Projecting the Economic Impact of the Fayetteville Shale Play for 2008-2012

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EXECUTIVE SUMMARY

In 2006, the Center for Business and Economic Research released an economic impact study of the newly developing natural gas industry related to the Fayetteville Shale. The Fayetteville Shale is an unconventional gas reservoir located on the Arkansas side of the Arkoma Basin, ranging in thickness from 50 to 325 feet and ranging in depth from 1,500 to 6,500 feet. That study concluded that from 2005 to 2008, economic output of over $5.5 billion and 9,683 jobs would be generated as a result of investments in the Fayetteville Shale. Those estimates were based on the best information available when the study was conducted; however, many of the companies involved in the Fayetteville Shale subsequently significantly accelerated their investment plans as the potential of the play was proved. Therefore, this report provides updated estimates, which better reflect the current investment plans of the companies involved, of the economic impact of the Fayetteville Shale natural gas industry on the state of Arkansas.

The direct activities associated with the development of the Fayetteville Shale that generate economic activity are: exploration, extraction, production, transportation, storage, and distribution. The counties in Arkansas where successful wells have been drilled are Cleburne, Conway, Faulkner, Franklin, Pope, Van Buren and White. The presence of the natural gas industry in Arkansas produces indirect (supply chain oriented) and induced (personal expenditure related) economic impacts. These added economic effects imply that when dollars are directly invested in the Fayetteville Shale, there is an associated multiplier.

In order to quantify the economic impact of the Fayetteville Shale Play, a survey was administered to the companies who make up and support the natural gas industry in central Arkansas. This survey had questions about planned expenditures and employment, risk factors like natural gas price declines and increases in the Arkansas severance tax, and the perceived economic impact of the development of the Fayetteville Shale. The numerical responses were used as inputs to the IMPLAN input/output model, which was used to estimate the indirect and induced effects associated with direct industry spending.

To provide a baseline of economic activity, expenditures and employment in the year 2007 were investigated. These impacts were substantial: $1.8 billion of direct expenditures led to total economic output of $2.6 billion and employment of 9,533 people.

	2007 Direct Impact	2007 Indirect Impact	2007 Induced Impact	2007 Total Impact	2007 Multiplier
Output	$1,797,349,728	$416,673,682	$387,068,671	$2,601,092,069	1.45
Employment	3,776.4	1,904.6	3,852.0	9,533.0	2.52

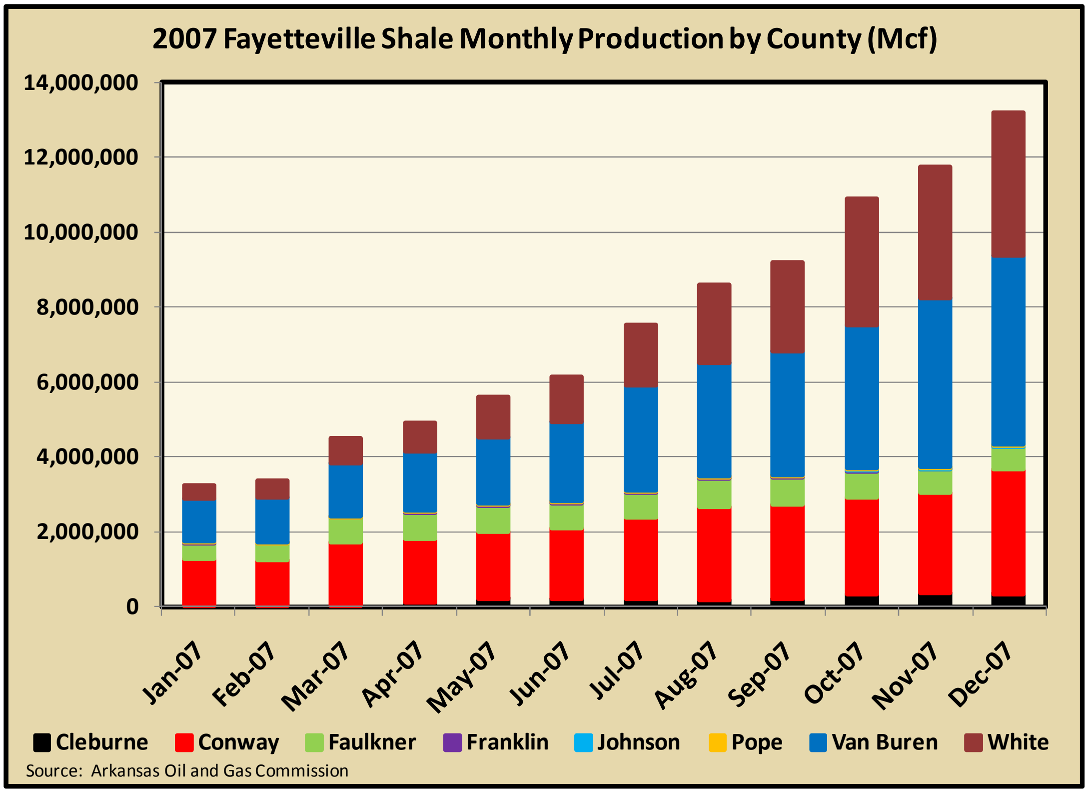
In 2007, the tax revenues from operations in the Fayetteville Shale were also significant for the state. More than $54.6 million in revenues were generated at the state level.

2007 Estimated State Taxes	Amount
Income Taxes from Employment	$5,023,891
Sales Taxes from Employment	$8,054,069
Income Taxes from Production	$34,216,210
Sales Taxes from Royalties	$3,359,130
Property Taxes for Schools from Production (2007 Assessment Year)	$3,703,650
Severance Taxes	$266,550
Arkansas State Taxes	**$54,623,500**

There were additional city and county sales and property taxes generated that are not included in this total. A weighted average of local sales tax rates was used to estimate the amount of sales tax generated for cities and counties. In 2007, that amount totaled just over $7.0 million. Local millage rates were used to calculate property tax revenues. These revenues were just over $1.3 million in 2007.

2007 Estimated Local Taxes	Amount
Sales Taxes from Employment	$4,698,207
Sales Taxes from Royalties	$2,339,776
Property Taxes from Production (2007 Assessment Year)	$1,303,067
Local Taxes	**$8,341,050**

In 2007, the companies continued to invest in the long term potential for production in the Fayetteville Shale. Total production from the Fayetteville Shale in 2007 was 88.8 billion cubic feet (Bcf) of natural gas, with a market value of approximately $651 million. This amount was less than 37 percent of the direct expenditures made by operating companies in that same year.



Using results from the survey, estimates of economic activity from 2008 to 2012 were made. Over the next five year period, total economic activity of about $17.9 billion will be generated if the companies operating in the Fayetteville Shale make expenditures in the amounts and using the timing that they reported. Additionally, annual direct employment of about 4,600 people will result in total annual state employment of more than 11,000 people during the 2008 to 2012 time period.

Year	Direct Economic Output Impact	Indirect Economic Output Impact	Induced Economic Output Impact	Total Economic Output Impact	Average Multiplier
2008	$2,403,100,608	$618,168,513	$494,040,561	$3,515,309,701	1.46
2009	$2,312,800,224	$533,726,731	$480,145,885	$3,326,672,757	1.44
2010	$2,548,019,872	$556,154,598	$524,428,800	$3,628,603,211	1.42
2011	$2,634,311,552	$567,638,793	$532,898,064	$3,734,848,322	1.42
2012	$2,582,333,760	$555,837,508	$512,828,487	$3,650,999,970	1.41
Total	**$12,480,566,016**	**$2,831,526,143**	**$2,544,341,797**	**$17,856,433,961**	**1.43**

Year	Direct Employment Impact	Indirect Employment Impact	Induced Employment Impact	Total Employment Impact	Average Multiplier
2008	4,719.6	2,903.8	4,818.5	12,441.9	2.64
2009	4,497.7	2,327.1	4,588.2	11,412.9	2.54
2010	4,813.2	2,304.4	4,908.5	12,026.1	2.50
2011	4,789.3	2,284.7	4,884.0	11,958.0	2.50
2012	4,511.5	2,186.0	4,601.1	11,298.5	2.50

Additionally, significant income, sales, property, and severance tax revenues are projected to accrue to the state from 2008 to 2012. About $1.8 billion in state level taxes are projected to result from the direct, indirect, and induced effects of the activities in the Fayetteville Shale.

2008-2012 Estimated State Taxes	Amount
Income Taxes from Employment	$31,165,410
Sales Taxes from Employment	$49,962,937
Income Taxes from Production	$1,389,126,182
Sales Taxes from Royalties	$137,942,032
Property Taxes for Schools from Production (Assessment Years)	$143,797,376
Severance Taxes	$7,249,125
Arkansas State Taxes	**$1,759,243,062**

City and county tax revenues are also expected to be substantial over the 2008 to 2012 time period. Local sales and property taxes resulting from Fayetteville Shale activities are estimated to total over $150 million during the five year period.

2008-2012 Estimated Local Taxes	Amount
Sales Taxes from Employment	$29,145,047
Sales Taxes from Royalties	$80,466,185
Property Taxes from Production (Assessment Years)	$40,974,340
Local Taxes	**$150,585,572**

The output, employment, and tax estimates presented above are subject to a couple of obvious risks. The first is that the price of natural gas declines to a level where production in the Fayetteville Shale is no longer profitable for the companies operating there. According to the survey respondents, an average price of $6.21 per MMBTU is necessary for the forecasted investments to be made. A sustained decrease of $1.00 from that level could cause a 47 percent decrease in investment in the Fayetteville Shale. However, a sustained $1 increase in prices from that average level could cause average additional investment of 10 percent.

The second risk factor to the above projections is that the severance tax is raised to a level that causes the operating companies to reduce the magnitude or slow the timing of their investments in developing the Fayetteville Shale. Accordingly, a survey question was included, which asked for the investment and hiring response to a hypothetical 5 percent severance tax without any initial reductions or performance exemptions. The survey responses from Fayetteville Shale operators indicated that if the severance tax were increased to 5 percent, the average response would be a 13 percent decrease in investment in Fayetteville Shale activities. Employment and tax revenues would be proportionally affected as well. Any increases or declines in investment would also be subject to the multiplier effects estimated in this study.

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The research team for this project at the Center for Business and Economic Research consisted of Kathy Deck, Viktoria Riiman, Mervin Jebaraj, Jeff Cooperstein, and Mary Davenport. Bill Dull and Kyle Story provided excellent student research assistance.

Independence of Results

This study was conducted by the research staff at the Center for Business and Economic Research in the Sam M. Walton College of Business at the University of Arkansas. This project could not have been completed without the sponsorship of and data provision from companies who are actively involved in developing the Fayetteville Shale natural gas industry. However, the choice of methodology, the type of analysis, and the conclusions reached in this report are the authors' own and have not been directed by any outside party.

INTRODUCTION

The Fayetteville Shale is the most significant natural gas field in Arkansas. The development of the Fayetteville Shale began in the early 2000's after employees at Southwestern Energy Company realized that the Fayetteville Shale was similar in character, age, and thickness to the Barnett Shale, an unconventional reservoir of natural gas in north and central Texas that has thousands of wells producing hundreds of billions cubic feet of natural gas annually. A combination of improving recovery technology and relatively high natural gas prices made development of the Barnett Shale economically attractive in the late 1990's. The same factors caused and are causing investment and production in the Fayetteville Shale.

At the end of 2004, there were 13 wells in the Fayetteville Shale with total production of just over 100 million cubic feet (MMcf) of gas. The approximate market value of that gas was about $640,000. By the end of 2007, there were 603 wells in the Fayetteville Shale. Those wells produced about 88.85 billion cubic feet (Bcf) of natural gas throughout 2007, with an approximate market value of $651 million.

The bulk of activity in the Fayetteville Shale has taken place in three counties: Conway, Van Buren, and White. However, there is also production in Cleburne, Faulkner, Franklin, Johnson, and Pope Counties. Early on in the development of the play, there was speculation about the economic feasibility of producing natural gas further to the east in Independence, Jackson, Woodruff, Prairie, and St. Francis counties, but at this point, the potential for significant recovery of natural gas in those counties seems limited.

The core counties in the Fayetteville Shale play (Cleburne, Conway, Faulkner, Franklin, Johnson, Pope, Van Buren, and White) had a combined population of 336,542 on July 1, 2006. These counties contained 12.0 percent of the population of the State of Arkansas. The character of these counties is primarily rural—only Faulkner County is part of a metropolitan statistical area. In Arkansas, rural counties have been disproportionally hurt by declines in the manufacturing sector of the economy, so the rise of a new industry to provide economic activity and employment is important for the viability of these communities.

This study attempts to measure the magnitude of the impact of the natural gas industry associated with the Fayetteville Shale. After detailed research on the background of the natural gas industry and on the Arkansas economy, a survey was administered to companies involved in businesses associated with the Fayetteville Shale. Those survey results were used as inputs for the IMPLAN input/output model to generate economic output and employment multipliers, detailing the inter-industry effects of the Fayetteville Shale activity. The modeled estimates were then used to calculate projections of tax revenues within the State of Arkansas.

The study is organized as follows. First, some background information about the economic activity associated with the natural gas industry is presented. The current natural gas environment is then discussed. Next, some information about how production in the Fayetteville Shale has progressed thus far is presented. Economic profiles of the state of Arkansas and the core counties in the Fayetteville Shale area follow. Then, survey results and economic impact estimates for output and employment for the year 2007 are shown. A section on tax revenues concludes the economic impact analysis. Following the year 2007 information are survey data and projections for the economic impact of activity as well as projected tax collections related to the Fayetteville Shale for 2008 through 2012. A discussion of risks to the estimates from price volatility or increased severance tax comes after the economic impact projections. Finally, a copy of the survey instrument and detailed IMPLAN output tables are included as appendices.

Background Information

A study of the Barnett Shale in Texas by the Perryman Group (2007) described the economic impact of activity in that unconventional reservoir of natural gas in the following way: "Exploration, drilling, and production in the field have transformed the economy with thousands of jobs and millions of dollars in investment; led to royalty and bonus payments to local residents, cities, school districts, and others totaling millions of dollars each year; increased property tax revenues to counties, schools, and other entities; and contributed to the opportunities and prosperity for the entire region." These factors are the same economic drivers as those related to the Fayetteville Shale. As companies invest billions of dollars in acquiring and distributing the Fayetteville Shale's natural gas, wealth accrues not just to the owners of the energy companies, but also to lessors, employees, subcontractors, vendors, communities, counties, and the state. The next section describes the activities that are involved in generating direct economic output for the industry.

Structure of the Natural Gas Industry

In the natural gas industry, three distinct owners usually control the natural gas before it reaches the end user: production companies, pipeline companies, and local distribution companies. During its ownership by these three owners, a six-step process occurs to get natural gas out of the ground and to the end-user: exploration, extraction, production, transportation, storage, and distribution.

1. **Exploration** – production companies

First, geologists examine the surface structure of the earth. Geophysicists then use technology to map underground rock formations in order to determine the most likely location to discover natural gas deposits. If the scientific results indicate a strong probability of the existence of a natural gas deposit, then an exploratory well is drilled. From these wells, samples are removed to determine the existence of the natural gas as well as the composition and extent of the deposit.

2. **Extraction** – production companies

Once a natural gas deposit is found, an extraction well must be drilled. The extraction well is either drilled by cable tool drilling or by rotary drilling. The technology used to extract the natural gas deposit is dependent on the depth and the composition of the deposit.

3. **Production** – production companies, pipeline companies

Once the extraction well bore is drilled, the gas must be extracted and processed. First, the extraction well must be completed. To complete the extraction well, the well bore is cased with steel pipe so that neither natural gas can escape nor other liquids nor solids fall into the well bore. During this time period, small diameter, low pressure pipes are built to transport the raw natural gas to the processing plant, which is normally built in the natural gas producing region. Depending on the composition of the natural gas, the gas will go through multiple purifications to meet the requirements mandated by the transportation companies for their pipelines.

4. **Transportation** – pipeline companies

Pipeline companies purchase the gas from the production companies and then transport the gas to areas with high natural gas usage. The gas is produced at low pressure, but in order to flow along the pipes, it must remain highly pressurized. This creates the need for the gas to be compressed to be put into pipelines and for several compressor stations to be built every 40-100 miles. Metering stations are also built along the pipelines and are used to monitor the flow of natural gas within the pipe. In addition, valves are constructed every 5-20 miles if needed to restrict the flow of the natural gas.

As natural gas deposits are found and explored, pipeline companies must continually expand their pipeline systems. Before laying pipes, companies must perform proper due diligence to determine the layout of the pipeline system. Companies are hired to do a feasibility study and then aerial and land-based surveying is completed. Once the path is determined, the land is cleared, trenches are dug, and the pipe is laid.

5. **Storage** – pipeline companies

When the natural gas reaches its delivery point, whatever portion is not immediately sold to the local distribution company is stored in depleted natural gas reservoirs.

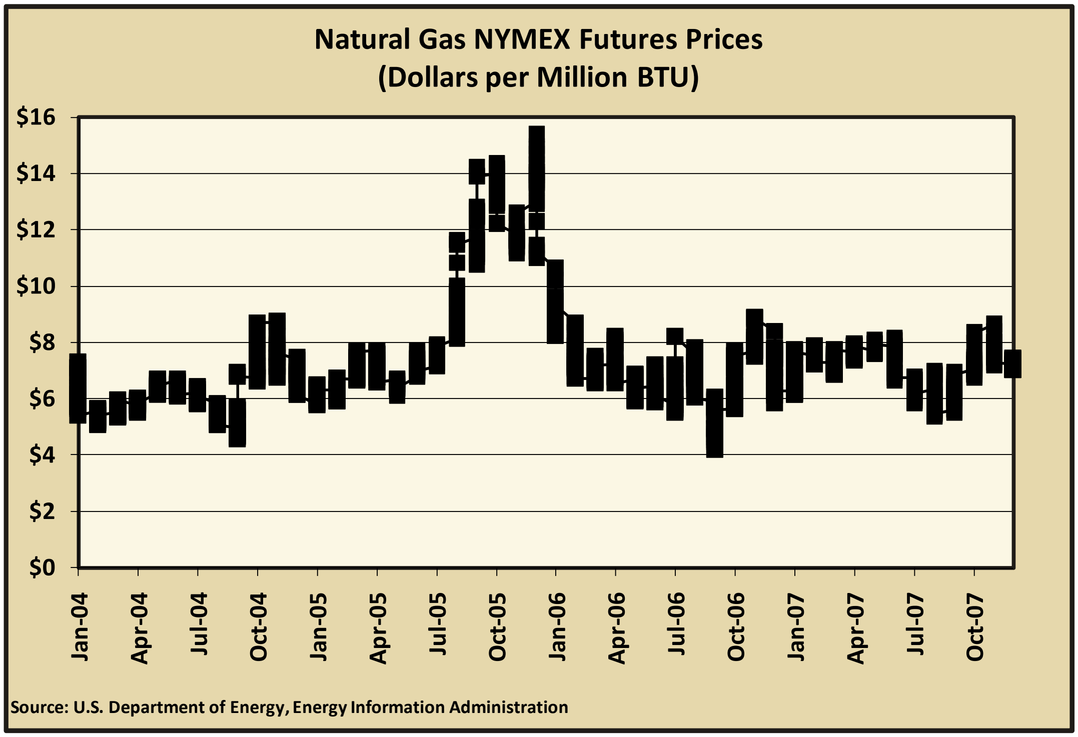
6. **Distribution** – local distribution companies

The local distribution company acquires the gas at the pipeline company's delivery point. The natural gas is then pumped into small diameter, low pressure pipes that ultimately connect to the end-user's location. Compressor stations are built along these pipelines in order to aid the flow of the natural gas.

Current Environment of the Natural Gas Industry

Throughout 2007, the price of natural gas hovered around $7 per million BTU, although in the summer the price was closer to $6 and in the late fall and early winter, the price was closer to $8. Sustained higher natural gas prices encourage additional exploration and production. Indeed, below some minimum threshold of prices, the economics on existing wells do not make sense. The associated graph shows that since 2006, prices have generally been above $6, even going higher than $15 in December 2005 before declining through 2006 to the $7 price range.

FIGURE 1: NATURAL GAS NYMEX FUTURES PRICES, DOLLARS PER MILLION BTU



FACTORS AFFECTING THE DEMAND FOR NATURAL GAS

RESIDENTIAL AND COMMERCIAL DEMAND

The U.S. Energy Information Administration (EIA) expects residential energy demand to increase 25 percent between 2002 and 2025. Residential use of natural gas is expected to increase by 1.5 percent per year from 2002 to 2010 and 0.9 percent from 2010 to 2025, increasing 25.5 percent from 2002 to 2025. Residential natural gas consumption accounts for 22 percent of all consumption in the U.S.

INDUSTRIAL DEMAND

The EIA estimates industrial energy demand to increase at an average rate of 1.2 percent per year to 2025. This may seem like a low level of growth, however it represents energy requirements for both energy-intensive manufacturing industries (which are expected to decline), and non energy-intensive manufacturing industries (which are expected to grow). Industrial demand accounts for 37.6 percent of natural gas demand, which is the highest of any sector.

The primary force shaping the demand for natural gas, and other sources of energy, in the industrial sector is the movement away from energy-intensive manufacturing processes, towards less energy-intensive processes. There are two driving forces behind this shift: the increased energy efficiency of equipment and processes used in the industrial sector, as well as a shift to the manufacture of goods that require less energy input. It is because of this trend that, while industrial shipments increased by 41 percent from 1980 to 2002, total energy consumption only increased by 1 percent. This trend is expected to hold into the future, and is the reason for modest increases in energy demand for the industrial sector.

Electric Generation Demand

The demand for electricity is predicted by the EIA to increase by an average rate of 1.8 percent per year through 2025. In order to meet this growing demand, 335 gigawatts of new electric generation capacity are expected to be needed by 2025. Because of the relatively low capital requirements for building natural gas fired combined cycle generation plants, as well as the reduction of emissions that can be earned from using natural gas as opposed to other dirtier hydrocarbons like coal, the EIA expects 57 percent of new electric generation capacity built by 2025 will be natural gas combined-cycle or combustion turbine generation.

While natural gas fired electricity generation accounted for 16 percent of all generation in 2002, the EIA predicts it will account for 21 percent of all generation in 2025. In addition to increased demand for natural gas powered central station generation, distributed electricity generation (as discussed for residential, commercial, and industrial sectors) may serve to increase the demand for natural gas for electricity generation purposes in the future.

Transportation Sector Demand

Natural gas use in the transportation sector is still in its infancy. Demand from the transportation sector accounts for 3 percent of total U.S. natural gas demand, and most of this demand is for natural gas to fuel the pipeline transportation of hydrocarbons.

Factors Affecting the Supply of Natural Gas

Short Term Supply Barriers

There are several barriers to immediate supply increases which affect the short term availability of natural gas supply. They include:

1. **Availability of Skilled Workers** - The need to train and hire skilled workers creates a lag between increased demand and an increase in production. From 1991 to 1999, a period of low prices indicated adequate supplies of natural gas existed. In response, exploration and production companies reduced employment by 26 percent, according

to the U.S. Bureau of Labor Statistics. Some of these workers left the industry altogether rather than remain unemployed. When prices began to rise in 1999, production activity was slower to increase than if skilled workers were plentiful. To counter this problem, many production companies offer increasingly high wages, as well as scholarships and educational contributions to attract professionals to the industry.

2. **Availability of Equipment** - Drilling rigs are very expensive pieces of equipment. Price volatility in the industry makes it very difficult for producers and suppliers to plan the construction and placement of drilling rigs far in advance. Low prices result in reduction of the number of available rigs. When prices respond to increased demand, and drilling activity increases, time is required to build and place an adequate number of drilling rigs. For this reason, drilling rig counts are a good indication of the status of the oil and natural gas production industry.

3. **Permitting and Well Development** - Before a natural gas well actually begins producing, there are several time-consuming procedures and development activities that must take place. In order to begin drilling, exploration must occur to determine the exact location of natural gas reserves. Once a suitable field has been located, production companies must receive approval from the mineral rights holder to install drilling equipment and begin to drill the well. Once drilling is completed, extraction and field processing equipment must be set up, as well as gathering systems. In all, the time between locating the natural gas deposits and the beginning of production can range from as little as a few months to as much as ten years.

4. **Weather and Delivery Disruptions** - Although unrelated to shifts in natural gas prices or demand increases and decreases, weather patterns and anomalies can have a significant impact on natural gas production. For example, hurricanes can have an impact on the offshore production of natural gas, as safety measures require the temporary shutdown of offshore drilling and production platforms. In addition, malfunctions and accidents may occur from time to time that disrupt the delivery of natural gas. Such an occurrence could disrupt the flow of natural gas through that important market center. While the effects of weather and delivery disruptions are most often of short duration, they can still have an effect on the expeditious production of natural gas.

General Barriers to Increasing Supply

In addition to the short term impediments to increasing natural gas supply, there exist other more general barriers to the increased supply of natural gas in the United States. These include:

1. **Land Access** - The U.S. government owns more than 29 percent of all the land in the country and an estimated 59 percent of undiscovered natural gas deposits. In several areas, the government has restricted access to federal lands. Outside of the western Gulf of Mexico, production companies are prohibited access to virtually all federal lands offshore the Lower 48 states. The National Petroleum Council in 1999 estimated that 213 Tcf of natural gas exists in areas under federal access restrictions. This restriction is the result of presidential and congressional leasing moratoria, and affects the amount of natural gas resources that may be extracted to increase supply.

2. **Pipeline Infrastructure** - The ability to transport natural gas from producing regions to consumption regions also affects the availability of supplies to the marketplace. The interstate and intrastate pipeline infrastructure can only transport so much natural gas at any one time, and thus a cap is placed on the amount of natural gas that can reach the market. Thus, natural gas pipeline companies must continually expand the pipeline infrastructure in order to meet growing demand.

3. **The Financial Environment** - Exploring for and producing natural gas is a very capital intensive endeavor. The National Petroleum Council estimated in 1999 that production companies will have to invest $1.44 trillion in capital between 1999 and 2015 in order to keep pace with demand growth. This puts significant pressures on production companies, particularly small, privately owned firms, to raise the capital necessary to increase production. The rate at which production companies raise capital serves as a limiting factor in the increasing availability of supplies reaching the market.

Besides these general impediments to increasing natural gas supply, there exists geological risk involved with exploring and producing natural gas. The volume of gas produced may happen to be non-profitable or the field may be found to contain hydrocarbons.

Potential Economic Impacts of the Natural Gas Industry

In determining the potential economic impacts of the natural gas industry, there are both direct and indirect effects at all levels of involvement in the industry. As discussed earlier, there is typically a six-step process in order to provide natural gas to the end-user. At each level of involvement, there are direct economic impacts as wages are paid out to employees and subcontractors. In addition, royalties, purchases and leases of land, and permits represent direct economic transactions occurring as a necessity in the operation of a natural gas company. There is also indirect economic activity that occurs as local and out-of-state workers must pay for places to stay and purchase food to eat. These workers become patrons of the communities in which they reside and in turn this stimulates economic activity in industries other than the natural gas industry.

Exploration – scientists and engineers studying the deposit need places to live and eat.

Extraction – permits; buying and leasing land; royalties.

Production – out-of-state employees need a place to live (home, apartments, hotels and motels) and eat; personnel hired to operate the wells, build and operate the processing facilities, and clear the land and lay the pipelines; attorneys, accountants, and engineers expanding their client base; state and local taxes.

Transportation – personnel hired to clear the land and lay the pipes; permits; buying and leasing land; various buildings must be built and maintained along the pipelines.

STATE ECONOMIC PROFILE

TABLE 1: ARKANSAS KEY ECONOMIC INDICATORS

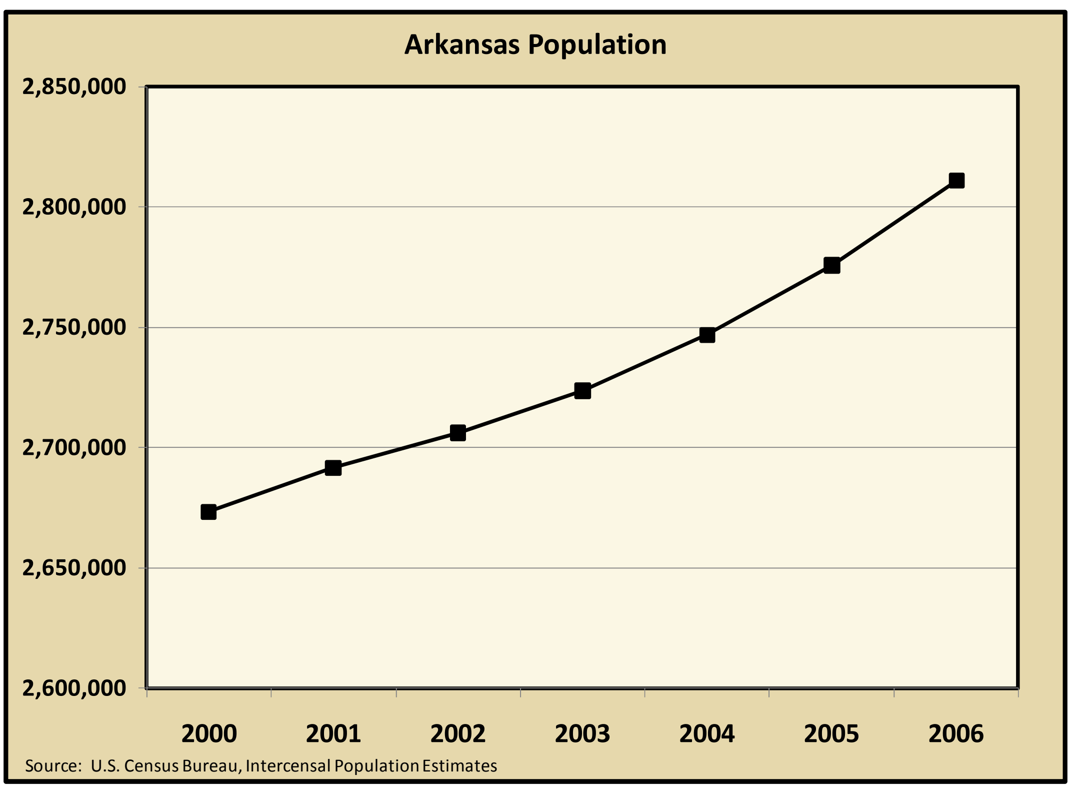
Economic Indicator	Arkansas	United States
Population Growth (April 1, 2000-July 1, 2007)	6.0%	7.2%
Per Capita Personal Income (2006)	$28,444	$36,629
Employment Growth (January 2000-December 2007)	6.9%	7.9%
Manufacturing Sector Employment Loss (January 2000-December 2007)	-22.0%	-19.8%
Natural Resources and Mining Sector Employment Growth (January 2000-December 2007)	44.8%	26.9%
Service Sector Employment Growth (January 2000-December 2007)	14.7%	11.9%
Wage Growth (2001-2006)	23.1%	21.2%

Sources: U.S. Census Bureau, Intercensal Population Estimates; U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics

POPULATION GROWTH

From April 1, 2000 to July 1, 2007, the population of Arkansas increased from 2,673,398 to 2,834,797 according to the intercensal population estimates released by the U.S. Census Bureau. This implies a growth rate of 6.0 percent over that time period. The United States experienced population growth of 7.2 percent during the same years, so the state was gaining population more slowly than the nation as a whole.

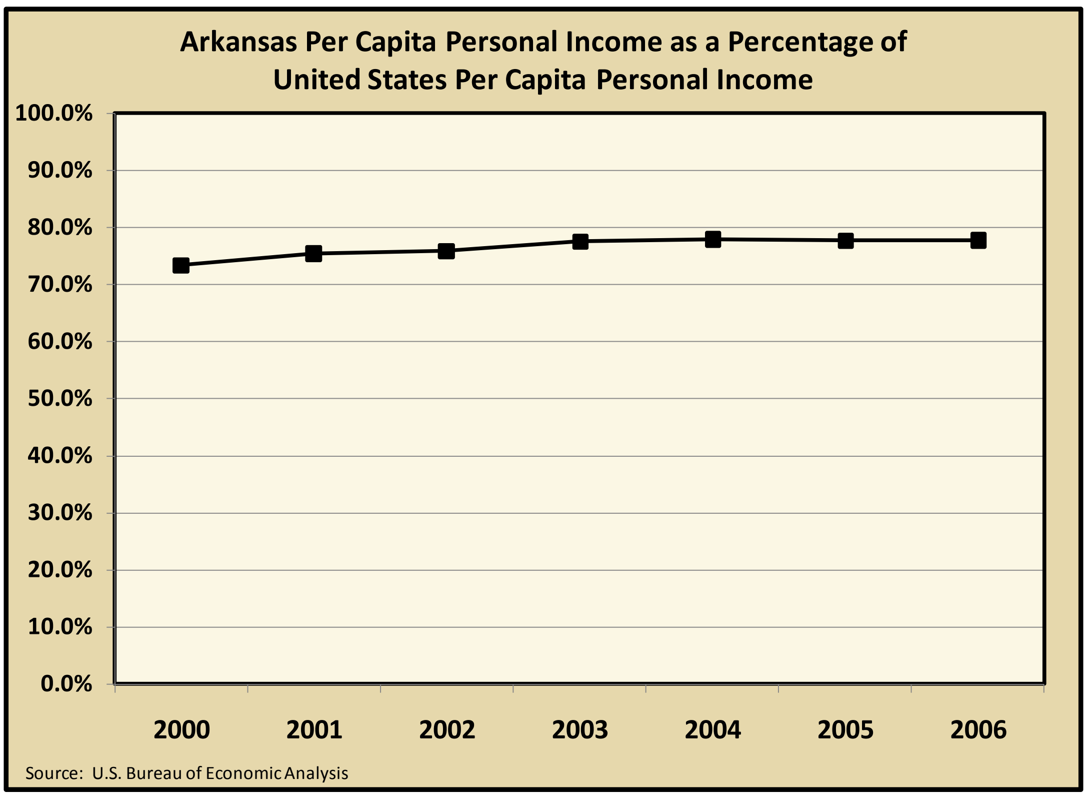
FIGURE 2: ARKANSAS POPULATION



Per Capita Personal Income

Per capita personal income is a measure of economic well-being that allows easy comparisons between counties, states, and nations. During the early decades of the twentieth century, Arkansas experienced significant gains in per capita personal income relative to the rest of the United States. However in the 1970's, the difference between national and Arkansas per capita personal income stopped declining. Since that time, per capita personal income in Arkansas has remained at about 75 percent of the national average. This implies that the average Arkansan is only about 75 percent as well off as the average citizen of the United States. Despite significant efforts by a variety of economic development groups, from 2000 to 2006, Arkansas per capita personal income only grew quickly enough to maintain its position relative to the United States value.

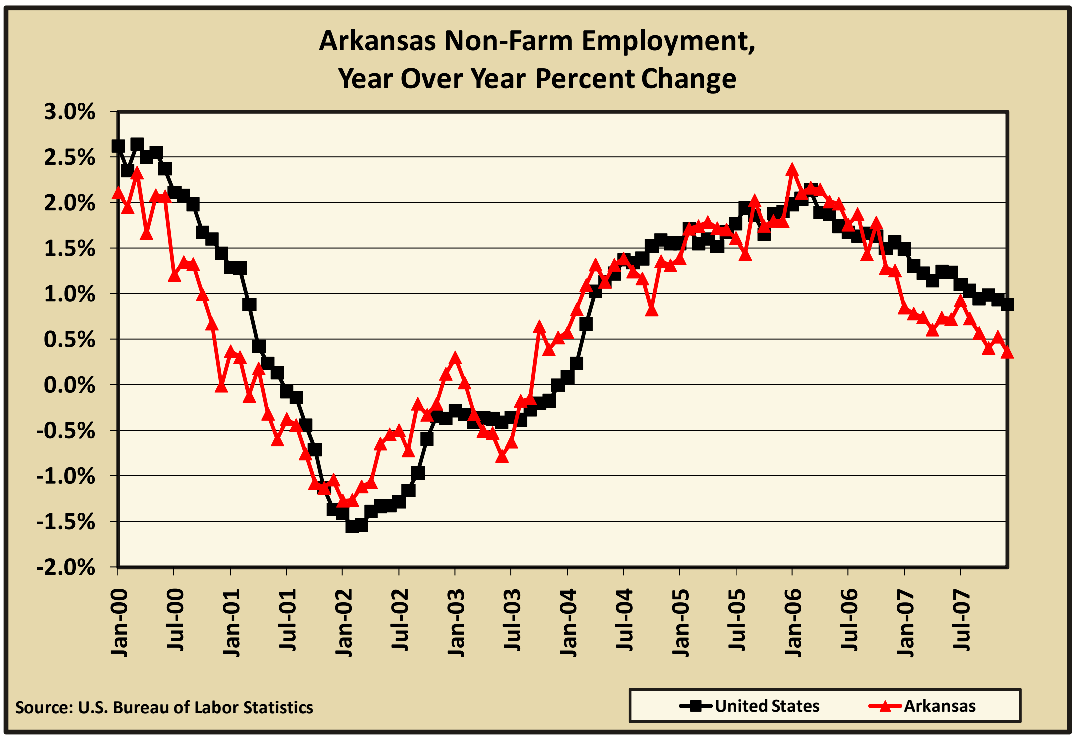
FIGURE 3: ARKANSAS PER CAPITA PERSONAL INCOME AS A PERCENTAGE OF US PER CAPITA PERSONAL INCOME



JOB GROWTH BY SECTOR

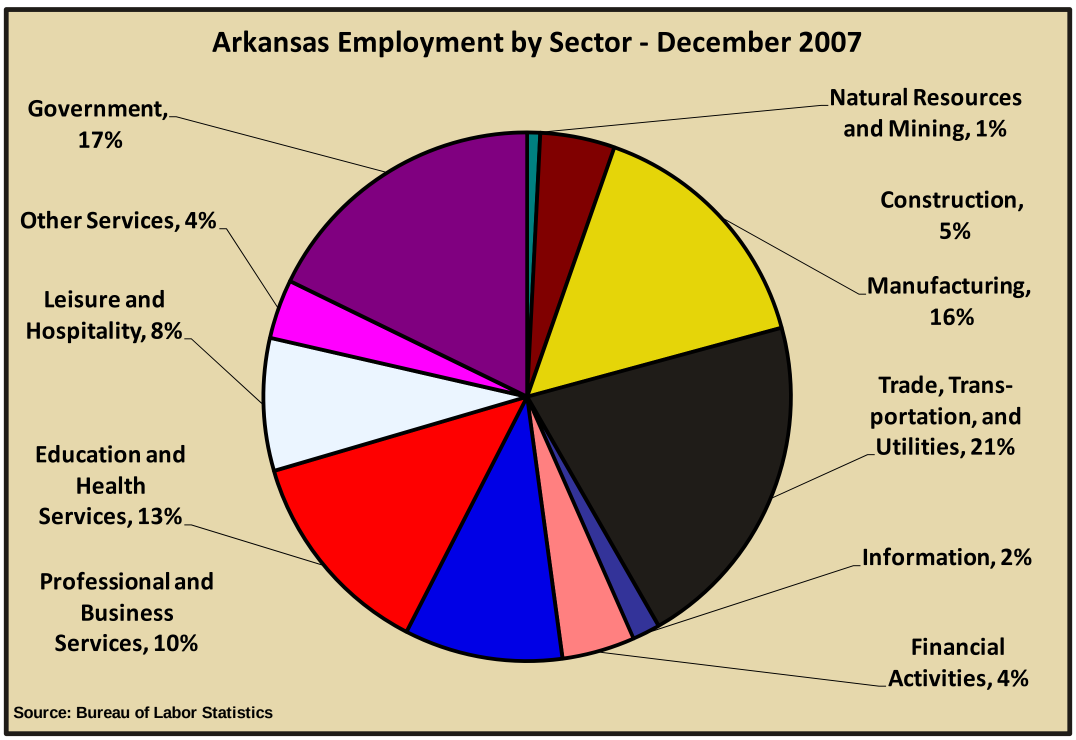
Since January 2004, Arkansas has generally experienced growth in non-farm employment, although in the earlier years of the 2000's, employment levels declined or remained flat. Growth in employment in Arkansas generally has followed growth in employment in the United States, sometimes being slightly higher and sometimes being slightly lower over the past seven years. However, from January to December 2007, employment growth in Arkansas was consistently about 0.5 percentage points lower than employment growth in the whole United States.

FIGURE 4: ARKANSAS NON-FARM EMPLOYMENT, YEAR OVER YEAR PERCENT CHANGE



The mix of employment in 2007 in Arkansas had a great deal to do with the state's poor performance relative to the national economy. Manufacturing made up 16 percent of employment in Arkansas in December 2007; this compares to a national average of about 10 percent. The state is less service-sector intensive than the country as a whole. Over the past two decades, manufacturing employment has been under increasing pressure from technological improvements and globalization pressures, while service sector employment has generally led in terms of gains. The natural resources and mining sector accounts for only 1 percent of Arkansas employment. In this sector, the state's economy is proportional to the national economy. At 5 percent, the construction sector in Arkansas is also the same relative size as its national counterpart.

FIGURE 5: ARKANSAS EMPLOYMENT BY SECTOR, DECEMBER 2007



From January 2000 to January 2005, Arkansas manufacturing employment declined by 38,900 jobs. During the same time period, employment in the natural resources and mining sector fluctuated seasonally between 6,500 jobs and 7,200 jobs, remaining essentially flat. From January 2005 through December 2005, the downward trend in manufacturing continued, with the state of Arkansas losing an additional 14,000 jobs in the sector. However, concurrent with the investment in the Fayetteville Shale as an economic source of natural gas, employment in the natural resources and mining sector increased by 3,200, from 6,500 jobs in January 2005 to 9,700 jobs in December 2007.

The employment gains in the natural resources and mining sector and losses in the manufacturing sector have been dwarfed by the gains in the service sector of the Arkansas economy. In January 2000, the service sector accounted for 73.8 percent of all employment. By December 2007, the service sector accounted for 79.2 percent. The Arkansas economy gained 54,500 service sector jobs from January 2000 to January 2005 and an additional 68,700 service sector jobs from January 2005 to December 2007.

FIGURE 6: CHANGE IN ARKANSAS EMPLOYMENT BY SECTOR, JANUARY 2000 - DECEMBER 2007

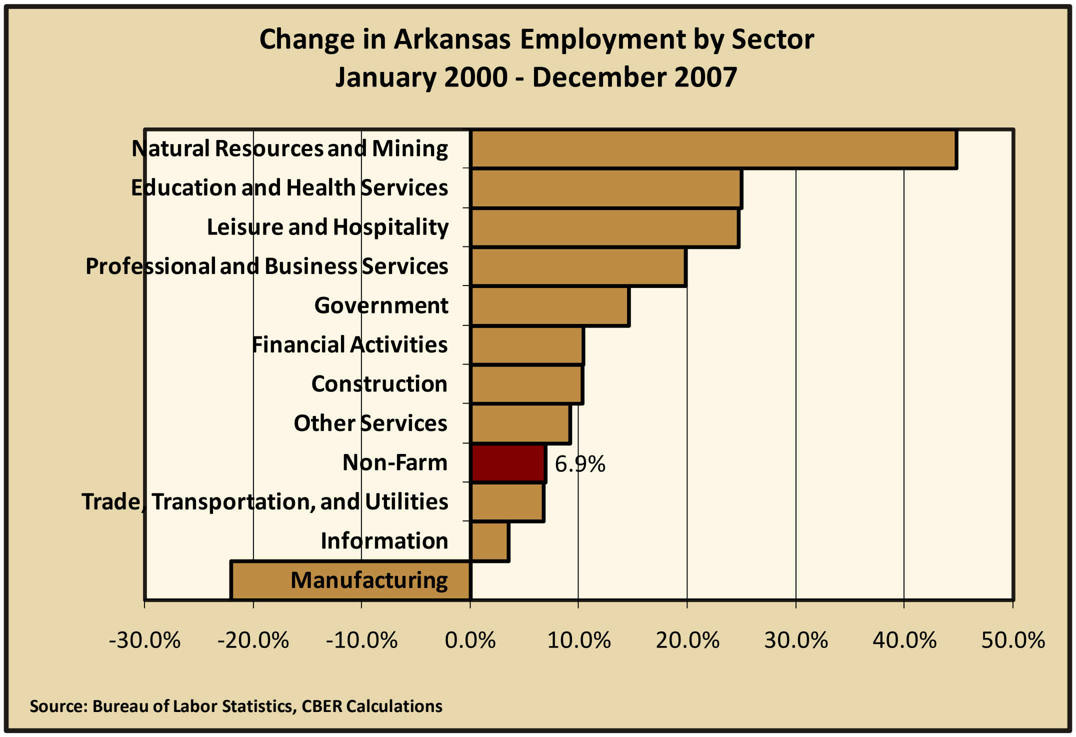


FIGURE 7: ARKANSAS MANUFACTURING EMPLOYMENT

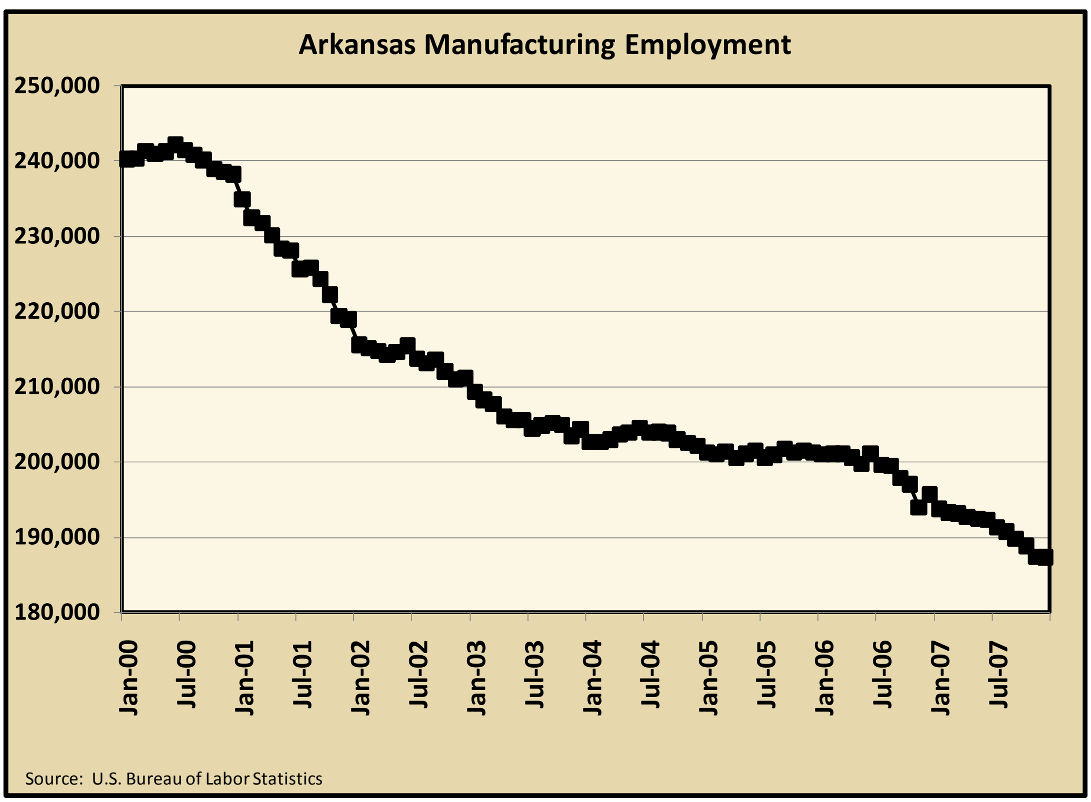


FIGURE 8: ARKANSAS NATURAL RESOURCES AND MINING SECTOR EMPLOYMENT

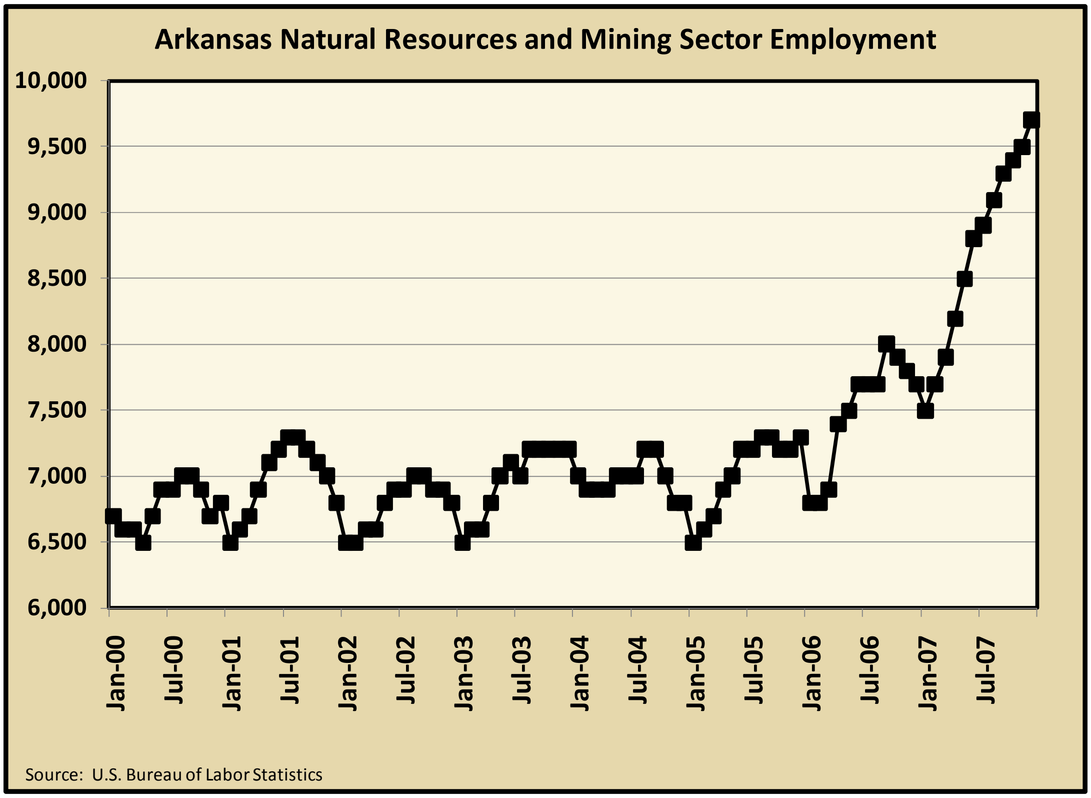
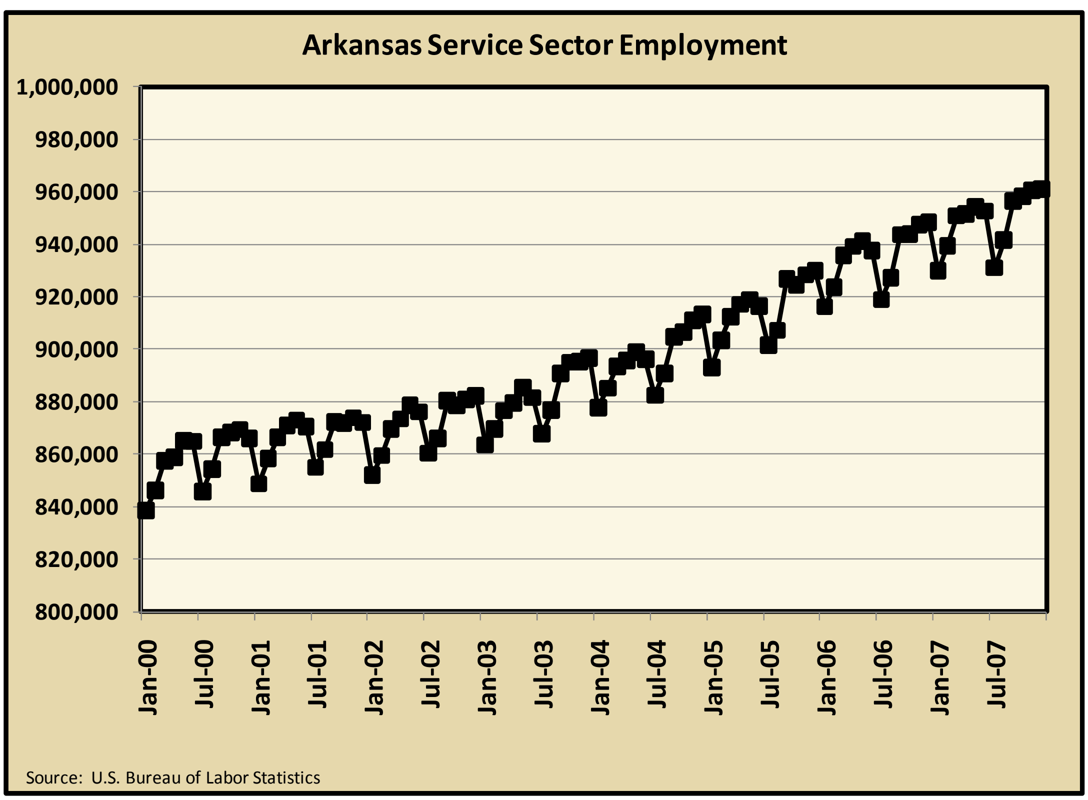


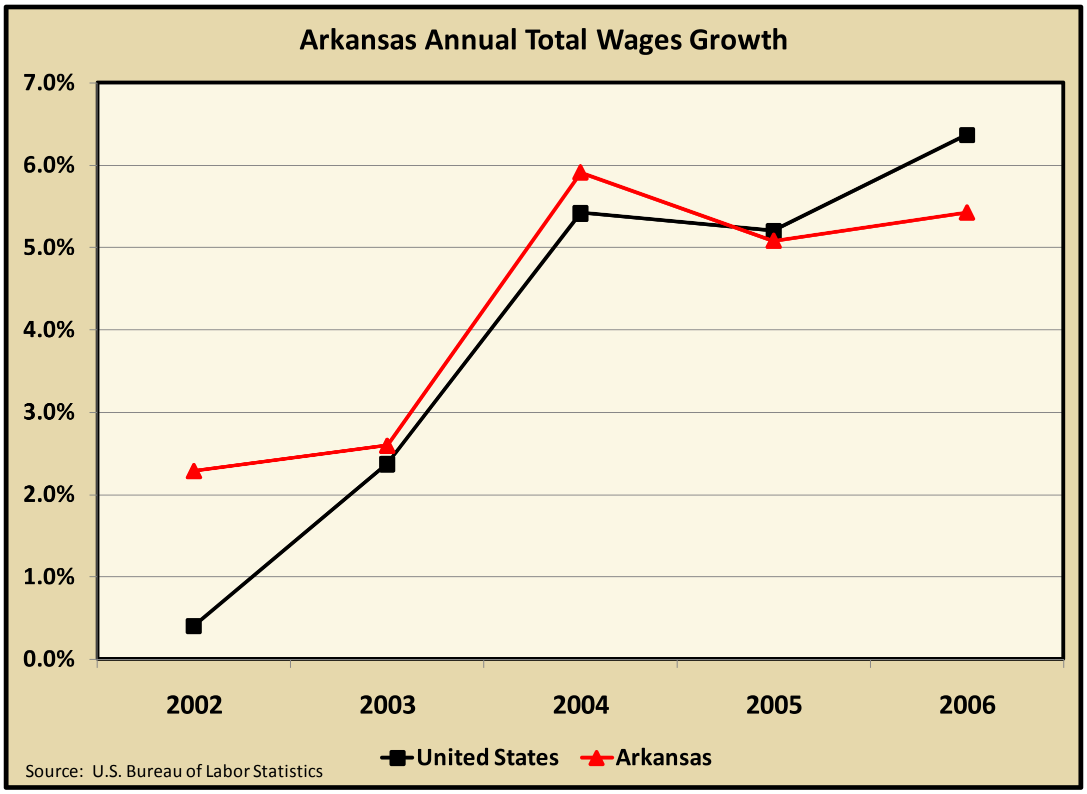
FIGURE 9: ARKANSAS SERVICE SECTOR EMPLOYMENT



Wage Growth

From 2001 to 2006, Arkansas total wage growth has been a little less volatile than wage growth in the United States as a whole. In Arkansas, total wages grew by a compound annual growth rate of 4.2 percent over the period. In 2002, 2003, and 2004, average wage growth in Arkansas was somewhat faster than the national average, but in 2005 and 2006, average wage growth was somewhat slower.

FIGURE 10: ARKANSAS ANNUAL TOTAL WAGES GROWTH

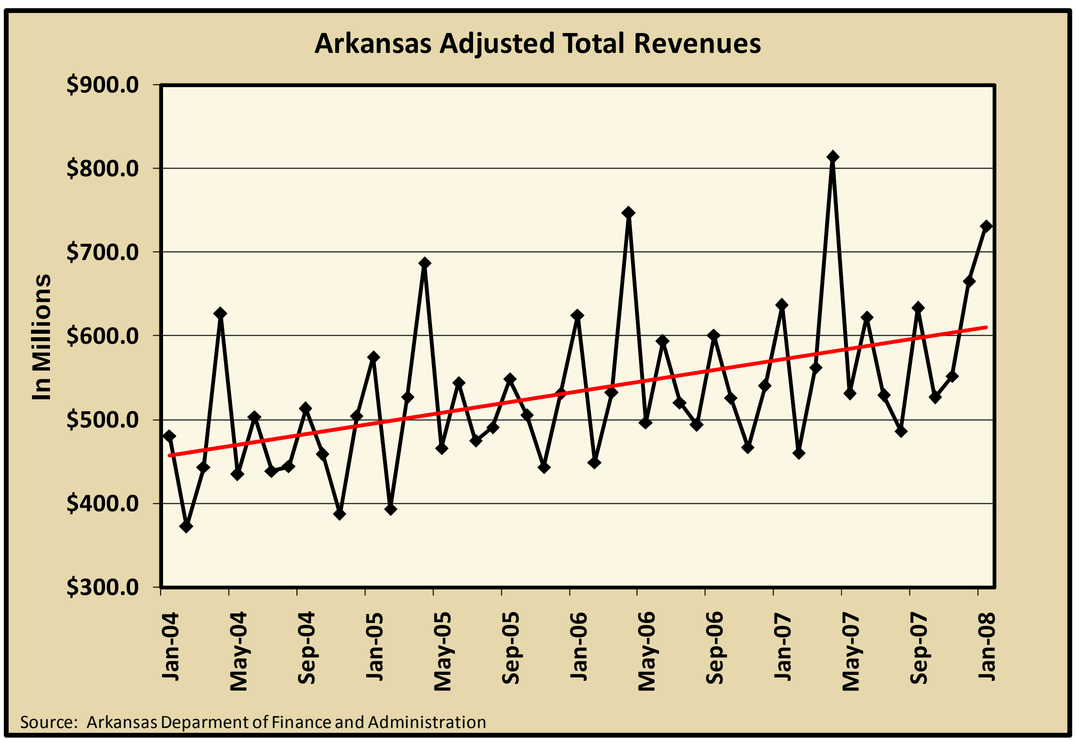


TAX REVENUES

From 2004 to 2007, adjusted total tax revenues for the state of Arkansas grew at a compound annual growth rate of 9.2 percent. However, the annual growth rate in state revenues was significantly higher in 2004 and 2005 than in 2006 and 2007. From 2004 to 2005, state revenue growth fell from 13.7 percent to 10.3 percent. In both 2006 and 2007, state adjusted total revenue growth averaged 6.5 percent.

There is a great deal of seasonality associated with the Arkansas adjusted total revenue data, with significant revenue peaks occurring in January and April of each year. December 2007 was better from a revenue collection standpoint than Decembers in the previous few years, with growth of 23.1 percent over December 2006. By comparison, December 2006 revenues were just 1.6 percent higher than December 2005 revenues.

FIGURE 11: ARKANSAS ADJUSTED TOTAL REVENUES



FAYETTEVILLE SHALE COUNTY PROFILES

Many of the publicly available county level economic data have significant reporting lags. Population, income, and wage growth data are not available for 2007 as of the production of this report. Given that the development of the Fayetteville Shale was rapid, but of a relatively small magnitude prior to 2007, many of the local statistics fail to demonstrate a noticeable impact of the new industry. Additionally, the deterioration of the manufacturing sector was underway and continued throughout the period. It is this effect which is most apparent in the following statistics. The profile of the core Fayetteville Shale area does provide a baseline and a characterization of the local economy during the years leading up to the development of the Fayetteville Shale.

The core counties in the Fayetteville Shale play (Cleburne, Conway, Faulkner, Franklin, Johnson, Pope, Van Buren, and White) had a combined population of 336,542 on July 1, 2006. These counties contained 12.0 percent of the population of the state of Arkansas. The character of these counties is primarily rural—only Faulkner County is part of a metropolitan statistical area. The population within the Fayetteville Shale counties has been growing more quickly than the population of the state as a whole, but per capita personal income growth in the counties has lagged the state, which in turn has lagged the United States.

On average, the Fayetteville Shale core counties have had employment growth rates which very closely tracked the state average. In the two most recent years, 2006 and 2007, employment growth in the Fayetteville Shale counties has been slightly lower than the state average, whereas in 2003 through 2005, employment growth was slightly higher than the Arkansas average.

From 2001 to 2006, average wages per employee grew more slowly in the counties that are in the core of the Fayetteville Shale Play than in all of Arkansas. In 2001, in the Fayetteville Shale counties, average wages per employee were 91.7 percent of state average wages per employee. By 2006, however, the Fayetteville Shale counties had average wages per employee that were only 89.5 percent of the Arkansas average.

Fayetteville Shale Play counties netted a gain of 1,151 new business establishments during the period of 2001 to 2006. This represented 13.7 percent of total 8,402 new business establishments in the state of Arkansas.

In 2004 and 2005, total property assessment values in Arkansas grew at a faster pace than total property assessment values in the Fayetteville Shale Counties. However, in 2006, the Fayetteville Shale counties averaged 6.9 percent growth in assessed property values, while the state averaged 6.5 percent growth.

TABLE 2: FAYETTEVILLE SHALE COUNTIES POPULATION

Year	Arkansas Population	Fayetteville Shale Counties Population	Fayetteville Shale Counties as a % of Arkansas
2000	2,673,398	308,774	11.5%
2001	2,691,665	313,592	11.7%
2002	2,706,198	316,616	11.7%
2003	2,723,645	320,642	11.8%
2004	2,746,823	325,371	11.8%
2005	2,775,708	330,692	11.9%
2006	2,810,872	336,542	12.0%

FIGURE 12: FAYETTEVILLE SHALE COUNTIES POPULATION ANNUAL GROWTH RATES

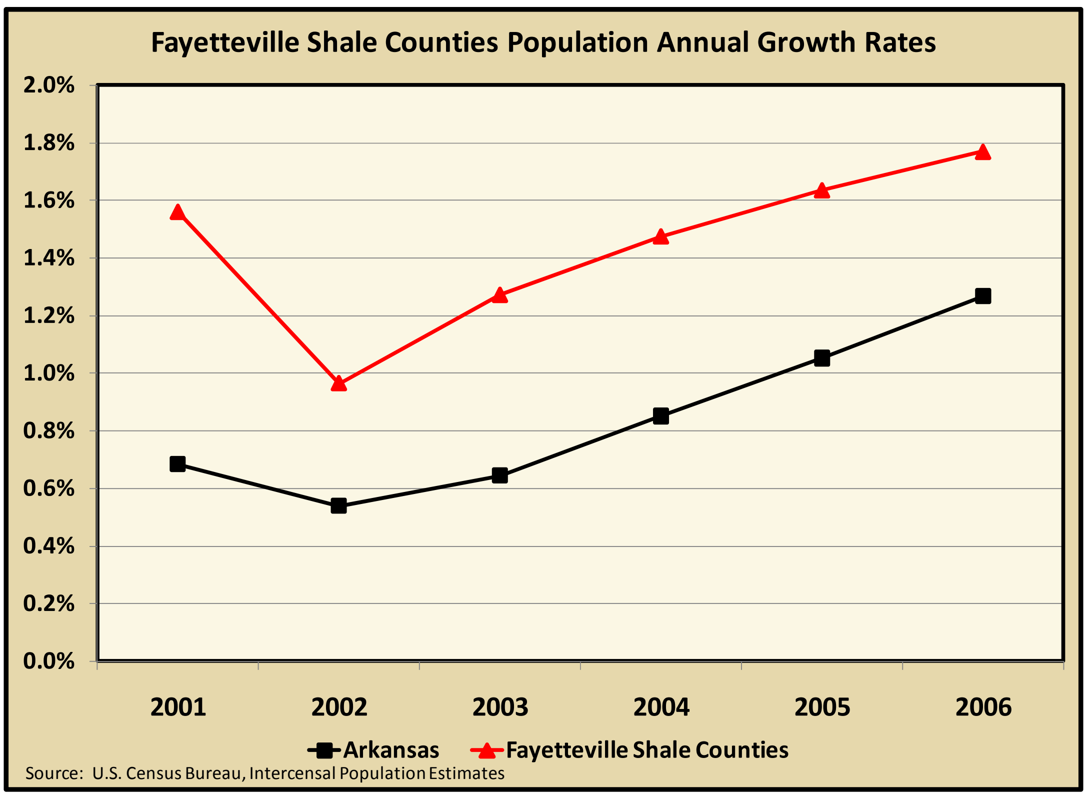


FIGURE 13: FAYETTEVILLE SHALE COUNTIES AVERAGE PER CAPITA PERSONAL INCOME GROWTH RATES

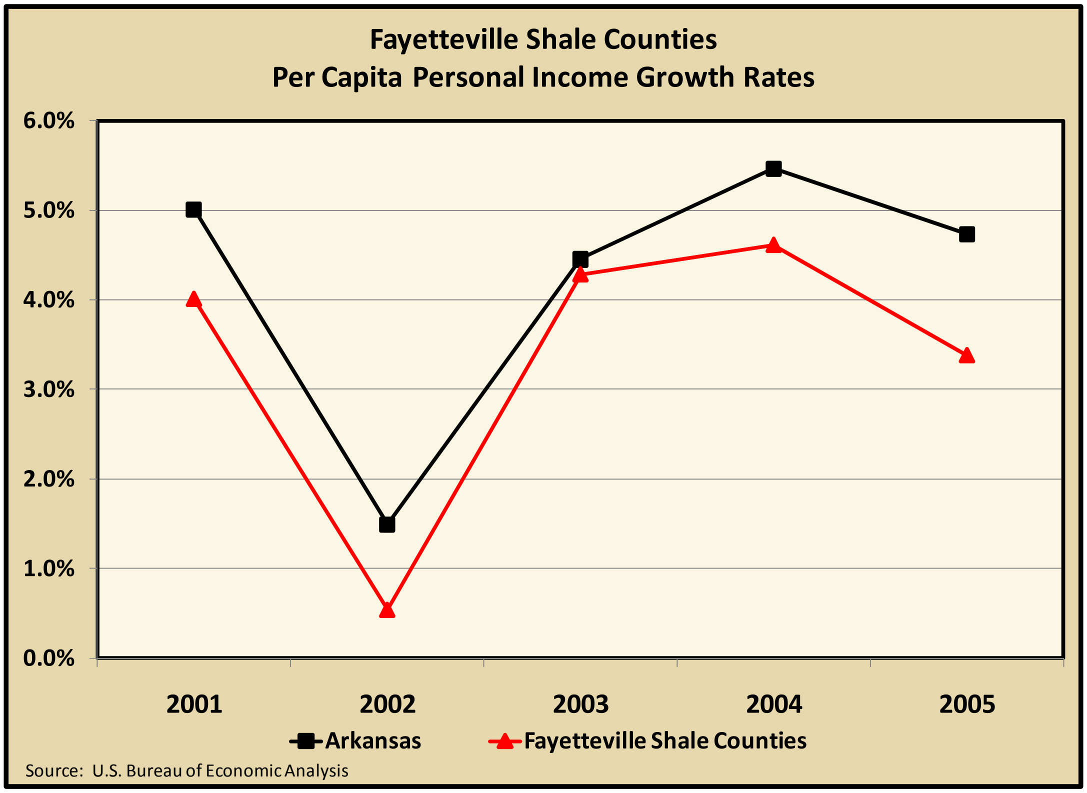


FIGURE 14: FAYETTEVILLE SHALE COUNTIES EMPLOYMENT ANNUAL GROWTH RATES

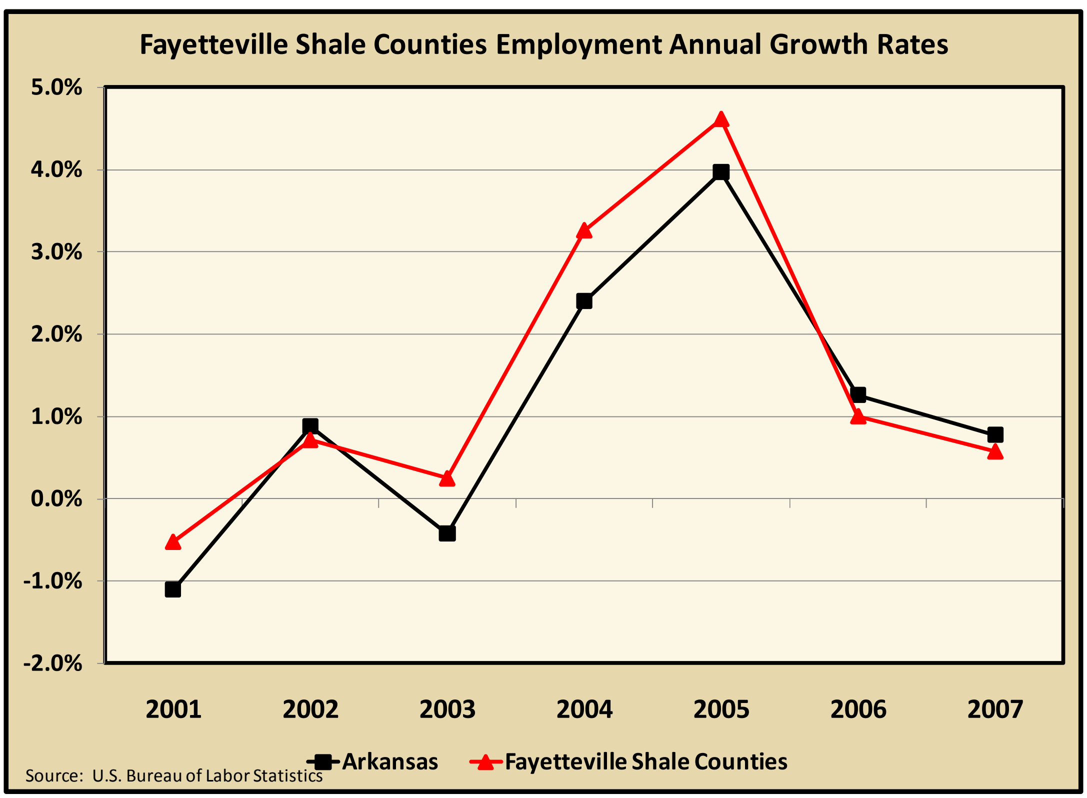


FIGURE 15: FAYETTEVILLE SHALE COUNTIES AVERAGE WAGES PER EMPLOYEE

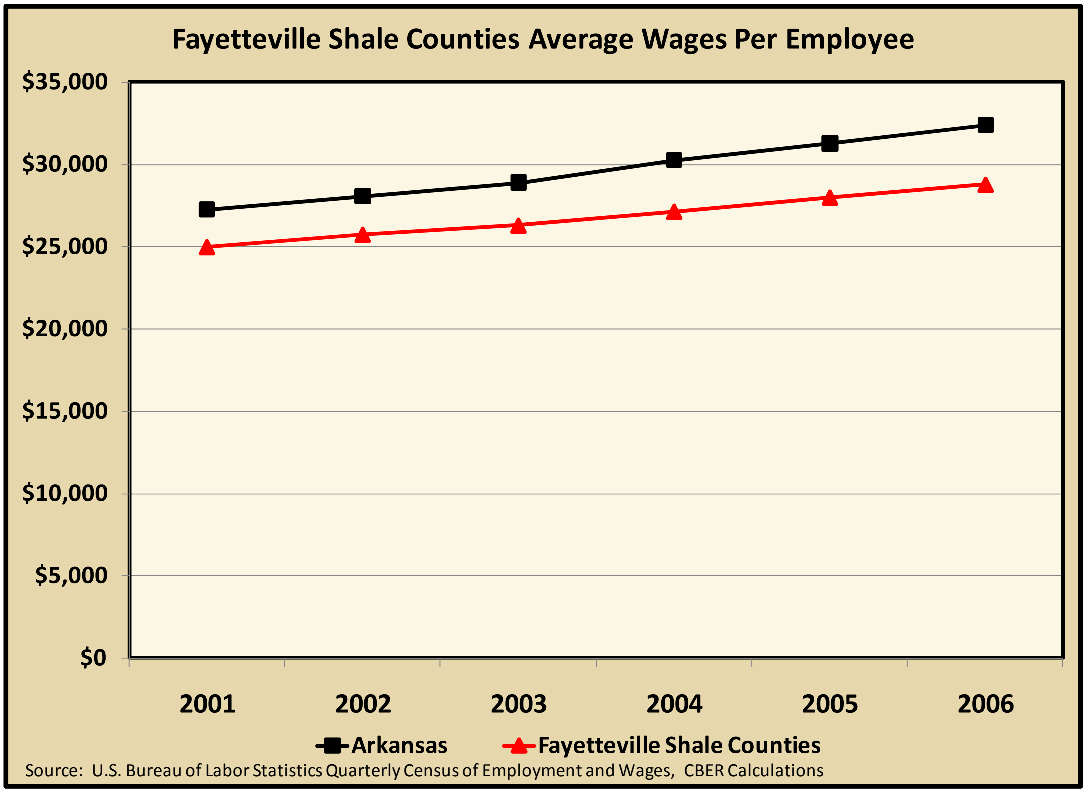


FIGURE 16: FAYETTEVILLE SHALE COUNTIES AVERAGE WAGES PER EMPLOYEE GROWTH RATES

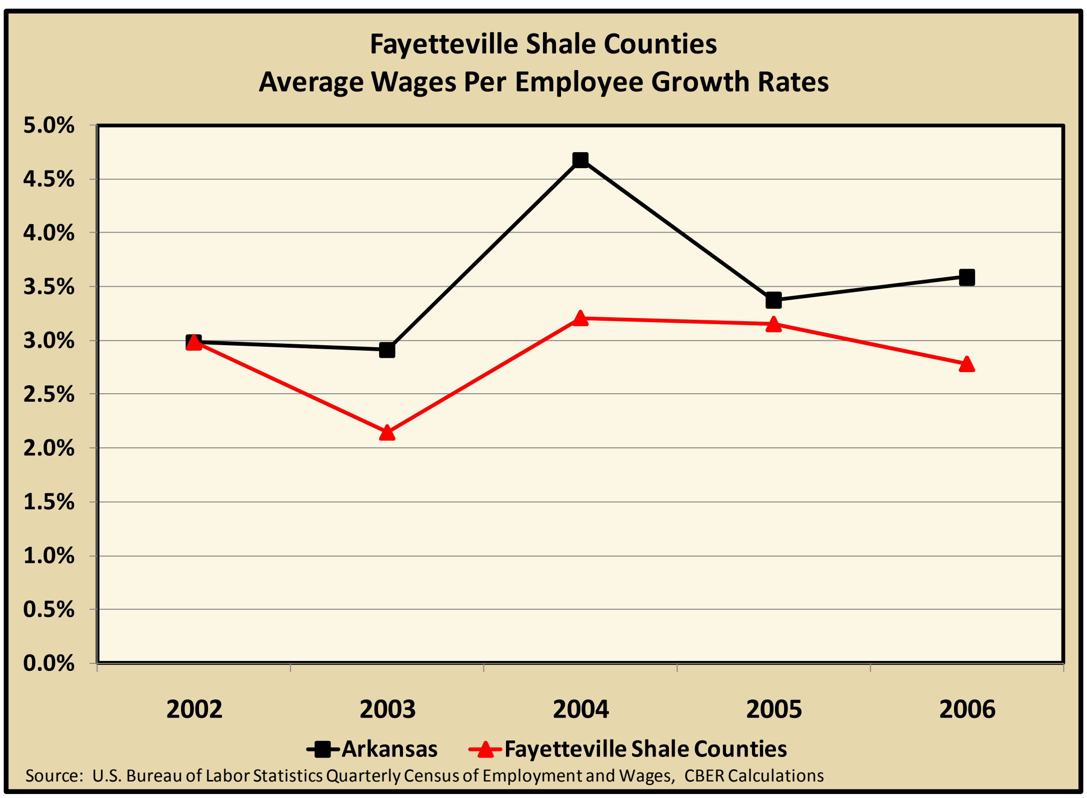
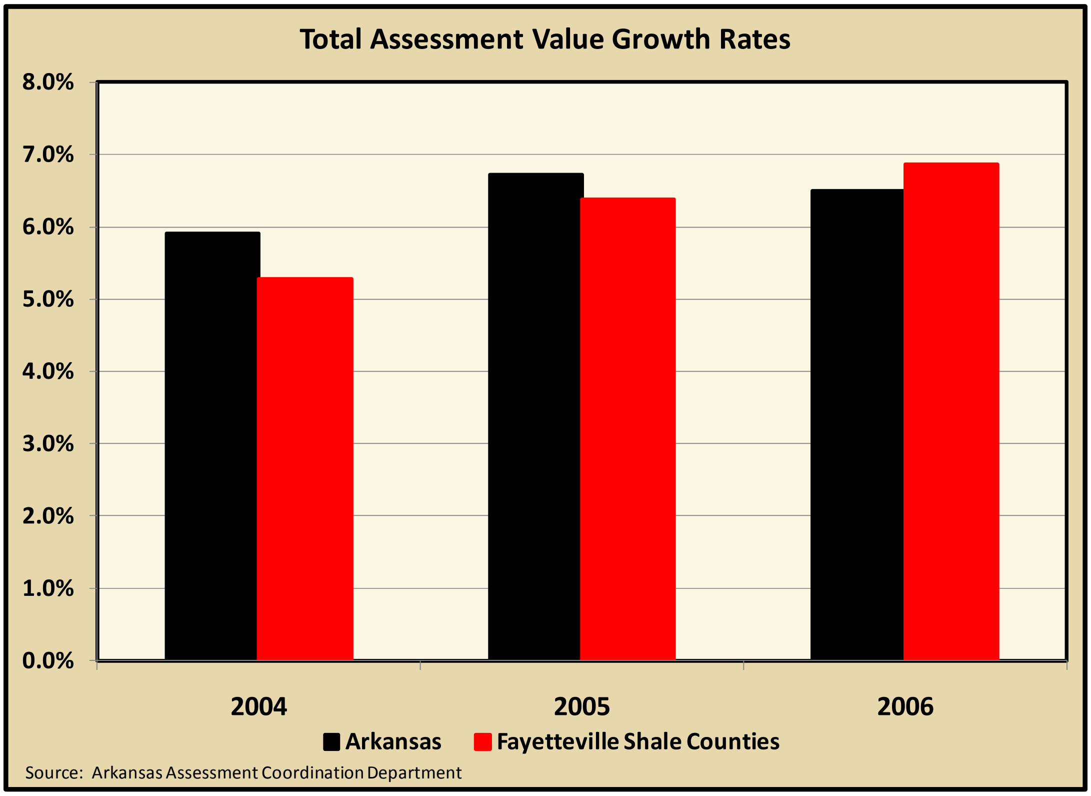


FIGURE 17: TOTAL ASSESSMENT VALUE GROWTH RATES



Fayetteville Shale Developments to Date

Drilling Permits

According the Arkansas Oil and Gas Commission's *Rules and Regulations as of January 14, 2008*, "Before any person, firm or corporation shall spud in and begin the actual drilling of any well in search of oil and/or gas in the State of Arkansas, such person, firm or corporation shall file with the Oil and Gas Commission its application in such form as the Commission shall require for a permit to drill said well. The application shall be accompanied by the sum of Three Hundred Dollars ($300.00), as the Commission shall prescribe as the fee for granting of a permit. [Order Reference Number 154-2000-11(8) authorized the Commission to increase the fee for a permit to drill from $150.00 to $300.00 effective January 1, 2001.] The permit so issued by the Commission shall be in such form as it may by its rules and regulations prescribe, and the number of said permit shall at all times be prominently displayed upon the derrick used in drilling of the well."

The first drilling permit in the Fayetteville Shale Play was issued in 2003. From 2004 to 2006, the number of drilling permits issued tripled each year. In 2007, there were 641 drilling permits issued and at the pace seen in the first month and a half of 2008, the number of permits issued will double over that value again.

TABLE 3: DRILLING PERMITS ISSUED IN FAYETTEVILLE SHALE PLAY, 2003 - 2008

Category	2003	2004	2005	2006	2007	2008*	Total
Number of Permits	1	27	90	299	641	106	1,164
Value of Permits	$300	$8,100	$27,000	$89,700	$192,300	$31,800	$349,200
Percentage of Total State Permits	0.3%	7.5%	18.8%	41.5%	59.3%	--	--

*includes permits issued in January and early February of 2008.

Gas Production[1]

Following the issuance of drilling permits, gas production in the Fayetteville Shale area has increased dramatically since the initial test well was drilled in 2003. In 2004, there were 13 wells that produced just over 100 MMcf. By 2005, almost 2.4 Bcf were produced by 58 wells. In 2006, the number of wells almost tripled to 172 and 14.8 Bcf of natural gas were produced.

[1] All gas production within the Fayetteville Shale counties is for the B-43 field only.

In 2007, the number of wells more than tripled again to 603 and 88.85 Bcf of natural gas were produced.

Since the inception of the Fayetteville Shale Play, SEECO Inc., a subsidiary of Southwestern Energy Company, has been the largest operator in the Fayetteville Shale. From 2006 to 2007, however, a number of other companies started operating in the Fayetteville Shale in significant ways, such that the percentage of production attributable to SEECO Inc. fell from 93.1 percent to 74.9 percent. In 2007, Chesapeake Operating Company had 15.3 percent and Petrohawk Operating Company (together with KCS Resources Inc) had 6.0 percent of the production in the Fayetteville Shale.

Production of gas in 2005 was mainly split between Conway and Van Buren Counties. By 2007, production had begun in earnest in White County, as well. As the pipeline infrastructure for distribution of the gas is being developed along with the Fayetteville Shale Play, early wells were located relatively close to the existing distribution pipeline network.

FIGURE 18: TOTAL NATURAL GAS PRODUCTION IN FAYETTEVILLE SHALE COUNTIES

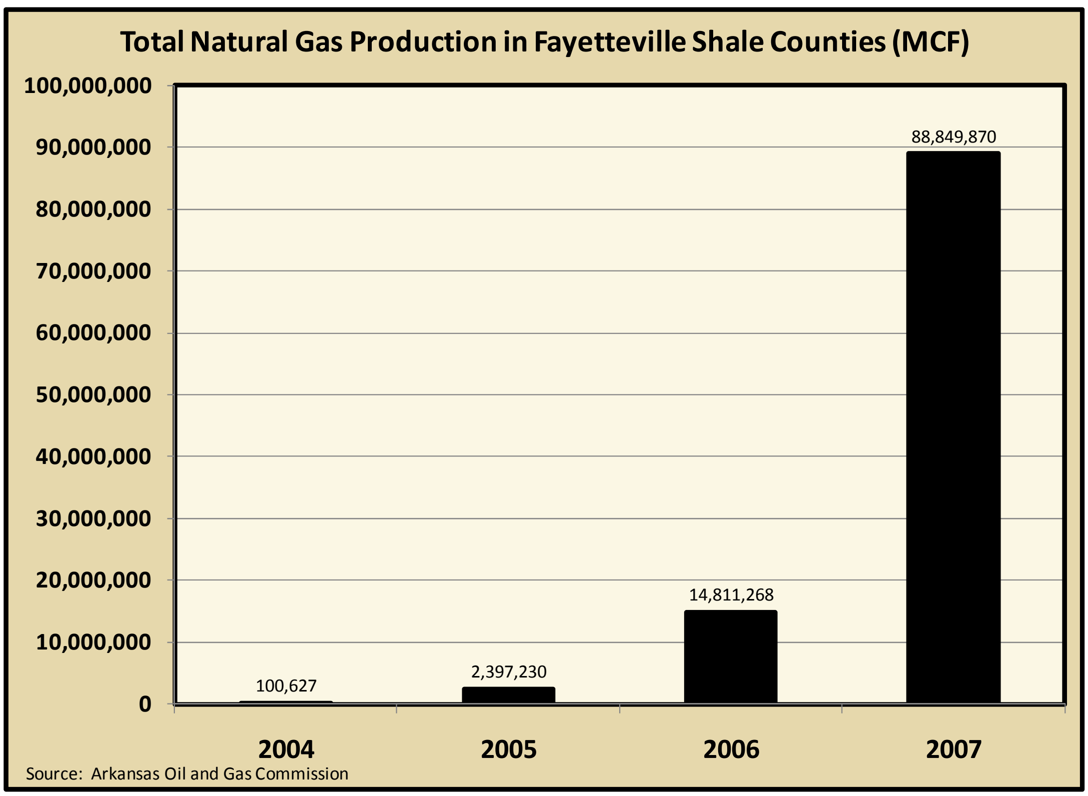


FIGURE 19: PRODUCTION BY OPERATOR

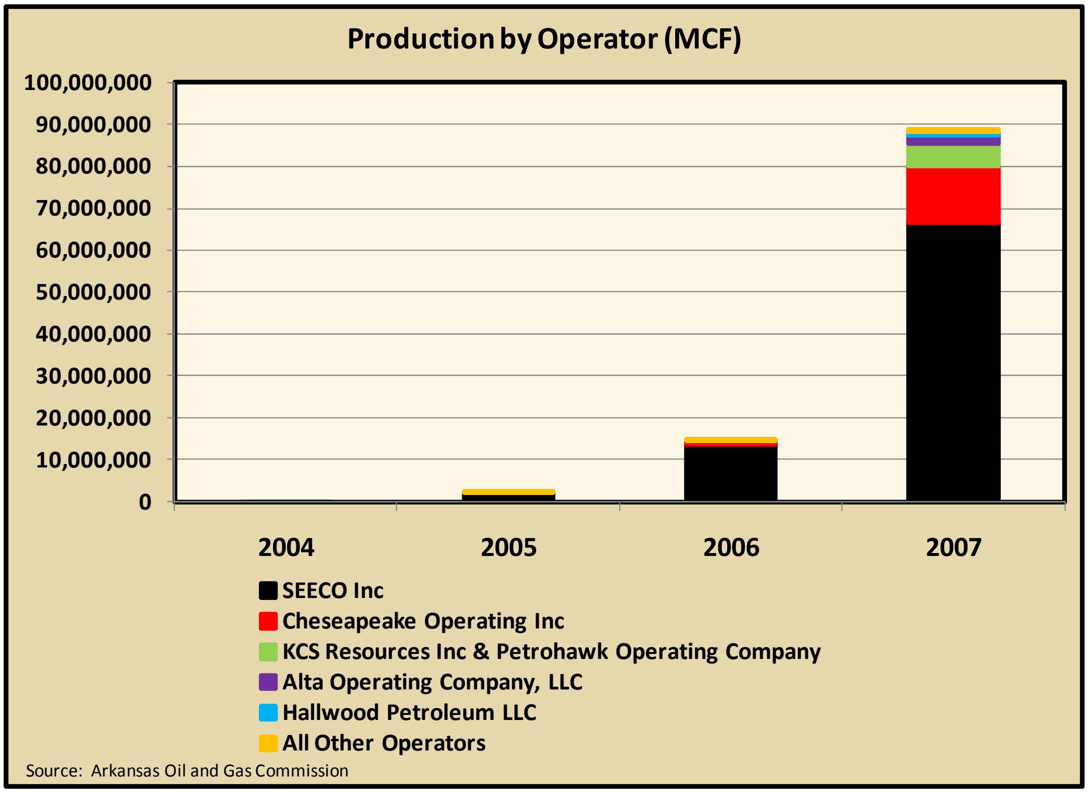
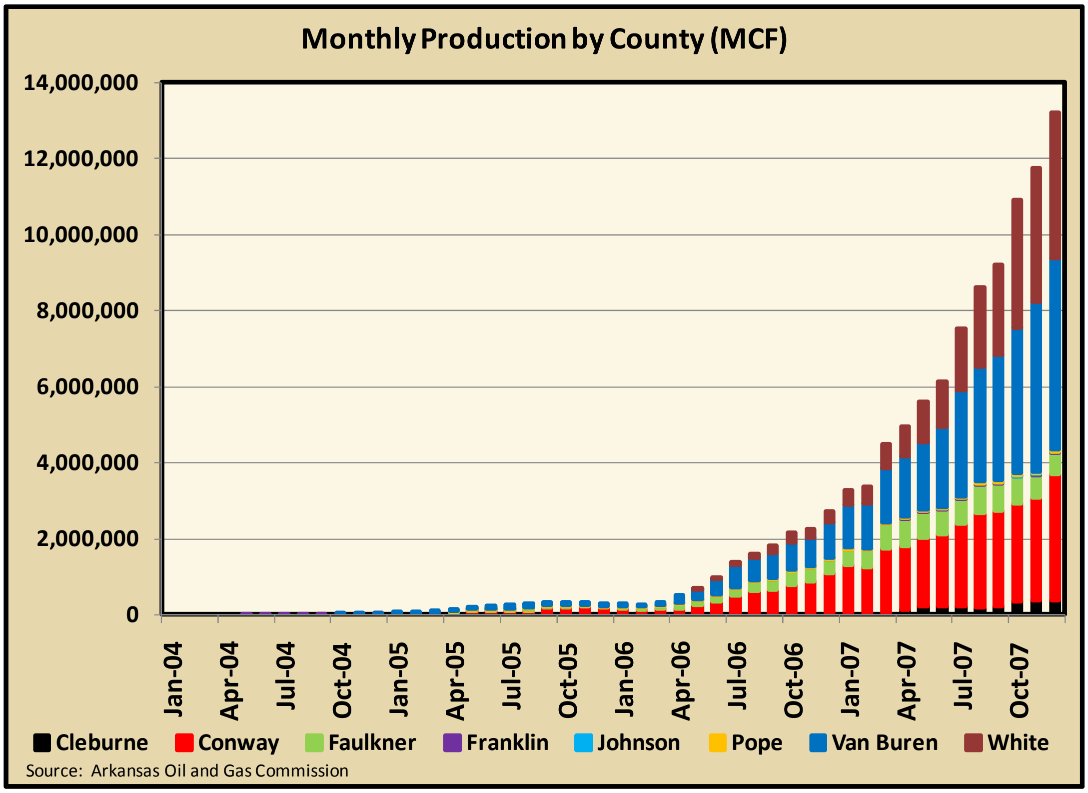


FIGURE 20: MONTHLY PRODUCTION BY COUNTY



Pipelines

In order for the natural gas produced in the Fayetteville Shale to reach the market, it must travel through a pipeline distribution network. Existing pipelines in the Fayetteville Shale exists from Ozark Gas Transmission. Ozark Gas Transmission has a 565 mile FERC-regulated natural gas interstate pipeline with total throughput capacity of 400 MMcf per day. There are approximately 30 supply and delivery interconnections, along with two compressor stations. The pipeline accesses the conventional production in the Arkoma Basin as well as the production from the Fayetteville Shale. In Arkansas, existing lines start in northern Sebastian County and travel through Franklin, Johnson, Pope, Conway, Van Buren, Stone, Izard, Baxter, Sharp, Lawrence, Randolph, Greene, and Clay Counties. One proposed expansion would start in southern Sebastian County and go through Logan, Pope, and Conway counties where it would join the existing network. Construction is planned to begin in Spring 2009 and the pipeline will be ready for service in late 2009 or early 2010. Another proposed expansion would start in Conway County and go south through Faulkner, White, Woodruff, Monroe, St. Francis, Lee and Phillips Counties.

CenterPoint Energy Gas Transmission also has pipelines through the Fayetteville Shale counties. One loop runs from Logan County through Pope, Conway, Faulkner, and White Counties.

Texas Gas Transmission LLC announced the construction of 165 miles of up to 42-inch diameter pipeline with designed capacity of 800 MMcf to 1.1 Bcf per day (with compression). The proposed route of the pipeline would begin in Conway County, extend through Faulkner, Cleburne, White, Woodruff, St. Francis, Lee, and Phillips counties in Arkansas, cross the Mississippi River near Helena, Arkansas, and interconnect with Texas Gas Transmission in Coahoma County Mississippi. The production gathering segment of the pipeline is projected to be completed in August 2008, while the entire lateral will be completed in early 2009, and the total cost is estimated to be about $821 million.

ECONOMIC IMPACT PRIOR TO AND IN 2007

In order to provide an updated baseline for the economic impact of activities in the Fayetteville Shale, a survey instrument was administered to companies with operations related to the Fayetteville Shale. A copy of the survey can be found in the Appendices at the end of this document. The survey was made available on the website of the Center for Business and Economic Research. Also, where the Center was able to obtain direct contact information for companies, emails were sent to management with a link to the survey instrument included. The survey was also distributed by chambers of commerce within communities in the Fayetteville Shale counties. Finally, the operating companies distributed the survey link to their primary vendors.

The survey collected detailed information about investment, expenditures, and employment in 2007. Once Fayetteville Shale operating companies were identified among the respondent companies based on their description and industry code, their numbers were used as inputs to the IMPLAN input/output model in order to estimate the indirect and induced effects that were caused by direct activities.

IMPLAN is a regional impact model that enables the evaluation of the economic impact of specific activities such as construction or operation of public works projects, as well as retail, wholesale, manufacturing, and service sales within an economy. IMPLAN was originally developed by the U.S. Department of Agriculture, the Forest Service in cooperation with the Federal Emergency Management Agency (FEMA), the U.S. Department of Interior Bureau of Land Management, and the University of Minnesota to assist the Forest Service in land and resource management planning.

The basic data sources for the current edition of the IMPLAN database and the models used in this study are the Input-Output Accounts of the United States, developed by the U.S. Department of Commerce, Bureau of Economic Analysis (BEA), and county income and employment data published by BEA and the Bureau of Labor Statistics (BLS). The model reflects 2006 industrial structure and technology, and 2006 prices. Trade flows and the results of this analysis were adjusted to reflect prices of the respective years from 2007 to 2012.

IMPLAN uses a 525-sector input-output model to measure the effects of three types of impacts: direct, indirect, and induced. Direct impacts consist of employment and purchases of goods and services in the region resulting from the activity being evaluated, in this case, natural gas exploration and production activities. Indirect (inter-industry) impacts consist of goods and services purchased by the firms, which supply inputs consumed in the direct activity. Induced impacts consist of increased household purchases of goods and services in the region by employees of direct and indirect employers. The model generates multipliers, which summarize the magnitude of the indirect and induced effects generated by a given direct change, to estimate changes in output, income, and employment. In other words, the multiplier is the ratio of total impact to direct impact.

In the IMPLAN model, inter-industry relationships (use and make coefficients) are quantified based on data on the production functions of the different industries in the region. The IMPLAN model was used to estimate multipliers based on those coefficients in specific counties. Direct spending, total economic activity, total labor income, total employment, and total property income were generated by this model.

For this study, the geographic area considered was the entire state of Arkansas. Both economic output and employment effects were generated by the IMPLAN model. The results were then used to calculate estimates of sales, income, and property taxes, resulting from economic activity in the Fayetteville Shale. The following sections detail those results for 2007.

Output Effects

Survey Results

A total of 81 companies replied to the online survey instrument. Among these respondents were 8 operating companies and 73 other service providers. For 2007, the survey respondents reported a total of more than $2.1 billion in expenditures.

TABLE 4: RESPONDENT COMPANIES EXPENDITURES IN THE STATE OF ARKANSAS IN 2007

Industry Sector	Total Expenditures
Advertising and Related Services	$350
Construction of Manufacturing & Industrial Buildings	$2,500,000
Drilling Oil & Gas Wells	$390,850,000
Environmental and Other Technical Consulting Services	$2,300,000
Food Services and Drinking Places	$5,000
General Merchandise Stores	$242,000
Legal Services	$1,460,000
Miscellaneous Professional and Technical Services	$6,365,000
Miscellaneous Store Retailers	$600,000
Natural Gas Distribution	$1,294,746
Oil & Gas Extraction	$1,425,700,000
Oil & Gas Field Machinery and Equipment	$4,562,000
Real Estate	$10,000,000
Recycling of Gas Lines	$130,000
Support Activities for Oil & Gas Operations	$248,510,433
Water, Sewer, & Pipeline Construction	$19,974,591
Total	**$2,114,494,120**

IMPLAN Results

Because the IMPLAN model captures the supply chain impacts of direct expenditures, only the survey responses from operating companies were used as inputs to the model. This avoids a potential double counting problem. In 2007, direct expenditures of almost $1.8 billion led to a total economic impact of more than $2.6 billion. This implies an economic multiplier of 1.45 for the state of Arkansas, which is consistent with the estimates made in the previous economic impact study, released in 2006.

TABLE 5: FAYETTEVILLE SHALE OPERATORS OUTPUT IMPACTS ON THE STATE OF ARKANSAS IN 2007

Year	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Multiplier
2007	$1,797,349,728	$416,673,682	$387,068,671	$2,601,092,069	1.45

Employment Effects

Survey Results

The survey instrument asked respondents to estimate their total payrolls and then to break down those payrolls by in-state and out-of-state employees. These results allow estimates to be made of the leakages that are likely to occur in spending. The results show that in 2007, the respondent companies had a total payroll of $170.2 million. About 80 percent or 2,493 employees were Arkansas residents, while the remaining 629 employees were out-of-state residents who were brought in to perform specialized functions.

TABLE 6: RESPONDENT COMPANIES PAYROLL IN THE STATE OF ARKANSAS IN 2007

Industry Sector	Total Payroll
Construction of Manufacturing & Industrial Buildings	$786,000
Drilling Oil & Gas Wells	$22,920,000
Environmental and Other Technical Consulting Services	$600,000
Food Services and Drinking Places	$2,000
General Merchandise Stores	$107,000
Legal Services	$1,739,845
Miscellaneous Professional and Technical Services	$2,278,000
Miscellaneous Store Retailers	$50,000
Natural Gas Distribution	$775,237
Oil & Gas Extraction	$64,565,545
Oil & Gas Field Machinery and Equipment	$1,532,784
Real Estate	$737,000
Recycling of Gas Lines	$100,000
Support Activities for Oil & Gas Operations	$62,763,076
Water, Sewer, & Pipeline Construction	$11,240,180
Total	**$170,196,667**

TABLE 7: RESPONDENT COMPANIES LOCAL EMPLOYMENT IN THE STATE OF ARKANSAS IN 2007

Industry Sector	Local Employment
Construction of Manufacturing & Industrial Buildings	37
Drilling Oil & Gas Wells	244
Environmental and Other Technical Consulting Services	29
Food Services and Drinking Places	2
General Merchandise Stores	6
Legal Services	12
Miscellaneous Professional and Technical Services	77
Miscellaneous Store Retailers	22
Natural Gas Distribution	21
Oil & Gas Extraction	513
Oil & Gas Field Machinery and Equipment	46
Real Estate	21
Recycling of Gas Lines	5
Support Activities for Oil & Gas Operations	1,142
Water, Sewer, & Pipeline Construction	317
Total	**2,493**

TABLE 8: RESPONDENT COMPANIES NON-ARKANSAS RESIDENTS EMPLOYMENT IN THE STATE OF ARKANSAS IN 2007

Industry Sector	Non-Arkansas Resident Employment
Drilling Oil & Gas Wells	150
Environmental and Other Technical Consulting Services	5
Natural Gas Distribution	1
Oil & Gas Extraction	425
Real Estate	2
Support Activities for Oil & Gas Operations	38
Water, Sewer, & Pipeline Construction	8
Total	**629**

In addition to employees in Cleburne, Conway, Faulkner, Van Buren, and White Counties, 32 other counties were indicated as a place of residence of local employees. Among them, the ten counties with the highest number of employees were, in descending order: Pope, Pulaski, Perry, Logan, Polk, Lonoke, Yell, Johnson, Sebastian, and Franklin.

TABLE 9: LOCATION OF RESPONDENT COMPANIES LOCAL EMPLOYEES IN 2007, BY COUNTY

County	Number of Local Employees	Percentage of Total
Cleburne	321	12.9%
Conway	553	22.2%
Faulkner	548	22.0%
Van Buren	247	9.9%
White	527	21.1%
Other Counties	297	11.9%
Total	**2,493**	**100.0%**

A total of 16.2 percent of the non-Arkansas resident employees worked in counties other than Cleburne, Conway, Faulkner, Van Buren, and White, specifically in Crawford, Franklin, Pope, Pulaski, Sebastian, Union, and Washington Counties.

TABLE 10: LOCATION OF RESPONDENT COMPANIES NON-ARKANSAS RESIDENT EMPLOYEES IN 2007, BY COUNTY

County	Number of Non-Arkansas Resident Employees	Percentage of Total
Cleburne	65	10.4%
Conway	31	4.9%
Faulkner	54	8.6%
Van Buren	180	28.6%
White	197	31.3%
Other Counties	102	16.2%
Total	**629**	**100.0%**

On average, non-Arkansas resident employees stayed in the state for 26.6 weeks or 6.6 months in 2007. Thus, for more than half a year they were living in Arkansas communities and spending money locally as they resided in hotels or apartments, went to local restaurants, and shopped in local retail establishments.

IMPLAN Results

Using the direct employment from Fayetteville Shale operators as the input to the IMPLAN model, total employment impacts on the state of Arkansas were estimated. The direct impact of 3,776.4 jobs led to an estimated total impact of 9,533.0 jobs. Because natural gas production is associated with royalty payments that increase the wealth of some individuals substantially, the induced effects of the industry are quite large. The employment multiplier for the state of Arkansas was estimated at 2.52 for 2007.

TABLE 11: FAYETTEVILLE SHALE OPERATORS EMPLOYMENT IMPACTS ON THE STATE OF ARKANSAS IN 2007

Year	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Average Multiplier
2007	3,776.4	1,904.6	3,852.0	9,533.0	2.52

TAXES

Fayetteville Shale Play activities resulted in increased tax collections received by the state of Arkansas, counties, cities, and schools. Natural gas production led to the growth of severance tax collections. Royalty payments and lease bonuses generated income, sales, and property taxes. Similarly, payroll employment produced income tax revenues, while personal expenditures increased sales tax collections. The following section presents estimation, whenever possible, of the taxes generated from the Fayetteville Shale Play activities.[2]

SEVERANCE TAXES

The State of Arkansas collects tax from the producers or purchasers of natural resources at the time of their severance. Producers of natural gas pay the tax rate of $0.003 per MCF produced. The following table presents the severance tax paid by Fayetteville Shale Play exploration and production companies estimated using production data. Following the rapid growth of gas extraction, tax collections from production in Fayetteville Shale counties increased more than 800 times from 2004 to 2007, reaching $266,550 last year. Overall, from 2004 to 2007, Arkansas received $318,477 in severance tax revenues from Fayetteville Shale activities.

TABLE 12: ARKANSAS SEVERANCE TAX REVENUES FROM FAYETTEVILLE SHALE ACTIVITIES BY COUNTY OF PRODUCTION, 2004 - 2007

County	2004	2005	2006	2007	Total
Cleburne	$0	$97	$473	$7,066	$7,636
Conway	$154	$3,806	$16,748	$76,085	$96,793
Faulkner	$0	$876	$7,494	$23,085	$31,455
Franklin	$94	$534	$603	$567	$1,797
Johnson	$0	$1	$0	$80	$81
Pope	$0	$40	$25	$1,163	$1,227
Van Buren	$54	$1,839	$15,489	$94,963	$112,345
White	$0	$0	$3,603	$63,541	$67,144
Fayetteville Shale Play Counties	**$302**	**$7,192**	**$44,434**	**$266,550**	**$318,477**

[2] The total amount of taxes acquired by the state and local communities from mineral rights owners receiving and spending lease bonuses is extremely difficult to estimate. Leasing activity in the Fayetteville Shale Play area started in early 2003. Initial lease terms were $25-$50 per acre bonus with a one-eighth royalty and a ten year primary term. Currently, lease terms are sometimes higher than a $600 bonus per acre with up to one-fifth royalty for a five year term due to the early success of the play and competition for leases. By now, mineral rights for about 3,748,038 net acres have been leased in this region. Lease bonuses paid by oil and gas companies to mineral right owners have yielded hundreds of million dollars to individual consumers and the resulting income and sales taxes, though not available, would be proportionally large.

INCOME AND SALES TAXES

Increased activity in the Fayetteville Shale Play area led to the creation of new jobs in various industry sections. These new employees received paychecks from which income taxes were paid, and when they spent their earnings, the sales taxes were paid concurrently. The estimation of income and sales taxes acquired as a result of new employment in the Fayetteville Shale is presented below.

For the evaluation, IMPLAN total employment impacts estimates were used. In particular, for the income tax estimation, the number of employees in 2007 (9,533.0) was multiplied by the average income tax of $527, which was calculated based on Arkansas per capita money income from 2004 ($16,904), yielding about $5.0 million in income tax collections. For the evaluation of sales tax, the assumption was made that new employees would spend 83.3 percent of their total income (i.e. the average national percentage of personal consumption expenditures (PCE) out of total personal income in 2007). The total income was calculated by multiplying the number of new employees and Arkansas per capita money income. A conservative sales tax rate of 6.0 percent was used for all PCI: durable, non-durable, and services. The resulting sales tax collections were estimated to be more than $8.0 million, while total income and sales taxes received due to new employment were estimated to be about $13.1 million in 2007.

TABLE 13: INCOME AND SALES TAXES AS A RESULT OF EMPLOYMENT, 2007

Year	State Income Tax	State Sales Tax	State Total Income and Sales Taxes	Local Sales Tax
2007	$5,023,891	$8,054,069	$13,077,960	$4,698,207

Using the weighted average of sales tax rates in the Fayetteville Shale area counties (3.5 percent, including an average county tax rate of 1.65 percent and an average city tax rate of 1.85 percent—weighted by the volume of gas production in each county), about $4.7 million of local sales tax was estimated to be collected due to Fayetteville Shale related employment during 2007.

Mineral right owners in the Fayetteville Shale Play area started to receive additional streams of income from royalty payments once the production of natural gas began in earnest. Hence, additional income taxes were collected during the period of 2004 to 2007. Moreover, producing natural gas yielded profits for exploration and production companies, which, in turn, impacted corporation and partnership income taxes collections in the state of Arkansas.

The value of production in the Fayetteville Shale Play area was estimated by multiplying production in Mcf by the price per Mcf, utilizing the prices used by the Arkansas Assessment Coordination Department for assessing working and royalty interest ($4.16, $4.70, $6.79, and

$6.51 for 2004, 2005, 2006, and 2007 years, respectively). In order to calculate royalty payments from the total value of gas production in the Fayetteville Shale Play area, a conservative estimate of 1/8 or 12.5 percent was used. Once total royalty payments were calculated, severance tax paid by mineral owners (1/8 of total severance tax) was subtracted, and individual income tax was estimated using the 7.0% income tax rate (based on the median Arkansas household income of $35,295 in 2004). For the evaluation of income taxes paid by exploration and production companies, first the decision was made what particular tax rate to use based on characteristics of a company. If a company was assumed to pay corporation income tax, the tax rate of 6.5 percent, and if partnership income tax, the tax rate of 7.0 percent was used. Utilizing methodology described below in the Property Taxes section, companies' profit from gas production was calculated and subtracting from it severance tax paid by companies (7/8 of total severance tax), yielded companies net income. Applying relevant tax rates to the net income, income tax from exploration and production companies was estimated.

Results show that from 2004 to 2007, about $40.8 million of income tax was collected in the State of Arkansas as a result of natural gas production in the Fayetteville Shale Play area. This includes more than $34.7 million received from exploration and production companies and more than $6.0 million received from mineral rights owners.

TABLE 14: ARKANSAS INCOME TAXES AS A RESULT OF FAYETTEVILLE SHALE PLAY PRODUCTION, 2004 - 2007

Income Tax	2004	2005	2006	2007	Total
Income Tax from Exploration & Production Companies	$20,696	$557,585	$5,000,082	$29,157,431	$34,735,795
Individual Income Tax	$3,660	$98,523	$879,586	$5,058,778	$6,040,547
Total Income Tax	**$24,356**	**$656,109**	**$5,879,668**	**$34,216,210**	**$40,776,342**

Since mineral right owners in the Fayetteville Shale Play area received royalty payments as additional income, the assumption was made that they would use it similarly to the rest of their income. Thus, 83.3 percent of their total net income was assumed to be spent on durable and non-durable goods as well as on services (using the average national percentage of 2007). The total net income of mineral rights owners was estimated by subtracting severance taxes and individual income taxes paid from the total royalty payments received. A conservative state sales tax rate of 6.0 percent was used, generating sales tax collections in Arkansas for the period of 2004 through 2007. As a result, more than $4.0 million of sales tax was received by the state during this period from Fayetteville Shale Play royalty payments. Additionally, more than $2.3 million of sales tax was received by local entities in Cleburne, Conway, Faulkner, Franklin, Johnson, Pope, Van Buren, and White counties from Fayetteville Shale Play royalty payments during the period of 2004 to 2007 (using a weighted average of 3.5 percent).

TABLE 15: SALES TAX FROM ESTIMATED FAYETTEVILLE SHALE ROYALTY PAYMENTS, 2004 - 2007

Year	State Sales Tax	Local Sales Tax
2004	$2,430	$1,418
2005	$65,421	$38,162
2006	$584,062	$340,703
2007	$3,359,130	$1,959,493
Total	**$4,011,044**	**$2,339,776**

PROPERTY TAXES

Production of natural gas also generated additional property taxes in the Fayetteville Shale Play area counties, including the increased amount received by schools. These taxes were paid by exploration and production companies as well as by mineral right owners from their royalty payments.

For the property taxes estimation, information from the Arkansas Assessment Coordination Department (ACD) on assessing working and royalty interests was used. ACD sends assessment formulas as well as suggested gas prices to county assessors annually. Since the county assessors use the prices indicated by ACD for most of their calculations, the same prices were used for this evaluation ($4.16, $4.70, $6.79, and $6.51 for the years 2004, 2005, 2006, and 2007, respectively). For each year, working and royalty interests were calculated using the following formulas:

Working Interest = (Production, MCF x Price per MCF) x Working Interest Percent (87.5%)

x (1 – Production Expenses (13%)) x 0.2 Assessment Rate

Royalty Interest = (Production, MCF x Price per MCF) x Royalty Interest Percent (12.5%)

x 0.2 Assessment Rate

Once the working interests of companies and royalty interests of mineral rights owners were calculated, property taxes were estimated, using the average millage rates for school districts and counties from Arkansas Coordination Department. It should be noted that the evaluation was made based on the production of the specific year, thus the results for assessment years, rather than calendar years, are presented.[3] The collection years are the years following the

[3] The property tax time line spans two years. The first year is used to establish the assessed values of property and levy millage rates. The second year is when the taxes will be collected and distributed to the cities, counties and school districts.

assessment years (for example, if the gas was produced in 2004, it was assessed using 2004 millage rates, yielding total of $2,582 in 2004 for school districts, but the property taxes were collected in 2005).

The results show that as a result of assessed valuation in Fayetteville Shale counties, school districts received more than $4.4 million in property taxes from 2004 to 2007. The collections of the $4.4 million would occur from 2005 to 2008. An additional $1.3 million in property taxes were collected by Fayetteville Shale area city, county, and other entities during the same time period.

TABLE 16: SCHOOL DISTRICTS PROPERTY TAXES FROM FAYETTEVILLE SHALE PRODUCTION BY COUNTY, 2004 – 2007 ASSESSMENT YEARS

County	2004	2005	2006	2007	Total
Cleburne	$0	$916	$6,805	$97,490	$105,211
Conway	$1,347	$37,634	$245,502	$1,066,411	$1,350,894
Faulkner	$0	$9,390	$116,833	$344,783	$471,006
Franklin	$786	$5,024	$8,559	$7,717	$22,086
Johnson	$0	$11	$0	$1,096	$1,107
Pope	$0	$408	$358	$15,942	$16,707
Van Buren	$448	$17,229	$212,447	$1,245,893	$1,476,019
White	$0	$0	$54,663	$924,318	$978,981
Fayetteville Shale Play Counties	**$2,582**	**$70,612**	**$645,168**	**$3,703,650**	**$4,422,011**

TABLE 17: TOTAL PROPERTY TAXES FROM FAYETTEVILLE SHALE PRODUCTION BY COUNTY, 2004 – 2007 ASSESSMENT YEARS

County	2004	2005	2006	2007	Total
Cleburne	$0	$1,030	$7,741	$110,889	$119,660
Conway	$1,834	$51,257	$325,858	$1,419,346	$1,798,295
Faulkner	$0	$11,772	$145,936	$439,436	$597,144
Franklin	$1,083	$6,951	$11,823	$10,660	$30,516
Johnson	$0	$15	$0	$1,516	$1,530
Pope	$0	$459	$434	$20,181	$21,074
Van Buren	$647	$24,971	$297,638	$1,709,405	$2,032,661
White	$0	$0	$62,772	$1,061,426	$1,124,197
Fayetteville Shale Play Counties	**$3,564**	**$96,455**	**$852,201**	**$4,772,858**	**$5,725,078**

Additionally, counties such as Faulkner, Johnson, and Pope tax minerals. County assessors evaluate natural gas reservoirs from the deeds which became possible due to the activities in the Fayetteville Shale Play. As a result, property taxes are received from the assessed values of natural gas as well in those counties.

Economic Impact from 2008-2012

The previous section established baseline economic impacts from the year 2007. This section describes projections from 2008 to 2012 of the estimated economic impact of the Fayetteville Shale Play on the state of Arkansas. The survey instrument, administered to Fayetteville Shale companies, was used to gather plans of expenditures and hiring during the next five years. Those survey results were used as inputs for the IMPLAN economic impact model to generate the total economic effect from direct spending in the Fayetteville Shale. The model estimates were then used to help project sales, income, and property taxes during the same time period.

Output Effects

Survey Results

The 81 survey respondents indicated that from 2008 to 2012, their total planned expenditures ranged from $2.6 billion in 2009 to $2.9 billion in 2011, with 2008, 2010, and 2012 numbers within that range. The largest part of expenditures was projected to be due to gas extraction and drilling gas wells.

TABLE 18: RESPONDENT COMPANIES PROJECTED EXPENDITURES IN THE STATE OF ARKANSAS, 2008 - 2012 (IN THOUSANDS)

Industry Sector	Expenditures, 2008	Expenditures, 2009	Expenditures, 2010	Expenditures, 2011	Expenditures, 2012
Construction of Manufacturing & Industrial Buildings	$2,750	$3,025	$3,328	$3,400	$3,500
Drilling Oil & Gas Wells	$770,150	$504,300	$438,850	$435,350	$437,900
Environmental and Other Technical Consulting Services	$3,400	$4,500	$4,600	$4,000	$4,000
Food Services and Drinking Places	$50	$65	$70	$75	$80
General Merchandise Stores	$305	$335	$385	$385	$390
Legal Services	$1,752	$1,945	$2,150	$2,175	$2,200
Miscellaneous Professional and Technical Services	$2,200	$2,905	$3,810	$2,615	$2,915
Miscellaneous Store Retailers	$700	$700	$700	$700	$700
Natural Gas Distribution	$1,500	$2,000	$2,300	$2,700	$3,000
Oil & Gas Extraction	$1,654,250	$1,831,900	$2,130,870	$2,220,662	$2,171,133
Oil & Gas Field Machinery and Equipment	$6,000	$7,900	$8,950	$10,000	$11,050
Real Estate	$10,400	$600	$600	$400	$400
Recycling of Gas Lines	$160	NA	NA	NA	NA
Support Activities for Oil & Gas Operations	$313,624	$186,275	$189,873	$170,197	$173,932
Water, Sewer, & Pipeline Construction	$26,601	$15,838	$26,700	$27,700	$28,300
Total	**$2,793,841**	**$2,562,288**	**$2,813,185**	**$2,880,358**	**$2,839,499**

IMPLAN RESULTS

As with the 2007 economic impact estimates, only the expenditures from operating companies were used as inputs in the IMPLAN input/output model. This avoids duplication of effects as the supply chain impacts are calculated as indirect impacts. Over the five year period, total direct investments of almost $12.5 billion were projected to result in total economic output of almost $17.9 billion. Following direct expenditure plans, the smallest total impact (about $3.3 billion) was projected to take place in 2009 and the largest total impact (more than $3.7 billion) was projected to take place in 2011. The average multiplier over the five year period was estimated to be 1.43, which is in the same range as previous estimates.

TABLE 19: FAYETTEVILLE SHALE OPERATORS PROJECTED OUTPUT IMPACTS ON THE STATE OF ARKANSAS, 2008 - 2012

Year	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Average Multiplier
2008	$2,403,100,608	$618,168,513	$494,040,561	$3,515,309,701	1.46
2009	$2,312,800,224	$533,726,731	$480,145,885	$3,326,672,757	1.44
2010	$2,548,019,872	$556,154,598	$524,428,800	$3,628,603,211	1.42
2011	$2,634,311,552	$567,638,793	$532,898,064	$3,734,848,322	1.42
2012	$2,582,333,760	$555,837,508	$512,828,487	$3,650,999,970	1.41
Total	**$12,480,566,016**	**$2,831,526,143**	**$2,544,341,797**	**$17,856,433,961**	**1.43**

EMPLOYMENT EFFECTS

SURVEY RESULTS

The respondents to the survey indicated that in 2008 they planned to have payroll expenditures of almost $184 million. This was an increase of 8.1 percent over their reported 2007 total payroll expenditures.

TABLE 20: RESPONDENT COMPANIES PROJECTED PAYROLL IN THE STATE OF ARKANSAS IN 2008

Industry Sector	Total Payroll
Construction of Manufacturing & Industrial Buildings	$1,290,000
Drilling Oil & Gas Wells	$10,150,000
Environmental and Other Technical Consulting Services	$730,000
Food Services and Drinking Places	$20,000
General Merchandise Stores	$117,000
Legal Services	$2,000,000
Miscellaneous Professional and Technical Services	$3,285,000
Miscellaneous Store Retailers	$50,000
Natural Gas Distribution	$1,000,000
Oil & Gas Extraction	$84,651,669
Oil & Gas Field Machinery and Equipment	$2,280,000
Real Estate	$783,000
Recycling of Gas Lines	$100,000
Support Activities for Oil & Gas Operations	$62,763,076
Water, Sewer, & Pipeline Construction	$14,773,108
Total	**$183,992,853**

Total in-state employment was projected to increase each year from 2008 through 2012 from 3,227 at the beginning of the period to 4,305 at the end of the period. However, out-of-state employment was expected to fluctuate, with the maximum number of employees occurring in 2009 at 774.

TABLE 21: RESPONDENT COMPANIES PROJECTED LOCAL EMPLOYMENT IN THE STATE OF ARKANSAS, 2008 - 2012

Industry Sector	Local Employment, 2008	Local Employment, 2009	Local Employment, 2010	Local Employment, 2011	Local Employment, 2012
Construction of Manufacturing & Industrial Buildings	41	42	46	50	51
Drilling Oil & Gas Wells	334	377	372	393	414
Environmental and Other Technical Consulting Services	33	35	40	25	25
Food Services and Drinking Places	2	3	3	3	3
General Merchandise Stores	7	7	8	8	9
Legal Services	13	15	17	18	18
Miscellaneous Professional and Technical Services	126	146	251	286	308
Miscellaneous Store Retailers	23	23	23	23	23
Natural Gas Distribution	38	42	48	52	60
Oil & Gas Extraction	717	891	1,028	1,090	1,152
Oil & Gas Field Machinery and Equipment	71	76	91	102	117
Real Estate	22	0	0	0	0
Recycling of Gas Lines	5	NA	NA	NA	NA
Support Activities for Oil & Gas Operations	1,516	1,667	1,708	1,701	1,796
Water, Sewer, & Pipeline Construction	279	262	288	304	329
Total	**3,227**	**3,585**	**3,923**	**4,055**	**4,305**

TABLE 22: RESPONDENT COMPANIES PROJECTED NON-ARKANSAS RESIDENTS EMPLOYMENT IN THE STATE OF ARKANSAS, 2008 - 2012

Industry Sector	Non-Arkansas Resident Employment, 2008	Non-Arkansas Resident Employment, 2009	Non-Arkansas Resident Employment, 2010	Non-Arkansas Resident Employment, 2011	Non-Arkansas Resident Employment, 2012
Drilling Oil & Gas Wells	150	195	178	154	139
Environmental and Other Technical Consulting Services	5	5	6	6	4
Natural Gas Distribution	1	0	0	0	0
Oil & Gas Extraction	425	533	521	517	503
Real Estate	2	0	0	0	0
Support Activities for Oil & Gas Operations	38	36	28	77	27
Water, Sewer, & Pipeline Construction	8	6	4	6	6
Total	**629**	**774**	**737**	**760**	**679**

IMPLAN RESULTS

Using the direct employment from Fayetteville Shale operators as the input to the IMPLAN model, total employment impacts on the state of Arkansas were estimated for 2008 through 2012. Direct employment is expected to peak in 2010 at 4,813.2 jobs. However, the total employment effect is highest in 2008 at 12,441.9, as the multiplier is projected to be highest in that year at 2.64. Total employment impacts in the remaining years range from a low of 11, 298.5 in 2012 to 12,026.1 in 2010. In those years, multipliers range from 2.50 to 2.54.

TABLE 23: FAYETTEVILLE SHALE OPERATORS PROJECTED EMPLOYMENT IMPACTS ON THE STATE OF ARKANSAS, 2008 - 2012

Year	Direct Impact	Indirect Impact	Induced Impact	Total Impact	Average Multiplier
2008	4,719.6	2,903.8	4,818.5	12,441.9	2.64
2009	4,497.7	2,327.1	4,588.2	11,412.9	2.54
2010	4,813.2	2,304.4	4,908.5	12,026.1	2.50
2011	4,789.3	2,284.7	4,884.0	11,958.0	2.50
2012	4,511.5	2,186.0	4,601.1	11,298.5	2.50

TAXES

Based on projected Fayetteville Shale investments, expenditures, and employment, severance, income, sales, and property tax estimates were projected for the period of 2008 through 2012 as well. The results are presented below.

SEVERANCE TAXES

Using projections of production of natural gas and the current severance tax rate of 0.3 percent of production, the collections of severance tax were forecasted for the Fayetteville Shale area for the next five years. Although the growth percentages of severance tax collections were enormous during the last four years, averaging 1,100 percent, growth rates are declining as production base values increase (from 2,282 percent in 2005 to 500 percent last year). Thus, conservative estimation implies that the average tax growth will moderate in the future. It is projected that from 2008 to 2012, the state of Arkansas will receive about $7.3 million in severance tax revenues from exploration and production companies and mineral rights owners.

TABLE 24: SEVERANCE TAX PROJECTIONS, 2008 - 2012

Year	Severance Tax
2008	$660,975
2009	$1,055,400
2010	$1,449,825
2011	$1,844,250
2012	$2,238,675
Total	**$7,249,125**

INCOME AND SALES TAXES

In order to project income and sales taxes for the state of Arkansas as a result of new employment in the Fayetteville Shale Play area, the same methodology was used as for the year 2007 estimation. Specifically, IMPLAN total employment impacts for the period of 2008 through 2012, income tax based on Arkansas per capita money income in 2004, the average national percentage of personal consumption expenditures out of total personal income in 2007, and a sales tax rate of 6.0 were used. The resulting projections showed that Arkansas will receive almost $31.2 million in income tax and about $50.0 million in sales tax from 2008 to 2012 due to new employment in the Fayetteville Shale area. Overall, a total of more than $81.1 million in income and sales taxes will be collected during this period by the state of Arkansas. In addition, more than $29.1 million in sales taxes will be collected by cities and counties in the Fayetteville Shale Play area during the next five years (based on a weighted average tax rate of 3.5 percent).

TABLE 25: PROJECTED INCOME AND SALES TAXES AS A RESULT OF EMPLOYMENT, 2008 - 2012

Year	State Income Tax	State Sales Tax	Total State Income and Sales Taxes	Local Sales Taxes
2008	$6,556,881	$10,511,688	$17,068,569	$6,131,818
2009	$6,014,598	$9,642,325	$15,656,923	$5,624,689
2010	$6,337,755	$10,160,394	$16,498,149	$5,926,896
2011	$6,301,866	$10,102,859	$16,404,725	$5,893,334
2012	$5,954,310	$9,545,672	$15,499,982	$5,568,309
Total	**$31,165,410**	**$49,962,937**	**$81,128,347**	**$29,145,047**

Projected income taxes received from exploration and production companies, as well as from mineral rights owners due to natural gas production in the Fayetteville Shale Play area, are shown below. The methodology used for the projections was the same as for calculating taxes from 2004 to 2007. Projected production and gas prices were used for the estimation. Specifically, for 2008, the price from the Arkansas Assessment Coordination Department for assessing working and royalty interest was used ($6.60 per MCF) and for 2009, 2010, 2011, and 2012 the prices were projected to be $7.50, $8.53, $9.70, and $11.02 per MCF, respectively (utilizing the average growth rate of prices used by ACD from 2004 to 2008 or 13.7 percent).

Projections showed that from 2008 to 2012, about $1.4 billion of income tax would be collected in the State of Arkansas as a result of natural gas production in the Fayetteville Shale Play area. This includes about $1.2 billion received from exploration and production companies and more than $195.9 million received from mineral rights owners.

TABLE 26: PROJECTED ARKANSAS INCOME TAX FROM FAYETTEVILLE SHALE PLAY PRODUCTION, 2008 -2012

Year	Income Tax from Exploration & Production Companies	Individual Income Tax	Total Income Tax
2008	$77,447,236	$12,717,980	$90,165,216
2009	$140,584,571	$23,085,874	$163,670,446
2010	$219,549,517	$36,052,719	$255,602,237
2011	$317,490,044	$52,135,423	$369,625,467
2012	$438,119,143	$71,943,673	$510,062,816
Total	**$1,193,190,511**	**$195,935,670**	**$1,389,126,182**

The amount of sales tax projected to be paid by mineral right owners as a result of spending some of their royalty payments from 2008 to 2012, was estimated using the same method as for sales tax evaluation from 2004 to 2007. Using the tax rate of 6.0 percent, more than $137.9

million of sales tax was expected to be received by the State of Arkansas during the next five years from Fayetteville Shale Play royalty payments. Additionally, almost $80.5 million of local sales tax was projected to be collected by Fayetteville Shale Play area cities and counties from royalty payments during the same period (using a weighted average tax rate of 3.5 percent).

TABLE 27: SALES TAX PROJECTIONS FROM ESTIMATED FAYETTEVILLE SHALE ROYALTY PAYMENTS, 2008 - 2012

Year	State Sales Tax	Local Sales Tax
2008	$8,953,740	$5,223,015
2009	$16,252,917	$9,480,868
2010	$25,381,766	$14,806,030
2011	$36,704,192	$21,410,779
2012	$50,649,417	$29,545,493
Total	**$137,942,032**	**$80,466,185**

PROPERTY TAXES

Property taxes received as a result of natural gas production in the Fayetteville Shale Play area were also forecasted for the next five years. Using the formulas described above, as well as projected production and price data, total property taxes to be collected from exploration and production companies and from mineral right owners were estimated to be about $184.8 million. This included about $143.8 million to be received by schools from property taxes generated in the Fayetteville Shale Play area and almost $41.0 million to be received by city, county, and other entities in Cleburne, Conway, Faulkner, Franklin, Johnson, Pope, Van Buren, and White counties (during the assessment years 2008 to 2012 or the collection years 2009 to 2013).

TABLE 28: PROJECTED PROPERTY TAXES FROM FAYETTEVILLE SHALE PLAY PRODUCTION, 2008 – 2012 ASSESSMENT YEARS

Year	School District Property Taxes	City, County, and Other Property Taxes	Total Property Taxes
2008	$9,334,311	$2,659,950	$11,994,261
2009	$16,942,859	$4,828,118	$21,770,977
2010	$26,458,030	$7,539,607	$33,997,637
2011	$38,259,033	$10,902,477	$49,161,510
2012	$52,793,143	$15,044,187	$67,837,330
Total	**$143,787,376**	**$40,974,340**	**$184,761,716**

Risks

The reported investment and hiring plans of the survey respondents were dependent upon the industry environment remaining consistent with expectations. There are two major identifiable risk factors to the projections presented in the previous sections. The first is a change in the market-based price of natural gas.

Price Volatility

Respondent operator companies were asked to estimate the level of natural gas prices needed in order to continue the projected activities in Fayetteville Shale Play. Their responses varied from $5.5 to $7.0 per MMBTU, with the average price being $6.21. In the case of a price decline by $1.0 from that average level, the companies reported plans to decrease their expenditures by an average of 47.0 percent. The respondent companies did report a range of answers from 20.0 to 100.0 percent. Respondent exploration and production companies also indicated that if prices were to increase by $1.0 above the indicated level, they would increase expenditures on average by 10.0 percent (the range of responses varied from 0.0 to 20.0 percent). Taking into account responses from Fayetteville Shale operators and using the IMPLAN total output impacts estimates, projected changes in output impacts were evaluated.

If the average natural gas price level were to decrease by $1, total economic output due to activity in the Fayetteville Shale from 2008 to 2012 was projected to decline by almost $8.4 billion. However, if the average price level were to increase by $1, the additional total economic output due to the Fayetteville Shale would be almost $1.8 billion over the years 2008 to 2012.

TABLE 29: FAYETTEVILLE SHALE OPERATORS PROJECTED OUTPUT IMPACT DEPENDING ON PRICE LEVEL, 2008 - 2012

Year	Projected Output Impact	Projected Output Impact if Price Level Decreases	Projected Output Impact if Price Level Increases
2008	$3,515,309,701	$1,834,053,216	$3,867,719,499
2009	$3,326,672,757	$1,731,589,013	$3,660,171,701
2010	$3,628,603,211	$1,888,658,943	$3,992,370,683
2011	$3,734,848,322	$1,941,834,250	$4,109,266,866
2012	$3,650,999,970	$1,894,049,671	$4,017,012,717
Total	**$17,856,433,961**	**$9,455,874,604**	**$19,646,541,466**

When asked to indicate how price volatility affects their employment strategies, some exploration and production companies reported no effect, while others estimated the impact as high as 60.0 percent and 50.0 percent in the cases of an average price decline and an average price increase, respectively. If the price of natural gas were to decline by $1.0 from the average level, the companies intend to hire fewer new employees (a decrease of 19.0 percent) on average. In the case of an average price increase, projected employment would increase at an average 17.5 percent. The effects of changing natural gas prices on total employment are shown below.

TABLE 30: FAYETTEVILLE SHALE OPERATORS PROJECTED EMPLOYMENT IMPACT DEPENDING ON PRICE LEVEL, 2008 - 2012

Year	Projected Employment Impact	Projected Employment Impact if Price Level Decreases	Projected Employment Impact if Price Level Increases
2008	12,441.9	10,074.2	14,619.2
2009	11,412.9	9,241.0	13,410.2
2010	12,026.1	9,737.5	14,130.7
2011	11,958.0	9,682.4	14,050.7
2012	11,298.5	9,148.4	13,275.7

SEVERANCE TAX INCREASE

The major risk factor other than natural gas price volatility to the estimates of total economic impact presented earlier is a substantial increase in the Arkansas severance tax rate. There have been proposals to raise the severance tax on natural gas from its current level of 0.3 percent of production volume up to 7.0 percent of the market value of production. The survey instrument for this study asked about changes to investment and employment plans if a 5.0 percent of market value severance tax were implemented without any initial reductions or performance exemptions. Respondents indicated that they would reduce their planned investments from 2008 to 2012 by a weighted average of 13.0 percent (the responses varied from 0.0 to 50.0 percent) with the institution of a flat 5.0 percent Arkansas severance tax. This resulted in the projected total output estimates declining by more than $2.3 billion over the five year time period.

TABLE 31: FAYETTEVILLE SHALE OPERATORS PROJECTED OUTPUT IMPACT DEPENDING ON SEVERANCE TAX, 2008 - 2012

Year	Projected Output Impact	Impact if Severance Tax Increases 5.0%
2008	$3,515,309,701	$3,005,589,794
2009	$3,326,672,757	$2,887,551,953
2010	$3,628,603,211	$3,178,656,413
2011	$3,734,848,322	$3,271,727,130
2012	$3,650,999,970	$3,198,275,974
Total	**$17,856,433,961**	**$15,541,801,264**

Similarly, total employment impacts were re-estimated using the responses of Fayetteville Shale operators. An average 23.2 percent (the range of responses varied from 0.0 to 60.0 percent) decrease in employment was estimated to be the impact of an increase in the severance tax. As a result, in 2008, there would be 2,843.7 fewer total jobs created and in 2012 there would be 2,621.3 fewer jobs than under the status quo scenario.

TABLE 32: FAYETTEVILLE SHALE OPERATORSPROJECTED EMPLOYMENT IMPACT DEPENDING ON SEVERANCE TAX, 2008 - 2012

Year	Projected Employment Impact	Impact if Severance Tax Increases to 5.0%
2008	12,441.9	9,555.4
2009	11,412.9	8,765.1
2010	12,026.1	9,236.0
2011	11,958.0	9,183.7
2012	11,298.5	8,677.2

APPENDICES

Survey Instrument

SAM M. WALTON COLLEGE of BUSINESS — UNIVERSITY of ARKANSAS

Economic Impact of Fayetteville Shale Play Survey

by the Center for Business and Economic Research,

Walton College of Business, University of Arkansas, Fayetteville.

Please answer the following questions.

1. Please describe the specific nature of your company's involvement with the Fayetteville Shale Play.

2. Please choose an industry code that best describes the character of your company's involvement with the Fayetteville Shale Play.

3. Please indicate total current and projected expenditures your company made/plans to make in relation to the Fayetteville Shale Play while working in the State of Arkansas.

	2007	2008	2009	2010	2011	2012
Total Expenditures,						

$

4. Please specify the payroll expenditures your company made/will make in relation to the Fayetteville Shale Play in 2007 and 2008.

	2007	2008
Total Payroll, $		

5. Please indicate the total number of full-time employees working for your company and projected to work for your company whose jobs are related to the Fayetteville Shale Play in the State of Arkansas at present and in future.

	2007	2008	2009	2010	2011	2012
Local Employees						
Non-Arkansas Residents						
Total Employees						

6. Where do your local employees live? Please specify the number of employees by county; estimate if necessary. You can check the list linking Arkansas cities to counties if not sure about counties' names: http://www.epodunk.com/communities_ar.html

Cleburne County (Heber Springs & Other Cities)	
Conway County (Morrilton & Other Cities)	
Faulkner County (Conway & Other Cities)	

Van Buren County (Fairfield Bay & Other Cities)	
White County (Searcy & Other Cities)	
Other - Please Specify Counties	

7. On average, how long did your non-Arkansas employees stay in the state while working on the Fayetteville Shale Play in 2007? Please specify the number of weeks.

	Number of Weeks
Average Stay in Arkansas	

8. Where do your non-Arkansas employees stay while working in Arkansas? Please specify the number of employees by county; estimate if necessary. You can check the list linking Arkansas cities to counties if not sure about counties' names: http://www.epodunk.com/communities_ar.html

Cleburne County (Heber Springs & Other Cities)	
Conway County (Morrilton & Other Cities)	
Faulkner County (Conway & Other Cities)	
Van Buren County (Fairfield Bay & Other Cities)	
White County (Searcy & Other Cities)	

Other - Please Specify Counties

9. Would an increase in the Arkansas severance tax on natural gas affect your company? Specifically, consider if the tax increased from the current 0.3 cents per 1000 cubic feet (equivalent to 0.071 percent of market value) to 5.0 percent of market value.

- [ ] Yes
- [ ] No

10. If you answered YES to the previous question, please indicate how an increase in the Arkansas severance tax on natural gas would affect your company.

Annual Decrease in Investment Dollars, %

Annual Decrease in the Number of Employees, %

Slow down Investment (How?)

Slow down Hiring (How?)

Other Effect

11. What is the level of the natural gas prices needed for your company in order to continue the projected activities (which you estimated above) in the Fayetteville Shale Play? (The natural gas price as of January, 7, 2008 was $7.57 per MMBTU.)

Level of Gas Prices, $	

12. How would a change in price of the natural gas affect your company? Please indicate all that apply for the following two scenarios: if the gas price declined $1 below the level you indicated in the previous question and if the price increased $1 above the indicated level.

	Decline in Gas Price Level	Increase in Gas Price Level
Annual Decrease/Increase in Investment Dollars, %		
Annual Decrease/Increase in the Number of Employees, %		
Slow down/Increase Investment (How?)		
Slow down/Increase Hiring (How?)		
Other Effect		

13. Please add any additional comments regarding the economic impact of the Fayetteville Shale Play as it relates to your business:

Thank you!

>>

IMPLAN Tables

TABLE 33: 2007 ECONOMIC OUTPUT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	$1,425,699,840	$94,066,944	$3,289,880	$1,523,056,640
Drilling oil and gas wells	$371,649,888	$2,766,448	$6,014	$374,422,368
Petroleum refineries	$0	$51,338,448	$8,276,904	$59,615,352
Owner-occupied dwellings	$0	$0	$50,615,316	$50,615,316
Management of companies and enterprises	$0	$34,578,716	$3,086,219	$37,664,932
Wholesale trade	$0	$16,304,991	$18,427,070	$34,732,060
Lessors of nonfinancial intangible assets	$0	$33,751,372	$424,403	$34,175,776
Offices of physicians- dentists- and other health	$0	$0	$25,043,016	$25,043,016
Real estate	$0	$6,645,607	$16,484,555	$23,130,160
Support activities for oil and gas operations	$0	$22,903,114	$49,576	$22,952,690
Hospitals	$0	$0	$22,432,320	$22,432,320
Food services and drinking places	$0	$775,349	$21,100,916	$21,876,264
Monetary authorities and depository credit intermediaries	$0	$8,894,004	$10,109,241	$19,003,244
Power generation and supply	$0	$7,799,552	$7,811,971	$15,611,522
Legal services	$0	$11,372,066	$3,818,902	$15,190,967
Truck transportation	$0	$6,694,443	$4,615,759	$11,310,202
Motor vehicle and parts dealers	$0	$588,018	$10,328,745	$10,916,764
Telecommunications	$0	$3,574,131	$6,718,321	$10,292,451
Other State and local government enterprises	$0	$2,498,169	$6,455,752	$8,953,920
Insurance carriers	$0	$1,538,423	$7,295,998	$8,834,420
Securities- commodity contracts- investments	$0	$4,452,901	$4,050,557	$8,503,457
General merchandise stores	$0	$439,339	$7,661,713	$8,101,052
Pipeline transportation	$0	$7,091,205	$796,215	$7,887,421
Nursing and residential care facilities	$0	$0	$6,193,588	$6,193,588
Other miscellaneous chemical product manufacturing	$0	$5,994,083	$186,159	$6,180,242
Food and beverage stores	$0	$329,009	$5,731,800	$6,060,809
Building material and garden supply stores	$0	$373,413	$5,515,929	$5,889,342
All other miscellaneous professional and technical	$0	$5,150,162	$698,704	$5,848,866
Other ambulatory health care services	$0	$5,035	$5,473,919	$5,478,954

Industry	Direct	Indirect	Induced	Total
Management consulting services	$0	$3,799,809	$1,215,119	$5,014,928
Architectural and engineering services	$0	$3,462,557	$964,500	$4,427,058
Warehousing and storage	$0	$3,659,941	$629,841	$4,289,782
Automotive repair and maintenance- except car wash	$0	$522,684	$3,708,616	$4,231,300
Social assistance- except child day care services	$0	$213	$4,218,802	$4,219,016
Other basic organic chemical manufacturing	$0	$3,673,455	$342,714	$4,016,170
Plastics plumbing fixtures and all other plastics	$0	$2,889,539	$1,107,587	$3,997,126
Conveyor and conveying equipment manufacturing	$0	$3,907,068	$8,166	$3,915,234
Petroleum lubricating oil and grease manufacturing	$0	$3,634,588	$273,819	$3,908,407
Nondepository credit intermediation	$0	$2,276,086	$1,601,693	$3,877,778
Natural gas distribution	$0	$1,718,291	$2,140,182	$3,858,472
Accounting and bookkeeping services	$0	$2,247,226	$1,414,235	$3,661,461
Scientific research and development services	$0	$3,300,979	$321,646	$3,622,625
Gasoline stations	$0	$224,679	$3,371,341	$3,596,020
Audio and video equipment manufacturing	$0	$15,918	$3,568,032	$3,583,950
Independent artists- writers- and performers	$0	$3,388,626	$56,337	$3,444,962
Health and personal care stores	$0	$219,492	$3,147,250	$3,366,742
Machinery and equipment rental and leasing	$0	$3,001,867	$287,535	$3,289,402
Civic- social- professional and similar organizations	$0	$1,325,105	$1,826,879	$3,151,984
Clothing and clothing accessories stores	$0	$152,982	$2,870,862	$3,023,844
Hotels and motels- including casino hotels	$0	$669,629	$2,337,830	$3,007,459
Poultry processing	$0	$40,488	$2,907,639	$2,948,127
Nonstore retailers	$0	$175,969	$2,641,448	$2,817,417
Maintenance and repair of nonresidential buildings	$0	$1,164,056	$1,557,608	$2,721,665
Rail transportation	$0	$1,738,903	$817,311	$2,556,214
Furniture and home furnishings stores	$0	$162,756	$2,355,353	$2,518,109

Industry	Direct	Indirect	Induced	Total
Child day care services	$0	$0	$2,489,175	$2,489,175
Employment services	$0	$1,160,008	$1,154,325	$2,314,332
Miscellaneous store retailers	$0	$124,227	$2,167,172	$2,291,399
Services to buildings and dwellings	$0	$1,000,310	$1,272,737	$2,273,047
Couriers and messengers	$0	$1,643,624	$575,636	$2,219,261
Other amusement- gambling- and recreation industries	$0	$473,029	$1,710,243	$2,183,271
Colleges- universities- and junior colleges	$0	$88,473	$1,982,628	$2,071,101
Meat processed from carcasses	$0	$19,562	$1,995,546	$2,015,107
Fitness and recreational sports centers	$0	$1,398,766	$614,692	$2,013,458
Cattle ranching and farming	$0	$25,739	$1,967,597	$1,993,336
Petrochemical manufacturing	$0	$1,836,185	$94,798	$1,930,983
Postal service	$0	$744,309	$1,126,677	$1,870,986
Animal- except poultry- slaughtering	$0	$16,733	$1,838,408	$1,855,141
Business support services	$0	$1,085,569	$696,402	$1,781,972
Advertising and related services	$0	$1,144,858	$599,546	$1,744,403
Funds- trusts- and other financial vehicles	$0	$8,572	$1,634,755	$1,643,327
State and local government electric utilities	$0	$832,920	$807,980	$1,640,900
Radio and television broadcasting	$0	$931,544	$685,902	$1,617,446
Computer systems design services	$0	$1,167,991	$399,456	$1,567,447
Insurance agencies- brokerages- and related	$0	$268,663	$1,287,961	$1,556,623
Newspaper publishers	$0	$903,812	$652,784	$1,556,596
Other personal services	$0	$42,096	$1,480,237	$1,522,334
Home health care services	$0	$0	$1,514,849	$1,514,849
Bread and bakery product- except frozen- manufacturers	$0	$20,700	$1,433,761	$1,454,460
Poultry and egg production	$0	$17,204	$1,436,171	$1,453,375
Database- directory- and other publishers	$0	$823,414	$615,035	$1,438,449
Personal care services	$0	$0	$1,435,698	$1,435,698
Toilet preparation manufacturing	$0	$42,695	$1,381,794	$1,424,489
Sporting goods- hobby- book and music stores	$0	$81,721	$1,340,499	$1,422,220
Office administrative services	$0	$637,384	$766,807	$1,404,191
Other computer related services- including facilities	$0	$1,172,890	$212,409	$1,385,299
Iron and steel mills	$0	$1,309,756	$17,815	$1,327,570
Other educational services	$0	$48,361	$1,276,408	$1,324,769

Industry	Direct	Indirect	Induced	Total
Elementary and secondary schools	$0	$0	$1,307,843	$1,307,843
Automotive equipment rental and leasing	$0	$386,491	$828,901	$1,215,392
Footwear manufacturing	$0	$0	$1,208,643	$1,208,643
Fluid milk manufacturing	$0	$8,362	$1,172,767	$1,181,129
Waste management and remediation services	$0	$738,691	$389,625	$1,128,316
Construction machinery manufacturing	$0	$1,090,399	$2,058	$1,092,457
Environmental and other technical consulting services	$0	$822,867	$261,272	$1,084,140
Religious organizations	$0	$0	$1,069,231	$1,069,231
Veterinary services	$0	$7,995	$1,053,604	$1,061,600
Motor vehicle parts manufacturing	$0	$685,418	$346,716	$1,032,134
Motion picture and video industries	$0	$204,641	$826,159	$1,030,800
Scenic and sightseeing transportation and support	$0	$468,241	$545,984	$1,014,225
All other industries	$0	$15,891,622	$30,998,167	$46,889,790
Total	**$1,797,349,728**	**$416,673,682**	**$387,068,671**	**$2,601,092,069**

TABLE 34: 2007 EMPLOYMENT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	3,182.4	210.0	7.3	3,399.7
Drilling oil and gas wells	594.0	4.4	0.0	598.4
Food services and drinking places	0.0	17.0	463.1	480.1
Offices of physicians- dentists- and other health	0	0	231.1	231.1
Wholesale trade	0	106.7	120.5	227.2
Hospitals	0	0	215.5	215.5
Real estate	0	60	148.9	208.9
Management of companies and enterprises	0	178.9	16	194.9
Legal services	0	115.9	38.9	154.8
General merchandise stores	0	8.1	141.2	149.3
Nursing and residential care facilities	0	0	141.5	141.5
Private households	0	0	135.3	135.3
Support activities for oil and gas operations	0	132.3	0.3	132.6
Social assistance- except child day care services	0	0	126.3	126.3
Food and beverage stores	0	6.5	113.1	119.6
Employment services	0	57.9	57.6	115.5
Motor vehicle and parts dealers	0	6.1	107.9	114.1
Monetary authorities and depository credit intermediaries	0	50.3	57.1	107.4
Truck transportation	0	53.6	37	90.5
Civic- social- professional and similar organizations	0	37.9	52.2	90.1
Miscellaneous store retailers	0	4.7	82.7	87.5
Building material and garden supply stores	0	4.6	68.1	72.7
Warehousing and storage	0	61.6	10.6	72.1
Securities- commodity contracts- investments	0	37.6	34.2	71.9
Fitness and recreational sports centers	0	47.4	20.8	68.2
Child day care services	0	0	68.1	68.1
Nonstore retailers	0	4.2	63	67.2
Clothing and clothing accessories stores	0	3.2	60.8	64.1
Hotels and motels- including casino hotels	0	12.8	44.6	57.4
Automotive repair and maintenance- except car wash	0	7.1	50.1	57.2
Gasoline stations	0	3.4	51.1	54.5
Health and personal care stores	0	3.5	50.1	53.6
Services to buildings and dwellings	0	21.4	27.3	48.7
Independent artists- writers- and performers	0	47.3	0.8	48.1
Management consulting services	0	32.8	10.5	43.4
Accounting and bookkeeping services	0	26.6	16.7	43.3
Elementary and secondary schools	0	0	42.5	42.5
Other ambulatory health care services	0	0	42.1	42.1
Other State and local government enterprises	0	11.7	30.2	41.8
Architectural and engineering services	0	32.5	9.1	41.6
Other amusement- gambling- and recreation industries	0	8.8	31.9	40.7
Colleges- universities- and junior colleges	0	1.7	38.3	40

Industry	Direct	Indirect	Induced	Total
Sporting goods- hobby- book and music stores	0	2.3	37.1	39.4
Insurance carriers	0	6.7	31.8	38.5
Business support services	0	23	14.7	37.7
Power generation and supply	0	18.4	18.5	36.9
Scientific research and development services	0	32.4	3.2	35.5
Personal care services	0	0	34.1	34.1
Couriers and messengers	0	25	8.8	33.8
Furniture and home furnishings stores	0	1.9	28.2	30.1
Nondepository credit intermediation	0	17.2	12.1	29.4
Postal service	0	11.5	17.4	28.8
Home health care services	0	0	27.8	27.8
Maintenance and repair of nonresidential buildings	0	10.9	14.5	25.4
Other educational services	0	0.9	23.5	24.4
Grantmaking and giving and social advocacy organizations	0	0	24.3	24.3
Drycleaning and laundry services	0	1.1	22.7	23.8
Investigation and security services	0	15.5	8.1	23.6
Telecommunications	0	7.9	14.8	22.6
Plastics plumbing fixtures and all other plastics	0	15.9	6.1	22
Electronics and appliance stores	0	1.6	19.6	21.2
Cattle ranching and farming	0	0.3	19.7	19.9
Performing arts companies	0	10.6	8.8	19.4
Computer systems design services	0	14.2	4.9	19
Promoters of performing arts and sports and agents	0	13.1	5.9	19
Spectator sports	0	3.8	13.2	17
Animal production- except cattle and poultry	0	0.2	16.6	16.8
Veterinary services	0	0.1	16.5	16.6
All other miscellaneous professional and technical	0	14.2	1.9	16.1
Insurance agencies- brokerages- and related	0	2.7	12.9	15.6
Advertising and related services	0	9.5	5	14.4
Conveyor and conveying equipment manufacturing	0	13.8	0	13.9
Other maintenance and repair construction	0	6	7.8	13.7
Newspaper publishers	0	7.9	5.7	13.7
Lessors of nonfinancial intangible assets	0	13.3	0.2	13.4
Other miscellaneous chemical product manufacturing	0	12.8	0.4	13.2
Poultry processing	0	0.2	12.8	13
Other Federal Government enterprises	0	2.3	10.4	12.7
Death care services	0	0	12.5	12.5
Machinery and equipment rental and leasing	0	10.7	1	11.7
Pipeline transportation	0	10.1	1.1	11.3
Car washes	0	0.7	9.9	10.7
All other industries	0	146.2	252.6	401.2
Total	**3,776.4**	**1,904.6**	**3,852.0**	**9,533.0**

TABLE 35: 2008 ECONOMIC OUTPUT IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	$1,654,250,496	$118,838,608	$4,302,912	$1,777,392,000
Drilling oil and gas wells	$748,850,112	$3,109,477	$7,598	$751,967,232
Petroleum refineries	$0	$87,713,432	$10,521,904	$98,235,336
Management of companies and enterprises	$0	$61,152,896	$4,020,651	$65,173,544
Owner-occupied dwellings	$0	$0	$62,102,712	$62,102,712
Wholesale trade	$0	$27,380,718	$23,591,756	$50,972,472
Lessors of nonfinancial intangible assets	$0	$38,440,540	$540,201	$38,980,740
Offices of physicians- dentists- and other health	$0	$0	$32,549,584	$32,549,584
Real estate	$0	$10,830,461	$21,103,212	$31,933,670
Hospitals	$0	$0	$29,126,026	$29,126,026
Food services and drinking places	$0	$1,194,000	$26,999,412	$28,193,410
Support activities for oil and gas operations	$0	$25,744,748	$62,474	$25,807,222
Monetary authorities and depository credit intermediaries	$0	$12,722,058	$12,911,999	$25,634,056
Legal services	$0	$19,993,148	$4,923,461	$24,916,610
Power generation and supply	$0	$10,103,059	$10,010,001	$20,113,060
Truck transportation	$0	$11,288,087	$5,859,342	$17,147,430
Telecommunications	$0	$5,973,139	$8,554,965	$14,528,104
Motor vehicle and parts dealers	$0	$1,056,628	$13,299,861	$14,356,489
Securities- commodity contracts- investments	$0	$7,675,305	$5,230,566	$12,905,871
Other State and local government enterprises	$0	$4,194,833	$8,324,157	$12,518,989
Insurance carriers	$0	$2,616,778	$9,433,921	$12,050,699
General merchandise stores	$0	$789,461	$9,865,643	$10,655,104
Other miscellaneous chemical product manufacturing	$0	$10,360,513	$238,725	$10,599,237
Pipeline transportation	$0	$9,250,835	$1,026,277	$10,277,112
Food and beverage stores	$0	$591,206	$7,380,582	$7,971,788
Nursing and residential care facilities	$0	$0	$7,890,709	$7,890,709
Building material and garden supply stores	$0	$670,997	$7,102,613	$7,773,610
All other miscellaneous professional and technical	$0	$6,375,982	$890,337	$7,266,320
Petroleum lubricating oil and grease manufacturing	$0	$6,703,443	$348,087	$7,051,529
Warehousing and storage	$0	$6,255,392	$795,680	$7,051,072
Other ambulatory health care	$0	$8,385	$7,036,828	$7,045,213

Industry	Direct	Indirect	Induced	Total
services				
Independent artists- writers- and performers	$0	$6,854,995	$71,622	$6,926,617
Management consulting services	$0	$5,263,748	$1,551,909	$6,815,657
Conveyor and conveying equipment manufacturing	$0	$6,605,199	$10,450	$6,615,649
Other basic organic chemical manufacturing	$0	$6,038,990	$442,814	$6,481,804
Architectural and engineering services	$0	$4,709,712	$1,235,058	$5,944,770
Natural gas distribution	$0	$2,988,066	$2,734,954	$5,723,020
Plastics plumbing fixtures and all other plastics	$0	$4,268,491	$1,418,734	$5,687,225
Automotive repair and maintenance- except car wash	$0	$909,940	$4,742,008	$5,651,948
Social assistance- except child day care services	$0	$341	$5,542,081	$5,542,422
Accounting and bookkeeping services	$0	$3,638,825	$1,826,045	$5,464,869
Nondepository credit intermediation	$0	$3,351,815	$2,038,705	$5,390,520
Machinery and equipment rental and leasing	$0	$4,820,036	$367,231	$5,187,267
Scientific research and development services	$0	$4,767,293	$409,859	$5,177,153
Gasoline stations	$0	$403,732	$4,341,124	$4,744,856
Health and personal care stores	$0	$394,412	$4,052,572	$4,446,984
Audio and video equipment manufacturing	$0	$23,656	$4,403,003	$4,426,658
Civic- social- professional and similar organizations	$0	$1,797,416	$2,316,214	$4,113,629
Hotels and motels- including casino hotels	$0	$1,091,207	$3,012,215	$4,103,421
Rail transportation	$0	$2,954,156	$1,050,965	$4,005,121
Clothing and clothing accessories stores	$0	$274,898	$3,696,680	$3,971,578
Maintenance and repair of nonresidential buildings	$0	$1,927,880	$1,980,048	$3,907,928
Poultry processing	$0	$66,148	$3,693,284	$3,759,432
Nonstore retailers	$0	$316,205	$3,401,274	$3,717,479
Fitness and recreational sports centers	$0	$2,814,942	$780,915	$3,595,857
Furniture and home furnishings stores	$0	$292,462	$3,032,882	$3,325,344

Industry	Direct	Indirect	Induced	Total
Employment services	$0	$1,729,980	$1,485,953	$3,215,933
Child day care services	$0	$0	$3,176,197	$3,176,197
Other amusement- gambling- and recreation industries	$0	$949,013	$2,172,747	$3,121,761
Services to buildings and dwellings	$0	$1,400,185	$1,620,557	$3,020,741
Miscellaneous store retailers	$0	$223,227	$2,790,570	$3,013,797
Couriers and messengers	$0	$2,160,398	$730,721	$2,891,119
Advertising and related services	$0	$2,054,765	$770,075	$2,824,840
Postal service	$0	$1,307,831	$1,452,316	$2,760,147
Colleges- universities- and junior colleges	$0	$119,698	$2,542,672	$2,662,370
Meat processed from carcasses	$0	$30,458	$2,534,741	$2,565,200
Radio and television broadcasting	$0	$1,676,467	$881,541	$2,558,008
Petrochemical manufacturing	$0	$2,426,292	$122,486	$2,548,778
Cattle ranching and farming	$0	$44,047	$2,491,155	$2,535,203
Newspaper publishers	$0	$1,631,082	$839,450	$2,470,532
Business support services	$0	$1,482,700	$889,425	$2,372,125
Animal- except poultry- slaughtering	$0	$26,833	$2,335,149	$2,361,981
Database- directory- and other publishers	$0	$1,461,623	$785,496	$2,247,119
Iron and steel mills	$0	$2,132,227	$23,024	$2,155,252
State and local government electric utilities	$0	$1,078,382	$1,062,925	$2,141,307
Computer systems design services	$0	$1,613,457	$510,170	$2,123,627
Insurance agencies- brokerages- and related	$0	$451,281	$1,644,589	$2,095,870
Funds- trusts- and other financial vehicles	$0	$14,428	$2,080,757	$2,095,185
Other computer related services- including facilities	$0	$1,772,514	$271,281	$2,043,794
Other personal services	$0	$71,248	$1,901,602	$1,972,850
Home health care services	$0	$0	$1,947,379	$1,947,379
Office administrative services	$0	$944,078	$979,346	$1,923,425
Sporting goods- hobby- book and music stores	$0	$146,847	$1,726,100	$1,872,947
Bread and bakery product- except frozen- manufacturers	$0	$30,243	$1,840,027	$1,870,269
Poultry and egg production	$0	$27,909	$1,818,322	$1,846,230
Toilet preparation manufacturing	$0	$75,779	$1,768,348	$1,844,126
Personal care services	$0	$0	$1,833,460	$1,833,460
Construction machinery manufacturing	$0	$1,819,939	$2,641	$1,822,580
Automotive equipment rental and	$0	$640,287	$1,071,632	$1,711,919

Industry	Direct	Indirect	Induced	Total
leasing				
Other educational services	$0	$64,835	$1,636,896	$1,701,731
Promoters of performing arts and sports and agents	$0	$1,319,812	$378,212	$1,698,023
Environmental and other technical consulting services	$0	$1,355,627	$333,688	$1,689,316
Elementary and secondary schools	$0	$0	$1,677,252	$1,677,252
Waste management and remediation services	$0	$1,109,268	$494,226	$1,603,494
Footwear manufacturing	$0	$0	$1,547,655	$1,547,655
Motor vehicle parts manufacturing	$0	$1,098,786	$446,057	$1,544,843
Other support services	$0	$985,953	$536,068	$1,522,021
Metal valve manufacturing	$0	$1,497,649	$19,667	$1,517,316
Fluid milk manufacturing	$0	$12,820	$1,487,824	$1,500,644
Scenic and sightseeing transportation and support	$0	$791,597	$699,264	$1,490,861
Motion picture and video industries	$0	$352,463	$1,078,999	$1,431,462
Household goods repair and maintenance	$0	$760,899	$632,415	$1,393,314
Religious organizations	$0	$0	$1,365,530	$1,365,530
Veterinary services	$0	$13,308	$1,342,577	$1,355,885
Other basic inorganic chemical manufacturing	$0	$1,103,303	$130,480	$1,233,782
Grantmaking and giving and social advocacy organizations	$0	$0	$1,230,539	$1,230,539
Investigation and security services	$0	$865,760	$359,844	$1,225,604
Commercial printing	$0	$809,678	$403,346	$1,213,024
Private households	$0	$0	$1,197,884	$1,197,884
Other apparel knitting mills	$0	$6,692	$1,187,240	$1,193,932
Drycleaning and laundry services	$0	$68,015	$1,067,917	$1,135,932
Electronics and appliance stores	$0	$112,870	$1,021,551	$1,134,421
Other snack food manufacturing	$0	$14,334	$1,101,288	$1,115,622
Automobile and light truck manufacturing	$0	$1,668	$1,024,378	$1,026,045
Industrial gas manufacturing	$0	$942,440	$66,778	$1,009,218
All other industries	$0	$17,728,830	$29,265,307	$46,994,138
Total	**$2,403,100,608**	**$618,168,513**	**$494,040,561**	**$3,515,309,701**

TABLE 36: 2008 EMPLOYMENT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	3,531.6	253.7	9.2	3,794.4
Drilling oil and gas wells	1,188.1	4.9	0.0	1,193.0
Food services and drinking places	0	25.6	579.3	604.9
Wholesale trade	0	175	150.8	325.8
Management of companies and enterprises	0	303.9	20	323.8
Offices of physicians- dentists- and other health	0	0	289.1	289.1
Real estate	0	95.6	186.3	281.9
Hospitals	0	0	269.5	269.5
Legal services	0	197.7	48.7	246.4
General merchandise stores	0	14.1	176.6	190.7
Nursing and residential care facilities	0	0	177	177
Private households	0	0	169.2	169.2
Social assistance- except child day care services	0	0	158	158
Employment services	0	83.9	72.1	156
Food and beverage stores	0	11.3	141.5	152.8
Support activities for oil and gas operations	0	147.6	0.4	147.9
Motor vehicle and parts dealers	0	10.7	135	145.7
Monetary authorities and depository credit intermediaries	0	70.4	71.5	141.9
Truck transportation	0	89	46.2	135.3
Fitness and recreational sports centers	0	93.9	26	119.9
Warehousing and storage	0	104.2	13.3	117.4
Civic- social- professional and similar organizations	0	50.7	65.3	116
Miscellaneous store retailers	0	8.3	103.5	111.7
Securities- commodity contracts- investments	0	62.9	42.8	105.7
Independent artists- writers- and performers	0	94.1	1	95.1
Building material and garden supply stores	0	8	85.2	93.2
Nonstore retailers	0	7.3	78.8	86.1
Child day care services	0	0	85.2	85.2
Clothing and clothing accessories stores	0	5.7	76.1	81.7
Hotels and motels- including casino hotels	0	20.2	55.9	76.1
Automotive repair and maintenance- except car wash	0	12	62.7	74.8
Gasoline stations	0	5.9	63.9	69.8
Health and personal care stores	0	6.1	62.7	68.8
Services to buildings and dwellings	0	29.5	34.1	63.6
Accounting and bookkeeping services	0	41.7	20.9	62.6
Management consulting services	0	44.6	13.1	57.7
Other amusement- gambling- and recreation industries	0	17.4	39.8	57.3
Other State and local government enterprises	0	19	37.7	56.7
Architectural and engineering services	0	43.2	11.3	54.6
Elementary and secondary schools	0	0	53.1	53.1
Other ambulatory health care services	0	0.1	52.6	52.7
Insurance carriers	0	11	39.8	50.8

Industry	Direct	Indirect	Induced	Total
Sporting goods- hobby- book and music stores	0	4	46.4	50.4
Colleges- universities- and junior colleges	0	2.3	47.8	50.1
Scientific research and development services	0	45.9	3.9	49.8
Business support services	0	30.7	18.4	49.2
Power generation and supply	0	23.3	23.1	46.4
Couriers and messengers	0	32.4	11	43.3
Personal care services	0	0	42.6	42.6
Postal service	0	19.6	21.7	41.3
Nondepository credit intermediation	0	25	15.2	40.1
Furniture and home furnishings stores	0	3.4	35.2	38.6
Maintenance and repair of nonresidential buildings	0	17.7	18.2	35.9
Home health care services	0	0	34.8	34.8
Investigation and security services	0	24.3	10.1	34.4
Promoters of performing arts and sports and agents	0	25.8	7.4	33.2
Performing arts companies	0	20.9	11	31.9
Telecommunications	0	12.9	18.5	31.4
Other educational services	0	1.2	29.4	30.6
Plastics plumbing fixtures and all other plastics	0	22.9	7.6	30.5
Grantmaking and giving and social advocacy organizations	0	0	30.4	30.4
Drycleaning and laundry services	0	1.8	28.4	30.2
Electronics and appliance stores	0	2.7	24.6	27.3
Computer systems design services	0	19.2	6.1	25.3
Cattle ranching and farming	0	0.4	24.6	25
Spectator sports	0	6.5	16.5	23
Conveyor and conveying equipment manufacturing	0	22.8	0	22.9
Advertising and related services	0	16.6	6.2	22.8
Other miscellaneous chemical product manufacturing	0	21.5	0.5	22
Animal production- except cattle and poultry	0	0.4	20.8	21.1
Newspaper publishers	0	13.9	7.2	21.1
Veterinary services	0	0.2	20.6	20.8
Insurance agencies- brokerages- and related	0	4.4	16.2	20.6
All other miscellaneous professional and technical	0	17.2	2.4	19.6
Other maintenance and repair construction	0	8.4	9.7	18.2
Machinery and equipment rental and leasing	0	16.8	1.3	18
Other Federal Government enterprises	0	3.6	13	16.6
Poultry processing	0	0.3	16	16.3
General and consumer goods rental except video tape	0	12.4	3.9	16.3
Death care services	0	0	15.7	15.7
Rail transportation	0	11.1	3.9	15
Lessors of nonfinancial intangible assets	0	14.8	0.2	15
Commercial printing	0	10	5	14.9
Other support services	0	9.3	5.1	14.4
Pipeline transportation	0	12.8	1.4	14.3

Industry	Direct	Indirect	Induced	Total
Scenic and sightseeing transportation and support	0	7.5	6.6	14.2
Car washes	0	1.1	12.4	13.6
Radio and television broadcasting	0	8.8	4.6	13.4
Footwear manufacturing	0	0	12.3	12.3
Office administrative services	0	6	6.2	12.2
Transit and ground passenger transportation	0	3.4	8.7	12.1
Other personal services	0	0.4	11.5	12
Bread and bakery product- except frozen- manufacturers	0	0.2	11.5	11.6
Petroleum refineries	0	10.3	1.2	11.5
Environmental and other technical consulting services	0	9.3	2.3	11.5
Waste management and remediation services	0	7.7	3.4	11.1
Video tape and disc rental	0	0.1	10.9	11
Religious organizations	0	0	11	11
Automotive equipment rental and leasing	0	4	6.7	10.6
All other industries	0	134.5	201.2	337.7
Total	**4,719.6**	**2,903.8**	**4,818.5**	**12,441.9**

TABLE 37: 2009 ECONOMIC OUTPUT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	$1,831,900,416	$122,002,592	$4,284,073	$1,958,187,008
Drilling oil and gas wells	$480,899,808	$3,301,637	$7,272	$484,208,704
Petroleum refineries	$0	$65,709,984	$10,181,999	$75,891,984
Owner-occupied dwellings	$0	$0	$58,003,388	$58,003,388
Management of companies and enterprises	$0	$46,552,456	$3,987,260	$50,539,716
Wholesale trade	$0	$21,089,914	$22,992,034	$44,081,948
Lessors of nonfinancial intangible assets	$0	$41,109,728	$523,406	$41,633,136
Offices of physicians- dentists- and other health	$0	$0	$32,204,366	$32,204,366
Real estate	$0	$8,556,531	$20,564,298	$29,120,828
Hospitals	$0	$0	$28,785,222	$28,785,222
Support activities for oil and gas operations	$0	$27,333,902	$59,928	$27,393,830
Food services and drinking places	$0	$989,464	$26,298,536	$27,288,000
Monetary authorities and depository credit intermediaries	$0	$11,200,887	$12,554,281	$23,755,168
Legal services	$0	$15,003,595	$4,831,766	$19,835,360
Power generation and supply	$0	$9,760,537	$9,763,557	$19,524,094
Truck transportation	$0	$8,528,727	$5,661,868	$14,190,595
Motor vehicle and parts dealers	$0	$776,692	$13,036,496	$13,813,189
Telecommunications	$0	$4,573,655	$8,292,443	$12,866,098
Other State and local government enterprises	$0	$3,274,013	$8,170,244	$11,444,256
Insurance carriers	$0	$2,030,612	$9,285,694	$11,316,305
Securities- commodity contracts- investments	$0	$5,875,027	$5,141,734	$11,016,760
General merchandise stores	$0	$580,307	$9,670,283	$10,250,589
Pipeline transportation	$0	$8,980,745	$1,006,943	$9,987,688
Other miscellaneous chemical product manufacturing	$0	$7,810,245	$233,031	$8,043,275
Food and beverage stores	$0	$434,576	$7,234,431	$7,669,007
Nursing and residential care facilities	$0	$0	$7,651,662	$7,651,662
Building material and garden supply stores	$0	$493,228	$6,961,967	$7,455,195
All other miscellaneous professional and technical	$0	$6,344,440	$863,617	$7,208,057
Other ambulatory health care services	$0	$6,554	$6,885,719	$6,892,272
Management consulting services	$0	$4,764,991	$1,508,751	$6,273,742
Architectural and engineering	$0	$4,353,468	$1,203,857	$5,557,325

Industry	Direct	Indirect	Induced	Total
services				
Social assistance- except child day care services	$0	$287	$5,541,448	$5,541,736
Warehousing and storage	$0	$4,630,838	$765,165	$5,396,004
Automotive repair and maintenance- except car wash	$0	$678,151	$4,615,469	$5,293,620
Other basic organic chemical manufacturing	$0	$4,817,744	$435,522	$5,253,265
Conveyor and conveying equipment manufacturing	$0	$5,053,924	$10,179	$5,064,103
Plastics plumbing fixtures and all other plastics	$0	$3,674,030	$1,383,358	$5,057,389
Petroleum lubricating oil and grease manufacturing	$0	$4,708,221	$336,844	$5,045,065
Natural gas distribution	$0	$2,226,611	$2,660,422	$4,887,033
Nondepository credit intermediation	$0	$2,858,855	$1,975,328	$4,834,184
Accounting and bookkeeping services	$0	$2,937,123	$1,794,774	$4,731,897
Gasoline stations	$0	$296,770	$4,255,161	$4,551,931
Scientific research and development services	$0	$4,144,091	$397,562	$4,541,653
Independent artists- writers- and performers	$0	$4,458,931	$69,312	$4,528,243
Health and personal care stores	$0	$289,919	$3,972,323	$4,262,242
Machinery and equipment rental and leasing	$0	$3,840,015	$357,018	$4,197,033
Audio and video equipment manufacturing	$0	$18,895	$4,136,025	$4,154,920
Civic- social- professional and similar organizations	$0	$1,634,703	$2,235,345	$3,870,048
Hotels and motels- including casino hotels	$0	$872,546	$2,954,278	$3,826,824
Clothing and clothing accessories stores	$0	$202,068	$3,623,478	$3,825,546
Poultry processing	$0	$51,399	$3,571,022	$3,622,421
Nonstore retailers	$0	$232,432	$3,333,922	$3,566,353
Maintenance and repair of nonresidential buildings	$0	$1,482,884	$1,915,990	$3,398,874
Rail transportation	$0	$2,271,339	$1,028,708	$3,300,047
Furniture and home furnishings stores	$0	$214,979	$2,972,825	$3,187,804
Child day care services	$0	$0	$3,084,814	$3,084,814
Employment services	$0	$1,490,513	$1,456,066	$2,946,580

Industry	Direct	Indirect	Induced	Total
Miscellaneous store retailers	$0	$164,087	$2,735,311	$2,899,397
Services to buildings and dwellings	$0	$1,248,903	$1,570,685	$2,819,588
Couriers and messengers	$0	$2,024,537	$706,097	$2,730,634
Other amusement- gambling- and recreation industries	$0	$620,723	$2,101,111	$2,721,834
Colleges- universities- and junior colleges	$0	$111,477	$2,482,099	$2,593,576
Fitness and recreational sports centers	$0	$1,836,490	$755,176	$2,591,665
Meat processed from carcasses	$0	$24,663	$2,450,833	$2,475,496
Petrochemical manufacturing	$0	$2,339,648	$120,469	$2,460,117
Cattle ranching and farming	$0	$32,706	$2,400,894	$2,433,600
Postal service	$0	$981,599	$1,425,011	$2,406,610
Animal- except poultry- slaughtering	$0	$21,185	$2,257,844	$2,279,029
Advertising and related services	$0	$1,504,936	$752,930	$2,257,866
Business support services	$0	$1,358,900	$864,687	$2,223,587
State and local government electric utilities	$0	$1,095,213	$1,064,401	$2,159,614
Radio and television broadcasting	$0	$1,226,453	$862,447	$2,088,900
Funds- trusts- and other financial vehicles	$0	$10,972	$2,016,100	$2,027,072
Newspaper publishers	$0	$1,191,702	$821,733	$2,013,435
Computer systems design services	$0	$1,464,153	$495,984	$1,960,137
Insurance agencies- brokerages- and related	$0	$345,823	$1,598,553	$1,944,375
Other personal services	$0	$54,857	$1,859,502	$1,914,359
Home health care services	$0	$0	$1,905,551	$1,905,551
Database- directory- and other publishers	$0	$1,069,266	$763,657	$1,832,923
Bread and bakery product- except frozen- manufacturers	$0	$26,374	$1,797,546	$1,823,920
Sporting goods- hobby- book and music stores	$0	$107,942	$1,691,920	$1,799,862
Personal care services	$0	$0	$1,782,305	$1,782,305
Toilet preparation manufacturing	$0	$55,650	$1,722,690	$1,778,340
Poultry and egg production	$0	$21,687	$1,752,439	$1,774,126
Office administrative services	$0	$806,274	$952,105	$1,758,380
Other computer related services- including facilities	$0	$1,487,707	$263,737	$1,751,444
Iron and steel mills	$0	$1,716,238	$22,652	$1,738,890
Other educational services	$0	$60,867	$1,597,958	$1,658,825
Elementary and secondary schools	$0	$0	$1,637,317	$1,637,317
Automotive equipment rental and	$0	$508,008	$1,054,613	$1,562,621

Industry	Direct	Indirect	Induced	Total
leasing				
Footwear manufacturing	$0	$0	$1,508,565	$1,508,565
Fluid milk manufacturing	$0	$10,496	$1,436,811	$1,447,308
Construction machinery manufacturing	$0	$1,415,381	$2,580	$1,417,961
Waste management and remediation services	$0	$924,297	$477,206	$1,401,503
Environmental and other technical consulting services	$0	$1,056,549	$324,408	$1,380,957
Motion picture and video industries	$0	$275,674	$1,072,717	$1,348,391
Religious organizations	$0	$0	$1,327,389	$1,327,389
Motor vehicle parts manufacturing	$0	$888,578	$436,842	$1,325,419
Veterinary services	$0	$10,238	$1,302,283	$1,312,522
Scenic and sightseeing transportation and support	$0	$606,653	$681,721	$1,288,374
Promoters of performing arts and sports and agents	$0	$865,251	$366,014	$1,231,265
Other support services	$0	$706,924	$521,159	$1,228,083
Metal valve manufacturing	$0	$1,203,523	$19,202	$1,222,725
Grantmaking and giving and social advocacy organizations	$0	$0	$1,196,169	$1,196,169
Other apparel knitting mills	$0	$5,217	$1,155,986	$1,161,203
Household goods repair and maintenance	$0	$545,733	$612,480	$1,158,213
Private households	$0	$0	$1,156,682	$1,156,682
Drycleaning and laundry services	$0	$53,329	$1,046,000	$1,099,329
Electronics and appliance stores	$0	$82,967	$1,001,322	$1,084,290
Other snack food manufacturing	$0	$11,780	$1,066,891	$1,078,671
Investigation and security services	$0	$693,017	$349,835	$1,042,852
Automobile and light truck manufacturing	$0	$1,354	$1,007,526	$1,008,880
All other industries	$0	$16,324,959	$29,057,266	$45,382,227
Total	**$2,312,800,224**	**$533,726,731**	**$480,145,885**	**$3,326,672,757**

TABLE 38: 2009 EMPLOYMENT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	3,740.3	249.1	8.7	3,998.2
Drilling oil and gas wells	757.4	5.2	0	762.6
Food services and drinking places	0	20.8	551.6	572.3
Wholesale trade	0	131.7	143.6	275.3
Offices of physicians- dentists- and other health	0	0	275.3	275.3
Hospitals	0	0	256.6	256.6
Real estate	0	73.8	177.4	251.2
Management of companies and enterprises	0	222.1	19.0	241.1
Legal services	0	144.0	46.4	190.3
General merchandise stores	0	10.1	168.2	178.3
Nursing and residential care facilities	0	0	168.5	168.5
Private households	0	0	161.1	161.1
Support activities for oil and gas operations	0	155.5	0.3	155.9
Social assistance- except child day care services	0	0	150.5	150.5
Food and beverage stores	0	8.1	134.7	142.8
Employment services	0	70.3	68.6	138.9
Motor vehicle and parts dealers	0	7.7	128.5	136.2
Monetary authorities and depository credit intermediaries	0	60.7	68.1	128.8
Truck transportation	0	66.3	44.0	110.3
Civic- social- professional and similar organizations	0	45.5	62.2	107.7
Miscellaneous store retailers	0	5.9	98.5	104.4
Warehousing and storage	0	76.4	12.6	89.0
Securities- commodity contracts- investments	0	46.6	40.8	87.4
Building material and garden supply stores	0	5.7	81.1	86.8
Fitness and recreational sports centers	0	60.3	24.8	85.1
Child day care services	0	0.0	81.1	81.1
Nonstore retailers	0	5.2	75.1	80.3
Clothing and clothing accessories stores	0	4.0	72.5	76.5
Hotels and motels- including casino hotels	0	15.7	53.2	68.9
Automotive repair and maintenance- except car wash	0	8.8	59.7	68.5
Gasoline stations	0	4.2	60.8	65.1
Health and personal care stores	0	4.4	59.7	64.0
Independent artists- writers- and performers	0	60.3	0.9	61.2
Services to buildings and dwellings	0	25.8	32.5	58.3
Accounting and bookkeeping services	0	32.6	19.9	52.5
Management consulting services	0	39.5	12.5	52.0
Elementary and secondary schools	0	0	50.6	50.6
Other State and local government enterprises	0	14.4	35.9	50.3
Other ambulatory health care services	0	0	50.1	50.2
Architectural and engineering services	0	39.0	10.8	49.8
Other amusement- gambling- and recreation industries	0	11.2	37.9	49.2
Colleges- universities- and junior colleges	0	2.0	45.6	47.6

Industry	Direct	Indirect	Induced	Total
Sporting goods- hobby- book and music stores	0	2.8	44.2	47.1
Insurance carriers	0	8.3	37.9	46.2
Business support services	0	27.6	17.6	45.2
Power generation and supply	0	22.0	22.0	44.0
Scientific research and development services	0	39.2	3.8	42.9
Personal care services	0	0.0	40.6	40.6
Couriers and messengers	0	29.9	10.4	40.3
Furniture and home furnishings stores	0	2.4	33.5	36.0
Nondepository credit intermediation	0	20.9	14.5	35.4
Postal service	0	14.2	20.7	34.9
Home health care services	0	0.0	33.1	33.1
Maintenance and repair of nonresidential buildings	0	13.4	17.3	30.7
Other educational services	0	1.1	28.0	29.1
Grantmaking and giving and social advocacy organizations	0	0.0	29.0	29.0
Investigation and security services	0	19.0	9.6	28.6
Drycleaning and laundry services	0	1.4	27.0	28.4
Telecommunications	0	9.7	17.6	27.3
Plastics plumbing fixtures and all other plastics	0	19.2	7.2	26.5
Electronics and appliance stores	0	1.9	23.4	25.3
Performing arts companies	0	13.5	10.5	24.0
Cattle ranching and farming	0	0.3	23.4	23.7
Promoters of performing arts and sports and agents	0	16.6	7.0	23.7
Computer systems design services	0	17.1	5.8	22.8
Spectator sports	0	4.7	15.7	20.4
Animal production- except cattle and poultry	0	0.3	19.8	20.1
Veterinary services	0	0.2	19.6	19.8
All other miscellaneous professional and technical	0	16.8	2.3	19.1
Insurance agencies- brokerages- and related	0	3.3	15.4	18.7
Advertising and related services	0	11.8	5.9	17.7
Conveyor and conveying equipment manufacturing	0	17.1	0	17.1
Newspaper publishers	0	9.9	6.8	16.7
Other maintenance and repair construction	0	7.2	9.3	16.5
Other miscellaneous chemical product manufacturing	0	15.8	0.5	16.3
Lessors of nonfinancial intangible assets	0	15.6	0.2	15.8
Poultry processing	0	0.2	15.2	15.5
Other Federal Government enterprises	0	2.8	12.3	15.2
Death care services	0	0	14.9	14.9
Machinery and equipment rental and leasing	0	13.1	1.2	14.3
Pipeline transportation	0	12.1	1.4	13.5
Car washes	0	0.9	11.8	12.7
General and consumer goods rental except video tape	0	8.6	3.7	12.3
Rail transportation	0	8.3	3.8	12.0
Scenic and sightseeing transportation and support	0	5.6	6.3	12.0

Industry	Direct	Indirect	Induced	Total
Commercial printing	0	7.2	4.7	11.9
Footwear manufacturing	0	0.0	11.7	11.7
Other support services	0	6.6	4.8	11.4
Other personal services	0	0.3	11.0	11.3
Bread and bakery product- except frozen- manufacturers	0	0.2	10.9	11.1
Office administrative services	0	5.0	5.9	11.0
Radio and television broadcasting	0	6.3	4.4	10.7
Transit and ground passenger transportation	0	2.4	8.2	10.6
Religious organizations	0	0	10.5	10.5
Video tape and disc rental	0	0.1	10.4	10.4
All other industries	0	129.9	204.1	335.9
Total	**4,497.7**	**2,327.1**	**4,588.2**	**11,412.9**

TABLE 39: 2010 ECONOMIC OUTPUT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	$2,130,870,016	$138,098,976	$4,792,098	$2,273,761,024
Drilling oil and gas wells	$417,149,856	$3,694,049	$7,830	$420,851,744
Petroleum refineries	$0	$63,203,876	$11,069,965	$74,273,840
Owner-occupied dwellings	$0	$0	$60,865,312	$60,865,312
Management of companies and enterprises	$0	$45,662,272	$4,442,506	$50,104,780
Lessors of nonfinancial intangible assets	$0	$46,413,528	$569,768	$46,983,296
Wholesale trade	$0	$20,671,268	$25,174,942	$45,846,212
Offices of physicians- dentists- and other health	$0	$0	$35,798,020	$35,798,020
Hospitals	$0	$0	$31,962,530	$31,962,530
Real estate	$0	$8,503,680	$22,514,314	$31,017,994
Support activities for oil and gas operations	$0	$30,582,158	$64,586	$30,646,742
Food services and drinking places	$0	$1,007,749	$28,779,282	$29,787,030
Monetary authorities and depository credit intermediaries	$0	$11,730,972	$13,713,907	$25,444,880
Power generation and supply	$0	$10,655,478	$10,699,408	$21,354,884
Legal services	$0	$14,530,808	$5,327,433	$19,858,242
Motor vehicle and parts dealers	$0	$742,610	$14,356,494	$15,099,103
Truck transportation	$0	$8,238,475	$6,146,769	$14,385,243
Telecommunications	$0	$4,457,420	$9,030,729	$13,488,149
Insurance carriers	$0	$2,007,346	$10,268,577	$12,275,924
Other State and local government enterprises	$0	$3,242,877	$9,009,633	$12,252,510
Securities- commodity contracts- investments	$0	$5,759,602	$5,678,589	$11,438,191
General merchandise stores	$0	$554,842	$10,649,439	$11,204,281
Pipeline transportation	$0	$9,858,111	$1,109,995	$10,968,106
Food and beverage stores	$0	$415,506	$7,966,947	$8,382,453
Nursing and residential care facilities	$0	$0	$8,336,483	$8,336,483
Building material and garden supply stores	$0	$471,584	$7,666,894	$8,138,478
All other miscellaneous professional and technical	$0	$6,982,928	$941,161	$7,924,089
Other miscellaneous chemical product manufacturing	$0	$7,567,344	$255,567	$7,822,911
Other ambulatory health care services	$0	$6,488	$7,570,096	$7,576,584
Management consulting services	$0	$5,052,525	$1,647,955	$6,700,480
Social assistance- except child day	$0	$299	$6,225,313	$6,225,611

Industry	Direct	Indirect	Induced	Total
care services				
Architectural and engineering services	$0	$4,664,913	$1,318,376	$5,983,288
Automotive repair and maintenance- except car wash	$0	$651,899	$5,047,151	$5,699,050
Plastics plumbing fixtures and all other plastics	$0	$3,813,574	$1,515,454	$5,329,028
Other basic organic chemical manufacturing	$0	$4,833,760	$481,256	$5,315,016
Warehousing and storage	$0	$4,412,013	$826,697	$5,238,710
Nondepository credit intermediation	$0	$2,944,837	$2,150,299	$5,095,135
Natural gas distribution	$0	$2,139,734	$2,907,559	$5,047,293
Gasoline stations	$0	$283,747	$4,686,013	$4,969,761
Accounting and bookkeeping services	$0	$2,964,331	$1,981,908	$4,946,240
Conveyor and conveying equipment manufacturing	$0	$4,934,045	$11,140	$4,945,184
Scientific research and development services	$0	$4,309,399	$433,260	$4,742,659
Petroleum lubricating oil and grease manufacturing	$0	$4,354,590	$366,221	$4,720,811
Health and personal care stores	$0	$277,197	$4,374,537	$4,651,733
Audio and video equipment manufacturing	$0	$18,554	$4,365,069	$4,383,624
Machinery and equipment rental and leasing	$0	$3,829,133	$389,958	$4,219,091
Clothing and clothing accessories stores	$0	$193,201	$3,990,370	$4,183,571
Civic- social- professional and similar organizations	$0	$1,729,655	$2,423,758	$4,153,413
Hotels and motels- including casino hotels	$0	$875,382	$3,255,346	$4,130,728
Independent artists- writers- and performers	$0	$3,913,487	$75,360	$3,988,847
Poultry processing	$0	$50,444	$3,879,252	$3,929,696
Nonstore retailers	$0	$222,232	$3,671,495	$3,893,727
Maintenance and repair of nonresidential buildings	$0	$1,447,742	$2,082,996	$3,530,738
Furniture and home furnishings stores	$0	$205,545	$3,273,836	$3,479,381
Child day care services	$0	$0	$3,366,181	$3,366,181
Rail transportation	$0	$2,228,257	$1,131,288	$3,359,545
Miscellaneous store retailers	$0	$156,886	$3,012,272	$3,169,158

Industry	Direct	Indirect	Induced	Total
Employment services	$0	$1,551,878	$1,603,005	$3,154,884
Services to buildings and dwellings	$0	$1,313,416	$1,710,378	$3,023,794
Couriers and messengers	$0	$2,170,872	$766,571	$2,937,443
Colleges- universities- and junior colleges	$0	$119,936	$2,722,273	$2,842,209
Other amusement- gambling- and recreation industries	$0	$546,872	$2,282,810	$2,829,682
Petrochemical manufacturing	$0	$2,564,947	$133,120	$2,698,066
Meat processed from carcasses	$0	$24,737	$2,662,375	$2,687,111
Cattle ranching and farming	$0	$31,244	$2,599,685	$2,630,929
Postal service	$0	$950,688	$1,570,922	$2,521,611
Animal- except poultry- slaughtering	$0	$20,970	$2,452,727	$2,473,697
State and local government electric utilities	$0	$1,239,010	$1,197,527	$2,436,537
Fitness and recreational sports centers	$0	$1,615,017	$820,485	$2,435,502
Business support services	$0	$1,448,637	$944,466	$2,393,104
Advertising and related services	$0	$1,434,324	$827,086	$2,261,410
Funds- trusts- and other financial vehicles	$0	$10,650	$2,194,693	$2,205,343
Radio and television broadcasting	$0	$1,168,371	$947,976	$2,116,348
Other personal services	$0	$53,836	$2,042,935	$2,096,771
Computer systems design services	$0	$1,554,163	$541,747	$2,095,909
Home health care services	$0	$0	$2,094,941	$2,094,941
Insurance agencies- brokerages- and related	$0	$337,595	$1,745,703	$2,083,298
Newspaper publishers	$0	$1,134,616	$903,736	$2,038,352
Bread and bakery product- except frozen- manufacturers	$0	$27,572	$1,972,928	$2,000,500
Sporting goods- hobby- book and music stores	$0	$103,206	$1,863,234	$1,966,439
Personal care services	$0	$0	$1,946,567	$1,946,567
Toilet preparation manufacturing	$0	$53,049	$1,885,471	$1,938,520
Poultry and egg production	$0	$21,253	$1,897,539	$1,918,792
Office administrative services	$0	$832,513	$1,039,949	$1,872,461
Database- directory- and other publishers	$0	$1,016,100	$834,118	$1,850,219
Other educational services	$0	$65,707	$1,752,604	$1,818,311
Other computer related services- including facilities	$0	$1,523,306	$288,071	$1,811,377
Elementary and secondary schools	$0	$0	$1,795,758	$1,795,758
Iron and steel mills	$0	$1,730,364	$25,038	$1,755,402
Automotive equipment rental and	$0	$508,329	$1,166,048	$1,674,377

Industry	Direct	Indirect	Induced	Total
leasing				
Footwear manufacturing	$0	$0	$1,652,067	$1,652,067
Fluid milk manufacturing	$0	$10,581	$1,558,918	$1,569,499
Motion picture and video industries	$0	$274,928	$1,198,188	$1,473,116
Waste management and remediation services	$0	$939,771	$517,682	$1,457,453
Religious organizations	$0	$0	$1,449,714	$1,449,714
Veterinary services	$0	$10,008	$1,419,214	$1,429,222
Construction machinery manufacturing	$0	$1,396,219	$2,832	$1,399,051
Environmental and other technical consulting services	$0	$1,041,202	$354,340	$1,395,542
Motor vehicle parts manufacturing	$0	$896,157	$480,652	$1,376,808
Scenic and sightseeing transportation and support	$0	$593,021	$746,705	$1,339,726
Grantmaking and giving and social advocacy organizations	$0	$0	$1,306,402	$1,306,402
Other apparel knitting mills	$0	$5,145	$1,264,570	$1,269,716
Private households	$0	$0	$1,254,846	$1,254,846
Other support services	$0	$663,537	$569,243	$1,232,780
Metal valve manufacturing	$0	$1,208,041	$21,064	$1,229,105
Drycleaning and laundry services	$0	$52,906	$1,151,075	$1,203,981
Electronics and appliance stores	$0	$79,326	$1,102,710	$1,182,037
Household goods repair and maintenance	$0	$511,597	$666,436	$1,178,033
Other snack food manufacturing	$0	$11,916	$1,161,219	$1,173,135
Promoters of performing arts and sports and agents	$0	$763,730	$397,956	$1,161,686
Automobile and light truck manufacturing	$0	$1,372	$1,113,336	$1,114,707
Investigation and security services	$0	$692,783	$382,112	$1,074,895
Commercial printing	$0	$574,022	$430,679	$1,004,700
All other industries	$0	$15,687,832	$31,334,783	$47,022,606
Total	**$2,548,019,872**	**$556,154,598**	**$524,428,800**	**$3,628,603,211**

TABLE 40: 2010 EMPLOYMENT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	4,161.1	269.7	9.4	4,440.1
Drilling oil and gas wells	652.1	5.8	0	657.9
Food services and drinking places	0	20.7	590.1	610.8
Offices of physicians- dentists- and other health	0	0	294.5	294.5
Wholesale trade	0	126.1	153.6	279.7
Hospitals	0	0	274.5	274.5
Real estate	0	71.7	189.8	261.4
Management of companies and enterprises	0	209.2	20.4	229.5
General merchandise stores	0	9.4	179.9	189.3
Legal services	0	135.3	49.6	184.9
Nursing and residential care facilities	0	0	180.3	180.3
Support activities for oil and gas operations	0	172.8	0.4	173.1
Private households	0	0	172.4	172.4
Social assistance- except child day care services	0	0	161	161
Food and beverage stores	0	7.5	144.1	151.6
Motor vehicle and parts dealers	0	7.1	137.5	144.6
Employment services	0	71.1	73.4	144.5
Monetary authorities and depository credit intermediaries	0	62.3	72.8	135.1
Civic- social- professional and similar organizations	0	47.5	66.5	114
Miscellaneous store retailers	0	5.5	105.4	110.9
Truck transportation	0	63.1	47.1	110.2
Building material and garden supply stores	0	5.3	86.7	92.1
Securities- commodity contracts- investments	0	44.3	43.6	87.9
Child day care services	0	0	86.8	86.8
Warehousing and storage	0	72	13.5	85.5
Nonstore retailers	0	4.9	80.3	85.2
Clothing and clothing accessories stores	0	3.8	77.5	81.3
Fitness and recreational sports centers	0	52.2	26.5	78.8
Hotels and motels- including casino hotels	0	15.3	56.9	72.2
Automotive repair and maintenance- except car wash	0	8.3	63.9	72.1
Gasoline stations	0	3.9	65.1	69
Health and personal care stores	0	4	63.9	67.9
Services to buildings and dwellings	0	26.7	34.7	61.4
Management consulting services	0	41	13.4	54.4
Elementary and secondary schools	0	0	54.1	54.1
Other ambulatory health care services	0	0	53.6	53.7
Accounting and bookkeeping services	0	31.9	21.3	53.2
Independent artists- writers- and performers	0	52	1	53
Architectural and engineering services	0	40.9	11.6	52.4
Other State and local government enterprises	0	13.8	38.4	52.3
Colleges- universities- and junior colleges	0	2.1	48.7	50.9
Other amusement- gambling- and recreation industries	0	9.7	40.6	50.3

Industry	Direct	Indirect	Induced	Total
Sporting goods- hobby- book and music stores	0	2.6	47.3	49.9
Insurance carriers	0	7.9	40.5	48.4
Business support services	0	28.8	18.8	47.6
Power generation and supply	0	23.4	23.5	46.9
Scientific research and development services	0	40	4	44
Personal care services	0	0	43.4	43.4
Couriers and messengers	0	31.6	11.2	42.8
Furniture and home furnishings stores	0	2.3	35.9	38.1
Nondepository credit intermediation	0	21.2	15.5	36.6
Postal service	0	13.4	22.1	35.5
Home health care services	0	0	35.4	35.4
Maintenance and repair of nonresidential buildings	0	12.9	18.5	31.4
Other educational services	0	1.1	30	31.1
Grantmaking and giving and social advocacy organizations	0	0	31	31
Drycleaning and laundry services	0	1.3	28.9	30.2
Investigation and security services	0	18.6	10.3	28.9
Telecommunications	0	9.3	18.8	28.1
Plastics plumbing fixtures and all other plastics	0	19.5	7.8	27.3
Electronics and appliance stores	0	1.8	25	26.8
Cattle ranching and farming	0	0.3	25	25.3
Computer systems design services	0	17.7	6.2	23.9
Performing arts companies	0	11.7	11.3	23
Promoters of performing arts and sports and agents	0	14.4	7.5	22
Animal production- except cattle and poultry	0	0.3	21.2	21.4
Spectator sports	0	4.4	16.8	21.2
Veterinary services	0	0.1	21	21.1
All other miscellaneous professional and technical	0	18.2	2.4	20.6
Insurance agencies- brokerages- and related	0	3.2	16.5	19.6
Lessors of nonfinancial intangible assets	0	17.3	0.2	17.5
Other maintenance and repair construction	0	7.4	9.9	17.3
Advertising and related services	0	11	6.3	17.3
Poultry processing	0	0.2	16.3	16.5
Newspaper publishers	0	9.2	7.3	16.5
Conveyor and conveying equipment manufacturing	0	16.3	0	16.3
Death care services	0	0	16	16
Other Federal Government enterprises	0	2.8	13.2	16
Other miscellaneous chemical product manufacturing	0	15	0.5	15.5
Pipeline transportation	0	12.9	1.5	14.3
Machinery and equipment rental and leasing	0	12.8	1.3	14.1
Car washes	0	0.9	12.7	13.5
Footwear manufacturing	0	0	12.5	12.5
Scenic and sightseeing transportation and support	0	5.4	6.8	12.2
Other personal services	0	0.3	11.8	12.1

Industry	Direct	Indirect	Induced	Total
Rail transportation	0	7.9	4	11.9
Bread and bakery product- except frozen- manufacturers	0	0.2	11.7	11.8
Commercial printing	0	6.7	5.1	11.8
General and consumer goods rental except video tape	0	7.9	3.9	11.8
Office administrative services	0	5.1	6.3	11.4
Video tape and disc rental	0	0.1	11.1	11.2
Other support services	0	6	5.2	11.2
Religious organizations	0	0	11.2	11.2
Transit and ground passenger transportation	0	2.1	8.8	11
Radio and television broadcasting	0	5.8	4.7	10.5
Custom computer programming services	0	10	0.4	10.4
All other industries	0	117.1	218.5	337
Total	**4,813.2**	**2,304.4**	**4,908.5**	**12,026.1**

TABLE 41: 2011 ECONOMIC OUTPUT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	$2,220,661,760	$143,749,248	$4,985,561	$2,369,396,480
Drilling oil and gas wells	$413,649,792	$3,708,846	$7,849	$417,366,496
Petroleum refineries	$0	$63,542,220	$11,193,831	$74,736,048
Owner-occupied dwellings	$0	$0	$59,402,608	$59,402,608
Management of companies and enterprises	$0	$47,033,696	$4,603,639	$51,637,336
Lessors of nonfinancial intangible assets	$0	$47,066,604	$576,870	$47,643,472
Wholesale trade	$0	$20,942,048	$25,637,696	$46,579,744
Offices of physicians- dentists- and other health	$0	$0	$37,010,344	$37,010,344
Hospitals	$0	$0	$33,009,384	$33,009,384
Real estate	$0	$8,620,157	$22,925,888	$31,546,044
Support activities for oil and gas operations	$0	$30,704,570	$64,739	$30,769,308
Food services and drinking places	$0	$1,022,312	$29,291,770	$30,314,080
Monetary authorities and depository credit intermediaries	$0	$11,895,784	$13,933,117	$25,828,902
Power generation and supply	$0	$10,858,574	$10,905,181	$21,763,754
Legal services	$0	$14,809,886	$5,463,252	$20,273,138
Motor vehicle and parts dealers	$0	$755,506	$14,704,658	$15,460,163
Truck transportation	$0	$8,273,040	$6,206,613	$14,479,653
Telecommunications	$0	$4,491,376	$9,147,096	$13,638,472
Insurance carriers	$0	$2,053,755	$10,561,487	$12,615,241
Other State and local government enterprises	$0	$3,309,321	$9,240,611	$12,549,932
Securities- commodity contracts- investments	$0	$5,883,013	$5,832,953	$11,715,965
General merchandise stores	$0	$564,477	$10,907,701	$11,472,179
Pipeline transportation	$0	$10,105,305	$1,138,042	$11,243,346
Food and beverage stores	$0	$422,722	$8,160,155	$8,582,877
Nursing and residential care facilities	$0	$0	$8,447,679	$8,447,679
Building material and garden supply stores	$0	$479,773	$7,852,826	$8,332,600
All other miscellaneous professional and technical	$0	$7,080,939	$953,954	$8,034,893
Other miscellaneous chemical product manufacturing	$0	$7,673,838	$260,687	$7,934,525
Other ambulatory health care services	$0	$6,601	$7,740,627	$7,747,228
Management consulting services	$0	$5,125,988	$1,674,149	$6,800,137
Social assistance- except child day	$0	$311	$6,504,686	$6,504,997

Industry	Direct	Indirect	Induced	Total
care services				
Architectural and engineering services	$0	$4,746,849	$1,342,841	$6,089,691
Automotive repair and maintenance- except car wash	$0	$658,988	$5,133,311	$5,792,299
Other basic organic chemical manufacturing	$0	$4,945,603	$494,611	$5,440,214
Plastics plumbing fixtures and all other plastics	$0	$3,876,086	$1,544,084	$5,420,170
Warehousing and storage	$0	$4,407,203	$830,726	$5,237,930
Nondepository credit intermediation	$0	$2,974,044	$2,177,102	$5,151,146
Natural gas distribution	$0	$2,161,777	$2,955,479	$5,117,257
Gasoline stations	$0	$288,675	$4,799,655	$5,088,329
Accounting and bookkeeping services	$0	$3,031,839	$2,035,529	$5,067,368
Conveyor and conveying equipment manufacturing	$0	$4,995,265	$11,339	$5,006,604
Scientific research and development services	$0	$4,358,696	$439,150	$4,797,846
Health and personal care stores	$0	$282,011	$4,480,625	$4,762,635
Petroleum lubricating oil and grease manufacturing	$0	$4,369,091	$370,318	$4,739,409
Audio and video equipment manufacturing	$0	$18,152	$4,284,679	$4,302,831
Clothing and clothing accessories stores	$0	$196,556	$4,087,142	$4,283,698
Machinery and equipment rental and leasing	$0	$3,873,569	$396,157	$4,269,726
Hotels and motels- including casino hotels	$0	$893,245	$3,336,302	$4,229,546
Civic- social- professional and similar organizations	$0	$1,742,407	$2,444,306	$4,186,713
Independent artists- writers- and performers	$0	$3,915,644	$76,208	$3,991,851
Nonstore retailers	$0	$226,091	$3,760,533	$3,986,625
Poultry processing	$0	$50,725	$3,919,437	$3,970,163
Maintenance and repair of nonresidential buildings	$0	$1,456,526	$2,106,226	$3,562,751
Furniture and home furnishings stores	$0	$209,115	$3,353,230	$3,562,345
Rail transportation	$0	$2,266,910	$1,157,111	$3,424,021
Child day care services	$0	$0	$3,416,430	$3,416,430
Miscellaneous store retailers	$0	$159,611	$3,085,324	$3,244,934

Industry	Direct	Indirect	Induced	Total
Employment services	$0	$1,584,997	$1,641,386	$3,226,383
Services to buildings and dwellings	$0	$1,328,142	$1,732,274	$3,060,416
Couriers and messengers	$0	$2,190,798	$774,035	$2,964,833
Colleges- universities- and junior colleges	$0	$122,240	$2,776,957	$2,899,197
Other amusement- gambling- and recreation industries	$0	$546,917	$2,306,824	$2,853,741
Petrochemical manufacturing	$0	$2,635,199	$136,814	$2,772,012
Meat processed from carcasses	$0	$24,901	$2,689,955	$2,714,856
Cattle ranching and farming	$0	$31,279	$2,618,114	$2,649,394
Postal service	$0	$968,791	$1,610,696	$2,579,487
State and local government electric utilities	$0	$1,296,828	$1,253,104	$2,549,932
Animal- except poultry- slaughtering	$0	$21,096	$2,478,135	$2,499,231
Fitness and recreational sports centers	$0	$1,614,987	$829,116	$2,444,103
Business support services	$0	$1,470,059	$959,478	$2,429,537
Advertising and related services	$0	$1,455,523	$845,020	$2,300,543
Funds- trusts- and other financial vehicles	$0	$10,725	$2,222,050	$2,232,775
Radio and television broadcasting	$0	$1,186,307	$969,130	$2,155,438
Other personal services	$0	$54,720	$2,087,547	$2,142,267
Home health care services	$0	$0	$2,142,134	$2,142,134
Computer systems design services	$0	$1,576,839	$550,358	$2,127,197
Insurance agencies- brokerages- and related	$0	$341,091	$1,773,098	$2,114,189
Newspaper publishers	$0	$1,152,618	$924,426	$2,077,044
Bread and bakery product- except frozen- manufacturers	$0	$28,084	$2,014,013	$2,042,098
Sporting goods- hobby- book and music stores	$0	$104,998	$1,908,419	$2,013,417
Personal care services	$0	$0	$1,977,327	$1,977,327
Toilet preparation manufacturing	$0	$53,647	$1,919,340	$1,972,987
Poultry and egg production	$0	$21,304	$1,910,991	$1,932,295
Office administrative services	$0	$843,579	$1,056,478	$1,900,057
Database- directory- and other publishers	$0	$1,025,421	$847,377	$1,872,798
Other educational services	$0	$66,979	$1,787,812	$1,854,791
Other computer related services- including facilities	$0	$1,542,946	$292,650	$1,835,596
Elementary and secondary schools	$0	$0	$1,831,831	$1,831,831
Iron and steel mills	$0	$1,771,307	$25,740	$1,797,047
Automotive equipment rental and	$0	$520,315	$1,199,117	$1,719,432

Industry	Direct	Indirect	Induced	Total
leasing				
Footwear manufacturing	$0	$0	$1,682,714	$1,682,715
Fluid milk manufacturing	$0	$10,641	$1,573,140	$1,583,780
Motion picture and video industries	$0	$284,096	$1,244,758	$1,528,854
Religious organizations	$0	$0	$1,472,631	$1,472,631
Waste management and remediation services	$0	$945,390	$522,326	$1,467,716
Veterinary services	$0	$10,092	$1,438,506	$1,448,598
Construction machinery manufacturing	$0	$1,418,185	$2,891	$1,421,076
Environmental and other technical consulting services	$0	$1,052,675	$359,972	$1,412,647
Motor vehicle parts manufacturing	$0	$913,389	$491,876	$1,405,265
Scenic and sightseeing transportation and support	$0	$600,909	$760,698	$1,361,608
Grantmaking and giving and social advocacy organizations	$0	$0	$1,327,053	$1,327,053
Other apparel knitting mills	$0	$5,210	$1,286,629	$1,291,839
Private households	$0	$0	$1,266,157	$1,266,157
Metal valve manufacturing	$0	$1,227,435	$21,490	$1,248,925
Other support services	$0	$669,197	$578,291	$1,247,488
Drycleaning and laundry services	$0	$53,888	$1,178,143	$1,232,031
Electronics and appliance stores	$0	$80,704	$1,129,453	$1,210,156
Household goods repair and maintenance	$0	$514,059	$674,443	$1,188,502
Other snack food manufacturing	$0	$12,022	$1,175,515	$1,187,536
Promoters of performing arts and sports and agents	$0	$764,391	$402,432	$1,166,822
Automobile and light truck manufacturing	$0	$1,404	$1,144,232	$1,145,636
Investigation and security services	$0	$700,907	$388,185	$1,089,093
Commercial printing	$0	$581,043	$438,732	$1,019,775
Plastics packaging materials	$0	$196,226	$806,826	$1,003,053
All other industries	$0	$15,719,715	$31,055,737	$46,775,447
Total	**$2,634,311,552**	**$567,638,793**	**$532,898,064**	**$3,734,848,322**

TABLE 42: 2011 EMPLOYMENT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	4,147.3	268.5	9.3	4,425.1
Drilling oil and gas wells	641.9	5.8	0	647.7
Food services and drinking places	0	20.5	587.2	607.7
Offices of physicians- dentists- and other health	0	0	293.1	293.1
Wholesale trade	0	124.8	152.8	277.7
Hospitals	0	0	273.2	273.2
Real estate	0	71	188.8	259.8
Management of companies and enterprises	0	206.9	20.3	227.1
General merchandise stores	0	9.3	179	188.3
Legal services	0	133.8	49.4	183.1
Nursing and residential care facilities	0	0	179.4	179.4
Support activities for oil and gas operations	0	172.2	0.4	172.5
Private households	0	0	171.5	171.5
Social assistance- except child day care services	0	0	160.2	160.2
Food and beverage stores	0	7.4	143.4	150.8
Motor vehicle and parts dealers	0	7	136.8	143.9
Employment services	0	70.5	73.1	143.6
Monetary authorities and depository credit intermediaries	0	61.9	72.5	134.3
Civic- social- professional and similar organizations	0	47.2	66.2	113.4
Miscellaneous store retailers	0	5.4	104.9	110.3
Truck transportation	0	62.4	46.9	109.3
Building material and garden supply stores	0	5.3	86.3	91.6
Securities- commodity contracts- investments	0	43.8	43.4	87.2
Child day care services	0	0	86.4	86.4
Warehousing and storage	0	71.3	13.4	84.7
Nonstore retailers	0	4.8	79.9	84.7
Clothing and clothing accessories stores	0	3.7	77.1	80.8
Fitness and recreational sports centers	0	51.4	26.4	77.8
Hotels and motels- including casino hotels	0	15.2	56.6	71.8
Automotive repair and maintenance- except car wash	0	8.2	63.6	71.7
Gasoline stations	0	3.9	64.7	68.6
Health and personal care stores	0	4	63.5	67.5
Services to buildings and dwellings	0	26.5	34.6	61.1
Management consulting services	0	40.8	13.3	54.1
Elementary and secondary schools	0	0	53.9	53.9
Other ambulatory health care services	0	0	53.3	53.4
Accounting and bookkeeping services	0	31.6	21.2	52.8
Independent artists- writers- and performers	0	51.2	1	52.2
Architectural and engineering services	0	40.6	11.5	52.1
Other State and local government enterprises	0	13.7	38.2	51.9
Colleges- universities- and junior colleges	0	2.1	48.5	50.6
Other amusement- gambling- and recreation industries	0	9.6	40.4	50

Industry	Direct	Indirect	Induced	Total
Sporting goods- hobby- book and music stores	0	2.6	47.1	49.7
Insurance carriers	0	7.8	40.3	48.2
Business support services	0	28.6	18.7	47.3
Power generation and supply	0	23.3	23.4	46.7
Scientific research and development services	0	39.7	4	43.7
Personal care services	0	0	43.2	43.2
Couriers and messengers	0	31.4	11.1	42.5
Furniture and home furnishings stores	0	2.2	35.7	37.9
Nondepository credit intermediation	0	21	15.4	36.4
Home health care services	0	0	35.3	35.3
Postal service	0	13.2	22	35.2
Maintenance and repair of nonresidential buildings	0	12.7	18.4	31.2
Other educational services	0	1.1	29.8	30.9
Grantmaking and giving and social advocacy organizations	0	0	30.8	30.8
Drycleaning and laundry services	0	1.3	28.8	30.1
Investigation and security services	0	18.5	10.2	28.7
Telecommunications	0	9.2	18.7	27.9
Plastics plumbing fixtures and all other plastics	0	19.4	7.7	27.1
Electronics and appliance stores	0	1.8	24.9	26.7
Cattle ranching and farming	0	0.3	24.9	25.2
Computer systems design services	0	17.6	6.2	23.8
Performing arts companies	0	11.5	11.2	22.7
Promoters of performing arts and sports and agents	0	14.2	7.5	21.7
Animal production- except cattle and poultry	0	0.3	21	21.3
Spectator sports	0	4.4	16.7	21.1
Veterinary services	0	0.1	20.9	21
All other miscellaneous professional and technical	0	18.1	2.4	20.5
Insurance agencies- brokerages- and related	0	3.2	16.4	19.5
Lessors of nonfinancial intangible assets	0	17.2	0.2	17.5
Other maintenance and repair construction	0	7.3	9.9	17.2
Advertising and related services	0	10.8	6.3	17.1
Poultry processing	0	0.2	16.2	16.4
Newspaper publishers	0	9.1	7.3	16.3
Conveyor and conveying equipment manufacturing	0	16.1	0	16.2
Death care services	0	0	15.9	15.9
Other Federal Government enterprises	0	2.7	13.1	15.9
Other miscellaneous chemical product manufacturing	0	14.8	0.5	15.3
Pipeline transportation	0	12.8	1.4	14.3
Machinery and equipment rental and leasing	0	12.7	1.3	13.9
Car washes	0	0.8	12.6	13.5
Footwear manufacturing	0	0	12.5	12.5
Scenic and sightseeing transportation and support	0	5.3	6.7	12.1
Other personal services	0	0.3	11.7	12

Industry	Direct	Indirect	Induced	Total
Bread and bakery product- except frozen- manufacturers	0	0.2	11.6	11.8
Rail transportation	0	7.8	4	11.8
Commercial printing	0	6.7	5	11.7
General and consumer goods rental except video tape	0	7.8	3.9	11.7
Office administrative services	0	5	6.3	11.4
Religious organizations	0	0	11.2	11.2
Video tape and disc rental	0	0.1	11	11.1
Other support services	0	5.9	5.1	11.1
Transit and ground passenger transportation	0	2.1	8.8	10.9
Radio and television broadcasting	0	5.7	4.7	10.4
Custom computer programming services	0	10	0.4	10.4
All other industries	0	116	217.2	335.4
Total	**4,789.3**	**2,284.7**	**4,884.0**	**11,958.0**

TABLE 43: 2012 ECONOMIC OUTPUT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	$2,171,133,696	$141,270,112	$4,910,793	$2,317,314,816
Drilling oil and gas wells	$411,200,064	$3,494,755	$7,450	$414,702,272
Petroleum refineries	$0	$62,378,304	$10,716,687	$73,094,992
Owner-occupied dwellings	$0	$0	$54,889,620	$54,889,620
Management of companies and enterprises	$0	$47,367,932	$4,516,733	$51,884,664
Wholesale trade	$0	$20,652,462	$24,719,448	$45,371,908
Lessors of nonfinancial intangible assets	$0	$44,804,612	$552,977	$45,357,592
Offices of physicians- dentists- and other health	$0	$0	$36,227,316	$36,227,316
Hospitals	$0	$0	$32,276,350	$32,276,350
Real estate	$0	$8,474,950	$22,102,596	$30,577,546
Food services and drinking places	$0	$999,398	$28,226,674	$29,226,072
Support activities for oil and gas operations	$0	$28,932,390	$61,439	$28,993,828
Monetary authorities and depository credit intermediaries	$0	$11,538,224	$13,402,448	$24,940,670
Power generation and supply	$0	$10,486,156	$10,523,393	$21,009,548
Legal services	$0	$14,767,242	$5,304,373	$20,071,614
Motor vehicle and parts dealers	$0	$754,334	$14,259,711	$15,014,045
Truck transportation	$0	$8,099,871	$5,933,513	$14,033,383
Telecommunications	$0	$4,405,635	$8,771,895	$13,177,530
Insurance carriers	$0	$2,046,136	$10,284,643	$12,330,779
Other State and local government enterprises	$0	$3,284,427	$8,973,123	$12,257,550
Securities- commodity contracts- investments	$0	$5,862,355	$5,672,635	$11,534,989
General merchandise stores	$0	$563,601	$10,577,647	$11,141,248
Pipeline transportation	$0	$9,817,294	$1,104,700	$10,921,994
Food and beverage stores	$0	$422,066	$7,913,238	$8,335,304
Nursing and residential care facilities	$0	$0	$8,104,823	$8,104,823
Building material and garden supply stores	$0	$479,029	$7,615,208	$8,094,238
Other miscellaneous chemical product manufacturing	$0	$7,601,477	$251,758	$7,853,234
All other miscellaneous professional and technical	$0	$6,782,255	$915,462	$7,697,718
Other ambulatory health care services	$0	$6,528	$7,493,778	$7,500,306
Management consulting services	$0	$4,959,123	$1,610,247	$6,569,369
Social assistance- except child day	$0	$312	$6,434,913	$6,435,225

Industry	Direct	Indirect	Induced	Total
care services				
Architectural and engineering services	$0	$4,597,170	$1,294,971	$5,892,141
Automotive repair and maintenance- except car wash	$0	$651,583	$4,943,094	$5,594,677
Other basic organic chemical manufacturing	$0	$4,907,254	$481,284	$5,388,538
Plastics plumbing fixtures and all other plastics	$0	$3,779,359	$1,489,526	$5,268,886
Warehousing and storage	$0	$4,302,484	$790,349	$5,092,833
Accounting and bookkeeping services	$0	$3,002,131	$1,979,340	$4,981,471
Natural gas distribution	$0	$2,136,121	$2,844,310	$4,980,431
Nondepository credit intermediation	$0	$2,882,305	$2,086,928	$4,969,234
Gasoline stations	$0	$288,227	$4,654,423	$4,942,650
Conveyor and conveying equipment manufacturing	$0	$4,927,305	$10,927	$4,938,232
Petroleum lubricating oil and grease manufacturing	$0	$4,326,171	$354,533	$4,680,704
Scientific research and development services	$0	$4,221,786	$421,430	$4,643,216
Health and personal care stores	$0	$281,573	$4,345,046	$4,626,620
Machinery and equipment rental and leasing	$0	$3,794,837	$381,036	$4,175,873
Clothing and clothing accessories stores	$0	$196,251	$3,963,469	$4,159,721
Hotels and motels- including casino hotels	$0	$883,324	$3,237,307	$4,120,631
Civic- social- professional and similar organizations	$0	$1,671,656	$2,333,847	$4,005,503
Audio and video equipment manufacturing	$0	$17,115	$3,981,938	$3,999,053
Independent artists- writers- and performers	$0	$3,924,222	$72,963	$3,997,185
Nonstore retailers	$0	$225,741	$3,646,744	$3,872,485
Poultry processing	$0	$49,533	$3,749,287	$3,798,820
Furniture and home furnishings stores	$0	$208,790	$3,251,765	$3,460,556
Maintenance and repair of nonresidential buildings	$0	$1,425,219	$2,016,376	$3,441,595
Rail transportation	$0	$2,246,984	$1,120,539	$3,367,523
Child day care services	$0	$0	$3,282,907	$3,282,907
Miscellaneous store retailers	$0	$159,363	$2,991,966	$3,151,328

Industry	Direct	Indirect	Induced	Total
Employment services	$0	$1,553,700	$1,591,244	$3,144,944
Services to buildings and dwellings	$0	$1,282,317	$1,661,080	$2,943,397
Couriers and messengers	$0	$2,099,458	$739,975	$2,839,433
Colleges- universities- and junior colleges	$0	$118,504	$2,681,991	$2,800,495
Other amusement- gambling- and recreation industries	$0	$547,143	$2,207,037	$2,754,180
Petrochemical manufacturing	$0	$2,568,146	$133,128	$2,701,273
Meat processed from carcasses	$0	$24,205	$2,573,178	$2,597,383
Postal service	$0	$965,795	$1,563,587	$2,529,382
Cattle ranching and farming	$0	$30,600	$2,496,354	$2,526,955
State and local government electric utilities	$0	$1,283,426	$1,241,476	$2,524,901
Fitness and recreational sports centers	$0	$1,616,348	$793,250	$2,409,598
Animal- except poultry- slaughtering	$0	$20,563	$2,370,555	$2,391,117
Business support services	$0	$1,420,694	$922,856	$2,343,549
Advertising and related services	$0	$1,449,834	$817,396	$2,267,230
Funds- trusts- and other financial vehicles	$0	$10,524	$2,130,013	$2,140,536
Radio and television broadcasting	$0	$1,182,683	$938,029	$2,120,713
Home health care services	$0	$0	$2,073,821	$2,073,821
Other personal services	$0	$54,171	$2,019,613	$2,073,785
Computer systems design services	$0	$1,525,183	$529,351	$2,054,533
Newspaper publishers	$0	$1,150,034	$895,265	$2,045,300
Insurance agencies- brokerages- and related	$0	$335,585	$1,705,077	$2,040,663
Bread and bakery product- except frozen- manufacturers	$0	$27,406	$1,946,540	$1,973,946
Sporting goods- hobby- book and music stores	$0	$104,835	$1,850,673	$1,955,508
Toilet preparation manufacturing	$0	$53,199	$1,849,835	$1,903,033
Personal care services	$0	$0	$1,901,677	$1,901,677
Poultry and egg production	$0	$20,728	$1,822,117	$1,842,845
Office administrative services	$0	$820,494	$1,016,153	$1,836,647
Database- directory- and other publishers	$0	$1,015,018	$815,032	$1,830,050
Other educational services	$0	$64,889	$1,726,667	$1,791,556
Other computer related services- including facilities	$0	$1,503,294	$281,479	$1,784,773
Iron and steel mills	$0	$1,756,378	$25,054	$1,781,432
Elementary and secondary schools	$0	$0	$1,769,184	$1,769,184
Automotive equipment rental and	$0	$516,943	$1,167,497	$1,684,440

Industry	Direct	Indirect	Induced	Total
leasing				
Footwear manufacturing	$0	$0	$1,622,715	$1,622,716
Fluid milk manufacturing	$0	$10,317	$1,503,006	$1,513,323
Motion picture and video industries	$0	$285,961	$1,224,319	$1,510,280
Religious organizations	$0	$0	$1,416,304	$1,416,304
Waste management and remediation services	$0	$914,856	$498,965	$1,413,821
Construction machinery manufacturing	$0	$1,400,727	$2,794	$1,403,521
Veterinary services	$0	$9,902	$1,380,462	$1,390,364
Environmental and other technical consulting services	$0	$1,033,851	$346,232	$1,380,083
Motor vehicle parts manufacturing	$0	$900,633	$476,573	$1,377,206
Scenic and sightseeing transportation and support	$0	$593,193	$733,711	$1,326,904
Grantmaking and giving and social advocacy organizations	$0	$0	$1,276,295	$1,276,295
Other apparel knitting mills	$0	$5,125	$1,239,406	$1,244,531
Metal valve manufacturing	$0	$1,207,055	$20,759	$1,227,813
Other support services	$0	$664,212	$556,218	$1,220,430
Private households	$0	$0	$1,209,580	$1,209,580
Drycleaning and laundry services	$0	$53,331	$1,141,673	$1,195,004
Electronics and appliance stores	$0	$80,579	$1,095,277	$1,175,855
Household goods repair and maintenance	$0	$507,992	$646,222	$1,154,214
Promoters of performing arts and sports and agents	$0	$765,050	$385,299	$1,150,349
Other snack food manufacturing	$0	$11,692	$1,126,655	$1,138,348
Automobile and light truck manufacturing	$0	$1,390	$1,113,400	$1,114,791
Investigation and security services	$0	$686,301	$373,369	$1,059,669
All other industries	$0	$16,225,762	$31,101,184	$47,326,940
Total	**$2,582,333,760**	**$555,837,508**	**$512,828,487**	**$3,650,999,970**

TABLE 44: 2012 EMPLOYMENT IMPACTS IMPLAN OUTPUT

Industry	Direct	Indirect	Induced	Total
Oil and gas extraction	3,878.1	252.3	8.8	4,139.2
Drilling oil and gas wells	633.4	5.4	0	638.8
Food services and drinking places	0	19.6	553.1	572.7
Offices of physicians- dentists- and other health	0	0	276.1	276.1
Wholesale trade	0	120.3	144	264.3
Hospitals	0	0	257.3	257.3
Real estate	0	68.2	177.9	246.1
Management of companies and enterprises	0	200.1	19.1	219.1
General merchandise stores	0	9	168.6	177.6
Legal services	0	129.4	46.5	175.9
Nursing and residential care facilities	0	0	169	169
Private households	0	0	161.6	161.6
Support activities for oil and gas operations	0	161	0.3	161.4
Social assistance- except child day care services	0	0	150.9	150.9
Food and beverage stores	0	7.2	135.1	142.3
Employment services	0	67.2	68.8	136
Motor vehicle and parts dealers	0	6.8	128.9	135.7
Monetary authorities and depository credit intermediaries	0	58.8	68.3	127
Civic- social- professional and similar organizations	0	44.7	62.4	107
Truck transportation	0	60.3	44.1	104.4
Miscellaneous store retailers	0	5.3	98.8	104.1
Building material and garden supply stores	0	5.1	81.3	86.4
Securities- commodity contracts- investments	0	42.3	40.9	83.2
Warehousing and storage	0	68.9	12.7	81.5
Child day care services	0	0	81.4	81.4
Nonstore retailers	0	4.7	75.3	79.9
Clothing and clothing accessories stores	0	3.6	72.7	76.3
Fitness and recreational sports centers	0	50.7	24.9	75.6
Hotels and motels- including casino hotels	0	14.6	53.3	67.9
Automotive repair and maintenance- except car wash	0	7.9	59.9	67.8
Gasoline stations	0	3.8	61	64.8
Health and personal care stores	0	3.9	59.9	63.7
Services to buildings and dwellings	0	25.1	32.6	57.7
Independent artists- writers- and performers	0	50.5	0.9	51.5
Management consulting services	0	38.6	12.5	51.2
Elementary and secondary schools	0	0	50.7	50.7
Accounting and bookkeeping services	0	30.3	20	50.3
Other ambulatory health care services	0	0	50.3	50.3
Architectural and engineering services	0	38.4	10.8	49.3
Other State and local government enterprises	0	13.2	36	49.2
Colleges- universities- and junior colleges	0	2	45.7	47.7
Other amusement- gambling- and recreation industries	0	9.4	38.1	47.5

Industry	Direct	Indirect	Induced	Total
Sporting goods- hobby- book and music stores	0	2.5	44.4	46.9
Insurance carriers	0	7.6	38	45.5
Business support services	0	27.1	17.6	44.7
Power generation and supply	0	22	22	44
Scientific research and development services	0	37.8	3.8	41.5
Personal care services	0	0	40.7	40.7
Couriers and messengers	0	29.7	10.5	40.1
Furniture and home furnishings stores	0	2.2	33.6	35.8
Nondepository credit intermediation	0	20	14.5	34.5
Postal service	0	12.8	20.7	33.5
Home health care services	0	0	33.2	33.2
Maintenance and repair of nonresidential buildings	0	12.3	17.4	29.6
Other educational services	0	1.1	28.1	29.1
Grantmaking and giving and social advocacy organizations	0	0	29.1	29.1
Drycleaning and laundry services	0	1.3	27.1	28.4
Investigation and security services	0	17.7	9.6	27.3
Telecommunications	0	8.9	17.6	26.5
Plastics plumbing fixtures and all other plastics	0	18.4	7.3	25.7
Electronics and appliance stores	0	1.7	23.5	25.2
Cattle ranching and farming	0	0.3	23.5	23.8
Computer systems design services	0	16.7	5.8	22.5
Performing arts companies	0	11.4	10.5	21.9
Promoters of performing arts and sports and agents	0	14	7.1	21.1
Animal production- except cattle and poultry	0	0.3	19.8	20.1
Spectator sports	0	4.2	15.8	20
Veterinary services	0	0.1	19.7	19.8
All other miscellaneous professional and technical	0	17	2.3	19.3
Insurance agencies- brokerages- and related	0	3	15.4	18.5
Advertising and related services	0	10.5	5.9	16.4
Lessors of nonfinancial intangible assets	0	16.1	0.2	16.3
Other maintenance and repair construction	0	7	9.3	16.2
Conveyor and conveying equipment manufacturing	0	15.6	0	15.6
Newspaper publishers	0	8.8	6.8	15.6
Poultry processing	0	0.2	15.3	15.5
Death care services	0	0	15	15
Other Federal Government enterprises	0	2.6	12.4	15
Other miscellaneous chemical product manufacturing	0	14.3	0.5	14.8
Pipeline transportation	0	12.1	1.4	13.5
Machinery and equipment rental and leasing	0	12.1	1.2	13.4
Car washes	0	0.8	11.9	12.7
Footwear manufacturing	0	0	11.7	11.7
Scenic and sightseeing transportation and support	0	5.1	6.3	11.5
Rail transportation	0	7.5	3.8	11.3

Industry	Direct	Indirect	Induced	Total
General and consumer goods rental except video tape	0	7.6	3.7	11.3
Other personal services	0	0.3	11	11.3
Commercial printing	0	6.5	4.7	11.2
Bread and bakery product- except frozen- manufacturers	0	0.2	10.9	11.1
Office administrative services	0	4.8	5.9	10.8
Other support services	0	5.8	4.8	10.6
Video tape and disc rental	0	0.1	10.4	10.5
Religious organizations	0	0	10.5	10.5
Transit and ground passenger transportation	0	2.1	8.3	10.3
Radio and television broadcasting	0	5.6	4.4	10
All other industries	0	120.6	204.9	327.3
Total	**4,511.5**	**2,186.0**	**4,601.1**	**11,298.5**

References

Arkansas Oil and Gas Commission

1. Rules and Regulations as of January 14, 2008, http://www.aogc.state.ar.us/OnlineData/Forms/Rules%20and%20Regulations.pdf
2. Fayetteville Shale Permits by County
3. Fayetteville Shale Production Information (for B-43 wells), http://www.aogc.state.ar.us/Fayprodinfo.htm

Arkansas Assessment Coordination Department, http://www.arkansas.gov/acd/index.html

Arkansas Department of Finance and Administration, http://www.arkansas.gov/dfa/index.html

Atlas Pipeline Partners, http://www.atlaspipelinepartners.com

Blaze Energy News, http://www.marketwire.com/mw/release.do?id=796813&k=

"Bounty from Below: The Impact of Developing Natural Gas Resources Associated with the Barnett Shale on Business Activity in Fort Worth and the Surrounding 14-County Area," The Perryman Group, May 2007

Chesapeake Energy Corporation, http://www.chk.com

Fayetteville Exploration LLC, http://www.fayexp.com/OurPeople.htm

Hallwood Energy, L.P., http://hallwoodenergy.com/operationsAK.asp

Maverick Oil and Gas Inc., http://www.maverickoilandgas.com/news090706.htm

NaturalGas.org, http://www.naturalgas.org

Panhandle Oil and Gas Inc., http://www.panhandleoilandgas.com

Petrohawk Energy Corporation News,

http://markets.chron.com/chron?GUID=4261584&Page=MediaViewer&Ticker=HK

Rigzone, Oil & Gas Industry Information Provider, http://www.rigzone.com

Shelby Geological Consulting, "The Fayetteville Shale Play – a Bonanza for Arkansas?" Presentation

Shell Exploration & Production Company News, http://energy.ihs.com/News/WW-News/news-2006/shell-joint-venture.htm?WBCMODE=h

Southwestern Energy Company, http://www.swn.com

Stormcat Energy News, http://news.moneycentral.msn.com/ticker/article.aspx?Feed=PR&Date=20071219&ID=7963841&Symbol=US:SCU

Texas Gas Transmission LLC, http://www.txgt.com

Triangle Petroleum Corporation News, http://money.cnn.com/news/newsfeeds/articles/marketwire/0354801.htm

U.S. Bureau of Economic Analysis, http://www.bea.gov

U.S. Bureau of Labor Statistics, http://www.bls.gov

U.S. Census Bureau, http://www.census.gov

U.S. Energy Information Administration, http://www.eia.doe.gov

XTO Energy Inc. News,

1. http://www.prnewswire.com/cgi-bin/stories.pl?ACCT=104&STORY=/www/story/02-12-2008/0004754338&EDATE=
2. http://investing.businessweek.com/research/stocks/transactions/transactions.asp?symbol=MCF