DECISION INNOVATION SOLUTIONS

Prepared for:

IOWA CORN

Iowa Renewable Fuels Association

The Demand Gap for Corn: Actions Needed to Address It Now

January 2026

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- Inadvertent errors and omissions related to data collection, data summarization, and visual display of data.

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Table 1. Acronyms

Acronym	Description
ARC	Agriculture Risk Coverage
ARC-CO	Agriculture Risk Coverage - County
CARB	California Air Resource Board
CCS	Carbon Capture and Sequestration
CI	Carbon Intensity
CRP	Conservation Reserve Program
CSA	Conservation Smart Agriculture
EIA	Energy Information Agency
EPA	Environmental Protection Agency
ETJ	Ethanol-to-Jet
HEFA	Hydrotreated Esters and Fatty Acids
IMO	International Marine Organization
LDP	Loan Deficiency Payment
LNG	Liquefied Natural Gas
LTO	Long-Term Outlook
MYA	Marketing Year Average
OBBBA	One Big Beautiful Bill Act
PLC	Price Loss Coverage
RD	Renewable Diesel
SAF	Sustainable Aviation Fuel
USDA	United States Department of Agriculture
US DOE	United States Department of Energy
WASDE	World Agricultural Supply and Demand Estimates

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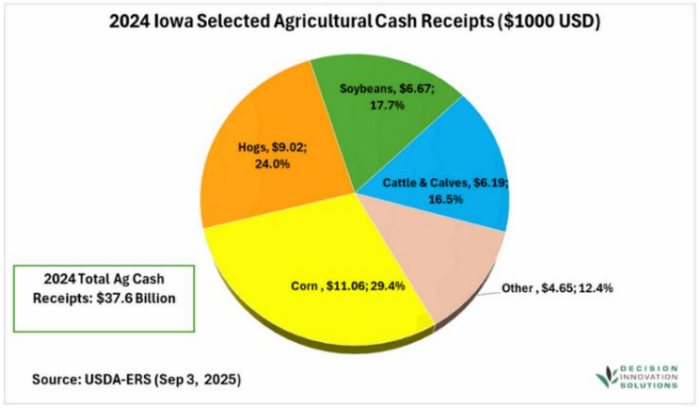
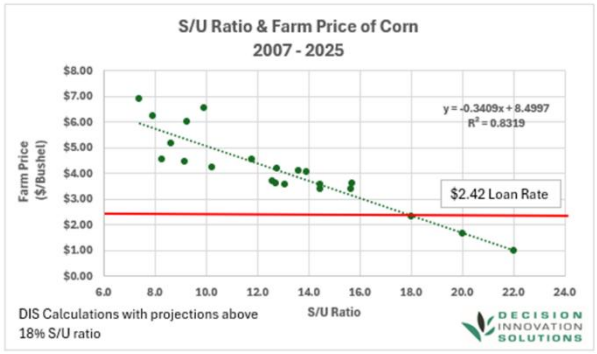
Executive Summary

Iowa's corn farmers continue to lead the nation in corn production and in productivity with trendline yields that are growing 15% faster than U.S. average corn yields. Historically, corn provides the largest share of farm revenue in Iowa (29.4%, $11.06 billion in 2024). With trendline yields pushing corn production to new record highs, new demand drivers are needed to support and sustain the economic drivers in the Cornbelt that are provided by corn production. Lowering acreage by 10% as forecast by the USDA Long-Term Outlook (LTO) will significantly weaken the rural economies that rely on the associated activities of corn production. Without year-round E15, the corn demand gap gets very large very quickly. By 2034 we could be facing ending stocks that are nearly as large as a full year's worth of demand (15+ billion bushels) similar to the 1980's farm crisis. Reducing corn acreage to manage prices will impact small family farms the most and increase further consolidation already seen in agriculture.

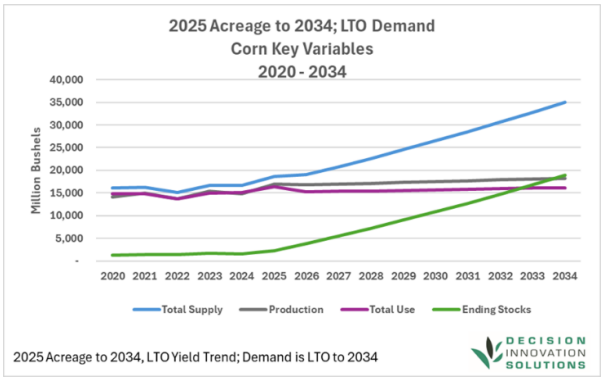


The Growing Demand Gap for Corn

The price of corn is very sensitive to the size of ending stocks. Stocks-to-use (S/U) ratio near 12% implies corn prices near $4 per bushel, but S/U ratios above 20% can pressure prices to lows so severe that federal farm program support programs kick in and loan rates become in play again. With the passage of policies that would support and encourage the adoption of year-round E15, the rapid downsizing of the rural economy that is built on activities related to maintaining corn acreage can be avoided until 2031.



In the long run, the fantastic productivity of U.S. corn farmers and the adoption of technologies that are supporting and sustaining growth in trendline yields means that reliable demand beyond E15 is also needed. USDA's LTO forecasts slow growth for feed use for corn with less than 0.5% annual growth rate and corn exports in the LTO fall by 14.8% by 2034. With acreage simply held at the 2025 level and trendline yields, a demand gap quickly develops. Annual production outpaces existing demand; carryover stocks rise year after year, and by the end



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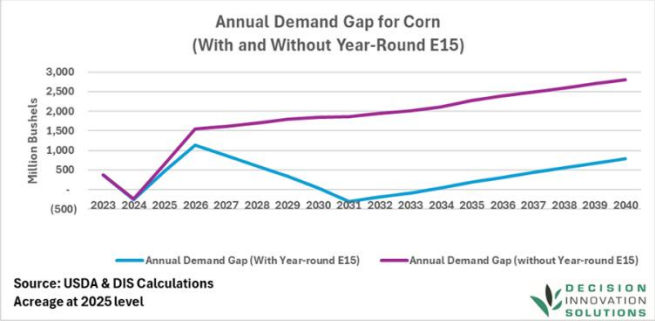
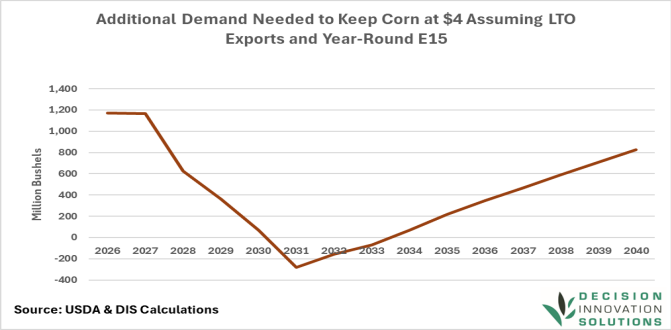
of the current LTO ending stocks can explode to nearly a full year's worth of production. The constant demand gap between production and usage multiplies. We experienced this in the early 1980s when the "new demand" that came from opening international markets in the 1970s leveled out, but yields continued to improve and with enhancements brought on by adoption of new production technologies, huge surpluses developed in only a few years. By 1986-87, stocks-to-use ratio for corn was above 66%. In response massive acreage cutting programs were adopted which provided a temporary bandage for U.S. farmers but enabled massive expansion of crop production in Brazil and around the world while having long-term detrimental impacts on agribusinesses and rural communities throughout Iowa and the Midwest.

Addressing the Demand Gap for Corn

Year-round E15 with a 5-year transition from E10 to E15 provides near-term relief and allows time for markets for ultra-low carbon ethanol to develop. The startup of operations of a CO2 pipeline in Nebraska serving 11 Nebraska ethanol plants and one in Iowa provides enough ultra-low carbon ethanol to jump-start the new demand. But beyond the adoption of year-round E15, ultra-low carbon ethanol from the ethanol plants in Iowa will be critical to the growth of these new markets and essential to filling the demand gap that is coming. Once fully adopted, year-round E15 provides a new market for 2.1 billion bushels of corn.



In fact, even with the additional corn demand for year-round E15, a demand gap continues to build beyond 2031 as trendline corn yields push annual production above 19 billion bushels by 2040 and more than 20.9 billion bushels per year by 2050. The extra corn demand provided by E15 helps narrow the demand gap, but with corn acreage at 2025 levels and trendline yields, a demand gap exists that would still need to be filled with new markets after 2033. The marine fuel market is a 70-80 billion gallon per year fuel market, and the U.S. SAF market is a 35 billion gallon per year fuel market. Not all these fuel requirements will be filled with ultra-low carbon ethanol. But these new markets are sufficiently large to close the gap on corn demand through 2050, if only we have the foresight to do so.



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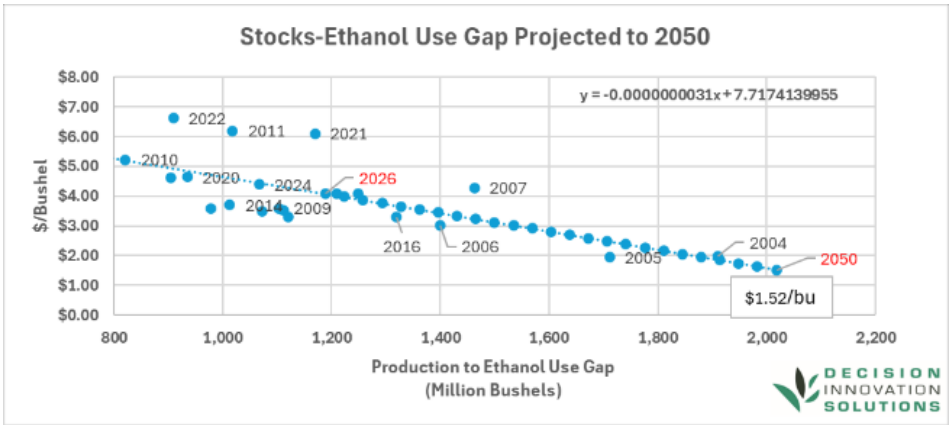

In Iowa, there is a very strong relationship between the ratio of the ending stocks in the state to the gap between state corn production and corn used for ethanol. Without new demand from E15 and ultra-low carbon ethanol, by 2050, this measure suggests that the price of corn in Iowa could be as low as $1.52 per bushel by 2050.

Policies Needed to Address the Demand Gap for Corn

1. **Congressional approval of nation-wide year-round E15.** Permanent waivers in 7 states is insufficient. A loud, strong message needs to be sent by Congress that domestic, home-grown E15 is ready to be facilitated and supported on a permanent year-round basis. This will spur the fuel refineries, blenders, and distributors to quickly adopt E15.
2. **Reinstatement of the 45Z production credits for SAF** at the levels they were at prior to the OBBBA. The Energy Department laid out the roadmap for transformation of the U.S. aviation fuel market to reduce emissions and become a world leader in development and adoption of low-carbon aviation fuel. In the early years of development of this new, exciting fuel market, the $1.75/gallon tax credit is needed for SAF. Congress needs to restore the credit levels that were in place before OBBBA. Further, Congress must recognize that ethanol can be both a qualifying 45Z fuel and a feedstock for qualifying 45Z SAF.
3. **Carbon capture and sequestration (CCS).** Ultra-low-carbon ethanol throughout the Midwest needs to be facilitated by adoption of rules and regulations that will allow for the safe and economic capture, transport, and sequestration of CO2 from ethanol plants. A small, first step is already underway in Nebraska with the transition of the Trailblazer pipeline to a CO2 pipeline. With plans to service eleven ethanol plants in Nebraska and one in Iowa, this project will facilitate early development of enough low-carbon ethanol that the domestic ETJ pathways for SAF can be developed and built. But twelve ethanol plants on a pipeline is just the beginning. There are 50 to 70 more ethanol plants that are waiting in the queue for their opportunity to lower the carbon intensity score of their ethanol.
4. **Conservation Smart Agriculture (CSA).** USDA, U.S. DOE and U.S. Treasury should finalize rules for 45Z that recognize the carbon reducing impact of CSA agronomic practices. Previous tentative steps in this direction should be more robust. The full suite of CSA practices should be recognized and full credit to farmers should be provided. Previous efforts that caved to pressure from anti-farmer groups should be abandoned for a science-based approach. Through the full recognition of CSA practices, the government can provide farmers an enhanced revenue opportunity while also empowering ethanol producers with another tool to produce the ultra-low carbon ethanol coveted by growing markets around the world.

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In Summary

Fortunately, there are attractive new markets developing that are large enough to provide the demand that America's farmers so desperately need. Ultra-low-carbon ethanol would be very attractive to the international marine industry and could be a major feedstock for low-carbon liquid fuels and SAF. Year-round E15 enacted now buys the time needed for additional infrastructure and industrial development to occur and can utilize the ethanol that Iowa's plants are producing. The technology exists so that ultra-low carbon ethanol can be a significant and long-term marine fuel and feedstock for SAF if the infrastructure is allowed to be put in place. The long-term economic viability for corn growers depends on access to these markets.

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1 Introduction

Iowa's corn farmers continue to lead the nation in corn production and in productivity with trendline yields that are growing 15% faster than U.S. average corn yields. Historically, corn provides the largest share of farm revenue in Iowa (29.4%, $11.06 billion in 2024). With trendline yields pushing corn production to new record highs, new demand drivers are needed to support and sustain the economic drivers in the Cornbelt that are provided by corn production. Lowering acreage by 10% as forecast by the USDA LTO will significantly weaken the rural economies that rely on the associated activities of corn production. (See Appendix Section 3.2 for details)

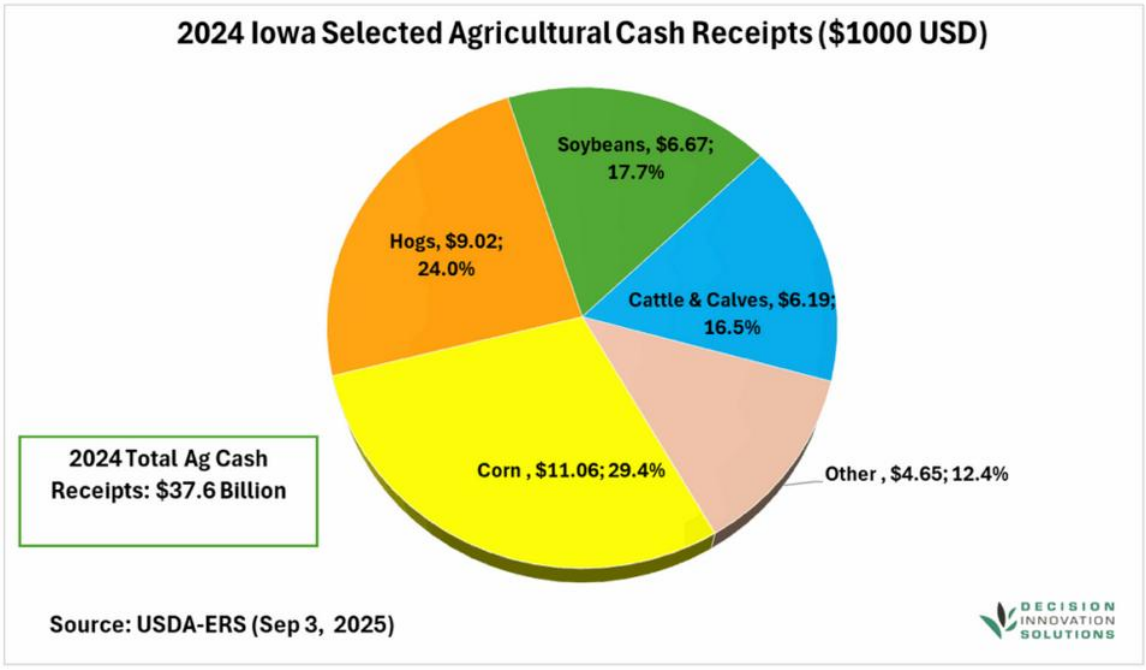

Figure 1. 2024 Iowa Selected Agricultural Cash Receipts ($1000 USD)

Iowa has an active, successful biofuels industry that has provided significant economic activity, employment, wages, and demand for local agricultural production for many years. The development of the biofuels industry has required significant investment to get it to its current state. Given the industry has experienced rapid growth and the use of ethanol has become commonly available throughout the United States, questions have turned to "what's next" for the industry. To this end, ICGA and IRFA have asked DIS to address the following four focal points of research in this white paper:

- How does a baseline that holds planted acreage at current levels and uses the most recent 30-year national trendline yield for production data compare to the USDA Long-term Outlook baseline.
- What is the demand gap that exists between trendline yield production at 2025 acreage levels and the demand that is projected by the USDA LTO?

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- E15 has been availabe in several midwestern states on a year-round basis based on annual waivers. If year-round E15 were authorized nationally, how would it affect demand for ethanol and the demand for corn used for ethanol?.
- Even with E15, what is the "demand gap" that remains between trendline production (without acreage declines) and the demand for corn needed to support prices at sustainable levels for corn producers? There are viable market opportunities to fill this demand gap. The question is: what must be done to access these markets?

2 Identifying the Demand Gap

Recently, and in coming years, corn farmers are facing increasingly unfavorable times as a demand gap has developed and is increasing over time. This demand gap is driven by demand factors that have matured and become relatively stagnant while productivity increases are driven by strong trendline yields. The divergence between the growth rates of production and usage results in the demand gap.

2.1 USDA's 10-Year Baseline

In the USDA's Long-Term Outlook (LTO)[1] acreage planted to corn declines from its recent high in 2025 of 98.7 million acres planted and 89.7 million acres harvested to just 88.5 million acres planted in 2034, and 80.6 million acres harvested (Figure 2). That is a 10.4% decline from current corn acres. USDA's LTO corn yield increases from 186.7 bushels per acre in 2025 to 200 bushels per acre in 2034, a trendline increase of roughly 2 bushels per acre per year after 2026 and an 11.5% increase from 2024.

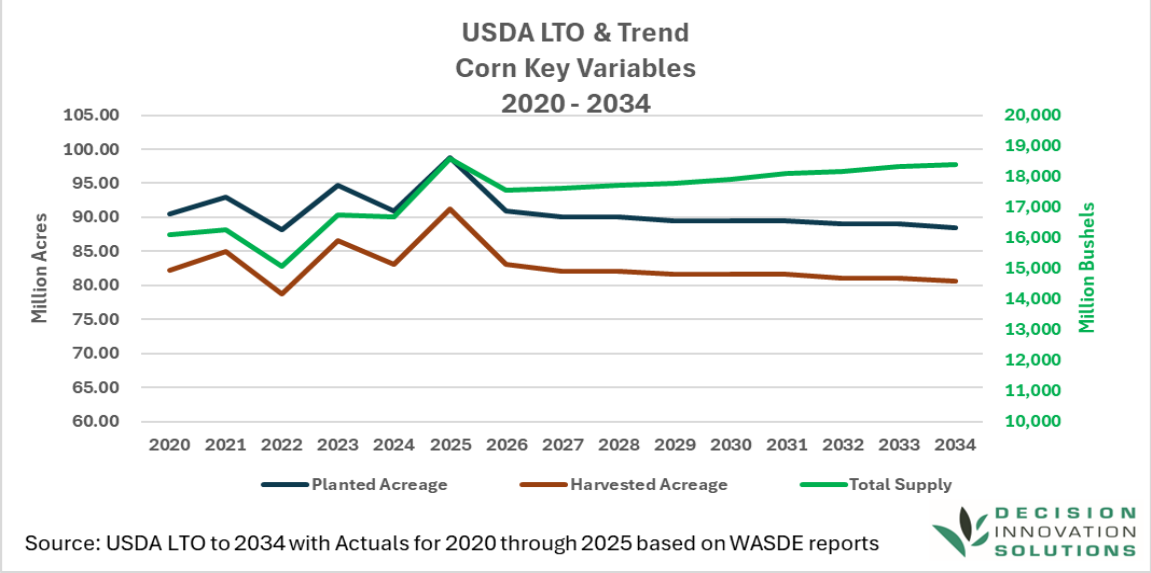

Figure 2. USDA LTO & Trend, Corn Key Variables (2020 - 2034)

[1] Published in February 2025

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With acreage declining and yield increasing, total supply drops from 2025 to 2027 but then begins rising as the percentage change in yield outweighs the percentage change in acreage. In addition, ending stocks decline slightly until 2027, then the increase in production, driven by yield, along with relatively benign growth in demand, results in ending stocks rising slowly into 2034, reaching 2.07 billion bushels (Figure 3). This would represent a stocks-to-use ratio of 12.8%. Built into the demand side of the USDA LTO is corn use for ethanol that remains flat at 5.55 billion bushels from 2027 through 2034. In essence, USDA's LTO keeps corn ending stocks from rising much above two billion bushels per year by systematically reducing planted and harvested acres for corn. The LTO has total domestic use rising by just 1.8% by 2034 and exports declining by 1.4% compared to 2025 demand levels. This scenario will undoubtedly lead to low profitability for corn growers across the country and suggests the best days for corn growers are in the past.

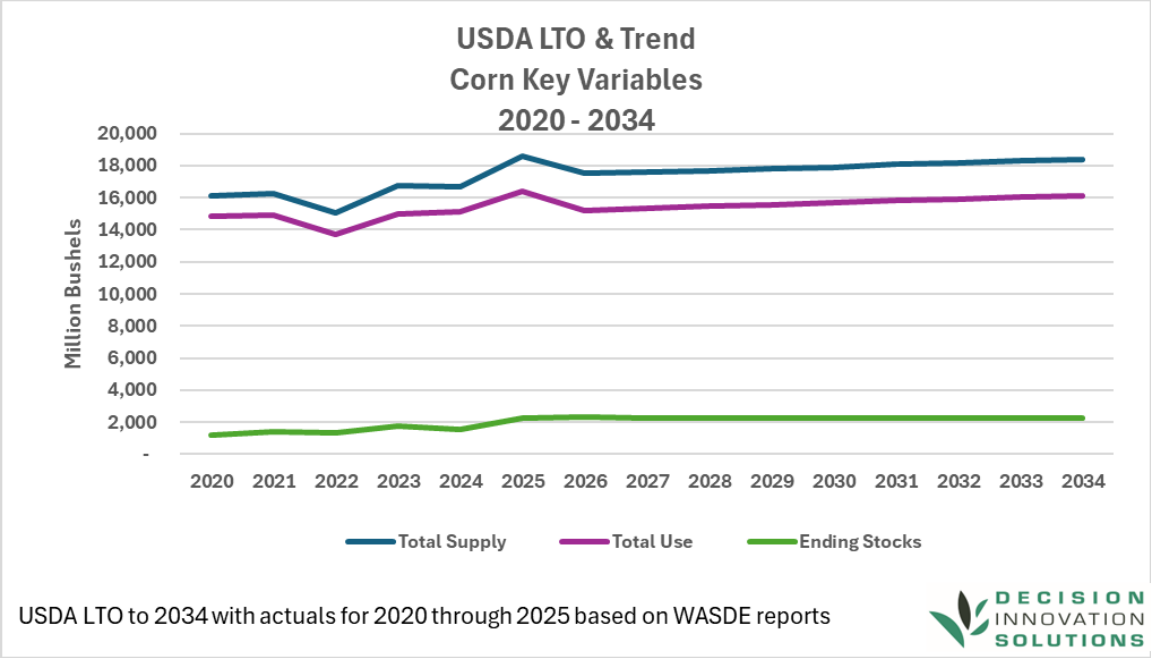

Figure 3. USDA LTO & Trend, Corn Key Variables (2020-2034)

Imbedded in the USDA LTO is an assumption that domestic ethanol production remains static at 5.55 billion bushels per year from 2027 through 2034 despite the EIA estimate that domestic fuel consumption will decline by 19.2% by 2035 and domestic ethanol consumption will decline by 12.6% by 2035 which implies that ethanol exports would need to rise by 34.4% (Figure 4). That percentage increase in ethanol exports will be difficult in an environment worldwide that is supporting electric vehicles and hybrid vehicles that contribute to less gasoline use and less ethanol blended fuels and where trade is more contentious and variable than it historically has been.

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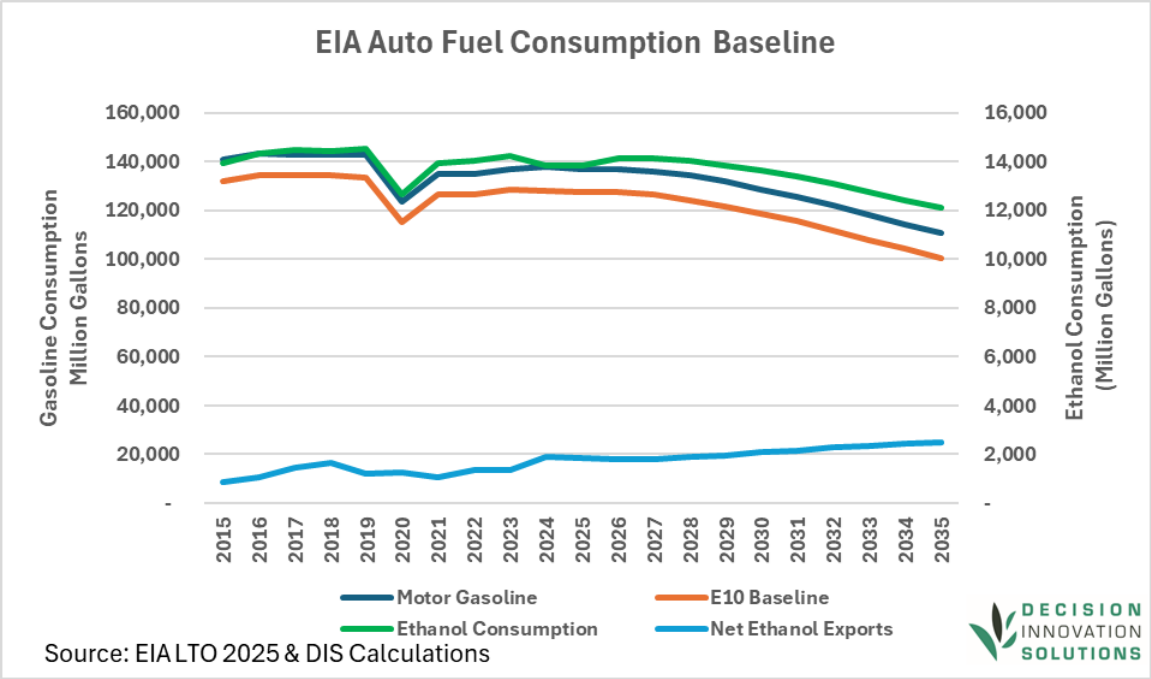

Figure 4. EIA Auto Fuel Consumption Baseline

The One Big Beautiful Bill Act (OBBBA) raised reference prices and likely payment rates for corn growers who utilize the Agricultural Risk Coverage (ARC) and Price Loss Coverage (PLC) commodity programs for corn. Based on estimates of county-level base acres and payment rates from the Policy Design Lab at the University of Illinois-Champaign, ARC & PLC payments related to the 2025 crop could total more than $6 billion. Figure 5 shows estimated ARC & PLC payments at the national level for corn for the years 2025

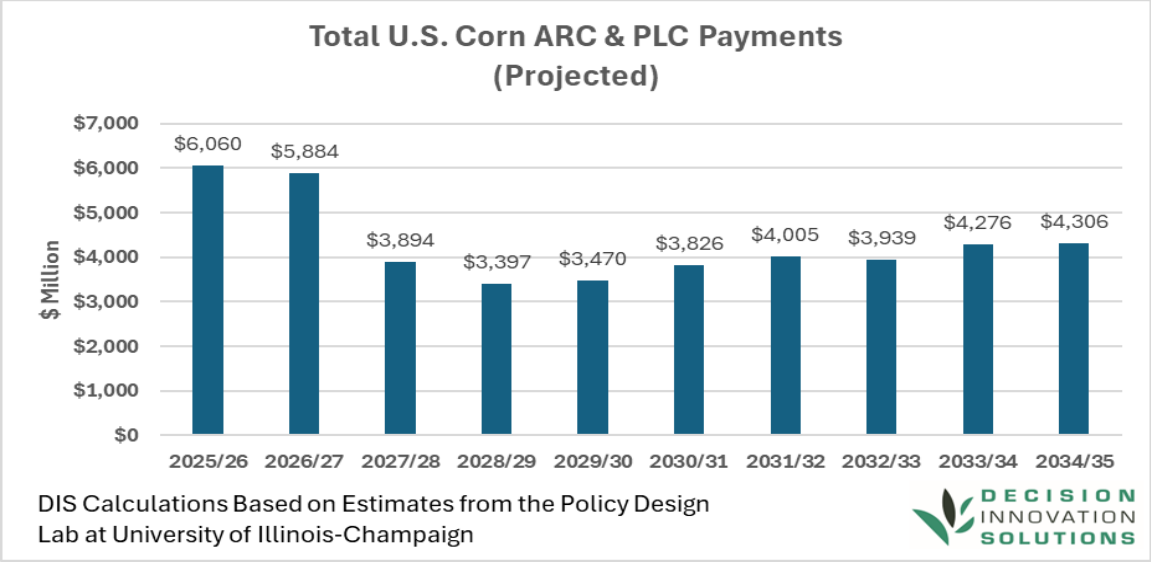

Figure 5. Total U.S. Corn ARC & PLC Payments (Projected)

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through 2034. Estimates beyond 2028 assume continuation of the policy in place in 2028. Across the period of 2025 through 2034, the average cost of the ARC & PLC program is $4.306 billion per year and with an aggregate 10-year cost of $43,056 billion. Without new, large sources of demand, farmers may be forced to rely on government payments well into the future. With diminishing profitability, economic development languishes, tax revenues decline, and farm consolidation accelerates.

2.2 How Big is the Demand Gap?

The purpose of this study is to determine whether an alternative scenario is possible that avoids the devastating reductions from the baseline acreage at 2025 levels through 2034 with the current demand factors that are in place. How big does the "demand gap" grow? And what are the implications on ending stocks and prices? To make the scenario more realistic considering the reductions in incentives for transition of the auto fleet to electric vehicles, instead of a 19% decline in fuel consumption by 2035, fuel consumption is modeled as only declining 6% by 2034 (implies a 15% reduction by 2050 versus the EIA LTO which has fuel consumption declining by 44% by 2050).

To estimate the demand gap, the baseline planted corn acreage is held steady at the levels seen in 2025 of 98.8 million acres and harvested corn acres hold steady at 91.3 million acres. With trendline yields in place for 2026 through 2034, corn production rises from 17,020 million bushels in 2025 to 18,252 million bushels in 2034. With total use remaining relatively flat according to the most recent USDA LTO (0.9% decline from 2025 to 2034), the gap between production and annual use averages 1,827 million bushels per year and grows from 650 million bushels in 2025 to 2,117 million bushels in 2034. Ending stocks climb rapidly in this situation with ending stocks rising from 2,227 million bushels in 2025 to 18,893 million bushels at the end of the 2034 marketing year.

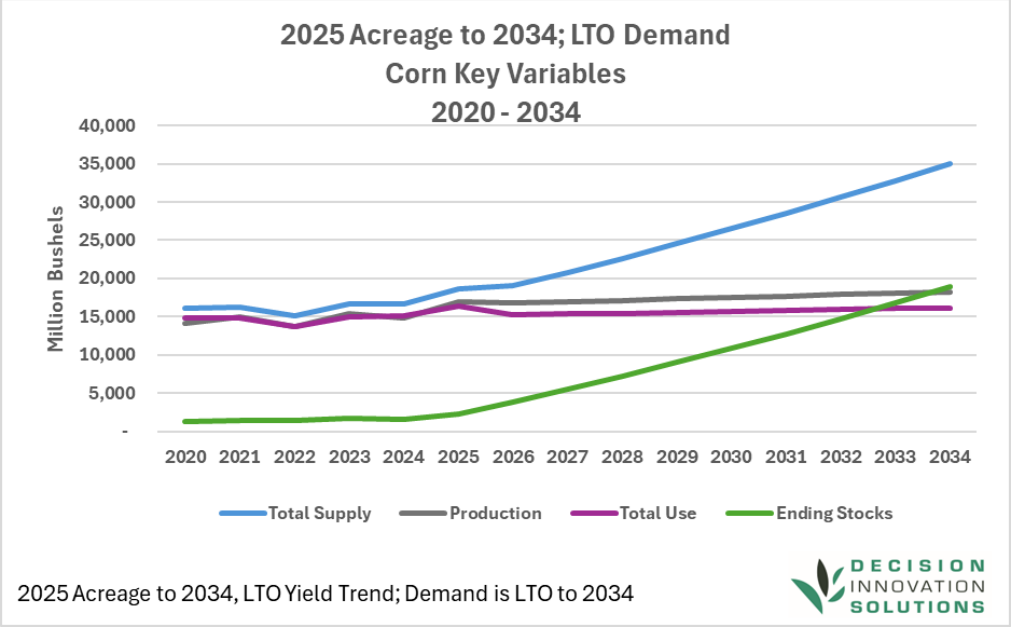

Figure 6. 2025 Acreage to 2034; LTO Demand, Corn Key Variables (2020-2034)

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Figure 6 shows the impacts of stable acreage and flat demand on key corn variables of total supply, production, annual use, and ending stocks. With production consistently outpacing annual demand, ending stocks and total supply grow rapidly. In just 9 years, ending stocks grow enough to equal annual demand and total supply by 2034 is roughly 200% of annual demand.

Figure 7 shows the annual demand gap for corn with acreage held at 2025 levels, and the rise in the cumulative demand gap for corn that builds year after year unless new demand is facilitated and allowed to develop. An average annual demand gap of 1,872 million bushels turns into an 18,900-million-bushel demand gap by the end of the 2034 marketing year.

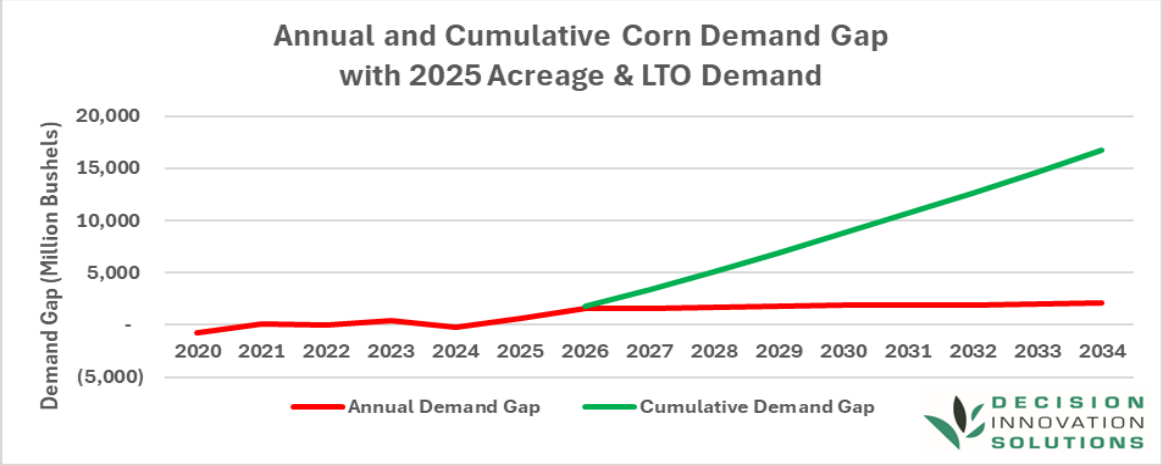

Figure 7. Annual and Cumulative Corn Demand Gap with 2025 Acreage and LTO Demand

There are price implications when a demand gap is allowed to develop and languish (Figure 8). USDA's baseline holds the price of corn relatively steady between $4 and $4.30 per bushel by forecasting decreases in corn acreage (10.3% decline from 2025 to 2034).

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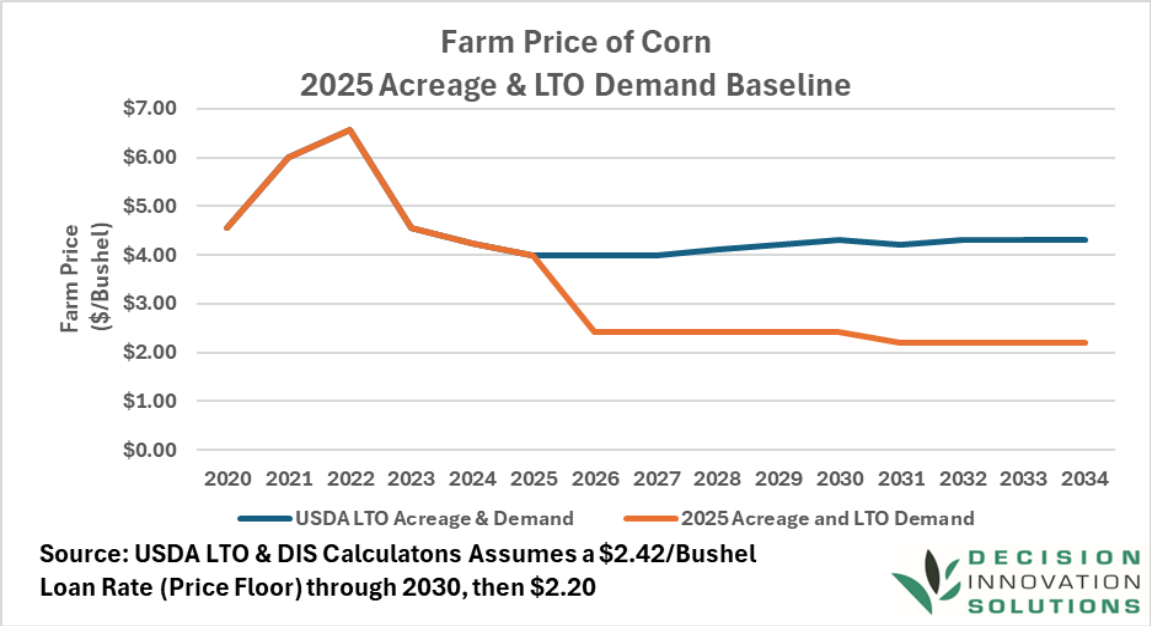

Figure 8. Farm Price of Corn, 2025 Acreage & LTO Demand Baseline

However, if corn acreage is held at current (2025) levels, and demand is allowed to languish at the levels in the USDA LTO baseline, then corn will likely drop to the loan rate ($2.42/bushel through 2030 and then $2.20/bu beyond) as stocks rapidly build (Figure 8).

The last time we had a stocks-to-use ratio above 20% was during the 1992/93 marketing year. The all-time high within the last 50 years is a stocks-to-use ratio of 54% in 1985/86. Cash corn prices in Iowa in 1986 went well below the loan rate[2] and USDA paid out large Loan Deficiency Payments (LDPs) that year. In response, USDA rolled out programs designed to take out huge amounts of acreage from production in 1986 through 1988 in addition to the long-term land idling connected with the Conservation Reserve Program (CRP).

A stocks-to-use pricing model based on U.S. corn data from 2007 through 2025 is shown in Figure 9. According to the model, each 1% increase in the stocks-to-use ratio projects a decline in the annual average price of 34 cents per bushel. For the 2025/26 corn marketing year the stocks-to-use ratio is projected to be 13.6%. With acreage at the 2025 level, and demand at the USDA LTO level, the stocks-to-use ratio could climb to 25% for the 2026 crop (which would project a farm price of $0.04 per bushel, although it is likely that the $2.42/bu loan rate would provide some level of support) and by the end of 2027, the stocks-to-use ratio would climb to 35.5% and would reach 104.3% by the end of the 2034 marketing year. Based on the model in Figure 9, any stocks-to-use ratio greater than 25.1 would result in negative corn prices. Again, the loan rate will provide some level of support, but with the current Loan Deficiency Program (LDP) that is in place, loan rates only provide “soft support” not absolute support.

[2] Monthly average cash corn price in Iowa in October 1986 was $1.24 per bushel. Source: USDA:NASS

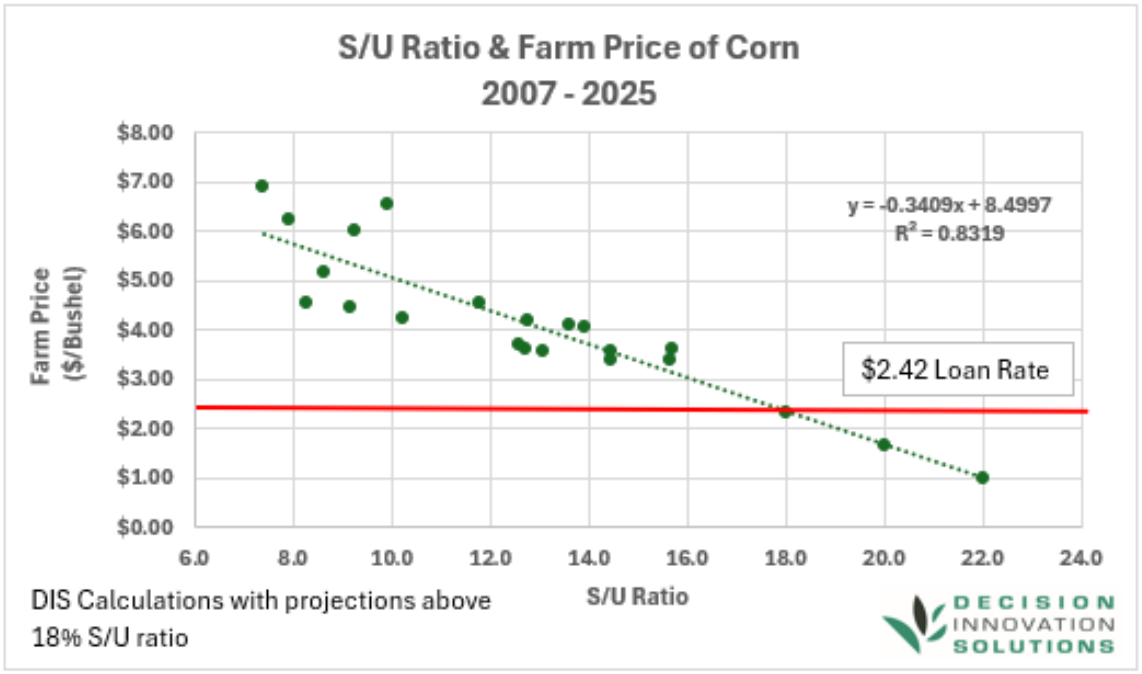

Figure 9. S/U Ratio & Farm Price of Corn

Estimating ARC-CO and PLC payments in the case where ending stocks build as production outpaces demand as depicted in Figure 6 would likely lead to maximum ARC-CO and/or PLC payments.

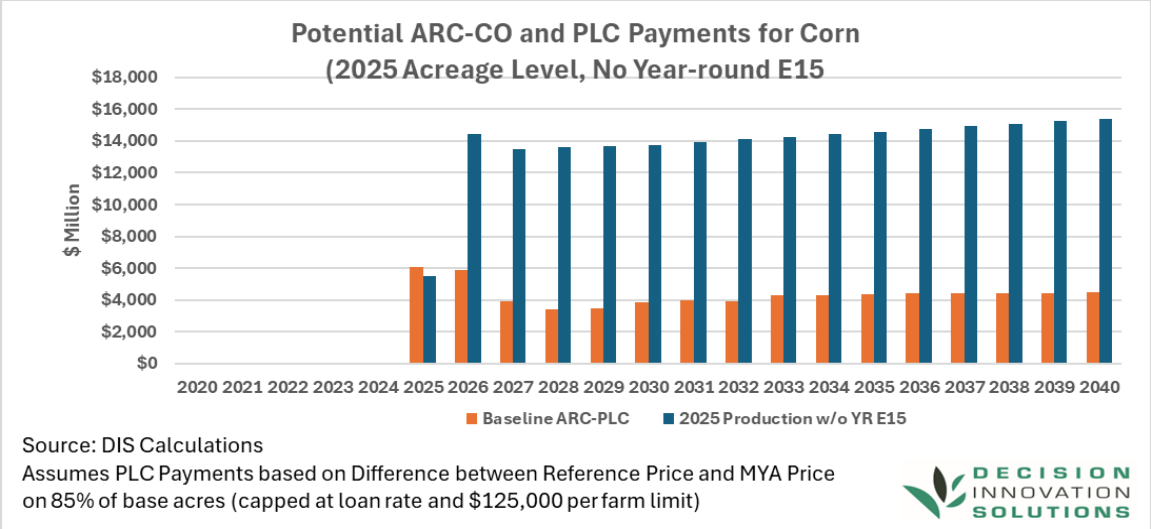

Figure 10. Potential ARC-CO and PLC Payments for Corn, (2025 Acreage Level, No Year-round E15)

Figure 10 shows estimated ARC-PLC payments in comparison to estimated payments under the baseline situation in which acreage and production are reduced as in the USDA LTO. A rapid buildup of ending stocks causes prices to drop to near loan-rate values and maximum ARC-PLC payments result. The

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average cost of the corn ARC-PLC payments without acreage reductions is more than $13.8 billion per year and the 10-year cumulative cost is more than $131.2 billion.

Unfortunately, very large per bushel ARC-PLC payments can trigger payment limitations for even mid-sized farmers. Using the corn harvested for grain acreage distribution in the 2022 Census of Agriculture and calculating estimated PLC payments when prices hit loan rates, only about 60% of corn production would be covered by PLC payments (declining to 57% of production by 2040) (Figure 11).

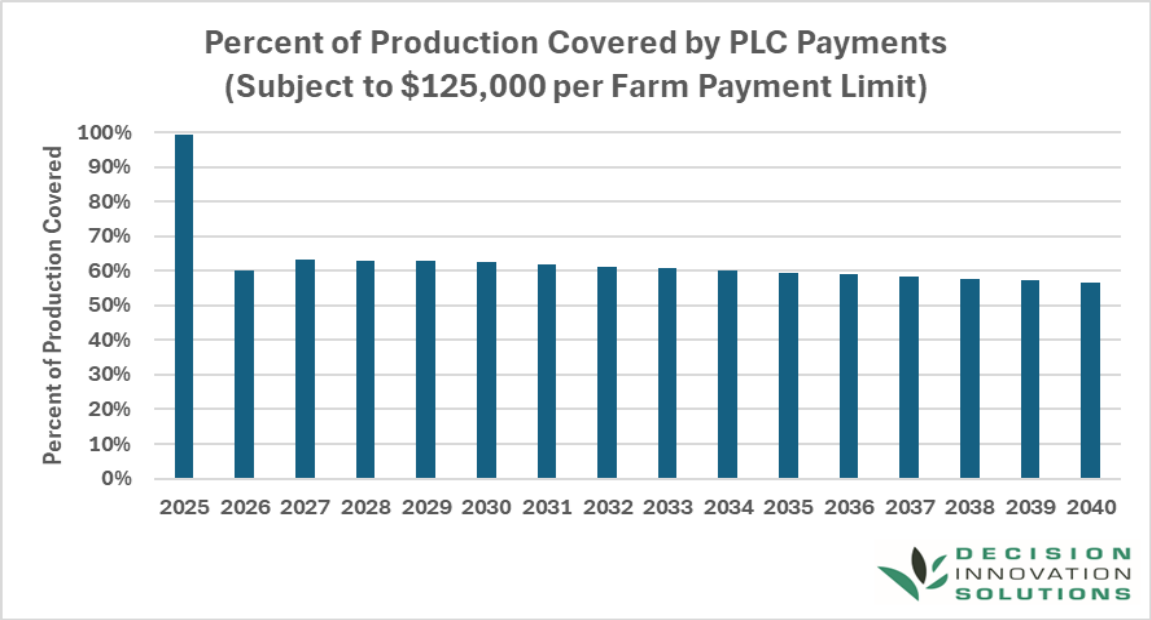

Figure 11. Percent of Production Covered by PLC Payments (Subject to $125,000 per Farm Payment Limit)

2.3 Addressing the Demand Gap

Essentially, there are two ways to address the demand gap that corn is likely to experience in the coming years. In the short-run, the demand gap can be filled with traditional ethanol by increasing the blend ratio in conventional, regular gasoline from E10 to E15. The second way to address the demand gap is with ultra-low carbon ethanol. Ethanol that has had its CI score lowered through sustainable, regenerative conservation (Smart Ag) practices and through capture and sequestration of carbon from the ethanol production process. Ultra-low carbon ethanol can be a feedstock for SAF, but it can be used directly in large ocean-going marine vessels that are equipped to run on methanol or have had their fuel systems converted from dirty bunker fuels to clean-burning alcohol-based fuels. To a large extent, any ship that can burn methanol, which while cleaner burning than bunker fuel, has many undesirable side effects due to the toxicity of methanol. Whereas ethanol essentially is a drop-in replacement for methanol in the fuel systems of large vessels.

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2.3.1 The Case for Year-round E15 in the U.S.

E15 has been proven to be a reliable, viable fuel for light-duty vehicles. Led by efforts in Iowa and Minnesota, EPA-approved waivers to sell E15 year-round have now been granted to seven states – Illinois, Iowa, Minnesota, Missouri, Nebraska, South Dakota, and Wisconsin. These waivers which had been granted on a year-by-year basis at the request of the governors of these states were made permanent starting in the summer of 2025. In October of 2025, California passed Assembly Bill 30 (AB 30) which legalizes E15 in California while the California Air Resource Board (CARB) studies its full environmental impact for year-round use. With the approval of E15 in California, E15 can now be legally sold in every state, but year-round sales are still restricted during part of the year in states not covered by the permanent waiver from EPA. (Figure 12).

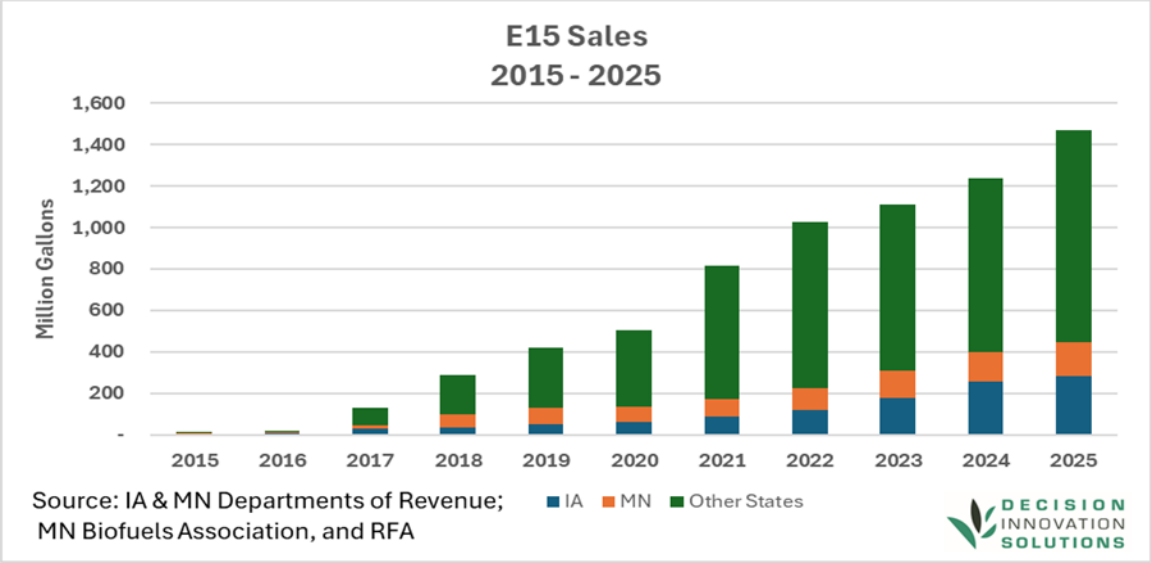

Figure 12. E15 Sales

Iowa and Minnesota led the way in early E15 sales with sales from those two states accounting for 90% of national sales in 2015. As E15 sales have increased in other Midwestern states and in selected markets around the county, the market share of IA and MN of national E15 sales has declined to about 30%. But that is still remarkable since combined they only represent about 3% of national gasoline sales (Figure 13).

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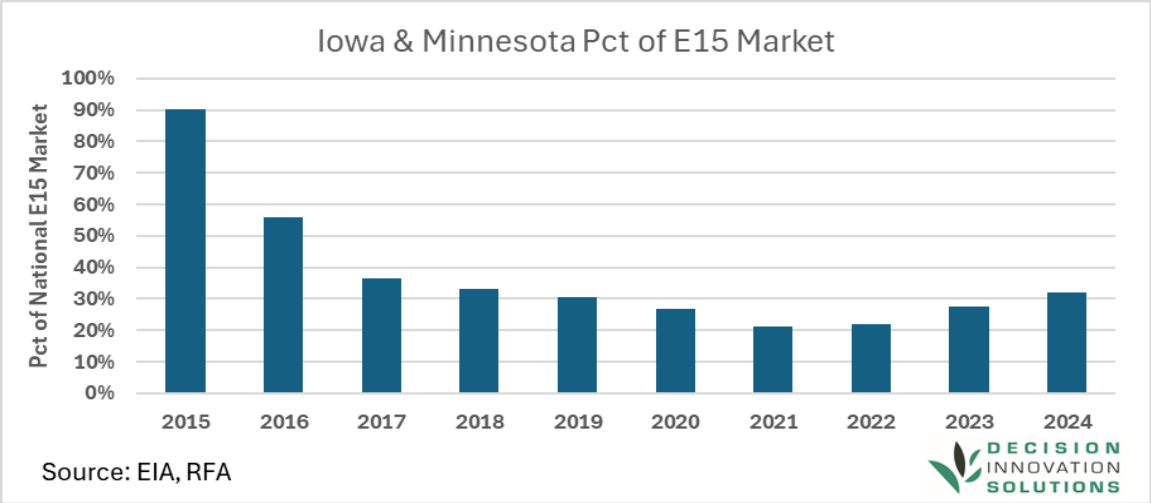

Figure 13. Iowa & Minnesota Pct of E15 Market

Figure 14 shows the penetration of E15 into the national gasoline market and the penetration rate of E15 in the combined IA-MN gasoline market. E15 had a miniscule share in both the national market and in the IA-MN market in 2015. Nationally, by 2024, E15 has approached a 1% share of the national gasoline market where it has only recently received permanent waivers in seven midwestern states and tentative approval in the California market. It is expected that with the permanent waivers now in effect in the seven states and approval in California, national sales of E15 will begin trending higher. In the IA-MN markets, where annual waivers for year-round sales have been received in recent years, and now with permanent waivers in place, growth of the market penetration of E15 has been strong with E15 market share growing by roughly 10 times since 2017 and 80 times since 2015. E15 saw 30% growth in market share in IA-MN from 2023 to 2024.

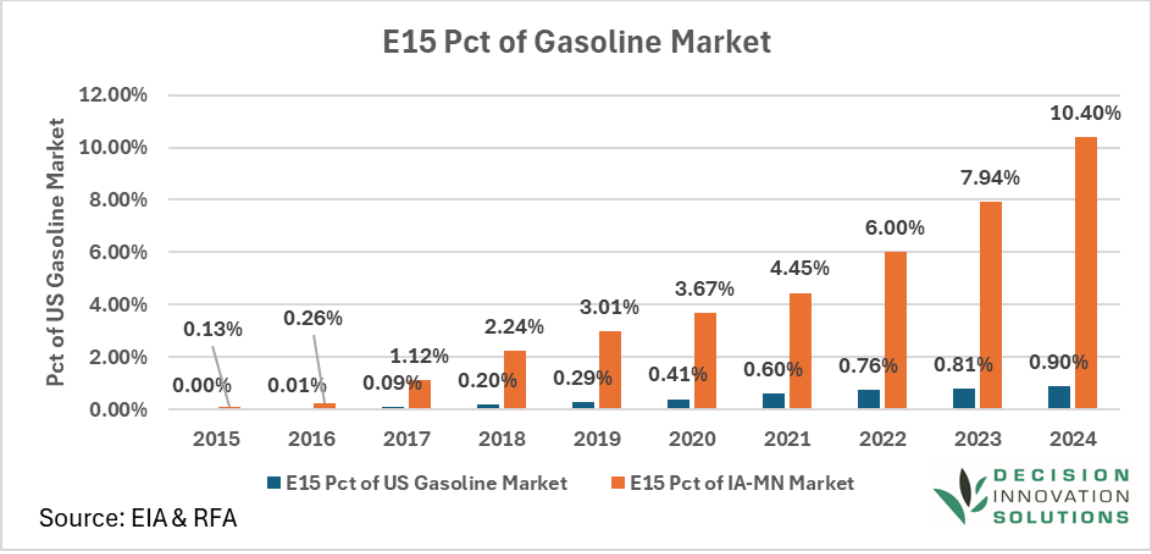

Figure 14. E15 Pct of Gasoline Market

The potential of E15 to fill the demand gap for corn if there were year-round nationwide use of E15, and a full replacement of E10 nationwide in the years of 2026 – 2030, is shown in Figure 15.

The top line shows the gap without year-round E15. With no new demand, the demand gap rises sharply into 2026 and then continues to rise as trendline yields push production faster than existing demand grows. The bottom (blue) line shows the gap in corn demand with transition to year-round E15 (based on a 5-year full transition of E10 to E15). Conversion to E15 reduces the demand gap while the transition to E15 is happening. However, after the transition to E15 is complete in 2031, the demand gap begins to build again, but with ethanol use at the higher level to support E15, the demand gap after 2031 is substantially less than it would be without year-round, nationwide E15 but Figure 15 shows that E15 is only an interim solution. Longer term, the demand gap for corn re-asserts itself unless new demand such as ultra-low carbon ethanol is allowed to flourish.

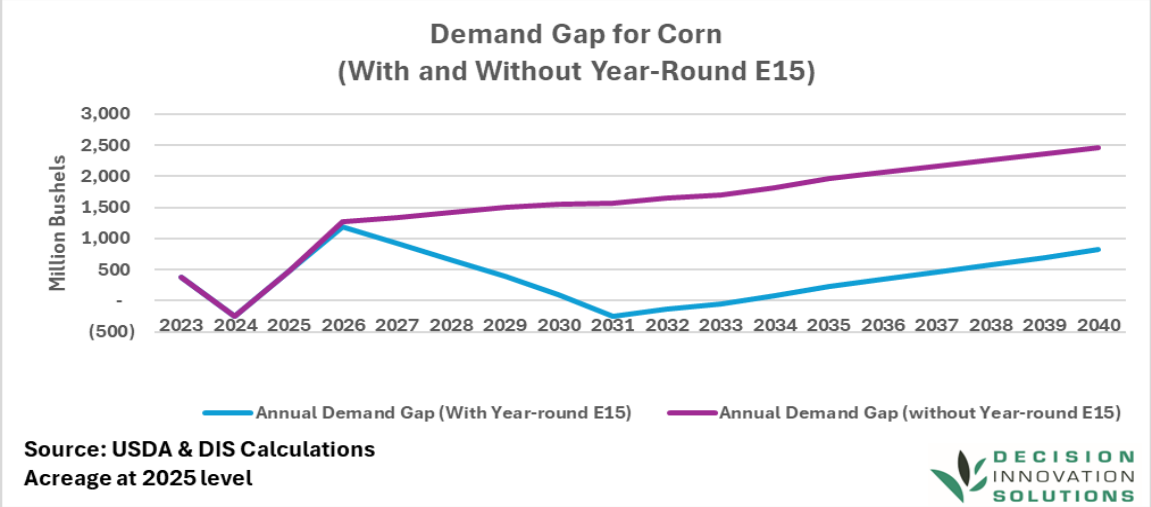

Figure 15. Demand Gap for Corn (With and Without Year-round E15

Transition to year-round, nationwide E15 reduces the demand gap while the transition is taking place and buys time for demand for ultra-low ethanol to be developed and address the demand gap that will build again once nationwide year-round E15 is adopted. Passage of legislation that facilitates year-round sales of E15 nationally would be expected to result in a relatively rapid adoption of E15 as the standard fuel blend in the U.S. Refiners and gasoline distributors would likely switch their primary gasoline blend stock to one that accommodates a 15% inclusion rate of ethanol to minimize their refinery costs and handling costs, thus speeding up the transition period in which E15 would, in essence, replace E10 as the predominant gasoline fuel blend across the U.S. E0 would retain 3 to 4 percent of the fuel market and E85 would continue to hold about 0.5% to 1% of the market. For this analysis, the transition of E10 to E15 in the marketplace is modeled as taking place over the 5-year period from 2026 through 2030 (Figure 16). Total gasoline use modeled as a 15% reduction from 2025 to 2050.

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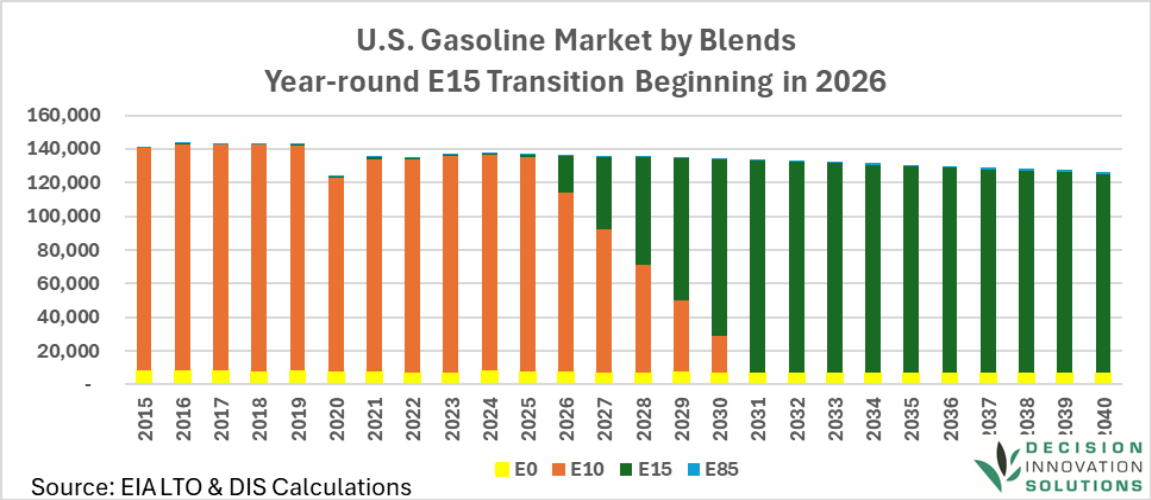

Figure 16. U.S. Gasoline Market by Blends, Year-round E15 Transition Beginning in 2026

The ethanol consumption that would result from a full transition to E15 is based on the assumption that total gasoline demand declines by 15% from 2025 to 2050. Based on that assumption, and the assumption that ethanol producers in the U.S. will make 2.9 gallons of ethanol from each bushel of corn for the years 2026 through 2040, ethanol production would grow from 16,240 million gallons in 2025 to 22,357 million gallons in 2031 before beginning to trend downward again as total gasoline consumption declines as more of the automotive fleet transitions to electric vehicles and hybrids and as vehicle miles-per-gallon continue to improve (Figure 17). During the transition to E15, ethanol exports were modeled at two billion gallons per year.

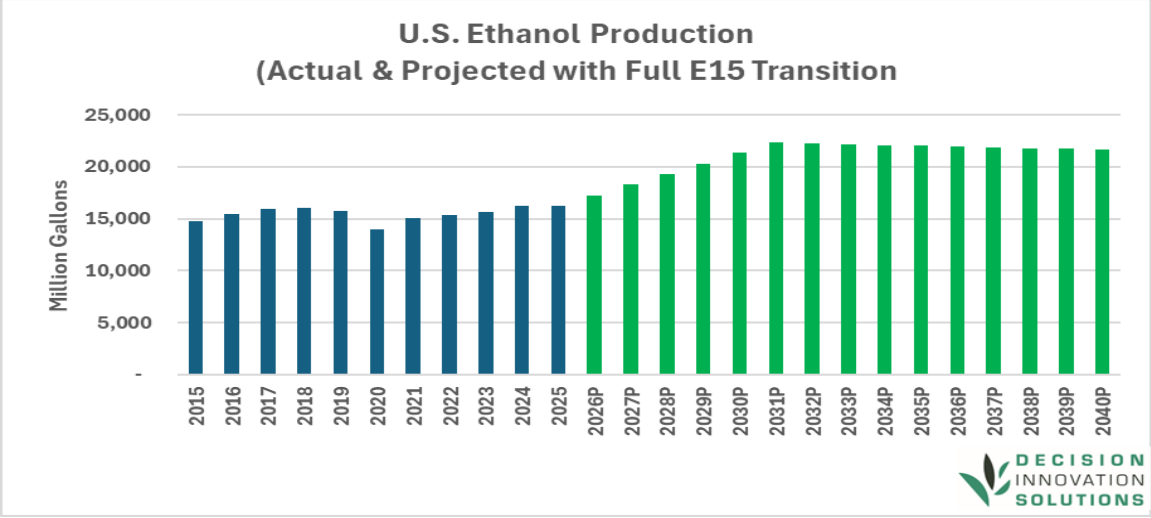

Figure 17. U.S. Ethanol Production (Actual & Projected with Full E15 Transition)

Converting the gallons of ethanol into corn usage, would result in corn use for ethanol climbing from 5,600 million bushels in 2025 to 7,709 million bushels in 2031 and then declining to under 7,470 million bushels in 2040 as fuel use declines (Figure 18).

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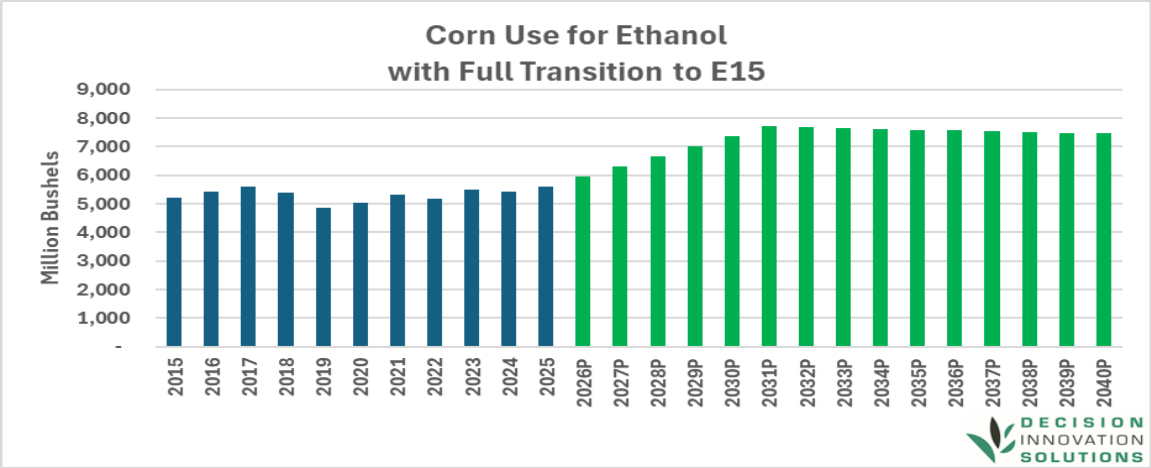

Figure 18. Corn Use for Ethanol (with Full Transition to E15)

Figure 19 shows the comparison of corn use for ethanol with a 5-Yr transition to year-round, nationwide E15 versus the baseline corn use for ethanol in the USDA LTO.

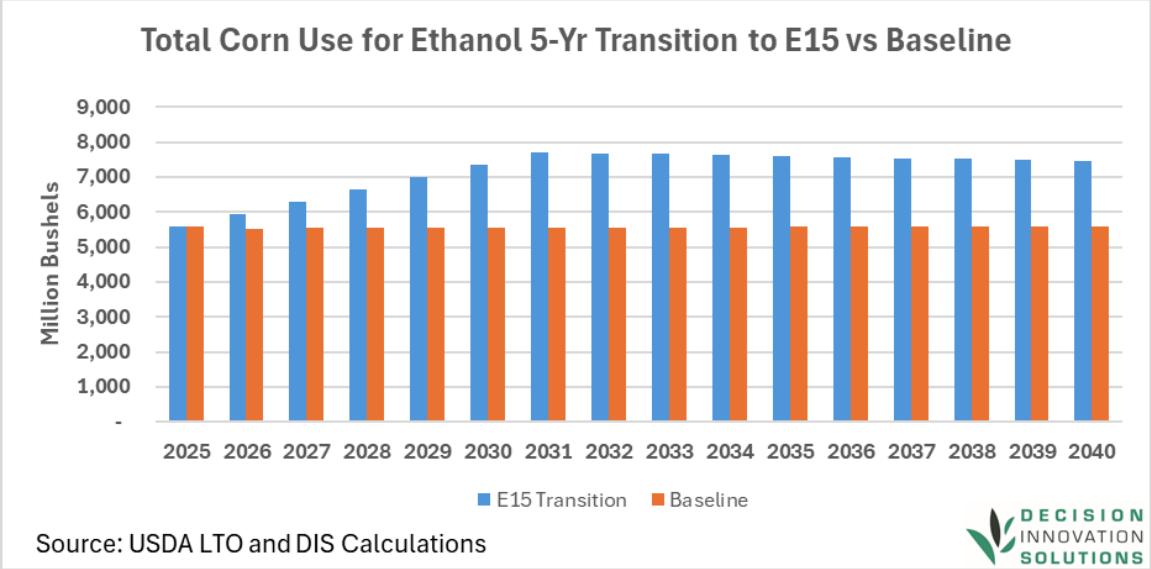

Figure 19. Total Corn Use for Ethanol 5-Yr Transition to E15 vs Baseline

As shown in Figure 20, if corn acreage is held at 2025 levels and trendline yield conditions prevail, there is more than enough corn to support the additional ethanol production that would be required in a year-round E15 scenario.

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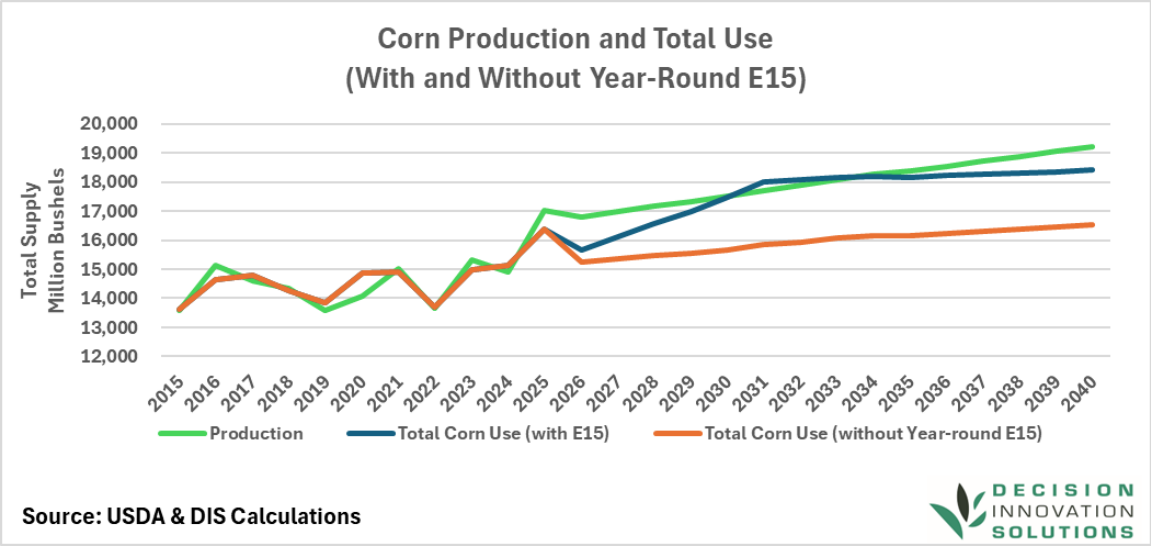

Figure 20. Corn Production and Total Use (With and Without Year-round E15)

In fact, even with the additional corn demand for year-round E15, a demand gap continues to build beyond 2031 as trendline corn yields push annual production above 19 billion bushels by 2040 and more than 20.9 billion bushels per year by 2050. The extra corn demand provided by E15 helps narrow the demand gap, but with corn acreage at 2025 levels and trendline yields, a demand gap exists that would still need filled with new markets after 2033 (Figure 21).

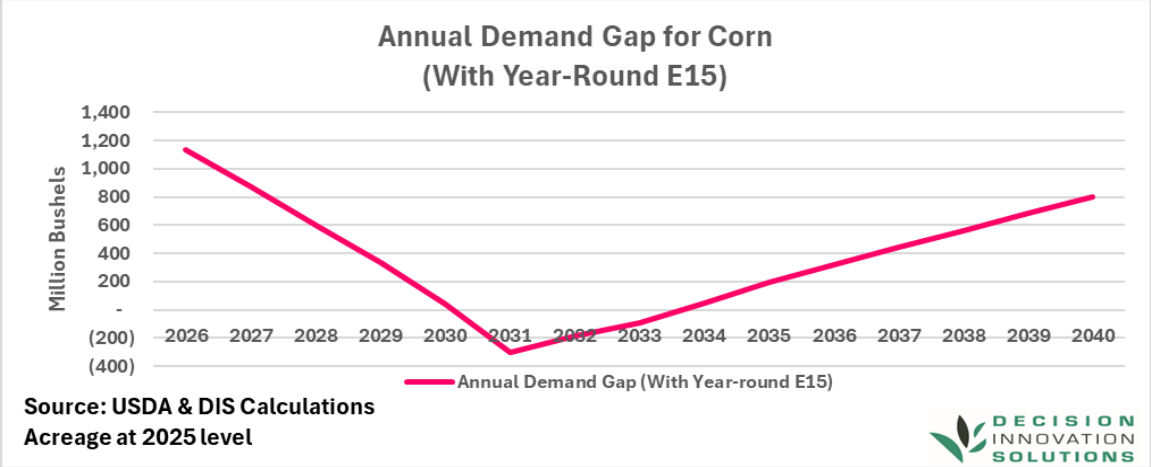

Figure 21. Annual Demand Gap With Year-round E15

The promising, large, new markets require ultra-low carbon ethanol. Ultra-low-carbon ethanol could be used as marine fuel or as a feedstock for Ethanol-to-Jet (ETJ) sustainable aviation fuel (SAF). Currently there are ten ethanol plants that are actively capturing and sequestering CO2 from about one billion gallons of annual ethanol production capacity. When all twelve plants are connected to the Trailblazer pipeline (converted from natural gas to CO2 transport), there will be about 2.2 billion gallons of ethanol per year from ethanol plants that will be ultra-low carbon. As they collect 45Q or 45Z tax credits for carbon sequestration and/or ultra-low carbon ethanol production, they will have roughly 60 cents per

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gallon advantage over ethanol plants (such as those in Iowa) that do not have access to carbon capture and sequestration.

With regards to addressing the demand gap for corn, the potential production of ultra-low carbon ethanol offers a pathway for addressing the gap. The corn that is not used for feed, food, conventional ethanol, or exports could be converted to ultra-low-carbon ethanol.

Figure 22 shows current and potential ultra-low carbon ethanol production beyond the conventional ethanol that is already being produced. From one billion gallons per year in 2025, ultra-low carbon ethanol could grow to more than six billion gallons per year by 2040 (assuming ending stocks being held to 1.5 billion bushels per year). In addition, with widespread CCS technology available, much of the current conventional ethanol production could also be converted into ultra-low carbon ethanol further reducing the environmental footprint of ethanol blended fuels.

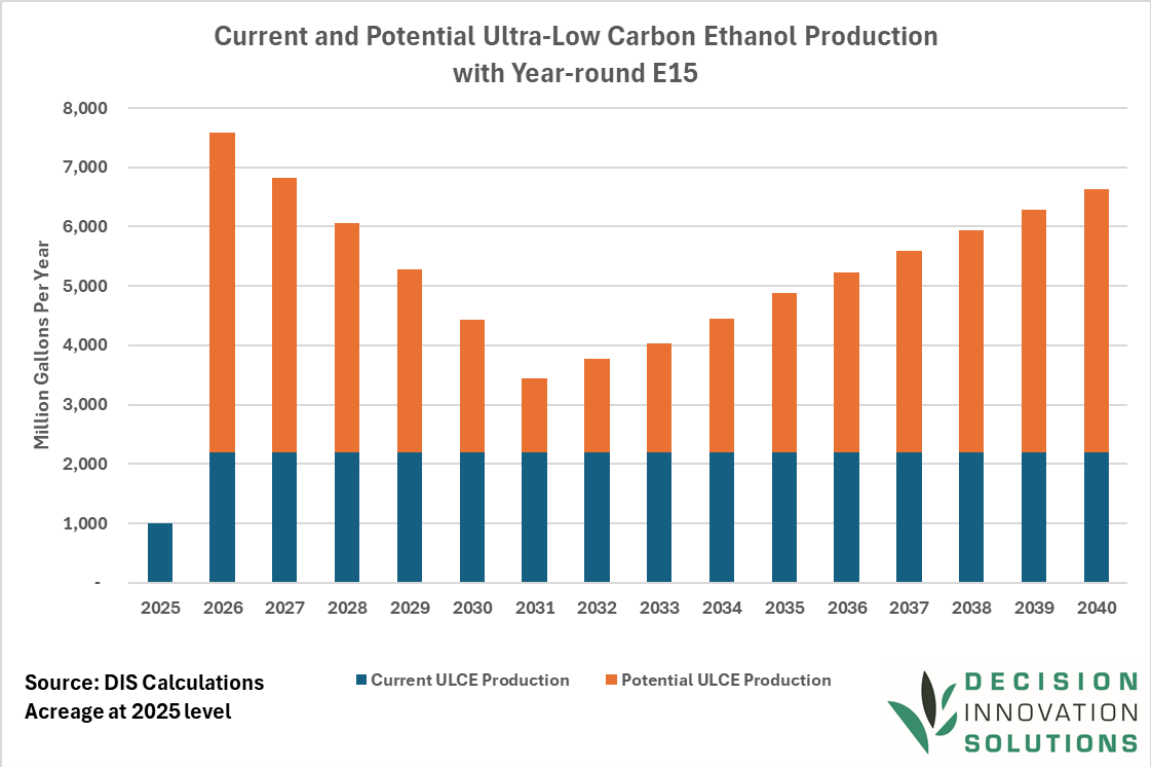

Figure 22. Current and Potential Ultra-Low Carbon Ethanol Production

Ultra-low carbon ethanol can be used directly as a replacement for marine fuel. It can be a very competitive feedstock for SAF. If all the ultra-low carbon ethanol were used for SAF, by 2030 nearly 2 billion gallons of ETJ-SAF could be produced (providing about 5.7% of U.S. jet fuel use). By 2040, nearly 2.9 billion gallons of ETJ-SAF could be produced (Figure 23). In reality, some of the ultra-low carbon ethanol would be used to reduce the CI score of light-vehicle fuels, some would be used for ocean-going marine vessels, and some would be used for ETJ-SAF. But for this potential to be unlocked, widespread

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CCS technology needs to become a reality for ethanol production located in the U.S. and particularly in Iowa.

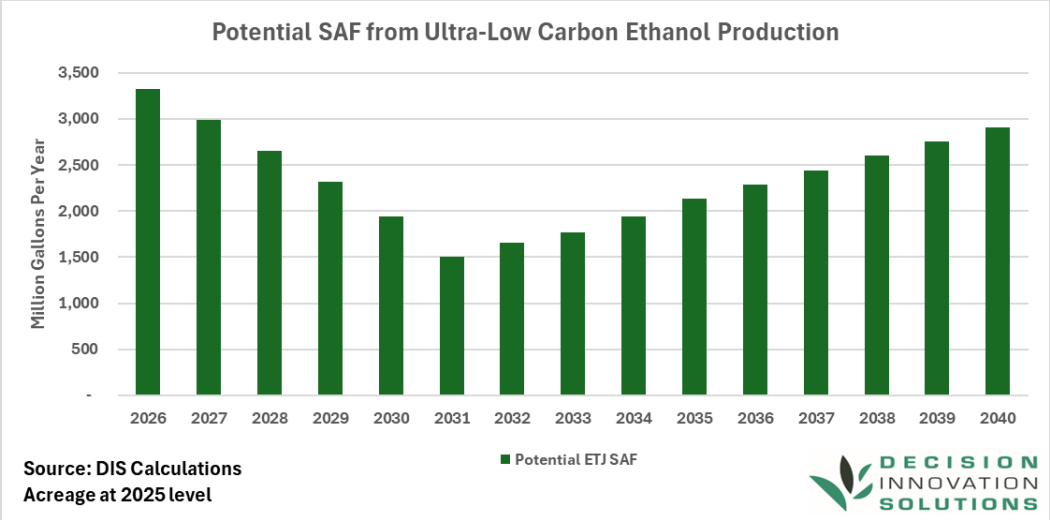

Figure 23. Potential SAF from Ultra-Low Carbon Ethanol Production

As noted in Figure 24, transition to E15 alone is insufficient to ensure profitable prices for the corn that would be produced with acreage held at current levels and with trendline yields. Figure 24 shows the amount of corn that would require new market demand. Cumulatively, there is nearly 3.1 billion bushels of corn that needs "new demand" between now and 2030 if acreage is maintained at current levels and trendline yields are realized. And, from 2034 to 2040 there is another 3.2 billion bushels of corn that will need "new demand" just to hold corn at $4 per bushel with current acreage and trendline yields. The demand from nationwide, year-round E15 buys time for other new demand to develop, and it is an essential part of the demand package, but more demand is needed beyond the that provided by E15.

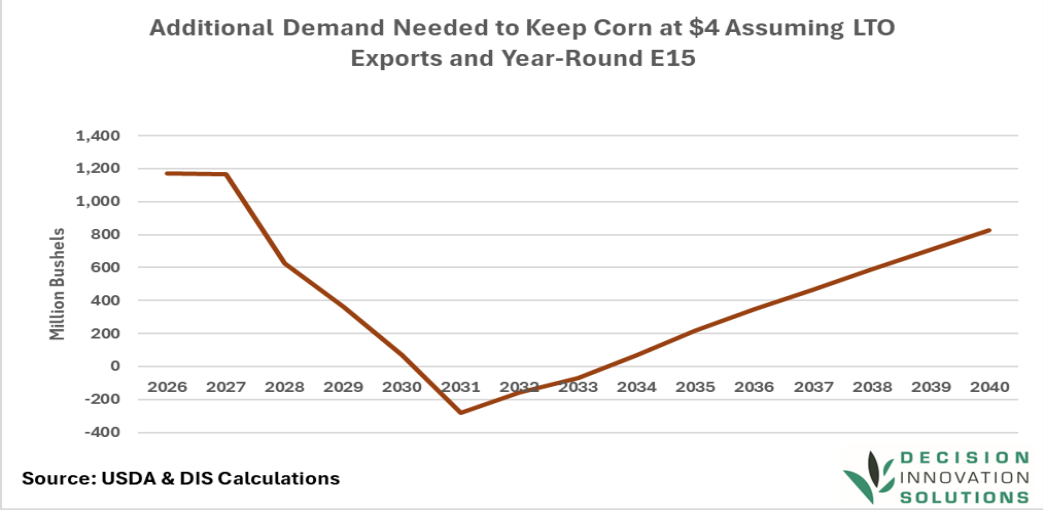

Figure 24. Additional Demand Needed to Keep Corn at $4 Assuming LTO Exports and Year-round E15

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But a brighter future is available if new demand for corn is realized. Instead of cutting acres to maintain price, and downsizing the whole corn industry, enabling new demand opportunities to be realized at 2025 acreage levels through year-round E15 and expansion of corn demand through ultra-low carbon ethanol, farmers could get their returns from the market as shown in Figure 25. This is the price path associated with holding stocks at two billion bushels per year while expanding demand sufficiently to use the production from trendline yields and acreage at 2025 levels. It is a brighter future, indeed, especially when compared to the dire alternative of cutting acreage, relying on ARC/PLC programs, and stressing out each year under the pressure of rising ending stocks and constant price pressure.

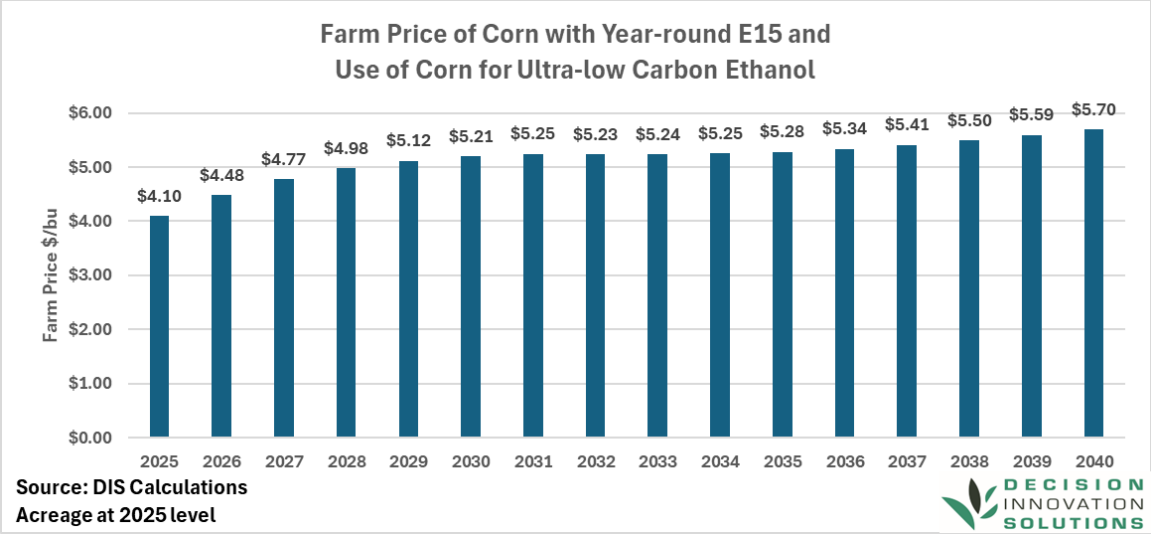

Figure 25. Farm Price of Corn with Year-round E15 and Use of Corn for Ultra-low Carbon Ethanol

2.4 New Demand for Ultra-low Carbon Ethanol

2.4.1 Marine Fuel

The international marine industry is under increasing pressure to decarbonize. Historically reliant on low-cost bunker fuel, the International Marine Organization (IMO) is working to reduce both harmful emissions and carbon emissions from ocean going vessels. Representatives from around the world recently met to discuss and adopt international regulations on emissions from oceangoing vessels. The proposed regulatory program developed by IMO is known as “Net Zero Framework” and operates similarly to a low-carbon fuel standard for highway vehicles, except it is focused on marine vessels. Incentives are an integral part of the program, but ultimately mandated emissions reductions and other programs are apt to be incorporated into the plan. The primary driver to switch from cheap bunker fuel to other fuels is the desire to reduce carbon. With this in mind, ultra-low carbon ethanol is attractive since it provides the greatest GHG reductions for the price.

Marine vessels are looking at several pathways to accomplish this goal. Orders for new ships have seen a dramatic uptick in the number fueled by LNG and methanol. Despite the great hopes in many counties that “green methanol” projects would be developed rapidly to meet this demand, several have been delayed or scrapped altogether. Given the likely shortage of “green” methanol, engine builders are

increasingly testing and certifying their “methanol” engines on ethanol. In most cases, ethanol can be used with no modifications.

The U.S. ethanol industry sees the IMO Net-Zero Framework as an enormous potential market opportunity for American-made renewable fuels produced from American-grown crops like corn, sorghum, and soybeans. How enormous? Well, the ships that would be subject to the IMO regulations typically consume roughly 70–80 billion gallons of fuel per year worldwide and as shown in Figure 26 the U.S. market is about 6.1 billion gallons per year.

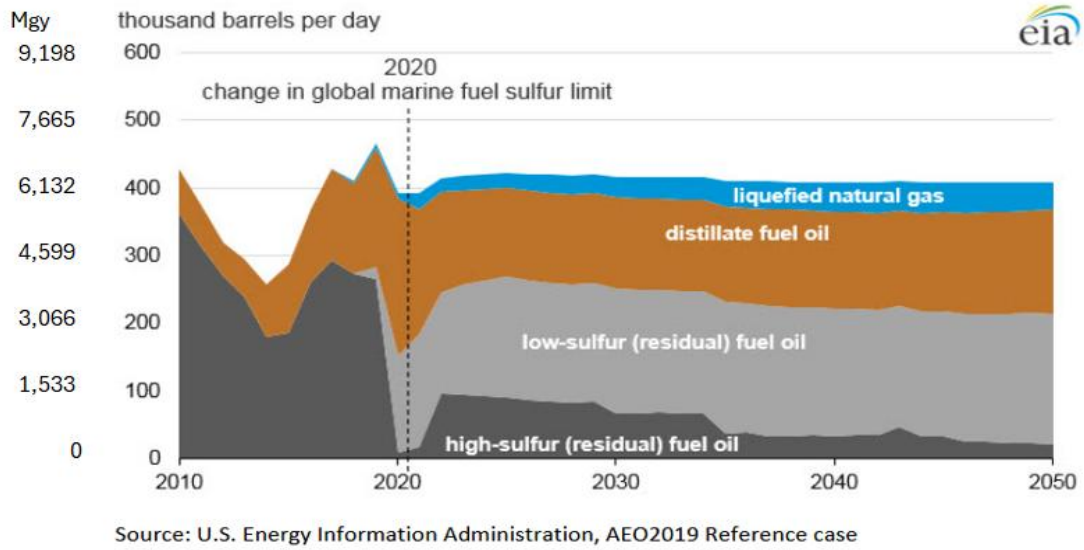

Figure 26. International Marine Shipping Fuel Consumption by Ocean-going Vessel Bunkering at U.S. Ports

The transition in fuel type that is going on in the marine industry offers opportunities for ultra-low carbon fuels. While this data is a projection from the 2019 Annual Energy Outlook 2019 Reference Case (EIA) it is very representative of the transition happening globally. To date, the alternative fuels are just a small piece of the fuel mix, but that segment is growing and ultra-low carbon ethanol has an opportunity to be a part of this market. Ultra-low carbon ethanol could potentially fill a billion gallons per year in the U.S. marine market and even a 5% penetration of the global market could represent 3.5 to 4.0 billion gallons per year market for ultra-low carbon ethanol while simultaneously increasing corn demand by 1.5 billion bushels or more[3].

[3] Clean Marine Fuels Are an Enormous Market Opportunity for U.S. Biofuels and Ag – Don’t Let it Sink, Geoff Cooper, RFA President and CEO, October 13, 2025.

2.4.2 SAF

While U.S. policy has pulled back on SAF, airlines continue to work to meet international standards and the increasing proliferation of SAF mandates in various countries. In a 2024 report produced by DIS[4] pathways for HEFA-based SAF (HEFA) and corn-ethanol-based SAF (ETJ) were projected based on the assumptions that public policy would support transition of jet fuels to low carbon fuels.

In that report it was projected that by 2040 more than 2,600 million gallons of ETJ-SAF could be produced used as jet fuel in 2040 if the goals of the SAF Roadmap were to be fulfilled (Figure 27). As noted in Figure 23, with updated acreage data, increased trendline yields for corn, and EIA forecasts of declining gasoline usage, the potential ETJ-SAF that could be produced in 2040 is now estimated to be more than 8 billion gallons per year.

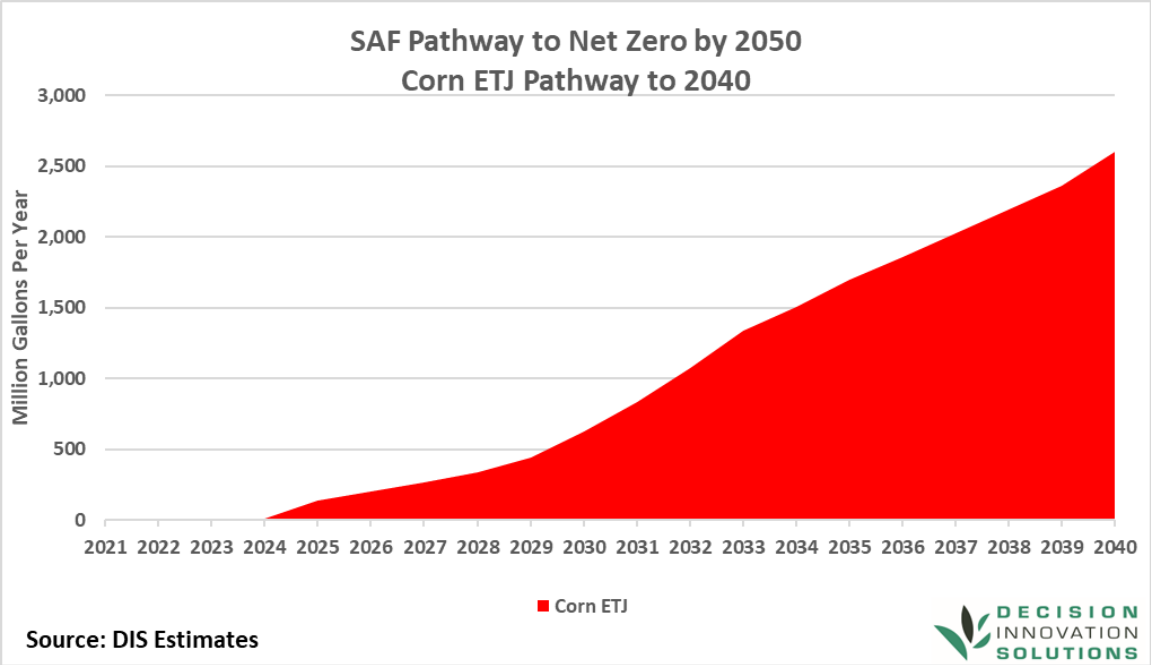

Figure 27. SAF Pathway to Net Zero by 2050, Corn ETJ Pathway

Progress is being made, but it is lagging behind the projections of the original pathway. In 2024, 112 million gallons of SAF were produced. Part way through 2025, SAF production increased to 237 million gallons and is likely to reach 300 million gallons. Figure 28 shows a comparison of current estimates of potential ultra-low carbon ethanol production potential with 2025 acreage, trendline yields, year-round E15, and declining future gasoline use versus the estimates of just a couple years ago. There is substantially more corn available in the current estimates for conversion to ultra-low carbon ethanol

[4] Sustainable Aviation Fuel for the Future: What Does the Midwest Have to Gain, January 2024, Prepared for the Iowa Renewable Fuels Association by Decision Innovation Solutions

than was forecast just a couple of years ago. The demand gap is getting larger, and the market wants ultra-low carbon ethanol.

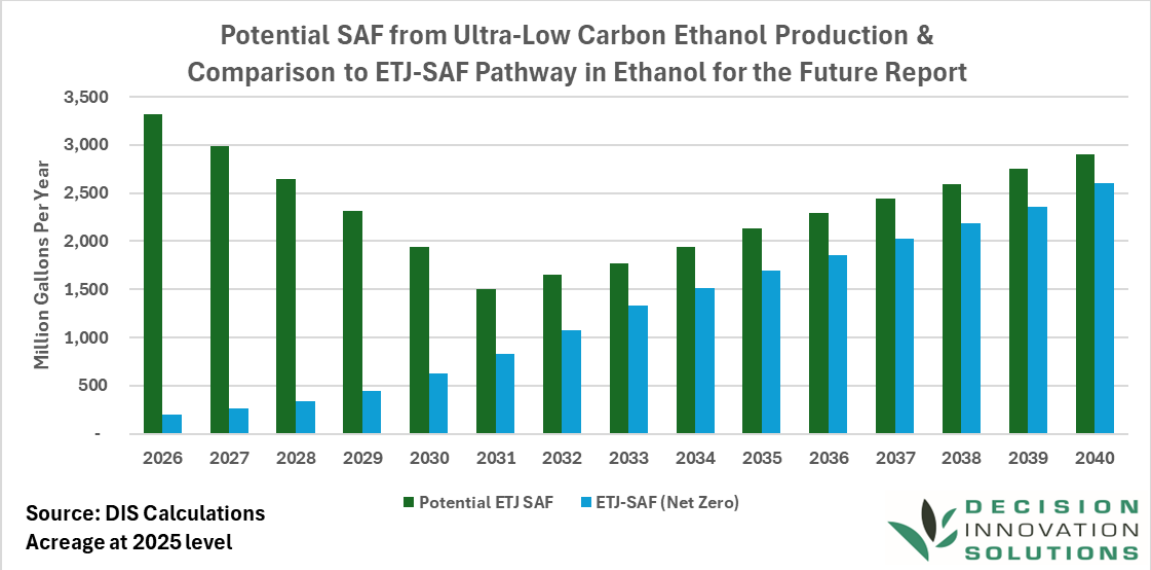

Figure 28. Potential SAF from Ultra-low Carbon Ethanol & Comparison to ETJ-SAF in Ethanol for the Future Report

With the reduction of the Section 45Z tax credit for SAF that was included in the OBBBA, there is less incentive to ramp up ETJ-SAF production in the near term. Tax policy currently favors production of renewable diesel (RD) rather than SAF. By 2030, the original SAF pathway projected 623 million gallons of ETJ-based SAF (which implies 322 million bushels of corn use for SAF) and 5,588 million gallons of ETJ-based SAF by 2050 which implies the use of 2,890 million bushels of corn for ETJ-based SAF (Figure 29). SAF production is lagging behind the pathway laid out in the roadmap but as the SAF market is pushed forward by the airlines, the opportunity for ultra-low carbon ethanol to participate needs to be not only enabled but encouraged. While there is more corn available for ultra-low carbon ethanol and SAF than is actually being produced, with the right incentives, the potential for SAF to address the demand gap in corn is significant.

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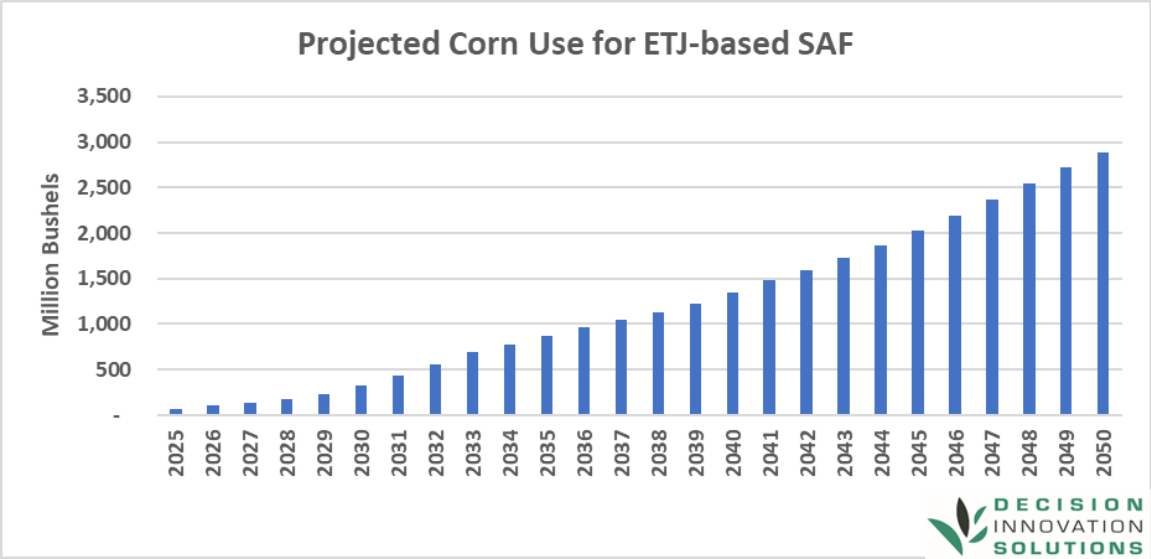

Figure 29. Projected Corn Use for ETJ-based SAF

Unlocking this potential new use for corn for ultra-low carbon ethanol feedstock for SAF can be a vital element of the demand that is needed for corn both now and especially beyond 2030 if year-round E15 is enabled. Year-round E15 buy the time needed for the infrastructure that is needed to enable large volumes of ultra-low carbon ethanol to be produced.

Currently, Nebraska has the edge. The transition of the Trailblazer pipeline to a CO2 pipeline is already operational with several ethanol plants in Nebraska producing ultra-low carbon ethanol. The twelve ethanol plants that are part of the Trailblazer pipeline system will have production capacity of 1.46 billion gallons of ultra-low carbon ethanol once all the plants are connected to the pipeline. That is enough ultra-low carbon ethanol for approximately 640 million gallons of SAF and will be enough to jump-start the ETJ-based SAF industry in the U.S. But to realize the objectives of the SAF Roadmap, there will need to be transformations of existing ethanol production capacity in Iowa, Minnesota, South Dakota, and other Midwestern states to ultra-low carbon ethanol. That requires carbon capture and sequestration (CCS), which is most economically, and most safely accomplished via pipeline transfer of carbon dioxide from ethanol production.

2.5 What Does This Mean for Iowa?

Iowa leads the nation in corn production. In 2025, Iowa produced 2,772 million bushels of corn, accounting for 16.8% of U.S. corn production (Figure 30).

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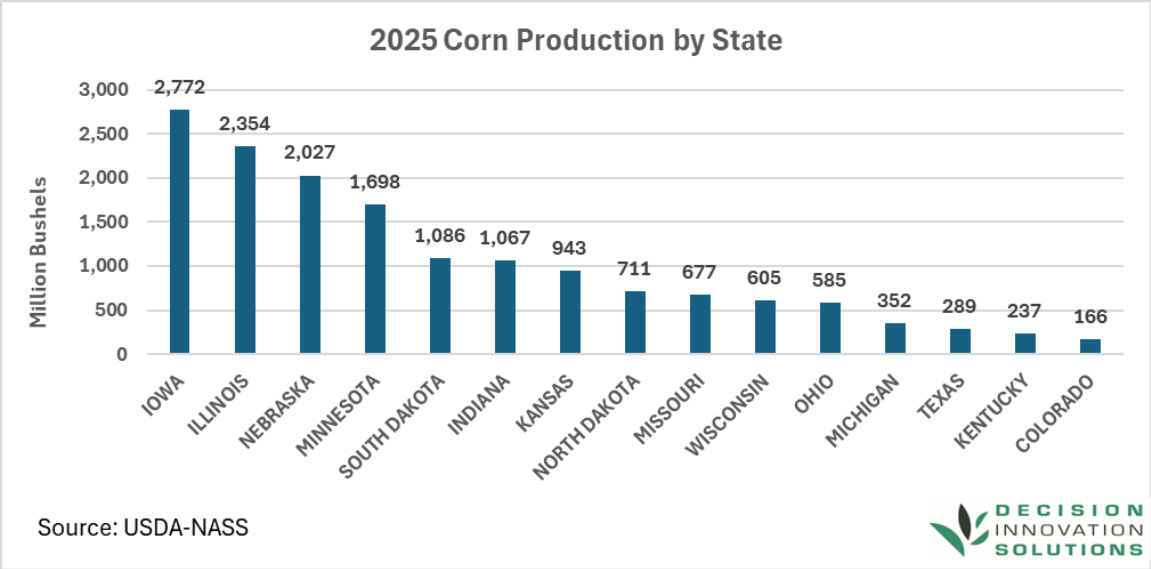

Figure 30. 2025 Corn Production by State

Iowa production is highly correlated with corn yields (Figure 31). Acreage fluctuates some, but most of the variation in corn production in Iowa is related to changes in yield. The trendline corn yield in Iowa is increasing by 2.31 bushels per acre per year, nearly 15% faster than the national corn yield trend. Corn production is trending up by 34.5 million bushels per year with most of that upward push attributed to increases in yield. In fact, acres planted to corn In Iowa in 2025 were slightly less than the average corn acres planted during the period of 2007 through 2020.

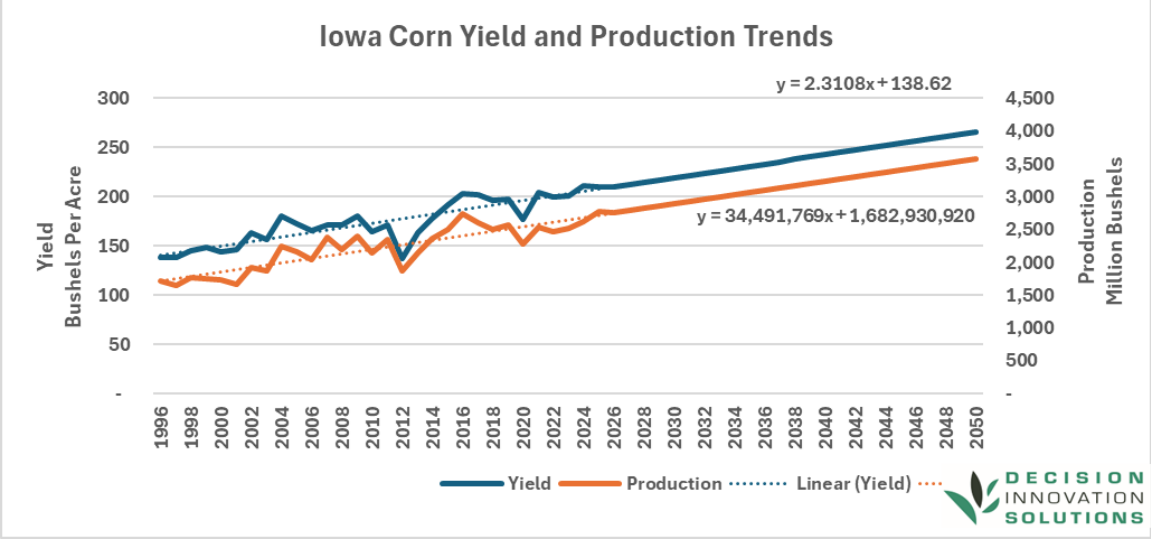

Figure 31. Iowa Corn Yield and Production Trends

Corn used for ethanol in Iowa was 1,563 million bushels in 2025, which was 59.5% of the 2024 Iowa corn crop. Trendline use of corn for ethanol in Iowa (based on usage from 2016 through 2025) is growing at

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the rate of 15.2 million bushels per year (Figure 32), that is less than half the growth rate of annual corn production in Iowa per year.

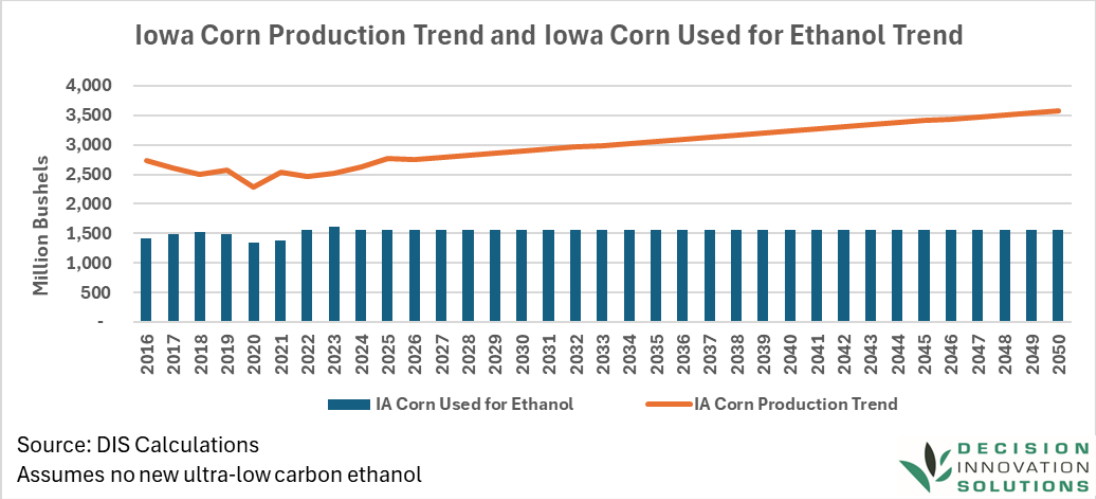

Figure 32. Iowa Corn Used for Ethanol and Projected Trend

The gap between production and the number one usage of corn in Iowa narrowed as the ethanol industry in Iowa was built. It stabilized at about 1 to 1.2 billion bushels as the industry matured. But now, without new demand for ultra-low carbon ethanol, it is projected that the gap between Iowa corn production and Iowa corn use for ethanol could widen back to where it was when the first dry mill ethanol plant was built in Iowa (Figure 33). What that means is that without new ultra-low carbon ethanol production, corn demand essentially has to come from increased livestock production in Iowa or increased corn exports. Unfortunately, the forward growth rates in feed demand and exports is likely to significantly lag behind the growth rate of yields.

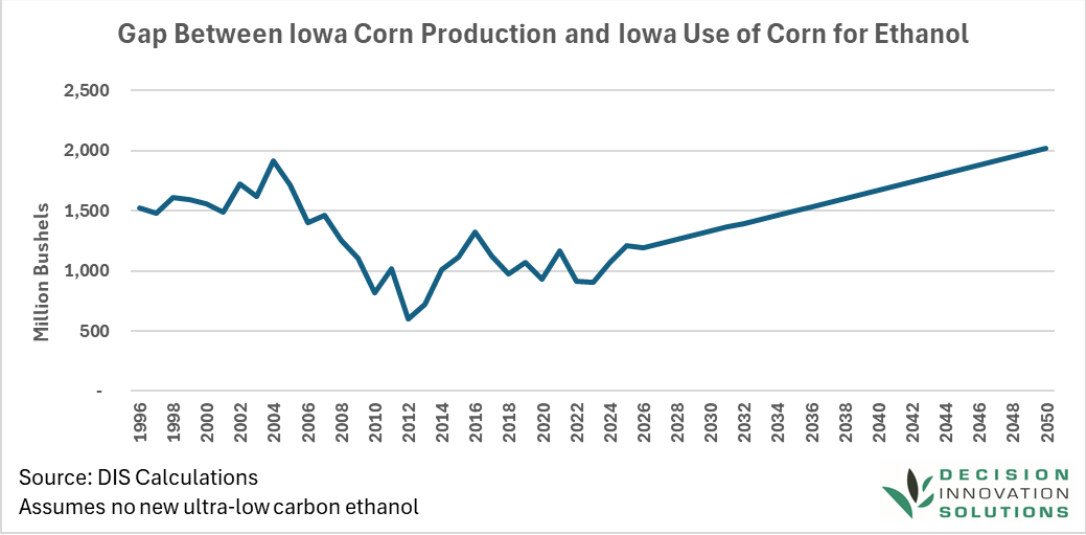

Figure 33. Gap Between Iowa Corn Production and Iowa Use of Corn for Ethanol

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One way to assess the impact of the widening gap between production and corn use for ethanol in Iowa is to look at the Stocks-to-Ethanol Use Gap ratio and plot it against the price of corn in Iowa (Figure 34). As noted in the figure, a gap of 1.2 billion bushels in Iowa is associated with a $4 corn price in 2025. In 2004, the gap between production and ethanol use was 1,910 million bushels. In 2010, as both corn production and ethanol production were ramping up, the gap was just over 800 million bushels.

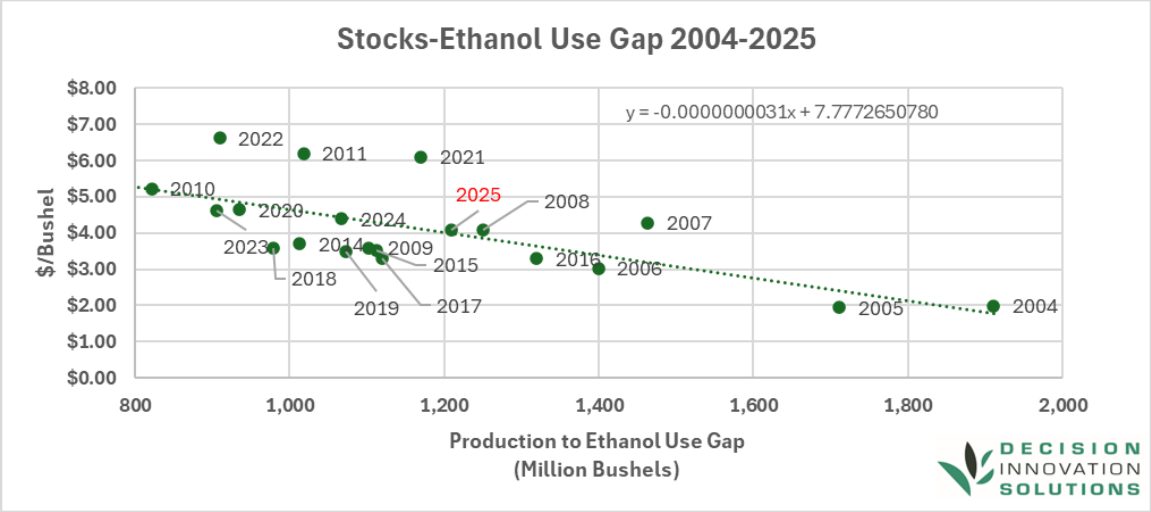

Figure 34. Stocks-Ethanol Use Gap (2004 - 2025)

By 2050, without new demand from ultra-low carbon ethanol, the gap could rise to 2,017 million bushels and the price of corn associated with that is estimated at $1.52 per bushel (Figure 35).

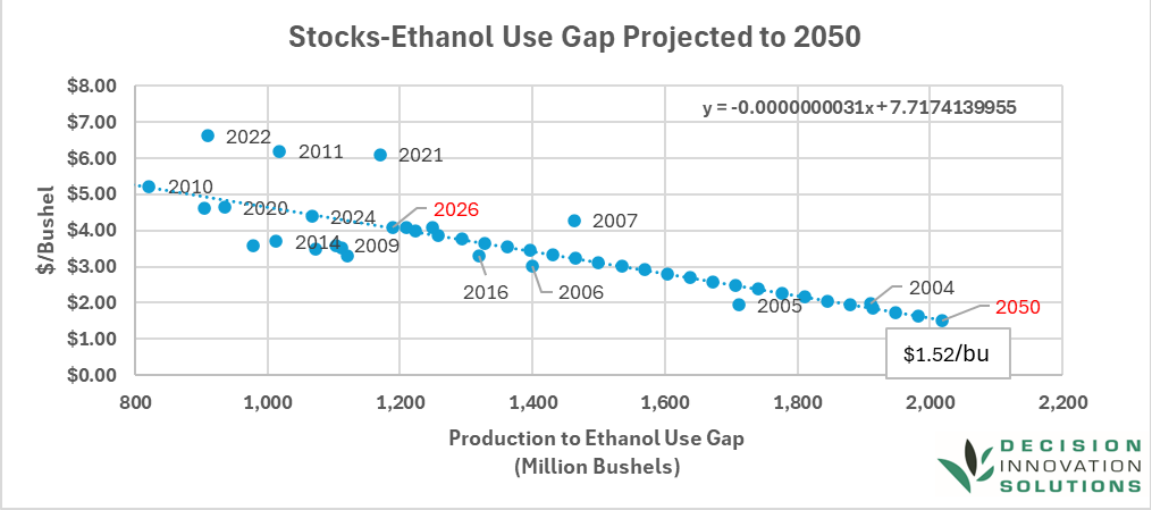

Figure 35. Stocke-Ethanol Use Gap Projected to 2050

In summary, Iowa corn farmers face daunting times ahead if new demand, especially from year-round E15 and ultra-low carbon ethanol do not happen. It is highly likely that trendline yields will continue to push corn production higher. It is also likely that livestock feeding and exports will face many headwinds in the coming years. Every 10 cents per bushel for corn means $277.2 million in gross farm income in

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Iowa and by 2050 will likely mean $357 million in gross farm income for Iowa. Corn price under $2 per bushel has happened before; it could happen again. A drop of $2.50 per bushel would erase $6.9 billion in gross income from corn farmers in Iowa using 2025 production. In 2050, it could be nearly $9 billion per year. On the other hand, with year-round E15 and ultra-low carbon ethanol, Iowa corn prices could return to profitable levels as shown in Figure 25. The time to build new demand is now. The pathways to do so are clear.

2.6 Summary

With trendline yields pushing corn production to new record highs, new demand drivers are needed to support and sustain the economic drivers in the Cornbelt that are provided by corn production. Lowering acreage by 10% as forecast by the USDA LTO will significantly weaken the rural economies that rely on the associated activities of corn production.

Without year-round E15, the demand gap gets very large very quickly. By 2034 we could be facing ending stocks that are nearly as large as a full year's worth of demand (15+ billion bushels). With the passage of policies that would support and encourage the adoption of year-round E15, the rapid downsizing of the rural economy that is built on activities related to maintaining corn acreage can be avoided for a while. In the long-run, the fantastic productivity of U.S. corn farmers and the adoption of technologies that are supporting and sustaining growth in trendline yields means that reliable demand beyond E15 is also needed. Fortunately, there are attractive new markets developing that are large enough to provide the demand that America's farmer so desperately need. Ultra-low-carbon ethanol would be very attractive to the internation marine industry and could be a major feedstock for low-carbon liquid fuels and SAF. Year-round E15 now buys the time needed for additional infrastructure and industrial development to occur so that ultra-low carbon ethanol can be a significant and long-term marine fuel and feedstock for SAF. The long-term economic viability for corn growers depends on access to these markets.

2.7 Policies Needed to Address the Demand Gap for Corn

1. **Congressional approval of nation-wide year-round E15.** Permanent waivers in seven states is insufficient. A loud, strong message needs to be sent by Congress that domestic, home-grown E15 is ready to be facilitated and supported on a permanent year-round basis. This will spur the fuel refineries, blenders, and distributors to quickly adopt E15.
2. **Reinstatement of the 45Z production credits for SAF** at the levels they were at prior to the OBBBA. The Energy Department laid out the roadmap for transformation of the U.S. aviation fuel market to reduce emissions and become a world leader in development and adoption of low-carbon aviation fuel. In the early years of development of this new, exciting fuel market, the $1.75/gallon tax credit is needed for SAF. Congress needs to restore the credit levels that were in place before OBBBA. Further, Congress must recognize that ethanol can be both a qualifying 45Z fuel and a feedstock for qualifying 45Z SAF. Congress must modify the current 45Z structure to ensure that there is not an unintended disincentive to use ethanol as a feedstock for SAF, instead of just as a fuel itself.

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3. **Carbon capture and sequestration (CCS).** Low-carbon ethanol throughout the Midwest needs to be facilitated by adoption of rules and regulations that will allow for the safe and economical capture, transport, and sequestration of CO2 from ethanol plants. A small, first step is already underway in Nebraska with the transition of the Trailblazer pipeline to a CO2 pipeline. With plans to service eleven ethanol plants in Nebraska and one in Iowa, this project will facilitate early development of enough low-carbon ethanol that the domestic ETJ pathways for SAF can be developed and built. But twelve ethanol plants on a pipeline is just the beginning. There are 50 to 70 more ethanol plants that are waiting in the queue for their opportunity to lower the carbon intensity score of their fuel and be enabled to be an attractive option for marine fuel and/or a viable feedstock of the future for SAF.
4. **Conservation Smart Agriculture (CSA).** USDA, U.S. DOE, and U.S. Treasury should finalize rules for 45Z that recognize the carbon reducing impact of CSA agronomic practices. Previous tentative steps in this direction should be more robust. The full suite of CSA practices should be recognized and full credit to farmers should be provided. Previous efforts that caved to pressure from anti-farmer groups should be abandoned for a science-based approach. Through the full recognition of CSA practices, the government can provide farmers an enhanced revenue opportunity while also empowering ethanol producers with another tool to produce the ultra-low carbon ethanol coveted by growing markets around the world.

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3 Appendix

3.1 Scenario: Acreage at 3-Year Average for 4 years, then holding acreage at the 2025 level beyond 2031.

The latest WASDE report shocked the markets with corn production over 17 billion bushels in 2025. Given that cash corn prices are less than $4 across much of the Cornbelt, the reality is that corn acreage is likely to fall in 2026 and even if the transition to E15 started today, it will take several years for the new demand to cut into the demand gap.

S&P Global projects[5] that farmers will plant approximately 95 million acres of corn for the 2026 season with much of that reduction being shifted to soybean acreage (current S&P Global estimate of 84.5 million acres of soybeans). The 3-year average of planted corn acreage is 94.8 million acres with 86.4 million acres likely to be harvested for grain. Using the 3-year average of corn acreage for 4 years while year-round E15 is phased in, still results in sharply lower corn prices for the next 3 years as ending stocks build to nearly 2.7 billion bushels before the extra demand from year-round E15 is sufficient to start using up the corn stockpile. Then beginning in 2030 corn acreage would begin to rise back towards the level of plantings in 2025, reaching 98.8 million acres in 2032 (Figure 36).

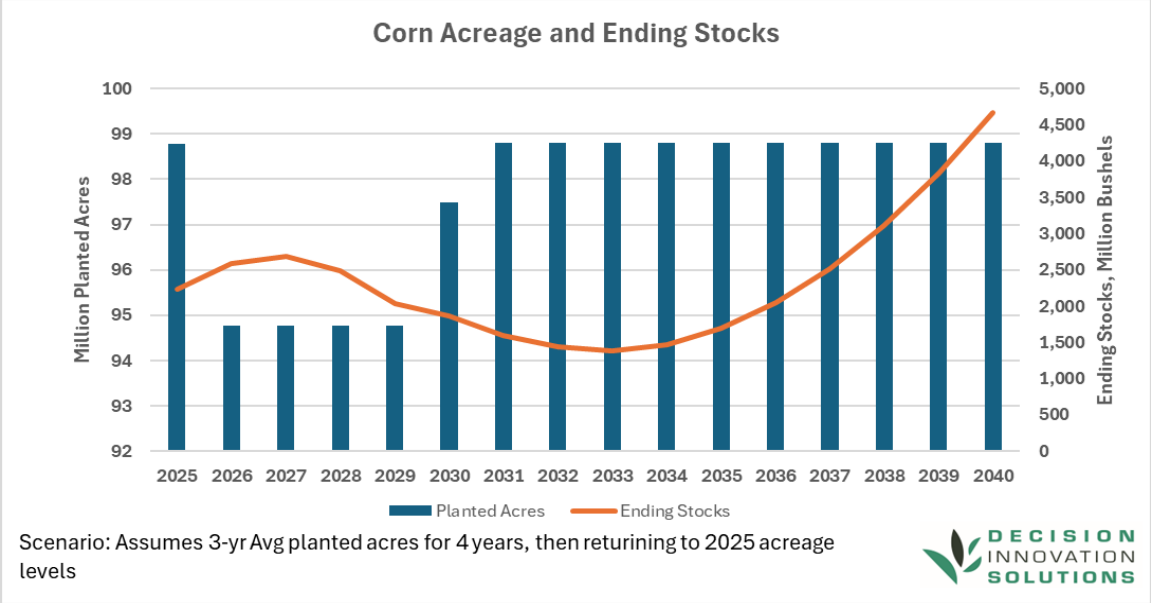

Figure 36. Corn Acreage and Ending Stocks (3-Yr Average of Planted Acres for 4 Years, then Acreage Adjusting back to 2025 levels)

[5] https://www.facebook.com/groups/agchat1/posts/2489608691459298/ with reporting by Julie Ingwersen of Reuters.

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Maintaining corn acres at the 2025 level beyond 2031 highlights the need for new demand for corn beyond 2031 that is most likely to be developed from uses for ultra-low carbon ethanol. Trendline increases in livestock feeding and exports is insufficient to maintain corn prices at the levels in the USDA LTO. It requires the new demand that comes from new uses for ultra-low carbon ethanol.

The price path associated with this scenario is shown in Figure 37. Even with acreage dropping to the 3-year average, with trendline yields, stocks build during the early part of the transition, then stocks come down for a couple years as the transition to E15 is completed. But the strength of trendline yields re-asserts itself by 2032 and stocks again build and prices move lower unless there is new demand created.

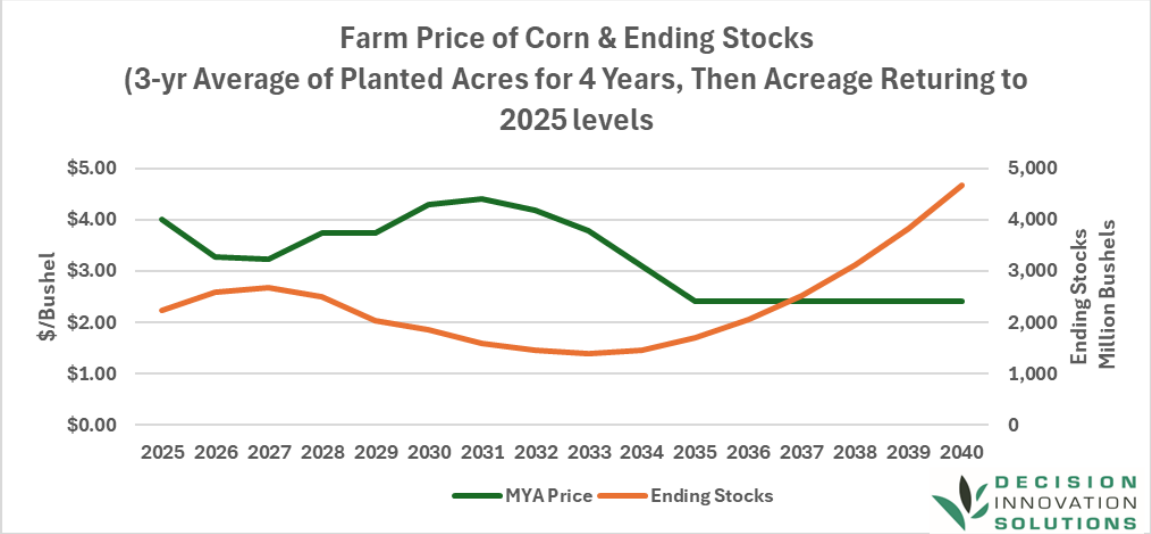

Figure 37. Farm Price of Corn & Ending Stocks (3-Yr Average of Planted Acres for 5 Years, Then Acreage Adjusting back to 2025 Levels)

3.2 What Happens When Production is Curtailed to Support Prices Rather than Developing New Demand -- An Iowa Case Study

According to the USDA LTO, an immediate cut of nearly 8% in corn acreage is modeled for 2026 and a 10% decline in corn acreage is projected by 2034. This is likely to have significant negative repercussions on the rural economy, especially in Iowa and the Midwestern Cornbelt states.

For example, when the Conservation Reserve Program (CRP) was enacted in the 1985 Farm Bill in response to low prices (1985 MYA price was $2.02/bu in Iowa and the 1986 MYA price in Iowa was $1.41/bu) numerous Iowa counties were economically crippled as 20% to 25% of crop acres were taken out of production by enrollment in the CRP program and as a result, many agricultural supply businesses closed their doors or were forced out of business.

The total value of foregone production in Iowa from 1982 through 2020 has been estimated at $26.2 billion. The average annual value of foregone production in Iowa over the 10 years from 2011 through 2020 was $1.1 billion per year. In 2020, the value of forgone production due to CRP in Iowa was $1,177 million. This led to an estimated loss throughout the Iowa economy of:

- **7,263** jobs
- **$734.4** million in value added
- **$2,102** million in output

In 2021, a case study was conducted of the 4-county area which includes Adair, Adams, Cass, and Montgomery Counties in Iowa. During the period of 1987 through 2007 while productive ag land was increasingly taken out of production. In the first 10 years of the CRP program (1986-1996) a total of 100,465 acres were enrolled in the CRP program in the 4-county area. This represented 10 percent of the land classified as cropland by the 1982 Census of Agriculture. During the second 10 years of CRP enrollments, CRP acreage climbed to a new peak of 101,148 acres by 2007.

As shown in Figure 38, compared to the state of Iowa, the 4-county area had more land enrolled in CRP from 1987 to the peak in 2007. The effects of loss of cropland to CRP in the 4-county area were more pronounced than for the state of Iowa as a whole. The 4-county area experienced a 56% higher rate of loss of farms (18.3% loss versus 11.7% loss), three times as much loss of farmland (decline of 8.7% versus loss of 2.8% for the state as a whole), four times greater loss of cropland, and a 17% higher rate of loss of cattle farms than the state as a whole (-47.3% vs -40%). Both the state of Iowa and the 4-county area lost a significant amount of their hired farm labor force.

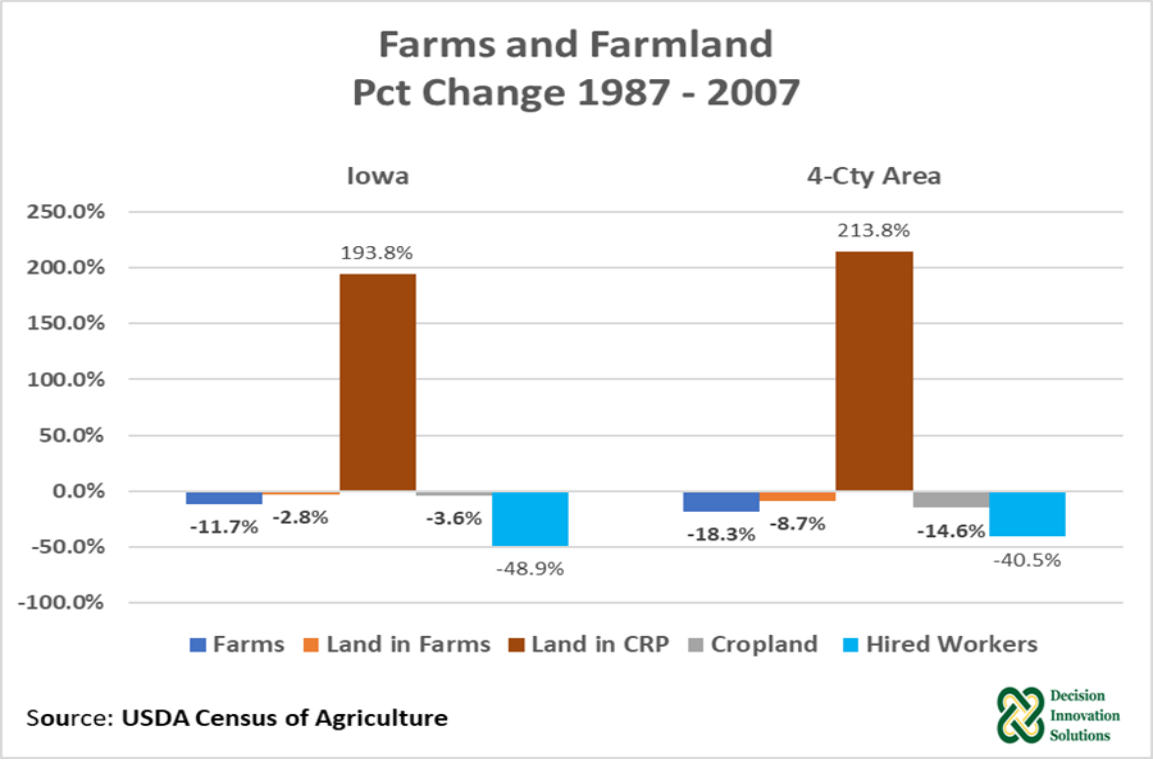

Figure 38. Farms and Farmland Pct Change (1987 - 2007)

But reducing productive agricultural land is not just about ag production. The impacts sweep wider than just the farm. Ag services employment in the 4-county area dropped from 358 workers in 1987 to 121 workers in 2000 when the Bureau of Economic Analysis stopped reporting on ag services employment in these counties. That was a 66% reduction in ag service employment. And much of it occurred after just a few years of reductions in crop activity (Figure 39).

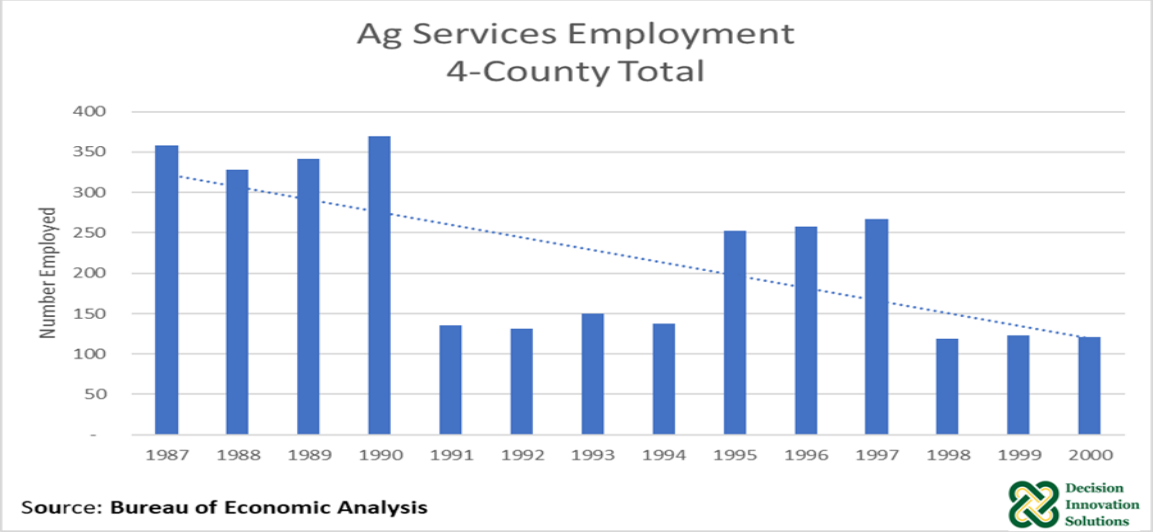

Figure 39. Ag Services Employment 4-County Total

The annual average foregone economic activity in the 4-county area by category is shown in Figure 40.

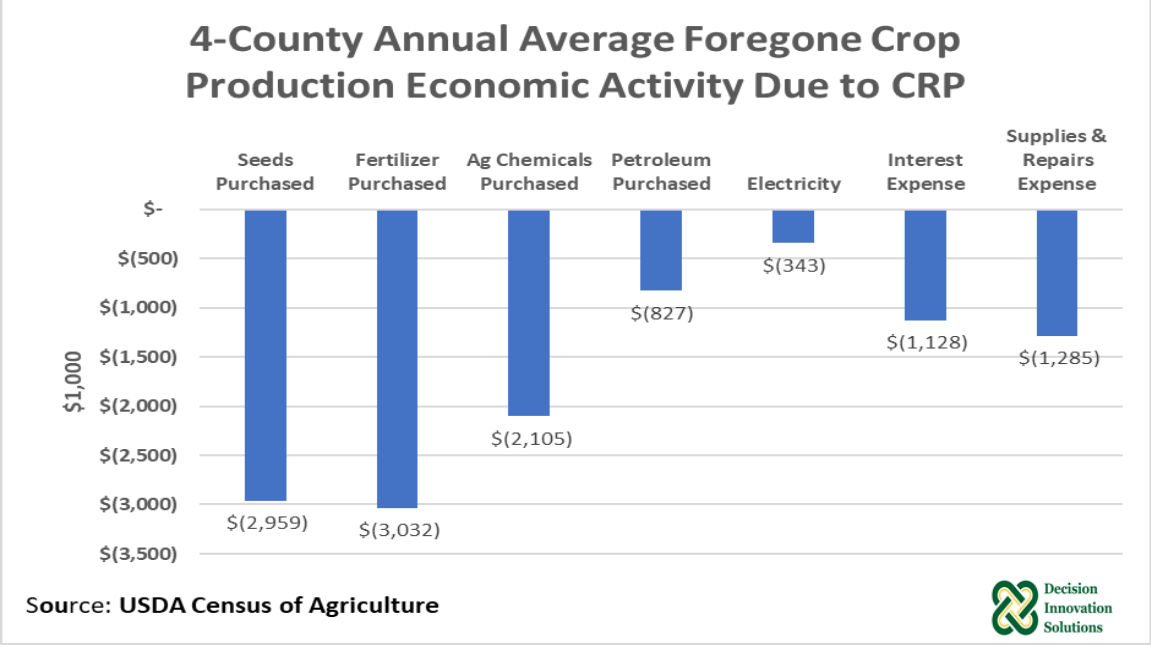

Figure 40. 4-County Annual Average Foregone Crop Production Economic Activity Due to CRP

On average, the impact of idling productive crop land resulted in $2.96 million less seed sales, $3 million less fertilizer sales, $2.1 million less chemical sales, $827 thousand less fuel sales, $343 thousand less utility sales, $1.1 million less interest paid, and $1.3 million less agricultural supplies and repairs.

Impacts from reductions in corn acreage in Iowa will not mimic the losses generated in Iowa through land retirement programs like the CRP. They actually could be much worse. Reduced corn acres are likely to be switched to soybeans depressing the price of soybeans and essentially resulting in a double whammy for most Iowa farmers who on average plant about 57% corn and 43% soybeans. Lack of new demand for corn is not likely to be fixed by simply shifting the problem to the other cash crop of Iowa farms.

3.2.1 Impact of Increasing Crop Acres

During the third 10-year period of CRP enrollments (2008-2017), CRP acreage in the 4-county area declined from the 2007 peak (114,740 acres) to 75,601 acres in 2017 (Figure 41). On average, there were 32,318 less acres in CRP during this period than at the 2007 peak with nearly all of that land returning to the area vs 2% increase for the state.

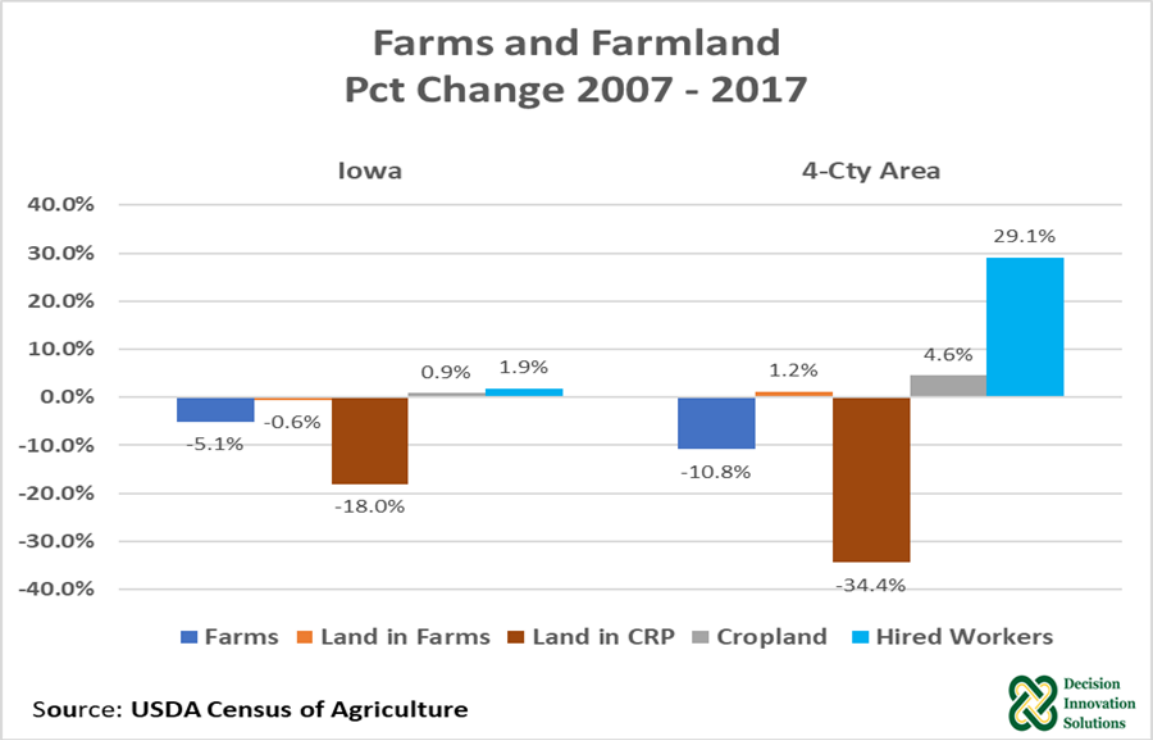

Figure 41. Farms and Farmland Pct Change (2007 - 2017)

Iowa farmers do not want to repeat the devastatingly negative economic experiences they faced in the 1980s. They are seeking to proactively find new demand for their crops, but they need public policies that will support the new demand that is ready to go.

3.3 Methodology

3.3.1 Baseline 10-year Economic Outlook for Corn and Ethanol (National)

This element of the core research involves creating a national baseline economic outlook for corn and ethanol using USDA's Long-Term Outlook as the base reference document but making sure that it is adjusted for trendline yields and with trendline projections beyond 2034. The following steps were taken to complete this element:

- Assuming no reduction in corn acreage, analyze the impacts of trendline yield improvements on corn production, domestic uses, exports, the impacts on corn use for ethanol, and carryout stocks and prices.
- Use the 2025 Energy Information Agency (EIA) as the bases for a model of gasoline and ethanol blend baselines and scenarios.
- Model several scenarios for future corn acreage and the impacts on production and ending stocks.
- Estimate the total ARC/PLC payments estimated to be made under the baseline.
- Model the impacts on corn income with the farm program safety nets (ARC/PLC) in place and estimate the "gap" between that and estimated breakeven prices.

3.3.2 Model Impacts of New Demand Drivers (National)

Two of the most likely "new demand" drivers at the national level are year-round E15 sales and the use of ultra-low carbon ethanol for international marine and SAF production ("Ethanol-to-Jet"), this element of the core research involves modeling impacts year-round E15[6]. Furthermore, the DIS team will also work to estimate the "Demand Gap" that exists that will need to be filled by enabling demand for ultra-low carbon ethanol.

3.3.3 Determine the "Demand Gap"

This element involves determination of the demand gap that exists between corn production as delineated by the baseline in Section 2.1 and the new use that is projected by year-round E15. It also includes an assessment of the likely potential new uses that could create demand to fill the gap. It will include identification of policies and/or policy tools that may be used to facilitate the development of these new uses.

3.3.4 Year-Round E15

- Create a 5-year forward outlook for year-round E15 at the national level, which will assume a federal solution (prior to the next election) for the year-round sale of E15 without granting of waivers

[6] The impact of ETJ on new demand for corn ethanol is included as an option for consideration, as proposed in Section 5.3.

- Create "short-form" models of:
  - E15 supply and use
  - Ethanol production Supply & Use
  - Corn Supply and Use
- "Shock" the above models with changes that would occur with year-round E15 use nationally with appropriate assumptions on impacts to E10 and E85 use and ethanol imports and exports
- Carry the ethanol shock results through to the supply and use models for corn and soybeans

3.3.5 Payment Rate for ARC-CO

ARC-CO (Agriculture Risk Coverage - County) payments are calculated as

$$85\% \times \text{Base Acres} \times \text{Payment Rate}$$

triggered when actual county revenue falls below 86% of the benchmark. The payment rate is the lower of: (Guarantee Revenue − Actual Revenue) or 10% of the Benchmark Revenue.

Benchmark is calculated as**:** 5-year Olympic average of county yields (excluding high/low) × 5-year Olympic average of Marketing Year Average (MYA) prices.

Guarantee Revenue: 86% × Benchmark Revenue

Actual County Revenue: Actual County Yield × Higher of (MYA Price or National Loan Rate).

Payment Cap: The payment rate is capped at: 10% of the benchmark revenue.

Base Acres: Payments are made on 85% of the farm's base acres

The One Big Beautiful Bill Act (OBBBA) increases the guarantee from 86% of benchmark revenue to 90% of revenue. OBBBA increases the limit on ARC-CO payments to 12% of the benchmark revenue. In other words, ARC-CO under OBBBA covers a band from 90% of benchmark revenue to 78% of benchmark revenue. So, the new ARC-CO payment is calculated as

$$85\% \times \text{Base Acres} \times \text{Payment Rate}$$

triggered when actual county revenue falls below 90% of the benchmark. The payment rate is the lower of: (Guarantee Revenue − Actual Revenue) or 12% of the Benchmark Revenue.

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