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CONTRIBUTION OF THE RENEWABLE FUELS INDUSTRY TO THE ECONOMY OF IOWA

Prepared for the Iowa Renewable Fuels Association

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Iowa's renewable fuels industry continued to provide a significant contribution to the state's economy in 2018. For the year, Iowa's 43 operating ethanol plants produced a record level of 4.35 billion gallons, leading the nation and accounting for 27 percent of U.S. capacity. Iowa also is the nation's leading biodiesel manufacturer, accounting for nearly 20 percent of total U.S. production at 365 million gallons from 11 facilities. Production capacity for both ethanol and biodiesel grew during the year reflecting Iowa's stable policy environment.

The year was not without challenges. On the ethanol side profitability was pressured by the combination of higher feedstock (corn) prices and lower ethanol prices. The one bright spot was that lower ethanol prices were partially offset by a sharp increase in the price of dried distiller's grains (DDGS), the principal ethanol co-product. Iowa biodiesel prices also declined during 2018 but the prices of fats and oils fell even more so that profitability improved significantly.

Renewable fuels plants purchase agricultural raw materials, other inputs, and a wide range of goods and services such as industrial chemicals; electricity, natural gas, and water; labor; and services such as maintenance, insurance, and general overhead. The primary feedstock for ethanol remains corn while the biodiesel industry uses a wider variety of fats and oils as feedstocks. In addition, funding for biofuels research and development from various sources benefits the state's economy. The 4.35 billion gallons of ethanol produced in Iowa last year utilized 1.5 billion bushels of corn, or 58 percent of Iowa's 2017 2.6-billion-bushel corn crop.

Expenditures on these goods and services represent the purchase of output of other industries. A substantial share of these dollars is spent in Iowa, and the economic impact stays in the state. Spending

associated with ethanol production circulates throughout the entire economy several-fold. Consequently, this spending stimulates aggregate demand, supports jobs not only in ethanol production but also jobs throughout the entire economy, generates additional household income, and provides tax revenue for state and local government.

At the request of the Iowa Renewable Fuels Association (IRFA), ABF Economics developed models to estimate the economic impacts of ethanol and biodiesel production in Iowa. The following report summarizes our methods and results. This report: 1) summarizes current trends in the national biofuel industry, 2) outlines the methods used to estimate impacts, and 3) presents results of the analysis.

1. National Trends in Ethanol

The U.S. ethanol industry had a mixed year in 2018. Ethanol production increased to record levels, export demand expanded, construction of new production facilities continued, but the domestic market faltered. Industry output through November 2018 was 1.2 percent above year earlier levels and was poised to set a new record of 16.1 billion gallons for the full year.

- World oil prices strengthened throughout most of 2018 and posted a 32 percent gain during 2018, leading to higher consumer gasoline prices. The impact of higher average motor gasoline prices during 2018 offset a strong consumer economy so that gasoline consumption was essentially unchanged for the year. Domestic ethanol demand fell slightly as a result of both stagnant gasoline demand and the impact of Small Refinery Exemptions (SREs) which are discussed below.

- Responding to record production, larger stocks, and the impact of SREs, ethanol prices generally fell from year-earlier levels throughout 2018. Ethanol stocks in November, the most data point, were 2.1 percent higher than the same month a year ago. Iowa ethanol prices (FOB plant) fell 6.3 percent for all of 2018.

- The two bright spots for the ethanol industry in 2018 were robust export markets and sharply higher DDGS prices. Ethanol exports through November 2018 were up more than 30 percent from year-earlier levels and were poised to reach a record level of more than 1.7 million gallons

for the year. Distiller's dried grain prices increased more than 40 percent from depressed 2017 levels. These higher co-product prices helped offset lower ethanol prices.

- The input markets were an impediment for the ethanol industry during 2018. Corn production for the 2018/19 marketing year was virtually unchanged from 2017. Higher demand, largely from the feed sector, reduced stock levels and supported corn prices. As reported by USDA AMS Market News[1], average cash market corn prices for 2018 were up 2.5 percent in Iowa and 1.1 percent in Central Illinois.

- Ethanol profitability was on a rollercoaster ride during 2018. Margins (measured as returns over variable costs) increased over year-earlier levels through mid-year. However, margins plunged during the second half of the year as profitability suffered from stable feedstock costs and lower ethanol prices. While our analysis estimates a national average return over variable costs for the full year of 24 cents per gallon, ethanol margins approached zero at years end compared to nearly 30 cents per gallon in mid-year.

The regulatory environment continued to provide challenges for the industry. On November 30, the Environmental Protection Agency (EPA) released its final rule for 2019 renewable volume obligations (RVOs) under the Renewable Fuel Standard (RFS).[2] The final rule continues the requirement for 15 billion gallons of conventional renewable fuel (e.g., corn starch ethanol) in 2019 which is equal to the level established by Congress in the 2007 Energy Independence and Security Act. The EPA did, however, increase the advanced biofuel requirement by 630 million gallons to 4.92 billion gallons. Within this category the RVO for cellulosic biofuels was set at 418 million gallons, far short of the statutory level of 7 billion gallons, but 130 million gallons higher than the 2018 cellulosic biofuel requirement.

The major regulatory issue that impacted both ethanol and biodiesel volumes and prices during 2018 was the continued use of Small Refinery Exemptions (SREs) by the EPA. The original Renewable Fuel Standard (RFS) passed in 2005 gave the EPA authority to extend a temporary exemption from biofuel mandates for small refineries. A recent study published the University of Illinois reports that the Trump

[1] https://marketnews.usda.gov/mnp/ls-report

[2] Federal Register/Vol. 83, No. 237/Tuesday December 11, 2018

Administration granted 48 SREs and that all but two granted for 2018 were retroactive for 2016 and 2017.[3] Under the exemption authority, the EPA reinstates RINs (Renewable Identification Numbers, which are essentially credits under the RFS) to small refiners.[4] Refiners granted exemptions can use these RINs to comply with future RFS requirements or sell them to other obligated parties. In either case the RINS can be used in lieu of blending physical gallons of biofuels. There is growing consensus that extension of these SREs is leading to reduced ethanol and biodiesel consumption and lower prices. The SREs granted for 2017 compliance reduced ethanol and biodiesel demand in 2018.

In October 2018 President Trump directed the EPA to initiate rulemaking to expand the RVP waiver for E15. This expansion would allow E15 to be sold year-round instead of the current eight-month restriction. As of this writing the EPA has not issued rules for expanded use.

2. National Trends in Biodiesel

Unlike the ethanol industry, 2018 was a generally positive year for biodiesel producers. According the EIA U.S. biodiesel production through November 2018 was 15.5 percent above year-earlier levels and is poised to reach a record of nearly 1.9 billion gallons.

- Congress passed a retroactive extension of the biodiesel tax credit for 2017 but failed to extend the credit to 2018. It is unclear whether the tax credit will be extended to 2019. As a result, biodiesel are producers are selling their product under an environment of great uncertainty. The market appears to be allocating the risk of the tax credits not being extended throughout the entire supply chain.
- The anti-dumping trade dispute between the U.S. and Argentina and Indonesia was resolved as the Commerce Department moved to protect the U.S. biodiesel industry by imposing final dumping rates ranging from 60.4 percent to 86.4 percent for Argentina and 92.5 percent to 276.7 percent for Indonesia.[5] These duties have restrained imports and boosted demand from domestic production. Imports of biodiesel through November 2018 were more than 60 percent

[3] Irwin, S. "Small Refinery Exemptions and Ethanol Demand Destruction". *farmdoc daily* (8): 170, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, September 13,

[4] Renewable Fuels Association. "The Impact of Small Refinery Exemptions on Ethanol Demand" November 20, 2018.

[5] "ITC Vote Levels Playing in Biodiesel Trade Dispute" Biodiesel.org News Release, April 3, 2018

lower than year earlier levels with no imports registered from Argentina or Indonesia. Unfortunately, in November the Commerce Department yielded to a request from Argentina to review these duties. While a decision is not expected until August 2019, any roll back is likely to reinvigorate import demand to the detriment of domestic producers.

ECONOMIC IMPACT OF RENEWABLE FUELS ON IOWA

The renewable fuels industry is multifaceted. Ethanol and biodiesel producers are part of a manufacturing sector that adds substantial value to agricultural commodities produced in Iowa. The first and second-generation feedstocks used to produce renewable fuels are produced primarily by Iowa farmers, and the R&D expenditures for renewable fuels provide important support for Iowa's universities. Combined, these activities make a significant contribution to the Iowa economy. Based on its size and scope the renewable fuels industry had the following impacts on Iowa's economy in 2018.[6]

- Accounts for more than $5 billion, or about 3 percent, of Iowa GDP;
- Generates $2.5 billion of income for Iowa households; and
- Supports more than 48,000 jobs through the entire Iowa economy. This is equivalent to 2.3 percent of total State employment.

The annualized contribution of the ethanol and biodiesel industries is summarized in Table 1.

Table 1
Total Economic Impact of the Renewable Fuels Industry for Iowa: 2018

	Purchases (Mil 2018$)	GDP (Mil 2018$)	Household Earnings (Mil 2018$)	Employment (Jobs)
Ethanol*	$7,079.6	$4,738.6	$2,230.7	43,697
Biodiesel	$964.2	$568.1	$307.2	4,690
Total	$8,043.8	$5,306.7	$2,537.9	48,387

* Includes agriculture, construction, investment in R&D, and exports

[6] This study estimates the annualized impact of producing 4.35 billion gallons of ethanol and 365 million gallons of biodiesel on Iowa's economy. These figures reflect the capacity of ethanol and biodiesel plants operating at year's end.

Methodology

The spending associated with renewable fuels production, construction, and R&D circulates throughout the entire Iowa economy several-fold. Consequently, this spending stimulates aggregate demand, supports the creation of new jobs, generates additional household income, and provides tax revenue for State and local governments. We estimate the impact of the renewable fuels industry on the Iowa economy by applying expenditures by the relevant supplying industry to the appropriate final demand multipliers for value added output, earnings, and employment.

This study utilizes the IMPLAN (Impact Analysis for Planning) economic model to develop this understanding of the economy, including the sectors that support the ethanol industry, the links between them, and the level of economic activity. IMPLAN is a commonly used economic input-output (I-O) model. I-O models are constructed based on the concept that all industries within an economy are linked together; the output of one industry becomes the input of another industry until all final goods and services are produced. I-O models can be used both to analyze the structure of the economy and to estimate the total economic impact of projects or policies. For this analysis, a model for the Iowa economy was constructed using the most recent IMPLAN software and data and used to estimate economic impacts of the ethanol and biodiesel industries. Detail regarding the IMPLAN model and how it was used is presented in Appendix A.

In addition to using the updated IMPLAN data discussed above we continued to recognize the impact of income generated by locally owned renewable fuels firms. All corporations earn income that directly impacts GDP. However, the income earned by firms owned by Iowans largely stays in Iowa and has a more significant impact on the State economy than earnings that are transferred to firms domiciled outside of Iowa. A review of ownership of ethanol and biodiesel firms based on information provided by IRFA suggests that more than half of Iowa's ethanol and biodiesel plants are locally owned. The earnings of locally owned firms are treated as an addition to the household sector since the income is paid to Iowans and their impact is estimated using multipliers for the household sector. The earnings by firms domiciled outside of Iowa are treated as direct additions to GDP.

We continued to incorporate the explicit impact of ethanol and DDGS exports into the analysis using USDA Agricultural Trade multipliers for output and employment to estimate the impact of exports. These results were added to the IMPLAN results. Since Iowa is the nation's largest ethanol producer, the Iowa industry participates in the export market. Reflecting this we applied Iowa's share of total production to the total national export impact.

This year's analysis includes revisions to ethanol and DDGS yields (to 2.85 gallons and 17 pounds per bushel, respectively) and an increase in Industrial Corn Oil (ICO) recovery to 90 percent. These revisions more accurately reflect current industry performance as reported by USDA.

Contribution of the Renewable Fuels Industry

The contribution of the renewable fuels industry to the economy of Iowa is detailed in Table 2. The ethanol industry provides a significant contribution to the Iowa economy, spending $7.1 billion on raw materials, other inputs, goods and services to produce 4.35 billion gallons of ethanol. The largest share of this spending is for corn and other grains used as the raw material to make ethanol, distillers' grains and industrial corn oil.

The Iowa ethanol industry used 1.5 billion bushels of corn, or nearly 58 percent of Iowa's corn crop.[7] At 2018 Iowa farm level prices this amounts to nearly $5.2 billion of revenue to Iowa corn farmers.

Ethanol

As pointed out earlier, U.S. ethanol exports have expanded significantly over the last decade and are projected at more than 1.7 billion gallons for all of 2018 with an export value of $2.2 billion. Exportable supplies of ethanol have grown over the past seven years as production exceeded domestic use. Moreover, the ethanol industry is generating a trade surplus and helping to reduce the nation's trade deficit. Exports of ethanol are estimated to generate $1.2 billion of GDP for the U.S. and support more

[7] The 4.3 billion gallons of ethanol production required 1.5 billion bushels of corn. This amounts to 58 percent of the 2.6 billion bushels of corn harvested in Iowa in 2017. Without the demand for corn provided by the ethanol industry Iowa farmers would likely plant fewer acres to corn, purchase fewer inputs, and produce a smaller crop, thereby reducing the economic contribution provided by the corn industry.

than 7,500 jobs. Iowa's share of this amounts to nearly $218 million of GDP and more than 2,000 jobs. The impact of biofuels for Iowa are detailed in Table 2.

In addition to providing a growing and reliable domestic market for Iowa farmers, the ethanol industry provides the opportunity for farmers to enjoy some of the value added to their commodity by further processing. Locally owned ethanol plants account for nearly half of Iowa fuel ethanol plants and production capacity.

The remainder of the spending by the ethanol industry is for a wide range of inputs such as industrial chemicals, electricity, natural gas, water, labor, transportation and services such as maintenance, insurance, and general overhead. Spending for these goods and services represents the purchase of output of other industries, mostly in Iowa.

Most ethanol produced in Iowa is by dry mills that also produce valuable co-products in the form of distillers dried grains (DDGS) and industrial corn oil.[8] The Iowa ethanol industry produced an estimated 13 million short tons of DDGS and 958 million pounds of industrial corn oil in 2018 with an aggregate market value of more than $2.1 billion. A significant share of these co-products is used by Iowa livestock producers and the Iowa biodiesel industry. It is notable that these co-products are produced with little additional expenditure.

The price assumptions used in estimating the value of expenditures for both ethanol and biodiesel are shown in Appendix Table 1.

- The value of the ethanol industry output (ethanol and co-products) amounts to more than $7.8 billion. Based on the IMPLAN model, the ethanol and supporting agriculture industries account for $4.7 billion of Iowa GDP.

[8] DDGS and ICO production is reported monthly in the USDA Grain Crushings and Co-Products Production report. http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1899.

Table 2
Contribution of the Renewable Fuels Industry to Iowa: 2018

	GDP (Mil 2018$)	Jobs (Mil 2018$)	Income (Mil 2018$)
Ethanol Manufacturing			
Direct	$652.8	2,100	$129.3
Indirect	$908.7	6,515	$556.7
Induced	$372.6	4,635	$222.0
Subtotal	**$1,934.1**	**13,250**	**$908.0**
Biodiesel Manufacturing			
Direct	$47.8	360	$20.1
Indirect	$403.0	2,821	$224.8
Induced	$117.3	1,509	$62.4
Subtotal	**$568.1**	**4,690**	**$307.2**
Agriculture			
Direct	$391.8	7,164	$166.7
Indirect	$1,404.5	11,905	$566.8
Induced	$300.8	4,064	$146.7
Subtotal	**$2,097.1**	**23,133**	**$880.1**
New Construction			
Direct	$51.0	727	$46.2
Indirect	$12.0	104	$3.5
Induced	$24.8	320	$8.6
Subtotal	**$87.8**	**1,152**	**$58.3**
R&D			
Direct	$170.8	1,424	$127.1
Indirect	$119.1	1,298	$83.7
Induced	$111.9	1,402	$66.9
Subtotal	**$401.8**	**4,124**	**$277.6**
Exports (Total)	**$217.7**	**2,038**	**$106.7**
Total			
Direct	$1,314.2	11,776	$489.3
Indirect	$3,065.1	24,681	$1,542.2
Induced	$927.3	11,930	$506.4
2018 Grand Total	**$5,306.7**	**48,387**	**$2,537.9**
Change from 2017	6.4%	3.2%	4.3%

- Jobs are created from the economic activity supported by ethanol production. While ethanol production is not a labor-intensive industry, accounting for about 2,000 full time equivalent direct jobs in Iowa[9], the economic activity resulting from the full activities of the ethanol industry supports a much larger number of jobs in the economy. The direct jobs supported by the ethanol industry are concentrated primarily in manufacturing and agriculture. When the indirect and induced effects of ethanol manufacturing and associated R&D are considered, the industry accounts for nearly 16,000 full-time equivalent jobs throughout the entire economy.

- Since renewable fuels production uses feedstocks produced by Iowa farmers, the ethanol and biodiesel industries have the largest impact on agriculture, supporting 7,164 direct farm and farm-related jobs. Most of the agriculture jobs supported by the ethanol industry are farm workers and laborers associated with grain production. However, a wide range of jobs in support activities related to crop production ranging from farm managers and bookkeepers to farm equipment operators are supported by ethanol production. As the impact of the direct spending by the ethanol and biodiesel industry expands throughout the economy, the employment impact expands significantly and is spread over a large number of sectors. The indirect and induced jobs supported by the agriculture output used by renewable fuels amount to an additional 15,900 jobs throughout the entire Iowa economy for a total impact from agriculture of 23,133 jobs.

- Increased economic activity and new jobs result in higher levels of income for Iowa households. The ethanol and supporting agriculture industry generated $2.2 billion of income for Iowans in 2018.

Biodiesel

The Iowa biodiesel industry also makes sizable contributions to the Iowa economy. According to the Iowa Renewable Fuels Association (IRFA), Iowa's 11 operating biodiesel plants produced 365 million gallons of biodiesel in 2018, nearly 27 percent more than in 2017.[10] The increase in output reflects a

[9] The Census Bureau does not report employment in ethanol production. The number of direct jobs associated with ethanol production is based on a conservative estimated industry average of 50 jobs per plant.

[10] http://www.iowarfa.org/biodiesel_refineries.php

combination of factors but perhaps most significantly lower feedstock costs and sharply reduced pressure from illegally dumped imports from Argentina and Indonesia.

The Iowa biodiesel industry spent nearly $965 million on raw materials, other inputs, goods and services in 2018. The largest share of this spending is for fats and oils used as the raw material to make biodiesel. The Iowa biodiesel industry used 2.2 billion pounds of soybean oil in 2018 to produce biodiesel, accounting for 80 percent of total feedstock use. For the first time in several years, Iowa biodiesel producers used virtually no canola oil. Industrial corn oil (supplied largely by Iowa ethanol producers) was the second largest biodiesel feedstock at 283 million pounds. Smaller amounts of animal fats and used cooking oil were also used. The majority of the raw material for biodiesel production in Iowa is procured locally. The remainder of the spending by the biodiesel industry is for a wide range of inputs such as industrial chemicals, electricity, natural gas, water, labor, and services such as maintenance, insurance, and general overhead. As with ethanol, spending for these goods and services represents the purchase of output of other industries.

The spending associated with biodiesel production also circulates throughout the entire Iowa economy stimulating aggregate demand, supporting jobs, generating additional household income, and creating tax revenue. The following summarizes the economic contribution of the Iowa biodiesel industry at the end of 2018.

- The gross value of the biodiesel and glycerin produced in Iowa totaled more than $1.1 billion. When the impact of manufacturing and R&D are combined the biodiesel industry accounts for more than $550 million of Iowa GDP.

- Jobs are created as a consequence of increased economic activity caused by biodiesel production. The increase in economic activity generated by biodiesel production supports nearly 4,700 full time equivalent jobs in all sectors of the Iowa economy.

- Increased economic activity and jobs result in higher levels of income for Iowa households. The biodiesel industry accounts for about $307 million of household income for Iowans.

Conclusion

The renewable fuels industry continues to make a significant contribution to the Iowa economy in terms of job creation, household earnings, and displacement of imported crude oil and petroleum products. The importance of the biofuels industry to agriculture and rural economies is particularly notable. Continued growth and expansion of the renewable fuels industry through new technologies and feedstocks will enhance the industry's position as the original creator of green jobs and will enable America to make further strides toward energy independence. However, policy stability is essential to maximize these benefits. Uncertainty surrounding issues like SREs, tax credit extensions, trade with China, year-around E15 sales, and the RFS reset will impede the ability of the industry to provide these societal benefits.

APPENDIX A

IMPLAN Methodology

We estimate the impact of the ethanol industry on the economy of Iowa by applying expenditures by the relevant supplying industry to the appropriate final demand multipliers for value added output, earnings, and employment.

To understand how the economy is affected by an industry such as renewable fuels production, it is necessary to understand how different sectors or industries in the economy are linked. For example, in the renewable fuels production sector, the ethanol industry buys corn from the agriculture sector; which in turn, buys inputs from other suppliers such as fertilizer and pesticide producers that also purchase products from a range of other industries. These are referred to as backward linkages. Use by other sectors of natural gas as an input, such as manufacturing operations, is a forward linkage. Natural gas production and transmission industries are linked through both forward and backward linkages to other economic sectors in each state's economy.

The household sector is linked to all sectors as it provides the labor and management resources. In turn, changes that affect incomes of the household sector typically have significant impacts compared to a change in the sales of other sectors. This is because households typically spend most of their income on both retail and service goods and this is a critical component of the economy

This study uses an economic model known as IMPLAN (Impact Analysis for Planning) to develop a model of the national economy, including sectors that support the ethanol industry, the links between them, and the level of national economic activity. IMPLAN is a commonly used economic input-output (I-O) model. I-O models are constructed based on the concept that all industries in an economy are linked together; and the output (i.e., sales) of one industry becomes the input of another industry until all final goods and services are produced. I-O models can be used both to analyze the structure of the economy and to estimate the total economic impact of projects or policies. For this analysis, a model for the Iowa economy was constructed using current IMPLAN software and the most recent data available.

IMPLAN models provide three economic measures that describe the economy: value added, income, and employment.

- Value added is the total value of the goods and services produced by businesses in the country and is generally referred to as GDP. It is equivalent to the sum of labor income, taxes paid by the industry, and other property income or profit.

- Labor income is the sum of employee compensation (including all payroll and benefits) and proprietor income (income for self-employed work). In the case of this analysis, demand for corn and other feedstock to produce ethanol supports farm income through higher crop receipts than would be the case without ethanol and biodiesel production.

- Employment represents the annual average number of employees, whether full or part-time, of businesses producing output. Value added including labor income and employment represent the net economic benefits that accrue to the nation as a result of increased economic output.

There are three types of effects measured with a multiplier: direct, indirect, and induced effects. Direct effects are the known or predicted changes in the economy. Indirect effects are the business-to-business transactions required to produce direct effects (i.e., increased output from businesses providing intermediate inputs). Finally, induced effects are derived from spending on goods and services by people working to satisfy direct and indirect effects (i.e., increased household spending resulting from higher personal income).

APPENDIX TABLE 1

2018 PRICES

	IA Corn Farm Price ($/bu)	IA Corn No 2. Yel ($/bu)	Distillers Grains 10%, Iowa ($/ton)	Ethanol FOB Iowa ($/gal)
Jan	$3.24	$3.28	$134.86	$1.28
Feb	$3.33	$3.39	$143.16	$1.34
Mar	$3.43	$3.49	$147.22	$1.42
Apr	$3.52	$3.58	$157.11	$1.44
May	$3.57	$3.70	$175.06	$1.39
Jun	$3.60	$3.39	$148.95	$1.41
Jul	$3.55	$3.21	$109.77	$1.41
Aug	$3.27	$3.31	$131.02	$1.35
Sep	$3.29	$3.17	$131.23	$1.23
Oct	$3.39	$3.29	$130.29	$1.22
Nov	$3.39	$3.38	$133.16	$1.24
Dec	$3.53	$3.39	$162.53	$1.16
Average	$3.43	$3.38	$142.03	$1.32

APPENDIX TABLE 1 (Continued)

2018 PRICES

	Crude Soy Oil Iowa (cents/lb.)	Corn Oil Iowa (cents/lb.)	Choice W. Grease Central US (cents/lb.)	Yellow Grease MN (cents/lb.)	B100 FOB Plant Iowa ($/gal)
Jan	31.61	30.68	32.08	NA	$3.26
Feb	30.63	29.72	32.20	31.00	$3.18
Mar	30.28	29.66	NA	NA	$3.22
Apr	29.70	29.50	NA	29.50	$3.15
May	29.40	29.65	NA	29.00	$3.09
Jun	28.30	29.54	32.50	30.00	$3.13
Jul	27.21	28.76	NA	32.47	$3.01
Aug	27.60	26.80	32.38	32.00	$3.01
Sep	27.73	26.46	32.93	31.00	$3.05
Oct	28.89	27.18	33.00	31.29	$3.00
Nov	27.49	26.37	34.33	33.56	$2.91
Dec	29.00	25.00	31.00	32.50	$3.15
Average	28.99	28.28	32.55	31.23	$3.10

Updated 2/27/19

Sources

1. USDA/NASS Agricultural Prices
2. USDA/ERS Feed Grains Database
3. USDA/AMS Market News