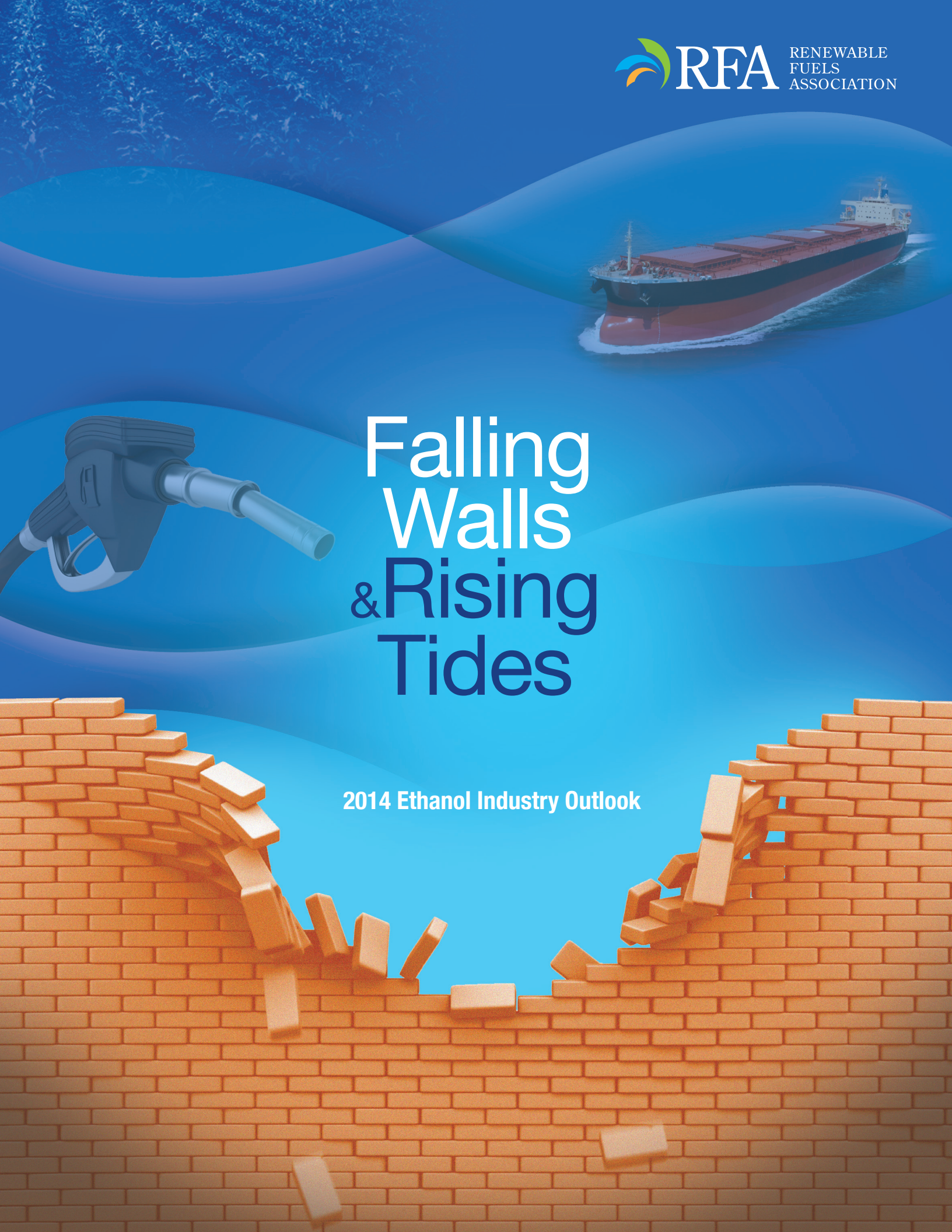
RFA RENEWABLE FUELS ASSOCIATION



Falling Walls & Rising Tides

2014 Ethanol Industry Outlook

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In many ways 2013 was a challenging year as the ethanol industry continued to struggle with the effects of an historic drought and a well-funded media and political campaign intended to undermine support for renewable fuels. But, as always, U.S. ethanol producers met those challenges with resolve, becoming more efficient, adopting new technologies, opening new markets, and fighting back whenever and wherever the policy and consumer benefits of ethanol were challenged.

By year's end, U.S. farmers had produced the single largest corn crop in history, significantly changing the course of the market. E15 began to take hold in many states, E85 sales spiked upward, exports rose and continue to show promise, and the new technologies adopted by scores of producers began to pay dividends. Profitability for most ethanol producers returned. Efforts to repeal the RFS were stymied on Capitol Hill, and the mantra "Don't Mess with the RFS" became the clarion call for ethanol advocates from coast to coast. In sum, 2013 made the ethanol industry stronger, more prepared for the future.

But this is an Outlook. So while the pages of this annual report are replete with statistics and trends of the past year, their intent is to shine a beacon on the future. In our assessment, 2014 promises to be a year of "Falling Walls, and Rising Tides."

Clearly, the biggest challenge of 2014 will be infrastructure. Each gasoline marketer that offers E15 to his customers takes another brick from the blend wall. That effort began in earnest last year, but it will need to continue and gain momentum in 2014, no matter what happens with government policy. Providing consumers options at the pump is essential to controlling volatile gasoline prices and minimizing the energy security and environmental impact of America's dependence on oil.

We will see significant commercial scale production of cellulosic ethanol in 2014, promising to change the biofuels landscape for decades to come. As companies like Abengoa, Dupont, POET-DSM, and Quad County Corn Processors succeed in their efforts to produce cellulosic ethanol, the tide of economic opportunity will rise for the entire industry.

We all know that with success come detractors. We are achieving what the RFS intended. Renewable fuel production and consumption has grown. Dependence on petroleum is down. Greenhouse gas emissions from the transportation sector have fallen. The value of agricultural products is up. And communities across the country have benefited from the jobs, tax revenue, and household income that stems from the construction and operation of biorefineries. Thus, almost without regard to what happens in the marketplace or in Washington, the U.S. ethanol industry is poised to continue its legacy of breaking down walls and lifting all boats.

Sincerely,

Bob Dinneen, President & CEO

Navigating the ebb & flow

What a difference a year makes. As 2013 began, U.S. ethanol producers were still reeling from the effects of 2012's ravaging drought. The industry was coping with extremely high corn prices, burdensome ethanol stocks, and a flood of Brazilian ethanol imports. These difficult market conditions led to poor economics and suspended operations for a number of ethanol plants.

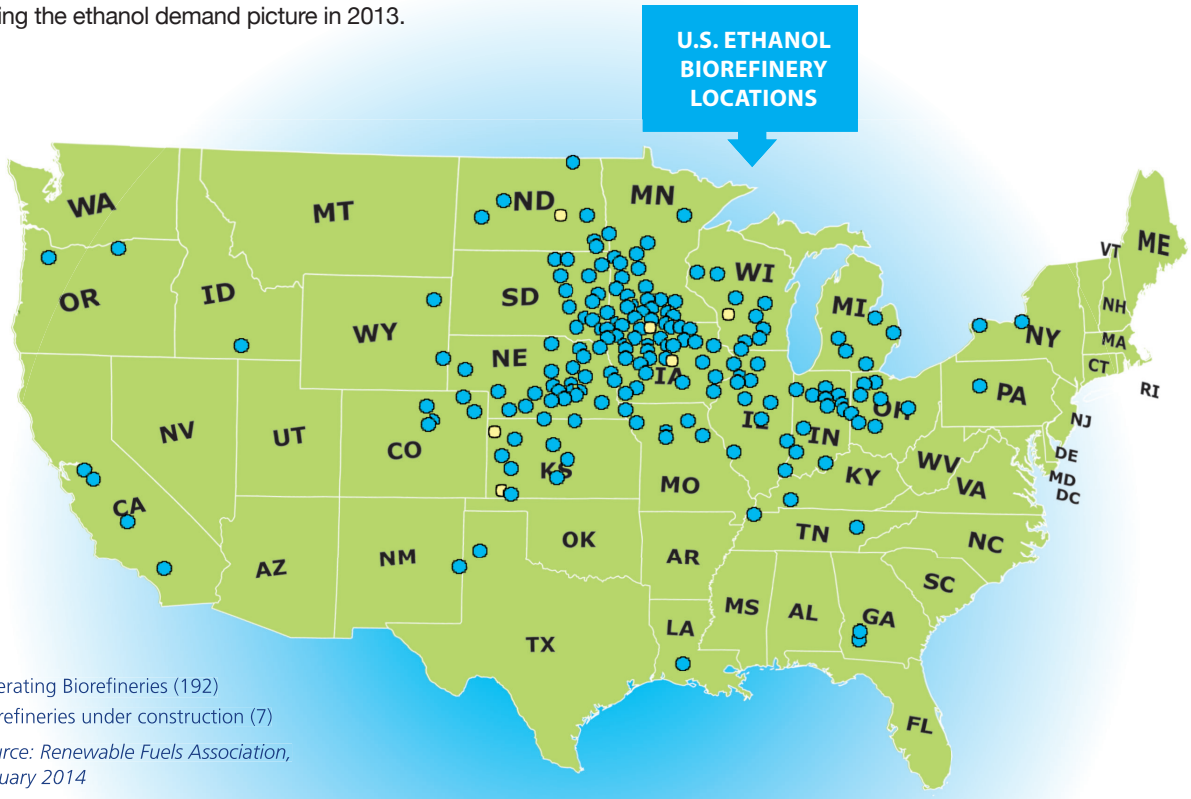
But as ethanol producers rang in the New Year and flipped their calendars to 2014, the tides had significantly turned. Corn prices were at a three-year low, ethanol exports were booming, stocks had fallen to healthier levels, and plants that were temporarily idled were back online.

Nearly 200 operating plants churned out an estimated 13.3 billion gallons of ethanol in 2013, up slightly from 2012 and rivaling 2010 for the second-highest annual output of all time. A Renewable Fuel Standard (RFS) requirement for 13.8 billion gallons, attractive blending economics, a record corn crop and lower corn prices, and robust export demand all played important roles in painting the ethanol demand picture in 2013.

An estimated 630 million gallons of ethanol were exported to nations around the globe in 2013. Meanwhile, the industry chipped away at the so-called "blend wall" in the domestic market. Enabled by appealing blending economics and higher RIN values, sales of E85 boomed. And by the end of the year, E15 was being offered at approximately 60 retail stations in 12 states—a nearly 10-fold increase since the beginning of 2013.

Additionally, as 2014 commenced, production was set to begin at the first wave of commercial cellulosic ethanol plants.

In the wake of the worst drought in some 50 years, American ethanol producers once more demonstrated their mettle. But as 2014 began, the industry was again under assault. Oil companies and other opponents of the RFS were lobbying harder than ever to hold back the looming tidal wave of cleaner, lower cost, more sustainable biofuels.



Source: Renewable Fuels Association, January 2014

U.S. ETHANOL PRODUCTION CAPACITY BY STATE

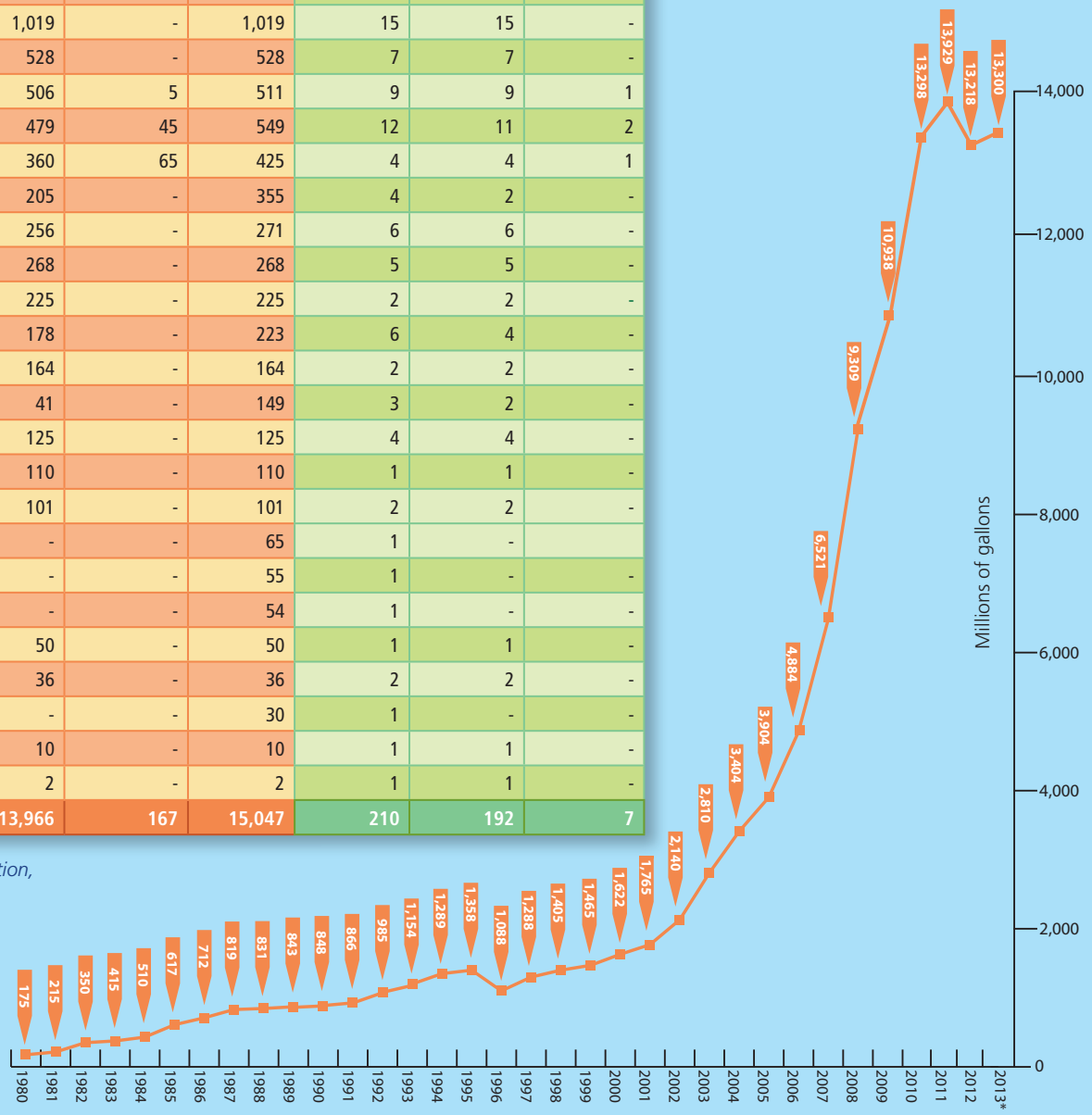
PRODUCTION FACILITIES

(Million Gallons/ Year)

	Nameplate	Operating	Under Construction/ Expansion	Total	Installed Ethanol Biorefineries	Operating Ethanol Biorefineries	Refineries Under Constr./ Expansion
Iowa	3,963	3,958	52	4,015	42	41	3
Nebraska	1,992	1,897	-	1,992	26	23	-
Illinois	1,421	1,384	-	1,421	15	14	-
Indiana	1,148	936	-	1,148	14	12	-
Minnesota	1,147	1,129	-	1,147	22	21	-
South Dakota	1,019	1,019	-	1,019	15	15	-
Ohio	528	528	-	528	7	7	-
Wisconsin	506	506	5	511	9	9	1
Kansas	504	479	45	549	12	11	2
North Dakota	360	360	65	425	4	4	1
Texas	355	205	-	355	4	2	-
Missouri	271	256	-	271	6	6	-
Michigan	268	268	-	268	5	5	-
Tennessee	225	225	-	225	2	2	-
California	223	178	-	223	6	4	-
New York	164	164	-	164	2	2	-
Oregon	149	41	-	149	3	2	-
Colorado	125	125	-	125	4	4	-
Pennsylvania	110	110	-	110	1	1	-
Georgia	101	101	-	101	2	2	-
Virginia	65	-	-	65	1	-	
Arizona	55	-	-	55	1	-	-
Mississippi	54	-	-	54	1	-	-
Idaho	50	50	-	50	1	1	-
Kentucky	36	36	-	36	2	2	-
New Mexico	30	-	-	30	1	-	-
Wyoming	10	10	-	10	1	1	-
Louisiana	2	2	-	2	1	1	-
TOTAL U.S.	14,880	13,966	167	15,047	210	192	7

Source: Renewable Fuels Association, January 2014

HISTORIC U.S. FUEL ETHANOL PRODUCTION



Source: U.S. Department of Energy/Energy Information Administration and RFA

**Estimated*

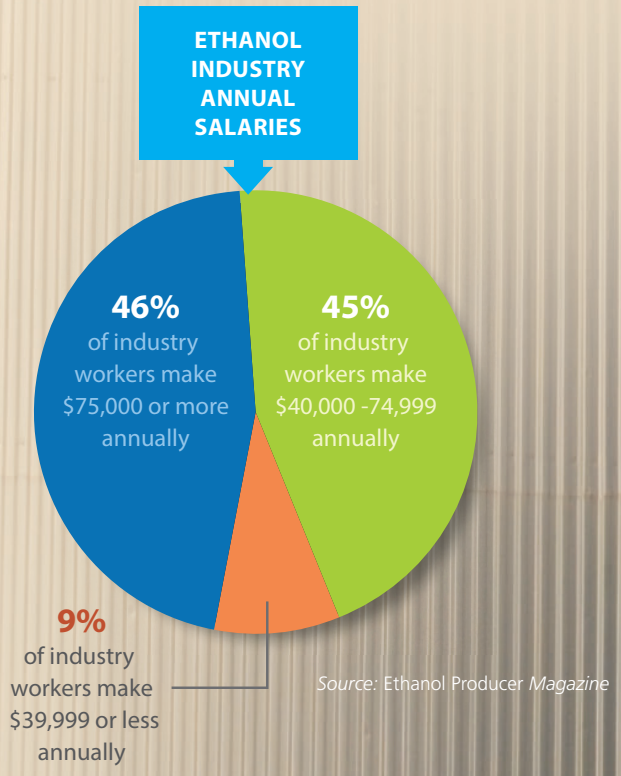
Oceans of opportunity

Amidst the slow economic recovery from the Great Recession, the ethanol industry continues to have a profoundly positive impact on the fiscal health of rural America.

In 2013, the production of 13.3 billion gallons of ethanol supported 86,504 direct jobs in renewable fuel production and agriculture, as well as 300,277 indirect and induced jobs across all sectors of the economy. Moreover, America's ethanol industry added $44 billion to the nation's Gross Domestic Product and paid $8.3 billion in taxes. The sector's economic activity and job creation helped raise household income $30.7 billion. Meanwhile, the U.S. ethanol industry spent $36.1 billion on raw materials, other inputs, and goods and services. In just a few short decades, the ethanol industry's value of output has grown to surpass that of the internet publishing and broadcasting sector, farm machinery and equipment manufacturing, the snack food industry, and other major American industrial sectors.

A 2013 survey by *Ethanol Producer Magazine* revealed that workers employed in the ethanol industry are well compensated, highly educated, and enjoy what they do for a living. Of the respondents, 46% reported earning salaries of more than $75,000 per year. Another 45% reported making between $40,000 and $74,999 annually. Overall, 66% of respondents felt they are compensated "about right" for their work. In terms of benefits, 96% of respondents had health insurance and 92% had retirement plans. The survey showed that 55% of respondents are college graduates, while another 30% took some college courses or earned post-high school vocational/technical training or certification. An impressive 68% of respondents reported being "satisfied" or "extremely satisfied" with their jobs, while another 23% were "somewhat satisfied."

Given ethanol's proven track record as an economic engine, it should come as no surprise that six of the 10 states with the lowest unemployment rates are also among the top 10 ethanol producing states.



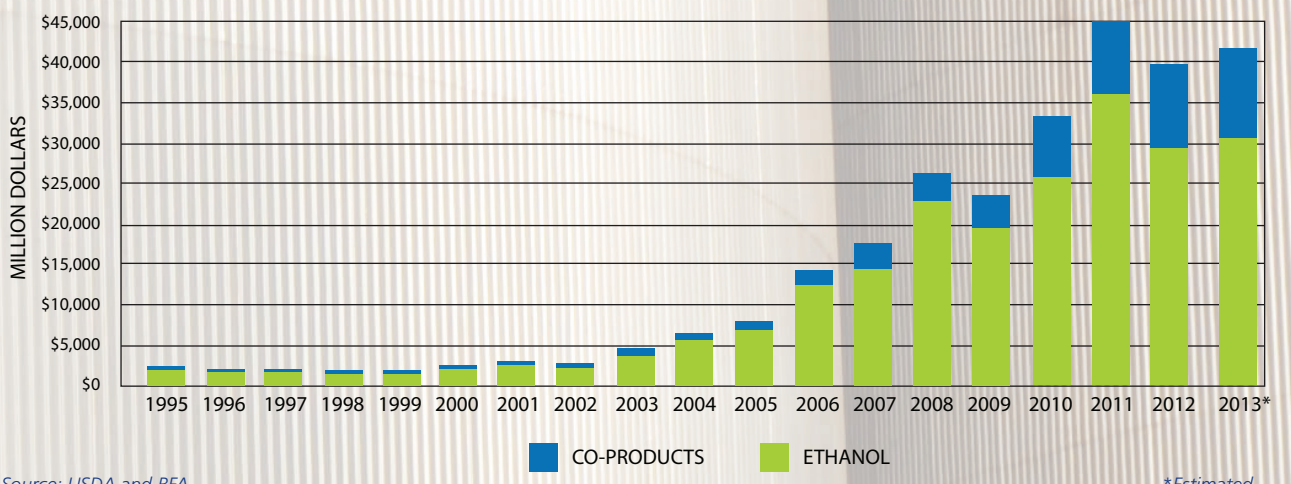
Source: Ethanol Producer *Magazine*

STATES WITH LOWEST UNEMPLOYMENT RATES

Lowest Unemployment Rank	State	2013 Ethanol Production Rank
1	North Dakota	9
2	Nebraska	2
3	South Dakota	5
4	Vermont	-
5	Iowa	1
5 (tie)	Oklahoma	-
7	Wyoming	23
8	New Hampshire	-
9	Minnesota	4
10	Kansas	7

Sources: Bureau of Labor Statistics and RFA

ETHANOL INDUSTRY GROSS VALUE OF OUTPUT



Source: USDA and RFA

**Estimated*

The production of 13.3 billion gallons of ethanol in 2013 created real, measurable economic opportunity, including:

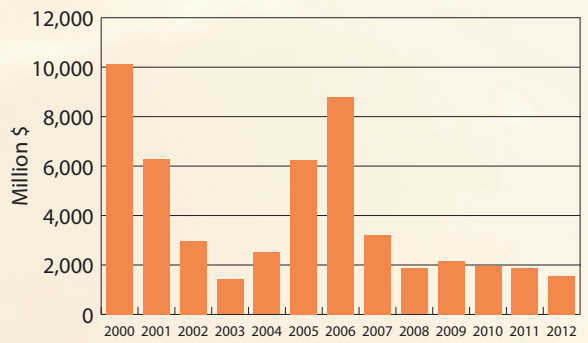
- 86,504 direct jobs
- 300,277 indirect and induced jobs
- $44 billion contribution to GDP
- $30.7 billion in household income
- $8.3 billion in tax revenue

ETHANOL'S IMPACT ON THE AGRICULTURE ECONOMY

A sea change is under way in rural America

While the rest of the U.S. economy has struggled to stay afloat in recent years, growth in ethanol production has helped the farm sector remain remarkably buoyant. The emergence of the ethanol industry over the past decade has enhanced the value of agricultural products, stimulated investment in new technology and expanded economic opportunities for rural communities across the country.

GOVERNMENT PAYMENTS TO CORN FARMERS



Source: USDA

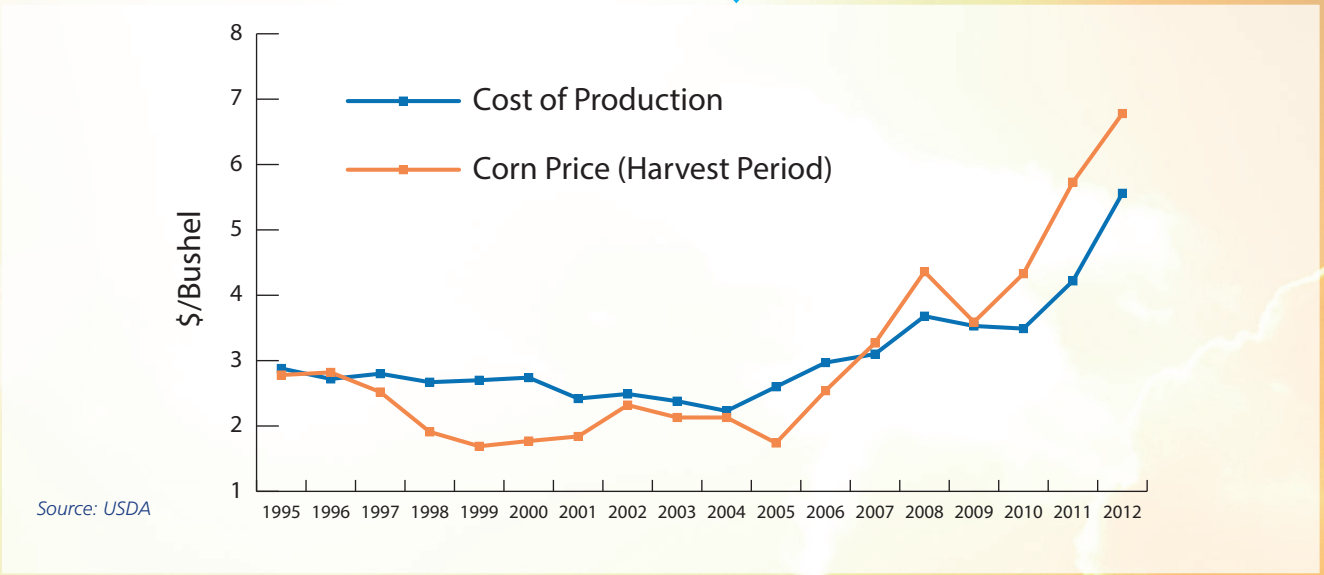
Not so long ago, the agricultural economy was floundering. From 1997 to 2006, producing corn was a losing proposition, as the cost of production exceeded the market price received by the farmer. As a result, growers became increasingly reliant on government payments as a source of income. But as dozens of ethanol plants arose in rural communities across the heartland, this dynamic began to change. In the past six years, the price of corn has been above the cost of production, meaning farmers have been earning their income from the marketplace—not from the government. Federal payments to corn farmers in 2012 were among the lowest in the last 25 years and 82% lower than payments in 2006.

This rising tide has lifted all boats in the agriculture sector. While the gross value of crops totaled $217 billion in 2013, livestock receipts surged to a record level of $182 billion. Net farm income hit a record $131 billion in 2013, up 15% from 2012 and more than double the amount generated in 2009. Meanwhile, farm equity and the value of farm assets also rose to unprecedented levels in 2013.

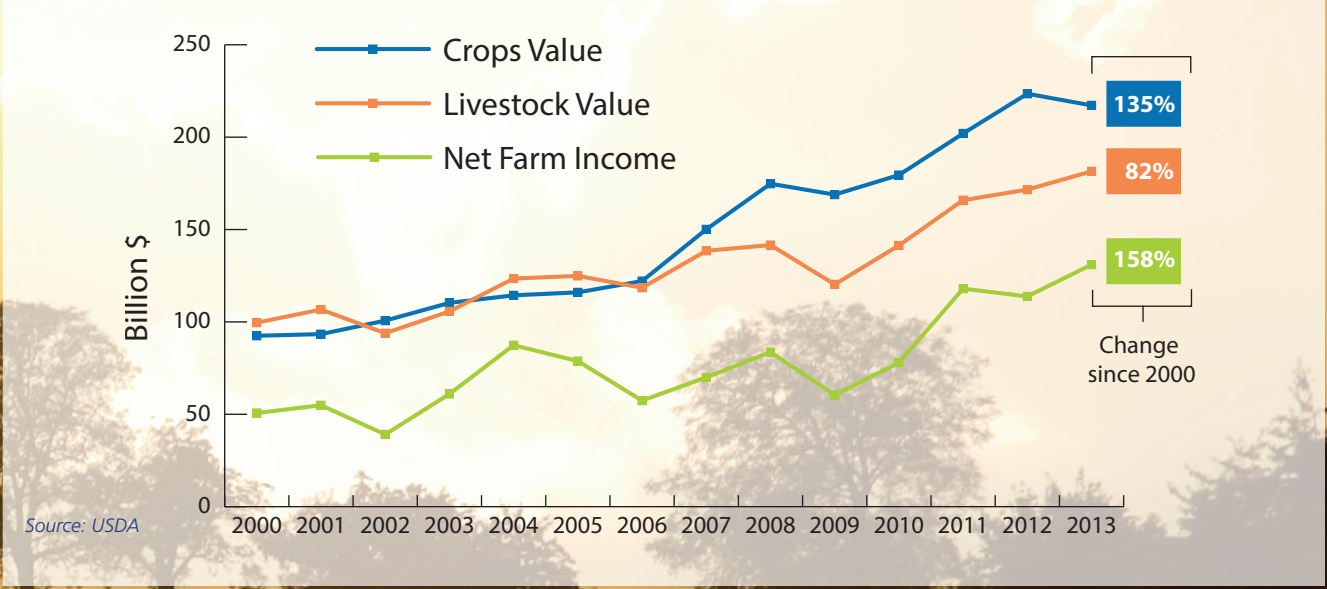
"Your industry—which is reviving opportunity in rural areas, creating new opportunities for small businesses, developing new products, spawning new research, creating more good-paying jobs and more income for farm families—gives us the capacity to re-invigorate our economy."

– Agriculture Secretary Tom Vilsack, 2013 National Ethanol Conference

CORN PRICE VS. COST OF PRODUCTION



VALUE OF CROPS AND LIVESTOCK AND NET FARM INCOME



ETHANOL AND ENERGY SECURITY

Tides are turning in the U.S. energy market

U.S. dependence on imported crude oil and petroleum products is plunging to depths not seen since the early 1990s. After peaking at 60% in 2005, import dependence has fallen steadily and registered at an estimated 35% in 2013. While increased fuel efficiency, fewer miles traveled, and the recent increase in fracking have all played a part in falling import dependence, the role of increased ethanol production has been significant and undeniable. Indeed, import dependence in 2013 would have been 41% without the addition of 13.3 billion gallons of American-made ethanol to the fuel supply.

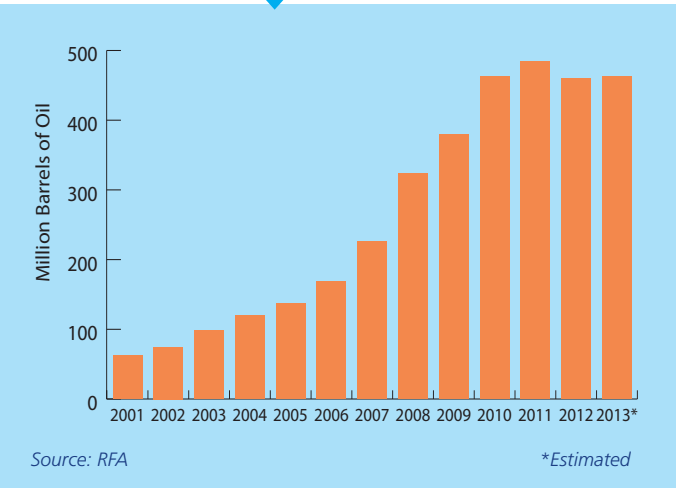
Nowhere has ethanol's impact been more evident than in the gasoline import market. The surge in ethanol production has reduced gasoline imports from 600,000 barrels per day in 2005 to near zero today. Looked at another way, the ethanol produced in 2013 displaced an amount of gasoline refined from 462 million barrels of imported crude oil. That's roughly equivalent to the amount of crude oil imported annually from Venezuela and Iraq combined.

While tremendous strides have been made to reduce dependence on imports of refined petroleum products like gasoline, progress has been slower in reducing raw crude oil imports. In fact, imports accounted for an estimated 51% of the crude oil processed by U.S. refineries in 2013. Department of Energy long-term projections suggest imports will continue to make up more than half of U.S. crude oil supplies, at a cost to the American economy of roughly $1 billion per day. And because crude oil is a global commodity, the recent increase in U.S. fracking has not resulted in lower oil prices. Against this backdrop, continued growth in the production of ethanol will remain vitally important as a strategy for diversifying the fuel market and improving domestic energy security.

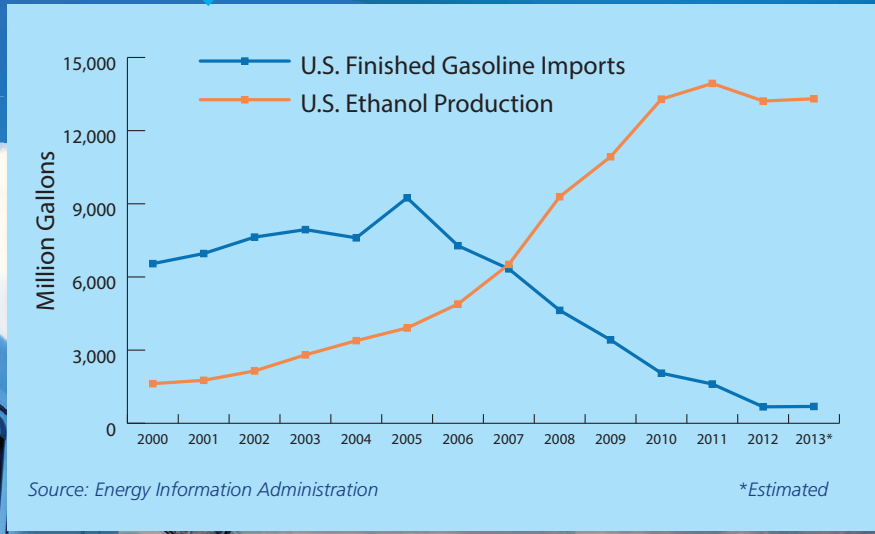
"The implication for world consumers is clear… the US renewable fuels program has cut annual consumer expenditures in 2013 between $700 billion and $2.6 trillion. This translates to consumers paying between $0.50 and $1.50 per gallon less for gasoline."

– Energy Economist Philip K. Verleger, Jr., former advisor to Presidents Ford and Carter

HISTORIC OIL IMPORT DISPLACEMENT BY ETHANOL

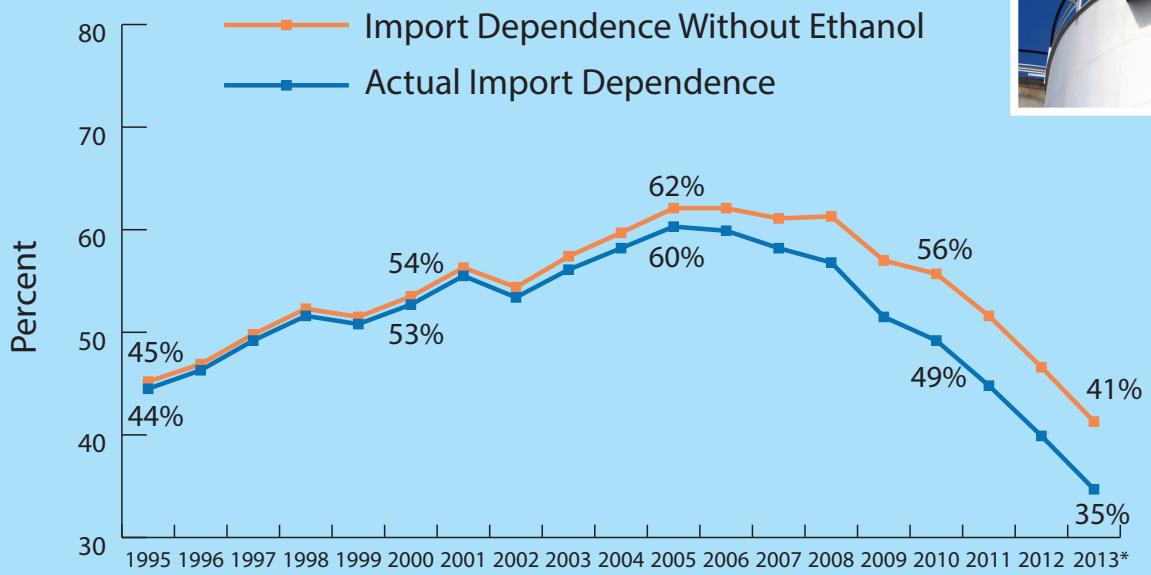


U.S. ETHANOL PRODUCTION VS. GASOLINE IMPORTS



Source: Energy Information Administration **Estimated*

U.S. OIL & PETROLEUM PRODUCT IMPORT DEPENDENCE WITH & WITHOUT ETHANOL



Source: Energy Information Administration and RFA **Estimated*

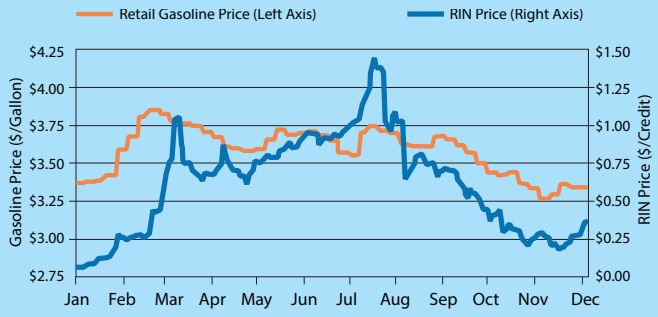
THE RENEWABLE FUEL STANDARD

Tearing down the "blend wall"

By any measure, the Renewable Fuel Standard (RFS) has been an unmitigated success. It has reduced dependence on imported petroleum, stimulated investment in new technologies, lowered gasoline prices, created jobs and economic opportunity across rural America, and reduced greenhouse gas emissions from transportation fuels. Under the RFS, ethanol's share of the gasoline pool has risen from just 3% in 2005 to 10% today.

Oil companies view this rapid shift in the marketplace as a serious threat to their century-old monopoly on America's gas tanks. As a result, Big Oil has mounted an unrelenting campaign to repeal the RFS and halt the evolution of the fuels market—just as it is getting started.

2013 GASOLINE PRICES AND RIN PRICES: NO CORRELATION



Source: Oil Price Information Service and Energy Information Administration

For the first time in the program's history, the RFS in 2013 required oil companies to blend more ethanol than could be consumed in 10% ethanol blends (E10). But instead of planning ahead and investing in E15 and E85 infrastructure to ensure compliance, Big Oil stepped up its opposition to the RFS. Oil companies also bid up the price of Renewable Identification Number (RIN) credits in 2013, choosing to comply with RFS requirements above the "blend wall" with surplus RINs instead of E15 and E85. Then they threatened that higher RIN prices would cause gasoline prices to rise.

Of course, there is not a shred of evidence to support the notion that RINs have any impact on gas prices, and several oil companies themselves have admitted to profiting from the sale of RINs. In truth, the "blend wall" and "RINsanity" are just convenient excuses for the oil industry's intransigence toward blending more renewable fuel.

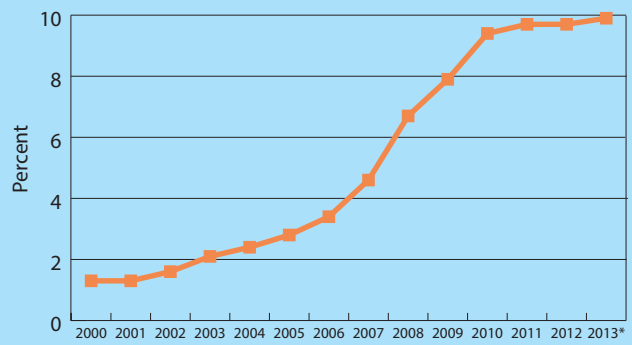
"A fact-based review of developments in the gasoline, ethanol and RIN markets indicates that the Renewable Fuel Standard in general and RINs in particular have not been a demonstrable factor in the rise in retail gasoline prices that has occurred in early 2013."

– **Informa Economics, Inc.,** ***Retail Gasoline Price Impact of Compliance with the Renewable Fuel Standard***

"Conventional RIN markets are responding to the blend wall – exactly as could have been anticipated. The RIN markets are now starting to incentivize all members of the value chain to seek ways to resolve the blend wall."

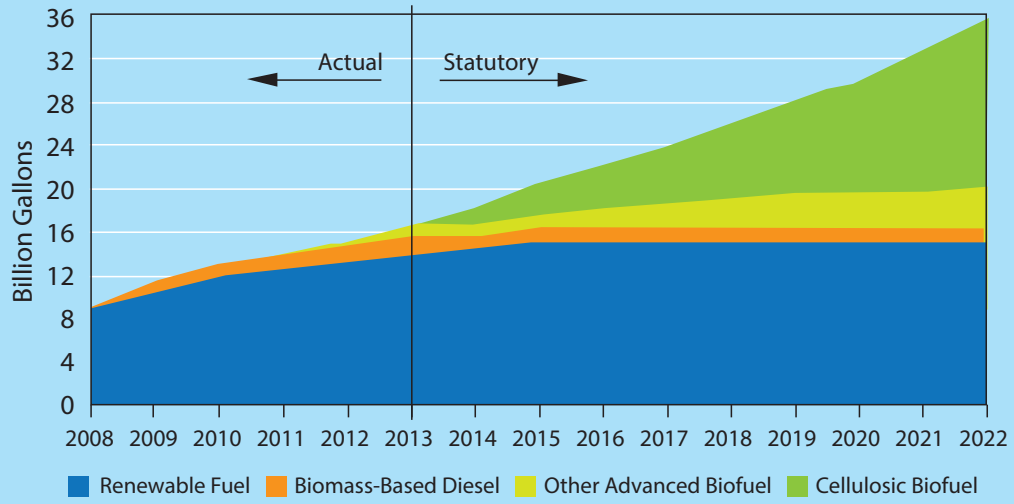
– BP Biofuels CEO Philip New

PERCENTAGE OF GASOLINE POOL COMPRISED OF ETHANOL



Source: Energy Information Administration **Estimated*

RENEWABLE FUEL STANDARD (BILLION RINS REQUIRED)



Source: Environmental Protection Agency

Oil refiners, biofuel producers, Congress, the Administration, and other stakeholders have known since 2007 that the RFS would require fundamental changes in the fuels marketplace and investment in new infrastructure. Indeed, that was the very intent.

As long as the RFS stays in place and is allowed to work as intended, it will create the economic incentive to install the infrastructure necessary to break the "blend wall." That is the genius of the RFS—the RIN credit system not only provides compliance flexibility, but it also provides the incentive to drive innovation and investment. The message is clear: Let the RFS work and solutions to the blend wall will be found.

"The goal of expanding renewable fuel is to reduce consumption of fossil fuels. It is no surprise that companies who produce fossil gasoline would object to the long-run financial impact of reduced demand for their product, even if in the short-run it makes financial sense for them to facilitate that reduction in demand."

– Bruce Babcock, Cargill Endowed Chair of Energy Economics, Iowa State University

E15 makes a splash

In July 2012, the first gallons of E15 were sold at the Zarco66 station in Lawrence, Kansas. The occasion marked the beginning of a new era for American drivers—an era marked by greater consumer choice at the pump and broader access to more affordable, cleaner fuel. Just 18 months later, much has been learned about the benefits and real-world impacts of E15. More than anything, the on-the-ground experience with E15 has completely disproven Big Oil's alarmist, self-interested, and ultimately false claims about the new fuel blend.

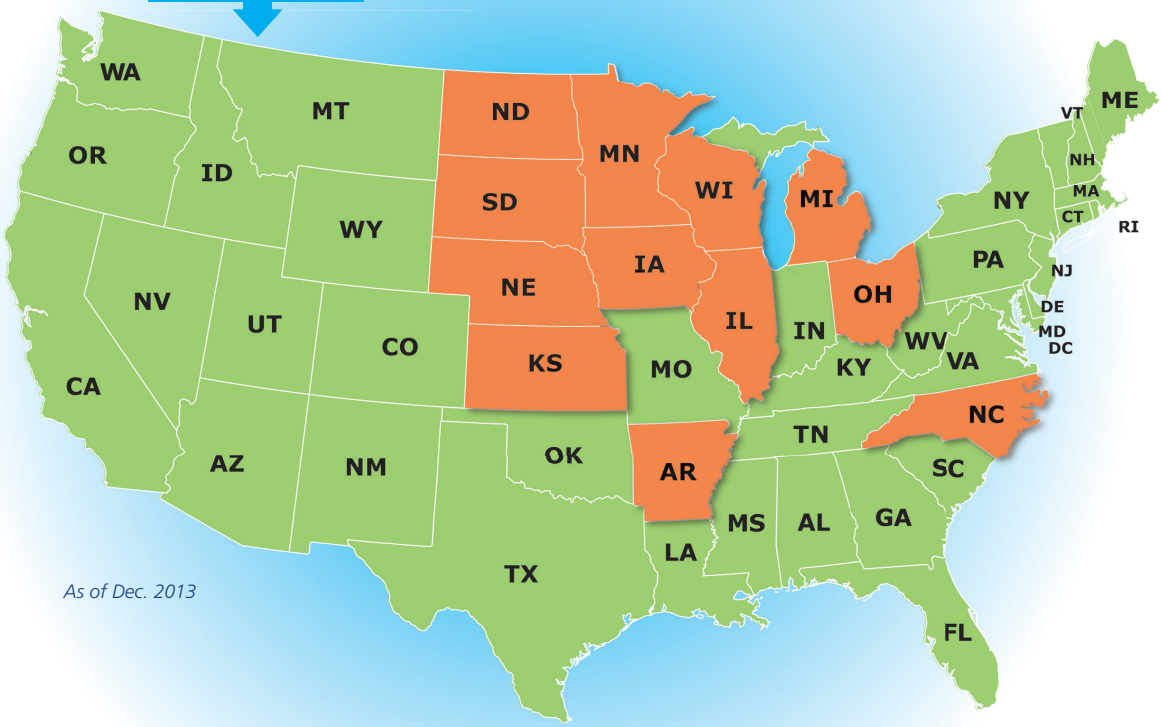
After carefully reviewing 43 studies on the effects of E15, the National Renewable Energy Laboratory (NREL) found that the available literature **"…did not show meaningful differences between E15 and E10 in any performance category."** With respect to the Coordinating Research Council's (CRC) controversial engine durability study, NREL found **"…the conclusion that engines will experience mechanical engine failure when operating on E15 is not supported by the data."**

Today, E15 is sold at approximately 60 retail gas stations in 12 states, from North Dakota to North Carolina. Since its commercial introduction, more than 50 million miles have been driven on E15—that's the equivalent of 210 trips to the moon. Moreover, E15 has typically been priced 10-15 cents per gallon less than gasoline without ethanol.

And despite the doomsday rhetoric from the oil industry, not a single case of "engine damage" or inferior performance due to E15 use has been reported. Similarly, there have been no known cases of E15 misfueling in pre-2001 vehicles, small engines, boats, or other non-approved equipment.

The oil industry's anti-E15 campaign and biased "study" were further undermined with the 2013 release of a comprehensive report by the National Renewable Energy Laboratory (NREL). The NREL report reviewed 43 studies related to E15 and found "…the conclusion that engines will experience mechanical engine failure when operating on E15 is not supported by the data."

E15 IS BEING SOLD IN 12 STATES

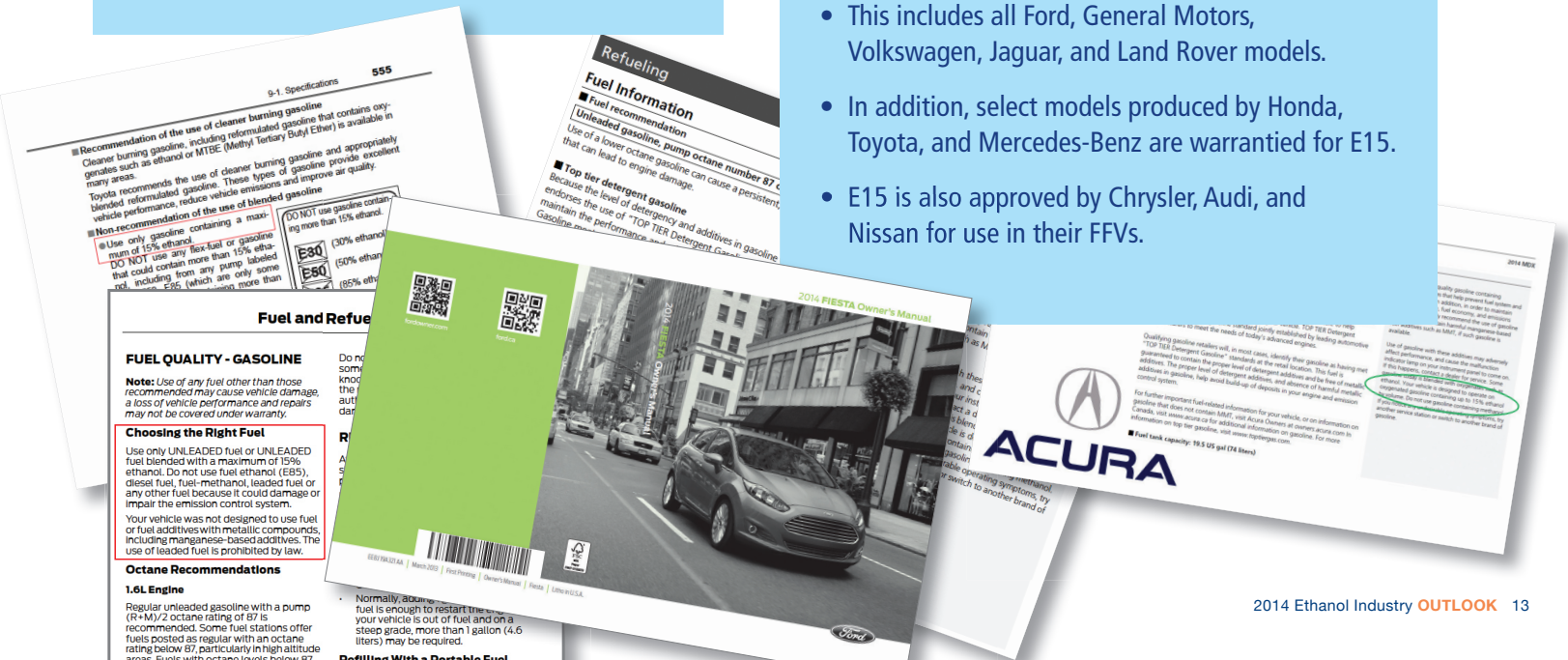


As of Dec. 2013

E15 is approved for use in all vehicles built in 2001 or later. These vehicles represent nearly 80% of today's fleet—or 4 out of every 5 cars on the road.

More than 60% of new cars sold in 2014 will be explicitly warrantied for the use of E15 by the manufacturer.

- This includes all Ford, General Motors, Volkswagen, Jaguar, and Land Rover models.
- In addition, select models produced by Honda, Toyota, and Mercedes-Benz are warrantied for E15.
- E15 is also approved by Chrysler, Audi, and Nissan for use in their FFVs.



A breakthrough year for E85

E85 has been in the marketplace for nearly two decades, but the high-octane fuel has rarely gotten the attention it deserves. That all changed in 2013, as E85 sales skyrocketed in response to escalating RFS requirements and favorable blending economics.

The higher RIN credit prices experienced in 2013 translated to lower fuel prices for consumers of E85. That's because progressive fuel blenders, marketers and retailers bought ethanol (with free RINs attached), blended it to make E85, separated the RINs from the gallons, and sold them to refiners who had stubbornly chosen to buy RINs rather than physical gallons of ethanol. Thus, the sale of RINs allowed enterprising retailers and marketers to reduce the price of E85 for consumers. During the summer, E85 was commonly priced $1 per gallon below the price of gasoline. In response to these discounts, consumer demand for E85 increased like never before. In Minnesota, for example, monthly E85 sales volumes tripled between January and August.

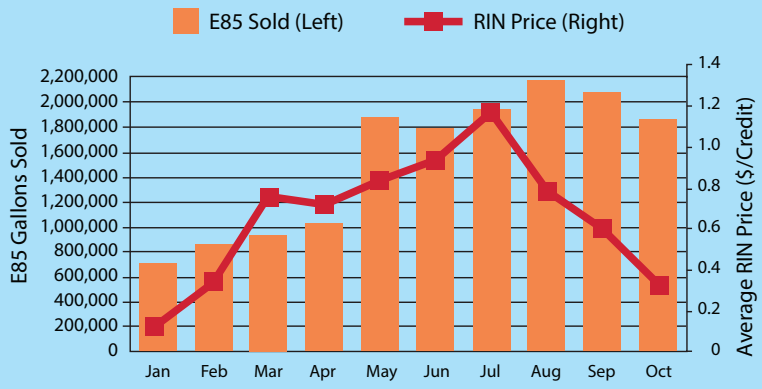
More than 200 retail stations added E85 refueling infrastructure in 2013, bringing the total number of stations offering E85 to approximately 3,250. In fact, the number of stations selling E85 has more than quadrupled since 2006.

The increasing population of flex-fueled vehicles (FFVs) is also playing an important role in the growth of E85. Approximately half of new vehicles produced by Chrysler, Ford, and General Motors are FFVs, meaning roughly one-quarter of all new vehicles sold today are capable of using up to E85. As we enter 2014, roughly one out of every 10 cars on the road is an FFV.

As biofuel blending continues to ramp up under the RFS, the use of E85 in FFVs will become increasingly important. As a result, American consumers will enjoy lower fuel prices, cleaner air, and a more secure energy supply.

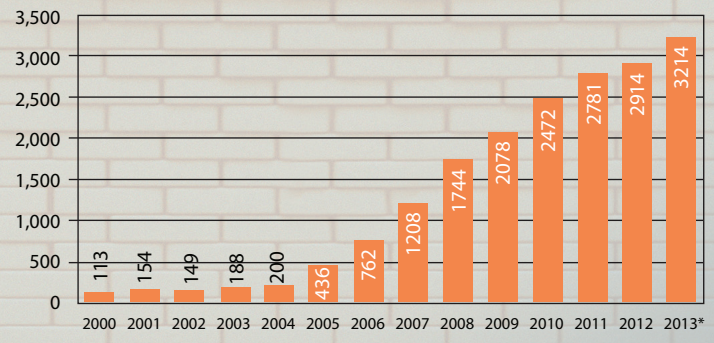
Roughly 25% of new vehicles sold in the U.S. in 2014 will be FFVs capable of operating on up to E85. This includes approximately half of new models produced by Ford, General Motors, and Chrysler, as well as select models made by Volkswagen, Land Rover, Jaguar, Toyota, Mercedes-Benz, Bentley, and Audi. For a comprehensive list of model year 2014 FFV offerings, go to www.chooseethanol.com

2013 MONTHLY E85 SALES IN MINNESOTA VS. RIN PRICE



Source: Minnesota Department of Commerce & Oil Price Information Service

U.S. RETAIL GAS STATIONS OFFERING E85



Sources: E85prices.com, Alternative Fuels Data Center, and RFA **Estimated*

Shattering misconceptions

Biofuel opponents continue to claim that using grain to make ethanol somehow creates a "food vs. fuel" dilemma and increases food prices. But a mountain of evidence proves otherwise. More grain is available for food and feed use worldwide today than ever before, and consumer food prices have been unaffected by higher corn prices and growth in ethanol production.

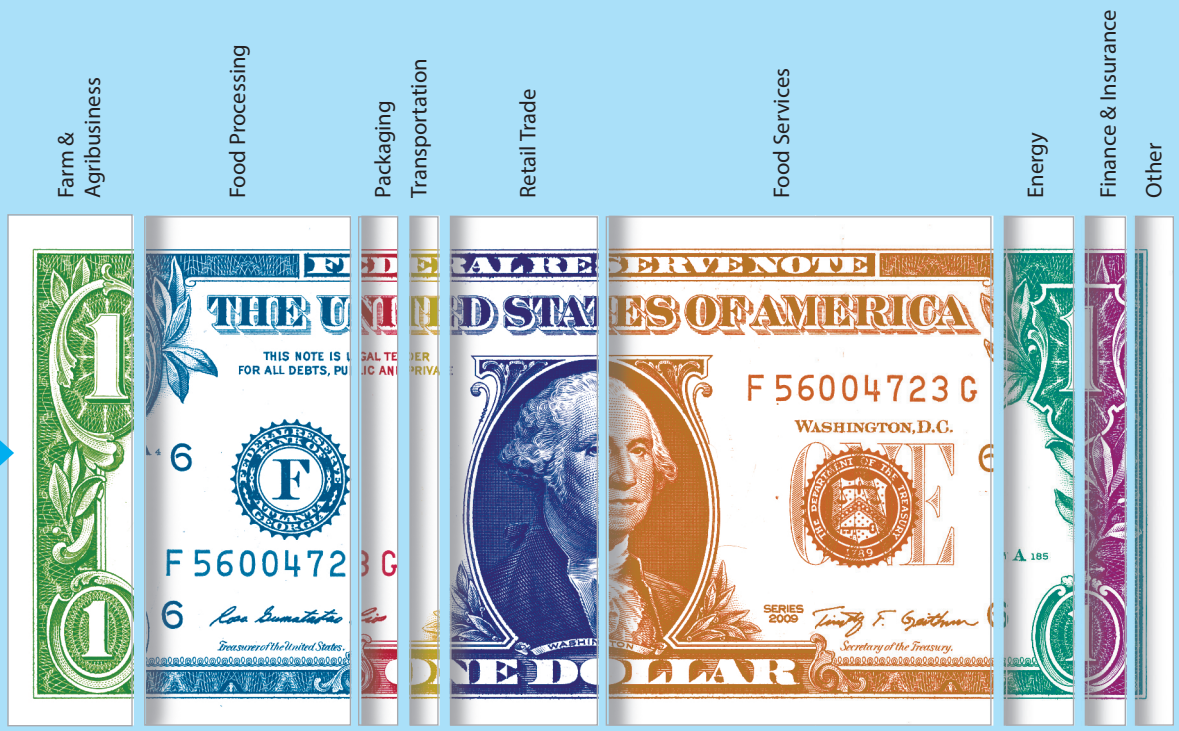
"…the price of food in the grocery store or restaurant is primarily determined by things that happen after products leave the farm."

– **Patrick Westhoff, professor of agricultural and applied economics, University of Missouri—Columbia**

Food price inflation continues to trend downward, meaning consumers are spending a smaller portion of their income on food today than ever before. Between 1980 and 2004, food prices increased by an average of 3.5% per year. In contrast, food prices have risen by an average of 2.9% per year since 2005, the year the RFS was adopted. Since 2009, food prices have risen just 2.2% per year, and USDA projects 2013 food price inflation at only 2.0%.

Corn has negligible effects on retail food prices because the grain is only a minor ingredient in consumer grocery items. For example, when corn is $4.40/bushel, a 12-ounce box of corn flakes contains just 4.9 cents worth of corn and just 16 cents worth of corn is needed to produce one pound of chicken. Indeed, when a consumer spends one dollar on food at the grocery store, only 12 cents is paying for the value of the farm products in the groceries. The other 88 cents is paying for processing, energy, transportation, labor, packaging, advertising,

WHO GETS THE CONSUMER'S FOOD DOLLAR?



Source: USDA

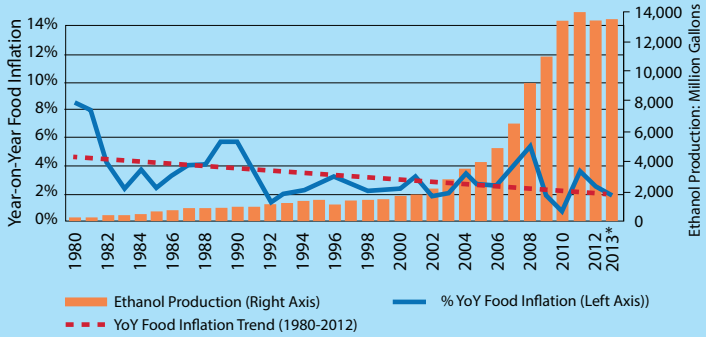
"Most of the contribution to food price changes from 1997-2004 to 2005-12 comes from the price of crude oil…"

– John Baffes and Allen Dennis, World Bank

and other costs. Thus, even large changes in agricultural commodity prices have relatively small effects on retail food prices. This explains why consumer food prices were stable or slightly higher in 2013, even though corn prices fell some 40% over the course of the year.

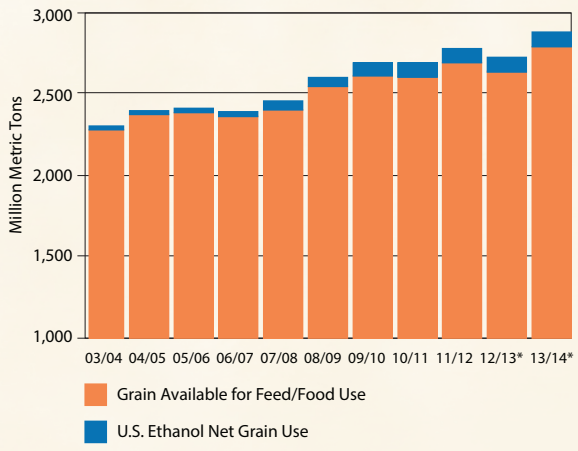
Not surprisingly, a number of academic and governmental organizations have concluded that recent fluctuations in food and feed prices have been driven primarily by volatile global oil markets. A 2013 World Bank report concluded that "most of the [food] price increases are accounted for by crude oil prices…" Similarly, a new analysis by the U.N. Food and Agriculture Organization found unambiguously that "…oil prices are the long run drivers of ethanol and grains prices."

U.S. FOOD PRICE INFLATION AND ETHANOL PRODUCTION



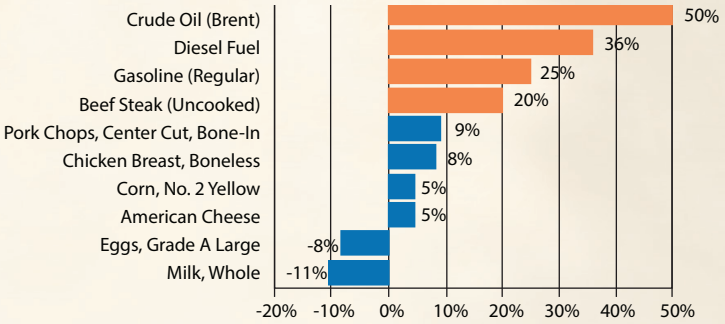
Source: U.S. Dept. of Labor and RFA **Estimated*

U.S. ETHANOL INDUSTRY IMPACT ON GLOBAL GRAIN SUPPLY



Source: USDA and RFA **Estimated*

CHANGES IN CORN, OIL AND FOOD PRICES SINCE 2007



Sources: (1) Crude Oil, Diesel Fuel, Gasoline prices from EIA (2013 price based on December 2013 STEO) (2) Food prices from Bureau of Labor Statistics (Dec. 2007 compared to Oct. 2013) (3) Corn price from USDA-ERS (2007/08 compared to 2013/14)

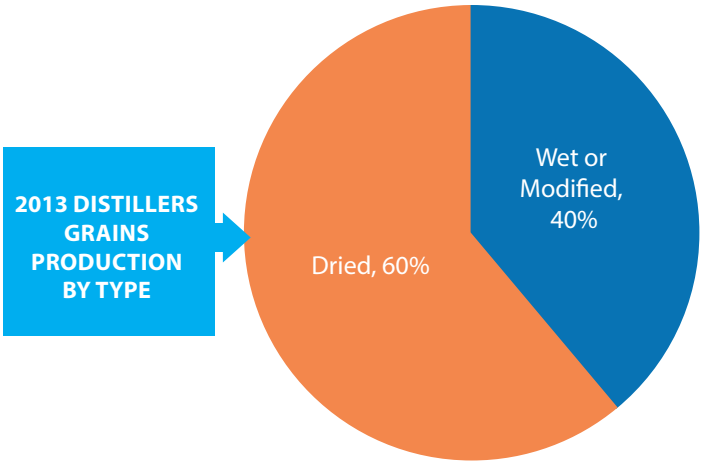
CO-PRODUCTS UPDATE

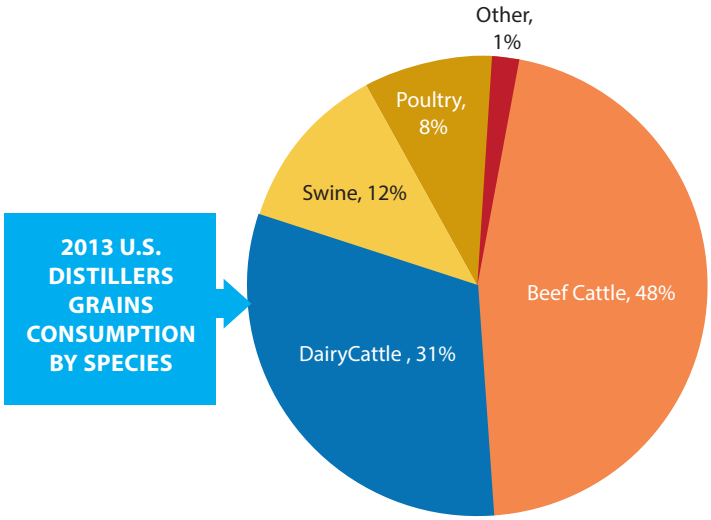
Ethanol co-products swell in importance

All too often, the U.S. ethanol industry's enormous contribution to the global feed market goes unnoticed or overlooked. But the numbers don't lie—the ethanol sector has quickly and quietly become one of the largest contributors to the U.S. feed supply. Roughly one-third of every 56-pound bushel of grain that enters the ethanol process is enhanced and returned to the animal feed market, most often in the form of distillers grains, corn gluten feed, and gluten meal. These co-products are fed to beef cattle, dairy cows, swine, poultry, and fish in nations around the world. Today, more than 75% of dry mill ethanol plants also extract corn distillers oil, a product that is sold into the feed market or used to produce biodiesel.

Despite enduring one of the worst droughts in the last 50 years, the ethanol industry generated 35.5 million metric tons (mmt) of high-quality feed in the 2012/13 marketing year. Production is expected to rise to 37.8 mmt in 2013/14. To put these production volumes in context, consider that the amount of feed produced by the ethanol industry in 2012/13 would rank as the world's fourth-largest corn crop, trailing only the United States, China, and Brazil. The feed produced by ethanol plants in 2012/13 would be enough to produce nearly 45 billion quarter-pound hamburger patties—or six patties for every person on the planet.

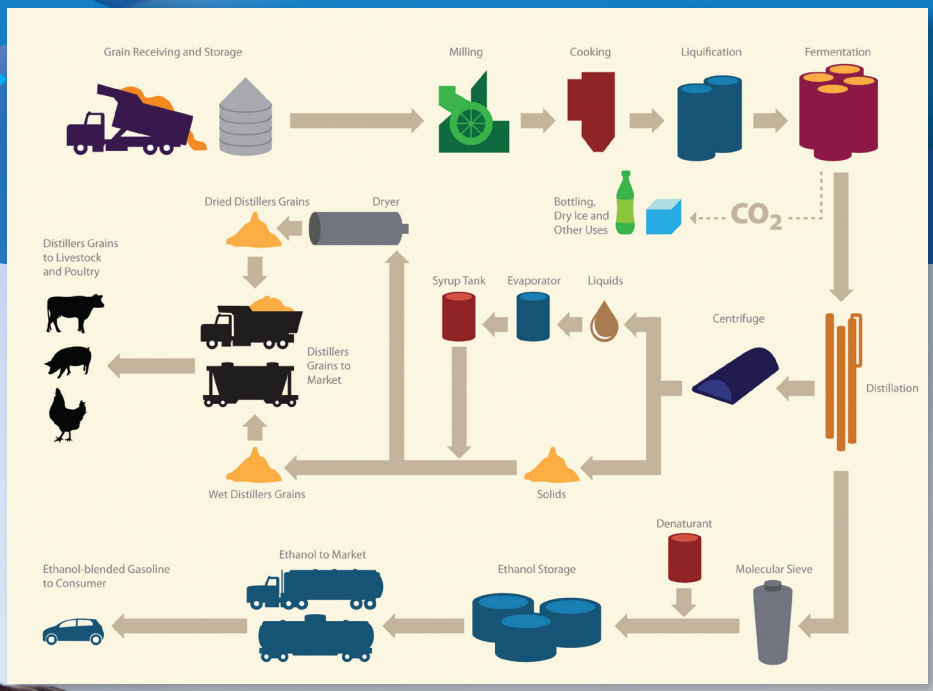
Feed co-products represent an increasingly important share of profit opportunities for ethanol producers. In fact, a typical dry mill earned 27% of its gross revenue from the sale of distillers grains and corn distillers oil in 2013. The estimated market value of all feed co-products from ethanol production in 2012/13 was a whopping $9.1 billion, more than double the value in 2009/10. An additional $700 million was realized through sales of corn distillers oil.



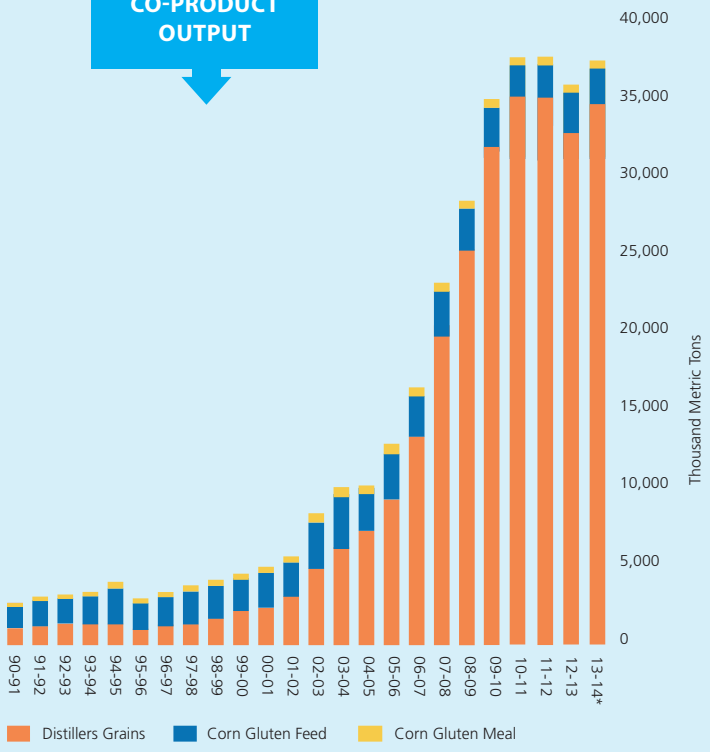


Source: Distillers Grains Marketing Companies

DRY MILL ETHANOL PROCESS

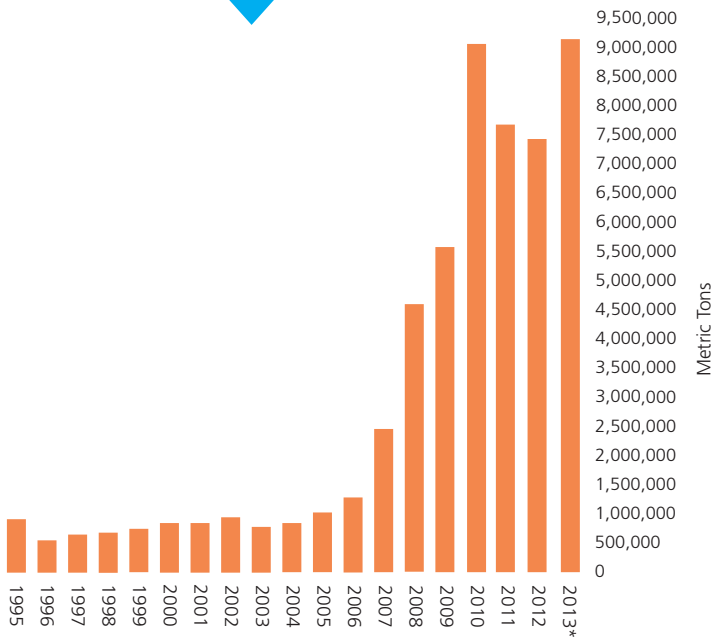


U.S. ETHANOL INDUSTRY CO-PRODUCT OUTPUT



Source: RFA **Estimated*

DISTILLERS GRAINS EXPORTS



Source: USDA-FAS **Estimated*

Traversing the global marketplace

The U.S. ethanol industry has established itself as a powerhouse in the global ethanol trade. Not only has the United States led the world in production the past several years, but it has also evolved into one of the top ethanol exporters as well. American-made ethanol has been the lowest-cost motor fuel in the world for much of the past three years.

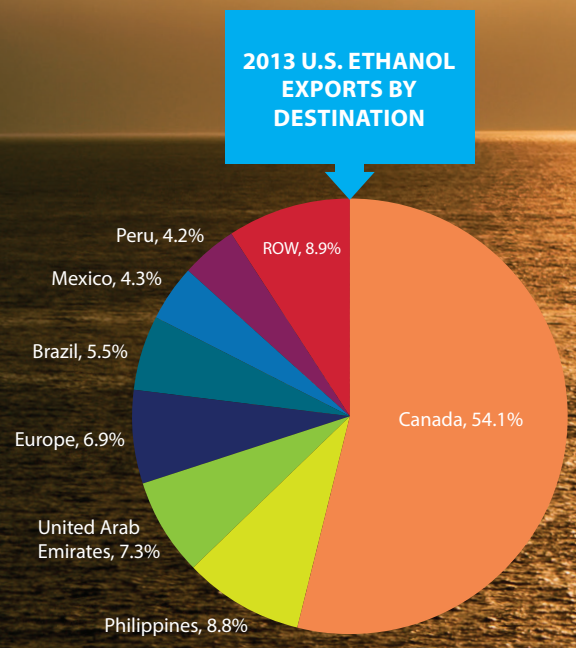
America's ethanol industry was responsible for an estimated 57% of world output in 2013. Brazil, which produced about 6.3 billion gallons and accounted for approximately 27% of world ethanol production, was a distant second. At 1.4 billion gallons of production, the European Union contributed 6% of the world ethanol supply. China, India, and Canada were other leading producers in 2013. Ethanol production in Thailand and Australia continued to make strides, while the South and Central American countries of Argentina, Peru, Paraguay, and Guatemala also ranked among the world's top ten producers.

In the wake of the drought, U.S. exports fell in 2013. However, the year still went down as the third-best on record. An estimated 630 million gallons of ethanol were exported to destinations around the world. Canada was again the U.S. ethanol industry's most consistent and reliable export market, taking in more than half of U.S. shipments. The Philippines rapidly emerged as the second-ranking customer for U.S. ethanol, while the United Arab Emirates ranked third. Brazil, Mexico, and Peru were other top importers of U.S. product, and new markets like China and India emerged late in the year.

Due to the imposition of a punitive tariff against U.S. ethanol in 2013, exports to the European Union fell precipitously. Europe accounted for roughly 7% of U.S. exports in 2013, down from about 25% in both 2012 and 2011. RFA and others challenged the legality of the EU tariff in 2013 and the association will continue to push for resolution of this prejudicial trade barrier in 2014.

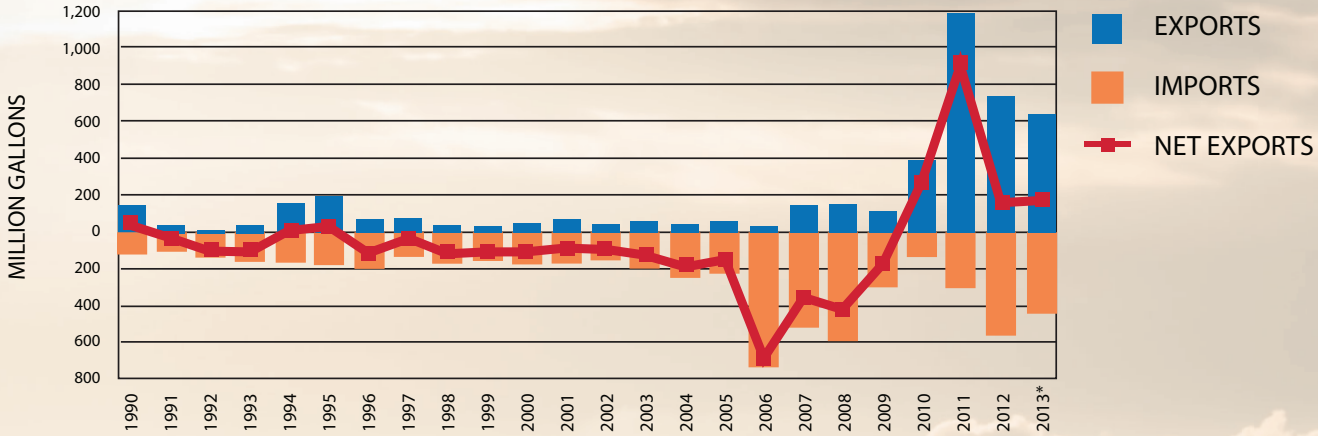
"The ethanol export market is extremely important to the future growth and financial health of our industry. The oil industry has created significant barriers to greater ethanol use domestically, which means we must continue to aggressively pursue global market opportunities while we work to overcome obstacles in the U.S. market. Because American-made ethanol is the lowest-cost fuel on the planet today, I believe there will be tremendous opportunities to expand global demand for our product."

– **Walter Wendland, President & CEO, Homeland Energy Solutions and Golden Grain Energy**



Source: Dept. of Commerce, U.S. Census Bureau, Foreign Trade Statistics Based on Jan.-Nov. 2013

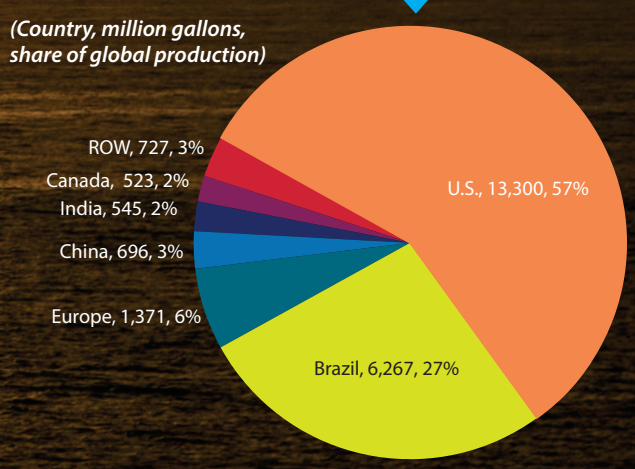
U.S. ETHANOL EXPORTS AND IMPORTS



Source: Dept. of Commerce, U.S. Census Bureau, Foreign Trade Statistics

**Estimated*

2013 GLOBAL FUEL ETHANOL PRODUCTION, BY COUNTRY



Source: USDA-FAS

American farmers rise to the challenge

Innovation and new technology have revolutionized the agriculture industry and reduced the environmental impacts associated with producing corn and other feedstocks. Thanks to advances in seed technology, farm machinery, and conservation practices, today's farmers are doing more with less. They are producing more grain than ever before and using less land, fertilizer, water and other resources to do it.

Despite an extremely late planting season, corn growers produced a record crop of 13.93 billion bushels in 2013 and the third-best yield per acre in history. The crop was 7% larger than the previous record and a whopping 30% bigger than 2012's drought-ravaged harvest.

Because growers are getting more output per acre, less land is needed to satisfy demand for food, feed and fuel. Total cropland continues to shrink, following a long-term trend that began in the 1930s. In fact, the land planted to major crops in 2013 was 3% smaller than the acreage planted in the mid-1990s and 8% smaller than typical plantings in the mid-1980s.

Farmers are using less fertilizer too. Since 1985, the amount of nitrogen fertilizer required to produce a bushel of corn has fallen 29%, while phosphorous and potash use have fallen 36% and 49%, respectively.

And despite the claims from anti-ethanol environmental extremists, the hypoxic "dead zone" in the Gulf of Mexico is actually smaller today than it was prior to emergence of the biofuels industry. In fact, the hypoxic zone in 2012 was the smallest in 12 years.

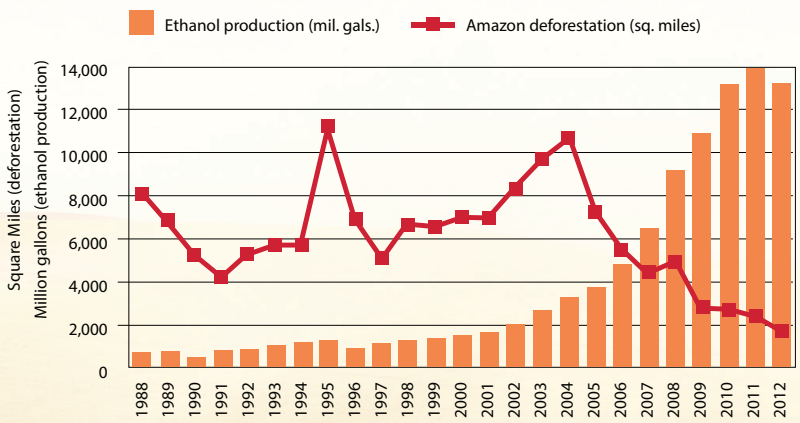
Similarly, real-world data have disproven alarmist claims that increased demand for U.S. crops would drive deforestation in the Amazon. The truth is, deforestation in the Brazilian Amazon has fallen to its lowest point since the government began keeping records in 1988.

FERTILIZER USE

		1985	2010	% Change
Total Nitrogen (N)	1000 short tons	5,666	5,610	-1.0%
Total Phosphate (P)	1000 short tons	2,153	1,933	-10.2%
Total Potash (K)	1000 short tons	2,769	1,991	-28.1%
N/bushel	lbs./bushel	1.28	0.90	-29.4%
P/bushel	lbs./bushel	0.49	0.31	-36.0%
K/bushel	lbs./bushel	0.62	0.32	-48.7%
Corn Production	million bushels	8,875	12,447	40.2%

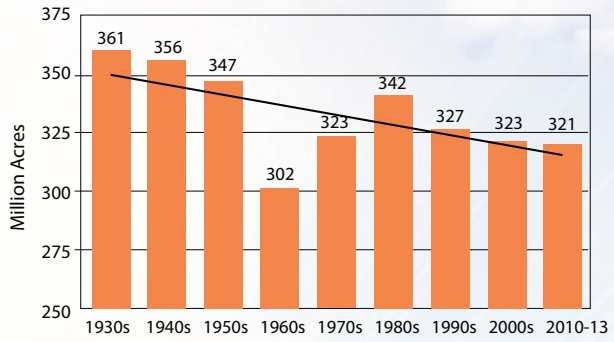
Source: USDA

AMAZON DEFORESTATION AND U.S. ETHANOL PRODUCTION



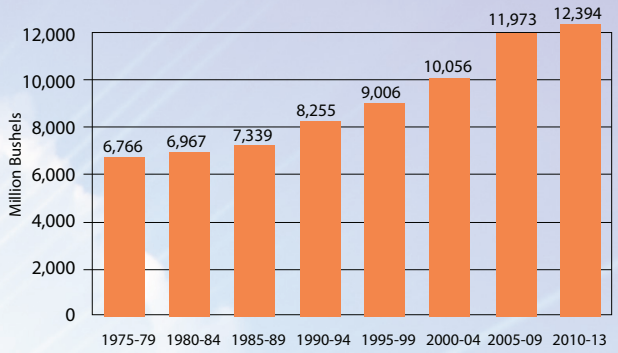
Source: Brazil National Institute for Space Research and RFA

U.S. ACRES PLANTED TO MAJOR CROPS (10-YEAR AVERAGES)



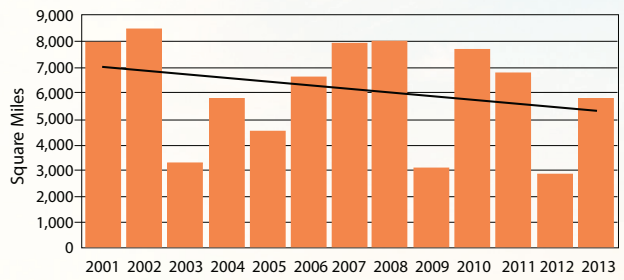
Source: USDA

SIZE OF U.S. CORN CROP (5-YEAR AVERAGES)



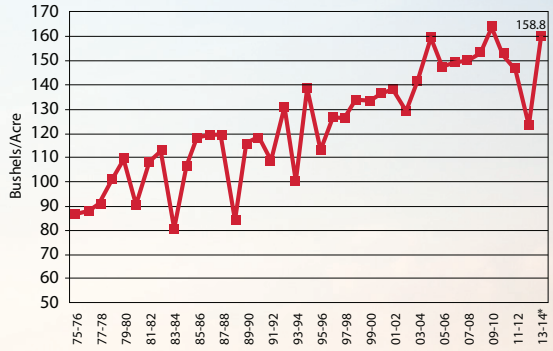
Source: USDA

SIZE OF GULF OF MEXICO HYPOXIC ZONE



Source: Louisiana State University and NOAA

U.S. CORN YIELD PER ACRE



Source: USDA **Projected*

ETHANOL'S ENERGY EFFICIENCY

Riding a crest of efficiency

Few—if any—manufacturing sectors in the United States can boast the same record of efficiency, technology adoption, and innovation as the ethanol industry.

In less than 20 years, the industry has dramatically reduced the environmental impacts of producing ethanol. The amount of thermal energy required to make a gallon of ethanol has fallen 36% since 1995, while electricity use is down 38%. At the same time, producers are squeezing 12% more ethanol out of every bushel of corn. Meanwhile, water use has been cut in half since 1998. Just like their counterparts in the farming community, ethanol producers are doing more with less.

The result of these dramatic improvements is a smaller carbon footprint and higher energy efficiency. According to the Department of Energy's GREET model, average corn ethanol reduces greenhouse gas (GHG) emissions by 34% compared to gasoline—even when hypothetical land use emissions are considered. Without indirect emissions, average corn ethanol decreases GHG emissions by 44%. Further, reductions in energy use on the farm and at the plant have improved the energy balance of corn ethanol. USDA's latest research concluded that 1 unit of energy invested in the corn ethanol production process results in the production of 2.3 units of usable energy in the form of ethanol.

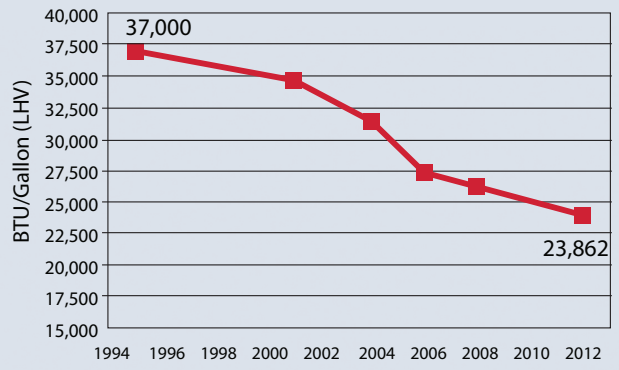
While ethanol's environmental record continues to improve, the ecological impacts of fossil fuel production continue to worsen. New sources of crude oil, such as fracking and tar sands, are often 15-20% more carbon intensive than conventional crude oil. And according to the Alberta government, 8-10 barrels of water are required to produce one barrel of crude oil from bitumen.

The use of ethanol in gasoline in 2013 reduced CO2-equivalent greenhouse gas emissions from transportation by 37.9 million metric tons—equivalent to removing 7.9 million cars from the road for an entire year.

Today's corn ethanol reduces GHG emissions by an average of 34% compared to gasoline even when penalized for speculative land use change emissions. Some corn ethanol pathways reduce GHG emissions by 48% including land use change emissons.

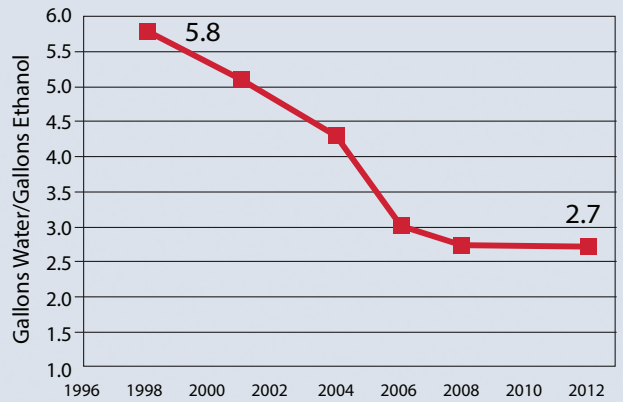
– Wang et al., Environmental Research Letters (2012)

AVERAGE NATURAL GAS ENERGY USE (THERMAL) FOR ETHANOL PRODUCTION



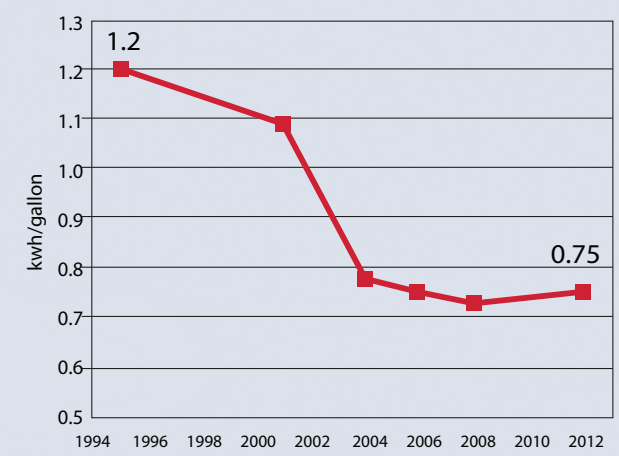
Source: University of Illinois-Chicago, Argonne National Laboratory, and USDA

AVERAGE CONSUMPTIVE WATER USE FOR ETHANOL PRODUCTION



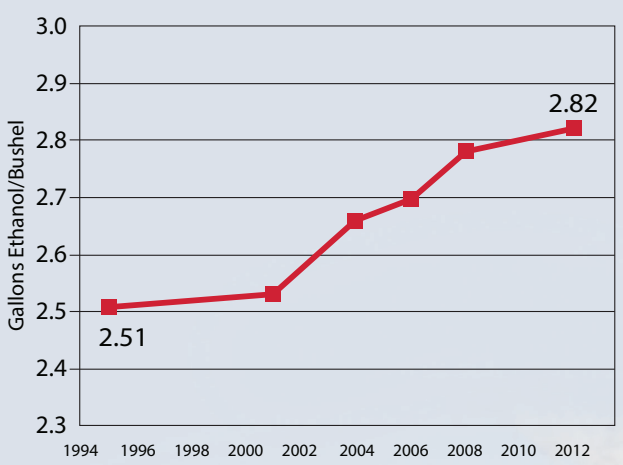
Source: University of Illinois-Chicago, Argonne National Laboratory, and USDA

AVERAGE ELECTRICITY USE FOR ETHANOL PRODUCTION



Source: University of Illinois-Chicago, Argonne National Laboratory, and USDA

AVERAGE ETHANOL YIELD PER BUSHEL (UNDENATURED)



Source: University of Illinois-Chicago, Argonne National Laboratory, and USDA

ADVANCED AND CELLULOSIC ETHANOL

Catching the next wave

The potential of cellulosic ethanol is enormous. Sandia National Laboratory says that the United States could produce 75 billion gallons per year of cellulosic biofuels by 2030, without disrupting traditional agricultural markets. That's more than half of today's U.S. gasoline demand.

But cellulosic ethanol is more than just another way to reduce oil dependence. Innovation and feedstock diversity are the keys to the future growth of today's ethanol industry. And cellulosic biofuel is an important piece of the puzzle when it comes to maintaining bipartisan support for the RFS going forward.

So where does the industry stand? The first wave of commercial plants are completing construction or are already online in Florida, Mississippi, Iowa and Kansas. In addition, there are projects in various stages of development and construction in more than 20 states, and it is already clear that the cellulosic ethanol industry will have a very diverse geographic profile.

Perhaps even more importantly, the U.S. is winning the global competition when it comes to attracting investment for advanced biofuel projects. The United States is home to an estimated 67% of global ventures in advanced biofuels, according to a recent report, ranking well ahead of China, Germany, France and Brazil. Why? It's simple: the RFS has decreased risk and provided the market certainty necessary for large-scale investments in innovative new technologies.

aec
ADVANCED ETHANOL COUNCIL

Formed in collaboration with RFA in 2011, the Advanced Ethanol Council (AEC) has quickly become a leading voice not just for advanced and cellulosic ethanol, but for the broader advanced biofuels industry in the context of key policy initiatives such as the RFS, tax and market development. AEC members include those endeavoring to operate production facilities, those interested in augmenting conventional biofuel plants with "bolt on" or efficiency technologies, and those developing and deploying the technologies necessary to make advanced biofuel production a commercial reality. The AEC is the only advanced biofuel advocacy group with the singular purpose of promoting advanced ethanol fuels and technologies.

ABENGOA BIOENERGY
Fulcrum BIOENERGY
DUPONT
Inbicon Biomass Refinery
BETA RENEWABLES S.p.A.
CLARIANT
IOGEN CORPORATION
ALGENOL BIOFUELS Harnessing the Sun to fuel the world
MASCOMA
Enerkem
ZeaChem

Abengoa Bioenergy

Hugoton, KS

- Capacity: 25 million gallons per year
- Expected startup in early 2014
- Feedstock: Agricultural residues, dedicated energy crops, prairie grasses
- 300 construction jobs, 65 operators, 120 external biomass procurement jobs

POET/DSM

Emmetsburg, IA

- Capacity: 20 million gallons per year
- Expected startup in early 2014
- Feedstock: corn crop residue
- 37 biorefinery jobs, 309 direct construction jobs

INEOS Bio

Vero Beach, FL

- Capacity: 8 million gallons per year
- Began commercial operations in 2013
- Feedstock: Vegetative and yard waste, municipal solid waste
- 400 direct and indirect jobs, 60 full time

DuPont Cellulosic Ethanol

Nevada, IA

- Capacity: 30 million gallons per year
- Under construction, commercial operations to begin in the second half of 2014
- Feedstock: Corn stover
- 700 direct and indirect jobs, 60-70 permanent full time employees

RFA COMMITTEES

Charting the course

As the ethanol industry's national trade association, the RFA has led the charge to expand the production and use of American-made ethanol. For more than 30 years, RFA has advanced policy and regulatory initiatives that support industry growth, educated decision-makers, served as the voice of the industry through public and media relations efforts, and provided the technical foundation to move the industry forward. RFA's Board of Directors – who are ascribed one vote per member – serve as a beacon to guide the Association's goals and strategies. 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 heavily on fuel specifications and standards developed by ASTM International, National Conference of Weights and Measures, ISO, Canadian General Standards Board, and other standard development organizations. Committee members monitor 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. Committee members and staff provide technically accurate and timely information on the production, blending, distribution, and performance of ethanol fuels and sponsored engine research to auto manufacturers and technicians, policymakers, refiners, marketers, media, and the general public.

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 committee also supports production and co-product utilization research and consumer marketing and education efforts.

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 regulations, safety compliance standards, and requirements as promulgated by the U.S. Department of Transportation under PHMSA, OSHA, the Association of American Railroads, and other bodies. The Committee also supports continuing education for every link of the ethanol supply chain, from production facilities to emergency responders.

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 and co-products. Committee members tackle complex issues such as the Greenhouse Gas Tailoring Rule, Mandatory Greenhouse Gas Reporting Requirements, and guidance for regulatory inspections of facilities.

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 Committee also coordinates trade mission opportunities for RFA members.

The Renewable Fuels PAC formed in 2012 to build 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.

For over 30 years the RFA has been at the helm, navigating the changing currents of the fuel ethanol industry. Together, members and staff are capably charting the course for the industry's future.

RFA EDUCATION & OUTREACH

Elevating awareness

RFA knows that increasing the demand for American-made ethanol and its co-products requires targeted methods of education and outreach to industry stakeholders, customers, consumers and key decision-makers.

The **Blend Your Own (BYO) Ethanol** marketing campaign is a joint effort by RFA and the American Coalition for Ethanol that educates gasoline marketers and retailers about ethanol infrastructure and the business case for higher-level blends. The BYO Ethanol campaign offers free grant writing services to gasoline retailers who wish to bid for funding to install blender pumps.

RFA also conducts **retailer education seminars and webinars** and participates in gasoline marketer trade shows. Further, the market development team has helped coordinate countless ethanol promotional events and **pump openings** at retail gas stations. RFA also sponsors **major promotional events**, such as "Free Fuel Happy Hour" at the Buffalo Chip during the legendary Sturgis motorcycle rally.

Expanding the ability of America's vehicle fleet to consumer ethanol blends above E10 is critical to achieving our nation's energy goals. RFA is an active collaborator on the **U. S. Council for Automotive Research** (USCAR) ethanol technical coordination team, which encourages automakers to pursue vehicle technologies that maximize the benefits of higher-level ethanol blends.

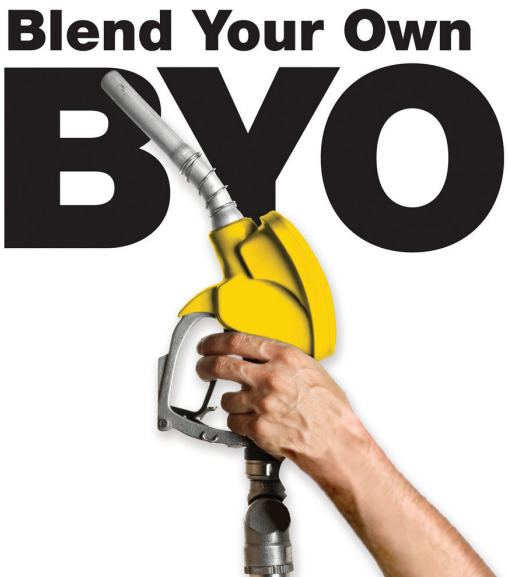
RFA has steadfastly continued its outreach and education efforts to ensure the **introduction of E15** to the marketplace. RFA is active with entities such as the EPA, state regulatory agencies, Weights & Measures and ASTM International in this regard.

Further, RFA strives to maintain the public's trust on the **safe transport** of ethanol. RFA has conducted **dozens of training sessions** for ethanol shippers and first responders through award-winning partnerships with the **Ethanol Emergency Response Coalition** (EERC) and **TRANSCAER®**.

Each year the RFA delivers **expert technical guidance** that educates a broad audience through go-to publications such as the *E15 Retailer Handbook*, *Changes in Gasoline IV*, and *Guidelines for Hinged and Bolted Manway Assembly*.

Entry into international markets has become increasingly important for U.S. ethanol producers' bottom line. RFA educates potential foreign buyers through **trade mission participation** in emerging markets, as well as co-sponsoring the international Export Exchange conference for the world's top buyers of ethanol co-products.

RFA educates key decision-makers with **targeted advertising**, easy-to-understand **infographics**, informative videos, and organized member visits to Capitol Hill. And RFA engages new audiences through social media such as Twitter, Facebook, blog posts, and smartphone apps. RFA also assists producers with local **marketing and advertising campaigns**, such as movie theater ads.



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Ethanol Emergency Response Coalition

FUELS AMERICA

IT'S ALREADY GROWING

RFA RENEWABLE FUELS ASSOCIATION

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Missy Ruff	Market Development Manager
Robert White	Director of Market Development

Staff bios are available at www.EthanolRFA.org/pages/staff.

RFF RENEWABLE FUELS FOUNDATION

The Renewable Fuels Foundation is dedicated to meeting the education, research and strategic planning needs of the U.S. fuel ethanol industry. The goal is to assure a growing and healthy renewable fuels industry well into the future. The focus of the RFF is toward academia, industry and public policy makers as we address issues related to new uses, new feedstocks and new technologies that will impact the future of ethanol.

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www.christiansoncpa.com

CHS Inc.
www.chsinc.com

CoBank
www.cobank.com

Colorado Corn Growers Association
www.coloradocorn.com

CSX Transportation
www.csx.com

DuPont
www.dupont.com

Eco-Energy, Inc.
www.eco-energyinc.com

Edeniq, Inc.
www.edeniq.com

Emerald Foam Control
www.emeraldmaterials.com

Fagen, Inc.
www.fageninc.com

Farm Credit Services of America
www.fcsamerica.com

Fermentis - S.I. Lesaffre
www.fermentis.com

Fremont Industries, Inc.
www.fremontind.com

Gavilon, LLC
www.gavilon.com

Gold Eagle Co.
www.goldeagle.com

Growmark, Inc.
www.growmark.com

Hartland Fuels
www.hartlandfuels.com

Hawkeye Gold

Husch Blackwell, LLP
www.huschblackwell.com

Hydro-Klean, Inc.
www.hydro-klean.com

ICM, Inc.
www.icminc.com

Illinois Corn Marketing Board
www.ilcorn.org

Indiana Corn Marketing Council
www.incorn.org

Innospec Fuel Specialties
www.innospecinc.com

Inspectorate America Corporation
www.inspectorate.com

INTL FCStone
www.intlfcstone.com

Iowa Corn Growers Association
www.iowacorn.org

Iowa Renewable Fuels Association
www.iowarfa.org

Kansas Corn Commission
www.ksgrains.com

KATZEN International, Inc.
www.katzen.com

Kenan Advantage Group, Inc.
www.thekag.com

Kentucky Corn Promotion Council
www.KYCorn.org

Kinder Morgan Inc.
www.kne.com

Lallemand Biofuels & Distilled Spirits
www.ethanoltech.com

Lansing Ethanol Services, LLC
www.lansingtradegroup.com

McGladrey LLP
www.mcgladrey.com

Michael Best & Friedrich, LLP
www.michaelbest.com

Midwest Laboratories, Inc.
www.midwestlabs.com

Minnesota Bio-Fuels Association
www.mnbiofuels.org

Minnesota Corn Research & Promotion Council
www.mncorn.org

Monsanto
www.monsanto.com

Motiva Enterprises LLC
www.motivaenterprises.com

Murex, N.A., Ltd.
www.murexltd.com

National Corn Growers Association
www.ncga.com

National Sorghum Producers
www.sorghumgrowers.com

Nebraska Corn Board
www.nebraskacorn.org

Noble Americas Corp.
www.thisisnoble.com

NorFalco Inc.
www.norfalco.com

North Dakota Corn Council
www.ndcorn.org

Novozymes North America, Inc.
www.novozymes.com

Ohio Corn Marketing Program
www.ohiocorn.org

PhibroChem
www.phibrochem.com

Pinnacle Engineering Inc.
www.pineng.com

PRX Geographic, Inc.
www.prxgeo.com

Renewable Products Marketing Group
www.rpmgllc.com

South Dakota Corn Utilization Council
www.sdcorn.org

Stinson Leonard Street LLP
www.leonard.com

Syngenta
www.syngenta.com

TransMontaigne Product Services
www.transmontaigne.com

Tranter PHE, Inc.
www.tranter.com

Trinity Rail Group, LLC
www.trinityrail.com

U.S. Development Group
www.us-dev.com

Union Pacific Railroad
www.up.com

United Sorghum Checkoff Program
www.sorghumcheckoff.com

Verenium
www.verenium.com

Supporting Members

Agricultural Retailers Association
www.aradc.org

Bemidji (MN) State University
www.bemidjistate.edu

Bismarck State College
www.bsc.nodak.edu

Colorado Farm Bureau
www.colofb.com

Corn Marketing Program of Michigan
www.micorn.org

Distillers Grains Technology Council
www.distillersgrains.org

Downstream Alternatives

Ethanol Producers and Consumers
www.ethanolmt.org

Great Falls Development Authority, Inc.
www.gfdevelopment.org

Iowa Central Fuel Testing Laboratory
www.iowafuellab.com

Jamestown/Stutsman Development Corp.
www.growingjamestown.com

Kansas Association of Ethanol Processors
www.ethanolkansas.org

Kentucky Energy & Environment Cabinet - Department for Energy
www.eec.ky.gov

Maryland Grain Producers Utilization Board
www.marylandgrain.com

Michigan State University – Department of Agricultural, Food and Resource Economics
www.aec.msu.edu

Milano the New School
www.newschool.edu/milano

Minnesota Department of Agriculture
www.mda.state.mn.us

Mississippi State University – Department of Forestry
www.cfr.msstate.edu/forestry

Missouri Corn Growers Association
www.mocorn.org

Morton College
www.morton.edu

National Corn-to-Ethanol Research Center
www.ethanolresearch.com

Nebraska Corn Growers Association
www.necga.org

New Jersey Gasoline C-Store Automotive Association (NJGCA)
www.njgca.org

South Dakota Corn Growers Association
www.sdcorn.org

Steele-Waseca Cooperative Electric
www.swce.coop

Sugar Processing Research Institute
www.spriinc.org

Texas Renewable Energy Industries Association
www.treia.org

United Association
www.ua.org

Water Assurance Technology Energy Resources
www.waterc3.com

Western Iowa Tech Community College - The National Boiler Training and Renewable Fuels Institute
www.witcc.edu

Wisconsin Pipe Trades Association
www.wipipetrades.org

U.S. Fuel Ethanol Industry Biorefineries and Capacity

Company	Location	Feedstock	Nameplate Capacity (mgy)	Operating Production (mgy)	Under Construction/ Expansion Capacity (mgy)
Abengoa Bioenergy Corp. (Total)	Madison, IL	Corn	378	323	25
	Mt. Vernon, IN	Corn			
	Colwich, KS	Corn/sorghum			
	Hugoton, KS	Cellulosic biomass			
	Ravenna, NE	Corn			
	York, NE	Corn			
	Portales, NM	Corn			
Absolute Energy, LLC	St. Ansgar, IA	Corn	115	115	
ACE Ethanol, LLC	Stanley, WI	Corn	41	41	
Adkins Energy, LLC	Lena, IL	Corn	45	45	
Advanced BioEnergy, LLC	Aberdeen, SD	Corn	53	53	
Advanced BioEnergy, LLC	Huron, SD	Corn	32	32	
Aemetis	Keyes, CA	Corn/sorghum	55	55	
Al-Corn Clean Fuel	Claremont, MN	Corn	50	50	
Archer Daniels Midland (Total)	Cedar Rapids, IA	Corn	1720	1720	
	Clinton, IA	Corn			
	Decatur, IL	Corn			
	Peoria, IL	Corn			
	Marshall, MN	Corn			
	Columbus, NE	Corn			
Arkalon Energy, LLC	Liberal, KS	Corn	110	110	
Aventine Renewable Energy, LLC (Total)	Pekin, IL	Corn	462	270	
	Canton, IL	Corn			
	Mount Vernon, IN	Corn			
	Aurora West, NE	Corn			
	Aurora East, NE	Corn			
Badger State Ethanol, LLC	Monroe, WI	Corn	50	50	
Big River Resources Boyceville LLC	Boyceville, WI	Corn	40	40	
Big River Resources Galva, LLC	Galva, IL	Corn	100	100	
Big River Resources, LLC	West Burlington, IA	Corn	100	100	
Big River United Energy	Dyersville, IA	Corn	110	110	
Blue Flint Ethanol	Underwood, ND	Corn	50	50	
Bonanza Energy, LLC	Garden City, KS	Corn/sorghum	55	55	
BP Biofuels North America	Jennings, LA	Sugar Cane Bagasse	1.5	1.5	
Bridgeport Ethanol	Bridgeport, NE	Corn	54	54	
Buffalo Lake Advanced Biofuels	Buffalo Lake, MN	Corn	18		
Bunge-Ergon Vicksburg	Vicksburg, MS	Corn	54		
Bushmills Ethanol, Inc.	Atwater, MN	corn	50	50	
Calgren Renewable Fuels, LLC	Pixley, CA	Corn	60	60	
Carbon Green Bioenergy	Lake Odessa, MI	Corn	50	50	
Cardinal Ethanol	Union City, IN	Corn	100	100	
Cargill, Inc.	Eddyville, IA	Corn	35	35	
Cargill, Inc.	Ft. Dodge, IA	Corn	115	115	
Cargill, Inc.	Blair, NE	Corn	195	195	
Center Ethanol Company	Sauget, IL	Corn	54	54	
Central Indiana Ethanol, LLC	Marion, IN	Corn	50	50	
Central MN Ethanol Coop	Little Falls, MN	Corn	21.5	21.5	
Chief Ethanol	Hastings, NE	Corn	62	62	
Chippewa Valley Ethanol Co.	Benson, MN	Corn	45	45	
Columbia Pacific Biorefinery	Clatskanie, OR	Corn	108		
Commonwealth Agri-Energy, LLC	Hopkinsville, KY	Corn	33	33	
Corn Plus, LLP	Winnebago, MN	Corn	49	49	

Corn, LP	Goldfield, IA	Corn	60	60	
Cornhusker Energy Lexington, LLC	Lexington, NE	corn	40	40	
Dakota Ethanol, LLC	Wentworth, SD	Corn	50	50	
Dakota Spirit AgEnergy LLC	Spiritwood, ND	Corn			65
DENCO II	Morris, MN	Corn	24	24	
Didion Ethanol	Cambria, WI	Corn	40	40	
Dubay Biofuels Greenwood	Greenwood, WI	Cheese Whey			5
DuPont	Nevada, IA	Cellulosic biomass			30
E Caruso (Goodland Energy Center)	Goodland, KS	Corn			20
E Energy Adams, LLC	Adams, NE	Corn	50	50	
East Kansas Agri-Energy, LLC	Garnett, KS	Corn	42	42	
ESE Alcohol Inc.	Leoti, KS	Seed Corn	1.5	1.5	
Fiberight, LLC	Blairstown, IA	Cellulosic biomass	5		
Flint Hills Resources LP	Arthur, IA	Corn	110	110	
Flint Hills Resources LP	Fairbank, IA	Corn	115	115	
Flint Hills Resources LP	Iowa Falls, IA	Corn	105	105	
Flint Hills Resources LP	Menlo, IA	Corn	110	110	
Flint Hills Resources LP	Shell Rock, IA	Corn	110	110	
Flint Hills Resources LP	Fairmont, NE	Corn	110	110	
Fox River Valley Ethanol	Oshkosh, WI	Corn	50	50	
Front Range Energy, LLC	Windsor, CO	Corn	40	40	
Gevo	Luverne, MN	Corn	21	21	
Glacial Lakes Energy, LLC	Mina, SD	Corn	107	107	
Glacial Lakes Energy, LLC	Watertown, SD	Corn	100	100	
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 Renewable Energy	Lakota, IA	Corn	100	100	
Green Plains Renewable Energy	Shenandoah, IA	Corn	55	55	
Green Plains Renewable Energy	Superior, IA	Corn	60	60	
Green Plains Renewable Energy	Bluffton, IN	Corn	120	120	
Green Plains Renewable Energy	Riga, MI	Corn	60	60	
Green Plains Renewable Energy	Fairmont, MN	Corn	115	115	
Green Plains Renewable Energy	Fergus Falls, MN	Corn	60	60	
Green Plains Renewable Energy	Wood River, NE	Corn	115	115	
Green Plains Renewable Energy	Atkinson, NE	Corn	44	44	
Green Plains Renewable Energy	Central City, NE	Corn	100	100	
Green Plains Renewable Energy	Ord, NE	Corn	55	55	
Green Plains Renewable Energy	Obion, TN	Corn	120	120	
Guardian Energy	Janesville, MN	Corn	110	110	
Guardian Hankinson, LLC	Hankinson, ND	Corn	110	110	
Guardian Lima, LLC	Lima, OH	Corn	54	54	
Heartland Corn Products	Winthrop, MN	Corn	100	100	
Heron Lake BioEnergy, LLC	Heron Lake, MN	Corn	50	50	
Highwater Ethanol LLC	Lamberton, MN	Corn	55	55	
Homeland Energy	New Hampton, IA	Corn	100	100	
Husker Ag, LLC	Plainview, NE	Corn	75	75	
Illinois Corn Processing	Pekin, IL	Corn	90	90	
Illinois River Energy, LLC	Rochelle, IL	Corn	100	100	
Iroquois Bio-Energy Company, LLC	Rensselaer, IN	Corn	40	40	
KAAPA Ethanol, LLC	Minden, NE	Corn	59	59	
Kansas Ethanol, LLC	Lyons, KS	Corn	60	60	
Land O' Lakes	Melrose, MN	Cheese Whey	2.5	2.5	

Levelland/Hockley County Ethanol, LLC	Levelland, TX	Corn	40		
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, LP	Marcus, IA	Corn	92	92	
Louis Dreyfus Commodities	Grand Junction, IA	Corn	100	100	
Louis Dreyfus Commodities	Norfolk, NE	Corn	45	45	
Marquis Energy - Wisconsin, LLC	Necedah, WI	Corn	50	50	
Marquis Energy, LLC	Hennepin, IL	Corn	100	100	
Marysville Ethanol, LLC	Marysville, MI	Corn	50	50	
Merrick and Company	Aurora, CO	Beverage Waste	3	3	
Mid America Agri Products/Wheatland	Madrid, NE	Corn	44	44	
Mid-Missouri Energy, Inc.	Malta Bend, MO	Corn	50	50	
Midwest Renewable Energy, LLC	Sutherland, NE	Corn	25		
Murphy Oil	Hereford, TX	Corn/sorghum	105	105	
Nebraska Corn Processing, LLC	Cambridge, NE	Corn	45	45	
Nesika Energy, LLC	Scandia, KS	Corn	10	10	
New Energy Corp.	South Bend, IN	Corn	102		
North Country Ethanol, LLC	Rosholt, SD	Corn	20	20	
NuGen Energy	Marion, SD	Corn	110	110	
One Earth Energy	Gibson City, IL	Corn	100	100	
Osage Bio-Energy	Hopewell, VA	Corn/Barley	65		
Pacific Ethanol	Madera, CA	Corn/sorghum	40		
Pacific Ethanol	Stockton, CA	Corn/sorghum	60	60	
Pacific Ethanol	Burley, ID	Corn	50	50	
Pacific Ethanol	Boardman, OR	Corn	40	40	
Parallel Products	R. Cucamonga, CA	Beverage Waste	3	3	
Parallel Products	Louisville, KY	Beverage Waste	3	3	
Patriot Renewable Fuels, LLC	Annawan, IL	Corn	100	100	
Penford Products	Cedar Rapids, IA	Corn	45	45	
Pennsylvania Grain Processing LLC	Clearfield, PA	Corn	110	110	
Pinal Energy, LLC	Maricopa, AZ	Corn	55		
Pine Lake Corn Processors, LLC	Steamboat Rock, IA	Corn	30	30	
Plymouth Ethanol, 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 City, SD	Corn	79	79	
POET Biorefining - Bingham Lake	Bingham Lake, MN	Corn	35	35	
POET Biorefining - Caro	Caro, MI	Corn	53	53	
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 - Hanlontown	Hanlontown, IA	Corn	56	56	
POET Biorefining - Hudson	Hudson, SD	Corn	56	56	
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 Biorefining - Scotland	Scotland, SD	Corn	11	11	
POET Biorefining- Groton	Groton, SD	Corn	53	53	
POET-DSM Advanced Biofuels	Emmetsburg, IA	Cellulosic biomass			20
Prairie Horizon Agri-Energy, LLC	Phillipsburg, KS	Corn	40	40	
Pratt Energy	Pratt, KS	Corn	55	55	
Quad-County Corn Processors	Galva, IA	Corn	30	30	2
Red Trail Energy, LLC	Richardton, ND	Corn	50	50	
Redfield Energy, LLC	Redfield, SD	Corn	50	50	
Reeve Agri-Energy	Garden City, KS	Corn/sorghum	12	12	
Renova Energy	Torrington, WY	Corn	10	10	
Show Me Ethanol	Carrollton, MO	Corn	55	55	
Siouxland Energy & Livestock Coop	Sioux Center, IA	Corn	60	60	
Siouxland Ethanol, LLC	Jackson, NE	Corn	50	50	
Southwest Georgia Ethanol, LLC	Camilla, GA	Corn	100	100	
Southwest Iowa Renewable Energy, LLC	Council Bluffs, IA	Corn	110	110	
Spectrum Business Ventures Inc.	Mead, NE	Corn	25		
Sterling Ethanol, LLC	Sterling, CO	Corn	42	42	
Summit Natural Energy	Cornelius, OR	Waste sugar/starches	1	1	
Sunoco	Volney, NY	Corn	114	114	
Tate & Lyle	Loudon, TN	Corn	105	105	
Tharaldson Ethanol	Casselton, ND	Corn/sorghum	150	150	
The Andersons Albion Ethanol LLC	Albion, MI	Corn	55	55	
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	Coshocton, OH	Corn	50	50	
Trenton Agri Products LLC	Trenton, NE	Corn	40	40	
United Ethanol	Milton, WI	Corn	52	52	
United WI Grain Producers, LLC	Friesland, WI	Corn	53	53	
Valero Renewable Fuels	Albert City, IA	Corn	110	110	
Valero Renewable Fuels	Charles City, IA	Corn	110	110	
Valero Renewable Fuels	Ft. Dodge, IA	Corn	110	110	
Valero Renewable Fuels	Hartley, IA	Corn	110	110	
Valero Renewable Fuels	North Linden, IN	Corn	110	110	
Valero Renewable Fuels	Welcome, MN	Corn	110	110	
Valero Renewable Fuels	Albion, NE	Corn	110	110	
Valero Renewable Fuels	Bloomingburg, OH	Corn	110	110	
Valero Renewable Fuels	Aurora, SD	Corn	120	120	
Valero Renewable Fuels	Jefferson Junction, WI	Corn	130	130	
Western New York Energy LLC	Shelby, NY	Corn	50	50	
Western Plains Energy, LLC	Campus, KS	Corn	45	45	
White Energy	Russell, KS	Sorghum/Wheat Starch	48	48	
White Energy	Hereford, TX	Corn/sorghum	100	100	
White Energy	Plainview, TX	Corn	110		
Wind Gap Farms	Baconton, GA	Beverage Waste	0.5	0.5	
Yuma Ethanol	Yuma, CO	Corn	40	40	
U.S. CAPACITY TOTALS			**14,879.5**	**13,965.5**	**167**

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