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2020 U.S. Economic Outlook
A Focus on Rural America

Homestead Funds

Prepared January 2020

Economists with the National Rural Electric Cooperative Association's (NRECA) Business and Technology Strategies Department examine a number of issues expected to be particularly impactful for rural electric co-ops and likely to play a big role in shaping the economic health of the communities they serve.

These insights are paired with a broad view of the health of the U.S. economy overall and portfolio management perspectives from RE Advisers, NRECA's money management subsidiary and the investment advisor for Homestead Funds. In comparing these different vantage points, you'll notice that an economic backdrop of uncertainty or increased volatility may present an opportunity for active money managers with a long-term view.

NRECA's Business and Technology Strategies Department offers insights on trends affecting operations, technology, consumer expectations and policy. The team engages directly with internal and external stakeholders and represents cooperative needs in key forums to help ensure the longevity and success of America's electric cooperatives.

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Created by NRECA, Homestead Funds offers a range of professionally managed strategies that can be used by cooperatives and individuals to meet their short-, intermediate- and long-term investment needs.

The State of the U.S. Economy

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Following a bumpy third quarter, stock and bond markets in the U.S. finished out 2019 with strong gains for the year. In the fourth quarter, we saw another rally for stocks especially, with broad U.S. benchmarks up significantly. Bond markets were flat to slightly down in the quarter but also posted healthy gains for the calendar year.

These results may surprise investors who see daily headlines about slowing global growth, trade war fallout and a wide range of geopolitical concerns. Still, investment prices are driven by a number of factors, and the defining trend in the fourth quarter (and the calendar year) is probably best described in this way: better than feared.

Looking ahead to 2020, the strong investment performance of 2019 could be hard to match. With stock valuations at a cyclical high, we would need to see a notable boost in expected company earnings in the year ahead in order to see a meaningful increase in stock values. Though the U.S. consumer continues to enjoy a strong job market and high confidence, the manufacturing sector faces ongoing headwinds and could go either way in the quarters to come.

Explaining the Urban-Rural Divide in Economic Growth

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The Federal Reserve Bank of St. Louis recently examined the urban-rural divide in economic growth using newly released county-level data on inflation-adjusted gross domestic product (GDP) over the 2012-2015 period.[1] GDP is the value of all goods and services produced in the economy.

The study divided counties between those belonging to metropolitan statistical areas (MSAs), generally in metro or urban areas, and counties located outside of MSAs in nonmetro or rural areas. The results found that the average annual growth rate of 1.97% in metro areas exceeded the growth rate in nonmetro areas, which averaged 1.68%. Moreover, 75% of metro counties expanded over the four-year study period, while only 64% of nonmetro counties expanded.

Annual growth rates across nonmetro counties are also more dispersed, meaning there is a broader range of growth rates in nonmetro counties than in metro counties. The report finds that this greater dispersion of growth can be attributed to the larger role of the goods-producing sector across nonmetro counties, as shown in the table below.

Composition of Average Real GDP by Sector: Metro and Nonmetro Counties

	U.S. Metro (Urban)	U.S. Nonmetro (Rural)
Private Goods Producing	17.9%	32.4%
Private Service Producing	70.1%	51.9%
Government and Government Enterprises	11.9%	15.7%

Source: Federal Reserve Bank of St. Louis

Approximately 70% of metro area GDP comes from the private service-producing sector and only about 50% of nonmetro GDP comes from this sector, which includes financial services, hospitality, retail, health, human services, information services and education. This difference is attributed to agglomeration effects, resulting from service-providing firms experiencing greater productivity by locating in areas where they have easier access to resources and a large pool of consumers. This leads to faster service-sector growth in metro counties. The median service-providing sector growth rate in metro counties was 2.12% compared with 1.17% in nonmetro counties.

[1]Gascon, Charles S. and Brian Reinbold, "Industry Mix May Help Explain Urban-Rural Divide in Economic Growth," Federal Reserve Bank of St. Louis, June 21, 2019.

The data also suggest that rural areas have been growing more slowly because of greater exposure to the government sector relative to the private service-producing sector. The public or government sector composes a larger share of GDP in nonmetro counties, accounting for nearly 16% of output compared with 12% in metro counties. As the Fed report explains, this partly accounts for the slower growth in nonmetro areas, since government-sector output declined across most counties during the 2012-2015 period.

This data is a great example of what we encounter every day in making investment decisions: anticipating how outcomes will differ, over time.

For instance, tech-sector stocks in the S&P 500 Index returned nearly 400% in the past decade, while energy-sector stocks returned less than 40%.[2] The macro factors, such as the overall growth of the economy, are very important to understand, but the micro-level, company- or region-specific issues will be the primary driver of long-term trends.

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Trade War Impacts Farm Exports

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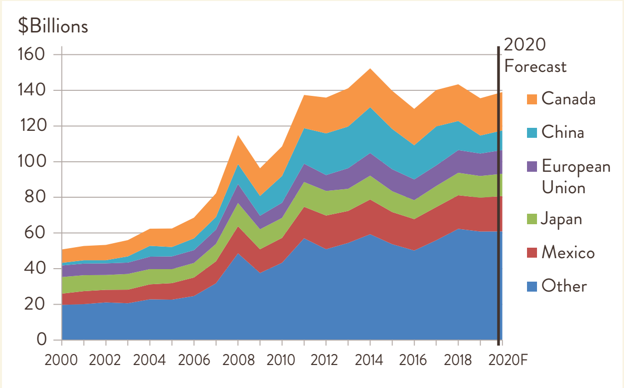
The U.S. trade war with China that began in July 2018 has had a negative impact on U.S. farmers. From 2008 to 2017 China was the largest or second largest market for U.S. agricultural exports annually, with most of the revenue coming from soybeans. But in fiscal years (FY) 2018 and 2019, exports fell to $16.3 billion and $10.1 billion respectively, substantially less than the $21.8 billion in agricultural export sales to China reported in FY 2017. The outlook in FY 2020 for U.S. agricultural trade with China is expected to improve. The U.S. Department of Agriculture (USDA) projects about a 10% increase over FY 2019, due to higher expected soybean and pork sales, with exports to China reaching $11 billion, but still half of export sales in FY 2017.[3]

China is the world's largest consumer of pork. Prior to the trade war, U.S. pork exports had been growing and are now starting to rebound again. Since late 2018, the African Swine Fever has reduced Chinese domestic pork production by a quarter, increasing its demand for imported pork. Despite a Chinese import tariff of 72%,[4] U.S. pork export volumes were up nearly 400% over the May-October 2019 period when compared with the same period in 2018.[5]

Similarly, U.S. exports of soybeans to China have surged in recent months, despite a 33% import tariff.[6] In 2018, exports of soybeans fell to 8.3 million metric tonnes (MMT). Over the January-September 2019 period, soybean exports to China totaled nearly 14 MMT, exceeding 2018 totals by 67%, though still well below the 32 MMT in 2017.

In January, the U.S. and China reached an agreement on Phase One of the trade deal. The deal is expected to improve the trade outlook, with the potential for exports to further recover from the drops seen in 2018 and 2019.

Top Five Exports Markets for U.S. Agricultural Products (Fiscal Year Ending September 30)



Source: U.S. Department of Agriculture, November 2019

The trade war is also affecting the costs that U.S. farmers face for new equipment and parts, thanks to tariffs on steel imports. When you combine these dynamics with stubbornly low prices for commodities, the average farm has faced substantial headwinds in recent years.

Since few farms are publicly held companies, we would look to associated sectors to see how the value of farms has been affected. Real estate investment trusts (REITs) holding farmland, farm equipment makers and crop transporters have generally underperformed the broader market over the past year, though most such stocks did produce modest gains.[7]

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[2] Egan, Matt, "Energy stocks are the biggest losers of 2019 — and the decade," CNN Business.

[3] U.S. Department of Agriculture, "Outlook for U.S. Agricultural Trade," November 25, 2019 (hereafter, USDA Outlook 2019).

[4] U.S. Department of Agriculture Foreign Agricultural Service, "China Announces Increases to Additional Tariffs on U.S. Agricultural Products," *Gain Report*, No. CH19062, September 19, 2019 (hereafter, USDA FAS 2019).

[5] USDA Outlook 2019.

[6] USDA FAS 2019.

[7] Bloomberg

Farm Bankruptcies on the Rise

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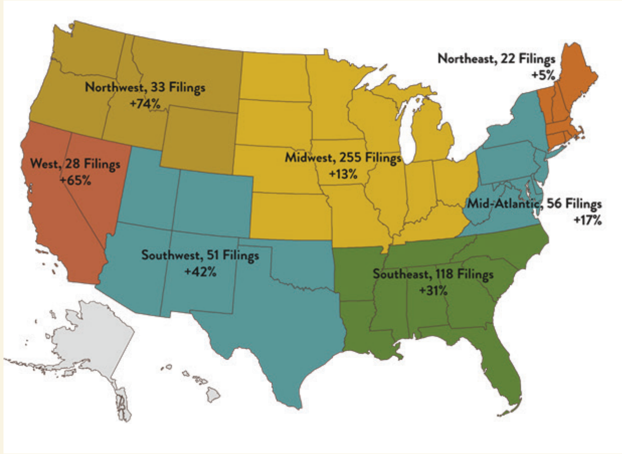
According to a recent report by the American Farm Bureau Federation, 580 farms filed for bankruptcy in 2019, marking an increase of 24% over 2018 levels and reaching the highest level since 2011. Farm debt is additionally projected to reach a new record of $416 billion, including $257 billion in real estate debt and $159 billion in non-real estate debt. With the help of historically low interest rates, farmers are taking longer to pay off their debt, as the Kansas City Federal Reserve reports that repayment periods have reached all-time highs for several non-real estate loan categories.[8]

Declining income has been an issue for many farms. Although the USDA estimates that U.S. farm income in 2019 will total $92.5 billion, its highest level since 2013, approximately 35% of that income is from federal aid and insurance programs,[9] including $14.3 billion in trade-adjustment assistance through the USDA Market Facilitation Program for farmers and ranchers.[10]

While trade assistance has helped boost overall farm income, a July 2019 study of USDA data found that farm assistance payments have flowed primarily toward the largest producers,[11] rather than small and midsize farms and ranches with less ability to weather disruptions. Midsize producers are especially vulnerable due to high levels of debt, and there are concerns that aiming trade assistance toward the largest farms will exacerbate trends toward farm consolidation and concentration.

These impacts can also spill over into other areas of the agricultural sector. For example, Deere & Company, the world's largest farm equipment manufacturer, reported lower-than-expected earnings in 2019 and forecasted further declines in 2020 due to continuing trade tensions, which have caused farmers to put off purchases of expensive equipment, such as tractors and harvesters. To control costs, the company slowed production and laid off workers at plants in Iowa and Illinois and offered voluntary early buyouts for salaried employees.[12]

2019 U.S. Farm Bankruptcies by Region and Change from 2018



Data Source: American Farm Bureau Federation, based on data from U.S. Courts

Though bankruptcies are on the rise, agricultural workers at large have surprisingly upbeat outlooks, according to recent consumer confidence surveys.[13]

The financial state of American households is a key driver of consumer confidence, an indicator to investors of how spending could trend in the overall economy. Therefore, we might expect higher farm bankruptcies to pressure consumer confidence. However, it could be the case that the increase in bankruptcies reflects the struggles of 2018 and early 2019, while recent strength in consumer confidence shows how difficulties are easing in more recent months.

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[8] American Farm Bureau Federation, "Farm Bankruptcies Rise Again," October 30, 2019.

[9] U.S. Department of Agriculture, Economic Research Service, U.S. and State Farm Income and Wealth Statistics, November 27, 2019.

[10] U.S. Department of Agriculture, Economic Research Service, Government Payments by Program, November 27, 2019.

[11] Carr, Donald and Chris Campbell, "USDA Bailout for Impact of Trump's Tariffs Goes to Biggest, Richest Farmers," *AgMag,* July 30, 2019.

[12] Sing, Rajesh Kumar, "Deere Warns of Lower Profits in 2020 on Lingering Trade Tensions," *U.S. News & World Report,* November 27, 2019.

[13] Williams, Claire, "Farm Consumer Confidence Recovers from August Slump, Despite Ongoing Trade War," Morning Consult, December 11, 2019.

Rural Hospital Closures

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In many rural areas, hospital closures have left residents struggling to find nearby health care and assistance during medical emergencies. In 2019, a record-high 19 rural hospitals closed, adding to a total that has now reached 120 closures since 2010.[14] Most of the closures have occurred in the South, a region where electric cooperatives have a strong presence.

These closures have a negative impact on local economies. Researchers at the University of North Carolina found that with every hospital closure, there is an estimated 1.6% increase in unemployment and a 4% decrease in per capita income within the community.[15] Hospital closures also lead to other cascading economic and social effects for the community, such as difficulty attracting and keeping new employers and residents.

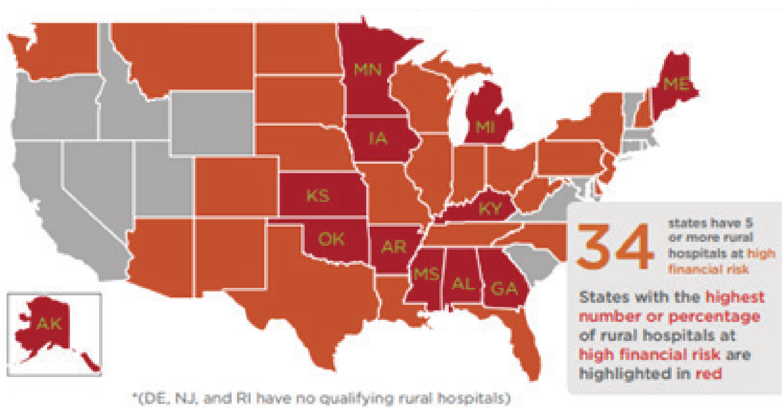
The cause of these closures ultimately stems from financial issues. Rural areas tend to have higher rates of uninsured residents, leading to more uncompensated or undercompensated care in rural hospitals. Declines in inpatient care further exacerbate the problem, with fewer visits due to advances in medicine and rising health care costs. This makes it harder for rural hospitals to innovate and attain newer technologies to advance their medical care. The outdated hospital buildings and lower population in rural areas are also less attractive for job-seeking doctors or specialists. Lack of public funding plays a role as well, with a 2018 study showing that states that did not expand Medicaid under the Affordable Care Act (ACA) are substantially more likely to have hospital closures than states that did expand Medicaid.[16]

A recent Navigant analysis shows that unless financial conditions improve, 430 rural hospitals across 34 states, or 21% of all remaining rural hospitals, are at a high risk of closure.[17] The study further finds that 64% of these at-risk hospitals are essential to their communities. In many situations, low-interest loans may be necessary to keep these hospitals afloat, upgrade facilities and prevent the negative economic impacts on the community.

Another potential solution is telemedicine. By allowing patients to communicate with their doctors to diagnose nonemergency issues, telemedicine can help hospitals save costs and reach more patients, while also offering long-distance care to residents in areas near hospitals that have closed.

The Number and Percentage of Rural Hospitals at High Risk of Closing*

21% of U.S. rural hospitals are at a *high risk of closing* unless their financial situations improve



STATE	HOSPITALS AT HIGH FINANCIAL RISK	PERCENTAGE AT HIGH FINANCIAL RISK
AL	21	50.0%
MS	31	48.4%
GA	26	41.3%
ME	8	40.0%
AK	6	40.0%
AR	18	36.7%
OK	17	29.3%
KS	29	28.7%
MI	18	25.4%
KY	16	24.6%
MN	19	21.3%
IA	17	17.9%

Source: Navigant Consulting, Inc. 2019

[14] University of North Carolina, The Cecil G. Sheps Center for Health Services Research.

[15] Holmes, George, et al., "The Effect of Rural Hospital Closures on Community Economic Health," *Health Services Research*, April 2006.

[16] Lindrooth, Richard, et al., "Understanding the Relationship Between Medicaid Expansions and Hospital Closures," *Health Affairs*, January 2018.

[17] Mosley, David and Daniel DeBehnke, MD, Navigant Consulting, Inc., "Rural Hospital Sustainability: New Analysis Shows Worsening Situation for Rural Hospitals, Residents," February 2019.

Large hospital groups are under the same pressures that we see among smaller rural operators.

While they are in better financial condition overall, large hospitals are also seeing revenue growth decelerate, and profitability is also declining. This trend stands in stark relief against the growth rates of health insurance companies, which were projected to report double-digit revenue growth as of the fourth quarter of 2019.[18]

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Midwest Economic Outlook

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Each month, the Creighton University (CU) Economic Forecasting Group develops the Business Conditions Index (BCI) for the Mid-American economy, based on a monthly survey of supply managers in Arkansas, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma and South Dakota. Approximately 38% of households and businesses in these nine states are served by electric cooperatives, making this index an important indicator of the future state of the economy for co-op consumer-members in this region.

The index ranges between 0 and 100 and is calculated as a mathematical average of individual indices for new orders, production or sales, employment, inventories and delivery lead time. An index greater than 50 indicates that the economy is expected to grow over the course of the next three to six months. The most recent BCI, released in January 2020, increased to 50.6 after falling to 48.6 the previous month — its lowest level in three years. Despite the improvement, concerns with slowing global growth and uncertainty about the trade war are expected to continue to hinder the economy. The individual employment index rose to a still weak 45.6, as the availability of workers continues to constrain job growth in the Midwest. Over the past year, the region has added jobs at a 0.7% pace, which is less than half the rate of the overall U.S. economy.

Looking ahead six months, economic optimism, measured by a separate business confidence index, climbed to 57.6, after rebounding to 52.9 the previous month. This confidence will depend heavily on the new U.S. trade agreement with Canada and Mexico, and Phase One of the trade agreement with China, both of which could further boost economic optimism going forward.

Economic Index	Jan. 2020	Dec. 2019	Jan. 2019
Overall Business Conditions	50.6	48.6	55.2
New Orders	50.1	45.6	55.5
Production or Sales	48.5	44.1	55.4
Employment	45.6	37.2	50.0
Inventories	50.1	54.6	47.4
Delivery Lead Time	54.4	61.4	67.6
Business Confidence	57.6	52.9	54.1

Source: Creighton University Economic Forecasting Group

CU's Economic Forecasting Group also produces a series of additional monthly indices, targeted specifically to characterize the rural economy, focusing on nonurban areas that are dependent upon agriculture and/or energy. The indices are based on a survey of community bank presidents and CEOs in rural Colorado, Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, South Dakota and Wyoming. Many of these rural areas are served by electric cooperatives.

These rural indices include an overall index called the Rural Mainstreet Index (RMI). In January, the RMI rose to 55.9, after falling to 50.2 in the previous month. This is the 11th time in the past 12 months, and the fifth straight month, that this index has been above 50.0, pointing toward economic growth for rural areas in these 10 states.

However, the rural farmland and ranchland index decreased to 45.6, marking the 73rd time out of the last 74 months that this index has been below growth neutral. The rural borrowing index for farmers also fell to 48.5, its lowest level since February 2013, indicating a decline in farm loans. In December, the surveyed bankers projected that 2020 farm loan defaults would grow by approximately 4%, and one in nine bank CEOs expected that defaults could expand by as much as 10% to 20%.

[18] Modern Healthcare, "Healthcare Earnings Reports from the Fourth Quarter of 2019," January 29, 2020.

The rural confidence index, which reflects bank CEO expectations for the rural economy over the next six months, increased to a still weak 50.0 and continues to suggest poor economic confidence among bankers for the rural economy. But it should be noted that because CU's rural survey was conducted before the signing of the Phase One trade agreement with China and the Senate's passage of the U.S. trade agreement with Mexico and Canada, this outlook is likely to improve.

The most recent BCI, released in January 2020, increased to 50.6 after falling to 48.6 the previous month — its lowest level in three years. Despite the improvement, concerns with slowing global growth and uncertainty about the trade war are expected to continue to hinder the economy.

Agricultural loans are showing some evidence of distress, but banks remain in good shape.

Delinquency rates on loan portfolios are the low end of historical ranges today, and the uptick in agricultural-loan delinquency is still fairly minor, according to data from the Board of Governors of the Federal Reserve System. For context, in the latest available period (third quarter of 2019), agricultural loans had a delinquency rate of 1.89%. At the height of the financial crisis, that rate reached 3.3%. The low-interest-rate environment is surely helping farms stay current on loans even when times are tighter.

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Research Emphasizes the Benefits of Broadband in Rural America

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Broadband is essential to bringing the benefits of the digital economy to rural America. Economic research indicates that broadband deployment supports economic growth, particularly in rural areas, where more than one-fourth of the population lacks access to broadband service.[19] Three important studies from the peer-reviewed economic literature are highlighted below.

Broadband expansion and local economic growth have a stronger positive relationship in areas with lower population densities.

In "Broadband and Local Growth," economist Dr. Jed Kolko looks at how broadband interacts with local conditions to affect economic outcomes.[20] Using employment change as a primary measure of economic growth, the study finds a positive relationship between broadband expansion and local economic growth. Importantly, this impact is stronger in areas with lower population densities, located in rural America. Kolko reports that this finding is consistent with the theory that broadband facilitates electronic communication and substitutes for face-to-face communication, which is already widespread and at a lower cost in higher-density areas.

Broadband availability raises employment, more so in rural areas than in urban areas.

In another study, Temple University economist Dr. Hilal Atasoy examines the impact of broadband deployment on labor market outcomes.[21] Her approach views broadband as a complement to skilled labor, in that broadband expansion increases the relative demand for skilled labor. The study finds that broadband availability led to a 1.8% increase in the U.S. employment rate, including a 2.2% increase in rural areas and a 1.5% increase in urban areas. These results are consistent with the notion that expanding broadband access provides slightly larger employment gains to rural and more isolated areas.

[19] Federal Communications Commission, "2019 Broadband Deployment Report," May 29, 2019.

[20] Kolko, Jed, "Broadband and Local Growth," *Journal of Urban Economics,* 71 (2012) 100-113.

[21] Atasoy, Hilal, "The Effects of Broadband Internet Expansion on Labor Market Outcomes," *Sage Publications,* April 2013.

Rural firms are more likely to locate in areas with access to broadband.

When new businesses are deciding where to locate, broadband availability in the area plays an important role. In a recent economic study, Dr. Younjun Kim and Dr. Peter Orazem found that broadband availability has a positive and significant effect on the location decisions of new firms in rural areas.[22] That is, firms are more likely to locate in rural areas with access to broadband than in rural areas without broadband availability. This effect is largest in more populated rural areas and those rural areas that are located closer to metropolitan areas.

Over 26% of rural Americans do not have access to broadband at home, compared with only 2% in urban areas.[23] From an investment perspective, this gap represents a real opportunity.

The Federal Communications Commission will provide $4.9 billion to 171 local carriers over the next 10 years, the commission chairman announced in August 2019. For nimble carriers, these factors could drive above-average growth in the years to come. As investors, the critical decision comes in finding the wireless, cable and wireline names with the right strategy and a history of executing well.

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Manufacturing Jobs Outlook

NRECA

The American manufacturing sector employs more than 12.8 million Americans, accounting for roughly 8.1% of all jobs in the United States.[24] However, two-thirds of economists say the U.S. manufacturing sector is now in recession,[25] which is partially evidenced by a plateau of manufacturing jobs in the past year,[26] with job losses in several states. Manufacturing job losses can disproportionately affect rural areas, where manufacturing accounts for 14% of nonfarm jobs and 21% of rural earnings, compared with 7% and 11%, respectively, in urban areas.[27]

Based on the most recent data from the U.S. Bureau of Labor Statistics, Wisconsin, New York and Indiana have lost the most manufacturing jobs in 2019, but losses have been prevalent throughout most of the Midwest. Michigan and Ohio, which are two of the most manufacturing-intensive states, each lost several thousand jobs, as did Illinois and Kansas. Nebraska is the only Midwest state to see significant growth in manufacturing jobs since the beginning of 2019.[28]

Losses in manufacturing jobs can be partially attributed to the effects of globalization and increased competition from other countries, especially China. The skills gap has been another contributor, with employers now seeking more high-skilled labor, such as engineers or computer programmers, to fulfill new roles created in place of traditional jobs. As a result, workers with a lower level of education will likely continue to face employment difficulties.

In September 2019, the ISM New Exports Orders Index fell to its lowest point since 2009. New orders generally predict manufacturing exports, which are now expected to see a decline in the next six months. A drop in exports also typically coincides with a decrease in manufacturing jobs and manufacturing output.[29]

[22] Kim, Younjun and Peter Orazem, "Broadband Internet and New Firm Location Decisions in Rural Areas," *American Journal of Agricultural Economics,* January 2016.

[23] Federal Communications Commission, "2019 Broadband Deployment Report."

[24] U.S. Bureau of Labor Statistics, Manufacturing Workforce Statistics.

[25] Torry, Harriet, "WSJ Survey: Majority of Economists Say Manufacturing Sector in Recession," *The Wall Street Journal,* October 10, 2019.

[26] U.S. Bureau of Labor Statistics, Databases, Tables & Calculators by Subject.

[27] U.S. Department of Agriculture, Economic Research Service, "Manufacturing is Relatively More Important to the Rural Economy than the Urban Economy," September 12, 2017.

[28] Federal Reserve Bank of St. Louis, Economic Research.

[29] Federal Famiglietti, Matthew and Fernando Leibovici, "International Trade and the Dynamics of Manufacturing Activity," Federal Reserve Bank of St. Louis, Economic Research, November 2019.

State	Manufacturing Jobs Lost in 2019
Wisconsin	8,300
New York	8,100
Indiana	7,900
Michigan	6,100
Pennsylvania	4,900
Illinois	4,200
Ohio	3,500
Oklahoma	3,200
Alaska	2,600
Kansas	2,400
North Carolina	2,200
Minnesota	1,900
South Dakota	900
Rhode Island	800
Iowa	700
Vermont	700
New Hampshire	600
West Virginia	300
Wyoming	200
Maryland	100
Missouri	100
Total	**59,700**

Source: U.S. Bureau of Labor Statistics, 2019

Global manufacturers have also come under pressure due to trade war effects.

In the U.S., the economy can keep growing even if the manufacturing sector is in a recession, because the sector constitutes a relatively small part of our increasingly consumer-driven economy. For some countries, the impact has been harsher. Germany, where manufacturing makes up about a third of GDP, teetered on recession through 2019.[30]

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The Impact of Oil and Gas Development for Local Economies

NRECA

Over the past decade, the shale gas boom has dramatically changed the energy industry and the production of natural gas and oil in the United States, leading to increased economic activity in areas located near large natural gas shale plays.

In 2017, the National Bureau of Economic Research found that counties with high natural gas production potential experience 3.6% to 5.4% higher employment and salary increases of 7.6% to 13.0%, along with 15.5% increases in local government revenues.[31]

Economists at Dartmouth note that there are three distinct areas where economic impacts from oil and gas extraction can have a positive effect: 1) wages for oil and gas extraction; 2) royalty payments for landowners where production takes place; and 3) wages and employment in other industries, such as hospitality, construction and transportation, which provide services to oil and gas workers and their families.[32] In a recent study of the employment impacts of oil and gas extraction in the Appalachian basin, researchers at Carnegie Mellon found that each job in the natural gas industry leads to an additional 1.9 jobs in other industries.[33] The study also noted that 54% of shale gas jobs are located in rural areas, with an additional 31% located in rural-urban mixed areas.[34]

[30] Walker, Andrew, "Germany Narrowly Avoids Recession Despite Trade War Hit," BBC News, November 14, 2019.

[31] Bartik, Alexander W., Janet Currie, Michael Greenstone, and Christopher R. Knittel, "The Local and Economic and Welfare Consequences of Hydraulic Fracturing," National Bureau of Economic Research, January 2017.

[32] Feyrer, James, Erin T. Mansur, and Bruce Sacerdote, "Geographic Evidence of Economic Shocks: Evidence from the Fracking Revolution," *American Economic Review*, vol. 107(4), April 2017.

[33] Mayfield, Erin N., Jared L. Cohen, Nicholas Z. Muller, Inês M. L. Azevedo, and Allen L. Robinson, "Cumulative Environmental and Employment Impacts of the Shale Gas Boom," *Natures Sustainability*, vol. 2, December 2019.

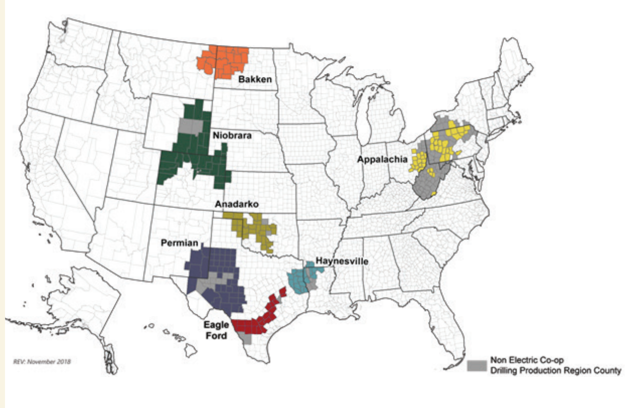
[34] Ibid.

Electric cooperatives serve 239 counties in the seven main oil and gas production regions. With gas production 10% higher in 2019 than in 2018 and projected to continue to grow,[35] many rural co-op communities can expect to reap the benefits from increased economic activity generated in nearby areas.

However, these benefits can also be accompanied by economic uncertainty for local communities when production slows or shifts to other sites. The instability of production and its direct and indirect job impacts can create volatility and planning challenges for local governments, as they invest in public services such as emergency response, roads, housing and schools to meet the increased demand in their communities.

Researchers from Duke University also found that areas with a more diverse economy are less likely to experience the negative effects of a downturn in oil and gas activity.[36] Local government and business leaders are therefore cautioned to avoid over-reliance on the oil and gas industries and consider the possibility that production could slow or leave altogether.

U.S. Oil and Gas Production in Counties Served by Electric Cooperatives



Source: U.S. Energy Information Administration and NRECA.

Only a decade ago, energy companies in the U.S. were anticipating a dwindling supply of natural gas. However, with the proliferation of fracking technologies, natural gas is now so abundant and cheap in the U.S. that it has revolutionized the global hydrocarbon market, as well as changed the competitive landscape for fertilizers and plastics.

Likewise, there are about 300 chemical-plant projects in progress across the U.S.,[37] almost exclusively being built to take advantage of our inexpensive natural resources. In terms of job creation, the investment cycle drives two different stages of employment: an investment phase where pipelines and plants are built, and a longer-term harvest phase at these plants.

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[35] U.S. Energy Information Administration, Short-Term Energy Outlook.

[36] Raimi, Daniel and Richard G. Newell, "Oil and Gas Revenue Allocation to Local Governments in Eight States," Duke University Energy Initiative, October 2014.

[37] Russell, Pam Radtke, "Shale Gas Fuels U.S. Chemical Plant Construction," Engineering News Record, November 21, 2018.

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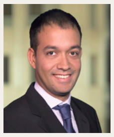

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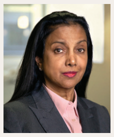
Mauricio Agudelo is a senior fixed-income portfolio manager for RE Advisers' short- and intermediate-term strategies.



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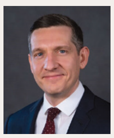
Senior Equity Portfolio Manager
Prabha Carpenter is a senior equity portfolio manager for RE Advisers' large- and small-cap value strategies.

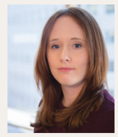


Joe Goodenbery
Senior Economist
Joe Goodenbery is a senior economist at NRECA where he provides economic modeling and analysis of issues that impact electric cooperatives.

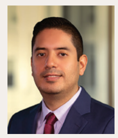
Maria Kanevsky
Energy Consumers Analyst
Maria Kanevsky is an energy consumers analyst at NRECA where she works on multiple efforts such as beneficial electrification, economic analyses of cooperative issues and consumer member engagement.

Lauren Khair
Senior Analyst
Lauren Khair is a senior analyst at NRECA where she provides analysis of business and data trends affecting electric cooperatives and their consumer-members.

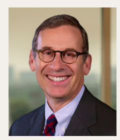
Michael Leitman
Senior Analyst
Michael Leitman is a senior analyst at NRECA where he provides analysis of economic, business and demographic trends affecting electric cooperatives and their consumer-members.



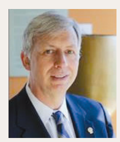
Katherine Loving
Senior Geographic Information Systems Specialist
Katherine Loving is a senior geographic information systems specialist at NRECA working on cartographic visualizations and spatial data analysis.



Ivan Naranjo, CFA®, FRM®
Fixed-Income Portfolio Manager
Ivan Naranjo is a fixed-income portfolio manager for RE Advisers' short- and intermediate-term strategies.



Jim Polk, CFA®
Senior Equity Portfolio Manager
Jim Polk is a senior equity portfolio manager for RE Advisers' large- and small-cap value strategies.



Russell Tucker
Chief Economist
Russell Tucker is the chief economist at NRECA where he provides economic analysis to help America's electric co-ops adapt and thrive in today's challenging environment.

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