

The Feed

Farmer Mac's Quarterly Perspective on Agriculture

Winter | Spring 2021

FARMER  AC
FINANCING RURAL AMERICA

Table of Contents

| | |
|---|----------------|
| A Message from Jackson Takach..... | Page 2 |
| Political Landscape..... | Page 3 |
| America Facing Increased Competition in Agricultural Transportation..... | Page 5 |
| Leveraging Port Grant Programs to Maximize Project and Area Development..... | Page 7 |
| The Rural Digital Opportunity Fund..... | Page 9 |
| Alternate Incomes from Solar Energy..... | Page 10 |
| Holiday Consumption in 2020..... | Page 11 |
| Corn and Soybeans..... | Page 13 |
| Weather..... | Page 15 |
| Dairy..... | Page 16 |
| Resources..... | Page 17 |
| About the Authors..... | Page 18 |

ABOUT THE FEED

The Feed is a quarterly economic outlook for current events and market conditions within agriculture. The report is broad-based, covers multiple regions and commodities and incorporates data and analysis from numerous sources to present a mosaic of the leading industry information, with a focus on the latest information from the United States Department of Agriculture and their Economic Research Service. There are several regularly included sections like weather and major industry segments, but the authors rotate through other industries and topics as they become relevant in the seasonal agricultural cycle. Where the report adds value to readers is through its unique synthesis of these multiple sources into a single succinct report. Please enjoy.

ABOUT FARMER MAC

Farmer Mac is a vital part of the agricultural credit markets and was created to increase access to and reduce the cost of capital for the benefit of American agricultural and rural communities. As the nation's premier secondary market for agricultural credit, we provide financial solutions to a broad spectrum of the agricultural community, including agricultural lenders, agribusinesses, and other institutions that can benefit from access to flexible, low-cost financing and risk management tools. Farmer Mac's customers benefit from our low cost of funds, low overhead costs, and high operational efficiency. For more than a quarter-century, Farmer Mac has been delivering the capital and commitment rural America deserves.

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FROM THE DESK OF THE CHIEF ECONOMIST

A Light Exists in Spring

As far as seasons go, spring is probably the most symbolic of the bunch. Change, thawing, opportunity, and planting are all metaphorical terms that flow from our first season of the year. With lengthening days and warming temperatures, these months are crucial for agricultural production and can set the tone for the year to come. Spring certainly feels welcome this year, as we look to shake off a pandemic and a fiercely partisan political cycle brought to you by the year 2020. Hence the title of this opening letter, borrowed from the works of Emily Dickinson. This spring, the Farmer Mac research team is taking a fresh look at the infrastructure supporting our agricultural sector, from the power that drives our irrigation pivots to the ports that facilitate our critical ag exports to the technological advancement of our competitors.

Infrastructure is increasingly important to agricultural and rural communities. The U.S. is blessed with rich resources and unparalleled geography. These advantages lower the cost of production and provide a comparative advantage against other producers around the globe. However, infrastructure requires reinvestment and innovation, and our competitors are closing the gap. Furthermore, investment in renewable energy and rural broadband could bring new and exciting economic prospects to communities across the country. The COVID-19 pandemic tested our food supply chain in numerous and varied ways, but the new year allows us to reevaluate and set a course to fortify the ag economy's backbone.

Access to long-term, low-cost capital will be a critical component in keeping America's food and energy infrastructure stalwart. Public policy combined with

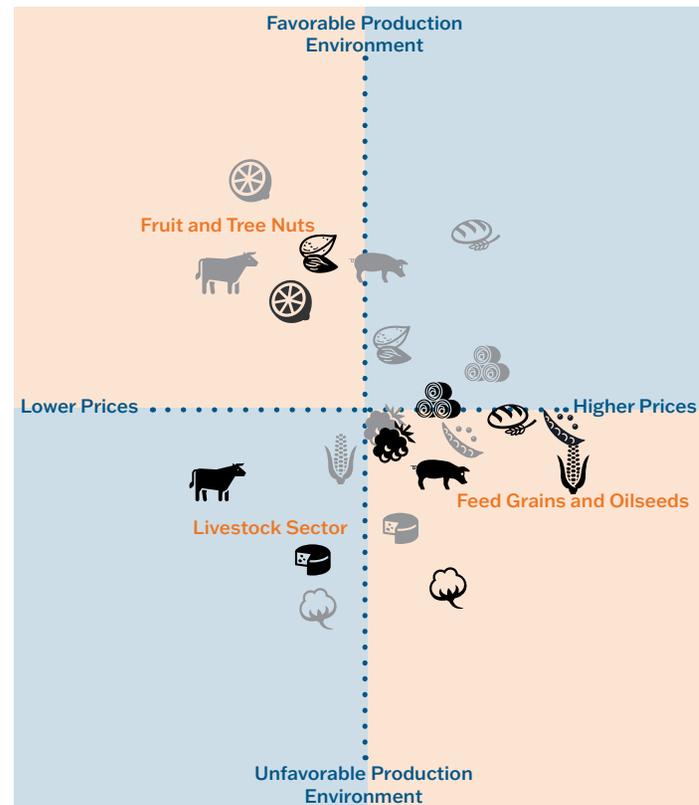
state and federal funding are all important, but it takes a village of investors, lenders, and entrepreneurs to fully realize the scale and scope of the links in our supply chain. Farmer Mac is a committed partner in that village, and we are always looking for opportunities to put our long-term capital to work for rural America. And I know that many lenders are eager to join in, as nearly half of the respondents to the Farmer Mac/ABA 2020 Ag Lender Survey indicated a specific interest in financing rural infrastructure. As 2021 takes shape, I encourage you to spend a few minutes thinking about how our nation's farming infrastructure impacts your daily life, both personally and professionally. I promise, it's time well-spent, and it may just give you a few ideas on how you can contribute to the revitalization of one of our greatest assets.

Our best for a vigorous start to 2021,



Jackson Takach, Chief Economist

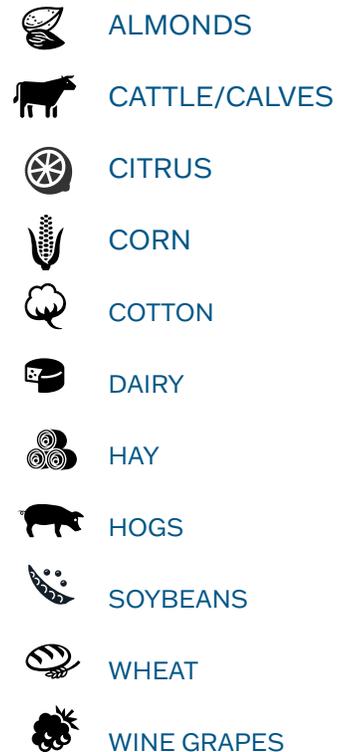
PRODUCTION AND MARKET PRICE PERCEPTUAL MAP



Fall 2020



Winter 2020 | 2021



Key Highlights

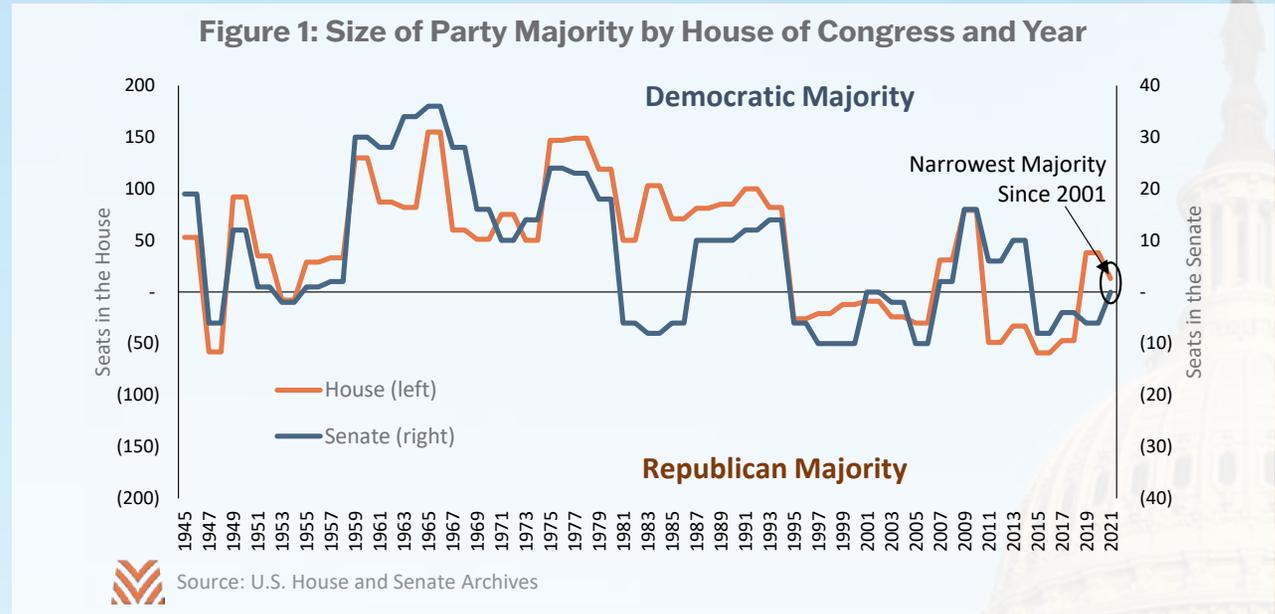
Democrats take control of the White House and Senate and retain control of the House in 2021. Democrats control a razor-thin majority in the House and Senate, which will hamper the ability to push sweeping changes.

Tom Vilsack, Katherine Tai, Janet Yellen, Gary Gensler, Representative David Scott (D-GA), Representative Glen “GT” Thompson (R-PA), Senator Debbie Stabenow (D-MI), and Senator John Boozman (R-AR) are names to watch in 2021 and 2022.

Renewables, broadband, and infrastructure could see a boost in 2021, and direct government farm payments track the economy, not political party.

Direct government farm payments are expected to continue to track the economy, as there is wide bipartisan support for U.S. agriculture.

ELECTION RESULTS. The 2020 election cycle was long and contentious, shaped by an economic and health crisis. In addition to the residence at 1600 Pennsylvania Avenue, both major parties sought control of the U.S. House of Representatives and U.S. Senate. With much at stake and partisanship nearing peak levels, the 2020 election rang up as the most



expensive in history. At nearly \$14 billion in combined campaign funds spent between Congressional races and the presidential race (excluding spending on the two Georgia Senate runoff elections), this year’s election more than doubled spending from the 2016 election cycle. A record number of voters cast mail-in ballots due to concerns about coronavirus spread and overall voter turnout (66.3%) was at the highest level in 120 years. After all states certified their election results, Joe Biden and Kamala Harris won the popular vote and took 306 electoral college votes to win the White House.

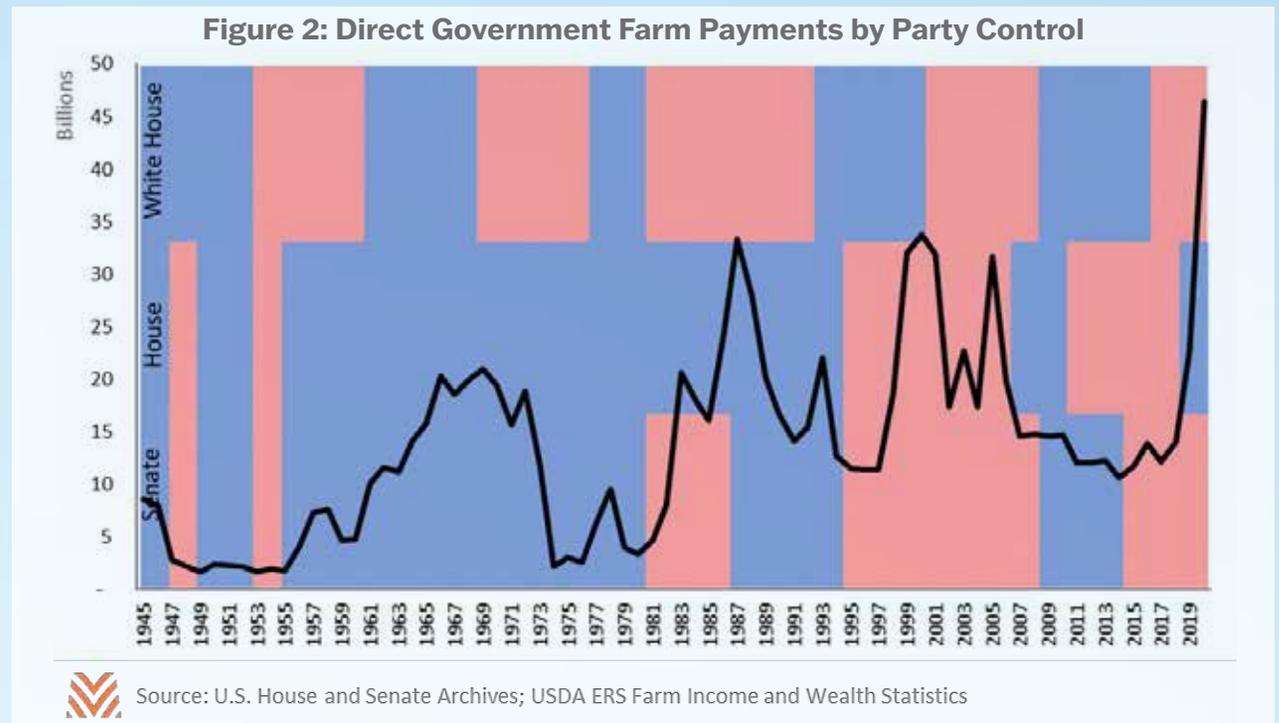
There were many interesting threads embedded in the election results. While many swing states swung again in 2020, several did not. The biggest difference-maker for the Biden camp was flipping the “blue wall” states of Pennsylvania, Michigan, and Wisconsin, all of which President Trump carried in 2016. However, other states like Iowa, Ohio, and Florida held a substantial republican vote margin, challenging their actual swing

state status. Democratic candidates won in Georgia and Arizona, locking up the states’ electoral votes for the first time in more than 20 years and all four Senate seats. The two Senate seats in Georgia combined with Vice President Harris gave the Democrats control of the Senate, but with no margin for error. Combined with a 11-seat majority in the House, the Democrats face the narrowest majority since 2001, as Figure 1 shows. This slim margin means President Biden may have to temper some expectations about sweeping policy changes. However, with control of both chambers of Congress, Democrats will have powerful legislative tools like budget reconciliation and the Congressional Review Act to advance legislation and roll back Trump-era regulations.

APPOINTEES AND LEADERSHIP FOR AGRICULTURE. With a new president and Congress comes new leadership. President Biden has announced numerous familiar names for his executive cabinet, but

three that agricultural producers and lenders should know are Tom Vilsack (Secretary of Agriculture), Katherine Tai (U.S. Trade Representative), and Janet Yellen (Secretary of Treasury). Tom Vilsack needs little introduction, having served as the Secretary of Agriculture for all eight years of the Obama presidency. He brings a deep understanding of agriculture, food programs, and departmental working with him to the cabinet. He has farm bill experience (2014) and was at the department's helm during the longest ag cycle expansion in history. Katherine Tai is President Biden's nominee for the U.S. Trade Representative (USTR), a role that has had an increasing impact on the farm, energy, and manufacturing sectors. Tai has rich experience in trade policy serving the USTR as Chief Counsel for China Trade Enforcement in the Obama administration and has been serving as the Chief Trade Counsel for the Democratic Members of the Committee on Ways and Means. Ms. Tai has been critical of China's trade practices in the past, and she is likely to continue to keep a strong posture with U.S.-China relations leaning more on World Trade Organization systems and regional alliances to influence behavior and outcomes than tariffs alone. Finally, former-Fed Chair Janet Yellen is back as President Biden's pick for Treasury secretary. Ms. Yellen is a tested economist and central banker who supports expanded economic recovery spending to stimulate the economy in 2021. Combined with a tilt towards continued-low interest rates, her positions could put downward pressure on the relative value of the U.S. dollar in coming years (a net positive for the agricultural sector).

Changes in Congress are also highly impactful for agriculture and rural. The House Agriculture Committee lost its chair with the defeat of Representative Colin Peterson (D-MN). Representative David Scott (D-GA) took the helm in 2021, moving the chair seat



from the Midwest to the Southeast. Republicans also have new leadership in the House Ag Committee with Representative Glenn Thompson (R-PA) replacing Mike Conaway (R-TX) after his retirement. Both Peterson and Conaway have been key figures in prior farm bills, so their departure for the House Ag Committee leaves big shoes to fill as we approach the next farm bill in 2023. The Senate Committee on Agriculture chair will be Senator Debbie Stabenow of Michigan, a veteran member of the committee and former chair.

IMPACTS ON RURAL AND FARM PROGRAMS.

The new administration is likely to focus on climate and infrastructure, but farm support is unlikely to be forgotten. President Biden's campaign platform included many calls for investment in energy and manufacturing technology, as well as billions for rural

infrastructure such as locks, dams, roads, bridges, and rural broadband. Biofuel and renewable energy incentives were a keystone of the 2009 Recovery Act, and the Biden administration is calling for a renewed focus on these programs in 2021. Conversely, tax policy (particularly estate tax exemption levels and rates), regulation requirements (particularly water and emissions), and farm consolidation are all set to get a fresh look in the coming years. While direct farm payments are not likely to repeat their eye-popping levels from 2020 (over \$46 billion and counting) anytime soon, government support for farming operations is not going away. As Figure 2 shows, regardless of the party in power, direct government support payments rise and fall in all combinations of party control. The best correlation for government payments has been and will continue to be the health of the agricultural economy.

AMERICA FACING INCREASED COMPETITION IN AG TRANSPORTATION
(resource 5, 6, 7, 8)

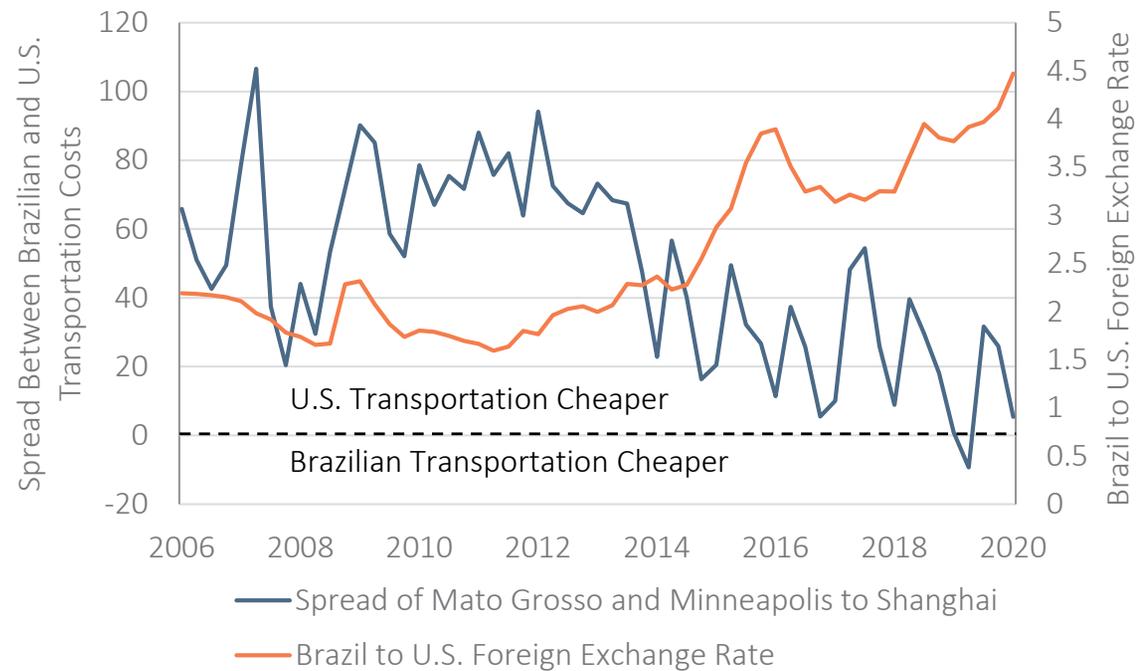
Key Highlights

American producers have historically had an advantage in transportation costs, but that advantage has dwindled for some commodities.

A combination of currency devaluation and new infrastructure investment has increased the transportation cost competitiveness of developing exporters like Brazil.

This does not apply to developed agricultural exporters like those in the E.U., but new Chinese investments signal some risk.

Figure 3: Spreads in Soybean Shipping Costs to Shanghai From Brazil and the U.S., 2006 – 2020



Source: USDA Agricultural Marketing Service; Federal Reserve Bank of St. Louis

For years, the relative high quality of American infrastructure has provided U.S. farmers with a competitive advantage over most foreign producers. Other nations have historically struggled to compete—as can be seen by using Brazilian soybeans as a case study. Brazil transports most of its soybeans on trucks, often on unpaved or inferior roads, and its major ports have often seen considerable loading delays.

However, while infrastructure remains relatively stable in America, developing nations are beginning to catch up, and Americans could be losing their competitive advantage. In 2006, transportation costs from the critical Brazilian soybean region of Mato Grosso to Shanghai were almost half of the total landed cost.

But Brazil managed to cut this figure almost in half by 2019, to 28%. Part of this is due to Brazilian investment in their infrastructure. Agriculture represents almost 7% of the total Brazilian GDP, and their government has been working to improve this rapidly growing industry. The government has paved and modernized major roads that connect soybean regions to ports and has begun to privatize some ports to spur additional investment in those facilities. Brazilian railways have also received attention, with new networks being completed that connect major growing regions like Goiás to ports for the first time.

A second factor in slashed transportation costs has been the continued depreciation of the Brazilian real.

Brazil is an economy driven by commodity exports. In 2015, broad declines in oil, coffee, and agricultural commodities prices drove the economy into recession. This led to a swift decline in the real, which still has not recovered to pre-2015 levels. Finally, in the second calendar quarter of 2019, something happened that was once unthinkable: transportation costs to Shanghai became cheaper in Brazil than in America.

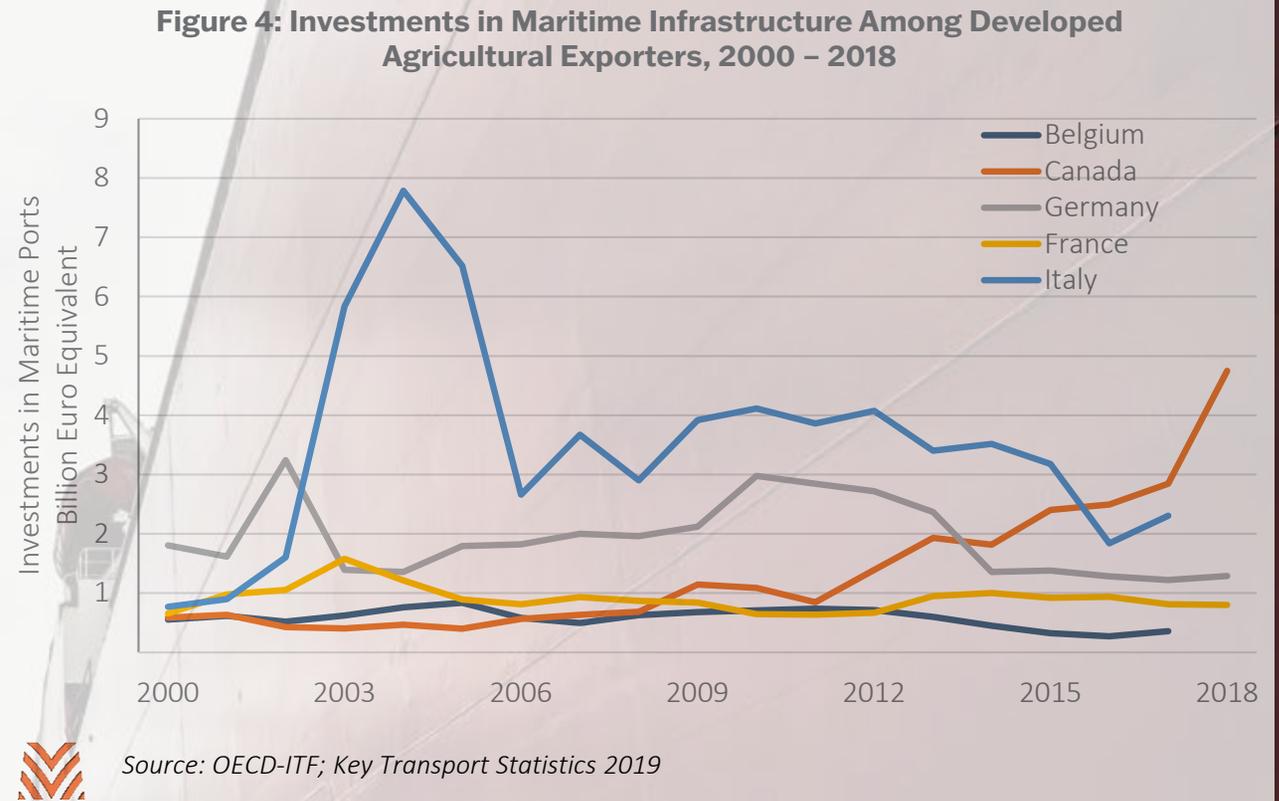
These trends are also evident among other major agricultural exporters in developing regions, like Argentina. Argentinian soybeans have been cheaper to transport to China for years, an advantage that has grown since the supercycle era. The Argentine peso has fallen even more against the dollar than the Brazilian

real, falling from an exchange rate of 8.5 at the start of 2015 to over 86 pesos today. The Argentine government has also used similar tools to modernize their infrastructure, creating a series of public-private partnerships to invest in infrastructure related to agriculture.

This pattern of depreciation and continued investment is not true of all major American competitors. Four of the top 10 largest agricultural exporters by value are in the European Union. Of those, none has seen consistent increases in their maritime infrastructure investments over the last two decades. Like the U.S., these nations had been able to rely on more robust existing infrastructure that had given them an advantage. The relationship between the dollar and euro has also been stronger between that of the dollar and South American currencies. Like it is in the U.S., agriculture is a small portion of the overall economy for these developed exporters, meaning that infrastructure investment for agricultural purposes may have a lower priority.

Different commodities will face different risks based off this trend. The most exported agricultural products from Europe, like pork and dairy, are less likely to see sharp changes in their competitive advantage stemming from transportation costs. However, corn and soybeans may face high risk from these changes. This can also extend outside South America. Wheat may face challenges as countries with commodity-reliant economies, like Russia, see currency devaluation and have easier opportunities to improve their existing infrastructure.

Even developed nations may see their transportation cost competitiveness to certain markets increase in



the coming years. Over the last decade, Chinese port operators like COSCO have become increasingly involved in European port activity. China's Belt and Road Initiative has helped spur some of this activity, leading to Chinese entities being involved in port acquisitions and partnerships in Belgium, Spain, Greece, Italy, and around the European continent. If the intention of these acquisitions is to reduce transportation costs between China and the world, the U.S. will see its competitive advantage in shipping costs to China decline.

This trend doesn't have to be permanent. Department of Transportation grants like the Port Infrastructure

Development Program may help further reduce American shipping costs. And the recent downward pressure on the U.S. dollar may help American shipping cost competitiveness over the near term. If commodity-driven economies like Brazil can rebound in the coming years, a rebound of those exporters' currencies would help improve America's competitiveness even further. In other words, there are reasons to suspect America will be able to come back out on top of the transportation costs arms race—but the days of enjoying first place without real competition may be over.

Key Highlights

Marine ports are critical for America's agricultural exports, but the top 20 ports account for more than 90% of agricultural exports.

Programs like the U.S. Department of Transportation's Port Infrastructure Development Program are designed to help grow port capacity, including for agricultural exports.

Leveraging economic development consultants can help maximize potential to receive incentive dollars and maximize secondary benefits like local job growth.

Editor's note: The authors, Charles (Bob) and Joe Brettell, operate The Prosody Group, a multidisciplinary consulting firm with strong experience in economic development, project pursuit and public support efforts. They maintain offices in Kansas City and Houston. More information is available at www.prosodygroup.com. Prosody Group's economic development subsidiary, Prosody Consulting ED, LLC, was the economic development consultant to West Plains in pursuit of the Brownsville Port PIDP grant.

America's ports are the lynchpin of the truism that "America feeds the world." According to USDA statistics, marine ports accounted for over \$140 billion in agricultural export value, with a net trade surplus approaching \$11 billion. Further, USDA estimates indicate "20% of U.S. farm income is export-driven, powering rural economic activity and supporting more than 1,000,000 American jobs on and off the farm."

Agricultural commodity exports are largely handled by independent grain merchants that earn their margin by providing services along the entire farm-to-fork value chain—originating sales in rural communities, transporting products to outbound port facilities, and arranging sales to their customers in markets around the globe. Hence, they are required to make significant investments in their port and other logistics facilities. Unfortunately, depressed commodity prices over the last few years have negatively impacted both producers and merchants alike, reducing merchants' ability to fund greenfield and redevelopment projects at existing and prospective port sites.

While the top 20 ports account for 90% of all ag commodity exports, membership in the top 20 also changes frequently, following the ebb and flow of investments, trade flows, and business fortunes. For smaller city ports, like the Port of Brownsville (POB) in Texas, the impact of port success or failure has an outsized impact on its surrounding communities—as the only deep-water port on the U.S.-Mexico border, POB accounts for over 33% of GDP in the Brownsville-Harlingen Metropolitan Statistical Area. Accordingly, maintaining and attracting customers is a critical function for ports, with the impact of their successes and failures felt by the entire local community.

This fluid situation provides ample opportunity for a forward-thinking port leadership team to make

substantive gains in both trade volume and dollars—provided they act decisively. While the Covid-19 pandemic and the resulting economic slowdown has altered the import/export landscape, port leadership teams can help maintain and grow their business by facilitating their customers' pursuit of incentive programs. Vying for these investment dollars can be competitive, yet they offer excellent opportunities to deliver value for ports, their customers, and their surrounding communities.

One such program is U.S. Department of Transportation's (USDOT) Port Infrastructure Development Program (PIDP). PIDP, like many other federal and state grant programs, is a "sleeved" or "conduit" benefit program—meaning that the port, as the eligible party/grantee, is merely a vessel for the flow of government dollars to private-sector partners. Therefore, these programs align the port's and private investors' interests, ultimately enhancing the capabilities of the port facility, boosting local economies, and creating good-paying jobs.

Moreover, programs like PIDP are infrastructure grants given to ports, and typically mostly used for out-of-water development projects including equipment purchases, building construction and upgrade, and facilitating more efficient, effective, and safe operation of port facilities. The same "fixed landside" infrastructure investment focus was (and is) true for the USDOT TIGER program, the State of Minnesota's Port Development Assistance Program, and virtually all other similar programs.

For a real-world example of what's possible, take the aforementioned Port of Brownsville (POB). In October 2020, USDOT notified POB of its successful PIDP application, which landed POB a \$14.5M grant to develop, expand, and upgrade the port's grain elevator, operated by West Plains, LLC, alongside fixed landside, rail, and road improvements. When completed, this

hugely beneficial project will allow agricultural exports from a facility that has been shuttered to outflows for 13 years and will redirect trade currently being handled by the Port of Corpus Christi—a massive win for the Brownsville area.

The Prosody Group believes that a robust review of these and other infrastructure incentive programs is especially important now, as 2021 is shaping up to be robust federal incentive environment:

1. Politically, infrastructure programs have historically garnered bipartisan support—something of a unicorn in our current political environment.
2. The recently enacted FY 2021 Omnibus Appropriations Bill upsize the 2021 PIDP allocation to \$230M and USDOT's overall MARAD program funding by 10%; it also funds existing infrastructure programs like TIGER, BUILD, and others.

Given the plethora of available incentive programs, private enterprises considering port-linked greenfield or redevelopment projects should consider economic development programs to determine whether they fit their funding needs.

Having walked through this process with clients before, Prosody has identified these best practices for a successful pursuit of incentive dollars:

1. First, find and retain the best economic development consultants possible. An experienced creative consultant with appropriate resources, client support, and ample lead time can work miracles. With so many dollars and jobs at stake, not to mention the complexity of these programs, management teams that pinch pennies on their pursuit may unnecessarily endanger funding that could make or break a project.
2. Second, don't delay starting your pursuit—time is the one thing you can't buy. Not only do these programs have rigid (often gated) timing requirements, but in most instances, these dollars aren't available once a project has broken ground or taken other significant steps.
3. Third, put together a compelling project/narrative and work hard to build public and private support for it. Competition for economic development funds promises to be more intense as Covid wreaks havoc on budgets. Building a strong public narrative and utilizing grassroots, media, and key stakeholder support to push the project over the finish line should be viewed as an essential project piece— not just an afterthought, particularly given the important of community support once the project is finished.



Key Highlights

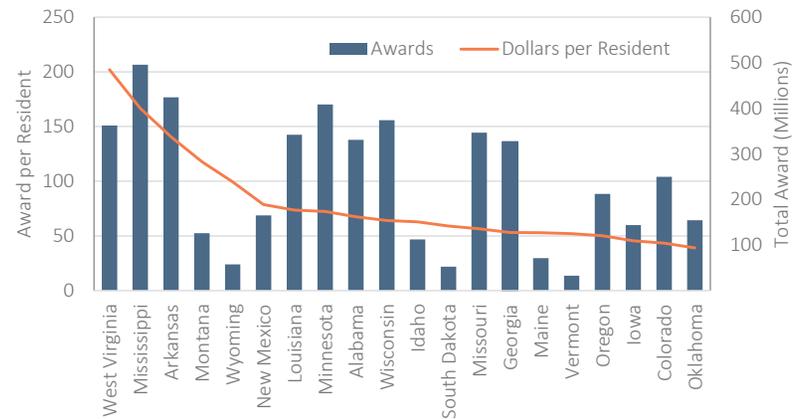
The Federal Communication Commission’s Rural Digital Opportunity Fund will award up to \$20.4 billion for rural broadband development over the next decade.

RDOF recipients represent a wide spectrum, from hundreds of local cooperatives to new entrants, like SpaceX; awardees must secure letters of credit by mid-February.

Award dollars show regional variation: Southeast and Northern Plains states see largest investment, while Northeast states see the least.

In 2017, the federally appointed Interagency Task Force on Agriculture and Rural Prosperity released a report detailing their top priorities to foster rural growth. They found that access to robust internet service was critical for workforce development, implementation of new technologies, and capital access. In the wake of this report, the Federal Communications Commission (FCC) has issued several rounds of funding designed to foster rural broadband access. In October, the FCC announced a list of 386 approved applicants for its Rural Digital Opportunity Fund (RDOF) Phase I Auction. This program will allocate up to \$20.4 billion to areas that do not offer what the FCC considers to be high-speed internet.

Figure 5: Total Phase I RDOF Award and Dollars per Resident Among Top 20 States by Average Award



Source: Federal Communications Commission

This program represents a large expansion over prior federal efforts. The USDA’s ReConnect program has awarded \$642 million to date, while the FCC’s Connect America Fund has awarded \$1.5 billion. The FCC’s eligible areas for the RDOF program cover almost 4 million homes, mostly in communities that have lagged national economic growth. In counties that have the largest share of homes eligible for RDOF, county-level GDP growth averaged 1.9% in 2018. In counties with the smallest share, growth was 2.5% percent over the same period.

While there are some familiar names in the list of RDOF awardees, the recipient list is broad. Just 22 applicants represent more than 90% of the initial award of \$9.2 billion, but many of those applicants represent large consortiums. Nearly 200 cooperative entities are represented by these consortiums, with interests across much of the country. Other awardees range from traditional large corporations, like CenturyLink, to newer entrants, like Space Exploration Technologies Corp. (SpaceX).

The size of this program means that almost every county in the U.S. will likely see some benefit, though there is significant regional variation. In states like West Virginia and Wyoming, the FCC has already awarded more than \$100 per person through the RDOF program. Across much of the Midwest, investment on a per person basis is closer to \$50, while many states in New England were awarded less than \$10 per resident due to their existing infrastructure.

RDOF awardees are currently in the process of securing letters of credit commitment letters and are certifying their applications. These awardees that we know now are likely those that will receive support through the program. This 10-year commitment should help both foster growth in these underserved rural communities and enable adoption of new technologies for agricultural producers. Enhanced broadband alone is not a panacea to rural America’s unique challenges, but new investments like RDOF may narrow the gap between urban and rural growth.

ALTERNATE INCOMES FROM SOLAR ENERGY

(resource 15, 16, 17, 18, 19)

Key Highlights

Solar power generation capacity is expected to double over the next five years and to eclipse total generation from U.S. hydropower plants by 2022.

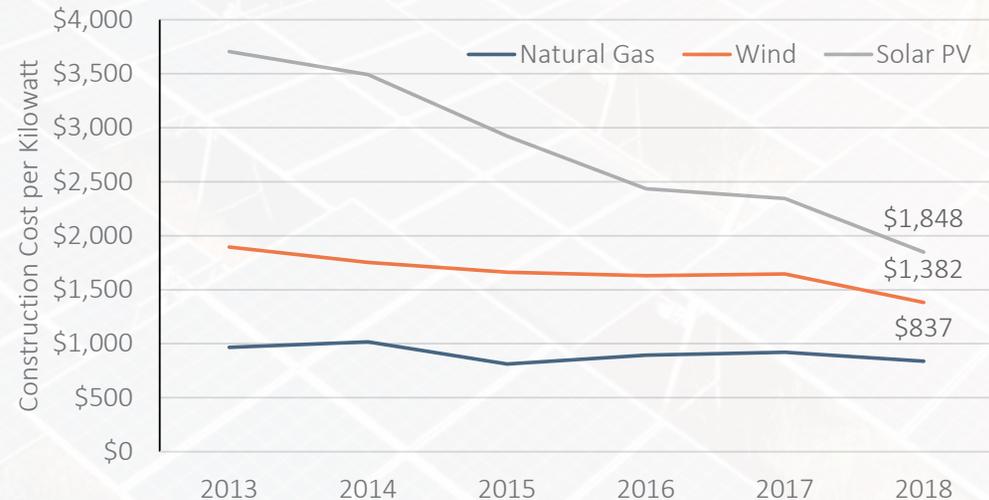
Solar leases can offer income streams above local cash rental rates, but contract length requires consideration of long-term changes.

Co-location of agriculture and solar infrastructure (agrivoltaics) offers a way to earn dual streams of income off farmland, though it is less suitable for row crops.

Between 2020 and 2025, the Energy Information Administration (EIA) predicts that more new electricity generation capacity will be added that is solar than that is oil and gas. Part of this stems from steep declines in installation costs on new solar projects. Between 2013 and 2018, the average cost per new kilowatt of solar photovoltaic (PV) generation fell 50%, rapidly approaching costs for other major energy sources. Solar is also unique in how distributed production is: 2% of solar production comes from end-users, like residences with solar rooftops or solar projects on farms.

Solar energy has been an avenue of alternative income for producers for years, but these cost reductions mean

Figure 6: Construction Costs of New Electricity Generation by Major Type, 2013 – 2018



Source: U.S. Energy Information Administration

that farmers are likely to receive even more offers for solar leases. Long-term leases will almost always be above local cash rental rates, though amounts will vary depending on access to existing infrastructure and urban proximity. However, the length of these contracts means that producers must consider what could change over multiple decades. Commodity prices could drive cash rental rates above lease rates, developmental pressures could increase, tax structures could change, and business partners could falter.

A second option producers could take is to co-locate agricultural and solar PV infrastructure, known as agrivoltaics. Recent studies of agrivoltaics find that select commodities may even benefit from this co-location. In one study, the reduction of direct sunlight from the solar panels allowed specialty crops like tomatoes to retain more moisture, along with other ancillary benefits. In another, cows in fields with

solar PV panels had lower internal temperatures as a result of standing under the panels, which aided milk production. Even shade-intolerant commodities like corn can co-exist well enough to increase total revenues from land, given appropriate solar infrastructure.

Whether or not solar could provide a useful income stream for a producer will depend on the specific circumstances of the land being considered. However, producers should expect to see plenty of opportunities to consider whether it is right for them over the next year. The EIA forecasts that the largest increase in total solar generation capacity will happen between 2021 and 2022. The amount of solar power generated by end users is forecast to quadruple by 2025. Even if producers do not decide to look to solar for alternate incomes, we are likely to see a surge in interest for these projects over the next five years.

Key Highlights

More than half of Americans changed their 2020 holiday plans as a result of the pandemic; gatherings were smaller but more frequent.

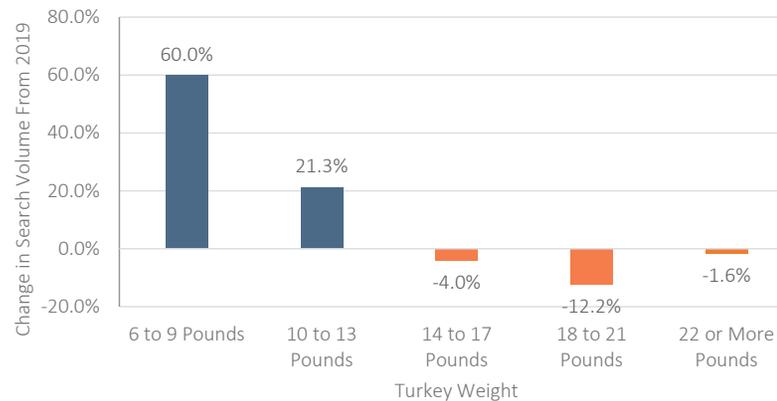
Scalable commodities saw more purchases at smaller volumes; people consumed more turkeys, but of smaller weights, with an overall decline in total slaughter weights.

Less scalable commodities, like pie pumpkins and Christmas trees, saw strong demand, hinting at stronger demand than in a typical year.

For many Americans, the holidays of 2020 looked different than years prior. Halloween featured fewer trick-or-treaters; fewer extra chairs were needed for Thanksgiving; and some holiday cookie recipes were halved. However, the impacts of all these changes were less obvious. Halloween chocolate sales were up 25% in the lead up to All Hallows' Eve even though there were fewer predicted gremlins and ghosts. Consumers seemed primed to spend on holiday foods even if many of them needed less than in a typical year. The allure of eating a bag of fun-size candy alone did not perfectly translate to pumpkin pie and Christmas ham. What did we learn from how consumers behaved through a unique holiday season?

Initial surveys show that most Americans altered their holiday plans in at least some ways as a result of the

Figure 7: Change in November Google Search Volume for How To Cook Various Size Turkeys From 2019



Source: Google Trends

pandemic. The Pew Research Center found that 57% of Americans changed their Thanksgiving plans in a meaningful way. This may have led to some softness in Thanksgiving foods. The American Farm Bureau Federation found that the total cost of a typical 4-person Thanksgiving meal fell 2% from 2019, driven by a steep decline in turkey prices. Total weights of slaughtered turkeys also fell year over year, being 3% below 2019 levels during November.

However, this doesn't mean that there were fewer gatherings. On the contrary, Google trend data gives us some evidence that Thanksgiving meals were smaller but more common in 2020. Americans were more likely to search for how to cook a turkey in 2020 than in any prior year, as interest in smaller birds surged while large tom searches were flat or fell. The USDA's Agricultural Marketing Service also found that Thanksgiving turkey demand for 8 to 16-pound hens was good, while demand for 20 pound and heavier birds was "light at best." Overall, consumers apparently looked to scale what commodities they could as they planned for smaller gatherings.

What about less scalable items, like pumpkin pie? With more dinners, more cooks may have tried their hands at baking their own pie through the fall months. Once again, Google trend data shows that search interest in pumpkin pie baking was higher in 2020 than any prior year. This was also borne out in retail pricing. Average wholesale pie pumpkin prices held steady through September and October, unlike in 2019 when prices fell as the season progressed. However, advertised carving pumpkin prices showed similar year over year prices. This could signal that consumption was relatively higher for products needed for less scalable baked goods, like pumpkin pie.

This same relationship with scalability held in December. Sales of Christmas trees in the first few weeks of December were up to 50% higher than prior year levels, according to the Michigan Christmas Tree Association. Unique holiday foods like fruitcake saw more Google trend interest in 2020 over prior years. And recipe searches for green bean casserole to cranberry sauce all saw higher year over year interest.

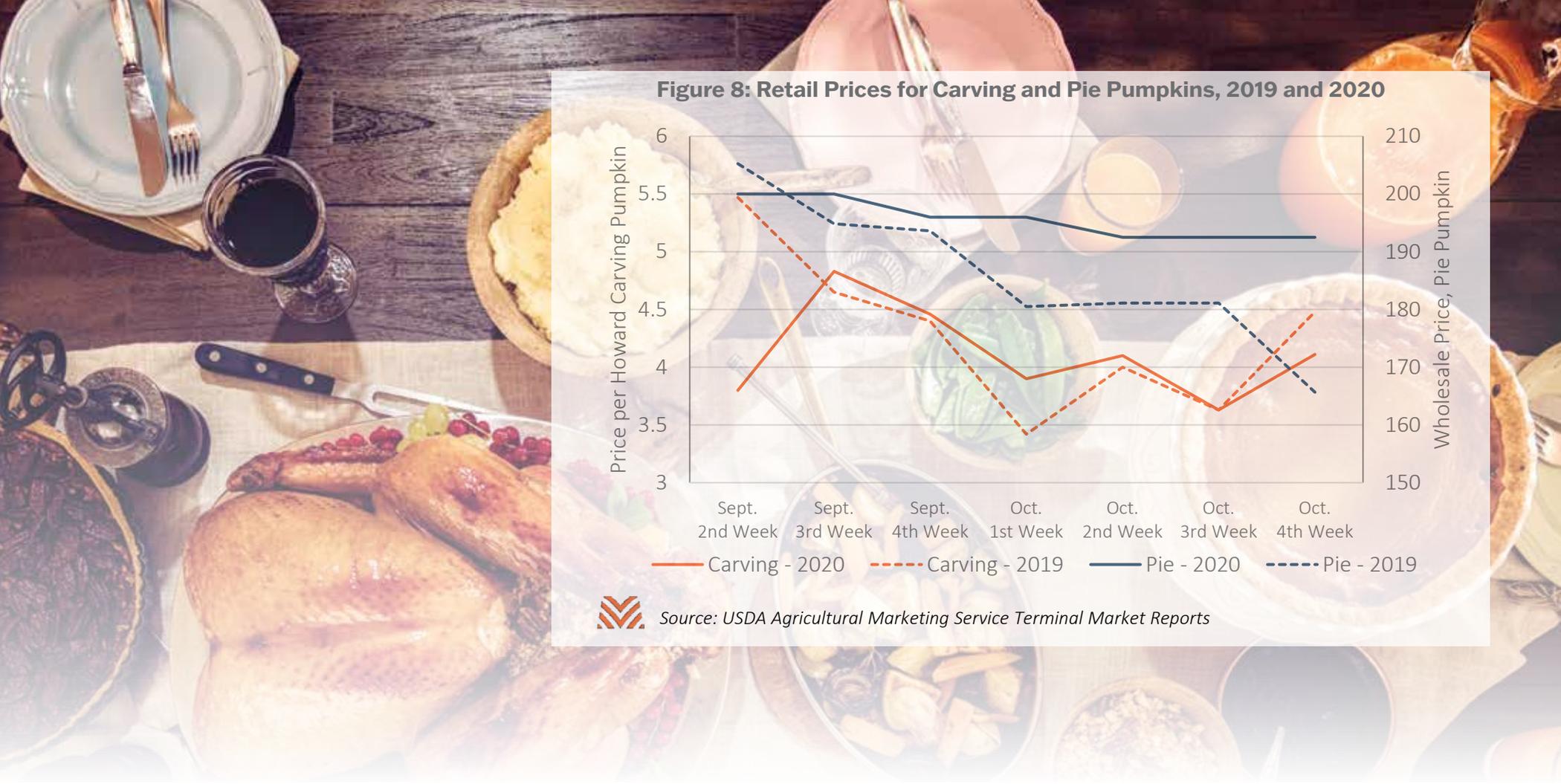
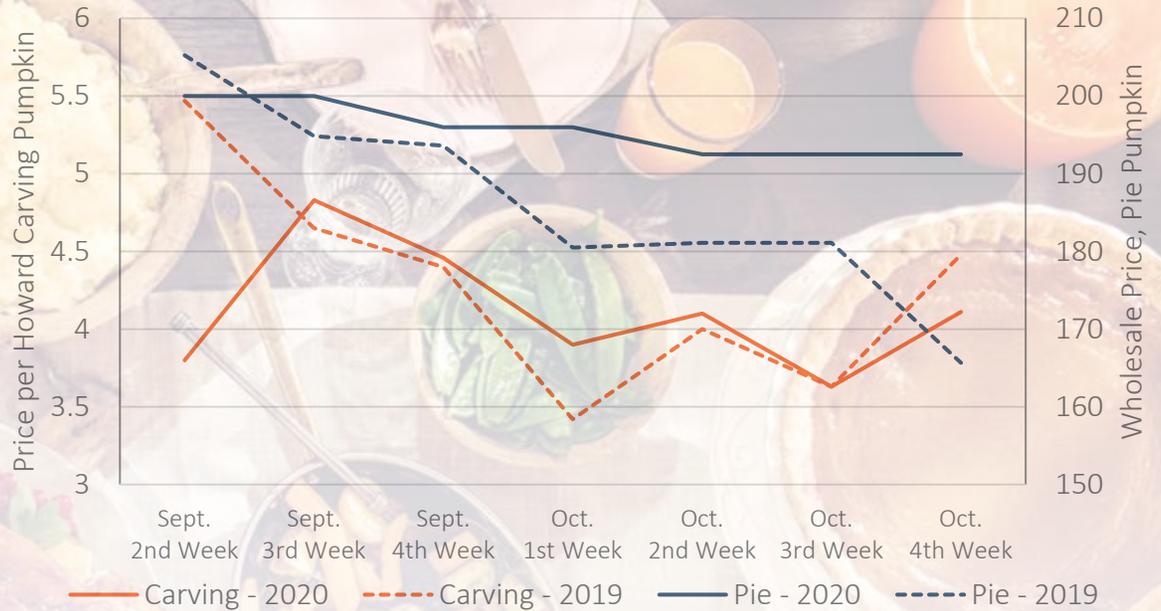


Figure 8: Retail Prices for Carving and Pie Pumpkins, 2019 and 2020



Source: USDA Agricultural Marketing Service Terminal Market Reports

Yet, once again, more scalable holiday foods did not see unexpected surges in demand. Pork retail prices were largely unaffected through December, and slaughter trends saw similar changes to turkeys. Cheese prices were solid but not unexpectedly strong, signaling that consumers may have skipped the third option for their holiday cheese board for a smaller bunch of attendees. However, stronger butter sales hint that Americans were cooking through the holiday season.

Taken together, these stories imply that Americans found ways to celebrate the 2020 holidays despite the strange circumstances. A follow-up survey from the National Confectioners Association found that more than half of Americans said they would buy at least as much candy as previous Decembers despite the circumstances. A quarter intended to increase their total purchases, despite smaller gatherings. In an otherwise atypical year, many Americans seemed to lean into the traditions of the holiday season.

What this means for future holidays in a post-pandemic world is difficult to tell. Through 2020, Americans did make changes to their holiday plans, and those plans often resulted in smaller and more numerous gatherings. That may have hurt consumption for scalable commodities like turkey, while less scalable items like pumpkin pie saw some benefit. If some families decide that they preferred the more intimate settings of 2020, these lessons may be relevant to producers long after the pandemic has passed.

CORN AND SOYBEANS

(resource 27, 28, 29, 30, 31)

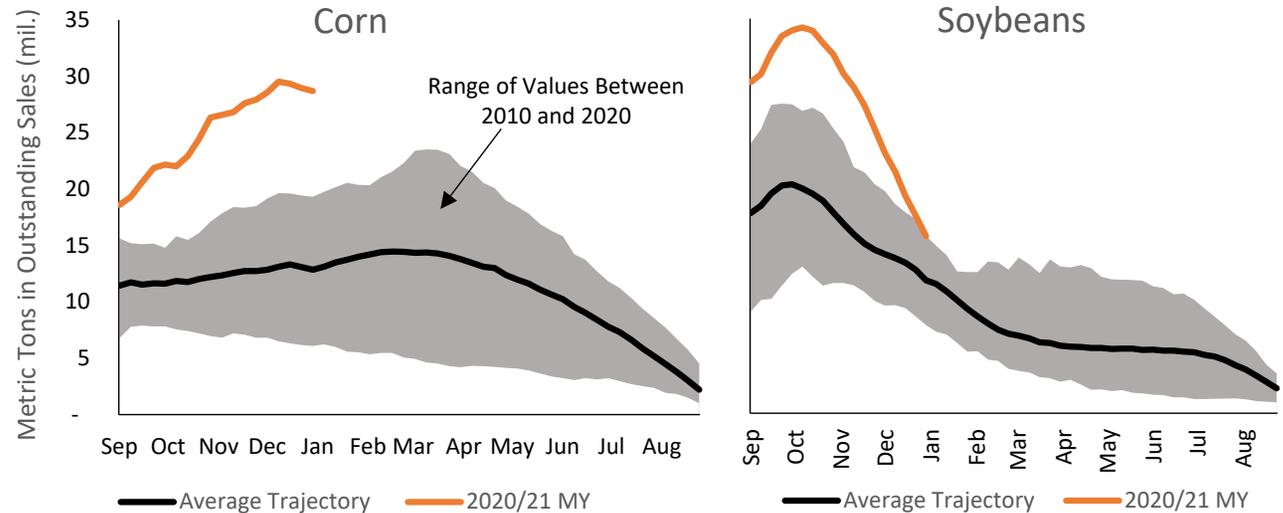
Key Highlights

Robust demand for animal feed and exports is behind the rapid rise in corn prices in 2021.

Soybeans are also in high demand from a recovering hog industry in China.

Cash and futures prices are at multi-year highs and could hold throughout 2021, depending on supply response to the rising demand.

Figure 9: Committed Export Sales of Corn and Soybeans



CORN. U.S. corn production rebounded in 2020, a function of more acres planted combined with return-to-trend yields. Corn acres only increased by a modest 1% from 2019 levels yet yields increased 3%. The rebound in production drove domestic supplies back up to 10-year averages. The U.S. led the global recovery in corn production, with only Brazil and Mexico also posting meaningful production gains in 2020. Total world corn production set a record in 2020, topping the prior record set in 2017.

Corn demand is also up in the 2020/21 marketing year. Animal feed use is driving domestic demand up, but the pandemic-related drop in fuel offsets the rise, with ethanol production off 12% in 2020. Global demand for corn spiked this year, led by a rebound in China's sizable hog industry. The USDA estimates China's corn imports will increase 350 million bushels this year, much of which is already committed in U.S. export data. Outstanding corn sales for export are off the

chart in the early part of the 2020/21 marketing year, nearly double the 10-year average and 50% above the highest level experienced in the last ten years, as Figure 9 shows. China's Farm Minister raised corn import estimates again in mid-January, citing the recovering hog industry and the need for additional feedstocks. Food price inflation is running high in China, giving rise to the unprecedented import surge from the region. Without the high export sales levels to China, corn exports would be down in 2020 on reduced sales in Mexico and Japan, our top grain trading partners. Outstanding sales in winter tend to get converted to actual shipments in the spring months, so record high levels are likely to persist or even climb a bit until April or May.

The spike in demand has been the catalyst for higher prices in the fall and winter months. Corn futures prices increased more than \$1.75 per bushel between July and December, and the price curve is consistently

hovering over \$5.00 per bushel throughout the 2021 marketing year, as Figure 10 shows. The USDA estimates an average farm price of \$4.20 per bushel in 2021, an 18% increase over the average 2020 price. Prices could moderate later in 2021, depending on the supply response to the higher prices and the rebuilding of corn stocks in China. Corn stocks-to-use, a ratio of supply and demand, is likely to be at its lowest level since 2014.

SOYBEANS. Both U.S. and global soybean production increased in 2020. Estimated production increased 16% in the U.S. due to an increase in both acres planted and average yields. More than half of the 7% rebound in global soybean production in 2020 came from U.S. producers. States notching the largest production gains include upper Midwest states, where acres and yield rebounded from a difficult 2019 growing season, and Missouri and Indiana, with record average yields for the crop year. Weather-related concerns

have lowered output projections in South America, although rains across Brazil's major growing regions in early 2021 have moderated some of those concerns. In its January World Agricultural Supply and Demand Estimates (WASDE), the USDA projected the second-largest soybean supply in history.

Like corn, the big story for the soybean complex in 2020 has been demand. The U.S. soybean crush has been very strong due to better prices and lower supplies in international markets. Meal demand has rebounded from a difficult 2019 as China has rebuilt its massive hog complex. Meal exports have followed a typical pattern this marketing year, but bulk soybean exports set records in terms of cumulative sales to date

and outstanding sales in early January, as Figure 10 shows. Sales to China accounted for the bulk of the increase in 2020, but there were also sizable increases in sales to Egypt and the Netherlands. Vegetable oil prices have also been rising due to supply concerns, another demand pull for additional soybean crush.

Soybean prices reflect the higher demand and tighter-than-expected supply situation. Soybean futures rallied more than \$5 per bushel between August 2020 and January 2021, a 56% increase. As of mid-January, the futures curve allows growers to price into 2022 at nearly \$12 per bushel. This is a vast improvement over conditions just three months earlier. The biggest driver in the bullish market sentiment is the decline

in expected soybean ending stocks. Global stocks-to-use are likely to fall to 0.14 in 2021, down from a peak of 0.19 in 2019. The U.S. stocks-to-use ratio is even tighter, falling to an estimated 0.03 in 2021 from 0.23 in 2019. These are the lowest stocks-to-use ratios since 2013, and in prior years with low relative stock levels, there has been a large production expansion the following growing seasons. Markets are pricing in a bounce in production into 2022, and that could indicate increased competition between U.S. and Brazilian producers. Infrastructure and transportation efficiencies will be incredibly impactful during such a production rebound.

Figure 10: CME Grain Futures Curves Compared from July 2020 and January 2021



Key Highlights

Cold conditions are probable in the Midwest and Ohio Valley in February into March.

Drier than normal conditions are likely to persist in California, despite a wet January.

normal, be on the lookout for periods of significantly below normal temperatures in February and early March. Accompanying this will be normal to above normal precipitation; thus, it is likely that snowpack will increase across the region for the remainder of the winter. Heading into spring, the melting of this snowpack will need to be monitored for ramifications for flood and fieldwork conditions.

The weather conditions noted for the Midwest are also likely to spread southeastward to affect the Ohio Valley and East Coast, though probably to a lesser degree than the Midwest. Therefore, these areas should also be impacted by increased chances for colder than normal conditions in February and March, which should abate by spring. An active storm track from the southern plains into the Appalachians is also likely to result in above normal precipitation in the Ohio Valley region.

The La Niña pattern, combined with colder than normal weather throughout the Midwest, generally does not portend favorably for the rainy season in California and other areas of the West outside of the Pacific Northwest and northern Rockies. Snow water equivalents across California have been less than 50% of seasonal average through late January 2021, and while there will be periods of welcomed significant precipitation into early February, it is unlikely that this rainy season will end up materially above average. Thus, when compounded on a dry 2020, drought conditions are likely to persist and intensify in much of the West heading into summer 2021.

The winter of 2021 has begun, with many areas of the country experiencing normal weather conditions, particularly with the expectations of the overall La Niña weather pattern that developed during the summer and fall of 2020.

Throughout the Midwest, the general implication of an La Niña pattern should be for milder than normal temperatures and normal amounts of precipitation. However, in early January 2021, a strong “sudden stratospheric warming” event developed. For some 30 to 60 days after these events, the polar vortex can become weakened, making cold outbreaks more likely. We have experienced a bit of this in mid- to late- January; however, repercussions will likely to be felt into at least February. While temperatures from February into April may be on average warmer than

Figure 11: Seasonal Drought Outlook

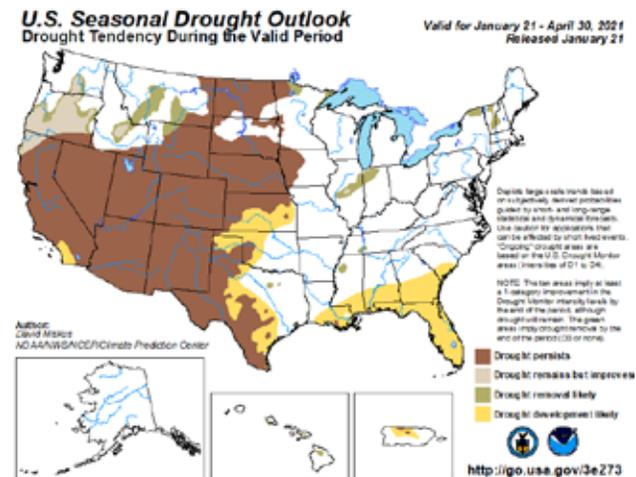
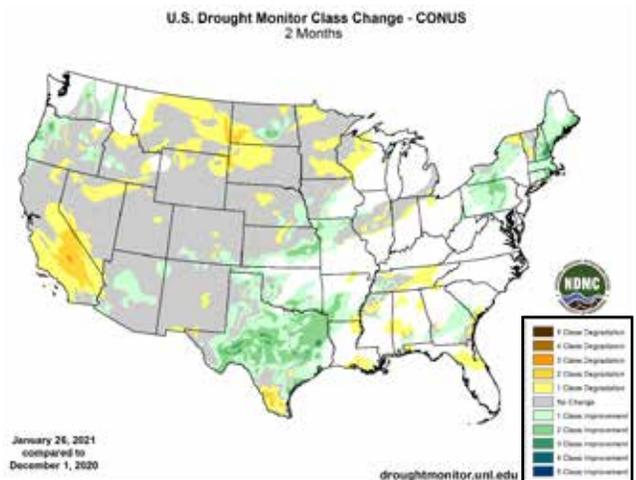


Figure 12: Drought Monitor Class Change



Key Highlights

Dairy markets saw more volatility than any major commodity in 2020; prices for class III milk observed both 5-year lows and highs over a span of one month.

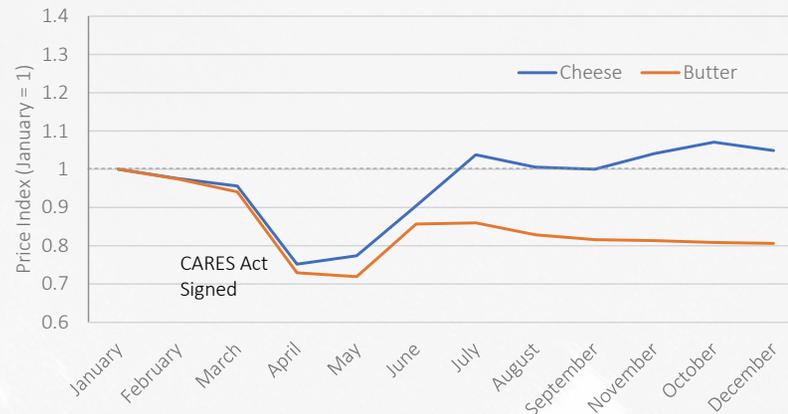
Government food box programs provided a critical support for dairy in 2020; food box programs purchased more than \$1 billion in dairy products.

Dairy subcomponents, like butter, will continue to be soft until restaurant activity recovers in the second half of 2021, though high stocks may delay that recovery.

Few commodities saw as much volatility as dairy did through 2020. Dairy producers came into 2020 with high expectations after several important trade agreements and increased export opportunities. The burgeoning pandemic came to represent an existential risk, as dairy use in restaurants plummeted overnight and spot prices fell well below breakeven measures. Yet producers ended the year bullish: USDA NASS found that producers increased their number of milk cows through the second half of 2020, and the USDA's Economic Research Service forecasts that 2020 incomes for dairy producers were their highest since 2014.

One critical component of this volatility was the USDA's Farmers to Families Food Box program. Of the round one contracts awarded, more than a quarter of the value was specifically for dairy products. This implies that of the \$4.5 billion allotted for food box

Figure 13: Index of WASDE Cheese and Butter Prices, January 2020 – December 2020



Source: USDA OCE World Agricultural Supply and Demand Estimates

purchases, more than a billion dollars were expressly for dairy purchases. This represents a meaningful amount of the estimated \$40 billion dollars dairy producers earned in 2020.

These purchases may have obscured some weakness in different subcomponents of the dairy market. Since March, strong pizza purchases combined with government programs led to stable markets for some dairy solids. However, drops in restaurant demand have hammered butter prices, which remain well below prior-year values. While the Farmers to Families program did have an impact on these markets, it is likely that a full recovery in the butter market will not occur until the service sector fully comes online, probably in the second half of 2021. Even then, high butter cold storage stocks may take months to come down to more normal levels.

Until the service sector can fully recover, the dairy sector remains susceptible to these severe price swings. As the USDA expended its initial \$4.5 billion in

emergency food purchases, futures for class III milk fell from high profit territory to below breakeven levels. The week Congress passed its December relief bill that included an additional \$1.5 billion for purchases, prices immediately rebounded. That bill included an additional \$400 million to pay for milk that would be processed and donated to nonprofit entities. While dairy producers may receive less total aid in 2021, these payments are a helpful stopgap until restaurant activity fully recovers.

Dairy producers faced more uncertainty than almost any sector in 2021, but have ended on a high note. This came from a combination of strong consumer demand for certain milk products, like liquid milk and pizzas, but was also contingent on strong government support. Producers are entering 2021 with more productive capacity even as restaurant activity continues to be well below prior year levels. While futures appear healthy through the first half of 2021, longer-term health may depend on the strength of restaurant recovery in the back half of the year.

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Prior to launching the strategic communications practice, he served as head of external relations for Apache Corporation, as has also served as Senior Vice President at Fleishman Hillard where he oversaw clients across the energy, agriculture and manufacturing spectrum. Joe resides in Houston.

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