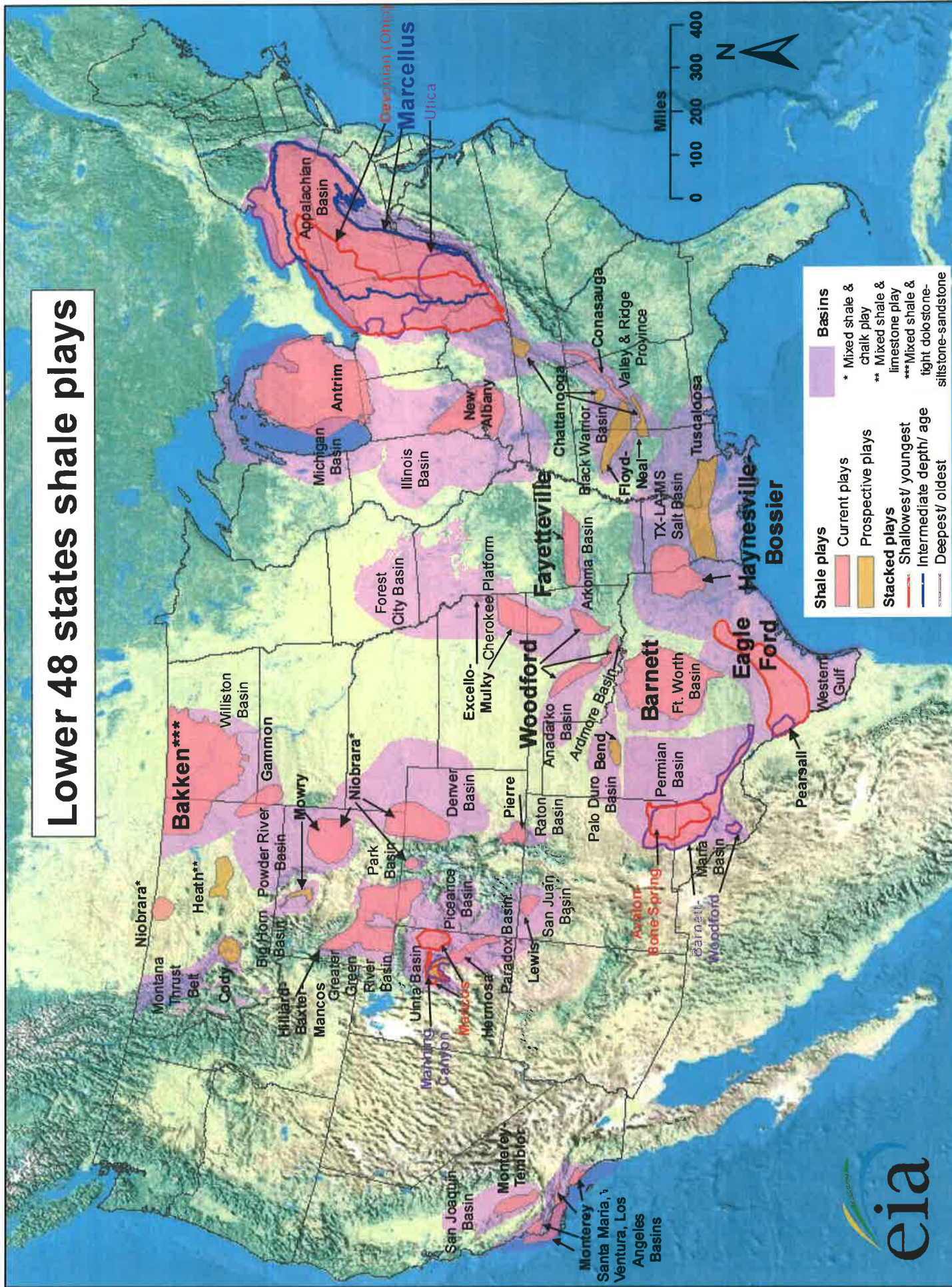


INTRODUCTION PRESENTATION

Attached below:

1. EIA U.S. Shale Play Map
2. Oil and Natural Gas Plays in Louisiana – One-pagers created by LOGA
3. 2013 Natural Gas Prices - Unconventional Resources and Louisiana's Manufacturing Development Renaissance, David Dismukes, Pd.D – Executive Summary
 - a. Full study can be found at: <http://loga.la/DismukesStudy.pdf>
4. 2009 Haynesville Shale Analysis + 4 Year Projections – Economic Impact of the Haynesville Shale on the Louisiana Economy 2009 Analysis and 2010-2014 Projections, Dr. Loren Scott - Executive Summary
 - a. Full study can be found at: <http://loga.la/pdf/Economic%20Impact%20of%20HS.pdf>
5. July 2012 State Revenue Study Summary

Lower 48 states shale plays



Shale plays

- Current plays
- Prospective plays

Stacked plays

- Shallowest/youngest
- Intermediate depth/age
- Deepest/oldest

Basins

- Mixed shale & chalk play
- Mixed shale & limestone play
- Mixed shale & tight dolomite-siltstone-sandstone

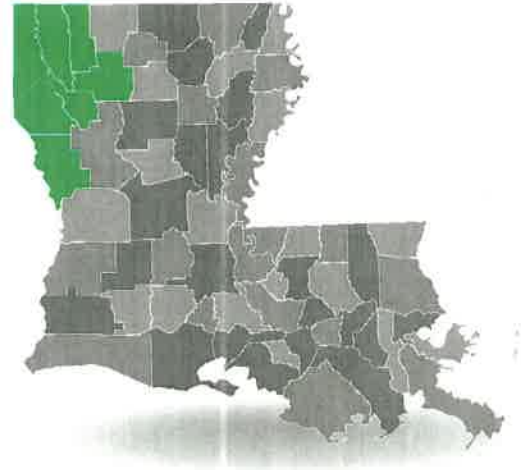
Source: Energy Information Administration based on data from various published studies.

Updated: May 9, 2011



HAYNESVILLE SHALE

The Haynesville Shale is a geological rock formation that lies more than 10,000 feet below the surface of the Earth in the area of northwestern Louisiana, southwestern Arkansas and eastern Texas. The Haynesville Shale is located primarily in five parishes in Louisiana - Caddo, Bossier, DeSoto, Sabine and Red River.



It has been estimated that the Haynesville Shale holds more than 245 trillion cubic feet of recoverable natural gas. At that volume, it contains the equivalency of over 30 billion barrels of oil, or nearly 18 years of current U.S. oil production.

The discovery and growth of the Haynesville Shale has created an overwhelming supply of domestic, clean-burning natural gas. Within just three years of its initial development, the Haynesville Shale has reached an average of 5.5 billion cubic feet of daily natural gas production, making it the largest producing onshore field in the entire United States.

As of December 16, 2011, there are currently 2,379 active Haynesville Shale wells. Of those 2,379 wells, 1,690 have been completed and are producing wells, 349 are permitted and waiting operations, and 96 are in the process of drilling.

The Haynesville Shale created an unprecedented influx of jobs and economic expansion in our state. Between 2008-2010, operations in the Haynesville Shale have generated approximately \$40 billion in direct and indirect economic growth. Over that time period, the Haynesville has supported over 100,000 jobs and provided Louisiana with over \$1.3 billion in local and state tax revenue.

In 2009 alone, the extraction activities in the Haynesville generated approximately \$10.6 billion in new business sales and nearly \$5.7 billion in household earnings within Louisiana.

From 2010 to 2014 companies operating in the Haynesville will spend nearly \$25.8 billion in drilling expenditures, \$57.5 million in estimated lease payments, and will allocate approximately \$672 million in royalty payments.

Over the next five years, activity in the shale will generate \$61 billion in new business sales and \$15.6 billion in new household earnings. Local governments will generate nearly \$844 million, and \$195 million will be paid in severance taxes to the State.

GULF OF MEXICO

In 2010, over 30 percent of the oil and 11 percent of the natural gas produced in the United States was produced in the Gulf of Mexico. This energy production is crucial to our nation's energy security and economic survival.



Louisiana's offshore oil and natural gas industry is critical to the United States both from an energy supply perspective and due to its contribution to U.S. GDP. Natural resource exploration and production operations off our state's coast stimulate many sectors of the economy, creating jobs, contributing to GDP and generating significant tax revenue at every level of government.

The Gulf offshore oil and natural gas industry is a significant provider of employment in the U.S. Due to the economic downturn, the deepwater moratorium and slowdown in permitting for offshore activities in the Gulf, total employment (direct, indirect and induced jobs) associated with offshore Gulf oil and natural gas industry investments declined to its lowest level in 2010.

However, even with the downturn, the industry provided an estimated 242,000 jobs in 2010.

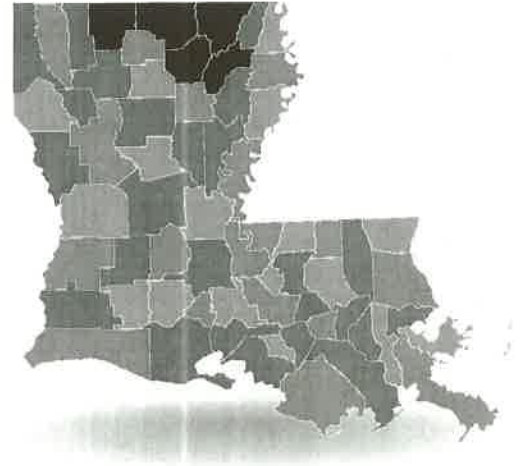
Over 60,000 of these jobs were within the oil and natural gas industry and 180,000 were either indirect (providing equipment and services to the offshore Gulf oil and natural gas industry) or induced jobs.

An analysis by IHS Global Insight of the economic contribution to the Gulf States from offshore oil and gas development in the Gulf of Mexico shows that independent oil and gas companies account for about half of the nearly 400,000 jobs; \$70 billion in economic values; and \$20 billion in federal, state, and local revenue generated by the industry in 2009.

Experts estimate that by 2020 an exclusion of the independents from the Gulf of Mexico would eliminate 300,000 jobs and result in a loss of \$147 billion in federal, state, and local taxes from the Gulf region over 10 years. If the independents are excluded just from the deepwater, the losses would be 265,000 jobs by 2020 and \$106 billion in tax revenues over the 10-year period.

BROWN DENSE

The Lower Smackover “Brown Dense” formation is an unconventional oil reservoir that underlies northern Claiborne, Union and Morehouse parishes, and includes parts of southern Arkansas. The Brown Dense is in the very early stages of development.

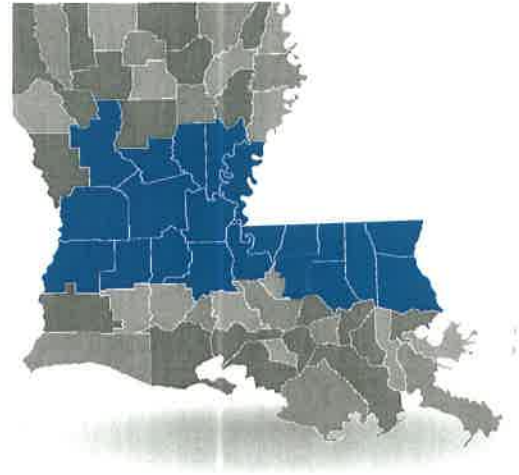


Several companies have announced acquisitions of oil and gas leases in the developing “Brown Dense” shale formation. It has been estimated that the formation ranges in vertical depths from 8,000 to 11,000 feet.

The area that encompasses the “Brown Dense” has produced oil and gas resources from the Upper Smackover formation for over 90 years. It has been suggested that the “Brown Dense” formation is the source rock for these Upper Smackover reserves and could become a viable resource play with the utilization of modern drilling techniques.

CENTRAL LOUISIANA

Central Louisiana is currently home to two important shale plays: The Tuscaloosa Marine Shale (TMS) and the Austin Chalk. While these shale plays are in the early stages of development, the results are positive.



The TMS is an unconventional resource play that has been estimated to contain more than 7 billion barrels of potential oil production. It has been suggested that the TMS has some of the same characteristics and geological age as the Eagleford shale located in southern Texas. The TMS potential area stretches across a large portion of central Louisiana into the Florida parishes, and into Mississippi.

A study conducted by the Basin Research Institute of Louisiana State University identified the shallowest depth of the TMS begins at approximately 10,000 ft. Currently, several companies are in the process of leasing and developing exploratory wells in the region.

In early December 2011, companies reported an initial test of 540 barrels of oil production per day from one of the first completed horizontal wells in the Tuscaloosa Marine Shale.

A new development that excites many throughout the state is the Austin Chalk formation. The Austin Chalk stretches across numerous fields in Texas, Louisiana and a small portion of Mississippi. Companies drilling the Austin Chalk are having huge success and are encouraged by these results.

For decades, the Austin Chalk has produced prolific amounts of oil in parts of Texas. Today, oil and gas companies are discovering that the Austin Chalk trend is a very promising resource in Louisiana. Experts now realize that since the Austin Chalk retains thicker sands in Louisiana, it could potentially exceed Texas in production from that geological horizon.

DAVY JONES

Southwest Louisiana is home to an onshore and offshore play called the “Davy Jones.” The Davy Jones could potentially be one of the largest natural resource discoveries in decades. While it is an onshore and offshore play, most wells will be drilled onshore to depths greater than 22,000 feet.



In January 2010, New Orleans-based McMoRan Exploration Co. announced the Davy Jones discovery. Experts believe this recent prospect discovery is so significant that it is reshaping the way the oil and gas industry thinks about the subsurface geology of the Gulf of Mexico shelf.

The Davy Jones prospect could potentially be one of the largest natural resource discoveries in decades in the shallow waters of the Gulf of Mexico. The Eocene-Paleocene rock formation just off the central Louisiana coast is estimated to contain an estimated 2.0 to 6.0 trillion cubic feet (tcf) of natural gas. The highly productive formation is located approximately 29,000 feet below the surface of the earth.

Until this find, the shallow waters of the shelf of the Gulf of Mexico have been considered thoroughly explored. The Davy Jones discovery could spur a new wave of drilling on the shelf, provided natural gas prices make it economical to do so. This would be a boon to drilling contractors and oilfield service companies in Louisiana, as well as the operators, partners, and investors in the projects conducted in this field.



Unconventional Resources and Louisiana's Manufacturing Development Renaissance

David E. Dismukes, Ph.D.
Center for Energy Studies
Louisiana State University

January 11, 2013

EXECUTIVE SUMMARY – PROJECT SUMMARY

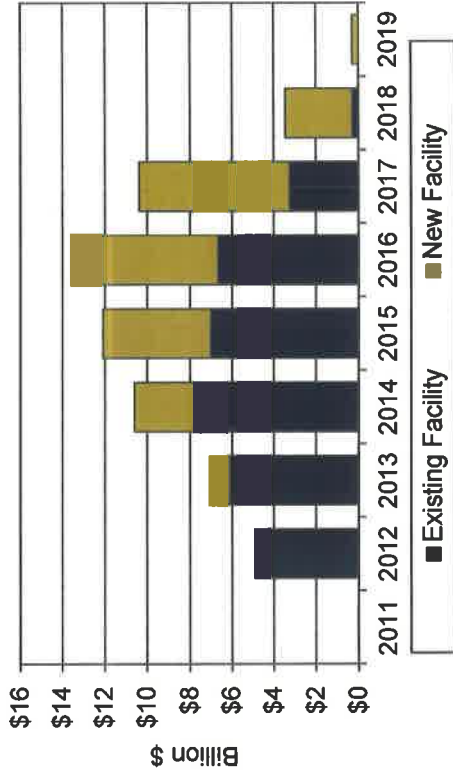
There is a symbiotic relationship between **natural gas prices** and Louisiana's **energy-intensive manufacturing base**. Louisiana manufacturing relies heavily on natural gas for heat, steam, power generation and most importantly, feedstock purposes. Louisiana's chemical industry is particularly reliant upon natural gas and natural gas liquids since both are used to produce a wide range of goods.

The synergies between natural gas use and Louisiana manufacturing have their genesis in the state's historic role as the **second largest U.S. natural gas producer**. While Louisiana's role as a major producer of natural gas is well known, the significance of its natural gas usage is not. Louisiana ranks **third in the country in total natural gas usage**, and **second in industrial natural gas usage**.

The **natural gas price increases of 2000**, and the dismal outlook for domestic North American natural gas supplies, cast a long shadow on Louisiana manufacturing that only got worse in the aftermath of the tropical activity of 2004 and 2005. Liquefied natural gas ("LNG") imports appeared to be the less-than-satisfactory solution to these gas supply problems.

The emergence of **prolific unconventional natural gas resources** however, has led to an abrupt reversal of fortune for Louisiana manufacturing. Over the past year, a **large number of proposed investments**, both expansions and new facilities, have been announced in Louisiana. These projects include LNG export terminals, gas-to-liquids facilities, ethane crackers, and methanol/ammonia plants.

EXECUTIVE SUMMARY – PROJECT ANNOUNCEMENTS



Natural gas prices, from 2000 to 2009, averaged about \$5.88 per million British Thermal Unit (“BTU”) and in many instances often exceeded, on a daily basis, \$10/MMBTU. During this period, the volatility of prices doubled, making natural gas an exceptionally high-cost energy resource for U.S., and in particular, Louisiana manufacturing.

Natural gas prices began to retreat from these unusually high price levels during the course of the last recession and have remained stable, between \$3.00/MMBTU to \$4.00/MMBTU.

This change in price comes from the development of unconventional gas reserves located throughout the U.S. Many credible resource estimates suggest at least 100 years of U.S. natural gas supply from these newly-discovered resources.

The abundance of natural gas resources has led to a virtual manufacturing renaissance in Louisiana where, to date, some \$62.3 billion in new capital investments have been announced. The majority of these proposed investments, if developed, will occur between the next five to eight years.

EXECUTIVE SUMMARY – PROJECT INVESTMENT IMPACTS

Statewide Impacts (Investment Only)

- In general, capital expenditures associated with a large manufacturing facility do not remain in one state since specialty equipment, machinery, and other materials are imported from other states, regions or international sources. If each of these natural gas induced projects were to be built, in-state capital investment in Louisiana would total \$20.2 billion (out of the total of \$62.3 billion) over the next nine years.
- The construction of the recently-announced natural gas induced projects is estimated to generate an economic benefit of over **\$29.7 billion in economic output** over a nine-year period (2011-2019), a **cumulative increase of some 214,670 job-years**, and **\$9.3 billion increase in wages** over a nine-year construction period.

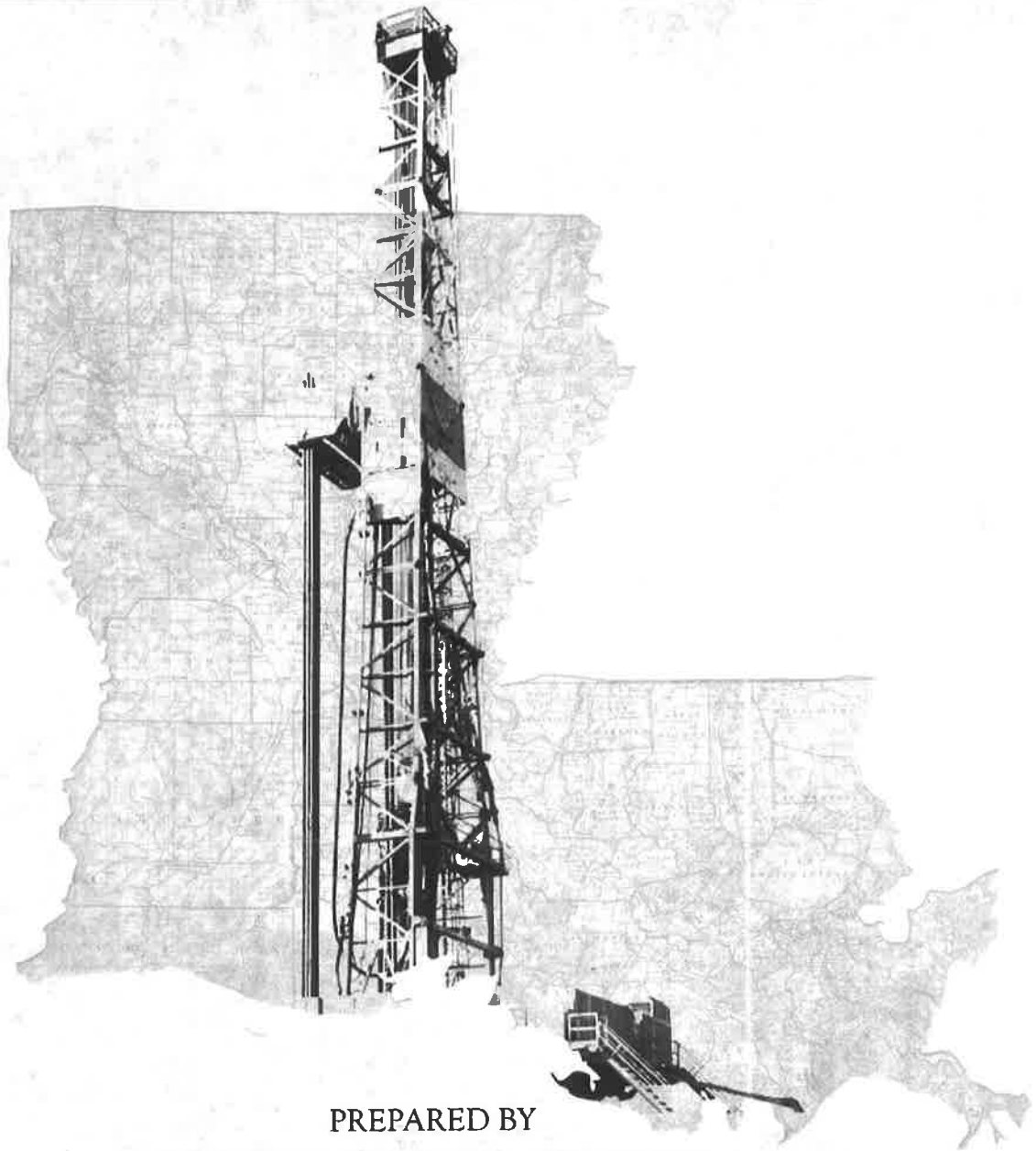
Region	Output (\$Billions)	Jobs-Years	Wages (\$Billions)
South East	\$15.64	109,355	\$5.21
South Central	\$4.33	30,920	\$1.39
South West	\$2.61	19,289	\$0.78

Regional Impacts (Investment Only)

- Most of the manufacturing project announcements are anticipated to be located in South Louisiana. As such, the estimated impacts were based on three different regions. **These impacts include over \$22.5 billion in output, almost 160,000 in job-years, and \$7.4 billion in wages.**

ECONOMIC IMPACT OF THE HAYNESVILLE SHALE ON THE LOUISIANA ECONOMY

2009 ANALYSIS & PROJECTIONS FOR 2010-2014



PREPARED BY
DR. LOREN C. SCOTT & ASSOCIATES
APRIL 2010



**THE ECONOMIC IMPACT OF THE HAYNESVILLE SHALE
ON THE LOUISIANA ECONOMY IN 2009**

PREPARED BY

LOREN C. SCOTT & ASSOCIATES

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April 2010

EXECUTIVE SUMMARY

Much excitement has been created in Louisiana's oil and gas extraction sector by the discovery of the Haynesville Shale deposit in the northwestern part of the state. In Louisiana, it is located primarily in four parishes---Caddo, Bossier, DeSoto, and Red River. What has especially bolstered excitement about this play is the first estimate of its size. One estimate suggests it holds 251 tcf of natural gas, making it the largest natural gas find in the U.S. Some of the initial wells have produced prodigious amounts of natural gas---as high as 24 mmcf---though the average decline rate in the first year has been calculated at 80.4 percent.

The purpose of this report is to capture and measure the direct and indirect effects on the Louisiana economy from the activities of the extraction firms operating in the Haynesville Shale in 2009. We received data from seven firms representing about 70 percent of the wells drilled in 2009. On the basis of this large sample, we estimated total expenditures by all firms operating in the shale and plugged these data into the RIMS II model to estimate the annual impacts on: (1) *new sales* for firms in the state, (2) *new household earnings* for residents in the state, (3) *new jobs* in the state, and (4) *tax collections* by the state and local governments.

We can summarize the impacts on the Louisiana economy in the following way:

- We estimate that during the year 2009, the extraction activity of these seven firms generated approximately **\$10.6 billion in new business sales within the state of Louisiana.**
- New business sales in turn created new household earnings for residents of the state. **As a result of these activities, nearly \$5.7 billion in household earnings was created in 2009.**
 - This represents about 3.6 percent of the personal income produced in the state in 2009.
 - Louisiana's personal income actually fell by almost \$1.2 billion or 0.7 percent in 2009. Had it not been for the Haynesville Shale activity the decline would have been 4.3 percent.
 - This estimate includes both direct and indirect earnings and includes almost \$1.3 billion in lease and royalty payments to landowners.
 - There are 64 parishes in Louisiana. In only nine parishes did total personal income exceed \$5.7 billion in 2007. The total personal income in the Monroe MSA (Ouachita and Union Parishes) totaled \$5.4 billion in 2007.

- Including the direct employment of approximately 4,318 employees and contract workers reported by these firms, **there was an increase of 57,637 new jobs within the state in 2009**. The job multiplier is remarkably large in this case due to the fact that \$1.3 billion in lease and royalty payments were injected into the state's economy by the extraction firms.
 - As a reference point, there were 59,500 people employed in all of Louisiana's finance and insurance companies in February 2010.
 - Louisiana lost 38,500 jobs in 2009, a decline of -2 percent. Had it not been for the Haynesville Shale activity, the decline would have been 96,137 jobs or -5 percent.
- Finally, we estimate the increase in state and local tax collections that were generated to extraction activities in the Haynesville Shale. These new taxes came from two sources: taxes paid directly by firms and additional taxes paid by households who experienced an increase in their household earnings via the multiplier effects. Our conservative estimate is that collectively, **state and local tax revenues increased by at least \$912.3 million in 2009** due to the extraction activities in the Haynesville Shale.
 - In Desoto Parish, sales tax collections were up by 82.2 percent in 2009.
 - In Red River Parish, sales tax collections were up 205.1 percent in 2009.
 - In the four primary parishes in which shale operations occurred, sales taxes fell during the short and shallow recession following 9-11. In the much more serious recession of 2009, sales tax collections actually rose in all four of these parishes.

While these multiplier impacts appear large at first blush, it is important to note that a non-trivial amount of the multiplier impacts estimated above did not arise from extraction or drilling activities. Approximately \$1.3 billion of the total expenditures associated with the extraction activity in the Haynesville Shale were in the form of mineral lease payments and royalty payments. Thus, the impacts on business sales, household earnings and jobs arise in no small part from the expenditures made by these lease owners.

One can easily argue that our estimates are on the conservative side, because we are using a very conservative estimate of the percentage of newly created wealth (e.g. lease payments and royalties) that households will spend on goods and services. Based on existing studies, economists estimate that households spend about 5 percent of their wealth each year. But, these estimates are based on traditional measures of household wealth (value of homes, pension values, etc.). The studies do not contemplate massive increases in a household's wealth due to

royalties and lease payments (equivalent in this case to winning the lottery). Unfortunately, we are not aware of any studies that measure the amount of money that households spend from lottery winnings, so we use the 5 percent value to calculate the impacts on sales, earnings and jobs. Thus, the multiplier impacts reported here may be viewed as lower bound estimates. The actual impacts may be substantially larger.

In the addendum, we also estimate the projected impact of Haynesville Shale activity over 2010-14. The impacts on business sales, household earnings and jobs are shown in Table E-1:

Table E-1
Projected Economic Impact of Haynesville Shale Activities: 2010-14

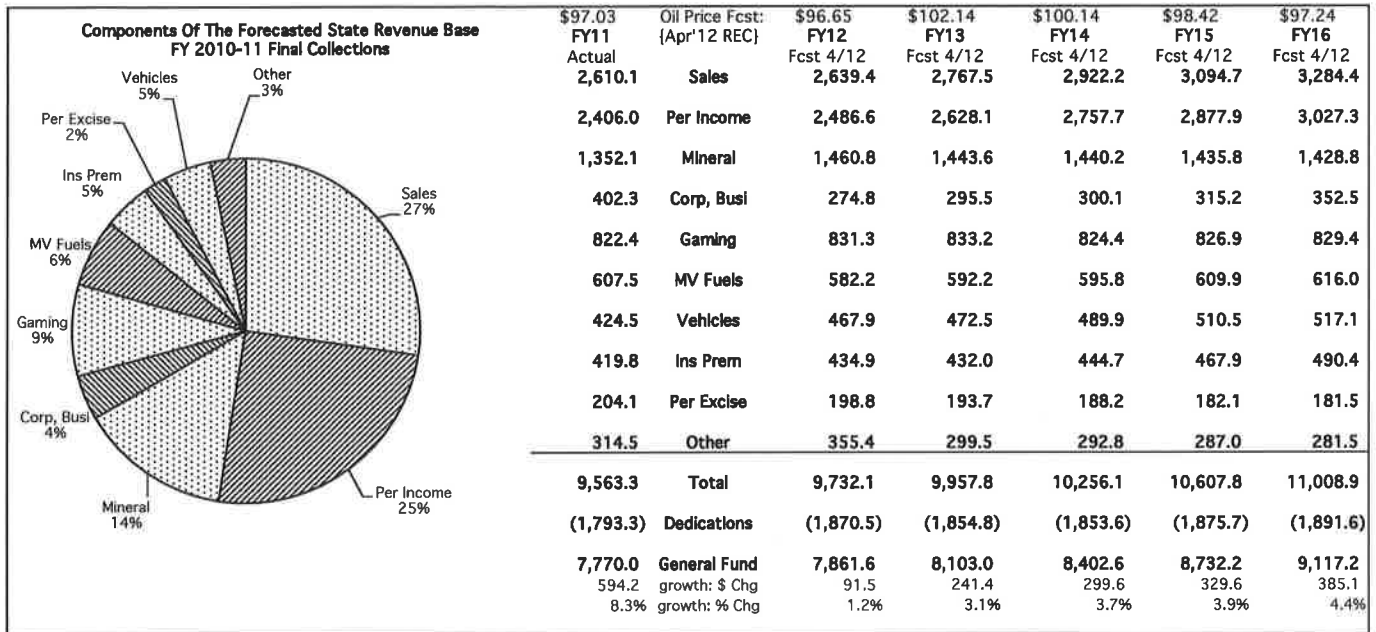
Year	Business Sales	Household Earnings	Jobs
2010	\$16,922,746,986	\$4,309,405,111	111,329
2011	\$11,989,513,898	\$3,053,243,027	76,339
2012	\$11,281,082,402	\$2,872,718,682	69,424
2013	\$10,580,655,696	\$2,694,525,036	62,883
2014	\$10,580,655,696	\$2,694,525,036	60,637

The projected impacts on the state and local government treasuries are shown in Table E-2:

Table E-2
Estimated State Taxes: 2010-14

Year	Total Local Taxes	Total State Taxes
2010	\$232,707,876	\$303,738,356
2011	\$164,875,123	\$225,827,012
2012	\$155,126,808	\$225,530,307
2013	\$145,504,352	\$251,206,752
2014	\$145,504,352	\$282,696,752

STATE REVENUE SUMMARY
as of 4/24/12 REC and FY11 Close
July, 2012



Pre-Storms: Path Looked Good

The U.S. economic recovery from the 2000-01 recession picking up steam and energy prices beginning to run up, pulling along the state economy and revenue receipts: FY04 experienced 5.2% / \$411 million of revenue growth (\$368.5m general fund). FY05 experienced 10.9% / \$905 million of revenue growth, with good trends across the board: mineral revenue +\$243m, corporate taxes +\$211m, personal income tax +\$209m, sales tax +\$173m; (\$626.0m general fund).

Post-Storms: Revenues Surged To FY08 Revenue Peak

In addition to U.S. economic acceleration affecting certain revenues (e.g. corporate) and post-storm effects on certain revenues (e.g. gaming, premiums, interest), particular revenue surges stood out: FY06 Sales Tax Step-Up: \$485.6m (19% gr); 60% of \$808.4 total tax gr (8.8% gr); \$909m SGF gr; spending for storm relief, recovery, relocation, and replacement FY07 Income Tax Step-Up: \$745.1m (30% gr); 45% of \$1,660.1m total tax gr (16.6% gr); \$1,379.5m SGF gr; deferral catch-up, job gr (recovery/rebuilding), wage premiums FY08 Mineral Revenue Step-Up: \$425.1m (26% gr); 128% of \$332.1m total tax gr (3.1% gr); \$500.2m SGF gr; oil & gas prices climb sharply all year before peaking in July'08 From an FY05 base year, the three following years (FY06 - FY08) experienced \$2.836 billion (31%) of state tax revenue growth, with receipts peaking in FY08 at \$12.020 billion of total state taxes and \$10.136 billion of SGF revenue.

FY08 Revenue Peak To FY10 Revenue Trough

The Great Recession reaching the state, post-storm spending tapering off, mineral prices collapsing, and substantial tax cuts combine to dramatically reduce state revenue. FY09 revenue dropped \$965m (8%): \$465m in mineral revenue (48%), \$352m in general economy (37%), and \$148m in tax cuts (16%, mostly sales and income taxes). FY10 revenue dropped \$2.136b (19%): \$192m in mineral revenue (9%), \$1.226b in general economy (57%), and \$718m in tax cuts (34%, mostly sales and income taxes). From an FY08 base year, the two following years (FY09 - FY10) experienced \$3.1 billion (26%) of state tax revenue decline: \$657m mineral revenue (21%), \$1.577b in general economy (51%), and \$866m in tax cuts (28%, mostly sales and income taxes). Total state tax receipts hit a trough in FY10 at \$8.919b and \$7.175b of SGF revenue.

FY11 A Good Recovery Year But FY12 Sharply Decelerated

Recovery from the Great Recession (U.S. and quicker LA) along with rising energy prices (after the 2008 collapse) resulted in a revenue bounceback in FY11 from the FY10 trough, with good performance almost all across the board. Only severance taxes lagged due to large exemption realizations, especially related to horizontal drilling production (mostly gas, but oil as well). However, this revenue recovery seemed to have nearly stalled out in FY12, as sharply lower growth was experienced in sales, income, and corporate taxes over most of the fiscal year. End-of-year performance may alleviate some of this disappointment, and both severance and royalties have performed well due largely to continued strong oil prices dominating other factors. FY11 total tax revenue grew \$643.4m (7.2%) with SGF growth of \$594.2m (8.3%) on the strength of corporate (50%gr), income (8.7%gr), general sales (10.5%), vehicle sales (18.7%), and royalties (19.4%). Severance taxes actually fell by 2.4% due to high levels of tax exempt activity. FY12 total tax revenue is officially projected to grow by only \$168.9m (1.8%) and only \$90.7m (1.2%) in SGF: \$81.2m (3.4%) income tax, \$29.3m (1.1%) sales tax, \$11.2m (1.5%) severance tax, and \$101m (20%) royalties. Final receipts may be somewhat better than this, but the year will be a disappointment in light of expectations for continuing recovery, even if at growth less than in FY11.

FY13 - FY16

Growth in the forecast horizon is expected to return to something more like normal assuming the U.S. economy continues to recover and accelerates, pulling along the state economy and state revenue receipts. The official growth projection for FY13 is 2.3% for gross taxes and 3.1% for general fund receipts. Going forward through FY16, total tax growth projections accelerate into the 3.5% to 4.0% range, with general fund receipts growth projected closer to the 4.0% to 4.5% range. Those are respectable growth rates, but they do rely on certain assumptions that are at risk. The most immediate risk is to the oil price projections which are \$97/bbl to \$102/bbl over this period. Recent weakness adds concern for at least the FY13 projection. Sluggish U.S. economic growth is vulnerable to a worsening of the Eurozone financial crisis and slowing growth in major emerging market economies. Consequently, the Louisiana economy is also vulnerable and struggled with weak sales tax and income tax growth all through FY12. Corporate collections were weak virtually all of the year, as well, and may only be improving at the very end of the year. A turnaround in this revenue source is overdue and welcome, but will not be sufficient to offset continued weakness in sales and income taxes.

Upside potential may rest with corporate collections, but total tax receipts are unlikely to be revised up on the corporate outlook alone. **Downside risks** are to oil prices, connected to the broader risks of overall economic slowing in the worldwide economy.