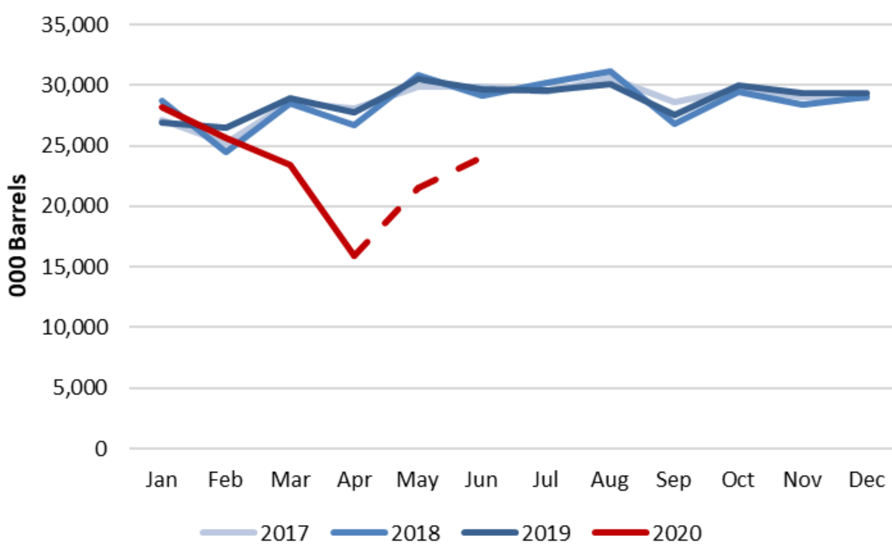
THE ECONOMIC IMPACT OF COVID-19 ON THE ETHANOL INDUSTRY

July 2020 Update

The social distancing and government-imposed restrictions associated with COVID-19 resulted in a dramatic reduction in the consumption of motor gasoline and ethanol in the spring of 2020. The low point occurred in April, when ethanol production and consumption fell more than 40% compared to the same month over the last few years (Exhibit 1). Since then, volumes have gradually rebounded as the economy has reopened, but they have not returned to historical levels. Now that the initial recovery is underway, it is possible to assess with greater accuracy the impact that the pandemic has had on the ethanol industry to date and to consider the continuing effects.

Exhibit 1: Ethanol Consumption by Month



Source: EIA (Historical Data), RFA (Analysis)
Note: May-June 2020 estimates are based on weekly data

Impact to Date

From March through June 2020, the cumulative decline in ethanol production and consumption exceeded 1.3 billion gallons (BG) (Exhibit 2). This was calculated by comparing monthly ethanol volumes to the average volume in the same month over the 2017-2019 period, a time when volumes were fairly consistent since

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growth had slowed as a result of small refinery exemptions from the Renewable Fuel Standard and international trade tensions. Ethanol is most commonly used in a 10% blend in gasoline (E10), but it is worth noting that the decline in ethanol consumption was equivalent to more than 10% of the decline in gasoline product supplied (a measure of implied demand). Nearly 500 million fewer bushels of corn were used in ethanol production during the period.

Exhibit 2: COVID-19 Volume Impact (Mil. Gal., Except as Noted)

	Ethanol Production	Ethanol Consumption	Gasoline Product Supplied	Ethanol Blend Rate in Gasoline	Ethanol Stocks-to-Use Ratio	Corn Usage (Mil. Bu.)
March	-104	-223	-2,006	-0.2%	36%	-36
April	-566	-488	-4,325	-0.8%	79%	-195
May*	-452	-372	-2,918	-0.7%	29%	-156
June*	-231	-228	-1,907	-0.3%	10%	-80
Total	-1,354	-1,311	-11,155	-0.5%	39%	-467

Source: EIA (Historical Ethanol and Gasoline Volumes), RFA (Analysis)
* May and June are based on weekly data. Whereas the ethanol consumption impact for March and April is greater than implied by weekly net inputs due to the inclusion of an EIA supply adjustment, no such adjustment was assumed for May and June.

The reduction in demand also sharply affected the market prices of ethanol and coproducts of ethanol production. The impact on prices was calculated by comparing the monthly price of each commodity to the average price during the preceding four months (i.e., November 2019 - February 2020). Again, April was the month when the maximum impact occurred, as ethanol prices fell by approximately 40% (Exhibit 3). This is counter to typical seasonal trends, as ethanol prices usually strengthen during the April-June period. The price of distillers grains increased as a result of the cutback in supplies; however, livestock feeding activity (demand) was not curtailed to nearly the same extent as distillers grains production. The price of distillers corn oil also increased, though not to the same extent.

Exhibit 3: COVID-19 Price Impact

	Chicago Spot Ethanol ($/Gal.)	Midwest Ethanol ($/Gal.)	Midwest Distillers Grains ($/Ton)	Midwest Distillers Corn Oil ($/Lb.)
March	-$0.32	-$0.23	$3.29	$0.03
April	-$0.50	-$0.54	$51.25	$0.04
May	-$0.28	-$0.34	$10.55	$0.03
June	-$0.13	-$0.14	-$15.37	$0.00
Avg. (Simple)	-$0.31	-$0.31	$12.43	$0.03

Sources: OPIS (Chicago Price), USDA-AMS (Midwest Ethanol Plant Prices) RFA (Analysis)

For the March-June period, ethanol industry revenues were reduced by over $3.4 billion as a result of the impacts of the pandemic on the volumes and prices of ethanol and coproducts (Exhibit 4). The decline in ethanol sales alone was nearly $3 billion, as the higher prices of coproducts partially offset the decline in sales volume.

Exhibit 4: Impact on Industry Revenues ($ Million)

Month	Ethanol Revenues	DDGS Revenues	Distillers Corn Oil Revenues	Total Revenues
March	-$419	-$30	$3	-$446
April	-$1,144	-$125	-$29	-$1,297
May	-$915	-$152	-$22	-$1,089
June	-$466	-$136	-$15	-$617
Total	-$2,943	-$442	-$64	-$3,449

Source: RFA

The Continuing Impact

Gasoline and ethanol consumption are still significantly below pre-pandemic levels, and it is likely that this will persist for a number of months as a result of COVID-related precautions and reduced economic activity. There were approximately 15 million fewer jobs in June than in February, which will weigh on the economy in general and transportation fuel consumption in particular. In its July *Short-Term Energy Outlook* (STEO), the EIA forecast that gasoline and ethanol consumption will not return to their corresponding 2019 levels until at least the end of 2021.

The EIA now forecasts that compared to 2019, ethanol production will be 1.9 BG lower in 2020 and will remain 0.4 BG lower in 2021 (Exhibit 5). Similarly, compared to the March STEO, which was published before the pandemic hit, the EIA's 2020 ethanol production forecast has been reduced by 2.1 BG, and its 2021 forecast has been reduced by 0.4 BG.

Given the estimates in Exhibit 2, this implies that approximately two-thirds of the volume impact from the pandemic has already occurred, although the EIA acknowledged that the STEO "remains subject to heightened levels of uncertainty because mitigation and reopening efforts related to [COVID-19] continue to evolve."

Since the EIA does not include an ethanol price forecast in the STEO, forecasts from the Food and Agricultural Policy Research Institute (FAPRI) at the University of Missouri were also reviewed. FAPRI also issued a baseline outlook in mid-March (pre-pandemic), along with an update in June. Compared to both 2019 volumes and its March outlook, FAPRI's June forecast was for ethanol production to be 1.5 BG lower in 2020 and 0.2-0.3 BG lower in 2021. Additionally, FAPRI projected that ethanol revenues in 2020 will be $3.7 billion lower than in 2019 and $5.2 billion lower than in the March outlook, while 2021 revenues will be $1.3 billion lower than expected in March. It is notable that FAPRI expects that the decline in consumption will be concentrated in the domestic market, whereas exports are not significantly affected relative to their March forecast. This assumption is debatable, given the observed significant reduction in ethanol exports in April and May.

Exhibit 5: EIA and FAPRI Changes from 2019 and Previous Forecasts (Mil. Gal., Except as Noted)

	2019	2020 Forecast		2021 Forecast		Jul. Forecast Chg. from 2019		Jul. Forecast Chg. from Mar.	
	Actual	March	July	March	July	2020	2021	2020	2021
EIA STEO									
Ethanol Production	15.8	15.9	13.9	15.8	15.4	-1.9	-0.4	-2.1	-0.4
Eth. Consumption	14.5	14.6	12.8	14.4	14.1	-1.7	-0.4	-1.7	-0.3
FAPRI									
Ethanol Production		15.8	14.3	15.9	15.6	-1.5	-0.2	-1.5	-0.3
Eth. Consumption		14.4	12.9	14.3	14.0	-1.6	-0.5	-1.5	-0.3
Eth. Price ($/Gal)	$1.26	$1.35	$1.13	$1.33	$1.27	-$0.13	$0.01	-$0.22	-$0.06
Eth. Revenue ($ Bil)	$19.9	$21.4	$16.2	$21.1	$19.8	-$3.7	-$0.1	-$5.2	-$1.3

Sources: EIA & FAPRI (Forecasts), RFA (Calculations)

The 2020 impact implied by FAPRI is only moderately higher than the reduction that is estimated to have already occurred. If EIA's current projections for 2020 and 2021 ethanol production are used along with FAPRI's ethanol price projections, the ethanol revenue loss estimates grow to nearly $5.8 billion in 2020 and nearly $1.5 billion in 2021. Notably, these figures do not include additional expected losses in co-product sales revenues, which (based on co-product revenue losses to date) could amount to nearly $1 billion in further losses in 2020 and more than $250 million in 2021.

Moreover, these estimates assume current ethanol production and consumption levels are maintained or slightly increased through the end of the year. If states order additional business and travel restrictions to slow the transmission of COVID-19 (e.g., California announced new closures on July 13), ethanol production and consumption will drop by a greater magnitude than contemplated in this analysis, meaning revenue losses could be greater than estimated here.

Conclusion

The COVID-19 pandemic has had a dramatically negative economic impact on the ethanol industry. To date, industry revenues have been reduced by over $3.4 billion. The negative effects are expected to continue through the remainder of 2020 and into 2021, even if the pandemic does not intensify and government restrictions such as those seen this spring are not re-imposed. Based on projections from EIA and FAPRI, and assuming current market conditions do not deteriorate, pandemic-related revenue losses could near **$7 billion in 2020** and **$1.8 billion in 2021**. If additional travel and business restrictions are adopted by states, the losses will be larger and could approach or surpass the $10 billion estimate from our initial, prospective analysis released in April.

Moreover, the impacts on ethanol industry output and revenues are having ripple effects throughout the broader U.S. economy. The agriculture sector in particular and Rural America more broadly are being adversely affected by the significant downturn in ethanol and coproduct output.

