,
Kansas.



Adkins Energy near
Lena, Illinois, is one of
several plants using
bolt-on technologies to
convert corn distillers
oil into biodiesel.



Quad County Corn
Processors in Galva,
Iowa, produced its
five-millionth gallon of
cellulosic ethanol from
corn kernel fiber in 2016.



DuPont's facility near
Nevada, Iowa, is the
world's largest cellulosic
ethanol biorefinery, with
the capacity to produce
30 million gallons
annually.



ETHANOL AND ENERGY SECURITY

DIVERSIFYING THE PORTFOLIO

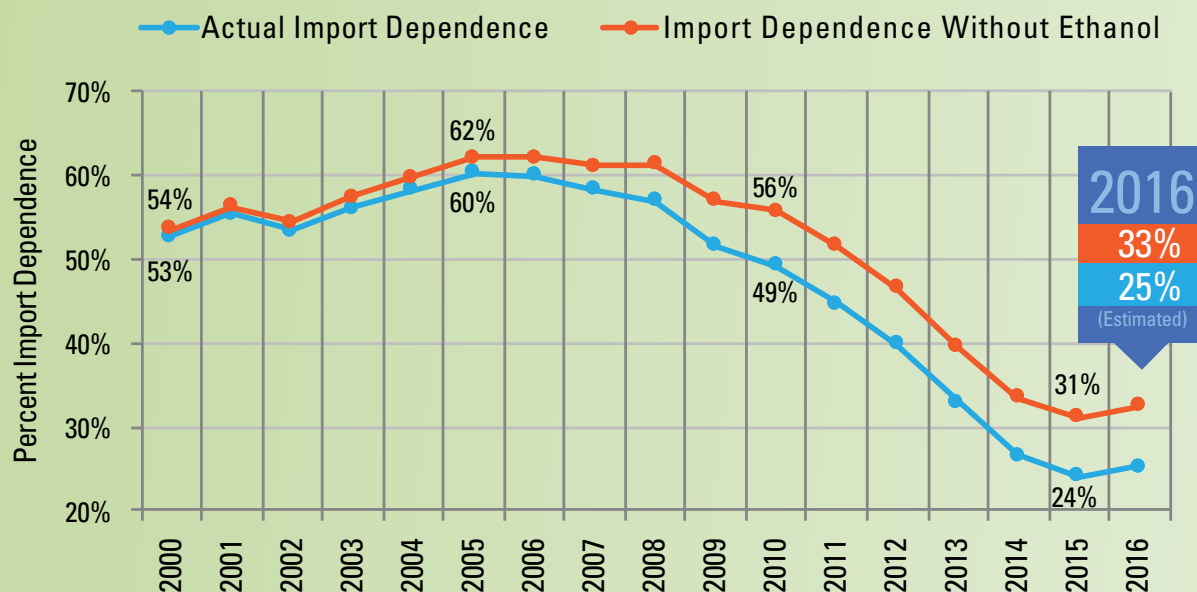
Rapid growth in domestic ethanol production has unquestionably enhanced U.S. energy security over the past decade. But as the events of 2016 clearly demonstrated, true energy independence remains elusive. As ethanol output set a new record in 2016, the nation's crude oil production began to tumble. Drilling in places like North Dakota and Texas slowed significantly due to lower oil prices and robust global supplies.

Meanwhile, America's appetite for crude oil hit unprecedented levels, as lower pump prices led to record gasoline consumption. American oil refineries processed a record 16.2 million barrels of crude oil per day, but U.S. production fell to 8.8 million barrels per day—equivalent to roughly half of domestic demand.

As lower U.S. oil production collided with record demand, the obvious result was an increase in oil imports. Oil imports in 2016 hit their highest level since 2012, with more than 40% coming from OPEC nations. Indeed, OPEC continued to assert its influence, first by flooding the world market and suppressing prices, and later by setting output limits and spurring prices higher. By the time 2016 was over, the U.S. economy had sent roughly \$160 million per day to the OPEC cartel, equivalent to an annual bill of nearly \$500 for every American household.

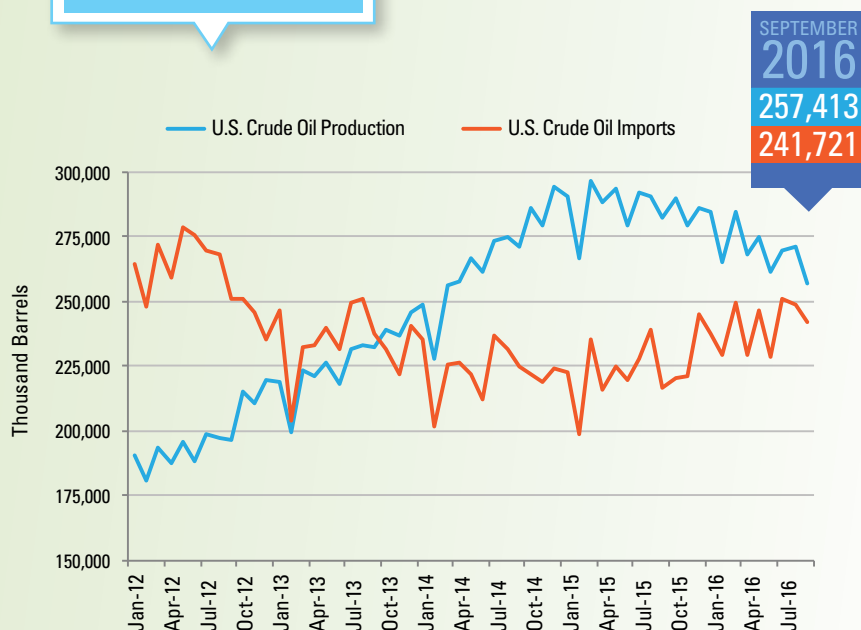
Fortunately, ethanol continues to expand domestic supplies and reduce reliance on petroleum imports. Net petroleum dependence was 25% in 2016, but would have been 33% without the addition of 15.25 billion gallons to the fuel supply. Looked at another way, 2016 ethanol production displaced an amount of gasoline refined from 540 million barrels of crude oil.

U.S. PETROLEUM (CRUDE OIL & PRODUCTS) NET IMPORT DEPENDENCE WITH AND WITHOUT ETHANOL



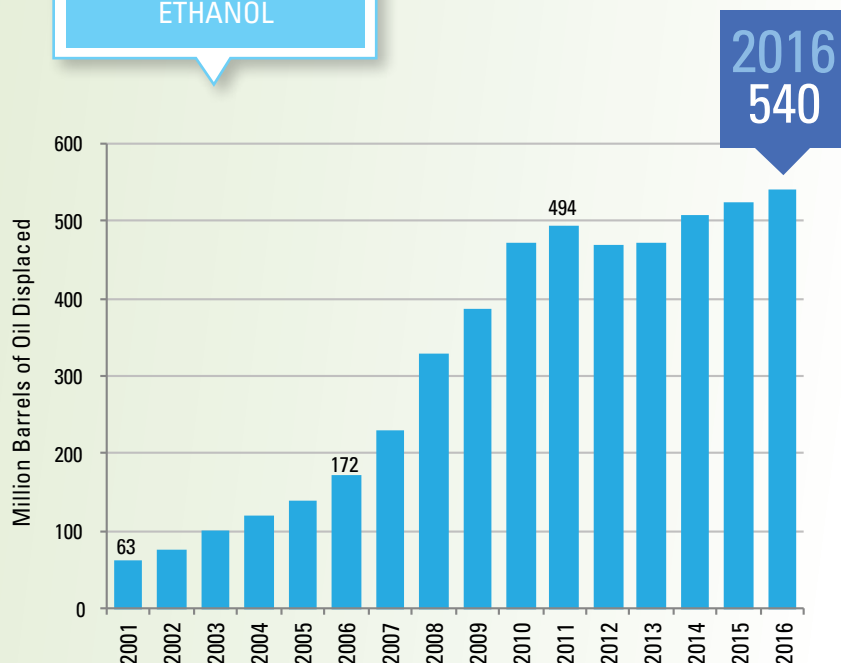
Source: RFA based on U.S. Dept. of Energy data

U.S. CRUDE OIL PRODUCTION AND IMPORTS



Source: U.S. Dept. of Energy

HISTORIC OIL IMPORT DISPLACEMENT BY ETHANOL

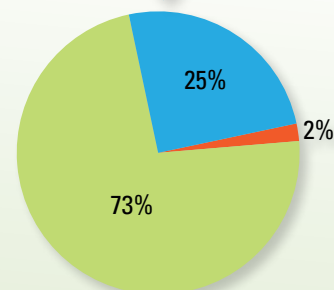


Source: RFA based on U.S. Dept. of Energy data

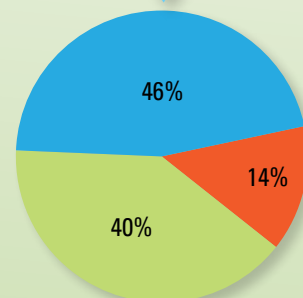
The U.S. produces just 14% of the world's petroleum and owns just 2% of the world's proven oil reserves. Yet, the U.S. uses more than one-fifth of the world's petroleum supply.

■ U.S. ■ OPEC ■ Rest of World

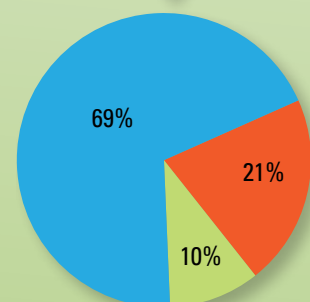
WORLD CRUDE OIL RESERVES



WORLD PETROLEUM PRODUCTION



WORLD PETROLEUM CONSUMPTION



Source: U.S. Dept. of Energy

ETHANOL AND FOOD/FEED MARKETS

DEFLATING THE DEMAGOGUES

Any remaining shreds of the nonsensical “food vs. fuel” myth were entirely obliterated in 2016. Grain consumption by the ethanol industry hit a record level, yet U.S. retail grocery prices experienced *deflation* for the first time since 1967.

Grocery prices were about 1% below 2015 levels, but restaurant prices were up about 3%. Overall, the average American consumer’s total food bill was less than 1% higher in 2016. Still, the chain restaurant and grocery manufacturing industries continued their ill-advised crusade against biofuels.

Meanwhile, farmers harvested a record corn crop of 15.1 billion bushels and achieved a new record average yield of 174.6 bushels per acre. The unprecedented corn harvest erased any lingering notions that growers can’t supply enough grain to meet both ethanol demand and growing global demand for food and feed.

The story was the same for global food prices. The U.N. world food price index hit a seven-year low as global grain and meat supplies hit all-time highs. The prevalence of worldwide undernourishment fell to its lowest level since the U.N. began keeping records more than 25 years ago.

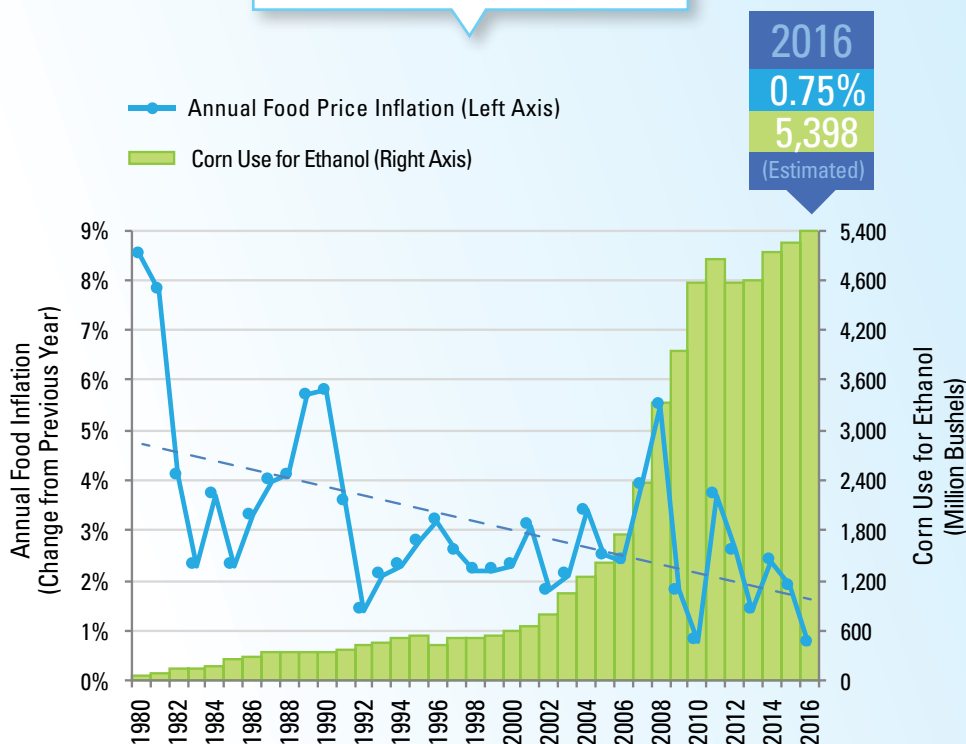
Of course, just as ethanol demand isn’t the only driver of corn prices, the cost of corn and other feed commodities isn’t the only driver of retail food prices. In fact, only 17 cents of every dollar spent on food pays for the raw farm ingredients in the food item. The other 83 cents pay for energy, processing, transportation, labor, packaging, advertising and other costs. In fact, a recent World Bank report concluded that “most of the contribution to food prices changes from 1997-2004 to 2005-2012 comes from the price of oil.”

“Retail food prices were not impacted in any demonstrable way by expansion of U.S. grain ethanol production under the Renewable Fuel Standard (RFS) over the past decade.”

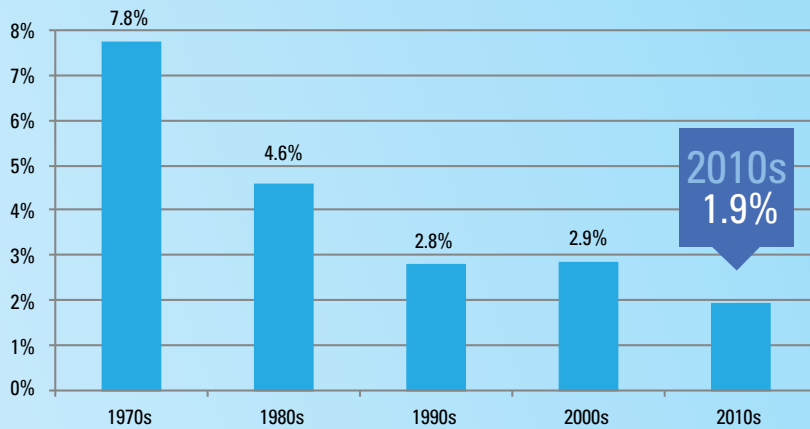
– Informa Economics IEG



U.S. CORN USE FOR ETHANOL AND ANNUAL U.S. FOOD INFLATION RATES

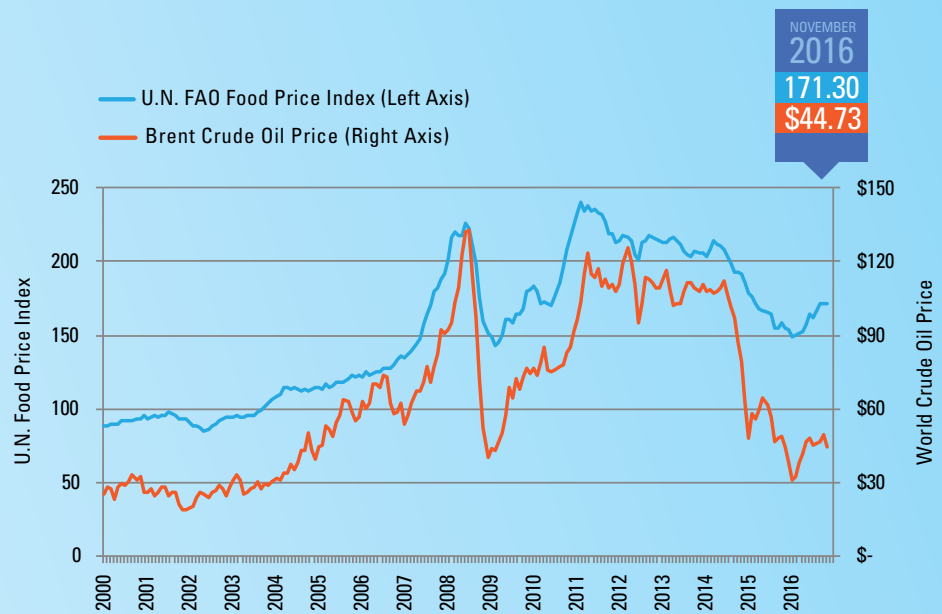


Source: U.S. Dept. of Agriculture and Bureau of Labor Statistics



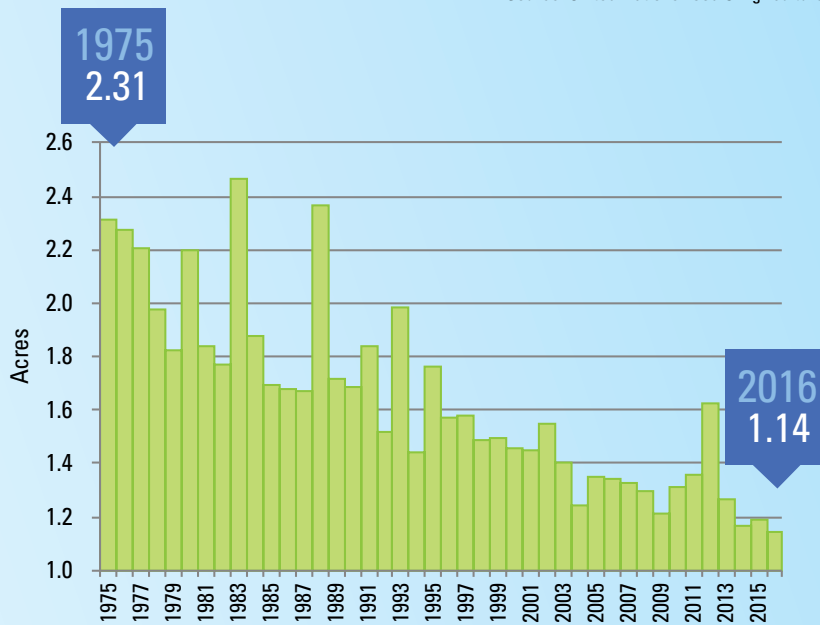
Source: Bureau of Labor Statistics

AVERAGE ANNUAL FOOD
INFLATION RATES BY
DECADE



WORLD OIL PRICES
DRIVE GLOBAL
FOOD PRICES

Source: United Nations Food & Agriculture Org. and U.S. Dept. of Energy



AMOUNT OF LAND
(ACRES) NEEDED TO
PRODUCE 200 BUSHELS
OF CORN

Source: RFA based on U.S. Dept. of Agriculture data

ETHANOL AND THE ENVIRONMENT

A POLLUTION SOLUTION

Ethanol continues to serve as one of the most inexpensive and effective tools available for reducing harmful emissions from the transportation sector. While much of the focus in recent years has been on ethanol's ability to reduce greenhouse gas (GHG) emissions, the renewable fuel also plays a critical role in reducing tailpipe emissions of pollutants that cause smog and ground-level ozone and adversely affect human health.

The ethanol molecule is 35% oxygen, meaning it burns more cleanly and completely than petroleum-based hydrocarbons in gasoline. By displacing petroleum-derived substances like aromatics in gasoline, ethanol helps reduce emissions of air toxics, particulate matter, carbon monoxide, nitrous oxides, and exhaust hydrocarbons.

Reducing these emissions means fewer cases of respiratory illness and asthma, heart disease, lung disease, cancer, and even fewer premature deaths. A study by the University of California-Berkeley found that human lives across the United States would be extended by replacing gasoline with biofuels: "A biofuel eliminating even 10-percent of current gasoline pollutant emissions would have a substantial impact on human health in this country, especially in urban areas." Specifically, the researchers found that replacing gasoline with biofuels like ethanol reduces occurrence of direct particulate matter and indirect fine particles, volatile organic compounds, ozone, and toxic air pollutants.

Of course, ethanol also has a proven track record for reducing GHG emissions. According to a new analysis conducted for the U.S. Department of Agriculture (USDA), corn ethanol from a typical dry mill reduces GHG emissions by 43% compared to gasoline—even when hypothetical land use change emissions are included. Data from USDA and EPA show that agricultural land use is actually shrinking, undermining the indirect land use change theory. The USDA study found that by 2022, corn ethanol could reduce GHG by 76% compared to gasoline.

Clearing the Air with Ethanol

In addition to reducing GHG emissions, ethanol is the best tool available to reduce tailpipe emissions of other harmful pollutants. Adding ethanol to gasoline reduces tailpipe emissions of the following pollutants, among others:

- **Carbon monoxide**, which can cause harmful health effects by reducing oxygen delivery to the body's organs.
- **Exhaust hydrocarbons**, which contribute to ozone, irritate the eyes, damage the lungs, and aggravate respiratory problems.
- **Air toxics like benzene**, which can cause cancer and reproductive effects or birth defects
- **Fine particulate matter**, which can pass through the throat and nose and enter the lungs, causing serious health effects

"Numerous studies in which ethanol was splash-blended with a fixed gasoline blendstock have demonstrated reductions of vehicle exhaust emissions, particularly particulate matter (PM), non-methane hydrocarbons (NMHC), and the air toxics 1,3-butadiene and benzene."

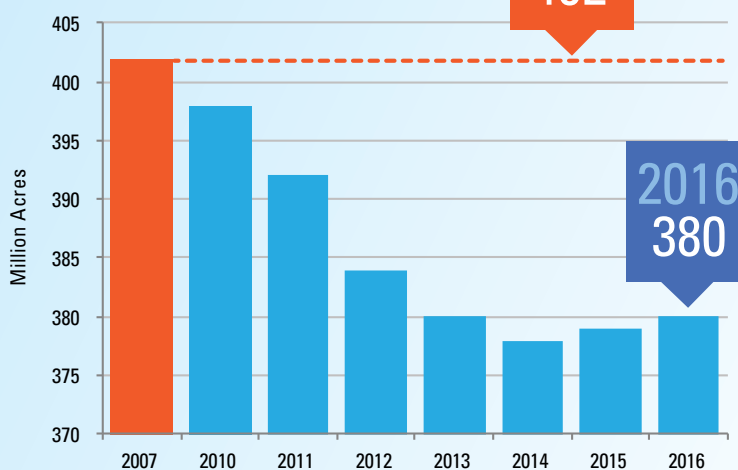
— Ford Motor Company, General Motors, and AVL Powertrain

The use of ethanol in gasoline in 2016 reduced CO₂-equivalent greenhouse gas emissions from the transportation sector by 43.5 million metric tons. That's equivalent to removing 9.3 million cars from the road for an entire year.

Source: RFA analysis using U.S. Dept. of Energy GREET model

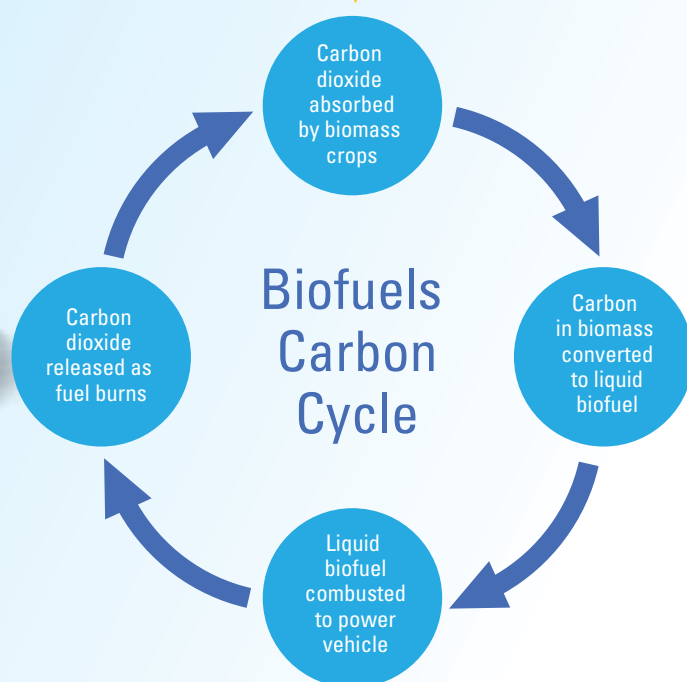
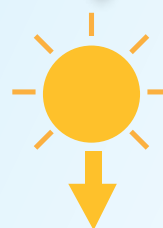


U.S. EPA DETERMINATION OF AGRICULTURAL LAND USE VS. 2007 BASELINE



Source: U.S. Environmental Protection Agency

BIOFUELS LIKE ETHANOL RECYCLE ATMOSPHERIC CARBON



RFA COMMITTEES, EDUCATION AND OUTREACH

ACTION, ADVOCACY, AND EXPERIENCE

Since 1981, the RFA has proudly served as the ethanol industry's national trade association. The Association advances policy and regulatory initiatives that support industry growth, educates key decision-makers, serves as the voice of the industry through public and media relations efforts, and provides the technical foundation to move the industry forward. RFA's Board of Directors is solely comprised of ethanol producers who are ascribed one vote per company. In addition, a broad cross-section of RFA producer, associate, and supporting members participate on standing committees that address issues important to the industry.

The RFA Technical Committee focuses on fuel specifications and standards development by ASTM International, National Conference of Weights and Measures, ISO, Canadian General Standards Board, and other organizations. Committee members monitor technical issues impacting day-to-day plant operations, such as storage and handling, transportation, and fuel quality, as well as state and regional regulations and international blending practices.

The RFA Co-Products Committee focuses on issues relevant to co-products from ethanol production, including distillers grains, corn distillers oil, corn gluten, carbon dioxide and other products. Committee members address operational and regulatory issues concerning production, storage and handling, transportation, international trade, animal nutrition, and animal feed safety.

The RFA Plant & Employee Safety Committee leads the industry in advocating safe practices in ethanol production, storage and handling, transportation, and use. Committee members monitor and share information on hazardous materials, safety standards, and federal and state safety regulations. The Committee also supports continuing education for every link of the ethanol supply chain.



The RFA Environmental Compliance Committee

examines and educates industry stakeholders on the implementation of environmental regulations for production, storage and handling, and transportation of ethanol. The committee tackles complex regulatory issues and provides guidance to members.

The RFA Export Committee assesses opportunities and challenges in growing international demand for U.S. ethanol. The group advocates for free and fair trade policies, examines technical and regulatory barriers, interacts with U.S. trade officials, and monitors data and trends in the global trade.

The Renewable Fuels PAC builds a stronger voice for American-made renewable fuels on Capitol Hill. Organized and operated by RFA members and staff, this Political Action Committee promotes consistent and forward-looking public policy essential to the growth and evolution of the industry by focusing on federal election activity.



Navigating the Regulatory Landscape

Nearly every facet of the ethanol industry—from production at the facility to consumption in the vehicle—is affected by a plethora of federal and state regulations. Ethanol producers face a multitude of registration, reporting, recordkeeping, and compliance requirements, and the regulatory landscape is constantly changing and is becoming more complex. Providing analyses of important regulations and technical issues has long been a hallmark of the RFA, and we strive to ensure our member companies know exactly how their operations—and industry—will be affected by new, pending, or amended regulations. On behalf of its members, RFA staff frequently interacts with the following regulatory bodies (among others):

- Alcohol Tobacco Tax and Trade Bureau (TTB)
- Federal Trade Commission (FTC)
- Occupational Safety & Health Administration (OSHA)
- U.S. Department of Agriculture (USDA)
- U.S. Department of Commerce (DOC)
- U.S. Department of Energy (DOE)
- U.S. Department of Transportation (DOT)
- U.S. Environmental Protection Agency (EPA)
- U.S. Food and Drug Administration (FDA)

RFA Staff

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Cassie Mullen	Director of Market Development
Missy Ruff	Technical Services Manager
Robert White	Vice President of Industry Relations

Staff bios & email addresses are available at www.EthanolRFA.org/about/staff.

RFA Key Initiatives

As the leading trade association for America's ethanol industry, we work to advance the development, production & use of fuel ethanol and its co-products and to raise awareness of the benefits of renewable fuels. Our expertise, advocacy and member services focus on these areas:

PUBLIC POLICY & REGULATION

FUEL ETHANOL TECHNICAL ISSUES

TRADE POLICY & EXPORT PROMOTION

SAFETY TRAINING & EMERGENCY RESPONSE

U.S. MARKET DEVELOPMENT

RESEARCH & ANALYSIS

COMMUNICATIONS, MEDIA & PUBLIC RELATIONS

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RFF Chairman
Ace Ethanol LLC

Carl Sitzmann
RFF Vice Chairman
E Energy Adams, LLC

Dana Lewis
RFF Treasurer
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The Renewable Fuels Foundation (RFF) addresses the education, research and strategic planning needs of the U.S. fuel ethanol industry. RFF collaborates with public policymakers and industry and academic stakeholders to address issues related to new uses, new feedstocks and new technologies with the goal of assuring a growing and healthy renewable fuels industry well into the future.

Associate Members

AgMotion, Inc. www.agmotion.com	Fagen, Inc. www.fageninc.com	Iowa Renewable Fuels Association www.iowarfa.org	Nebraska Corn Board www.nebraskacorn.org
AgStar Financial Services, ACA www.agstar.com	Farm Credit Services of America www.fcsamerica.com	Kansas Corn Commission www.ksgrains.com	North Dakota Corn Council www.ndcorn.org
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CSX Transportation www.csx.com	Illinois Corn Marketing Board www.ilcorn.org	Minnesota Corn Growers Association www.mncorn.org	Syngenta US www.syngenta-us.com/corn/enogen
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Ethanol Producers and Consumers (EPAC)			Wisconsin Pipe Trades Association www.wipipetrades.org
Great Falls Development Authority, Inc. www.gfdevelopment.org			

2017 U.S. ETHANOL PRODUCTION CAPACITY BY PLANT

Company	Location	State	Feedstock	Production Capacity (mgy)	Operating Production (mgy)	Under Construction/Expansion Capacity (mgy)
ABE South Dakota, LLC	Aberdeen	SD	Corn	48	48	
ABE South Dakota, LLC	Huron	SD	Corn	32	32	
Absolute Energy, LLC	St. Ansgar	IA	Corn	115	115	
Ace Ethanol, LLC	Stanley	WI	Corn	48	48	
Adkins Energy, LLC	Lena	IL	Corn	52	52	
Aemetis	Keyes	CA	Corn/Sorghum	60	60	
Al-Corn Clean Fuel	Claremont	MN	Corn	50	50	
Archer Daniels Midland Co. Plant 1	Cedar Rapids	IA	Corn	300	300	
Archer Daniels Midland Co. Plant 2	Cedar Rapids	IA	Corn	240	240	
Archer Daniels Midland Co.	Clinton	IA	Corn	238	238	
Archer Daniels Midland Co. Plant 1	Columbus	NE	Corn	100	100	
Archer Daniels Midland Co. Plant 2	Columbus	NE	Corn	313	313	
Archer Daniels Midland Co.	Decatur	IL	Corn	300	300	
Archer Daniels Midland Co.	Marshall	MN	Corn	40	40	
Archer Daniels Midland Co.	Peoria	IL	Corn	185	185	
Arkalon Ethanol, LLC	Liberal	KS	Corn	110	110	
Badger State Ethanol, LLC	Monroe	WI	Corn	57	57	
Big River Resources Boyceville, LLC	Boyceville	WI	Corn	57	57	
Big River Resources Galva, LLC	Galva	IL	Corn	110	110	
Big River Resources West Burlington, LLC	West Burlington	IA	Corn	105	105	
Big River United Energy, LLC	Dyersville	IA	Corn	110	110	
Blue Flint Ethanol	Underwood	ND	Corn	65	65	
Bonanza BioEnergy, LLC	Garden City	KS	Corn/Sorghum	55	55	
Bridgeport Ethanol	Bridgeport	NE	Corn	50	50	
Buffalo Lake Advanced Biofuels, LLC	Buffalo Lake	MN	Corn	18	-	
Bushmills Ethanol Inc.	Atwater	MN	Corn	65	65	
Calgren Renewable Fuels LLC	Pixley	CA	Corn	55	55	
Carbon Green BioEnergy	Woodbury	MI	Corn	55	55	
Cardinal Ethanol	Union City	IN	Corn	100	100	
Cargill, Inc.	Blair	NE	Corn	210	210	
Cargill, Inc.	Eddyville	IA	Corn	35	35	
Cargill, Inc.	Fort Dodge	IA	Corn	115	115	
Center Ethanol Company, LLC	Sauget	IL	Corn	54	54	
Central Indiana Ethanol, LLC	Marion	IN	Corn	55	55	
Central MN Renewables, LLC/Green Biologics	Little Falls	MN	Corn	22	-	
Chief Ethanol Fuels, Inc.	Hastings	NE	Corn	70	70	
Chief Ethanol Fuels, Inc.	Lexington	NE	Corn	50	50	
Chippewa Valley Ethanol, Co.	Benson	MN	Corn	50	50	
CHS Inc.	Annawan	IL	Corn	125	125	
CHS Inc.	Rochelle	IL	Corn	133	133	
Columbia Pacific Bio-Refinery/Global Partners	Clatskanie	OR	Corn	108	-	
Commonwealth Agri-Energy, LLC	Hopkinsville	KY	Corn	33	33	
Corn Plus, LLP	Winnebago	MN	Corn	38	38	
Corn, LP	Goldfield	IA	Corn	60	60	
Dakota Ethanol, LLC	Wentworth	SD	Corn	48	48	
Dakota Spirit AgEnergy LLC	Spiritwood	ND	Corn	65	65	
DENCO II, LLC	Morris	MN	Corn	24	24	
Diamond Ethanol	Levelland	TX	Corn	40	40	
Didion Ethanol LLC	Cambria	WI	Corn	50	50	
DuPont Cellulosic Ethanol	Nevada	IA	Cellulosic Biomass	30	*	
E Energy Adams, LLC	Adams	NE	Corn	50	50	
East Kansas Agri-Energy, LLC	Garnett	KS	Corn	42	42	
Elkhorn Valley Ethanol, LLC	Norfolk	NE	Corn	45	45	
Ergon BioFuels, LLC	Vicksburg	MS	Corn	54	54	
ESE Alcohol Inc.	Leoti	KS	Corn	2	2	

Company	Location	State	Feedstock	Production Capacity (mg/y)	Operating Production (mg/y)	Under Construction/Expansion Capacity (mg/y)
Fiberight LLC	Blairstown	IA	Cellulosic Biomass	6	-	
Flint Hills Resources, LLC	Arthur	IA	Corn	120	120	
Flint Hills Resources, LLC	Camilla	GA	Corn	120	120	
Flint Hills Resources, LLC	Fairbank	IA	Corn	120	120	
Flint Hills Resources, LLC	Fairmont	NE	Corn	120	120	
Flint Hills Resources, LLC	Iowa Falls	IA	Corn	100	100	
Flint Hills Resources, LLC	Menlo	IA	Corn	120	120	
Flint Hills Resources, LLC	Shell Rock	IA	Corn	120	120	
Fox River Valley Ethanol LLC	Oshkosh	WI	Corn	65	65	
Front Range Energy, LLC	Windsor	CO	Corn	40	40	
Gevo	Luverne	MN	Corn	22	22	
Glacial Lakes Energy, LLC	Mina	SD	Corn	100	100	
Glacial Lakes Energy, LLC	Watertown	SD	Corn	120	120	
Golden Cheese Company of California	Corona	CA	Cheese Whey	5	-	
Golden Grain Energy, LLC	Mason City	IA	Corn	115	115	
Golden Triangle Energy, LLC	Craig	MO	Corn	20	5	
Grain Processing Corp.	Muscatine	IA	Corn	20	20	
Grain Processing Corp.	Washington	IN	Corn	20	20	
Granite Falls Energy, LLC	Granite Falls	MN	Corn	52	52	
Green Plains Inc.	Atkinson	NE	Corn	53	53	
Green Plains Inc.	Bluffton	IN	Corn	120	120	
Green Plains Inc.	Central City	NE	Corn	106	106	
Green Plains Inc.	Fairmont	MN	Corn	119	119	
Green Plains Inc.	Fergus Falls	MN	Corn	60	60	
Green Plains Inc.	Hereford	TX	Corn	110	110	
Green Plains Inc.	Hopewell	VA	Barley	60	60	
Green Plains Inc.	Lakota	IA	Corn	112	112	
Green Plains Inc.	Madison	IL	Corn	90	90	
Green Plains Inc.	Mt. Vernon	IN	Corn	90	90	
Green Plains Inc.	Obion	TN	Corn	120	120	
Green Plains Inc.	Ord	NE	Corn	55	55	
Green Plains Inc.	Riga	MI	Corn	60	60	
Green Plains Inc.	Shenandoah	IA	Corn	69	69	
Green Plains Inc.	Superior	IA	Corn	60	60	
Green Plains Inc.	Wood River	NE	Corn	121	121	
Green Plains Inc.	York	NE	Corn	56	56	
Guardian Energy, LLC	Janesville	MN	Corn	110	110	
Guardian Hankinson, LLC	Hankinson	ND	Corn	132	132	
Guardian Lima, LLC	Lima	OH	Corn	54	54	
Heartland Corn Products	Winthrop	MN	Corn	100	100	
Heron Lake BioEnergy, LLC	Heron Lake	MN	Corn	59	59	
Highwater Ethanol, LLC	Lamberton	MN	Corn	58	58	
Homeland Energy Solutions, LLC	Lawler	IA	Corn	120	120	
Husker Ag, LLC	Plainview	NE	Corn	75	75	
ICM, Inc.	Colwich	KS	Corn/Sorghum	25	-	
Illinois Corn Processing Co.	Pekin	IL	Corn	90	90	
INEOS Bio USA, LLC	Vero Beach	FL	Cellulosic Biomass	8	-	
Ingredion Inc.	Cedar Rapids	IA	Corn	45	45	
Iroquois Bio-Energy Company, LLC	Rensselaer	IN	Corn	50	50	
KAAPA Ethanol Ravenna, LLC	Ravenna	NE	Corn	90	90	
KAAPA Ethanol, LLC	Minden	NE	Corn	80	80	
Kansas Ethanol LLC	Lyons	KS	Corn	60	60	
Land O' Lakes	Melrose	MN	Cheese Whey	3	3	
LifeLine Foods, LLC	St. Joseph	MO	Corn	50	50	
Lincolnland Agri-Energy, LLC	Palestine	IL	Corn	48	48	
Lincolnway Energy, LLC	Nevada	IA	Corn	55	55	
Little Sioux Corn Processors, L.P.	Marcus	IA	Corn	92	92	
Louis Dreyfus Commodities	Grand Junction	IA	Corn	100	100	

Company	Location	State	Feedstock	Production Capacity (mg/y)	Operating Production (mg/y)	Under Construction/ Expansion Capacity (mg/y)
Marquis Energy LLC	Hennepin	IL	Corn	300	300	
Marquis Energy-Wisconsin, LLC	Necedah	WI	Corn	60	60	
Marysville Ethanol, LLC	Marysville	MI	Corn	50	50	
Merrick & Company	Aurora	CO	Brewery Waste	5	5	
Mid-America BioEnergy, LLC	Madrid	NE	Corn	46	46	
Mid-Missouri Energy, LLC	Malta Bend	MO	Corn	50	50	
Midwest Renewable Energy, LLC	Sutherland	NE	Corn	28	-	
Nebraska Corn Processing, LLC	Cambridge	NE	Corn	44	44	
Nesika Energy, LLC	Scandia	KS	Corn	21	21	
Noble Americas South Bend Ethanol	South Bend	IN	Corn	102	102	
NuGen Energy, L.L.C.	Marion	SD	Corn	110	110	
One Earth Energy	Gibson City	IL	Corn	100	100	
Pacific Ethanol Inc.	Boardman	OR	Corn	40	40	
Pacific Ethanol Inc.	Burley	ID	Corn	60	60	
Pacific Ethanol Inc.	Canton	IL	Corn	38	-	
Pacific Ethanol Inc.	Madera	CA	Corn/Sorghum	40	40	
Pacific Ethanol Inc.	Stockton	CA	Corn/Sorghum/Cellulosic Biomass	60	60	
Pacific Ethanol Inc. Plant 1	Aurora	NE	Corn	45	45	
Pacific Ethanol Inc. Plant 2	Aurora	NE	Corn	110	110	
Pacific Ethanol Inc. Plant 1	Pekin	IL	Corn	100	100	
Pacific Ethanol Inc. Plant 2	Pekin	IL	Corn	60	60	
Parallel Products	Louisville	KY	Beverage Waste	3	3	
Parallel Products	Rancho Cucamonga	CA	Beverage Waste	3	3	
Pennsylvania Grain Processing, LLC	Clearfield	PA	Corn	110	110	
Pinal Energy, LLC	Maricopa	AZ	Corn	50	50	
Pine Lake Corn Processors LLC	Steamboat Rock	IA	Corn	30	30	
Plymouth Energy, LLC	Merrill	IA	Corn	50	50	
POET Biorefining - Alexandria	Alexandria	IN	Corn	68	68	
POET Biorefining - Ashton	Ashton	IA	Corn	56	56	
POET Biorefining - Big Stone	Big Stone	SD	Corn	79	79	
POET Biorefining - Bingham Lake	Bingham Lake	MN	Corn	35	35	
POET Biorefining - Caro	Caro	MI	Corn	67	67	
POET Biorefining - Chancellor	Chancellor	SD	Corn	110	110	
POET Biorefining - Cloverdale	Cloverdale	IN	Corn	92	92	
POET Biorefining - Coon Rapids	Coon Rapids	IA	Corn	54	54	
POET Biorefining - Corning	Corning	IA	Corn	65	65	
POET Biorefining - Emmetsburg	Emmetsburg	IA	Corn	55	55	
POET Biorefining - Fostoria	Fostoria	OH	Corn	68	68	
POET Biorefining - Glenville	Albert Lea	MN	Corn	42	42	
POET Biorefining - Gowrie	Gowrie	IA	Corn	69	69	
POET Biorefining - Groton	Groton	SD	Corn	53	53	
POET Biorefining - Hanlontown	Hanlontown	IA	Corn	64	64	
POET Biorefining - Hudson	Hudson	SD	Corn	65	65	
POET Biorefining - Jewell	Jewell	IA	Corn	69	69	
POET Biorefining - Laddonia	Laddonia	MO	Corn	50	50	
POET Biorefining - Lake Crystal	Lake Crystal	MN	Corn	56	56	
POET Biorefining - Leipsic	Leipsic	OH	Corn	68	68	
POET Biorefining - Macon	Macon	MO	Corn	46	46	
POET Biorefining - Marion	Marion	OH	Corn	68	68	
POET Biorefining - Mitchell	Mitchell	SD	Corn	68	68	
POET Biorefining - North Manchester	North Manchester	IN	Corn	68	68	
POET Biorefining - Portland	Portland	IN	Corn	68	68	
POET Biorefining - Preston	Preston	MN	Corn	46	46	
POET Research Center	Scotland	SD	Corn	11	11	
Prairie Horizon Agri-Energy, LLC	Phillipsburg	KS	Corn	40	40	
Pratt Energy	Pratt	KS	Corn	55	55	
Project LIBERTY (POET/DSM)	Emmetsburg	IA	Cellulosic Biomass	20	*	

Company	Location	State	Feedstock	Production Capacity (mg/y)	Operating Production (mg/y)	Under Construction/Expansion Capacity (mg/y)
Quad County Corn Processors	Galva	IA	Corn/Cellulosic Biomass	38	38	
Red River Energy LLC	Rosholt	SD	Corn	25	25	
Red Trail Energy, LLC	Richardton	ND	Corn	60	60	
Redfield Energy, LLC	Redfield	SD	Corn	55	55	
Reeve Agri-Energy	Garden City	KS	Corn/Sorghum	12	12	
Show Me Ethanol, LLC	Carrollton	MO	Corn	55	55	
Siouxland Energy Cooperative	Sioux Center	IA	Corn	60	60	
Siouxland Ethanol, LLC	Jackson	NE	Corn	70	70	10
Southwest Iowa Renewable Energy, LLC	Council Bluffs	IA	Corn	130	130	
Spectrum Business Ventures Inc	Mead	NE	Corn	25	-	
Sterling Ethanol LLC	Sterling	CO	Corn	42	42	
Summit Natural Energy	Cornelius	OR	Waste Sugars/Starch	2	2	
Sunoco Ethanol	Fulton	NY	Corn	85	85	
Synata Bio, Inc.	Hugoton	KS	Cellulosic Biomass	25	-	
Tate & Lyle	Loudon	TN	Corn	105	105	
Tharaldson Ethanol	Casselton	ND	Corn	153	153	
The Andersons Albion Ethanol LLC	Albion	MI	Corn	68	68	68
The Andersons Clymers Ethanol LLC	Clymers	IN	Corn	110	110	
The Andersons Denison Ethanol LLC	Denison	IA	Corn	55	55	
The Andersons Marathon Ethanol LLC	Greenville	OH	Corn	110	110	
Three Rivers Energy, LLC	Coshocton	OH	Corn	50	50	
Trenton Agri Products LLC	Trenton	NE	Corn	40	40	
Tyton NC Biofuels LLC	Raeford	NC	Corn/Tobacco	60	-	
United Ethanol, LLC	Milton	WI	Corn	47	47	
United Wisconsin Grain Producers, LLC	Friesland	WI	Corn	58	58	
Valero Renewable Fuels-Albert City	Albert City	IA	Corn	130	130	
Valero Renewable Fuels-Albion	Albion	NE	Corn	130	130	
Valero Renewable Fuels-Aurora	Aurora	SD	Corn	135	135	
Valero Renewable Fuels-Bloomington	Bloomington	OH	Corn	130	130	
Valero Renewable Fuels-Charles City	Charles City	IA	Corn	135	135	
Valero Renewable Fuels-Fort Dodge	Fort Dodge	IA	Corn	135	135	
Valero Renewable Fuels-Hartley	Hartley	IA	Corn	135	135	
Valero Renewable Fuels-Jefferson	Jefferson	WI	Corn	105	105	
Valero Renewable Fuels-Linden	Linden	IN	Corn	130	130	
Valero Renewable Fuels-Mount Vernon	Mount Vernon	IN	Corn	100	100	
Valero Renewable Fuels-Welcome	Welcome	MN	Corn	135	135	
Western New York Energy LLC	Medina	NY	Corn	62	62	13
Western Plains Energy LLC	Campus	KS	Corn/Sorghum	50	50	
White Energy	Hereford	TX	Corn/Sorghum	120	120	
White Energy	Plainview	TX	Corn	120	120	
White Energy	Russell	KS	Corn/Sorghum/Wheat Starch	55	55	
Wyoming Ethanol	Torrington	WY	Corn	10	-	
Yuma Ethanol	Yuma	CO	Corn	40	40	
U.S. Totals				15,998	15,555	91

**Actual operating production unknown; not included in total.*



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