



ETHANOL

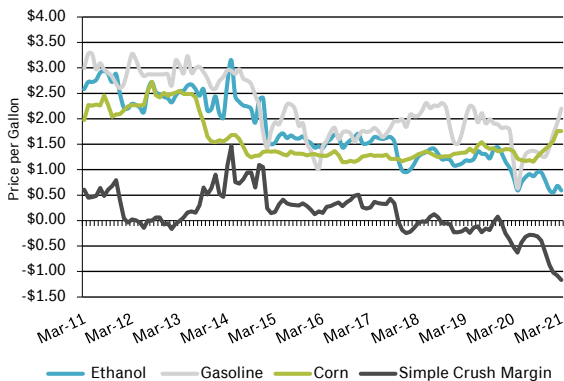
CURRENT TRENDS

- The U.S. ethanol industry produced 13.9 billion gallons of ethanol in 2020, down 11.7% from 15.8 billion gallons in 2019.
- Several factors contributed to the drop in production, most notably reduced demand for gasoline because of the pandemic, small refinery exemptions and lower exports due to unfavorable and protectionist trade policies.
- Ethanol exports declined for the second straight year, falling 8.5% in 2020.
- Despite the pandemic, the U.S. ethanol industry turned a profit in 2020 due to higher prices for the industry's two principal by-products.
- As of April 2021, ethanol production has recovered to approximately 90% of pre-pandemic levels or 950,000 barrels per day but the near-term outlook for the industry is uncertain due to questions regarding final ethanol blending requirements for 2021 and future trade policies and small refinery exemptions.

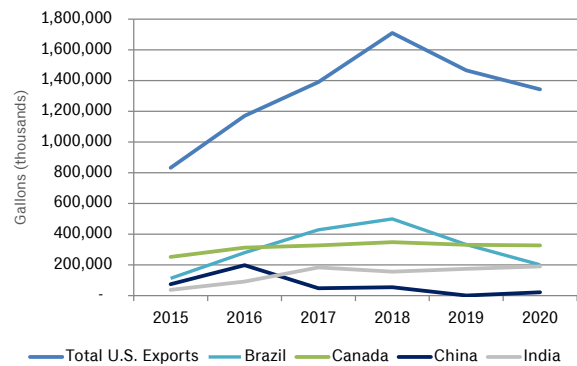
PROJECTED VALUES (12-MONTH OUTLOOK)



ETHANOL PRICING AND CRUSH MARGIN



U.S. ETHANOL EXPORT TOTALS



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A MOST PECULIAR YEAR: What was expected to be a challenging year for the U.S. ethanol industry in 2020 turned out to be one of the most trying years for the industry since 2012, when a drought that wiped out large portions of the nation's corn crop sent corn prices soaring. In March 2020, the COVID-19 pandemic and the related safer-at-home orders covering much of the nation decimated gasoline and ethanol demand, leaving ethanol producers with nowhere to sell their products. In addition, on March 8, 2020, Saudi Arabia initiated an oil price war with Russia over Russia's failure to agree to cut oil production in response to falling global oil demand. The price war triggered a major drop in global oil prices followed by lower gasoline and ethanol prices.

In response to these events, many ethanol producers idled their plants while others reduced output. Approximately 70 ethanol plants with output of 6.0 billion gallons were idled as the pandemic spread. Another 64 plants followed, reducing output and taking more than 1.7 billion gallons of ethanol out of production. In total, approximately two-thirds of the nation's 204 ethanol plants were either idled or were operating below capacity in 2020. This compares to approximately 10 plants idled in a normal year.

By the end of April 2020, daily ethanol production had declined approximately 50% to 537,000 barrels per day from approximately 1.05 million barrels per day in January. To reduce losses, many plants that remained open during the pandemic started producing industrial grade ethanol for use in the production of hand sanitizer after the federal government relaxed alcohol requirements for the product.

In the late spring and early summer of 2020, ethanol demand began to recover, as the initial shock of the pandemic subsided. By the end of June, industry production had climbed to over 900,000 barrels per day. At the same time, prices for the ethanol industry's primary by-products, distiller's dried grains with solubles (DDGS), the nutrient-rich co-product of dry-milled ethanol production, and corn oil, increased sharply, helping many ethanol producers return to profitability. Aided by higher prices for DDGS and corn oil throughout the second half of the year, the ethanol industry managed to report a profit in 2020, something that seemed impossible at the height of the pandemic.

Ethanol production declined to 13.93 billion gallons in 2020, a drop of 11.7% and the lowest level of output since 2013. Additionally, exports declined for the second straight year in 2020, falling 8.5% to 1.34 billion gallons, as compared to 1.48 billion gallons in 2019 and 1.72 billion gallons in 2018. Due to the sharp drop in domestic demand, exports increased to 9.6% of total demand in 2020 from 9.2% in 2019. Three countries, Canada, Brazil and India, accounted for over 53% of exports in 2020 with Canada surpassing Brazil as the leading destination for U.S. ethanol for the first time since 2017.

TRADE POLICY ADVERSELY AFFECTS INDUSTRY: Heading into 2020, ethanol producers expected to contend with a challenging market due to the Trump Administration's handling of the Renewable Fuel Program (RFP) and trade policies. The RFP mandates that refiners blend ethanol into gasoline at a mixture of 10% ethanol and 90% gasoline. Since 2015, the Environmental Protection Agency (EPA) has generally adopted final

volume requirements for the upcoming year in November or December. For 2017 through 2019, final ethanol volume requirements were set at 15 billion gallons. In December 2019, the EPA adopted its final ethanol volume requirement for 2020 at 15 billion gallons; however, the final volume requirement for 2021 has been delayed due to the pandemic.

The Trump Administration's management of the RFP adversely affected industry demand in 2019 and was expected to do the same in 2020. During the Trump Administration, the EPA granted approximately 90 hardship waivers to small refiners exempting them from the mandated blending requirements. Researchers at the University of Illinois estimated that the hardship waivers granted to small refiners by the EPA reduced domestic demand for biofuels by 1.6 billion gallons, of which ethanol was estimated to account for 1.2 billion gallons.

In addition to the waivers, the Trump Administration's protectionist trade policies had a dampening effect on exports. For example, China was the third-largest importer of U.S. ethanol in 2016, accounting for 17% of exports. However, when the trade war erupted, China imposed a series of retaliatory tariffs on U.S. ethanol that, by April 2018, amounted to a tariff of 70% and all but closed off the China market to U.S. ethanol producers by 2019. In 2020, the U.S. exported a 21.3 million gallons of ethanol China, a fraction of the amount exported in 2016. In addition to the demise of the China market, exports to Brazil, the largest importer of U.S. ethanol from 2017 through 2019, declined approximately 34% in 2019 and 40% in 2020 due to trade policies.

CRUSH SPREAD AN INDICATOR OF FINANCIAL HEALTH: The crush spread is a financial metric that ethanol producers routinely use to monitor their financial health. The crush spread is the difference between the combined sales value of the ethanol and the co-products that can be extracted from a bushel of corn and the cost of the bushel of corn and other operating costs. The crush spread is used to gauge the relative costs of production. When the margin exceeds processing costs, ethanol producers tend to process more corn into ethanol. When the margin falls below processing costs, ethanol producers tend to scale back their operations and idle plants. A narrowing corn crush spread occurs when the price of corn rises relative to the price of ethanol, corn oil and DDGS. When this occurs, the spread becomes less positive, or more negative. A widening corn crush spread occurs when the price of ethanol, corn oil and DDGS rises relative to the price of corn. When this happens, the spread becomes more positive.

Ethanol crush margins declined sharply in the spring of 2020 due to the demise of gasoline demand and lower prices for ethanol. In the second half of the year, higher prices for the industry's by-products reduced the net cost of corn and enabled the industry to return to profitability. Beginning in December 2020, the industry was challenged by a spike in corn prices; however, since the end of January 2021, the industry has benefited from rising ethanol prices.

INDUSTRY AND VALUATION OUTLOOK: For the week ended April 9, 2021, domestic ethanol production was 941,000 gallons per day, representing approximately 90% of pre-pandemic levels. Despite the increased level of production, most industry participants do not believe the industry will return to pre-pandemic production levels until 2022, while others believe industry demand will never recover to pre-pandemic levels.

Despite differing viewpoints, most industry analysts agree that the industry's near-term outlook is uncertain due to questions regarding how the Biden Administration will administer the Renewable Fuel Program and small refiner exemption program. For lenders with ethanol suppliers or end users in their portfolios, it will be critical to monitor economic and regulatory factors and the availability of government stimulus to ethanol producers.

Inventory appraisal values for ethanol will be impacted from a pricing perspective but should remain stable on a mark-to-market basis. Equipment assets will be somewhat impaired at current fuel price levels.

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Patrick Millar has valued businesses in a variety of industries including advertising, aerospace, apparel, automobile, chemical, computer, construction, consumer electronics, food service, film and television post-production, furniture manufacturing, gaming, import/export distribution, insurance, legal, liquor, metal processing, paper, petroleum, pest control, specialty chemical, transportation and retail. In addition, he has broad experience analyzing accounting, economic and valuation issues and providing litigation support in those areas. Read his full bio [here](#).



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