

# Ag Decision Maker

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## UPDATES

The following [Information Files](#) have been updated on [extension.iastate.edu/agdm](http://extension.iastate.edu/agdm):

A1-77 How do Data and Payments Flow through Ag Carbon Programs?

C2-70 Farmland Value Survey (Iowa State University)

C2-72 Historical Iowa Farmland Value Survey by County

The following [Video and Decision Tools](#) have been updated on [extension.iastate.edu/agdm](http://extension.iastate.edu/agdm):

A1-10 Chad Hart's Latest Ag Outlook

A1-33 ARC-CO & PLC Payments by Crop and County for Iowa, 2020

A1-33 ARC-CO & PLC Per Acre Payment Estimator for Iowa, 2022-2023

C2-70 Historical Farmland Value Survey Data (Iowa State University)

The following [Profitability Tools](#) have been updated on [extension.iastate.edu/agdm/outlook.html](http://extension.iastate.edu/agdm/outlook.html):

A1-85 Corn Profitability

A1-86 Soybean Profitability

A2-11 Iowa Cash Corn and Soybean Prices

A2-15 Season Average Price Calculator

D1-10 Ethanol Profitability

D1-15 Biodiesel Profitability



## Strong by-product values lift cattle prices

By Lee Schulz, extension livestock economist  
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By-product values supported cattle prices throughout 2021. That strength seems likely to persist into 2022.

The aggregate value of by-products is referred to as the drop value, or drop credit, and often simply the drop. The drop reflects the wholesale value that packers receive from the animal's by-products that "drop" off the carcass when an animal is harvested for beef. Those items include hides, edible offal, and inedible offal. Variety meats are a subcategory of edible offal.

USDA Market News Service releases a weekly report on cow by-product values (NW\_LS444). A steer by-product report (NW\_LS441) is released daily. USDA's Weekly National Carlot Meat Report consolidates several reports, including the cow and steer by-product reports. Values are reported on a dollars per live hundredweight (cwt.) basis. A dressed equivalent basis is also reported with 47% being assumed for cows and 63% for steers. Furthermore, the report notes that a typical slaughter steer weighs 1,400 pounds and

slaughter cow weighs 1,100 pounds so a drop value per head can be calculated. Cattle weights have changed over time, so any dollar per head figure is best used for contemporary comparisons.

### Highest drop values since 2014

Drop values for both steers and cows trended higher in 2021 (Figure 1). For the week ending December 3, the steer by-product value was \$14.61 per live cwt., up 72% (\$6.11) from the same week in 2020 and 42% (\$4.32) above the 2015-2019 average. At \$14.46 per live cwt., the early December cow by-product value was up 46% (\$4.54) compared to a year earlier and 60% (\$5.44) higher than the five-year average. The last time drop values reached similar levels was in 2014.

Interestingly the cow by-product value averaged greater, on a dollar per live or dressed weight basis, than the steer by-product value in 2021. This occasionally happened in the past, but not this prolonged and to this degree. This does not mean steer by-products were worth less, but rather cow by-products were worth more.



## Drop values gain on meat

In mid-2020 drop values began building in relative value to their respective live cattle prices (Figure 2). For instance, in October 2021 the steer drop value was 13.1% of the 5-Area weighted average live negotiated steer price for all quality grades. It's been above 12% since August 2021 and above 10% since May 2021.

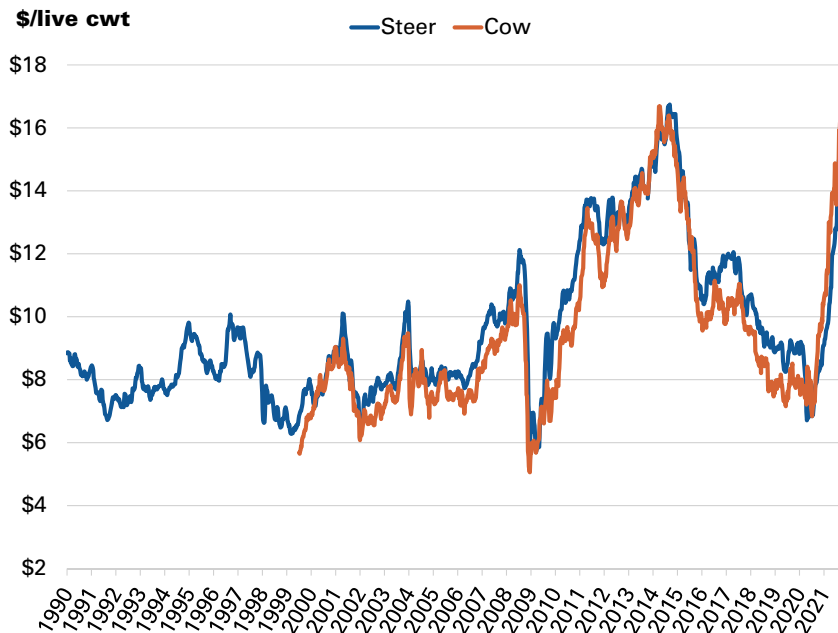
Looking at the monthly percentage back to January 1990, the lowest was 6.2% in May of 2020, during the peak of COVID-19 market disruptions. The highest since 1990 was 14.6% in January 1997.

A simple regression model suggests that a 10% increase in the steer drop value results in a 3.6% hike in fed cattle prices, all else being equal. Higher carcass cutout values also boost fed cattle prices whereas slaughter levels are negatively correlated with cattle prices.

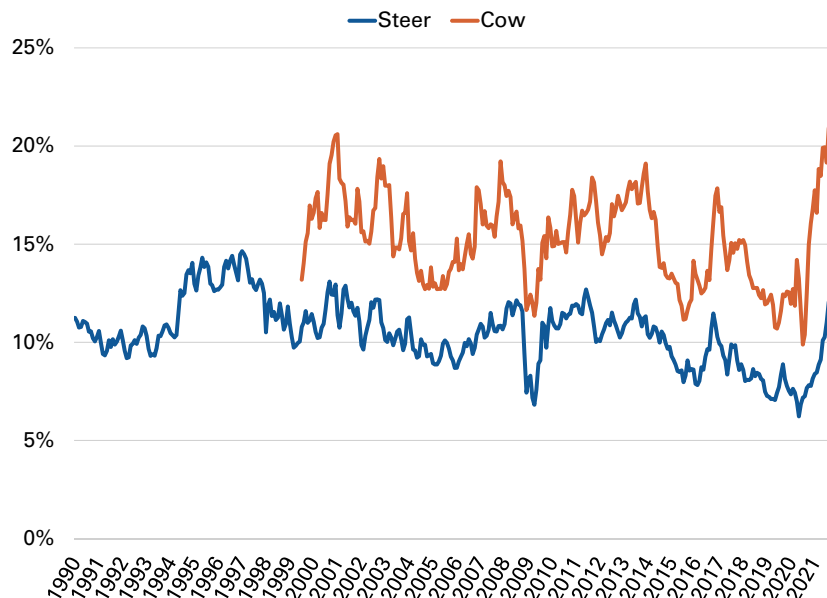
## Big differences among by-products

Observing prices for separate items provides insight into the value of by-products for US packers and renderers. Year-over-year strength in the steer drop value has been mostly attributable to tripe (up 48% to up 473% depending on the product), livers (up 267%), tongues (up 143%), oxtail (up 112%), edible tallow (up 108%), and inedible tallow (up 85%) along with several other items included in the by-product total. These include cheek meat, head

**Figure 1. Weekly by-product drop value. Source: USDA-AMS Market News. USDA By-Product Drop Value (Steer) FOB Central U.S. (NW\_LS441) and Weekly USDA By-Product Drop Value (Cow) (NW\_LS444).**



**Figure 2. By-product value as pct. Of live cattle price, monthly. USDA By-Product Drop Value (Steer) FOB Central US (NW\_LS441), Weekly USDA By-Product Drop Value (Cow) (NW\_LS444), 5 Area Monthly Weighted Average Direct Slaughter Cattle – Negotiated (LM\_CT180), and South Dakota Weekly Cattle Auction Summary.**



meat, hearts, and lips. Edible tallow is largely exported for cooking in other countries. Inedible tallow is used mostly for industrial purposes like biodiesel. The largest component of steer by-product value is the hide. But steer hide values are only even with a year ago after showing strength during the spring and summer.

The sharp jump in cow by-product value is due to hikes in inedible tallow (up 124%) and tongues (up 83%). The growing biofuels market is boosting demand for key feedstocks with vegetable oils and fats seeing some of the sharpest inflation of all agricultural commodities. The price rally for these raw ingredients is seemingly showing no signals of slowing in the near-term.

The majority of by-product items depend on foreign markets. Many internal organs, like the liver, have more robust demand by foreign consumers than they do by the US population. Beef variety meats alone account for more than 20% of the volume of US beef muscle cut and variety meat exports and over 10% of the value.

### **Help limit consumer sticker shock**

Consumers think retail beef is plenty pricy. But retail beef prices are actually lower than they would be without by-product sales because the processing costs to wholesalers of the entire animal are spread across both muscle cuts and by-products.

Efficiency gains from technological advances have lowered the costs to

recover by-products, enabling packers and renderers to sell more by-products at potentially lower prices. It is true that, technologies now exist for producing synthetic materials that could replace, or compete against, by-products. But supply chain challenges for raw materials and new or growing demand, for some by-products have been supportive.

Estimates of by-product production are not readily available. Cattle produce by-products in nearly fixed proportions. However, availability and production do not necessarily equate. By-products collected from cattle can vary from animal to animal, packer to packer, and over time. Packers seek to capture the highest possible profit from every possible piece of the animals that they process; ribeyes, ground beef, a steer hide, and a beef liver all contribute to profits.

### **Processor headaches vary**

Packing plant operational capacity is highly influenced by the supply of labor. The COVID-19 pandemic, plus measures to recover from it, exacerbated longstanding labor shortages in processing plants. Labor shortages have both upstream and downstream

effects. Even if plants have enough labor to operate harvest floors, many are short of labor on boning lines and in by-product capture operations. Bottlenecks may divert some by-products to the rendering plant that would have higher values in other forms.

Many smaller processors have sufficient access to rendering services and can earn some by-product revenue, primarily for hides. But for many others “the drop” is a liability rather than a revenue source. Some may not collect enough volume each week to offset what the renderer charges to pick it up. Others may be located in an area with limited access to rendering. In 2020, 65% of the federally-inspected cattle plants slaughtered between 1-999 head annually and 22% slaughtered between 1,000-9,999 head annually. This equates to roughly an average of eight head and 45 head per week, respectively, assuming 51 slaughter weeks per year.

Furthermore, small, fee-for-service processors, i.e., custom-exempt plants, sell processing services, not muscle cuts and by-products. They cannot cover their processing costs with drop revenue, because the drop either generates little or no revenue, or is a cost.



## New publication details benchmarks for Iowa feedlot cattle

By Beth Doran, ISU Extension and Outreach beef specialist  
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Benchmarking is best used to track cattle and financial performance within a feedlot, but can also be used to monitor trends within the industry. Although industry-wide benchmarking programs exist, the values reported may not be reflective of Iowa climate and input costs.

Realizing this, Iowa Beef Center specialists collaborated on summarizing closeout data from more than 171,000 head of yearling steers and heifers enrolled in the Iowa Feedlot Monitoring program for the years of 2017 through 2020. These results are reported in a new publication, "Benchmarking the Performance of Iowa Feedlot Cattle."

Iowa State University extension beef specialist Beth Doran led the project.

"Averages are reported for each year and overall for the four-year time period for both steers and heifers," she said. "Also, performance and financial data were summarized for almost 99,000 head of cattle finished in four types of facilities - windbreaks, outdoor lots with shelter, open lot and confinement."

The report demonstrates that cattle characteristics, facility type, and extraneous factors, such as weather, commodity prices and marketing disruptions, greatly affect benchmarking values, Doran said.

"Those variabilities are why we encourage Iowa cattle producers to use benchmarking as a tool to monitor progress within their own operation over time," Doran said. "It's also important for them to be cautious in comparing their feedlot with other feedlots at a specified point in time."

Download your free copy of the publication from the [Extension Store](https://store.extension.iastate.edu/product/16292), [store.extension.iastate.edu/product/16292](https://store.extension.iastate.edu/product/16292). To learn more about the Iowa State University Feedlot Monitoring Program, see information on the Iowa Beef Center website. For more information, contact Doran at [doranb@iastate.edu](mailto:doranb@iastate.edu)

or 712-737-4230, or your ISU Extension and Outreach beef specialist.

The Iowa Beef Center at Iowa State University was established in 1996 with the goal of supporting the growth and vitality of the state's beef cattle industry. It comprises faculty and staff from ISU Extension and Outreach, College of Agriculture and Life Sciences, and College of Veterinary Medicine, and works to develop and deliver the latest research-based information regarding the beef cattle industry. For more information about IBC, visit [www.iowabeefcenter.org](http://www.iowabeefcenter.org).

### Benchmarking the Performance of Iowa Feedlot Cattle





**Introduction**

Benchmarking is defined as a standard or point of reference against which things can be compared or assessed. Benchmarking feedlot performance is best done with the objective of monitoring performance and improvement within an operation over time.

Benchmarking can be used to gauge differences across operations at a fixed point in time. Variables where a producer's feedyard is superior to a benchmark average suggests areas of strength; whereas, variables where a producer's operation is inferior to the benchmark average suggests areas where improvement may be warranted.

Benchmarking values should be viewed as averages, rather than "the best achievable," as there are a number of factors influencing differences among operations. These include such things as weather, animal characteristics, facility type, management, protocols, and changing market prices.

For example, does the benchmarking data fully capture variability in specific situations and managerial approaches? Firm-specific variations are noteworthy as many operations may not realize the full magnitude of positive returns at times (could have hedged feed cattle sales) or in other cases mitigated losses through implementation of a price risk management strategy (may have hedged feed cattle sales and/or feed inputs).

Iowa feedlot producers are encouraged to use benchmarking as a tool to monitor progress of their own operation over time and to cautiously compare their feedlot performance with other feedlots at a specific point in time. If the latter is undertaken, the task is to determine why the performance of their feedlot varies from other feedlots and to consider possible management changes to improve their operation.

**Materials and Methods**

Closeout data from 727 pens (131,886 head) of yearling steers and 239 pens (39,699 head) of yearling heifers over the 2017-2020 period were summarized for selected performance and financial characteristics. Closeouts were generated by users of the Iowa State University Feedlot Monitoring Program. The majority of these users were located in the Midwest (Iowa, South Dakota, Nebraska, and Minnesota) with a high concentration throughout Iowa.

Performance and financial data were summarized for 993 pens (98,929 head) of cattle finished in four types of facilities during the same period. Facility types were broadly categorized as windbreak, outdoor lot with shelter, open lot, and confinement. Operations not indicating the type of facility in which cattle were housed were not included in the facility analysis.

All data are reported as averages with standard deviations and were not analyzed for statistical differences. Hence, users should not compare averages for steers versus heifers, year effects, or facility types. The purpose of this data is to provide a point of reference only, and to look at trends.



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## Nitrous oxide – long-lasting and powerful

By Don Hofstrand, retired extension value-added agriculture specialist

Reviewed by Eugene Takle, retired professor emeritus, Iowa State University

**This article is the tenth in a series focused on the causes and consequences of a warming planet.**

Nitrous oxide, also known as laughing gas, is a colorless and non-flammable gas with a slightly sweet odor and taste. It is used in surgery and dentistry.

It is a powerful and long-lasting greenhouse gas. Atmospheric nitrous oxide captures 265-298 times more heat per unit of mass than carbon dioxide, according to the EPA. Also, nitrous oxide emitted today will remain in the atmosphere for an estimated 114 years (compared to 12 years for methane and hundreds of years for carbon dioxide).

Although nitrous oxide emissions occur naturally, about 40% are caused by human activity. About 75% of the human-caused emissions occur when nitrogen fertilizer is applied to the soil.

Recent research at Iowa State University shows that the climate warming effects of nitrous oxide emissions from local corn and soybean soils are two-fold greater than the climate cooling that might be achieved by increasing soil carbon storage with common agricultural practices.

[Iowa State's Steven Hall said](#) "storing carbon in agricultural soils is a valuable tactic to mitigate climate change, but the new research indicates



any such policies should first take into account nitrous oxide emissions. Failure to do so could result in policies that are much less effective in addressing climate change." ([www.news.iastate.edu/news/2021/11/08/nitrousoxide21](http://www.news.iastate.edu/news/2021/11/08/nitrousoxide21)).

Nitrous oxide emissions can be reduced by using less nitrogen-based fertilizer and applying fertilizer more efficiently. New products known as enhanced efficiency fertilizers, as well as the application of biochar to fields, might also help to limit nitrous oxide emissions

An additional 5% is emitted as a result of how manure is managed. If manure doesn't have access to oxygen, it can be converted to nitrous oxide. Emissions can also occur if manure is overapplied to cropland.

Surprisingly, significant nitrous oxide emissions are occurring from the melting of permafrost in the Arctic.

Nitrous oxide poses another threat. When in the atmosphere, it is exposed to sunlight and oxygen and converted to nitrogen oxides. These oxides can damage the ozone layer, which protects us from ultraviolet radiation.

Luckily, the actual level of nitrous oxide emissions is relatively small. When its potency is adjusted to a carbon dioxide equivalent, nitrous oxide makes up about 6% of US greenhouse gas emissions. Nevertheless, nitrous oxide is a significant contributor to climate change.

See the [Ag Decision Maker website](#), [www.extension.iastate.edu/agdm/energy.html#climate](http://www.extension.iastate.edu/agdm/energy.html#climate), for more from this series.



## Biofuel developments

By Chad Hart, extension crop market economist  
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Now that the harvest has wrapped up, the markets’ focus is shifting from the supply side to the demand side. Exports were the big story at this time last year, as they were surging to record amounts for many commodities. This year, export sales are feeling the pressure of higher prices and more international competition. Traders searching for a boost in crop usage have turned their focus to biofuels.

On the policy front, in early December, the Environmental Protection Agency (EPA) released their proposal for biofuel blending targets for 2020, 2021, and 2022, along with a proposal for supplemental obligations to make up for lost volumes in prior years due to waivers. Table 1 outlines the final volumes for 2019 and the proposed volumes for the other years. When reading the table, remember that cellulosic biofuel and biomass-based

diesel are part of the advanced biofuel complex and that the vast majority of corn-based ethanol is captured by the gap between the advanced biofuel and total renewable fuel lines. There has already been a lot of discussion about the 2020 and 2021 volumes. As is evident in the numbers below, EPA expanded the cellulosic volumes, held the biomass-based diesel volumes steady, but reduced the advanced biofuel and total renewable fuel totals. These adjustments were prompted by the COVID pandemic and its impact on fuel usage. EPA is arguing that the overall drop in fuel usage necessitates the revision of the 2020 volumes and that the larger reduction in gasoline usage, relative to diesel usage, drives the need for the decline in ethanol-related areas of the standard versus the biomass-based diesel-related areas.

Ethanol production was significantly impacted over the past couple of years, not only by COVID, but also extreme weather events. Figure 1 shows the estimated weekly usage of corn for ethanol production. The COVID shutdown in April 2020 is easy to spot. The ethanol industry basically cut itself in half over a period of four weeks, as travel restrictions kicked in. As the pandemic progressed and the economy adjusted, liquid fuel usage and ethanol production partially recovered. But as we entered 2021, production was still running well below pre-pandemic levels. The next large drop in ethanol production coincided with the big freeze in February. The freeze limited natural gas supplies, forcing ethanol plants to once again retreat on production. Luckily, the impact was short-lived and the ethanol industry continued to climb back toward pre-COVID levels.

**Table 1. Renewable Fuel Volume Standards (Source: EPA)**

Fuel Type	Units	2019	2020	2021	2022
Cellulosic Biofuel	Billion ethanol-equivalent gallons	0.42	0.51	0.62	0.77
Biomass-based Diesel	Billion biodiesel-equivalent gallons	2.10	2.43	2.43	2.76
Advanced Biofuel	Billion ethanol-equivalent gallons	4.92	4.63	5.20	5.77
Total Renewable Fuel	Billion ethanol-equivalent gallons	19.92	17.13	18.52	20.77
Supplemental Standard	Billion ethanol-equivalent gallons	0.00	0.00	0.00	0.25

Within the past couple of months, ethanol production has finally returned to pre-COVID levels. The major question for the markets is: Will the industry be able to maintain these levels? The federal government provided somewhat divergent signals on that question recently, with the EPA providing a more positive slant for the biofuels sector than USDA. The release of 2022 volume standards by EPA indicates a return to pre-pandemic levels as the gap between the advanced biofuel and total renewable fuel standards is back at 15 billion gallons. Meanwhile, USDA reports pointed to continued lower corn usage for ethanol from the 2021 and 2022 crops, below pre-COVID levels. The December WASDE report held corn usage for ethanol steady at 5.25 billion bushels for the 2021 crop. That is below the 5.378 billion bushels used from the 2018 crop. And last month USDA released its longer-term projections, including an early peek at 2022, which maintained corn usage for ethanol at 5.25 billion bushels. The key to the recent uptick in ethanol production has been improving processing margins, as the strength in oil prices and the sideways trend in corn prices provided room for ethanol prices to increase, while costs held steady. The current corn futures curve indicates feedstock costs will remain flat. And the current oil futures curve is relatively flat as well, so margins should be robust going into 2022.

**Figure 1. Weekly US corn usage for ethanol (Based on EIA data).**



And while the ethanol resurgence has been positive for the crop markets, it's the chatter about another biofuel that may actually have more impact on crop prices in the future. Over the past year, soybean and corn oil prices have roughly doubled as interest has grown in renewable diesel production. Renewable diesel is not the same as biodiesel. With renewable diesel, the feedstock (whether a vegetable oil, such as soybean or corn oil, or animal fat) is refined in a similar way as petroleum to create a biofuel that chemically meets the diesel standard. The heightened awareness and increased policy focus on climate change, along with the growth of low carbon fuel standards around the globe and the recent rise in energy prices, has renewed interest in developing other biofuels to address these issues.

Renewable diesel has received much of that interest as the diesel market maintained more of its usage during the

pandemic, as we drove less but shipped more. Figure 2 displays the historical and projected capacity for renewable diesel production. The technology and process to create renewable diesel has been around for a while, but capacity buildup had been slow until the last couple of years. Recent renewable diesel projects are looking to the increases in low carbon fuel needs, especially from California, as their main outlet.

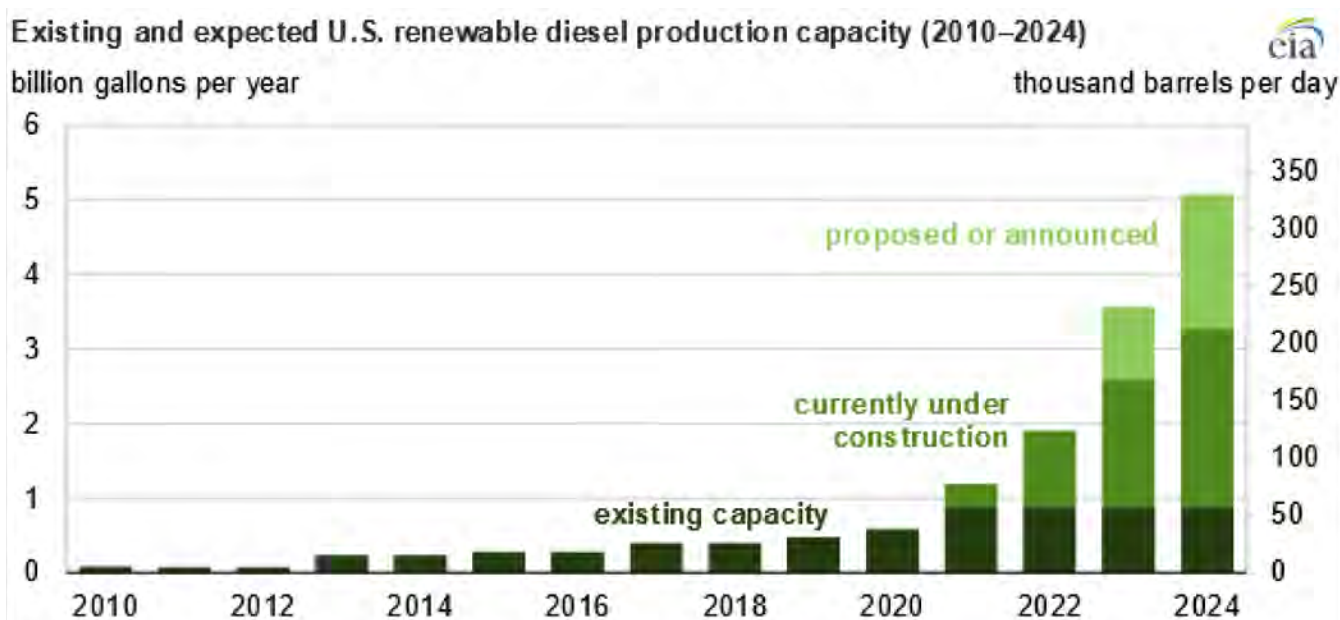
As the figure shows, the industry could grow to have a production capacity of 5 billion gallons of renewable diesel by 2024. That would roughly be the size of California's diesel market. One of the largest challenges may come from gathering enough feedstocks. While there are several feedstock options between vegetable oils and animal fats, the quick projected growth in the industry may squeeze those supplies. As an example, think about soybean oil and the doubling of prices over the past year.

Currently, the US soybean crop is roughly split into two near-equal sections, with half of the crop being crushed domestically and the other half heading to other countries. If all of the soybean oil from the current domestic crush were utilized for renewable diesel, it would produce roughly 2.8 billion gallons. To meet the capacity

targets for 2024 shown in the figure with soybean oil, the US would need to dedicate approximately 90% of the current soybean crop. That would create another biofuel boom, if it comes to pass. The key word there is "if." Right now, the combination of policies and pricing are conducive for renewable diesel development. Those need to

continue to hold over the next couple of years to maintain the development pressure. Several states, beyond California, are considering low carbon fuel standards, indicating the policy push will continue. The wildcard will be energy prices and if OPEC sees these developments as a big enough threat to their industry.

**Figure 2. US Renewable Diesel Production Capacity (Source: EIA).**



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