



July 2019

Ethanol Outlook Weak Amid Sluggish Demand

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Key Points:

- Operating margins will likely remain weak for the remainder of 2019 under the weight of abundant ethanol production.
- Declining corn production this year will also squeeze margins. Some ethanol plants will be forced to shut down or idle their production due to high corn prices or unavailable corn.
- In 2020 and 2021, margins may move slightly higher as demand and supply come into better balance.
- Exports remain one area of optimism, but that optimism precariously hangs on China’s plans to convert to E10 blend gasoline nationally by the end of 2020. In the meantime, domestic U.S. ethanol demand will likely be flat over the next two years.
- For ethanol plants’ margins to go up, supply will need to go down. This will be a painful process for some higher-cost producers.
- Higher-cost plants – those with older technology, those that are smaller, or are located in areas with higher input costs – will be the first to exit the industry.
- Longer term, ethanol plant profitability will come from diversified revenues and growth in E15 blend gasoline.

Background

Ethanol plants have been expanding capacity (*Exhibit 1*) after several years of positive margins. Ample production and relatively stagnant demand growth have weakened ethanol margins. Today, the industry is trying to work through and absorb this excess production.

Ethanol plants margins began sliding last summer and have struggled to remain profitable ever since (*Exhibit 2*). With stocks expected to remain above 900 million gallons through the remainder of 2019, margins will remain low. Supply and demand need to come into better balance in order to see a pop in margins.

When ethanol prices are cheaper than gasoline, gasoline blenders find ethanol to be an economical octane enhancer at a 10% blend. As a result, ethanol prices will tend to follow corn prices more closely than oil prices. Despite the recent ethanol price jump, ethanol prices remain well below gasoline prices. Accordingly, the crush margin for ethanol plants will remain range-bound while supplies remain ample and demand remains flat.

Demand: Limited domestic, hopeful export

Domestic ethanol demand will see limited growth over the next several years according to the U.S. Energy Information Administration (EIA). The U.S. EIA's most-recent Short-Term Energy Outlook projects ethanol consumption blended into gasoline to increase by just over 1% in 2020 compared to 2018.¹ In the five-year window, domestic demand is largely flat, according to EIA's 2019 Annual Energy Outlook (*Exhibit 3*).² This is the result of flat or declining gasoline demand, itself the result of improving miles per gallon (MPG) – despite more miles being driven.³

E15 Provides Support

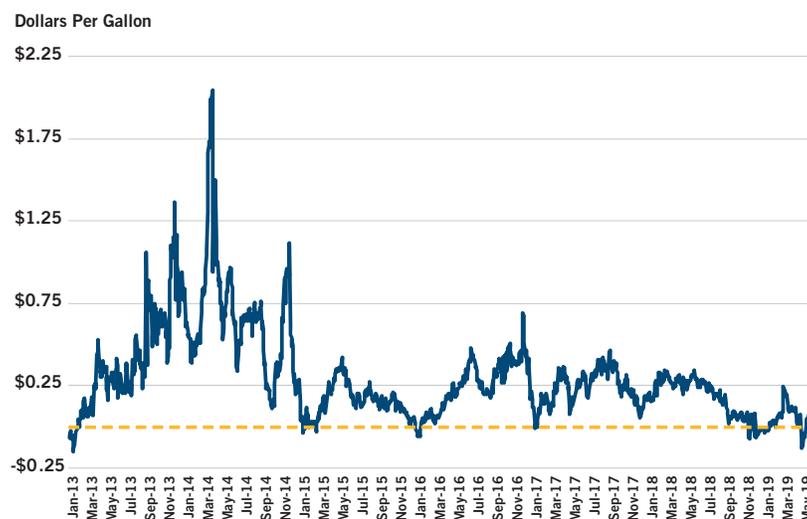
These EIA estimates, however, do not include potential growth in E15 consumption now that this fuel blend containing 15% ethanol can be sold year-round. This growth area is likely to remain small over the next two to three years. By 2025, the Renewable Fuels Association (RFA) expects year-round E15 to provide a net increase of 1.5 billion gallons in ethanol use,⁴ 10% above current EIA projections for domestic demand.

EXHIBIT 1: Ethanol Plant Capacity



Source: Renewable Fuels Association

EXHIBIT 2: Ethanol Plant, Operating Margin



Source: ISU-CARD

Two factors will affect E15 uptake. The first factor is policy. EPA has now finalized its rule allowing for sales of E15 gasoline blends during summer months, which will now allow for year-round E15 sales.

Policy feeds into the second factor: E15 pump adoption by gasoline retailers. The year-round E15 policy provides consistency for retailers as well as three more months of sales.

Some retailers will need to invest in additional infrastructure to support E15 sales, weighing costs of new pumps, tanks, or other equipment against the potential profits from offering E15. They will also need to account for any lost margin from cannibalizing sales that would have come from another fuel, such as E10.

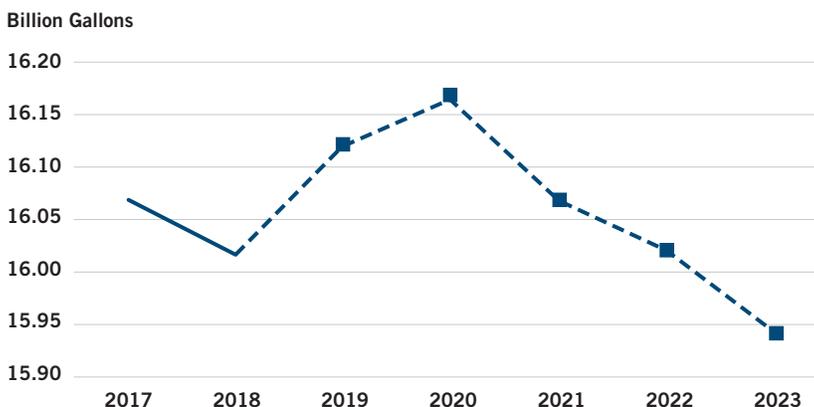
Consumer awareness will also need to grow with the help of education about the new gasoline offering. While consumer awareness will grow over time, the E15 demand bump will be limited in the next three years as this infrastructure and consumer acceptance builds. Longer-term, the E15 fuel market will be able to provide stronger support to ethanol plant margins.

Export Potential Hinges on China

Exports have been the demand growth star in recent years. 2016-17 and 2017-18 set new records, capping off five years of year-over-year increases. Exports in 2017-18 totaled 1.6 billion gallons, accounting for around 10% of total U.S. ethanol production.

2018-19 exports started the year very strong, growing 100 million gallons over the September-January period. However, YTD exports now trail last year's exports by around 50 million gallons due to a surge in early 2018. (*Exhibit 4*). Exports in 2018-19 have been soaking up some of the excess production, but there is no major shift in export demand.

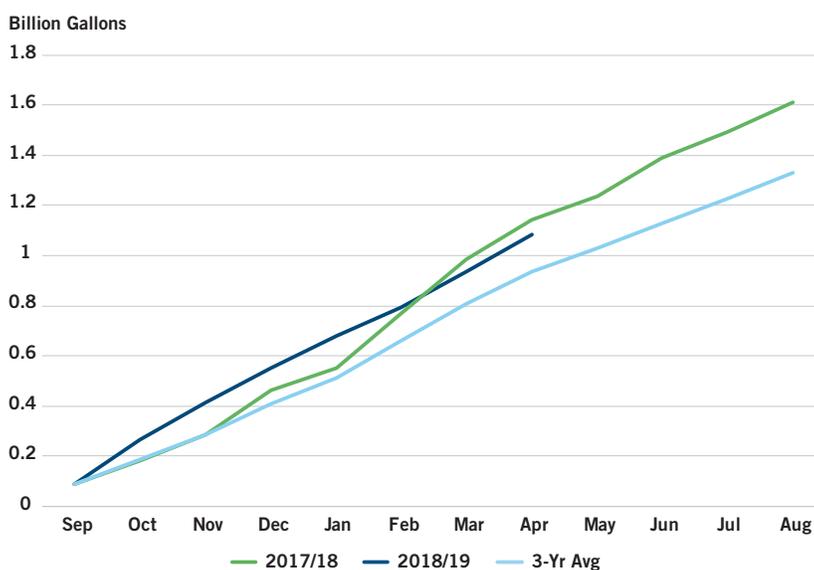
EXHIBIT 3: Future Ethanol Consumption



Source: U.S. EIA

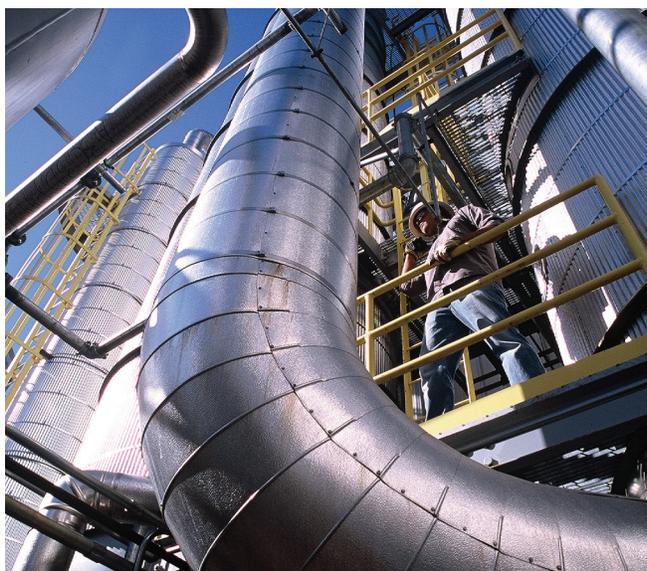
EXHIBIT 4: Ethanol Exports, YTD

Marketing Year (September – August)



Source: USDA-FAS

Exports will increase in the next few years as long as global economic growth continues. However, the increase in ethanol exports is unlikely to match recent years' growth as global economic growth slows and gasoline demand levels off or declines in other advanced economies.



Two developments on the export front could change this dynamic:

1. **EU's return:** The EU has recently dropped anti-dumping duties levied against U.S. ethanol imports. These tariffs have been in place since 2013. In 2011-12, the last full marketing-year prior to the tariffs being in place, the EU imported nearly 250 million gallons of ethanol from the U.S. Regaining this market would provide some support to margins. However, this support is likely to be small.

First, there is a question of whether the EU will return to pre-tariff levels. As history teaches us, a market lost due to trade distortions are difficult to regain. The new EU-MERCOSUR free trade deal will be an additional headwind to U.S. exports to the EU.

Second, EU demand is small in the context of overall production and use. The EU imported around 100 million gallons of ethanol last year from the U.S., and an additional 150 million gallons would boost total use by less than 1%. This would support margins, but not send them much higher.

2. **China's E10 mandate:** In 2017, China originally announced its intention to have all gasoline sold by 2020 be E10 blend. Chinese gasoline consumption in 2020 is projected to be around 45 billion to 50 billion gallons.^{5,6} An E10 mandate would require between 4.5 billion and 5 billion gallons of ethanol.

Industry estimates suggest current and projected capacity in China could supply around 3 billion gallons of ethanol in 2020.⁷ As a result, ethanol imports in the short run will have to make up the 1.5 billion to 2 billion-gallon shortfall.

The keys for U.S. ethanol to benefit from this potential demand is two-fold.

First, will China follow through on its E10 initiative on time? If not, it may build its own ethanol production capacity over time, never increasing ethanol imports to meet the E10 mandate. In that case, China will need to increase corn imports. As the world's largest corn producer, the U.S. will likely be a major supplier if the U.S.-China trade dispute is resolved, which could increase corn prices for U.S. ethanol producers.

Second, will U.S. and China trade relations normalize in time for U.S. ethanol to benefit if China does abide by the 2020 timeline? If so, as the global leader in ethanol production, the U.S. is well-positioned to fill this need. If not, the U.S. will still likely benefit, but not as much had trade relations been normalized.

On balance, the likelihood of a major purchasing drive by China is unlikely as U.S.-China trade negotiations seem to have stalled.

Supply: Heavy lifting for balance

With demand relatively flat in the coming years, the heavy lifting to improve margins will have to come from supply adjustments. This means industry production will need to decline in the form of reduced capacity utilization or plant closures. These plant-level decisions will be unique to each operation. Each plant has a different combination of technology, labor costs, corn costs, ethanol price, etc.

Ethanol plants with higher costs will be the most likely to exit. Types of plants with higher costs often include:

- **Plants with less-efficient technology:** Plants with less-efficient technology will have higher costs of production because they do not yield the same ethanol and co-product volume per bushel of input. This is a particularly difficult factor to change for an existing plant, leaving technologically-inefficient plants with few options.
- **Smaller plants:** Smaller plants cannot spread fixed costs over as many gallons. While smaller plants will often have lower total fixed costs, they often have higher fixed costs on a per-gallon basis. Labor costs have been rising and are having an outsized impact on smaller plants.

One important factor in the coming months is the dismal planting conditions that persisted for many areas of the Midwest this spring. Ethanol plants in areas that had lower than normal corn planting will likely see higher than normal local corn prices, if corn is available at all. Ethanol prices are unlikely to increase sufficiently in these areas to cover the higher corn prices, and plants in these areas will see their crush margin shrink, which may hasten production pullbacks. In the year ahead, corn production issues will likely be the cause of many decisions to idle or shut down ethanol plants.

As some plant owners look to exit, the question becomes who will buy them. Large plant owners with strong balance sheets will likely consider purchasing plants relatively close to existing facilities. However, significant discounts to ethanol plant values will be incurred to incentivize a buyer to purchase a plant. This contrasts with previous years, when financially troubled individual plants would not have incurred as significant of a discount. Potential buyers in previous years could envision the plant as a strategic expansion opportunity. Under the current margin environment, discounts will be significant as this mindset has likely changed.

While some plants will close, supply may not decrease significantly with two new plants expected to come online in 2019. In addition, plants are continually increasing production by adopting process improvements and new technology. As a result, low ethanol margins will likely be a fixture for the foreseeable future.

Conclusions

Ethanol producer margins will likely hover around break-even to slightly higher levels in the coming years. The major drivers are:

- Relatively stagnant domestic demand
- Slow export growth, unless
 - The EU returns to historical levels prior to anti-dumping duties, and
 - China fulfills its E10 commitment
- Significant production capacity

For margins to go up, supply will need to go down. This will be a painful process for some higher-cost producers as they look to reduce production or exit the industry. If the plants can be run profitably with lower financing costs, other ethanol producers with strong balance sheets may purchase these assets. Consolidation and a slow grind to higher margins will be the theme of the coming years.

Persistent, low margins will also drive ethanol plants to diversify revenue. One could expect co-product offerings to expand and investments in these co-product lines to increase. These co-product investments may include equipment to produce high-protein dried distiller grains with solubles (DDGS), corn oil optimization, and new buyers for carbon dioxide. The ethanol plant of today will likely turn into the corn bio-refinery of tomorrow. ■

References

- ¹ U.S. Energy Information Administration. June 2019. "Short-Term Energy Outlook." Washington, DC.
- ^{2,3} 2019. EIA Annual Energy Outlook. U.S. Energy Information Administration. January 2019. "Annual Energy Outlook 2019 with projections to 2050." Washington, DC.
- ⁴ Schill, Susanne Retka. 2018. "Relieving the Pressure." *Ethanol Producer Magazine*. November 21. <http://ethanolproducer.com/articles/15745/relieving-the-pressure>.
- ⁵ Platts and ISU CARD studies. Li, Minghao, Wendong Zhang, Dermot Hayes, Riley Arthur, Yantao Yang, and Xiudong Wang. 2017. "China's New Nationwide E10 Ethanol Mandate and Its Global Implications." *Iowa State University - CARD: Agricultural Policy Review*. Fall. https://www.card.iastate.edu/ag_policy_review/article/?a=71.
- ⁶ Liu, Harry. 2019. "China's ethanol push." IHS Markit. January 3. <https://ihsmarkit.com/research-analysis/china-ethanol-push.html>.
- ⁷ Gu, Hallie, and Dominique Patton. 2018. "China set to triple its ethanol production capacity: government researcher." Reuters. December 10. <https://www.reuters.com/article/us-china-ethanol/china-set-to-triple-its-ethanol-production-capacity-government-researcher-idUSKBN10A0FH>.

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