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THE QUARTERLY

Dedicated to the industries financed by CoBank

October 2024

Rising electricity demand, supply constraints put AI boom at risk, raise worries over residential rates

Amidst plunging row crop profitability, momentum is building in Congress to get a new farm bill in place after the November election – but that is only one of several "must do" items Congress must tackle.

Executive Summary

Billions have been invested in generative AI with the expectation that big productivity gains will propel the U.S. economy in the years to come. But here's the rub: Many market participants believe we may be only 12-24 months away from not having enough electricity to run these power-hungry Gen AI data centers.

U.S. farmers are harvesting a record-large soybean crop and the third-largest corn crop on top of large carryover stocks from the previous marketing year. The ample harvests have coincided with a plethora of export headwinds including a strong U.S. dollar, political uncertainty over trade policy, stalled rail shipments into Mexico, and low water levels on the Mississippi River – the main artery for U.S. grain and oilseed exports. All the livestock sectors, including dairy, are benefitting from the lower feed cost environment and enjoying their best profitability in recent years. Given the poor current and forecast prices for row crops, momentum is building in Congress to get a new farm bill done before year-end.

The combination of weakening labor market metrics, a big downward revision in the past year's job creation numbers and a series of tame inflation reports cleared the way for the Fed's 50bps rate cut in September. But borrowing costs won't fall in tandem due to higher long-term interest rate expectations and tightening lending standards.

This quarterly update is prepared by the Knowledge Exchange division and cover the key industries served by CoBank, including the agricultural markets and the rural infrastructure industries.

Topics In This Issue:

- *AI technology and data center investments are expected to drive U.S. economic growth, but limitations of U.S. electricity supply jeopardize it.*
- *The Fed has finally started cutting interest rates, but borrowing costs likely won't drop as much as some hope.*
- *Farm profit dichotomy: Low feed costs have improved livestock industry conditions while creating the lowest grain and oilseed margins in years.*

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SPOTLIGHT

AI-induced energy supply demand imbalance endangers economic growth

By Jeff Johnston

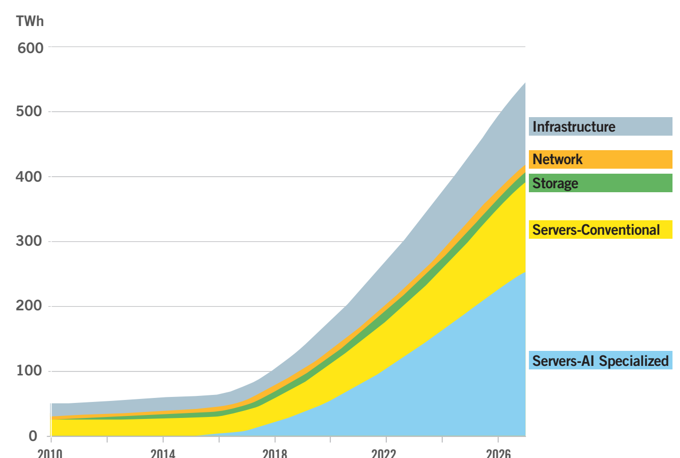
Over the last two years, generative artificial intelligence (Gen AI) has taken the country by storm. Seemingly you can't turn on the TV or read an article without some mention of the promising technology. But what is less understood is the burgeoning supply-demand imbalance these new hyperscale AI data centers are causing in the energy markets, and the risk this poses for the country's economic growth prospects. To put Gen AI's energy consumption into perspective, consider that one ChatGPT inquiry consumes 10x as much energy as one Google search. Couple that with the notion that the energy complex has yet to feel the true impact of widespread Gen AI deployments, and you have a recipe for increased economic risks.

Economic growth is anchored in two core pillars: a growing workforce and technology that makes the workforce more productive. Growing the workforce will be a challenge over the coming years given the structural headwinds facing the U.S. workforce (declining birth rates, aging population, early COVID-related retirements, lack of immigration reform, etc.). This makes the adoption of future Gen AI applications and the operational efficiencies they deliver critically important to economic growth. But here is the rub: Many market participants believe that the forecasted explosive growth means we are 12-24 months away from not having enough electricity to run these power-hungry Gen AI data centers. Should this happen, energy supply will become a bottleneck for data center growth and potentially the broader economy.

Today, data centers represent approximately 4% of the country's energy demand, but that number is expected to grow exponentially over the coming years. Consider this: From an application perspective, ChatGPT – which was launched two years ago – is largely responsible for the current surge in Gen AI data center deployments. Given that it takes about three years to standup a new data center, the energy complex has yet to feel the full effects of Gen AI. One needs to look no further than the DOE's latest data center forecast to see that demand is set to surge *(Exhibit 1).*

1 **The energy supply demand imbalance AI is causing puts its promise of productivity and economic growth into question.**

EXHIBIT 1: Data Center Annual Electric Demand



Source: DOE Lawrence Berkeley Labs

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Historically, data center operators prioritized access to deeply integrated fiber networks and proximity to Fortune 500 companies as the main criteria for new data center locations. Today it is all about power – a clear path to power for a new data center is far and above the number one criterion. The situation has gotten so dire in Georgia that the state recently increased its new long-term energy needs by over 38% in just one year, which has firmly planted the state in uncharted waters and is overwhelming the Public Service Commission. Hence the move to rural markets where access to renewables and excess power is available, and the energy market's increased attention during the presidential election.

We are at a point where a monumental type of effort is needed at the federal level. Issues related to generation and transmission, permitting and the enormous levels of capital needed to build new infrastructure are not being addressed quickly enough to prevent a long lasting and very problematic data center bottleneck.

2 **The country is facing a structural labor shortage, making AI's growth a critical factor for the economy to expand.**

3 **Given AI's economic importance, bold policy and investment steps need to be taken to ensure AI's adoption isn't hampered.**

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MACROECONOMIC OUTLOOK

Fed pulls the fire alarm, but everyone already left the theater

By Rob Fox

The combination of weakening labor market metrics, a big downward revision in the past year's job creation numbers and a series of tame inflation reports during the eight-week hiatus between meetings sent Chairman Powell lunging at the "fire alarm" and sounded a 50bps cut at September's Federal Open Market Committee meeting. The move dropped the current rate to 4.75%.

Per the accompanying meeting notes, the median committee member thinks the overnight rate will drop to 3.25% by the end of 2025 with the long-term, or "neutral," rate eventually settling at 2.9%. The FOMC has now lifted its long-term rate forecast three times this year – it had been stuck at 2.5% since 2018. Powell said the neutral rate is "probably significantly higher" than it was just a couple of years ago, although he admitted the only way to know was to observe the effects of rate changes over time. Everyone agrees that in the next few years the rate environment will be higher than it was in the 2009-2022 period between the Global Financial Crisis and the post-COVID recovery.

Looking at the labor market, the FOMC projects unemployment averaging 4.4% in 2025 and then declining to 4.2% by 2027. The problem we have with those predictions is that the unemployment rate had already risen by 0.5% before the rate cut and it now stands at 4.1%. General economic "wisdom" (if such a thing exists) is that rate cuts take at least 18 months to show full effect in the labor market. Unemployment almost always accelerates quickly once it starts increasing, so again the Fed's prediction that unemployment will level off near current levels would buck historic norms if it holds true. Given the slow but steady weakening of labor conditions and recent grim manufacturing and consumer survey results, it seems very optimistic to think that unemployment is that close to maxing out in this cycle.

In our view it is more than likely the Fed was late to the game again on responding to changing economic conditions that were apparent to most observers for months. But the mistake is understandable given the difficulty in seeing forward when continually focusing on data that is at least six weeks old when published and often later revised (Chair Powell proudly proclaims that his decisions are dependent on "data").

1 Long-term, or neutral, interest rate expectations are higher than pre-pandemic levels.

2 The Fed was likely late to the game again in addressing weakening labor markets.

EXHIBIT 1: Spread Over Fed Overnight Rate

Source: Federal Reserve Bank of St. Louis

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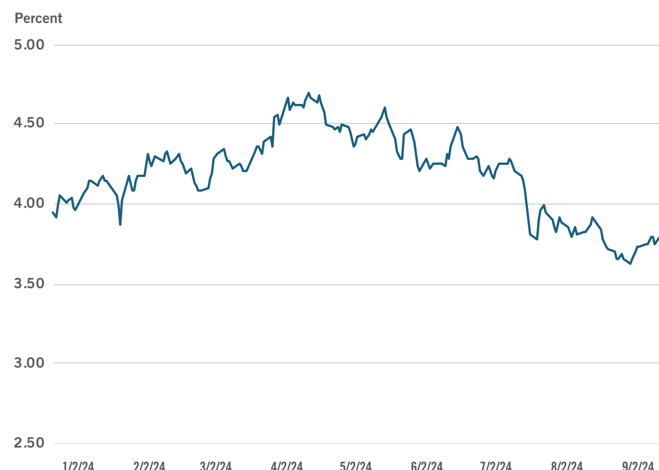
Then there is the question of what effect the Fed's rate cuts will actually have on personal and corporate interest payments. It probably won't be as much as people hope. There are a couple of reasons: the spreads between the Fed overnight rate and common benchmark costs of capital (10-year Treasury, 30-year mortgage, and corporate bonds, for example) are currently near all-time lows. This is because the economy has been doing very well and market participants have seen relatively little risk of default. But history shows that in times of rate cuts – that is also in times of a weakening economy – those spreads increase sharply *(Exhibit 1)*. Through its actions, the Fed shows that economic conditions warrant big rate cuts – we expect senior lending officers and bond buyers are now looking at new probability of default calculations in a cooling economy and pricing access to capital accordingly.

In simple terms, borrowing costs for consumers and companies do not fall in unison with the Fed overnight rate. In fact, sometimes they don't drop at all, depending on the long-term economic outlook. In four of the past seven rate cutting cycles, 10-year Treasury yields actually increased over the ensuing 12 months (and have now risen over 25bps since the the Fed rate cut). *(Exhibit 2)*. The outlook for consumer mortgages is uncertain as well. When asked about the outlook for mortgage rates, Chairman Powell said, "Very hard for me to say. From our standpoint I can't really speak to mortgage rates. I will say that'll depend on how the economy evolves."

So, the combination of expectations of higher long-term inflation rates, a return to more normal borrowing spreads in a slowing economy, and federal policy uncertainty (tariffs, immigration) mean that borrowing costs won't drop as fast and far as you might think.

3 While the Fed is expected to cut 150bps by end of 2025, don't expect to see that big of a reduction in borrowing costs.

EXHIBIT 2: Yield on 10-Year Treasury



Source: Federal Reserve Bank of St. Louis

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GOVERNMENT AFFAIRS

Congress passes short-term funding but expects post-election fights

By Lauren Sturgeon Bailey

As Congress wraps up another fiscal year, little has changed over the last several months. Funding fights continue to suck the air out of the room, and partisanship kills all progress. The House and Senate passed a relatively clean continuing resolution to fund the government though Dec. 20, 2024, setting the stage for another funding fight after the November election. Both the Republican and Democratic conferences say the path for major legislative progress is unknown until after the results of the presidential and congressional elections.

While we know the government must get funded, it is unclear whether an omnibus spending bill, a series of mini-buses or another continuing resolution will be the path. The U.S. Congress's only must-do job is to allocate funding annually to government programs. House and Senate Appropriation principals all agree the primary end-of-year-goal is to fully fund the next fiscal year. But should the newly elected president insert themself into this process, the result could be a full funding meltdown.

Two other items building momentum to make it on the lame duck calendar are the National Defense Authorization Act and the Farm Bill. Both bills expire this year and the recent CR did not include a short-term extension of either. As we continue to see high interest rates, low commodity prices, and a volatile geopolitical environment, the need for a farm bill is growing. Southern crops were already hurting and have been hit by multiple natural disasters. Assistance need is increasing and the House Republican and Democratic leadership have both called for consideration of a full farm bill by the end of the year. The Senate chair and ranking member are meeting regularly and have publicly stated interest in getting this over the finish line. Industry groups continue to push for an end of year bill.

While Congress will be in recess until after the November election, the agenda for the few remaining legislative weeks continues to grow longer. Ultimately, the election results will dictate the legislative agenda for the end of 2024, adding a large list of items to the 2025 "must pass" list. Raising the debt ceiling is already on the docket in early 2025. The Tax Cuts and Jobs Acts of 2017 will expire and require a significant amount of government investment. And again, the next fiscal year will need to be funded. While most members of Congress are reluctant to take difficult votes in election years, the next 12 months will bring a longer list of must-pass pieces of legislation. Many hope that the haze will start to clear in Washington after Nov. 5 and members will again start legislating. That is an optimistic view, as many expect this presidential election and congressional races to be too close to call for many days or weeks after the polls close. This will ultimately continue to delay the work in Washington. ■

1. **House and Senate Appropriation principals all agree the primary end-of-year-goal is to fully fund the next fiscal year.**

2. **With high interest rates, low commodity prices, and a volatile geopolitical environment, the need for a farm bill is growing.**

3. **Ultimately, the election results will dictate the legislative agenda for the end of 2024, adding a large list of items to the 2025 "must pass" list.**

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GRAINS AND OILSEEDS

U.S. grain exports showing signs of recovery

By Tanner Ehmke

U.S. farmers are harvesting a record-large soybean crop and the third-largest corn crop on top of large carryover stocks from the previous marketing year. Carries have returned to the futures market as a result, making storage for elevators more profitable. The ample harvests have coincided with a plethora of export headwinds. A strong U.S. dollar, political uncertainty over trade policy, stalled rail shipments into Mexico, and low water levels on the Mississippi River – the main artery for U.S. grain and oilseed exports – have frustrated U.S. exports *(Exhibit 1).* Export demand for U.S. grains and oilseeds, though, is showing signs of recovery as droughts in Brazil and Russia send global buyers back to the U.S.

Corn

Record corn yields are projected to produce a 15.19 billion-bushel corn crop this fall, which will be piled on top of large carryover stocks from last year's record harvest. U.S. corn stocks on Sept. 1 were tallied at 1.76 billion bushels, up 29% YoY, bringing total U.S. corn supply to the second largest on record. Usage for the quarter, though, was bigger than expected. Export demand is resurging with total export commitments now up 17.3% YoY versus last year's record harvest, with sales to top-customer Mexico up 12.6% YoY.

Ethanol also remains the bright spot for corn demand. Corn ground for ethanol has held at record-high levels with cheap corn and natural gas stimulating usage *(Exhibit 2).* Policy uncertainty over carbon tax credits and falling gasoline and ethanol prices, though, threaten the strong usage pace.

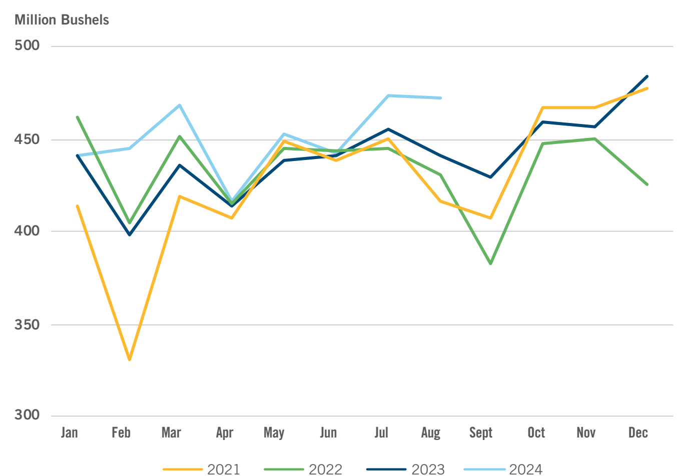
1 Large U.S. corn and soybean harvests will fill grain bins this fall **on top of ample old-crop inventories. But export business is recovering, and domestic demand continues to grow.**

2 Winter wheat planting has commenced in the U.S. and the Black Sea region **with acreage expected to slip amid low wheat prices and dry conditions.**

EXHIBIT 1: Mississippi River Level at St. Louis

Source: U.S. Geological Survey

EXHIBIT 2: Corn Used for Fuel Alcohol



Source: USDA-NASS

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Soybeans

The fourth quarter will be critical for U.S. soybean exports with half of the crop typically shipped in October-December. Total new crop export commitments are down 0.4% YoY. Chinese bookings are down 8.7% YoY on sagging Chinese crush margins and trade policy uncertainty, but drought fears in Brazil have awakened demand. Domestic usage is also rising as processors hasten their crush pace to fill growing demand for renewable diesel stock *(Exhibit 3).* U.S. farmers in the meantime are harvesting a record large soybean crop of 4.59 billion bushels, up 10% YoY. Carryover stocks on Sept. 1 were tallied at 342 million bushels, up 29% YoY.

Attention next quarter turns to the South American soybean crop where historically dry conditions have delayed planting in Brazil. China's fiscal stimulus has also raised hopes of an economic recovery, boosting China's soybean crush margins next quarter and lifting demand for soybeans.

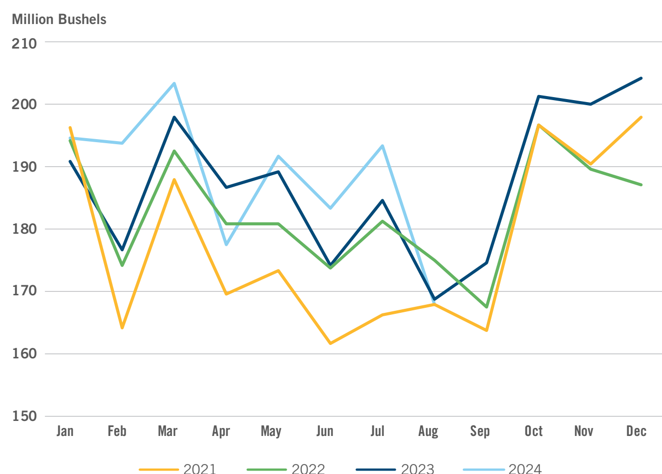
3 South American soybean planting is underway, but ongoing drought in Brazil is scaring export demand back to the U.S.

Wheat

U.S. winter wheat farmers are planting the 2025-26 crop with acreage expected to drop slightly YoY. Farmers are shifting more acres to forage crops amid high livestock prices and low wheat prices. The expansion of the Conservation Reserve Program (CRP) will also reduce wheat acres. U.S. wheat stocks on Sept. 1 totaled 1.99 million bushels, up 12% YoY. But basis volatility is weakening carries in Kansas City hard red winter (HRW) wheat futures, frustrating elevators *(Exhibit 4).*

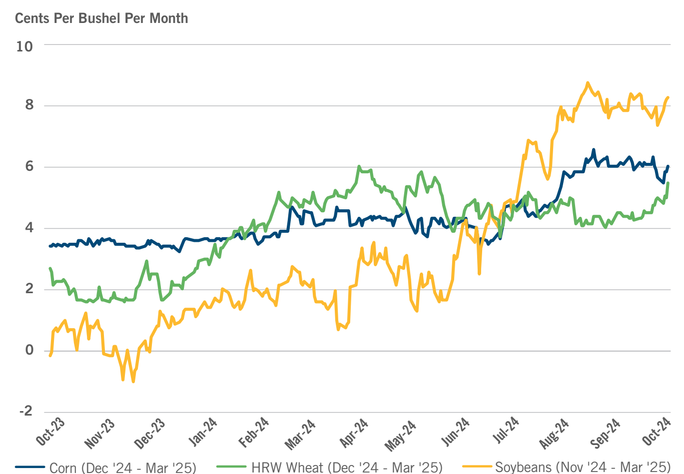
Globally, wheat stocks are tight. Dry conditions in the Black Sea raise concern for the Russian and Ukrainian winter wheat crops, but a weak Russian Ruble continues to anchor world wheat prices. Attention next quarter turns to Southern Hemisphere harvests in Argentina and Australia and supply availability into early 2025.

EXHIBIT 3: U.S. Soybean Crush



Source: USDA-NASS

EXHIBIT 4: Futures Carries



Source: CME Group

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FARM SUPPLY

Input prices soften to close out 2024

By Jacqui Fatka

Margins from a potential "double harvest" of unwinding last year's crop and this year's record harvest will cover farmers' input purchases this fall, and ag retailers predict a healthy spend. While a dry harvest will limit propane usage (and cost), ag retailers are offering more financing programs to help customers manage the tighter cycle ahead.

Fertilizer prices have moderated from the March peak and bump in late May-early June. Supply hiccups may be coming for fertilizer: Hurricane impact may diminish domestic supplies of DAP just as farmer demand is rising ahead of fall applications. An early, dry harvest will likely boost fall fertilizer applications, especially in the Midwest.

USDA's latest 2024 farm income projections indicate 1% lower overall production expenses, including livestock operations. However, final 2024 fertilizer, pesticide, and fuel and oil expenses are expected to decline nearly 10% YoY mostly due to price reductions. Although lower, these input costs have not dropped in tandem with crop prices and remain above pre-pandemic levels *(Exhibit 1).*

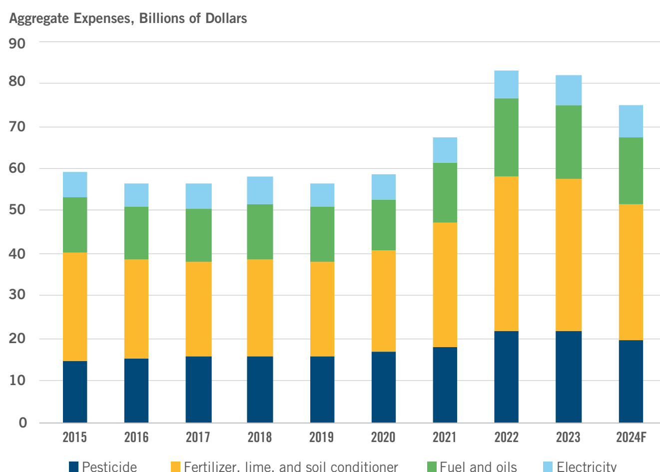
Farmers have improved their equity positions with strong farmland assets, which they can use for operating loan collateral. Agricultural land values averaged $4,170 per acre and increased by $200 or 5% over last year *(Exhibit 2).* This marks the fourth consecutive yearly increase in agricultural land values. Cash rent values for cropland were up 3.2% to a record $160 per acre. Compared to operators working farmland they own, operators on cash-rented land will struggle to profit in the lower commodity price cycle, according to the University of Illinois analysis, "Implications of Non-Increasing Farmer Returns."

1 Ag retailers on higher alert for potential stressed borrowers are increasing available input financing.

2 Fertilizer prices have stabilized and still provide reasonable economics with next year's projected corn values.

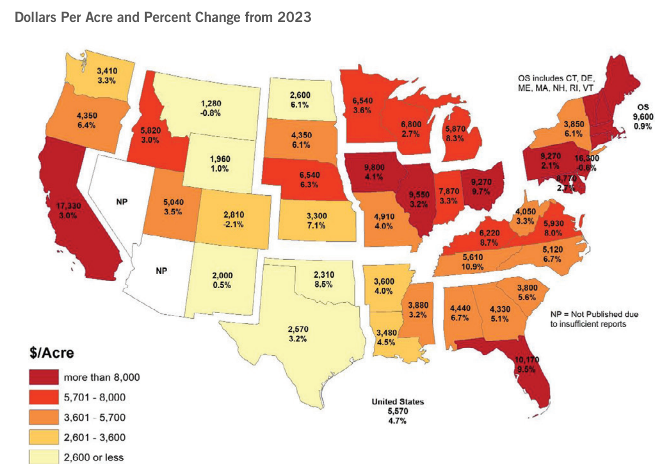
3 Land price increases softened for the year and may bring fewer buyers to the table in the lower price environment.

EXHIBIT 1: Inputs Costs Remain Elevated



Source: USDA-ERS production expenses report, Sept. 5, 2024

EXHIBIT 2: Farmland Values Per Acre



Source: USDA-NASS

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BIOFUELS

Lower commodity prices support biofuels sector

By Jacqui Fatka

U.S. ethanol plants are coming off seasonal high runs with near-record amounts of corn used for fuel-alcohol production this summer. As many shut down for maintenance in August, plants are now ready to take advantage of this fall's bumper harvest to keep production climbing. The fourth quarter brings lower gasoline use, meaning lower ethanol blended into fuel. Ethanol margins will benefit from lower corn and natural gas costs and improved corn oil extract rates will also help plants' revenue returns.

Ethanol exports started the 2025 marketing year Sept. 1 building on 2024's record levels, forecast at $4.3 billion and a record 2 billion gallons. More ethanol export competition could be on the horizon with Brazil constructing new corn-ethanol plants in addition to its sugarcane-based facilities. Brazil's ethanol production was up 41% from the (April to March) Brazilian marketing year prior, reaching 15.85 billion gallons and nameplate capacity of 19 billion gallons this year *(Exhibit 1).* Brazil's 22 corn ethanol plants now consume 15% of its domestic corn production, which equates to 17 MMT for the 2023/24 crop season.

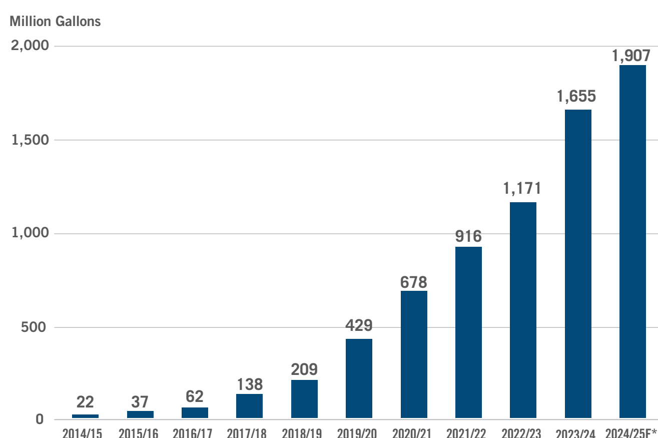
Soy oil demand for renewable diesel and biodiesel markets continue to face headwinds from rising imports of used cooking oil and tallow mostly from China and Brazil *(Exhibit 2),* which now account for an estimated 1 out of 6 gallons of U.S.-produced biomass-based diesel. The Environmental Protection Agency is investigating the authenticity of UCO imports from China. Domestic producers want 45Z tax credits to apply only to domestic feedstocks for feedstocks, but administration officials warn this could lead to trade retaliation.

1 Average ethanol plant earnings are stable **and projected to continue the same trajectory.**

2 Brazil's expansion of its domestic corn-based ethanol production will increase ethanol export competition.

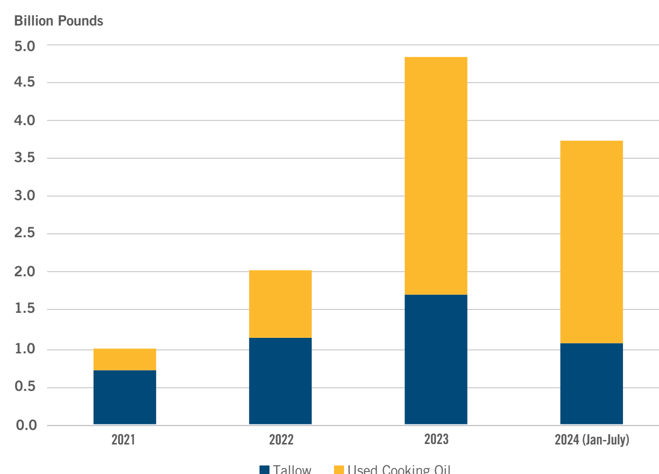
3 Even though soybean oil used for biofuel reached the second-highest volume in June 2024, imported UCO and tallow are competing for use in renewable diesel.

EXHIBIT 1: Brazilian Corn-Ethanol Production



Source: USDA-FAS

EXHIBIT 2: Imports of UCO and Inedible Tallow



Source: U.S. Census Bureau

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ANIMAL PROTEIN

Resilient domestic demand, retreating feed costs tempt producers

By Brian Earnest

Despite the recent slowdown in food inflation, consumers are still reeling from price increases over the past two years. A recent LendingTree survey suggested that 8 in 10 shoppers consider fast food a luxury, which means animal protein producers and marketers need to re-think how to remain attractive to consumers. A new focus on "value" vs. "luxe" has put pressure on supplies of certain animal protein items, such as ground beef and dark meat chicken, whereas bacon use has softened.

Most inputs, like labor, energy, capital, and interest rates remain elevated. However, some – such as corn and soybean meal – have softened, and feed ration prices are down 20% or more from 2023 levels. Feeder cattle prices were up more than 60% from two years ago, and hog values have been elevated this year as well, boosting the incentive to grow larger animals. Cattle weights typically decline through the peak of the summer, but for a while, they were moving counter-seasonally higher.

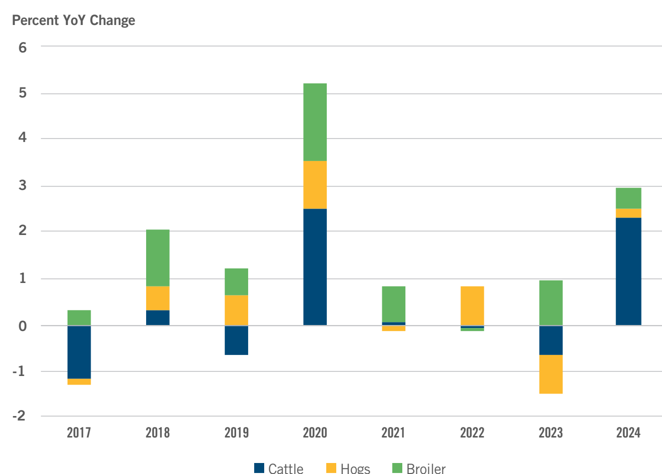
Elevated weights *(Exhibit 1)* are offsetting lower harvest numbers in many instances, to the degree that U.S. consumers have access to an abundance of animal protein. Disappearance is projected at 211.5 pounds per capita, up 1.8%, or 3.7 pounds YoY. Chicken remains a leading growth segment as exports slow. However, to maintain beef consumption, U.S. is becoming more heavily reliant on foreign cattle production *(Exhibit 2)*. Cattle imports are up 22% YTD, and beef imports are 20% higher YoY, while U.S. beef exports have declined by 2.3% YoY. Apart from beef processors, margins in the animal protein sector were above breakeven, which should bode well as animal protein demand enters a seasonally softer period.

1 With corn and soybean prices retreating, prices of typical feed rations are down 20% or more from 2023.

2 Offtake has held strong amidst consumer spending scrutiny as marketers have been shifting to "value" offerings.

EXHIBIT 1: Change in Liveweights at Slaughter

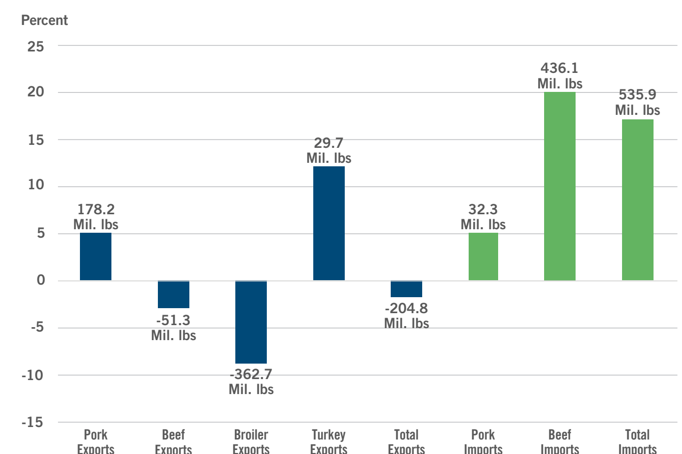
January-August Average



Source: LMIC, USDA, CoBank Calculations

EXHIBIT 2: U.S. Animal Protein Trade

Year-to-Date Change YoY



Source: CattleFax, USDA

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BEEF

Beef demand remained robust through the grilling season. However, consumers (who were previously seeking out pricey loin cuts) instead found ample retail hamburger promotions just as their pocketbooks were feeling the impact of inflation. Still, everyday retail beef prices continued rising to new highs through August, topping more than $8.60/lb. So too, at the wholesale level, prices for 90% lean beef trim were record high, averaging $3.80/lb., a 25% premium vs. 2023. Both domestic and imports supplies of this major component to ground beef have been tight.

Despite fears of tighter cattle supplies, cattle on feed numbers reported by USDA were up 1% YoY in each of the last three reports. So, what's keeping more cattle on feed? Heifer retention has yet to emerge, cattle imports from Mexico are up 23% YoY *(Exhibit 3),* and days on feed are being extended with higher cattle values and lower corn prices. Cheaper feed conversion and expectation of tighter calf supplies ahead is contributing to more high-quality beef production than was initially anticipated for the current period, and we expect this trend to continue in the near-term.

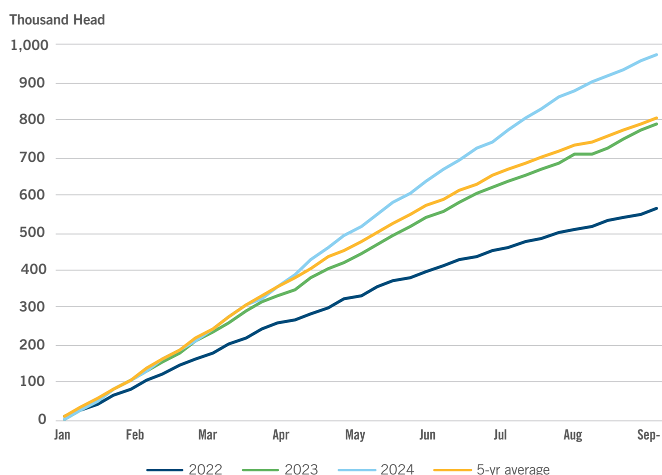
The composition of beef coming to market in 2024 has been more fed cattle, with more steers in the mix of cattle entering the feedlots than was the case last year. Falling feed prices, a changing mix of cattle and tighter availability is contributing to higher cattle weights. Fed steer weights have been eclipsing 940 pounds in recent weeks, up more than 20 pounds YoY. For January-August, U.S. beef production was down just 0.5% YoY *(Exhibit 4).*

U.S. beef imports have eclipsed year-ago levels every month so far this year. We expect imports will remain strong as the beef supply outside of U.S. production is largely leaner and formulations for hamburgers require lean beef trimmings to mix with U.S.-produced beef trimmings.

1 **While U.S. beef supplies are well below 2022's peak,** production through the summer months was within 1% of year-ago levels.

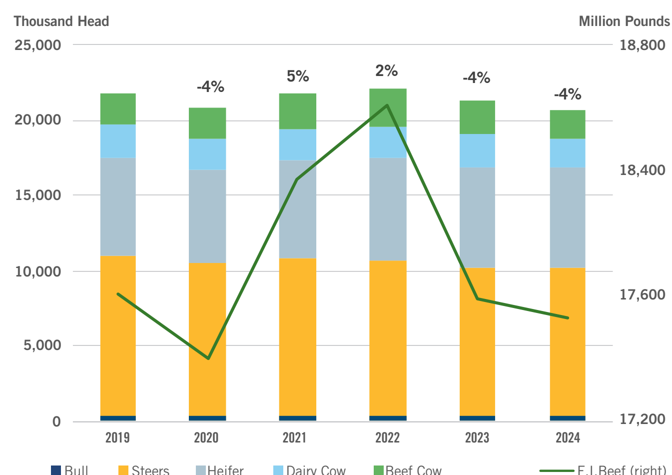
2 **Cumulative cattle imports from Mexico were up 23.4% YoY through September,** partially offsetting lower domestic feeder supplies.

EXHIBIT 3: Cumulative Cattle Imports From Mexico to U.S.
January-September



Source: LMIC

EXHIBIT 4: U.S. Cattle Slaughter vs. Beef Production
Monthly January-August



Source: LMIC, USDA

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CHICKEN

Chicken consumption was strong this quarter, benefitting from increased feature activity, falling feed rations and consumers seeking value at the meat case. While global pork demand is supportive in the U.S. hog sector, the focus in the broiler sector is growing through domestic outlets. Disappearance is on pace to rise 1.5 lbs./capita annually in 2024, to 102 lbs., according to the latest ERS forecast.

Cumulatively, U.S. broiler production is up 0.7% YoY *(Exhibit 5),* which is an amazing feat considering chick placements had been trailing year-ago numbers through much of the fourth quarter of 2023 and early in 2024. But increasing placements as of late have not necessarily resulted in rising slaughter numbers, as chick mortality rates have been higher. Liveweights were up 0.14 lbs., or 2% YoY, from January-September working to offset a 0.9% reduction in slaughter numbers.

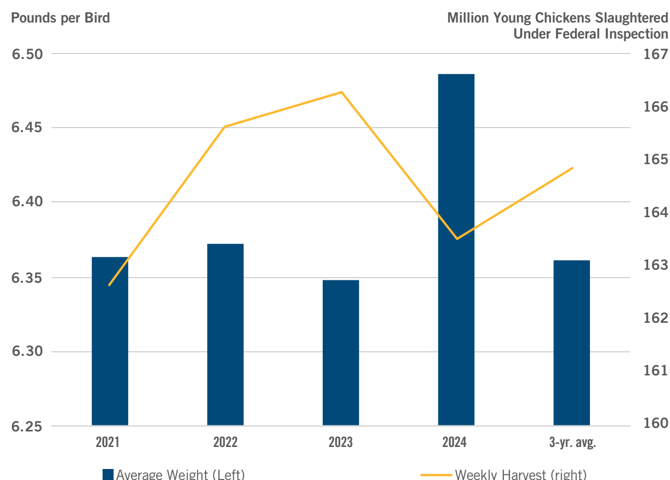
The increase in liveweights is in part a response to falling feed prices and improved processing efficiencies, but it is also tied to growing demand in the value-add segment. Items like boneless/skinless breast meat were fetching $1.90/lb. in August because of increased feature activity both at retail and food service.

Both exports and cold storage holdings of leg quarters *(Exhibit 6)* are sitting at five-year lows, and wholesale values remain elevated, hovering near $0.50/lb. through summer months as domestic marketers seek value-oriented items. Overall, broiler integrators are doing quite well in the current pricing environment.

1 **Broiler production was moderately higher YoY through summer months despite higher flock mortality rates.**

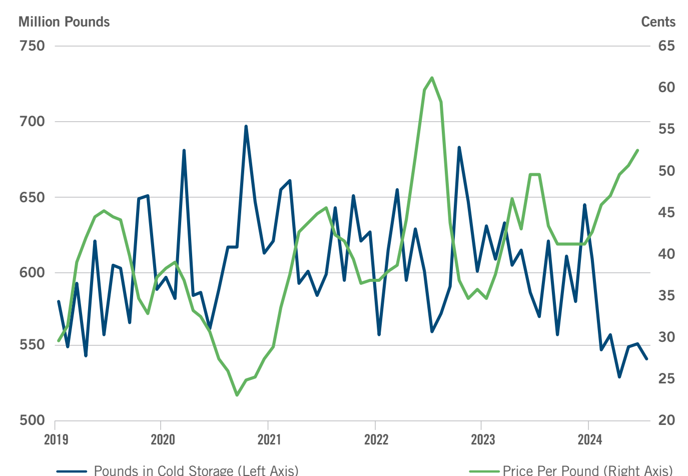
2 **Domestic consumer interest in both dark and white meat items is growing as marketers address inflation concerns.**

EXHIBIT 5: Weekly Broiler Production
January-September



Source: USDA, CoBank Calculations

EXHIBIT 6: Leg Quarters
Cold Storage vs. Prices



Source: USDA, CoBank

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PORK

Hog producer margins were signaling contraction a year ago, but as producers are cycling out of higher priced rations *(Exhibit 7),* concern is easing this year. Iowa State University estimates farrow-to-finish operators experienced their fifth consecutive month of positive margins in August at $13.63/head. And naturally, sow slaughter has declined in recent months. For August alone, sow slaughter was down 15% YoY. Still, the breeding herd was down 3% YoY on Sept. 1, at 6.044 million head which is an eight-year-low. Pigs saved per litter has continued to rise in recent quarters reaching an all-time high of 11.72 during June-August, offsetting a declining breeding herd.

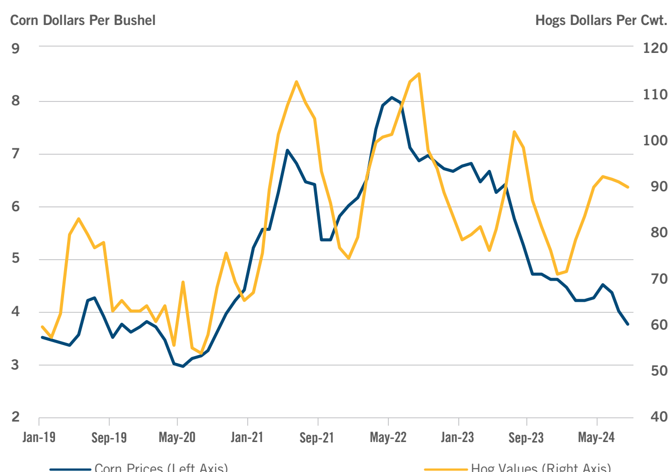
After peaking in July, lean hog futures are declining seasonally. Margins are expected to narrow through the end of the year. Non-feed costs remain elevated and interest in expansion is nil, so pork prices should hold their own through 2024 – yet slaughter numbers move higher in the autumn, so the market will be tested. Global pork demand remains robust; as focus on supporting global pork needs subsides in the European Union, U.S. pork is gaining a competitive advantage in global markets and will likely overtake Europe as the leader in pork exports this year *(Exhibit 8).*

The pork cutout was down 7% YoY in August, the ham primal was the biggest contributor to broad-based support. California Prop 12 influence was greater in 2023, as end users prepared for restrictions on pork. This year, markets have adjusted, and belly prices have softened. Total pork in cold storage was at 453 million pounds, down 3.4% YoY, but hams were at a three-year high, up 2% YoY indicative of building for holiday needs.

1 Producer optimism is returning as margins are reflecting falling feed costs, but still other operational costs remain elevated, limiting growth.

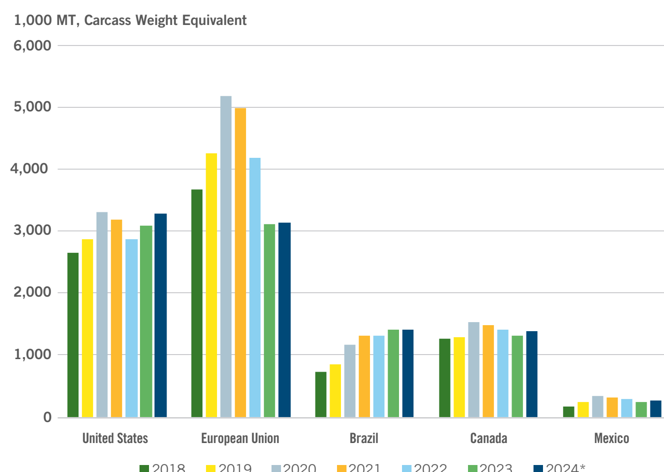
2 Exports have been nothing short of phenomenal as U.S. pork is competitive in global markets.

EXHIBIT 7: U.S. National Hog Values vs. Corn Prices



Source LMIC, USDA

EXHIBIT 8: Top 5 World Pork Exporters



Source: USDA-FAS Production, Supply and Distribution data

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DAIRY

Margins to produce milk poised to be the best in a decade

By Corey Geiger

A window has opened for dairy farmers to consider locking in some positive margins based on futures contracts. Overall, 2024 should go in the books as a top-three milk price year. On the flip side, grain prices have been dropping steadily this summer to reach a five-year low – admittedly not good for crop farmers but an opportunity for livestock producers. In July, the margin above feed costs to produce milk moved to the best level since May 2022 at $12.33 per cwt. Forecasts for the remainder of the year show margins improving to nearly $16 per cwt., based on calculations from the Dairy Margin Coverage (DMC) program. *(Exhibit 1.)*

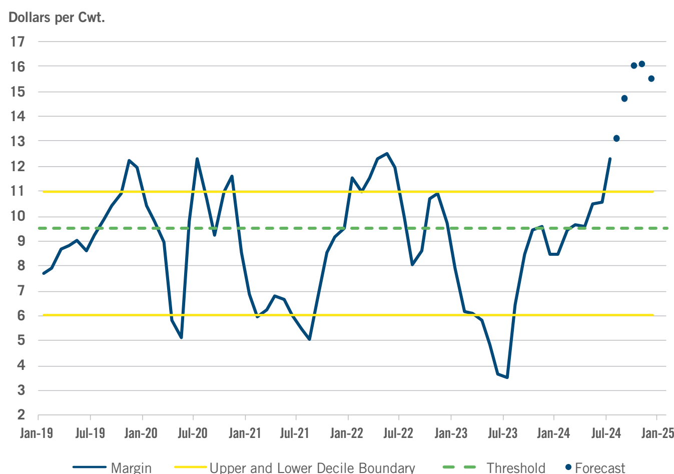
The positive movement in milk prices has been driven largely due to tighter supplies rather than stronger dairy demand. Milk supplies have gotten tight among the big three dairy product exporters – New Zealand, the EU, and the U.S. Stateside milk production is on pace to be down for two straight years. If the trend plays out, this would be the first time in over 50 years that milk production has declined for back-to-back years. That being noted, milk component production (butterfat and protein) continues to grow. While Highly Pathogenic Avian Influenza (HPAI) has caused concern in the U.S., cases have occurred in less than 1% of the U.S. dairy herds. A more concerning health issue is taking place in Europe as bluetongue outbreaks have put downward pressure on milk with Germany, the Netherlands, and Belgium particularly hard hit.

Those are among the reasons that spot cheddar block prices moved to the highest levels in over two years at $2.20-plus per pound while spot cheddar barrels on the CME pushed to a record high climbing to over $2.60 per pound in mid-September. These lofty prices likely do not have staying power. However, they do show that the market is nervous about

1 **Dairy farmers could experience some of the best margins in a decade** given the forecasted combination of higher milk prices and falling grain costs.

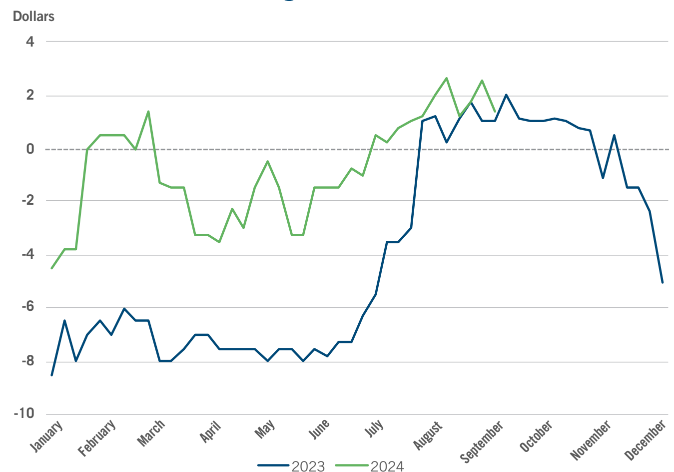
2 **With tight milk production among the three largest dairy product exporters,** spot cheese and butter prices have remained rather strong.

EXHIBIT 1: Actual and Forecast Dairy Margins



Source: USDA-AMS Dairy Market News

EXHIBIT 2: Upper Midwest Spot Class III Prices Remain Strong



Source: USDA-AMS Dairy Market News

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supplies as cheddar production has dropped by 7.7% YTD during the first seven months of 2024. Due to tightness in the milk supply, spot Class III milk prices in the Upper Midwest had moved to weekly highs not seen in over a decade. *(Exhibit 2).*

Meanwhile, mozzarella production has grown by 4.3% this year due to a combination of both demand and profitability. Cheese makers can skim off butterfat when making the relatively lower fat cheese and sell it for butter production. That's a profitable endeavor as domestic butter markets have remained strong with spot butter prices trading above $3 per pound May to mid-September *(Exhibit 3).* They have since dropped to the $2.60 range, with August butter production posting the highest-ever output for the month. In Europe, butter has approached $4 territory as markets enter the peak sales season.

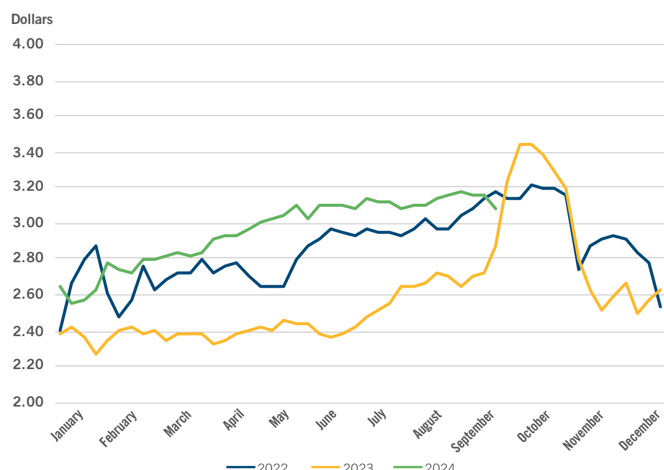
While $22 to $23 per hundredweight milk would typically spur expansion, headwinds will prevent that from taking place. Beef-on-dairy calves are still fetching market highs and those values have placed a lid on replacement numbers. That has pushed replacement values to $2,120 based on USDA data and towards $3,000 at recent auctions compared to just $1,600 18 months ago *(Exhibit 4).* With dairy replacements at a 20-year low waiting to join the milking herd, dairy farmers have pulled way back on culling. In the past 52 weeks, dairy farmers have sent 445,000 fewer dairy cows to slaughter in a national herd of roughly 9.3 million head. Higher construction costs also have put a damper on construction of new dairies with costs being 30% to 40% higher than 2017. When compared to just a year ago, insulation, electrical, concrete, wood and steel are up 11% to 22%.

And finally, the latest news on Federal Milk Marketing Order (FMMO) modernization is that USDA received 127 comments on its Recommended Decision. The federal agency will release its Final Decision Nov. 12 and a dairy producer referendum on the package would take place in late December or early January.

3 Markets have been in a bit of angst as HPAI has impacted dairy cows in over a dozen U.S. states. **A bluetongue outbreak in Europe has also limited dairy product supply.**

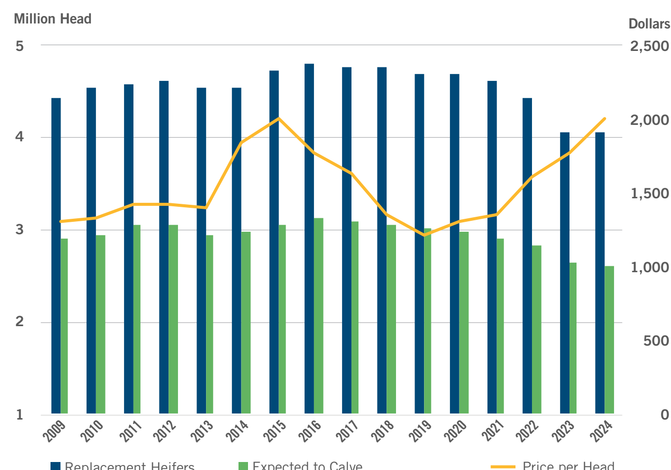
4 Expansion prospects remain capped **due to 20-year low replacement numbers and escalating construction costs.**

EXHIBIT 3: Spot Butter Prices Remained Over $3 from May to September



Source: CME

EXHIBIT 4: Shrinking Dairy Heifer Inventory has Caused Replacement Prices to Skyrocket



Source: USDA-NASS

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COTTON, RICE AND SUGAR

Hurricane Helene devastates Southeastern cotton growers

By Tanner Ehmke

Cotton

Hurricane Helene caused widespread crop losses and a sharp drop in crop conditions for the cotton crop *(Exhibit 1)* across Georgia, North Carolina and Tennessee just as farmers were preparing for harvest. Helene's total impact on the cotton crop is still being quantified. Combined, Georgia, North Carolina and Tennessee typically account for over a quarter of U.S. cotton production annually. The hurricane arrived with more than three-quarters of the crop in the region having open bolls, risking losses to crop quality. Tropical rains and Hurricane Francine inflicted losses on other cotton-producing states across the U.S. South in prior weeks. USDA's estimate on the U.S. crop of 14.51 million bales will be revised downward in future reports as losses are tallied.

Cotton prices climbed to their highest level since July late in September, buoyed by expectations for the Federal Reserve's cut to interest rates improving consumer demand for apparel. Drought in Brazil, crop losses in the U.S., and a weaker U.S. Dollar also lifted prices. Export demand, though, remains sluggish. U.S. cotton export commitments at the end of September were down 10.5% YoY with Chinese bookings down 71.5% YoY and Pakistan down 17.7%. Other markets like Mexico and Vietnam have increased purchases.

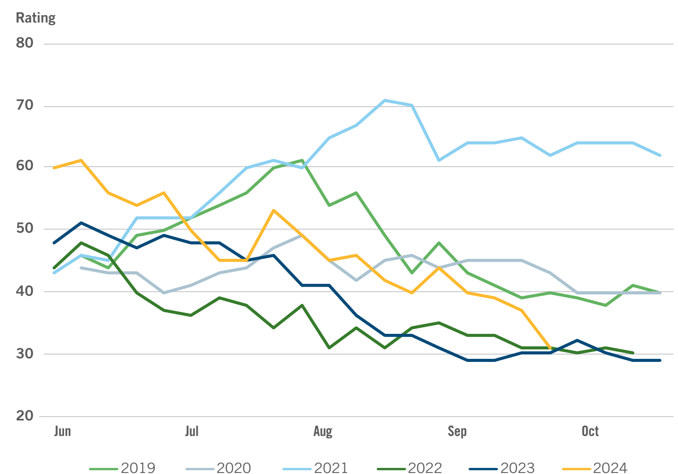
Rice

Rice harvest in the Delta and Midsouth made record pace ahead of Hurricane Francine. Crop losses to high winds were limited, but drenching rains have raised concerns over deteriorating grain quality. U.S. rice prices have defied the downward trend in grains and oilseeds as rising Brazilian paddy rice prices underpin U.S. values following Brazil's crop losses to flooding. Brazilian prices now trade at a rare premium to

1 **Hurricane Helene caused widespread cotton crop damage across th Southeastern U.S. and raises concern of crop quality ahead of harvest.**

2 **Strong export demand continues to support U.S. rice prices amid tight Brazilian supplies. India's return to the export market, though, may pressure global prices.**

EXHIBIT 1: U.S. Cotton Good-to-Excellent Crop Condition Ratings



Source: USDA-NASS

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U.S. prices. Export demand for U.S. long-grain rice in the Western Hemisphere remains robust *(Exhibit 2)*, while medium grain rice sales are also strong on Japanese demand. Total U.S. export sales for all rice are up 31.4% YoY.

India has resumed exports of non-basmati white rice after having restricted exports for the past year to contain food inflation. With India carrying hefty old-crop carryover stocks and expecting a record rice harvest in the weeks ahead, the lifting of the ban will boost global rice supplies and pressure world prices.

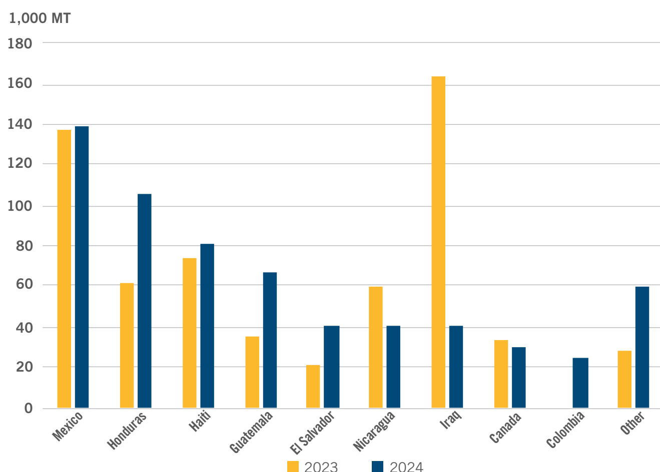
Sugar

U.S. sugarbeet and cane sugar farmers are in the process of bringing in a record harvest following a mild growing season. USDA estimates the new sugarbeet harvest at a record 5.311 million short tons, up 3% YoY. Output from sugar cane is up 1.4% YoY at 5.311 million short tons, also a record high *(Exhibit 3).* The combined record crops will help replenish tight U.S. supplies following Mexico's drought-stricken cane sugar harvest. Midwest white refined beet sugar prices are down 15% YoY at 53 cents/lb.

Globally, drought and widespread fires in Brazil, the top sugar-exporter, have underpinned world sugar prices with Brazil's sugar harvest figured to fall more than 3% YoY. India and Thailand, though, will harvest bumper sugar crops following a growing season of ample monsoon rains. Raw sugar #11 prices are down 13% YoY.

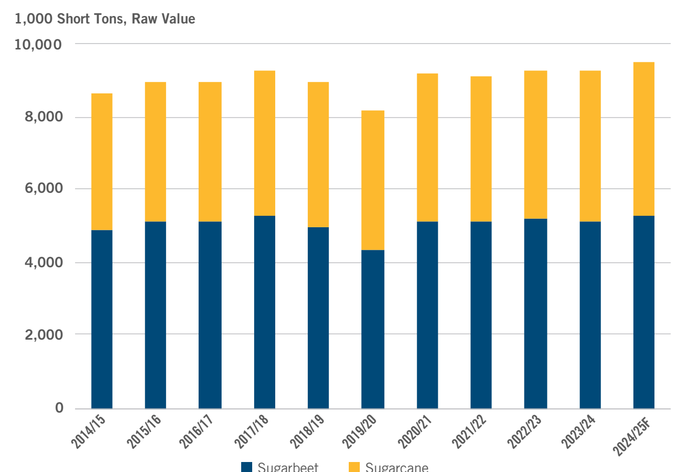
3 U.S. sugar beet farmers are harvesting a record crop, replenishing tight supplies following last year's drought-stricken Mexican sugar cane crop.

EXHIBIT 2: U.S. Long-Grain Rice Export Commitments



Source: USDA-FAS. Data as of Sept. 26

EXHIBIT 3: U.S. Sugar Production



Source: USDA-NASS

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SPECIALTY CROPS

Production perks up for coffee, U.S. peaches and table grapes

By Billy Roberts

A recent report from USDA's Foreign Agricultural Service forecasts world coffee production for 2024/25 will increase 7.1 million 60kg bags from the previous year *(Exhibit 1),* reaching 176.2 million, due primarily to continued recovery in Brazil and rebounding Indonesian output. Coffee consumption is expected to be 3.1 million bags more than a year ago, reaching 170.6 million in 2024/25.

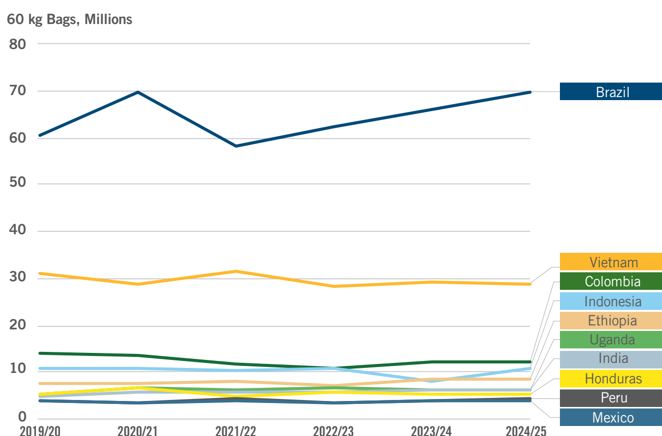
The report notes that while high temperatures in Brazil at the end of 2023 caused some cherries to drop during the fruit-forming stage, the subsequent adequate precipitation provided ideal conditions for the final stage of fruit development and boosted yields. Indonesia's coffee crop bounced back after last year's crop suffered from excessive rain during cherry development and caused sub-optimal conditions for pollination.

Arabica production will be led by Brazil *(Exhibit 2),* whose 2023/24 tally was already 13% ahead of 2022/23, and its 2024/25 projection would add another 7%. Brazil is still far and away the leader in Arabica, with production levels four times that of runner-up Colombia. Competition is much closer in robusta coffee *(Exhibit 3),* where Brazil falls roughly 20% short of leader Vietnam. In robusta, however, Brazil has shown steady YoY growth. While Vietnam broke the 30,000-bag barrier in 2022/23, it hasn't approached that number in the years since.

1 **Coffee production worldwide is set to rebound from the previous year as output from Brazil and Indonesia improves.**

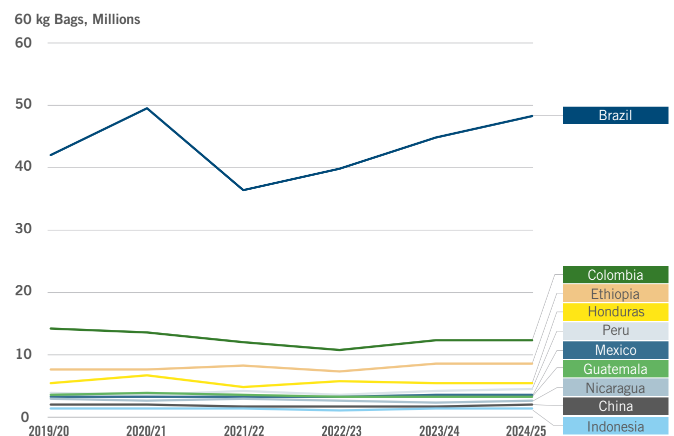
2 **Brazil remains the leading producer of Arabica coffee, and projections call for the country to add 7% to its current-year tally.**

EXHIBIT 1: Total Coffee Production by Country



Source: USDA-FAS

EXHIBIT 2: Arabica Coffee Production by Country



Source: USDA-FAS

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The challenge for coffee producers has been similar the world over, with drought and heat negatively affecting both Brazil and Vietnam in particular. Consumption levels, meanwhile, continue to grow, particularly in Asia.

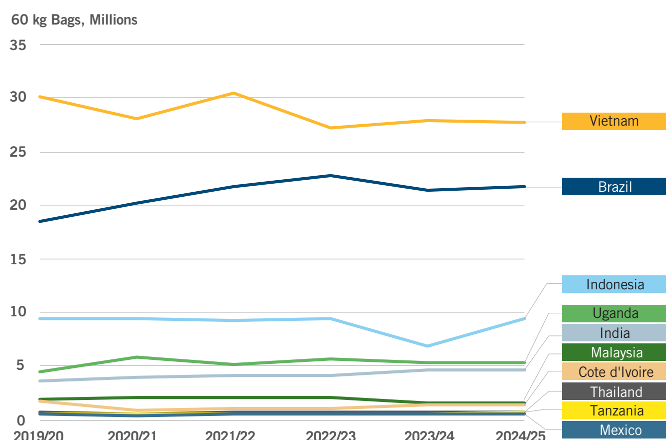
Turning to U.S. fruits and nuts, the USDA's National Agricultural Statistics Service (NASS) 2024 production forecast anticipates a 22% increase in peaches and table grapes *(Exhibit 4).* The latter result is at least somewhat impacted by last season's crop that was negatively affected by late-summer tropical storms. The 2024 production increase for peaches comes as the Southeast recovers from spring freeze events that hit last year.

In addition to a fairly robust 6% uptick in production of table olives, NASS does foresee marked declines in production of walnuts and pears. The lower walnut numbers follow a record high crop in 2023, in addition to likely lower yields in 2024 stemming from a warm winter followed by extreme summer heat. Weather likewise is to blame for the lower expectations among pears, but from the opposite end of the temperature gauge; cold weather will lead to an expected 22% decline in pear production in 2024, including a 31% drop in Washington, typically the largest pear-producing state.

3 For Robusta coffee, Brazil's production falls short only of Vietnam's.

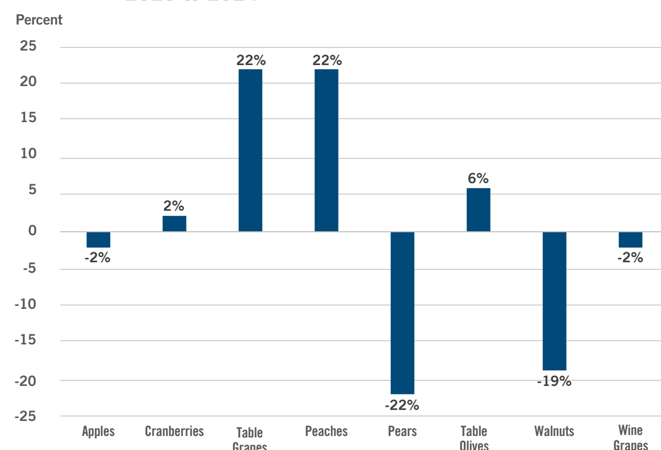
4 U.S. production of both peaches and table grapes is up 22% while pears and walnuts have plummeted.

EXHIBIT 3: Robusta Coffee Production by Country



Source: USDA-FAS

EXHIBIT 4: Select U.S. Fruit and Tree Nut Production Changes
2023 to 2024



Source: USDA-ERS based on data from USDA-NASS

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FOOD AND BEVERAGE

Consumers mind their food dollar as the holiday season approaches

By Billy Roberts

During earnings calls over recent quarters, consumer packaged good food and beverage brands have lamented loss of share and low volume sales. Circana forecasts an uptick in volume sales over the course of 2024, but that is not necessarily translating into higher volumes for national brands. And with the holiday season set for an early start, consumer cost-cutting behaviors will likely persist at least through the fourth quarter, pushing any real volume recovery for national brands into the new year.

The traditional holiday shopping window is shorter than usual this year with Thanksgiving on Nov. 28, so mass merchandisers are kicking off promotions earlier than ever: Both Walmart and Target will begin their holiday seasons in early October. In addition, holiday spending forecasts are modest: Mastercard expects consumers to be “picky about their spending this year” and pegs U.S. retail sales growth at 3.2% this holiday season (vs. 3.1% in 2023). Deloitte predicts holiday retail sales growth will be at the slowest pace in six years. Analysts expect aggressive deals. With the shopping season beginning earlier, however, consumers are likely to be even more aware of their spending – not only on gifts, but on essentials – and continue holding their costs in line.

In the grocery arena, price increases have slowed, but a variety of segments are still well ahead of pre-pandemic levels: Prices for cereals and bakery products have climbed about 25% since 2020, while fruits and vegetables are up 14%, notes Circana. While some recovery is expected in volume sales for retail food and beverage in 2024, this follows three years of declines.

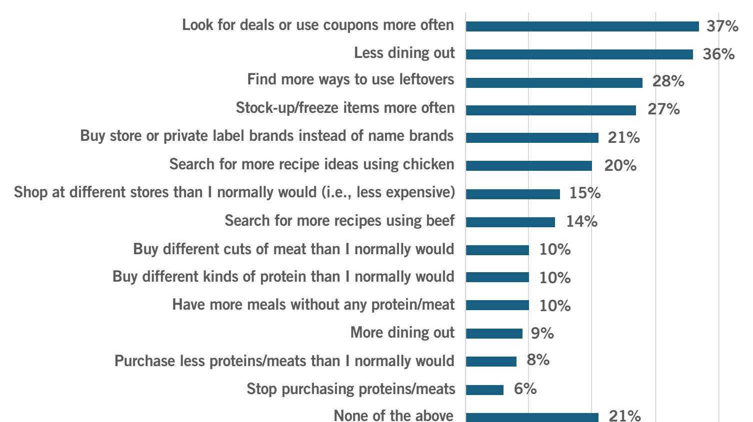
1 **Retailers’ early start to the holiday shopping season is likely to keep budgets top of mind for consumers still looking to maximize their food dollar.**

2 **Volume sales remain a point of concern for national CPG food and beverage brands.**

Nevertheless, FMI - The Food Industry Association finds grocery shoppers a bit more confident in their ability to afford groceries compared to one year ago. While nearly 4 in 10 (39%) still express concern about affording the food they need, that is fewer than the 42% sharing that sentiment in 2023. Consumers remain wary, though. Despite indications that inflation’s growth is slowing, nearly 70% of respondents are very or extremely concerned with retail food inflation, and 68% reported concerns with rising prices on foods they prefer, up 6 percentage points from last year.

Grocery shopping behaviors will continue to reflect those concerns *(Exhibit 1),* with couponing and deals a particularly popular option for consumers, and one

EXHIBIT 1: Shopping and Dining Habits in the Next Six Months
June 2024



Source: State of Consumer, June 2024, National Cattlemen’s Beef Association (“Thinking about your current shopping and dining habits, in which ways, if any, do you see them changing in the next 6 months? Select all that apply.”)

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that national brands are likely to use. However, dining out less and extending meals through freezing or creatively using leftovers are evidence that value is still top of mind for consumers and likely will keep them seeking the most cost-effective solution at least through the holidays and into the new year.

As such, expect the growth in grocery store foot traffic not only to remain strong, but to continue to outpace that of restaurants, despite the uptick in value menu promotions *(Exhibit 2).* Nearly 9 in 10 (86%) eating occasions remain sourced from home, per Circana's "Eating Patterns in America," 3 percentage points above pre-pandemic levels. Yet, consumers are not solely dining at the dinner table. With a notable increase in snacking away from home, CPG brands will continue to focus innovation and R&D on portability and portion sizing.

3 Value menus have helped restaurant traffic but not enough to surpass grocery.

4 Consumers are continuing cost-cutting behaviors set during the height of inflation.

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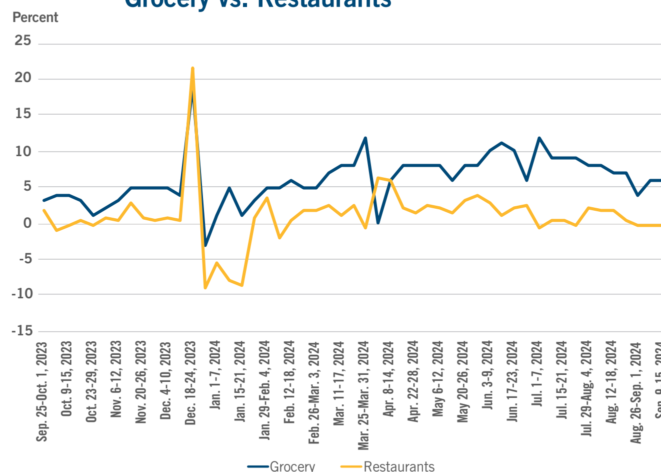
EXHIBIT 2: Percent Change in Weekly Foot Traffic Nationwide, Grocery vs. Restaurants



Source: Placer.ai, https://www.placer.ai/industries/grocery

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POWER, ENERGY AND WATER

"Stick season" utility bills bring melancholy

1 Consumer electricity bills will continue to rise even though headline inflation has been tamed.

2 Residential energy spending now remains elevated beyond the traditional three-month peak seasons. Fixed delivery costs are rising faster than electric generation costs.

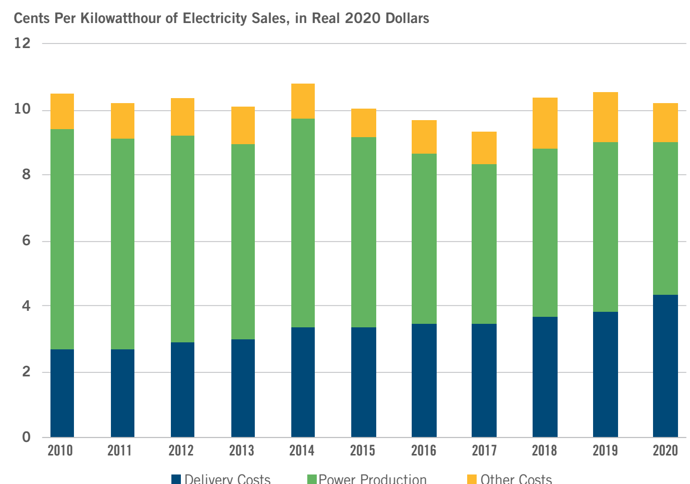
By Teri Viswanath

There was a time, especially if you lived on a limited budget, when leaving the worst of the summer heat behind meant the anticipation of reduced utility bills as the calendar progressed into fall (or, in Vermont, "stick season"). Or perhaps you signed up for an "average monthly payment program" with your utility, to skirt the summer electricity bill fatigue cycle entirely. But as residential energy spending now remains elevated beyond the traditional three-month peak seasons and fixed delivery costs are rising much faster than the generation costs, is shoulder-season-utility-bill-relief-euphoria a thing of the past? More to the point, are consumers reaching a breaking point in their ability to absorb additional utility rate increases required to fix our grid, where seasonal relief is not enough for already strained household budgets?

According to EIA's survey on residential energy use, 52% of U.S. households' annual energy consumption in 2020 was for just two energy end uses: space heating and air conditioning. Increased air conditioning use among U.S. households – rising from roughly 75% in 2000 to nearly 90% now – at least partially explains the phenomenon of higher shoulder month billing for the average American as this equipment remains in use for a longer period each year. A Scientific American article this summer confirmed what we all have been thinking: Summers are indeed getting hotter. What's more, a recent study published in the Geophysical Research Letters highlights that since the 1950s, the length of summer in the Northern Hemisphere has increased from 78 to 95 days. What this means is that the traditional meteorological summer looks more like four months instead of three.

The resulting boost in air-conditioning demand combined with structural growth likely translates to 3% more electricity generated this year than last. Yet, despite this increase in demand, power supply costs have largely been damped down because of deeply discounted natural gas fuel costs and the ability of the existing fleet to absorb increases in load. The challenge of these long, hot summers, however, is for the equipment to continue to operate at a high rate of utilization without an unplanned outage for repair. And, for that matter, as air-conditioning demand now persists well into September,

EXHIBIT 1: Major U.S. Utilities' Annual Spending by Category



Source: EIA

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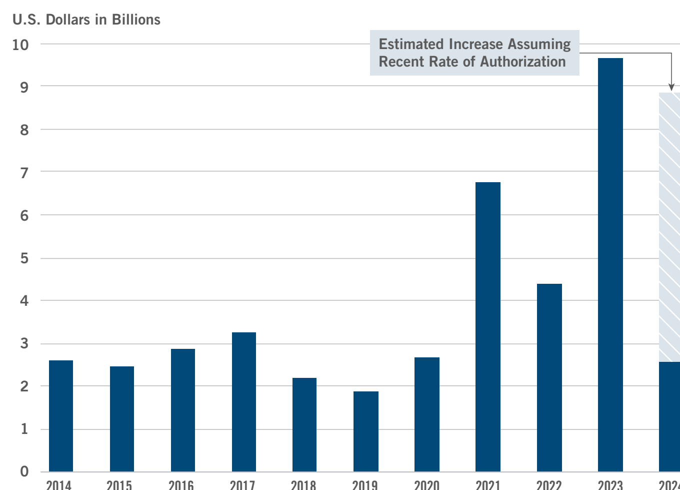
there is simply less time to service the equipment – the planned outages that are needed during the truncated shoulder season to meet the next peak winter wave of winter heating. Indeed, the more volatile wholesale power prices that we are witnessing during the shoulder seasons attests to the leaning of baseload supply during these periods.

Beyond the we-are-just-using-more-electricity-off-peak arguments, another factor contributing to elevated shoulder season utility bills is the structural change underway in the composition of the cost of service for electricity providers. Over the past decade, utilities generally have been spending more on delivering electricity to customers and less on producing that electricity *(Exhibit 1).* According to EIA's analysis, after adjusting for inflation, major utilities spent 2.6 cents per kilowatthour (kWh) on electricity delivery in 2010, using 2020 dollars. In comparison, spending on delivery was 65% higher in 2020 at 4.3 cents/kWh. Conversely, utility spending on power production decreased from 6.8 cents/kWh in 2010 (using 2020 dollars) to 4.6 cents/kWh in 2020. It is very likely that the major spending that occurred by electric utilities in most areas of the country is more heavily weighted toward delivery rather than electricity production. From a consumer perspective this shift toward fixed infrastructure spending rather than capital deployed toward variable power production means that the basic cost of electric service is rising, regardless of how much energy is used.

3 With a reported 78% of American stressed out over high energy bills, affordability of electricity bills is becoming an acute concern.

What's more, it is very likely that consumer electricity bills will continue to grow even though headline inflation has been tamed. When utilities expect their future operating needs will exceed expected revenue from consumers, they request a rate increase. And they've been requesting these increases at a record clip. After filing record-setting rate requests in 2021 and 2022, utilities brought an even more ambitious rate case agenda in 2023, with requests totaling more than $18.13 billion. According to S&P Global's Regulatory Research Associates last year marked the highest annual total of electric and gas rate increase requests since the agency began tracking rate cases. Further, the early tally for 2024 suggests that rate increase requests will likely rival last year's levels *(Exhibit 2).* Concerns about the affordability of electricity bills have become especially acute in recent years, with a reported 78% of American stressed out over high energy bills, begging the question of whether we've collectively arrived at a breaking point, the stick season.

EXHIBIT 2: Annual U.S. Net Rate Increases



Source: EIA

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DIGITAL INFRASTRUCTURE

Operators and banks get creative to finance fiber builds

By Jeff Johnston

The race to build fiber networks in unserved and underserved markets is on! The urgency is centered around the notion that whoever plants their fiber flag first will garner a disproportionate share of the market. Operators have shown that when a new fiber network is built in a market that is only being served with hybrid fiber-coax and/or DSL, the fiber operator quickly takes share due to the superior performance and reliability of the network.

Given this heightened level of urgency, broadband operators are looking for new loan structures that will accelerate their network build timeline.

Traditional loan structures for broadband operators were based around cash flow. For example, if an operator wanted to borrow $X amount they had to generate enough cash flow from their existing operations to service the debt. Now, operators are looking to borrow money based on the cost of a new network with milestones built into the deal. This type of structure is referred to as "loan to cost" and it enables operators to borrow money before the network begins to generate cash flow.

These structures are like a project finance arrangement and the milestones are typically tied to locations passed. After each milestone is reached, a tranche of cash is released to the operator to use to continue its build. So instead of "guaranteeing" the loan with cash flow from operations, banks use the network asset as collateral for the loan. This structure increases the risk and leverage for operators, but they are willing to do so to attain first-mover advantages when a new fiber network is built. And for banks, it's a different mindset and risk profile to adjust to. However, banks are warming up to this under the right circumstances because they recognize that take rates will ramp quickly when the network is built, and churn is typically very low for fiber operators who have weak competition. For banks it really comes down to their comfort level of whether the operator can execute its plan and hit the milestones. If they can, the risk of default drops considerably post-network construction.

It's reasonable to believe the loan-to-cost structure will grow in popularity over the foreseeable future. Broadband has become critical infrastructure and for those consumers and businesses relying on it, no service is untenable. But it's also important to recognize that it's still early days for these loans, and any material execution missteps related to passings or ARPU could reduce banks' willingness to underwrite these structures. Also, most of the loan-to-cost deals done thus far have had private equity backing, which reduces the risk profile for the lender.

1. **The race to build fiber networks in unserved and underserved markets is on!**
2. **Competition is causing operators and banks to get creative and to take on additional leverage and risk.**
3. **The new loan structures enable operators to build fiber networks faster so they can benefit from being first to market.**

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This quarterly update is prepared by the Knowledge Exchange Division and covers the key industries served by CoBank, including the agricultural markets and the rural infrastructure industries, as well as relevant legislative and regulatory developments.

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