

**THE LOUISIANA ECONOMIC
OUTLOOK: 2019 AND 2020**

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At LSU, **Judy Collins** not only manages our subscription lists and printing schedule, but she also manages the author and is perhaps one of only two people in the state that has read the LEO cover to cover looking for the numerous editorial errors made by yours truly. **Dean Richard White**, in his exemplary tenure in the E.J. Ourso College of Business, always makes support of the LEO one of his priorities. Thanks for your backing, Dick.

To be successful with a project it is important to set the tone early. It has been my great fortune for over two decades to have the perfect vehicle for launching the LEO. My two great pals---**Rolfe McCollister** and **Julio Melara**---let us release this document at their heavily attended Top 100 Luncheon every year. It is a real treat to rub shoulders with such a successful, innovative and influential duo.

Merci! Danke! Gracias! Spasibo! Grazie! Thanks to you all!

SUMMARY & CONCLUSIONS

After enduring a 28-month recession that cost Louisiana over 23,000 jobs, the state's economy began to grow again in 2018. Our forecast for 2019-20 is undergirded by the assumptions that (1) the national economy will expand at a healthy rate (though threats from tariffs and IMO 2020 are unsettling), (2) inflation and interest rates will rise a bit but remain unthreatening, (3) oil prices will rise gradually from \$65 per barrel this year to \$80 in 2020, and (4) natural gas prices will decline slightly and continue to fuel a remarkable industrial boom in Louisiana. That industrial boom and a revived oil and gas industry should produce a nice recovery from the 2015-17 recession, with 2020 being particularly strong for the state.

There are nine Metropolitan Statistical Areas (MSAs) in Louisiana and 29 parishes designated "rural." Our outlook for each is as follows:

- The **New Orleans MSA** is projected to be the seventh fastest growing MSA in the state, adding 6,500 jobs (+1.1%) in 2019 and 9,100 jobs (+1.6%) in 2020. Huge industrial projects on the "edges" of this MSA---especially to the west in St. James Parish and to the east in Plaquemines Parish---will drive this growth. Very upbeat LNG and methanol industries will be the key to this resurgence. Nice infusions from the tech sector---including the 2,000+ DXC Technology, iMerit, and Accruent---and big hires at Michoud will add another bump.
- After a brief lull in industrial projects in the **Baton Rouge MSA** several major projects will start up over 2019-20, providing a major kick to the construction sector. This MSA is expected to tie for second place in economic growth over the next two years, adding 6,000 jobs in 2019 (+1.5%) and another 8,100 in 2020 (+1.9%). Over half a billion in road projects, including widening of I-10 from the bridge to the split will also infuse the construction sector.
- Oil prices rising to \$80 a barrel is expected to revive the **Lafayette MSA** and that, combined with solid performance by the MSA's Big Five---Stuller, Acadian Ambulance, the Schumacher Group, GCI, and LHC---is expected to generate 1,400 new jobs (+0.7%) in 2019 and a more robust 4,900 jobs (+2.4%) in 2020.
- After falling to 12,700 jobs below its 2008 peak, the state's fourth largest MSA---**Shreveport-Bossier**---is projected to return to a positive, though modest growth mode over the next two years. This MSA is projected to add 600 jobs a year or an annual growth rate of 0.3%, ninth among the state's nine MSAs. While activity at the Port of Shreveport-Bossier and the tech facility CSRA remain a bright spot in this economy, the region suffers from a lack of major announcements supporting the next two years.
- Remarkably, the fastest growing MSA in the country over 2013-18 is the **Lake Charles MSA**. We have documented almost \$117 billion in projects announced for this region since 2012---an unheard of number. About half of those projects have yet to start construction, something we expect to change, especially in mid-to-late 2019 when three LNG projects are expected to go vertical. Lake Charles is expected to continue in its

role as the fastest growing MSA in the state, adding 4,000 jobs (+3.3%) in 2019 and another 5,300 jobs (+4.3%) in 2020.

- After much bloodletting, the corner appears to have been turned in the Houma MSA. Fabricators and shipbuilders are making a reasonably successful shift to non-extraction-related customers. An oil price of \$80 a barrel by 2020 is expected to start a serious revival in the Gulf by 2020. We are projecting 700 new jobs (+0.8%) in 2019 and a healthier, extraction-driven bump of 2,100 jobs (+2.4%) in 2020.
- Like Shreveport-Bossier, we remain concerned about the **Monroe MSA**. Chase Mortgage Processing, IBM, Graphics Packaging and Vantage Health Plan provide stability to the area. We remain concerned about the future of CenturyLink post-merger. These concerns have tempered our forecasts for Monroe, especially in 2020. We project 400 new jobs (+0.5%) in 2019 and 200 more (+0.3%) in 2020.
- A special 2-year IT project at Cleco in the Alexandria MSA will be ending in 2019. That event, combined with few new announced prospects, also has tempered our projections for this MSA. Key players like P&G, Crest Industries, Union Tank Car, and Cleco will maintain a steady base for the region. Vanishing temporary IT jobs at Cleco should keep the region's growth rate flat in 2019, and about 500 new jobs (+0.8%) are projected for 2020.
- Resolution of the fiscal cliff without major cuts to SLU supports a positive future for the **Hammond MSA** over the next two years. Dealing with Medicaid expansion effects is limiting growth from the region's other large employer---North Oaks Hospital—but we expect this college town and region to add 800 jobs a year over 2019-20, a very nice growth rate of 1.7% a year.
- A revival of the extraction industry, new wood-oriented mills, and significant spending in the power industry will keep employment expanding in Louisiana's 29 **rural parishes**. We are projecting 2,500 new jobs (1.1%) in these parishes in 2019 and an even better record of 4,500 jobs (+2%) in 2020.

Taking all these regions together, **Louisiana** has recovered from its 28-month recession and is expected to add 23,400 jobs (+1.2%) in 2019 and an even better 36,100 jobs (+1.8%) in 2020. If our projections are on the mark, the state should surpass 2,000,000 jobs on an annual basis for the first time in its history in 2020.

Executive Summary Table

Item	2018	2019	2020
BASIC ASSUMPTIONS:			
Real Gross Domestic Product: Growth	3.1%	2.9%	2.8%
Inflation Rate	2.5%	2.5%	2.5%
30-Year Fixed Interest Rate	4.6%	5.0%	5.2 %
Oil Price: barrel	\$65	\$72*	\$80*
Natural Gas Price: mmbtu	\$2.80	\$2.70**	\$2.65**
STATE PROJECTIONS:			
Non-Farm Employment (000s):	1,994	2017.4	2,053.5
Absolute Growth Rate	23.0	23.4	36.1
Percent Growth Rate: Employment	1.2	1.2	1.8
MSA PROJECTIONS:			
EMPLOYMENT (000s)			
Alexandria	62.5	62.5	63.0
Absolute Change	0.5	0	0.5
Percent Growth Rate	0.8%	0	0.8%
Baton Rouge	412.2	418.2	426.3
Absolute Change	5.4	6.0	8.1
Percent Growth Rate	1.3%	1.5%	1.9%
Hammond	47.1	47.9	48.7
Absolute Change	1.0	0.8	0.8
Percent Growth Rate	2.2%	1.7%	1.7%
Houma	86	86.7	88.8
Absolute Change	0.2	0.7	2.1
Percent Growth Rate	0.2%	0.8%	2.4%
Lafayette	201.1	202.5	207.4
Absolute Change	-0.2	1.4	4.9
Percent Growth Rate	-0.1%	0.7%	2.4%
Lake Charles	120.1	124.1	129.4
Absolute Change	4.5	4	5.3
Percent Growth Rate	3.9%	3.3%	4.3%
Monroe	78.8	79.2	79.4
Absolute Change	0.4	0.4	0.2
Percent Growth Rate	0.5%	0.5%	0.3%
New Orleans	578.5	585.0	594.1
Absolute Change	3.5	6.5	9.1
Percent Growth Rate	0.6%	1.1%	1.6%
Shreveport-Bossier	180.0	180.6	181.2
Absolute Change	0.5	0.6	0.6
Percent Growth Rate	0.3%	0.3%	0.3%
RURAL EMPLOYMENT	228.2	230.7	235.2
Absolute Change	7.7	2.5	4.5
Percent Growth Rate	3.5%	1.1%	2.0%

Source: Loren C. Scott. *Around a wide range of \$40 to \$120 a barrel. **Around a range of \$2.40 to \$3.20 per mmbtu.

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OUTLOOK FOR 2019-20: UNDERLYING ASSUMPTIONS

There are many policies that states can follow that can either deter or enhance economic growth. Taxation and regulatory policies are perhaps at the top of that list. Still, the Louisiana economy does not operate in a vacuum. There are several key outside factors that will influence the course of the state's economy over the next two years.

Will the national economy continue to grow strongly or is a recession visible on the near-term horizon? Louisiana is an energy-dominant state, ranking #2 in crude oil production, #4 in natural gas production, and #2 in refining capacity in the U.S. Fluctuations in oil and natural gas prices heavily impact the state's economy, as we have learned with a vengeance over 2015-17. Where are the prices of those fuels headed over 2019-20?

While external factors will be prominent in the Louisiana economy, internal decisions can either aid or hamper Louisiana's growth. The state is in the midst of an industrial boom like none in its history. However, a significant amount of the new industrial announcements has not yet begun construction. What stands in the way of a final investment decision (FID) and initiation of construction on these proposed facilities?

It is to these issues---these background assumptions---that we first turn our attention.

The National Economy: Record Expansion or Recession Ahead?

Louisiana is not as impacted by swings in the national economy as say, Mississippi and Alabama. For example, during the 2008-09 period known as the Great Recession, Louisiana lost 2.8% of its jobs. Mississippi's employment, on the other hand, fell 5.3% and Alabama's dropped 6.8%. The reason is these other two states have much larger durable goods manufacturing sectors, and the first thing people quit buying during a recession is durable goods. Similarly, the first products that enjoy a boost as the economy starts to recover is durable goods, so Alabama and Mississippi have a tendency to come out of a recession growing faster than Louisiana.

In either case, the state's economy is moved by fluctuations in the national economy. As of August 2018, the national economy was in its 110th month of expansion---the second longest in post-war history. Only the expansion of March 1991 to March 2001 (120 months) has exceeded this latest boom period. This has brought an added bump to Louisiana's economy. The question is, where is the economy headed over 2019-20?

Real Gross Domestic Product Forecasts

Our forecasts for the national economy are provided in Table 1 along with actual data for 2016-17 for comparison purposes. Note that the speed of the economy began picking up in 2017 and gained momentum this year, expanding at just over 3%. As mentioned in last year's Louisiana Economic Outlook (LEO), we believe this is due to policy changes under the Trump administration that emphasizes economic growth over income equality. A shift from a marked increase in regulation to a deregulation environment and a shift from higher taxes to lower taxes

has done what we are taught in principles of economics classes. Deregulation and lower taxes shift firm's cost curves downward, encouraging them to both produce more output and hire more people.

Table 1
Actual & Forecasted Real Gross Domestic Product (RGDP): 2016-20

Year	RGDP
2016	1.6%
2017	2.2%
2018	3.1%
2019	2.9%
2020	2.8%

Source: 2016-17 from Bureau of Economic Analysis; 2018-20 from author

Several key points should be made about the forecasts in Table 1. First, they assume the stimulative effects of deregulatory and lower-taxation policies of the Trump Administration will continue over the next two years. Secondly, if these forecasts turn out near the mark, then in July of 2019 this will become a new record expansion in U.S. history.

Thirdly, the Conference Board's **Leading Economic Index** (LEI) is supportive of at least continued growth through 2018 and 2019. The LEI is made up of ten economic indicators that tend to start rising before an economy comes out of a recession and tends to fall about 11 months before the economy enters a recession. As of August 2018, the LEI continues going straight up, indicating a recession is not on the near-term horizon.¹

The Problem of Tariffs

Fourthly, the forecasts in Table 1 are built on what some will consider a heroic assumption--**that the tariffs proposed by President Trump are a negotiating gambit** (especially with China), and he has no plans to permanently raise tariffs on foreign goods coming into the U.S. At this writing, the President has had a meeting with the head of the EU that ended with the pronouncement that tariffs would come down between the U.S. and the EU.

The data in Table 2 were assembled by the very fine economics team at Wells Fargo Economics. It shows the tariffs levied and proposed tariffs as of July 2018. Tariffs have been levied on almost \$90 billion of imported goods and another \$484.6 billion are proposed by the President. Combined, this represents tariffs on about one-quarter of the goods U.S. citizens import and on about 5% of total spending by U.S. consumers. As mentioned in last year's LEO the huge problem is that the data in Table 2 could be just the beginning.

History tells us that initiating tariffs often leads to an escalating trade war that could be devastating to the economy, sending it into a recession that would make the Great Recession seem trivial. If our heroic assumption is incorrect and President Trump wants permanent tariffs on imported goods, the numbers for 2019-20 in Table 1 will turn red and ugly very quickly.

¹ The Conference Board, news release July 19, 2018. The LEI did drop slightly in June before rising again in July.

Table 2
Actual and proposed Tariffs Levied by the U.S. as of July 2018

Date in Effect	Avg. Size	Value of Goods (bill)	Goods Targeted	Country	% of Imports	% Consumer Spending
11/2/17	21%	\$5.9	Softwood Lumber	Canada	0.05%	0.05%
2/7/18	20%	\$1.8	Washing Machines	Multiple	0.08%	0.02%
2/7/18	30%	\$8.5	Solar Panels	Multiple	0.36%	0.07%
3/23/18	25%	\$23.4	Steel	Multiple	1.00%	0.20%
3/23/18	10%	\$16.4	Aluminum	Multiple	0.70%	0.14%
7/6/18	25%	\$3.4	Variety	China	1.45%	0.29%
Enacted Total	22%	\$89.9			3.84%	0.76%
Proposed	25%	\$1.6	Variety	China	0.68%	0.13%
Proposed	10%	\$200	Variety	China	8.54%	1.68%
Proposed	25%	\$268.6	Auto & Parts	Multiple	11.47%	2.26%
Proposed Total	13%	\$484.6			20.69%	4.08%
Combined	14%	\$574.5			24.53%	4.83%

Source: Wells Fargo Economics

How Will IMO 2020 Impact 2020?

Another big uncertainty---especially with regard to our 2020 RGDP forecast back in Table 1---is IMO 2020. The International Maritime Organization (IMO) is under the umbrella of the UN. Among other things, the IMO regulates maritime fuel quality. In 2016, the IMO declared that ocean-going ships must adopt measures to limit sulfur emissions to 0.5 wt % sulfur or less---down from 3.5 wt %. The IMO has no power to enforce this new regulation. It must rely on member nations for enforcement, and the U.S. has stated it will enforce the new rule. The question is, how disruptive will this new regulation be on the oil market and the shipping industry?

It should be noted that most major port cities in the world are in emission control areas. For example, ships operating within 200 miles of the U.S. coast, the North Sea or the Baltic Sea must 0.1 wt % bunker fuel. Consequently, most ships have dual tanks. These ships can burn whatever fuel is available that has BTU value. They use very dirty, cheap bunker fuel for operating in the ocean, then when they get within 200 miles of an emissions control port they switch to a cleaner burning fuel. IMO 2020 requires the cleaner burning fuel at all times while at sea.

What are the options available to the shipping industry? First, they can continue to use high sulfur diesel (HSD) but install flue-gas scrubbers (such as those used at coal-burning power plants) to lower their emissions to acceptable levels. Scrubbers are expensive (\$2-\$6 million per retrofit) and at this time there is not enough capacity to produce and install enough scrubbers for

the 70,000 ocean-going ships to meet IMO 2020 requirements. One estimate is that only 3,000-4,000 ships could install scrubbers by 2020, and perhaps a third by 2030.² Secondly, the ships can convert to LNG or methanol to power their ships---an expensive conversion obviously---and one that requires new LNG bunkering infrastructure and retrofitting of ships.

Thirdly, shippers can choose not to comply; after all, when you are in the middle of the ocean, who is watching and what is the cost except reputational damage? One limitation on this approach is the IMO may put pressure on insurance companies to declare these shippers as “non-seaworthy” which means they could not get insurance. It is unclear how serious a threat this may be.

A fourth option is to start burning lower sulfur diesel (LSD) fuel. There is an argument that the shippers will eschew options 1-3 above and put the onus of complying with this new rule on refineries to produce more LSD. The problem with this option is there is not enough LSD production capacity at refineries worldwide to meet the additional demand caused by IMO 2020. That means one should expect a **spike in LSD prices in 2020**---perhaps a substantial spike. It also will mean that a significant spread will develop between low sulfur crude (sweet crude) and high sulfur crude (heavy crude), with sweet crude prices spiking much higher.

These price differentials between LSD/HSD and sweet/heavy crude will cause disruptions in the energy market and perhaps in the global economy as well. As least one prominent energy economist---Philip Verleger---suggests the disruption and price spikes will generate oil prices higher than the peak in 2014 and a serious worldwide recession worse than the Great Recession of 2008-09.³

An alternative view is that the energy market knows about this change and the anticipated price spikes and disruptions ahead and will begin a whole series of investments to calm the market. Anticipation of higher demand for LSD and thus higher prices for LSD will encourage shippers to install scrubbers (to continue using the now much cheaper HSD). The price of scrubbers will go up, enticing manufacturers to enter this industry to increase capacity in this sector.

Higher priced LSD will encourage refineries to make the capital investments to produce more LSD. One method is to “destroy” HSD by adding coker capacity. Cokers take HSD and basically desulfurize it, resulting in LSD, gasoline, and the product coke---which is often used in power generating plants as a fuel. Most U.S. refineries are well-positioned for IMO 2020 because they already have coking capacity. The challenge is to refineries in the rest of the world (especially Russian refineries that use high sulfur Urals oil) that do not have this capability now. It is also noteworthy, from a U.S. perspective, that most of the new oil being produced via fracking is sweet crude (though Gulf of Mexico crude is heavier).

² “European, Russian Refineries Address 2020 Reduced-Sulfur Bunker Rules”, Oil and Gas Journal, August 6, 2018, p.41.

³ <https://www.pkverlegerllc.com/assets/documents/180704200CrudePaper.pdf>

Note that all these investments to meet the challenge of responding to IMO 2020 are good for the economy---not bad. IMO 2020 does create a non-trivial uncertainty for 2020 forecasts.

Inflation & Interest Rates

Runaway inflation and high interest rates are the bane of economic growth. Fortunately, both have not been a problem for some time. As seen in Table 3 there has been a slight uptick in inflation in 2018 from 1.3% in 2016 to the 2.5% range.

Table 3
Actual and Projected Inflation Rates in the U.S.

Year	Inflation Rate
2016	1.3%
2017	2.1%
2018	2.5%
2019	2.5%
2020	2.5%

Source: 2018-19 – Wells Fargo Economics; 2020 – Loren C. Scott

A reasonable question might be why inflation forecasts are not higher given expected price increases due to the **tariffs**. Wells Fargo economists argue that the impact of tariffs in effect (see Table 2) should be small because they are levied on intermediate, not final goods and they are being levied only on goods---not services---and the latter make up two-thirds of consumer spending. And finally, note in Table 2 that the tariffs in effect are on less than 1% of consumer spending. Of course the proposed tariffs are on final goods and kick the impact up to 4% of consumer spending. This is still a small percentage. If the tariffs are just a negotiating tactic and are temporary, and if a trade war can be avoided, the inflation impacts will be small indeed.

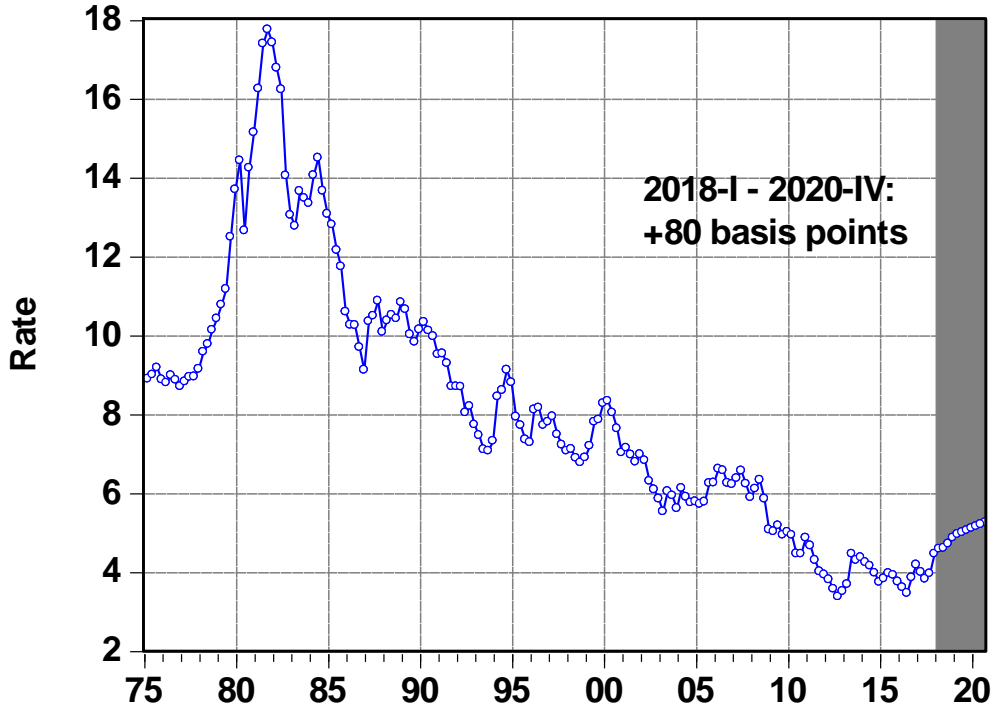
Subdued inflation is critical because of the close **relationship between inflation and interest rates**. The interest rate charged by a lender can be broken down into three parts. The first is the “basic rate.” This is the rate the lender charges for giving up the use of his/her money for a year. Historically that has been about 3%. Secondly, there is a “risk premium” based on the lender’s assessment of the likelihood the borrower will not be able to repay the loan. Finally, there is the “inflationary premium.” The lender wants to make sure his/her money is returned in real purchasing power.

The power of this inflationary premium can be seen in Figure 1, which tracks the 30-year fixed mortgage rate over 1975Q1 through 2020Q4. The very high rates in the early 80s were due to runaway inflation during that period, driving the risk premium and the overall rate up dramatically. The decline in this rate since the early 80s is largely due to the Federal Reserve getting inflation under control, thereby reducing the inflationary premium and the overall rate.

Note in Figure 1 that the slight upward bump in inflation is expected to cause a slight upward bump in the 30-year fixed mortgage rate---an increase of about 80 basis points (0.8

percentage points) between 2018Q1 and 2020Q4. This is not enough of an increase to meaningfully restrain the economy. The reader may also be interested to learn that the author taught forecasting techniques to MBAs at LSU for over three decades and noticed an unusual upward bias in interest rate forecasts. Forecasters oddly always forecast interest rates to rise, which looking at Figure 1 suggest their (and my) record has not been so good on this key indicator!

Fig. 1: 30-Year Fixed Mortgage Rate



Source: 2018-19 forecasts - Wells Fargo Economics, 7/18; 2020 forecasts - Loren Scott

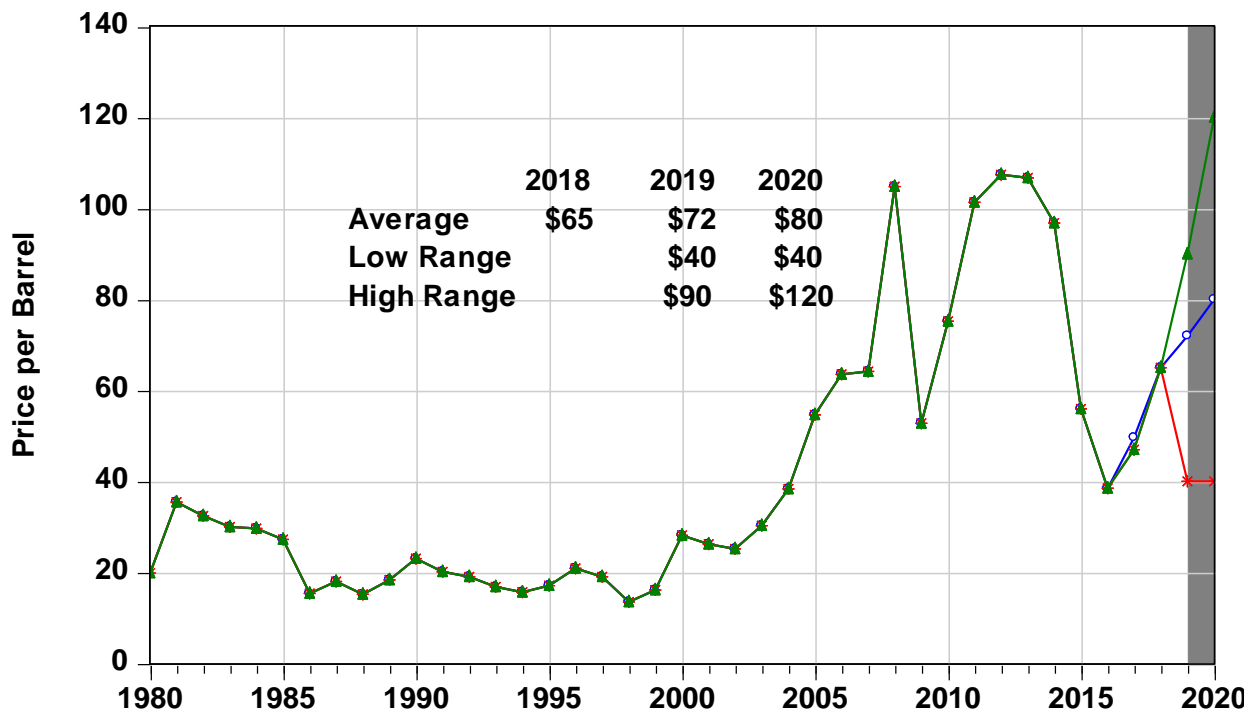
Oil Prices: Is \$80 Possible?

Because Louisiana is the country’s second largest producer of crude oil (if offshore crude is counted in the number), movements in oil prices can often dramatically impact the state, as Louisiana has learned with a vengeance since late 2014. The huge decline in oil prices from late 2014 through much of 2017 hammered Louisiana’s oil patch so hard, that it sent the state into a 28-month recession and a loss of 23,300 jobs (-1.2%). Louisiana desperately needs oil prices to both rise and stay high for an extended period for a drilling recovery in the Gulf of Mexico and a revival of the state’s oil-centered metropolitan areas.

Unfortunately, oil prices are one of the most difficult variables in the economy to predict. An intuitive sense of why that is true is apparent from just observing the track of oil prices since 1980 in Figure 2. Oil prices are unusually variable, and wide variability is the bane of forecasters.

Analysts familiar with the oil market may look at Figure 2 and ask “What oil price are you graphing?” For years the price of oil was basically the same everywhere---with small variances due to the grade of the crude (heavy versus sweet)---because there were 3,700 very large crude carriers on the high seas taking oil where ever the highest price was. This had a tendency to keep the price the same everywhere. That is no longer the case primarily because of on-land transportation bottlenecks. Lack of pipeline and railcar capacity has caused (at this writing) the price of Midland crude from the Permian Play to sell at about a \$15 discount to West Texas Intermediate (WTI) while Western Canada Select is selling at a whopping \$29 discount to the WTI. Such large differentials have always incentivized companies to work hard to remove the bottlenecks. We expect this discount variance to be cleared up by early 2020 at the latest.

Figure 2: Oil Price Forecasts



Note in Figure 2 that we are projecting a slight rise in oil prices from the current 2018 average price of \$65 per barrel to \$80 in 2020. A price trail like the one forecasted would be welcome news in Louisiana, promoting a significant boost in the Gulf of Mexico rig count. There is, however, a very wide confidence range of \$40 to \$120 a barrel around this point forecast, reflecting the numerous uncertainties associated with future oil prices.

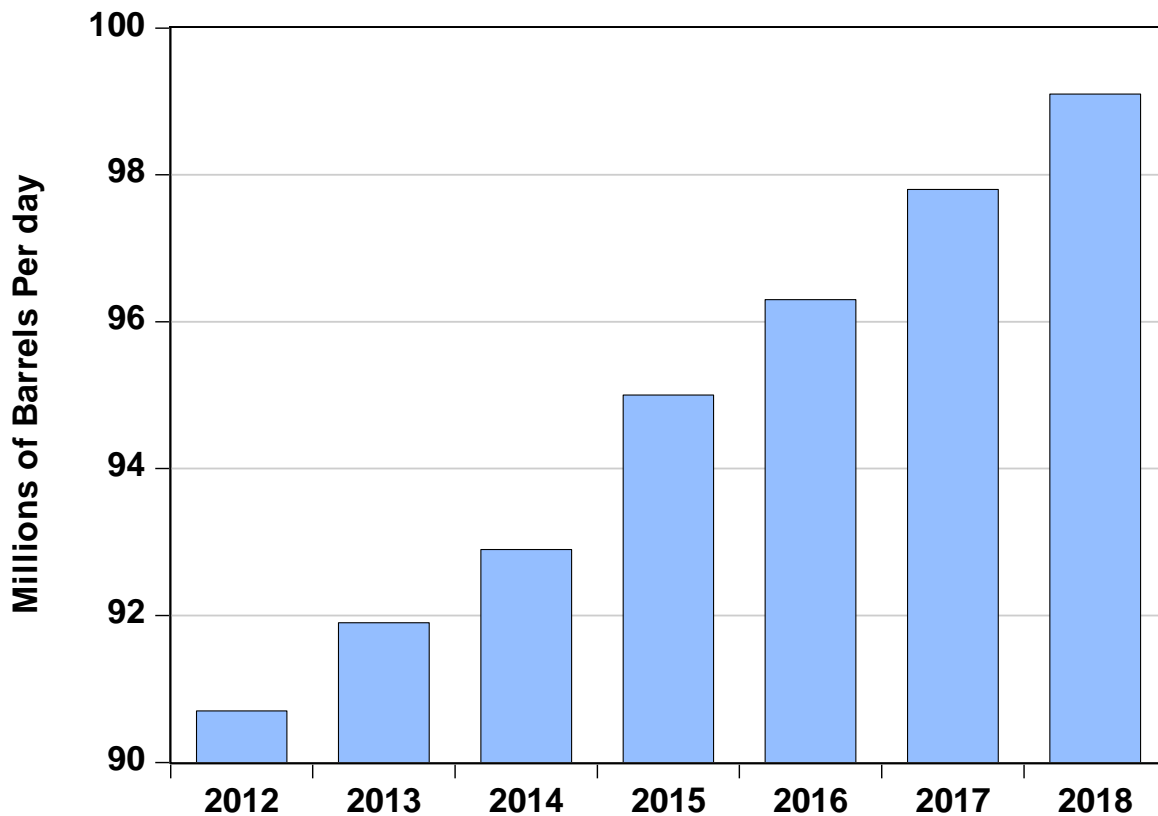
Petroleum Demand Side: Steady Growth (Except Tariffs & IMO 2020?)

What is the source of these uncertainties? Well, oil prices are the result of supply and demand conditions, so what are the uncertainties around these two factors? As seen in Figure 3, the problem is not coming so much from the **demand side**. World oil demand has been steadily rising from 90.7 million barrels per day (mmb/d) in 2012 to an estimated 99.1 mmb/d in 2018.

There is every reason to believe that world demand for crude will continue its march upward---lending credence to higher oil prices. Supporting this view is the evolving growth in two huge economies---India and China. There are two very real uncertainties to which we have already alluded that could easily derail the upward growth in world petroleum demand. First, **President Trump’s tariff policies** could easily send world economies into a trade war and a deep worldwide recession that would reduce petroleum demand and prices. This trade war possibility is largely the source of our lower bound estimates of \$40 per barrel in 2019 and 2020.

Secondly, back on pages 3 and 4 we explained that the **IMO 2020 rule** could jack up oil prices strikingly (as Philip Verleger projects) leading to a worldwide recession and lower petroleum demand. It is principally because of the approaching IMO 2020 rule that we have a \$120 upper bound on oil prices for 2020.

Fig. 3: Global Oil Demand



Source: Energy Information Administration

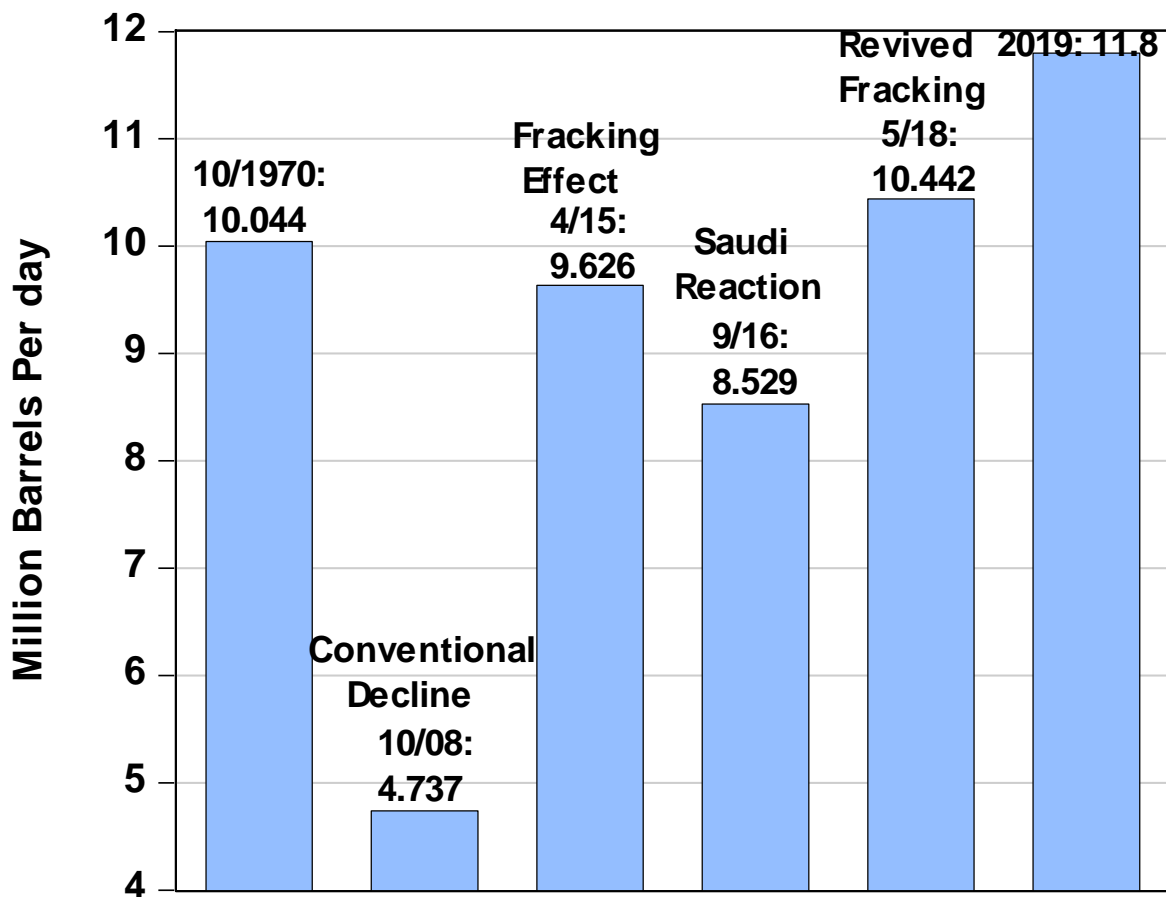
Petroleum Supply Side: Still “Who Knows?”

What really muddies the water for oil prices are highly unpredictable supply-side issues. The basic problem is that about two-thirds of world oil reserves are under the lands of countries

where (a) the government is running oil operations and (b) the oil-rich regions tend to be very politically unstable.

A classic case is the big decline in oil prices in 2015 shown in Figure 2. That unexpected decline was the result of Saudi Arabia opening their spigots and pumping large amounts of additional oil on the market to drive down oil prices with the objective of destroying oil shale production in the U.S. that was eating into the Saudi's market share. To demonstrate how "revolutionary" the fracking of shale was in the U.S. note the data in Figure 4. From its prior peak in October 1970 of 10.04 mmb/d, U.S. oil production had declined to 4.7 mmb/d by October 2008. That huge decline was made up for by importing Saudi oil. When U.S. oil companies began fracking shale, production started rising again and reached a peak of 9.6 mmb/d in April 2015. That extra production ate into Saudi's market share in the U.S, so the Saudis drove the price down by pumping much more oil on the market. Prices plummeted from over \$100 per barrel to under \$30. A pummeled oil industry in the U.S. sent oil production declining to 8.5 mmb/d by September 2016. Prices then recovered and production rose to 11.8 mmb/d by May 2019.

Fig. 4: Peaks & Troughs in U.S. Oil Production



Source: Energy Information Administration

The Saudi's hoped for death blow to the fracking industry in the U.S. did not fully materialize because clever capitalists in the industry figured out ways to get their breakeven down, either through technological innovations or by pressuring their suppliers to lower their prices. Breakeven prices in the shale plays fell from the \$70-\$90 range in 2013 to the mid-\$30s in 2017.

By November 2016, the Saudis had enough of low oil prices, so that country brokered a deal with the other OPEC nations and the Russians to reduce their production by 2%. Oil prices predictably began to rise again. They would have risen even further except revival of the shale plays in the U.S. led to greater oil production. Indeed, the nation's production set a new record of 10.44 mmb/d in May of this year and is predicted to achieve 11.8 mmb/d in 2019.

Alarmed by the recent rise in oil prices, President Trump began to jawbone the Saudis to back off of their supply cut and release more oil. In June 2018, both OPEC and Russia agreed to add 1 mmb/d to their production. One would have thought this increase would have sent oil prices down significantly, but oil prices have remained around the \$70 a barrel level. A number of factors have led to this stickiness, all involving governments again. First, President Trump reinstated U.S. **sanctions on Iran**, which will likely reduce that country's production by at least 400,000 b/d. Secondly, production continues to fall in **Venezuela**, dropping from a peak of 3.6 mmb/d to only 1.42 mmb/d now. What many consider a sham election of Maduro to Venezuela's presidency is expected to further enhance this decline. Civil unrest in **Libya and Nigeria** has left production from those countries in question.

Finally, our forecast for rising oil prices over 2019-20 are underpinned by our concern that suppliers will not be able to keep up with demand because of (1) **declining supplies from such mature, conventional fields** as in Norway, Gabon, and Libya and (2) **weak capital budgets post-2014** that hamper adding enough reserves to meet demand. Regarding the latter, the industry needs to add about 33 mm a year to meet demand growth, and in 2018 new investments are only enough to account for 20 mm more barrels.⁴ A combination of all these factors leads us to a projection of oil prices rising to \$80 by 2020. Again, we refer the reader back to Figure 2 and the wide range around this forecast.

Natural Gas Prices: An Ocean of Supply

Unlike oil prices, natural gas prices are much easier to project. As seen in Figure 5, after six years of relatively high prices over 2003-08, natural gas initially fell to the \$4 per million BTU (mmbtu) range and has since dropped to below \$3. **Our expectations are that natural gas prices will continue a slight decline, falling from an annual average of \$2.80 in 2018 to \$2.65 in 2020.**

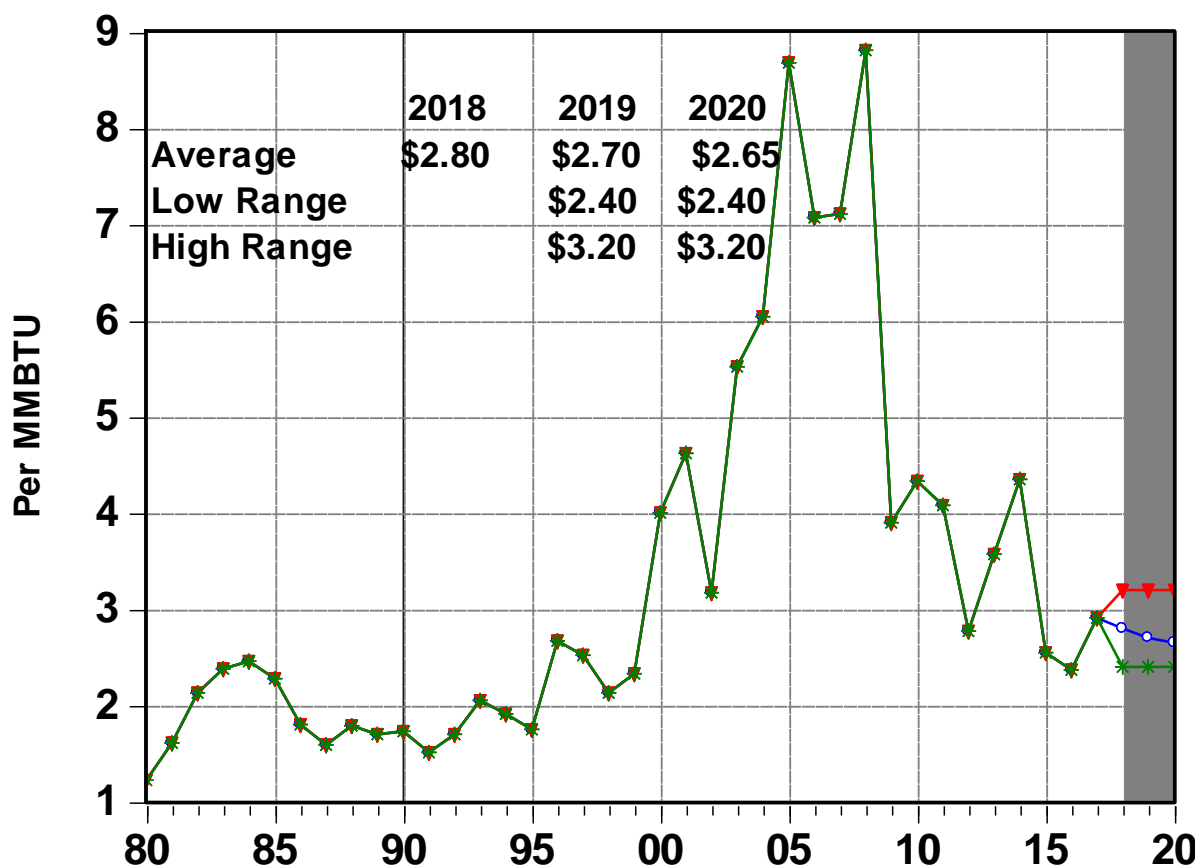
The reason for this price-decline scenario is virtually all supply-side related. The nation is swimming in an ocean of natural gas. Development of the fracking technology in the dry plays such as the Barnett, Haynesville, Fayetteville and parts of the Marcellus created the first

⁴ "Oil Supply Crimped as Legacy of 2014", Wall Street Journal, July 30, 2018, p. B1-B2.

decline stage. Then when fracking began to be used to harvest oil, there was the byproduct of “associated” gas---gas produced during the process of lifting oil.

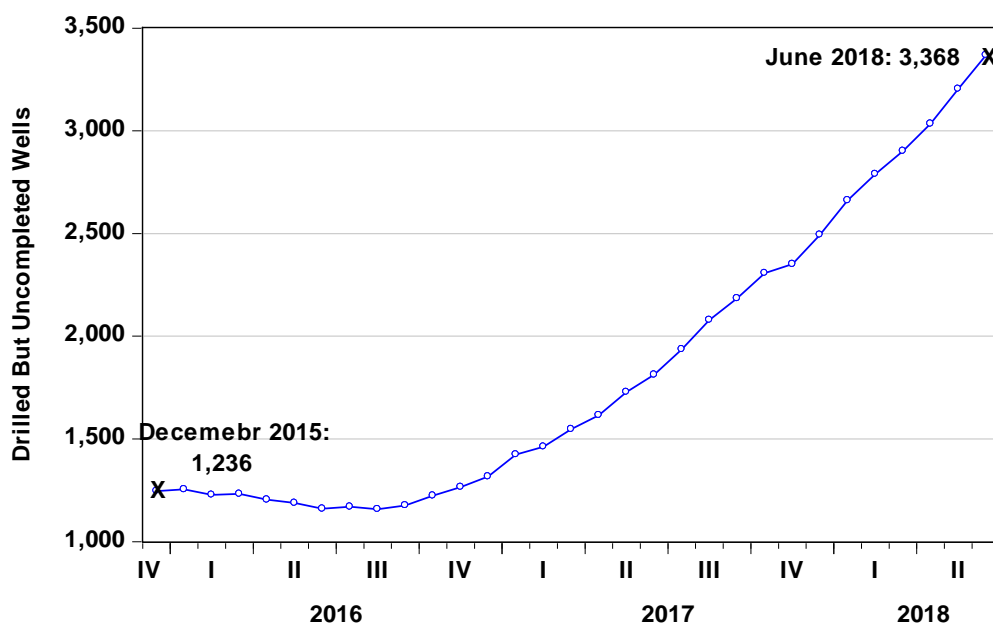
Since oil was the higher priced (from a BTU content) of the two fuels, focus turned to the “wet” plays that concentrated on oil production. Activity in the “dry” plays dropped precipitously (in June 2018 there was one rig operating in the Fayetteville Play) not only because oil was more profitable, but also because massive production of associated gas pushed natural gas prices down another level as seen in Figure 5.

Fig. 5: Price of Natural Gas



In fact, there is so much natural gas being produced in the Permian Play in West Texas/Eastern New Mexico that it has turned into a non-trivial problem. So much associated natural gas is being produced in this play that it exceeds pipeline capacity. The Texas Railroad Commission has severely restricted the flaring off of this gas, so in some cases oil production has been stopped until new pipelines are built (or old ones expanded) to transport the associated gas. In anticipation of these pipelines becoming available, companies have **drilled wells but not completed (fracked) them**. Note on Figure 6 that these DUCs have almost tripled from 1,236 in December 2015 to 3,368 in June 2018.

Fig. 6: Drilled But Uncompleted Wells-Permian Play



Source: Energy Information Administration

An Amazing Industrial Boom

These nice low natural gas prices, along with the prospect that they will stay low for some time, has enticed an unusually large number of firms to announce expansion of their existing plants or to build greenfield plants in Louisiana. **Since 2012, we estimate that \$181.8 billion of these announcements have been made** and are still “active” in the sense that they are either built, under construction, or still at the FEED (front end engineering and design) stage. In a really good year prior to 2012, having a \$5 billion announcement year would have been considered very good. This is an historical record by several orders of magnitude.

It should come as no surprise that most of these announcements are associated with firms that are heavy users of natural gas as a feedstock or clean-burning boiler fuel--that is, chemical firms. Table 4 documents a list of chemical firm announcements since 2012, and they total \$162.7 billion or over 90% of the announcements.

Note at the bottom of Table 4 that at least **18,975 new direct jobs** are associated with the firms listed. Two factors cause this to be an under-statement of new jobs created. First, most firms list only jobs directly associated with working for the firm; that is people wearing the company logo on their shirts. This may not include **contract workers**--those wearing a shirt that says Performance Contractors, Turner Industries, Cajun Contractors, etc. It is not uncommon for these contractor workers to double the workforce at a chemical plant. Secondly, the 18,975 number does not include the additional new jobs created in the state via the **multiplier effect**. We have estimated the job multiplier for the chemical industry at a whopping 9.3. That is, for every new job created at a chemical plant there are 8.3 new jobs created elsewhere in the economy---retail trade, healthcare, construction, etc---via the multiplier effect.

Table 4
Announcements of New Chemical Plants & Expansions of Existing Plants
In Louisiana Since 2012

Chemicals Only	Capex	Status*	Jobs**
Air Products	\$ 150,000,000	C	150
Axiall-Lotte Corp	\$ 3,000,000,000	U	2,400
BASF	\$ 500,000,000	C	455
BASF	\$ 42,600,000	C	111
BASF	\$ 20,000,000	C	167
BASF	\$ 150,000,000	U	15
Cheniere Energy LNG	\$ 20,000,000,000	U	148
CF Industries	\$ 2,100,000,000	C	779
Commonwealth LNG	\$ 200,000,000	P	NA
Dow Chemical	\$ 1,060,000,000	C	541
Driftwood LNG	\$ 14,459,000,000	P	498
Dyno Nobel/Cornerstone	\$ 1,025,000,000	C	540
Emerald Biofuels LLC	\$ 70,000,000	C	NA
Energy World LNG	\$ 888,000,000	P	150
Eurochem	\$ 1,500,000,000	P	1,500
ExxonMobil Plastics	\$ NA	P	60
Formosa Chemical	\$ 9,400,000,000	P	1,200
G2 LNG	\$ 11,000,000,000	P	250
Honeywell	\$ 300,000,000	C	190
Huntsman	\$ 78,000,000	C	75
IGP Methanol	\$ 3,600,000,000	P	325
Indorama Ventures	\$ 175,000,000	U	125
Lake Charles Methanol	\$ 4,600,000,000	P	200
Magnolia LNG	\$ 3,500,000,000	P	70
Matheson	\$ 130,000,000	C	27
Methanex	\$ 600,000,000	C	650
Methanex	\$ 800,000,000	C	650
Methanex	\$ 1,300,000,000	P	NA
Mid South Extrusion	\$ 4,000,000	C	30
Momentive	\$ 66,000,000	P	85
Monkey Island LNG	\$ 9,300,000,000	P	NA
Monsanto	\$ 925,000,000	U	120
Myriant Corporation	\$ 100,000,000	C	190
Nalco	\$ 18,700,000	C	189
Occidental Chemical	\$ 145,000,000	U	15
PCS Nitrogen	\$ 40,000,000	U	NA
Praxair	\$ 100,000,000	U	NA

Praxair	\$ 150,000,000	U	NA
Sasol Ethylene	\$ 11,000,000,000	U	2,895
SE Tylose at Shintech	\$ 120,000,000	C	322
Sempra-Cameron LNG	\$ 20,000,000,000	U	190
Shell Chemical	\$ 1,000,000,000	U	NA
Shell Chemical	\$ 717,000,000	C	20
Shintech	\$ 1,400,000,000	C	100
Shintech	\$ 500,000,000	C	NA
Shintech	\$ 1,490,000,000	P	120
SNF Flopam	\$ 362,000,000	C	1,400
South LA Methanol/ZEEP	\$ 1,700,000,000	P	65
Syngas Energy Holdings	\$ 350,000,000	P	100
Taminco/Balchem	\$ 37,588,000	U	173
Trunkline LNG	\$ 10,000,000,000	P	250
Venture Global LNG	\$ 8,500,000,000	P	250
Venture Global LNG	\$ 4,250,000,000	P	100
Virdia Biochemical	\$ 60,000,000	U	81
Wanhua Chemical	\$ 1,120,000,000	P	170
Westlake	\$ 140,000,000	P	NA
Westlake	\$ 330,000,000	U	180
Westlake	\$ 425,000,000	C	454
Williams Olefins	\$ 375,000,000	C	NA
Williams Olefins	\$ 5,000,000,000	P	NA
Yuhuang Chemicals	\$ 2,300,000,000	U	200
Total all Projects	\$ 162,672,888,000		18,975
Total Potentials	\$ 92,363,000,000		5,393
Total Completed/Underway	\$ 70,309,888,000		13,582

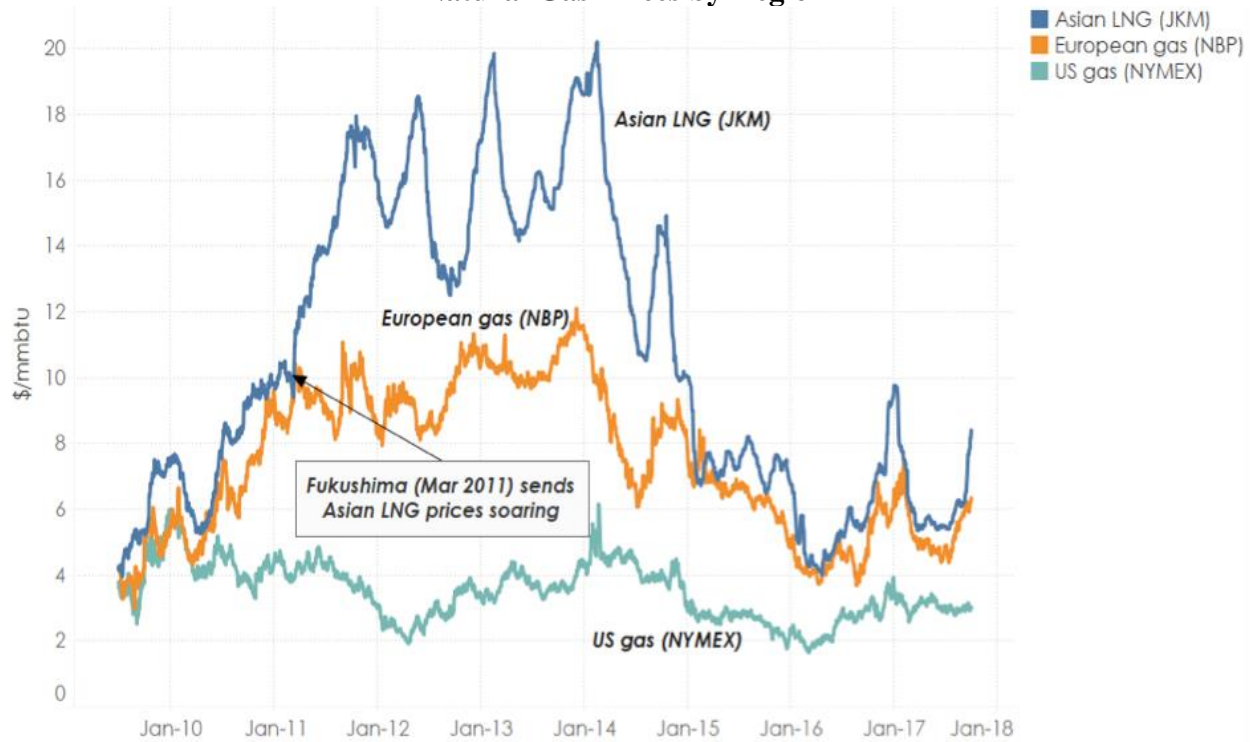
Source: Loren Scott & Greater Baton Rouge Industrial Alliance. *C=completed; U=underway; P=potential. **www.opportunitylouisiana.com & author's calculations, sometimes includes both direct & indirect jobs

Asia-Europe-Henry Hub Price Differential

It is not just the low price of natural gas in the U.S. that has created this remarkable boom. It is also the fact that natural gas prices are much higher in Europe and Asia as seen in Figure 7, Note that the green, orange and blue lines tend to stay together until the latter part of 2009. Then the fracking movement drove U.S. prices well below those in Japan and Europe. European and Asian prices actually went up markedly because these regions must import LNG, and their suppliers---Russia and Middle Eastern countries---price their LNG at about 15% of the price of oil. When oil prices sky rocketed over 2011-14, European and Asian gas prices jumped

as well. The huge price differential between U.S. and European/Asian gas meant chemical firms in those countries could not compete effectively with U.S. chemical firms. This price differential was a key to fueling the colossal industrial boom in Louisiana.

Figure 7
Natural Gas Prices by Region



Notice that the price differential was squeezed significantly beginning in 2015, because the price of oil fell so much that it lowered European and Asian gas prices. This caused some of the announced, FEED-stage projects in Table 4 to hesitate about making a final investment decision (FID) until there was more clarity about where oil prices would finally settle.

Those FEED-stage projects are now looking more hopeful, because the differential has begun to widen as oil prices have started to increase again. If our oil and natural gas price forecasts are approximately correct, the green line in Figure 7 will decline slightly, and the blue and orange lines will rise even more. More firms will be incentivized to pull the trigger and make that FID that the state eagerly anticipates.

LNG Announcements: How Many Will Build?

A careful review of the data in Table 4 will reveal that about 58% (\$102.1 billion) of the capital expenditures listed are associated with 11 announced **LNG facilities**. Two are under construction---Cheniere (Sabine Pass LNG) and Sempra (Cameron LNG)---and they are the biggest listed in the table. These facilities take natural gas in a gas form and run it through a series of machines called “trains” that liquefy the gas down to one 600th of its volume. This LNG is then shipped by LNG tankers to Asia, Europe or other destinations, where it is re-gasified and used typically to generate electric power.

Of the 11 announced projects, two are under construction. Cheniere is building five trains and four are already operational. Cameron LNG has three trains under construction. Both of these firms secured **Sales and Purchase Agreements (SPAs)**---long-term, “take or pay” commitments---from buyers back when the differential in Figure 7 was particularly wide. As seen in Table 5, the price of LNG in Asia was about \$16 mmbtu and Cheniere could offer \$8.80. Buyers were eager to sign long-term contracts given that price spread.

The narrowing of the gap that started in 2015 has created a difficult financing problem for the other nine LG companies that have announced. At an oil price of \$30 a barrel, the U.S. competitive advantage had not only disappeared, it had swung decidedly against U.S. firms---\$4.50 versus \$8.58 in the U.S. The oil price recovery has restored the U.S.’s competitive advantage (\$9.75 versus \$8.83) but buyers have now experienced oil price volatility and are very reluctant to sign long term SPAs. That means the nine remaining firms are having difficulty raising capital to build their very expensive, proposed plants.

Table 5
Comparative Market Price for LNG

	2012	2015	2018
	Oil Price = \$107	Oil Price = \$30	Oil Price = \$65
Foreigner LNG Price (15% of Oil Price)	\$16.05 mmbtu	\$4.50 mmbtu	\$9.75 mmbtu
U.S. Supplier LNG Price:			
Henry Hub Price of LNG	\$2.77 mmbtu	\$2.55 mmbtu	\$2.80 mmbtu
15% for Liquefaction	\$0.53 mmbtu	\$0.53 mmbtu	\$0.53 mmbtu
Capital Recovery	\$3.50 mmbtu	\$3.50 mmbtu	\$3.50 mmbtu
Transportation to Asia	\$2.00 mmbtu	\$2.00 mmbtu	\$2.00 mmbtu
Total U.S. Supplier Price of LNG	\$8.80 mmbtu	\$8.58 mmbtu	\$8.83 mmbtu

To overcome their financing barriers, these nine firms are examining creative ways to lower the **capital recovery component** of their pricing scheme in Table 5. Driftwood, for example, is attempting to sell equity shares in its trains. After their upfront equity stake, these buyers would only pay for the throughput and liquefaction costs. We understand that Venture Global (VG) is getting their capital recovery costs down to perhaps as low as \$2.25 by going to individual components suppliers and negotiating a fixed cost per part. We are unaware at this writing if VG has been able to secure an engineering-procurement-construction (epc) contract

under these terms. Magnolia is trying to lower its capital recovery component by building smaller trains.

We do not expect that all nine proposed LNG plants will be built. We do expect that those that choose to make an FID will do so **in mid-2019** and beyond. That way, their plants will become operational in about 2022 when the LNG market is expected to shift from a glut to a shortage market.

Methanol: Watching China

A review of the data in Table 4 will reveal another dominant player in these announcements---methanol plants. There are \$17.52 billion in methanol plants on the list. The first two Methanex plants listed (totaling \$1.4 billion) are completed and the \$2.3 billion Yuhuang Chemical plant is under construction. There are six other proposed plants totaling \$14.27 billion in capital expenditures that are awaiting their FID.

What are the prospects that these six plants will be constructed? That depends on the methanol market, which has demonstrated significant growth recently. Global methanol demand was about 64.7 mm (million) tonnes in 2013 and grew to nearly 88.7 mm tonnes in 2017---growth of 24 mm tonnes or 37% in four years. Projections are for growth of another 35.5 mm tonnes to a total of 124.2 mm tonnes in 2023---a 40% increase. Of the 35.5 mm tonnes of growth over 2017-2023, 30 mm tonnes are expected to be needed by **China**. India is also following closely behind in pushing for conversation to methanol's use in power generation (e.g., industrial boilers, turbines, fuel cells, gensets, and cooking applications) although projections of their demand have not yet been added to global projections.

Access to the vast North American natural gas supplies delivered through the pipeline infrastructure originally developed to transport Gulf Coast gas to the north provides Louisiana with low priced fuel. The state's deep water access and decades of manufacturing experience makes it ideal for creating value-added products from natural gas for export.

China is the globe's largest source and consumer of methanol. The country produces about two-thirds of the world's capacity. The problem is most of this methanol is derived from coal. Asia, and in particular, China will play a large role in future demand for this commodity. As everyone knows, China has an awful pollution problem, and the country seems committed to do something about it.

Traditionally, methanol was used for production of formaldehyde, a basic component of glues; however, demand growth for methanol in this country is now coming from three key sources. First, methanol can be used to make olefins which are a basic ingredient in hundreds of consumer products. China has 24 large **methanol-to-olefins** (MTO) plants and another 37 at various stages of construction or permitting. Roughly half of the operating plants are in conjunction with coal-based methanol production. The country has been relying on coal as a source of its methanol, but coal is a particularly dirty input from a pollution standpoint. China will not allow permits for these 37 proposed MTO plants without a methanol supply coming from a source other than coal. Most of the proposed MTO plants are in Eastern China requiring

imports. Northern and northwestern China has lots of coal. However, methanol produced from coal there is very expensive to transport to the coast. A single large MTO plant uses about 1.8 mm tons a year of methanol.

Secondly, methanol as a fuel substitute is growing rapidly. Methanol is needed for converting China's many **boilers**. There are about 475,000 small to medium to large-sized industrial boilers in the country that are coal-fired with essentially no pollution controls. They are (1) attached to factories for manufacturing and (2) used for district heating of apartment complexes, sections of cities, etc. The latter is seasonal and the former is more constant. Boilers are using 400 mm tons of coal a year. The National People's Conference War on Pollution sees this as the biggest, lowest-hanging fruit to clean up particulate and carbon emissions. Two main possible replacements are LNG and methanol. China is promoting a buildup of imported methanol reserves on its East Coast---10 mm tonnes of reserves (15% of the current global production). If China refueled half of these boilers evenly split between LNG and methanol---50 mm tonnes of methanol would be needed. The result would be a huge reduction in particulate and CO₂ pollution with no SOX or NOX.

Thirdly, a combination of (1) the International Maritime Organization 2020 rule on low-sulfur diesel replacing bunker fuel, and (2) China's desire to reduce emissions from its **inland water vessels** is another source of increased demand for methanol, because maritime engines can be inexpensively converted to methanol, dramatically reducing emissions and the effects of fuel spills as methanol is readily biodegradable unlike petroleum.

The bottom line: a burgeoning global methanol market (especially in China) bodes well for most of the six proposed methanol plants getting an FID. A concern is methanol might get caught in the crosshairs of a trade war. In early August, China included methanol in a list of 25% retaliatory tariffs against the U.S.

Proposed Plants & the Problem of Texas

It should be apparent to the reader after reviewing the information in Table 4 that Louisiana has a lot to lose if the "potential" projects listed do not become "real." At a minimum, some \$92.4 billion in capital expenditures and at least 5,393 jobs are at stake (see the bottom of Table 4). In addition, every year these capital-intensive firms are making multi-million dollar decisions about capital projects to improve productivity and/or to meet new environmental regulations. From a state and local policy standpoint, what can stand in the way of these investments?

What decision makers always must always keep in the forefront is that Louisiana has a very robust competitor for these investments. There are several reasons why **Texas** is the number one producer of chemicals in the U.S. Texas brings to the table many of the same characteristics as Louisiana. Our immediate neighbor to the west has several well-developed ports with easy access to the Gulf and from there to international markets. That state is home to an abundant supply of natural gas, a vast pipeline infrastructure to move this fuel where it is needed, and access to plenty of water in its southeastern corner.

But there is a reason why Texas' value of chemical shipments exceeds Louisiana's by a factor of almost three. Forbes Magazine ranks the business climate in Texas #2 in the nation, while Louisiana ranked #40.⁵ The Institute for Legal Reform within the U.S. Chamber of Commerce ranked Louisiana dead last in its 2017 legal climate survey, while Texas ranked 39th.⁶ In a ranking of "Best States for Transportation," Texas ranks 22nd and Louisiana ranks 44th.⁷ On the education front, one 2017 ranking shows Texas higher education at #34 and pre-K through 12 at #33, while the comparable rankings for Louisiana are #42 and #45.⁸

On the business taxation front, Texas has several advantages over Louisiana. Unlike Louisiana, Texas has a unified sales tax collection, does not tax manufacturing utilities, does not tax manufacturing equipment, does not tax manufacturing inputs, and has significantly lower local sales tax rates. Importantly, Texas has no corporate or personal income tax. The state does have a gross receipts tax, somewhat similar to Louisiana's franchise tax, but Texas lawmakers took a major step toward eliminating this reviled tax recently, with the Texas Senate's passage of Senate Bill 17---legislation that will phase out the tax based on revenue triggers.

It should be apparent from these statistics that Texas brings a formidable array of positives to the table when competing for new or expanding chemical facilities. To keep the playing field somewhat level Louisiana must bring significant incentives to the table to offset Texas' advantages. One might argue that state incentive programs are not the primary factors firms look at in making their final location decision. Incentive programs may not be the primary factors, but the bottom line is the firm's location decision is typically just a matter of math. The site that provides the greater return on equity is the site selected. At the margin, incentive programs can be just the factor that pushes Louisiana into the win category.

Proposed Plants & ITEP 2.0 and ITEP 3.0

One key factor in helping that rate of return on equity equation move in Louisiana's favor has been the presence of the **industrial tax exemption program** (ITEP). Until June 24, 2016 firms were able to approach the Board of Commerce and Industry with their proposed capital expenditures on a new plant, replacement of key machinery, or environmental upgrades, and the Board would grant the firms an exemption from paying local property taxes on those expenditures for five years with an opportunity for a renewal for another five years.

On June 24, 2016 the Governor issued executive order **JBE 2016-26 (ITEP 2.0)**. In this order he made the following changes in the ITEP:

- All contracts shall now require an "Exhibit A" consisting of a Cooperative Endeavor Agreement (CEA) between the State, the Department of Economic Development and the applicant providing for the creation or retention of jobs. Effectively this means the Industrial Tax Exemptions (ITEPs) will no longer be awarded for replacement equipment, environmental upgrades, maintenance capital, or other investments that do

⁵ www.forbes.com/best-states-for-business/list/#tab:overall

⁶ www.instituteforlegalreform.com/states

⁷ www.usnews.com/news/best-states/rankings/infrastructure/transportation

⁸ www.usnews.com/news/best-states/rankings/education

not create new jobs or do not provide compelling evidence of the retention of existing jobs. The ITEP can be reduced or eliminated if the applicant does not meet the job goals in the CEA.

- All new contracts now must include “Exhibit B” consisting of local approvals consisting of a resolution from the parish council or police jury, and the school board, and the sheriff’s office.

These changes do not apply to any CEAs issued before June 24, 2016, so ITEP agreements exist with most of the firms listed back in Table 4. However, if these firms in the future want to apply for an ITEP for replacement equipment, environmental upgrades, maintenance capital, or other investments that do not create new jobs or do not provide compelling evidence of the retention of existing jobs, those applications will be turned down. This is a change in the ITEP that clearly moves against the ROE equation in Louisiana of a new firm or expansion of an existing one.

The Exhibit B addition---gaining local government approval---has obviously added to the cost and time to achieve an ITEP. The Governor’s executive order clearly says all applications “must include Exhibit B consisting of approvals...” This wording suggests strongly that local entities have gained veto power over the ITEP. A sheriff in north Louisiana has used this new power to reject an ITEP requested by Calumet Refinery. The Together Baton Rouge group has an explicit goal of stopping as many of these ITEP applications as possible in East Baton Rouge Parish under the misguided notion that this is a “give away” of tax dollars that would have been spent here anyway---a notion that flies in the face of every corporate finance class taught in classrooms in America.

To the extent that the ITEP program factored significantly into a firm’s decision to locate or expand in Louisiana, these changes have added costs and uncertainty to the equation---moves that on the net harm economic development in the state. Indeed, economic development professionals have said the ITEP change has created so much uncertainty that it **rendered the ITEP basically a zero factor in the firm’s location decisions.**

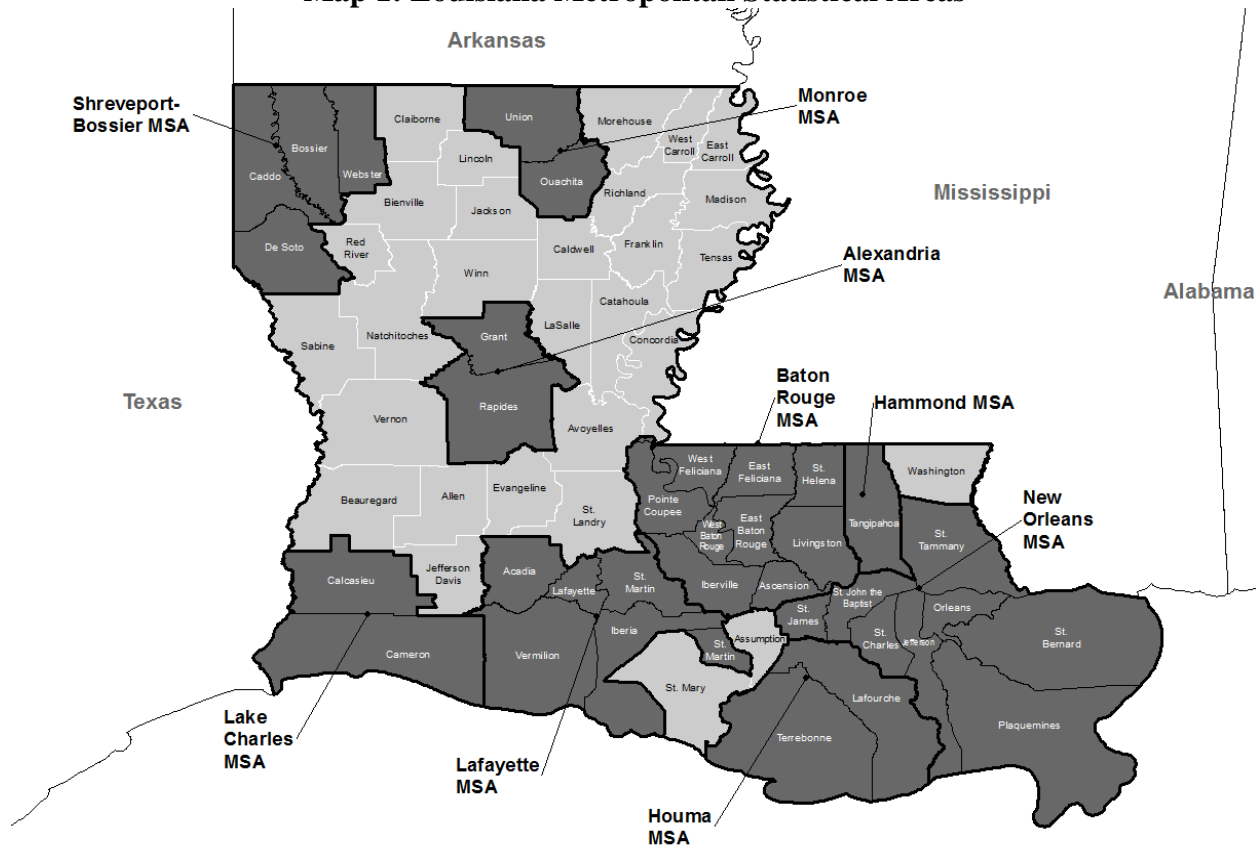
There was such a clamor from economic developers and industry across the state about ITEP 2.0 that the Governor and the Board of Commerce and Industry voted in June 2018 on **ITEP 3.0**. Two key changes were made to ITEP 2.0. First, the ITEP is now capped at 80% for 10 years. Local governments can begin to collect some property taxes right away, and industry gets the exemption for a full 10 years instead of eight. Secondly, the ITEP application was standardized and gives the Commerce & Industry Board authority to evaluate and approve exemptions. After the C&I Board approves a project, a notice and materials are sent to local authorities. These bodies have 30 days to place the project on their agenda and another 30 days to vote on it. The project will be approved if either 30-day period ends without any actions by the locals.

If there was no formidable competitor for these plants ITEP 2.0 and 3.0 would be no problem. Unfortunately, Texas looms right next door.

THE OUTLOOK FOR THE METROPOLITAN STATISTICAL AREAS

There are 64 parishes in Louisiana, and the U.S. Bureau of Economic Analysis (BEA) has taken 35 and separated them into nine **metropolitan statistical areas** (MSAs). These parishes are all grouped around one or more major cities in the state. Map 1 shows the location of each and the parishes that are in each MSA. Important changes took place in 2015 when the definitions of three MSAs expanded: (1) Lafayette added Acadia, Vermillion and Iberia Parishes, (2) Shreveport-Bossier added Webster Parish, and (3) New Orleans added St. James Parish. For the first time in decades Louisiana added an entirely new MSA---Hammond---which is composed of Tangipahoa Parish.

Map 1: Louisiana Metropolitan Statistical Areas



Those even remotely familiar with the Louisiana economy are keenly aware that each of these MSAs is unique. Like a stroll down the produce aisle at your local supermarket where the produce is of different size, shape, color, and taste, Louisiana’s MSA have their own size, makeup and culture. No two of them are exactly alike.

The **New Orleans MSA**, with an estimated 578,500 non-farm workers, is the largest MSA in the state. Though there have been some great advances in this region since the mid-2000s, this MSA’s employment still remains 50,100 jobs (or 8%) below its Pre-Katrina/Rita

peak. Situated in the “toe of the boot” near the mouth of the Mississippi, the MSA’s system of ports ranks among the largest in the world in terms of tonnage moved. It houses a huge medical complex for veterans and non-veterans, and it is the home to several universities---the largest being the University of New Orleans and Tulane University. New Orleans proper is a tourism magnet, in some cases attracting tourists to the unique French Quarter and to the MSA’s substantial gaming industry anchored by the state’s only land-based casino, two other riverboat casinos, and the Churchill Downs Racetrack. A number of large refineries (including the third largest in the country) and chemical firms reside within this MSA’s boundaries, along with some key energy companies such as Chevron and Shell. Recently the region has begun attracting a burgeoning tech sector.

Second in size, the **Baton Rouge MSA** provides jobs for about 412,200 non-farm workers. The petro-chemical industry looms large in this MSA with the largest concentration of chemical employment in the state, the country’s fourth largest refinery, and an unusually high concentration of industrial construction workers to support that base. Both LSU and Southern University are located in this MSA along with Baton Rouge Community College, which is now larger than Southern. This is also the location of the State Capitol, which means government employment plays a major role in this MSA. Its growing high tech sector is anchored by the IBM complex in downtown Baton Rouge. It is the home of three riverboat casinos and has a healthy digital gaming sector.

The fourth largest MSA is **Shreveport-Bossier** (180,000 jobs in 2018). This MSA contains the State’s largest gaming sector with six riverboat casinos and one racetrack. A very active port---the Port of Caddo Bossier---exists on the Red River in the Shreveport-Bossier area. The port hosts a number of large employers including a major steel mill. With just over 9,193 military and civilian personnel, Barksdale Air Force Base gives this community a significant military presence. High tech is a growing presence in this region with the addition of CSRA as the 1,000-job anchor of the MSA’s National Cyber Research Park. Shreveport-Bossier is in the heart of a huge deposit of natural gas called the Haynesville Shale.

Louisiana’s third largest MSA is **Lafayette** (201,100 jobs) and its sixth largest is **Houma** (86,000 jobs). We put these two together because both have an unusually high concentration of firms associated with the oil and gas extraction industry, so fluctuations in energy prices powerfully impact these two regions. They are, however, not identical. Lafayette is more diverse, hosting the nation’s largest jewelry settings manufacturer, a large, successful ambulance firm, a firm that provides ER personnel to hospitals in several states, and one of the nation’s largest home health companies. Because of its location closer to the Gulf, Houma supports major shipbuilding and fabrication firms and is home to Port Fourchon, a port that services over 90% of the structures in the Gulf.

The most closely watched MSA in the state over the next few years is likely to be **Lake Charles**, (120,100 non-farm jobs). Like Baton Rouge, Lake Charles has an unusually heavy chemical and refining base---the second largest concentration in Louisiana after Baton Rouge. About two-thirds of the \$177.4 billion in announced industrial expansions since 2012 are scheduled to occur within this MSA. The industrial construction sector was already a major player in this region; now it has expanded dramatically. Two LNG export terminals are under

construction in this MSA and eight more are at the FEED stage. With three casinos (two very large), a racetrack, and a large Indian casino nearby, Lake Charles is the state's second largest gaming market. Another unusual characteristic of this MSA's economy is the large aircraft maintenance and repair sector at Chennault Airpark.

Located in the northeastern area of the state, **Monroe** (78,800 non-farm workers) is the third smallest of the nine MSAs. This MSA can brag of housing one of only two Fortune 500 firms in Louisiana---CenturyLink. Chase has a large mortgage facility in Monroe. The large Graphics Packaging facility gives Monroe an out-sized presence in the paper and lumber sector. Vantage Health is a growing, new presence in the area with over 1,300 employees.

The second smallest item in the produce section would be **Alexandria**. Located in the central part of the state, this MSA has about 62,000 non-farm jobs in 2018. There is a diverse mixture of major players in this MSA including Cleco (a large utility company), Proctor & Gamble, Union Tank Car, Crest Industries, and Roy O. Martin Lumber. One of the MSA's jewels is England Airpark, which houses Union Tank Car and recently became home of a 150-person Immigration and Customs Transfer Facility. Alexandria has a strong military influence due to nearby Fort Polk---the largest single employer in the state.

The smallest of Louisiana's nine MSAs is its newest member---**Hammond**. With employment at an estimated 47,100 in 2018, Hammond's economic base is Southeastern Louisiana University and a significant healthcare sector anchored by the very large North Oaks Medical Center. Tangipahoa Parish is also a bedroom region for people who work in New Orleans, Baton Rouge, and in plants along the Mississippi River. Some 14% of income earned by Parish residents is earned outside of the Parish.

In the sections below we will give a brief employment history of each of the state's nine MSAs, along with the Louisiana Econometric Model (LEM) forecast for 2019-20. In each MSA, we will explain the key factors and companies driving the region's future.

The New Orleans MSA: DXC Inside, but Watch the "Edges"

The New Orleans MSA is the largest in the state and is composed of eight parishes---Orleans, Plaquemines, Jefferson, St. Charles, St. John the Baptist, St. Tammany, St. James, and St. Bernard. Employment in this MSA is now at about 578,500---still about 4% larger than the Baton Rouge MSA. These eight parishes are located in "the toe of the boot" (see Map 1).

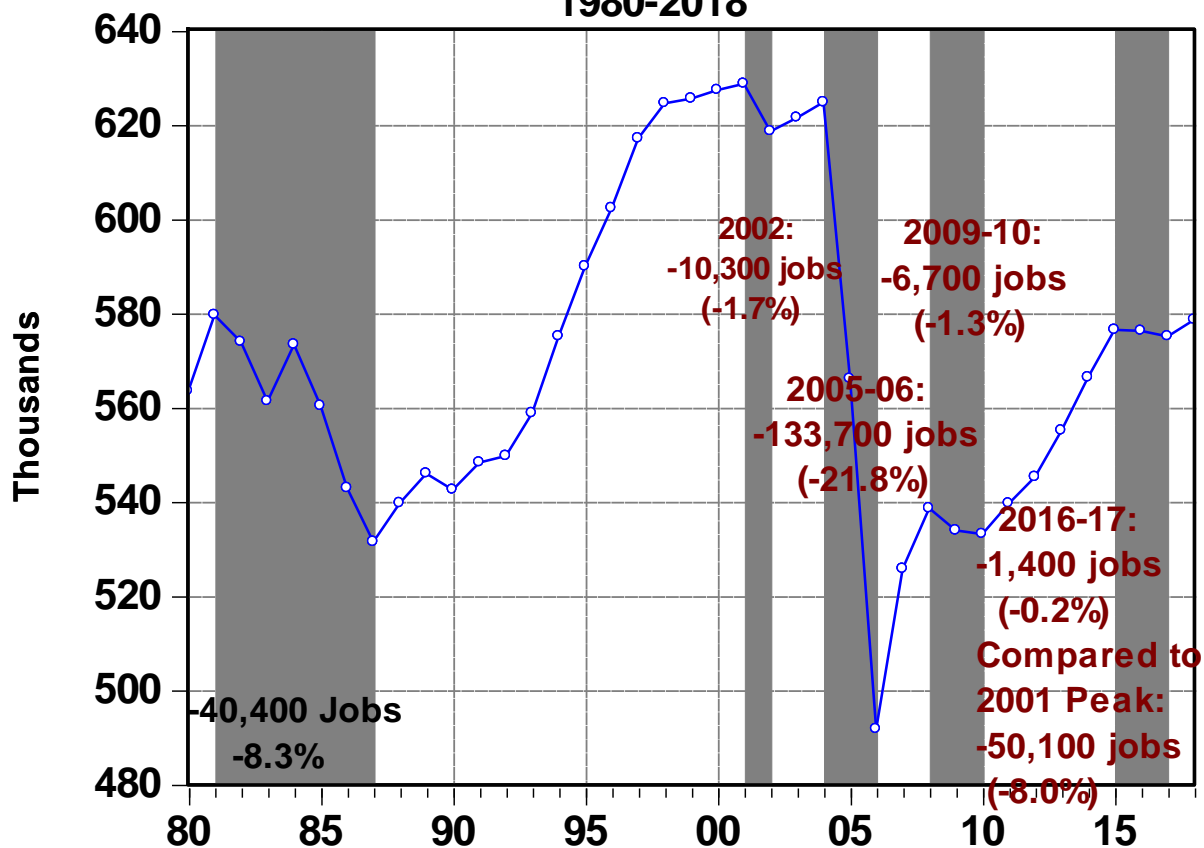
It has been a wild ride for this MSA over the last 38 years. The good news is the MSA enjoyed a solid recovery from the Great Recession despite the drag of a 4,500-job loss at Huntington Avondale Shipyard. New hires in a major hospital sector, major industrial construction projects, and new high tech firms are a plus for the future of the New Orleans MSA, but the oil and gas exploration sector---and firms associated with it---have been a drag on the region for the past three years.

History Pre-Katrina & Rita

Figure 8 tracks the non-farm employment history in New Orleans from 1980 through 2018. New Orleans suffered mightily during the 1981-87 recession, losing 40,400 jobs or 8.3 percent of its workforce. This MSA had more **extraction sector** employees than any other area in the state in 1981---20,600. By 1987, problems in the oil patch had driven that figure down by nearly 30 percent to 14,600, as many firms relocated their headquarters operations to Houston and employment in the industry in general declined.

New Orleans' **manufacturing** sector also took a beating, falling from 61,300 workers in 1981 to 41,700 by 1987. Much of this decline occurred in the shipbuilding segment of manufacturing which alone lost 6,900 jobs. Shipbuilding at the time was very energy-focused with little diversity in its orders. Multiplier effects from these shipbuilding layoffs dealt the MSA's **real estate, retail, services, and financial markets** punches that would have them floored until well into the 1990s.

**Fig. 8: New Orleans MSA Non-Farm Employment
1980-2018**



Like the other MSAs with strong energy ties---Houma and Lafayette---New Orleans began a slow recovery in the late 1980s. Then another round of layoffs at Avondale Shipyards and the soft natural gas prices of 1991-92 flattened growth in 1992. A further blow occurred

when the Challenger accident caused a slowdown in flights of that spacecraft. This meant fewer flights and fewer external fuel tanks to be built by what was then Martin Marietta.

The big jump in 1994 and 1995 shown in Figure 8 will look familiar to readers who carefully examine these same two years in the graphs of the other two major casino markets--- Lake Charles and Shreveport/Bossier. **Four riverboat casinos** with about 3,300 workers opened during this time period. Secondly, the **land-based casino** opened at a temporary site, and construction began on the massive permanent location at the foot of Canal Street. This injection of new jobs was enough to generate healthy annualized growth rates of 2.6 percent per year during 1994-95.

New Orleans' employment trend from 1999 to 2001 was virtually flat. Then, in 2001, employment in the region responded to the national recession and other events with a **one-year loss of 10,300 jobs**, ranking it number five among the hardest hit MSAs in the state by the post-911 national recession. Note in Figure 8 that the two years after the recession---2003-04---were not particularly great recovery years. High natural gas prices led to the closing of some ammonia fertilizer plants in the area and to general sluggishness in the region's large chemical industry. Employment rose at a moribund 0.5 percent rate a year. An important fact from examining Figure 8 is that **for six straight years before Katrina and Rita hit, employment in this MSA was virtually flat.**

The Impact of Katrina & Rita

Of course, the most profound message from Figure 8 is the impact of Hurricanes Katrina and Rita on the MSA. On an annual average basis, **Katrina and Rita caused employment to fall by a remarkable 133,700 jobs or 21.8 percent.** These two storms effectively drove New Orleans MSA's employment back to levels it had not seen since 1977. Three decades of employment growth were wiped out overnight. According to Figure 8, the New Orleans economy had recovered 83,600 of those jobs by 2018, but the MSA employment is still lower than it was in 1980 and is still 50,100 jobs (-8.0%) below its 2001 peak employment year.

Actually, the use of annual average data in Figure 8 does due justice to how badly these storms impacted the New Orleans economy. On a monthly basis the job-destruction was much greater than suggested by the annual average data. By the time Rita had re-flooded New Orleans, the region had lost 177,900 jobs, an astounding 29.5 percent decline.

Recovery rate very slow: A disheartening factor has been the slow recovery since the storms. More frequently one would see a "V" pattern in employment right after a disaster as massive federal recovery and private insurance monies flow into the area for the re-build effort. We saw this "V" pattern, for example when observing the recovery in Lake Charles and Pascagoula, Mississippi.

In New Orleans, the recovery looks like an unbalanced V, with one side longer than the other. Why has the recovery rate been so slow? Few would dispute that **housing** has been a key factor. First, there is just the **sheer size of the destruction.** There were almost 182,000 homes in the New Orleans MSA that incurred either severe or major damage, i.e. damage bad enough to

render the home uninhabitable. Some have estimated this is seven times more homes destroyed than in any other natural disaster in our country's history.

Secondly, these homes were rendered uninhabitable by **flood waters**. When flood waters enter a home, regular home owner's insurance no longer applies. The owner must have purchased national flood insurance. As it turns out, **74 percent of these homeowners had no flood insurance**. Those who did have flood insurance discovered that it covered only 80 percent of the pre-flood value of the home up to a maximum of \$250,000. Virtually every home owner, even if they had flood insurance, was left with a gap in their coverage.

To cover this gap in coverage, the generous taxpayers in the other 48 states agreed to send a pot of money to Louisiana and Mississippi to help homeowners bridge this gap---what was referred to in Louisiana as the "**Road Home**" monies. These monies were critical in rebuilding many of the homes. Still, there remain large swaths of New Orleans East and St. Bernard Parish where people have simply chosen not to return.

Finally, consider four other issues. Recall from Figure 8 that in the six years before the storms hit **the economy in New Orleans was basically flat**. Families that had been dispersed by the storms to Dallas, Houston, San Antonio or even other parts of Louisiana, typically found themselves in much more robust economies with more, and higher-paying jobs. Secondly, it is a fact that **public schools in the New Orleans** area were among the worst in the state (if not the nation). Dispersed families found themselves in cities with much better public school systems. The good news is that the advent of charter schools into the Orleans Parish system has apparently improved these schools significantly. Thirdly, dispersed families watched with alarm the deteriorating **crime situation** in New Orleans, and this no doubt retarded the return rate.

The Drag of the Great Recession

Finally, the **Great Recession** hindered this MSA's recovery. Bolstered by massive amounts of construction spending to rebuild houses, levees, locks, etc., and the boost from the availability of Go Zone funding, the New Orleans MSA actually enjoyed employment growth in 2008. However, the drag of the national economy finally had an impact in 2009 and 2010, when the MSA lost 6,700 jobs---a 1.3 percent decline. That was actually not a bad performance considering that the national economy fell by 6.1 percent. The performance of the New Orleans MSA economy during the Great Recession was actually the best performance relative to the state's other nine MSAs.

Solid Recovery from the Great Recession

Recovery from the negative impacts of the Great Recession (but not the hurricanes) has been impressive for the New Orleans MSA. Note back in Figure 8 that the region initially enjoyed five straight years of solid growth from 2011-15. Indeed, the MSA had recovered all the jobs lost during the recession by 2011.

This performance is particularly impressive given that it occurred against the backdrop of the 4,500+ layoffs at Huntington Avondale Shipyards, about two-thirds that loss again at the

Michoud Assembly Facility, and at least a \$1 billion decline in the Army Corps of Engineers spending on rebuilding the area's levee system.

2016-17: The Drag of Oil & Gas

It is unfortunate that the region could not stay on the steady growth path of 2011-15. The New Orleans is the home of many firms in the oil and gas industry or in industries closely aligned with exploration and production activities. The recent large decline in oil prices has dinged the region enough to offset nice gains in other areas.

On the oil and gas side, **Shell** moved 95 people to Houston, **Freeport McMoran** dropped 32 jobs, **Hexion** closed at facility at Norco (-97 jobs), and **Chevron** had a temporary reduction in force at its Covington office (Chevron employment is now higher than pre-layoff conditions). A reduced demand for supply boat services in the Gulf led **Hornbeck** to stack 45 of its 62 boats and layoff 1,000 mariners and 150 onshore workers.

Adding to the employment issues, between 2015 and 2017 the **Army Corps of Engineers** reduced spending by \$311 million on its Hurricane and Storm Damage Risk Reduction System. **Trinity Yachts** shut down its site in Madisonville at a cost of 60 jobs, and **Louis Dreyfus** closed its packaging facility in Gramercy (-49 jobs). **Chiquita** returned its operations from the Port of New Orleans to Gulfport (-100 longshoremen), and **Macy's** closed its store in Esplanade Mall (-116 jobs).

Offsetting these declines was the opening of the huge new **University Medical Center Hospital** to replace the old Charity Hospital, some \$11 billion in industrial construction, and the final construction work on the new **VA Hospital**. During this period work was completed on the \$66 million **Pin Oaks Terminal** in St. John the Baptist Parish, generating 70 new jobs at \$70,000 a year. **Zen-Noh Grain** completed its \$150 million dock extension and continuous barge unloading system (+15 jobs). **Millennium Galvanizing** (a Crest company) opened its new facility in Convent and is now up to 65 employees. **TCI Plastics** has completed its \$36 million logistics facility at the Port of New Orleans and has begun hiring for its 160-person workforce. Construction has begun on some other large-scale industrial projects that will be discussed below. Construction was completed on the \$35 million addition to the A.B. Freeman School of Business at **Tulane**.

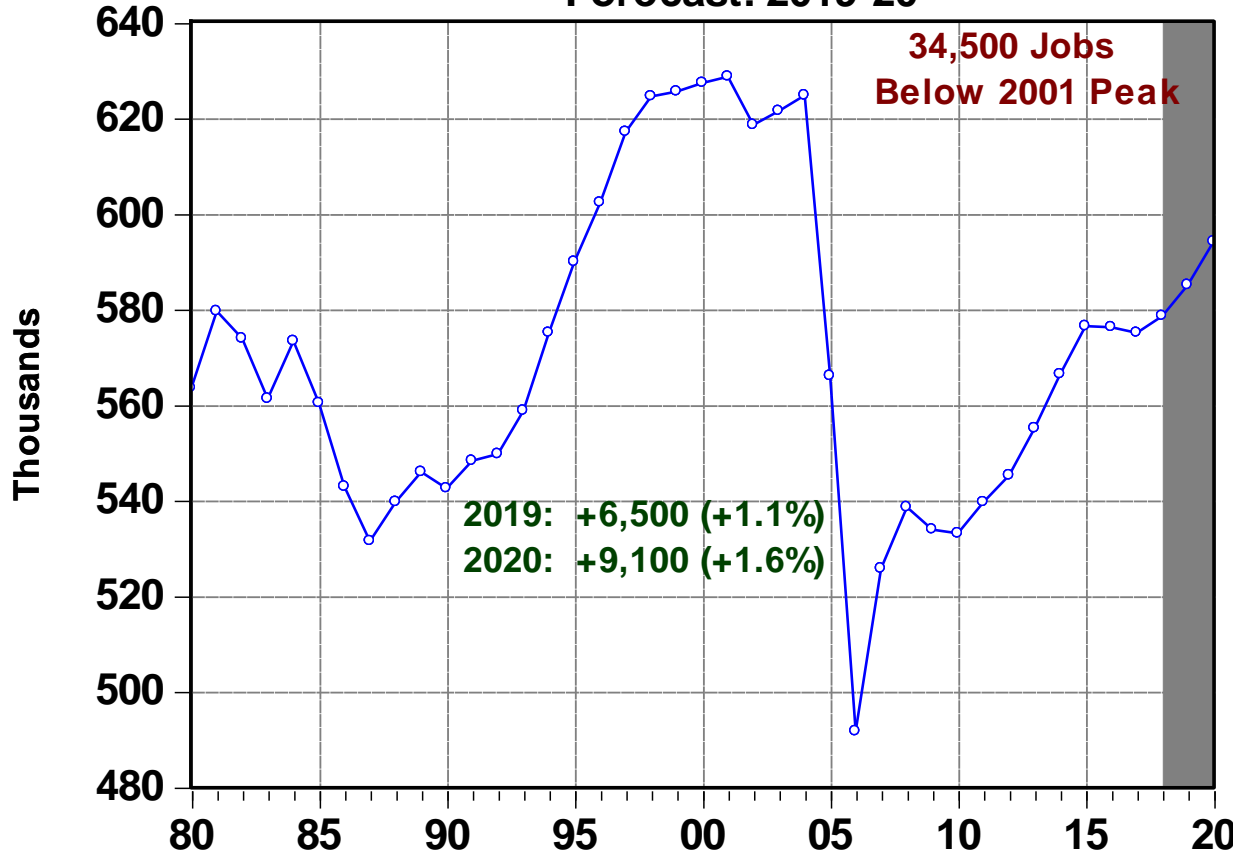
The result of all this is that the track of employment in this MSA resulted in a net loss of only 1,400 jobs over 2016-17---not bad for an MSA with such deep oil and gas roots. The really good news is that despite an oil and gas sector that remained basically moribund, **the New Orleans MSA economy began to grow again in 2018, adding 3,500 jobs (+0.8%).**

Forecasts for 2019-20: DXC, the "Edges", Michoud & Oil Exploration Recovery

There are many reasons to be optimistic about the immediate future of the New Orleans MSA. Developers have landed a very large, high-wage high-tech company. Looking to the northwest and southeast edges of the MSA reveals some ultra-large construction jobs ahead on the River, and if our oil price forecasts are near the mark, a meaningful recovery in exploration

activity in the Gulf should be ahead by late 2019 or early 2020. As seen in Figure 9, we project that the New Orleans MSA will add 6,500 jobs in 2019 (up +1.1% and more than double 2018's performance) and an even better 9,100 jobs (+1.6%) in 2020.

Fig. 9: New Orleans MSA Non-Farm Employment Forecast: 2019-20



DXC, Accruent & iMerit

New Orleans hit the jackpot this year when it landed one of the largest (employment-wise) projects in the South. **DXC Technology** is opening a new digital transformation center across from the Superdome. The company will hire 300 IT and business enterprise specialists in 2018 and grow to a 2,000-person workforce within five years. A high-wage firm, DXC will pay an average of \$63,000 plus benefits. Shortly after the DXC announcement GNO, Inc. announced that **Accruent** would open a 350-person technology center for excellence in the central business district. This firm produces software and IT products to aid construction, real estate, development and facilities management for major clients in retail, corporate, consumer goods, higher education, food/beverage and others. Right on the tails of the Accruent announcement was the notification that **iMerit**, a digital data services company, was putting a U.S. delivery center in downtown New Orleans. IMerit is projected to hire 100 people.

Looking to the “Edges”: A Huge Industrial Boom

Back in the “Assumptions” section of this report we indicated that Louisiana is in the midst of a record industrial boom like never seen in its history. As of this writing we have documented at least \$181.8 billion in projects that have been announced in the state since 2012. Luckily for New Orleans, a heady **\$42 billion** of those projects have been announced for this MSA. Of that total, approximately \$11.4 billion are either under construction or completed. That means about \$30.6 billion in projects are at the front-end engineering, design (FEED) stage. The great majority of these projects are located along the Mississippi either well to the northwest of the CBD (in St. James, St. Charles, and St. John the Baptist Parishes) or in Plaquemines Parish to the southeast. Among the projects that are presently under construction in this MSA are the following:

- The largest of these projects is **Yuhuang Chemicals’** new plant in St. James Parish. Construction began on the \$850 million first phase in April 2017. Plans are to open this phase in 2019 and immediately start construction on the \$1.45 billion 2nd and 3rd phases. Once both phases are completed 200 employees will be working at an average wage of \$85,000 (about twice the average wage in the private sector in Louisiana). Yuhuang recently let a contract with Air Liquide to build a \$170 million plant to supply oxygen to the complex. Methanol made at this plant will primarily be for shipping to China to manufacture into downstream products (see pages 17-18 for a description of this market).
- **Monsanto** broke ground in February 2017 on a \$975 million expansion of its Dicamba herbicide producing plant in Luling. This plant will take 3-5 years to build. When completed the new plant will have an additional 120 workers earning an average of \$76,500 a year.
- **Entergy** has three significant projects underway in this MSA. Work began in early 2017 on a \$869 million expansion of a power plant in Montz that will create 31 permanent jobs. A \$69 million upgrade of the company’s transmission system on the Westbank is designed to move power more efficiently and make the system less vulnerable to hurricanes. A \$212 million, 128-megawatt, gas-fired power plant is scheduled for the Michoud area.
- Significant investments are underway in the MSA’s large refineries. **Valero** is building a \$325 million gas desulfurization unit in St. Charles Parish that should be finished in 2020. In Garyville, **Marathon** will complete a \$120 mm ultra-low sulfur diesel project by the end of this year. The company signed an agreement with **Praxair** to supply hydrogen to support this new unit. No capital cost was reported for Praxair’s facility, but typically these facilities run the \$100+ million range. **Shell Motiva** started construction on a \$150 million H-oil recovery project in 2017. **Shell Norco** will spend \$10 million on new pollution control and monitoring equipment.
- **Noranda Bauxite** in Gramercy is spending \$35 million on an expansion and upgrades. This investment is projected to create 65 new plant jobs and 15 new headquarters jobs.

- **Millennium Galvanizing**---a Crest Company affiliate---is now at 65 people in Convent and hopes to add 15-18 jobs over the next 2 years.
- **Ergon** in St. James Parish is spending \$200 million to add 20 new oil storage tanks to its facility.

The three areas in Louisiana that are benefitting the most from the \$180.4 billion in industrial announcements are the Lake Charles, Baton Rouge and New Orleans MSAs. As it turns out, most of the projects (83%) in the Baton Rouge region are completed, while in the Lake Charles MSA just over half are completed or near completion. New Orleans is at the other end of the spectrum. **Only about 28% of its announcements are under construction or completed.** The great majority (72%) are at the FEED or permitting stage.

We start with projects proposed to the west of the CBD. Readers should note the dominant role that **St. James Parish** plays in this western list.

- It was with great excitement that state officials announced **Formosa Petrochemicals** had chosen St. James Parish as the site for a huge new \$9.4 billion chemical complex that would include an ethane cracker and downstream chemical manufacturing plants. The firm has purchased land next to the Mosaic facility and has applied for permits to start construction. When complete, an estimated 1,200 high-paying jobs would materialize at the site. Construction would likely start in late 2019 or 2020, and a very high probability is placed on this project going forward.
- Also in St. James Parish, **South Louisiana Methanol** has announced plans to build a \$1.7 billion ethanol plant---the largest in North America---across from Nucor’s steel mill. If constructed, the plant would hire 65 workers at \$66,500 a year. The firm is fully permitted and is awaiting a final investment decision (FID) that is expected before the end of 2018.
- **Wanhua Chemicals** has also chosen St. James Parish as a site for a proposed \$1.12 billion methanol plant. One hundred seventy jobs at \$70,440 would work at the completed plant. No specific site or FID has been made about this proposed plant as yet. Economic developers remain very positive about this announcement, though construction probably would not begin until the latter part of our forecast period.
- Another methanol plant proposed for the St. James Parish region is a \$350 million project about 10 miles south of the Sunshine Bridge by **Syngas Energy Holdings**. This project has been permitted. Associated with a fully-constructed facility would be 100 new jobs paying \$78,600.
- **Shell Motiva** in St. James Parish is awaiting an FID on a \$380 million “Amite Expansion.” One hundred new jobs would accompany this new facility.
- Mixed comments have been received on the potential of the **Eurochem** project scheduled for St. John the Baptist Parish. The company has purchased a site, has engineering

underway, and submitted air permit applications. This urea production plant would hire 200 people at an annual wage of \$58,000. While many local economic developers are skeptical, officials at the state-level are more optimistic. There has been no movement on this project for some time.

- In Reserve, Louisiana, **First Bauxite Corporation** wants to build a \$200 million processing plant to make proppants for the oil and gas extraction industry. This plant would be built at the Globalplex International terminal in St. John the Baptist Parish and would employ 100 new workers at \$70,000 a year. No cooperative Endeavor Agreement has been signed with the state, and the firm is still seeking financing. Probability is less than 50%.
- In St. Charles Parish, **Diamond Green Diesel** has a study underway to double its capacity from 275 million gallons to 550 million gallons by 2021. No capital expenditures or prospective job additions have been reported.
- **Cornerstone** in Jefferson Parish is doing the front-end engineering on a \$157.3 million expansion of its HCN production facilities. A final investment decision is expected in 2018-III.
- **PBF Energy** is in the middle of raising equity to spend \$108.4 million to restart a coker unit (+27 new jobs) at the Chalmette Refinery the company recently purchased. PBF has also filed notifications with the Louisiana Department of Economic Development to potentially spend \$503.2 million to upgrade the facility.

While the river parishes to the west of downtown New Orleans are teeming with prospects, there has also been a resurgence of activity to the east in **Plaquemines Parish**. This is especially so at the **Plaquemines Port & Harbor Terminal District**, where four large projects with a high probability of materializing are finding a home.

- One of these potential projects is **Venture Global's** \$8.5 billion LNG export facility planned for the Citrus Terminal at the Port of Plaquemines. This facility would have 20 liquefaction trains and the ability to export 20 million metric tonnes of LNG per year. Once operational, 250 people will be employed at this plant at an average annual salary of \$70,000. We analyzed the LNG market back on pages 16-17. VG is one of the LNG projects that we believe has a high probability of announcing an FID in late 2019 or 2020. VG is getting their capital recovery costs down to perhaps as low as \$2.25 by going to individual components suppliers and negotiating a fixed cost per part. At this date no engineering-procurement-construction contract has been signed, but we are getting more optimistic about this project.
- Also at the Plaquemines Port is a proposed new \$4.5-\$4.8 billion 4-plant methanol facility by **IGP** at Myrtle Grove. (See page 17-18 for an analysis of the methanol market.) This project would generate 325, high-wage jobs for Louisianans. Air quality permits have been secured and a contract has been let with CB&I to conduct FEED work

on the project. We place a high probability on this project beginning construction during our forecast period.

- Two new, related projects of substantial size have recently been announced at the Port. Tallgrass Energy has announced plans to construct a \$1.5 billion, 30-tank, 20-million barrel-capacity oil storage terminal to be called the **Plaquemines Liquid Terminal (PLT)**. Plans are for the PLT to be fully operational by 2020-II. A 700-mile pipeline (the Seahorse Pipeline) is to be constructed from Cushing, Oklahoma to PLT to bring feedstock to the site. Multiple deepwater docks will enable post-Panamax vessels of up to one million barrel capacity to load at the site. Tallgrass also plans to add to this project the \$1.5 billion **Blue Water Gulf (BWG)**. This would involve a 50-60 mile pipeline from PLT to a new terminal (BWG) in the Gulf that would enable the PLT to feed oil to Very Large Crude Carriers (VLCCs). These two projects have a high probability of going forward. Indeed, ground will probably be broken on the PLT about the time the Outlook goes to press.

Destructive Force of Trump's Tariff Regime

Clearly, the New Orleans MSA has a lot at stake when it comes to these proposed projects actually issuing FIDs. Looming large over these FIDs is the question of President Trump's tariff initiatives. Tariffs negatively impact these decisions in at least two ways. First, Trump's steel and aluminum tariffs are **driving up the cost of building these very capital-intensive, steel-rich projects**. For example, consider the \$1.12 billion Wanhua Chemicals project. Steel comprises about one-third of project costs. One-third of \$1.12 billion is \$373 million. Bumping that number by 25% adds over \$93 million to project costs, an increase of over 8% in total project costs.

Secondly, products produced by these proposed projects are now the subject of **retaliatory tariffs** by other countries. Specifically, China has levied retaliatory tariffs on U.S. LNG and methanol, which will make their prices higher to the Chinese, reduce demand and sales, and make it even more difficult to secure funding for the projects.

It is very important for these trade issues to be resolved quickly and avoid a trade war. New Orleans has a great deal at stake in this issue.

Back in Space: A Resurgence at Michoud

In early August, NASA announced a new group of astronauts that will be going into space for the first time since 2011. This was great news for the **Michoud Assembly Facility (MAF)** in New Orleans East, where important component parts for the spacecraft are assembled. Over the next two years, **Boeing** will be adding 400 jobs to its 600-job workforce to build the core stage for the rocket. During that same period, **Lockheed** will add 300 to its workforce to construct the Orion Capsule. A third shift has been added for these projects.

Another growing unit at MAF is **LM Wind Power** (wholly-owned by GE and formerly Blade Dynamics). Now at 100 employees in its design center, this firm anticipates adding

another 150 engineers to this unit. If it goes to a manufacturing center, it may add an additional 600 jobs depending on consolidation of other markets (GE is in a reorganizing process). The huge **USDA Finance Center** on the MAF campus is holding steady at 1,500 employees.

Just down the street from the MAF site is another important player in New Orleans East--
- **Textron Marine and Land Systems**. At this unit Textron builds the Ship-to-Shore Connector amphibious landing craft for the Navy. Starting with an \$84 million contract, an additional \$180 million was added on and the Navy is working on a further \$500 million for this project. The Navy wants 73 of these craft. Presently, the project is funded through 2020, with options to 2030. Over a 10-12 year span this would support about 600 jobs at this site.

Movement at Avondale

One of this MSA's important economic development assets---the old **Avondale Shipyard**---has set idle for several years, but is now showing signs of life. **Fuji Vegetable Oil** announced in March that the firm would build a \$70 million processing facility on the site that would refine palm oil from the Pacific into fats and oils found in desserts, infant formula, frying fats and soaps. The project would create 39 jobs paying \$77,000 annually.

The present owner of the site---Ingalls--- has signed a purchase agreement to sell the site to **HRE Global**, an Illinois-based financial services firm. Exactly how HRE would use this site is unclear, but initial indicators were to turn it into a break bulk terminal with a warehousing and manufacturing component. To our knowledge the full sale has not closed yet.

Stability on the Northshore

After two years of taking hard hits from the declining oil and gas exploration market, the Northshore appears to have stabilized and should see some growth as the Gulf of Mexico (GOM) activity begins to pick up. In addition to the closure of Trinity Shipyards, many jobs were lost at **Hornbeck** as the offshore supply business tanked when oil prices fell. Employment at the company's headquarters in Covington has stabilized at 150. Hornbeck now owns 66 offshore supply vessels (OSVs) that mainly service drillships in the Gulf. The majority of these OSVs (about 45) are tied up, awaiting a recovery in the GOM. This is not unique to Hornbeck; virtually all players in the GOM have large segments of their vessels in dry dock. Hornbeck also owns eight multiple purpose service vessels (MPSVs) with two more under construction. These vessels can do pipe laying, maintenance of existing infrastructure, and serve as floatels, i.e., housing for people working on offshore units. If our oil price forecasts are near the mark (see pages 6-10), drilling activity in the GOM should begin picking up over 2019-20, giving Hornbeck a boost. The opening of the **Mexican market** to private companies has helped Hornbeck as well. The company now has nine former Jones Act vessels in operating as Mexico-flagged boats. On the other hand, the movement in the GOM for new fields to use **tiebacks** to existing platforms rather than building a new production platform (that would need servicing by OSVs) is contributing to the status quo for this and other supply boat companies.

Chevron has consolidated leadership of its offshore operations to Covington and now has about 550 at this location---more than before the initial layoffs when oil prices collapsed. This

unit has worked diligently to get its breakeven price in the GOM down to the \$40 range. If our \$80 oil price forecast materializes, this company will boost its activity in the Gulf even more. Having divested itself of its shelf properties in the Gulf, Chevron has four major deep water projects under evaluation---Ballymore, Whale, Anchor and Tigris---that are being evaluated at the Covington site.

Another major player on the Northshore is **Textron Marine and Land Systems**. Textron's 350+ workforce unit in the Slidell area produces the COMMANDO family of armored security vehicles. In 2017, the company was awarded a \$333 million contract to provide 255 Mobil Strike Force Vehicles for the Afghanistan Army through the U.S. Army Tank, Automotive and Armaments Command. This contract will last through late 2024, adding stability to this workforce.

Three other firms in the Covington area will be boosting their workforces over 2019-20. **Gilsbar**---a health and benefits management company---has 478 employees now and is projecting a slight growth in that number over the next two years. At 320 workers, **Pool Corporation** is now operating in 14 countries in North America, South America, Europe and Australia. The company expects its workforce to grow by 2-4% over 2019-20. **Globalstar** launched three products this year---SmartOne Solar, Sat-Fi2, and SPOT X---which are all supported by the Globalstar Satellite Network. The company provides communications to the most remote parts of the world. At 208 employees, Globalstar expects to add 30 new positions in 2019 and add a new, larger facility to house its growing staff.

Healthcare & Big Commercial

Growth in the New Orleans MSA will also be augmented by significant construction activity in the healthcare and commercial arenas. The **Ochsner Health System** is in the midst of a \$360 million expansion to be completed in early 2020. Construction began in early 2017 on a \$300 million **Children's Hospital**, which is part of a 3-phase expansion of the LCMC Health System's new campus. It is scheduled to open in 2021. We reported last year that **Provision Healthcare** wanted to build a \$100 million proton therapy cancer treatment facility at the University Medical Center complex. The facility would have employed 60 people at \$100,000 a year. We understand this project is now on hold and the company is looking for another site.

Final financing was put in place in June for the renovation of the World Trade Center. This \$60 million renovation will be known as **2 Canal Street** and will house a 330-luxury room hotel (Four Seasons) and 80 hotel-serviced condominiums. Construction will take about two years, with expected opening at the end of 2020. The largest project in the South Market District---**The Odeon**---is a \$106 million apartment tower. The Odeon will be 29-stories high, the tallest structure built in New Orleans in 30 years. It should be completed in the fall of 2020.

Shot in the Arm from Public Construction

There is both good news and not so good news coming from the publicly-funded construction sector. On the not so good side, a major project---the \$993.7 million relocation of the **Louis Armstrong Airport**---will be completed in early 2019 and those construction dollars

will go away. The \$370 million expansion of the **World War II Museum** is scheduled for completion in early 2019. This expansion adds a 10-story hotel and a 31,000 square foot Hall of Democracy. A third reduction in spending is detailed in Table 6. The amount of Army Corps **Hurricane & Storm Damage Risk Reduction Spending** has been declining and will drop decidedly over the next two years. Since 2017, HSDRRS will have fallen by \$469 million. This will be partially offset by Corps non-HSDRRS expenditures which will rise from \$183 million in 2018 to \$340 million in 2019 before dropping again to \$129 million in 2020. Completion of the first two projects and reduction of HSDRRS will remove a noticeable amount of public spending starting in early 2019.

Table 6
Army Corps Hurricane & Storm Damage Risk Reduction Spending

Year	HSDRRS (Millions)
2014	\$942
2015	\$970
2016	\$808
2017	\$659
2018	\$318
2019	\$285
2020	\$190

Source: Army Corps of Engineers, New Orleans Office

While this spending is declining, other projects have popped up to supplant them. The federal government recently approved \$760 million for the **St. Charles/St. John Levee**. This massive levee system will run from Hope Canal near Garyville to the Bonnet Carre Spillway near LaPlace. It will include earthen levees, flood walls, and pump stations and will take five years to complete. This MSA will also get a bump from increased **state highway spending**. Over 2019-20, \$379.8 million in state highway lettings have been detailed by the Department of Transportation and Development. This figure is up from \$317.7 million last year. The largest project in this list is \$72.8 million for replacement of the Bayou Barataria Bridge at Jean Lafitte.

Compared to the above, there are several other public works projects ahead that are smaller, but still significant, in nature. The **Recovery School District** has \$168.1 million in design, planning or construction over 2019-20, and the **Orleans Parish School Board** has another \$46.2 million scheduled as well. The **Regional Transit Authority** will spend \$57.6 million over 2019-20, the largest project being \$23 million for Phase 1 of a ferry terminal. Finally, **Tulane University** is building a new \$40 million, 36,000 square foot science and engineering Building---the Steve and Jan Paul Hall.

Gaming: Will Treasure Chest Go Land Side?

Table 7 tracks employment in the four gaming establishments in this MSA over 2014-QI to 2018-QII, while Table 8 shows what has happened to gaming revenues at each establishment over the past four years. Clearly, this sector has not been a major driver over this 4-year period.

Employment has been essentially flat, while revenues are down about 7.8% (46.5 million)---the latter primarily due to declines at the land-based casino.

An interesting issue to watch over our forecast period is whether either of the riverboat casinos will elect to move on land. Treasure Chest has definitely indicated an interest. Legislation was passed in 2018 to allow casinos to move onshore within 1,200 feet of their designated berth space if it represents a true expansion in terms of adding a hotel and meeting spaces. The Gaming Control Board has not released the rules for making this move and probably will not until early 2019. It will probably be mid-2019 before we know the decision of Treasure Chest.

Table 7
Employment Trends in New Orleans MSA Gaming Establishments

	14Q1	15Q1	16Q1	17Q1	18Q1	Change: 14Q1 to 18Q1
Boomtown	593	642	653	674	622	29
Treasure Chest	686	698	703	661	628	(58)
Harrah's	2,400	2,400	2,400	2,400	2,400	-
Fairgrounds	233	215	184	154	172	(61)
TOTAL	3,912	3,955	3,940	3,889	3,822	(90)

Source: Gaming Control Board

Table 8
Revenue Trends in New Orleans MSA Gaming Establishments

	FY14	FY17	Change
Boomtown	\$ 113.2	\$ 119.4	\$ 6.20
Treasure Chest	\$ 97.7	\$ 107.8	\$ 10.10
Harrah's	\$ 340.1	\$ 281.6	\$ (58.50)
Fairgrounds	\$ 45.9	\$ 41.6	\$ (4.30)
TOTAL	\$ 596.9	\$ 550.4	\$ (46.50)

Source: Gaming Control Board

Baton Rouge MSA: Regenerated Industrial Base

The Baton Rouge MSA is the largest MSA in the state in terms of numbers of parishes---nine, including East Baton Rouge, West Baton Rouge, Livingston, Ascension, Iberville, St. Helena, Pointe Coupee, East Feliciana, and West Feliciana (see Map 1). In terms of population,

East Baton Rouge Parish was the most populous in the state in 2016 at 447,037 according to the Bureau of Economic Analysis.⁹ In 2015, for the first time in its history, this MSA’s employment broke through the 400,000 level. There are now an estimated 412,200 jobs in this MSA, the second largest behind the New Orleans MSA.

The author has been monitoring the Baton Rouge economy for 40 years. Never has this MSA experienced an industrial expansion like the one presently underway. As seen in Table 9, there have been **\$18.9 billion in announced industrial expansions** in this MSA since 2012. What differentiates this MSA from New Orleans and Lake Charles---sites of other major industrial announcements---is that in the Baton Rouge MSA almost all the announced projects (\$15.8 billion) are either completed or under construction. This created a construction lull in 2018, as construction of many projects came to an end. **However, starting in mid-2019 and continuing through 2020 a resurgence in construction is expected as some large potential projects get a final investment decision (FID) and move into the “underway” category.**

Table 9
Baton Rouge MSA Industrial Announcements: 2012 – Present
(Billions of Dollars)

Total Announcements:	\$18.9
Completed or Underway:	\$15.8
Potential:	\$3.1

Source: Loren C. Scott & Greater Baton Rouge Industrial Alliance

Petrochemicals, Construction, Universities & Government

The **petrochemical industry** is a huge factor in this MSA’s economy. This MSA has the largest concentration of **chemical industry** activity in Louisiana. Between the three of them, East Baton Rouge, Ascension, and Iberville Parishes had 10,595 chemical workers in 2017 with an annual payroll of over \$1.2 billion.¹⁰ If one included the full time contract workers at these plants the total would increase at least 40%. Baton Rouge is home of the nation’s fourth (and the world’s twelfth) largest **refinery**---ExxonMobil---located just north of the state capitol building. This refinery alone employs 3,724 employees and contract workers. Placid Refinery is also located in this MSA.

Because the petrochemical industry is very capital-intensive, when it expands, so does the **industrial construction**. Industrial construction jobs are also closely tied to “turnarounds” at these plants, i.e., when the plants are shut down completely for scheduled maintenance. In June 2018, the Baton Rouge MSA had an unusually high 12.9% of its workforce (53,300 jobs) in the construction sector, the second highest percentage in the state. Only Lake Charles was higher at

⁹ www.bea.gov

¹⁰ “Impact of the Chemical Industry on the Louisiana Economy: An Update”, prepared for The Louisiana Foundation for Excellence in Science, Technology and Education, Loren C. Scott, March 2018, p.22.

23.3% (27,900 jobs). The comparable percentage for the whole state was 7.6%.¹¹ Turner Industries, Performance Contractors, CB&I, the Newtron Group, Brown & Root, MMR, EXCEL ISC Contractors, and Cajun Contractors are among the larger industrial construction companies in the area.

The Baton Rouge MSA also is the location of the **State Capitol** and the vast office complex associated with it. **Two major state universities**---LSU and Southern University---are located in Baton Rouge, along with one of Louisiana's largest community colleges. Baton Rouge Community College is actually larger than Southern University in terms of enrollment. This MSA is also home to an emerging high tech sector, led by Electronic Arts game company and the large IBM facility. The **Port of Baton Rouge** handled 73 short tons of material in 2016 and is the nation's 9th largest port.

Recent History of Baton Rouge

Figure 10 shows employment trends in the Baton Rouge MSA over 1980-18. This MSA was only mildly touched by the terrible recessionary years of 1982-87. Baton Rouge dropped 4,800 jobs or 2.2 percent of its workforce as compared to the 9 percent decline in the state as a whole over that same period. Note the distinct jump in the employment trend line in Figure 10 in 1990. This was due to the addition of five more parishes to this MSA by the Department of Labor.

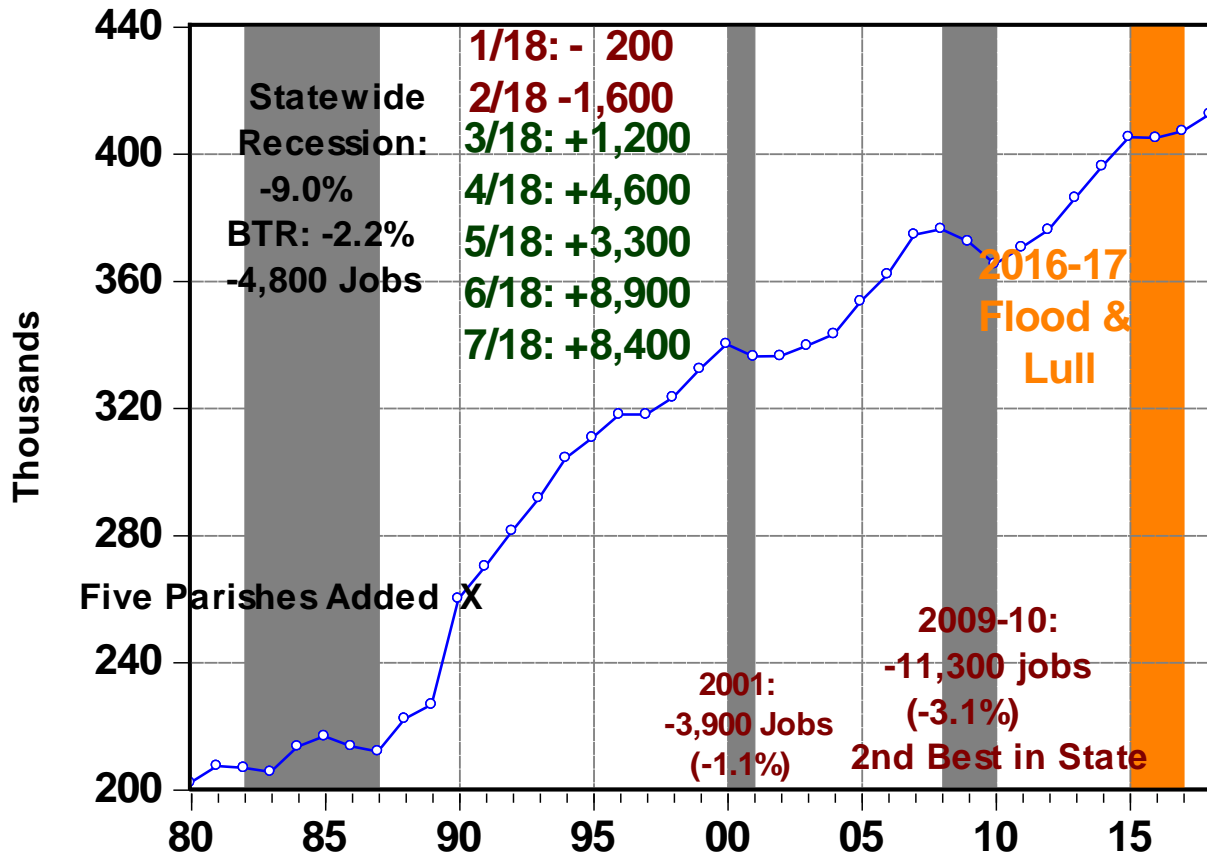
The really good years: The years from 1988 to 2000 were heady ones in the Baton Rouge MSA. This region had the most enviable growth record in the state in terms of both size and consistency. The MSA immediately recovered the 1982-87 losses with a banner year in 1988 when it gained 10,300 new jobs. Then the region's employment went straight up for 13 straight years over 1988-00, adding a robust average of 7,500 jobs each time the calendar turned.

The really weak years: The tables decidedly turned against Baton Rouge over the next four years. This 9-parish MSA lost 3,900 jobs or 1.1 percent of its workforce in 2001 due to the national recession---an unusually short and mild dip compared to what happened nationally. Its recovery from that dip was nothing like that of 1988. It took three years to recover the jobs lost in 2001, and those three years were ones of very modest growth as seen in Figure 10.

The culprit behind this slow growth pattern was the **chemical industry**. We have already pointed out the dominant role played by this industry in the MSA's economy. The chemical sector was hurt by two factors. Initially, the **national recession** hit sales in this sector very hard and weakened considerably the price of chemical products. However, the second factor was in many ways the most problematic. **High natural gas prices** (see Figure 5) radically raised operating costs for these firms. Several chemical firms in the MSA announced layoffs or closed either temporarily, partially, or completely. The region's ammonia fertilizer plants especially suffered.

¹¹ Louisiana Workforce at a Glance, Louisiana Workforce Commission, July 27,2018, pp. 10-15.

Fig. 10: Baton Rouge MSA Non-Farm Employment 1980-2018



The Katrina Effect

Evacuees in: Baton Rouge is the closest large MSA to New Orleans, so it initially absorbed a huge number of evacuees as a result of Hurricane Katrina. From FEMA assistance applications, we estimate that the Baton Rouge MSA initially absorbed about 248,386 evacuees. **Overnight, this MSA’s population exploded by over 34 percent.** Traffic came to a standstill across the area, supplies vanished from grocery stores and gasoline stations, and every rental unit in the area was absorbed. There was a wild real estate period of about one month when realtors were selling more houses in a week than in the previous year. The median price for a single family home leapt 27 percent, the largest jump among the 151 MSAs surveyed by the National Association of Realtors. Sales tax collections in East Baton Rouge Parish rose by 34 percent in September 2005.

Evacuees out: There was, of course, no way for the MSA to permanently absorb a quarter of a million people over such a short time span, if for no other reason than there were not enough jobs available to support that many people. For example, in November 2005, the traffic count on I-12 east of the I-12/I-10 split was up 22 percent over August 2005. By 2007 that count

was up only 3.1 percent. On the I-10 bridge over the Mississippi, the count initially jumped by 26 percent, November over August. By 2007 that count was up only 2.9 percent.

More importantly, the Census Department made an estimate of the area’s population as of July 2007. That estimate showed **the MSA’s 2007 population of 770,037 was up 39,921 over July 2005**---a 5.5 percent increase. As seen in Table 10, the bulk of that population increase occurred in East Baton Rouge (18,121), Ascension (10,000) and Livingston (9,100) Parishes. The area clearly experienced an “evacuees in – evacuees out” phenomenon. A similar phenomenon was experienced in Hattiesburg, Mississippi and Mobile, Alabama.

Table 10
Population Change by Parish
July 2005 – July 2007

Parish	Absolute Change	Percent Change
East Baton Rouge	18,121	4.4%
Ascension	10,000	11.2%
Livingston	9,100	8.5%
West Baton Rouge	1,091	5.1%
Pointe Coupee	564	2.6%
St. Helena	437	4.3%
East Feliciana	276	1.3%
Iberville	272	0.8%
West Feliciana	60	0.4%

Source: U.S. Census Bureau

Katrina boosted employment. Not only do the population numbers show that this MSA benefited from the storms, the employment numbers shown in Figure 10 confirm that as well. The employment line in Figure 10 took a distinct upward turn in 2005 and 2006. The MSA’s employment rose by 18,500 jobs or 5.4 percent over this period. Obviously such a rapid growth pattern could not be sustained long run.

2007: Construction Leads to a Strong Year

As seen back in Figure 10, the Baton Rouge MSA managed to continue the post-Katrina, torrid pace of adding 9,000-10,000 jobs a year. Incentivized by the Go Zone legislation, an impressive amount of new construction work began in 2007.

2009-10: Impacts of the Great Recession

It is clear from Figure 10 that the Great Recession had an impact on the Baton Rouge MSA, though the region performed better than most in the country and the state. To repeat, the national economy began losing jobs in January 2008 and U.S. employment fell by 6.1 percent. By contrast, the Baton Rouge MSA did not lose the first job until September 2008, and it lost only 3.1% of its jobs. This was the second lowest loss of any MSA in the state.

The MSA was not without some serious job losses during the recession. For example:

- **Dow Chemical** in Iberville Parish closed one facility (-160 jobs) and laid off 400 contract workers.
- **Trinity Marine** closed its barge manufacturing facility in Port Allen (-190 jobs).
- **Capital One Bank** closed its call center at a cost of 180 jobs.
- **Chase Bank** closed its operations center, dismissing 247 people.
- **Wells Fargo** closed a call center, terminating 70.
- **IEM** moved its headquarters to North Carolina, taking with it 50 very high-paying jobs.
- **Excide Batteries** temporarily closed its shop, terminating 132 people.

In addition to these announcements, budgetary shortfalls in **state government** led to layoffs in that sector of about 1,300 workers.

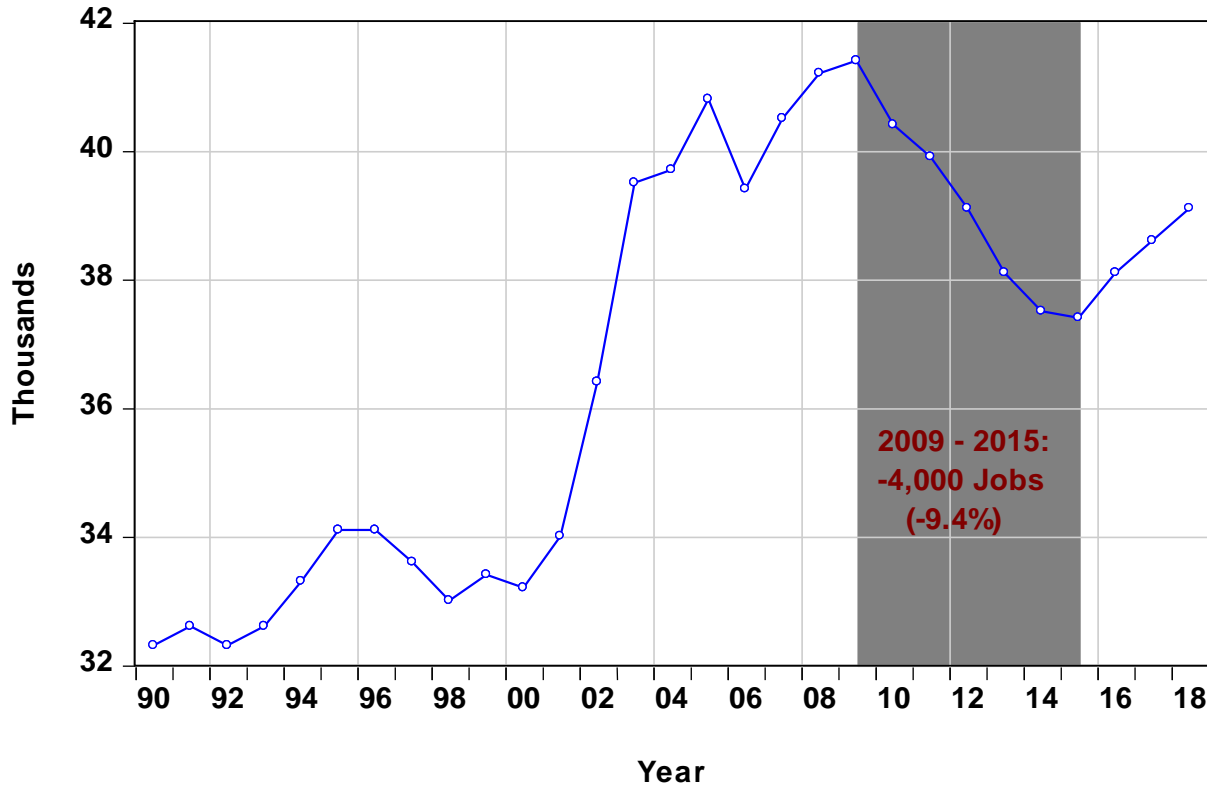
Recovery from Great Recession Strong Despite State Government

Recovery from the Great Recession in the Baton Rouge MSA has been getting stronger each year from 2010 to 2015 as seen back in Figure 10. Employment growth in 2011, 2012, 2013, 2014, and 2015 were 1.4%, 1.5%, 2.7%, 2.6%, and 2.2%, respectively. **By October 2012, the MSA had recovered all the jobs lost during the Great Recession** and began setting new employment records. This boom was largely led by the **massive industrial construction activity** associated with nearly \$16 billion in new industrial projects under construction in the region. Indeed, construction employment in the region jumped from 37,500 in July, 2011 to 53,300 in June, 2018---a remarkable 42% increase in only seven years.

The MSA accomplished this growth despite a couple of significant setbacks. First, the region lost 925 **call center and distribution center** jobs, including the 400-person Home Depot call center. Secondly, **state government** faced some serious financial challenges as a result of the recession and other factors. During his two terms Governor Jindal steadfastly refused to solve these budgetary issues by raising taxes, which meant cuts in government spending were the order of the day. As the state capital, Baton Rouge tended to bear the brunt of those cutbacks as seen in Figure 11. **From 2009 to 2015, state government shed 4,000 workers (-9.4%)** in the Baton Rouge MSA. (Statewide, over that same period, state government employment fell by 29,000 or 25 %.)

The region lost two other significant employers and saw a major reduction in force by another. **Kellogg Distributors** laid off 208 people at its Gonzales site, and **Trinity Marine** closed its 288-person facility in Brusly. In August, **Albermarle** announced it was moving 200 jobs out of its service center---engineering, information technology, and logistics---in downtown Baton Rouge to Kings Mountain, North Carolina. For now the company is keeping its research development and manufacturing operations on Gulf States Road in the region.

Fig. 11: Baton Rouge MSA State Government Employment



Great Flood of 2016

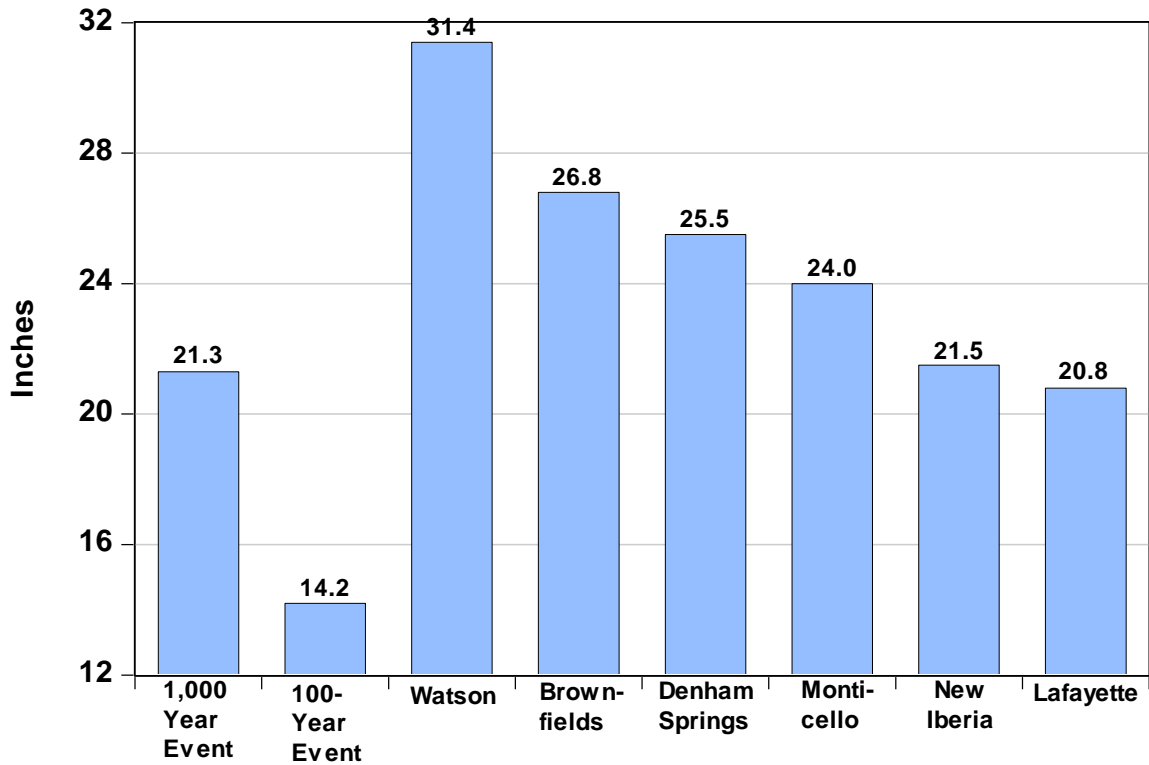
There was another epic event that recently impacted this MSA’s employment numbers. The impact was so great that despite the strong industrial boom in the area, employment in the Baton Rouge MSA was actually flat in 2016 and 2017. In August 2016 a relentless rain storm hit the area.

Figure 12 puts the rainfall numbers in perspective as compared to a 100-year and a 1,000-year event. For a 100-year event, 14.2 inches would be expected over two days, and for a 1,000-year event 21.3 inches would be expected. The next four bars in Figure 13 show the rainfall in communities in the Baton Rouge MSA. All four exceeded the 1,000-year event.

FEMA data in Figure 13 reveal that a remarkable 65,829 homes just in three of the MSA’s nine parishes were damaged by flood waters. By-products of this tragedy included (1) many workers not being able to get to work because of the attention required on their homes and (2) many businesses were closed---some temporarily and some permanently---due to flooding. An Advocate newspaper report indicated 410 of 1,766 businesses in Livingston Parish (23%) had not renewed their occupational license.

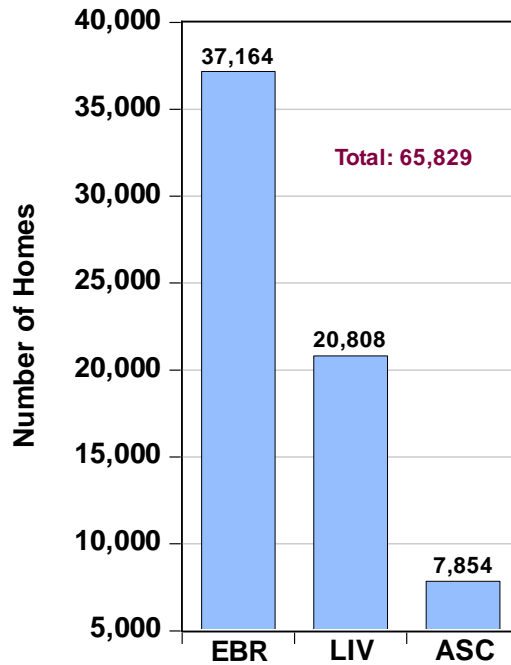
Note the impact on employment in this MSA as shown back in Figure 10. The MSA lost jobs in every month from August through December in 2017. It was enough to render employment basically flat for 2016.

Fig. 12: 2-Day Rainfall Totals: August 2016



Source: Advocate Newspaper, August 6, 2017, p.1

Fig. 13: FEMA Verified Home Damage



Source: The Advocate Newspaper, August 8, 2017

Major Industrial Projects Completed in 2016-17: The Pickups Were Leaving

A second factor contributed to the MSA's weak performance over 2016-17 as seen in Figure 10. Construction of several major projects came to an end during two years. The largest was **CF Industries'** \$2.1 billion fertilizer plant near Donaldsonville. **Dow** in Iberville Parish completed work on a massive \$1.06 billion project, and **Methanex** completed the \$1.1 billion move of two methanol plants from Chile to Ascension Parish. Also in Ascension Parish **BASF** finished four new facilities at a cost of \$500 million. At the Port of Baton Rouge, **Genesis Energy** completed its \$150 million storage terminal for oil, intermediates, and refined products, while in Livingston Parish **Epic Piping** completed its \$43.3 million pipe fabrication facility. **Pepsi Cola** opened its new 200-person distribution center in Livingston, just north of the Epic Piping site, in January 2017.

Each of these projects led to new high-paying, permanent jobs that the MSA did not have before. However, readers can envision hundreds of vehicles containing construction workers leaving these sites for the last time. This is the primary reason the MSA's employment entered a lull, with employment up only 1,900 in 2017 (0.4%)---much less than boom years of 2013-15.

2018: Back on a Solid Growth Track

By 2018 the flood of 2016 effects were largely left in the dust, and industrial construction began signs of the lull being over. The year is turning out well for the Baton Rouge MSA. Note the monthly employment growth numbers highlighted in Figure 10. After two weak months in January and February, the region started slowly adding jobs in March and by June/July was adding jobs at an 8,600 per year rate. We estimate that for the year, the MSA will average +5,400 new jobs, up 1.3%. All indications are that the lull is over.

Forecasts for 2019-20: Lighting the Fuse on the Construction Rocket

A revival of industrial construction in this MSA will be behind a renewed growth spurt over the next two years as can be seen in Figure 14. **We are projecting 6,000 new jobs (+1.5%) in 2019 and 8,100 (+1.9%) jobs in 2020 for the Baton Rouge MSA.** This will put the MSA in second place in terms of percentage growth (behind Lake Charles) and in second place in absolute growth (behind New Orleans) among the state's nine MSAs.

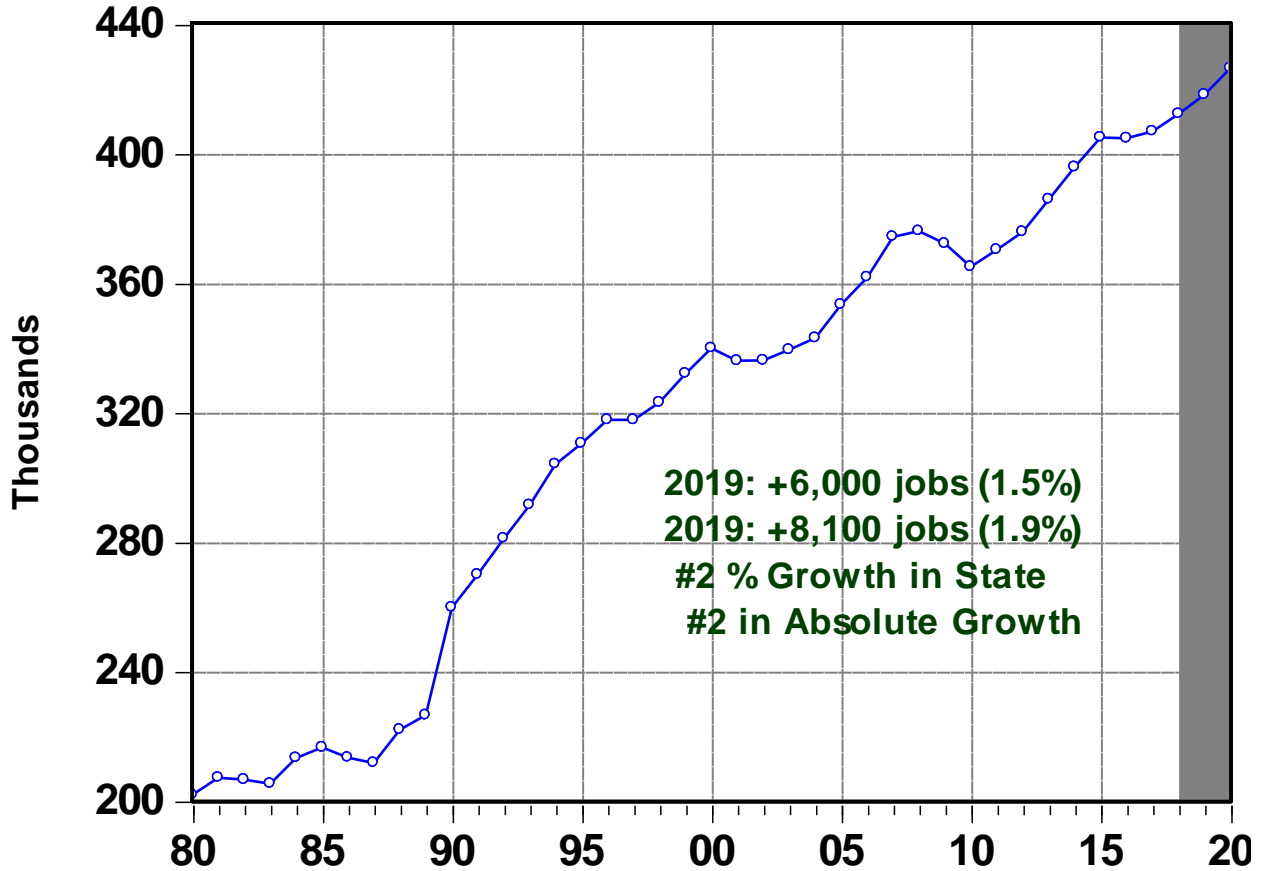
Industrial Construction Rejuvenated

After a lull of some 18 months, during which time the MSA's economy slowed to a crawl, industrial construction is poised to launch into a new round of growth. There are six major projects in the region that are still under construction. They include:

- **Shintech** has about completed a \$1.4 billion ethane cracker and connections to PVC and VCM production lines. This addition will create 100 new permanent jobs that are high-paying as well (\$68,500 annually). This company has a lot of land at its site (about 5,700 acres) and purchased the Carville property last year, which gives Shintech a lot of

expansion to grow. Indeed, the company just announced another expansion which will be described below.

Fig. 14: Baton Rouge MSA Non-Farm Employment Forecast: 2019-20



- **Shell Chemical** is in the midst of constructing a \$717 million alpha olefins plant in Geismar, a project that may be completed by year end. Twenty new permanent jobs at \$104,000 per year will be created.
- **OxyChem** is finishing up work on a \$145 million expansion that will produce material used in refrigerants. Only 12 permanent jobs will result, but again, they will be high-wage at \$80,000 per year.
- One of the real constants in the Ascension Parish economy is construction activity at **BASF**. Construction will continue through mid-2020 on a \$150 million expansion to double MDI output at the facility. Fifteen new permanent jobs will result at an average annual wage of \$86,600.

- At the BASF site, **Praxair** has begun construction of a \$150 million carbon monoxide/hydrogen production unit to feed into work at BASF. This addition is scheduled for completion in 2020.
- **Air Products** is spending \$150 million on a new facility next to the Huntsman plant. Ten new jobs are connected to this plant.
- **ThermalDyne** is constructing a \$50 million industrial waste reclamation project in West Baton Rouge. First announced back in 2015, this facility is scheduled to open in late 2018 and add 75 jobs at \$80,000 per year.

A careful review of the six projects listed above will show that three---Shintech, Shell Chemical, and OxyChem---will be completed or be near completion by the end of 2018. Why are we suggesting resurgence in industrial construction instead of a slowdown? The answer is that there are some large projects on the horizon that will more than supplant these completions. Among them are:

- **Shintech** has announced a continuation in a string of major capital projects that began the moment the company sited their operations on the west bank of the Mississippi River. In July, the company announced another \$1.49 billion expansion of its PVC facility. Once completed in 2021 Shintech will hire 120 new employees at an average annual salary of \$81,800. The firm now has about 500 employed at its property in Addis and Plaquemine.
- After relocating two methanol plants from Chili to Ascension Parish, **Methanex** is planning to build a third plant at a cost of \$1.3 billion near its existing facilities. The company has approval for its industrial tax exemption and has awarded an epc contract to KBR to construct the facility, with a mid-2019 construction start date. Once completed in 2020, Methanex would hire 25 permanent employees at annual salaries of \$80,000 to run this third plant.
- During the debate over revising the ITEP (see pages 18-20), **ExxonMobil** indicated its Baton Rouge site was under serious consideration for a \$400+ million dollar expansion of its polyethylene plant. If Baton Rouge wins the race for this project it would mean 65 new permanent jobs paying \$80,000 a year in addition to a large number of construction jobs. Because of the uncertainty surrounding this project it is not included in our tabulation back in Table 9. The project did win an ITEP approval from the C&I Board.
- In early 2018, **Westlake Chemical** indicated it will undertake a \$140 million expansion at its Geismar site. No new job count was given; the plant currently employs 175.
- **Shell LNG** is still contemplating a \$200 million LNG facility within this MSA. Construction is supposed to commence during 2018.
- **Renewable Energy Group**, a company that makes fuel out of animal fats, is expected to make a \$160 million investment that will increase its output by about one-third. The

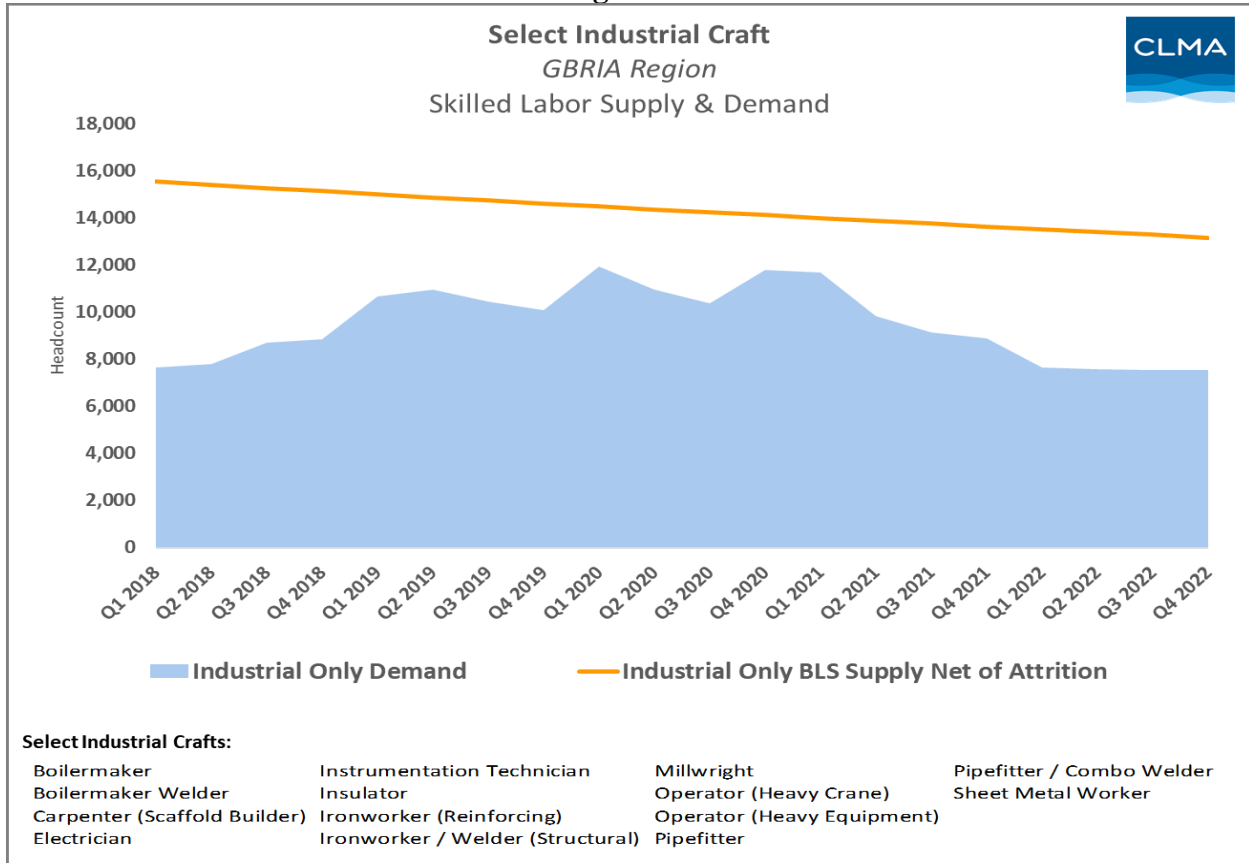
company has under consideration a much bigger \$500 million expansion that would effectively double its capacity.

- **Taminco** (Eastman) in Iberville Parish is planning a \$60 million expansion that would create five new jobs at \$60,000 per year.
- **Blue Cube** (Olin) has made an ITEP application for a \$33.8 million expansion of its site in Iberville Parish.
- **Katoen Natie** has finished the first \$36 million phase of its plastics and distribution center and is now embarking on the second phase which is equally as large. The company's primary client is ExxonMobil.
- Economic developers in Ascension Parish are keeping fingers crossed on **Project Seagull**, a \$1.2 billion project that is expected to make a final investment decision in 2019-II

There are two other smaller projects recently announced for this region. **Brown Eagle**--- a third party logistics and supply chain management provider---has announced an \$8.5 million expansion that will create 14 new jobs. In Clinton, **PacTec** will be adding 15 jobs to its 95-job workforce with a \$2.5 million expansion. PacTec makes spill containment and waste packaging products. An unspecified, but potentially significant capital investment may be made by **Ready Shield Solutions** which makes structural panels for houses. Ready Shield plans to refurbish the old Cotton Holsum Bakery site near downtown Baton Rouge and hire up to 300 employees. From a capital investment standpoint, the announcement of a new **Amazon** 21,306 square foot distribution center was the oddest of the year so far. Amazon is planning a tent-like structure with taut fabric pulled over trusses and held in place by cables. The company says it plans to hire "hundreds" at wage rates up to \$25 a hour.

What does all this mean for industrial construction in the region? Connie Fabre at the Greater Baton Rouge Industrial Alliance conducts skilled worker demands in the Baton Rouge region. The results of GRBIA's latest survey are shown in Figure 15. Between 2018-I and 2021-I, demand for skilled construction workers will rise from under 8,000 to over 12,000. Clearly, the lull is over and a new burst of activity is at hand.

Figure 15

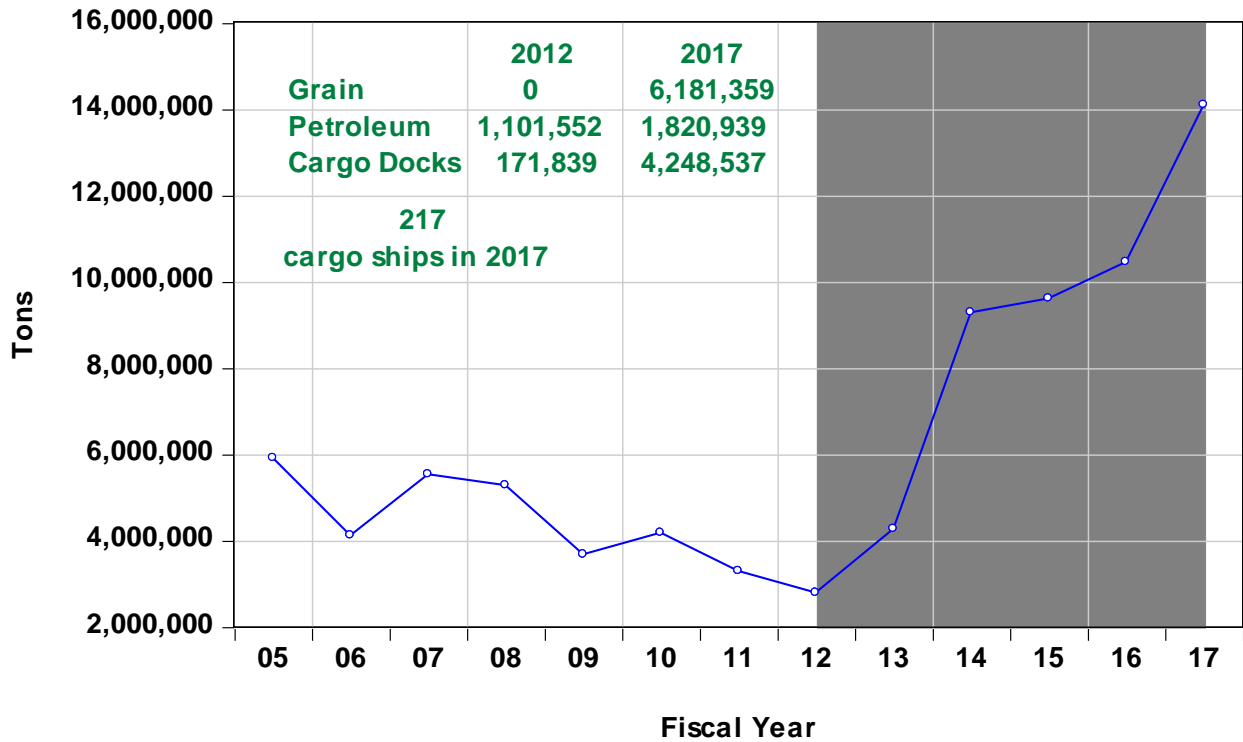


Source: Greater Baton Rouge Industrial Alliance

Port of Baton Rouge: The Boom Continues

One of the almost hidden success stories in this region is the **Port of Baton Rouge**, now the 9th largest port in the nation in terms of tonnage moved. Note in Figure 16 the remarkable jump in tonnage handled at the Port since 2012, jumping by a factor of five from about 2.7 million tons in 2012 to 14.1 million tons in 2017. As seen in the insert to Figure 16, the construction of the **Louis Dreyfus** grain elevator complex at the port created the largest source of new tonnage. **Drax Biomass'** dome storage facilities viewed on the north side of the I-10 Bridge, contributed heavily to the large increase in cargo tonnage shown in the insert. **Union Pacific** will be spending \$20 million at the Port on improvements to its railyard which will enable Drax and Dreyfus to ship from 88-car trains instead of 45-car trains. Some 217 cargo ships were serviced through the Port in 2017.

Fig. 16: Tonnage Handled at Port Of Baton Rouge: 2005-17



Healthcare and Tech Will Add to the Mix

Three large hospital investments are underway in the region and a fourth is poised to join the mix in late 2019. The \$230 million **Our Lady of the Lake Children’s Hospital** should be completed and open in 2019. This 350,000 square foot, 130-bed facility will be an excellent addition to the healthcare landscape in Baton Rouge. **Ochsner** is building a \$100 million medical office building and a 10-bed micro-hospital near the Mall of Louisiana. It will open in phases beginning in 2019. **Baton Rouge General** has a \$30 million, 10-bed hospital along with physician office space, a lab, and an emergency room in Prairieville. BRG is also spending \$40 million on an expansion of its Bluebonnet site.

Still to come in the healthcare space is a \$185 million proton radiation therapy center by **Provident Protoncare**. This new facility will employ 95 people at an average wage of \$105,000. Construction start is planned for the summer of 2019, with a 2021-II opening date.

Advances in the high-wage tech sector employment are on the horizon for Baton Rouge. **IBM’s** facility in the city is in the 400-500 employment range and is to go to 800 during our forecast period. **General Informatics** is moving into their beautiful new \$20 million building on Highland Road---dubbed @Highland Building. GI acquired a Baton Rouge high-tech company named Teknarus and now has 96 employees. At the LSU Innovation Park a software engineering firm called **Twistlock** has been formed that has 20 employees at an average wage of \$90,000.

The Public Construction Side: Huge Influx of Flood Mitigation Monies

After experiencing the disastrous flood of 2016, citizens in this area breathed a sigh of relief when the federal government announced awarding of **\$1.4 billion in flood mitigation and relief monies** for the area. About \$450 million will be used to complete the Comite River Diversion Canal. Another \$255 million will be dedicated to clearing, widening, and dredging East Baton Rouge waterways. Finally, between \$500 million and \$1 billion will be provided in additional post-flood housing construction reimbursements. This obviously represents a huge injection of new monies into the area's economy.

The state has scheduled **\$275.6 million in new state road lettings** over 2019-20. The largest two projects are (1) \$18 million on the Pecue Lane, I-10 interchange and (2) \$16.3 million to widen North Sherwood Forest from two-to-five lanes. Some \$360 million in **GARVEE (Grant Anticipated Revenue Vehicles) bonds** will be used to widen I-10 from the Mississippi River Bridge to the I-10.I-12 split. This project will start sometime over the next two years. Another \$8.8 million will be spent on a new **Terrace Street** exit off of I-110 to relieve traffic problems where I-110 meets I-10.

Gaming: Will the Belle Come on Land?

Note in Table 11 that employment in the area's three casinos has been slowly declining since FY14. The decline occurred across all three casinos and totaled a loss of 384 jobs (-17%) over the last four years.

Table 11
Employment in Baton Rouge Area Casinos: 2014-I to 2018-I

	14Q1	15Q1	16Q1	17Q1	18Q1	Change: 14Q1 to 18Q1
L'Auberge	1,170	1,154	1,116	1,030	1,037	(133)
Belle	627	585	574	456	439	(188)
Hollywood	459	440	425	406	396	(63)
TOTAL	2,256	2,179	2,115	1,892	1,872	(384)

Source: Louisiana Gaming Control Board

While employment has been declining, revenues at the casinos have actually risen 13% (\$35.7 million) as seen in Table 12. The gains came almost entirely via the L'Auberge Casino, the newest of the three. The Belle has already expressed an interest in moving its operations onshore under the new regulations passed by the Legislature in 2018. As we mentioned in the New Orleans casino write up, the new rules for making this change will not be promulgated by the Gaming Control Board until probably early 2019. To make the move, the Belle would have to do more than just move landside. The company would also have to commit to more of a resort style venue with a hotel and meeting rooms.

Table 12
Revenues at Baton Rouge Area Casinos: FY14 to FY17

	FY14	FY17	Change
L'Auberge	\$ 140.0	\$ 175.8	\$ 35.80
Belle	\$ 61.1	\$ 62.8	\$ 1.70
Hollywood	\$ 71.9	\$ 70.1	\$ (1.80)
TOTAL	\$ 273.0	\$ 308.7	\$ 35.7

Source: Louisiana Gaming Control Board. Dollars in millions

Lake Charles MSA: Fastest Growing---Everywhere

A logical question for readers is: “You were describing the MSAs in Louisiana in order of size: New Orleans first, then Baton Rouge second. Why have you now skipped to the state’s 5th largest MSA?” The answer is because this MSA’s performance in the last five years has been nothing short of spectacular. Not only has it been the fastest growing MSA in Louisiana, but Lake Charles has often been one of the fastest growing in the entire country!

Located in the far southwestern corner of Louisiana (see Map 1), the Lake Charles MSA is composed of two parishes---Calcasieu and Cameron. This MSA is dominated by three industries. One of which is what is broadly referred to as the **petrochemical industry**. This phrase handily combines two closely related industries---chemicals (which include LNG export terminals) and refining. The Lake Area Industry Alliance reports that Calcasieu Parish was the home to **16 different chemical plants, two refineries, one LNG export facility (and another under construction), and three industrial gas processing plants**. Total employment in these facilities was in excess of 7,500 direct employees and about 3,800 contractors. Like the Baton Rouge area, this huge capital-intensive petrochemical complex supports a very large **industrial construction** industry.

A second major industry in Lake Charles is **gambling**. Pre-Rita, Lake Charles was home to five riverboat casinos. Now there are three in operation, plus the Delta Downs Racetrack. The two largest operational casinos are **L’Auberge du Lac**, which opened in the summer of 2005, and the **Golden Nugget**, which opened in December 2014. Hurricane Rita badly damaged both of the casinos owned by Harrah’s. Harrah’s sold its two licenses to Pinnacle Entertainment, owner of L’Auberge du Lac. Pinnacle moved a license to Baton Rouge. **Isle of Capri** closed one of its smaller riverboats and moved that license to Shreveport.

It is interesting to note that while the gaming sector in the Shreveport-Bossier MSA has declined and the New Orleans and Baton Rouge casinos have remained stable over the past four years, in the Lake Charles MSA it has grown, as seen in Table 13. **Total employment at the three casinos and the racetrack was at 5,703 as of 2018-I---a 36% increase over three years ago**. Mainly this was due to the opening of the Golden Nugget in December 2014. While this new casino did cannibalize some from the other three gaming venues in the area, on the net the region’s gaming market was way up. Gross revenues (as shown in Table 14) behaved similarly, growing some 31% between FY14 and FY17. The Golden Nugget picked up market share (as measured in revenues) from the other three gaming venues, but on the net, revenues grew.

Table 13
Employment in Lake Charles Area Gaming Venues: 2014-I to 2018-I

	14Q1	15Q1	16Q1	17Q1	18Q1	Change: 14Q1 to 18Q1
Golden Nugget	-	2,337	1,989	2,191	2,395	2,395
L'Auberge	2,389	2,402	2,055	2,016	1,909	(480)
Isle of Capri	1,050	1,009	947	927	783	(267)
Delta Downs	755	716	722	645	616	(139)
TOTAL	4,194	6,464	5,713	5,779	5,703	1,509

Source: Louisiana Gaming Control Board

Table 14
Revenues at Lake Charles Gaming Venues: FY14 to FY17

	FY14	FY17	Change
Golden Nugget	\$ -	\$ 264.5	\$ 264.50
L'Auberge	\$ 360.1	\$ 335.2	\$ (24.90)
Isle of Capri	\$ 135.6	\$ 121.7	\$ (13.90)
Delta Downs	\$ 188.2	\$ 176.8	\$ (11.40)
TOTAL	\$ 683.9	\$ 898.2	\$ 214.30

Source: Louisiana Gaming Control Board. Dollars in millions.

With the closest gambling establishments to the Houston metroplex, Lake Charles' riverboat casinos were an instant success when they opened in the mid-1990s. When **Delta Downs** added slot machines and became a "racino," it added another 1,057 workers to the area's gambling industry, a number that has drifted down by almost one half to 616 in 2018-I.

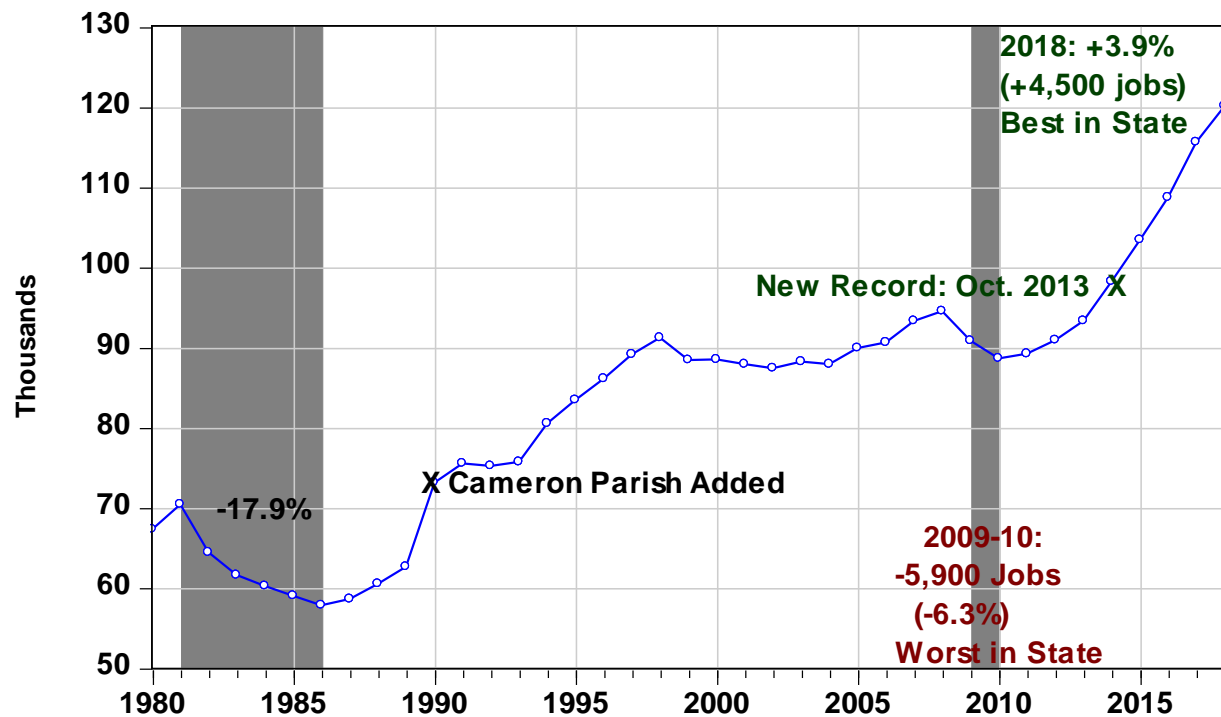
A third key sector is **aircraft repair**. There are now three significant employers located at Chennault Industrial Airpark---**Northrop Grumman**, **Landlock Aviation** and **Citadel Completions**. Changes in tenants at Chennault have had a major impact on the MSA's employment pattern over time. Closely allied with the aircraft industry, two significant employers at Lake Charles Regional Airport are **Era Helicopters** and **PHI**---another helicopter service firm. **CB&I Modular Solutions** (formerly Shaw) is estimated to employ about 300.

A History of Ups and Downs

A history of the Lake Charles economy is depicted in Figure 17. This MSA suffered mightily between 1981 and 1986 as the **chemical industry** reeled from a huge loss of sales in its foreign markets. The region lost a whopping 17.9 percent of its non-farm jobs. This loss was caused by a large run up in the exchange value of the dollar. Not only did the industry itself reduce employment by one-third, but capital expansion plans were also halted, hammering the industrial construction sector at the same time.

Coincidentally, the Reagan administration fully **deregulated the price of crude oil** in the early 1980s. One side effect of this action was that several marginal refineries found it increasingly difficult to remain competitive and shut down. The loss of jobs in the two highest-wage industries in Louisiana’s manufacturing sector, combined with a shuddering halt to industrial construction and other negative multiplier effects, sent the Lake Charles economy into a serious 5-year dive.

**Fig. 17: Lake Charles MSA Non-Farm Employment
1980-2018**



Lake Charles was actually the first MSA in Louisiana to begin recovering from the terrible statewide recession of 1982-87. The key was the attraction of **Boeing Aircraft** to Chennault Field. Boeing created over 2,000 jobs to refurbish K-135 transport airplanes for the Air Force. That helped set Lake Charles off on a recovery mode. The recovery was further aided by a sudden drop in the exchange value of the dollar, which rejuvenated foreign markets for the chemical firms and set them off on a new round of hiring and capital expansions. (Note the magnitude of this recovery is distorted in Figure 17 by the addition of Cameron Parish employment data to this MSA’s job statistics.)

In 1992, Boeing announced the closure of its facility, and the job loss there caused Lake Charles’ employment to slide sideways for two years. The next three years were excellent growth years for Lake Charles. Three factors powered this expansion. First, there were some unusually large capital projects under construction in the petrochemical sector. **Citgo** and **Conoco/Pennzoil** combined for \$1.6 billion in expansions during this period. (Note that in 1992, \$1.6 billion in industrial announcements was considered “unusually large.”)

Secondly, it was during this period that the **riverboat casinos** came to Lake Charles. Thirdly, Boeing was replaced at Chennault Airpark by **Northrop Grumman---** a facility that took 707s, stripped them down, and installed the Joint System Target Attack Radar System (JSTARS) in them. This was an addition of 1,900 good-paying jobs for the Lake Charles economy.

It is obvious from Figure 17 that the good times ended for Lake Charles in 1999. The MSA lost 2,800 jobs in that year and was essentially flat for the next six years. There were several contributors to this poor performance. The first involved hits at the aircraft repair facilities at Chennault Airpark. As Northrop Grumman came near the end of its JSTARS contract, the firm began handling fewer aircraft and consequently began terminating workers. NG reverted to doing maintenance, repair and overhaul (MRO) work on the JSTARS aircraft, and its workforce dropped all the way down to 350. The attraction of EADS to Chennault helped offset NG layoffs somewhat, but even that firm reduced its workforce from about 350 down to 160 before selling to **Aeroframe Services**.

Secondly, a combination of 9/11 and the national recession reduced trips to the area gambling establishments, prompting layoffs there. Thirdly, **Xspedius** moved its headquarters office in Lake Charles to St. Louis.

But by far the most important contributor to the downturn was the **funk in the chemical industry**. High natural gas prices forced this vitally important industry in Lake Charles to hunker down and look for ways to reduce costs. One way was to reduce the number of employees. Too, the industry placed capital expansion projects on hold and delayed maintenance/repair work as much as was safely feasible. The result was a significant reduction in **industrial construction** employment.

The Surprising “Rita Effect”

What may surprise readers the most about the data in Figure 17 is the growth in 2005 and 2006. Despite being hit by a vicious storm, this MSA’s employment actually grew---adding 2,700 jobs over those two years. The larger portion of that growth occurred in 2005, the year of the hurricane.

Rita’s impact on housing: There were 47,384 homes damaged by Rita in this MSA--- but only 2,284 incurred severe damage and 6,673 major damage. Residents could and did return to the Lake Charles area fairly quickly. Normally one would be aghast at these figures, but against the backdrop of the housing destruction in New Orleans, they pale. It is very important to note that with the exception of lower Cameron Parish (the most sparsely populated parish in the state) **there was virtually no flood water damage** in Lake Charles. That means regular homeowner’s insurance was applicable to the damage. As a result, all the impediments to rebuilding that existed in New Orleans due to standing flood waters did not exist in Lake Charles.

Rita's impact on Lake Charles manufacturing: It is the nature of the manufacturing industries in Lake Charles that they would seemingly be very vulnerable to a powerful storm like Rita. Chemical plants and refineries are very capital-intensive, and all their capital is outside and exposed to the elements. In fact, three refineries in the area were damaged and shut down: (1) Citgo (324,000 b/d); (2) ConocoPhillips (239,400 b/d), and (3) Calcasieu (30,000 b/d). All three were back up by December 2005.

Also, the aircraft industry, which operates in large hangers, seemed likely victims of high winds. Despite these vulnerabilities, these industries made it through the storm without losing much downtime. There was \$40 million in damage to hangers at Chennault, but the two firms operating there continued to do so despite the inconvenience. Importantly, **staffing** was not as difficult a problem as in New Orleans because most housing remained intact in Lake Charles.

Rita's impact on the Lake Charles gaming sector: As a result of Rita the two Isle of Capri-owned casinos and the L'Auberge du Lac encountered minor damage and were reopened by November 2005. However, the two Harrah's riverboats were badly damaged by the hurricane. Again, Pinnacle Entertainment, which owned L'Auberge du Lac, purchased both of Harrah's licenses in Lake Charles. Pinnacle returned one license to the Gaming Control Commission and moved the other license to Baton Rouge.

Rita's impact on other sectors: A look at other sectors in Lake Charles indicates a solid recovery in the aftermath of the storm. By January 2005, all **hospitals** in the MSA except one in Cameron Parish were fully operational. The **Lake Charles Regional Airport** began operating at an even higher level than pre-Rita. By contrast, it was 2014 before the New Orleans airport was operating pre-Katrina levels.

Within a month of Rita's landfall, all of the **public schools** in the MSA had reopened and virtually all hotel room space was back to normal by the end of 2006. The **Port of Lake Charles** escaped any flooding by Rita. However, it did experience about \$40 million in wind damage and initially had no power. Within a few days power was restored and the port was open to receive shallow water vessels.

Careful reviewers may have noticed another important fact back in Figure 17. In 2007 Lake Charles MSA set a **new record in employment**---exceeding the previous peak by 2,100 jobs. Construction associated with the storm recovery was still robust in 2007, about 2,200 jobs higher than just after Rita. However, construction's growth peaked in 2007 and was slightly lower in 2008, constituting something of a temporary drag on the area economy.

The Great Recession Felt Hardest Here

Among Louisiana's eight MSAs, none suffered more than the Lake Charles MSA from the Great Recession. Although this MSA's employment began to slide later than the national economy---in February 2009 as compared to January 2008---2009 was particularly harsh on the region. In that year the MSA shed 3,900 jobs and then it lost another 2,200 in 2010---an employment drop over two years of 6.5%. This is a worse decline than that experienced at the national level (6.1%).

What was behind this poor performance over 2009-10? There were several factors, including:

- In 2008 **Citgo** announced it was closing its 192-person lube plant which added to the drag of reduced construction spending.
- **Aeroframe**, which does maintenance work for FedEx and US Airways aircraft had to reduce its workforce from 475 to 250 as both firms idled many of their jets due to the sagging global economy.
- The weak national economy hurt business at the area's important **casino industry**.
- The region was delivered a blow in the summer of 2010 when Pinnacle announced it was stopping construction on the **Sugarcane Bay Casino** and was turning in that license to the Gaming Control Board. It should be noted that the combination of the Great Recession and the unusually weak recovery negatively impacted the casino market.
- During this period the region's **petrochemical firms** really tightened their belts especially with regard to capital projects. This is illustrated below in Table 15 which contains data supplied by the Lake Area Industry Alliance which shows an almost **3,000-job decline in contractor jobs** at area plants over 2007-10. Fortunately, the data for 2011-15 show this downward trend was reversed, and in the case of contract workers has almost increased over 50% from the 2010 trough.

Table 15
Employment in Lake Charles Area Petrochemical Plants

Year	Full Time Employees	Contract Employees
2005	6,401	3,003
2006	6,158	2,830
2007	6,221	5,412
2008	6,070	3,572
2009	6,042	3,070
2010	5,961	2,456
2011	6,683	3,265
2012	6,754	4,273
2013	6,083	3,611
2014	6,180	3,656
2015	6,420	4,021

Source: Lake Area Industry Alliance

Finally: A Growth Year in 2012

Referring back to Figure 17, readers will notice the beginnings of a recovery in 2011 (+600 jobs) and very good growth over 2012-13. In 2012 and 2013, the region's employment rose by 2% and 2.6%, respectively. What is particularly impressive about this performance is it was accomplished despite the fact that a major employer---**Dynamic Industries**---basically shut down its 500-person operation in Lake Charles in 2013. The firm won phase I work on manufacturing components for the Marine Well Container project. However, the company was unsuccessful in landing phase II, so terminated its operations in this region.

On a far more positive note, during this period **Shaw Modular Solutions** opened its new facility and now has an estimated 300 employees. **Aeroframe** added employees as one of its key customers---FedEx---began to fly more planes. Importantly, **turnover work** at area petrochemical firms rose from \$350 million in 2010 to over \$800 million in 2012, and area **chemical firms** in general were enjoying an increase in business due to increased exports. Note in Table 15 that LAIA surveys indicate direct employment in petrochemical firms jumped by 793 employees over 2010-12 and contract employment rose a whopping 1,817 jobs over that same time period.

Ground-breaking took place on the \$500 million **Golden Nugget Casino** in July of 2012. Work began on a \$176 million expansion at **Sasol** and at the Lake Charles Port, **IFG** started construction on phase I of a new \$59.5 million grain elevator. Even more importantly, \$5.6 billion worth of work began on the first two "trains" at **Cheniere's** new LNG export terminal. We will have more to say about this project below.

2014-18: The Real Boom Begins

As Lake Charles entered 2014, we began to see the first evidence of a massive boom in this corner of the state unlike any ever seen before. Note how the employment line in Figure 17 moves up markedly in 2014-2018. Specifically:

- In 2014 employment in the Lake Charles MSA set a regional record for the first time since 2008.
- In 2015, employment passed the 100,000 mark for the first time in the MSA's history and it passed Houma to become the fourth largest MSA in the state.
- **Lake Charles has now been the fastest growing (in percentage terms) MSA in the state for five straight years, adding 26,800 jobs and expanding by a remarkable 5.4% a year.** In 40 years of monitoring the Louisiana economy we have never seen back-to-back job performances like that in any MSA in the state. In fact, few if any other MSA in the country matched this record.

What was the source of this remarkable performance? Consider the data in Table 16. **Lake Charles has garnered an astounding \$116.8 billion in industrial announcements since**

2012. Remember our earlier reference to \$1.6 billion in announcements in 1992 as “unusually large?” Today’s figure is 73 times larger!

Table 16
Lake Charles MSA Industrial Announcements: 2012 – Present
(Billions of Dollars)

Total Announcements:	\$116.8
Completed or Underway:	\$56.1
Potential:	\$60.7

Source: Loren C. Scott & Greater Baton Rouge Industrial Alliance

Of these \$116.8 billion in announcements, \$56.1 billion (48%) are already constructed or are underway. This massive injection of money into this economy has shot its employment straight up. Among these projects are:

- **Cheniere Energy** is constructing a \$20 billion, 6-train LNG export plant called Sabine Pass LNG. This is the largest single capital investment project in Louisiana’s history. At this time, four of the trains are operational and Cheniere made over 300 shipments from the site as of August 2018. The fifth train should be operational in 2019. NO FID has been given on the 6th train. Once complete, 148 people will be employed at this facility earning an average of \$100,000 a year. The company has purchased land next to this site for future expansions.
- Also coming in at a whopping \$10 billion capex is **Sempra’s** Cameron LNG project. Construction was started in August 2014 with a goal of initial operation in 2018 and full completion in 2019. Expected employment is 190 jobs at \$80,000 a year.
- Ground was broken in March 2015 on **Sasol’s** \$11 billion ethane cracker and derivatives complex. The plant was 85% complete in July 2018. Sasol will start with 500 Sasol jobs (at \$88,000 yearly) and 358 contractor jobs. The company has indicated it will probably add 200 more Sasol workers over 2019-20.
- In Mid-2016, a joint venture between **Axiall and Lotte Chemical** began construction of a \$3 billion suite of facilities that will be a world-scale ethane cracker and ethylene derivatives plants. Lotte is also moving its headquarters from Houston to Lake Charles. Expected to start up in 2019 (and presently on schedule), this new complex will employ 215 workers at \$76,000-\$86,000 a year. Presently there are 1,250 people working at Sasol. The headquarters move produced 50 new jobs at \$80,000.
- Electric power company **Entergy** has two large projects for this area. One---a \$187 million transmission project---was started in 2016 and will be completed this year. In June 2017, the company received approval to spend \$872 million on a new power plant and transmission interconnections in Westlake. Construction on this facility began January 2018 and it will become operational in 2020 with 30 new employees.

- **Westlake Chemicals** started construction in 2016-II on a \$350 million ethylene expansion at its Petro 1 plant.
- A state-of-the-art air separation unit to supply gas to Sasol has been completed by **Matheson Tri-Gas**. This \$130 million project added 27 jobs to Matheson's 13-job workforce.
- **Indorama Ventures** is undertaking a \$175 million renovation of a dormant ethane cracker at the old OxyChem site. This facility should open at the end of 2018 and create 125 jobs at \$50,000 a year.
- **Advanced Refining Technologies**---a joint venture between WR Grace and Chevron--- involves a \$135 million residue hydro-processing catalyst production plant and additional aluminum capacity at the Grace plant. Now under construction, the new facility will add 30 jobs to the present workforce of 295.
- On a smaller scale than the others, **Dongsung Finetee** is spending \$5 million at the Port of Lake Charles on a new cryogenic insulation manufacturing plant. Scheduled to open at the end of 2018, the new plant will create 250 jobs at \$40,000 a year.

Two other projects were off and on contributors to construction activity during this period.

- **G2X Energy** broke ground on its Big Lake Fuels project in January 2016, which was the first phase of a two-phase project. Big Lake is designed to convert natural gas to methanol and from methanol into auto gasoline. Construction of this unit has been put on hold as the company moved its focus to a similar plant in Beaumont. Once the Beaumont project is completed G2X is expected to re-start construction on Big Lake. The company plans to spend \$1.6 billion on both phases. Nothing is happening at the site at this writing.
- The **York Capital GTL** (formerly Juniper GTL) project to build a \$100 million renovation of a dormant steam methane reformer in Westlake has been an up and down affair. Juniper started construction on the project, and then filed for bankruptcy. York Capital purchased the assets and restarted construction in 2016. The facility will make diesels, waxes, and naphtha.

For any economy---but especially for one the size of Lake Charles---this has been a massive injection of construction spending into the economy. That is why the employment line back in Figure 17 has shot straight up for the past five years. In fact, a recent USA Today piece indicated that over 2013-18 Lake Charles was the fastest growing MSA in the nation!¹² Is this record sustainable over our forecast period? It is to that question that we now turn.

¹² <https://www.usetoday.com/story/money/economy/2018/08/14/who-is-hiring-cities-adding-most-jobs-in-every-state/37367147/>

Forecast for 2019-20: A Pick Up in Mid-2019

Our expectations are that by mid-2019 the “go light” will be turned on for 3-4 major new projects in this MSA. The wind down of existing projects and the delay until mid-2019 for new projects to make an FID will tend to slow growth slightly in 2019. Even that slower growth will be the envy of most MSAs in the country. In 2020, construction activities at the newer, very large projects should propel the Lake Charles region into another stellar period of growth. We are projecting 4,000 new jobs (+3.3%) in 2019, followed by 5,300 new jobs (+4.3%) in 2020 for the Lake Charles MSA (see Figure 18).

Which LNG Projects Will Issue FIDs?

One of the hot parlor topics in development circles is trying to guess which of the proposed new LNG projects for the Lake Charles region will start going vertical over 2019-20. We described the LNG market in some detail back on pages 16 and 17. There has been an uptick in LNG demand recently as more and more countries switch from coal-fired to natural-gas-fired electric power plants. Most analysts believe 2019 will be a crucial year for decisions on the part of these players. A construction start in 2019 would match up well with an expected LNG shortage market in 2022-23, when the projects would come on line. Here is the line-up and some indication of our expectation for each.

- **Magnolia LNG** is planning a \$4.35 billion export facility at the Port of Lake Charles. An epc has been signed with SK E&C USA, and FERC approval has been received, so Magnolia is one of the farthest along in the process to an FID. Magnolia’s trains are smaller than those of Cameron or Cheniere LNG and some argue that makes each train’s product a little easier to market. The firm plans to use 75% debt and 25% equity to finance the project. The equity portion is in place via Stonepeak out of New York. The debt part will depend on getting credit worthy customers for the LNG. Magnolia already has the output of one of its four trains sold to Meridian. We understand if it can sell a second train, an FID will be issued. Seventy jobs at an annual salary of \$75,000 are associated with this product. We assign a high probability to this project.
- **Driftwood LNG**, under the direction of the former CEO of Cheniere (Charif Sould), is hoping to start a \$15.2 billion, 4-train LNG export facility on 800 acres on the west side of the Calcasieu River. There are 498 permanent jobs associated with this venture. FERC permitting is expected in January 2019 for this project, so it is a step behind Magnolia. Driftwood is attempting a unique way of financing its project---it is selling equity interest in the facility. Buyers of LNG invest in the project and only pay for gas throughput and the liquefaction cost of their LNG (see the Henry Hub price and liquefaction components back in Table 5). This means Driftwood does not have to look for financing; the buyers have to come up with their own financing. Current partners include Total SA, General Electric and Bechtel which has the contract to build the facility. Driftwood is also planning a \$7 billion pipeline complex to bring natural gas from West Texas, East Texas and the Haynesville Play to its LNG facility. Routes of the proposed Permian Global Access Pipeline and the Haynesville Global Access Pipeline

are shown in Figure 19. Given the quality and experience of this team, we assign a high probability to Driftwood making an FID in 2019.

Fig. 18: Lake Charles MSA Non-Farm Employment Forecast: 2019-20

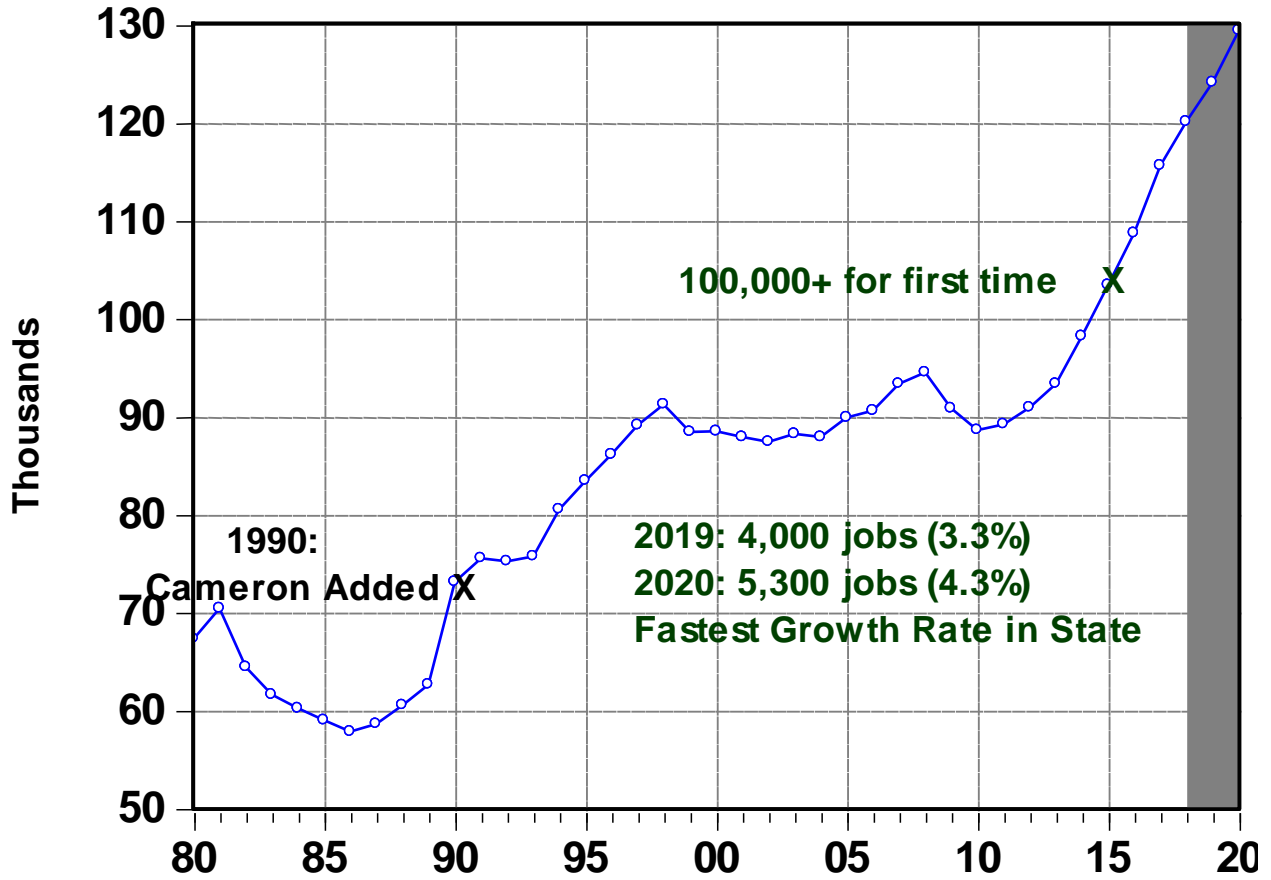
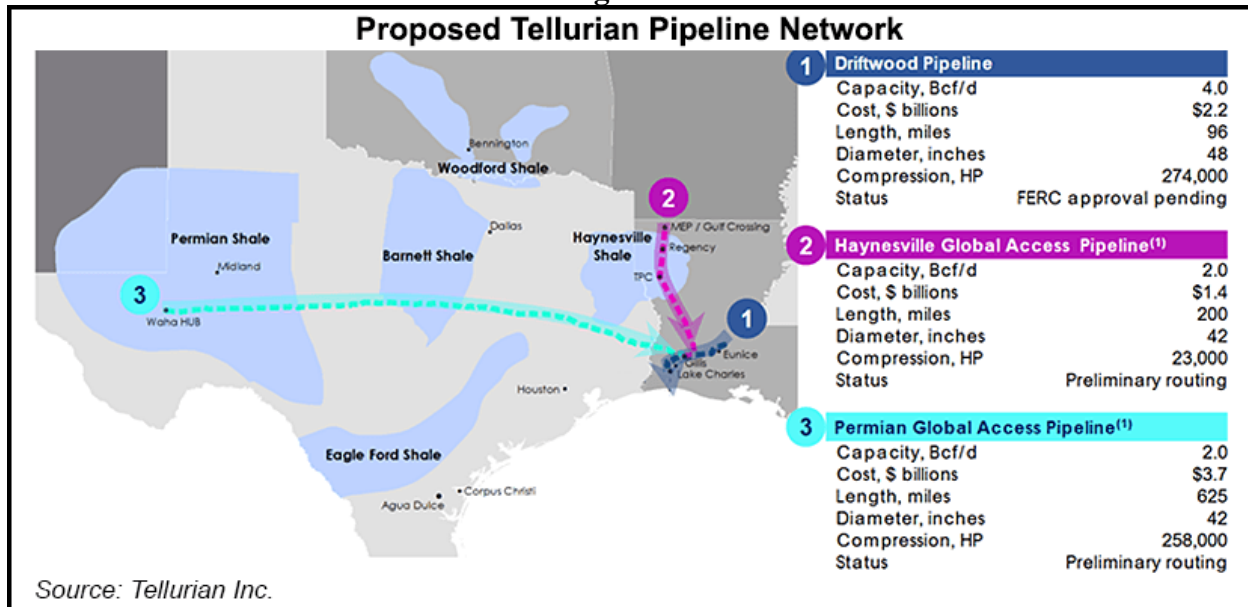


Figure 19



- Another \$4.25 billion LNG export terminal---operated by **Venture Global**---is planned on 938 acres at the mouth of the Calcasieu Ship Channel. The firm would employ 100 employees at \$75,000 a year once built. As we understand it, of the 10 million tonnes per year (mmtpa) of output VG has contracts in place with Shell and Edison for 3 mmtpa and another two mmtpa with BP. Final permitting is still needed from FERC---though VG has a schedule from FERC for a path forward for a timeline to get permits---and it's draft environmental impact statement is in. The company is trying to get the capital recovery component (see Table 5) of its project down by negotiating the price of individual components of the project with suppliers to achieve their lower cost. We are not aware if any such contracts have been signed at this writing. Given the amount of signed contracts VG has secured, we place a high probability on an FID from this company.
- **Lake Charles LNG** (formerly Trunkline) made an advanced filing with the state for an \$11 billion, 5-train LNG export terminal that would eventually employ 250 people. This company does have its FERC permits in hand. One hundred percent of the LNG from this facility is dedicated to Shell, so an FID depends on when Shell wants it. The company has signed a memorandum of understanding (MOU) with Energy Transfer Partners to examine forming a joint venture to build this project. We assign a medium probability on an FID on Lake Charles LNG within our forecast period.
- **Monkey Island LNG** (formerly Southern California Telephone and Energy) has signed 99-year lease on 232 acres on Monkey Island to build a \$6.5 billion, 6-train LNG export terminal. The firm has MOUs in place for both a supply of gas and a user (the JOVO Group from China). The firm is currently not in the FERC review process, so a low probability is assigned to an FID anytime soon.

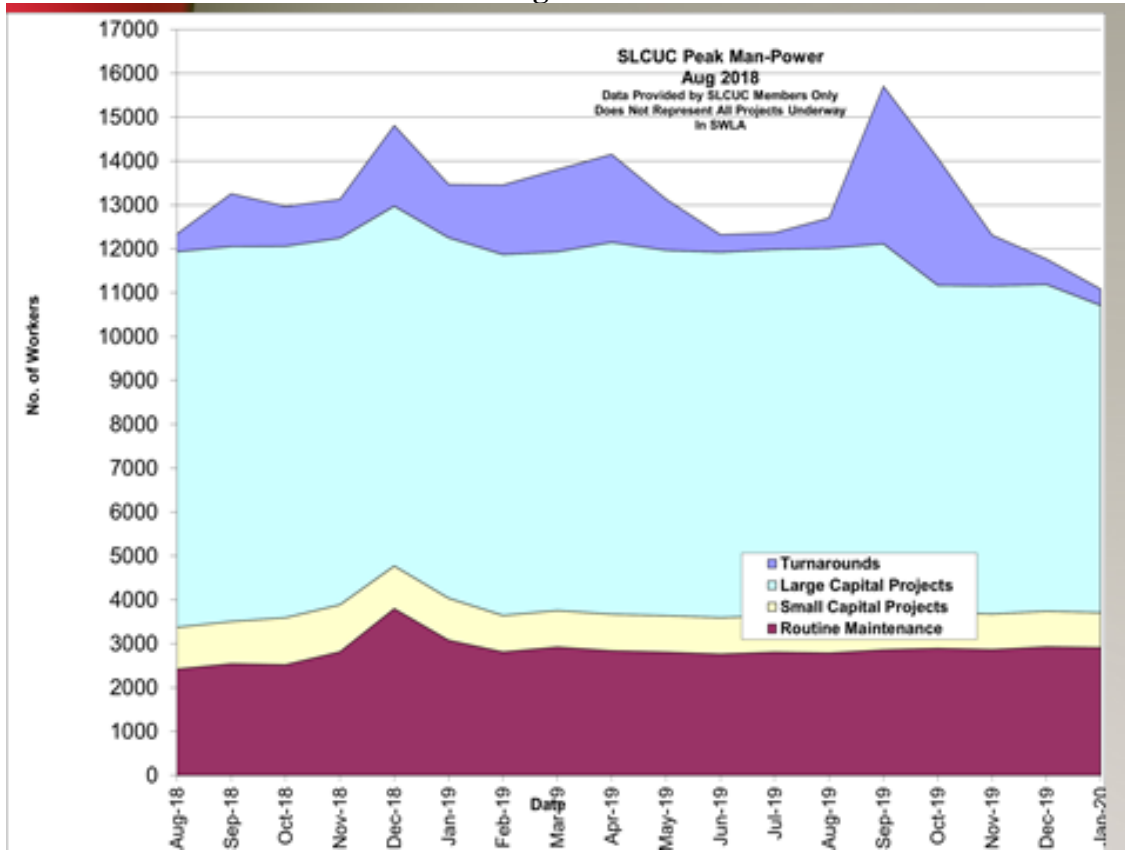
- Not much movement has been apparent lately on the proposed **G2 LNG** facility on the Calcasieu Ship Channel. The firm is currently not in the FERC approval process. This \$11 billion project would have 250 permanent jobs at \$85,000 a year when operational. A low probability is assigned to an FID anytime soon.
- **Commonwealth LNG** (formerly Waller LNG) is still working on approval from FERC for its \$2 billion facility. It is still at the pre-filing phase with FERC. A low probability is assigned to an FID during our forecast period.
- **Delfin LNG** is an oddity among the proposed LNG export terminals. Delfin would have all operations on an FLNG---floating LNG facility---located 45 miles off the coastline of Cameron Parish. This \$7 billion project would likely be built outside of Louisiana, but the state economy would gain from the operation of the plant. Delfin has purchased UTOS pipeline, the largest natural gas pipeline in the Gulf, and has received a positive record of decision from the Maritime Administration. We understand FERC approvals are pending. We are unable to assign a probability of an FID to this project.

Given the enlivened methanol market (see pages 17-18) another proposed plant that has a more than an average chance of coming to an FID is **Lake Charles Methanol**. This proposed \$4.6 billion facility would use carbon capture technology and would be the first plant in the U.S. to convert petcoke to methanol. In December 2016 the company received a \$2 billion loan guarantee from the Department of Energy, and in early 2017 the company signed a 25-year service agreement with the Port of Lake Charles. The Port would spend \$80 million to expand Bulk Terminal 1 at the site. An anticipated 200 jobs would be created at the plant. At a June 2018 Port board meeting, the company asked for a 3-month extension on its lease, so an up-or-down FID decision is eminent.

Another major project under design and discussion is **Port Cameron**, a \$1.5 billion, 50-acre port at the mouth of the Calcasieu Ship Channel. Designed to provide port services to facilities operating in the Gulf, officers are putting together financing. The Group has signed a lease for 1.2 million square feet of space with Peterson Offshore Group, a European energy logistics management operator. Little has changed since we reported on this project last year. A stronger recovery in the Gulf would go a long way toward achieving an FID for this project.

What does all this mean for construction employment in the area? The Southwest Louisiana Construction Users Council (SLCUC) recently conducted a survey of its members, and Figure 20 shows the results. **Construction employment is expected to rise from around 12,500 in August 2018 to a peak of nearly 16,000 in late 2019.** There are two important caveats about this survey. First, it includes only SLCUC members. Key companies the survey does not cover are Axial-Lotte, Cheniere LNG, Advanced Refining and many of the proposed projects which we think will begin construction in late 2019-early 2020. The latter include Magnolia LNG, Driftwood LNG, Venture Global LNG and Lake Charles Methanol. The big downturn shown in the latter part of Figure 20 is exactly when at least some of these un-pollled members will start hiring big time.

Figure 20



The data in Figure 20 are for construction workers. The **Lake Area Industrial Alliance** also conducts a survey to determine the number of new permanent workers that will be hired as newly built plants open up. Their estimates are shown in Table 17.

Table 17
LAIA Estimates of New Permanent Employees at Plants

Year	New Permanent Employees
2017	619
2018	325
2019	228
2020	683

Source: Lake Area Industrial Alliance

Two factors cause the numbers in Table 17 to be a significant under-estimate of the new permanent jobs coming to Lake Charles. First, the non-SLCUC members listed earlier were not included in the survey. Secondly, the numbers in Table 17 do not include full-time **contract workers** which could easily boost these numbers another 40%.

There are two pipeline projects involving significant expenditures of capital money that are closely related to the projects mentioned above. **Kinder Morgan** will be constructing a \$151 million Sabine Pass Expansion Pipeline to deliver feed gas to Cheniere LNG's 5th train. **Gulf**

South Pipeline will spend \$56.2 million to build and operate a pipeline, compressor station, and delivery/receipt stations for natural gas delivered to the new Lake Charles Power Plant.

New Tenants at Chennault, More Capex at the Port & State Road Lettings

Good things are happening at Chennault Airpark. **Northrop Grumman** (NG) is the largest tenant at the airport. Chennault is now the Northrop Grumman Center of Excellence for the Technical Services and Repair Operations Division. Now at 850 employees, NG does MRO (maintenance, repair, and overhaul) work on Joint JSTARS, UK AWACS and other international 707 platform operators. Employment is projected to remain steady, though the company is chasing opportunities with the Customs/Border Patrol and Navy that, if landed, could boost employment by 200.

The Airpark landed a good one when **Citadel Completions** was lured to Hanger H and I. The company has a \$17.6 million renovation underway at the hangers and an administrative building. Citadel does MRO work on its own planes and luxury interiors for high-end customers and commercial aircraft. Only a skeleton crew is at the site at this writing, but within two years employment is projected to grow to 256 at an average wage of \$80,000 a year.

An aircraft painting company---**Landlock Aviation**---that can also do small-scale aircraft modifications has 46 employees at Chennault and is expected to expand over 2019-20.

The **Port of Lake Charles** has its hands full with many of the projects bulleted above residing within the Port's jurisdiction. Capital expenditures at the Port will increase noticeably over the next two years. The 2018 budget of \$18 million will more than quadruple to \$89 million in 2019 and \$41 million in 2020. This money will be used for repair of dikes, land acquisition in the ship channel, rock projects, and dredged materials placement facilities.

Finally, \$201.3 million in **new state road lettings** have been announced for this MSA. This includes \$65 million to widen I-10 to six lanes from the Texas line to East of Coon Gulley, \$30.3 million on new LA12 bridges, and \$14.8 million in improvements to the Nelson Exchange.

Shreveport- Bossier: Where's the Beef?

This MSA is now the fourth largest MSA in Louisiana with an estimated 180,000 non-farm jobs in 2018. Located in the northwestern corner of the state, this MSA is now comprised of four parishes---Caddo, Bossier, Webster, and DeSoto. Webster Parish is a recent addition to this MSA. All our employment numbers reflect the addition of this parish.

Shreveport-Bossier has the highest concentration of durable goods manufacturing employment in the state, and that tends to make the area much more susceptible to national recessions than Louisiana's other eight MSAs. Among the large durable goods manufacturers in the area are **Sabre Industries** (formerly, CellXion and a manufacturer of cellular towers), **Frymaster** (manufacturer of deep fryers and similar products for McDonalds and KFC), **Ternium**---a steel components manufacturer, and **Benteler Steel**, the latter two housed at the Port of Caddo Bossier.

Shreveport-Bossier is also home of the state's largest and most successful casino market. This MSA now has **six large river boat casinos** plus the **Harrah's Racetrack**, which together employed about 5,065 people in 2018-I. Bossier City is home for **Barksdale Air Force Base**, an employer of 9,193 military/civilian workers and an important economic driver for the area. Another big employer in the MSA is the **LSU Health Sciences Center** with 5,260 employees.

The **Caddo-Bossier Port** is home to several firms including the Ternium steel firm, the Pratt recycling company, Ronpak, Sports South, and Benteler Steel. Altogether, tenants at the Port employ about 1,700 people. **General Dynamics IT** (formerly, CSRA) is a major new player in the region with 1,100 employees at its three centers.

This region was a huge beneficiary of an economic jolt from 2007 to about 2009 in the form of the **Haynesville Shale**---a very large deposit of natural gas. New fracking technology made possible the harvesting of this field. In 2008, exploration companies pumped \$4.5 billion in new dollars, about \$3.2 billion of that in the form of mineral lease payments, into the northwest section of the state. In 2009, that figure rose to \$7 billion, of which about \$1 billion was in the form of mineral lease payments. This largess radically reduced the influence of the Great Recession on this MSA's economy, as we will show below. We will also note a considerable tailing off of activity in the shale since 2010.

Shreveport/Bossier Recent Employment History

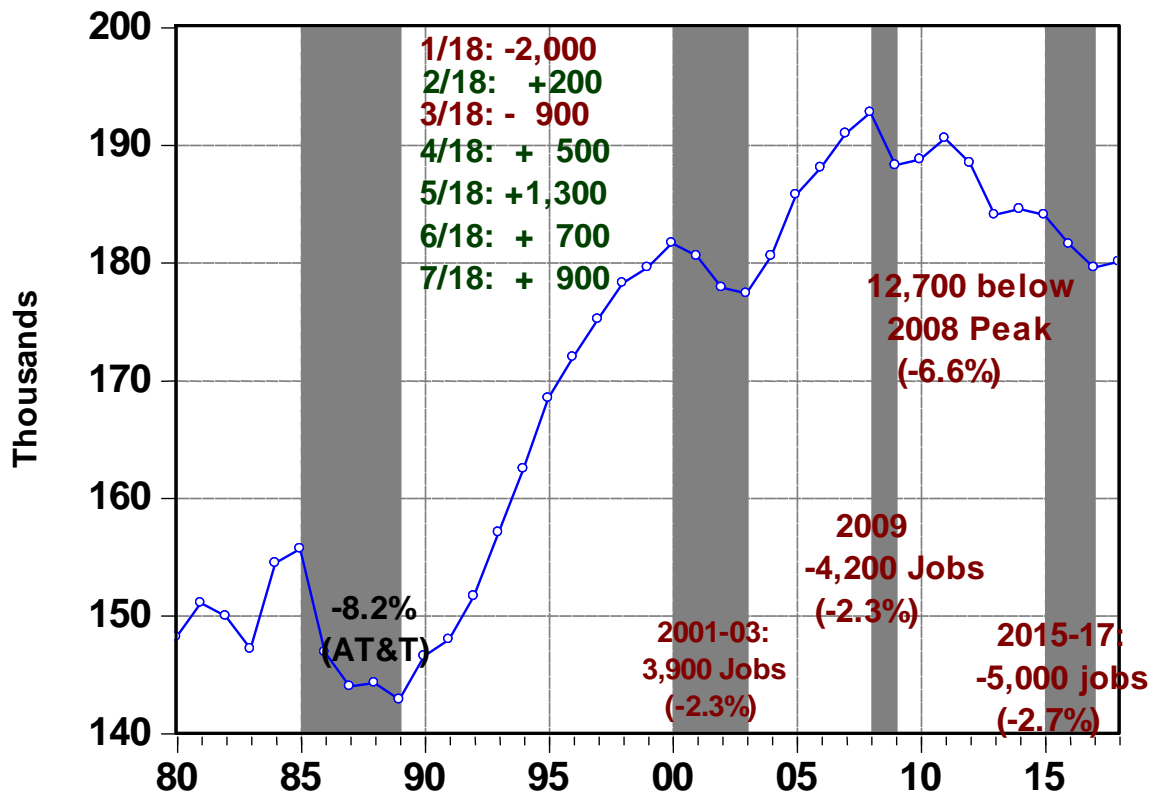
Figure 21 tracks the employment history of this MSA over 1980-2018. The Shreveport/Bossier area suffered through a prolonged, and deep, recessionary period from 1985-89. While this decline was partially a result of a badly declining exploration industry, that was not the main culprit.

1985-89: The AT&T effect. Both the depth and length (this MSA was the last in the state to begin the recovery process) of the recession was due to one firm. **AT&T** had a large phone equipment manufacturing facility in Shreveport that employed 7,450 people at its peak in 1984. The firm then began a major downsizing effort that ultimately dropped its employment to near 1,100. Those layoffs, combined with their negative multiplier effects, caused the MSA's employment to decline by 8.2 percent.

Casinos to the rescue: In 1990, the Shreveport/Bossier area began a slow ascent from the depths of its recession. Initially, job growth was positive, but anemic. Then in 1994, its employment began to rise rapidly---by an average of 4,600 jobs a year. The source was **riverboat casinos**. These casinos have been among the most successful in the state, because they have drawn heavily from the huge Dallas-Ft. Worth metroplex for their customers.

Casinos added jobs to the region in another important way as well---the construction of large **hotels**. Horseshoe Casino had a 25-story, 606-suite hotel; Casino Magic operated a 94-room, 94-suite hotel; and Isle of Capri operated a 300-suite hotel. These, of course, are pretty labor-intensive operations, so the MSA picked up a significant employment boost here as well.

Fig. 21: Shreveport-Bossier MSA Non-Farm Employment 1980-2018



Durable goods dependence & national recessions: The years 2001-03 were particularly difficult ones for this MSA. The MSA lost 3,900 jobs over this three-year period or 2.3% of its workforce. In both percentage terms and in length, it was the worst decline in the state, not unexpected in a very durable goods-dependent region.

Several factors played a role in this rather poor record. First, there was the closure of some large manufacturing facilities in the area. In mid-2001, the **Avaya Communications** (formerly, Lucent Technologies) closed its Shreveport plant, costing the area 900 jobs. The **Pennzoil Refinery** was sold and dramatically cut back from 230 workers to only 85. **Boeing** closed its facility at the airport, terminating 162. **Precision Response** closed its 250-person call center in early 2001. **General Electric** began the process of transferring 400 positions at its industrial systems plant to another site in Monterrey, Mexico. These were all permanent layoffs.

Too, the state's most successful **casino** market took a hit as business declined with the recession. The area's newest casino at the time, **Hollywood**, reduced its workforce from 2,200 to 1,800. Three of the area's five casinos reduced employment due to the recession. Finally, a mixture of other firms, including **Frymasters**, **Beird**, and **Exide Technologies** imposed significant layoffs in 2002. Beird, in particular, went from a 700- to a 30-person workforce.

GM, Beird, and Frymaster stop the fall: The Shreveport/Bossier MSA turned the corner in 2004 and grew for five years in a row, expanding at a very healthy rate of almost 2% a year over 2004-08. Initially, **General Motors** was a key player in this recovery. GM opened its

new facility and hired 600 additional workers to begin test-building of the Hummer 3 at its old site. Its employment in the region jumped from about 2,400 to 3,600. However, a round of employee buyouts in 2007 dropped employment at this plant back down to 2,153.

After taking over Beaird Manufacturing, the **Eakin Company** initially put that firm back on an expansion path. Employment at the location jumped from 30 to about 570. **Frymaster** came back at an all-time high employment level of over 600 employees. The new firm **Steelscape** (now **Ternium**)---a steel components manufacturer---opened at the Port of Caddo-Bossier, creating 240 new jobs in 2007.

Haynesville & Barksdale Mitigate the Great Recession

As mentioned earlier, normally this MSA is the hardest hit when a national recession hits because of its high dependency on durable goods employment. When the Great Recession hit, the result was Shreveport was almost turned on its head compared to past history. The U.S. economy began losing jobs in January 2008. Shreveport-Bossier did not lose its first job until 10 months later. **The U.S. economy lost 6.1 % of its jobs; this MSA lost only 2.3 % and it only lost jobs in one year---the only MSA in Louisiana to pull that off.** Instead of ranking dead last in the state, Shreveport-Bossier ranked 2nd in least jobs lost during the Great Recession.

There were two key factors behind this unusual performance. First and foremost was the tremendous amount of money pumped into the economy by **Haynesville Shale** exploration over 2008-09. As we indicated earlier, these funds amounted to \$3.5 billion in 2008 and \$7 billion in 2009, an immense injection of economic activity into the region's economy.

One indicator of how important the Haynesville Shale activity was during the Great Recession is shown in **local government sales tax collections**, which are illustrated for four northwest Haynesville parishes in Table 18. First note that during the last post 9-11 recession three of the parishes experienced declines in collections (we were unable to get the earlier data for Bossier Parish), just as normally happens in the face of a national downturn. However, despite the length and depth of the Great Recession, **local sales tax collections rose in all four parishes over 2008-09**, with unusually large increases in 2009 in Red River Parish (+205.1%) and DeSoto Parish (+82.2%).

Similar findings occurred in **property taxes** collected in five Haynesville-impacted parishes as seen in Table 19. Not only did property taxes increase dramatically in all five parishes during the country's worst recession since the Great Depression, but also it is clear from the last two columns that almost all of that growth was energy-related. In Desoto Parish, property taxes increased by 3 ½ times. In Red River Parish the increase was almost by a factor of seven. The Haynesville Shale was a huge factor in the treasuries of these local governments.

Table 18
Sales Tax Collections in Selected North Louisiana Parishes

Parish	Percent Change In Sales Taxes
Red River	
2001	-3.1%
2008	71.1%
2009	205.1%
DeSoto	
2001	-0.8%
2008	3.6%
2009	82.2%
Caddo	
2001	-0.8%
2008	7.0%
2009	1.4%
Bossier	
2002	NA
2008	4.1%
2009	5.5%

Source: Author survey of parish finance offices

Table 19
Property Tax Collections in 5 Haynesville Shale-Impacted Parishes:
2005 Versus 2013

Parish	Property Taxes 2005	Property Taxes 2013	% Energy-Related 2005	% Energy-Related 2013
Desoto	\$22,395,351	\$78,432,531	18.9%	62.4%
Red River	\$3,549,617	\$21,927,425	3.6%	47.8%
Webster	\$15,728,690	\$25,342,948	17.1%	26.0%
Bossier	\$52,449,881	\$97,054,727	8.5%	16.1%
Caddo	\$158,347,601	\$230,350,740	2.8%	10.5%

Source: Louisiana Tax Commission

Of course, the awarding of the **Global Strike Command** to Barksdale Air Force Base also helped mitigate the impact of the Great Recession. By September 2009, 275 of the 900 jobs attached to the GSF had relocated to Barksdale. In addition to the Global Strike Force,

Barksdale gained part of 700 positions it would ultimately secure via flight training jobs and the reopening of a weapons storage area that came to the MSA.

The gains from the Haynesville Shale activity and the additions at Barksdale did not mean the region escaped the recession unscathed. Consider the following:

- Problems at **General Motors** dropped its workforce from over 2,000 to about 800.
- **Capital One Bank** closed a 150-person call center.
- **Verizon** closed a 300-person call center.
- Market conditions turned against **Beird Industries** in 2008, and it was closed at a cost of about 400 jobs.
- A weak U.S. housing market led to the closure of the **Georgia Pacific** plywood plant in DeSoto Parish (-280 jobs), and the firm laid off 400 at its plant in Springhill.

Recovering From the Great Recession: Not the Normal Pattern

Note back in Figure 21 that the Shreveport-Bossier MSA actually started enjoying job gains in 2010. The increase was only 400 jobs or about 0.2%, but this was the only MSA in the state to grow that year. The region also had a good year in 2011, adding 2,100 jobs, a very respectable growth rate of 1.2%.

This is the pattern one would normally expect to continue in a durable-goods-dependent economy---good solid growth on the recovery side of a recession. That, however, was not the pattern that has continued. Except for slight growth in 2010-11, **the Shreveport-Bossier MSA was in a decline from 2008 to 2017, losing 12,700 jobs (-6.6%).**

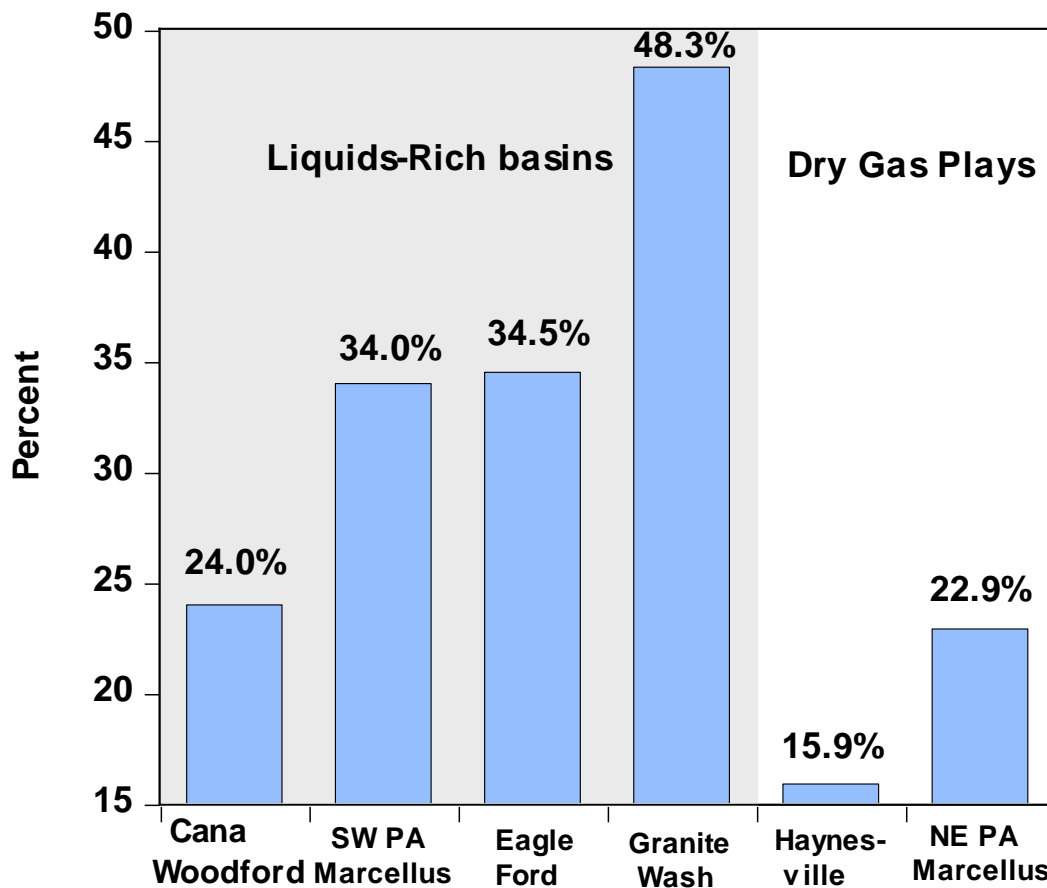
Several factors contributed to this poor performance. First, the **GM plant** closed in August 2012, costing the region 800 high-paying jobs. Area and state economic developers have been hustling to find a replacement at the GM site, something we will discuss in the forecasting section.

The **Haynesville Shale** has played a significant role in the first two years of this employment decline. After being responsible for shielding the MSA from much of the effects of the Great Recession, activity in this shale dropped precipitously. After reaching a peak of 142 rigs in April 2010, the rig count in North Louisiana plummeted to only 23 in July 2013---an 84% decline. Rig activity fell as low as 16, but has shown signs of a modest recovery as will be discussed later.

What caused this rig movement out of the Haynesville play? The answer lies in the rate of return on equity (ROE) data in Figure 22. Note that the ROE in the Haynesville Shale in 2010

was far lower than in the other plays shown.¹³ There are two reasons for this differential. First, the wells in the Haynesville Play are deeper than in these other plays, so it was costing more to drill a typical well---about \$9.5 million per well in the Haynesville versus \$6 million in the Eagle Ford or Marcellus Plays. Secondly, the Haynesville Shale is a "dry" play, i.e., when you drill you get only natural gas. In parts of the Eagle Ford, Marcellus, Woodford, Permian, and Granite Wash, exploration companies hit both natural gas and the more highly priced oil. The latter are "wet" plays. The Haynesville was simply at a serious disadvantage vis-à-vis other natural gas plays in the U.S.

Fig. 22: Rate of Return on Equity: Various Shale Plays 2010



Source: Credit Suisse

A third factor holding back this region's economy has been a reduction in forces at **Barksdale AFB**. The troop count which was 8,655 in 2012 dropped to 6,609. A 24-plane A-10C Wing was removed from the base in 2013. There were 500 jobs directly tied to that wing, but luckily about 400 of those were absorbed into the 307th Bomber Wing. Associated with all these

¹³ It is important to note that the ROI figures in Figure 22 are for 2010. Dramatic improvements in drilling efficiencies since 2010 have significantly changed these numbers, but the Haynesville Play is still at a disadvantage compared to wet plays.

reductions is obviously a reduction in spending in the MSA that contributed to the region's poor job performance over 2012-17.

Another contributor to the recent decline was **Libbey Glass**. This firm reduced its workforce by 200 in early 2013, moving these jobs to Toledo and Monterrey, Mexico. Adding to the decline was the closure of the 250-person **Express Jet** maintenance facility at the Shreveport Airport in 2016.

Finally, competition with Indian casinos in Oklahoma has significantly eaten into Shreveport-Bossier's **gaming sector** over the past few years. Note in Table 20 that this sector has shed **1,133 jobs** between 2014-I and 2018-I according to data from the Louisiana Gaming Control Board. There appears from the data in Table 20 to be no reason for hope that there will be an arresting of the downward employment trend in this industry.

Table 20
Shreveport-Bossier Gaming Employment: 2014-I to 2018-I

	14Q1	15Q1	16Q1	17Q1	18Q1	Change: 14Q1 to 18Q1
DiamondJack	653	519	529	422	401	(252)
Sam's	1,086	1,079	884	778	796	(290)
Horseshoe	1,212	1,161	1,156	1,089	1,112	(100)
Margaritaville	1,070	1,060	999	1,046	1,034	(36)
Boomtown	626	583	559	523	496	(130)
El Dorado	1,187	1,149	1,115	1,093	1,016	(171)
TOTAL CASINO	5,834	5,551	5,242	4,951	4,855	(979)
Harrah's	364	282	265	202	210	(154)

Source: Louisiana Gaming Control Board

Lest one think the casinos are just getting more efficient in handling a bigger revenue pot, the data in Table 21 will dispel that notion. Gross revenues at the six Shreveport-Bossier casinos have fallen by \$57 million between FY14 and FY17, a decline of 7.7%. Indeed, the DiamondJack Casino made overtures to move its license to Tangipahoa Parish, but legislative authorization died in the senate.

Table 21
Shreveport-Bossier Casino Revenues: FY14 v FY17

	FY14		FY17		Change
Diamondback	\$ 60.1		\$ 41.8		\$ (18.30)
Sam's	\$ 92.5		\$ 76.7		\$ (15.80)
Horseshoe	\$ 198.3		\$ 183.2		\$ (15.10)
Margaritaville	\$ 123.4		\$ 147.2		\$ 23.80
Boomtown	\$ 65.0		\$ 59.7		\$ (5.30)
El Dorado	\$ 136.9		\$ 130.2		\$ (6.70)
Harrah's	\$ 61.5		\$ 41.9		\$ (19.60)
TOTAL	\$ 737.7		\$ 680.7		\$ (57.00)

Source: Louisiana Gaming Control Board

2018: A Corner Turned?

After almost a decade of decline there is evidence accruing that the corner has turned in this MSA and growth---though modest---is starting to occur. Readers are directed back to the insert in Figure 21 that shows employment growth by month in 2018. After showing a hefty job loss (-2,000) in January and bouncing along the bottom the next two months, this MSA has now experienced four straight months of growth. In two of those months the expansion was modest, but at least the numbers are positive. Our projection is that the MSA will be up about 500 jobs (+0.3%) for the year in 2018.

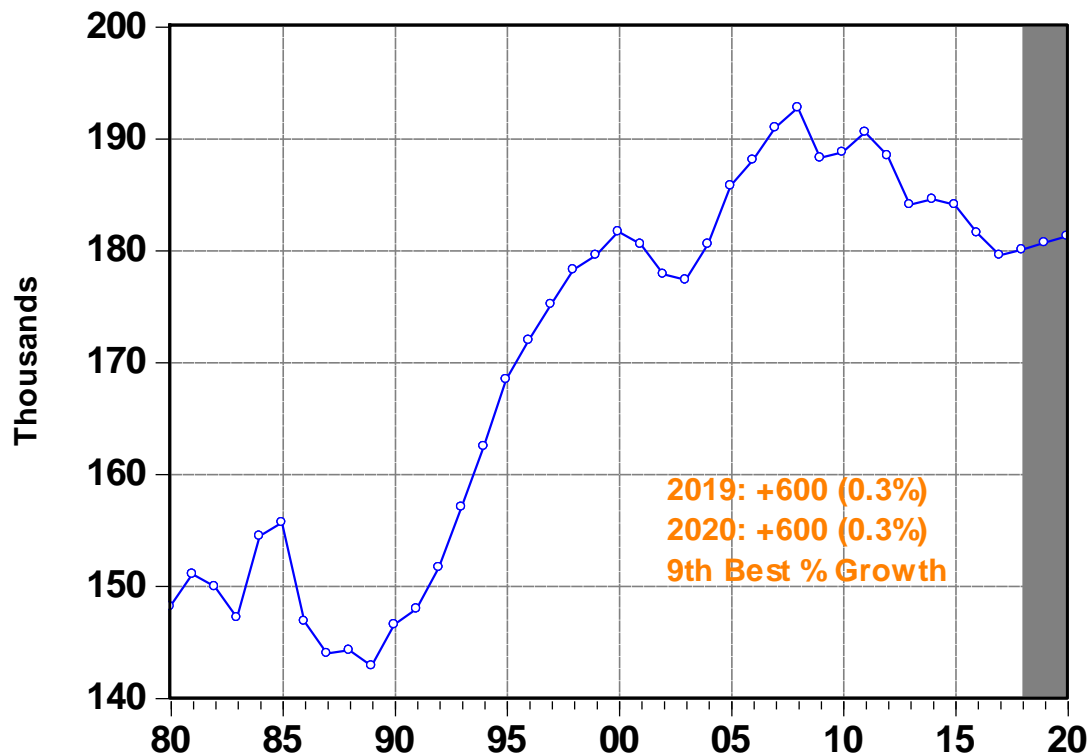
Two key factors have helped in this recovery. **General Dynamics IT** (formerly CSRA) has enjoyed a growth spurt. There are now 1,100 people employed at its three centers: (1) the customer engagement center, (2) the cyber innovation center, and (3) the integrated technology center. Our understanding is these centers are now hired up and will be stable over our forecast period.

An additional bump was provided by the arrival of **Glovis America** (GA), a subsidiary of Hyundai, at the old GM plant. The company now has 156 employees earning \$31,750 a year on average. GA does logistic staging, quality inspections, and accessorizing for some 75,000 Kia vehicles annually.

Forecast for 2019-20: Modest Recovery Continues

The good news is we see Shreveport-Bossier remaining on an expansion path over the next two years. The not so great news is we see this trend being modest at best. **We are projecting the Shreveport-Bossier MSA will add about 600 jobs a year over 2019-20, a growth rate of about 0.3%---the lowest of the nine MSAs in the state.** Hence, the caution color around our forecasts in the insert in Figure 23.

Fig. 23: Shreveport-Bossier MSA Non-Farm Employment Forecast: 2019-20



The tricky thing in examining this MSA’s future is finding the “beef”---the big projects coming down the line that could jack this economy up to a higher, more acceptable trend. While pages of such projects were listed in our descriptions of the New Orleans, Baton Rouge and Lake Charles economies, one is hard-pressed to find a single big one in the northwestern corner of the state.

The area is not without some winners. **Western Global Airlines** is moving into the Express Jet facility with an aircraft maintenance plant at the Shreveport Airport. The company will make a \$3 million investment in Hanger 40. Twenty-five people are employed at the site now, but the firm plans to be at 275 by the end of our forecast period. Annual pay at the facility will average \$45,200.

Alorica is a new firm to the area. It is a back office support and customer relations management firm that uses part-time, work-at-home employees. An estimated 500 people will be hired; no annual pay numbers were available.

Port Remains Solid for Shreveport-Bossier

One of the rock-solid players in this MSA’s economy has been the **Port of Caddo Bossier**. About 1,700 people are employed at various clients at the port. One of the newer units at the port is **Benteler Steel**. It opened its new \$665 million tube mill in late 2015 and was at

395 at the beginning of 2017. By the end of this year, employment will have swelled to 540. Trump's steel tariffs are of course a positive for Benteler, so the company is expecting a sales bump in 2019. The company held a job fair in July to fill 75 hourly maintenance positions. An additional \$227 million mini steel mill is on hold awaiting favorable market conditions.

Steel fabricator **Ternium** was at 168 employees last year and has added a 4th crew and 18 operators through all departments this year. About \$14 million will be spent over 2018-19 on capital projects, including (a) a galvanizing line revamping, (b) completion of a warehouse expansion, (c) premelt pot upgrade to cordless technology, (d) painting line wrapper replacement and (e) specmetrix in-line gauge coating measurement for paint film.

Pratt is a recycled paper mill whose employment is at 114 and probably will change little over 2019-20. The mill is effectively running at capacity and supplies internal and external customers in the U.S. and Central and South America. **Ronpak**, which started at the Port in 2012 with 50 employees, now has tripled that number and is enjoying 10-15% growth year-over-year. Growth is driven by large targets in the region such as What-a-Burger, Canes, Popeye's, Five Guys and Church's. If business with these targets is secured, the firm will likely add another 25 workers.

Sports South finished an addition to their Knapp automation tower---a sortation/picking machine. The company's employment (total not revealed) is expected to be stable over 2019-20. The logistics company **ADS** receives, stores and ships products for Ternium, Nucor, and Integrico Composites of Louisiana. ADS employs 21 office staff and drivers and will be adding a few more over the next two years.

Barksdale & State Roads

This MSA's largest employer---**Barksdale AFB**---with 6,609 military personnel and 2,584 civilian employees should stay relatively stable over our forecast period. A \$21 million Communications Squadron complex is at the planning stage and should start construction within 2019-20. Bonds will likely be let soon for a \$90 million road from I-220 into the base. The design build has been done and construction should start in late 2019 or early 2020.

Speaking of roads, over 2019-20 the **state is letting \$245 million for roads** (up from \$182.4 million last year). The biggest project is \$28.1 million to replace the US80 Red River Bridge. In second place is \$26 million in motorist assistance patrols, followed by \$14.2 million for a new alignment of Swan Lake Road. Also on the construction side, Shreveport received a \$24.2 million **Choice Neighborhoods Grant** to upgrade three neighborhoods. Money will be used to construct 486 affordable, mixed-income housing units.

Hopeful about Haynesville

A key variable for folks in this area to watch is the Haynesville Shale rig count. After peaking at 142 rigs in April 2010, the count plummeted to only 15 rigs in June 2016. Since then the rig count has doubled to the 35 range. As the LNG and chemical projects in the southern part of the state come on line will they lust for the nearby gas in the Haynesville? As noted on pages

60-61, Driftwood LNG is proposing to build the Haynesville Global Access Pipeline down to its site in the Lake Charles area. We understand Driftwood has closed the offerings for this pipeline because interest already exceeded the pipeline's capacity. Will more drilling activity be necessary to meet this new demand? We can only hope. It was a bit disturbing when **FTS International** closed its Shreveport facility in August, terminating 192 people. The company said the action was due to the loss of a significant customer in the region.

Lafayette: The Hammering Hasn't Stopped But Hope Lies Ahead

This MSA is located in south-central Louisiana (see Map 1) and is composed of five parishes---Lafayette, St. Martin, Vermillion, Acadia, and Iberia. With the addition of the latter three parishes, **Lafayette is now the third largest MSA in the state** with an estimated 201,100 people employed in 2018.

A key to understanding this region's economy is its geographic location. Located in an oil-rich area and not far from the coast, Lafayette became a prime spot to locate service firms, fabricators, and other companies that do business with **extraction firms** exploring South Louisiana and especially in the Gulf of Mexico. Consequently, like Houma, the Lafayette MSA is closely tied to all aspects of the oil and gas exploration industry.

The MSA derives **6.8% percent of its jobs directly from the exploration industry**, the highest concentration among the state's nine MSAs. The comparable number for Houma is 6.6%, and the statewide average is 1.7 %. Countless other jobs in the MSA are tied to the extraction industry through the multiplier effect.

There are six deviations from this pattern. **Stuller Inc.** is a 1,250-person facility that is the nation's largest jewelry settings manufacturer. **Acadian Ambulance** is another large employer in the area (1,300 employees) whose ties are not all directly related to the extraction industry, although the firm provides air-med helicopter services and offshore rig/pipeline safety training to the industry. This company also monitors over 200,000 alarms in 40 states and monitors businesses and houses via videos, eliminating the need for guards. A third, growing firm is the 505-person **Schumacher Clinical Partners**, which provides ER and hospital medicine doctors to hospitals in 23 states. **LHC**---the nation's second largest home-health companies---employs about 700 people in Lafayette and 31,000 across 26 states.

Fifth, Lafayette has a new and growing **high-tech sector** which we describe in detail in the forecast sector below. Finally, Lafayette is the home of one of the state's larger public universities---the **University of Louisiana at Lafayette**. Until the mid-90s this area also hosted the largest manufacturing employer in the state---Fruit-of-the-Loom---which had a huge facility near St. Martinville. That facility has been shuttered.

Recent History of Lafayette

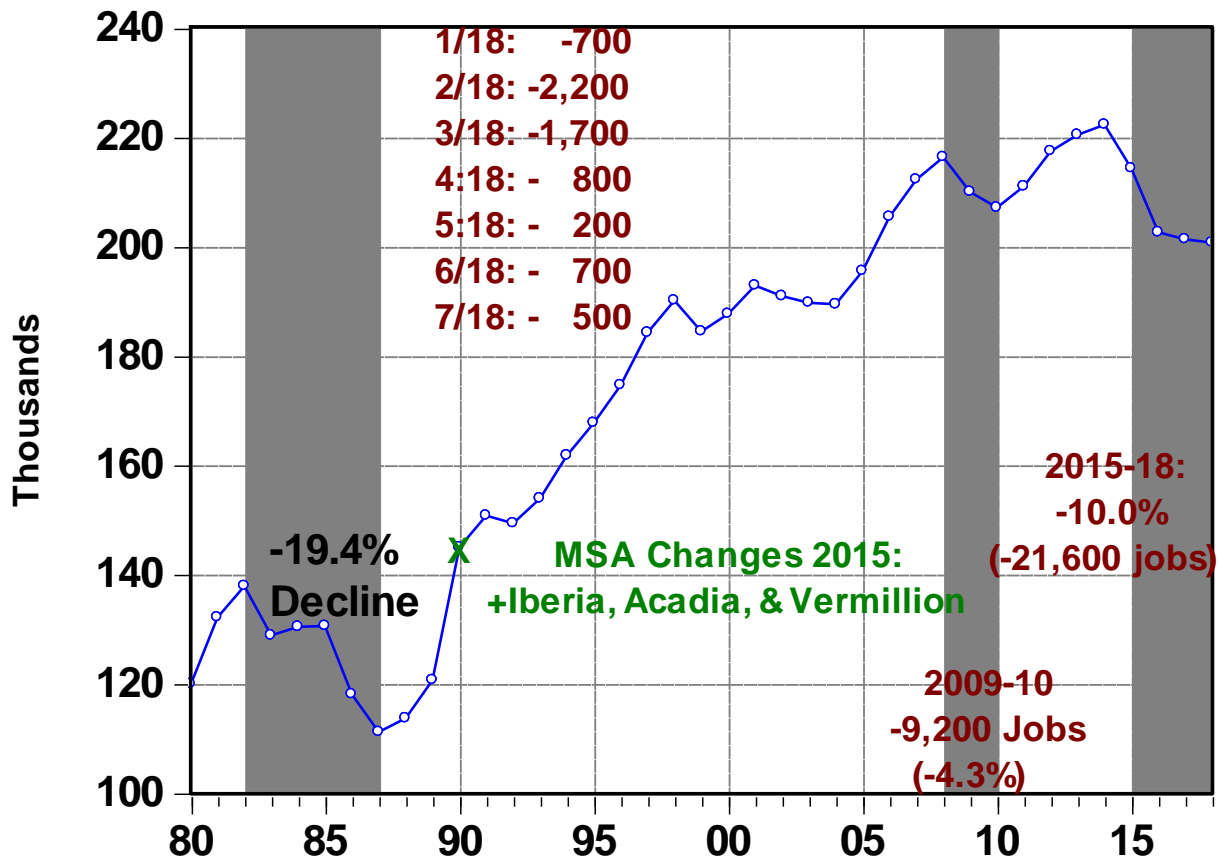
Figure 24 displays the recent employment history in Lafayette and demonstrates vividly the close ties this MSA has to the extraction industry. When oil prices plummeted in the early 80s, so did the Lafayette economy. Remarkably, a fifth of the MSA's jobs disappeared over 1982-87. It was the worst downturn in Lafayette's recorded history. However, unlike similarly

extraction-dependent Houma---which took 10 years to recover its losses from that recession---Lafayette came out of its “V” much quicker.

The key was diversification. In the late 1980s, the previously mentioned **Fruit-of-the-Loom** constructed very large facilities in the area and in a short period of time became the state’s largest manufacturing employer. By 1994, Lafayette had recovered all its lost jobs and began setting new employment records. This phenomenon does not show up clearly in Figure 24, because of the adjustment in the makeup of the MSA in 1990.

Soft gas prices in 1992 set Lafayette back a bit, but like Houma, the hit was nothing like the 1982-87 period. Surging employment at Fruit-of-the-Loom pushed employment up briskly for the next couple of years.

Fig. 24: Lafayette MSA Non-Farm Employment 1980-2018



Then Lafayette entered a “bad news-good news” period. The bad news: As a result of the North American Free Trade Agreement, Fruit-of-the-Loom began a round of massive layoffs. The good news: Layoffs at Fruit-of-the-Loom coincided almost exactly with two important events. One was a jump in oil and gas prices that sent the exploration industry on a hiring binge.

The other was a new entrant that both diversified the economy even more and was labor-intensive to boot---**Stuller Inc.** Stuller hired enough employees that it became the largest jewelry settings manufacturer in the U.S. Lafayette employment expanded right through the Fruit-of-the-Loom layoffs.

The year 1999 was a bad one for Lafayette. Oil prices fell to under \$10 a barrel, and that sent the extraction industry into the layoff mode again. Forty-three hundred jobs disappeared from the MSA (see the decline for 1999 shown in Figure 24).

For the next two years, Lafayette was back in the growth mode, setting new employment records in 2001 when most other MSAs in the state were being depressed by the national recession. Help in this recovery came from two sectors. Several significant distribution centers, including the large **Wal-Mart** distribution center near Opelousas and **Magnolia Distribution Center** in Lafayette, opened during this period. Then in 2001, the MSA attracted the **Cingular Wireless** call center, which hired 1,200 employees.

Unfortunately, Lafayette experienced a big blow in November 2001 when Fruit-of-the-Loom's Martin Mills plant was shuttered, terminating 1,300. By this time, the post 9-11 national recession was also impacting Stuller Inc., which laid off about 175 employees. In 2003, **Devon Energy** transferred 60 employees out of Lafayette, and **Fleming Company**---a wholesaler supplying the troubled K-Mart---closed its distribution center there as well. The combination of these events, coupled with a lackluster response of the extraction industry to high energy prices, kept this MSA in a funk (-2,500 jobs) for three straight years.

The Impact of Katrina & Rita

It is obvious from examining the 2005 and 2006 data points in Figure 22 that something special happened in this MSA in those two years. Non-farm employment spiked upward by 10,800 jobs or 8.2 percent over those two years. What caused this nice rebound in employment in Lafayette?

One factor was **resurgence in the oil patch.** The rig count rose from about 165 to over 201, which meant (1) new exploration jobs, (2) new exploration servicing jobs, and (3) new oilfield-fabrication-associated jobs for the Lafayette area.

Indirect energy effects: But a larger factor by far was the impacts of Hurricanes Katrina and Rita. These two storms impacted the Lafayette area in two broad ways. First, there were the spillover effects of the destruction of the offshore energy infrastructure. Both Katrina and Rita were very destructive to the energy infrastructure in the Gulf of Mexico. A total of 115 offshore platforms were destroyed and another 52 were damaged by the two storms. Underwater pipeline systems were also damaged. Lafayette is the home to several fabricators and oilfield service firms that garnered some of the repair work on these facilities.

Evacuee effects: Secondly, Lafayette became a home to many evacuees after the storms---about 34,336 by one estimate. Evidence from the Census Bureau suggests that Lafayette experienced the same population adjustment as Baton Rouge except on a smaller scale. Census

data indicate that between July 2005 and July 2007, the **Lafayette MSA population increased by 9,033**---a heady 3.7 percent increase in only two years.

2007 to Early 08: \$140 Barrel Oil Pumps Up the Region

Data indicate that the employment growth rate slowed from about 5,400 jobs a year in the previous two years to a slower 4,000 jobs a year over 2007-08. Still, this represented a very healthy growth rate of 2.8 percent a year---second only to Houma among the state's nine MSAs.

This slowdown was partially due to the completion of much of the Gulf of Mexico rebuild effort, but also, **Morton Salt** closed its 197-person facility at Weeks Island in 2007, one of the few bits of negative news coming out of this region. That was somewhat offset by the **Nucomm** call center coming to Lafayette in 2007, adding 500 new jobs.

Growth in 2008 was initially spurred by a very robust oil patch as oil prices reached record levels in the fall of 2008, and natural gas prices were unusually high as well. Also, **Acadian Ambulance** built a \$15 million expansion that led to 300 more jobs.

High Energy Prices and Job Declines in Lafayette

A problem arose near the end of 2008. After peaking at \$132.61 a barrel in September 2008, the price of oil began a rapid, but temporary, slide down to a bottom of \$39.06 in March 2009. Employment in the Lafayette MSA responded as it always does to declining oil prices. The state rig count fell from the 190 level to near 170. The MSA began recording job losses in the latter half of 2008.

But there was another factor in the MSA's employment decline. Beginning in April 2009 oil prices began to rise again and were at a very profitable \$46.72 by May 2009. By August 2009 oil prices were over \$70 a barrel, where they stayed well above that level through mid-2014. Despite these unusually high and very profitable energy prices, the rig count in south Louisiana continued to fall. For example in August 2008, when oil prices nudged \$140 a barrel, the rig count in south Louisiana (land and water) was 56 rigs. It fell to only 30 rigs in August 2009 despite very high oil and natural gas prices. As seen in Figure 24, the Lafayette MSA lost jobs in 2009 and 2010---a total 2-year decline of 4,400 jobs (-3%). We are unaware of any other time in the history of the Lafayette economy when energy prices were this high and the economy actually lost jobs.

We believe there are two factors behind this poor behavior. First, our conversations with decision makers in this field and region indicate that **President Obama's proposed \$36 billion tax** on the extraction industry sent a chill through this sector and pushed down the rig count despite the presence of higher and very profitable oil prices. We gave a detailed analysis of this tax proposal in the 2010 LEO. This tax was proposed in President Obama's FY10 budget, but Congress was so absorbed in the healthcare debate that this legislation did not come up for debate. However, the administration continued to promote it, so the threat to the industry still lingers. Of course, a second factor was the difficulties associated with the **BP oil spill**.

Recovery from the Great Recession: From Unbelievable to Believable Numbers

The Lafayette MSA has had a very healthy recovery from the recession, adding 14,200 jobs (+6.9%) over the four years from 2011-14. It is important to note the fact that **this MSA (1) was the first to set new employment records (in September 2011) after the losses incurred during the Great Recession and (2) had the best recovery record of all nine MSAs over 2010-14.**

2015-18: Ogre of Low Oil Prices Raises Its Ugly Head

Unfortunately, it has been Lafayette's lot to face another down cycle in oil prices. The decline from \$105.71 a barrel in August 2014 to a low of \$27.76 in January, 2016 has had its usual effect on the very oil-dependent Lafayette MSA. Even with oil prices recovering into the \$50 a barrel range, employment losses in the Lafayette MSA continue to mount.

Among the recent casualties was the closure of **Chevron's Shelf Office** (though the firm is maintaining an Emergency Response Center in Lafayette). **Baker Hughes** closed a cement and pumping division in Crowley that employed 200 people at one time. **Blue Sky Innovations**--a firm providing support to helicopters servicing offshore work---shed 58 jobs. At the Port of Iberia, **Dynamic Industries** completed the module for Shell's Appomattox Platform and dropped its workforce from 500 to 350. Then came the big blow in late 2017. **Stone Energy** was acquired by Talos Energy (a private equity firm) and the firm was moved to Houston. The Stone Building in Lafayette is now for sale. No Stone job loss count for the area has been published.

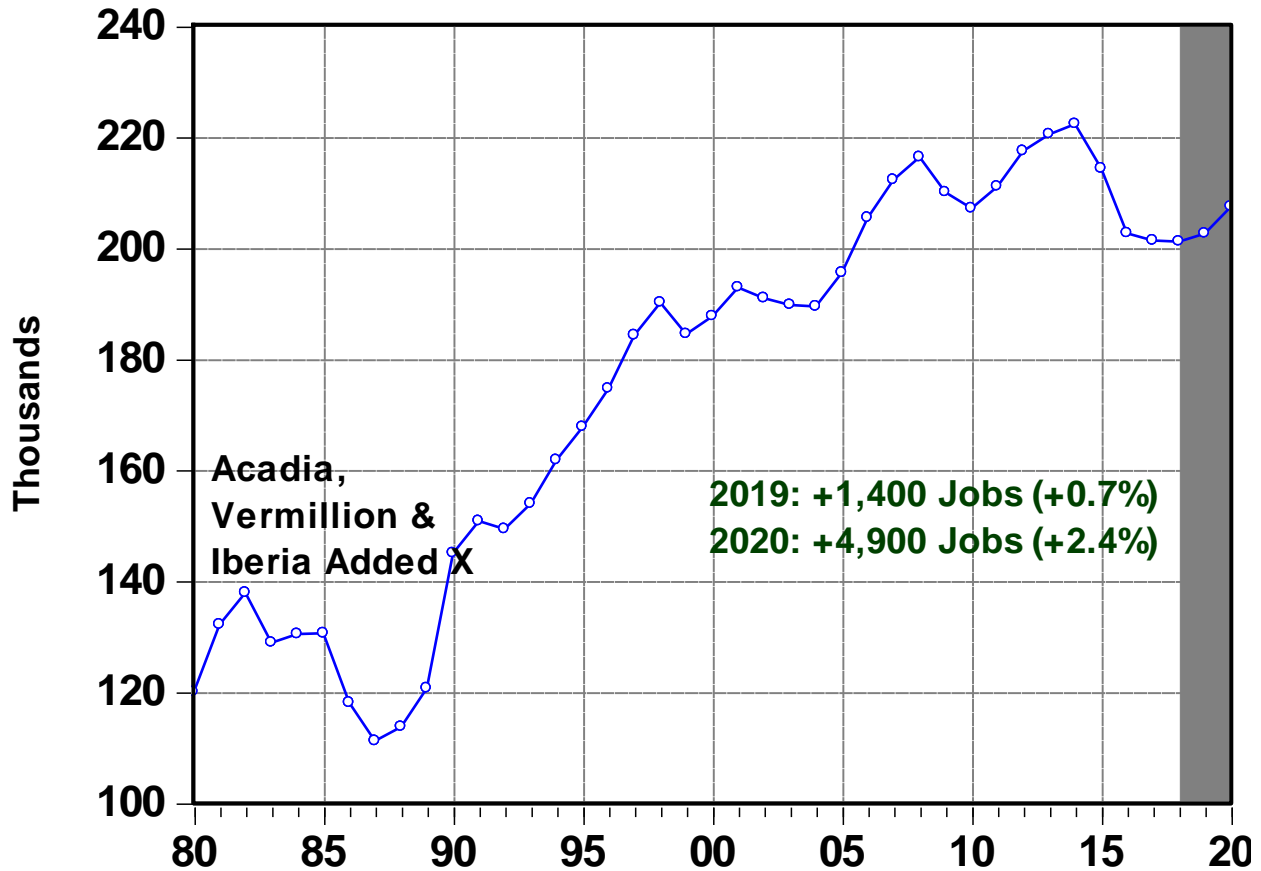
As seen back in Figure 24, **we are estimating the region will be down 21,600 jobs (-10%) over 2015-18** as compared to 2014. By way of reference, during the period labeled the "Great Recession" in the U.S. over 2008-09 the nation's employment fell by 6.1%. The hit to Lafayette is 64% again worse than the Great Recession. Note back in Figure 24 that the decline in the early 80s was actually worse (-19.4%), but Lafayette has still taken one bad lick. One of the biggest hits the region took was the acquisition of **Stone Energy** by Talos Energy and the movement of the company to Houston. The Stone Energy Building is up for sale.

There is at least a glimpse of good news back in Figure 24. Listed in red are the annual-rate employment decline numbers for the first seven months of 2018. After a tough first quarter, the loss rate in Lafayette has declined noticeably. It appears from these numbers that Lafayette is nearing the bottom of the trough of this cycle. Will the bottom be reached in 2018? We turn to that topic next.

Forecast for 2019-20: Will the Gulf Come Back?

Figure 25 shows the track of employment in the Lafayette MSA over 1980-2018 along with our forecasts for 2019-20. **We are projecting the Lafayette economy will turn the corner in 2019---adding 1,400 jobs (+0.7%)---and then move into a stronger year in 2020---adding 4,900 jobs or a healthy 2.4% growth rate.**

Fig. 25: Lafayette MSA Non-Farm Employment Forecast: 2019-2020

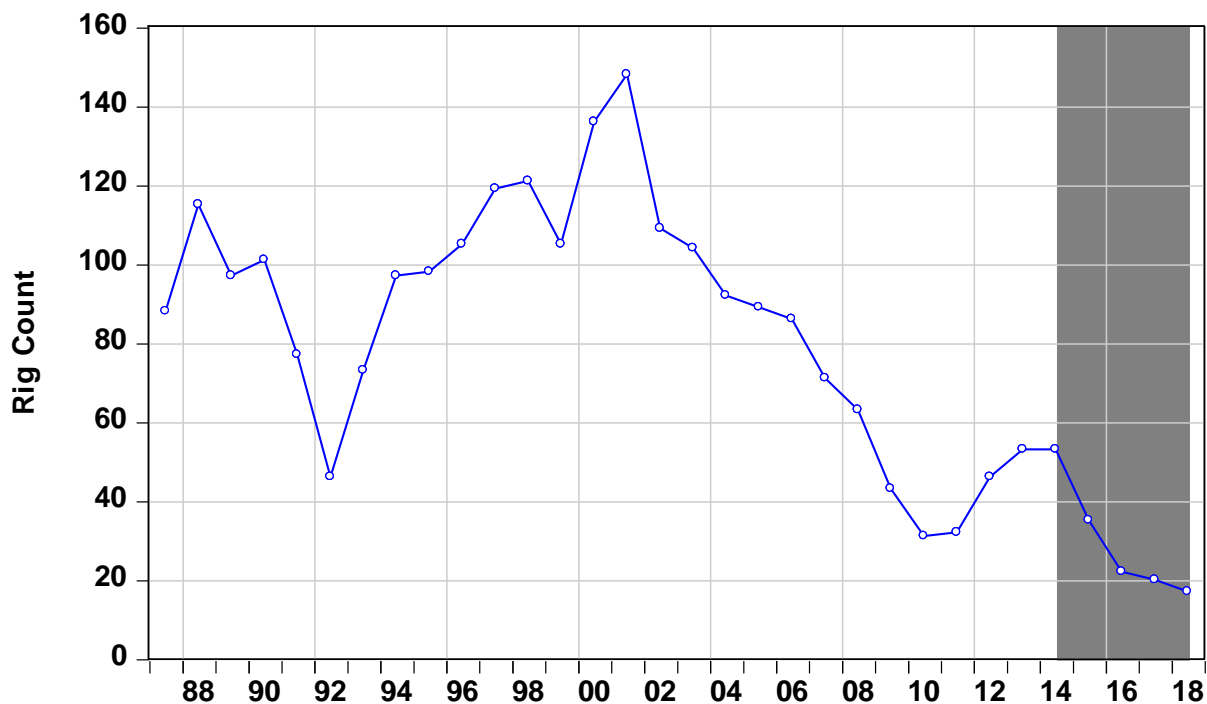


Will the Gulf Come Back? If so, When?

The key to a serious revival in the Lafayette MSA is resurgence in activity in the Gulf of Mexico (GOM). Both the Lafayette and Houma economies are strongly linked to activity in the GOM and recent difficulties in these two economies are largely defined by the picture in Figure 26. After the oil price collapse in late 2014, the rig count in the GOM dropped from 53 to only 17 by mid-year 2018.

There is a clear message in Figure 26, and that is that activity in the GOM does respond significantly to movements in oil prices. This is important, because back on pages 6-10 we made the case that oil prices should rise from \$65 a barrel this year to \$80 in 2020. What offshore investors need to get comfortable about returning to the Gulf is not only higher prices but also a sense that prices will be stable-to-moving-upward. Prices have now been rising for three years and we are projecting another two years of rising prices.

Fig. 26: Rig Count - Gulf of Mexico



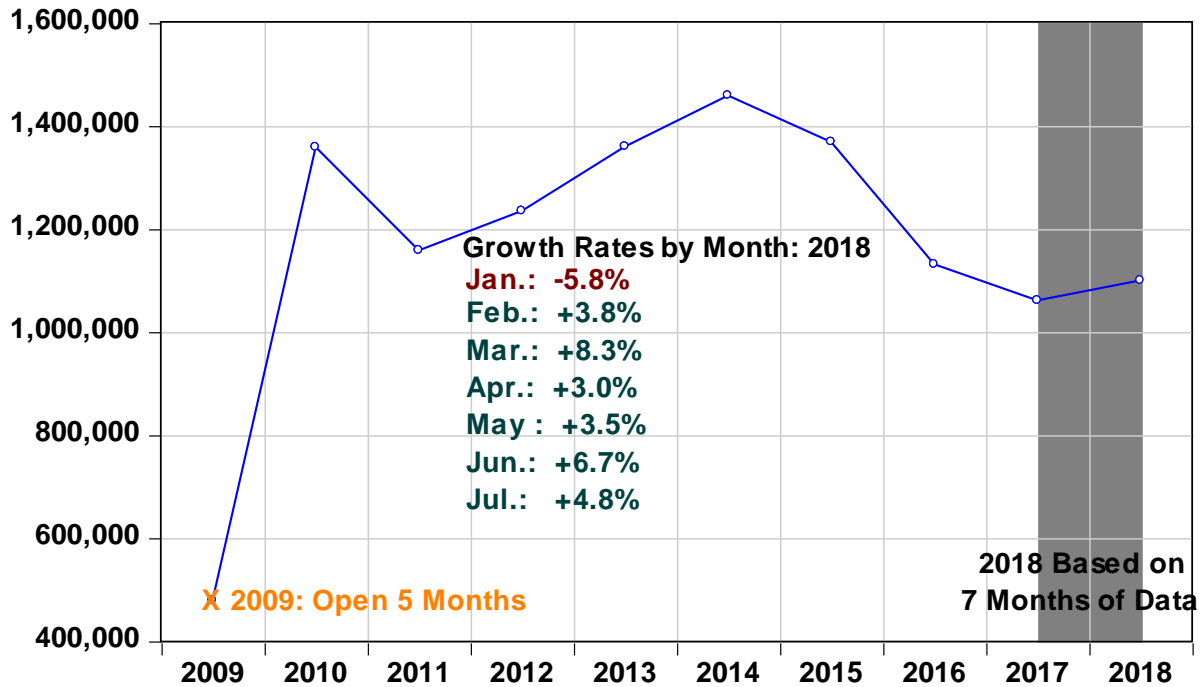
Source: www.BHGE.com. Data are for Texas, Louisiana and Alabama offshore. 2018 based on 8 months of data

This pattern has already created evidence of some positive movement in the Gulf. The **GOM lease sale** this August generated \$178 million in bids, up 39% from the \$128 million bid earlier in the years. This latest sale covering leases in the western, eastern, and central Gulf regions is a far cry from the \$851 million bid just in the Central Gulf back in 2014, but at least it is moving in the right direction.

Another positive indicator is the traffic count on the **LA1 Expressway** leading into Port Fourchon, the main port feeding materials and supplies to operations in the Gulf (see Figure 27 below). After declining for three straight years, the vehicle count has made a meaningful turn upwards in 2018. The data point for 2018 is based on data for the first seven months of 2018, which generates a 3.7% bump upward. However, a quick perusal of the monthly numbers in the insert indicates that in June (+6.7%) and July (4.8%) growth was well in excess of our baseline of 3.7%. This is a very encouraging signal.

There are indications from individual energy firms in the Lafayette region with whom we made contact that conditions are changing in the MSA. For example, fifteen percent growth is expected at **Offshore Engineering Services** which employs about 200 in the MSA. OES runs casing pipe in wells and operates tugs to bring casing and other supplies to wells.

Fig. 27: Vehicle Traffic LA1 Expressway: 2009-2018



Source: Louisiana Department of Transportation & Development

Action at the Port of Iberia

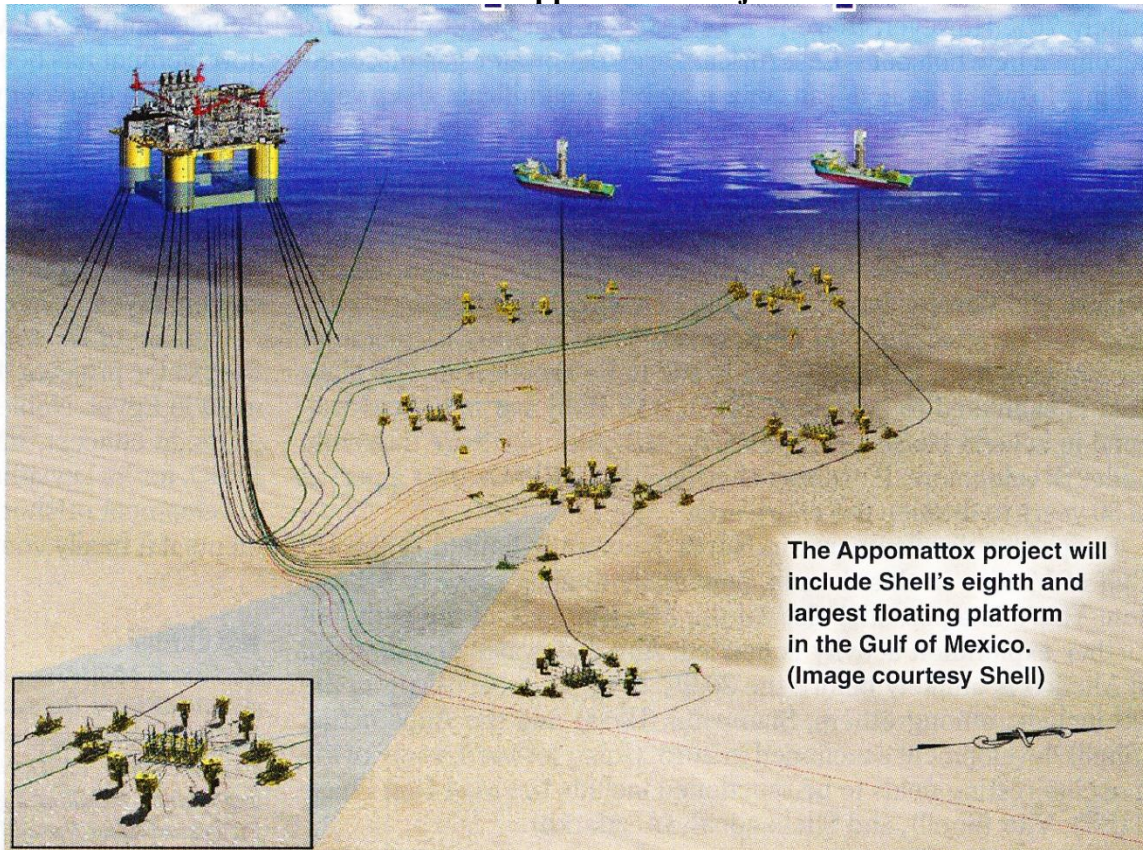
Firms at the Port of Iberia are more active and growing in the higher oil price environment and many are working on pieces of Shell’s Appomattox project---the company’s largest facility in the Gulf (see Figure 28). **Bayou Coatings** has completed \$14 million in flow lines for Shell’s Appomattox platforms and is beginning coating work for Shell’s Vito project. A stable customer of Shell, this firm’s 300-person workforce should be solid over 2019-20. A dealer for Caterpillar, **Louisiana Machinery** is at 68 workers now and is expected to expand due to work on rebuilding and then testing engines for use in extension of gas lines. **Omega Fabricators**---owned by an Alaskan Indian Tribe---is loading out pieces for the Appomattox project and is making moves to diversify more out of the oil and gas business.

Good news for **Dynamic Industries** at the port is the company is bringing in materials for Shell’s “Franklin Project 75” modules on the Ohio River in Pennsylvania. This should keep Dynamic’s workforce of 300-350 busy through our forecast period. **Red Guard** has located at the port. This company builds explosion proof facilities for offshore operations and industrial plants. Plans are to add 50-150 jobs within a year. **Crosby Energy Services** leased a large building at the port to manufacture ASME certified pressure vessels targeted at the offshore industry. This firm just completed connections for the first subsea pipeline between the U.S. and Mexico. Crosby plans to hire 60 people within its first six months of operation.

At the nearby Acadian Airport, **Halliburton** has finished its \$68 million facility and is starting another \$5 million building to house completion tools for the Appomattox Project, a

completion project Shell recently awarded to the firm. Halliburton also landed another 2-year contract for completion tools for Chevron. The company is at 500 employees and stable for now. Also nearby, **Aggreko** is expanding its rental facilities. Now at 256 employees, the company will be adding another 30 jobs at \$65,000 plus benefits.

Figure 28
Shell's Appomattox Project



All of these indicators are consistent with our forecast that a reviving energy sector will make 2018 a “trough” year and 2019 will be the beginnings of a very solid recovery for Lafayette.

Lafayette's Non-Energy Big Five Look Good

Lafayette is very fortunate to have five large firms that have diversified the economy away from just the energy sector, and all five are doing quite well. The largest employment-wise is **Acadian Ambulance** with 1,300 employees in Lafayette. Acadian is adding a third state to its service area that will boost its administrative and billing staff about 4% over 2019-20. The firm does have an oil and gas safety management section that will probably grow about 5% as the GOM comes back. **Stuller Inc.**, the nation's top manufacturer of jewelry settings, is now at 1,250 employees and adding jobs at about 2% per year. The company has released 13 catalogues over the past two years as a new marketing tool.

One of the hottest companies in Lafayette is **LHC**, now the nation's second largest provider of home health services after an \$850 million acquisition of Almost Family. The firm now has 780 locations in 36 states with about \$1.3 billion in annual revenue. The new acquisition will add 500 jobs to the company's 700-person workforce in Lafayette. Over the next five years another 400 jobs are projected. The firm will build and expand into a lot next door to its present location.

A fairly recent addition at ULL's Technology Park is **CGI**. This information technology company is running ahead of its hiring schedule with 400 jobs by the end of this year and another 400 by the end of 2020. Salaries are at \$55,000 and the company is committed to Louisiana through 2027. Finally, **Schumacher Clinical Partners**---a provider of ER and hospitalist services to hospitals---has just finished a significant merger that brought its Lafayette employment to 505. Absent another merger, this number is unlikely to change over 2019-20. Schumacher has 7,500 providers in 30 states and 400 hospitals.

We should mention a relatively new addition to the Lafayette skyline. The innovative firm **Waitr** opened in May 2017. Waitr provides online and mobile software solutions and partners with local restaurants to provide home delivery. At last report, the company had 100 software/tech jobs in Lafayette and 100 drivers. There are 4,000 employees company-wide and growing. Recently purchased for \$305 million by the owner of the Houston Rockets, we will be watching to see if this impacts headquarters operations in Lafayette. Initial reports were it would have no impact.

Public Roads & Airports

Lafayette's economy will also get a shot in the arm from a \$90 million expansion of the **Lafayette Regional Airport**. This expansion will double the size of the terminal to 100,000 square feet. Demolition of the existing terminal will start in 2018-H2 and design of the new facility was about 60% complete this August. Frontier Airlines has entered the Lafayette market adding flights to Denver and Orlando. On a more negative note, the **Bell Helicopter** facility at the airport was supposed to create 115 jobs, but is now closing that site. Under a cooperative endeavor agreement with the State, a \$26.3 million dollar facility was built for the company. The state is now pursuing at least a \$16 million repayment from Bell.

Drivers in this area are contending with a much-needed widening of I-10. Over the next two years another \$234.1 million in **new state road lettings** will occur. The largest of the projects to come is \$101.8 million to widen I-10 from LA 328 to LA 347. About \$5.5 million has been allocated for cable barriers along I-10.

Houma: Starting the Long Road Back

The Houma MSA is composed of two parishes---Lafourche and Terrebonne---and this is one of the MSAs whose composition did not change when the Census Bureau generated new MSA designations. Located in the south-central coastal area of the state (see Map 1), Houma is

highly dependent on the oil and gas extraction industry in the Gulf and the spillover sectors---machinery, fabrication, shipbuilding, water-borne transportation---that feed off of extraction activities.

In 2018, 6.6% of the MSA's employment was directly in oil and gas extraction, nearly four times the statewide average of 1.7%. The key word in that last sentence was "directly". There are many fabricators and shipbuilders in the MSA that cater almost exclusively to the extraction industry. Chief among these is **Edison Chouest** a firm that owns some 250 supply boats servicing the offshore industry and large shipyards that manufacture and service these ships. **Bollinger Shipyards** is another huge shipbuilding player in the region, though the firm focuses its efforts in the Houma area on a significant Coast Guard contract. **Thomas-Sea** is a 350-person shipyard presently diversifying into non-oil and gas work. Many of these ships operate out of **Port Fourchon**, basically a small city on the Gulf, which services about 90 percent of the offshore platforms and drill ships in the Gulf of Mexico.

Numerous fabricators work out of this region, one of the larger being **Gulf Island Fabricators** (950 employees). Other significant fabricators are **Danos**, with 100 workers at its headquarters in Houma but 2,200 company-wide, and **Chett Morrison** (320 employees). All the fabricators are busy trying to diversify into non-oil and gas related work.

Houma's Recent History

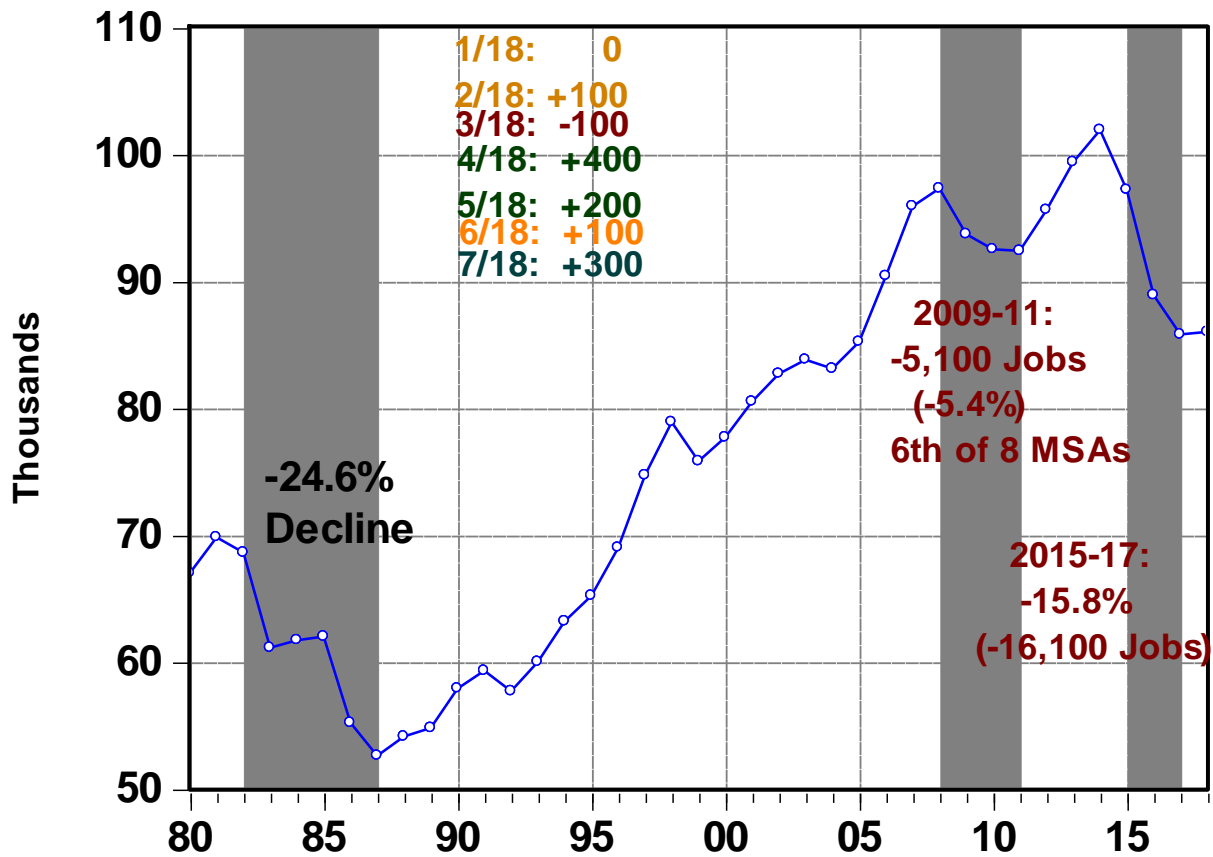
Figure 29 tracks the non-farm employment history of this MSA over 1980-2018. What strikes an observer most in this graph is the unusually wild fluctuations in the region's employment over time. Because of its heavy dependency on the extraction industry (the second heaviest of any MSA, behind Lafayette), wild fluctuations in energy prices over the past 38 years have dramatically impacted Houma. The influence of energy prices can be seen in the big "V" and the little "Vs" shown in this graph.

The BOOM years: The first, and biggest, "V" occurred after one of the greatest bull runs for any MSA in Louisiana history. From 1975-81, this MSA enjoyed a remarkable period of growth in response to oil prices that peaked at \$37.50 a barrel for Louisiana crude in 1981. That would be about \$113.86 a barrel in today's prices.

The BUST years: A big "V"---covering the period from 1981-91---followed this boom period. The marked decline in oil and gas prices between 1982 and 87 sent this region into a free-fall. Some 17,200 jobs or nearly a quarter of the workforce vanished. Car dealerships, restaurants, banks, and any retail establishment suffered through a terrible period as the MSA shed a quarter of its jobs. Houma was the worst hit MSA in the state by this recession. It took a decade for Houma to recover all the jobs lost during this dramatic downturn.

The long road back: When oil and gas prices recovered somewhat from 1987-91, this metro area rose up the other side of the "V." Exploration activity in Louisiana has been moving southward across the state since the 1950s, indeed, heading further and further offshore in the Gulf. Houma's geographic location on the coast made it the ideal site from which to launch offshore exploration.

**Fig. 29: Houma MSA Non-Farm Employment
1980-2018**



The little “Vs”: Still, every time energy prices got soft, Houma’s employment declined. The MSA lost 1,500 jobs in 1992 when natural gas prices declined as a result of two straight unusually warm winters, and it lost 3,100 jobs in 1999 due to low oil prices. Interestingly, Houma went through the post-911 U.S. recession unscathed. In fact, the MSA picked up 5,000 new jobs over 2001-02 when most of the other regions of the state were in absolute decline.

Note in Figure 29 that the “Vs” have been getting more and more shallow. This is primarily because the extraction industry is running much leaner now and has learned not to respond too strongly to rising energy prices. The firms that lend money to extraction firms have learned the same lesson.

Still it is important to note in Figure 29 that **there has always been a left side to the “V.”** That is, after energy prices have remained high for an extended period, the extraction industry has always responded by returning to the oil patch to take advantage of the higher prices. At least that was true until 2004. Response to the run up in oil and natural gas prices at that time was more tepid than expected in 2004, with little change in the rig count. In fact, Houma was the worst performing MSA in Louisiana in that year.

Legacy lawsuit effects: We believe this poor response resulted from industry fears generated by “legacy” cases, in particular the Corbello case. In the time since the Corbello case, the industry has been lobbying hard for tort reforms to correct their perception of abuses arising out of the Corbello case. A degree of success has been achieved. One of the factors that made the Corbello case so onerous to the industry was that much of the settlement was based on allegations that drilling had impaired the ground water supplies. The great majority of the Corbello award was for this damage, and the plaintiff could simply pocket the award and was not required to use the award to correct the problem. **Act 1166** required that if damage was alleged to have occurred to a water aquifer, the award must be used to correct the problem. That eliminated a lot of the incentive for suing extraction companies.

Secondly, in the **Terrebonne Parish School Board v Castex** case the School Board was suing to require the oil company to backfill canals that were dredged years ago. This was especially troubling to the extraction companies because there are thousands of miles of these canals across the southern part of the state and the cost of filling them would be astronomical. The Louisiana Supreme Court over-ruled this judgment and said firms cannot be required to backfill a canal unless it was specified in the initial contract to drill. It was also determined that when permission is given to drill, there will always be a “footprint” that will be left that is reasonable to that activity. If the footprint is excessive and not reasonable to that activity, the landowner has a right to sue. Despite the reforms and legislation passed in the regular session of the State Legislature during 2006, several legacy lawsuits are still active in the state.

The Katrina & Rita Effects

Like Lafayette, Houma received a nice injection of activity as a result of the two hurricanes. **Over the three years of 2005-07, Houma gained a whopping 12,400 jobs, a remarkable increase of 14.9 percent or 5 percent per year.** It was the fastest growing area of the state. In fact, growth in Houma was so strong that in 2007, Houma moved past Lake Charles to the fifth largest MSA in the state. Effects of the recent oil price drop, coupled with an industrial boom in Lake Charles, has moved the latter MSA back above Houma again.

The source of this employment reversal is much the same as occurred in Lafayette. First, there was finally a **response in the oil patch to higher oil and natural gas prices.** As an MSA heavily laden with exploration companies, oil service firms, and shipbuilders for the offshore sector, Houma benefited from this resurgence. Too, this MSA is home to many fabricating and repair/maintenance firms that benefited from the **rebuild effort of offshore energy infrastructure** that was damaged by Katrina and Rita.

Finally, Houma also benefited somewhat from an **influx of evacuees.** Houma, at 58 miles, is the closest MSA to New Orleans (Baton Rouge is 79 miles from New Orleans). Based on FEMA assistance applications, we estimated that this MSA’s population ballooned upward by 62,810 people in the first two weeks after Katrina---second only to Baton Rouge in attracting evacuees.

However, like Baton Rouge, Houma experienced the same population adjustment as did Baton Rouge and Lafayette. **Census Bureau data show that between July 2005 and July**

2007, the Houma MSA population increased by 3,449 people or about 1.7 percent. This is slightly more than the MSA tends to grow anyway. Thus, there was an exodus of evacuees from the MSA, but a number remained there as new residents, giving a bit of an extra boost to the retailers, real estate firms, and service providers in the area.

2008-09: High Energy Prices & Job Losses??

The experience in the Houma MSA over these two years pretty much mimics that of the Lafayette MSA. 2008 started out strongly as oil prices climbed to a high of \$132.61 a barrel in September 2008. Then the price of oil began a rapid slide down to a bottom of \$39.06 in March 2009.

Beginning in April 2009 oil prices began to rise again and were at a very profitable \$46.72 by May 2009. Oil prices continued to rise through 2013 and the first half of 2014 as seen back in Figure 2.

However, despite these very profitable energy prices, the Houma MSA was the first MSA in the state to begin losing jobs during the Great Recession---recording its first job loss in August 2008. Over 2009-10 the MSA lost 4,800 jobs---a 4.9 percent decline---ranking its performance 6th among the eight MSAs in the state. **It is historically unprecedented for this MSA to be losing jobs in the face of relatively high energy prices.** We believe the reason for this poor performance mirrors a similar weak performance in nearby Lafayette: the chilling effect of President Obama's proposed new taxes on the extraction industry. In addition to the extraction firms cutting back, Gulf Island Fabricators and nearby J. Ray McDermott laid off workers in 2009, and Offshore Specialty Fabricators released 90 workers that year.

2011: Oops - Forgot about BP

In our 30 years of producing the Louisiana Economic Outlook, few things have surprised us more than the performance of the Houma economy in 2011. In the LEO released in the fall of 2010---six months after the oil spill and in the middle of the moratorium on drilling---we projected significant job losses for the area. Eleven deepwater drill ships left the Gulf, and activity at Port Fourchon dropped 35-40% below pre-spill levels. Normally, that would translate into a major decline in employment in the MSA.

What we failed to take into account was the massive amount of money that BP would pump into the area's economy for the cleanup effort and to pay out on claims for losses due to the spill. While we do not have a good handle on the cleanup spending (which we know was quite large), we do have relatively good information on the amount BP paid to businesses and individuals who claimed losses due to the spill.

As of August 2011, **BP had paid out \$132.1 million in claims in Terrebonne Parish and \$81 million in claims in Lafourche Parish.** As a reference point, that is about 3.1% of Terrebonne Parish personal income and about 2.1% of personal income in Lafourche Parish. The combination of BP's cleanup expenditures and its payouts to claimants was sufficient

enough to overcome slowdowns in exploration and cause a very modest 100-job loss in 2011 instead of the 1,500-job loss we predicted in the 2011-12 LEO.

2012-14: Strong Bounce Back

As seen back in Figure 29, the years 2012-2014 were very good years for the Houma MSA. The MSA added 8,700 jobs over those three years. That is an average growth rate of 3.1% a year, an enviable achievement compared to most MSA's in the country. Its growth rate in 2014 was 2.1%---tying Lafayette as the third highest among Louisiana's nine MSAs. Only the exceptionally booming Lake Charles and Baton Rouge MSAs performed better. Note in Figure 29 that **(1) in 2013, the Houma MSA blew past its previous employment peak of 2008 and (2) in 2014 the MSA crossed the 100,000 employment mark for the first time in its history.**

The comeback in the Gulf is largely responsible for this surge. Not only did exploration activity return and surpass its previous peak, but also Gulf Island added several hundred workers and Chouest's new shipyard---LaShip---opened and grew to 1,200 employees. The major port servicing the offshore industry, Port Fourchon, turned from retrenching to bustling. It was a very good three years indeed.

2015-18: Sliding Down another "V"

It is a tough situation when an economy is tied so closely to a commodity and that commodity's price fluctuates in a most unpredictable way. Such is the lot of the Houma MSA. The oil price decline after 2014 sent this economy into another slide down the "V" and this has been a bad one. In the last three years, Houma has lost 15,800 jobs, a 16.1% decline. **This is more than 2 ½ times worse than what U.S. employment declined during the Great Recession over 2008-09.**

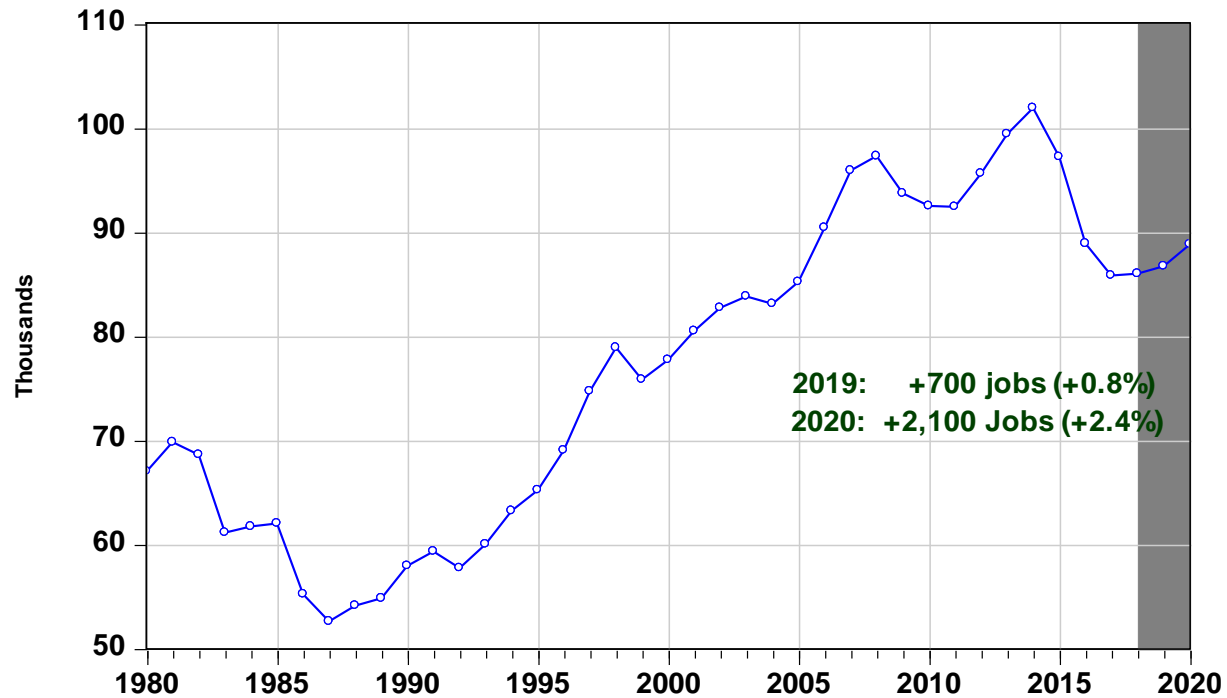
The hammer fell on a number of companies in the region. **Edison Chouest** dropped employment at LaShip from over 1,000 down to 500. One hundred of the company's 250 ships are stacked and its mariners are working about half the time as before the collapse. At **Chett Morrison** employment declined from 515 to 320. **Baker Hughes** closed its 50-person wireline facility, and **Hercules Offshore** laid off 50. **National Oilwell Varco** closed its facility in Houma at a cost of 80 jobs, **CCHI Aviation** in Galliano closed its facility laying off 74 pilots, mechanics and support staff, and **Offshore Specialty Fabricators** began layoffs in May 2016 that cost 67 jobs. The bloodbath was obviously not confined to the direct oil and exploration companies but also to tangentially connected companies as well.

The good news is that it appears Houma has reached the bottom of the "trough" in this recession. As noted in the monthly growth inserts in Figure 29, employment has been up every month in 2018 in the Houma MSA since February. The numbers obviously do not show great growth, but at least they are up. We expect the MSA to add about 200 jobs in 2018, an increase of 0.2%. It looks like the bloodletting is over.

Forecasts for 2019-20: Moving Up the Other Side of the “V”

Historically, Houma has always “moved up the other side of the V” after a tough downturn, and we do not expect this round to be any different. **We are forecasting Houma will experience modest growth of 700 jobs (+0.8%) in 2019 followed by a more robust 2,100 jobs (+2.4%) in 2020 as a resurgent Gulf lights a fire under this economy.** See Figure 30.

Fig. 30: Houma MSA Employment Forecast 2019-20



Recovery Powered by the GOM

As was the case for Lafayette, we expect Houma’s climb out of the abyss to be powered by a revival in the Gulf of Mexico. Readers are referred back to our analysis on pages 80-81 for indicators that evidence of renewed activity is already there in the recent lease sales and vehicle counts on the LA1 Expressway. Though the rig count in the Gulf is still declining (see Figure 26), we expect that to reverse in the face of potentially five years of rising oil prices that will crest at about \$80 a barrel in 2020.

A major operator in the oilfield is **Danos** which is headquartered in Houma. With 100 employees at its office in Houma and 2,200 company-wide (90% in the GOM and 10% in West Texas), Danos is looking to a future that involves boosting its workforce by 5-10% over 2019-2020. The company does a lot of maintenance, repair, painting, refurbishment work. Much of their work on the shelf is being driven by regulations, but some of the expected new business is in new activity in the Gulf. Indeed, Danos recently was awarded a contract with Shell for mechanical and maintenance work on that company’s Auger, Ram Powell, Enchilada, and Salsa Platforms.

Fabricators and the “Tieback” Phenomenon

The Houma MSA is home to some of the larger fabricators in the state, and these firms are anxiously watching the burgeoning **tieback phenomenon** in the Gulf. Historically when a field was discovered exploration companies would invest millions to billions of dollars on a massive tension leg platform (TLP) or spar that would float above the field to harvest the oil in the field. Many fabricators in this region did very well building these TLPs or component parts of them.

When the oil price collapse occurred in late 2014, exploration firms began to investigate ways to radically lower costs. One technique discovered was the tieback. For example, when Shell was ready to develop its Kaikais Field the firm eschewed spending multi-millions to build a TLP over the field. Instead, as seen in Figure 31, Shell runs pipeline tiebacks to one of their existing TLPs---the Ursa TLP. Interestingly, when the first combined western/central/eastern Gulf lease sale took place early in 2018, 85 of the 105 leases sold were immediately contiguous to existing leased acreage, and another 17 were within two miles of existing leases. This appears to be clear evidence that exploration companies want to keep the less expensive tieback option available as they develop their fields.

This TLP-to-tieback shift is clearly not good for the fabrication business in this region. The good news is that tiebacks are not always possible for exploration companies. When a firm drills in a field there are three basic possible outcomes: (1) a dry hole, (2) a middle producer, or (3) a grand slam. **Chevron** is presently evaluating its Ballymore Field which is near the company’s Blind Faith TLP. If Ballymore turns out to be a “middle” producer, then its production may be tied back to Blind faith for harvesting. However, if Ballymore turns out to be a “grand slam”, Blind Faith will not have the capacity to handle Ballymore’s production, so a new TLP or spar will be required. Chevron has three other fields under evaluation---Whale, Tigris, and Anchor---and it appears that all three will require new TLPs. This is especially true of the Tigris and Anchor fields which are not near enough to existing platforms to do a tieback.

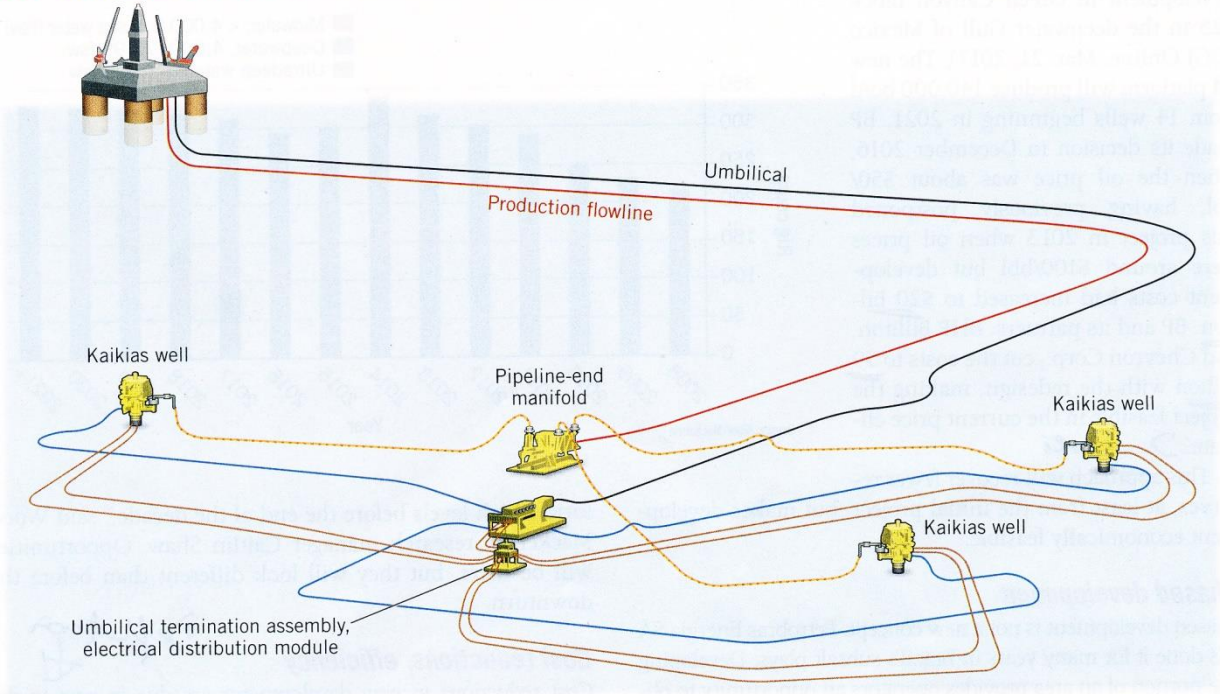
One serious barrier to getting the fabrication work on new TLPs for the Gulf is the serious **competitive advantage that Korean fabrication yards enjoy** at the present. It is for this reason that many fabricators in this region are diversifying into non-exploration venues for new work. One of the larger fabricators in the area is **Gulf Island** with 950 employees. This company has a new, varied customer base. GI has fabricated offshore wind jackets for Rhode Island and has bid for more with that state and Massachusetts. The company is starting work on a Regional Research Class Vessel (RRCV) for Oregon State University, with a contract for a second awarded for 2019 and a third subject to Congressional approval. A \$63.6 million contract was awarded to GI to build the first of potentially seven new Navy salvage, towing and rescue ships. The company is also into downstream fabricating for the chemical and LNG boom underway in South Louisiana, having just delivered four modules to CB&I.

Figure 31
Illustration of a Subsea Tieback: Kaikais to Ursa

HNOLGY

GULF OF MEXICO KAIKIAS DEVELOPMENT CONCEPT

FIG. 3



Source: Oil & Gas Journal

Chett Morrison (CM) is another company that is changing its focus under difficult market conditions. Now at 320 employees, CM is changing its focus from short-term to longer-term projects. Specifically, the company is after EPIC work---engineering, procurement, installation, and commissioning. CM just finished an EPIC project for Trinidad, where the company built and laid pipe and commissioned a project. Tiebacks are actually good for this firm and its pipe laying, subsea work, and tiebacks.

Shipyards Are Struggling

One key industry in the Houma region that has really struggled since the oil price collapse is its shipyards, especially **Edison Chouest** (EC). EC both builds and operates ships that service the offshore oil and gas industry. While there are several new production platforms entering the Gulf, the rig count (see Figure 26 page 81) has dropped significantly. Drilling operations require much more service boat activity than production platforms. Thus, of Edison Chouest's fleet of 250 ships, at least 100 are tied up. Its LaShip Shipyard is down to 400 people (from over 1,000) and will likely drop more. Employment at its North American Shipyard has declined from about 500 to near 200. Its North American Yard at Port Fourchon is a maintenance yard and is still open with about 300 workers.

EC, like other facilities in this region, has been diversifying its portfolio of customers. It has 14 tug boats, four barges and 12 platform supply boats under construction. Four of the barges are for work in the Corpus Christi area and several others are destined for use by exploration companies in Alaska.

Thoma-Sea Marine in Houma now has 350 employees and expects that number to be relatively stable over 2019-20. Like EC, this company has survived the oil and gas downturn by diversifying into other markets. Thoma-Sea will begin refurbishment work this year on a Pacific Coast fishing trawler, and the company just landed a multi-million contract with Rolls Royce to build a 328-foot fishing vessel. Repair work for the Coast Guard and on other tugs and barges also keeps this workforce busy.

We are aware of no significant changes at **Bollinger Shipyard**. This Lockport facility is in the midst of a 58-boat contract with the Coast Guard to build its Fast Response Cutter. The 29th boat in this series, the 154-foot USCGC Forrest Rednour, was delivered to the Coast Guard this past June. This contract should keep Bollinger's 800-person workforce busy through 2024.

Port Fourchon: Activity Picking Up

An impressive list of projects that we described in last year's LEO are still underway or at the planning stage. Development of **Slip D**---a \$90 million project---is nearing the end of its dredging stage. The Port is conducting a study for Army Corps is still about six months away from completing its study of the Port's desire to develop the southern section of the Port (**Fourchon Island**) into a deep draft, deepwater repair and refurbishment yard. This would require Belle Pass to be dredged to 50 feet, then the area that services Slips A-D would need to be dredged to 30 feet from 27 feet.

Perhaps the most closely watched project on the Port's horizon is **Energy World LNG**, an \$888 million LNG export facility. LNG from this site would be exported to the company's own power plants in the Caribbean. This plant would be sited on 150 acres on the west side of Belle Pass. The company is in the very early stages of the FERC approval process, so construction is unlikely to start on this project until late in our forecast period, if that early. Once constructed, 150 permanent jobs would be created at the facility.

Oceaneering---a subsea service company---and **Omni Energy Services Corporation**---a tank cleaning company---have both developed portions of the sites they have leased and are in operation. **Workstrings International**, in the superior Energy family of companies, is a pipe firm that is a new tenant at the Port.

Readers are referred back to Figure 27 on page 82 which shows the vehicle traffic on the **LA1 Expressway** coming into the Port. There has been a reversal in the recent decline rate, and vehicle traffic has shown a clear upward move. That is good news for this Port after a couple of very trying years.

Bump Upward in State Road Lettings

The Houma MSA is one of the few MSAs in the state that should experience an upward bump in its **state road lettings** over 2019-20. Data from the Louisiana DOTD document \$77.8 million in new lettings (up from \$54.4 million in last year's LEO). The largest project is \$31.6 million for the Company Canal Bridge replacement at LA 24 and LA 316. The second largest project is for a \$4.6 million Acadian Road roundabout.

Monroe MSA: Will CenturyLink Prevent New Peak?

Located in the northeast corner of the state (see Map 1), the Monroe MSA is comprised of two parishes---Ouachita and Union. Monroe is the third smallest MSA in the state (ahead of Alexandria and Hammond), with an estimated 78,800 non-farm jobs in 2018.

Until the turn of the century, this MSA had the highest concentration of employment in the broad category called "finance/insurance/real estate" (FIRE) of any MSA in the state. Partly that was because of the 1,800-person **JPMorgan Chase Mortgage** facility, the service part (400 employees) of which was spun off to **Wing Span Portfolio**, a company that subsequently folded. Another big contributor to this ranking was the 1,200-person **State Farm** claims center. The latter closed its doors in 2005, and Chase absorbed the **Bank One** documents depository, so FIRE's influence in this MSA's economy has been reduced somewhat.

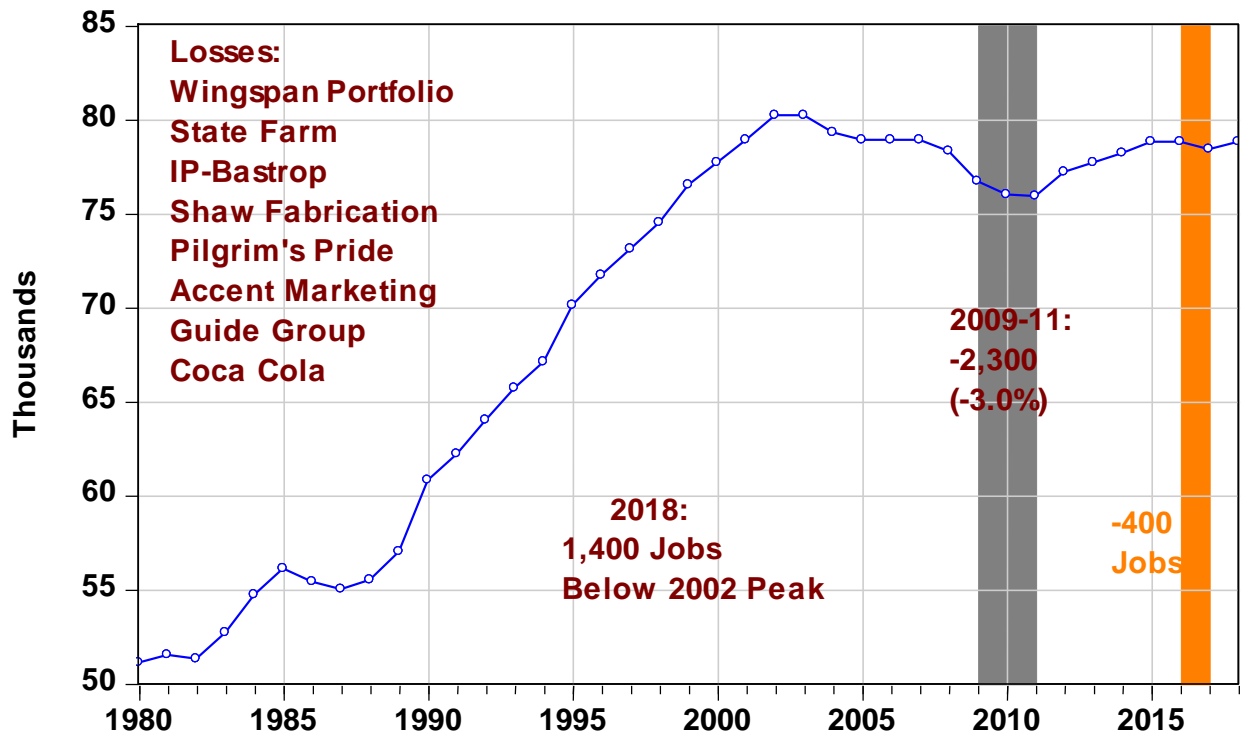
Other large employers in the region include **Graphic Packaging**, a paper/carton plant that employs about 800 people at its three sites. **CenturyLink**---one of Louisiana's Fortune 500 Companies---also plays a key role in this MSA's economy with its workforce now approaching 2,300. **IBM** has a 300-person operation near CenturyLink. **Delphi Lighting** was a major player until it closed its 800-person headlight manufacturing facility in June 2007. **Vantage Health Plan** is a newer addition to the region and has grown to employ 1,300 people. The **University of Louisiana Monroe** is also located in this MSA and has about 300 faculty members.

Monroe Employment History

Figure 32 traces Monroe's employment history from 1980 to 2018. Like Baton Rouge, this MSA was only lightly tapped by the deep recession of 1982-87. Monroe only lost jobs for two years---1986 and 1987---and even then the decline was only 2 percent as compared to the 9 percent statewide job loss. The reason for the light hit is that Monroe has almost no jobs in extraction or chemicals, which were the two industries that suffered the most during that recession.

By 1989, Monroe had retrieved all those lost jobs and was setting new employment records. Between 1987 and 2002, this region enjoyed a 14-year stretch of growth, with five of those years registering 2.5 percent plus annual growth rates. The increase in 1990 is distorted by the addition of Union Parish to the MSA's numbers.

**Fig. 32: Monroe MSA Non Farm Employment
1980-2018**



The years from 2003 through 2011 were not good ones for the Monroe MSA as evident in Figure 32. Remarkably, **Monroe did not have a growth year during this entire 9-year period.** The decline was not horrendous, but it was steady. After going flat in 2003, the MSA lost 4,300 jobs over 2003-11, a 5.4 % decline. The three years from 2005-07 were also flat. During the "Great Recession" the region lost 2,300 jobs, a decline of 3.0 percent---tied with Lafayette as the third best performance in the state.

Consider the body blows this region took during those nine years (see insert to Figure 32):

- The biggest hits came with the initial layoffs at, and then total closure of, the **State Farm Insurance** claim office, costing the area 1,100+ jobs.
- **Guide Corporation** reduced the workforce at its headlight plant, and then totally shuttered the facility in 2007, at a cost of 650 jobs with an annual payroll of \$53 million.
- **Graphic Packaging** also engaged in workforce reductions.
- **Holsum Bakery** closed its facility in Monroe, terminating 50 employees in the process.
- In 2008, **International Paper** closed its 550-person paper mill in nearby Bastrop.

- In 2009, **Shaw** closed a pipe fabrication plant that had 202 employees and an \$11 million annual payroll.
- In 2008, **Pilgrim's Pride** closed a chicken processing plant in Union Parish that cost the region an estimated 1,500 jobs.
- In early 2010, **Accent Marketing** lost a major client and dismissed 340 workers at its call center.
- **Coca Cola** closed its bottling plant, dropping 85 people.

That is a remarkable list of 9 significant closures during those nine years. It is a wonder that the job loss was not much greater.

2012: An End to the Blood-Letting

As seen back in Figure 32, Monroe actually experienced net job growth in 2012 for the first time in nine years, and it was a healthy boost of 1,000 jobs. There were no more major layoff announcements in that year, and the region received a shot in the arm from a number of sources.

- **CenturyLink** continued to move like a freight train in its acquisition efforts. In 2014, the company made a commitment to keep its headquarters in Monroe through 2020 and added to its Monroe workforce.
- **Foster Farms** reopened the shuttered Pilgrim's Pride plant and is now back up to 1,200 employees in Union Parish.
- **Gardner Denver Thomas** relocated operations in Wisconsin to the Monroe area in 2010, generating 67 jobs initially and now employs 300.
- As a sign of a longer run commitment to the region, **Graphic Packaging** brought in new equipment from a mill in Colorado to increase productivity of its workforce, which it plans to keep stable for now.
- **Angus Chemical** invested about \$100 million in its plant in Sterlington, including a \$10.8 million investment in 2011 in a new electrical substation and general electrical system, which helped the firm remain productive enough to retain its 174 jobs.

Fortunately, that growth pattern in 2012 continued through 2014. The MSA averaged 800 new jobs a year over 2012-14.

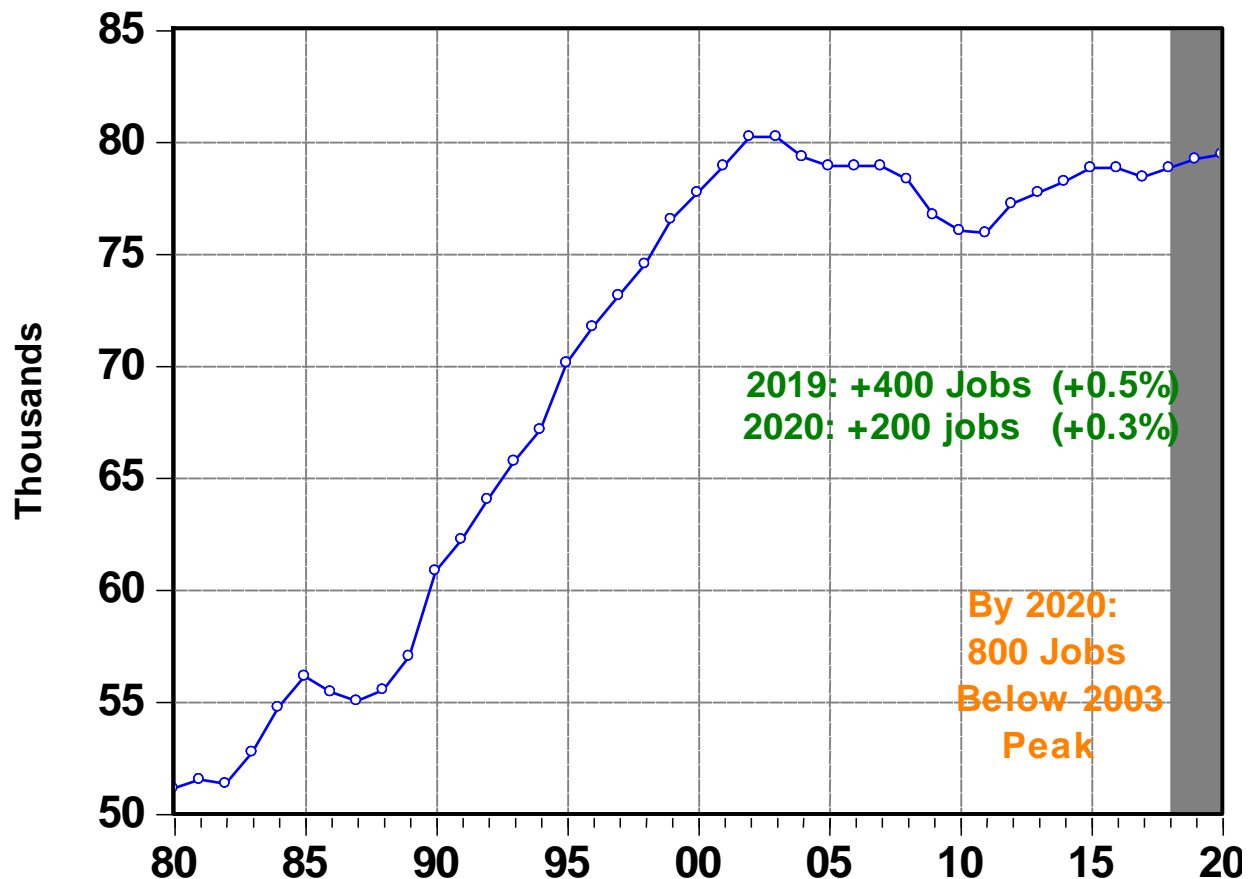
2015-18: A Period of No Growth

As can be seen in Figure 32, the Monroe MSA has been essentially flat since 2015. The loss of 400 jobs at **Wingspan Portfolio Advisors** did not help matters, and that loss was followed by a shedding of 412 jobs at **CenturyLink** in the latter part of 2017. During this period, the region was virtually devoid of new entrants into its economy, an experience quite at variance with what was going on at its sister MSAs in the southern part of the state.

Forecasts for 2019-20: Nervousness over CenturyLink

Early Workforce Commission data suggest that the MSA will add jobs this year---about 400 in total (+0.5%). **We project this growth rate will continue into 2019, with the region adding another 400 jobs (see Figure 33).**

Fig. 33: Monroe MSA Wage & Salary Employment Forecast: 2019-20



When it comes to 2020, we are as nervous as everyone else in Monroe about the future of CenturyLink. Acquisition of Level 3 by CenturyLink has created some interesting dynamics. The headquarters of Level 3 was in Denver. Jeff Storey of Level 3 will be taking over the helm

of CenturyLink with the retirement of the mastermind who built this company, Glen Post. CenturyLink has a commitment with the state to keep its headquarters in Monroe through 2020. The headquarters in Monroe has already shed over 400 headquarter jobs post-merger. Are more on the horizon? We think so, and **have slowed this region's growth to only 200 jobs in 2020 (+0.2%)** because of these concerns. It is important to note that CenturyLink is hiring 150 new people for its outbound sales center for small business---a move that is helping the 2018 numbers for Monroe shift into green.

Stable-to-Modest Growth from Other Big Players

While there is underlying nervousness about the community's largest employer, that is not the case for the other major companies in the Monroe region. The large, 1,800-person **Chase Mortgage Processing Center** expects employment levels to remain stable and has a program with local community colleges to generate candidates for its open positions. **Vantage Health** and its Affinity Health Group (the physician practice portion of the company) is now at 1,300 employees, and projects stable to modest growth over 2019-20 as it moves into the southern part of Louisiana and into other states.

IBM has an applications development and innovations center across from CenturyLink in an 88-acre mixed use development. Now at 300 employees, the company expects to add another 100 jobs by 2019. In a nice capital expansion of \$274 million, **Graphics Packaging** upgraded its paper mill (\$274 million) and constructed a new folding carton plant. The latter will open this year, adding 93 jobs to a workforce that is already at 800. **Gardner Denver** consolidated a California plant at its present location in early 2017 and now has stabilized its employment at about 300.

Steel Fabricators, which provides engineering and steel fabrication services to a wide range of clients, is now at 120 employees and expects to add 40 by the end of our forecast period. The Monroe community was elated to learn recently that **Drax Biomass** (a maker of wood pellets to be used as fuel in electric power plants) is moving its headquarters from Atlanta to Monroe. Thirty new jobs will accompany this move.

While most of the manufacturing news in this region is good, the one exception seems to be **Angus Chemical**, which was purchased recently by an investment group. We understand costs are being squeezed there and that employment has declined by about 390 workers.

It is encouraging that a prominent businessman in this region---**James Davidson**---is financing the demolition of the old Delphi Lighting facility. This will be an ideal site for the region to market to a potential new company for the region.

State Road Letting Down

Over 2019-20, the state has announced **\$34.9 million in new state road lettings** for this MSA. This figure is down significantly (as it has been in most MSAs in the state) from the \$605 million we reported in last year's LEO. Two of the bigger projects listed are (1) \$5.6 million for an I-20/US 80 overpass replacement and (2) \$5 million for an LA 134 intersection realignment.

Note back in Figure 33 that if our forecasts are close to the mark, at the end of 2020 Monroe will still be about 800 jobs below the peak it achieved in 2003. Hopefully, circumstances at CenturyLink over this 2-year period will prove us very wrong.

Alexandria: Any Chance of Austin Chalk Rescue?

Alexandria is the second smallest of Louisiana's nine MSAs with about 62,000 non-farm employees in 2018. This MSA is comprised of two parishes---Rapides and Grant. Alexandria derives the lowest percentage of its employment from the "basic" sectors---mining and manufacturing---of all the MSAs in the state except Hammond. Located in the central part of Louisiana (see Map 1), it has typically served as the retail/services center for the north/central part of the state.

Alexandria also has the second highest percentage of employment in the **government sector** (20%) of all the MSAs as well---even larger than Baton Rouge (17.1%), which is the state capital and home to two large state universities. Among the significant state agencies in the area was the **Huey P. Long Medical Center**, the 400-person charity hospital for this region, which was taken over by two of the private hospitals in the region. **Pinecrest Support and Services Center** provides care for the mentally disabled and employs about 1,300 people. **Central State Hospital** for the mentally ill has about 300 workers at the present time. Nearby **Fort Polk** is the largest military installation in the state. While not actually located in the Alexandria MSA, this huge base has a noticeable impact on this MSA's economy.

Procter & Gamble has a significant 1,200-person operation in this MSA, and **Union Tank Car** with just over 340 employees is located at England Airpark. The utility company **Cleco**, with 1,225 employees, is also a major force in this MSA's economy, and **Roy O. Martin** employs about 850 at various wood processing sites a couple of miles outside of Rapides Parish. **Crest Industries**---which is the umbrella firm for DisTran, CNR, Beta Engineering and Mid State Supply---makes steel poles and substations for electric power generation and employs about 710.

Alexandria's Recent Employment History

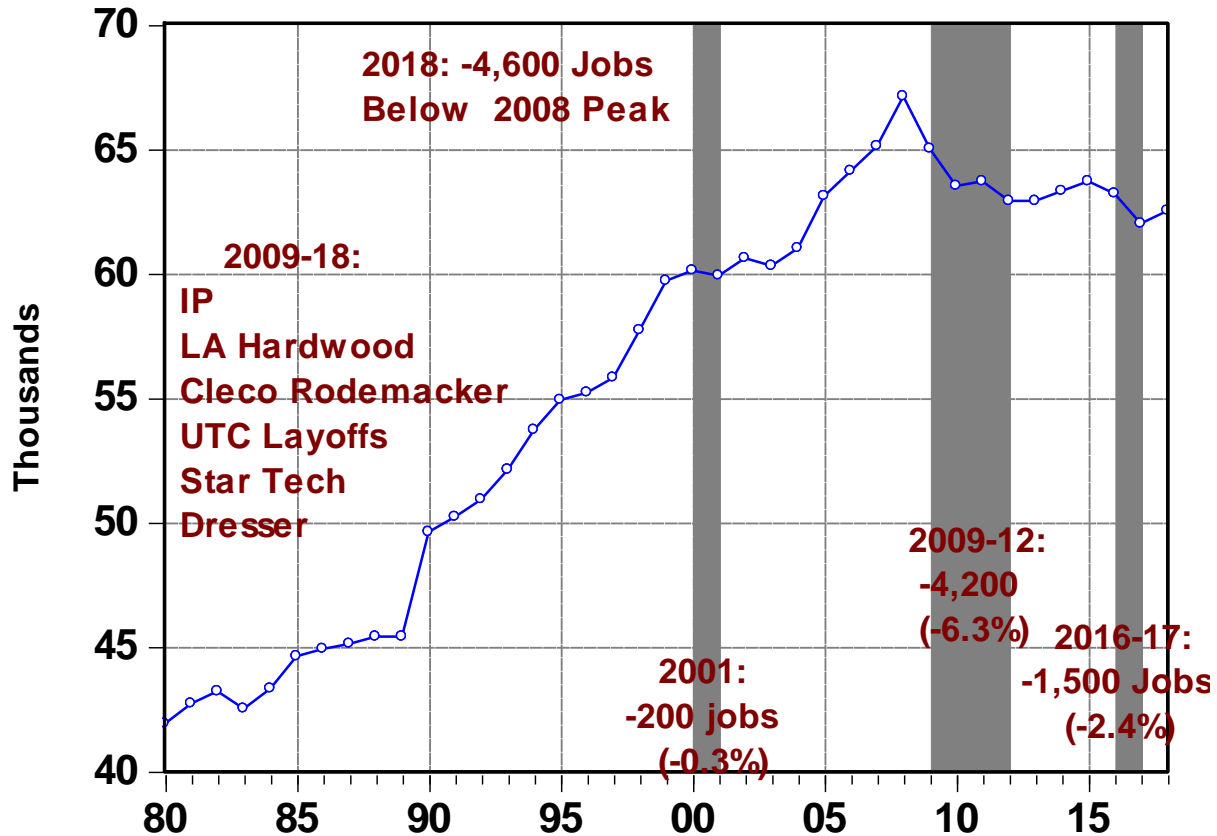
Alexandria's employment history is illustrated in Figure 34. Five key points will be noticed by the careful reader when viewing this figure. First, note that there was a slight bump upwards in 1990. The Department of Labor revised the employment statistics only back to that year to take into account the addition of Grant Parish to this MSA.

Secondly, note that this MSA enjoyed an **almost recession-free history** until 2001. Except for a mild decline in 1982, its employment track had basically been a line moving constantly upward for the last two decades of the 20th century.

Even the post-9/11 national recession in 2001 only mildly impacted the Alexandria MSA, causing a meager loss of only 200 jobs (-0.3 percent). This means the Alexandria MSA was the second-least impacted of all the state's nine MSAs---not a surprising finding given the lower

manufacturing base and the government-orientation of the region. (Hammond was the least impacted.)

Fig. 34: Alexandria MSA Non-Farm Employment 1980-2018



Note thirdly that there is a **slight kink upward in the graph starting in 1992**. Two factors contributed to this nice boost in Alexandria's growth rate. The first was a seemingly negative event--the closure of England Air Force Base. Civic and governmental leaders turned this economic lemon into lemonade by gaining control of the base assets and turning it into an industrial park/retirement village. **England Industrial Airpark** is now almost totally reoccupied. Several businesses have moved to the site, and the regional airport has been relocated there. A new, 150-person **Immigration and Customs Transfer** facility was opened at the Airpark in the summer of 2014 and serves as a domestic transportation hub for moving detainees.

Too, during this period **I-49 was being constructed** through the heart of the city, adding an unusual injection of construction jobs to the economy. There was a slight slowdown in 1996-97 when one of England's newest and largest tenants---J.B. Hunt Trucking---shut down their operation there.

2005-08: Great Growth Years

A fourth lesson in Figure 34 is that the recovery from the 2001 recession was initially lackluster at best. Employment was basically flat from 2002 through 2004. However, as seen in Figure 34 the next four years were very good ones for this MSA. Employment jumped by 6,100 or a strong 2.5 percent annually. This was one of the best performances in the state over that 4-year time frame.

During this rapid expansion phase there was (1) a doubling of the size of the federal prison at Pollock, (2) significant capital expenditures at England Airpark, (3) \$132 million on the construction phase of Union Tank Car (UTC), (4) UTC began a hiring process that resulted in 670 workers initially at its new plant, (5) the huge \$1 billion+ **Cleco Rodemacher** plant was under construction at the time, creating about 1,700 construction jobs, and (6) a new \$60 million **MARTCO** plant was constructed just outside the southern part of the MSA.

On the outer edges of the MSA, there was a \$100 million addition to the **Paragon Casino** in nearby Avoyelles Parish, and a large amount of construction spending took place at **Fort Polk**. While these two projects are outside of the MSA's borders, they created extra earnings which were often spent in Alexandria's retail and service establishments. Offsetting all this good news was the closure of **Parta Systems**, a 110-person pharmaceutical parts manufacturing plant.

2009-13: A Pounding from the Great Recession & State Government

The fifth lesson from Figure 34 is the almost continuous drop in employment over the four years from 2009-13. During that period, **this MSA lost 4,200 jobs---a 6.3% decline.**

Great Recession Effects: The Great Recession was partly the culprit. Alexandria's employment took quite a hit over 2009-10, losing 3,600 jobs or a 5.4 percent decline. Only Lake Charles at -6.3% had a worse record during the Great Recession.

There were several factors behind this drop. The attraction of a large, high-paying, durable goods manufacturer like **Union Tank Car** is great for an area. However, when the national economy goes south, durable goods manufacturers get hit the hardest. After reaching a peak employment of 670 in early 2008, orders for UTC tank cars dropped so much that the firm reduced its employment to 270. Demand for new railcars was down as always happens when you have a recession as bad as the Great Recession. For example, in 2006 about 60,000 rail cars were sitting idle; by spring 2009 this number was up to 540,000.

Secondly, the region's lumber industry came under attack due to the weak national housing market. Specifically, **Louisiana Hardwood** in Lemoyen halted its second shift in 2009, and **International Paper** closed its container board plant in late 2009, terminating 230 people. Thirdly, the huge \$1 billion+ **Cleco Rodemacher** plant construction project was finished in 2009, resulting in the loss of those 1,700 construction jobs. On a lesser scale, **Dresser Industries** began moving from a manufacturing orientation towards assembly, and reduced its workforce by 75 in early 2010. Finally, **Star-Tech** lost a major customer and dismissed 300 people.

2010-18: Languishing

Alexandria did not pop back from the Great Recession as is clear from an examination of Figure 34. Since 2010, the region's economy has been either flat or declining (2016-17) before enjoying a mild 500-job recovery in 2018. This occurred despite the fact that the **Jena Indian Tribe** opened a 46,000 square foot, class II casino in February 2014 that employs 300 people.

A key culprit in this languishing performance was government. We mentioned in the introduction to this MSA that this region has a higher percentage of employment in the government sector than any other MSA in the state. More often than not that lends an extra measure of stability to a region, but not when state and local governments are having budgetary problems. **Since 2010, state government employment in the MSA has steadily declined by a total of 1,200 jobs and local government employment has been essentially flat.** That is large enough alone to put a serious drag on the MSA's economy.

State government was not the only problem. The decline in the last two years was prodded along by private sector players as well. **Union Tank Car** announced a workforce reduction of 244 because a primary customer left its fleet, though now both business and employment at UTC are in an expansion mode. **GE-Dresser** finally closed its facility in the area, costing the MSA 289 jobs.

On a more positive note, **Cleco** helped lead the way to positive job growth in 2018 with the instigation of its \$130 million "Start" technology project which brought in 100 new high-wage IT workers to Alexandria. "Start" was far from enough to offset the negative hits listed above. By the end of 2018 **Alexandria's employment will still be 4,600 jobs below the peak last achieved in 2008.**

Forecasts for 2019-20: Can the Austin Chalk help?

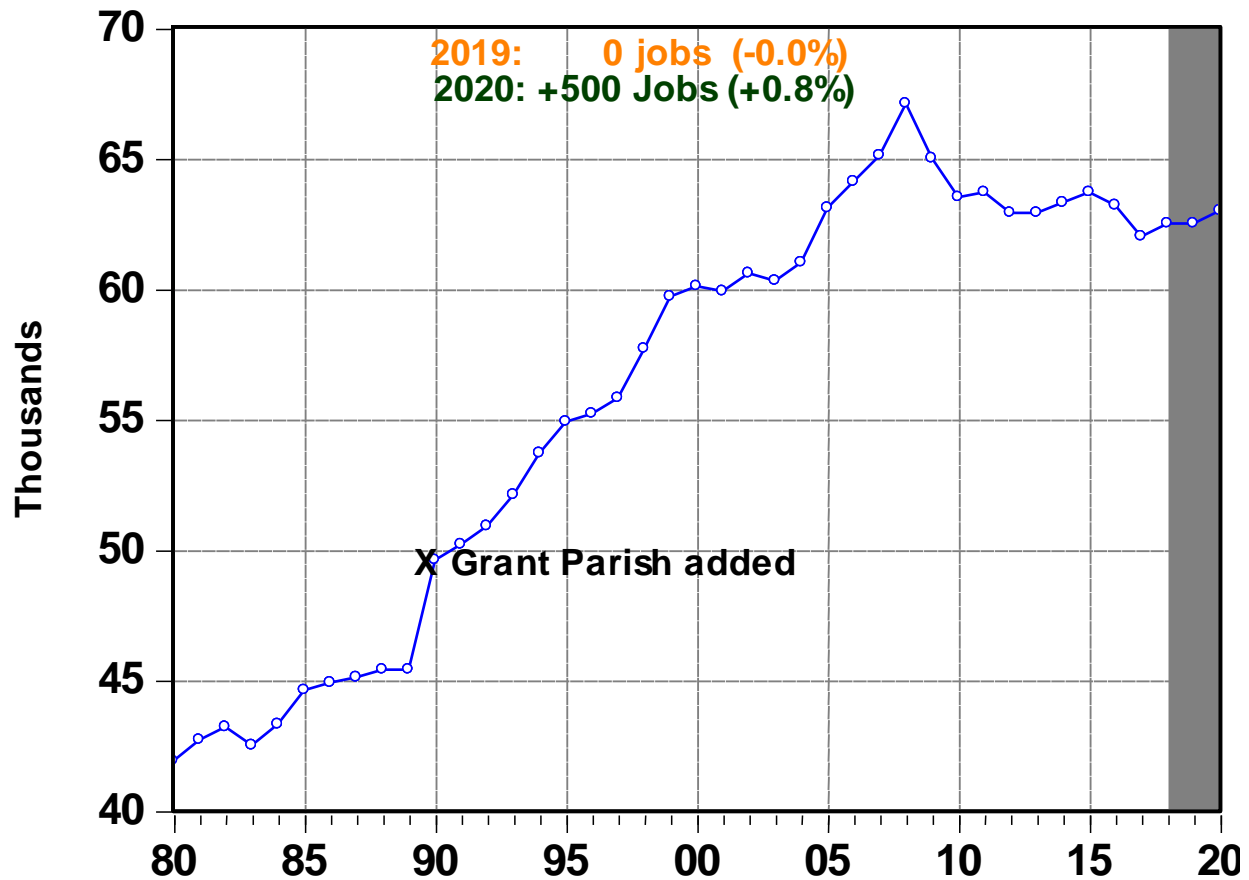
This MSA has some large firms whose employment forms a solid base for the community. Our conversations with these companies suggest they will maintain their stable base, but not generate really significant growth over our forecast period. **We are estimating that next year employment in the Alexandria MSA will be flat, because of the ending of the "Start" initiative at Cleco that will cost the region about 100 jobs. Modest growth of 500 jobs is forecast for 2020 in keeping with recent growth years for Alexandria** (see Figure 35). These numbers could improve noticeably if the region gets a bump from the Austin Chalk, as we will discuss below.

The Base Remains Solid

The good news for this region is that its economic base appears to be in good shape and unlikely to face significant layoffs over 2019-20. A mainstay of the community---**Cleco**---has 1,225 employees, which is a number that is not expected to change over the next two years. The exception to that rule is the 100 or so IT people hired to handle the company's "Start" program which is scheduled to be completed in 2019-II. Cleco announced early in 2018 intentions to pay \$1 billion for five NRG power plants that serve nine power cooperatives throughout the state.

The five power stations include Big Cajun in Jarreau, Big Cajun II in New Roads, Bayou Cove in Jennings, Sterlington in Sterlington, and Cottonwood in Deweyville, Texas. The sale is to close at the end of 2018. It is not clear if more employment at Cleco's headquarters in Pineville is in the works.

Fig. 35: Alexandria MSA Non-Farm Employment Forecast: 2019-20



Proctor & Gamble (P&G) continues to maintain its workforce of 500 P&G employees and 700 contractors. The company has filed an application for an ITEP for a \$40.5 million investment that would create three new jobs. **Plastipak Packaging**, a firm that provides plastic containers to P&G, has a \$15 million expansion underway that should be completed by year's end. The firm has about 350 employees. **Crest Companies**---the umbrella organization for Dis-Tran, CNR, Beta Engineering, and Mid State Supply---is heavily into the manufacture of steel poles for the transmission market. Now at 710 employees, Crest would like to add 26-30 more welders, but is finding it very difficult to secure qualified candidates.

The increased pace of the economy, combined with a growing need for railcars to service Louisiana and Texas' booming chemical industry, has boosted business at **Union Tank Car (UTC)**. Employment at this facility had declined into the mid-200s but is now up to 340. This

figure is expected to be stable to slightly rising over 2019-20. This MSA's economy is positively impacted by two **Roy O. Martin** plants that are only a couple of miles outside of the Rapides Parish border. The plywood plant at Chopin, just over the border in Natchitoches Parish, is at 680 and will expand to about 700 by next year. Martin's facility in Oakdale, about 1 ½ miles south of Rapides Parish in Allen Parish, set a new record in shipments in August of this year. The 170 jobs at that plant should remain stable over the next two years.

We have discussed in previous LEOs the development of the **Cool Planet** project at the Alexandria Port. Cool Planet has invested \$2.5-\$3 million in a project to make CoolTerra, a bio char made from wood that helps farm land retain water and strengthen roots. Initial tests suggest application of CoolTerra could increase productivity across all crops by as much as 15%. Cool Planet estimates the market for this product to be in the \$2 billion range. The firm has only five employees now as it is marketing its product.

The Public Side: Housing Authority, Road Lettings, & England

New state and federal monies will be injected into this region's economy over 2019-20. The region's **Housing Authority** has been notified of the awarding of a \$67 million grant to improve low-income housing in the area. This funding will enable the Authority to renovate and update 580+ housing units. The Louisiana DOTD expects \$35.2 million in **new state road lettings** over the next two years. This figure is actually down from the \$48 million we reported in last year's LEO. The two largest projects listed by DOTD were (1) \$3.6 million on a US 71 overlay, and (2) \$3.1 million on Horseshoe Drive improvements.

Over the next two years the region will be positively impacted by over \$65 million in 27 capital projects at **England Airpark**. The top projects are: (1) \$30.3 million on a noise mitigation program, (2) \$8.5 million on a runway safety project, (3) a \$9.8 million runway project, and (4) \$4.2 million on a north airport emergency access project. Also, the old IP site has been purchased by a private party and is being renamed the **Beaver Creek Industrial Park**---an excellent showcase for potential clients for the region.

Could the Austin Chalk Help?

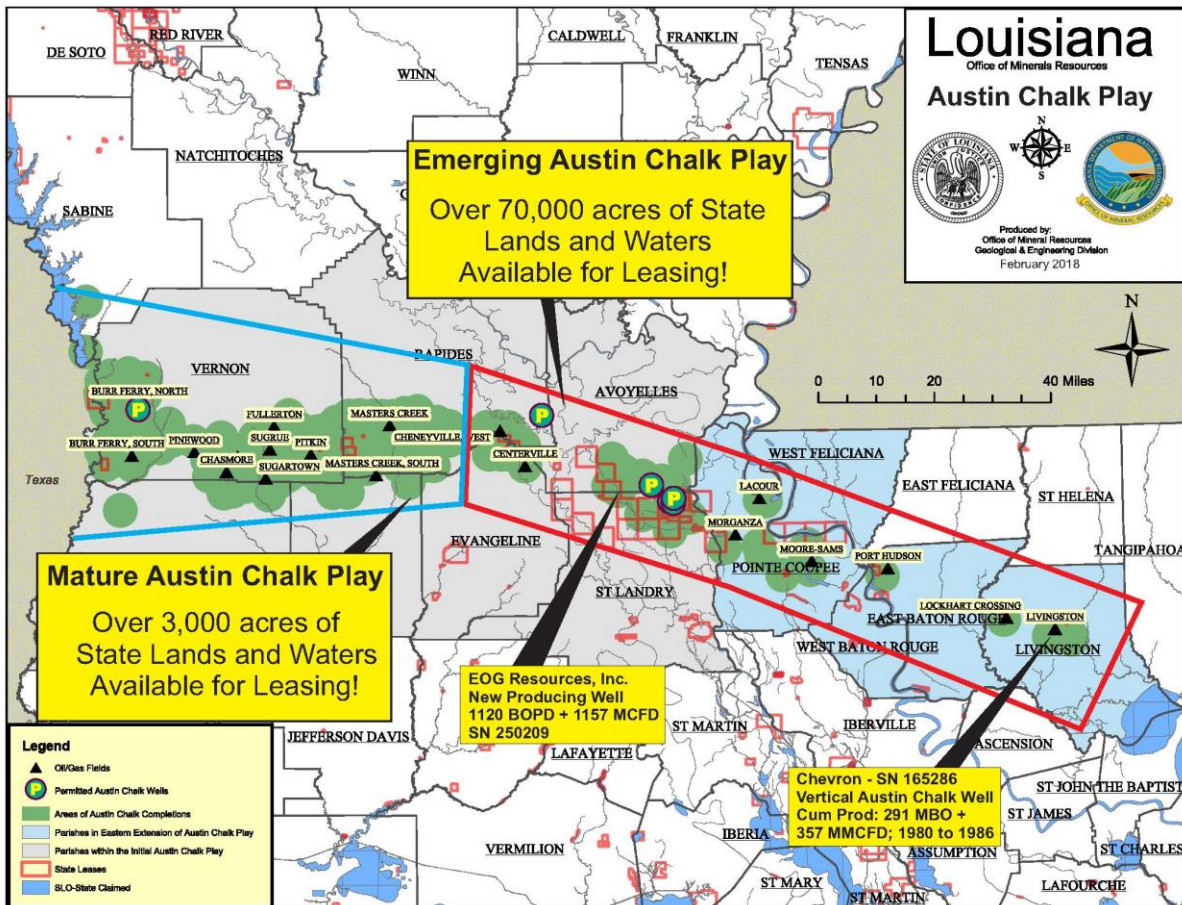
It has been interesting in the past year to watch the growing interest in the **Austin Chalk**, an oil play that runs right through the Alexandria MSA as seen in Figure 36. This is a carbonate reservoir running from Texas to the middle of Louisiana. In late 2017, PetroQuest Energy purchased 24,600 acres in the play, and EOG has reportedly leased more than 130,000 acres. In January, a Business Reports article indicated that 85,000 acres had been sold to an undisclosed buyer.¹⁴ Marathon Oil has also accumulated 250,000 acres in the play, and ConocoPhillips recently announced it purchased a position in the Austin Chalk. This formation had little leasing activity for two decades until the past year or so.

Does the purchase of this new acreage signal a significant resurgence in a play that already has 57 operating wells? If so, it is interesting that the most active areas in the play have

¹⁴ "85 Acres in Louisiana Austin Chalk Play Sells for \$87M", www.businessreport.com, January 4, 2018.

been in the Masters Creek, West Masters Creek, and Sugartown fields in Rapides and Vernon Parishes. This would certainly be a much needed shot in the arm for the central Louisiana economy.

Figure 36
The Austin Chalk in Louisiana



Source: Louisiana Department of Natural Resources

Hammond: SLU & North Oaks Are Critical

The Hammond MSA is the newest member of the MSA club in Louisiana and is composed of one parish---Tangipahoa. This MSA is located from the northwestern edge of Lake Ponchartrain north to the Mississippi line and between Baton Rouge on the west and Slidell on the east (see Map 1). This parish is perhaps best known as the “Strawberry Capital of the World” and is host to a famous strawberry festival each year. In 2018, an estimated 47,100 people were employed in this MSA, making it the smallest of the nine in Louisiana.

The two largest employers in the parish (aside from the School Board) are **North Oaks Medical Center** (2,600 employees) and **Southeastern Louisiana University** (1,380 employees). The dominance of these two players means healthcare and educational services play a larger role in this economy than in the state as a whole. Healthcare and social services represent 20.6% of

employment in this MSA versus 15.7% at the state level, and educational service is 11.8% versus 8.6% at the state level.¹⁵ This MSA has the highest percentage of **government employment** (24.8%) of any MSA in the state.¹⁶

Manufacturing is not as large an element in this MSA (5.3% of employment) as is the case at the state level (7.0%), and manufacturing has a larger food processing component than the other MSAs, headed up by the 550-person **Sanderson Farms** poultry processing plant and the 164-person (and growing) **Elmer's Candy** plant. **Smitty Supply** is a 400-person operation out of Roseland that is a motor oil blending, packaging and distribution firm.

There are two significant distribution centers in this region. A large 800-person **Walmart Distribution Center** is located in Tangipahoa Parish, as is the 375-person **C&S Wholesale Grocers** (formerly Winn-Dixie).

North Lake Division Evergreen Life Services (300 employees) provides services to over 200 residents with intellectual and developmental disabilities. Evergreen Presbyterian Ministries manages NLDELS for the Louisiana Department of Health and Hospitals.

The city of Hammond enjoys a unique location only 40 miles from the state capitol to the west and about the same distance to the North Shore business region to the east. Residents in the southern part of the parish are a relatively easy commute to New Orleans via I-55 or to the plants along the Mississippi River. As a consequence, a relatively high percentage (22%) of this parish's residents earns their income outside of the parish.

History of Hammond MSA: After 7 Years of Stagnation - Growth

The history of this MSA from 1990 through 2017 is illustrated in Figure 37. It is apparent from a casual glance at this chart that the Hammond MSA has been through three distinct periods---(1) a period of solid upward growth from 1990-2007 followed by (2) seven years of stagnation from 2008-14, and now (3) four straight years of job growth with the last two years averaging 1,250 jobs per year.

In a College Town Enrollment Matters

What is behind this peculiar pattern? It is important to note that the largest city in this MSA---Hammond---is very much a university town. **SLU** is one of its largest employers at 1,387. However, the university attracts over ten times that many students (114,700) to the region, students who bring a great deal of spending power to the community.

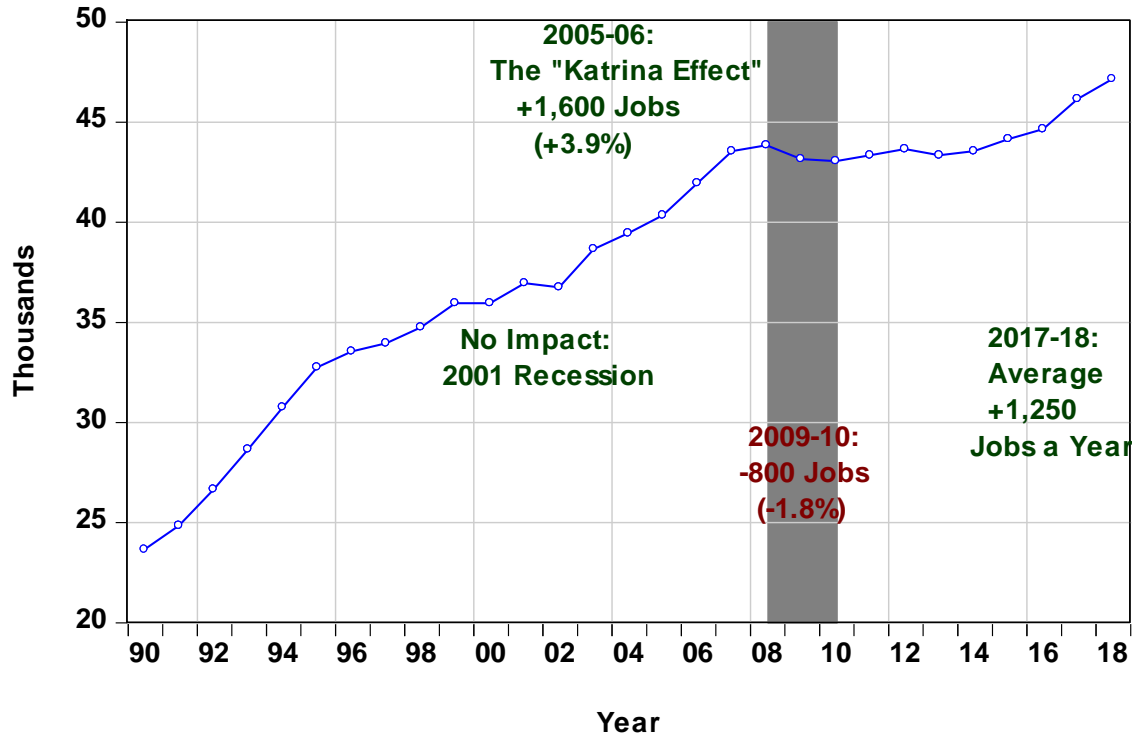
The powerful influence that SLU has on this MSA is seen when comparing the MSA employment data in Figure 37 with SLU's enrollment data in Figure 38 and the university's budget data in Figure 39. Hammond's growth phase from 1990-2007 was mirrored by a huge

¹⁵ Data are for 2016 from www.laworks.net

¹⁶ "Louisiana Workforce at a Glance", Louisiana Workforce Commission, July 27, 2018, p. 12.

growth in fall enrollment and budget at SLU. Enrollment at the university jumped by 5,670 students over 1990-2005, an impressive rise of 54.5% and the budget rose a whopping 174.5%.

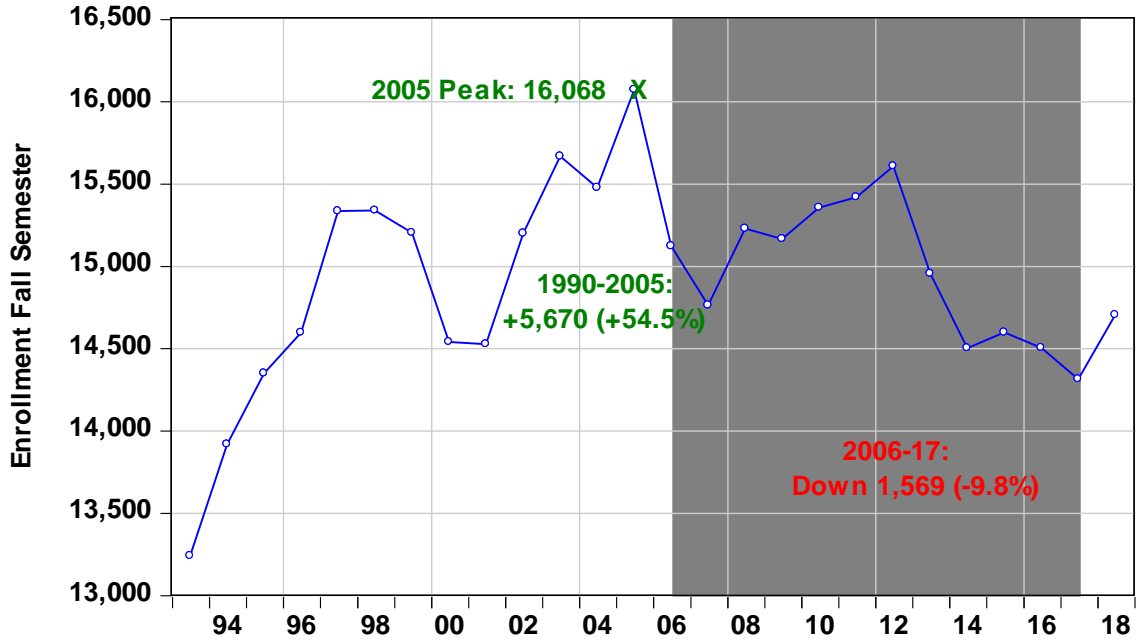
**Fig. 37: Hammond MSA Employment
1990-2018**



Hammond’s seven years of employment stagnation from 2008-2016 were accompanied by an actual decline in enrollment and generally reduced funding at SLU. Enrollment declined from a peak of 16,068 students in the fall of 2005 to 14,594 in fall 2015---a 9.2% decline. It dropped to 14,499 over 2016-17 before rising slightly to 14,700 in fall 2018. The university’s funding dropped by 13.3% over 2008-13, before recovering by 12.7% the next five years. Still, by fall 2018 the budget at SLU was about \$3.3 million below its fall 2008 peak.

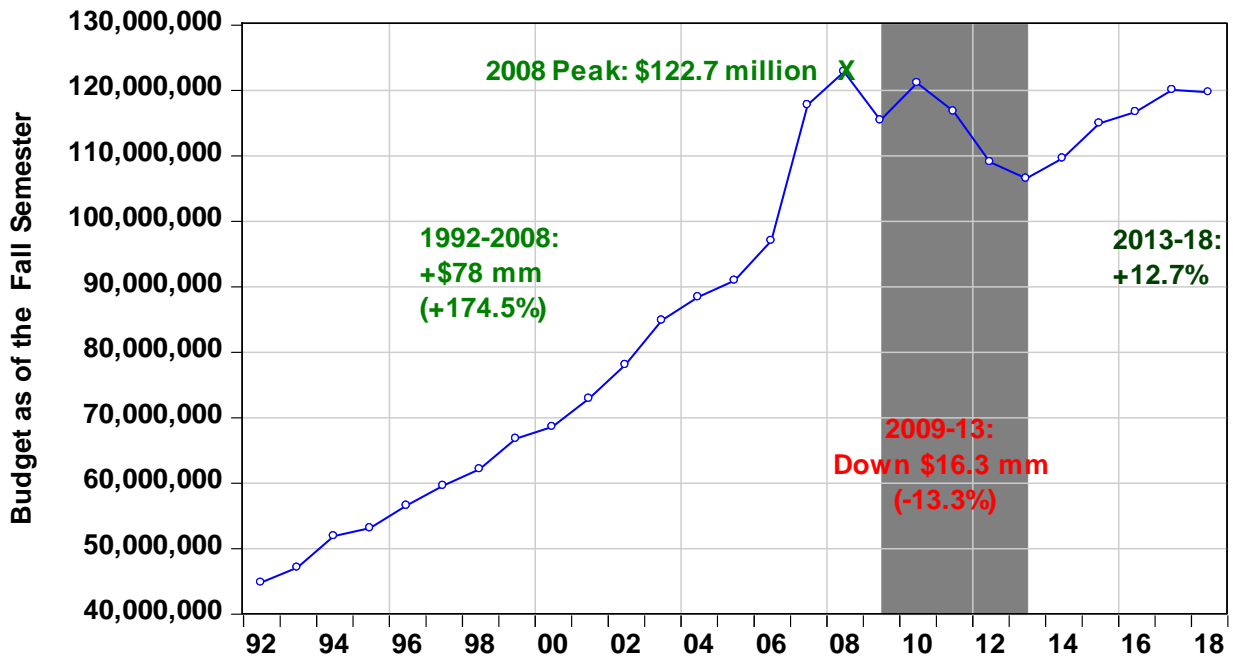
Since it is employment we are forecasting for the MSA, the pattern of actual employment at SLU also helps us to understand the pattern of total employment in the MSA back in Figure 37. Figure 40 tracks total employment at SLU from 1993-2018. Year-to-year movements shown in Figure 40 are exaggerated a bit because the Y-axis does not start at zero. Between 1993 and 2008, employment at the university rose from 1,249 to 1,692, a gain of 443 jobs or +26.2%. This boost was one of the factors helping overall job growth to be very robust in the Hammond MSA over that period (see Figure 37). However, note that since 2008, employment at SLU has sunk to levels not seen since way back in 1995. This 324-job decline, along with enrollment drops and a lower budget contributed to the more lackadaisical nature of job growth in the region through 2016.

**Fig. 38: Southeastern Louisiana University Enrollment
Fall 1990 - Fall 2018**



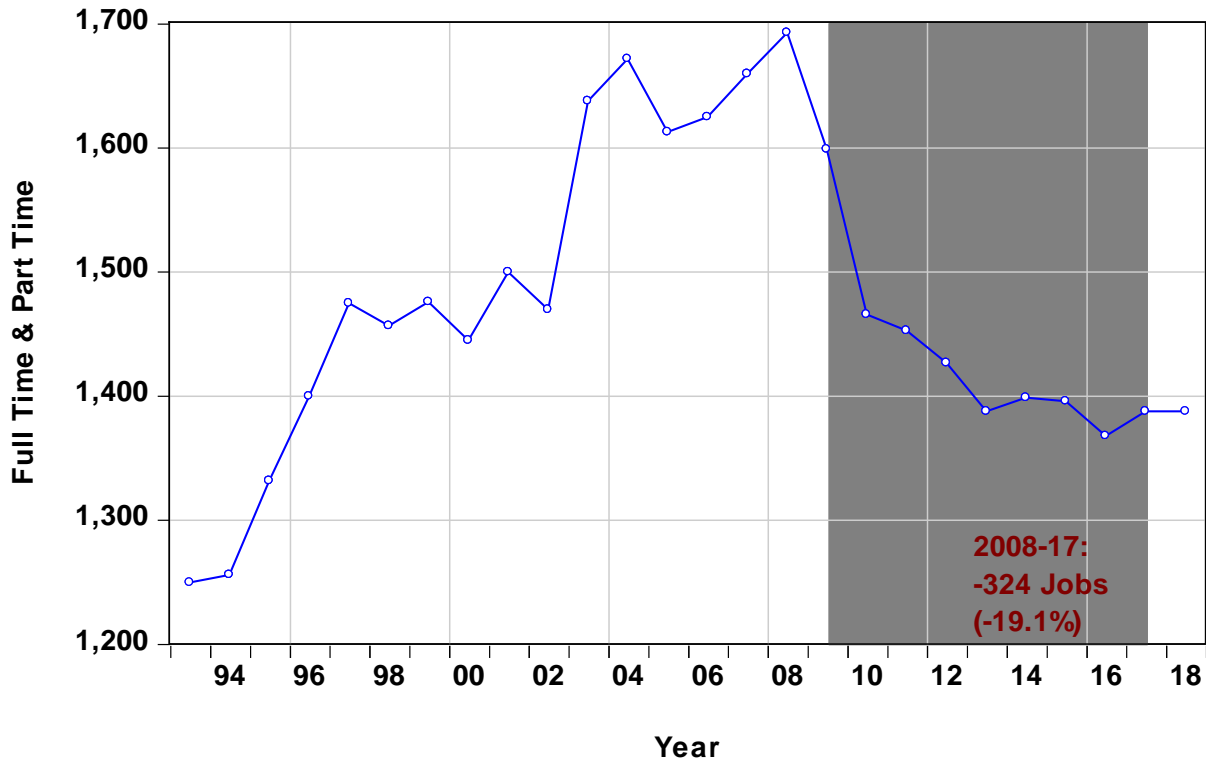
Source: SLU Office of Institutional Research & Assessment

**Fig. 39: Southeastern Louisiana University Budget
Fall 1992 - Fall 2018**



Source: SLU Office of Institutional Research & Assessment

Fig. 40 : Total Employment Southeastern Louisiana University



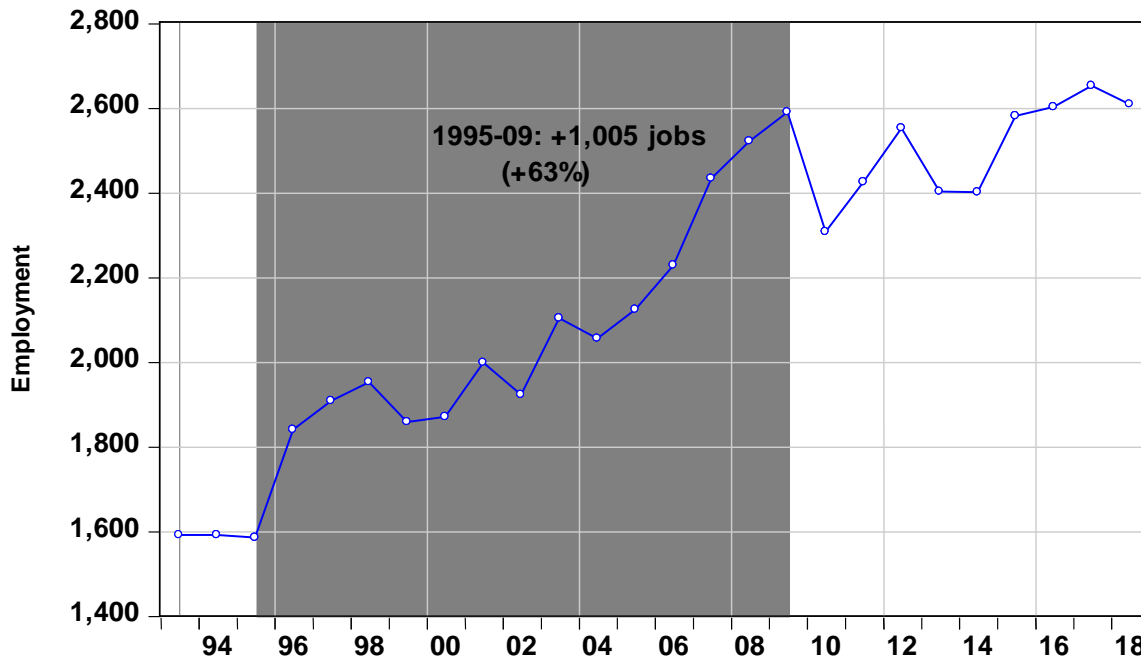
Healthcare Keeps MSA’s Head above Water

Economic conditions would have been much worse for this region had it not been for an energetic healthcare sector. Unfortunately, data on this small MSA’s healthcare sector are sparse. The U.S. Bureau of Economic Analysis and Bureau of Labor Statistics and Louisiana’s Workforce Commission only provide data back to 2005 and up to 2013 on the Hammond MSA healthcare sector.

What is available are data on employment at the largest healthcare system in this MSA--- **North Oaks Medical System**. The history of employment at North Oaks is shown in Figure 41. Again, it is instructive just how closely employment at North Oaks mirrors the pattern of employment in the MSA in general. North Oak’s employment grew rapidly (+63%) over 1995-09. This is the same period when employment in the MSA was rising as well (see Figure 37).

However from 2009-14, employment at North Oaks was basically flat to declining, just like employment in the MSA as a whole. In the past four years, employment has picked up a bit at North Oaks as has the job growth rate in the MSA. This year has marked a slight exception to that, with the hospital system employment down a little less than 50 jobs. Governor Edwards’ Medicaid expansion program has created a problem for North Oaks. The hospital’s Medicaid component increased from 15% to 30%, and the hospital receives only 38 cents on the dollar of costs. The hospital receives the lowest per diem reimbursements in the state because it has a large service district with (1) no medical education component and (2) no “rural” designation. The system reported a \$5 million loss in FY17, but had a 1.5% positive bottom line in FY18 due to supplemental funds provided by the state.

Fig. 41: North Oaks Medical System Employment



Source: North Oaks Medical System Human Resources Division

Almost Impervious to Recessions

Figure 37 reveals another unique characteristic of the Hammond MSA over 1990-2018: This MSA is almost impervious to the impact of national recessions. There was a short U.S. recession from July 1990 to March, 1991 during which this MSA’s employment actually grew. Employment rose again during the 2001 recession, then during the Great Recession---when the U.S. lost 6.1% of its jobs---the Hammond MSA’s employment only declined 1.8%, a loss of only 800 jobs.

This resilience can largely be traced to the makeup of the region’s economy. Its huge healthcare and educational services sectors are typically touched only lightly, if at all, by national downturns. On the other hand, the durable goods manufacturing sector that typically gets hammered by a national recession, is largely absent from the Hammond region. Only 5.3% of its employment is in manufacturing (as compared to 7.0% at the state level), and even then employment is heavily concentrated in nondurable goods manufacturing such as food processing.

A 2018 Bump from Walmart and Southern Foods

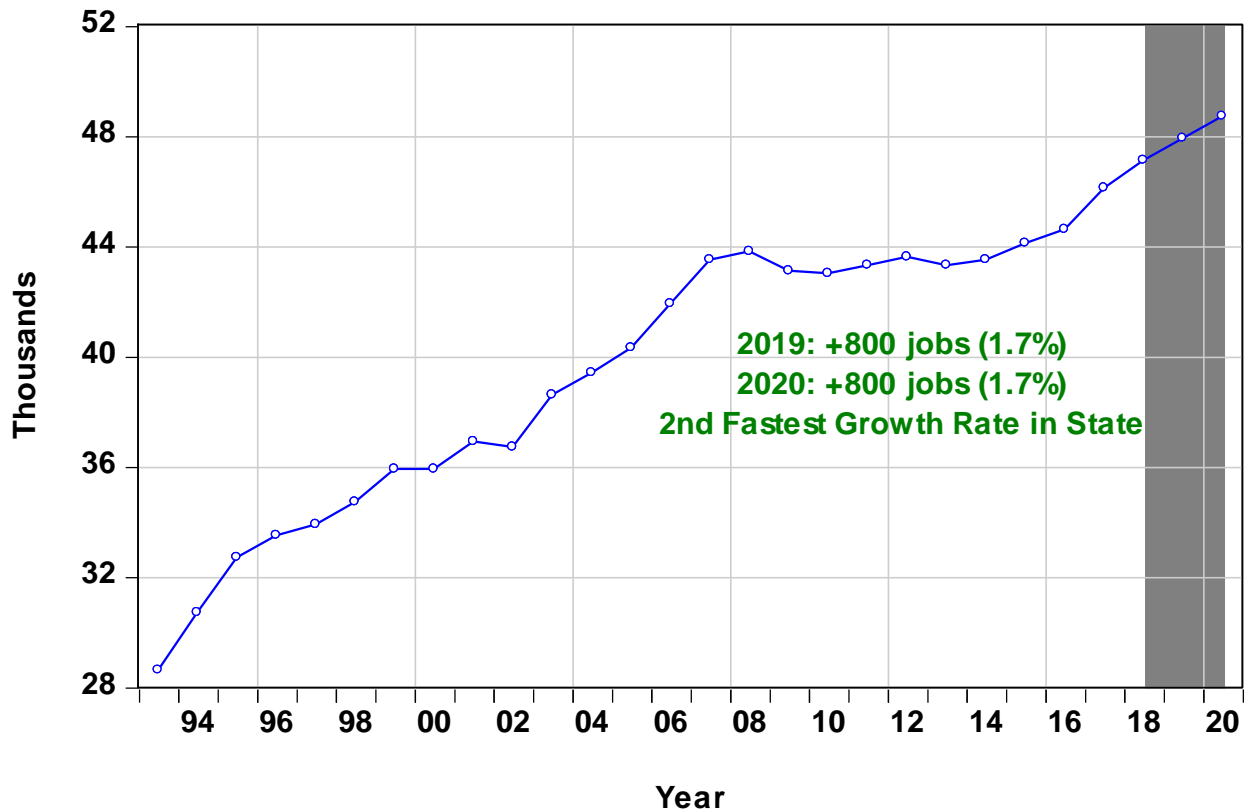
Another reason 2017 has been a better year for this MSA has been a nudge it received from two important players in the Parish. **Walmart Distribution Center** expanded and added 70 jobs to its workforce. **Southern Foods** tacked on 40 more jobs to its milk distribution operations. More importantly, the company moved its Brown’s Dairy milk processing facility from New Orleans to Hammond, creating 186 new jobs. **Smitty Supply** and **Intralox** also had

significant capital and employment expansions recently. The one negative in an otherwise positive review of the Hammond MSA has been the closure of the **Brakken Foundry** at the cost of 30 jobs.

Forecasts for 2019-20: Healthcare Will Slow Things a Bit

As seen in Figure 42, we are projecting that the growth rate in this MSA will slow a bit over 2019-20, with the region **adding about 800 jobs a year or a healthy 1.7% a year average growth rate**. Despite the growth in jobs slowing, this MSA will still be the **second fastest growing MSA in the state in percentage terms**.

Fig. 42: Hammond MSA Nonfarm Employment Forecast 2019-20



Can Healthcare’s Growth Be Sustained?

An examination of the drivers behind the more robust expansion in this MSA’s economy over the past two years reveals that the #1 factor was the broadly defined “healthcare /social services” sector. Of the 1,356 jobs created in this MSA between 2016-IV and 2017-IV, this sector provided 616 of those jobs. The question is, can this level of contribution be sustained? Given North Oaks’ struggle with the Medicaid expansion fallout and the state’s questionable ability to continue providing meaningful supplemental payments to the hospital, we doubt this sector will continue to be the driving force it has been in the past two years. Indeed, the system

has already put the construction of its \$25 million Women and Children's unit on hold. That is the primary reason for our more arrested projected growth as compared to the past two years.

Sigh of Relief at SLU

While its budget was basically flat for the 2018-19 year, SLU administrators are breathing a sigh of relief after the last special session of the Legislature resolved the "fiscal cliff" that has dogged the state for the past few years. For now at least, the prospects of mid-year---or beginning of the year---cuts seem less threatening. Hopefully, SLU will be a contributor instead of a drag on the Hammond MSA economy over 2019-20.

Faster Growth in Baton Rouge & New Orleans Will Help

In the introductory section it was mentioned that a lofty 22% of earnings in this parish are earned outside of the parish. In the case of Tangipahoa Parish residents, that means jobs in the Baton Rouge and New Orleans MSAs. Readers are referred back to the Executive Summary Table on page vi. Note that growth in both of these MSAs is expected to pick up markedly over 2019-20. That means more jobs for Tangipahoans in those cities, and that means more dollars flowing into the retail and restaurant sectors---two very labor-intensive sectors---in Tangipahoa Parish.

Stability among Tangipahoa's Other Key Players

The operative word for the other main players in this MSA's economy is "stable." The large 800-person **Walmart Distribution** has no immediate plans for changes in employment, nor are any significant alterations expected at the 375-job **C&S Grocers** facility. **Smitty Supply** is adding a new aerosol unit, but we are not aware that this will change the 300-person job count at that firm. Intralox has completed its \$35 million expansion and is expected to stay at about 60 jobs. **Elmer's Candy** has made a \$44.3 million investment in its plant in Ponchatoula that will make the company capable of making four million chocolate pieces per day. This investment added 20 jobs to the company's 195-person workforce.

State Roads & Other Public Projects

Louisiana's DOTD has announced \$17.6 million in **state road lettings** for this parish over 2019-20. This is a decline from \$25.6 million mentioned in last year's LEO. The two largest projects are (1) \$3 million for a Tangipahoa Bridge replacement and (2) \$1.1 million for Randall and Vitrano bridges.

In addition to the road lettings, there are \$17.5 million in **public infrastructure projects** scheduled for the parish. These include: (1) \$10.4 million to widen Club Deluxe Road, (2) \$3.5 million for South Hoover Road improvements, (3) \$1.6 million for lift station and sewer improvements, and (4) \$1.1 million for airport land acquisitions.

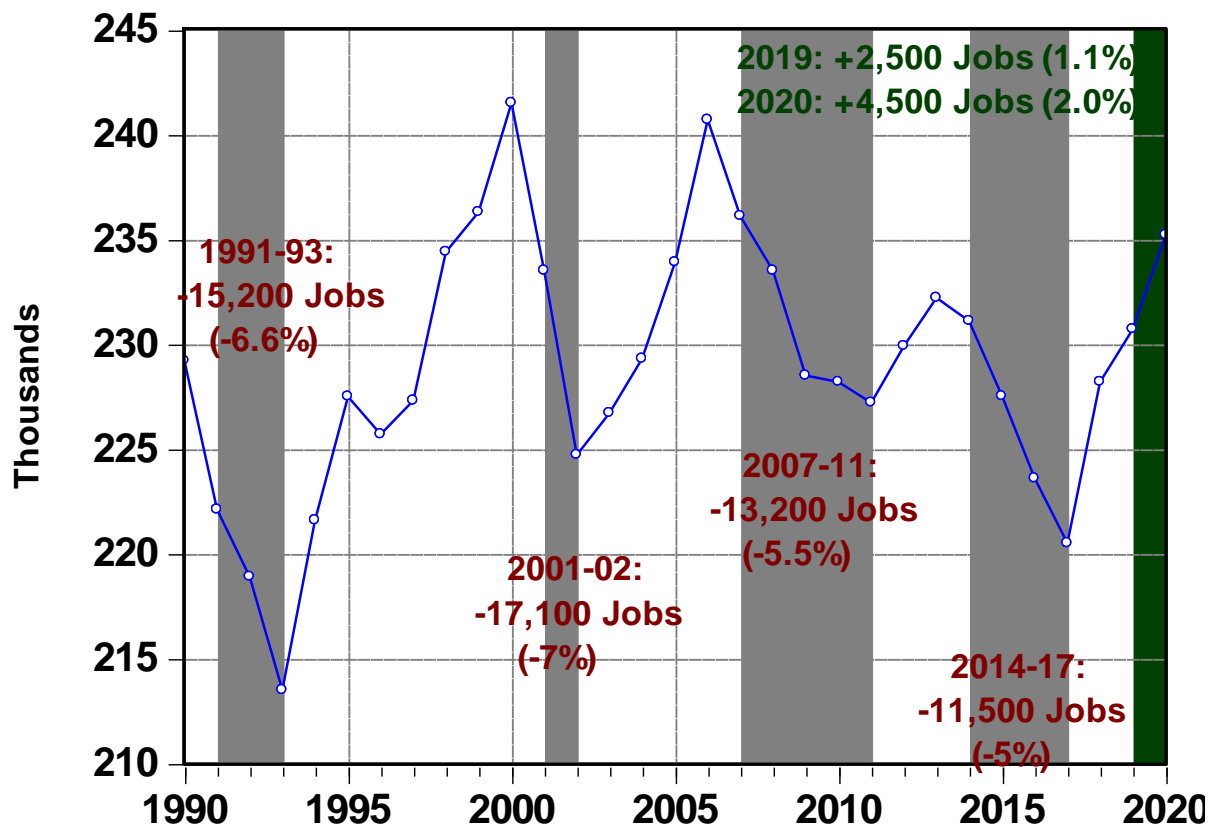
Rural Louisiana: Energy, Power Plants & Wood

Back in Map 1 we illustrated where the nine MSAs are located in Louisiana. With the recent expansions to three of our MSAs and the addition of the Hammond MSA, there are now 35 of the state's 64 parishes located in these nine MSAs. The remaining 29 parishes are designated as "rural."

With few exceptions, most of these rural parishes have a distinctly agricultural economic base, producing crops and timber. Among the exceptions are Lincoln and Natchitoches Parishes--which are homes to relatively large universities---the coastal parish of St. Mary---which has a significant attachment to the oil and gas extraction industry---and Vernon Parish on the central Texas border which is the home parish for Fort Polk, a very large military base.

About 11.4% of the state's employment (225,500 jobs) exists in these 29 parishes. Figure 43 tracks employment trends since 1990 in these rural parishes and provides forecasts for 2019-20.

**Fig. 43: Non-Farm Employment - Rural Parishes
1990-2018 Actual; 2019-20 Forecast**



Recession Impact on Rural Parishes Hard

While employment in the rural parishes is quite variable, the reader is urged to note the vertical axis in this graph. Since 1990, employment in this region has only varied over a range from a low of 213,500 to a high of 241,500---not as wide a fluctuation as may appear initially. Having noted that, this region's employment is **very sensitive to national recessions**. In the early 1990s' recession, rural employment fell for three straight years. Rural parishes lost 15,200 jobs, a drop of 6.6 percent. Then in the post-9/11 recession, rural region employment fell hard for two years---a loss of 17,100 jobs or seven percent. During the Great Recession, rural employment fell for four straight years by a total of 5.5%. The sharp decline from 2014-17 (-11,500 jobs) is largely due to the oil price collapse.

Employment in rural areas actually started to decline a year before the initiation of the Great Recession. The housing bubble burst started in 2007 and this led to layoffs and closings in several of Louisiana's large **wood products firms**. These firms tend to be concentrated in rural parishes. For example:

- **Weyerhaeuser Corporation** laid off 185 at its facilities in Lincoln and Winn Parishes.
- **Weyerhaeuser Corporation** terminated 39 at its Bienville Parish site.
- **Hunt Forest Products** temporarily idled its Natalbany facility in Tangipahoa Parish.
- **Boise Cascade** indefinitely curtailed 130 workers at its plywood veneer plant in Allen Parish.

Bad news in the wood products area was partially offset by good news in those parishes with ties to the extraction industry. **Red River Parish** had an especially good 2009-10 due to flourishing drilling activity in the Haynesville Shale in the northwestern part of the state. In the **coastal parishes**, offshore drilling in the Gulf was strong until the BP spill, then large sums of money came flowing into these parishes for cleanup work or in claims payments made to businesses and individuals. This was enough to keep rural losses from their typical routine of experiencing losses greater than the nation.

Some Recovery: 2012-13

Note that the rural area of the state had two years (2012-13) of recovery from the Great Recession but remained well shy of its pre-recession employment mark. By 2013, the region was 8,500 jobs away from its previous 2006 peak.

Still, the area enjoyed some nice announcements post-Great Recession. Among the positives were:

- In Bogalusa **General Dynamics** opened a call center that handles government healthcare calls. GD opened its facility in the summer of 2013 and now employs over 600 people.

- **Gulf Coast Spinning** announced it would build a \$130 million new cotton spinning facility at the Bunkie Industrial Park. Over 300 jobs were to be created at the plant, paying an average annual wage of \$30,100.
- In Urania, **German Pellets GmbH** began construction on the world's largest wood pellets manufacturing plant, capable of producing 1.1 million tons of pellets a year. About 150 employees were announced for this plant in LaSalle Parish.
- **Universal Plant Services** completed its \$3.9 million plant in Jena in LaSalle Parish. The firm hired 95 employees who work on welding, fabrication, and equipment overhaul and repair.
- A real success story for Ruston in Lincoln Parish is **Mortgage Contracting Services**, a firm that protects and preserves vacant properties for mortgage companies. MCS doubled the size of their facility to 200,000 square feet and added 90 new jobs.
- **Conagra** built a 2-phase sweet potato processing plant in Richland Parish adding several hundred jobs.
- **Metal Shark Boats** in Jeanerette secured a \$192 million contract with the Coast Guard to construct 500 patrol boats. The firm added 100 workers to its workforce.

The 2014-17 Decline

Sadly the recovery in rural Louisiana was short-lived. The region went into a free fall over the four years from 2014-17. No small part of this decline is associated with the deteriorating exploration market. The rig count plummeted in the rural parishes in the Haynesville Shale region in northwest Louisiana. St. Mary Parish on the southern coast is host to numerous firms that service the offshore exploration industry. Specifically, **Danos & Curole** terminated 80 people from their relatively new site.

Shipyards in these rural parishes in south Louisiana suffered as well. Three **Bollinger Shipyards** in the Amelia and Morgan City areas halved their employment from 700 to 350, but the shipyards are diversifying into barges, flood gates and other civil work and do not anticipate further layoffs. Other shipyards and fabricators in St. Mary Parish have reduced employment and begun moves to diversify their client bases out of oil and gas and into other areas.

In Vidalia, **Fruit-of-the-Loom** closed its plant ending 167 jobs. **Gulf Coast Spinning** stopped construction of its facility in Bunkie. Construction delays and cost over-runs drove the new **German Pellets** plant in LaSalle Parish into bankruptcy. **Life Care Specialty Hospital** in Ruston closed its doors at the cost of 167 jobs.

2018: Back to Growth

It is apparent from Figure 43 that the rural areas of Louisiana have begun to grow again in 2018. Several factors prodded this turnaround. **Drax Biomass** took over construction of the

wood pellets plant in Urania from German Pellets GmbH and opened the plant in fall 2017. A total of 125-150 permanent jobs came to the plant. **Monster Moto** completed its \$4 million manufacturing facility for mini-bikes and go-carts in Ruston. At 25 jobs, the company's plans are to pump this employment number up to 287 over 10 years. We are hearing reports that these plans are not going smoothly.

Foster Farms made a \$30 million upgrade to its poultry processing plant in Farmerville and added 50 jobs to the 1,092 already employed there. **Cleco** completed an \$80 million clean energy plant in St. Mary Parish that takes waste heat from Cabot's carbon black plant and generates electricity for 17,000 homes. This new site employs 20 people.

Forecasts for 2019-20: Energy, Wood, and Power Provide a Nice Jolt

Note back in Figure 43 that we are projecting the rural recovery begun in 2018 will continue over the next two years, **with 2,500 additional jobs (+1.1%) in 2019 and 4,500 jobs in 2020 (+2.0%).**

Oil & Gas Extraction Revives

One job-creating factor in rural areas over 2019-20 will be a recovering oil and gas extraction sector. Back on pages 6-10, we discussed the prospects of oil prices going to \$80 a barrel by 2020. This will be good news for extraction related companies in rural areas, especially in St. Mary Parish. Prices at these levels could spur drilling activity in the Austin Chalk, much of which resides in rural Louisiana. (See the write up on the Austin Chalk on pages 104-105.) The huge, natural-gas-oriented industrial boom in the southern part of the state will encourage exploration activity in rural parishes in the Haynesville Shale. Pipelines to deliver that gas to the south will cut across many rural parishes.

Booming Housing Market Good for Rural Parishes

The U.S. housing market is very good and expected to stay good over 2019-20. This will be excellent for timber-rich rural Louisiana. **Hunt Forest Products** is building a \$115 million lumber mill in Urania that will employ 110 people at an average wage of \$46,000 annually. Output from this mill will not primarily be for housing but instead to supply residuals and wood fibers to the Drax Biomass facility. **Roy O. Martin** is spending \$8 million to expand a plywood/solid woods plant at Chopin in Natchitoches Parish (+14 jobs to the present 680-person workforce). That company's mill in Allen Parish just had a record shipping month in August. **Champion Home Builders** is planning a \$1.3 million facility in Leesville to build manufactured homes. Plans are to hire 200 people at the plant.

Power + a Refinery

Significant investments in power plants in rural parishes are on the board for 2019-20. Approval was received from regulators in May for **Calpine Corporation** to spend \$261 million to complete a 361-megawatt, gas-fired power plant in Washington Parish. Once completed, the **Washington Parish Energy Center** will be turned over to Entergy to operate. It should be

finished in 2021-II. In a separate project, **Entergy** plans to spend \$100 million on infrastructure upgrades in Jeff Davis Parish.

There is at least one significant refinery project scheduled for a rural parish. **Delek (Alon) Refinery** in Krotz Springs is adding a \$103 million alkylation unit at its refinery, a project that should be completed in 2019-I. Back in 2015, **Hazelwood Energy Hub** announced a \$400 million oil storage and blending facility that would create 123, high-wage jobs in the Port Barre area. The firm would be using four salt domes and above ground tanks. We understand this project is still at the permitting stage and is moving forward.

Railroads Pump Money into Rural Louisiana

Railroads and companies associated with them are expected to make significant investments in rural Louisiana. **Union Pacific** announced plans to spend \$87 million on improvements in Louisiana. Included in its projects are (1) \$16 million on railroad ties and rock ballast between Alexandria and Shreveport, (2) \$12 million on railroad ties and rock ballast between Luling and Livonia, and (3) \$18 million on bridge improvements.

An announcement is expected later this year from **Rail Logix** on a proposed \$127.8 million facility in the Lacassine Industrial Park for railcar storage, staging, repair, cleaning and transloading of products. Three hundred jobs are expected with this facility. Phase 1 is to accommodate 800 railcars, expandable to 2,350.

A Mix of Other Rural Parish Projects

A variety of other projects have been announced for these parishes. A building lease was signed in Vidalia to house **Project Blue**--an apparel manufacturing plant that would employ 300 people at an average wage of \$37,000. Also in Vidalia, **Syrah Resources** has announced it will open a \$25 million graphite processing facility that will employ 25 people. **Terral River Services** in Lake Providence (East Carroll Parish) provides product movement services on the Mississippi River. Now at about 350 employees, the firm plans to add another 50 jobs. We are not sure if **Swiftships** in Morgan City will be adding to its workforce, but the company just landed an \$18 million contract to design and build a Navy landing craft. Options are available for 31 more craft and an additional \$411 million total contract.

These nice gains are being at least partially offset by the decision by **Ardagh Group Glass** to cut its capacity in half at its Simsboro plant. A total of 227 jobs were terminated by this action.

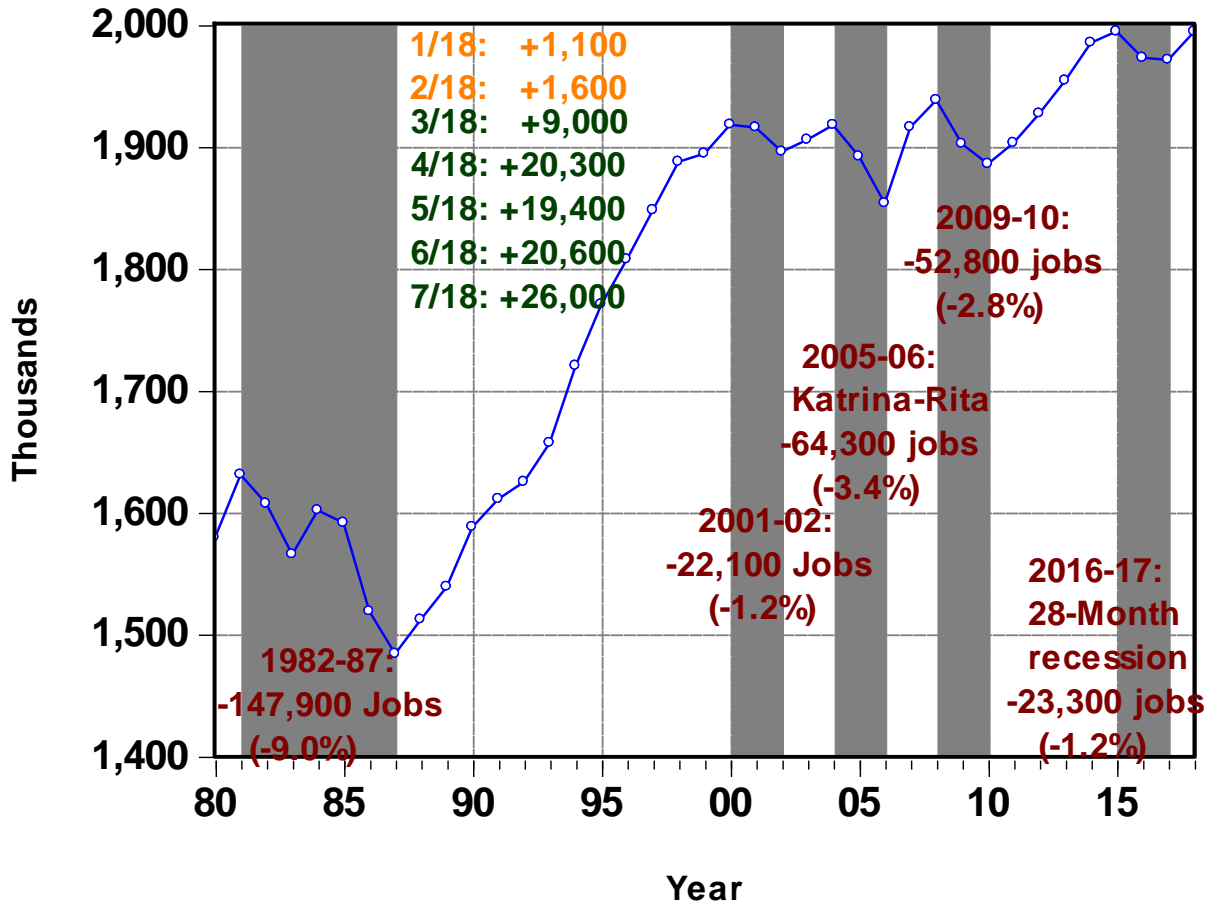
A Drop in Road Lettings

Data from Louisiana's DOTD indicate that **state road lettings** in rural areas will total \$332.8 million over 2019-20. This is a substantial decline from the \$448.1 million mentioned in last year's LEO. Among the larger projects planned are: (1) \$29 million to rehab the Atchafalaya Bridge on US 190, (2) \$15 million to rehab the LA 182 Berwick Bay Bridge, (3) \$8.2 million on an extension of LA 124, and (4) \$77 million to replace the Boeuf River Bridge.

THE OUTLOOK FOR THE STATE: 2019-20

In the sections above we have reviewed the individual economies of each of Louisiana's nine MSAs and its rural region. Dominate issues in Louisiana's future are the monstrous industrial boom along and below I-10 and the budding signals that the oil patch is beginning to turn around. Figure 43 reveals that the state has just exited its 6th recession since 1980, a 28-month long decline that cost the economy 23,300 jobs (-1.2%). Certainly this energy-led recession would have been even worse had it not been for the leavening effect of the industrial boom in the southern part of the state.

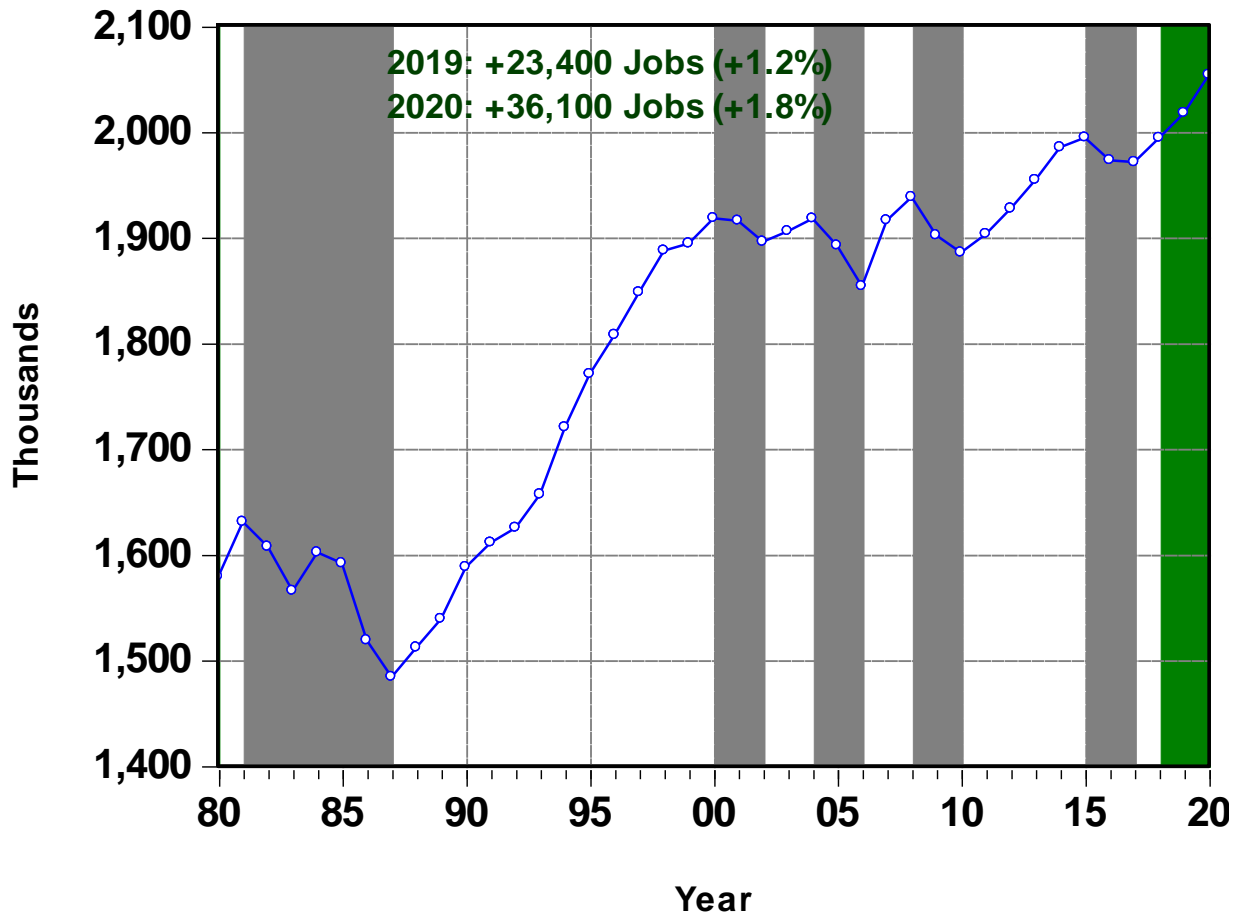
**Fig. 43: Louisiana Non-Farm Employment:
1980-2018**



The really good news is that it is clear the state has emerged from that recession and is now in a relatively healthy growth mode. Note the monthly annual job growth numbers in the insert in Figure 43. Though the recovery started slowly in January and February, by July employment was expanding at a rate of 26,000 jobs a year. That is a growth rate of 1.3% which is about the average for the nation as a whole.

As we reviewed each separate region of the state, forecasts to 2020 were provided. In Figure 44 we show the results of adding up the forecasts to reach a state total. We are projecting that the state will add 23,400 jobs in 2019 (+1.2%) and a healthier 36,100 jobs (+1.8%) in 2020. The latter year is when two key events will hopefully occur: (1) FIDs on several large industrial projects in the southern part of the state (especially LNG export terminals) and (2) more robust activity in the state's oil and gas exploration industry.

Fig. 44: Louisiana Non-Farm Employment: Forecast 2019-20



Note in Figure 44 that if our projections are correct the state will attain and surpass the 2,000,000 employment mark for the first time in its history.