

Economic & Workforce Development Study – Marcellus Shale

Lackawanna County Workforce Investment Board

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The Institute for Public Policy & Economic Development

The **INSTITUTE** for
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*A partnership among Keystone College, King's College, Luzerne County Community College,
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Executive Summary

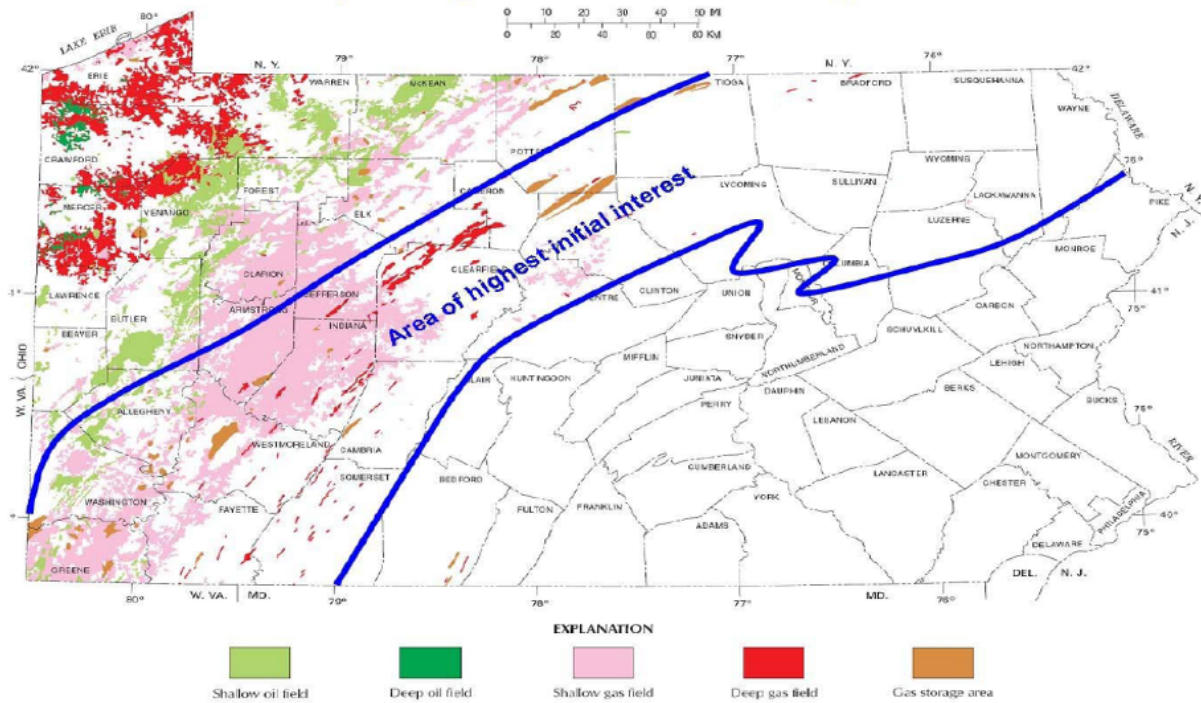
This study is designed to prepare all stakeholders, including Pennsylvania’s workforce, for natural gas drilling industry growth created by the Marcellus Shale play. Here, The Institute flushes out opportunities and gaps in Pennsylvania’s workforce and economic development efforts; in addition, we identify potential for new economic development and pinpoint the education and training necessary for current and future careers in the burgeoning industry. To round out the study, we identify potential gaps in existing industries that may lose qualified employees to the natural gas industry.

While other studies use multipliers to identify economic impact (and offers earnings and wages in other sectors with indirect or induced impact), such studies do not identify specific industry growth. This study identifies potential growth in specific industries in core and adjacent counties (or “parishes” as they are referred to in Louisiana) in the Marcellus Shale play. “Core” counties are considered those where there is currently and where there is projected drilling based on the location and geology of the Marcellus Shale. “Adjacent” counties border core counties and may have limited or no shale drilling, however, because of their geographic proximity to core areas, are expected to enjoy “spillover” economic benefits.

The study examines businesses and employment changes in Texas, Arkansas, Louisiana, and Oklahoma related to natural gas drilling in each state’s respective shale play. It should be noted, however, that none of the shale plays in these states is as large as Pennsylvania’s Marcellus Shale play. In addition, the study evaluates these states’ demographic and migration pattern changes; identifies secondary, post-secondary, and continuing education programs and classes available in each respective state and compares them to Pennsylvania’s current and potential offerings. Finally, The Institute presents a career ladder of drilling industry occupations.

The study’s research methodology is presented within the study. It should be noted that various data sources from the public and private sectors are used as a basis to measure changes and to develop baseline data for Pennsylvania. The study reports on areas of Pennsylvania served by the Northeast and Northern Tier Workforce Investment Boards (WIBs). The Northeast WIB serves Carbon, Lackawanna, Luzerne, Monroe, Pike, Schuylkill, and Wayne Counties. The Northern Tier WIB serves Bradford, Sullivan, Susquehanna, Tioga, and Wyoming Counties.

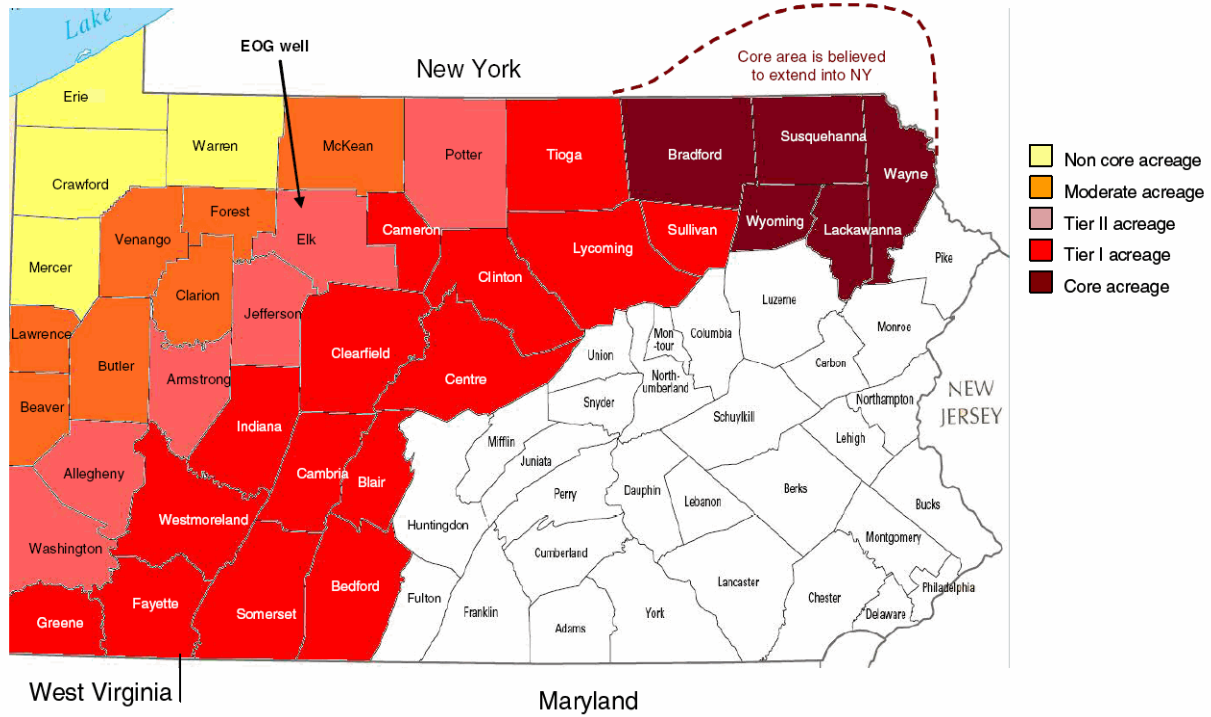
Map of Pennsylvania Oil and Gas Fields
 Showing area of highest interest for Marcellus Shale exploration



	Arkansas	Louisiana	Oklahoma	Texas
Core	Faulkner and White	Caddo and DeSoto	Garfield and Pittsburg	Denton and Wise
Adjacent	Independence and Pope	Sabine and Webster	Wagoner and Garvin	Cooke and Ellis

In Pennsylvania, Bradford, Lackawanna, Wayne, Wyoming, and Susquehanna Counties are considered core areas. Tioga and Sullivan Counties are labeled Tier I, which is slightly less than core, but still expected to have significant drilling activity and economic impact. Adjacent areas include: Carbon, Luzerne, Monroe, Pike and Schuylkill Counties. The eastern portion of Luzerne County (primarily rural and suburban areas) will have limited drilling activity in 2010. It is unlikely the other counties considered adjacent will have any drilling activity.

Estimated rankings of PA counties based on depth, thickness and thermal maturity



Source; Bernstein Estimates

Conclusions

Demographics

All counties examined experienced population growth, although growth levels varied by county. Texas counties experienced the most significant growth.

All four states experienced median household income increases of at least 20%. The composition of higher education changed for the period as well, and poverty level research was inconclusive; it is normally expected that as education levels increase, income levels increase, and poverty levels decrease. Median housing values increased in both core and adjacent counties in all states – reaching a high increase of 23%.

In Pennsylvania, population growth varied. The Pocono counties experienced growth as a result of westward migration from New York, New Jersey, and Philadelphia. The other counties examined experienced population declines. In a report prepared by The Institute focusing on Lackawanna and Luzerne population changes due to migration, births, and deaths, Lackawanna and Luzerne experienced positive net in-migration, but since their death rates still exceed birth rates, population growth has not occurred. Nearly every Pennsylvania County examined experienced higher education attainment improvements. It should be noted, however, that several counties still lag state and national averages.

Further, median household income has been increasing. Most counties still trail state and national averages, however strides have been made. Poverty levels still increased in the Pennsylvania counties.

Finally, all Pennsylvania counties examined experienced housing value increases. Such increases result in a higher cost of living and aid in increasing poverty levels.

Migration

The Institute can conclude that each of the counties in the four states examined experienced overall increases in the number of people migrating into each county. Not surprisingly, most of these in-migrants came from other parts of the state examined or nearby.

In this report, we can see the patterns and fluctuations in the number of people who migrate into a county. This report concludes that while most of the migration takes place within the same state, the number of people who migrate into one of the counties in the study has increased overall – particularly within recent years.

County Business Patterns (CBP)

A review of Pennsylvania Counties from 1997-2007 demonstrates that whether they were core or adjacent, there was minimal new industry. Warehousing and transportation was the fastest growing industry in most of counties. There were some pockets of manufacturing growth, but the counties in the study area did not appear to have expansive job or industry growth. In 2007, Susquehanna County began to see the presence of mining companies. There was an increase of mining firms from 13-47, although employee numbers did not dramatically change. It appears that the firms began to establish themselves and secure land deals under the radar.

In a review of sixteen counties in four other states examined, some apparent growth trends emerged. Other studies completed both for Pennsylvania and other states focus on economic impact and identify growth through earnings and job creation using multipliers. This analysis focuses specifically on the type of industry. The core shale industry counties all experienced growth in a number of sectors (both in number of establishments and employees). Adjacent county growth was inconsistent; however the adjacent Texas counties were most successful. Growth in the adjacent counties was much less noticeable than in core counties, and core county growth was consistent over the ten-year-period. Major growth did not occur during any one year. Growth occurred primarily in small firms employing nineteen or less people.

There was consistent growth in the mining, financial, insurance, food services and accommodations, and healthcare and social assistance industries. Additionally, growth in the construction, real estate, and warehousing and transportation industries also occurred. While the retail industry grew in most counties examined, it was not a consistent performer in all shale counties.

Finally, there was some growth in the professional, scientific, and technical sectors within Pennsylvania and the other states studied, Depending on the operational side, a company may set up a central location for its staff and have them provide the necessary statewide services. Also, companies have used independent contractors to meet short-term demands that don't call for full-time employees. Although it is not conclusive that the information industry is related to the drilling industry, this sector grew in both Louisiana Counties studied and in one each of the Texas, Arkansas, and Oklahoma counties examined.

Workforce

Careers in the drilling industry fall into those needed for development and production. The drilling industry uses both its own employees and sub-contractors. Most positions require a high school diploma, some certifications or certificates, and on-the-job training. Further, based on the presence of a drilling firm in the state, other positions such as geoscientists, marketing and public relations professionals, human resources, and those in government relations are also needed. Additionally, drilling firms hire engineers and lawyers to assist in a number of transactions required throughout the entire process. Those jobs that require the most education often pay the highest, however due to the risk associated with drilling jobs, even entry level positions pay well.

Education & Training

Pennsylvania has in place the higher education infrastructure to support the natural gas and energy industry. There are options to expand programming at trade schools like Johnson College and other community colleges throughout the region. Texas provides a strong model for vocational training at the high school level that incorporates technical with the necessary math and science programs over four years.

Recommendations

Core and adjacent counties' educational institutions and workforce development providers should collaborate on education and training programs to avoid duplicity and ensure that there is a comprehensive delivery system on the secondary, post secondary, and continuing education levels. In addition, the counties should work with drilling companies to explore training opportunities the drilling companies provide or subsidize for potential employees.

Further, economic development and workforce development providers should work together to identify specific geographic areas where there are gaps in the necessary goods and services driven by the drilling industry. This collaboration should include participation from the Small Business Development Centers, which can provide necessary technical assistance and workshops to encourage more entrepreneurial activity and prepare existing small business to accommodate the drilling industry.

The WIBs should evaluate various secondary programs in Texas for potential replication within the Pennsylvania study area.

The WIBs should identify industries and companies that could lose portions of their existing workforce to the drilling industry. The WIBs should form teams to evaluate the companies' immediate and future workforce needs, recruitment, training and education. In addition, they should develop a customized program to assist those companies in employee retention, recruitment, and training.

Several drilling occupations are specialized and short-term in nature. This creates a transient workforce and this may cause an influx of people moving from other drilling states into various Pennsylvania counties. By working with the drilling companies to identify these individuals, a database of spousal/significant other education and skills could be created in order to assist in identifying employment opportunities within other local companies/organizations.

The tenants for success are collaboration, cooperation, shared services, and engaging the drilling companies. Much of their growth is predicated on statewide policy, local planning and permitting, and the availability of a technically trained workforce to begin the drilling and production phases.

Research Summary

Demographics

Arkansas experienced population increases between 1990 and 2006-2008, with its core shale counties experiencing the most growth. While Louisiana did not experience the same level of population growth as Arkansas, its core shale counties experienced minimal population increases between 2000 and 2008. Oklahoma counties experienced population fluctuations between 1990 and 2000. Texas counties experienced significant population increases during each year examined.

Arkansas and Louisiana experienced decreases in those with less than a high school education and increases in the percentage of individuals with a high school education. Oklahoma counties saw similar changes; however, Wagoner County experienced a decrease in its percentage of high school graduates. Texas counties experienced a decrease in the percentage of individuals with a high school diploma, and an increase the percentage of those with Bachelor's and graduate/professional degrees.

Median household income increased in each of the states studied; Arkansas experienced increases as high as 20%, while Louisiana experienced increases up to 25%. Oklahoma and Texas followed, with increases over 20%.

Arkansas counties experienced poverty level decreases in 2000, only to the experience increases in 2008. Faulkner County reported the highest percentage of individuals below the

poverty level (16.3%), while White County reported the highest percentage of families below the poverty level (12.8%); White County did not exceed its 1990 poverty level of 14.7%. The percentage of individuals/families that fell below the poverty level in each of the Louisiana Parishes (counties) studied fluctuated. DeSoto Parish experienced the greatest decrease — a 7.2% drop between 2000 and 2006-2008. Oklahoma and Texas counties also experienced poverty level decreases in 2000, followed by increases in 2006-2008 and in nearly all years examined.

The median housing value in each of the states studied increased in each year examined. Arkansas experienced median housing value increases as high as 19.7% (Pope County) between 2000 and 2006-2008, while Louisiana experienced increases as high as 25.5% (DeSoto Parish). The median household income in each of Oklahoma's counties examined increased during each year studied. The largest increase occurred in Wagoner County, which experienced a 31.7% increase between 2000 and 2006-2008. The smallest increase occurred in Garfield County (27.1%). Texas housing values increased in 2000 and 2006-2008. The greatest increase occurred in Ellis County (33.6%), followed closely by Cooke County (33.3%).

It should be noted that there is no way to pinpoint exactly how much of the positive or negative changes resulted from unconventional shale drilling.

Pre-drilling demographic data provides a snapshot of the twelve Pennsylvania counties examined in this study. Changes from 2000 to 2006-2008 were documented in order to provide background information and to show that the area has experienced both negative and positive changes since 2000. Carbon, Monroe, Pike, and Wayne Counties were the only counties in the Pennsylvania study area to experience population increases between 2000 and 2006-2008. Nine of the twelve counties experienced population decreases since 2000, and, for most, this trend has occurred over several decades.

The study region has been making impressive advancements in the area of educational attainment. Nearly every county experienced increases in those with some college, as well as those who earned Associate's, Bachelor's and graduate or professional degrees. Carbon County experienced the greatest increase in those with Associate's degrees (2.8%), while Pike County experienced the most substantial increase in those with Bachelor's degrees (3.7%). Schuylkill County experienced the greatest increase in those with graduate or professional degrees, which grew from 3.7% in 2000 to 5.3% in 2006-2008.

Median household income increased in each of Pennsylvania's core shale counties. Wyoming County experienced the greatest increase of 31%, followed by Susquehanna and Wayne Counties, both of which experienced a 28.9% jump in median household income. Wyoming County reported the highest median household income for 2006-2008 at \$47,617.

Individuals and families living in poverty is a vital indicator used to determine a region's economic health. Nearly every county in Pennsylvania's study area experienced increases in the percentage of individuals and families living in poverty. Among the tier one shale counties, Luzerne County experienced the highest poverty levels for individuals and families in 2000 and 2006-2008. Tioga County experienced the highest percentage of individuals living below the poverty level for 2006-2008, where 15.8% of all persons and 12.6% of all families were below the poverty level.

Housing values are also a critical economic indicator. All Pennsylvania counties examined experienced increased housing values over the time frame studied. Pike County reported the highest median housing value for 2006-2008 (\$215,900), and the largest increase (45.2%) in housing values over the period examined.

Migration

The four Arkansas counties studied in this report display a range of migration patterns. The sizes and impact varied from the larger Faulkner County, with a total in-migration of 36,777 over the ten years, to the smaller Independence County, with a total in-migration of 7,768. All of the counties basically doubled their in-migration. The most significant changes occurred in the 2002-2007 time period. These figures represent those who moved into the respective county from the most prominent locations in Arkansas. This suggests that shale drillings have generated positive in-migration.

From 1997 to 2007, over half of Faulkner, Pope, Independence, and White Counties' in-migration came from other Arkansas counties. From 2002 to 2007, in-migration from other Arkansas counties grew, accounting for even more of the total. This signifies that it has become increasingly popular to relocate to other areas, but that many residents remained within Arkansas. Arkansas counties experienced the most in-migration from Texas, Tennessee, and Oklahoma. Aside from Arkansas, the second most popular state of origin appears to be Texas. Faulkner and White Counties both had substantial in-migration growth from Texas.

The data for Louisiana parishes is fairly similar to the Arkansas counties. Caddo Parish, which is sufficiently larger than the other three counties examined, recorded 53,172 migrants from within Louisiana over the ten years examined. Like the Arkansas counties, the increase of in-migrants was greater during the study period's final five year Parish which is much smaller in size, recorded 3,731 in-migrants from other Louisiana parishes, with over half of that in-migration occurring during the study's last five years examined.

Examining total in-migration from all counties allows us to see the total impact of Louisiana parishes on the state's overall in-migration for the ten years studied. From 1997 to 2007, Caddo Parish recorded 103,079 in-migrants from all over the country and some foreign lands. Interestingly, less than half of the total (48 %) of Caddo Parish in-migration occurred during the

2002 to 2007 time frame. This suggests a significant number of migrants were from outside of Louisiana. De Soto, Sabine, and Webster Parishes maintained roughly the same pattern, with Louisiana parishes comprising roughly half of total in-migration, including those in other states. Louisiana parishes experienced the most in-migration from Texas, Tennessee and Florida.

Oklahoma's Garfield, Garvin, Pittsburg and Wagoner Counties exhibited a far different pattern of in-migration than Arkansas and Louisiana counties. From 1997 to 2007, Wagoner County (the largest county studied) recorded 49,710 in-migrants, 36,465 of who originated from other Oklahoma counties. While the in-migration of counties in Louisiana and Arkansas was largely comprised of people who moved to the counties examined from within the respective state examined, Oklahoma's results are a bit different. With three counties relatively smaller than Wagoner County, it is more difficult to make comparisons.

Looking at the total number of people who moved to Oklahoma counties from all over allows for a broader understanding of Oklahoma's in-migration patterns – opening a comparison of migrants from the same and different states. Of the four Oklahoma counties examined, while in-migration from within the state varies, overall in-migration is more similar. About half of Garfield, Garvin, and Pittsburg Counties' total in-migration occurred in the final five years examined; approximately 44% of Wagoner County's in-migrants arrived during the final five years examined.

Understanding Texas' in-migration patterns is different. Because of its significantly larger size and economic attraction, Texas more likely draws people from different areas. Nonetheless, in-state migration remains strong. Judging by the great difference in size among these counties, it appears as though it may be difficult to find a common ground for each of these counties. Given the massive size of Denton County, we can expect to see migrants from several different counties and even states. But it also makes it difficult to compare in-migration among smaller counties. Once broken down, it becomes clear how similarities exist.

The counties are of relatively different sizes, and in-migration for each during the study's final five years examined varies. For example, only about 56% of in-migrants moved from another county in Texas into Cooke County, compared with 73% for Ellis County. At any rate, each of these counties experienced far greater in-migration from 2002 to 2007 than the other three states examined.

While it has the majority of in-migrants from within the state, Denton County also drew migrants from throughout the country and foreign lands. People who previously resided in other parts of the southern U.S. and the Mid-West seemed most inclined to move into Denton County. And while the number of in-migrants increased each year, there were a roughly similar percentage of in-state in-migrants (approximately 65%).

County Business Patterns

From an economic development perspective, there were some obvious changes in business establishments in the sixteen comparative shale counties. The number of mining firms, employment, and payrolls primarily increased in core shale counties, but not necessarily in adjacent shale counties. Mining industry growth is a direct result of drilling and production. However, indirect and induced opportunities exist as a result of this new industry's growth. Some of it stems from new wealth and some of it from the population increases, as more people move for job opportunities. Other studies have used a multiplier analysis to examine the economic impact of new jobs, however in order to evaluate the true nature of the types of jobs, this review of the number and types of establishments, number of jobs and payrolls by industry specifically reflect where the economic development and workforce development opportunities exist.

Increases in the finance and insurance industries were demonstrated. More than likely, the finance industry grew due to increased wealth by landowners who received lease and royalty payments. Accommodations and food services industries grew consistently in the study area. The retail industry, however, was not always a growing industry. There were increases in the healthcare and social assistance categories throughout the study area. The construction and real estate industries grew in almost all areas (core and adjacent). The construction industry grew as a result of the need for pipelines, housing, road improvements, and offices. The real estate industry grew as a result of the drilling leases as well as new residential and commercial opportunities. It appears that the drilling companies established "central offices" in each state that housed professional, scientific, and technical services, as this category showed some increases in each state, but not necessarily in every core county nor in adjacent counties. Increases in other industries also occurred, but were not transformative. For example, there were increases in transportation and warehousing establishments (as the transportation industry supports the drilling industry). Some increases also occurred in the manufacturing and wholesale industries, and these increases may be due to miscellaneous equipment, parts, chemicals and sand for the drilling industry. Based on a review of the other states and counties, Texas exhibited the most growth in establishments and employees. This may be attributable to both the size and the duration of Texas' involvement in shale drilling. The Texas shale play is approximately ten years old and second in size to Pennsylvania's Marcellus Shale play.

As far as Pennsylvania is concerned, the Pennsylvania Counties showed very little growth to date. The transportation and warehousing industries experienced increases that point to a growing cluster in northeastern Pennsylvania. A couple Pennsylvania counties also experienced manufacturing industry increases, but they were not consistent among the all counties examined.

Workforce

The career ladder for the petroleum industry shows a possible career pathway for a person starting in the natural gas industry. Beginning with a helper/extraction worker, an employee can work their way up to a roustabout/roughneck that repairs field equipment. From there, a worker with enough experience could become a derrick operator. Middle range positions include a drilling/rig operator and petroleum pump/system operator. Higher level positions include a drilling foreman and rig manger. The highest level position is the drilling engineer/petroleum engineer.

In terms of high demand jobs, supervisors and managers are needed most, while geoscientists are needed least. Naturally, those occupations that require the most education tend to have the highest salaries.

There are three phases of natural gas development that require a variety of workers. The first is the Development Phase, which is short lived and labor intensive. The following activities occur during this phase: (1) well-pad and access road construction, (2) local collection pipeline construction, (3) drilling of the well, (4) fracturing of the well, and (5) reclaiming some disturbance. The second phase of natural gas development is the Production Phase, which is long lived and includes a small and steady labor force. The activities involved in the second phase are: (1) trucking water and condensate from well site, (2) monitoring production, and (3) occasional well work-overs. Finally, in the Reclamation Phase, well-sites are dismantled and reclaimed.¹

There are typically several different players in natural gas extraction, many of who are involved in each of the phases described above. First, the drilling company hires drilling staff to form drilling crews. In addition, these companies hire welders and crane operators. Construction companies are a vital component of the drilling industry. Excavators and laborers who lay pipeline are necessary. Fracturing companies take care of trucking and water supplies.

¹ Wyoming Boomtowns Social and Economic Impacts from Natural Gas Drilling

Drilling Company	Construction Companies
Welders	Excavation
Directional Drillers	Equipment Set up, Cranes
Man Camps, Porta-potties, Bottled Water	Roustabouts (general Labor)
Drilling Mud Companies	Water Well Drilling
Drill Bits, Drill Pipe, Supplies	Road Construction
Crane Operators	Local Pipelines
Fracturing Company	Other Companies
Trucking	Water Trucking
Water	Well Logging
Man Camps, etc.	
Source: Wyoming Boomtowns Social and Economic Impacts from Natural Gas Drilling	

Education/Training

In comparison to Arkansas, Louisiana, Oklahoma, and Texas, Pennsylvania has more institutions of higher education (86) that offer numerous baccalaureate programs relating to the energy industry. It appears that these institutions have capabilities to train students for occupations in the shale industry.

In Texas, there are higher education offerings directly related to Barnett Shale play mining. At Texas Christian University (an energy Institute that houses classes, workshops, seminars and research related to the technology and management of energy), initiatives are supported by local energy companies, and provide unique opportunities for individuals to receive energy-related educational training in geology, GIS, engineering, environmental science and professional land management. The TCU Energy Institute provides an important link between university teaching and research and the ever expanding energy industry, as the need for clean and reliable domestic energy resources and future technologies are developed in the U.S.²

Texas' Navarro College offers specialized programs in Oil and Gas Production Technology. Both certificate and degree programs are available.³

North Central Texas College offers courses leading to either a two-year Associate's degree or a one-year certificate in Oil & Gas Production Technology.⁴

The Commonwealth of Pennsylvania has 22 community colleges offering energy industry coursework. Texas has the highest number of offerings at 48 community colleges, followed by

² <http://www.energyinstitute.tcu.edu/>

³ <http://www.navarrocollege.edu/areas-of-study.php?id=123&bizgroup=Oil%20and%20Gas%20Production%20Technology>

⁴ <http://www.nctc.edu/Oil&Gas/>

Louisiana with 26, Oklahoma at 20, and Arkansas at eighteen. It appears that Pennsylvania's community college system has room for growth in programs relating to the energy industry, which, in turn, may lead to baccalaureate and/or certificate programs.

In regard to vocational and technical training, Pennsylvania has 65 institutions, Oklahoma has 27, Arkansas has nine and Louisiana has three. Oklahoma and Texas schools offer Oil & Gas training not offered at any vocational technical schools in Pennsylvania, Arkansas, or Louisiana. Arkansas offers programs in Power Plant Technology and Renewable Energy Technology. Similar programs are not available in any of the other states studied.

Much can be learned from the experiences in other states. Texas is a very good role model from a number of angles. Texas' Barnett Shale play was the largest until the Marcellus Shale play became active. Texas has been involved in drilling for the longest period of time and has the opportunity to invent, evaluate, and reinvent policies, regulation, and taxation on a number of levels. Texas is involved in urban, rural, and suburban drilling. Overall, whether counties in Texas are considered core or adjacent, those evaluated in this study are prospering. The state as a whole appears to have mastered the Barnett shale industry, specifically capitalizing on the opportunities while mitigating the challenges.

Research Methodology

For purposes of this study, The Institute employed a variety of methodologies. In collecting, organizing, and analyzing the data, The Institute used a data mining process. Data mining involves analyzing information from different sources and summarizing it into useful data; the process includes finding correlations or patterns among many fields within large databases. In addition, several educational and industry websites were examined.

Demographic Analysis

The demographic analysis studied population, education attainment, median income, median housing value, poverty level, and migration patterns pre-post drilling in four counties in Texas, Arkansas, Louisiana, and Oklahoma. A total of 16 counties (or "parishes" as they are referred to in Louisiana) were examined. Counties were chosen based on two criteria: their proximity to shale drilling and population. For each state, The Institute examined two "core" shale drilling counties (those with a high concentration of wells) and "non-core" counties (those with a lower number of wells or those adjacent to "core" counties). All data were obtained from the U.S. Census Bureau 1990/2000 Decennial Census and 2006-2008 American Community Survey Three Year Estimates. Three Year Estimates were chosen because of the small population sizes in many of the counties studied. American Community Survey releases one year estimates from populations 65,000 and above whereas three year estimates are released from population

20,000 and above. In addition, counties that did not meet the three year estimate population requirements were not used in this study, regardless of their proximity to shale drilling.

In addition, pre-drilling demographics were obtained for the twelve counties in the Pennsylvania shale region. Demographic indicators included population, education attainment, median income, median housing value, and poverty level. The Institute selected the years 2000 and 2006-2008 in order to examine changes that were occurring before major shale drilling began. All data were obtained from the U.S. Census Bureau. Counties were examined in three groups: “core,” “tier one,” and “adjacent.”

Migration Analysis

The migration data in this report is provided by the Internal Revenue Service (IRS). This valuable data allows for the tracking of people as they move from one place to another. It provides the number of people who moved from a specific location and where they moved to on a county-by-county basis. The County-to-County Migration data is updated annually based on year-to-year changes in the addresses shown on the population of returns from the IRS Individual Master File System.⁵

County-to-County Migration Flow Data shows migration patterns by county based on changes on individual income tax returns. It includes only those with more than 10 persons to be accounted for in the data.

This report studies the number of people who migrate into the respective county each year beginning in 1997 and ending with 2007. Over the ten years, several changes occur, but patterns can be found among the individual counties and the states that make up this study.

Education and Training Programs

This section identified the types of training programs offered at the secondary and post secondary level. The Institute examined educational programs in all four states related to the shale drilling industry by visiting each institution’s website.

Workforce Analysis

The Institute examined the careers in the Marcellus shale industry by compiling data on all current job openings in Texas, Arkansas, Louisiana, and Oklahoma for selected companies that currently are drilling in the Pennsylvania study region. Job openings were obtained from the

⁵ SOI Tax Stats - County-to-County Migration Data
<http://www.irs.gov/taxstats/indtaxstats/article/0,,id=96816,00.html>

selected companies' websites, each of which posts jobs regularly. Included in the analysis is job title, required/desired years of experience, required/desired education, and compensation (when available in job announcement.). Originally, the information was to come from interviews and surveys from human resource professionals. Multiple contacts were made in several companies, an electronic survey was created and distributed, and appointments were made. In the end, every single company either canceled or did not respond despite original commitments.

Analysis of Business Composition Pre and Post Drilling in Key Areas

The local business analysis studied the changes in the number of establishments, types of establishments, and number of jobs patterns pre-post drilling in counties in Texas, Arkansas, Louisiana, and Oklahoma. A total of 16 counties were examined. Counties were chosen based on two criteria: their proximity to shale drilling and population. For each state, The Institute examined two “core” shale drilling counties (those with a high concentration of wells) and “non-core” counties (those with a lower number of wells or those adjacent to “core” counties). All data were obtained from the U.S. Census Bureau County Business Patterns. Pre-drilling is identified as 1998 and post drilling as 2007. The change is the percentage difference between the two in terms of overall establishments, types of establishments, and number of jobs. In some cases, data is considered inconclusive as the US Census has inserted letter codes which reflect ranges of jobs. This is done to protect specific company identities. A chart of codes is reflected below. Further, between 1998 and 2007, NAICS Codes were changed. The code “95” entitled auxiliary existed in 1998, but was absorbed into 55 Management of companies and enterprises as well as under specific industry headings prior to 2007. The change will show a 100% decrease in code 95.

Source: U.S. Census Bureau	
A	0-19 employees
B	20-99 employees
C	100-249 employees
E	250-499 employees
F	500-999 employees
G	1,000-2,499 employees
H	2,500-4,999 employees
I	5,000-9,999 employees
J	10,000-24,999 employees
K	25,000-49,999 employees
L	50,000-99,999 employees
M	100,000 or more employees
S	Withheld because estimate did not meet publication standards
D	Withheld to avoid disclosing data for individual companies data are included in higher level totals

Local Business Assessment

In addition, pre-drilling business patterns were obtained for the twelve counties in the Pennsylvania shale region. Pre-drilling is defined as 2007 County Business Patterns data. This will serve as the baseline for any longitudinal research in economic development. Further, all counties were examined for the same ten year period as non-Pennsylvania counties in order to evaluate trends and anomalies. All data were obtained from the U.S. Census Bureau's County Business Patterns. Counties were examined in three groups: "core", "tier one", and "adjacent." The information is subject to the same changes in industry codes and the letter keys as defined above.

Shale Plays

Fayetteville Shale (Arkansas)

The Fayetteville Shale Formation the current focus of a regional shale-gas exploration and development program within the eastern Arkoma Basin of Arkansas. Approximately 2.5 million acres have been leased in the Fayetteville Shale gas play with a cumulative production of 106 BCF since drilling began in 2004.⁶ 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. The Fayetteville Shale covers several counties in central and eastern Arkansas, including the counties of Cleburne, Conway, Faulkner, Independence, Johnson, St. Francis, Prairie, Van Buren, White, and Woodruff.⁷



Source: Arkansas Geological Survey

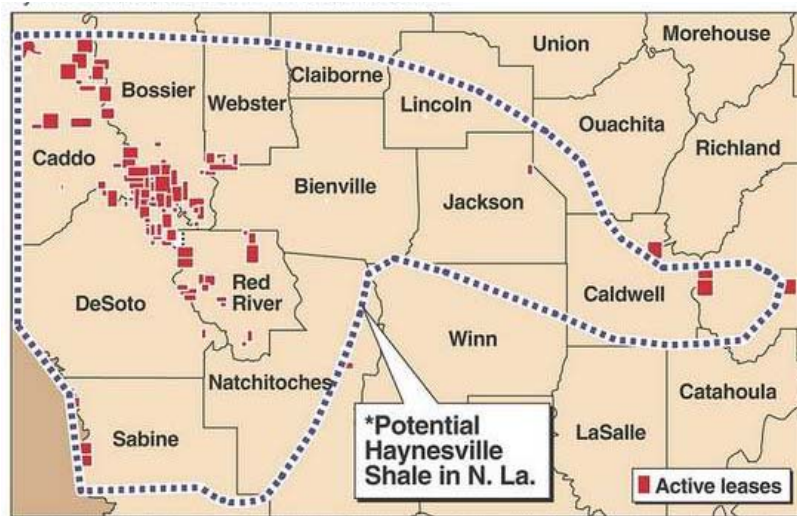
⁶ Arkansas Geological Survey

⁷ University of Arkansas. Projecting the Economic Impact of the Fayetteville Shale Play for 2005-2008.

Haynesville (Louisiana)

The Haynesville formation is a layer of sedimentary rock more than 10,000 feet below the surface of the Earth in the area of northwestern several energy companies have begun work in the area to explore the shale formation and drill for natural gas based on findings indicating a potentially large supply of gas trapped within some portions of the shale. The most active areas have been Caddo, Bienville, Bossier, DeSoto, Red River, and Webster parishes of Louisiana. The Haynesville Shale Play is still very much an unexploited natural gas reservoir, and thus, not much is known about its productive capacity.

In the first five years, it may add a total of over forty thousand jobs, and even after that period, new jobs would be in the order of 25,000 more compared to the case the Play is not developed at all. Disposable income [this is income after taxes] could increase by \$2 to \$3 billion dollars a year in the state as a whole. And state tax revenue would increase by at least \$150 million per year, with a higher increase [over \$200 million] in some of the first five years of the analysis [note: this tax revenue does *not* include the state revenue from severance tax and state royalty income].⁸



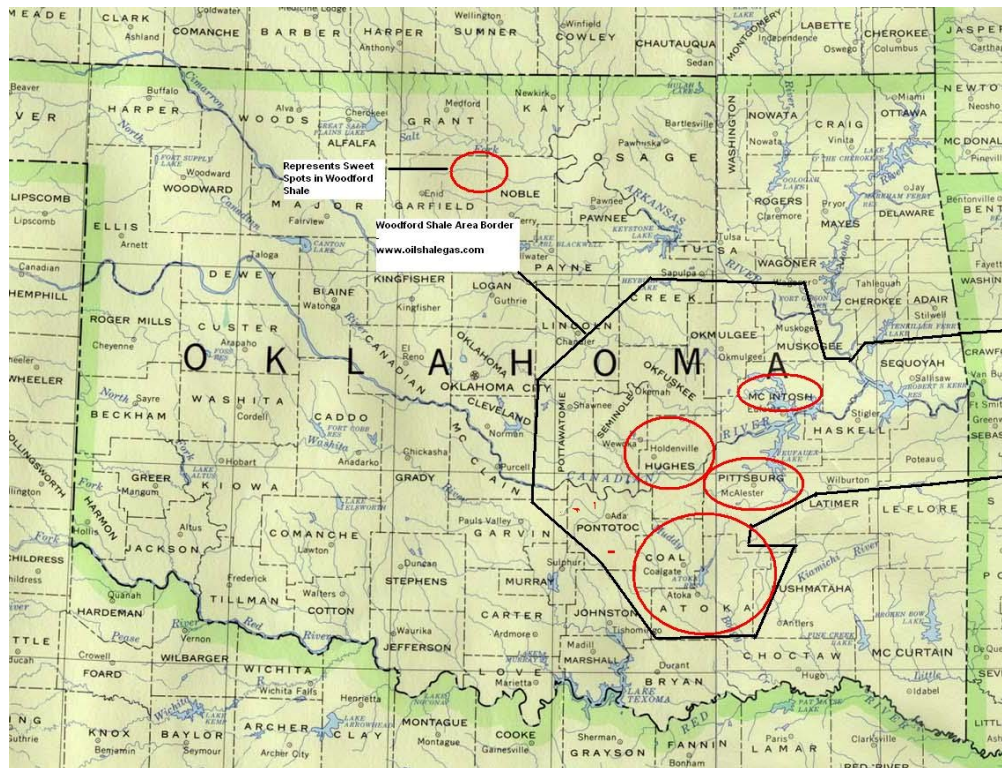
Source: State of Louisiana Mineral Board

Woodford Shale (Oklahoma)

The Woodford Shale play is currently unfolding in southeastern Oklahoma where drilling centers on Pittsburg, Coal, and Hughes counties. Like the Barnett and Fayetteville shales, the Woodford is not a new discovery. Geologists have long known this gas-saturated play existed, situated along a long fault line. Although the play is in its infancy, operators will benefit from the

⁸ An Economic Impact Analysis of the Haynesville Shale Natural Gas Exploration, Drilling and Production.

experience of the significant number of wells drilled in the Barnett Shale during the past 20 years. The more active Woodford players include Devon Energy and Newfield Exploration. About 100 wells have been drilled to the Woodford so far. Five were horizontal wells with lateral legs of 1,000 to 2,500 feet. Woodford wells are 6,000 to 11,000 feet deep and cost \$3.3 million on average to drill and complete with multiple fracs required. The gas-bearing shale section ranges from 120 to 200 feet thick. Estimates net potential in its acreage is between 2 trillion cubic feet equivalent on 80-acre spacing and 4 trillion on 40-acre spacing.⁹



Source: Oil and Shale Gas Discovery News

Barnett Shale (Texas)

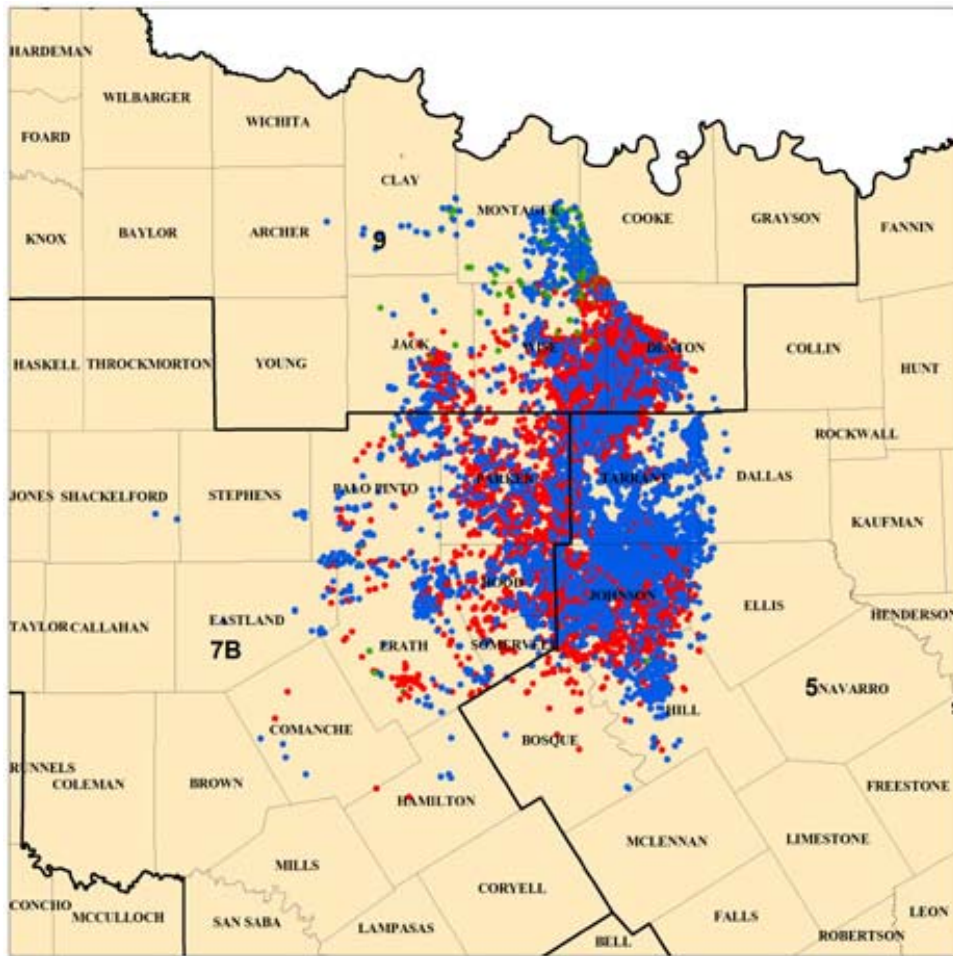
Barnett Shale is a hydrocarbon-producing geological formation of great economic significance to Texas. It consists of sedimentary rock and the productive part of the formation is estimated to stretch west and south from the City of Dallas, covering 5,000 square miles and at least eighteen counties. It is the nation's second largest producing on-shore domestic natural gas field.

Texas' Barnett Shale field, located in the Dallas/Fort Worth area, was discovered in 1981 by Mitchell Energy. It was only after improvements in recovery methods during the late 1990s that significant production became possible. When price increases in natural gas made recovery economically feasible, production in Barnett Shale accelerated markedly.

⁹ Oil and Gas Investor. January 2006.

The Dallas/Fort Worth area is one of the nation's largest gas production regions. According to an economic impact analysis of Barnett Shale, total natural gas production has grown sharply in recent years and has accounted for 12 percent of the state's 2006 total production. The development has produced a substantial number of businesses, leading to the creation of jobs and economic opportunities for thousands of area residents and companies. Retail sales taxes, occupancy taxes, and other sources of fiscal revenue have increased, as the enhanced level of aggregate performance spans a broad spectrum of sectors. These resources afford numerous opportunities for investments in overall community well-being. In addition, companies operating in the Barnett Shale have provided substantial time and monetary contributions to local charities.

Prior to the emergence of Barnett Shale, Fort Worth had established itself as one of Texas' largest cities and a major contributor to the state's overall business prosperity. It is also a central part of a dynamic urban region, the population of which recently exceeded six million. Its Barnett Shale is like 'icing on the cake' for an area already performing quite well, and once the Barnett Shale play is exhausted, many of its impacts and economic benefits will remain.



Source: Railroad Commission of Texas

Marcellus Shale (Pennsylvania)

Marcellus Shale, also referred to as the Marcellus Formation, is a Devonian-age black, low-density, carbonaceous (organic rich) shale. Located in the Appalachian Basin, it stretches over 600 miles from southern New York into West Virginia and Ohio. Gas distributed throughout the rock, like Marcellus Shale, is known as an unconventional reservoir. The shale's natural fractures are key to recovering large amounts of natural gas. Largely, Marcellus Shale exists a mile or more below the ground's surface.¹⁰ Successful wells must yield large volumes of natural gas to pay for drilling costs, which may exceed \$1 million for a traditional vertical well, and much more than that for a horizontal well with hydraulic fracturing.

Natural gas occurs within Marcellus Shale in three ways: 1) within the shale's pore spaces; 2) within vertical fractures (joints) that break through the shale; and 3) adsorbed on mineral grains. Of these likely occurrences, most natural gas is contained in pore spaces. The natural gas, however, has difficulty escaping through such spaces, as they are very small and poorly connected.¹¹

Historic Marcellus Shale wells produced gas at a very slow rate because of the low permeability mentioned above; this is typical for shale. However, the most successful historic Marcellus Shale wells share a common characteristic – they intersect numerous fractures. These fractures allow natural gas to flow through the rock unit and into the well bore. The fractures intersecting the well also intersect other fractures and those fractures intersect even more fractures. Thus, an extensive fracture network allows one well to drain natural gas from a very large shale volume.¹²

Marcellus Shale fractures are vertical, so a vertical borehole would be expected to intersect very few fractures. However, a horizontal well, drilled perpendicular to the most common fracture orientation, may intersect a maximum number of fractures. Some horizontal Marcellus Shale wells yield over a million cubic feet of natural gas per day. They are some of the most productive wells drilled in the eastern U.S. this decade.¹³

Past studies by the U.S. Geological Survey determined that Marcellus Shale contained an estimated undiscovered resource of about 1.9 trillion cubic feet (Tcf) of natural gas.¹⁴ More recently, however; Terry Englander, a geosciences professor at the Pennsylvania State University, and Gary Lash, a geology professor at the State University of New York at Fredonia, estimated that Marcellus Shale could contain 516 Tcf of natural gas. Using new horizontal drilling methods and hydraulic fracturing of the productive rock unit, up to 10 percent of that

¹⁰ Barnett Shale News

¹¹ <http://geology.com/articles/marcellus-shale.shtml>

¹² Ibid

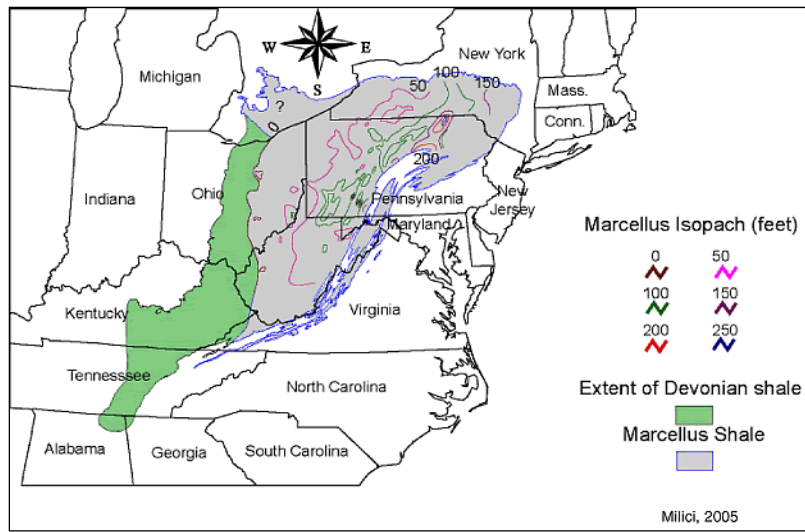
¹³ Ibid

¹⁴ <http://geology.com/articles/marcellus-shale.shtml>

natural gas may be recoverable. That volume would be enough to supply the entire U.S. for about two years, with a wellhead value of about \$1 trillion.¹⁵

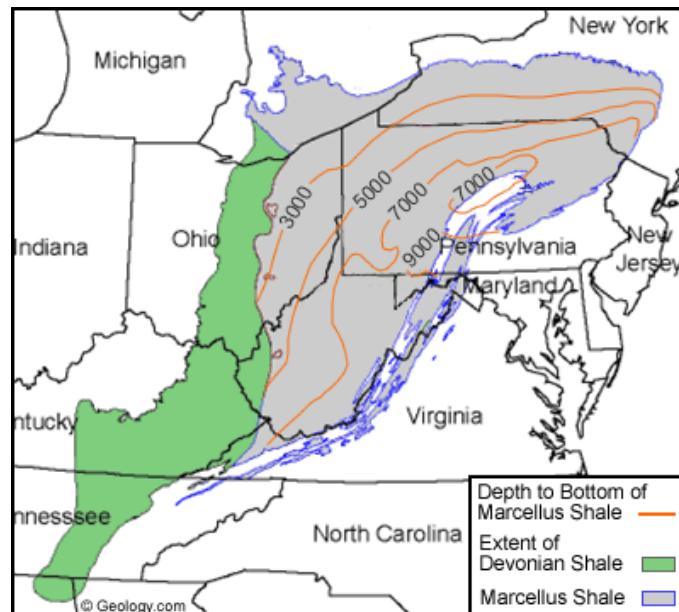
The figures below show the extent and depth of Marcellus Shale in New York, Pennsylvania, West Virginia, and Ohio. Clearly, there is a significant amount of Marcellus Shale at significant depths throughout northeastern Pennsylvania.

*The Distribution of Shale in the Appalachian Basin*¹⁶



Source: AAPG

The Depth of Shale in the Appalachian Basin



Source: AAPG

¹⁵ Penn State Live

¹⁶ <http://www.geosc.psu.edu/~engelder/AFS/AFSindex.html>

Demographic Introduction

Marcellus shale is organic-rich, black shale that was deposited in an oxygen-deficient marine environment during Middle Devonian time (390 million years ago).¹⁷ This shale holds pockets of natural gas – an inexpensive and plentiful energy source. While knowledge about this shale and the natural gas it holds developed in the early 1970s, a method to extract the natural gas was not available until 2000. The shale is buried so deep that conventional drilling is not an option, but a new horizontal drilling technique now makes the natural gas recoverable.

Other shale found in Arkansas, Louisiana, Oklahoma, and Texas have transformed regional economies in those states. All of the states are in various stages of drilling; in addition, all are demonstrating successes and failure in taxing, regulation, environmental management, road conditions, traffic management, social services, education and training, business development, population growth, public services and public safety. Regions within these states offer us the opportunity to not only identify best practices, but to measure and analyze change in workforce requirements and skills, as well as business composition relating to both the needs of the natural gas drilling industry and to ancillary industries and economic growth resulting from the drilling industry.

Opportunities exist in northeastern, central, and northern tier regions of Pennsylvania (referred to as the “Pennsylvania shale region” or the “Pennsylvania study region”) to direct workforce education and training, business attraction, expansion, and business creation based on the demands of the drilling industry and its employee base. This study assesses those needs, measures the changes, and identifies economic development opportunities. The study region is comprised of Lackawanna, Luzerne, Bradford, Wayne, Pike, Monroe, Carbon, Schuylkill, Susquehanna, Tioga, Sullivan, and Wyoming.

The Institute compiled a demographic analysis for select counties in five states and assesses the following demographic indicators: population, education, income, poverty level (individual and family), housing value and net migration.

The second analysis identifies the types of training programs offered at the secondary and post secondary levels, as well as customized training available for employees in the Arkansas, Louisiana, Oklahoma, and Texas drilling industries.

This study’s third analysis follows a career path pertaining to direct labor. As previously indicated, unconventional shale drilling creates significant employment opportunities; the career path details the jobs available and position requirements.

The Institute reviewed four case studies on pre- and post-drilling business compositions, including two in Arkansas (White County and Faulkner County) and two in Texas (Denton County and Wise County). The counties were selected based on their proximity to shale wells

¹⁷ http://www.dcnr.state.pa.us/topogeo/oilandgas/marcellus_shale.aspx

and populations. The studies point to significant improvements in multiple areas of the regional economies.

The fifth component of this study is a business composition analysis. Data on the study area's twelve counties for 2008 were obtained and compared by type and size, specifically identifying growth opportunities.

The study's final section includes recommendations on how to proceed for stakeholders with vested interest in Pennsylvania's Marcellus shale industry.

Demographic Analysis – Arkansas, Louisiana, Oklahoma, and Texas

A demographic analysis of several target areas from pre- and post-shale drilling in Arkansas, Louisiana, Oklahoma, and Texas provides a glimpse of the states' current populations, educational attainment levels, incomes, housing values and poverty levels. All data were obtained from the U.S. Census Bureau. Data from years 1990 and 2000 were derived from the respective Decennial Census, while data represented as 2008 were obtained from the U.S. Census Bureau's 2006-2008 American Community Survey Three-Year Estimate.

Population

Arkansas

Population levels in three of Arkansas' four study counties increased between 1990 and 2006-2008. Faulkner County's population increased 78%, Pope County's population increased 30%, and White County's population increased 36%. The counties considered core shale areas (Faulkner and White) experience the most significant growth.

Population: Arkansas Shale Counties			
	1990	2000	2008
Faulkner County	60,006	86,014	106,823
Independence County	31,192	34,233	34,641
Pope County	45,883	54,469	59,952
White County	54,676	67,165	74,845

Source: U.S. Census Bureau

Louisiana

Louisiana did not experience the same amount of population growth as Arkansas. DeSoto and Sabine parishes, both core shale areas, experienced minimal population increases between 2000 and 2006-2008, at -3.4% and .01% respectively. Caddo Parish, an adjacent shale area, also experienced minimal growth (.002%).

Population: Louisiana Shale Counties			
	1990	2000	2008
Caddo Parish	248,253	252,161	252,895
DeSoto Parish	25,346	25,494	26,388
Sabine Parish	22,646	23,459	23,688
Webster Parish	41,989	41,831	40,754
Source: U.S. Census Bureau			

Oklahoma

Oklahoma counties showed population fluctuations between 1990 and 2000, although both of its shale counties experienced population growth – with an 11% population increase in Pittsburg County and a 2.5% increase in Garfield County.

Population: Oklahoma Shale Counties			
	1990	2000	2008
Garvin County	26,605	27,210	27,247
Garfield County	56,735	57,813	58,167
Pittsburg County	40,581	43,953	45,115
Wagoner County	47,883	57,491	68,960
Source: U.S. Census Bureau			

Texas

Texas counties experienced significant population increases during the 1990 to 2006-2008 time period. As core shale areas, Denton County experienced an amazing 133% population increase, while Ellis County experienced a 73% population increase. Second tier shale areas also experienced population increases, with Cooke County showing a 24.8% growth, and Wise County showing a 68.7% growth since 1990.

Population: Texas Shale Counties			
	1990	2000	2008
Cooke County	30,777	36,363	38,407
Denton County	273,525	432,976	636,557
Ellis County	85,167	111,360	148,186
Wise County	34,679	48,793	58,506
Source: U.S. Census Bureau			

Educational Attainment

Arkansas

Each county in the designated shale area reported increases in the number of individuals with a high school education; the largest such increase was in Independence County, where the number of individuals with a high school education jumped 8.1% between 1990 and 2006-2008. In addition, Arkansas' percentage residents over age 25 with a Bachelor's degree increased, with Faulkner County experiencing the greatest such increase of 6.5%.

Educational Attainment: Arkansas Shale Counties												
	Faulkner County			Independence Co.			Pope County			White County		
	1990	2000	2008	1990	2000	2008	1990	2000	2008	1990	2000	2008
Less than 9th grade	11.1%	4.8%	4.4%	16.0%	9.5%	7.5%	15.1%	8.8%	7.7%	17.6%	10.7%	7.6%
9th to 12th grade, no diploma	16.5%	11.9%	7.7%	20.9%	15.0%	11.7%	18.4%	13.7%	10.7%	19.9%	16.4%	12.0%
High school graduate	32.4%	31.3%	33.5%	35.4%	39.7%	39.2%	30.6%	33.5%	36.5%	33.7%	35.7%	39.3%
Some college, no degree	18.6%	22.7%	22.1%	14.5%	19.1%	22.6%	18.1%	21.5%	21.2%	15.1%	17.7%	20.1%
Associate degree	3.5%	4.1%	6.3%	3.0%	2.9%	5.7%	3.1%	3.5%	4.2%	2.9%	4.0%	4.0%
Bachelor's degree	10.8%	16.7%	17.3%	6.8%	8.6%	8.2%	9.9%	12.8%	12.8%	6.8%	10.1%	10.2%
Graduate or professional degree	7.1%	8.5%	8.7%	3.5%	5.1%	5.0%	4.9%	6.2%	6.9%	4.1%	5.4%	6.9%

Source: U.S. Census Bureau

Louisiana

Louisiana counties experienced significant decreases in its percentage of individuals who did not graduate high school. Sabine County experienced the greatest decrease, with its percentage of individuals who did not graduate high school dropping from 19.4% in 1990 to 12.1% in 2006-2008. Likewise, Sabine County experienced the state's greatest increase in high school graduation rate.

Educational Attainment Louisiana Shale Counties												
	Caddo Parish			DeSoto Parish			Sabine Parish			Webster Parish		
	1990	2000	2008	1990	2000	2008	1990	2000	2008	1990	2000	2008
Less than 9th grade	10.1%	6.0%	4.7%	17.0%	10.3%	6.7%	18.6%	10.6%	7.1%	16.1%	9.8%	6.3%
9th to 12th grade, no diploma	16.5%	15.3%	12.4%	19.1%	19.4%	14.0%	19.4%	18.5%	12.1%	19.9%	19.4%	18.4%
High school graduate	30.9%	32.2%	35.2%	38.1%	40.6%	41.6%	39.8%	40.9%	48.1%	35.6%	35.9%	38.8%
Some college, no degree	20.6%	22.2%	21.0%	14.1%	16.6%	19.7%	11.7%	16.4%	17.8%	15.9%	18.4%	19.7%
Associate degree	3.7%	3.7%	5.1%	2.3%	2.8%	4.4%	2.0%	2.5%	3.0%	2.4%	3.9%	4.0%
Bachelor's degree	12.1%	13.5%	13.6%	6.3%	7.0%	9.2%	5.0%	6.9%	9.0%	7.0%	8.5%	8.7%
Graduate or professional degree	6.2%	7.0%	8.0%	3.2%	3.2%	4.3%	3.4%	4.2%	2.9%	3.0%	4.1%	4.1%

Source: U.S. Census Bureau

Oklahoma

Oklahoma counties experienced very similar changes in terms of educational attainment. However, Wagoner County experienced a decrease in its percentage of high school graduates, which dropped from 35.8% in 2000 to 33% in 2006-2008.

Educational Attainment : Oklahoma Shale Counties												
	Garfield County			Garvin County			Pittsburg County			Wagoner County		
	1990	2000	2008	1990	2000	2008	1990	2000	2008	1990	2000	2008
Less than 9th grade	8.3%	5.4%	3.5%	16.6%	10.5%	7.7%	15.8%	8.9%	5.6%	9.1%	4.4%	4.4%
9th to 12th grade, no diploma	15.2%	12.4%	10.7%	20.0%	16.5%	14.1%	19.9%	14.8%	12.1%	16.2%	14.3%	7.9%
High school graduate	36.4%	35.6%	37.3%	35.6%	40.4%	44.2%	31.3%	36.5%	38.8%	35.3%	35.8%	33.0%
Some college, no degree	18.5%	22.2%	19.7%	15.4%	17.9%	15.2%	17.1%	20.0%	19.8%	22.3%	23.7%	25.6%
Associate degree	4.3%	4.9%	6.7%	2.3%	2.8%	3.5%	5.7%	6.9%	7.6%	5.1%	6.3%	8.6%
Bachelor's degree	11.9%	13.0%	15.8%	6.5%	8.2%	11.5%	6.3%	8.5%	11.2%	8.6%	11.4%	15.8%
Graduate or professional degree	5.4%	6.6%	6.2%	3.6%	3.8%	3.8%	4.0%	4.4%	5.0%	3.4%	4.1%	4.7%

Source: U.S. Census Bureau

Texas

Two of the Texas shale counties experienced decreases in their percentage of high school graduates; while Denton County experienced a high school graduate decrease of 1.4% from 1990 to 2006-2008, it experienced an increase in the percentage of residents achieving a Bachelor's and graduate or professional degrees.

Educational Attainment: Texas Shale Counties												
	Cooke County			Denton County			Ellis County			Wise County		
	1990	2000	2008	1990	2000	2008	1990	2000	2008	1990	2000	2008
Less than 9th grade	12.6%	7.5%	7.6%	4.9%	4.1%	4.0%	11.3%	8.4%	6.6%	13.1%	8.3%	7.3%
9th to 12th grade, no diploma	15.8%	13.3%	9.5%	8.3%	6.6%	5.7%	17.0%	13.8%	11.2%	19.7%	15.7%	13.1%
High school graduate	30.4%	31.5%	32.0%	21.7%	19.9%	20.3%	33.2%	30.8%	31.5%	33.7%	34.8%	35.7%
Some college, no degree	22.6%	25.2%	23.5%	26.4%	26.1%	25.0%	20.7%	24.6%	24.0%	19.9%	23.5%	23.3%
Associate degree	6.7%	6.8%	7.7%	6.5%	6.7%	6.9%	4.5%	5.3%	6.6%	3.5%	4.8%	6.0%
Bachelor's degree	7.2%	10.4%	15.0%	23.3%	26.6%	27.2%	9.6%	12.4%	14.6%	7.5%	9.2%	9.9%
Graduate or professional degree	4.6%	5.3%	4.8%	9.0%	10.0%	10.9%	3.8%	4.7%	5.4%	2.5%	3.8%	4.7%

Source: U.S. Census Bureau

Median Household Income

Arkansas

Median household income in each of the Arkansas counties studied increased during each year examined. The largest increase occurred in Pope County (adjacent shale county), which experienced a 19.7% jump in median household income between 2000 and 2006-2008.

Median Household Income: Arkansas Shale Counties			
	1990	2000	2008
Faulkner County	23,663	38,204	43,641
Pope County	22,326	32,069	39,941
Independence County	20,208	31,920	35,583
White County	19,722	32,203	38,835

Source: U.S. Census Bureau

Louisiana

Louisiana also experienced increases in median household income. Core shale parishes experienced the most significant increases. Sabine Parish experienced a 25% increase, the largest increase recorded, followed by DeSoto Parish, with a 24.6% increase.

Median Household Income: Louisiana Shale Counties			
	1990	2000	2008
Caddo Parish	22,395	31,467	35,422
DeSoto Parish	16,315	28,252	37,480
Sabine Parish	16,790	26,655	35,046
Webster Parish	18,716	28,408	35,612
Source: U.S. Census Bureau			

Oklahoma

The median household income in the Oklahoma counties studied increased during each year examined. The largest increase occurred in Garfield County, where median household income jumped 21.2% from 2000 to 2006-2008.

Median Household Income: Oklahoma Shale Counties			
	1990	2000	2008
Garfield County	23,243	33,006	41,907
Garvin County	18,659	28,070	50,062
Pittsburg County	18,906	28,679	40,165
Wagoner County	28,544	41,744	54,233
Source: U.S. Census Bureau			

Texas

Texas counties also experienced median household income increases from 2000 to 2006-2008. The largest increase occurred in Wise County, where median household income rose 26.6%, followed by Denton County, which experienced a 20.1% jump.

Median household Income: Texas Shale Counties			
	1990	2000	2008
Cooke County	24,525	37,649	50,384
Denton County	36,914	58,216	73,275
Ellis County	30,553	50,350	59,932
Wise County	25,885	41,933	57,123
Source: U.S. Census Bureau			

Poverty Level

Arkansas

The poverty level in Arkansas counties decreased in 2000, yet increased in nearly all years studied, including in 2006-2008. In 2006-2008, Faulkner County's poverty levels of 16.3% for individuals (the highest of all four counties) and 11.4% for families were actually higher than its 1990 poverty levels. White County recorded the highest poverty rates among families in all years examined, however unlike the other counties, its 2006-2008 level (12.8%) did not exceed its 1990 level (14.7%).

Poverty Level: Arkansas Shale Counties												
	Faulkner			Independence			Pope County			White County		
	1990	2000	2008	1990	2000	2008	1990	2000	2008	1990	2000	2008
All Persons	13.8%	12.5%	16.3%	17.1%	13.0%	14.0%	15.4%	15.2%	16.6%	18.7%	14.0%	16.2%
Families	9.8%	7.9%	11.4%	13.2%	9.9%	9.6%	12.5%	11.6%	12.4%	14.7%	10.4%	12.8%

Source: U.S. Census Bureau

Louisiana

From 2000 to 2006-2008, the percentage of individuals and families with incomes below the poverty level fluctuated in each Louisiana parish studied. The largest decrease occurred in Desoto Parish, which saw an -7.2% change in its poverty level between 2000 and 2006-2008.

Poverty Level : Louisiana Shale Counties												
	Caddo Parish			DeSoto Parish			Sabine Parish			Webster Parish		
	1990	2000	2008	1990	2000	2008	1990	2000	2008	1990	2000	2008
All Persons	24.0%	21.1%	22.1%	29.8%	25.1%	17.9%	27.1%	21.5%	20.6%	25.1%	20.2%	19.9%
Families	19.1%	17.1%	17.0%	24.5%	21.0%	16.4%	21.4%	16.3%	17.0%	20.2%	15.3%	16.6%

Source: U.S. Census Bureau

Oklahoma

Poverty levels in the Oklahoma counties examined decreased in 2000, only to increase in 2006-2008 and in nearly all of the years studied. Among the four counties examined, Garfield County reported the highest percentage of individuals below the poverty level at 18.2% for individuals and 15.0% for families. The county also experienced the greatest increase in those falling below poverty level between 2000 and 2006-2008.

Poverty Level: Oklahoma Shale Counties												
	Garfield County			Garvin County			Pittsburg County			Wagoner County		
	1990	2000	2008	1990	2000	2008	1990	2000	2008	1990	2000	2008
All Persons	14.1%	13.9%	18.2%	19.7%	15.9%	16.2%	19.6%	17.2%	14.9%	12.2%	8.9%	13.0%
Families	11.1%	10.5%	15.0%	15.3%	11.4%	13.6%	15.8%	13.6%	9.6%	9.4%	6.7%	10.0%

Source: U.S. Census Bureau

Texas

The percentage of individuals and families that fell below poverty level in each of the Texas counties studied also fluctuated. The largest increase occurred in Ellis County, who experienced a 3% increase between 2000 and 2006-2008. The largest decrease in poverty level occurred in Cooke County (-2%) from 2000 to 2006-2008.

Poverty Level: Texas Shale Counties												
	Cooke County			Denton County			Ellis County			Wise County		
	1990	2000	2008	1990	2000	2008	1990	2000	2008	1990	2000	2008
All Persons	16.4%	14.1%	12.1	8.2%	6.6%	7.5%	12.6%	8.6%	11.6%	14.0%	9.9%	8.5%
Families	12.9%	10.9%	12.5	4.5%	4.1%	4.5%	10.3%	6.8%	9.2%	11.1%	7.5%	6.4%

Source: U.S. Census Bureau

Median Housing Value

Arkansas

Housing values in each of the Arkansas counties studied increased in each year examined. The largest increase occurred in Faulkner County, where housing values grew 26.4% between 2000 and 2006-2008.

Housing Values: Arkansas Shale Counties			
	1990	2000	2008
Faulkner County	55,400	92,900	126,200
Independence County	40,600	64,300	79,200
Pope County	48,000	71,100	94,000
White County	43,200	72,100	91,100

Source: U.S. Census Bureau

Louisiana

Housing values the Louisiana parishes also increased during each year examined. The largest increase occurred in Caddo Parish, where housing values grew 41.4% between 2000 and 2008; in DeSoto Parish, housing values grew 34.3% between 2000 and 2008.

Housing Values - DeSoto Parish			
	1990	2000	2008
Caddo Parish	55,000	75,100	106,200
DeSoto Parish	39,400	58,100	78,000
Sabine Parish	37,800	61,400	72,300
Webster Parish	40,600	57,200	69,100

Source: U.S. Census Bureau

Oklahoma

Housing values in each of the Oklahoma counties examined increased during each year studied. The largest increase occurred in Garvin County, where housing values grew 35.9% between 2000 and 2006-2008. Garfield County recorded the least household income growth at 27.1%.

Housing Values: Oklahoma Shale Counties			
	1990	2000	2008
Garfield County	38,000	58,800	80,700
Garvin County	32,800	45,400	70,800
Pittsburg County	34,700	53,400	83,000
Wagoner County	58,300	89,800	131,400
Source: U.S. Census Bureau			

Texas

Housing values the Texas counties examined increased in 2000 and 2006-2008. The largest increase occurred in the Ellis County, where housing values increased 33.6%, followed closely by Cooke County, where housing values increased 33.3%.

Housing Values: Texas Shale Counties			
	1990	2000	2008
Cooke County	47,700	73,100	109,600
Denton County	89,100	133,200	178,100
Ellis County	67,900	91,400	137,700
Wise County	49,700	89,100	120,200
Source: U.S. Census Bureau			

Migration

Arkansas In-Migration Data

The four Arkansas counties studied in this report display a range of migration patterns. The sizes and impacts vary from the larger Faulkner County, with a total in-migration of 36,777 over ten years, to the smaller Independence County, with total in-migration of 7,768 during the same time period. The table below shows that all of the counties essentially experienced a doubling of in-migration. By breaking the data into two periods, we can better observe changes that occurred during the most recent five years. These figures represent the number of persons who moved into the respective county listed from the most prominent Arkansas locations. Findings suggest that the regions' shale industry resulted in positive in-migration.

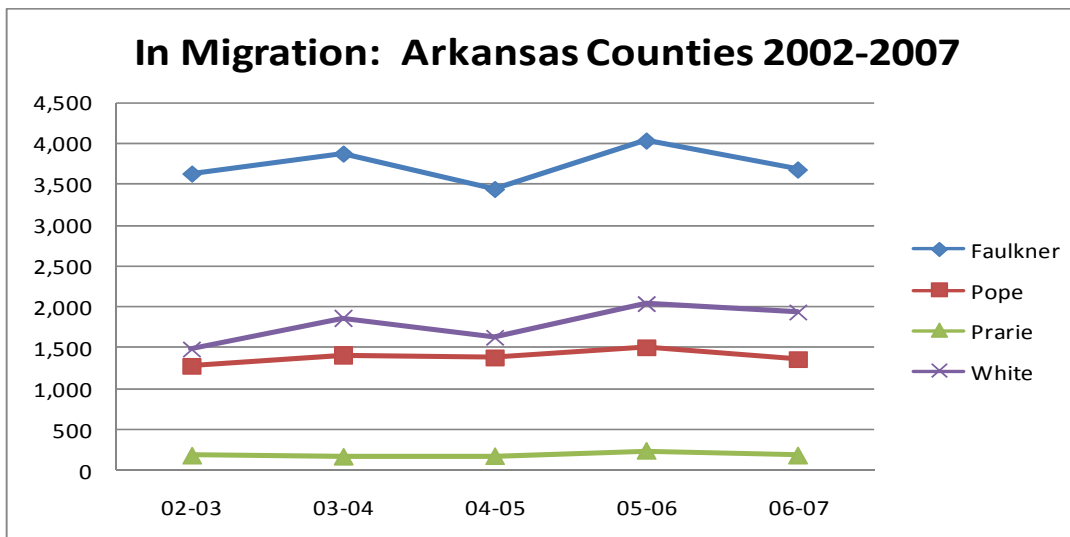
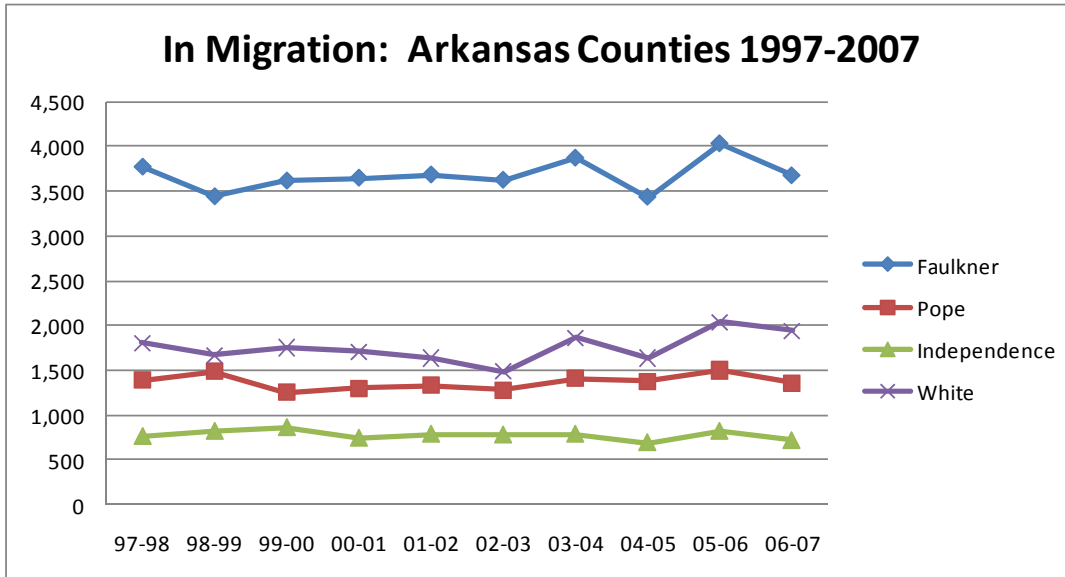
In-Migration: Arkansas Counties			
1997-2007		2002-2007	
Faulkner	36,777	Faulkner	18,629
Pope	13,677	Pope	6,920
Independence	7,768	Independence	3,793
White	17,535	White	8,963

From 1997 to 2007, over half of Faulkner, Pope, Independence, and White Counties' in-migration drew from other Arkansas counties; from 2002 to 2007, this trend continued and Arkansas counties accounted for even more of the share of the total in-migration. Outside of Arkansas, the counties studied drew most of their in-migrants from Texas, Tennessee, and Oklahoma.

In-Migration: All Counties			
1997-2007		2002-2007	
Faulkner	59,822	Faulkner	29,293
Pope	28,426	Pope	14,184
Independence	16,415	Independence	8,501
White	34,872	White	17,013

Trends may be further examined by studying the fluctuation of inward migration among individual counties. Aside from Arkansas, the second most popular state of origin is Texas. Faulkner and White Counties experienced substantial in-migration growth from Texas. From 1997 to 1998, Faulkner County drew 85 migrants from Texas. By 2006 to 2007, that number jumped to 169. White County also drew an increasing number of in-migrants from Texas. However, its in-migrants from Texas decreased from 65 in the 1997 to 1998 period to 20 from 2006 to 2007. Pope County also drew in-migrants from Texas, but the numbers of such remained inconsistent over the ten-year-period.

It is therefore concluded that while Texas is key to Arkansas in-migration, impacts vary from Arkansas county to county. The segment of this report pertaining to Texas further delves into migration details.



When looking at the impact of Arkansas counties from 1997 to 2007, different in-migration trends are evident. The 1997 to 2007 graph shows that while in-migration in Pope and Independence Counties remained about even, in-migration in Faulkner and White Counties fluctuated quite a bit. Such fluctuations likely flowed from migration patterns of various regions, which had too small of an impact to include in the migration data.

This table below details total in-migration for each county examined over the ten-year-period from 1997 to 2007. All four counties experienced decreasing in-migration over the first years, followed by increases beginning in 2000-2001. Because of Independence County's significantly smaller size, it is more difficult to notice that county's trends.

Total Migration: All Counties				
	Faulkner	Pope	Independence	White
97-98	5,956	3,013	1,780	3,628
98-99	5,860	3,012	1,691	3,200
99-00	5,770	2,784	1,688	3,395
00-01	5,852	2,682	1,631	3,466
01-02	5,855	2,693	1,711	3,324
02-03	5,762	2,496	1,603	3,160
03-04	6,148	2,807	1,679	3,581
04-05	5,677	2,866	1,534	3,463
05-06	6,590	3,123	1,660	3,906
06-07	6,352	2,950	1,438	3,749
Total	59,822	28,426	16,415	34,872

Based on the counties' in-migration trends, it can be concluded that:

- Faulkner County, the largest of the four counties studied, experienced the greatest in-migration swings.
- While the number of in-migrants changed little during some years, in other years, particularly the final five examined, it altered greatly.
- All of these counties Faulkner, Pope, Independence, and White County experienced steady changes in growth and decline in terms of migration into the respective county.
- From 2006 to 2007, all four counties experienced lower in-migration than in the prior year, which was particularly evident in Independence County.

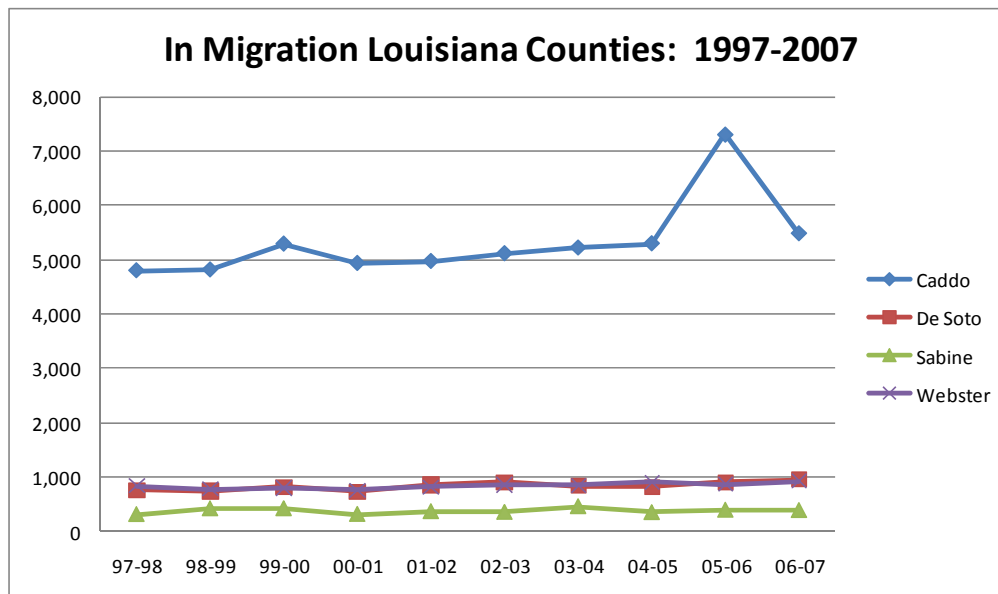
Louisiana Migration Data

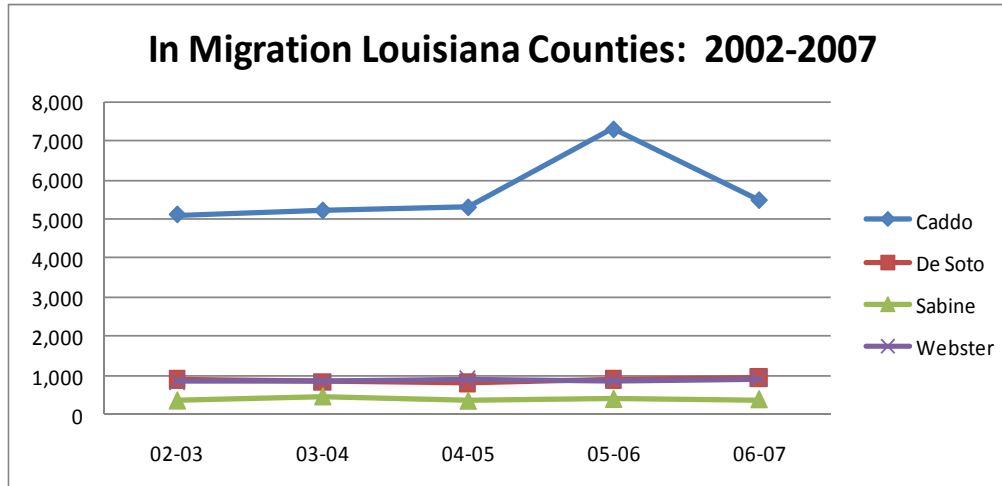
Data for Louisiana counties examined are fairly similar to the Arkansas counties. Caddo Parish, which is sufficiently larger than the other three in this study, recorded 53,172 in-migrants from other counties within Louisiana over the ten years examined. Like the Arkansas counties, the increase of in-migrants was greater during the study's final five years examined. About 53.4% of the total in-migration from within Louisiana occurred between 2002 and 2007. Sabine Parish, which is much smaller in size, recorded 3,731 in-migrants from other Louisiana counties, over half of which migrated during the second half of the ten-year period examined.

In Migration: Louisiana Counties			
1997-2007		2002-2007	
Caddo	53,172	Caddo	28,395
De Soto	8,264	De Soto	4,396
Sabine	3,731	Sabine	1,918
Webster	8,333	Webster	4,362

Examining total in-migration from all counties, the significant impact of in-migration from Louisiana counties is evident – comprising roughly half of the total migration over the ten years examined. From 1997 to 2007, Caddo Parish had 103,079 in-migrants from all over the country and from some foreign areas. Interestingly, less than 48% of Caddo Parish’s total migration over the ten-year-period occurred between 2002 and 2007. This points to a significant number of migrants from outside of Louisiana. De Soto, Sabine, and Webster Parishes maintained roughly the same patterns, with Louisiana counties contributing about half or just slightly less than half of total migration. Outside of Louisiana, the counties examined drew the most in-migrants from Texas, Tennessee and Florida.

In Migration: All Counties			
1997-2007		2002-2007	
Caddo	103,079	Caddo	49,484
De Soto	13,119	De Soto	6,422
Sabine	8,563	Sabine	4,202
Webster	16,632	Webster	8,247





The table below presents no significant patterns, as in-migrants vary from year to year. Webster Parish experienced sinking in-migration until 2001 to 2002, when in-migration drastically increased over the prior year. Sabine Parish experienced slight increases and decreases each year. De Soto Parish remained fairly stable during each year over the ten-year period.

Total Migration: All Counties				
	Caddo	De Soto	Sabine	Webster
97-98	9,888	1,182	863	1,732
98-99	9,896	1,260	889	1,651
99-00	10,225	1,340	859	1,579
00-01	9,684	1,244	792	1,547
01-02	9,791	1,396	799	1,738
02-03	9,978	1,320	877	1,586
03-04	10,643	1,321	893	1,715
04-05	10,550	1,289	845	1,677
05-06	12,052	1,355	902	1,765
06-07	10,372	1,412	844	1,642
Total	<i>103,079</i>	<i>13,119</i>	<i>8,563</i>	<i>16,632</i>

Oklahoma Migration Data

Oklahoma's Garfield, Garvin, Pittsburg, and Wagoner Counties exhibited a far different pattern of in-migration than the Arkansas and Louisiana counties studied. From 1997 to 2007, Wagoner County (the largest county examined) recorded a total of 49,710 in-migrants, 36,465 of who came from other Oklahoma counties. While the in-migration from within the respective

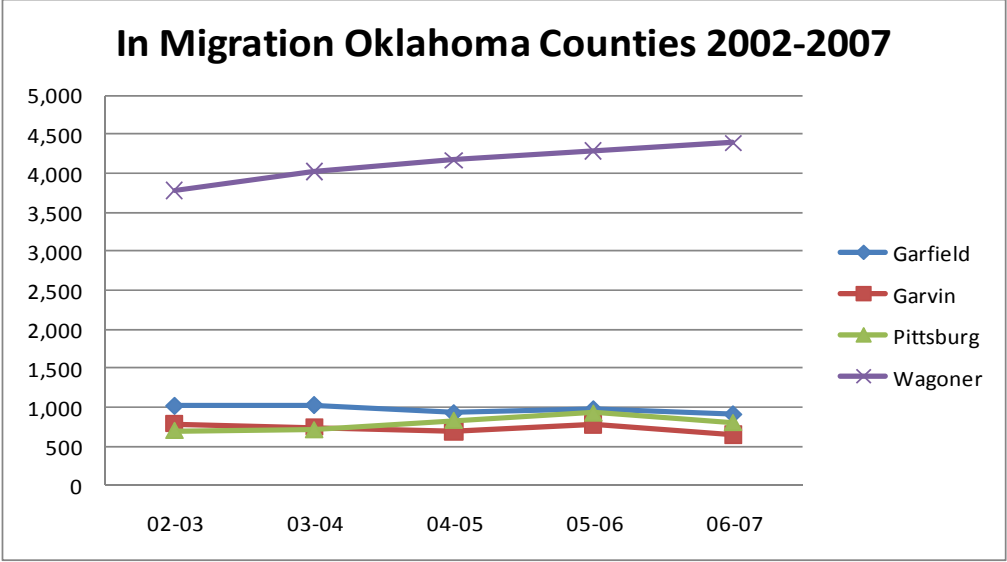
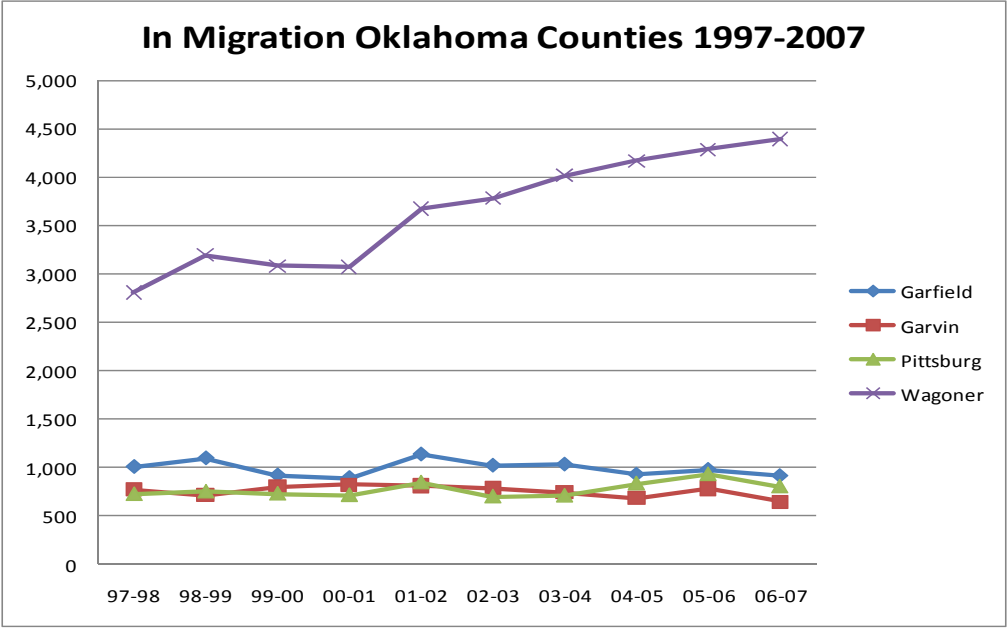
state examined in the previous two sections comprised about half of all in-migration over the ten-year period, the table below details how Oklahoma trends are a bit different.

In Migration: Oklahoma Counties			
1997-2007		2002-2007	
Garfield	9,889	Garfield	4,853
Garvin	7,553	Garvin	3,638
Pittsburg	7,702	Pittsburg	3,959
Wagoner	36,465	Wagoner	20,642

Looking at total in-migrants from throughout the country allows for a broader understanding of where Oklahoma in-migrants originated. About half of Garfield, Garvin, and Pittsburg Counties' in-migration occurred during the final five years examined; approximately 44% of Wagoner County's in-migrants also arrived during the same timeframe. This shows that despite whether in-migration increased or decreased within the state, migration from within the state still accounted for about half of all in-migration. Out-of-state migration to the Oklahoma counties examined largely came from Texas, Arizona and Florida.

In Migration: All Counties			
1997-2007		2002-2007	
Garfield	31,903	Garfield	16,354
Garvin	15,194	Garvin	7,989
Pittsburg	19,821	Pittsburg	9,895
Wagoner	49,710	Wagoner	22,290

In order to understand the state's overall in-migration, we look at how numbers fluctuated within individual Oklahoma Counties. Garfield, Garvin and Pittsburg Counties drew most in-migrants from within Oklahoma and a few from Texas; migrants from Texas comprise the second highest contributor to each state examined.



It is difficult to make a single assumption that fits all of the counties in this study. Garfield County’s in-migration patterns increased and decreased subtly each year; Garvin County experienced a period of in-migration growth, followed by slight decreases each year; Pittsburg County’s in-migration fluctuated between increases and decreases of about 200 people each year; Wagoner County is the only county that exhibited overall in-migration growth, which substantially spiked from 2005 to 2006.

Total Migration: All Counties				
	Garfield	Garvin	Pittsburg	Wagoner
97-98	3,352	1,558	1,831	4,174
98-99	3,503	1,526	2,145	4,416
99-00	3,105	1,728	1,961	4,381
00-01	3,083	1,523	1,768	4,377
01-02	3,311	1,654	2,190	4,942
02-03	3,061	1,470	1,965	4,894
03-04	3,173	1,387	1,870	5,069
04-05	3,051	1,452	1,987	5,557
05-06	3,200	1,462	2,147	5,902
06-07	3,064	1,434	1,957	5,998
Total	<i>31,903</i>	<i>15,194</i>	<i>19,821</i>	<i>49,710</i>

Based on this information, we can conclude:

- In-migration growth is relatively stable among Garfield, Garvin, and Pittsburg counties, although future in-migration is unclear.
- Wagoner County has had experienced greater in-migration in each of the last four years examined, most of which came from other Oklahoma counties.

Texas Migration Data

Understanding Texas' in-migration patterns is different from Arkansas, Louisiana and Oklahoma. Because of its much larger size and economic attraction, Texas is more likely to draw many people from different areas. Nonetheless, in-state migrants remain a significant part of total in-migration. Since there is a significant difference in size of Texas counties examined, it is difficult to make comparisons, although when broken down, certain similarities may be drawn.

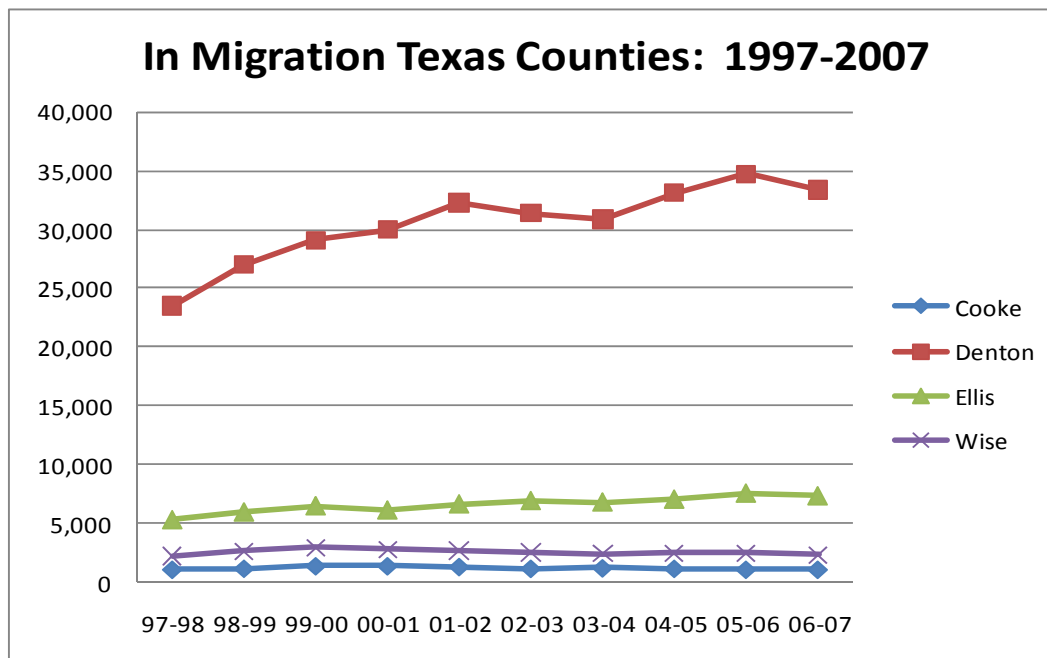
In Migration: Texas Counties			
1997-2007		2002-2007	
Cooke	12,127	Cooke	5,739
Denton	305,241	Denton	163,451
Ellis	66,442	Ellis	35,733
Wise	25,559	Wise	12,278

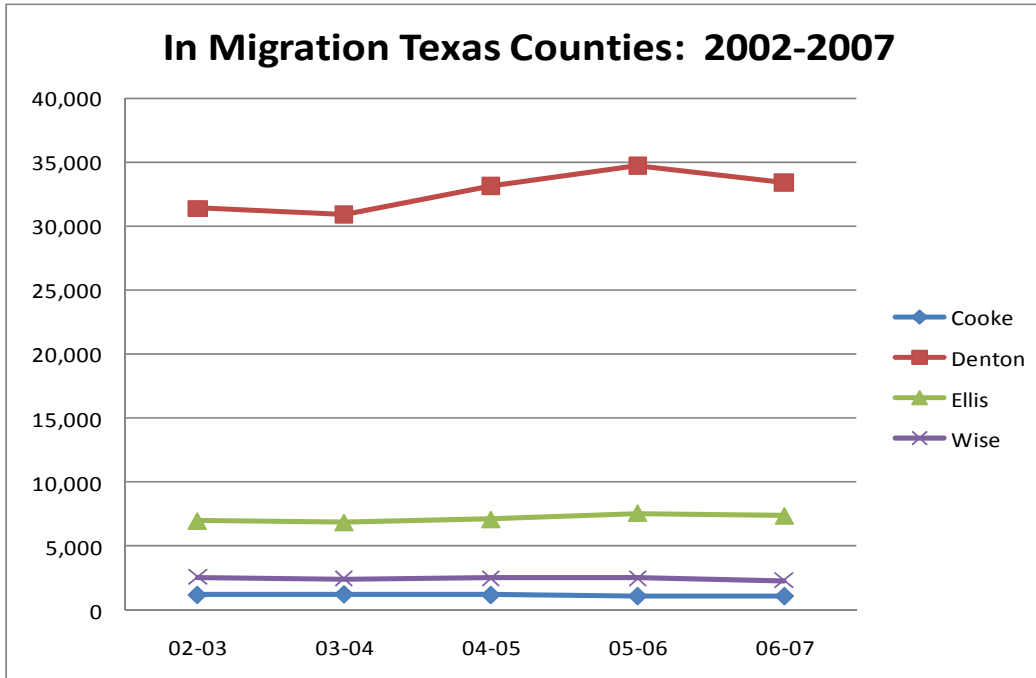
The counties examined are of relatively different sizes, and the final five years examined for each do not show similar trends. For example, in the final five years studied, only about 56% of in-migrants to Cooke County came from other Texas counties, compared with 73% of in-

migration to Ellis County. At any rate, each of these counties had far greater in-migration from 2002 to 2007 than the counties in the other three states examined.

In Migration: All Counties			
1997-2007		2002-2007	
Cooke	21,321	Cooke	11,061
Denton	455,561	Denton	212,314
Ellis	90,073	Ellis	42,037
Wise	37,799	Wise	18,934

The graphs below help us to understand why Texas counties have experienced more in-migrants in the last five years examined. Part of the logic may be the overwhelmingly large size of Texas. And while the counties studied have drawn the majority of in-migrants from within the state, Denton County recorded in-migrants from all over the country, including foreign lands. People who previously resided in other parts of the southern U.S. and the Mid-West appear more inclined to move into Denton County.





The table below details the total number of in-migrants to each county examined from all locations. From 2002 to 2003, Cooke, Denton, and Wise Counties all recorded fewer in-migrants than the prior year. In the following years, each of the counties experienced inconsistent in-migration patterns. From 2004 to 2005, all of the counties except Cooke County experienced in-migration growth over the prior year. Denton County's in-migration skyrocketed that year and the next.

Total Migration: All Counties				
	Cooke	Denton	Ellis	Wise
97-98	1,985	37,116	7,561	3,292
98-99	2,202	41,145	8,287	3,757
99-00	2,263	42,683	8,819	4,129
00-01	2,298	45,252	8,507	3,927
01-02	2,313	46,118	8,863	3,829
02-03	2,017	44,132	9,033	3,813
03-04	2,165	43,510	8,894	3,621
04-05	2,095	48,936	9,439	3,906
05-06	2,022	54,577	10,339	3,826
06-07	1,961	52,092	10,331	3,699
Total	21,321	455,561	90,073	37,799

Demographic Analysis - Pennsylvania

Although Pennsylvania’s shale play is in its infancy, it has tremendous potential. Experts have said the Marcellus shale is larger than any of the country’s previous unconventional gas reservoirs.

This section details the demographics of the Pennsylvania shale region. Since drilling just began in 2007 in the counties examined, all data report on pre-drilling periods.

Carbon, Monroe, Pike, and Wayne Counties were the only counties to experience population increases between 2000 and 2008. Such increases are likely due to in-migration from New York and New Jersey. All of the core shale counties experienced population declines.

Population: Pennsylvania Shale Counties		
	2000	2008
Bradford	62,761	61,233
Carbon	58,802	63,558
Lackawanna	213,295	209,408
Luzerne	319,250	311,983
Monroe	138,687	165,058
Pike	46,302	59,664
Schuylkill	150,336	147,254
Sullivan	6,556	6,124
Susquehanna	42,238	40,831
Tioga	41,373	40,574
Wayne	47,722	52,016
Wyoming	28,080	27,759
Source: U.S. Census Bureau		
Core	Tier 1	Adjacent

Educational Attainment

Each of Pennsylvania’s core shale counties made strides in educational attainment levels. Most counties experienced increases in their percentage of high school graduates and decreases in anything less than a high school diploma. Each county also experienced increases in the percentage of individuals with some college as well as those who earned an Associate’s, Bachelor’s, or graduate or professional degrees. Lackawanna, Susquehanna and Wyoming Counties each experienced a 1.2% increase in the number of residents with Associate’s degrees. Lackawanna County experienced the greatest increase in individuals with Bachelor’s degrees (1.7%), while Wayne County experienced the greatest increase in those with graduate or professional degrees (1.9%).

Educational Attainment: Pennsylvania Core Shale Counties										
	Bradford		Lackawanna		Susquehanna		Wayne		Wyoming	
	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008
Less than 9th grade	5.0%	4.3%	5.2%	3.9%	4.5%	3.2%	5.4%	2.5%	3.9%	2.5%
9th to 12th grade, no diploma	13.3%	11.3%	12.8%	8.8%	13.0%	10.5%	13.9%	9.3%	12.4%	8.2%
High school graduate	47.1%	48.6%	40.6%	40.0%	47.2%	46.3%	43.5%	44.0%	45.3%	47.9%
Some college, no degree	13.7%	13.9%	15.2%	16.6%	15.4%	16.8%	17.0%	17.8%	16.3%	17.5%
Associate degree	6.0%	6.8%	6.6%	8.2%	6.6%	8.4%	5.7%	6.9%	6.7%	7.2%
Bachelor's degree	8.9%	9.8%	12.4%	14.1%	8.0%	8.9%	8.8%	12.0%	9.8%	10.9%
Graduate or professional degree	5.9%	5.5%	7.2%	8.3%	5.2%	5.8%	5.7%	7.6%	5.6%	5.9%

Source: U.S. Census Bureau

Pennsylvania's adjacent shale counties experienced similar changes, which are expected since the region is so interconnected. Nearly all counties examined experienced higher rates of high school graduates, and every county experienced increases in higher education attainment levels. Carbon County experienced the greatest increase in those with Associate's degrees (2.8%), while Pike County experienced the most substantial increase in those with Bachelor's degrees (3.7%). Schuylkill County experienced the greatest increase in those with graduate or professional degrees, which grew from 3.7% in 2000 to 5.3% in 2006-2008.

Educational Attainment: Pennsylvania Adjacent Shale Counties										
	Carbon		Luzerne		Monroe		Pike		Schuylkill	
	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008
Less than 9th grade	6.1%	3.4%	5.9%	3.9%	3.7%	2.5%	2.5%	2.1%	6.6%	5.2%
9th to 12th grade, no diploma	14.8%	9.8%	13.1%	9.5%	12.4%	8.9%	10.7%	7.0%	16.3%	12.2%
High school graduate	47.9%	48.8%	41.4%	42.4%	38.7%	39.4%	41.2%	40.2%	48.3%	47.4%
Some college, no degree	13.9%	15.5%	16.4%	16.3%	18.7%	18.2%	20.3%	20.5%	12.4%	13.3%
Associate degree	6.3%	9.1%	6.9%	8.2%	5.9%	8.2%	6.3%	7.7%	5.8%	8.0%
Bachelor's degree	7.2%	8.7%	10.4%	12.9%	13.5%	15.2%	12.2%	15.9%	7.0%	8.6%
Graduate or professional degree	3.7%	4.6%	6.0%	6.8%	7.0%	7.6%	6.7%	6.6%	3.7%	5.3%

Source: U.S. Census Bureau

Because Sullivan County did not meet the population requirements for the U.S. Census Bureau's American Community Survey Three-Year Estimate, 2006-2008 data were not available. Tioga County experienced a decrease in high school graduates, yet increases in higher education attainment levels; the county experienced a 1.9% increase in those with Associate's degrees and a 2.6% increase in those with Bachelor's degrees. In addition, the county's percentage of residents with a graduate or professional degree increased by 1.3% between 2000 and 2006-2008.

Educational Attainment: Pennsylvania Tier 1 Shale Counties				
	Sullivan		Tioga	
	2000	2008	2000	2008
Less than 9th grade	6.4%	n/a	5.1%	4.2%
9th to 12th grade, no diploma	15.7%	n/a	14.5%	10.3%
High school graduate	45.6%	n/a	44.6%	43.5%
Some college, no degree	13.5%	n/a	15.3%	15.8%
Associate degree	6.1%	n/a	6.3%	8.2%
Bachelor's degree	7.2%	n/a	8.5%	11.1%
Graduate or professional degree	5.6%	n/a	5.7%	7.0%

Source: U.S. Census Bureau

Median Household Income

Median household income increased in each of Pennsylvania's core shale counties. Wyoming County experienced the greatest increase of 31%, followed by Susquehanna and Wayne Counties, both of which experienced a 28.9% jump in median household income. Wyoming County reported the highest median household income for 2006-2008 at \$47,617.

Median Household Income: PA Core Shale Counties		
	2000	2008
Bradford	35,038	38,475
Lackawanna	34,438	42,126
Susquehanna	33,622	43,330
Wayne	34,082	43,947
Wyoming	36,365	47,617

Source: U.S. Census Bureau

Pennsylvania's adjacent shale counties also experienced median household income increases across the board. Carbon County reported a 33.1% increase, followed by a 28.6% increase in Schuylkill County. For 2006-2008, Pike County reported the highest household income at \$56,679, followed by Monroe County at \$55,187.

Median Household Income: PA Adjacent Shale Counties		
	2000	2008
Carbon	35,113	46,727
Luzerne	33,771	42,388
Monroe	46,257	55,187
Pike	44,608	56,679
Schuylkill	32,699	42,041

Source: U.S. Census Bureau

In 2000, Sullivan County reported a median household income of \$30,279. Tioga County experienced a 21.3% increase in income between 2000 and 2006-2008.

Median Household Income: PA Tier 1 Shale Counties		
	2000	2008
Sullivan	30,279	n/a
Tioga	32,020	38,836
Source: U.S. Census Bureau		

Poverty Level

Nearly all counties in Pennsylvania's core shale area experienced increases in individual and family poverty rates, although from 2000 to 2006-2008, Wayne County experienced a decline in family poverty rate, which dropped from 8.4% to 8%. Wyoming County also experienced declining poverty rates, which dropped from 10.2% to 9.5% for individuals and from 7.8% to 6.6% for families.

Poverty Level: Pennsylvania Core Shale Counties										
	Bradford		Lackawanna		Susquehanna		Wayne		Wyoming	
	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008
All Person	11.8%	15.5%	10.6%	13.1%	12.3%	11.6%	11.3%	11.9%	10.2%	9.5%
Families	9.0%	11.7%	7.0%	9.3%	8.9%	9.5%	8.4%	8.0%	7.8%	6.6%
Source: U.S. Census Bureau										

Each of Pennsylvania's adjacent shale counties experienced increases in the percentage of individuals below the poverty level. Luzerne County experienced the highest poverty levels for individuals and families in 2000 and in 2006-2008. The county also experienced the largest increase for families living below the poverty level (1.5%). Schuylkill County followed with the second highest poverty rate, and experienced the greatest increase in individuals living below poverty level (3%).

Poverty Level: Pennsylvania Adjacent Shale Counties										
	Carbon		Luzerne		Monroe		Pike		Schuylkill	
	2000	2008	2000	2008	2000	2008	2000	2008	2000	2008
All Person	9.5%	11.1%	11.1%	13.1%	9.0%	10.0%	6.9%	8.1%	9.5%	12.5%
Families	6.8%	8.6%	8.1%	9.6%	6.2%	6.9%	5.1%	7.3%	6.7%	8.8%
Source: U.S. Census Bureau										

Of all counties within Pennsylvania's shale area, Sullivan County reported the highest individual poverty level for 2000. Tioga County reported the shale area's highest percentage of people below the poverty level for 2006-2008, where a total of 15.8% of all individuals and 12.6% of all families were below the poverty level.

Poverty Level: Pennsylvania Tier 1 Shale Counties				
	Sullivan		Tioga	
	2000	2008	2000	2008
All Person	14.5%	n/a	13.5%	15.8%
Families	7.4%	n/a	9.3%	12.6%
Source: U.S. Census Bureau				

Housing Values

Wayne County reported the highest housing value (\$169,400) among Pennsylvania's core shale counties for 2006-2008; the county also experienced the largest increase in housing values since 2000 (39.7%). Susquehanna reported the second greatest increase in its median housing value (33.2%) for 2006-2008; Wyoming County followed with the third greatest increase (31.6%) and the second highest median housing value (\$137,300).

Housing Values: PA Core Shale Counties		
	2000	2008
Bradford	73,900	95,200
Lackawanna	93,400	132,400
Susquehanna	81,800	122,400
Wayne	102,100	169,400
Wyoming	93,900	137,300
Source: U.S. Census Bureau		

Pike County reported the highest median housing value for 2006-2008 (\$215,900) and experienced the greatest increase – 45.2%. Monroe County followed closely in both categories, with a median housing value of \$209,100 and an increase of 40.1% from 2000 to 2006-2008.

Housing Values: PA Adjacent Shale Counties		
	2000	2008
Carbon	82,100	134,600
Luzerne	84,800	110,800
Monroe	125,200	209,100
Pike	118,300	215,900
Schuylkill	63,300	84,500
Source: U.S. Census Bureau		

In 2000, Sullivan County's median housing value was \$74,900. Tioga County experienced a 27.1% increase in its median housing value, which grew from \$72,000 in 2000 to \$98,800 in 2006-2008.

Housing Values: PA Tier 1 Shale Counties		
	2000	2008
Sullivan	74,900	n/a
Tioga	72,000	98,800
Source: U.S. Census Bureau		

Demographic & Migration Summary

Arkansas, Louisiana, Oklahoma, and Texas

Arkansas experienced population increases between 1990 and 2006-2008, with its core shale counties experiencing the most growth. While Louisiana did not experience the same level of population growth as Arkansas, its core shale parishes experienced minimal population increases between 2000 and 2008. Oklahoma counties experienced population fluctuations between 1990 and 2000. Texas counties experienced significant population increases during each year examined.

Arkansas and Louisiana experienced decreases in those with less than a high school education and increases in the percentage of individuals with a high school education. Oklahoma counties saw similar changes; however, one county – Wagoner - experienced a decrease in its percentage of high school graduates. Texas counties experienced a decrease in the percentage of individuals with a high school diploma, and an increase the percentage of those with Bachelor’s and graduate/professional degrees.

Median household income increased in each of the states studied; Arkansas experienced increases as high as 20%, while Louisiana experienced increases up to 25%. Oklahoma and Texas followed, with increases over 20%.

Arkansas counties experienced poverty level decreases in 2000, only to the experience increases in 2008 during nearly all years examined. Faulkner County reported the highest percentage of individuals below the poverty level - 16.3%, while White County reported the highest percentage of families below the poverty level - 12.8%; White County did not exceed its 1990 poverty level of 14.7%. The percentage of individuals/families that fell below the poverty level in each of the Louisiana parishes studied fluctuated. DeSoto Parish saw the largest decrease with a -7.2% change between 2000 and 2006-2008. Oklahoma and Texas counties also experienced poverty level decreases in 2000, followed by increases in 2006-2008 and in nearly all years examined.

The median housing value in each of the states studied increased in each year examined. Arkansas experienced median housing value increases as high as 19.7% (Pope County) between 2000 and 2006-2008, while Louisiana experienced increases as high as 25.5% (DeSoto Parish). The median household income in each of Oklahoma County examined increased during each

year studied. The largest increase occurred in Wagoner County, which experienced a 31.7% increase between 2000 and 2006-2008. The smallest increase occurred in Garfield County (27.1%). Housing values Texas increased in 2000 and 2006-2008. The greatest increase occurred in Ellis County (33.6%), followed closely by Cooke County (33.3%).

It should be noted that there is no way to pinpoint exactly how much of the positive or negative changes resulted from unconventional shale drilling.

This report studies in-migration patterns in four states: Arkansas, Louisiana, Oklahoma, and Texas. The study further breaks down in-migration by studying patterns of four counties within each state. A common factor shared by each county, and which is the basis of this study, is that all have been impacted by shale drillings. This report studies the number of people who migrate into the respective counties during each year over a ten-year-period – from 1997 to 2007. Over the ten years, several changes occurred, but patterns do exist among the counties and states examined.

The migration data in this report was provided by the Internal Revenue Service (IRS) and allows for the tracking of people as they move from one place to another. It details the number of people who moved from a specific location and where they moved to on a county-by-county basis. By researching this data, The Institute can conclude that each of the counties in the four states experienced overall in-migration increases. Not surprisingly, most in-migrants to the counties examined originated from counties within the respective state examined or nearby.

This report highlights patterns and fluctuations in number of people who migrate into each respective county. The data include both charts and graphs that detail each state's results. To emphasize the impact of counties within each respective state, some tables are broken down to include only migrants from largely represented counties *within the respective state*. The study also includes charts for each state that point to the two counties with the largest impacts on in-migration to the counties examined.

This report concludes that while most of in-migration draws from within the state examined, the number of people who migrated into the counties examined has consistently grown.

Given the economic conditions and sizes of Pennsylvania's counties, it is likely that Marcellus Shale drillings will initiate more in-migration to designated counties, both from within the Commonwealth and from surrounding areas. It will be interesting to see how Pennsylvania's in-migration figures change after the shale industry further develops. Based on the impact of drillings within the four states examined within this study, in-migration will either grow each year, or it will essentially balance out (as seen in Cooke County, TX). The Institute's focus will be on Lackawanna and Luzerne Counties - studying in-migrants to determine a critical impact of the shale drillings.

Pennsylvania

Pre-drilling demographic data provides a snapshot of the twelve Pennsylvania counties examined in this study. Changes from 2000 to 2006-2008 were documented in order to provide background information and show that the area has experienced both negative and positive changes since 2000. Carbon, Monroe, Pike, and Wayne Counties were the only counties in the Pennsylvania study area to experience population increases between 2000 and 2006-2008. Nine of the twelve counties experienced population decreases since 2000, and for most this trend has occurred for several decades.

The study region has been making impressive advancements in the area of educational attainment. Nearly every county experienced increases in those with some college, as well as those who earned Associate's, Bachelor's, or graduate or professional degrees. Carbon County experienced the greatest increase in those with Associate's degrees (2.8%), while Pike County experienced the most substantial increase in those with Bachelor's degrees (3.7%). Schuylkill County experienced the greatest increase in those with graduate or professional degrees, which grew from 3.7% in 2000 to 5.3% in 2006-2008.

Median household income also increased in each Pennsylvania County examined. Carbon County experienced a 33.1% increase in household income, the largest increase among the tier one counties, while Wyoming County experienced the largest increase of the core shale counties with 31%.

Individuals and families living in poverty is a vital indicator used to determine a region's economic health. Nearly every county in the study area experienced increases in the percentage of individuals and families living in poverty. Among the tier one shale counties, Luzerne County experienced the highest poverty levels for individuals and families in 2000 and 2006-2008. Tioga County experienced the highest percentage of individuals living below the poverty level for 2006-2008, where 15.8% of all persons and 12.6% of all families were below the poverty level.

Housing values are also a critical economic indicator. All Pennsylvania counties examined experienced increased housing values over the time frame studied. Pike County reported the highest median housing value for 2006-2008 (\$215,900), and experienced the largest increase (45.2%) in housing values over the period examined.

County Business Patterns

The County Business Patterns report is a product of the US Census Bureau that measures establishments by NAICS (North American Industry Classification System) code, number of employees by size of firm, and payrolls. There was a change in the classification codes during

the study period. In 1998, there was a category “95 – Auxiliaries (Executive Corporate, Subsidiary, and Regional Management). By 2007, this category was absorbed. In the 1998 - 2002 CBP reports, corporate, subsidiary, and regional managing offices were tabulated in NAICS Sector 55. All other auxiliaries were tabulated in NAICS 95. Starting with the 2003 CBP, corporate, subsidiary, and regional managing offices are still published in NAICS Sector 55, but the other auxiliaries are tabulated in the industry of the service performed. The other auxiliaries were coded into ten separate NAICS classifications listed in the auxiliary section of the 1997 [Bridge Between NAICS and SIC](#) [PDF 2.0mb]. Empty cells in the table of establishments by number of jobs reflects “0” jobs.

Some of the data is inconclusive because the US Census Bureau may attempt to provide confidentiality for some employers when the number of establishments is low. Data is then coded using the key below. The data in the tables that may be coded in either the pre- or post year is presented with the appropriate letter code separated by a “-”. “ These numbers reflected actual numbers are not percentage changes. In other areas of the table the percentage change from pre-drilling (1998) and post drilling (2007) is displayed. All states used for comparison have four counties presented, two are core shale and two are adjacent counties. These will help to reflect the geographical layout of the 12 county Pennsylvania study region which comprises both core and adjacent. The Pennsylvania Counties data also shows the change over the 10 year period in order to reflect any trends that may have occurred due to other factors. The 2007 data is presented by county as the baseline for “pre” drilling purposes. This can be used to track longitudinal differences as the shale play matures.

Key

Source: U.S. Census Bureau	
A	0-19 employees
B	20-99 employees
C	100-249 employees
E	250-499 employees
F	500-999 employees
G	1,000-2,499 employees
H	2,500-4,999 employees
I	5,000-9,999 employees
J	10,000-24,999 employees
K	25,000-49,999 employees
L	50,000-99,999 employees
M	100,000 or more employees
S	Withheld because estimate did not meet publication standards
D	Withheld to avoid disclosing data for individual companies data are included in higher level totals

Louisiana

DeSoto Parish (County), Louisiana

DeSoto County in Louisiana is home to 375 businesses and while that number did not change from pre-drilling (1998) to “post” drilling (2007), their composition of business did change. Obviously, the number of mining businesses increased and with that so did retail, information, health care and social assistance, accommodations, and food services and other services.

There were nine mining establishments in 1998 employing approximately 200 people. By 2007, however, that number increased to 12 and employed over 325 people. First quarter payrolls and annual payrolls showed dramatic annual increases from 1998 to 2006. From 2006 – 2007, the increases were more modest.

Increases in the number of establishments and employment in retail, accommodations and food services, health care and social assistance can be expected with population increases. From 2003 to 2004, the overall number of jobs in all industries increased from 4,449 to 5,046. From that point on, it decreased slightly every year and by 2007, was 4,379 — an increase of 21 from 1998 - 2007). The manufacturing sector was primarily responsible for the growth of jobs. Establishments increased slightly during the period, but hovered in the 365-375 range.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	0%	45%	33%	0%
11----	Forestry, fishing, hunting, and agriculture support	-55%	-34%	-37%	17%
21----	Mining	64%	179%	110%	33%
22----	Utilities	-10%	64%	44%	0%
23----	Construction	E	D	D	4%
31----	Manufacturing	-20%	14%	8%	0%
42----	Wholesale trade	-81%	-75%	-82%	-53%
44----	Retail trade	25%	79%	71%	8%
48----	Transportation & warehousing		127%	136%	-13%
51----	Information	B	D	D	17%
52----	Finance & insurance	-8%	23%	21%	-6%
53----	Real estate & rental & leasing	-84%	-89%	-73%	-25%
54----	Professional, scientific & technical services	87-B	26%	11%	-12%
55----	Management of companies & enterprises	A-B	D	D	0%
56----	Admin, support, waste mgt, remediation services	95-C	446-D	1787-D	-22%
61----	Educational services	B	D	D	0%
62----	Health care and social assistance	17%	82%	85%	14%
71----	Arts, entertainment & recreation	A	D	D	0%
72----	Accommodation & food services	45%	61%	101%	6%
81----	Other services (except public administration)	-4%	4%	6%	10%
99----	Unclassified establishments	A	D	D	-50%

Aside from retail and administrative, support, waste management and remediation classifications most of the job growth occurred in small firms (less than 50 employees with the bulk of it being in the under 19 category.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	1000 or more
-----	Total	0%	-2%	3%	4%	-4%	29%	-20%	100%	-100%	0%
11----	Forestry, fishing, hunting, and agriculture support	17%	29%	0%		-100%	-100%				0%
21----	Mining	33%	0%	50%	33%	100%		0%			0%
22----	Utilities	0%	-17%	50%	0%	0%		0%			0%
23----	Construction	4%	4%	0%	14%	0%					0%
31----	Manufacturing	0%	75%	0%	-50%	-100%		0%	100%	-100%	0%
42----	Wholesale trade	-53%	-53%	0%	-100%		-100%				0%
44----	Retail trade	8%	12%	-6%	8%	-13%	400%	-100%			0%
48----	Transportation & warehousing	-13%	-14%	-40%	-50%	200%					0%
51----	Information	17%	0%	0%	0%						0%
52----	Finance & insurance	-6%	-15%	33%	50%	-50%					0%
53----	Real estate & rental & leasing	-25%	67%	-67%	-100%		-100%				0%
54----	Professional, scientific & technical services	-12%	-5%	0%	-100%	-100%					0%
55----	Management of companies & enterprises	0%	-50%	0%							0%
56----	Admin, support, waste mgt, remediation services	-22%	-43%			0%	100%				0%
61----	Educational services	0%				0%					0%
62----	Health care and social assistance	14%	0%	40%	25%	100%	-50%	0%			0%
71----	Arts, entertainment & recreation	0%	0%	0%							0%
72----	Accommodation & food services	6%	0%	-33%	100%	-50%					0%
81----	Other services (except public administration)	10%	14%	18%	-100%						0%
99----	Unclassified establishments	-50%	-50%								0%

Caddo County, Louisiana

Caddo, Louisiana had similar results, while the number of establishments showed some fluctuations during the period. Job growth increased from 106,000 in 1998 to 113,000 in 2006. There was a slight decrease in 2007. The number of mining jobs increased, second only to transportation and warehousing. Other jobs in the healthcare and hospitality showed increases. The professional, scientific, and technical jobs also showed a tremendous increase in jobs.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	6%	33%	36%	1%
11----	Forestry, fishing, hunting, and agriculture support	C-B	D	D	-56%
21----	Mining	51%	120%	173%	-3%
22----	Utilities	H-G	D	D	-16%
23----	Construction	-21%	26%	5%	-2%
31----	Manufacturing	-18%	-4%	3%	1%
42----	Wholesale trade	-10%	21%	23%	-22%
44----	Retail trade	1%	39%	37%	-6%
48----	Transportation & warehousing	99%	172%	167%	17%
51----	Information	-29%	0%	2%	41%
52----	Finance & insurance	-9%	46%	40%	-2%
53----	Real estate & rental & leasing	14%	71%	56%	12%
54----	Professional, scientific & technical services	43%	93%	83%	8%
55----	Management of companies & enterprises	4%	13%	56%	-6%
56----	Admin, support, waste mgt, remediation services	-10%	6%	5%	4%
61----	Educational services	5%	72%	75%	11%
62----	Health care and social assistance	33%	65%	67%	22%
71----	Arts, entertainment & recreation	-45%	-64%	-63%	-2%
72----	Accommodation & food services	49%	135%	133%	7%
81----	Other services (except public administration)	0%	27%	22%	-2%
99----	Unclassified establishments	71-A	S	-80%	-87%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	417 (1998)			

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	1%	-2%	1%	9%	1%	14%	-3%	13%	-50%	83%
11----	Forestry, fishing, hunting, and agriculture support	-56%	-61%	-38%	-75%	-50%					
21----	Mining	-3%	-26%	43%	38%	33%	400%	0%			
22----	Utilities	-16%	-44%	200%	100%	-80%	500%	-50%	-100%	-100%	
23----	Construction	-2%	9%	-20%	-18%	36%	-27%	-57%	-100%		
31----	Manufacturing	1%	6%	-11%	17%	-4%	29%	0%	-50%	-60%	100%
42----	Wholesale trade	-22%	-29%	-20%	-4%	-32%	-17%	200%	0%	0%	
44----	Retail trade	-6%	-12%	-4%	7%	-4%	0%	-12%	300%	0%	
48----	Transportation & warehousing	17%	21%	-7%	40%	10%	-11%	100%			
51----	Information	41%	79%	64%	71%	-36%	25%	33%	-67%		
52----	Finance & insurance	-2%	-4%	11%	-21%	33%	-14%	0%	-100%		
53----	Real estate & rental & leasing	12%	6%	17%	55%	-10%	300%	-33%			
54----	Professional, scientific & technical services	8%	8%	-11%	22%	54%	60%	-50%	-100%	0%	
55----	Management of companies & enterprises	-6%	22%	-60%	-33%	50%	-50%	-50%			
56----	Admin, support, waste mgt, remediation services	4%	1%	33%	35%	-13%	-47%	0%	-33%	-100%	
61----	Educational services	11%	9%	-36%	83%	25%	33%	0%		-100%	
62----	Health care and social assistance	22%	15%	26%	32%	15%	26%	35%	150%	-33%	0%
71----	Arts, entertainment & recreation	-2%	26%	-17%	-12%	-39%	-20%	0%			-100%
72----	Accommodation & food services	7%	1%	-15%	21%	2%	67%	-33%			
81----	Other services (except public administration)	-2%	-5%	15%	-7%	-9%	-22%	17%	0%		
99----	Unclassified establishments	-87%	-88%	-75%							
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)										

Sabine County, Louisiana

Sabine County has seen very little change in most categories. The 250% increase of real estate and leasing firms demonstrates an increase from four establishments to 14. Under the Administrative, Support et al category there is an 86% increase in establishments with employees increasing from 41 to 100-249(C). Finance business increased from 26-38. Overall, the total number of establishments increased by ten.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll	Annual payroll (\$1,000)	Total Establishments
-----	Total	-6%	30%	34%	2%
11----	Forestry, fishing, hunting, and agriculture support	-41%	-8%	-3%	-15%
21----	Mining	61-B	245-D	847-D	0%
22----	Utilities	A	D-174	D-582	0%
23----	Construction	33%	131%	88%	34%
31----	Manufacturing	-26%	21%	35%	-14%
42----	Wholesale trade	6%	533-S	21%	0%
44----	Retail trade	-7%	24%	28%	-10%
48----	Transportation & warehousing	-12%	1%	7%	19%
51----	Information	-39%	-38%	-37%	-50%
52----	Finance & insurance	307-E	1746-D	7274-D	46%
53----	Real estate & rental & leasing	600%	1700%	1520%	250%
54----	Professional, scientific & technical services	66%	238%	282%	38%
55----	Management of companies & enterprises	B-A	D	D	-67%
56----	Admin, support, waste mgt, remediation services	41-C	868%	900%	86%
61----	Educational services	A-0	D-0	D-0	-100%
62----	Health care and social assistance	7%	28%	42%	11%
71----	Arts, entertainment & recreation	50-A	-51%	-71%	-33%
72----	Accommodation & food services	13%	46%	43%	-32%
81----	Other services (except public administration)	6%	37%	26%	-13%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	A-0	D-0	D-0	-100%
99----	Unclassified establishments	A-0	D-0	D-0	-100%

In review of the annual data, Sabine shows gradual increases in most types of establishments and some decreases. While some of the percentages seem unusually high, the raw numbers are small.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	2%	3%	10%	-10%	-14%	67%	-29%	0%		
11----	Forestry, fishing, hunting, and agriculture suppo	-15%	-5%	17%	-54%	-67%					
21----	Mining	0%	14%		-100%	0%					
22----	Utilities	0%	0%	0%							
23----	Construction	34%	32%	50%	0%	0%					
31----	Manufacturing	-14%	-25%	0%	0%	33%	0%	-67%	0%		
42----	Wholesale trade	0%	-13%	0%	50%	0%					
44----	Retail trade	-10%	-5%	-36%	14%	0%	0%	0%			
48----	Transportation & warehousing	19%	19%	14%	100%			-100%			
51----	Information	-50%	-60%	-33%	-67%	0%					
52----	Finance & insurance	46%	64%	83%	-80%			-100%			
53----	Real estate & rental & leasing	250%	150%								
54----	Professional, scientific & technical services	38%	40%	-50%	200%	-100%					
55----	Management of companies & enterprises	-67%	-100%		-100%	-100%					
56----	Admin, support, waste mgt, remediation service	86%	125%	-50%	0%						
61----	Educational services	-100%	-100%								
62----	Health care and social assistance	11%	-25%	100%	60%						
71----	Arts, entertainment & recreation	-33%	-33%	0%							
72----	Accommodation & food services	-32%	-42%	-67%	-57%						
81----	Other services (except public administration)	-13%	-22%	11%	50%						
95----	Auxiliaries (exc corporate, subsidiary & regional	-100%	-100%								
99----	Unclassified establishments	-100%	-100%	-100%							

Webster County, Louisiana

Webster County, Louisiana is very similar to Sabine County in that the changes are small and gradual. There was not a big impact from drilling in any particular area. Mining establishments and employees increased as did healthcare and social assistance, but the other types of industries decreased. Over the entire period Webster increased its business base by 14 companies.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	11%	53%	55%	-2%
11----	Forestry, fishing, hunting, and agriculture support	-21%	-9%	-20%	-29%
21----	Mining	27%	96%	84%	108%
22----	Utilities	A-B	D-376	D-1818	-11%
23----	Construction	28%	144%	141%	-8%
31----	Manufacturing	8%	39%	36%	-23%
42----	Wholesale trade	-17%	17%	27%	-14%
44----	Retail trade	12%	52%	53%	-11%
48----	Transportation & warehousing	-46%	-32%	-11%	-13%
51----	Information	109-B	815-D	3238-D	-27%
52----	Finance & insurance	-7%	26%	34%	0%
53----	Real estate & rental & leasing	45%	194%	170%	9%
54----	Professional, scientific & technical services	53%	-3%	5%	11%
55----	Management of companies & enterprises	B	D-302	D-1303	0%
56----	Admin, support, waste mgt, remediation services	153%	465%	458%	44%
61----	Educational services	710B	194-D	812-D	0%
62----	Health care and social assistance	13%	46%	51%	15%
71----	Arts, entertainment & recreation	63-B	-33%	-33%	-22%
72----	Accommodation & food services	13%	55%	49%	7%
81----	Other services (except public administration)	26%	84%	92%	-1%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	B-0	D-0	D-0	4-0
99----	Unclassified establishments	5-A	15-D	60-D	-75%

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	-2%	-9%	0%	25%	6%	-24%	14%	67%	-100%	
11----	Forestry, fishing, hunting, and agriculture support	-29%	-25%	-43%	0%	0%					
21----	Mining	108%	100%	150%	500%	0%	0%				
22----	Utilities	13%	-13%								
23----	Construction	-8%	-4%	-12%	-14%	-50%	-25%	50%			
31----	Manufacturing	-23%	-42%	20%	-63%	-13%	0%	0%	100%	-100%	
42----	Wholesale trade	-14%	-10%	-17%	0%	-17%	-50%				
44----	Retail trade	-11%	-22%	4%	-7%	-27%	67%	-50%			
48----	Transportation & warehousing	-13%	-38%	133%	100%	-33%		-100%			
51----	Information	38%	200%	-50%	100%	-33%					
52----	Finance & insurance	0%	-2%	-36%	120%	100%	-100%				
53----	Real estate & rental & leasing	9%	-14%	14%	200%	0%					
54----	Professional, scientific & technical services	11%	16%	-13%	0%	100%	-100%				
55----	Management of companies & enterprises	0%	100%	-50%		0%					
56----	Admin, support, waste mgt, remediation services	44%	64%	-33%	0%						
61----	Educational services	0%	100%	-100%	0%		0%				
62----	Health care and social assistance	15%	-22%	4%	138%	220%	-100%	50%	-50%		
71----	Arts, entertainment & recreation	-22%	25%	-67%	0%	-100%					
72----	Accommodation & food services	7%	-13%	29%	29%	0%	0%				
81----	Other services (except public administration)	-1%	-13%	8%	14%	100%					
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-75%	-67%			-100%					
99----	Unclassified establishments	-100%	-100%								

Arkansas

Faulkner County, Arkansas

Faulkner County, Arkansas showed major employment increases in all sectors except for manufacturing. The number of establishments increased as well. Faulkner showed a tremendous, continuous growth pattern in both paid employees and total establishments from 1998 – 2007.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	26%	79%	72%	43%
11----	Forestry, fishing, hunting, and agriculture support	A-B	D	D	33%
21----	Mining	B-F	D	D	133%
22----	Utilities	C-B	D	D	-38%
23----	Construction	27%	65%	51%	47%
31----	Manufacturing	-33%	-2%	-9%	16%
42----	Wholesale trade	34%	153%	143%	23%
44----	Retail trade	37%	85%	80%	24%
48----	Transportation & warehousing	98%	139%	125%	50%
51----	Information	G-2386	D-53295	D-223757	22%
52----	Finance & insurance	46%	139%	111%	80%
53----	Real estate & rental & leasing	175%	278%	263%	75%
54----	Professional, scientific & technical services	43%	39%	52%	99%
55----	Management of companies & enterprises	54-B	156%	155%	80%
56----	Admin, support, waste mgt, remediation services	72%	226%	239%	37%
61----	Educational services	85%	66%	72%	40%
62----	Health care and social assistance	57%	107%	104%	57%
71----	Arts, entertainment & recreation	51%	72%	66%	13%
72----	Accommodation & food services	53%	99%	92%	53%
81----	Other services (except public administration)	26%	80%	75%	30%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	A-0	D-0	D-0	-100%
99----	Unclassified establishments	A	D	D	-85%

The biggest gains in establishments can be seen in the smaller firms. The exceptions are in the remediation, food services, retail and healthcare. Those are the fields where the larger (100+) employee firms showed growth.

Industry Code	Industry Code Description	Total								'100-249'	'250-499'	'500-999'	'1000 or more'
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'				
-----	Total	43%	43%	50%	51%	35%	43%	6%	13%	33%	-33%		
11----	Forestry, fishing, hunting, and agriculture support	33%	0%										
21----	Mining	133%	100%	0%	50%								
22----	Utilities	-38%	-25%		-100%	-50%		-100%					
23----	Construction	47%	52%	37%	48%	29%	200%	-50%					
31----	Manufacturing	16%	37%	55%	11%	30%	-50%	-50%	-20%	0%	-50%		
42----	Wholesale trade	23%	26%	0%	100%	-11%	100%	0%					
44----	Retail trade	24%	12%	29%	43%	22%	33%	133%	0%	0%			
48----	Transportation & warehousing	50%	27%	367%	-29%	250%	-50%						
51----	Information	22%	44%	0%	57%	-33%	100%	-100%			0%		
52----	Finance & insurance	80%	63%	111%	240%	100%	-100%	0%					
53----	Real estate & rental & leasing	75%	51%	375%	200%	0%							
54----	Professional, scientific & technical services	99%	121%	4%	340%	-33%		-100%					
55----	Management of companies & enterprises	80%		-67%	100%	100%							
56----	Admin, support, waste mgt, remediation services	37%	39%	17%	-10%	250%	33%	100%					
61----	Educational services	40%	10%			0%	100%	-100%	-100%				
62----	Health care and social assistance	57%	57%	70%	36%	68%	0%	75%		0%			
71----	Arts, entertainment & recreation	13%	50%	-67%	-50%	67%							
72----	Accommodation & food services	53%	81%	33%	59%	36%	58%	100%					
81----	Other services (except public administration)	30%	14%	104%	43%	-9%	0%						
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%										
99----	Unclassified establishments	-85%	-82%	-100%									

White County, Arkansas

White County Arkansas is another area that demonstrated significant growth in all sectors. Of course, the mining industry exploded. Manufacturing was the only sector to exhibit declines in all categories. White County's growth, while increasing annually, did not increase as rapidly as Faulkner County. Both Arkansas Counties saw significant increases in both real estate and construction during the period.

Industry code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	9%	36%	36%	10%
11----	Forestry, fishing, hunting, and agriculture support	-15%	77%	0%	-11%
21----	Mining	344%	356%	574%	275%
22----	Utilities	113-C	1204-D	4869-D	-13%
23----	Construction	40%	117%	82%	13%
31----	Manufacturing	-23%	-12%	-12%	-2%
42----	Wholesale trade	0%	90%	52%	-13%
44----	Retail trade	5%	42%	44%	-7%
48----	Transportation & warehousing	1405-H	10130-D	41906-D	-4%
51----	Information	162-C	884-D	3685-D	0%
52----	Finance & insurance	40%	140%	106%	41%
53----	Real estate & rental & leasing	59%	187%	165%	35%
54----	Professional, scientific & technical services	32%	83%	85%	14%
55----	Management of companies & enterprises	B-A	D-215	D-8258	50%
56----	Admin, support, waste mgt, remediation services	5%	40%	44%	51%
61----	Educational services	G	D	D	17%
62----	Health care and social assistance	33%	92%	86%	37%
71----	Arts, entertainment & recreation	95%	160%	109%	27%
72----	Accommodation & food services	29%	51%	55%	36%
81----	Other services (except public administration)	53%	97%	92%	7%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	G-0	D-0	D-0	-100%
99----	Unclassified establishments	B-A	D	D	-67%

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	10%	7%	15%	10%	16%	76%	-6%	-50%	0%	100%
11----	Forestry, fishing, hunting, and agriculture support	-11%	-14%	100%	-100%						
21----	Mining	275%		67%	0%						
22----	Utilities	-13%	-50%	50%		-100%	0%				
23----	Construction	13%	8%	25%	0%	33%	150%				
31----	Manufacturing	-2%	29%	-20%	44%	-33%	0%	-25%	-50%	0%	
42----	Wholesale trade	-13%	-21%	12%	-21%	0%	-50%				
44----	Retail trade	-7%	-16%	-8%	14%	-4%	200%	0%	0%		
48----	Transportation & warehousing	-4%	0%	-14%	-17%	-17%	200%	0%	-100%		
51----	Information	0%	-25%	75%	-25%		-100%				
52----	Finance & insurance	41%	31%	50%	300%	50%	-100%				
53----	Real estate & rental & leasing	35%	31%	50%	0%						
54----	Professional, scientific & technical services	14%	-2%	47%	60%	0%					
55----	Management of companies & enterprises	50%			-50%						
56----	Admin, support, waste mgt, remediation services	51%	50%	29%	133%	50%	0%				
61----	Educational services	17%	33%	-100%							0%
62----	Health care and social assistance	37%	40%	73%	-29%	67%	200%	20%	0%	-100%	
71----	Arts, entertainment & recreation	27%	25%		-50%	0%					
72----	Accommodation & food services	36%	50%	6%	45%	32%	100%	-100%			
81----	Other services (except public administration)	7%	2%	0%	-8%	175%		-100%			
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%			-100%	-100%	-100%		-100%	
99----	Unclassified establishments	-67%	-50%	-100%	-100%						

Independence County, Arkansas

In Independence County, there was an increase of seven establishments and 2,500 employees during the time period. Aside from mining, there was an increase in the finance and insurance sector and the real estate and rental & leasing, and construction. There were decreases in wholesale, manufacturing and even retail.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	9%	53%	50%	1%
11----	Forestry, fishing, hunting, and agriculture support	21-A	86-D	395-D	-40%
21----	Mining	42%	78%	47%	60%
22----	Utilities	C	D	D	-13%
23----	Construction	42%	132%	124%	25%
31----	Manufacturing	5%	48%	37%	-18%
42----	Wholesale trade	-9%	19%	29%	-25%
44----	Retail trade	-3%	32%	38%	-14%
48----	Transportation & warehousing	-16%	19%	12%	-5%
51----	Information	-1%	20%	13%	0%
52----	Finance & insurance	45%	1461-S%	139%	42%
53----	Real estate & rental & leasing	70%	135%	130%	26%
54----	Professional, scientific & technical services	68%	51%	16%	4%
55----	Management of companies & enterprises	101-B	572-D	1840-D	33%
56----	Admin, support, waste mgt, remediation services	78%	95%	123%	40%
61----	Educational services	E	D	D	0%
62----	Health care and social assistance	17%	82%	79%	11%
71----	Arts, entertainment & recreation	B-43	D-130	D-615	-27%
72----	Accommodation & food services	18%	50%	45%	16%
81----	Other services (except public administration)	1%	33%	31%	-2%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	A-0	D-0	D-0	-100%
99----	Unclassified establishments	-100%	-100%	-100%	-100%

Similar to the other counties, Independence's businesses are small — primarily in the categories of 19 and under.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
----	Total	1%	-7%	4%	21%	21%	-18%	33%	40%	-60%	
11----	Forestry, fishing, hunting, and agriculture support	-40%	-33%	-50%							
21----	Mining	60%	0%		200%	0%					
22----	Utilities	-13%	0%	-33%	0%	0%		0%			
23----	Construction	25%	22%	22%	-17%	167%		0%			
31----	Manufacturing	-18%	-22%	-55%	-25%	14%	-75%	100%	300%	-50%	
42----	Wholesale trade	-25%	-33%	0%	17%	-57%	-100%	100%			
44----	Retail trade	-14%	-15%	-28%	12%	0%	50%	####	0%		
48----	Transportation & warehousing	-5%	-12%	0%	-33%	150%	0%		-100%		
51----	Information	0%	0%	0%	-25%	100%	-100%				
52----	Finance & insurance	42%	27%	100%	250%	-100%	0%				
53----	Real estate & rental & leasing	26%	22%	25%	0%						
54----	Professional, scientific & technical services	4%	-13%	160%	0%	-50%					
55----	Management of companies & enterprises	33%			-100%	200%	-100%				
56----	Admin, support, waste mgt, remediation services	40%	43%	67%	-20%	200%	0%	0%			
61----	Educational services	0%	-100%				0%		0%		
62----	Health care and social assistance	11%	-6%	8%	114%	57%	100%	-20%	-100%	-100%	
71----	Arts, entertainment & recreation	-27%	-33%	-100%							
72----	Accommodation & food services	16%	60%	-8%	22%	-6%	67%				
81----	Other services (except public administration)	-2%	-22%	75%	100%	50%	-100%				
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%		-100%							
99----	Unclassified establishments	-100%	-100%								

Pope County, Arkansas

In Pope County, business establishments increased by a little over 100 and employees by 2,000 during the period. Mining, finance and insurance, and real estate increased. However, in Pope County, we also see increases in the Science, Technical, and Professional category. Agricultural, management of companies, manufacturing, and the information sector all decreased. Pope County showed a larger increase in establishments from 2003-2004 and then it experienced small, but steady growth. From 1998 – 2003, business establishments had an erratic increase and decrease pattern to them.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	9%	43%	45%	7%
11----	Forestry, fishing, hunting, and agriculture support	38%	90%	63%	-26%
21----	Mining	B	D	D	300%
22----	Utilities	G	D	D	-9%
23----	Construction	16%	35%	54%	10%
31----	Manufacturing	1%	37%	41%	-13%
42----	Wholesale trade	-16%	7%	3%	-1%
44----	Retail trade	5%	58%	47%	-5%
48----	Transportation & warehousing	93%	151%	154%	24%
51----	Information	E-C	D	D	-43%
52----	Finance & insurance	3%	24%	35%	23%
53----	Real estate & rental & leasing	67%	221%	267%	49%
54----	Professional, scientific & technical services	34%	60%	60%	53%
55----	Management of companies & enterprises	C-150	D-1319	D-5349	-29%
56----	Admin, support, waste mgt, remediation services	38%	129%	137%	9%
61----	Educational services	53%	94%	81%	85%
62----	Health care and social assistance	22%	24%	42%	6%
71----	Arts, entertainment & recreation	-5%	22%	19%	7%
72----	Accommodation & food services	26%	49%	42%	10%
81----	Other services (except public administration)	1%	47%	52%	4%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%	-100%	-100%
99----	Unclassified establishments	A	D	D	-100%

During the entire period, Pope County's businesses have been smaller employers (19 and under). There has been representation in the 20-49 and to a lesser extent 50-99, but beyond that the larger businesses do not have a strong presence in the county.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	7%	3%	6%	19%	23%	8%	-5%	-57%	500%	-50%
11----	Forestry, fishing, hunting, and agriculture support	-26%	-22%	-50%	0%	-50%			-100%		
21----	Mining	300%				-100%					
22----	Utilities	-9%	0%	0%	-25%	0%					-100%
23----	Construction	10%	3%	40%	0%	63%	0%				
31----	Manufacturing	-13%	-30%	8%	-55%	0%	67%	14%	-67%		0%
42----	Wholesale trade	-1%	5%	-10%	0%	200%	-100%				
44----	Retail trade	-5%	-16%	-8%	32%	26%	11%	-50%	-100%		
48----	Transportation & warehousing	24%	17%	0%	71%	40%	-20%				
51----	Information	-43%	-57%	-60%	100%	-20%	-100%				
52----	Finance & insurance	23%	19%	43%	33%	100%	-67%				
53----	Real estate & rental & leasing	49%	38%	100%	133%						
54----	Professional, scientific & technical services	53%	78%	-16%	225%	-50%					
55----	Management of companies & enterprises	-29%	-67%	-100%		50%		-100%			
56----	Admin, support, waste mgt, remediation services	9%	7%	22%	-29%	67%	33%	0%	-100%		
61----	Educational services	85%	88%	300%	100%	0%	0%				
62----	Health care and social assistance	6%	-16%	15%	21%	73%	67%	0%		0%	
71----	Arts, entertainment & recreation	7%	13%	-25%	200%	-50%					
72----	Accommodation & food services	10%	-31%	58%	12%	32%	0%				
81----	Other services (except public administration)	4%	2%	13%	-6%	-14%	200%				
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%				-100%	-100%		-100%		
99----	Unclassified establishments	-100%	-100%								

Texas

Denton County, Texas

Similar to Arkansas, Denton County, Texas exploded in terms of jobs in all sectors except (manufacturing) and saw increases in all types of establishments. Denton saw huge gains each year beginning from 1998 to 1999 in all categories. Those increases were consistent through the entire study period.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	62%	127%	115%	54%
11----	Forestry, fishing, hunting, and agriculture support		148%	182%	32%
21----	Mining	364%	1122%	1392%	105%
22----	Utilities	22%	70%	50%	-14%
23----	Construction	52%	131%	99%	35%
31----	Manufacturing	-18%	1%	-5%	17%
42----	Wholesale trade	122%	229%	207%	35%
44----	Retail trade	43%	109%	107%	32%
48----	Transportation & warehousing	248%	344%	316%	59%
51----	Information	108%	313%	227%	61%
52----	Finance & insurance	164%	416%	344%	102%
53----	Real estate & rental & leasing	58%	191%	164%	72%
54----	Professional, scientific & technical services	73%	161%	152%	83%
55----	Management of companies & enterprises	8%	39%	42%	244%
56----	Admin, support, waste mgt, remediation services	137%	278%	275%	47%
61----	Educational services	170%	309%	280%	78%
62----	Health care and social assistance	75%	140%	136%	80%
71----	Arts, entertainment & recreation	133%	163%	168%	74%
72----	Accommodation & food services	64%	116%	107%	82%
81----	Other services (except public administration)	78%	124%	115%	34%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	364-0	4818-0	23707-0	-100%
99----	Unclassified establishments	-91%	313-S	-57%	-80%

Denton's growth in establishments showed diversity as well. There were a number of sectors where larger companies (100+) were evident. The 500+ categories with significant growth were wholesale, information, administration, healthcare, arts, other services and management of companies.

Industry Code	Industry code description	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	54%	56%	46%	48%	66%	65%	74%	78%	113%
11----	Forestry, fishing, hunting, and agriculture support	32%	19%	300%	0%					
21----	Mining	105%	73%	0%			0%			
22----	Utilities	-14%	-25%	20%	-67%	0%		-100%		
23----	Construction	35%	32%	39%	35%	73%	27%	0%	50%	
31----	Manufacturing	17%	26%	6%	-4%	33%	22%	21%	-25%	0%
42----	Wholesale trade	35%	30%	20%	19%	86%	44%	900%	0%	
44----	Retail trade	32%	50%	4%	14%	71%	40%	16%	225%	
48----	Transportation & warehousing	59%	45%	38%	80%	62%	350%		-50%	
51----	Information	61%	52%	65%	145%	12%	60%	200%		
52----	Finance & insurance	102%	96%	134%	113%	32%	175%	25%	50%	
53----	Real estate & rental & leasing	72%	82%	62%	47%	13%	200%	0%		
54----	Professional, scientific & technical services	83%	84%	77%	89%	78%	160%	0%	0%	0%
55----	Management of companies & enterprises	244%	124%	1100%	220%	433%	400%	-40%	300%	-100%
56----	Admin, support, waste mgt, remediation services	47%	39%	42%	91%	23%	31%	178%	300%	
61----	Educational services	78%	62%	121%	45%	180%	33%			
62----	Health care and social assistance	80%	84%	80%	67%	83%	93%	114%	0%	33%
71----	Arts, entertainment & recreation	74%	71%	82%	60%	67%	75%	200%		
72----	Accommodation & food services	82%	108%	105%	67%	65%	78%	50%	-100%	
81----	Other services (except public administration)	34%	33%	18%	39%	92%	64%	300%		
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%	-100%	-100%	-100%	-100%	-100%		
99----	Unclassified establishments	-80%	-78%	-100%	-100%					

Wise County, Texas

Wise County, Texas showed growth in almost all sectors as well. However, it was not as significant as Denton in terms of number of establishments; however its paid employees and payrolls increased. Further, Wise County, demonstrated a large increase from 1998 – 1999, but then showed smaller, consistent growth until 2004, until 2006, when there was another large expansion. A small increase occurred from 2006 to 2007. NAICS 55 Management of Companies decreased by 95 percent as it dropped from 25 companies to one.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	93%	239%	198%	46%
11----	Forestry, Fishing, Hunting, and Agriculture Support				-50%
21----	Mining	479%	687%	556%	139%
22----	Utilities	183%	344%	315%	100%
23----	Construction	62%	241%	290%	87%
31----	Manufacturing	29%	90%	77%	23%
42----	Wholesale Trade	109%	293%	403%	60%
44----	Retail Trade	44%	94%	74%	31%
48----	Transportation and Warehousing	133%	313%	305%	16%
51----	Information	-56%	-48%	-48%	-25%
52----	Finance and Insurance	55%	75%	62%	33%
53----	Real Estate and Rental and Leasing	205%	952%	803%	14%
54----	Professional, Scientific, and Technical Services	35%	240%	193%	84%
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and Remediation Services	B	D	D	-95%
56----		-12%	51%	-37%	620%
61----	Educational Services	13-A	34-D	161-D	-95%
62----	Health Care and Social Assistance	90%	196%	198%	733%
71----	Arts, Entertainment, and Recreation	-21%	-3%	-29%	-74%
72----	Accommodation and Food Services	56%	123%	107%	-2%
81----	Other Services (except Public Administration)	155%	486%	416%	
99----	Unclassified	B-A	D	D	-79%

Wise County was similar to Denton in that expansion of the 100+ firms can be seen in a number of sectors. An interesting note is that the mining industry in Denton noticed increases in the smaller employee firms while Wise County increases in mining were primarily in the 50 – 499 employee category.

Industry code	Industry code description	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	46%	35%	37%	94%	61%	111%	75%	0%	
11----	Forestry, Fishing, Hunting, and Agriculture Support	-50%	-100%							
21----	Mining	139%	211%	0%	-33%	157%	450%	300%		
22----	Utilities	100%	0%	100%		-50%				
23----	Construction	87%	111%	18%	67%	400%		-100%		
31----	Manufacturing	23%	12%	9%	75%	9%	150%	0%	0%	
42----	Wholesale Trade	60%	27%	15%	275%	300%	-100%			
44----	Retail Trade	31%	23%	20%	71%	33%	200%	100%	0%	
48----	Transportation and Warehousing	16%	-12%	78%	71%	125%	50%			
51----	Information	-25%	-40%	0%	200%	-67%	-100%			
52----	Finance and Insurance	33%	6%	43%	600%	-50%	0%			
53----	Real Estate and Rental and Leasing	14%	-7%	0%	200%					
54----	Professional, Scientific, and Technical Services	84%	84%	50%	600%	100%	-100%			
55----	Management of Companies and Enterprises									
56----	Administrative and Support and Waste Management and Remediation Services	71%	71%	150%	100%		50%	-50%		
61----	Educational Services	-40%	-50%	0%						
62----	Health Care and Social Assistance	61%	53%	108%	38%	100%	0%	100%	-100%	
71----	Arts, Entertainment, and Recreation	25%	11%	50%			-100%			
72----	Accommodation and Food Services	62%	79%	70%	82%	25%	50%			
81----	Other Services (except Public Administration)	38%	29%	40%	50%	67%				
99----	Unclassified	-79%	-77%	-100%						

Cooke County, Texas

Cooke County, Texas saw an increase of 10% of their business establishments which is actually less than 100, however, employee increases were 3,000. Cooke County showed increases in almost all sectors for both number of establishments and number of paid employees. Cooke's decreases were in retail trade and the management of companies. Retail was significant as there was a loss of almost 50 companies.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	24%	96%	114%	10%
11----	Forestry, fishing, hunting, and agriculture support	B-A	D-75	D-320	33%
21----	Mining	173%	312%	429%	33%
22----	Utilities	63-B	436-D	1788-D	40%
23----	Construction	94%	217%	152%	31%
31----	Manufacturing	17%	71%	60%	25%
42----	Wholesale trade	-3%	55%	59%	6%
44----	Retail trade	-6%	38%	30%	-23%
48----	Transportation & warehousing	187%	265%	538%	93%
51----	Information	4%	54%	34%	-8%
52----	Finance & insurance	21%	68%	71%	29%
53----	Real estate & rental & leasing	62-B	254%	232%	53%
54----	Professional, scientific & technical services	107%	307%	251%	39%
55----	Management of companies & enterprises	28-B	193-D	647-D	-25%
56----	Admin, support, waste mgt, remediation services	127%	578%	522%	57%
61----	Educational services	F-S	D-395	D-4	33%
62----	Health care and social assistance	19%	72%	67%	26%
71----	Arts, entertainment & recreation	43-B	33%	34%	38%
72----	Accommodation & food services	36%	90%	75%	33%
81----	Other services (except public administration)	16%	78%	82%	-4%
99----	Unclassified establishments	B-0	D-0	D-0	-100%

Cooke County's business was similar to the others in that the biggest gains (and the biggest existing share) are those firms with 19 and less employees. However, Cooke shows strong growth among firms in several sectors in the 20-49 employee range.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	10%	14%	0%	-3%	29%	32%	14%	-50%	200%	
11----	Forestry, fishing, hunting, and agriculture support	33%	0%		-100%						
21----	Mining	33%	28%	33%	0%						
22----	Utilities	40%	-33%	200%		-100%					
23----	Construction	31%	14%	89%	67%	0%					
31----	Manufacturing	25%	63%	33%	-43%	77%	-44%	-33%		0%	
42----	Wholesale trade	6%	8%	-17%	125%	-60%					
44----	Retail trade	-23%	-21%	-35%	-29%	78%	33%	-100%	0%		
48----	Transportation & warehousing	93%	171%	0%	33%	-50%				-100%	
51----	Information	-8%	0%	0%	-33%	0%					
52----	Finance & insurance	29%	20%	150%	-33%		-100%				
53----	Real estate & rental & leasing	53%	53%	100%		-100%					
54----	Professional, scientific & technical services	39%	55%	-33%	0%						
55----	Management of companies & enterprises	-25%	-33%			0%					
56----	Admin, support, waste mgt, remediation services	57%	47%	200%	67%	0%					
61----	Educational services	33%	200%			0%				-100%	
62----	Health care and social assistance	26%	42%	10%	33%	-33%	25%		0%		
71----	Arts, entertainment & recreation	38%	75%	200%	-67%						
72----	Accommodation & food services	33%	33%	38%	46%	24%	25%				
81----	Other services (except public administration)	-4%	-7%	-6%	-18%	67%					
99----	Unclassified establishments	-100%	-100%	-100%	-100%						

Ellis County, Texas

In Ellis County, Texas, again there is strong growth amongst a number of sectors in terms of total establishments and number of employees. The 367% increase in management of companies and enterprises is actually an increase of 11 companies and approximately 320 employees. Ellis County saw a decrease in the information sector number of employees despite an increase in the number of firms.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	26%	76%	66%	28%
11----	Forestry, fishing, hunting, and agriculture support	A	D	D	0%
21----	Mining	24%	29%	47%	50%
22----	Utilities	167%	580%	357%	86%
23----	Construction	37%	123%	114%	17%
31----	Manufacturing	-5%	42%	31%	3%
42----	Wholesale trade	5%	76%	60%	32%
44----	Retail trade	40%	90%	89%	14%
48----	Transportation & warehousing	148%	197%	203%	37%
51----	Information	-34%	-27%	-24%	59%
52----	Finance & insurance	28%	90%	81%	44%
53----	Real estate & rental & leasing	7%	48%	56%	32%
54----	Professional, scientific & technical services	78%	162%	84%	47%
55----	Management of companies & enterprises	362%	495%	571%	367%
56----	Admin, support, waste mgt, remediation services	43%	101%	91%	57%
61----	Educational services	319-F	1049-D	4262-D	73%
62----	Health care and social assistance	29%	81%	89%	37%
71----	Arts, entertainment & recreation	20%	72%	41%	52%
72----	Accommodation & food services	63%	146%	124%	58%
81----	Other services (except public administration)	31%	80%	76%	27%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%	-100%	-100%
99----	Unclassified establishments	B-A	D	D	-91%

Ellis County has seen significant growth in firms up to 99 employees and to a lesser extent growth in the 100 plus category. Ellis has by far has the best expansion for adjacent counties. Ellis' growth has been gradual and consistent throughout the entire 10 year period.

Industry Code	Industry Code Description	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	1000 or more
-----	Total	28%	25%	30%	45%	29%	2%	46%	-29%	300%
11----	Forestry, fishing, hunting, and agriculture support	0%	0%							
21----	Mining	50%	100%	-100%	100%	100%				
22----	Utilities	86%	75%	0%		0%				
23----	Construction	17%	16%	8%	42%	17%	200%			
31----	Manufacturing	3%	-7%	25%	26%	29%	-42%	38%	-56%	100%
42----	Wholesale trade	32%	41%	32%	6%	43%	-100%			
44----	Retail trade	14%	10%	17%	23%	-3%	67%	300%	0%	
48----	Transportation & warehousing	37%	45%	82%	33%	-29%	67%	-100%		
51----	Information	59%	100%	-17%	200%	0%	-100%	-100%		
52----	Finance & insurance	44%	42%	63%	125%	-43%	-50%			
53----	Real estate & rental & leasing	32%	40%	23%	0%	-50%				
54----	Professional, scientific & technical services	47%	45%	92%	-18%	125%				
55----	Management of companies & enterprises	367%			-100%		0%			
56----	Admin, support, waste mgt, remediation services	57%	40%	117%	117%	250%	33%	100%	0%	
61----	Educational services	73%	117%	0%	-100%				0%	
62----	Health care and social assistance	37%	24%	35%	100%	53%	0%	33%	0%	
71----	Arts, entertainment & recreation	52%	17%	175%	200%	-67%				
72----	Accommodation & food services	58%	94%	5%	40%	66%	100%			
81----	Other services (except public administration)	27%	14%	39%	79%	42%	33%	-100%		
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%	-100%		-100%	-100%			
99----	Unclassified establishments	-91%	-90%	-100%						

Pittsburg, Oklahoma

Pittsburg, Oklahoma showed a 12% increase in establishments over the period with a 30% increase in jobs and 94% in payrolls. Mining, construction, and transportation/warehousing showed the largest gains in employees, but not in the number of establishments. Strong gains in the professional, scientific, and real estate can be noted, while those retail and hospitality jobs showed increases as they did in other counties. Just as in Wise County, Texas, the manufacturing jobs increased in Pittsburg.

Industry Code	Industry Code Description	Employees for Paid Period including	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	30%	94%	94%	12%
11----	Forestry, fishing, hunting, and agriculture support	A-0	D-0	D-0	-100%
21----	Mining	148%	286%	265%	109%
22----	Utilities	115-B	1111-D	4316-D	-30%
23----	Construction	261%	685%	712%	-3%
31----	Manufacturing	11%	65%	41%	-11%
42----	Wholesale trade	27%	91%	64%	-14%
44----	Retail trade	17%	66%	65%	1%
48----	Transportation & warehousing	115%	339%	319%	46%
51----	Information	5%	27%	42%	20%
52----	Finance & insurance	-5%	51%	43%	25%
53----	Real estate & rental & leasing	43%	143%	164%	40%
54----	Professional, scientific & technical services	67%	224%	232%	21%
55----	Management of companies & enterprises	A-B	D	D	33%
56----	Admin, support, waste mgt, remediation services	63%	110%	122%	39%
61----	Educational services	B-A	D	D	33%
62----	Health care and social assistance	18%	61%	65%	24%
71----	Arts, entertainment & recreation	B-40	D-117	D-517	-36%
72----	Accommodation & food services	17%	32%	22%	18%
81----	Other services (except public administration)	20%	82%	66%	8%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	B-0	D-0	D-0	-100%
99----	Unclassified establishments	-80%		-71%	-63%

Pittsburg County, Oklahoma's growth was in the smaller firms. The 100+ job gains came in the healthcare, administrative support, and manufacturing. These jobs gains were not as strong as those seen in Texas for this employee category.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	12%	6%	15%	11%	42%	0%	83%	100%	0%	
11----	Forestry, fishing, hunting, and agriculture support	-100%									
21----	Mining	109%	125%	-33%	500%	67%					
22----	Utilities	-30%	-17%	0%	-100%	-50%					
23----	Construction	-3%	-6%	-37%	150%	33%	200%				
31----	Manufacturing	-11%	-33%	17%	-33%	0%	0%	50%	0%		
42----	Wholesale trade	-14%	-40%	86%	-14%	-20%					
44----	Retail trade	1%	-15%	0%	46%	33%	-33%			-100%	
48----	Transportation & warehousing	46%	69%	-14%	0%						
51----	Information	20%	100%		-75%	50%	0%				
52----	Finance & insurance	25%	42%	-13%	50%	0%	0%				
53----	Real estate & rental & leasing	40%	36%	17%	75%						
54----	Professional, scientific & technical services	21%	5%	67%	75%	300%					
55----	Management of companies & enterprises	33%		50%							
56----	Admin, support, waste mgt, remediation services	39%	10%	75%	200%	500%	-33%	100%			
61----	Educational services	33%	50%				-100%				
62----	Health care and social assistance	24%	47%	17%	8%	8%	0%	50%		0%	
71----	Arts, entertainment & recreation	-36%	50%	-100%	-100%	-50%					
72----	Accommodation & food services	18%	-9%	62%	6%	53%	-17%	-100%			
81----	Other services (except public administration)	8%	7%	47%	-38%	200%					
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%			-100%						
99----	Unclassified establishments	-63%	-63%								

Garfield County

Garfield County, Oklahoma showed minimal increases in all sectors. Ironically, it showed a decrease in mining employees over the study period. As a matter of fact, Garfield showed decreases from 1998 – 2002. From that point forward there were small increases from 2002 – 2004, but from 2004 to 2007, the increases came at a better rate. There were three auxiliaries in 1998 and the unclassified establishments went from 16 – one.

Industry Code	Industry Code Description	Paid Employees			Total Establishments
		for paid period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	
-----	Total	3%	31%	33%	1%
11----	Forestry, fishing, hunting, and agriculture support	77-B	137-D	837-D	-25%
21----	Mining	-2%	38%	42%	1%
22----	Utilities	B-C	D	D	-20%
23----	Construction	2%	24%	30%	9%
31----	Manufacturing	39%	50%	50%	4%
42----	Wholesale trade	-70%	-20%	-27%	-49%
44----	Retail trade	-5%	28%	30%	-18%
48----	Transportation & warehousing	9%	32%	41%	9%
51----	Information	-6%	4%	5%	0%
52----	Finance & insurance	11%	33%	38%	6%
53----	Real estate & rental & leasing	4%	49%	48%	-1%
54----	Professional, scientific & technical services	-9%	-50%	-39%	12%
55----	Management of companies & enterprises	51%	77%	84%	36%
56----	Admin, support, waste mgt, remediation services	20%	62%	56%	29%
61----	Educational services	-90%	35%	53%	32%
62----	Health care and social assistance	5%	32%	34%	14%
71----	Arts, entertainment & recreation	7%	11%	17%	10%
72----	Accommodation & food services	4%	27%	24%	-4%
81----	Other services (except public administration)	1%	24%	20%	8%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	B-0	D-0	D-0	-100%
99----	Unclassified establishments	11-A	36-D	207-D	-1500%

Garfield, unlike other counties, showed increases in larger firms more so than smaller firms. The sectors were similar (except for mining). Garfield did show a sharp decline in employees in education and whole sectors. The number of education organizations, however increased.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	1%	-3%	1%	9%	2%	11%	20%	0%	33%	-100%
11----	Forestry, fishing, hunting, and agriculture support	-20%	0%		0%		-100%				
21----	Mining	1%	2%	-42%	33%	57%	-67%	100%			
22----	Utilities	-17%	-33%	-50%			0%				
23----	Construction	10%	1%	45%	56%	-43%	0%	0%			
31----	Manufacturing	5%	19%	-33%	13%	0%	0%	0%	100%		
42----	Wholesale trade	-33%	-43%	-40%	25%	-29%	0%				-100%
44----	Retail trade	-16%	-16%	-27%	8%	-19%	80%	-40%	0%		
48----	Transportation & warehousing	10%	35%	29%	-9%	-29%	-67%				
51----	Information	0%	-11%	80%	-57%	50%		0%			
52----	Finance & insurance	6%	-4%	69%	9%	20%	-100%	0%			
53----	Real estate & rental & leasing	-1%	-12%	78%	-18%	0%					
54----	Professional, scientific & technical services	14%	13%	15%	29%	-17%					-100%
55----	Management of companies & enterprises	57%	-67%		100%		-100%	100%			
56----	Admin, support, waste mgt, remediation services	40%	45%	8%	33%	150%	300%	0%	-100%		
61----	Educational services	46%	80%	200%	0%	0%			-100%		
62----	Health care and social assistance	16%	3%	31%	18%	38%	100%	-25%		0%	
71----	Arts, entertainment & recreation	11%	9%	100%	0%	-100%	-50%				
72----	Accommodation & food services	-4%	-11%	-15%	-5%	11%	13%				
81----	Other services (except public administration)	8%	9%	14%	24%	-50%	0%				
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%								
99----	Unclassified establishments	-94%	-93%	-100%							

Wagoner County, Oklahoma

Wagoner County increased its total establishments by 88 firms and approximately 1,200 employees. Its information industry increased from six to 12 firms and other increases were in the mining, construction, arts, and other services. There were increases in healthcare and social assistance. This is another case where retail decreased as well as hospitality. Transportation & warehousing, education, and utilities decreased as well.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	19%	86%	81%	25%
11----	Forestry, fishing, hunting, and agriculture support	A	D	D	0%
21----	Mining	17 - B	76-D	365-D	20%
22----	Utilities	15-B	118-D	506-D	-50%
23----	Construction	99%	242%	213%	56%
31----	Manufacturing	7%	51%	53%	23%
42----	Wholesale trade	11%	72%	128%	30%
44----	Retail trade	16%	78%	74%	-4%
48----	Transportation & warehousing	123%	386%	311%	-7%
51----	Information	B	D-435	D-2014	100%
52----	Finance & insurance	39%	81%	94%	33%
53----	Real estate & rental & leasing	-1%	1%	-17%	7%
54----	Professional, scientific & technical services	25%	60%	67%	44%
55----	Management of companies & enterprises	A	D	D	-50%
56----	Admin, support, waste mgt, remediation services	-41%	13%	-1%	31%
61----	Educational services	6-A	33-D	146-D	-50%
62----	Health care and social assistance	-19%	16%	24%	13%
71----	Arts, entertainment & recreation	81-C	224-D	1302-D	88%
72----	Accommodation & food services	28%	67%	58%	-2%
81----	Other services (except public administration)	124%	690%	486%	51%
99----	Unclassified establishments	1-A	5-D	44-D	-50%

Wagoner County's strength is in its smaller firms. Specifically, the 19 and under best represent the region. There are however strengths in the 20-49 employee size firm in construction, manufacturing, finance, professional, science, and technical and healthcare and social assistance.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	25%	29%	11%	23%	30%	8%	400%	50%	-100%	
11----	Forestry, fishing, hunting, and agriculture su	0%	0%								
21----	Mining	20%	25%		0%						
22----	Utilities	-50%	-67%		-100%						
23----	Construction	56%	59%	19%	82%	133%	-100%				
31----	Manufacturing	23%	60%	-18%	33%	50%	-43%	50%		-100%	
42----	Wholesale trade	30%	40%	-13%	133%	-50%					
44----	Retail trade	-4%	-3%	-10%	-8%	0%	50%		-100%		
48----	Transportation & warehousing	-7%	-10%	-33%		-100%					
51----	Information	100%	125%	100%	0%						
52----	Finance & insurance	33%	38%	0%	20%	100%					
53----	Real estate & rental & leasing	7%	9%	0%		0%					
54----	Professional, scientific & technical services	44%	48%	20%	50%	0%					
55----	Management of companies & enterprises	-50%	-50%								
56----	Admin, support, waste mgt, remediation ser	31%	29%	38%	0%	0%				-100%	
61----	Educational services	-50%	-50%								
62----	Health care and social assistance	13%	9%	40%	25%	-17%	-50%		-100%		
71----	Arts, entertainment & recreation	88%	67%	200%			0%				
72----	Accommodation & food services	-2%	-38%	86%	-43%	42%					
81----	Other services (except public administration)	51%	59%	12%	50%						
99----	Unclassified establishments	-50%	-50%								

Garvin County, Oklahoma

Garvin County's education sector and arts sector exploded. The arts sector increased from two establishments to 42 and education from one to 62 firms. Mining decreased while agriculture, transportation and warehousing, hospitality, and construction demonstrated strong increases. Retail, healthcare, and other services decreased.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	23%	77%	87%	6%
11----	Forestry, fishing, hunting, and agriculture support	A-16	D-68	D-326	50%
21----	Mining	48%	140%	158%	-2%
22----	Utilities	-4%	52%	44%	0%
23----	Construction	69%	113%	159%	38%
31----	Manufacturing	-31%	10%	15%	7%
42----	Wholesale trade	0%	119%	79%	6%
44----	Retail trade	3%	57%	50%	-11%
48----	Transportation & warehousing	985%	802%	913%	36%
51----	Information	-15%	7%	3%	-25%
52----	Finance & insurance	29%	89%	74%	13%
53----	Real estate & rental & leasing	B	D	D	-16%
54----	Professional, scientific & technical services	45%	155%	154%	11%
55----	Management of companies & enterprises	B	D	D	0%
56----	Admin, support, waste mgt, remediation services	17%	110%	109%	21%
61----	Educational services	A-0	D-0	D-0	6300%
62----	Health care and social assistance	-9%	22%	37%	-80%
71----	Arts, entertainment & recreation	A-C	D	D	2000%
72----	Accommodation & food services	24%	48%	24%	56%
81----	Other services (except public administration)	12%	53%	116%	-100%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	B-0	D-0	D-0	-100%
99----	Unclassified establishments	-100%	-100%	-100%	-100%

Garvin has a strong business base of 5-49 employees putting it outside that under 19 range. As a matter of fact, the 1-4 employee size firm showed a decrease during the study period.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	6%	-3%	20%	11%	29%	14%	0%	100%		
11----	Forestry, fishing, hunting, and agriculture support	50%	-50%								
21----	Mining	-2%	-26%	0%	0%	100%	133%	0%			
22----	Utilities	0%	0%	100%	-100%	0%					
23----	Construction	38%	12%	27%	500%	300%	-100%				
31----	Manufacturing	7%	13%	300%	-29%	-25%	0%	-50%	0%		
42----	Wholesale trade	6%	-11%	50%	20%	0%	-100%				
44----	Retail trade	-11%	-10%	-27%	0%	11%	0%	100%			
48----	Transportation & warehousing	36%	13%	20%		50%					
51----	Information	-25%	-18%	-75%	100%						
52----	Finance & insurance	13%	-11%	175%	0%	100%					
53----	Real estate & rental & leasing	-16%	-24%	100%	0%						
54----	Professional, scientific & technical services	11%	0%	100%	0%						
55----	Management of companies & enterprises	0%	-33%		-100%						
56----	Admin, support, waste mgt, remediation services	21%	0%	200%	100%	0%					
61----	Educational services	6300%	2900%								
62----	Health care and social assistance	14%	15%	70%	0%	-17%	-50%	0%			
71----	Arts, entertainment & recreation	450%	250%								
72----	Accommodation & food services	-7%	0%	-50%	-50%	44%					
81----	Other services (except public administration)	11%	12%	6%	0%	100%					
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%			-100%	-100%					
99----	Unclassified establishments	-100%	-100%								

Study Region – Pennsylvania Counties

Lackawanna County

Lackawanna County experienced an increase in forestry, management of companies, and transportation & warehousing during the ten year period. The increase in the number of establishments was only 3 percent. The increase in the number of employees overall was 8 percent. The biggest employee gains were in the transportation and warehousing, arts & entertainment, and finance & insurance, and professional, scientific, and technical tied for third place. Utilities, construction, manufacturing, the arts, and other services showed decreases in the number of establishments. Manufacturing, information, real estate, and other services show decreases in employment.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-		Total Establishments
			Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	
-----	Total	8%	48%	43%	3%
11----	Forestry, fishing, hunting, and agriculture support	A	D	D	200%
21----	Mining	B	D	D	13%
22----	Utilities	186-E	1651-D	6580-D	-10%
23----	Construction	8%	57%	57%	-2%
31----	Manufacturing	-21%	-7%	-6%	-15%
42----	Wholesale trade	27%	92%	74%	0%
44----	Retail trade	8%	50%	46%	-4%
48----	Transportation & warehousing	95%	179%	151%	33%
51----	Information	-22%	4%	19%	21%
52----	Finance & insurance	42%	142%	93%	18%
53----	Real estate & rental & leasing	-3%	58%	55%	15%
54----	Professional, scientific & technical services	42%	87%	103%	27%
55----	Management of companies & enterprises	9%	11%	14%	43%
56----	Admin, support, waste mgt, remediation services	19%	60%	52%	7%
61----	Educational services	16%	34%	46%	9%
62----	Health care and social assistance	15%	66%	57%	9%
71----	Arts, entertainment & recreation	65%	87%	48%	-1%
72----	Accommodation & food services	16%	50%	52%	6%
81----	Other services (except public administration)	-8%	28%	29%	-5%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%	-100%	-100%
99----	Unclassified establishments	-80%	-80%	-89%	-93%

There has been some growth in the 100-249 employee range, but the bulk of the growth has been in firms 19 and under.

Industry Code	Industry Code Description	Total Establishments					'100-249'	'250-499'	'500-999'	or more'	
		'1-4'	'5-9'	'10-19'	'20-49'	'50-99'					
-----	Total	3%	-2%	9%	3%	14%	12%	3%	21%	-9%	20%
11----	Forestry, fishing, hunting, and agriculture support	200%	200%								
21----	Mining	13%	-20%	-100%	100%						
22----	Utilities	-10%	-20%	-100%	100%	-100%	0%				
23----	Construction	-2%	-6%	-13%	47%	8%	-25%	100%			
31----	Manufacturing	-15%	-24%	-2%	13%	-19%	-21%	-25%	-22%	100%	-50%
42----	Wholesale trade	0%	-2%	-8%	-4%	0%	75%	75%			
44----	Retail trade	-4%	-12%	0%	-3%	23%	14%	24%	-75%		
48----	Transportation & warehousing	33%	37%	38%	71%	-15%	-14%	67%			
51----	Information	21%	79%	0%	33%	-40%	200%	0%	100%	-100%	
52----	Finance & insurance	18%	25%	42%	-37%	-7%	17%	-17%	200%	0%	
53----	Real estate & rental & leasing	15%	27%	33%	-62%	0%	100%				
54----	Professional, scientific & technical services	27%	29%	27%	15%	19%	-33%	300%			
55----	Management of companies & enterprises	43%	133%	-50%	25%	33%	150%	300%	-33%		
56----	Admin, support, waste mgt, remediation services	7%	-3%	33%	-5%	31%	25%	15%			
61----	Educational services	9%	-29%	67%	40%	33%	0%	100%	-33%	50%	0%
62----	Health care and social assistance	9%	-8%	18%	38%	38%	32%	-10%	80%	-67%	50%
71----	Arts, entertainment & recreation	-1%	20%	-67%	-38%	-23%	0%				
72----	Accommodation & food services	6%	-2%	1%	0%	54%	0%	0%	0%		
81----	Other services (except public administration)	-5%	-8%	13%	-19%	-14%	33%	-33%	0%		
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%	-100%	-100%		-100%	-100%	-100%	-100%	
99----	Unclassified establishments	-93%	-96%	-100%	-60%						

Lackawanna Baseline – Pre-Drilling Year – 2007

In the base year, Lackawanna County has 5,554 establishments with 97,959 paid employees. The biggest employee sectors are healthcare, retail, and manufacturing. The largest presence of firms are in the retail, other services and hospitality industries.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	97,959	711,164	2,963,459	5,554
11----	Forestry, Fishing, Hunting, and Agriculture Support	A	D	D	3
21----	Mining	B	D	D	9
22----	Utilities	E	D	D	9
23----	Construction	3,025	25,556	131,162	516
31----	Manufacturing	12,736	106,894	444,215	265
42----	Wholesale Trade	4,501	45,584	180,238	278
44----	Retail Trade	14,499	68,106	287,098	990
48----	Transportation and Warehousing	3,709	31,023	128,595	162
51----	Information	2,272	20,491	88,745	74
52----	Finance and Insurance	6,306	86,493	287,050	347
53----	Real Estate and Rental and Leasing	823	5,162	22,250	161
54----	Professional, Scientific, and Technical Services	3,880	35,747	171,964	479
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and Remediation Services	1,994	17,027	72,564	33
56----	Educational Services	4,937	25,156	110,890	232
61----	Health Care and Social Assistance	6,085	31,999	137,199	60
62----	Arts, Entertainment, and Recreation	18,705	157,775	675,739	720
71----	Accommodation and Food Services	1,197	3,478	15,121	79
72----	Other Services (except Public Administration)	8,714	23,735	100,991	547
81----	Unclassified	4,033	19,164	79,752	586
99----		25	57	168	4

Almost 50 percent of Lackawanna County establishments fall into the 1-4 employee range and another 21 percent into the 5-9 category. Only 3 percent of the firms fall into the 100+ category.

Industry Code	Industry Code Description	Total									'1000 or more'
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	
-----	Total	5,554	2,791	1,163	693	541	192	123	35	10	6
11----	Forestry, Fishing, Hunting, and Agriculture Support	3	3	-	-	-	-	-	-	-	-
21----	Mining	9	4	-	4	1	-	-	-	-	
22----	Utilities	9	4	-	2	-	2	1	-	-	
23----	Construction	516	355	75	53	28	3	2	-	-	
31----	Manufacturing	265	76	41	44	43	30	21	7	2	
42----	Wholesale Trade	278	119	58	43	36	14	7	1	-	
44----	Retail Trade	990	420	248	159	108	32	21	1	1	
48----	Transportation and Warehousing	162	78	29	24	17	6	5	2	1	
51----	Information	74	34	9	12	9	3	5	2	-	
52----	Finance and Insurance	347	175	111	29	14	7	5	3	2	
53----	Real Estate and Rental and Leasing	161	107	40	8	4	2	-	-	-	
54----	Professional, Scientific, and Technical Services	479	304	89	45	31	4	4	2	-	
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and	33	7	2	5	8	5	4	2	-	
56----	Remediation Services	232	122	40	18	21	15	15	1	-	
61----	Educational Services	60	15	10	7	16	4	2	2	3	
62----	Health Care and Social Assistance	720	304	171	108	76	29	19	9	1	
71----	Arts, Entertainment, and Recreation	79	55	4	5	10	3	1	1	-	
72----	Accommodation and Food Services	547	237	92	81	100	29	7	1	-	
81----	Other Services (except Public Administration)	586	370	144	44	19	4	4	1	-	
99----	Unclassified	4	2	-	2	-	-	-	-	-	

Luzerne County

Luzerne County has experienced a 1 percent increase in the number of total establishments and 5 percent in the number of paid employees. The biggest establishment gains are in information, education, arts, and transportation/warehousing. The losses were in the agricultural area, manufacturing, and wholesale trade. Utilities, arts, and transportation/warehousing show the largest employee gains, while manufacturing, finance, other services, and management show employee losses.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	5%	50%	44%	1%
11----	Forestry, fishing, hunting, and agriculture support	A	D	D	-50%
21----	Mining	26%	84%	99%	6%
22----	Utilities	82%	366%	281%	73%
23----	Construction	0%	32%	31%	-14%
31----	Manufacturing	-21%	5%	7%	-14%
42----	Wholesale trade	5%	50%	41%	-6%
44----	Retail trade	6%	51%	48%	-8%
48----	Transportation & warehousing	42%	92%	89%	22%
51----	Information	17%	69%	64%	48%
52----	Finance & insurance	-13%	44%	32%	11%
53----	Real estate & rental & leasing	33%	-22%	126%	9%
54----	Professional, scientific & technical services	32%	106%	83%	17%
55----	Management of companies & enterprises	-1%	191%	67%	33%
56----	Admin, support, waste mgt, remediation services	32%	111%	99%	11%
61----	Educational services	13%	59%	67%	29%
62----	Health care and social assistance	12%	50%	48%	11%
71----	Arts, entertainment & recreation	81%	169%	136%	28%
72----	Accommodation & food services	16%	55%	54%	10%
81----	Other services (except public administration)	-9%	16%	11%	-9%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%	-100%	-100%
99----	Unclassified establishments	C-A	D-18	D-58	-93%

The biggest growth sector in Luzerne County occurred with firms of 500+. This is most likely indicative of the larger warehouses and distribution centers. The next group was the 20 -49 employee size firm.

Industry Code	Industry Code Description	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	1%	-2%	0%	12%	-2%	8%	6%	42%	0%
11----	Forestry, fishing, hunting, and agriculture support	-50%	-33%		-100%					
21----	Mining	6%	0%	-60%	33%	100%	0%			
22----	Utilities	73%	200%	-25%	150%	-100%	500%	0%	-100%	
23----	Construction	-14%	-21%	5%	-3%	-6%	33%	20%		
31----	Manufacturing	-14%	-7%	2%	-5%	-29%	-34%	-22%	-7%	0%
42----	Wholesale trade	-6%	-5%	12%	-3%	-40%	8%	0%		0%
44----	Retail trade	-8%	-13%	-18%	10%	11%	-6%	32%	0%	
48----	Transportation & warehousing	22%	20%	3%	40%	0%	220%	133%	200%	
51----	Information	48%	52%	33%	107%	8%	43%	50%	-50%	
52----	Finance & insurance	11%	18%	18%	-13%	0%	-60%	0%	-100%	0%
53----	Real estate & rental & leasing	9%	5%	32%	15%	-50%	100%	-100%		
54----	Professional, scientific & technical services	17%	12%	12%	46%	40%	267%	-38%	100%	
55----	Management of companies & enterprises	33%	425%	-36%	20%	-22%	33%	-33%	300%	-100%
56----	Admin, support, waste mgt, remediation services	11%	12%	12%	15%	-16%	-7%	42%		0%
61----	Educational services	29%	142%	0%	-31%	33%	0%	0%	-100%	100%
62----	Health care and social assistance	11%	12%	-5%	22%	25%	-3%	41%	100%	-40%
71----	Arts, entertainment & recreation	28%	15%	89%	44%	18%	33%	-67%		
72----	Accommodation & food services	10%	5%	9%	24%	7%	24%	10%		
81----	Other services (except public administration)	-9%	-12%	-2%	-3%	-11%	33%	0%		
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-80%	100%	-50%	-100%	-100%	-100%	-100%		-100%
99----	Unclassified establishments	-100%	-100%	-100%	-100%	-100%				

Luzerne County Baseline – Pre-Drilling Year – 2007

In 2007, Luzerne County has 7,705 establishments with 128,627 employees. Retail is the largest sector, followed by healthcare and other services. From an employment standpoint healthcare, retail, and manufacturing are the three largest sectors. The smallest number of establishments are mining, unclassified, and utilities. From an employee perspective, agriculture, unclassified, and mining are the smallest employee driven sectors.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	128,627	1,040,253	4,211,296	7,705
11----	Forestry, Fishing, Hunting, and Agriculture Support	A	D	D	2
21----	Mining	283	2,831	12,537	18
22----	Utilities	1,949	51,593	167,306	26
23----	Construction	5,339	44,777	234,630	701
31----	Manufacturing	18,196	176,805	735,433	350
42----	Wholesale Trade	6,146	59,148	243,435	361
44----	Retail Trade	19,129	97,865	410,527	1,282
48----	Transportation and Warehousing	6,540	48,936	213,433	276
51----	Information	3,896	47,284	174,950	149
52----	Finance and Insurance	4,899	63,290	238,211	489
53----	Real Estate and Rental and Leasing	1,782	12,668	86,105	224
54----	Professional, Scientific, and Technical Services	5,019	45,180	192,095	607
55----	Management of Companies and Enterprises	2,474	70,237	155,239	53
56----	Administrative and Support and Waste Management and Remediation Services	8,426	43,874	193,867	399
61----	Educational Services	3,803	22,308	95,106	72
62----	Health Care and Social Assistance	23,113	195,994	815,414	991
71----	Arts, Entertainment, and Recreation	2,260	8,973	40,318	95
72----	Accommodation and Food Services	11,052	30,130	128,465	766
81----	Other Services (except Public Administration)	4,309	18,333	74,128	841
99----	Unclassified	A	18	58	3

Over 50 percent of Luzerne County businesses fall into the 1-4 employee size category. Eight-five percent are 19 and under employees.

Industry Code	Industry Code Description	Total Establishments	'1000 or more'								
			'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	7,705	3,928	1,545	1,054	690	239	177	51	16	5
11----	Forestry, Fishing, Hunting, and Agriculture Support	2	2	-	-	-	-	-	-	-	-
21----	Mining	18	5	2	4	6	1	-	-	-	-
22----	Utilities	26	9	3	5	-	6	2	-	-	1
23----	Construction	701	458	110	65	50	12	6	-	-	-
31----	Manufacturing	350	100	59	57	55	25	36	14	3	1
42----	Wholesale Trade	361	160	82	61	35	14	7	1	1	-
44----	Retail Trade	1,282	542	313	232	117	44	29	5	-	-
48----	Transportation and Warehousing	276	124	41	35	48	16	7	3	2	-
51----	Information	149	67	20	29	14	10	6	2	1	-
52----	Finance and Insurance	489	269	140	49	21	4	4	-	2	-
53----	Real Estate and Rental and Leasing	224	147	45	23	5	2	-	2	-	-
54----	Professional, Scientific, and Technical Services	607	406	95	60	28	11	5	2	-	-
55----	Management of Companies and Enterprises	53	21	7	6	7	4	4	4	-	-
56----	Administrative and Support and Waste Management and Remediation Services	399	212	65	47	36	14	17	7	1	-
61----	Educational Services	72	29	13	9	12	4	2	-	2	1
62----	Health Care and Social Assistance	991	434	216	166	94	28	38	10	3	2
71----	Arts, Entertainment, and Recreation	95	45	17	13	13	4	1	1	1	-
72----	Accommodation and Food Services	766	341	123	130	125	36	11	-	-	-
81----	Other Services (except Public Administration)	841	555	193	63	24	4	2	-	-	-
99----	Unclassified	3	2	1	-	-	-	-	-	-	-

Carbon County

Carbon County showed an 8 percent increase in establishments and a 3 percent decline in paid employees. Transportation & Warehousing, real estate, and administrative support show the largest increase in establishments. Conversely, agricultural, unclassified and management of companies showed the sharpest decreases in the number of establishments. Professional, scientific; education and healthcare showed the greatest percentage increase in paid employees. Administrative, manufacturing, and finance/insurance showed the biggest percentage decreases in employees.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	-3%	37%	38%	8%
11----	Forestry, fishing, hunting, and agriculture support	A-0	D-0	D-0	-100%
21----	Mining	B-A	D-S	D-205	-25%
22----	Utilities	A	D	D	-50%
23----	Construction	17%	114%	121%	14%
31----	Manufacturing	-32%	2%	10%	-13%
42----	Wholesale trade	-24%	7%	3%	-13%
44----	Retail trade	16%	52%	48%	-12%
48----	Transportation & warehousing	55%	178%	167%	50%
51----	Information	596-F	3080-D	12680-D	0%
52----	Finance & insurance	-27%	17%	9%	4%
53----	Real estate & rental & leasing	37%	117%	185%	48%
54----	Professional, scientific & technical services	49%	120%	103%	6%
55----	Management of companies & enterprises	122-B	1323-D	20313-D	-75%
56----	Admin, support, waste mgt, remediation services	-77%	-62%	-65%	46%
61----	Educational services	48%	80%	59%	0%
62----	Health care and social assistance	32%	87%	77%	23%
71----	Arts, entertainment & recreation	-4%	35%	32%	26%
72----	Accommodation & food services	7%	40%	49%	26%
81----	Other services (except public administration)	26%	100%	103%	10%
99----	Unclassified establishments				-100%

Carbon County showed the largest percentage increases in firms employing 100 -249 and 10 - 19. Its largest decreases were the firms employing 50 -99, 500 -999 and 250 – 499.

Industry Code	Industry Code Description	Total							'100-249'	'250-499'	'500-999'	'1000 or more'
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'					
-----	Total	8%	1%	19%	25%	19%	-30%	25%	-17%	-25%		
11----	Forestry, fishing, hunting, and agriculture support	-100%	-100%	-100%								
21----	Mining	-25%	200%	-100%								
22----	Utilities	-50%	-100%	0%								
23----	Construction	14%	8%	41%	-17%	200%	-100%					
31----	Manufacturing	-13%	-21%	17%	67%	20%	-69%	0%	-100%	0%		
42----	Wholesale trade	-13%	0%	-29%	-67%	0%	0%					
44----	Retail trade	-12%	-29%	8%	3%	0%	100%	-33%				
48----	Transportation & warehousing	50%	75%	-33%	500%	-40%						
51----	Information	0%	0%	-17%	0%	0%		0%	100%			
52----	Finance & insurance	4%	12%	11%	-25%	-25%	-100%					
53----	Real estate & rental & leasing	48%	56%	17%		-100%						
54----	Professional, scientific & technical services	6%	6%	-20%	17%							
55----	Management of companies & enterprises	-75%	-100%		-100%	0%	-100%					
56----	Admin, support, waste mgt, remediation services	46%	100%	-33%	33%	-50%				-100%		
61----	Educational services	0%	-30%		25%	0%						
62----	Health care and social assistance	23%	-3%	0%	209%	120%		0%	0%	0%		
71----	Arts, entertainment & recreation	26%	42%	133%	-100%	0%	-100%		-100%	0%		
72----	Accommodation & food services	26%	15%	118%	-12%	47%	0%		0%			
81----	Other services (except public administration)	10%	-3%	77%	0%	50%						
99----	Unclassified establishments	-100%	-100%	-100%								

Carbon County – Pre-Drilling Baseline 2007

Carbon County has 1,197 establishments employing 13,727 employees. The largest employee sectors are manufacturing, healthcare, and retail. The smallest are real estate, education, and wholesale trade. Retail, construction, and other services make up the largest establishment sectors while management, utilities, and mining are the fewest represented.

Industry Code	Industry Code Description	First-				Total Establishments
		Paid Employees for Paid Period including March 12 (number)	Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)		
-----	Total	13,727	86,258	371,285	1,197	
21----	Mining	A	S	205	3	
22----	Utilities	A	D	D	1	
23----	Construction	614	5,014	25,953	176	
31----	Manufacturing	2,370	21,660	95,794	54	
42----	Wholesale Trade	185	1,776	7,323	28	
44----	Retail Trade	2,285	11,238	47,462	192	
48----	Transportation and Warehousing	336	2,110	9,077	36	
51----	Information	F	D	D	20	
52----	Finance and Insurance	320	2,998	11,315	56	
53----	Real Estate and Rental and Leasing	114	637	3,734	37	
54----	Professional, Scientific, and Technical Services	348	2,151	9,566	70	
55----	Management of Companies and Enterprises	B	D	D	1	
56----	Administrative and Support and Waste Management and Remediation Services	224	1,658	7,163	35	
61----	Educational Services	126	467	1,988	15	
62----	Health Care and Social Assistance	2,340	17,751	75,471	153	
71----	Arts, Entertainment, and Recreation	1,171	2,428	7,958	29	
72----	Accommodation and Food Services	1,567	4,919	22,509	127	
81----	Other Services (except Public Administration)	732	3,196	13,775	164	

Over half of Carbon County’s establishments fall into the 1-4 categories while 78 percent overall have 9 or less employees. Less than 2 percent of establishments have 100 or more employees.

Industry Code	Industry code description	Total									
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	1197	676	258	138	86	16	15	5	3	0
21----	Mining	3	3	0	0	0	0	0	0	0	0
22----	Utilities	1	0	1	0	0	0	0	0	0	0
23----	Construction	176	134	31	5	6	0	0	0	0	0
31----	Manufacturing	54	15	7	10	12	4	5	0	1	0
42----	Wholesale Trade	28	19	5	1	2	1	0	0	0	0
44----	Retail Trade	192	79	57	35	16	2	2	1	0	0
48----	Transportation and Warehousing	36	21	4	6	3	2	0	0	0	0
51----	Information	20	8	5	1	2	0	2	2	0	0
52----	Finance and Insurance	56	29	21	3	3	0	0	0	0	0
53----	Real Estate and Rental and Leasing	37	28	7	2	0	0	0	0	0	0
54----	Professional, Scientific, and Technical Services	70	53	8	7	1	0	1	0	0	0
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and	1	0	0	0	1	0	0	0	0	0
56----	Remediation Services	35	26	2	4	2	1	0	0	0	0
61----	Educational Services	15	7	2	5	1	0	0	0	0	0
62----	Health Care and Social Assistance	153	64	38	34	11	2	2	1	1	0
71----	Arts, Entertainment, and Recreation	29	17	7	0	1	0	3	0	1	0
72----	Accommodation and Food Services	127	62	24	15	22	3	0	1	0	0
81----	Other Services (except Public Administration)	164	111	39	10	3	1	0	0	0	0

Monroe County

Over the 10 year period ending 2007, Monroe County saw a 16 percent increase in the number of establishments and a 31 percent increase in employees. The biggest sector was agriculture followed by mining and then transportation and warehousing. Utilities, retail, and hospitality showed the lowest gains in the number of establishments. Transportation/Warehousing, education, and healthcare had the largest employee gains. Information, real estate, and hospitality showed the lowest gains. Information actually demonstrated a 6 percent decline.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	31%	109%	97%	16%
11----	Forestry, fishing, hunting, and agriculture support	A	D	D	100%
21----	Mining	B-54	D-440	D-2343	75%
22----	Utilities	B-C	D	D	0%
23----	Construction	44%	131%	107%	8%
31----	Manufacturing	8%	93%	69%	13%
42----	Wholesale trade	47%	206%	166%	18%
44----	Retail trade	22%	71%	63%	3%
48----	Transportation & warehousing	461%	635%	577%	54%
51----	Information	-6%	-2%	0%	17%
52----	Finance & insurance	30%	92%	76%	25%
53----	Real estate & rental & leasing	0%	67%	48%	41%
54----	Professional, scientific & technical services	22%	57%	46%	34%
55----	Management of companies & enterprises				25%
56----	Admin, support, waste mgt, remediation services	10%	41%	74%	20%
61----	Educational services	79%	169%	142%	50%
62----	Health care and social assistance	49%	114%	103%	35%
71----	Arts, entertainment & recreation	-10%	38%	50%	21%
72----	Accommodation & food services	4%	36%	34%	5%
81----	Other services (except public administration)	33%	94%	87%	23%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	E	D	D	-100%
99----	Unclassified establishments	B-A	D	D	-97%

Monroe County demonstrated the largest percentage increases in firms in the 1000 or more, 250-499, and 50-99 category. There was a 40 percent decline in the 500 -999 and a modest 5 percent growth in the 100-249 followed by a 12 percent growth in the 1-4 firms.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	16%	12%	18%	27%	20%	29%	5%	50%	-40%	50%
11----	Forestry, fishing, hunting, and agriculture support	100%	100%								
21----	Mining	75%		67%	-100%						
22----	Utilities	0%	-50%		0%	0%					
23----	Construction	8%	7%	1%	0%	50%	300%	100%			
31----	Manufacturing	13%	20%	25%	36%	15%	-55%	40%	0%	-100%	0%
42----	Wholesale trade	18%	14%	26%	29%	0%	50%	100%			
44----	Retail trade	3%	-2%	-5%	24%	13%	29%	-8%	200%		
48----	Transportation & warehousing	54%	54%	33%	22%	50%				0%	
51----	Information	17%	4%	100%	60%	0%	-50%	0%			
52----	Finance & insurance	25%	21%	42%	12%	-25%					
53----	Real estate & rental & leasing	41%	49%	80%	-45%	25%	-100%	-100%			
54----	Professional, scientific & technical services	34%	36%	0%	133%	11%	-100%	0%			
55----	Management of companies & enterprises	25%	0%					-100%			
56----	Admin, support, waste mgt, remediation services	20%	14%	40%	43%	20%	-40%	100%			
61----	Educational services	50%	9%	100%	250%	33%	100%	0%			
62----	Health care and social assistance	35%	17%	57%	27%	89%	100%	40%			0%
71----	Arts, entertainment & recreation	21%	27%	-20%	40%	17%	200%		100%	-50%	
72----	Accommodation & food services	5%	2%	-9%	27%	7%	46%	-25%	-67%		
81----	Other services (except public administration)	23%	14%	52%	16%	18%	200%				
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%				-100%			-100%		
99----	Unclassified establishments	-97%	-97%	-100%	-100%						

Monroe County Baseline Pre-Drilling 2007

In 2007, Monroe County had 3,689 establishments employing 49,076 employees. Retail, construction, and other services represented the largest number of establishments. Unclassified, agricultural, and management represented the least number of establishments. Retail, hospitality, and transportation/warehousing represented the largest number of employees while Agriculture, Mining and utilities represent the smallest employment sectors.

Industry Code	Industry Code Description		Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total		49,076	395,282	1,605,590	3,689
11----	Forestry, Fishing, Hunting, and Agriculture Support	A		D	D	4
21----	Mining		54	440	2,343	7
22----	Utilities	C		D	D	6
23----	Construction		2,828	24,399	111,696	467
31----	Manufacturing		5,654	98,071	342,451	135
42----	Wholesale Trade		1,173	18,428	69,716	120
44----	Retail Trade		9,268	46,363	193,597	685
48----	Transportation and Warehousing		6,577	66,784	286,113	91
51----	Information		547	4,972	19,976	48
52----	Finance and Insurance		1,154	11,198	42,798	193
53----	Real Estate and Rental and Leasing		877	5,363	21,883	163
54----	Professional, Scientific, and Technical Services		1,705	13,412	57,771	340
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and Remediation Services	A		195	701	5
56----			1,498	6,768	37,970	182
61----	Educational Services		610	3,690	15,410	30
62----	Health Care and Social Assistance		5,902	50,131	213,925	365
71----	Arts, Entertainment, and Recreation		2,045	8,563	28,669	70
72----	Accommodation and Food Services		6,917	23,840	107,440	381
81----	Other Services (except Public Administration)		2,132	10,388	44,544	396
99----	Unclassified	A		D	D	1

Over half of the Monroe county establishments employ 1-4 people, while 89 percent of the firms employ 19 or under. Less than 2 percent employ 100 or more people.

Industry Code	Industry Code Description	Total									
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	3,689	2,059	766	476	243	81	46	12	3	3
11----	Forestry, Fishing, Hunting, and Agriculture Support	4	4	0	0	0	0	0	0	0	0
21----	Mining	7	1	5	0	1	0	0	0	0	0
22----	Utilities	6	2	1	1	1	1	0	0	0	0
23----	Construction	467	332	79	31	15	8	2	0	0	0
31----	Manufacturing	135	60	30	15	15	5	7	2	0	1
42----	Wholesale Trade	120	74	24	9	8	3	2	0	0	0
44----	Retail Trade	685	298	169	129	53	22	11	3	0	0
48----	Transportation and Warehousing	91	63	8	11	3	0	1	3	1	1
51----	Information	48	27	8	8	3	1	1	0	0	0
52----	Finance and Insurance	193	97	64	28	3	1	0	0	0	0
53----	Real Estate and Rental and Leasing	163	124	27	6	5	0	0	1	0	0
54----	Professional, Scientific, and Technical Services	340	240	47	42	10	0	1	0	0	0
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and Remediation Services	5	3	2	0	0	0	0	0	0	0
56----	Educational Services	182	121	28	20	6	3	4	0	0	0
61----	Health Care and Social Assistance	30	12	4	7	4	2	1	0	0	0
62----	Arts, Entertainment, and Recreation	365	153	102	56	36	10	7	0	0	1
71----	Accommodation and Food Services	70	42	8	7	7	3	0	2	1	0
72----	Other Services (except Public Administration)	381	161	60	70	60	19	9	1	1	0
81----	Unclassified	396	244	100	36	13	3	0	0	0	0
99----		1	1	0	0	0	0	0	0	0	0

Pike County

Pike County demonstrated a 42 percent increase in the number of establishments and a 53 percent increase in the number of employees. The largest percentage sector increases are other services, real estate, administration, and construction. The biggest percentage declines are education, management, and manufacturing. The largest percentage increases in types of employees are administration, healthcare, and construction. The largest decreases are manufacturing, wholesale, and agriculture.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	53%	100%	93%	42%
11----	Forestry, Fishing, Hunting, and Agriculture Support	A	D	D	100%
21----	Mining	B-A	D	D	-20%
22----	Utilities	B-A	D-225	D-939	20%
23----	Construction	102%	228%	193%	71%
31----	Manufacturing	-36%	-34%	-34%	-30%
42----	Wholesale trade	-29%	-53%	-42%	12%
44----	Retail trade	69%	161%	149%	20%
48----	Transportation & warehousing	40%	93%	119%	31%
51----	Information	47%	330%	182%	50%
52----	Finance & insurance	40%	173%	147%	61%
53----	Real estate & rental & leasing	25%	62%	42%	83%
54----	Professional, scientific & technical services	58%	183%	106%	40%
55----	Management of companies & enterprises	E-C	D	D	-67%
56----	Admin, support, waste mgt, remediation services	129%	425%	402%	77%
61----	Educational services	B	D	D	-75%
62----	Health care and social assistance	106%	191%	185%	57%
71----	Arts, entertainment & recreation	43%	132%	189%	63%
72----	Accommodation & food services	65%	123%	105%	16%
81----	Other services (except public administration)	101%	187%	185%	84%
99----	Unclassified establishments	A	D	D	-100%

With the 42 percent increase in establishments, there was a 200 percent in the 250-499 employee size firms followed by 50 -99 and 20 -49. The smallest percentage increases were 100-249 (-13 percent), 10 – 19 and 1-4.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	42%	40%	50%	30%	65%	86%	-13%	200%		
11----	Forestry, Fishing, Hunting, and Agriculture Support										
21----	Mining	-20%	-33%		-100%						
22----	Utilities	20%	100%	-33%							
23----	Construction	71%	60%	125%	150%	100%					
31----	Manufacturing	-30%	-50%	0%	-25%	50%		-100%			
42----	Wholesale Trade	12%	22%	25%	-50%	-100%					
44----	Retail Trade	20%	10%	8%	44%	80%	100%	50%			
48----	Transportation and Warehousing	31%	36%	50%	0%	-50%					
51----	Information	50%	125%	0%	0%	-100%					
52----	Finance and Insurance	61%	123%	8%	0%						
53----	Real Estate and Rental and Leasing	83%	68%	200%	100%			-100%			
54----	Professional, Scientific, and Technical Services	40%	37%	50%	0%						
55----	Management of Companies and Enterprises	-67%	-100%		-100%				-100%		
56----	Administrative and Support and Waste Management	77%	59%	125%	200%						
61----	Educational Services	-75%	-100%	-100%		0%					
62----	Health Care and Social Assistance	57%	32%	65%	83%		-50%				
71----	Arts, Entertainment, and Recreation	63%	38%	150%	400%	0%	0%				
72----	Accommodation and Food Services	16%	8%	29%	30%	13%	100%	-67%			
81----	Other Services (except Public Administration)	84%	113%	63%	-18%	133%	200%				
99----	Unclassified establishments	-100%	-100%								

Pike County- Baseline – Pre-Drilling 2007

Pike County has 977 establishments with 8,177 employees. The establishments are manufacturing, transportation and other services. The smallest sectors are agriculture, management, and mining. As far as employment size, retail and hospitality employ the most followed by healthcare while agriculture, mining, and utilities employ the least.

Industry Code	Industry Code Description		Paid employees for paid period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total		8,177	44,872	195,366	977
11----	Forestry, Fishing, Hunting, and Agriculture Support	A		D	D	1
21----	Mining	A		D	D	4
22----	Utilities	B		225	939	6
23----	Construction		567	4,391	20,312	181
31----	Manufacturing		198	1,503	6,872	21
42----	Wholesale Trade		77	638	2,694	28
44----	Retail Trade		1,968	10,434	43,330	130
48----	Transportation and Warehousing		148	561	2,279	21
51----	Information		128	2,004	6,057	15
52----	Finance and Insurance		158	1,633	6,252	45
53----	Real Estate and Rental and Leasing		512	1,951	8,007	53
54----	Professional, Scientific, and Technical Services		238	2,429	9,481	81
55----	Management of Companies and Enterprises	C		D	D	1
56----	Administrative and Support and Waste Management and Remediation Services		135	1,093	4,935	39
61----	Educational Services	B		D	D	1
62----	Health Care and Social Assistance		811	4,467	19,900	88
71----	Arts, Entertainment, and Recreation		248	1,003	5,277	31
72----	Accommodation and Food Services		1,855	6,849	32,718	102
81----	Other Services (except Public Administration)		912	4,007	18,521	129

Almost 64 percent of the firms employ 1-4 people while 1 percent of the firms employ 100 or more.

Industry code	Industry code description	Total									'1000 or more'
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	
-----	Total	977	625	195	90	43	13	7	3	1	0
11----	Forestry, Fishing, Hunting, and Agriculture Support	1	0	1	0	0	0	0	0	0	0
21----	Mining	4	2	2	0	0	0	0	0	0	0
22----	Utilities	6	4	2	0	0	0	0	0	0	0
23----	Construction	181	142	27	10	2	0	0	0	0	0
31----	Manufacturing	21	8	7	3	3	0	0	0	0	0
42----	Wholesale Trade	28	22	5	1	0	0	0	0	0	0
44----	Retail Trade	130	66	26	23	9	2	3	1	0	0
48----	Transportation and Warehousing	21	15	3	1	1	1	0	0	0	0
51----	Information	15	9	1	4	0	1	0	0	0	0
52----	Finance and Insurance	45	29	14	2	0	0	0	0	0	0
53----	Real Estate and Rental and Leasing	53	37	12	2	1	0	0	1	0	0
54----	Professional, Scientific, and Technical Services	81	67	9	3	2	0	0	0	0	0
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and Remediation Services	1	0	0	0	0	0	1	0	0	0
56----	Remediation Services	39	27	9	3	0	0	0	0	0	0
61----	Educational Services	1	0	0	0	1	0	0	0	0	0
62----	Health Care and Social Assistance	88	41	28	11	6	1	1	0	0	0
71----	Arts, Entertainment, and Recreation	31	18	5	5	2	1	0	0	0	0
72----	Accommodation and Food Services	102	55	18	13	9	4	1	1	1	0
81----	Other Services (except Public Administration)	129	83	26	9	7	3	1	0	0	0

Tioga County

Tioga County saw no increase in firms and a 5 percent decline in paid employees in the ten year study period. The management of firms increased as did the professional/scientific/technical and information and information categories. Unclassified, agriculture, and utilities showed the biggest decreases. Employees in other services, education, and finance insurance grew while arts, manufacturing, and utilities decreased.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-	Annual	Total Establishments
			quarter payroll (\$1,000)	Payroll (\$1,000)	
-----	Total	-5%	27%	23%	0%
11----	Forestry, fishing, hunting, and agriculture support	9%	15%	25%	-38%
21----	Mining	A	D	D	0%
22----	Utilities	-19%	35%	30%	-30%
23----	Construction	-8%	27%	47%	-4%
31----	Manufacturing	-28%	4%	3%	-9%
42----	Wholesale trade	-16%	29%	30%	-15%
44----	Retail trade	10%	30%	36%	-2%
48----	Transportation & warehousing	-3%	21%	10%	0%
51----	Information	16%	51%	32%	44%
52----	Finance & insurance	15%	80%	59%	-12%
53----	Real estate & rental & leasing	B-62	D-331	D-1548	47%
54----	Professional, scientific & technical services	-3%	88%	39%	2%
55----	Management of companies & enterprises	A-44	D-637	D-2435	400%
56----	Admin, support, waste mgt, remediation services	1%	52%	75%	7%
61----	Educational services	79-C	330-D	1140-D	0%
62----	Health care and social assistance	11%	43%	35%	9%
71----	Arts, entertainment & recreation	-38%	-33%	-1%	33%
72----	Accommodation & food services	-9%	3%	11%	2%
81----	Other services (except public administration)	28%	19%	7%	5%
99----	Unclassified establishments	B-A	D	D	-92%

Firms in the 100-249, 20-49, and 10 – 19 showed the largest percentage increases while those in the 1000+, 50-99, and 250-499 showed the sharpest decreases.

Industry Code	Industry Code Description	Total Establishments	'1000 or more'							
			'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'
-----	Total	0%	-6%	5%	16%	19%	-52%	50%	-25%	-100%
11----	Forestry, Fishing, Hunting, and Agriculture Support	-38%	-45%	-100%	100%					
21----	Mining	0%	0%	-100%						
22----	Utilities	-30%	####	-33%	50%					
23----	Construction	-4%	-3%	0%	-17%	0%				
31----	Manufacturing	-9%	15%	-10%	-17%	-29%	-40%	33%	-50%	-100%
42----	Wholesale Trade	-15%	-8%	-29%	50%	-75%				
44----	Retail Trade	-2%	-19%	0%	18%	92%	-75%	0%	0%	
48----	Transportation and Warehousing	0%	4%	-14%	20%	-14%				
51----	Information	44%	25%		50%	100%	-100%			
52----	Finance and Insurance	-12%	-6%	-28%	25%		-100%			
53----	Real Estate and Rental and Leasing	47%	64%	0%						
54----	Professional, Scientific, and Technical Services	2%	-6%	50%	0%	-100%				
55----	Management of Companies and Enterprises	400%			100%					
56----	Administrative and Support and Waste Management and Remediation Services	7%	-16%	125%	200%	-33%	-100%			
61----	Educational Services	0%	0%		-100%		-100%			
62----	Health Care and Social Assistance	9%	0%	11%	38%	11%	0%	0%	0%	
71----	Arts, Entertainment, and Recreation	33%	86%	-50%	-50%	0%				
72----	Accommodation and Food Services	2%	-3%	-19%	40%	50%	-40%	0%		
81----	Other Services (except Public Administration)	5%	-5%	89%	0%	33%				
99----	Unclassified	-92%	-91%	-100%	-100%					

Tioga County – Baseline – Pre-Drilling 2007

Tioga County has 860 firms employing 9,951 people. The firms best represented are transportation and warehousing, healthcare, and other services. Least represented are those unclassified, mining, and education. Manufacturing, retail, and healthcare employ the most while mining, unclassified, and agriculture employ the least.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-quarter payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	9,951	60,577	253,050	860
11----	Forestry, Fishing, Hunting, and Agriculture Support	37	156	767	8
21----	Mining	A	D	D	2
22----	Utilities	115	1,774	7,092	7
23----	Construction	253	1,161	7,432	75
31----	Manufacturing	2,250	18,464	76,597	43
42----	Wholesale Trade	225	1,786	7,826	22
44----	Retail Trade	2,087	8,798	38,462	169
48----	Transportation and Warehousing	362	2,516	10,376	43
51----	Information	168	853	3,620	23
52----	Finance and Insurance	425	4,391	15,596	37
53----	Real Estate and Rental and Leasing	62	331	1,548	22
54----	Professional, Scientific, and Technical Services	206	1,899	6,524	51
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and	44	637	2,435	5
56----	Remediation Services	215	1,444	6,202	30
61----	Educational Services	C	D	D	5
62----	Health Care and Social Assistance	1,730	12,112	49,646	102
71----	Arts, Entertainment, and Recreation	55	134	1,137	16
72----	Accommodation and Food Services	1,092	2,103	9,906	97
81----	Other Services (except Public Administration)	468	1,373	5,498	102
99----	Unclassified	A	D	D	1

Over half of the firms employ 1-4 people with over 88 percent employing 19 and under. Less than 2 percent employ 100 or more people.

Industry Code	Industry Code Description	Total								'1000 or more'	
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'		'500-999'
-----	Total	860	462	181	121	70	10	12	3	1	0
11----	Forestry, Fishing, Hunting, and Agriculture Support	8	6	0	2	0	0	0	0	0	0
21----	Mining	2	1	1	0	0	0	0	0	0	0
22----	Utilities	7	0	2	2	3	0	0	0	0	0
23----	Construction	75	58	11	5	1	0	0	0	0	0
31----	Manufacturing	43	15	9	5	5	3	4	1	1	0
42----	Wholesale Trade	22	12	5	3	1	1	0	0	0	0
44----	Retail Trade	169	67	43	33	23	1	1	1	0	0
48----	Transportation and Warehousing	43	25	6	6	6	0	0	0	0	0
51----	Information	23	15	3	3	2	0	0	0	0	0
52----	Finance and Insurance	37	17	13	5	0	0	2	0	0	0
53----	Real Estate and Rental and Leasing	22	18	4	0	0	0	0	0	0	0
54----	Professional, Scientific, and Technical Services	51	33	12	6	0	0	0	0	0	0
55----	Management of Companies and Enterprises	5	1	2	2	0	0	0	0	0	0
56----	Administrative and Support and Waste Management and Remediation Services	30	16	9	3	2	0	0	0	0	0
61----	Educational Services	5	3	1	0	0	0	1	0	0	0
62----	Health Care and Social Assistance	102	48	20	18	10	2	3	1	0	0
71----	Arts, Entertainment, and Recreation	16	13	1	1	1	0	0	0	0	0
72----	Accommodation and Food Services	97	38	22	21	12	3	1	0	0	0
81----	Other Services (except Public Administration)	102	75	17	6	4	0	0	0	0	0
99----	Unclassified	1	1	0	0	0	0	0	0	0	0

Bradford County

Bradford County demonstrated a 150 percent increase in management of companies followed by 136 percent increase in mining companies and a 60% increase in the arts. All of this while having only a 4 percent increase in the number of establishments and a 2 percent decline in paid employees. A number of sectors experienced decline including those unclassified as well as agriculture, administration, and education. As far as employees, there were increases in arts, administration, management, and education with decreases in agriculture, information, manufacturing, and wholesale.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-quarter payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	-2%	31%	25%	4%
11----	Forestry, fishing, hunting, and agriculture support	-50%	-40%	-40%	-30%
21----	Mining	61-B%	62%	85%	136%
22----	Utilities	156-C	1852-D	6851-D	14%
23----	Construction	4%	57%	54%	-2%
31----	Manufacturing	-15%	8%	6%	-3%
42----	Wholesale trade	-15%	26%	21%	-11%
44----	Retail trade	-2%	35%	29%	-1%
48----	Transportation & warehousing	17%	55%	54%	18%
51----	Information	-38%	-14%	-18%	12%
52----	Finance & insurance	16%	107%	75%	-2%
53----	Real estate & rental & leasing	B-72	D-357	D1489	0%
54----	Professional, scientific & technical services	18%	42%	39%	6%
55----	Management of companies & enterprises	C-E	D	D	150%
56----	Admin, support, waste mgt, remediation services	74%	104%	110%	-13%
61----	Educational services				-13%
62----	Health care and social assistance	7%	55%	43%	32%
71----	Arts, entertainment & recreation	89%	101%	63%	60%
72----	Accommodation & food services	9%	34%	44%	-1%
81----	Other services (except public administration)	10%	53%	58%	6%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)				-100%
99----	Unclassified establishments	A	D	D	-92%

Bradford County demonstrated a 9 percent increase in the 10 -19, 8 percent in the 5-9, and 6 percent in the 20 -49 size companies. It showed a 25 percent decrease in the 500 -999, 20 percent in the 100 -249, and 5 percent in the 50 -99.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	4%	2%	8%	9%	6%	-5%	-20%	0%	-25%	0%
11----	Forestry, fishing, hunting, and agriculture support	-30%	-17%	-75%	-100%						
21----	Mining	136%	283%	-33%	-50%						
22----	Utilities	14%		-50%	0%	0%					
23----	Construction	-2%	-7%	0%	57%	0%					
31----	Manufacturing	-3%	-5%	22%	0%	-33%	40%	-20%	50%	-50%	0%
42----	Wholesale trade	-11%	19%	-44%	0%	-75%	-100%				
44----	Retail trade	-1%	-2%	-1%	-2%	8%	0%	-33%	0%		
48----	Transportation & warehousing	18%	9%	10%	86%	33%	100%	-100%			
51----	Information	12%	8%	80%	-25%	0%	0%	-100%			
52----	Finance & insurance	-2%	8%	-25%	0%	40%					
53----	Real estate & rental & leasing	0%	-4%	67%	-50%						
54----	Professional, scientific & technical services	6%	-8%	47%	43%	-50%					
55----	Management of companies & enterprises	150%			-100%			-100%			
56----	Admin, support, waste mgt, remediation services	-13%	-22%	67%	-67%	0%					
61----	Educational services	-13%	-20%	-100%	0%	100%					
62----	Health care and social assistance	32%	36%	63%	11%	100%	-40%	-50%	-67%		0%
71----	Arts, entertainment & recreation	60%	50%	133%	-50%						
72----	Accommodation & food services	-1%	-22%	14%	80%	-13%	-50%				
81----	Other services (except public administration)	6%		14%	43%	-50%					
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%			-100%						
99----	Unclassified establishments	-92%	-91%		-100%						

Bradford – Baseline – Pre-Drilling 2007

Bradford County has 1,359 firms employing 18,093 employees. The firsts are retail, other services, and health care. The least represented sectors are unclassified, administrative, and education. Employees are manufacturing, healthcare, and retail. The smallest sectors are unclassified, agriculture, and real estate.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-quarter payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	18,093	141,562	572,088	1,359
11----	Forestry, Fishing, Hunting, and Agriculture Support	33	187	846	16
21----	Mining	B	370	2,195	26
22----	Utilities	C	D	D	8
23----	Construction	406	2,426	13,540	114
31----	Manufacturing	5,131	50,907	206,351	70
42----	Wholesale Trade	434	3,074	13,177	49
44----	Retail Trade	3,068	14,968	61,673	289
48----	Transportation and Warehousing	589	3,985	16,162	77
51----	Information	267	1,624	6,635	28
52----	Finance and Insurance	664	7,373	23,832	81
53----	Real Estate and Rental and Leasing	72	357	1,489	28
54----	Professional, Scientific, and Technical Services	441	2,394	9,991	83
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and Remediation Services	E	D	D	5
56----	Educational Services	214	624	3,317	26
61----	Health Care and Social Assistance	86	553	2,152	7
62----	Arts, Entertainment, and Recreation	4,154	41,912	165,481	151
71----	Accommodation and Food Services	119	271	1,365	24
72----	Other Services (except Public Administration)	1,286	3,132	13,710	109
81----	Unclassified	652	2,231	9,690	167
99----		A	D	D	1

Over half of Bradford's establishments employ 1-4 people with 90 percent employing 19 or less. Less than 2 percent employ 100 or more people.

Industry Code	Industry Code Description	Total						'100-249'	'250-499'	'500-999'	'1000 or more'
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'				
-----	Total	1,359	737	299	188	92	20	12	6	3	2
11----	Forestry, Fishing, Hunting, and Agriculture Support	16	15	1	0	0	0	0	0	0	0
21----	Mining	26	23	2	1	0	0	0	0	0	0
22----	Utilities	8	2	1	2	3	0	0	0	0	0
23----	Construction	114	81	21	11	1	0	0	0	0	0
31----	Manufacturing	70	21	11	15	6	7	4	3	2	1
42----	Wholesale Trade	49	25	9	13	1	0	1	0	0	0
44----	Retail Trade	289	124	72	58	28	4	2	1	0	0
48----	Transportation and Warehousing	77	47	11	13	4	2	0	0	0	0
51----	Information	28	13	9	3	2	1	0	0	0	0
52----	Finance and Insurance	81	39	24	10	7	1	0	0	0	0
53----	Real Estate and Rental and Leasing	28	22	5	1	0	0	0	0	0	0
54----	Professional, Scientific, and Technical Services	83	46	25	10	2	0	0	0	0	0
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and Remediation Services	5	2	0	0	2	0	0	1	0	0
56----	Educational Services	26	18	5	1	1	0	1	0	0	0
61----	Health Care and Social Assistance	7	4	0	1	2	0	0	0	0	0
62----	Arts, Entertainment, and Recreation	151	76	31	20	16	3	2	1	1	1
71----	Accommodation and Food Services	24	15	7	1	1	0	0	0	0	0
72----	Other Services (except Public Administration)	109	40	33	18	14	2	2	0	0	0
81----	Unclassified	167	123	32	10	2	0	0	0	0	0
99----	Unclassified	1	1	0	0	0	0	0	0	0	0

Wayne County

Wayne County's establishments grew by 3 percent with 3 percent employment growth over the study period. There was a 100 percent growth in mining, followed by healthcare, and the professional/scientific/technical categories. There were declines in the unclassified, management, and utilities. There was a 217 percent increase in employees in mining, 97 percent in administrative, support et al and 52 percent in utilities. Arts, information, and manufacturing showed declines in employment.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	3%	47%	45%	3%
11----	Forestry, fishing, hunting, and agriculture support	12-A	-29%	-33%	13%
21----	Mining	217%	253%	170%	100%
22----	Utilities	52%		409%	-18%
23----	Construction	23%	88%	96%	8%
31----	Manufacturing	-26%	1%	1%	-6%
42----	Wholesale trade	63%	179%	119%	-5%
44----	Retail trade	23%	64%	54%	-2%
48----	Transportation & warehousing	12%	60%	36%	6%
51----	Information	-29%	2%	7%	-11%
52----	Finance & insurance	-8%	57%	38%	5%
53----	Real estate & rental & leasing	7%	118%	91%	-3%
54----	Professional, scientific & technical services	1%	15%	4%	24%
55----	Management of companies & enterprises	A	D	D	-67%
56----	Admin, support, waste mgt, remediation services	97%	189%	182%	11%
61----	Educational services	12%	65%	30%	-13%
62----	Health care and social assistance	7%	32%	42%	27%
71----	Arts, entertainment & recreation	-56%	-33%	-4%	-17%
72----	Accommodation & food services	-24%	16%	18%	-6%
81----	Other services (except public administration)	4%	50%	47%	5%
99----	Unclassified establishments	A	D	D	-100%

Wayne County saw a 300 percent growth in the 250 -499 employee firms with 27 percent in the 20 -49 and 11 percent in the 10 -19. There was a 50 percent drop in the 500 -999, followed by a 25 percent drop in the 50 -99 and 20 percent in the 100 -249.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	3%	-1%	7%	11%	27%	-25%	-20%	300%	-50%	
11----	Forestry, fishing, hunting, and agriculture support	13%	13%								
21----	Mining	100%	20%		100%						
22----	Utilities	-18%	-75%	0%	0%						
23----	Construction	8%	19%	-18%	-32%	0%	200%	100%			
31----	Manufacturing	-6%	10%	-29%	-19%	33%	50%	-100%			
42----	Wholesale trade	-5%	-4%	-50%	25%	100%	-100%				
44----	Retail trade	-2%	-9%	5%	0%	29%	-29%	200%			
48----	Transportation & warehousing	6%	-4%	-8%	400%	-33%					
51----	Information	-11%	6%	-40%	-25%	0%	-100%				
52----	Finance & insurance	5%	30%	-45%	100%	-25%	0%				
53----	Real estate & rental & leasing	-3%	-22%	267%	-50%	-100%					
54----	Professional, scientific & technical services	24%	14%	100%	-20%		-100%				
55----	Management of companies & enterprises	-67%	-100%								
56----	Admin, support, waste mgt, remediation services	11%	12%	0%	0%		-100%	0%			
61----	Educational services	-13%	-40%	0%	0%	100%					
62----	Health care and social assistance	27%	6%	69%	127%	0%	0%	-50%		0%	
71----	Arts, entertainment & recreation	-17%	-40%	67%	25%	100%		-100%			
72----	Accommodation & food services	-6%	-19%	10%	9%	29%	-100%		0%	-100%	
81----	Other services (except public administration)	5%	1%	10%	17%	50%		-50%			
99----	Unclassified establishments		-100%	-100%							

Wayne – Baseline – Pre-Drilling 2007

Wayne County has 1,466 firms employing 13,102 employees. There are 250 in retail, 229 in construction, and 167 in hospitality. The least number of firms by sector are management, education, and agricultural and utilities (tied for third). The employees work in retail, healthcare, and hospitality. The least amount of employees is in agriculture, management, and mining.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-Quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	13,102	80,386	364,062	1,466
11----	Forestry, Fishing, Hunting, and Agriculture Support	A	36	170	9
21----	Mining	76	459	2,536	12
22----	Utilities	100	S	6,444	9
23----	Construction	1,306	10,776	58,912	229
31----	Manufacturing	762	6,090	25,358	66
42----	Wholesale Trade	457	4,307	14,707	40
44----	Retail Trade	2,945	14,491	64,244	250
48----	Transportation and Warehousing	307	1,685	6,402	66
51----	Information	259	2,403	9,571	31
52----	Finance and Insurance	498	5,441	20,810	68
53----	Real Estate and Rental and Leasing	134	811	3,377	37
54----	Professional, Scientific, and Technical Services	379	2,734	12,105	109
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and Remediation Services	A	D	D	1
56----	Remediation Services	674	2,735	13,315	62
61----	Educational Services	82	514	2,449	7
62----	Health Care and Social Assistance	2,196	13,756	59,973	122
71----	Arts, Entertainment, and Recreation	168	655	4,486	24
72----	Accommodation and Food Services	1,711	7,500	40,598	167
81----	Other Services (except Public Administration)	1,030	4,240	18,240	157

Over half of the firms employ between 1-4 employees. Over 92 percent employ less than 19 people. Only 1.1 percent employ 100 or more people.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	1,466	879	289	185	81	15	12	4	1	0
11----	Forestry, Fishing, Hunting, and Agriculture Support	9	9	-	-	-	-	-	-	-	0
21----	Mining	12	6	4	2	-	-	-	-	-	0
22----	Utilities	9	1	5	2	1	-	-	-	-	0
23----	Construction	229	175	31	15	3	3	2	-	-	0
31----	Manufacturing	66	32	10	13	8	3	-	-	-	0
42----	Wholesale Trade	40	26	4	5	4	-	1	-	-	0
44----	Retail Trade	250	120	58	45	18	5	3	1	-	0
48----	Transportation and Warehousing	66	43	11	10	2	-	-	-	-	0
51----	Information	31	18	3	6	4	-	-	-	-	0
52----	Finance and Insurance	68	43	12	8	3	2	-	-	-	0
53----	Real Estate and Rental and Leasing	37	25	11	1	-	-	-	-	-	0
54----	Professional, Scientific, and Technical Services	109	81	22	4	2	-	-	-	-	0
55----	Management of Companies and Enterprises	1	-	1	-	-	-	-	-	-	0
56----	Administrative and Support and Waste Management and Remediation Services	62	47	8	4	1	-	1	1	-	0
61----	Educational Services	7	3	1	1	2	-	-	-	-	0
62----	Health Care and Social Assistance	122	57	27	25	7	1	3	1	1	0
71----	Arts, Entertainment, and Recreation	24	12	5	5	2	-	-	-	-	0
72----	Accommodation and Food Services	167	78	44	25	18	-	1	1	-	0
81----	Other Services (except Public Administration)	157	103	32	14	6	1	1	-	-	0

Wyoming – Baseline – Pre-Drilling 2007

Wyoming County has 629 establishments with 8,225 employees. The firms are retail, unclassified, and manufacturing. The least amount of firms is in management, education, and utilities. The firms employ retail, healthcare, and hospitality employees. The least amount of employees are in management, arts, and information.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	8,225	65,071	272,952	629
11----	Forestry, Fishing, Hunting, and Agriculture Support	C	D	D	6
21----	Mining	B	D	D	5
22----	Utilities	B	D	D	3
23----	Construction		2,012	11,451	72
31----	Manufacturing	H	D	D	31
42----	Wholesale Trade	E	3,799	17,995	18
44----	Retail Trade		5,757	24,423	112
48----	Transportation and Warehousing		383	3,000	39
51----	Information		73	346	10
52----	Finance and Insurance		207	1,656	40
53----	Real Estate and Rental and Leasing	B	D	D	10
54----	Professional, Scientific, and Technical Services		212	1,876	42
55----	Management of Companies and Enterprises	A	D	D	1
56----	Administrative and Support and Waste Management and Remediation Services	E	D	D	23
61----	Educational Services	C	D	D	2
62----	Health Care and Social Assistance		1,136	8,195	70
71----	Arts, Entertainment, and Recreation		37	73	11
72----	Accommodation and Food Services		549	1,200	57
81----	Other Services (except Public Administration)		260	1,248	77

Industry Code	Industry Code Description	Total Establishments	'1000 or more'								
			'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	
-----	Total	629	378	121	74	34	12	7	2	0	1
11----	Forestry, Fishing, Hunting, and Agriculture Support	6	3	1	1	0	0	1	0	0	0
21----	Mining	5	3	0	2	0	0	0	0	0	0
22----	Utilities	3	1	1	1	0	0	0	0	0	0
23----	Construction	72	57	7	6	2	0	0	0	0	0
31----	Manufacturing	31	15	3	4	5	3	0	0	0	1
42----	Wholesale Trade	18	9	3	3	1	1	1	0	0	0
44----	Retail Trade	112	53	26	20	9	2	2	0	0	0
48----	Transportation and Warehousing	39	26	4	4	2	3	0	0	0	0
51----	Information	10	6	1	2	1	0	0	0	0	0
52----	Finance and Insurance	40	21	14	4	1	0	0	0	0	0
53----	Real Estate and Rental and Leasing	10	7	2	1	0	0	0	0	0	0
54----	Professional, Scientific, and Technical Services	42	30	5	5	2	0	0	0	0	0
55----	Management of Companies and Enterprises Administrative and Support and Waste Management and Remediation Services	1	1	0	0	0	0	0	0	0	0
56----	Educational Services	23	19	0	3	0	0	0	1	0	0
61----	Health Care and Social Assistance	2	1	0	0	0	0	1	0	0	0
62----	Arts, Entertainment, and Recreation	70	28	28	4	5	2	2	1	0	0
71----	Accommodation and Food Services	11	7	4	0	0	0	0	0	0	0
72----	Other Services (except Public Administration)	57	31	12	7	6	1	0	0	0	0
81----		77	60	10	7	0	0	0	0	0	0

Over 60 percent of the firms employ 1-4 people. That climbs to 91 percent employing 19 and under. A little more than one percent employ 100 or more in the county.

Wyoming County

Wyoming County's business establishments decreased by 1 percent and its paid employees decreased by 7 percent during the study period. Increases were demonstrated in information, arts, and finance sectors with decreases in unclassified, mining and wholesale. Employee changes were noted in professional, scientific, and agricultural. Decreases in transportation/warehousing, construction, and hospitality were noted.

Industry Code	Industry Code Description	Paid employees for paid period including March 12 (number)	First-quarter payroll (\$1,000)	Annual payroll (\$1,000)	Total Establishments
-----	Total	-7%	14%	13%	-1%
11----	Forestry, fishing, hunting, and agriculture support	B-C	D	D	-25%
21----	Mining	B	D	D	-44%
22----	Utilities	B	D	D	0%
23----	Construction	-22%	22%	19%	-18%
31----	Manufacturing	3098-H	482-D	122841-D	-14%
42----	Wholesale trade		141%	136%	-28%
44----	Retail trade	-3%	39%	37%	-3%
48----	Transportation & warehousing	-62%	-59%	-62%	3%
51----	Information	A-73	D-346	D-1523	100%
52----	Finance & insurance	-5%	35%	39%	21%
53----	Real estate & rental & leasing	B	D	D	11%
54----	Professional, scientific & technical services	46%	119%	104%	17%
55----	Management of companies & enterprises	A	D	D	0%
56----	Admin, support, waste mgt, remediation services	305-E	792-D	3348-D	10%
61----	Educational services	C	D	D	0%
62----	Health care and social assistance	16%	77%	60%	13%
71----	Arts, entertainment & recreation	B-37	D-73	D-796	57%
72----	Accommodation & food services	-15%	8%	7%	-3%
81----	Other services (except public administration)	15%	69%	61%	8%
99----	Unclassified establishments	A	D	D	-100%

Wyoming County saw increases in the 50 -99 group, the 10 -19, and 100-249 employee firms. Decreased in the 250-499, 20-49, and 5-9 were the highest.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	-1%	0%	-10%	25%	-23%	71%	17%	-33%		0%
11----	Forestry, fishing, hunting, and agriculture support	-25%	-57%				-100%				
21----	Mining	-44%	-50%	-100%	0%						
22----	Utilities	0%	0%	0%	0%						
23----	Construction	-18%	-16%	-30%	-25%	0%					
31----	Manufacturing	-14%	-25%	200%	-33%	-17%	50%				0%
42----	Wholesale trade	-28%	-47%	50%	200%	-75%		0%			
44----	Retail trade	-3%	8%	-33%	54%	-25%		0%			
48----	Transportation & warehousing	3%	4%	-20%	33%	0%	200%		-100%		
51----	Information	100%	50%		100%						
52----	Finance & insurance	21%	24%	27%	100%	-67%					
53----	Real estate & rental & leasing	11%	0%	0%							
54----	Professional, scientific & technical services	17%	15%	-17%	25%						
55----	Management of companies & enterprises	0%			-100%						
56----	Admin, support, waste mgt, remediation services	10%	27%	-100%	50%			-100%			
61----	Educational services	0%	0%					0%			
62----	Health care and social assistance	13%	4%	40%	-33%	-17%	100%	100%	0%		
71----	Arts, entertainment & recreation	57%	40%		-100%	-100%					
72----	Accommodation & food services	-3%	11%	-20%	0%	-14%	-50%				
81----	Other services (except public administration)	8%	18%	-44%	600%	-100%					
99----	Unclassified establishments	-100%	-100%								

Schuylkill County

Schuylkill County saw a 5 percent decrease in establishments and a 2 percent increase in employees. Increases in management, transportation/warehousing, and information firms are

noted with decreases in the unclassified, arts, and mining industries. Employees increases in transportation/warehousing, administrative, support, and management are noted, while decreases in unclassified, mining, and agriculture are noted.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-quarter payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	2%	36%	34%	-5%
11----	Forestry, fishing, hunting, and agriculture support	-41%	-30%	-48%	11%
21----	Mining	-67%	-54%	-51%	-26%
22----	Utilities	-4%	67%	62%	18%
23----	Construction	12%	81%	77%	-7%
31----	Manufacturing	-27%	3%	3%	-17%
42----	Wholesale trade	9%	53%	55%	-19%
44----	Retail trade	-9%	15%	13%	-15%
48----	Transportation & warehousing	370%	661%	581%	43%
51----	Information	-9%	32%	35%	23%
52----	Finance & insurance	-33%	-5%	0%	0%
53----	Real estate & rental & leasing	38%	73%	51%	6%
54----	Professional, scientific & technical services	26%	109%	107%	13%
55----	Management of companies & enterprises	54%	53%	59%	80%
56----	Admin, support, waste mgt, remediation services	116%	67%	58%	13%
61----	Educational services	-7%	36%	25%	-4%
62----	Health care and social assistance	27%	65%	61%	13%
71----	Arts, entertainment & recreation	-31%	-4%	-17%	-28%
72----	Accommodation & food services	3%	39%	37%	-6%
81----	Other services (except public administration)	1%	54%	52%	-8%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%	-100%	-100%
99----	Unclassified establishments	-100%	-100%	-100%	-100%

Schuylkill saw an increase in the 500 -999, 100 -249, and the 10-19 and 20-49 groups. Decreases in the 1000 or more 250 – 499, and the 1-4 employee size are noted.

Industry Code	Industry Code Description	Total Establishments	Total					'100-249'	'250-499'	'500-999'	'1000 or more'	
			'1-4'	'5-9'	'10-19'	'20-49'	'50-99'					
-----	Total		-5%	-11%	1%	3%	3%	-4%	15%	-29%	100%	-100%
11----	Forestry, fishing, hunting, and agriculture support	11%	80%	-75%								
21----	Mining	-26%	12%	-18%	-33%	-71%	-80%	-100%				
22----	Utilities	18%	150%	-100%	200%	0%	0%					
23----	Construction	-7%	-10%	-10%	-15%	167%	-75%					
31----	Manufacturing	-17%	-16%	-6%	-34%	-2%	-45%	19%	-62%	0%	-100%	
42----	Wholesale trade	-19%	-25%	-5%	-27%	-19%	-33%		0%			
44----	Retail trade	-15%	-26%	-3%	3%	-26%	55%	-42%				
48----	Transportation & warehousing	43%	38%	20%	0%	113%	200%					
51----	Information	23%	75%	-18%	40%	-67%		0%				
52----	Finance & insurance	0%	8%	11%	-41%	33%	-83%	-100%				
53----	Real estate & rental & leasing	6%	-18%	50%	200%	100%						
54----	Professional, scientific & technical services	13%	7%	35%	29%	-25%						
55----	Management of companies & enterprises	80%	-25%	200%	250%	200%	-100%	100%				
56----	Admin, support, waste mgt, remediation services	13%	0%	47%	-45%	30%	100%					
61----	Educational services	-4%	0%	-17%	80%	-63%						
62----	Health care and social assistance	13%	-8%	14%	50%	94%	38%	44%	-33%	50%		
71----	Arts, entertainment & recreation	-28%	-4%	-43%	-88%	0%	0%					
72----	Accommodation & food services	-6%	-18%	4%	26%	-5%	50%	-100%				
81----	Other services (except public administration)	-8%	-10%	-12%	27%	25%	0%					
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%		-100%			-100%				
99----	Unclassified establishments	-100%	-100%	-100%								

Schuylkill – Baseline – Pre-Drilling 2007

Schuylkill has 3,019 firms employing 43,956 employees. There are 552 retail, 435 other, and 326 healthcare firms. Agriculture, utilities, and education are the smallest sectors. Manufacturing, healthcare, and retail are the largest employment categories; while agriculture, arts, and utilities are the smallest.

Industry Code	Industry Code Description	Paid Employees for			
		Paid Period including March 12 (number)	First-quarter payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	43,956	316,142	1,346,976	3,019
11----	Forestry, Fishing, Hunting, and Agriculture Support	20	95	430	10
21----	Mining	337	3,369	16,116	39
22----	Utilities	269	5,011	20,234	13
23----	Construction	1,608	12,813	61,741	285
31----	Manufacturing	10,687	102,529	425,148	199
42----	Wholesale Trade	1,901	15,646	69,234	109
44----	Retail Trade	6,441	30,264	126,616	552
48----	Transportation and Warehousing	4,242	33,053	137,280	147
51----	Information	462	4,593	19,794	48
52----	Finance and Insurance	1,039	9,438	38,978	173
53----	Real Estate and Rental and Leasing	364	1,891	7,831	74
54----	Professional, Scientific, and Technical Services	911	8,183	37,884	161
55----	Management of Companies and Enterprises	461	4,720	21,136	18
56----	Administrative and Support and Waste Management and Remediation Services	1,811	6,086	27,690	96
61----	Educational Services	321	2,109	7,975	25
62----	Health Care and Social Assistance	8,004	60,168	259,485	328
71----	Arts, Entertainment, and Recreation	180	546	3,125	29
72----	Accommodation and Food Services	2,897	7,468	33,061	278
81----	Other Services (except Public Administration)	2,001	8,160	33,218	435

Over half of the Schuylkill firms employ 1- 4 people. A little over 2.5 percent employ 100 or more employees. Still 86 percent employ 19 or less.

Industry Code	Industry Code Description	Total									'1000 or more'
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	
-----	Total	3,019	1,543	671	388	258	79	62	12	6	-
11----	Forestry, Fishing, Hunting, and Agriculture Support	10	9	1	-	-	-	-	-	-	-
21----	Mining	39	19	9	8	2	1	-	-	-	-
22----	Utilities	13	5	-	3	3	2	-	-	-	-
23----	Construction	285	197	53	17	16	1	1	-	-	-
31----	Manufacturing	199	49	31	21	44	16	32	5	1	-
42----	Wholesale Trade	109	50	20	16	17	2	3	1	-	-
44----	Retail Trade	552	234	154	100	39	17	7	1	-	-
48----	Transportation and Warehousing	147	72	24	20	17	9	2	1	2	-
51----	Information	48	28	9	7	2	1	1	-	-	-
52----	Finance and Insurance	173	90	61	13	8	1	-	-	-	-
53----	Real Estate and Rental and Leasing	74	42	24	6	2	-	-	-	-	-
54----	Professional, Scientific, and Technical Services	161	104	31	18	6	2	-	-	-	-
55----	Management of Companies and Enterprises Administrative and Support and Waste Management	18	3	3	7	3	-	2	-	-	-
56----	and Remediation Services	96	45	25	6	13	4	1	2	-	-
61----	Educational Services	25	7	5	9	3	1	-	-	-	-
62----	Health Care and Social Assistance	328	137	75	54	33	11	13	2	3	-
71----	Arts, Entertainment, and Recreation	29	22	4	1	1	1	-	-	-	-
72----	Accommodation and Food Services	278	130	56	44	39	9	-	-	-	-
81----	Other Services (except Public Administration)	435	300	86	38	10	1	-	-	-	-

Sullivan County

Sullivan County showed a 6 percent decline in the number of establishments and a 3 percent increase in paid employees from 1997- 2007. Unclassified firms, manufacturing, agriculture, utilities, and education showed the sharpest declines; while healthcare, administrative, and information firms showed the greatest increases. Information regarding employment changes by sector was inconclusive. However there was a 54 percent decline in manufacturing employees. Healthcare and retail showed the sharpest increases.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-quarter payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	3%	19%	19%	-6%
11----	Forestry, fishing, hunting, and agriculture support	B-10	D-32	D-129	-50%
21----	Mining	A	D	D	0%
22----	Utilities	A	D	D	-50%
23----	Construction	15%	55%	55%	-19%
31----	Manufacturing	-54%	-44%	-47%	-53%
42----	Wholesale trade	26-A	122-D	561-D	17%
44----	Retail trade	32%	65%	51%	-11%
48----	Transportation & warehousing	B-50	D-458	D-1857	13%
51----	Information	A-29	D-80	D-310	50%
52----	Finance & insurance	B	D-229	D-869	-14%
53----	Real estate & rental & leasing	A	D	D	-33%
54----	Professional, scientific & technical services	39-B	-66%	-42%	13%
56----	Admin, support, waste mgt, remediation services	B	D	D	100%
61----	Educational services	A	D	D	-50%
62----	Health care and social assistance	34%	59%	56%	50%
71----	Arts, entertainment & recreation	A-B	D	D	100%
72----	Accommodation & food services	12%	46%	81%	4%
81----	Other services (except public administration)	B	D-264	D-1774	27%

Sullivan County's growth was in the 50-99 employee firms. The 100-249 and the 20 -49 showed the sharpest increases.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	-6%	-12%	3%	53%	-70%	300%	-33%			
11----	Forestry, fishing, hunting, and agriculture support	-50%	-40%								
21----	Mining	0%									
22----	Utilities	-50%			0%						
23----	Construction	-19%	-33%	50%	0%						
31----	Manufacturing	-53%			-33%	-60%		-100%			
42----	Wholesale trade	17%	50%	0%	-100%						
44----	Retail trade	-11%	-7%	-56%	150%	-50%					
48----	Transportation & warehousing	13%	-20%	50%	100%						
51----	Information	50%		100%							
52----	Finance & insurance	-14%	0%	0%	-50%						
53----	Real estate & rental & leasing	-33%	-50%								
54----	Professional, scientific & technical services	13%	29%			-100%					
56----	Admin, support, waste mgt, remediation services	100%				-100%					
61----	Educational services	-50%	-50%								
62----	Health care and social assistance	50%	20%	75%			100%	0%			
71----	Arts, entertainment & recreation	100%	50%								
72----	Accommodation & food services	4%	25%	-43%	25%						
81----	Other services (except public administration)	27%	14%	100%							
99----	Unclassified establishments	-100%				-100%					

Sullivan – Baseline – Pre-Drilling 2007

Sullivan County has 169 firms employing 1,405 people. The firsts are primarily transportation, hospitality, and manufacturing. The least amount of firms are mining, utilities, and education.

Employees are in healthcare, retail, and manufacturing trades. The smallest group is agriculture, mining, utilities, wholesale, real estate, professional, and education.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-quarter payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	1,405	6,896	29,806	169
11----	Forestry, Fishing, Hunting, and Agriculture Support	10	32	129	6
21----	Mining	A	D	D	1
22----	Utilities	A	D	D	1
23----	Construction	83	393	2,134	21
31----	Manufacturing	151	952	3,846	7
42----	Wholesale Trade	A	D	D	7
44----	Retail Trade	233	937	3,845	25
48----	Transportation and Warehousing	50	458	1,857	9
51----	Information	29	80	310	3
52----	Finance and Insurance	B	229	869	6
53----	Real Estate and Rental and Leasing	A	D	D	4
54----	Professional, Scientific, and Technical Services	A	63	323	9
56----	Administrative and Support and Waste Management and Remediation Services	B	D	D	4
61----	Educational Services	A	D	D	1
62----	Health Care and Social Assistance	501	2,907	11,243	18
71----	Arts, Entertainment, and Recreation	B	D	D	4
72----	Accommodation and Food Services	132	264	1,774	24
81----	Other Services (except Public Administration)	B	109	614	19

Sullivan has primarily 104 person firms and only two firms or 1% over 100 employees.

Industry Code	Industry Code Description	Total Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	'1000 or more'
-----	Total	169	102	35	23	3	4	2	0	0	0
11----	Forestry, Fishing, Hunting, and Agriculture Support	6	6	0	0	0	0	0	0	0	0
21----	Mining	1	0	1	0	0	0	0	0	0	0
22----	Utilities	1	0	0	1	0	0	0	0	0	0
23----	Construction	21	14	6	1	0	0	0	0	0	0
31----	Manufacturing	7	0	2	2	2	1	0	0	0	0
42----	Wholesale Trade	7	6	1	0	0	0	0	0	0	0
44----	Retail Trade	25	14	4	5	1	1	0	0	0	0
48----	Transportation and Warehousing	9	4	3	2	0	0	0	0	0	0
51----	Information	3	0	2	1	0	0	0	0	0	0
52----	Finance and Insurance	6	3	2	1	0	0	0	0	0	0
53----	Real Estate and Rental and Leasing	4	3	1	0	0	0	0	0	0	0
54----	Professional, Scientific, and Technical Services	9	9	0	0	0	0	0	0	0	0
56----	Administrative and Support and Waste Management and Remediation Services	4	2	0	2	0	0	0	0	0	0
61----	Educational Services	1	1	0	0	0	0	0	0	0	0
62----	Health Care and Social Assistance	18	6	7	1	0	2	2	0	0	0
71----	Arts, Entertainment, and Recreation	4	3	0	1	0	0	0	0	0	0
72----	Accommodation and Food Services	24	15	4	5	0	0	0	0	0	0
81----	Other Services (except Public Administration)	19	16	2	1	0	0	0	0	0	0

Susquehanna County

Susquehanna County saw a 13% increase in establishments and a 10 percent increase in employees. Mining, administrative, and real estate show the largest percentage increases in firms. Unclassified, agriculture, and utilities show the largest decline. Employees in administrative, education and professional, and construction show the largest increase while manufacturing and wholesale the sharpest decreases. The remaining categories are inconclusive.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-quarter payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	10%	34%	35%	13%
11----	Forestry, fishing, hunting, and agriculture support	25-A	11%	-1%	-40%
21----	Mining	C-138	D-942	D-4855	262%
22----	Utilities	B	D	D-4855	-33%
23----	Construction	37%	109%	96%	16%
31----	Manufacturing	-28%	7%	9%	37%
42----	Wholesale trade	-16%	-11%	4%	39%
44----	Retail trade	18%	50%	49%	0%
48----	Transportation & warehousing	B-151	D-711	D4012	28%
51----	Information	4%	28%	42%	0%
52----	Finance & insurance	390-C	2341-S	-37%	-21%
53----	Real estate & rental & leasing	B-49	D-206	D-911	55%
54----	Professional, scientific & technical services	48%	83%	86%	22%
55----	Management of companies & enterprises	B	D	D	50%
56----	Admin, support, waste mgt, remediation services	110%	487%	522%	113%
61----	Educational services	85%	100%	33%	-17%
62----	Health care and social assistance	7%	42%	40%	-3%
71----	Arts, entertainment & recreation	B-F	D-S	D-2225	42%
72----	Accommodation & food services	1%	43%	47%	1%
81----	Other services (except public administration)	12%	59%	35%	0%
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%	-100%	-100%
99----	Unclassified establishments	B-A	D	D	-90%

There was a 57 percent decline in the 100 – 249 person firms and a 39 percent increase in the 10-19 person firms.

Industry Code	Industry Code Description	Total							'100-249'	'250-499'	'500-999'	'1000 or more'
		Establishments	'1-4'	'5-9'	'10-19'	'20-49'	'50-99'					
-----	Total	13%	9%	19%	39%	-2%	9%	-57%	0%			
11----	Forestry, fishing, hunting, and agriculture support	-40%	-33%	-100%								
21----	Mining	262%	322%	500%	200%	-100%	-100%					
22----	Utilities	-33%		-50%	0%							
23----	Construction	16%	8%	50%	67%	-50%						
31----	Manufacturing	37%	19%	300%	44%	0%	50%	-100%	-100%			
42----	Wholesale trade	39%	100%	-56%	167%	-50%		-100%				
44----	Retail trade	0%	-7%	3%	18%	-27%	100%					
48----	Transportation & warehousing	28%	15%	20%	400%							
51----	Information	0%	60%	-100%	0%	0%						
52----	Finance & insurance	-21%	0%	-32%	0%	0%	-100%					
53----	Real estate & rental & leasing	55%	63%	50%	0%							
54----	Professional, scientific & technical services	22%	10%	71%	0%	100%						
55----	Management of companies & enterprises	50%		-100%	200%							
56----	Admin, support, waste mgt, remediation services	113%	145%	300%	-50%							
61----	Educational services	-17%	-25%	-50%								
62----	Health care and social assistance	-3%	-39%	64%	100%		-67%	-33%	0%			
71----	Arts, entertainment & recreation	42%	50%	-50%								
72----	Accommodation & food services	1%	-12%	55%	22%	0%	-50%					
81----	Other services (except public administration)	0%	-6%	16%	50%	-100%						
95----	Auxiliaries (exc corporate, subsidiary & regional mgt)	-100%	-100%									
99----	Unclassified establishments	-90%	-88%	-100%	-100%							

Susquehanna – Baseline – Pre-Drilling 2007

Susquehanna County employs 6,985 people across 889 businesses. The firms are retail, construction, and other services respectively. The smallest representation of sectors is unclassified, utilities, and management. Employees in retail, healthcare, and manufacturing represent the largest occupational sectors while agriculture, unclassified, education, and real estate are the smallest.

Industry Code	Industry Code Description	Paid Employees for Paid Period including March 12 (number)	First-quarter payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
-----	Total	6,985	36,539	160,861	889
11----	Forestry, Fishing, Hunting, and Agriculture Support	A	92	411	6
21----	Mining	138	942	4,855	47
22----	Utilities	B	D	D	2
23----	Construction	400	2,907	15,153	109
31----	Manufacturing	830	5,586	26,605	67
42----	Wholesale Trade	405	2,792	12,543	43
44----	Retail Trade	1,368	6,189	26,569	153
48----	Transportation and Warehousing	151	711	4,012	41
51----	Information	139	1,145	4,982	13
52----	Finance and Insurance	C	S	5,975	31
53----	Real Estate and Rental and Leasing	49	206	911	17
54----	Professional, Scientific, and Technical Services	256	1,176	5,171	50
55----	Management of Companies and Enterprises	B	D	D	3
56----	Administrative and Support and Waste Management and Remediation Services	147	981	4,172	34
61----	Educational Services	37	98	401	5
62----	Health Care and Social Assistance	1,136	7,335	29,378	58
71----	Arts, Entertainment, and Recreation	F	S	2,225	17
72----	Accommodation and Food Services	686	1,665	8,030	84
81----	Other Services (except Public Administration)	414	1,484	6,226	108
99----	Unclassified	A	D	D	1

Almost 60 percent of the firms employ 1-4 people with only one-half of one percent employing 100 or more. Over 93 percent employ 19 or less people.

Industry Code	Industry Code Description	Total Establishments	'1000 or more'								
			'1-4'	'5-9'	'10-19'	'20-49'	'50-99'	'100-249'	'250-499'	'500-999'	
-----	Total	889	531	184	115	42	12	3	2	0	0
11----	Forestry, Fishing, Hunting, and Agriculture Support	6	6	0	0	0	0	0	0	0	0
21----	Mining	47	38	6	3	0	0	0	0	0	0
22----	Utilities	2	0	1	1	0	0	0	0	0	0
23----	Construction	109	81	21	5	1	1	0	0	0	0
31----	Manufacturing	67	25	16	13	10	3	0	0	0	0
42----	Wholesale Trade	43	26	4	8	2	3	0	0	0	0
44----	Retail Trade	153	71	38	33	8	2	1	0	0	0
48----	Transportation and Warehousing	41	30	6	5	0	0	0	0	0	0
51----	Information	13	8	0	3	2	0	0	0	0	0
52----	Finance and Insurance	31	11	13	6	1	0	0	0	0	0
53----	Real Estate and Rental and Leasing	17	13	3	1	0	0	0	0	0	0
54----	Professional, Scientific, and Technical Services	50	34	12	2	2	0	0	0	0	0
55----	Management of Companies and Enterprises	3	0	0	3	0	0	0	0	0	0
56----	Administrative and Support and Waste Management and Remediation Services	34	27	4	2	0	1	0	0	0	0
61----	Educational Services	5	3	1	0	1	0	0	0	0	0
62----	Health Care and Social Assistance	58	23	18	8	5	1	2	1	0	0
71----	Arts, Entertainment, and Recreation	17	12	2	2	0	0	0	1	0	0
72----	Accommodation and Food Services	84	45	17	11	10	1	0	0	0	0
81----	Other Services (except Public Administration)	108	77	22	9	0	0	0	0	0	0
99----	Unclassified	1	1	0	0	0	0	0	0	0	0

Summary

From an economic development perspective there were some obvious changes in business establishments in the 16 comparative shale counties. The number of mining firms, employment and payrolls primarily increased in core shale counties, but not necessary adjacent shale counties. The mining industry growth is a direct result of the drilling and production. However, indirect and induced opportunities exist as a result of the growth of this new industry. Some of it stems from the new wealth and some of it from the population increases as more people move in for job opportunities. Other studies have used a multiplier analysis to examine the economic impact of new jobs; however in order to evaluate the true nature of the types of jobs, this review of the number and types of establishments, number of jobs and payrolls by industry specifically reflect where the economic development and workforce development opportunities lie.

Increases in the finance and insurance industry were demonstrated. More than likely, the finance industry increased due to the increased wealth by the landowners who now receive lease and royalty payments. Accommodations and food services industry increased consistently in the study area. Retail, however, was not always a growing industry. There were increases in healthcare and social assistance categories throughout the study area. Construction and real estate industries grew in almost all areas (core and adjacent). Construction industry grew as a result of the need for pipelines, housing, road improvements, and offices. The real estate industries grew as a result of the leasing for drilling as well as new residential and commercial opportunities. It appears that the drilling companies established “central offices” in each state that housed professional, scientific, and technical services as this category showed some increases in each state, but not necessarily in every core county nor in the adjacent counties. Increases in other industries were present, but not transformative. For example, there were increases in transportation and warehousing establishments. The transportation industry does support the drilling industry. There were some increases in manufacturing and wholesale and these increases could be due to miscellaneous equipment and parts for the drilling industry as well as chemicals and sand. Based on a review of the other states and counties, Texas has the best growth in establishments and employees. This could be due to both the size and the duration of Texas’ involvement in shale drilling. The Texas shale play is approximately ten years old and is second in size, next to Pennsylvania’s Marcellus Shale play.

As far as Pennsylvania is concerned, the Pennsylvania Counties showed very little growth. The transportation and warehousing industry showed increases as that industry is a growing cluster in northeastern Pennsylvania. A few counties showed manufacturing increases, but it was not consistent among the counties.

Education & Training Programs

A review of educational opportunities, including those from four year institutions of higher education, community colleges, and vocational technical schools (which provide training programs for adults and secondary diploma programs) was conducted for the states of Arkansas, Louisiana, Oklahoma, and Texas. As noted in other areas of our study these states have various types of shale for mining. The educational offerings relating to shale mining in the Commonwealth of Pennsylvania are also provided.

Arkansas

Four Year Institutions of Higher Education

Currently Arkansas has 23 four year colleges and universities which offer courses in the energy industry.

A total of four programs exist for training in positions for Electrical, Electronic and Communications Engineering Technology/Technician; three programs of training for positions in Electrical, Electronics and Communications Engineering; and three programs for training in Geology/Earth Sciences. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these colleges and universities is included in the Appendix section of this report).

Arkansas

The state of Arkansas has 23 4-year Colleges, 12 of which offer courses in the Energy industry, including:

Occupation	Number of Colleges Providing Training
Business, Management, Marketing, and Related Support Services,	1
Chemical Engineering	1
Computer Engineering Technology/Technician	1
Computer Installation and Repair Technology/Technician	1
Electrical and Electronic Engineering Technologies/Technicians, Other	1
Electrical, Electronic and Communications Engineering Technology/Technician	4
Electrical, Electronics and Communications Engineering	3
Environmental Science	2
Environmental Studies	4
Geological and Earth Sciences/Geosciences, Other	2
Geology/Earth Science, General	3
Industrial Electronics Technology/Technician	1
Industrial Mechanics and Maintenance Technology	2
http://www.careervoyages.gov/energy-links.cfm	

Community Colleges

Community colleges in Arkansas total 24 with 18 of these institutions' offering coursework for positions in the energy industry.

Arkansas	
The state of Arkansas has 24 community colleges, 18 of which offer courses in the Energy industry, including:	
Occupation	Number of Colleges Providing Training
Building/Construction Finishing, Management, and Inspection, Other	1
Building/Construction Trades, Other	1
Business, Management, Marketing, and Related Support Services	4
Carpentry/Carpenter	2
Computer Installation and Repair Technology/Technician	3
Construction/Heavy Equipment/Earthmoving Equipment Operation	1
Electrical, Electronic and Communications Engineering Technology/Technician	6
Electrician	1
Heavy/Industrial Equipment Maintenance Technologies	2
Industrial Electronics Technology/Technician	7
Industrial Mechanics and Maintenance Technology	7
Lineworker	1
http://www.careervoyages.gov/energy-links.cfm	

A total of seven community colleges offer training in Industrial Electronics Technology/Technician and Industrial Mechanics and Maintenance Technology; six offer training in Electrical, Electronic and Communications Engineering Technology/Technician; and four programs in Business, Management, Marketing, and Related Support Services. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these community colleges is included in the Appendix section of this report).

Vocational Technical Programs

There are a total of nine vocational technical schools which offer training for positions in the energy industry. Some of the secondary and workforce training programs offered focus on Power Plant Technology; Renewable Energy Technology; Steel Technology; and Welding. Many of these institutions offer diploma programs, GED, and adult and specialty workforce training programs. (A matrix of these vocational and technical programs is included in the Appendix section of this report).

Louisiana

Four Year Institutions of Higher Education

Currently Louisiana has 28 four year higher education institutions; 14 of those offer coursework in the energy industry.

A total of six programs exist for training in Electrical, Electronic and Communications Engineering Technology/Technician and Electrical, Electronics and Communications Engineering. There are five Geology/ Earth Science programs and four in Chemical Engineering and Environmental Science. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these colleges and universities is included in the Appendix section of this report)

<u>Louisiana</u>	
The state of Louisiana has 28 4-year Colleges, 14 of which offer courses in the Energy industry, including:	
Occupation	Number of Colleges Providing Training
Electrical, Electronic and Communications Engineering Technology/Technician	6
Electrical, Electronics and Communications Engineering	6
Geology/Earth Science, General	5
Chemical Engineering	4
Environmental Science	4
Business, Management, Marketing, and Related Support Services	2
Environmental Studies	2
Oceanography, Chemical and Physical	1
Geophysics and Seismology	1
http://www.careervoyages.gov/energy-links.cfm	

Community Colleges

Community colleges in Louisiana total 40 with 26 of these institutions' offering coursework for positions in the energy industry.

A total of 16 programs are offered for the position of Electrician; 10 for Carpentry/ Carpenter and Industrial Electronics Technology/Technician. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these community colleges is included in the Appendix section of this report).

Louisiana	
The state of Louisiana has 40 community colleges, 26 of which offer courses in the Energy industry, including:	
Occupation	Number of Colleges Providing Training
Building/Construction Management/Manager	4
Carpentry/Carpenter	10
Computer Installation and Repair Technology/Technician	3
Construction/Heavy Equipment/Earthmoving Equipment Operation	1
Electrical and Power Transmission Installers, Other	1
Electrical, Electronic and Communications Engineering Technology/Technician	2
Electrician	16
Heavy/Industrial Equipment Maintenance Technologies	1
Industrial Electronics Technology/Technician	10
Industrial Mechanics and Maintenance Technology	9
Masonry/Mason	1
Pipefitting/Pipefitter and Sprinkler Fitter	1
http://www.careenvoyages.gov/energy-links.cfm	

Vocational Technical Programs

There are a total of three vocational technical schools which offer training for positions in the energy industry. Some of the secondary and workforce training programs include Welding; Plumbing; and Electronics. Many of these institutions offer diploma programs, GED, and adult and specialty workforce training programs. (A matrix of these vocational and technical programs is included in the Appendix section of this report).

Oklahoma

Four Year Institutions of Higher Education

Currently Oklahoma has 13 four year colleges and universities which offer courses in the energy industry.

A total of five programs exist for training in positions for Electrical, Electronic and Communications Engineering; four in Electrical, Electronic and Communications Engineering Technology/Technician; and three in Chemical Engineering and Geology/Earth Science. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these colleges and universities is included in the Appendix section of this report).

Oklahoma	
The state of Oklahoma has 35 4-year Colleges, 13 of which offer courses in the Energy industry, including:	
Occupation	Number of Colleges Providing Training
Business, Management, Marketing, and Related Support Services	2
Cartography	2
Chemical Engineering	3
Electrical and Power Transmission Installers, Other	1
Electrical, Electronic and Communications Engineering Technology/Technician	4
Electrical, Electronics and Communications Engineering	5
Environmental Science	3
Environmental Studies	1
Geochemistry	1
Geology/Earth Science, General	3
Geophysics and Seismology	2
Telecommunications Technology/Technician	1
http://www.careervoyages.gov/energy-links.cfm	

Oklahoma

Community Colleges

Community colleges in Oklahoma total 33 with 20 of these institutions' offering coursework for positions in the energy industry.

A total of 14 programs are offered for positions in the fields of Carpentry/ Carpenter; eight in computer Installation and Repair Technology/Technician; and four respectively in Building/Construction Management/Manager, Electrician, and Masonry/Mason. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these community colleges is included in the Appendix section of this report).

Oklahoma	
The state of Oklahoma has 33 community colleges, 20 of which offer courses in the Energy industry, including:	
Occupation	Number of Colleges Providing Training
Building/Construction Management/Manager	4
Building/Construction Trades, Other	1
Business, Management, Marketing, and Related Support Services	3
Carpentry/Carpenter	14
Computer Installation and Repair Technology/Technician	8
Electrical and Electronic Engineering Technologies/Technicians, Other	1
Electrical and Power Transmission Installation/Installer, General	1
Electrical, Electronic and Communications Engineering Technology/Technician	3
Electrician	4
Industrial Electronics Technology/Technician	3
Industrial Mechanics and Maintenance Technology	2
Masonry/Mason	4
http://www.careervoyages.gov/energy-links.cfm	

Vocational Technical Programs

There are 27 institutions which offer vocational technical training in the state of Oklahoma. Some of the secondary and workforce training programs include Carpentry; Electrical CAD; Masonry; Welding; and Oil & Gas technician training. Many of these institutions offer diploma programs, GED, and adult and specialty workforce training programs. (A matrix of these vocational and technical programs is included in the Appendix section of this report).

Texas

Four Year Institutions of Higher Education

Currently Texas has 98 four year higher education institutions, 55 of those institutions offer courses in the energy industry. Of those institutions 29 offer coursework in Environmental Science; 27 offer coursework in Geology/Earth Science; 19 in Electrical, Electronics and Communications Engineering. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these colleges and universities is included in the Appendix section of this report)

Texas

The state of Texas has 98 4-yr Colleges, 55 of which offer courses in the Energy industry, including:

Occupation	Number of Colleges Providing Training
Business, Management, Marketing, and Related Support Services	7
Carpentry/Carpenter	1
Cartography	4
Chemical Engineering	8
Computer Engineering Technology/Technician	6
Construction/Heavy Equipment/Earthmoving Equipment Operation	1
Electrical, Electronic and Communications Engineering Technology/Technician	11
Electrical, Electronics and Communications Engineering	19
Electrician	2
Environmental Science	29
Environmental Studies	9
Geological and Earth Sciences/Geosciences, Other	3
Geology/Earth Science, General	27
Geophysics and Seismology	7
Oceanography, Chemical and Physical	2
Pipefitting/Pipefitter and Sprinkler Fitter	1
Telecommunications Technology/Technician	1

Community Colleges

Community colleges in Texas total 65 with a total of 48 offering coursework in the energy industry. Of those institutions, 31 offer coursework in the field of Electrical, Electronic and Communications Engineering Technology/Technician; 10 in Geology/Earth Science and 10 in Cartography. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these community colleges is included in the Appendix section of this report)

Texas	
The state of Texas has 65 community colleges, 48 of which offer courses in the Energy industry, including:	
Occupation	Number of Colleges Providing Training
Building/Construction Management/Manager	5
Building/Construction Trades, Other	1
Business, Management, Marketing, and Related Support Services	1
Carpentry/Carpenter	4
Cartography	10
Chemical Engineering	1
Computer Engineering Technology/Technician	4
Computer Installation and Repair Technology/Technician	3
Electrical and Power Transmission Installation/Installer, General	6
Electrical, Electronic and Communications Engineering Technology/Technician	31
Electrical, Electronics and Communications Engineering	2
Electrical/Electronics Drafting and Electrical/Electronics CAD/CADD	3
Electrician	9
Environmental Science	3
Geology/Earth Science, General	10
Industrial Electronics Technology/Technician	1
Industrial Mechanics and Maintenance Technology	6
Masonry/Mason	1
Pipefitting/Pipefitter and Sprinkler Fitter	2
Telecommunications Technology/Technician	8
http://www.careervoyages.gov/energy-links.cfm	

Vocational Technical Programs

The Institute contacted the Texas Department of Education on several occasions requesting information on vocational technical programs. To date there was no information provided. However, according to the Fort Worth Star Telegram, an academy focusing on the oil and gas industry opened in August 2009 at Southwest High School.

The article states that “The International Petroleum Association Academy program is providing the curriculum, speakers and other related activities for the academy, the fourth of its kind. The three others are in the Houston area. Southwest teachers who will be involved with the academy were sent by the association to a five-day training camp at the University of Houston. Local energy companies are helping to pay for the program.

The program will open with about 50 students who will go through the four-year curriculum, taking math, science and business classes related to the energy industry as part of their core and elective courses. “

Pennsylvania

Four Year Institutions of Higher Education

Currently the Commonwealth of Pennsylvania has 138 four year higher education institutions of which 86 offer coursework relating to the energy industry. Of those institutions there are 39 Environmental Science programs; 29 offering coursework in Geology/Earth Sciences; 25 offer coursework in Environmental Studies; and 24 offering coursework in Electrical, Electronics and Communications Engineering. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these colleges and universities is included in the Appendix section of this report).

Pennsylvania	
The state of Pennsylvania has 138 4-year Colleges, 86 of which offer courses in the Energy industry, including:	
Occupation	Number of Colleges Providing Training
Business, Management, Marketing, and Related Support Services	15
Carpentry/Carpenter	1
Chemical Engineering	11
Computer Engineering Technology/Technician	2
Electrical and Electronic Engineering Technologies/Technicians, Other	2
Electrical, Electronic and Communications Engineering Technology/Technician	13
Electrical, Electronics and Communications Engineering	24
Electrician	1
Environmental Science	39
Environmental Studies	25
Geological and Earth Sciences/Geosciences, Other	9
Geology/Earth Science, General	29
Industrial Electronics Technology/Technician	1
Industrial Mechanics and Maintenance Technology	1
Masonry/Mason	1
Oceanography, Chemical and Physical	3
Plumbing Technology/Plumber	1
Telecommunications Technology/Technician	1
http://www.careervoyages.gov/energy-links.cfm	

Community Colleges

Community colleges in Pennsylvania total 46 of which 22 offer coursework relating to the energy industry. Of those institutions, 16 offer coursework in Electrical, Electronic and Communications Engineering Technology/Technician; 10 offer coursework for Electrician; and 6

offer coursework in the fields of Carpentry/Carpenter. Each energy related occupation and training opportunities are detailed in the table below. (A matrix of these community colleges is included in the Appendix section of this report).

Pennsylvania	
The state of Pennsylvania has 46 community colleges, 22 of which offer courses in the Energy industry, including:	
Occupation	Number of Colleges Providing Training
Building/Construction Finishing, Management, and Inspection, Other	1
Building/Construction Management/Manager	4
Building/Construction Trades, Other	1
Building/Home/Construction Inspection/Inspector	3
Business, Management, Marketing, and Related Support Services	2
Carpentry/Carpenter	6
Computer Engineering Technology/Technician	2
Computer Installation and Repair Technology/Technician	3
Electrical and Power Transmission Installation/Installer, General	2
Electrical and Power Transmission Installers, Other	1
Electrical, Electronic and Communications Engineering Technology/Technician	16
Electrician	10
Environmental Science	3
Environmental Studies	1
Industrial Electronics Technology/Technician	3
Industrial Mechanics and Maintenance Technology	4
Lineworker	1
Masonry/Mason	2
Plumbing Technology/Plumber	5
Telecommunications Technology/Technician	1
http://www.careervoyages.gov/energy-links.cfm	

Vocational Technical Programs

There are 65 institutions which offer vocational technical training in the state of Pennsylvania relating to the energy industry. Some of the secondary and workforce training programs Electromechanical Technology; Machine Trades Technology; Welding; Diesel Mechanics; Precision Production Metals; Robotics, Engineering and Design. Many of these institutions offer diploma programs, GED, and adult and specialty workforce training programs. (A matrix of these vocational and technical programs is included in the Appendix section of this report).

Summary

In comparison, to Arkansas, Louisiana, Oklahoma, and Texas, Pennsylvania has more higher education institutions (86 total) which offer numerous baccalaureate programs relating to the energy industry. It appears that these institutions have the capabilities to train students for occupations relating to the energy industry.

In the state of Texas there are higher education offerings directly related to the Barnett Shale play mining. At Texas Christian University an Energy Institute which houses classes, workshops, seminars and research related to the technology and management of energy. These initiatives are supported by local energy companies, and provide unique opportunities for individuals to receive energy-related educational training in geology, GIS, engineering, environmental science and professional land management. The Institute provides an important link between university teaching and research and the ever expanding energy industry, as the need for clean and reliable domestic energy resources and future technologies are developed in the U.S.¹⁸

At Navarro College there are specialized programs in Oil and Gas Production Technology. A certificate program is available as is a degree program.¹⁹

North Central Texas College offers courses leading to either a two-year associate degree or a one-year certificate in Oil & Gas Production Technology.²⁰

The Commonwealth of Pennsylvania has 22 community colleges offering coursework in the energy industry. Texas has the highest number of offerings at 48 community colleges Louisiana 26, followed by Oklahoma at 20 and Arkansas at 18. It appears that the community college system in Pennsylvania has room for growth in programs relating to the energy industry which could in turn lead to baccalaureate programs or certificate programs at the four year level.

In regard to vocational and technical training in Pennsylvania; the Commonwealth has 65 institutions followed by 27 in Oklahoma; 9 in Arkansas; and 3 in Louisiana. Oklahoma and Texas have Oil & Gas training programs at the secondary level which are not offered at any vocational technical schools in Pennsylvania nor is it available in Arkansas or Louisiana. Arkansas does have programs available in Power Plant Technology and Renewable Energy Technology. These programs are not available in any of the other states in this study.

Career Ladder – Petroleum Sector

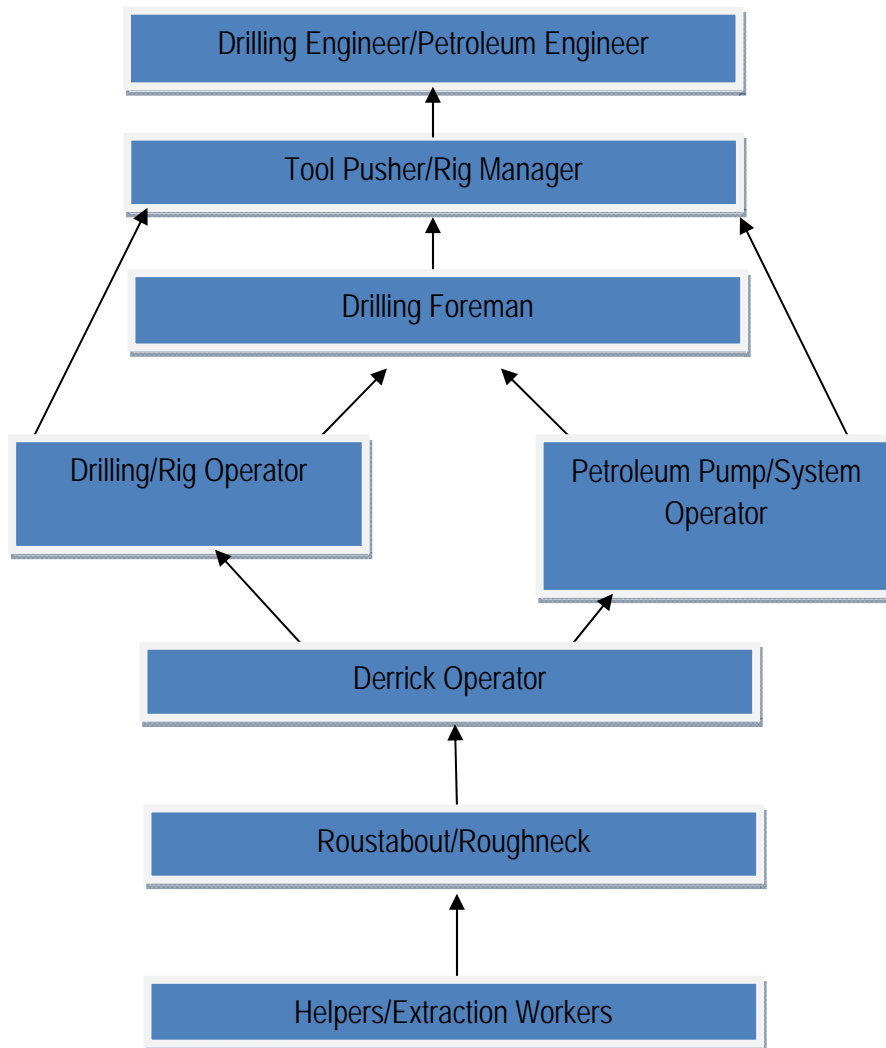
The following diagram describes the positions involved in petroleum drilling. Such positions are very similar to those in the Marcellus shale sector. Following the diagram is a description of each position including job title, level, and description, required education, any necessary workforce preparation and

¹⁸ <http://www.energyinstitute.tcu.edu/>

¹⁹ <http://www.navarrocollege.edu/areas-of-study.php?id=123&bizgroup=Oil%20and%20Gas%20Production%20Technology>

²⁰ <http://www.nctc.edu/Oil&Gas/>

experience, licensure/certification, and salary. The following occupational data is from the U.S. Department of Labor's CareerStop.org.



Drilling Engineer / Petroleum Engineer
Executive-level (Supervisory)

Job Description: Devise methods to improve oil and gas well production and determines the need for new or modified tool designs. They oversee drilling and offer technical advice to achieve economical and satisfactory progress. Tasks include:

- Assess costs and estimate the production capabilities and economic value of oil and gas wells, to evaluate the economic viability of potential drilling sites.
- Monitor production rates, and plan rework processes to improve production.

- Analyze data to recommend placement of wells and supplementary processes to enhance production.
- Specify and supervise well modification and stimulation programs to maximize oil and gas recovery.
- Direct and monitor the completion and evaluation of wells, well testing, or well surveys.
- Assist engineering and other personnel to solve operating problems.
- Develop plans for oil and gas field drilling, and for product recovery and treatment. 8. Maintain records of drilling and production operations.
- Confer with scientific, engineering, and technical personnel to resolve design, research, and testing problems.
- Write technical reports for engineering and management personnel.

The education for this occupation is a Bachelor's degree. Employees in this occupation usually need several years of work-related experience, on-the-job training, and/or vocational training. A minimum of two to four years of work-related skill, knowledge, or experience is needed for this occupation. There is no Licensure/Certification needed and the average salary is \$91,000/year.

Tool Pusher / Rig Manager Job Level

Management-Level (Supervisory)

Job Description: Experienced driller with direct responsibility for all drilling operations on a rig, including drillers and their crews. Operate equipment to increase oil flow from producing wells or to remove stuck pipe, casing, tools, or other obstructions from drilling wells. Tasks include:

- Observe load variations on strain gauges, mud pumps, and motor pressure indicators; and listen to engines, rotary chains, and other equipment in order to detect faulty operations or unusual well conditions.
- Confer with other personnel in order to gather information regarding pipe and tool sizes, and borehole conditions in wells.
- Drive truck-mounted units to well sites.
- Install pressure-control devices onto well heads.
- Thread cables through pulleys in derricks and connect hydraulic lines, using hand tools.
- Start pumps that circulate water, oil, or other fluids through wells, in order to remove sand and other materials obstructing the free flow of oil.
- Close and seal wells no longer in use.
- Operate controls that raise derricks and level rigs.
- Direct drilling crews performing such activities as assembling and connecting pipe, applying weights to drill pipes, and drilling around lodged obstacles.
- Perforate well casings or sidewalls of boreholes with explosive charges.

This occupation usually requires a high school diploma and may require some vocational training or job-related course work. In some cases, an Associate's or Bachelor's degree could be needed. Employees need anywhere from a few months to one year of working with experienced employees. Some previous work-related skill, knowledge, or experience may be helpful. Possible certifications include Standard

First Aid with CRP/AED, Computer Fundamentals & reading Comprehension, Wilderness/Remote Location First Aid, Oil Monitoring Analyst, and First Aid. The annual average salary is \$80,000.

Critical Development Experiences: From Tool Pusher / Rig Manager to Drilling Engineer / Petroleum Engineer

The position of Drilling Engineer/Petroleum Engineer requires a Bachelor's degree. Employees in this occupation usually need several years of work-related experience, on-the-job training, and/or vocational training.

- Analyze worker and production problems and recommend solutions, such as improving production methods or implementing motivational plans.
- Locate, measure, and mark site locations and placement of structures and equipment, using measuring and marking equipment.
- Read specifications such as blueprints to determine construction requirements and to plan procedures.
- Assign work to staff to obtain maximum utilization of personnel.
- Coordinate the installation, maintenance, and operation of mining and oil field equipment.
- Develop plans for oil and gas field drilling, and for product recovery and treatment.
- Monitor production rates, and plan rework processes to improve production.
- Specify and supervise well modification and stimulation programs to maximize oil and gas recovery.

Drilling Foreman Management-Level (Supervisory)

Job Description: Directly supervise and coordinate activities of construction or extraction workers. Tasks include:

- Examine and inspect work progress, equipment, and construction sites to verify safety and to ensure that specifications are met.
- Read specifications such as blueprints to determine construction requirements and to plan procedures.
- Estimate material and worker requirements to complete jobs.
- Supervise, coordinate, and schedule the activities of construction or extractive workers.
- Confer with managerial and technical personnel, other departments, and contractors in order to resolve problems and to coordinate activities.
- Coordinate work activities with other construction project activities.
- Order or requisition materials and supplies.
- Locate, measure, and mark site locations and placement of structures and equipment, using measuring and marking equipment.
- Record information such as personnel, production, and operational data on specified forms and reports.
- Assign work to employees, based on material and worker requirements of specific jobs.

This occupation usually requires training in vocational schools, related on-the-job experience, or an Associate's degree. Some may require a Bachelor's degree. Employees in this occupation usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. Previous work-related skill, knowledge, or experience is required for these occupations. Often must have passed a licensing exam. Possible certifications include Standard First Aid with CRP/AED, Computer Fundamentals & reading Comprehension, Wilderness/Remote Location First Aid, Oil Monitoring Analyst, and First Aid. The average annual salary is \$53,000.

Critical Development Experiences: From Drilling Foreman to Tool Pusher / Rig Manager

The position of Tool Pusher/Rig Manager usually requires a high school diploma and may require some vocational training or job-related course work. In some cases, an Associate's or Bachelor's degree could be needed. Employees need anywhere from a few months to one year of working with experienced employees.

- Analyze worker and production problems and recommend solutions, such as improving production methods or implementing motivational plans.
- Confer with managerial and technical personnel, other departments, and contractors in order to resolve problems and to coordinate activities.
- Examine and inspect work progress, equipment, and construction sites to verify safety and to ensure that specifications are met.
- Supervise, coordinate, and schedule the activities of construction or extractive workers.
- Direct drilling crews performing such activities as assembling and connecting pipe, applying weights to drill pipes, and drilling around lodged obstacles.
- Plan fishing methods and select tools for removing obstacles, such as liners, broken casing, screens, and drill pipe, from wells.

Petroleum Pump Systems Operator **Mid-Level (Non-supervisory)**

Job Description: Control the operation of petroleum refining or processing units. May specialize in controlling manifold and pumping systems, gauging or testing oil in storage tanks, or regulating the flow of oil into pipelines. Tasks include:

- Calculate test result values, using standard formulas.
- Collect product samples by turning bleeder valves, or by lowering containers into tanks to obtain oil samples.
- Control or operate manifold and pumping systems to circulate liquids through a petroleum refinery.
- Monitor process indicators, instruments, gauges, and meters in order to detect and report any possible problems.
- Operate control panels to coordinate and regulate process variables such as temperature and pressure, and to direct product flow rate, according to process schedules.
- Perform tests to check the qualities and grades of products, such as assessing levels of bottom sediment, water, and foreign materials in oil samples, using centrifugal testers.

- Plan movement of products through lines to processing, storage, and shipping units, utilizing knowledge of system interconnections and capacities.
- Read and analyze specifications, schedules, logs, test results, and laboratory recommendations to determine how to set equipment controls to produce the required qualities and quantities of products.

This occupation usually requires training in vocational schools, related on-the-job experience, or an Associate's degree. Some jobs may require a Bachelor's degree. Employees in these occupations usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. Previous work-related skill, knowledge, or experience is required for these occupations. Possible certifications include Standard First Aid with CRP/AED, Computer Fundamentals & reading Comprehension, Wilderness/Remote Location First Aid, Oil Monitoring Analyst, and First Aid. The average annual salary is \$45,000.

Critical Development Experiences: From Petroleum Pump Systems Operator to Drilling Foreman

The position of Drilling Foreman usually requires training in vocational schools, related on-the-job experience, or an Associate's degree. Some positions may require a Bachelor's degree. Employees in this occupation usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. Previous work-related skill, knowledge, or experience is required for these occupations.

- Patrol units to monitor the amount of oil in storage tanks, and to verify that activities and operations are safe, efficient, and in compliance with regulations.
- Plan movement of products through lines to processing, storage, and shipping units, utilizing knowledge of system interconnections and capacities.
- Read and analyze specifications, schedules, logs, test results, and laboratory recommendations to determine how to set equipment controls to produce the required qualities and quantities of products.
- Record and compile operating data, instrument readings, documentation, and results of laboratory analyses.
- Synchronize activities with other pump houses to ensure a continuous flow of products and a minimum of contamination between products.
- Coordinate work activities with other construction project activities.

Critical Development Experiences: From Petroleum Pump Systems Operator to Tool Pusher / Rig Manager

The position of Tool Pusher/Rig Manager usually requires a high school diploma and may require some vocational training or job-related course work. In some cases, an Associate's or Bachelor's degree could be needed. Employees need anywhere from a few months to one year of working with experienced employees.

- Patrol units to monitor the amount of oil in storage tanks, and to verify that activities and operations are safe, efficient, and in compliance with regulations.

- Read and analyze specifications, schedules, logs, test results, and laboratory recommendations to determine how to set equipment controls to produce the required qualities and quantities of products.
- Record and compile operating data, instrument readings, documentation, and results of laboratory analyses.
- Synchronize activities with other pump houses to ensure a continuous flow of products and a minimum of contamination between products.
- Examine and inspect work progress, equipment, and construction sites to verify safety and to ensure that specifications are met.
- Record information such as personnel, production, and operational data on specified forms and reports.
- Train workers in construction methods, operation of equipment, safety procedures, and company policies.

Driller / Rig Operator Job Level

Mid-Level (Non-Supervisory)

Job Description: Set up or operate a variety of drills to remove petroleum products from the earth and to find and remove core samples for testing during oil and gas exploration. Tasks include:

- Train crews, and introduce procedures to make drill work more safe and effective.
- Observe pressure gauge and move throttles and levers in order to control the speed of rotary tables, and to regulate pressure of tools at bottoms of boreholes.
- Count sections of drill rod in order to determine depths of boreholes.
- Push levers and brake pedals in order to control gasoline, diesel, electric, or steam draw works that lower and raise drill pipes and casings in and out of wells.
- Connect sections of drill pipe, using hand tools and powered wrenches and tongs.
- Maintain records of footage drilled, location and nature of strata penetrated, materials and tools used, services rendered, and time required.
- Maintain and adjust machinery in order to ensure proper performance.
- Start and examine operation of slush pumps in order to ensure circulation and consistency of drilling fluid or mud in well.
- Locate and recover lost or broken bits, casings, and drill pipes from wells, using special tools.
- Weigh clay, and mix with water and chemicals to make drilling mud.

This occupation usually requires a high school diploma and may require some vocational training or job-related course work. In some cases, an Associate's or Bachelor's degree could be needed. Employees in this occupation need anywhere from a few months to one year of working with experienced employees. Some previous work-related skill, knowledge, or experience may be helpful in this occupation, but usually is not needed. Possible certifications included Standard First Aid with CRP/AED, Computer Fundamentals & reading Comprehension, Wilderness/Remote Location First Aid, and Oil Monitoring Analyst. The annual average salary is \$38,000.

Critical Development Experiences: From Driller / Rig Operator to Drilling Foreman

The position of Drilling Foreman usually requires training in vocational schools, related on-the-job experience, or an Associate's degree. Some positions may require a Bachelor's degree. Employees in this occupation usually need one or two years of training involving both on-the-job experience and informal training with experienced workers. Previous work-related skill, knowledge, or experience is required for these occupations.

- Direct rig crews in drilling and other activities, such as setting up rigs and completing or servicing wells.
- Monitor progress of drilling operations, and select and change drill bits according to the nature of strata, using hand tools.
- Observe pressure gauge and move throttles and levers in order to control the speed of rotary tables, and to regulate pressure of tools at bottoms of boreholes.
- Examine and inspect work progress, equipment, and construction sites to verify safety and to ensure that specifications are met.
- Locate, measure, and mark site locations and placement of structures and equipment, using measuring and marking equipment.
- Train workers in construction methods, operation of equipment, safety procedures, and company policies.

Critical Development Experiences: From Driller / Rig Operator to Tool Pusher / Rig Manager

The position of Tool Pusher/Rig Manager usually requires a high school diploma and may require some vocational training or job-related course work. In some cases, an Associate's or Bachelor's degree could be needed. Employees need anywhere from a few months to one year of working with experienced employees.

- Direct rig crews in drilling and other activities, such as setting up rigs and completing or servicing wells.
- Monitor progress of drilling operations, and select and change drill bits according to the nature of strata, using hand tools.
- Train crews, and introduce procedures to make drill work more safe and effective.
- Confer with other personnel in order to gather information regarding pipe and tool sizes, and borehole conditions in wells.
- Direct lowering of specialized equipment to point of obstruction, and push switches or pull levers in order to back-off or sever pipes by chemical or explosive action.
- Plan fishing methods and select tools for removing obstacles, such as liners, broken casing, screens, and drill pipe, from wells.
- Read specifications such as blueprints to determine construction requirements and to plan procedures.

Derrick Operator

Mid-level (Supervisory)

Job Description: Rig derrick equipment and operate pumps to circulate mud through drill hole. Tasks include:

- Inspect derricks, or order their inspection, prior to being raised or lowered.
- Inspect derricks for flaws, and clean and oil derricks in order to maintain proper working conditions.
- Control the viscosity and weight of the drilling fluid.
- Repair pumps, mud tanks, and related equipment.
- Set and bolt crown blocks to posts at tops of derricks.
- Listen to mud pumps and check regularly for vibration and other problems, in order to ensure that rig pumps and drilling mud systems are working properly.
- Start pumps that circulate mud through drill pipes and boreholes to cool drill bits and flush out drill-cuttings.
- Position and align derrick elements, using harnesses and platform climbing devices.
- Supervise crew members, and provide assistance in training them.
- Guide lengths of pipe into and out of elevators.

This occupation may require a high school diploma or GED certificate. Some may require a formal training course to obtain a license. Employees in this occupation need anywhere from a few days to a few months of training. No previous work-related skill, knowledge, or experience is needed for this occupation. Some may require a formal training course to obtain a license. Certification varies. Possible certifications include Standard First Aid with CRP/AED, Computer Fundamentals & Reading Comprehension, Wilderness/Remote Location First Aid, and Oil Monitoring Analyst. The average annual salary is \$29,000.

Critical Development Experiences: From Derrick Operator to Driller / Rig Operator

The position of Driller/Rig Operator usually requires a high school diploma and may require some vocational training or job-related course work. In some cases, an Associate's or Bachelor's degree could be needed. Employees in this occupation need anywhere from a few months to one year of working with experienced employees.

- Inspect derricks for flaws, and clean and oil derricks in order to maintain proper working conditions.
- Listen to mud pumps and check regularly for vibration and other problems, in order to ensure that rig pumps and drilling mud systems are working properly.
- Count sections of drill rod in order to determine depths of boreholes.
- Dig holes, set forms, and mix and pour concrete, for foundations of steel or wooden derricks.
- Locate and recover lost or broken bits, casings, and drill pipes from wells, using special tools.
- Plug observation wells, and restore sites.

- Repair or replace defective parts of machinery, such as rotary drill rigs, water trucks, air compressors, and pumps, using hand tools.

Critical Development Experiences: From Derrick Operator to Petroleum Pump Systems Operator

The position of Petroleum Pump Systems Operator usually requires training in vocational schools, related on-the-job experience, or an Associate's degree. Some may require a Bachelor's degree. Employees in this occupation usually need one or two years of training involving both on-the-job experience and informal training with experienced workers.

- Listen to mud pumps and check regularly for vibration and other problems, in order to ensure that rig pumps and drilling mud systems are working properly.
- Repair pumps, mud tanks, and related equipment.
- Steady pipes during connection to or disconnection from drill or casing strings.
- Collect product samples by turning bleeder valves, or by lowering containers into tanks to obtain oil samples.
- Start pumps and open valves or use automated equipment to regulate the flow of oil in pipelines and into and out of tanks.
- Verify that incoming and outgoing products are moving through the correct meters, and that meters are working properly.

Roustabout / Roughneck ***Entry-level (Non-supervisory)***

Job Description: Assemble or repair field equipment using hand and power tools. Perform other tasks as needed. General purpose laborer working on a drill site. Handles bulk supplies and assists in most jobs not directly connected with drilling. Tasks include:

- Clean up spilled oil by bailing it into barrels.
- Unscrew or tighten pipes, casing, tubing, and pump rods, using hand and power wrenches and tongs.
- Bolt together pump and engine parts.
- Walk flow lines to locate leaks, using electronic detectors and making visual inspections.
- Move pipes to and from trucks, using truck winches and motorized lifts, or by hand.
- Dismantle and repair oil field machinery, boilers, and steam engine parts, using hand tools and power tools.
- Dig drainage ditches around wells and storage tanks.
- Keep pipe deck and main deck areas clean and tidy.
- Guide cranes to move loads about decks.
- Supply equipment to rig floors as requested, and provide assistance to roughnecks.

This occupation usually requires a high school diploma and may require some vocational training or job-related course work. Employees in this occupation need anywhere from a few months to one year of working with experienced employees. Some previous work-related skill, knowledge, or experience may

be helpful, but usually is not needed. Possible certifications include: Standard First Aid with CRP/AED, Computer Fundamentals & reading Comprehension, Wilderness/Remote Location First Aid, and Oil Monitoring Analyst. The annual average salary is \$24,000.

Critical Development Experiences: From Roustabout / Roughneck to Derrick Operator

The position of Derrick Operator may require a high school diploma or GED certificate. Some positions may require a formal training course to obtain a license. Employees in this occupation need anywhere from a few days to a few months of training.

- Dig holes, set forms, and mix and pour concrete into forms to make foundations for wood or steel derricks.
- Dismantle and repair oil field machinery, boilers, and steam engine parts, using hand tools and power tools.
- Walk flow lines to locate leaks, using electronic detectors and making visual inspections.
- Inspect derricks for flaws, and clean and oil derricks in order to maintain proper working conditions.
- Start pumps that circulate mud through drill pipes and boreholes to cool drill bits and flush out drill-cuttings.
- Steady pipes during connection to or disconnection from drill or casing strings.
- Weigh clay, and mix with water and chemicals in order to make drilling mud, using portable mixers.

Helpers – Extraction Workers Job Level

Entry-level (Non-supervisory)

Job Description: Help extraction craft workers, such as earth drillers, blasters and explosives workers, derrick operators, and mining machine operators, by performing duties of lesser skill. Duties include supplying equipment or cleaning work area. Tasks include:

- Clean and prepare sites for excavation or boring.
- Clean up work areas and remove debris after extraction activities are complete.
- Dismantle extracting and boring equipment used for excavation, using hand tools.
- Drive moving equipment in order to transport materials and parts to excavation sites.
- Load materials into well holes or into equipment, using hand tools.
- Observe and monitor equipment operation during the extraction process in order to detect any problems.
- Organize materials in order to prepare for use.
- Provide assistance to extraction craft workers such as earth drillers and derrick operators.
- Set up and adjust equipment used to excavate geological materials.
- Signal workers to start geological material extraction or boring.

This occupation may require a high school diploma or GED certificate. Some may require a formal training course to obtain a license. Employees in this occupation need anywhere from a few days to a

few months of training. No previous work-related skill, knowledge, or experience is needed for these occupations. Some may require a formal training course to obtain a license. Possible certifications: Standard First Aid with CRP/AED, Computer Fundamentals & reading Comprehension, Wilderness/Remote Location First Aid, and Oil Monitoring Analyst. The average annual salary is \$22,000.

Critical Development Experiences: From Helpers-Extraction Workers to Roustabout / Roughneck

The position of Roustabout/Roughneck usually requires a high school diploma and may require some vocational training or job-related course work. In some cases, an Associate's or Bachelor's degree could be needed. Employees in this occupation need anywhere from a few months to one year of working with experienced employees.

- Collect and examine geological matter, using hand tools and testing devices.
- Dismantle extracting and boring equipment used for excavation, using hand tools.
- Load materials into well holes or into equipment, using hand tools.
- Observe and monitor equipment operation during the extraction process in order to detect any problems.
- Repair and maintain automotive and drilling equipment, using hand tools.
- Dig drainage ditches around wells and storage tanks.

Energy Related Occupations

The below table shows energy related occupations, their growth, wage rate, education/training. The occupation with the highest need for employees is First Line Supervisors/Managers of Construction Trades and Extractions Workers with 178,000 in need. The occupations with the highest projected growth are Environmental Scientists and Specialists, Including Health and Surveying and Mapping Technicians both with expected growth of 18-26%.

The engineering and geology occupations have the highest salaries and require the most education and training. Plumbing, pipe fitting and excavating occupations require the least amount of education.

Energy Related Occupations and Their Projected 10 Year Growth								
Occupation Title	Projected Need for Employees	Projected Growth	2008 Hourly Wage Rate			Education & Training		
			Bottom 10%	Median	Top 10%	High School or Less	Some College	College Degree or Higher
First Line Supervisors/ Managers of Construction Trades and Extraction Workers	178,000	9-17%	\$17	\$28	\$45	60%	30%	10%
Plumbers, Pipefitters, and Steamfitters	157,000	9-17%	\$13	\$22	\$38	68%	29%	3%
Sales Representatives, Wholesale and Manufacturing Technical and Scientific Products	142,000	9-17%	\$17	\$34	\$64	21%	28%	51%
Industrial Machinery Mechanics	67,000	9-17%	\$14	\$21	\$31	56%	39%	5%
Electrical Engineers	45,000	0-8%	\$25	\$40	\$60	3%	17%	80%
Environmental Scientists and Specialists, Including Health	42,000	18-26%	\$17	\$29	\$49	0%	7%	93%
Electrical and Electronic Engineering Technicians	39,000	0-8%	\$16	\$26	\$38	27%	55%	18%
Electrical and Electronics Repairers, Commercial and Industrial Equipment	33,000	0-8%	\$14	\$23	\$34	50%	50%	0%
Helpers - Pipelayers, Plumbers, Pipefitters, and Steamfitters	32,000	9-17%	\$9	\$13	\$18	84%	13%	3%
Surveying and Mapping Technicians	29,000	18-26%	\$10	\$17	\$28	42%	51%	7%
Sales Engineers	26,000	9-17%	\$24	\$40	\$66	0%	16%	84%
Pipelayers	20,000	9-17%	\$11	\$16	\$27	68%	29%	3%
Excavating and Loading Machine and Dragline Operators	19,000	0-8%	\$11	\$17	\$28	79%	18%	3%
Geoscientists, Except Hydrologists and Geographers	15,000	18-26%	\$20	\$38	\$75	0%	7%	93%

Source: U.S. Department of Labor – Career Voyages

Career Ladder Summary

The career ladder for the petroleum industry shows a possible career pathway for a person starting in the natural gas industry. Beginning with a helper/extraction worker, an employee can work their way up to a roustabout/roughneck that repairs field equipment. From there a worker with enough experience could become a derrick operator. Middle range positions include a drilling/rig operator and petroleum pump/system operator. Higher level positions include a drilling foreman and rig manger. The highest level position is the drilling engineer/petroleum engineer.

In terms of high demand jobs, supervisors and managers are needed the most while geoscientists are needed least. The occupations that require the most education tend to have the highest salaries.

There are three phases of natural gas development that require a variety of workers. The first is the Development Phase which is short lived and quite labor intensive. The following activities occur during this phase: (1) Well-pad and Access Road Construction, (2) Local collection pipeline Construction, (3) Drilling of the Well, (4) Fracturing of the Well, and (5) Reclaiming some Disturbance. The second phase of natural gas development is the Production Phase which is long lived and includes a small and steady labor force. The activities involved in the second phase are (1) Trucking Water and condensate from Well Site, (2) Monitoring Production, and (3) Occasional Well Work-Overs. Finally, in Reclamation Phase well-sites are dismantled and reclaimed.²¹

There are typically several different players in natural gas extraction many of which are involved in each of the phases described above. First the drilling company hires drilling staff to form drilling crews. In addition, these companies hire welders and crane operators. Construction companies are a vital component of the drilling industry. Excavators and laborers who lay pipeline are necessary. Fracturing companies take care of trucking and water supplies.

Drilling Company	Construction Companies
Welders	Excavation
Directional Drillers	Equipment Set up, Cranes
Man Camps, Porta-potties, Bottled Water	Roustabouts (general Labor)
Drilling Mud Companies	Water Well Drilling
Drill Bits, Drill Pipe, Supplies	Road Construction
Crane Operators	Local Pipelines
Fracturing Company	Other Companies
Trucking	Water Trucking
Water	Well Logging
Man Camps, etc.	
Source: Wyoming Boomtowns Social and Economic Impacts from Natural Gas Drilling	

²¹ Wyoming Boomtowns Social and Economic Impacts from Natural Gas Drilling

Depending on the level of investment a drilling company has in the state and how it chooses to structure its state offices, positions in administration, human resources, marketing, public relations, legislative advocacy are also available. The CBP section identifies that some scientific, professional, and technical employees are growing in drilling communities.

Study Summary

Demographics

Arkansas experienced population increases between 1990 and 2006-2008, with its core shale counties experiencing the most growth. While Louisiana did not experience the same level of population growth as Arkansas, its core shale parishes experienced minimal population increases between 2000 and 2008. Oklahoma counties experienced population fluctuations between 1990 and 2000. Texas counties experienced significant population increases during each year examined.

Arkansas and Louisiana experienced decreases in those with less than a high school education and increases in the percentage of individuals with a high school education. Oklahoma counties saw similar changes; however, –Wagoner County experienced a decrease in its percentage of high school graduates. Texas counties experienced a decrease in the percentage of individuals with a high school diploma, and an increase the percentage of those with Bachelor’s and graduate/professional degrees.

Median household income increased in each of the states studied; Arkansas experienced increases as high as 20%, while Louisiana experienced increases up to 25%. Oklahoma and Texas followed, with increases over 20%.

Arkansas counties experienced poverty level decreases in 2000, only to the experience increases in 2008. Faulkner County reported the highest percentage of individuals below the poverty level (16.3%), while White County reported the highest percentage of families below the poverty level (12.8%); White County did not exceed its 1990 poverty level of 14.7%. The percentage of individuals/families that fell below the poverty level in each of the Louisiana parishes studied fluctuated. DeSoto Parish experienced the greatest decrease — a 7.2% drop between 2000 and 2006-2008. Oklahoma and Texas counties also experienced poverty level decreases in 2000, followed by increases in 2006-2008 and in nearly all years examined.

The median housing value in each of the states studied increased in each year examined. Arkansas experienced median housing value increases as high as 19.7% (Pope County) between 2000 and 2006-2008, while Louisiana experienced increases as high as 25.5% (DeSoto Parish). The median household income in each of Oklahoma's counties examined increased during each year studied. The largest increase occurred in Wagoner County, which experienced a 31.7% increase between 2000 and 2006-2008. The smallest increase occurred in Garfield County

(27.1%). Texas housing values increased in 2000 and 2006-2008. The greatest increase occurred in Ellis County (33.6%), followed closely by Cooke County (33.3%).

It should be noted that there is no way to pinpoint exactly how much of the positive or negative changes resulted from unconventional shale drilling and to what extent the recession in 2008 impacted the economic benchmarks.

Pre-drilling demographic data provides a snapshot of the twelve Pennsylvania counties examined in this study. Changes from 2000 to 2006-2008 were documented in order to provide background information and to show that the area has experienced both negative and positive changes since 2000. Carbon, Monroe, Pike, and Wayne Counties were the only counties in the Pennsylvania study area to experience population increases between 2000 and 2006-2008. Nine of the twelve counties experienced population decreases since 2000, and, for most, this trend has occurred over several decades.

The study region has been making impressive advancements in the area of educational attainment. Nearly every county experienced increases in those with some college, as well as those who earned Associate's, Bachelor's and graduate or professional degrees. Carbon County experienced the greatest increase in those with Associate's degrees (2.8%), while Pike County experienced the most substantial increase in those with Bachelor's degrees (3.7%). Schuylkill County experienced the greatest increase in those with graduate or professional degrees, which grew from 3.7% in 2000 to 5.3% in 2006-2008.

Median household income also increased in each Pennsylvania County examined. Carbon County experienced a 33.1% increase in household income, the largest increase among the tier one counties, while Wyoming County experienced the largest increase of the core shale counties with 31%.

Individuals and families living in poverty is a vital indicator used to determine a region's economic health. Nearly every county in Pennsylvania's study area experienced increases in the percentage of individuals and families living in poverty. Among the tier one shale counties, Luzerne County experienced the highest poverty levels for individuals and families in 2000 and 2006-2008. Tioga County experienced the highest percentage of individuals living below the poverty level for 2006-2008, where 15.8% of all persons and 12.6% of all families were below the poverty level.

Housing values are also a critical economic indicator. All Pennsylvania counties examined experienced increased housing values over the time frame studied. Pike County reported the highest median housing value for 2006-2008 (\$215,900), and the largest increase (45.2%) in housing values over the period examined.

Migration

The four Arkansas counties studied in this report display a range of migration patterns. The sizes and impact varied from the larger Faulkner County, with a total in-migration of 36,777 over the ten years, to the smaller Independence County, with a total in-migration of 7,768. All of the counties basically doubled their in-migration. The most significant changes occurred in the 2002-2007 time period. These figures represent those who moved into the respective county from the most prominent locations in Arkansas. This suggests that shale drillings have generated positive in-migration.

Looking at total migration from all states provides a broader look at in-migration growth and we can compare the impact of Arkansas counties to the whole [the whole what?]. From 1997 to 2007, over half of Faulkner, Pope, Independence, and White Counties' in-migration came from other Arkansas counties. From 2002 to 2007, in-migration from other Arkansas counties grew, accounting for even more of the total. This signifies that has become increasingly popular to relocate to other areas, but that many residents remained within Arkansas. Arkansas counties experienced the most in-migration from Texas, Tennessee and Oklahoma. Aside from Arkansas, the second most popular state of origin appears to be Texas. Faulkner and White Counties both had substantial in-migration growth from Texas.

The data for Louisiana counties is fairly similar to the Arkansas counties. Caddo Parish, which is sufficiently larger than the other three parishes examined, recorded 53,172 migrants from within Louisiana over the ten years examined. Like the Arkansas counties, the increase of in-migrants was greater during the study period's final five years. About 53.4% of in migration from Louisiana counties occurred from 2002 to 2007. Sabine Parish, which is much smaller in size, recorded 3,731 in-migrants from other Louisiana counties, with over half of that in-migration occurring during the study's last five years examined.

Examining total in-migration from all counties allows us to see the total impact of Louisiana counties on the state's overall in-migration for the ten years studied. From 1997 to 2007, Caddo Parish recorded 103,079 in-migrants from all over the country and some foreign lands. Interestingly, less than half of the total (48 %) of Caddo Parish in-migration occurred during the 2002 to 2007 time frame. This suggests a significant number of migrants were from outside of Louisiana. De Soto, Sabine, and Webster Parishes maintained roughly the same pattern, with Louisiana counties comprising roughly half of total in-migration, including those in other states. Louisiana counties experienced the most in-migration from Texas, Tennessee and Florida.

Oklahoma's Garfield, Garvin, Pittsburg and Wagoner Counties exhibited a far different pattern of in-migration than Arkansas and Louisiana counties. From 1997 to 2007, Wagoner County (the largest county studied) recorded 49,710 in-migrants, 36,465 of who originated from other Oklahoma counties. While the in-migration of counties in Louisiana and Arkansas was largely comprised of people who moved to the counties examined from within the respective state

examined, Oklahoma's results are a bit different. With three counties relatively smaller than Wagoner County, it is more difficult to make comparisons.

Looking at the total number of people who moved to Oklahoma counties from all over allows for a broader understanding of Oklahoma's in-migration patterns – opening a comparison of migrants from the same and different states. Of the four Oklahoma counties examined, while in-migration from within the state varies, overall in-migration is more similar. About half of Garfield, Garvin, and Pittsburg Counties' total in-migration occurred in the final five years examined; approximately 44% of Wagoner County's in-migrants arrived during the final five years examined.

Understanding Texas' in-migration patterns is different. Because of its significantly larger size and economic attraction, Texas more likely draws people from different areas. Nonetheless, in-state migration remains strong. Judging by the great difference in size among these counties, it appears as though it may be difficult to find a common ground for each of these counties. Given the massive size of Denton County, we can expect to see migrants from several different counties and even states. But it also makes it difficult to compare in-migration among smaller counties. Once broken down, it becomes clear how similarities exist.

The counties are of relatively different sizes, and in-migration for each during the study's final five years examined varies. For example, only about 56% of in-migrants moved from another county in Texas into Cooke County, compared with 73% for Ellis County. At any rate, each of these counties experienced far greater in-migration from 2002 to 2007 than the other three states examined.

While it has the majority of in-migrants from within the state, Denton County also drew migrants from throughout the country and foreign lands. People who previously resided in other parts of the southern U.S. and the Mid-West seemed most inclined to move into Denton County. And while the number of in-migrants increased each year, there were a roughly similar percentage of in-state in-migrants (approximately 65%).

CBP

From an economic development perspective, there were some obvious changes in business establishments in the sixteen comparative shale counties. The number of mining firms, employment and payrolls primarily increased in core shale counties, but not necessarily in adjacent shale counties. Mining industry growth is a direct result of drilling and production. However, indirect and induced opportunities exist as a result of this new industry's growth. Some of it stems from new wealth and some of it from the population increases, as more people move for job opportunities. Other studies have used a multiplier analysis to examine the economic impact of new jobs, however in order to evaluate the true nature of the types of jobs, this review of the number and types of establishments, number of jobs and payrolls by

industry specifically reflect where the economic development and workforce development opportunities exist.

Increases in the finance and insurance industries were demonstrated. More than likely, the finance industry grew due to increased wealth by landowners who received lease and royalty payments. Accommodations and food services industries grew consistently in the study area. The retail industry, however, was not always a growing industry. There were increases in the healthcare and social assistance categories throughout the study area. The construction and real estate industries grew in almost all areas (core and adjacent). The construction industry grew as a result of the need for pipelines, housing, road improvements and offices. The real estate industry grew as a result of the drilling leases as well as new residential and commercial opportunities. It appears that the drilling companies established “central offices” in each state that housed professional, scientific, and technical services, as this category showed some increases in each state, but not necessarily in every core county nor in adjacent counties. Increases in other industries also occurred, but were not transformative. For example, there were increases in transportation and warehousing establishments (as the transportation industry supports the drilling industry). Some increases also occurred in the manufacturing and wholesale industries, and these increases may be due to miscellaneous equipment, parts, chemicals and sand for the drilling industry. Based on a review of the other states and counties, Texas exhibited the most growth in establishments and employees. This may be attributable to both the size and the duration of Texas’ involvement in shale drilling. The Texas shale play is approximately ten years old and second in size to Pennsylvania’s Marcellus Shale play.

As far as Pennsylvania is concerned, the Pennsylvania Counties showed very little growth to date. The transportation and warehousing industries experienced increases that point to a growing cluster in northeastern Pennsylvania. A couple Pennsylvania counties also experienced manufacturing industry increases, but they were not consistent among the all counties examined.

Workforce

The career ladder for the petroleum industry shows a possible career pathway for a person starting in the natural gas industry. Beginning with a helper/extraction worker, an employee can work their way up to a roustabout/roughneck that repairs field equipment. From there, a worker with enough experience could become a derrick operator. Middle range positions include a drilling/rig operator and petroleum pump/system operator. Higher level positions include a drilling foreman and rig manger. The highest level position is the drilling engineer/petroleum engineer.

In terms of high demand jobs, supervisors and managers are needed most, while geoscientists are needed least. Naturally, those occupations that require the most education tend to have the highest salaries.

There are three phases of natural gas development that require a variety of workers. The first is the Development Phase, which is short lived and labor intensive. The following activities occur during this phase: (1) well-pad and access road construction, (2) local collection pipeline construction, (3) drilling of the well, (4) fracturing of the well, and (5) reclaiming some disturbance. The second phase of natural gas development is the Production Phase, which is long lived and includes a small and steady labor force. The activities involved in the second phase are: (1) trucking water and condensate from well site, (2) monitoring production, and (3) occasional well work-overs. Finally, in the Reclamation Phase, well-sites are dismantled and reclaimed.²²

There are typically several different players in natural gas extraction, many of who are involved in each of the phases described above. First, the drilling company hires drilling staff to form drilling crews. In addition, these companies hire welders and crane operators. Construction companies are a vital component of the drilling industry. Excavators and laborers who lay pipeline are necessary. Fracturing companies take care of trucking and water supplies.

Drilling Company	Construction Companies
Welders	Excavation
Directional Drillers	Equipment Set up, Cranes
Man Camps, Porta-potties, Bottled Water	Roustabouts (general Labor)
Drilling Mud Companies	Water Well Drilling
Drill Bits, Drill Pipe, Supplies	Road Construction
Crane Operators	Local Pipelines
Fracturing Company	Other Companies
Trucking	Water Trucking
Water	Well Logging
Man Camps, etc.	
Source: Wyoming Boomtowns Social and Economic Impacts from Natural Gas Drilling	

Education/Training

In comparison to Arkansas, Louisiana, Oklahoma, and Texas, Pennsylvania has more institutions of higher education (86) that offer numerous baccalaureate programs relating to the energy industry. It appears that these institutions have capabilities to train students for occupations in the shale industry.

In Texas, there are higher education offerings directly related to Barnett Shale play mining. At Texas Christian University (an energy Institute that houses classes, workshops, seminars and

²² Wyoming Boomtowns Social and Economic Impacts from Natural Gas Drilling

research related to the technology and management of energy), initiatives are supported by local energy companies, and provide unique opportunities for individuals to receive energy-related educational training in geology, GIS, engineering, environmental science and professional land management. The Institute provides an important link between university teaching and research and the ever expanding energy industry, as the need for clean and reliable domestic energy resources and future technologies are developed in the U.S.²³

Texas' Navarro College offers specialized programs in Oil and Gas Production Technology. Both certificate and degree programs are available.²⁴

North Central Texas College offers courses leading to either a two-year Associate's degree or a one-year certificate in Oil & Gas Production Technology.²⁵

The Commonwealth of Pennsylvania has 22 community colleges offering energy industry coursework. Texas has the highest number of offerings at 48 community colleges, followed by Louisiana with 26, Oklahoma at 20 and Arkansas at eighteen. It appears that Pennsylvania's community college system has room for growth in programs relating to the energy industry, which, in turn, may lead to baccalaureate and/or certificate programs.

In regard to vocational and technical training, Pennsylvania has 65 institutions, Oklahoma has 27, Arkansas has nine and Louisiana has three. Oklahoma and Texas schools offer Oil & Gas training not offered at any vocational technical schools in Pennsylvania, Arkansas or Louisiana. Arkansas offers programs in Power Plant Technology and Renewable Energy Technology. Similar programs are not available in any of the other states studied.

Conclusions

Demographics

All counties examined experienced population growth, although growth levels varied by county. Texas counties experienced the most significant growth.

All four states experienced median household income increases of at least 20%. The composition of higher education changed for the period as well, and poverty level research was inconclusive; it is normally expected that as education levels increase, income levels increase, and poverty levels decrease. Median housing values increased in both core and adjacent counties in all states – reaching a high increase of 23%.

²³ <http://www.energyinstitute.tcu.edu/>

²⁴ <http://www.navarrocollege.edu/areas-of-study.php?id=123&bizgroup=Oil%20and%20Gas%20Production%20Technology>

²⁵ <http://www.nctc.edu/Oil&Gas/>

In Pennsylvania, population growth varied. The Pocono counties experienced growth as a result of westward migration from New York, New Jersey and Philadelphia. The other counties examined experienced population declines. In a report prepared by The Institute focusing on Lackawanna and Luzerne population changes due to migration, births, and deaths, Lackawanna and Luzerne experienced positive net in-migration, but since their death rates still exceed their birth rates, population growth has not occurred. Nearly every Pennsylvania County examined experienced higher education attainment improvements. It should be noted, however, that several counties still lag state and national averages.

Further, median household income has been increasing. Most counties still trail state and national averages, however strides have been made. Poverty levels still increased in the Pennsylvania counties.

Finally, all Pennsylvania counties examined experienced housing value increases. Such increases result in a higher cost of living and aid in improving poverty levels.

Migration

The Institute can conclude that each of the counties in the four states examined experienced overall increases in the number of people migrating into each county. Not surprisingly, most of these in-migrants came from other parts of the state examined or nearby.

In this report, we can see the patterns and fluctuations in the number of people who migrate into a county. This report concludes that while most of the migration takes place within the same state, the number of people who migrate into one of the counties in the study has increased overall – particularly within recent years.

CBP

A review of Pennsylvania Counties from 1997-2007 demonstrates that whether they were core or adjacent, there was minimal new industry. Warehousing and transportation was the fastest growing industry in most of counties. There were some pockets of manufacturing growth, but the counties in the study area did not appear to have expansive job or industry growth. In 2007, Susquehanna County began to see the presence of mining companies. There was an increase of firms from 13-47, although employee numbers did not dramatically change. It appears that the firms began to establish themselves and secure land deals under the radar.

In a review of sixteen counties in four other states examined, some apparent growth trends emerged. Other studies completed both for Pennsylvania and other states focus on economic impact and identify growth through earnings and job creation using multipliers. This analysis focuses specifically on the type of industry. The core shale industry counties all experienced growth in a number of sectors (both in number of establishments and firms). Adjacent county growth was inconsistent; however the adjacent Texas counties were most successful. Growth

in the adjacent counties was much less noticeable than in core counties, and core county growth was consistent over the ten-year-period. Major growth did not occur during any one year. Growth occurred primarily in small firms employing nineteen or less people.

There was consistent growth in the mining, financial, insurance, food services and accommodations, healthcare and social assistance industries. Additionally, growth in the construction, real estate and warehousing and transportation industries also occurred. While the retail industry grew in most counties examined, it was not a consistent performer in all shale counties.

Finally, there was some growth in the professional, scientific, and technical sectors within Pennsylvania and the other states studied, Depending on the operational side, a company may set up a central location for its staff and have them provide the necessary statewide services. Also, companies have used independent contractors to meet short-term demands that don't call for full-time employees. Although it is not conclusive that the information industry is related to the drilling industry, this sector grew in both Louisiana Counties studied and in one each of the Texas, Arkansas, and Oklahoma counties examined.

Workforce

Careers in the drilling industry fall into those needed for development and production. The drilling industry uses both its own employees and sub-contractors. Most positions require a high school diploma, some certifications or certificates, and on-the-job training. Further, based on the presence of a drilling firm in the state, other positions such as geoscientists, marketing and public relations professionals, human resources, and those in government relations are also needed. Additionally, drilling firms hire engineers and lawyers to assist in a number of transactions required throughout the entire process. Those jobs that require the most education often pay the highest, however due to the risk associated with drilling jobs, even entry level positions pay well.

Education & Training

Pennsylvania has in place the higher education infrastructure to support the natural gas and energy industry. There are options to expand programming at trade schools like Johnson College and other community colleges throughout the region. Texas provides a strong model for vocational training at the high school level that incorporates technical with the necessary math and science programs over four years.

Recommendations

Core and adjacent counties' educational institutions and workforce development providers should collaborate on education and training programs to avoid duplicity and ensure that there is a comprehensive delivery system on the secondary, post secondary, and continuing education

levels. In addition, the counties should work with drilling companies to explore training opportunities the drilling companies provide or subsidize for potential employees.

Further, economic development and workforce development providers should work together to identify specific geographic areas where there are gaps in the necessary goods and services driven by the drilling industry. This collaboration should include participation from the Small Business Development Centers, which can provide necessary technical assistance and workshops to encourage more entrepreneurial activity and prepare existing small business to accommodate the drilling industry.

The WIBs should evaluate various secondary programs in Texas for potential replication within the Pennsylvania study area.

The WIBs should identify industries and companies that could lose portions of their existing workforce to the drilling industry. The WIBs should form teams to evaluate the companies' immediate and future workforce needs, recruitment, training and education. In addition, they should develop a customized program to assist those companies in employee retention, recruitment and training.

Several drilling occupations are specialized and short-term in nature. This creates a transient workforce and this may cause an influx of people moving from other drilling states into various Pennsylvania counties. By working with the drilling companies to identify these individuals, a database of spousal/significant other education and skills could be created in order to assist in identifying employment opportunities within other local companies/organizations.

The tenants for success are collaboration, cooperation, shared services, and engaging the drilling companies. Much of their growth is predicated on statewide policy, local planning and permitting, and the availability of a technically trained workforce to begin the drilling and production phases.

Arkansas- Four Year Institutions of Higher Education
Energy Related Offerings

Business, Management, Marketing, and Related Support Services

Central Baptist College
1501 College Avenue
Conway, AR 72034
(501) 329-6872
www.cbc.edu

Chemical Engineering

University Of Arkansas Main Campus
Administration Bldg 425
Fayetteville, AR 72701
(479) 575-2000
www.uark.edu

Computer Engineering Technology/Technician

University Of Arkansas At Little Rock
2801 S University Ave
Little Rock, AR 72204
(501) 569-3000
www.ualr.edu

Computer Installation and Repair Technology/Technician

University Of Arkansas-Fort Smith
5210 Grand Ave
Fort Smith, AR 72913
(479) 788-7000
www.uafortsmith.edu

Electrical and Electronic Engineering Technologies/Technicians

Arkansas Tech University
Administration Bldg 200; 1509 N Boulder Ave
Russellville, AR 72801
(479) 968-0389
www.atu.edu

Electrical, Electronic and Communications Engineering Technology/Technician

Arkansas State University-Main Campus
2105 E. Aggie Road
State University, AR 72467

(870) 972-2100
www.astate.edu

Arkansas Tech University
Administration Bldg 200; 1509 N Boulder Ave
Russellville, AR 72801
(479) 968-0389
www.atu.edu

Itt Technical Institute-Little Rock
4520 S University Ave
Little Rock, AR 72204
(501) 565-5550
www.itt-tech.edu

University Of Arkansas At Little Rock
2801 S University Ave
Little Rock, AR 72204
(501) 569-3000
www.ualr.edu

Electrical, Electronics and Communications Engineering

Arkansas Tech University
Administration Bldg 200; 1509 N Boulder Ave
Russellville, AR 72801
(479) 968-0389
www.atu.edu

Harding University
915 E. Market Ave.
Searcy, AR 72143
(501) 279-4000
www.harding.edu

University Of Arkansas Main Campus
Administration Bldg 425
Fayetteville, AR 72701
(479) 575-2000
www.uark.edu

Environmental Science

Arkansas State University-Main Campus
2105 E. Aggie Road
State University, AR 72467
(870) 972-2100

www.astate.edu

University Of Arkansas Main Campus
Administration Bldg 425
Fayetteville, AR 72701
(479) 575-2000
www.uark.edu

Environmental Studies

Arkansas State University-Main Campus
2105 E. Aggie Road
State University, AR 72467
(870) 972-2100
www.astate.edu

Hendrix College
1600 Washington Ave
Conway, AR 72032
(501) 329-6811
www.hendrix.edu

University Of Central Arkansas
201 Donaghey Ave
Conway, AR 72035
(501) 450-5000
www.uca.edu

University Of The Ozarks
415 N College Ave
Clarksville, AR 72830
(479) 979-1000
www.ozarks.edu

Geological and Earth Sciences/Geosciences, Other

University Of Arkansas At Little Rock
2801 S University Ave
Little Rock, AR 72204
(501) 569-3000
www.ualr.edu

University Of Arkansas Main Campus
Administration Bldg 425
Fayetteville, AR 72701
(479) 575-2000
www.uark.edu

Geology/Earth Science, General

Arkansas Tech University
Administration Bldg 200; 1509 N Boulder Ave
Russellville, AR 72801
(479) 968-0389
www.atu.edu

University Of Arkansas At Little Rock
2801 S University Ave
Little Rock, AR 72204
(501) 569-3000
www.ualr.edu

University Of Arkansas Main Campus
Administration Bldg 425
Fayetteville, AR 72701
(479) 575-2000
www.uark.edu

Industrial Electronics Technology/Technician

University Of Arkansas-Fort Smith
5210 Grand Ave
Fort Smith, AR 72913
(479) 788-7000
www.uafortsmith.edu

Industrial Mechanics and Maintenance Technology

University Of Arkansas At Monticello
Highway 425 South
Monticello, AR 71656
(870) 367-6811
www.uamont.edu

University Of Arkansas-Fort Smith
5210 Grand Ave
Fort Smith, AR 72913
(479) 788-7000
www.uafortsmith.edu

Arkansas- Community Colleges
Energy Related Offerings

Building/Construction Finishing, Management, and Inspection, Other

Southern Arkansas University Tech
100 Carr Road
Camden, AR 71701
(870) 574-4500
www.sautech.edu

Building/Construction Trades, Other

Pulaski Technical College
3000 W Scenic Dr
North Little Rock, AR 72118
(501) 812-2200
www.pulaskitech.edu

Business, Management, Marketing, and Related Support Services

Arkansas State University-Mountain Home
1600 South College Street
Mountain Home, AR 72653
(870) 508-6100
www.asumh.edu

Ouachita Technical College
One College Cir
Malvern, AR 72104
(501) 337-5000
www.otcweb.edu

Ozarka College
218 College Dr
Melbourne, AR 72556
(870) 368-7371
www.ozarka.edu

South Arkansas Community College
300 S West Ave
El Dorado, AR 71731
(870) 862-8131
www.southark.edu

Carpentry/Carpenter

Cossatot Community College Of The University Of Arkansas
183 Hwy 399
De Queen, AR 71832
(870) 584-4471
cccua.edu

National Park Community College
101 College Dr
Hot Springs, AR 71913
(501) 760-4222
www.npcc.edu

Computer Installation and Repair Technology/Technician

Arkansas State University-Mountain Home
1600 South College Street
Mountain Home, AR 72653
(870) 508-6100
www.asumh.edu

Mid-South Community College
2000 W. Broadway
West Memphis, AR 72301
(870) 733-6722
www.midsouthcc.edu

Southern Arkansas University Tech
100 Carr Road
Camden, AR 71701
(870) 574-4500
www.sautech.edu

Construction/Heavy Equipment/Earthmoving Equipment Operation

North Arkansas College
1515 Pioneer Dr
Harrison, AR 72601
(870) 743-3000
www.northark.edu

Electrical, Electronic and Communications Engineering Technology/Technician

Arkansas State University-Mountain Home
1600 South College Street
Mountain Home, AR 72653
(870) 508-6100

www.asumh.edu

East Arkansas Community College
1700 Newcastle Rd
Forrest City, AR 72335
(870) 633-4480
www.eacc.edu

National Park Community College
101 College Dr
Hot Springs, AR 71913
(501) 760-4222
www.npcc.edu

North Arkansas College
1515 Pioneer Dr
Harrison, AR 72601
(870) 743-3000
www.northark.edu

Northwest Arkansas Community College
One College Dr
Bentonville, AR 72712
(479) 636-9222
www.nwacc.edu

Southern Arkansas University Tech
100 Carr Road
Camden, AR 71701
(870) 574-4500
www.sautech.edu

Electrician

Ouachita Technical College
One College Cir
Malvern, AR 72104
(501) 337-5000
www.otcweb.edu

Heavy/Industrial Equipment Maintenance Technologies

Arkansas State University-Beebe
1000 Iowa Street
Beebe, AR 72012
(501) 882-3600
www.asub.edu

University Of Arkansas Community College-Hope
2500 S Main
Hope, AR 71802
(870) 777-5722
www.uacch.edu

Industrial Electronics Technology/Technician

Arkansas Northeastern College
2501 S Division
Blytheville, AR 72316
(870) 762-1020
www.anc.edu

Arkansas State University-Beebe
1000 Iowa Street
Beebe, AR 72012
(501) 882-3600
www.asub.edu

Black River Technical College
1410 Hwy 304 East
Pocahontas, AR 72455
(870) 248-4000
www.blackrivertech.edu

South Arkansas Community College
300 S West Ave
El Dorado, AR 71731
(870) 862-8131
www.southark.edu

Southeast Arkansas College
1900 Hazel
Pine Bluff, AR 71603
(870) 543-5900
www.seark.edu

Southern Arkansas University Tech
100 Carr Road
Camden, AR 71701
(870) 574-4500
www.sautech.edu

University Of Arkansas Community College-Hope
2500 S Main
Hope, AR 71802
(870) 777-5722
www.uacch.edu

Industrial Mechanics and Maintenance Technology

Arkansas Northeastern College
2501 S Division
Blytheville, AR 72316
(870) 762-1020
www.anc.edu

Arkansas State University-Mountain Home
1600 South College Street
Mountain Home, AR 72653
(870) 508-6100
www.asumh.edu

Black River Technical College
1410 Hwy 304 East
Pocahontas, AR 72455
(870) 248-4000
www.blackrivertech.edu

Ouachita Technical College
One College Cir
Malvern, AR 72104
(501) 337-5000
www.otcweb.edu

Southeast Arkansas College
1900 Hazel
Pine Bluff, AR 71603
(870) 543-5900
www.seark.edu

Southern Arkansas University Tech
100 Carr Road
Camden, AR 71701
(870) 574-4500
www.sautech.edu

University Of Arkansas Community College-Hope
2500 S Main
Hope, AR 71802
(870) 777-5722
www.uacch.edu

Lineworker

Arkansas State University-Newport
7648 Victory Blvd
Newport, AR 72112
(870) 512-7800
www.asun.edu

Arkansas- Vocational Technical
Energy Related Offerings

Institution	Credential	Programs
Area Career & Tech Ctr. Jim Franks, Director	Diploma/GED/Certificate Metal Fabrication	Industrial Equipment Maintenance
Area Technical Center	Diploma/GED/Certificate	Computer Aided Drafting Machine Trades Electronics
Arkansas Northeastern College Technical Center	Diploma/GED/Certificate	Power Plant Technology Renewable Energy Technology Steel Technology Welding
Arkansas State University-Searcy Regional Career Center	Diploma/GED/Certificate	Computerized Machining Technology Diesel Technology Industrial Electronics Welding Technology
Conway Area Career Center	Diploma/GED/Certificate	Metal trades
East Arkansas Secondary Career Center	Diploma/GED/Certificate	Industrial Maintenance Technology Renewable Energy Technology Environmental/Health and Safety Technology Industrial Supervision and Safety
Jefferson Area Vocational Center	Diploma/GED/Certificate	Drafting and Design Industrial Equipment Maintenance
Metropolitan Career and Technical Center	Diploma/GED/Certificate	Electronics Metal Fabrication/Welding
Monticello Occupational Education Center	Diploma/GED/Certificate	Machine Tool Technology Welding

Louisiana- Four Year Institutions of Higher Education
Energy Related Offerings

Business, Management, Marketing, and Related Support Services

Dillard University
2601 Gentilly Blvd
New Orleans, LA 70122
(504) 816-4640
www.dillard.edu

University Of Louisiana At Lafayette
104 University Circle
Lafayette, LA 70503
(377) 482-1000
www.louisiana.edu

Chemical Engineering

Louisiana State University And Agricultural & Mechanical College
Baton Rouge, LA 70803
(225) 578-3202
www.lsu.edu

Louisiana Tech University
305 Wisteria
Ruston, LA 71272
(318) 257-2000
www.latech.edu

Tulane University Of Louisiana
6823 Saint Charles Ave
New Orleans, LA 70118
(504) 865-5000
www.tulane.edu

University Of Louisiana At Lafayette
104 University Circle
Lafayette, LA 70503
(377) 482-1000
www.louisiana.edu

Electrical, Electronic and Communications Engineering Technology/Technician

Grambling State University
403 Main Street

Grambling, LA 71245
(318) 247-3811
www.gram.edu

Itt Technical Institute-Baton Rouge
14141 Airline Hwy Bldg 3 Ste K
Baton Rouge, LA 70817
(225) 754-5800
www.itt-tech.edu

Itt Technical Institute-Saint Rose
140 James Dr E
Saint Rose, LA 70087
(504) 463-0338
www.itt-tech.edu

Louisiana Tech University
305 Wisteria
Ruston, LA 71272
(318) 257-2000
www.latech.edu

Northwestern State University Of Louisiana
College Ave
Natchitoches, LA 71497
(318) 357-6011
www.nsula.edu/

Directions
Southern University And A & M College
Southern Branch Post Office
Baton Rouge, LA 70813
(225) 771-4500
www.subr.edu

Electrical, Electronics and Communications Engineering
Louisiana State University And Agricultural & Mechanical College
Baton Rouge, LA 70803
(225) 578-3202
www.lsu.edu

Louisiana Tech University
305 Wisteria
Ruston, LA 71272
(318) 257-2000
www.latech.edu

Southern University And A & M College
Southern Branch Post Office
Baton Rouge, LA 70813
(225) 771-4500
www.subr.edu

Tulane University Of Louisiana
6823 Saint Charles Ave
New Orleans, LA 70118
(504) 865-5000
www.tulane.edu

University Of Louisiana At Lafayette
104 University Circle
Lafayette, LA 70503
(377) 482-1000
www.louisiana.edu

University Of New Orleans
2000 Lakeshore Drive
New Orleans, LA 70148
(504) 280-6000
www.uno.edu

Environmental Science

Louisiana State University And Agricultural & Mechanical College
Baton Rouge, LA 70803
(225) 578-3202
www.lsu.edu

Louisiana State University-Shreveport
One University Place
Shreveport, LA 71115
(318) 797-5000
www.lsus.edu/

Louisiana Tech University
305 Wisteria
Ruston, LA 71272
(318) 257-2000
www.latech.edu

Mcneese State University
4205 Ryan St
Lake Charles, LA 70609

(337) 475-5000
www.mcneese.edu

Environmental Studies

Tulane University Of Louisiana
6823 Saint Charles Ave
New Orleans, LA 70118
(504) 865-5000
www.tulane.edu

University Of New Orleans
2000 Lakeshore Drive
New Orleans, LA 70148
(504) 280-6000
www.uno.edu

Geology/Earth Science, General

Centenary College Of Louisiana
2911 Centenary Boulevard
Shreveport, LA 71134
(318) 869-5011
www.centenary.edu

Louisiana State University And Agricultural & Mechanical College
Baton Rouge, LA 70803
(225) 578-3202
www.lsu.edu

Tulane University Of Louisiana
6823 Saint Charles Ave
New Orleans, LA 70118
(504) 865-5000
www.tulane.edu

University Of Louisiana At Lafayette
104 University Circle
Lafayette, LA 70503
(377) 482-1000
www.louisiana.edu

University Of New Orleans
2000 Lakeshore Drive
New Orleans, LA 70148
(504) 280-6000
www.uno.edu

Geophysics and Seismology

University Of New Orleans
2000 Lakeshore Drive
New Orleans, LA 70148
(504) 280-6000
www.uno.edu

Oceanography, Chemical and Physical

Louisiana State University And Agricultural & Mechanical College
Baton Rouge, LA 70803
(225) 578-3202
www.lsu.edu

Louisiana- Community Colleges
Energy Related Offerings

Building/Construction Management/Manager

Louisiana Technical College-Delta-Ouachita Campus
609 Vocational Pky
West Monroe, LA 71292
(318) 397-6100
www.region8.ltc.edu

Louisiana Technical College-Florida Parishes
137 College Street
Greensburg, LA 70441
(225) 222-4251
www.region9.ltc.edu

Louisiana Technical College-Oakdale Campus
117 Hwy 1152
Oakdale, LA 71463
(318) 335-3944
www.ltc.edu

Louisiana Technical College-West Jefferson Campus
475 Manhattan Blvd
Harvey, LA 70058
(504) 671-6800
www.dcc.edu/ltc/west_jeff.htm

Carpentry/Carpenter

Louisiana Technical College-Lafourche Campus
1425 Tiger Dr
Thibodaux, LA 70301
(985) 447-0924
region3.ltc.edu/

Louisiana Technical College-Northwest Louisiana Campus
814 Constable Street
Minden, LA 71055
(318) 371-3035
www.ltc.edu

Louisiana Technical College-Ruston Campus
1010 James St
Ruston, LA 71273

(318) 251-4145
www.ltc.edu

Louisiana Technical College-Shreveport-Bossier Campus
2010 N Market St
Shreveport, LA 71107
(318) 676-7811
www.ltc.edu

Louisiana Technical College-Sullivan Campus
1710 Sullivan Dr
Bogalusa, LA 70427
(985) 732-6640
www.region9.ltc.edu

Louisiana Technical College-Tallulah Campus
132 Old Hwy 65 South
Tallulah, LA 71282
(318) 574-4820
www.region8.ltc.edu

Louisiana Technical College-Teche Area Campus
609 Ember Dr
New Iberia, LA 70560
(337) 373-0011
www.techeareacampus.net

Louisiana Technical College-West Jefferson Campus
475 Manhattan Blvd
Harvey, LA 70058
(504) 671-6800
www.dcc.edu/ltc/west_jeff.htm

Louisiana Technical College-Young Memorial Campus
900 Youngs Road
Morgan City, LA 70380
(985) 380-2436
region3.ltc.edu

Nunez Community College
3710 Paris Rd
Chalmette, LA 70043
(504) 278-6245
www.nunez.edu

Computer Installation and Repair Technology/Technician

Louisiana Technical College-Gulf Area Campus
1115 Clover St
Abbeville, LA 70510
(337) 893-4984
www.theltc.net/greateracadianaregion/gulfarea

Louisiana Technical College-Teche Area Campus
609 Ember Dr
New Iberia, LA 70560
(337) 373-0011
www.techeareacampus.net

Southern University At Shreveport
3050 Martin Luther King Dr
Shreveport, LA 71107
(318) 670-6000
www.susla.edu

Construction/Heavy Equipment/Earthmoving Equipment Operation

Louisiana Technical College-Northwest Louisiana Campus
814 Constable Street
Minden, LA 71055
(318) 371-3035
www.ltc.edu

Electrical, Electronic and Communications Engineering Technology/Technician

Delgado Community College
615 City Park Ave
New Orleans, LA 70119
(504) 361-6410
www.dcc.edu

Southern University At Shreveport
3050 Martin Luther King Dr
Shreveport, LA 71107
(318) 670-6000
www.susla.edu

Electrical and Power Transmission Installers, Other

Louisiana Technical College-West Jefferson Campus
475 Manhattan Blvd
Harvey, LA 70058
(504) 671-6800
www.dcc.edu/ltc/west_jeff.htm

Electrician

Delgado Community College
615 City Park Ave
New Orleans, LA 70119
(504) 361-6410
www.dcc.edu

L E Fletcher Technical Community College
310 St Charles St
Houma, LA 70360
(985) 857-3655
www.ftcc.edu

Louisiana Technical College-Alexandria Campus
4311 South Macarthur Drive
Alexandria, LA 71302
(318) 487-5439
www.region6.ltc.edu

Louisiana Technical College-Delta-Ouachita Campus
609 Vocational Pky
West Monroe, LA 71292
(318) 397-6100
www.region8.ltc.edu

Louisiana Technical College-Florida Parishes
137 College Street
Greensburg, LA 70441
(225) 222-4251
www.region9.ltc.edu

Louisiana Technical College-Gulf Area Campus
1115 Clover St
Abbeville, LA 70510
(337) 893-4984
www.theltc.net/greateracadianaregion/gulfarea

Louisiana Technical College-Lafayette Campus
1101 Bertrand Dr
Lafayette, LA 70506
(337) 262-5962
www.ltc.edu/lafayette/default.html

Louisiana Technical College-Lafourche Campus
1425 Tiger Dr

Thibodaux, LA 70301
(985) 447-0924
region3.ltc.edu/

Louisiana Technical College-Shreveport-Bossier Campus
2010 N Market St
Shreveport, LA 71107
(318) 676-7811
www.ltc.edu

Louisiana Technical College-Sullivan Campus
1710 Sullivan Dr
Bogalusa, LA 70427
(985) 732-6640
www.region9.ltc.edu

Louisiana Technical College-Teche Area Campus
609 Ember Dr
New Iberia, LA 70560
(337) 373-0011
www.techeareacampus.net

Louisiana Technical College-T H Harris Campus
332 E South St
Opelousas, LA 70570
(337) 948-0239
www.ltc.edu

Louisiana Technical College-West Jefferson Campus
475 Manhattan Blvd
Harvey, LA 70058
(504) 671-6800
www.dcc.edu/ltc/west_jeff.htm

Louisiana Technical College-Young Memorial Campus
900 Youngs Road
Morgan City, LA 70380
(985) 380-2436
region3.ltc.edu

Nunez Community College
3710 Paris Rd
Chalmette, LA 70043
(504) 278-6245
www.nunez.edu

Sowela Technical Community College

3820 J Bennett Johnston Ave
Lake Charles, LA 70616
(337) 491-2698
www.sowela.edu

Heavy/Industrial Equipment Maintenance Technologies

Louisiana Technical College-Shreveport-Bossier Campus
2010 N Market St
Shreveport, LA 71107
(318) 676-7811
www.ltc.edu

Industrial Mechanics and Maintenance Technology

Bossier Parish Community College
6220 East Texas
Bossier City, LA 71111
(318) 678-6000
www.bpcc.edu

Louisiana Technical College-Alexandria Campus

4311 South Macarthur Drive
Alexandria, LA 71302
(318) 487-5439
www.region6.ltc.edu

Louisiana Technical College-Delta-Ouachita Campus

609 Vocational Pky
West Monroe, LA 71292
(318) 397-6100
www.region8.ltc.edu

Louisiana Technical College-Natchitoches Campus

6587 Hwy 1 Bypass
Natchitoches, LA 71458
(318) 357-3162
www.theltc.net

Louisiana Technical College-Northwest Louisiana Campus

814 Constable Street
Minden, LA 71055
(318) 371-3035
www.ltc.edu

Louisiana Technical College-River Parishes Campus

181 Regala Pk Rd

Reserve, LA 70084
(985) 536-4418
region3.ltc.edu

Louisiana Technical College-Ruston Campus
1010 James St
Ruston, LA 71273
(318) 251-4145
www.ltc.edu

Louisiana Technical College-Tallulah Campus
132 Old Hwy 65 South
Tallulah, LA 71282
(318) 574-4820
www.region8.ltc.edu

Louisiana Technical College-Teche Area Campus
609 Ember Dr
New Iberia, LA 70560
(337) 373-0011
www.techeareacampus.net

Masonry/Mason

Louisiana Technical College-Ward H. Nash-Avoyelles Campus
508 Choupique St
Cottonport, LA 71327
(318) 876-2401
www.avoyellescampus.com

Pipefitting/Pipefitter and Sprinkler Fitter

Louisiana Technical College-West Jefferson Campus
475 Manhattan Blvd
Harvey, LA 70058
(504) 671-6800
www.dcc.edu/ltc/west_jeff.htm

Louisiana- Vocational Technical
Energy Related Offerings

Institution

Shreveport Job Corps Center

Terrebonne Vo-Tech High

Washington Career & Technical Education Center

Credential

Diploma/GED/Certificate

Diploma/GED/Certificate

Diploma/GED/Certificate

Programs

Welding

Welding
Plumbing
Electronics

Drafting
Welding

Oklahoma- Four Year Institutions of Higher Education
Energy Related Offerings

Business, Management, Marketing, and Related Support Services

Oklahoma Baptist University
500 W University
Shawnee, OK 74804
(405) 275-2850
www.okbu.edu

Oklahoma State University-Oklahoma City
900 N Portland
Oklahoma City, OK 73107
(405) 947-4421
www.osuokc.edu

Cartography

East Central University
1100 E. 14
Ada, OK 74820
(580) 332-8000
www.ecok.edu

Oklahoma State University-Main Campus
107 Whitehurst
Stillwater, OK 74078
(405) 744-5000
pio.okstate.edu

Chemical Engineering

Oklahoma State University-Main Campus
107 Whitehurst
Stillwater, OK 74078
(405) 744-5000
pio.okstate.edu

University Of Oklahoma Norman Campus
660 Parrington Oval
Norman, OK 73019
(405) 325-0311
www.ou.edu

University Of Tulsa
800 South Tucker Drive
Tulsa, OK 74104
(918) 631-2000
www.utulsa.edu

Electrical and Power Transmission Installers

Oklahoma State University-Oklahoma City
900 N Portland
Oklahoma City, OK 73107
(405) 947-4421
www.osuokc.edu

Electrical, Electronics and Communications Engineering

Oklahoma Christian University
2501 E Memorial Rd
Edmond, OK 73013
(405) 425-5000
www.oc.edu

Oklahoma State University-Main Campus
107 Whitehurst
Stillwater, OK 74078
(405) 744-5000
pio.okstate.edu

Oral Roberts University
7777 S Lewis Ave.
Tulsa, OK 74171
(918) 495-6161
oru.edu

University Of Oklahoma Norman Campus
660 Parrington Oval
Norman, OK 73019
(405) 325-0311
www.ou.edu

University Of Tulsa
800 South Tucker Drive
Tulsa, OK 74104
(918) 631-2000
www.utulsa.edu

Electrical, Electronic and Communications Engineering Technology/Technician

Cameron University
2800 Gore Blvd
Lawton, OK 73505
(580) 581-2225
www.cameron.edu

Itt Technical Institute-Oklahoma City
50 Penn Place Office Tower, 1900 Nw Expressway St.-Ste 305
Oklahoma City, OK 73118
(405) 810-4100
www.itt-tech.edu

Itt Technical Institute-Tulsa
8421 East 61st Street, Suite U
Tulsa, OK 74133
(918) 615-3900
www.itt-tech.edu

Oklahoma State University-Main Campus
107 Whitehurst
Stillwater, OK 74078
(405) 744-5000
pio.okstate.edu

Environmental Science

Northeastern State University
600 N Grand
Tahlequah, OK 74464
(918) 456-5511
www.nsuok.edu

Oklahoma State University-Main Campus
107 Whitehurst
Stillwater, OK 74078
(405) 744-5000
pio.okstate.edu

University Of Oklahoma Norman Campus
660 Parrington Oval
Norman, OK 73019
(405) 325-0311
www.ou.edu

Environmental Studies

University Of Tulsa
800 South Tucker Drive
Tulsa, OK 74104
(918) 631-2000
www.utulsa.edu

Geochemistry

University Of Tulsa
800 South Tucker Drive
Tulsa, OK 74104
(918) 631-2000
www.utulsa.edu

Geology/Earth Science

Oklahoma State University-Main Campus
107 Whitehurst
Stillwater, OK 74078
(405) 744-5000
pio.okstate.edu

University Of Oklahoma Norman Campus
660 Parrington Oval
Norman, OK 73019
(405) 325-0311
www.ou.edu

University Of Tulsa
800 South Tucker Drive
Tulsa, OK 74104
(918) 631-2000
www.utulsa.edu

Geophysics and Seismology

University Of Oklahoma Norman Campus
660 Parrington Oval
Norman, OK 73019
(405) 325-0311
www.ou.edu

University Of Tulsa
800 South Tucker Drive
Tulsa, OK 74104
(918) 631-2000
www.utulsa.edu

Telecommunications Technology/Technician
Spartan College Of Aeronautics And Technology
8820 E Pine St
Tulsa, OK 74115
(918) 836-6886
www.spartan.edu

Oklahoma- Community Colleges
Energy Related Offerings

Building/Construction Management/Manager

Eastern Oklahoma County Technology Center
4601 N Choctaw Rd
Choctaw, OK 73020
(405) 390-9591
www.eoctech.org

Great Plains Technology Center

4500 W Lee Blvd
Lawton, OK 73505
(580) 355-6371
www.gptech.org

High Plains Technology Center

3921 34th St
Woodward, OK 73801
(580) 256-6618
www.hptc.net

Kiamichi Technology Center-Poteau

1509 S Mckenna
Poteau, OK 74953
(918) 465-2323
www.okktc.org/

Building/Construction Trades, Other

Moore Norman Technology Center
4701 12th Avenue Nw
Norman, OK 73069
(405) 364-5763
www.mntechnology.com

Business, Management, Marketing, and Related Support Services

Great Plains Technology Center
4500 W Lee Blvd
Lawton, OK 73505
(580) 355-6371
www.gptech.org

Kiamichi Technology Center-Idabel
3205 Lincoln Road Ne/Hwy 70 N
Idabel, OK 74745
(580) 286-7555
www.okktc.org

Tulsa Community College
6111 E Skelly Dr
Tulsa, OK 74135
(918) 595-7000
www.tulsacc.edu

Carpentry/Carpenter

Autry Technology Center
1201 W Willow
Enid, OK 73703
(580) 242-2750
www.autrytech.com

Caddo Kiowa Technology Center
100 Career Tech Road
Fort Cobb, OK 73038
(405) 643-5511
www.caddokiowa.com

Eastern Oklahoma County Technology Center
4601 N Choctaw Rd
Choctaw, OK 73020
(405) 390-9591
www.eoctech.org

Francis Tuttle Technology Center
12777 N Rockwell Ave
Oklahoma City, OK 73142
(405) 717-4900
www.francistuttle.com

Great Plains Technology Center
4500 W Lee Blvd
Lawton, OK 73505
(580) 355-6371
www.gptech.org

High Plains Technology Center
3921 34th St
Woodward, OK 73801
(580) 256-6618
www.hptc.net

Indian Capital Technology Center-Muskogee
2403 N 41st St E
Muskogee, OK 74403
(918) 687-6383
www.ictctech.com

Kiamichi Technology Center-Atoka
1301 West Liberty Road
Atoka, OK 74525
(580) 889-7321
www.okktc.org

Kiamichi Technology Center-Mcalester
301 Kiamichi Dr
Mcalester, OK 74501
(918) 426-0940
www.okktc.org/

Kiamichi Technology Center-Stigler
1410 Old Military Road
Stigler, OK 74462
(918) 465-2323
www.okktc.org/

Kiamichi Technology Center-Talihina
13739 Se 202nd Road
Talihina, OK 74571
(918) 465-2323
www.okktc.org

Meridian Technology Center
1312 S Sangre Rd
Stillwater, OK 74074
(405) 377-3333
www.meridian-technology.com

Metro Technology Centers
1900 Springlake Drive
Oklahoma City, OK 73111
(405) 424-8324
www.metrotech.org

Moore Norman Technology Center
4701 12th Avenue Nw
Norman, OK 73069
(405) 364-5763
www.mntechnology.com

Computer Installation and Repair Technology/Technician

Eastern Oklahoma County Technology Center
4601 N Choctaw Rd
Choctaw, OK 73020
(405) 390-9591
www.eoctech.org

Francis Tuttle Technology Center
12777 N Rockwell Ave
Oklahoma City, OK 73142
(405) 717-4900
www.francistuttle.com

Great Plains Technology Center
4500 W Lee Blvd
Lawton, OK 73505
(580) 355-6371
www.gptech.org

High Plains Technology Center
3921 34th St
Woodward, OK 73801
(580) 256-6618
www.hptc.net

Meridian Technology Center
1312 S Sangre Rd
Stillwater, OK 74074
(405) 377-3333
www.meridian-technology.com

Metro Technology Centers
1900 Springlake Drive
Oklahoma City, OK 73111
(405) 424-8324
www.metrotech.org

Oklahoma City Community College
7777 S May Ave
Oklahoma City, OK 73159
(405) 682-1611
www.occc.edu

Tulsa Community College
6111 E Skelly Dr
Tulsa, OK 74135
(918) 595-7000
www.tulsacc.edu

Electrical and Electronic Engineering Technologies/Technicians, Other

Autry Technology Center
1201 W Willow
Enid, OK 73703
(580) 242-2750
www.autrytech.com

Electrical and Power Transmission Installation/Installer, General

Meridian Technology Center
1312 S Sangre Rd
Stillwater, OK 74074
(405) 377-3333
www.meridian-technology.com

Electrical, Electronic and Communications Engineering Technology/Technician

Northern Oklahoma College
1220 E Grand Ave
Tonkawa, OK 74653
(580) 628-6200
www.north-ok.edu

Oklahoma City Community College
7777 S May Ave
Oklahoma City, OK 73159
(405) 682-1611
www.occc.edu

Tulsa Community College
6111 E Skelly Dr
Tulsa, OK 74135
(918) 595-7000
www.tulsacc.edu

Electrician

Eastern Oklahoma County Technology Center
4601 N Choctaw Rd
Choctaw, OK 73020
(405) 390-9591
www.eoctech.org

Great Plains Technology Center
4500 W Lee Blvd
Lawton, OK 73505
(580) 355-6371
www.gptech.org

Metro Technology Centers
1900 Springlake Drive
Oklahoma City, OK 73111
(405) 424-8324
www.metrotech.org

Moore Norman Technology Center
4701 12th Avenue Nw
Norman, OK 73069
(405) 364-5763
www.mntechnology.co

Industrial Electronics Technology/Technician

Autry Technology Center
1201 W Willow
Enid, OK 73703
(580) 242-2750
www.autrytech.com

Caddo Kiowa Technology Center
100 Career Tech Road
Fort Cobb, OK 73038
(405) 643-5511
www.caddokiowa.com

Indian Capital Technology Center-Muskogee
2403 N 41st St E
Muskogee, OK 74403
(918) 687-6383
www.ictctech.com

Industrial Mechanics and Maintenance Technology

Great Plains Technology Center
4500 W Lee Blvd
Lawton, OK 73505
(580) 355-6371
www.gptech.org
Map
Directions
Tulsa Technology Center-Broken Arrow Campus
4600 South Olive
Broken Arrow, OK 74011
(918) 828-3000
www.tulsatech.edu

Masonry/Mason

Eastern Oklahoma County Technology Center
4601 N Choctaw Rd
Choctaw, OK 73020
(405) 390-9591
www.eoctech.org

Francis Tuttle Technology Center
12777 N Rockwell Ave
Oklahoma City, OK 73142
(405) 717-4900
www.francistuttle.com

Kiamichi Technology Center-Idabel
3205 Lincoln Road Ne/Hwy 70 N
Idabel, OK 74745
(580) 286-7555
www.okktc.org

Meridian Technology Center
1312 S Sangre Rd
Stillwater, OK 74074
(405) 377-3333
www.meridian-technology.com

Oklahoma- Vocational Technical

Energy Related

Institution	Credential	Program
Autry Technology Center	College credits for these courses	General Physics Mechanics
Caddo Kiawa Technology Center	Diploma/GED/Certificate	Architecture & Construction Science, Technology, Engineering & Mathematics
Canadian Valley Technology Center	Diploma/GED	Welding Electrical trades Pre engineering
Central Tech	Diploma/GED	Architecture & Construction Pre engineering
EOC Tech	Diploma/GED/Certificate	Architecture & Construction
Francis Tuttle Technology Center		Carpentry Masonry Welding
Gordon Cooper Technology Center	Diploma/GED/Certificate	Welding Electrical CAD Carpentry Masonry
Great Plains Technology Center	Diploma/GED/Certificate	Welding Carpentry Electrical
Green County Technology Center	Diploma/GED/Certificate	CAD Mechanical trades

High Plains Technology Center	Diploma/GED/Certificate	Oil & Gas technician training Construction trades
Indian Capital Technology Center	Diploma/GED/Certificate	Carpentry Drafting Machine tool technology Welding
Kiamichi Technology Center	Diploma/GED/Certificate	Construction Masonry Welding
Meridian Technology Center	Diploma/GED/Certificate	Electrical CAD Welding
Metro Technology Center	Diploma/GED/Certificate	CAD Carpentry Electrical
Mid-America Technology Center	Diploma/GED/Certificate	Carpentry Drafting Electrical
Mid-Del Technology Center	Diploma/GED/Certificate	CAD Construction Electrical Plumbing

Moore Norman Technology Center	Diploma/GED/Certificate	Carpentry Pre-engineering Machining Welding CAD
Northeast Technology Center	Diploma/GED/Certificate	Carpentry Electrical Masonry Welding
Pioneer Technology Center	Diploma/GED/Certificate	Architecture & Construction Pre-engineering Welding
Pontotoc Technology Center	Diploma/GED/Certificate	Heavy Equipment operator
Red River Technology Center	Diploma/GED/Certificate	Carpentry Pre-engineering Welding
Southern Oklahoma Technology Center	Diploma/GED/Certificate	Architecture & Construction CAD
Southwest Techology Center	Diploma/GED/Certificate	Carpentry
Tri County Technology Center	Diploma/GED/Certificate	Welding Construction Pre-engineering
Tulsa Technology Center	Diploma/GED/Certificate	Carpentry Pre-engineering Drafting Masonry

Wes Watkins Technology Center

Diploma/GED/Certificate

Carpentry
Plumbing

Western Technology Center

Diploma/GED/Certificate

Construction
Welding & Metal Fabrication

Texas- Four Year Institutions of Higher Education
Energy Related Offerings

Business, Management, Marketing, and Related Support Services

Amberton University
1700 Eastgate Dr
Garland, TX 75041
(972) 279-6511
www.amberton.edu

Baylor University
500 Speight Ave.
Waco, TX 76798
(254) 710-1011
www.baylor.edu

Saint Edward'S University
3001 S Congress Ave
Austin, TX 78704
(512) 448-8400
www.stedwards.edu

Southern Methodist University
6425 Boaz St
Dallas, TX 75275
(214) 768-2000
www.smu.edu

Texas Wesleyan University
1201 Wesleyan St
Fort Worth, TX 76105
(817) 531-4444
www.txwes.edu

University Of Dallas
1845 E Northgate Drive
Irving, TX 75062
(972) 721-5000
www.udallas.edu

Wiley College
711 Wiley Ave
Marshall, TX 75670
(903) 927-3300
wileyc.edu

Carpentry

Midland College
3600 N Garfield
Midland, TX 79705
(432) 685-4500
www.midland.edu

Cartography

Texas A & M University

College Station, TX 77843
(979) 845-3211
www.tamu.edu

Texas A & M University-Corpus Christi
6300 Ocean Dr.
Corpus Christi, TX 78412
(361) 825-5700
www.tamucc.edu

Texas State University-San Marcos
601 University Dr
San Marcos, TX 78666
(512) 245-2111
www.txstate.edu

The University Of Texas At Dallas
800 West Campbell Road
Richardson, TX 75080
(972) 883-2111
www.utdallas.edu

Chemical Engineering

Lamar University
4400 Milk
Beaumont, TX 77705
(409) 880-7011
www.lamar.edu

Prairie View A & M University
5th Street Ave. A, L.W. Minor Street.
Prairie View, TX 77446
(936) 261-3311
www.pvamu.edu

Rice University
6100 S Main
Houston, TX 77005
(713) 348-0000
www.rice.edu

Texas A & M University
College Station, TX 77843
(979) 845-3211
www.tamu.edu

Texas A & M University-Kingsville
955 University Blvd
Kingsville, TX 78363
(361) 593-2111
www.tamuk.edu

Texas Tech University
Broadway And University Avenue
Lubbock, TX 79409
(806) 742-2011
www.ttu.edu

The University Of Texas At Austin

Austin, TX 78712
(512) 471-3434
www.utexas.edu

University Of Houston
212 E. Cullen Building
Houston, TX 77204
(713) 743-1000
www.uh.edu

Computer Engineering Technology

Devry University-Texas
4800 Regent Blvd
Irving, TX 75063
(972) 929-6777
www.devry.edu

Letourneau University
2100 S Mobberly Ave
Longview, TX 75607
(903) 233-3000
www.letu.edu

Prairie View A & M University
5th Street Ave. A, L.W. Minor Street.
Prairie View, TX 77446
(936) 261-3311
www.pvamu.edu

South Texas College
3201 W Pecan
McAllen, TX 78502
(956) 872-8311
www.southtexascollege.edu

University Of Houston
212 E. Cullen Building
Houston, TX 77204
(713) 743-1000
www.uh.edu

University Of Houston-Downtown
1 Main Street
Houston, TX 77002
(713) 221-8000
www.uhd.edu

Construction/Heavy Equipment/Earthmoving Equipment Operation

Brazosport College
500 College Dr
Lake Jackson, TX 77566
(979) 230-3000
www.brazosport.edu

Electrical, Electronics and Communications Engineering

Baylor University
500 Speight Ave.
Waco, TX 76798
(254) 710-1011
www.baylor.edu

Lamar University
4400 Milk
Beaumont, TX 77705
(409) 880-7011
www.lamar.edu

Letourneau University
2100 S Mobberly Ave
Longview, TX 75607
(903) 233-3000
www.letu.edu

Prairie View A & M University
5th Street Ave. A, L.W. Minor Street.
Prairie View, TX 77446
(936) 261-3311
www.pvamu.edu

Rice University
6100 S Main
Houston, TX 77005
(713) 348-0000
www.rice.edu

Southern Methodist University
6425 Boaz St
Dallas, TX 75275
(214) 768-2000
www.smu.edu

St Marys University
One Camino Santa Maria
San Antonio, TX 78228
(210) 436-3011
www.stmarytx.edu/

Texas A & M University
College Station, TX 77843
(979) 845-3211
www.tamu.edu

Texas A & M University-Kingsville
955 University Blvd
Kingsville, TX 78363
(361) 593-2111
www.tamuk.edu

Texas Tech University
Broadway And University Avenue
Lubbock, TX 79409
(806) 742-2011
www.ttu.edu

The University Of Texas At Arlington
701 S. Nedderman Dr.
Arlington, TX 76013
(817) 272-2011
www.uta.edu

The University Of Texas At Austin
Austin, TX 78712
(512) 471-3434
www.utexas.edu

The University Of Texas At Dallas
800 West Campbell Road
Richardson, TX 75080
(972) 883-2111
www.utdallas.edu

The University Of Texas At El Paso
500 W. University Ave
El Paso, TX 79968
(915) 747-5000
www.utep.edu

The University Of Texas At San Antonio
One Utsa Circle
San Antonio, TX 78249
(210) 458-4011
www.utsa.edu/

The University Of Texas At Tyler
3900 University Blvd
Tyler, TX 75799
(903) 566-7000
www.uttyler.edu/

The University Of Texas-Pan American
1201 W University Dr
Edinburg, TX 78539
(956) 381-2011
www.utpa.edu

University Of Houston
212 E. Cullen Building
Houston, TX 77204
(713) 743-1000
www.uh.edu

University Of North Texas
Chestnut Ave.
Denton, TX 76203
(940) 565-2000
www.unt.edu

Electrical, Electronic and Communications Engineering Technology/Technician

Devry University-Texas
4800 Regent Blvd
Irving, TX 75063
(972) 929-6777
www.devry.edu

Letourneau University
2100 S Mobberly Ave
Longview, TX 75607
(903) 233-3000
www.letu.edu

Midland College
3600 N Garfield
Midland, TX 79705
(432) 685-4500
www.midland.edu

Prairie View A & M University
5th Street Ave. A, L.W. Minor Street.
Prairie View, TX 77446
(936) 261-3311
www.pvamu.edu

Sam Houston State University
1806 Ave J
Huntsville, TX 77340
(936) 294-1111
www.shsu.edu/

Texas A & M University
College Station, TX 77843
(979) 845-3211
www.tamu.edu

Texas Southern University
3100 Cleburne St
Houston, TX 77004
(713) 313-7011
www.tsu.edu

Texas Tech University
Broadway And University Avenue
Lubbock, TX 79409
(806) 742-2011
www.ttu.edu

The University Of Texas At Brownsville
80 Fort Brown
Brownsville, TX 78520
(956) 882-8200
www.utb.edu

University Of Houston
212 E. Cullen Building
Houston, TX 77204
(713) 743-1000
www.uh.edu

University Of North Texas
Chestnut Ave.
Denton, TX 76203
(940) 565-2000
www.unt.edu

Electrician

Brazosport College
500 College Dr
Lake Jackson, TX 77566
(979) 230-3000
www.brazosport.edu

South Texas College
3201 W Pecan
McAllen, TX 78502
(956) 872-8311
www.southtexascollege.edu

Enviromental Science

Abilene Christian University
1600 Campus Court
Abilene, TX 79699
(325) 674-2000
www.acu.edu

Baylor University
500 Speight Ave.
Waco, TX 76798
(254) 710-1011
www.baylor.edu

Concordia University Texas
11400 Concordia University Dr.
Austin, TX 78726
(512) 313-3000
www.concordia.edu

Hardin-Simmons University
2200 Hickory
Abilene, TX 79698
(325) 670-1000
www.hsutx.edu

Lamar University
4400 Milk
Beaumont, TX 77705
(409) 880-7011
www.lamar.edu

McMurry University
S 14th And Sayles Blvd
Abilene, TX 79697
(325) 793-3800
www.mcm.edu/

Midwestern State University
3410 Taft Blvd
Wichita Falls, TX 76308
(940) 397-4000
www.mwsu.edu

Sam Houston State University
1806 Ave J
Huntsville, TX 77340
(936) 294-1111
www.shsu.edu/

Southern Methodist University
6425 Boaz St
Dallas, TX 75275
(214) 768-2000
www.smu.edu

Stephen F Austin State University
1936 North St
Nacogdoches, TX 75962
(936) 468-2011
www.sfasu.edu

Tarleton State University
1333 W. Washington
Stephenville, TX 76401
(254) 968-9000
www.tarleton.edu

Texas A & M International University
5201 University Blvd
Laredo, TX 78041
(956) 326-2001
tamiu.edu

Texas A & M University

College Station, TX 77843
(979) 845-3211
www.tamu.edu

Texas A & M University-Commerce
2600 South Neal
Commerce, TX 75429
(903) 886-5081
www.tamu-commerce.edu

Texas A & M University-Corpus Christi
6300 Ocean Dr.
Corpus Christi, TX 78412
(361) 825-5700
www.tamucc.edu

Texas Christian University
2800 S University Dr
Fort Worth, TX 76129
(817) 257-7000
www.tcu.edu

Texas State University-San Marcos
601 University Dr
San Marcos, TX 78666
(512) 245-2111
www.txstate.edu

The University Of Texas At Arlington
701 S. Nedderman Dr.
Arlington, TX 76013
(817) 272-2011
www.uta.edu

The University Of Texas At Brownsville
80 Fort Brown
Brownsville, TX 78520
(956) 882-8200
www.utb.edu

The University Of Texas At El Paso
500 W. University Ave
El Paso, TX 79968
(915) 747-5000
www.utep.edu

The University Of Texas At San Antonio
One Utsa Circle
San Antonio, TX 78249
(210) 458-4011
www.utsa.edu/

The University Of Texas Health Science Center At Houston
7000 Fannin, Suite 1200
Houston, TX 77030
(713) 500-4472
www.uthouston.edu/

The University Of Texas Of The Permian Basin
4901 E University
Odessa, TX 79762
(432) 552-2020
www.utpb.edu

University Of Houston
212 E. Cullen Building
Houston, TX 77204
(713) 743-1000
www.uh.edu

University Of Houston-Clear Lake
2700 Bay Area Blvd
Houston, TX 77058
(281) 283-7600
www.uhcl.edu

University Of North Texas
Chestnut Ave.
Denton, TX 76203
(940) 565-2000
www.unt.edu

University Of St Thomas
3800 Montrose Blvd
Houston, TX 77006
(713) 522-7911
www.stthom.edu

University Of The Incarnate Word
4301 Broadway
San Antonio, TX 78209
(210) 829-6000
www.uiw.edu

West Texas A & M University
2501 4th Ave
Canyon, TX 79016
(806) 651-4636
www.wtamu.edu

Enviromental Studies

Austin College
900 N Grand Ave
Sherman, TX 75090
(903) 813-2000
www.austincollege.edu

Baylor University
500 Speight Ave.
Waco, TX 76798
(254) 710-1011
www.baylor.edu

Rice University
6100 S Main
Houston, TX 77005
(713) 348-0000
www.rice.edu

Saint Edward'S University
3001 S Congress Ave
Austin, TX 78704
(512) 448-8400
www.stedwards.edu

Southern Methodist University
6425 Boaz St
Dallas, TX 75275
(214) 768-2000
www.smu.edu

Southwestern University
1001 University Ave
Georgetown, TX 78626
(512) 863-6511
www.southwestern.edu

Texas A & M University

College Station, TX 77843
(979) 845-3211
www.tamu.edu

Trinity University
One Trinity Place
San Antonio, TX 78212
(210) 999-7011
www.trinity.edu

University Of St Thomas
3800 Montrose Blvd
Houston, TX 77006
(713) 522-7911
www.stthom.edu

Geological and Earth Sciences/Geosciences, Other

Baylor University
500 Speight Ave.
Waco, TX 76798
(254) 710-1011
www.baylor.edu

Hardin-Simmons University
2200 Hickory
Abilene, TX 79698
(325) 670-1000
www.hsutx.edu

Lamar University
4400 Milk
Beaumont, TX 77705
(409) 880-7011
www.lamar.edu

Midland College
3600 N Garfield
Midland, TX 79705
(432) 685-4500
www.midland.edu

Midwestern State University
3410 Taft Blvd
Wichita Falls, TX 76308
(940) 397-4000
www.mwsu.edu

Rice University
6100 S Main
Houston, TX 77005
(713) 348-0000
www.rice.edu

Sam Houston State University
1806 Ave J
Huntsville, TX 77340
(936) 294-1111
www.shsu.edu/

Southern Methodist University
6425 Boaz St
Dallas, TX 75275
(214) 768-2000
www.smu.edu

Stephen F Austin State University
1936 North St
Nacogdoches, TX 75962
(936) 468-2011
www.sfasu.edu

St Marys University
One Camino Santa Maria
San Antonio, TX 78228
(210) 436-3011
www.stmarytx.edu/

Sul Ross State University
400 North Harrison
Alpine, TX 79832
(432) 837-8011
www.sulross.edu

Tarleton State University
1333 W. Washington
Stephenville, TX 76401
(254) 968-9000
www.tarleton.edu

Texas A & M University
College Station, TX 77843
(979) 845-3211
www.tamu.edu

Texas A & M University-Corpus Christi
6300 Ocean Dr.
Corpus Christi, TX 78412
(361) 825-5700
www.tamucc.edu

Texas A & M University-Kingsville
955 University Blvd
Kingsville, TX 78363
(361) 593-2111
www.tamuk.edu

Texas Christian University
2800 S University Dr
Fort Worth, TX 76129
(817) 257-7000
www.tcu.edu

Texas Tech University
Broadway And University Avenue
Lubbock, TX 79409
(806) 742-2011
www.ttu.edu

The University Of Texas At Arlington
701 S. Nedderman Dr.
Arlington, TX 76013
(817) 272-2011
www.uta.edu

The University Of Texas At Austin

Austin, TX 78712
(512) 471-3434
www.utexas.edu

The University Of Texas At Dallas
800 West Campbell Road
Richardson, TX 75080
(972) 883-2111
www.utdallas.edu

The University Of Texas At El Paso
500 W. University Ave
El Paso, TX 79968
(915) 747-5000
www.utep.edu

The University Of Texas At San Antonio
One Utsa Circle
San Antonio, TX 78249
(210) 458-4011
www.utsa.edu/

The University Of Texas Of The Permian Basin
4901 E University
Odessa, TX 79762
(432) 552-2020
www.utpb.edu

Trinity University
One Trinity Place
San Antonio, TX 78212
(210) 999-7011
www.trinity.edu

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212 E. Cullen Building
Houston, TX 77204
(713) 743-1000
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University Of North Texas
Chestnut Ave.
Denton, TX 76203
(940) 565-2000
www.unt.edu

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2501 4th Ave
Canyon, TX 79016
(806) 651-4636
www.wtamu.edu

Geosciences
Baylor University
500 Speight Ave.
Waco, TX 76798
(254) 710-1011
www.baylor.edu

Texas A & M University
College Station, TX 77843
(979) 845-3211
www.tamu.edu

The University Of Texas At Austin
Austin, TX 78712
(512) 471-3434
www.utexas.edu

Geophysics and Seismology

Baylor University
500 Speight Ave.
Waco, TX 76798
(254) 710-1011
www.baylor.edu

Southern Methodist University
6425 Boaz St
Dallas, TX 75275
(214) 768-2000
www.smu.edu

Texas A & M University
College Station, TX 77843
(979) 845-3211
www.tamu.edu

Texas Tech University
Broadway And University Avenue
Lubbock, TX 79409
(806) 742-2011
www.ttu.edu

The University Of Texas At Austin
Austin, TX 78712
(512) 471-3434
www.utexas.edu

The University Of Texas At El Paso
500 W. University Ave
El Paso, TX 79968
(915) 747-5000
www.utep.edu

University Of Houston
212 E. Cullen Building
Houston, TX 77204
(713) 743-1000
www.uh.edu

Oceanography

Texas A & M University
College Station, TX 77843
(979) 845-3211
www.tamu.edu

Texas A & M University At Galveston
200 Seawolf Parkway
Galveston, TX 77554
(409) 740-4400
www.tamug.edu

Pipefitting

Brazosport College
500 College Dr
Lake Jackson, TX 77566
(979) 230-3000
www.brazosport.edu

Telecommunications Technology

Southern Methodist University
6425 Boaz St
Dallas, TX 75275
(214) 768-2000
www.smu.edu

Texas- Community Colleges
Energy Related Offerings

Building Construction Trades, Other

Coastal Bend College
3800 Charco Rd
Beeville, TX 78102
(361) 358-2838
www.coastalbend.edu

Building/Construction Management

Central Texas College
6200 West Central Texas Expressway
Killeen, TX 76540
(254) 526-7161
www.ctcd.edu

Cisco College
101 College Heights
Cisco, TX 76437
(254) 442-5000
www.cisco.edu

Del Mar College
101 Baldwin Blvd.
Corpus Christi, TX 78404
(361) 698-1255
www.delmar.edu

Odessa College
201 W University
Odessa, TX 79764
(432) 335-6400
www.odessa.edu

Southwest Collegiate Institute For The Deaf
3200 Ave C
Big Spring, TX 79720
(432) 264-3700
www.howardcollege.edu/swcid/

Business Management, Marketing and Related Support

Coastal Bend College

3800 Charco Rd

Beeville, TX 78102

(361) 358-2838

www.coastalbend.edu

Carpentry/Carpenter

Austin Community College District

5930 Middle Fiskville Rd

Austin, TX 78752

(512) 223-7000

www.austincc.edu

Coastal Bend College

3800 Charco Rd

Beeville, TX 78102

(361) 358-2838

www.coastalbend.edu

Mclennan Community College

1400 College Dr

Waco, TX 76708

(254) 299-8000

www.mclennan.edu

Texarkana College

2500 N Robison Rd

Texarkana, TX 75599

(903) 838-4541

www.texarkanacollege.edu

Cartography

Brookhaven College

3939 Valley View Ln

Farmers Branch, TX 75244

(972) 860-4700

www.dcccd.edu

College Of The Mainland

1200 Amburn Road

Texas City, TX 77591

(409) 938-1211

www.com.edu

Houston Community College System
3100 Main Street
Houston, TX 77266
(713) 718-2000
www.hccs.edu

Lee College
511 S Whiting
Baytown, TX 77520
(281) 427-5611
www.lee.edu

Lone Star College System
5000 Research Forest Drive
The Woodlands, TX 77381
(832) 813-6500
www.lonestar.edu

San Jacinto Community College
8060 Spencer Hwy
Pasadena, TX 77501
(281) 998-6150
www.sjcd.edu

Tarrant County College District
1500 Houston St
Fort Worth, TX 76102
(817) 515-5100
www.tccd.edu

Temple College
2600 S 1st St
Temple, TX 76504
(254) 298-8282
www.templejc.edu

Texas State Technical College Waco
3801 Campus Dr
Waco, TX 76705
(800) 792-8784
www.waco.tstc.edu

Tyler Junior College
1400 East Fifth Street
Tyler, TX 75789
(903) 510-2200
www.tjc.edu

Chemical Engineering

Kilgore College
1100 Broadway
Kilgore, TX 75662
(903) 984-8531
www.kilgore.edu

Computer Engineering Technology

Houston Community College System
3100 Main Street
Houston, TX 77266
(713) 718-2000
www.hccs.edu

Texas State Technical College Waco
3801 Campus Dr
Waco, TX 76705
(800) 792-8784
www.waco.tstc.edu

Texas State Technical College-West Texas
300 Homer K. Taylor Drive
Sweetwater, TX 79556
(325) 235-7300
www.westtexas.tstc.edu

Tyler Junior College
1400 East Fifth Street
Tyler, TX 75789
(903) 510-2200
www.tjc.edu

Computer Installation and Repair Technology/Technician

Kilgore College
1100 Broadway
Kilgore, TX 75662
(903) 984-8531
www.kilgore.edu

Laredo Community College
West End Washington St
Laredo, TX 78040
(956) 721-5394
www.laredo.edu

St Philips College
1801 Martin Luther King Dr
San Antonio, TX 78203
(210) 531-3200
www.accd.edu

Electrical, Electronic and Communications Engineering Technology

Alvin Community College
3110 Mustang Rd
Alvin, TX 77511
(281) 756-3500
www.alvincollege.edu

Amarillo College
2011 S. Washington
Amarillo, TX 79109
(806) 371-5000
www.actx.edu

Angelina College
3500 South First
Lufkin, TX 75902
(936) 639-1301
www.angelina.edu

Austin Community College District
5930 Middle Fiskville Rd
Austin, TX 78752
(512) 223-7000
www.austincc.edu

Central Texas College
6200 West Central Texas Expressway
Killeen, TX 76540
(254) 526-7161
www.ctcd.edu

College Of The Mainland
1200 Amburn Road
Texas City, TX 77591
(409) 938-1211
www.com.edu

Collin County Community College District
4800 Preston Park Blvd.
Plano, TX 75093
(972) 881-5790
www.ccccd.edu

Eastfield College
3737 Motley Dr
Mesquite, TX 75150
(972) 860-7002
www.dcccd.edu

Grayson County College
6101 Grayson Drive
Denison, TX 75020
(903) 465-6030
www.grayson.edu

Kilgore College
1100 Broadway
Kilgore, TX 75662
(903) 984-8531
www.kilgore.edu

Lamar State College-Port Arthur
1500 Proctor St
Port Arthur, TX 77640
(409) 984-6342
www.pa.lamar.edu

Lee College
511 S Whiting
Baytown, TX 77520
(281) 427-5611
www.lee.edu

Lone Star College System
5000 Research Forest Drive
The Woodlands, TX 77381
(832) 813-6500
www.lonestar.edu

Mountain View College
4849 W Illinois
Dallas, TX 75211
(214) 860-8680
www.dcccd.edu

North Lake College
5001 N Macarthur Blvd
Irving, TX 75038
(972) 273-3000
www.dcccd.edu

Paris Junior College
2400 Clarksville St
Paris, TX 75460
(903) 785-7661
parisjc.edu

Richland College
12800 Abrams Rd
Dallas, TX 75243
(972) 238-6106
www.dcccd.edu

San Antonio College
1300 San Pedro Ave
San Antonio, TX 78212
(210) 733-2000
www.accd.edu/sac/sacmain/sac.htm

San Jacinto Community College
8060 Spencer Hwy
Pasadena, TX 77501
(281) 998-6150
www.sjcd.edu

South Plains College
1401 S. College Ave
Levelland, TX 79336
(806) 894-9611
www.southplainscollege.edu/website/home.php3

Tarrant County College District
1500 Houston St
Fort Worth, TX 76102
(817) 515-5100
www.tccd.edu

Texarkana College
2500 N Robison Rd
Texarkana, TX 75599
(903) 838-4541
www.texarkanacollege.edu

Texas State Technical College Harlingen
1902 North Loop 499
Harlingen, TX 78550
(956) 364-4000
www.harlingen.tstc.edu

Texas State Technical College Waco
3801 Campus Dr
Waco, TX 76705
(800) 792-8784
www.waco.tstc.edu

Texas State Technical College-West Texas
300 Homer K. Taylor Drive
Sweetwater, TX 79556
(325) 235-7300
www.westtexas.tstc.edu

Trinity Valley Community College
100 Cardinal Drive
Athens, TX 75751
(903) 675-6200
www.tvcc.edu

Tyler Junior College
1400 East Fifth Street
Tyler, TX 75789
(903) 510-2200
www.tjc.edu

Vernon College
4400 College Dr
Vernon, TX 76384
(940) 552-6291
www.vernoncollege.edu

Victoria College
2200 E Red River
Victoria, TX 77901
(361) 573-3291
www.victoriacollege.edu

Weatherford College
225 College Park Drive
Weatherford, TX 76086
(817) 594-5471
www.wc.edu

Wharton County Junior College
911 Boling Hwy
Wharton, TX 77488
(979) 532-4560
www.wcjc.edu

Electrical, Electronics and Communications Engineering

Kilgore College
1100 Broadway
Kilgore, TX 75662
(903) 984-8531
www.kilgore.edu

Palo Alto College
1400 Villaret
San Antonio, TX 78224
(210) 921-5000
www.accd.edu/pac/htm/

Electrical and Power Transmission Installation/Installer

Coastal Bend College
3800 Charco Rd
Beeville, TX 78102
(361) 358-2838
www.coastalbend.edu

Houston Community College System
3100 Main Street
Houston, TX 77266
(713) 718-2000
www.hccs.edu

Lone Star College System
5000 Research Forest Drive
The Woodlands, TX 77381
(832) 813-6500
www.lonestar.edu

Northeast Texas Community College
2886 Fm 1735
Mount Pleasant, TX 75455
(903) 434-8100
www.ntcc.edu

San Jacinto Community College
8060 Spencer Hwy
Pasadena, TX 77501
(281) 998-6150
www.sjcd.edu

South Plains College
1401 S. College Ave
Levelland, TX 79336
(806) 894-9611
www.southplainscollege.edu/website/home.php3

Electrical/Electronics Drafting and Electrical/Electronics CAD/CADD

Central Texas College
6200 West Central Texas Expressway
Killeen, TX 76540
(254) 526-7161
www.ctcd.edu

Collin County Community College District
4800 Preston Park Blvd.
Plano, TX 75093
(972) 881-5790
www.ccccd.edu

Eastfield College
3737 Motley Dr
Mesquite, TX 75150
(972) 860-7002
www.dcccd.edu

Electrician

Coastal Bend College

3800 Charco Rd

Beeville, TX 78102

(361) 358-2838

www.coastalbend.edu

El Paso Community College

919 Hunter Drive

El Paso, TX 79915

(915) 831-2000

www.epcc.edu

Houston Community College System

3100 Main Street

Houston, TX 77266

(713) 718-2000

www.hccs.edu

Laredo Community College

West End Washington St

Laredo, TX 78040

(956) 721-5394

www.laredo.edu

Lee College

511 S Whiting

Baytown, TX 77520

(281) 427-5611

www.lee.edu

North Lake College

5001 N Macarthur Blvd

Irving, TX 75038

(972) 273-3000

www.dcccd.edu

St Philips College

1801 Martin Luther King Dr

San Antonio, TX 78203

(210) 531-3200

www.accd.edu

Texarkana College
2500 N Robison Rd
Texarkana, TX 75599
(903) 838-4541
www.texarkanacollege.edu

Texas State Technical College Waco
3801 Campus Dr
Waco, TX 76705
(800) 792-8784
www.waco.tstc.edu

Environmental Science

Central Texas College
6200 West Central Texas Expressway
Killeen, TX 76540
(254) 526-7161
www.ctcd.edu

Clarendon College
1122 College Drive
Clarendon, TX 79226
(806) 874-3571
www.clarendoncollege.edu

Tyler Junior College
1400 East Fifth Street
Tyler, TX 75789
(903) 510-2200
www.tjc.edu

Geology/Earth Science

Austin Community College District
5930 Middle Fiskville Rd
Austin, TX 78752
(512) 223-7000
www.austincc.edu

Central Texas College
6200 West Central Texas Expressway
Killeen, TX 76540
(254) 526-7161
www.ctcd.edu

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1122 College Drive
Clarendon, TX 79226
(806) 874-3571
www.clarendoncollege.edu

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3800 Charco Rd
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(361) 358-2838
www.coastalbend.edu

Grayson County College
6101 Grayson Drive
Denison, TX 75020
(903) 465-6030
www.grayson.edu

Hill College
112 Lamar Dr
Hillsboro, TX 76645
(254) 582-2555
www.hillcollege.edu

Kilgore College
1100 Broadway
Kilgore, TX 75662
(903) 984-8531
www.kilgore.edu

Odessa College
201 W University
Odessa, TX 79764
(432) 335-6400
www.odessa.edu

San Jacinto Community College
8060 Spencer Hwy
Pasadena, TX 77501
(281) 998-6150
www.sjcd.edu

Tyler Junior College
1400 East Fifth Street
Tyler, TX 75789
(903) 510-2200
www.tjc.edu

Industrial Electronics Technology Technician

Hill College
112 Lamar Dr
Hillsboro, TX 76645
(254) 582-2555
www.hillcollege.edu

Industrial Mechanics and Maintenance Technology

Del Mar College
101 Baldwin Blvd.
Corpus Christi, TX 78404
(361) 698-1255
www.delmar.edu

Grayson County College
6101 Grayson Drive
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(903) 465-6030
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Hill College
112 Lamar Dr
Hillsboro, TX 76645
(254) 582-2555
www.hillcollege.edu

Lamar Institute Of Technology
855 E Lavaca
Beaumont, TX 77705
(409) 880-8321
www.lit.edu

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8060 Spencer Hwy
Pasadena, TX 77501
(281) 998-6150
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Texas State Technical College Waco
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Waco, TX 76705
(800) 792-8784
www.waco.tstc.edu

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www.tvcc.edu

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www.lee.edu

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San Antonio, TX 78203
(210) 531-3200
www.accd.edu

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www.ctcd.edu

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www.ccccd.edu

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www.dcccd.edu

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www.lee.edu

Texas State Technical College Harlingen
1902 North Loop 499
Harlingen, TX 78550
(956) 364-4000
www.harlingen.tstc.edu

Texas State Technical College Waco
3801 Campus Dr
Waco, TX 76705
(800) 792-8784
www.waco.tstc.edu

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Tyler, TX 75789
(903) 510-2200
www.tjc.edu

Pennsylvania- Four Year Institutions of Higher Education
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Business, Management, Marketing, and Related Support Services

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610 King Of Prussia Rd
Radnor, PA 19087
(610) 902-8100
www.cabrini.edu

Carlow University
3333 Fifth Ave
Pittsburgh, PA 15213
(412) 578-6000
www.carlow.edu

Cedar Crest College
100 College Drive
Allentown, PA 18104
(610) 606-4666
www.cedarcrest.edu

Drexel University
3141 Chestnut St
Philadelphia, PA 19104
(215) 895-2000
www.drexel.edu

Duquesne University
Administration Bldg 600 Forbes Ave
Pittsburgh, PA 15282
(412) 396-6000
www.duq.edu

Eastern University
1300 Eagle Rd
Saint Davids, PA 19087
(610) 341-5800
www.eastern.edu

Grove City College
100 Campus Dr
Grove City, PA 16127
(724) 458-2000
www.gcc.edu

Lehigh University
27 Memorial Dr W
Bethlehem, PA 18015
(610) 758-3000
www.lehigh.edu

Messiah College
One College Ave
Grantham, PA 17027
(717) 766-2511
www.messiah.edu

Misericordia University
301 Lake St
Dallas, PA 18612
(570) 674-6400
www.misericordia.edu

Philadelphia University
School House Lane And Henry Avenue
Philadelphia, PA 19144
(215) 951-2700
www.philau.edu

Point Park University
201 Wood St
Pittsburgh, PA 15222
(412) 391-4100
www.pointpark.edu

University Of Pennsylvania
1 College Hall 34th And Spruce Sts
Philadelphia, PA 19104
(215) 898-5000
www.upenn.edu

Villanova University
800 Lancaster Avenue
Villanova, PA 19085
(610) 519-4500
www.villanova.edu

Widener University-Main Campus
One University Place
Chester, PA 19013
(610) 499-4000

www.widener.edu

Carpentry/Carpenter

Pennsylvania College Of Technology

One College Ave

Williamsport, PA 17701

(570) 326-3761

www.pct.edu

Chemical Engineering

Bucknell University

Dent Drive

Lewisburg, PA 17837

(570) 577-2000

www.bucknell.edu

Carnegie Mellon University

5000 Forbes Ave

Pittsburgh, PA 15213

(412) 268-2000

www.cmu.edu/

Drexel University

3141 Chestnut St

Philadelphia, PA 19104

(215) 895-2000

www.drexel.edu

Geneva College

3200 College Ave

Beaver Falls, PA 15010

(724) 846-5100

www.geneva.edu

Lafayette College

High St

Easton, PA 18042

(610) 330-5000

www.lafayette.edu

Lehigh University

27 Memorial Dr W

Bethlehem, PA 18015

(610) 758-3000

www.lehigh.edu

Pennsylvania State University-Main Campus
201 Old Main
University Park, PA 16802
(814) 865-4700
www.psu.edu/

University Of Pennsylvania
1 College Hall 34th And Spruce Sts
Philadelphia, PA 19104
(215) 898-5000
www.upenn.edu

University Of Pittsburgh-Pittsburgh Campus
4200 Fifth Avenue
Pittsburgh, PA 15260
(412) 624-4141
www.pitt.edu

Villanova University
800 Lancaster Avenue
Villanova, PA 19085
(610) 519-4500
www.villanova.edu

Widener University-Main Campus
One University Place
Chester, PA 19013
(610) 499-4000
www.widener.edu

Computer Engineering Technology/Technician

California University Of Pennsylvania
250 University Ave
California, PA 15419
(724) 938-4400
www.cup.edu

Devry University-Pennsylvania
1140 Virginia Dr
Fort Washington, PA 19034
(215) 591-5700
www.devry.edu

Electrical, Electronics and Communications Engineering

Bloomsburg University Of Pennsylvania
400 E Second St
Bloomsburg, PA 17815
(570) 389-4000
www.bloomu.edu

Bucknell University
Dent Drive
Lewisburg, PA 17837
(570) 577-2000
www.bucknell.edu

Carnegie Mellon University
5000 Forbes Ave
Pittsburgh, PA 15213
(412) 268-2000
www.cmu.edu/

Drexel University
3141 Chestnut St
Philadelphia, PA 19104
(215) 895-2000
www.drexel.edu

Elizabethtown College
One Alpha Dr
Elizabethtown, PA 17022
(717) 361-1000
www.etown.edu

Gannon University
109 W Sixth St
Erie, PA 16541
(814) 871-7000
www.gannon.edu

Grove City College
100 Campus Dr
Grove City, PA 16127
(724) 458-2000
www.gcc.edu

Lafayette College
High St
Easton, PA 18042
(610) 330-5000
www.lafayette.edu

Lehigh University
27 Memorial Dr W
Bethlehem, PA 18015
(610) 758-3000
www.lehigh.edu

Pennsylvania State University-Main Campus
201 Old Main
University Park, PA 16802
(814) 865-4700
www.psu.edu/

Pennsylvania State University-Penn State Altoona
3000 Ivyside Pk
Altoona, PA 16601
(814) 949-5000
www.aa.psu.edu/

Pennsylvania State University-Penn State Berks
Tulpehocken Rd
Reading, PA 19610
(610) 396-6000
www.bk.psu.edu/

Pennsylvania State University-Penn State Erie-Behrend College
5091 Station Rd
Erie, PA 16563
(814) 898-6000
www.pserie.psu.edu/

Pennsylvania State University-Penn State Harrisburg
777 W Harrisburg Pike
Middletown, PA 17057
(717) 948-6452
www.hbg.psu.edu

Pennsylvania State University-Penn State New Kensington
3550 7th Street Road Rte 780
Upper Burrell, PA 15068
(724) 334-5466
www.nk.psu.edu/

Pennsylvania State University-Penn State York
1031 Edgecomb Ave
York, PA 17403

(717) 771-4000
www.yk.psu.edu/

Temple University
1801 North Broad Street
Philadelphia, PA 19122
(215) 204-7000
www.temple.edu

University Of Pennsylvania
1 College Hall 34th And Spruce Sts
Philadelphia, PA 19104
(215) 898-5000
www.upenn.edu

University Of Pittsburgh-Pittsburgh Campus
4200 Fifth Avenue
Pittsburgh, PA 15260
(412) 624-4141
www.pitt.edu

University Of Scranton
800 Linden Street
Scranton, PA 18510
(570) 941-7400
www.scranton.edu

Villanova University
800 Lancaster Avenue
Villanova, PA 19085
(610) 519-4500
www.villanova.edu

Widener University-Main Campus
One University Place
Chester, PA 19013
(610) 499-4000
www.widener.edu

Wilkes University
84 West South Street
Wilkes-Barre, PA 18766
(570) 408-5000
www.wilkes.edu

York College Pennsylvania

Country Club Rd
York, PA 17403
(717) 846-7788
www.ycp.edu

Electrical and Electronic Engineering Technologies/Technicians

Pennsylvania College Of Technology
One College Ave
Williamsport, PA 17701
(570) 326-3761
www.pct.edu

Point Park University
201 Wood St
Pittsburgh, PA 15222
(412) 391-4100
www.pointpark.edu

Electrical, Electronic and Communications Engineering Technology/Technician

California University Of Pennsylvania
250 University Ave
California, PA 15419
(724) 938-4400
www.cup.edu

Devry University-Pennsylvania
1140 Virginia Dr
Fort Washington, PA 19034
(215) 591-5700
www.devry.edu

Pennsylvania College Of Technology
One College Ave
Williamsport, PA 17701
(570) 326-3761
www.pct.edu

Pennsylvania State University-Penn State Altoona
3000 Ivyside Pk
Altoona, PA 16601
(814) 949-5000
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Pennsylvania State University-Penn State Berks
Tulpehocken Rd

Reading, PA 19610
(610) 396-6000
www.bk.psu.edu/

Pennsylvania State University-Penn State Erie-Behrend College
5091 Station Rd
Erie, PA 16563
(814) 898-6000
www.pserie.psu.edu/

Pennsylvania State University-Penn State Fayette- Eberly Campus
One University Dr, Route 119 North
Uniontown, PA 15401
(724) 430-4100
www.fe.psu.edu/

Pennsylvania State University-Penn State Hazleton
76 University Drive
Hazleton, PA 18202
(570) 450-3000
www.hn.psu.edu/

Pennsylvania State University-Penn State Lehigh Valley
8380 Mohr Ln
Fogelsville, PA 18051
(610) 285-5000
www.an.psu.edu/

Pennsylvania State University-Penn State New Kensington
3550 7th Street Road Rte 780
Upper Burrell, PA 15068
(724) 334-5466
www.nk.psu.edu/

Pennsylvania State University-Penn State Wilkes-Barre
Old Rte 115
Lehman, PA 18627
(570) 675-2171
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1031 Edgecomb Ave
York, PA 17403
(717) 771-4000
www.yk.psu.edu/

University Of Pittsburgh-Johnstown

450 Schoolhouse Road
Johnstown, PA 15904
(814) 269-7000
www.upj.pitt.edu

Electrician

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One College Ave
Williamsport, PA 17701
(570) 326-3761
www.pct.edu

Environmental Science

Albright College
1621 N. 13th St.
Reading, PA 19612
(610) 921-2381
www.albright.edu

Allegheny College
520 N Main St
Meadville, PA 16335
(814) 332-3100
www.allegheny.edu

California University Of Pennsylvania
250 University Ave
California, PA 15419
(724) 938-4400
www.cup.edu

Carlow University
3333 Fifth Ave
Pittsburgh, PA 15213
(412) 578-6000
www.carlow.edu

Carnegie Mellon University
5000 Forbes Ave
Pittsburgh, PA 15213
(412) 268-2000
www.cmu.edu

Cedar Crest College
100 College Drive
Allentown, PA 18104
(610) 606-4666
www.cedarcrest.edu

Chatham University
Woodland Rd
Pittsburgh, PA 15232
(412) 365-1100
www.chatham.edu

Chestnut Hill College
9601 Germantown Ave
Philadelphia, PA 19118
(215) 248-7000
www.chc.edu

Clarion University Of Pennsylvania
840 Wood St
Clarion, PA 16214
(814) 393-2000
www.clarion.edu

Desales University
2755 Station Avenue
Center Valley, PA 18034
(610) 282-1100
www.desales.edu

Dickinson College
College And Louthier Streets
Carlisle, PA 17013
(717) 243-5121
www.dickinson.edu

Drexel University
3141 Chestnut St
Philadelphia, PA 19104
(215) 895-2000
www.drexel.edu

Duquesne University
Administration Bldg 600 Forbes Ave
Pittsburgh, PA 15282
(412) 396-6000

www.duq.edu

Edinboro University Of Pennsylvania
219 Meadville Street
Edinboro, PA 16444
(814) 732-2000
webs.edinboro.edu

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One Alpha Dr
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(717) 361-1000
www.etown.edu

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College Ave
Lancaster, PA 17604
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Huntingdon, PA 16652
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King'S College
133 N River St
Wilkes Barre, PA 18711
(570) 208-5900
www.kings.edu

Kutztown University Of Pennsylvania
15200 Kutztown Rd
Kutztown, PA 19530
(610) 683-4000
www.kutztown.edu

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1900 W Olney Ave
Philadelphia, PA 19141
(215) 951-1000
www.lasalle.edu

Lehigh University
27 Memorial Dr W
Bethlehem, PA 18015
(610) 758-3000
www.lehigh.edu

Lincoln University Of Pennsylvania
1570 Baltimore Pike
Lincoln University, PA 19352
(484) 365-8000
www.lincoln.edu

Marywood University
2300 Adams Ave
Scranton, PA 18509
(570) 348-6211
www.marywood.edu

Messiah College
One College Ave
Grantham, PA 17027
(717) 766-2511
www.messiah.edu

Moravian College And Moravian Theological Seminary
1200 Main St
Bethlehem, PA 18018
(610) 861-1360
www.moravian.edu

Muhlenberg College
2400 Chew Street
Allentown, PA 18104
(484) 664-3100
www.muhlenberg.edu
Point Park University
201 Wood St
Pittsburgh, PA 15222
(412) 391-4100
www.pointpark.edu

Robert Morris University
6001 University Boulevard
Moon Township, PA 15108
(412) 762-0097
www.rmu.edu

Saint Joseph'S University
5600 City Avenue
Philadelphia, PA 19131
(610) 660-1000
www.sju.edu

Saint Vincent College
300 Fraser Purchase Rd
Latrobe, PA 15650
(724) 539-9761
www.stvincent.edu

Temple University
1801 North Broad Street
Philadelphia, PA 19122
(215) 204-7000
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Thiel College
75 College Ave
Greenville, PA 16125
(724) 589-2000
www.thiel.edu

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(215) 898-5000
www.upenn.edu

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800 Linden Street
Scranton, PA 18510
(570) 941-7400
www.scranton.edu

University Of The Sciences In Philadelphia
600 S 43rd Street

Philadelphia, PA 19104
(215) 596-8800
www.usp.edu

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800 Lancaster Avenue
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(610) 519-4500
www.villanova.edu

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319 South Market Street
New Wilmington, PA 16172
(724) 946-8761
www.westminster.edu

Widener University-Main Campus
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www.widener.edu

Environmental Studies

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Meadville, PA 16335
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www.bucknell.edu

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(412) 268-2000

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Saint Davids, PA 19087
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www.eastern.edu

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www.fandm.edu

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(814) 871-7000
www.gannon.edu

Gettysburg College
300 N Washington St
Gettysburg, PA 17325
(717) 337-6000
www.gettysburg.edu

Juniata College
1700 Moore St
Huntingdon, PA 16652
(814) 641-3000
www.juniata.edu

Keystone College
One College Green
La Plume, PA 18440

(570) 945-8000
www.keystone.edu

King'S College
133 N River St
Wilkes Barre, PA 18711
(570) 208-5900
www.kings.edu

Lehigh University
27 Memorial Dr W
Bethlehem, PA 18015
(610) 758-3000
www.lehigh.edu

Moravian College And Moravian Theological Seminary
1200 Main St
Bethlehem, PA 18018
(610) 861-1360
www.moravian.edu

Muhlenberg College
2400 Chew Street
Allentown, PA 18104
(484) 664-3100
www.muhlenberg.edu

Neumann College
One Neumann Drive
Aston, PA 19014
(610) 459-0905
www.neumann.edu

Pennsylvania State University-Penn State Altoona
3000 Ivyside Pk
Altoona, PA 16601
(814) 949-5000
www.aa.psu.edu/

Shippensburg University Of Pennsylvania
1871 Old Main Drive
Shippensburg, PA 17257
(717) 477-7447
www.ship.edu

Swarthmore College
500 College Ave

Swarthmore, PA 19081
(610) 328-8000
www.swarthmore.edu

Temple University
1801 North Broad Street
Philadelphia, PA 19122
(215) 204-7000
www.temple.edu

University Of Pennsylvania
1 College Hall 34th And Spruce Sts
Philadelphia, PA 19104
(215) 898-5000
www.upenn.edu

Ursinus College
601 E. Main St
Collegeville, PA 19426
(610) 409-3000
www.ursinus.edu

Washington & Jefferson College
60 S Lincoln St
Washington, PA 15301
(724) 503-1001
www.washjeff.edu

Wilson College
1015 Philadelphia Ave
Chambersburg, PA 17201
(717) 264-4141
www.wilson.edu

Geological and Earth Sciences/Geosciences, Other

Allegheny College
520 N Main St
Meadville, PA 16335
(814) 332-3100
www.allegheny.edu

Franklin And Marshall College
College Ave
Lancaster, PA 17604
(717) 291-3911
www.fandm.edu

Map

Directions

Harrisburg University Of Science And Technology

304 Market Street

Harrisburg, PA 17101

(717) 901-5152

www.harrisburgu.net

Lafayette College

High St

Easton, PA 18042

(610) 330-5000

www.lafayette.edu

Lehigh University

27 Memorial Dr W

Bethlehem, PA 18015

(610) 758-3000

www.lehigh.edu

Pennsylvania State University-Main Campus

201 Old Main

University Park, PA 16802

(814) 865-4700

www.psu.edu/

University Of Pittsburgh-Bradford

300 Campus Drive

Bradford, PA 16701

(814) 362-7500

www.upb.pitt.edu/

University Of Pittsburgh-Johnstown

450 Schoolhouse Road

Johnstown, PA 15904

(814) 269-7000

www.upj.pitt.edu

University Of Pittsburgh-Pittsburgh Campus

4200 Fifth Avenue

Pittsburgh, PA 15260

(412) 624-4141

www.pitt.edu

Geology, Earth Sciences

Allegheny College

520 N Main St
Meadville, PA 16335
(814) 332-3100
www.allegheny.edu

Bloomsburg University Of Pennsylvania
400 E Second St
Bloomsburg, PA 17815
(570) 389-4000
www.bloomu.edu

Bryn Mawr College
101 N Merion Avenue
Bryn Mawr, PA 19010
(610) 526-5000
www.brynmawr.edu

Bucknell University
Dent Drive
Lewisburg, PA 17837
(570) 577-2000
www.bucknell.edu

California University Of Pennsylvania
250 University Ave
California, PA 15419
(724) 938-4400
www.cup.edu

Clarion University Of Pennsylvania
840 Wood St
Clarion, PA 16214
(814) 393-2000
www.clarion.edu

East Stroudsburg University Of Pennsylvania
200 Prospect Street
East Stroudsburg, PA 18301
(570) 422-3211
www.esu.edu

Edinboro University Of Pennsylvania
219 Meadville Street
Edinboro, PA 16444
(814) 732-2000
webs.edinboro.edu/welcome/

Haverford College
370 Lancaster Ave
Haverford, PA 19041
(610) 896-1000
www.haverford.edu

Indiana University Of Pennsylvania-Main Campus
1011 South Dr 201 Sutton Hall
Indiana, PA 15705
(724) 357-2100
www.iup.edu

Juniata College
1700 Moore St
Huntingdon, PA 16652
(814) 641-3000
www.juniata.edu

Kutztown University Of Pennsylvania
15200 Kutztown Rd
Kutztown, PA 19530
(610) 683-4000
www.kutztown.edu

La Salle University
1900 W Olney Ave
Philadelphia, PA 19141
(215) 951-1000
www.lasalle.edu

Lehigh University
27 Memorial Dr W
Bethlehem, PA 18015
(610) 758-3000
www.lehigh.edu

Lock Haven University
401 North Fairview Street
Lock Haven, PA 17745
(570) 484-2011
www.lhup.edu

Mansfield University Of Pennsylvania

Mansfield, PA 16933
(570) 662-4000
www.mansfield.edu

Mercyhurst College
501 E 38th St
Erie, PA 16546
(814) 824-2000
www.mercyhurst.edu

Millersville University Of Pennsylvania
20 Dilworth Rd
Millersville, PA 17551
(717) 872-3024
www.millersville.edu

Moravian College And Moravian Theological Seminary
1200 Main St
Bethlehem, PA 18018
(610) 861-1360
www.moravian.edu

Pennsylvania State University-Main Campus
201 Old Main
University Park, PA 16802
(814) 865-4700
www.psu.edu

Shippensburg University Of Pennsylvania
1871 Old Main Drive
Shippensburg, PA 17257
(717) 477-7447
www.ship.edu

Slippery Rock University Of Pennsylvania
1 Morrow Way
Slippery Rock, PA 16057
(724) 738-9000
www.sru.edu

Susquehanna University
514 University Ave
Selinsgrove, PA 17870
(570) 374-0101
www.susqu.edu

Temple University
1801 North Broad Street
Philadelphia, PA 19122
(215) 204-7000

www.temple.edu

University Of Pennsylvania
1 College Hall 34th And Spruce Sts
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(215) 898-5000
www.upenn.edu

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450 Schoolhouse Road
Johnstown, PA 15904
(814) 269-7000
www.upj.pitt.edu

University Of Pittsburgh-Pittsburgh Campus
4200 Fifth Avenue
Pittsburgh, PA 15260
(412) 624-4141
www.pitt.edu

West Chester University Of Pennsylvania
University Avenue And High Street
West Chester, PA 19383
(610) 436-1000
www.wcupa.edu

Wilkes University
84 West South Street
Wilkes-Barre, PA 18766
(570) 408-5000
www.wilkes.edu

Industrial Electronics Technology/Technician

Pennsylvania College Of Technology
One College Ave
Williamsport, PA 17701
(570) 326-3761
www.pct.edu

Industrial Mechanics and Maintenance Technology

Pennsylvania College Of Technology
One College Ave
Williamsport, PA 17701
(570) 326-3761
www.pct.edu

Masonry/Mason

Pennsylvania College Of Technology
One College Ave
Williamsport, PA 17701
(570) 326-3761
www.pct.edu

Plumbing Technology/Plumber

Pennsylvania College Of Technology
One College Ave
Williamsport, PA 17701
(570) 326-3761
www.pct.edu

Oceanography, Chemical and Physical

Kutztown University Of Pennsylvania
15200 Kutztown Rd
Kutztown, PA 19530
(610) 683-4000
www.kutztown.edu

Millersville University Of Pennsylvania
20 Dilworth Rd
Millersville, PA 17551
(717) 872-3024
www.millersville.edu

Pennsylvania State University-Main Campus
201 Old Main
University Park, PA 16802
(814) 865-4700
www.psu.edu/

Telecommunications Technology/Technician

Pennsylvania State University-Penn State Wilkes-Barre
Old Rte 115
Lehman, PA 18627
(570) 675-2171
www.wb.psu.edu/

Carpentry/Carpenter
Pennsylvania College Of Technology

One College Ave
Williamsport, PA 17701
(570) 326-3761
www.pct.edu

Pennsylvania- Community Colleges
Energy Related Offerings

Building/Construction Management/Manager

Commonwealth Technical Institute
727 Goucher St
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(814) 255-8200
www.hgac.org

Delaware County Community College
901 S Media Line Rd
Media, PA 19063
(610) 359-5000
www.dccc.edu

Luzerne County Community College
1333 South Prospect Street
Nanticoke, PA 18634
(570) 740-0200
www.luzerne.edu

Orleans Technical Institute
2770 Red Lion Road
Philadelphia, PA 19114
(215) 728-4400
www.orleanstech.edu

Building/Construction Finishing, Management, and Inspection

Harrisburg Area Community College-Harrisburg
One Hacc Dr
Harrisburg, PA 17110
(717) 780-2300
www.hacc.edu

Building/Home/Construction Inspection/Inspector

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727 Goucher St
Johnstown, PA 15905
(814) 255-8200
www.hgac.org

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One Hacc Dr
Harrisburg, PA 17110
(717) 780-2300
www.hacc.edu

Pennsylvania Highlands Community College
101 Community College Way
Johnstown, PA 15904
(814) 262-6400
www.pennhighlands.edu

Business, Management, Marketing, and Related Support Services,
Bucks County Community College
275 Swamp Rd
Newtown, PA 18940
(215) 968-8000
www.bucks.edu

Manor College
700 Fox Chase Rd
Jenkintown, PA 19046
(215) 885-2360
www.manor.edu

Carpentry/Carpenter
Community College Of Allegheny County
800 Allegheny Ave
Pittsburgh, PA 15233
(412) 323-2323
www.ccac.edu

Community College Of Beaver County
One Campus Drive
Monaca, PA 15061
(724) 775-8561
www.ccbc.edu

Delaware County Community College
901 S Media Line Rd
Media, PA 19063
(610) 359-5000
www.dccc.edu

Johnson College
3427 N Main Ave
Scranton, PA 18508

(570) 342-6404
www.johnson.edu

Orleans Technical Institute
2770 Red Lion Road
Philadelphia, PA 19114
(215) 728-4400
www.orleanstech.edu

Thaddeus Stevens College Of Technology
750 E King St
Lancaster, PA 17602
(717) 299-7730
www.stevenscollege.edu

Computer Engineering Technology/Technician

Lehigh Carbon Community College
4525 Education Park Dr
Schnecksville, PA 18078
(610) 799-2121
www.lccc.edu

Westmoreland County Community College
145 Pavilion Lane
Youngwood, PA 15697
(724) 925-4000
wccc.edu

Building/Construction Trades
Community College Of Allegheny County
800 Allegheny Ave
Pittsburgh, PA 15233
(412) 323-2323
www.ccac.edu

Computer Installation and Repair Technology/Technician

Harrisburg Area Community College-Harrisburg
One Hacc Dr
Harrisburg, PA 17110
(717) 780-2300
www.hacc.edu

Northampton County Area Community College
3835 Green Pond Rd
Bethlehem, PA 18020

(610) 861-5300
www.northampton.edu

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145 Pavilion Lane
Youngwood, PA 15697
(724) 925-4000
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Electrical, Electronic and Communications Engineering Technology/Technician

Bucks County Community College
275 Swamp Rd
Newtown, PA 18940
(215) 968-8000
www.bucks.edu

Butler County Community College
College Drive Oak Hills
Butler, PA 16003
(724) 287-8711
www.bc3.edu

Community College Of Allegheny County
800 Allegheny Ave
Pittsburgh, PA 15233
(412) 323-2323
www.ccac.edu

Community College Of Beaver County
One Campus Drive
Monaca, PA 15061
(724) 775-8561
www.ccbc.edu

Community College Of Philadelphia
1700 Spring Garden St
Philadelphia, PA 19130
(215) 751-8000
www.ccp.edu

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(610) 359-5000
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www.lccc.edu

Luzerne County Community College
1333 South Prospect Street
Nanticoke, PA 18634
(570) 740-0200
www.luzerne.edu

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340 Dekalb Pike
Blue Bell, PA 19422
(215) 641-6300
www.mc3.edu

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101 Community College Way
Johnstown, PA 15904
(814) 262-6400
www.pennhighlands.edu

Pennsylvania Institute Of Technology
800 Manchester Ave
Media, PA 19063
(610) 565-7900
www.pit.edu

Reading Area Community College
10 S Second St
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(610) 372-4721
www.racc.edu

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750 E King St
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www.stevenscollege.edu

Electrical and Power Transmission Installers

Johnson College
3427 N Main Ave
Scranton, PA 18508
(570) 342-6404
www.johnson.edu

Environmental Science

Bucks County Community College
275 Swamp Rd
Newtown, PA 18940
(215) 968-8000
www.bucks.edu

Harrisburg Area Community College-Harrisburg
One Hacc Dr
Harrisburg, PA 17110

(717) 780-2300
www.hacc.edu

Lackawanna College
501 Vine St
Scranton, PA 18509
(570) 961-7810
www.lackawanna.edu

Environmental Studies

Harrisburg Area Community College-Harrisburg
One Hacc Dr
Harrisburg, PA 17110
(717) 780-2300
www.hacc.edu

Industrial Mechanics and Maintenance Technology

Community College Of Allegheny County
800 Allegheny Ave
Pittsburgh, PA 15233
(412) 323-2323
www.ccac.edu

Delaware County Community College
901 S Media Line Rd
Media, PA 19063
(610) 359-5000
www.dccc.edu

Harrisburg Area Community College-Harrisburg
One Hacc Dr
Harrisburg, PA 17110
(717) 780-2300
www.hacc.edu

Reading Area Community College
10 S Second St
Reading, PA 19603
(610) 372-4721
www.racc.edu

Industrial Electronics Technology/Technician

Community College Of Allegheny County
800 Allegheny Ave

Pittsburgh, PA 15233
(412) 323-2323
www.ccac.edu

Lehigh Carbon Community College
4525 Education Park Dr
Schnecksville, PA 18078
(610) 799-2121
www.lccc.edu

Northampton County Area Community College
3835 Green Pond Rd
Bethlehem, PA 18020
(610) 861-5300
www.northampton.edu

Lineworker

Lehigh Carbon Community College
4525 Education Park Dr
Schnecksville, PA 18078
(610) 799-2121
www.lccc.edu

Masonry/Mason

Community College Of Beaver County
One Campus Drive
Monaca, PA 15061
(724) 775-8561
www.ccbc.edu

Thaddeus Stevens College Of Technology
750 E King St
Lancaster, PA 17602
(717) 299-7730
www.stevenscollege.edu

Plumbing Technology/Plumber

Community College Of Beaver County
One Campus Drive
Monaca, PA 15061
(724) 775-8561
www.ccbc.edu

Delaware County Community College

901 S Media Line Rd
Media, PA 19063
(610) 359-5000
www.dccc.edu

Luzerne County Community College
1333 South Prospect Street
Nanticoke, PA 18634
(570) 740-0200
www.luzerne.edu

Orleans Technical Institute
2770 Red Lion Road
Philadelphia, PA 19114
(215) 728-4400
www.orleanstech.edu

Thaddeus Stevens College Of Technology
750 E King St
Lancaster, PA 17602
(717) 299-7730
www.stevenscollege.edu

<http://www.careervoyages.gov>

**Pennsylvania- Vocational Technical
Energy Related Offerings**

<u>Institution</u>	<u>Credential</u>	<u>Programs</u>
A W Beattie Career Center	Diploma/GED	Chemistry Biology Pre-Algebra Algebra Advanced Computer Programming Agile Robotics / Intelligent Systems Business and Information Technology Computer Systems Technology Network Engineering Technology
Admiral Peary AVTS	Diploma/GED/Certification	Welding Mechanical Engineering Tech Computer Aided Drafting Electrical Technology
Beaver County CTC	Diploma/GED/Certification	Logistics Materials Management Machine Tool Technology
Bedford County Technical Center	Diploma/GED/Certification	AutoCAD Industrial Machine Control and Troubleshooting
Berks CTC	Diploma/GED/Certification	Electronic Technology Precision Machining Technologies Heavy Equipment Technology Robotics and Automation Technology Welding

Bethlehem AVTS

Diploma/GED/Certification

Auto Technician
Precision Machine
Welding Technologies
Engineering
Electro-mechanical Technologies

Bucks County Technical High School

Diploma/GED

Algebra
Geometry
Calculus
Biology
Chemistry
Physics

Butler County AVTS

Diploma/GED/Certification

Heavy Equipment Repair
Machine Technology

Carbon Career & Technical Institute

Diploma/GED/Certification

Electronics and electrical occupations
Precision Machine Technology
Welding
Algebra
Geometry
Pre-calculus/Trigonometry
Calculus
Biology
Physics/Technology
Chemistry

Career Institute of Technology

Diploma/GED

CAD/Engineering Graphics
Information Systems Technology
Machine Tool Technology
Welding Technology

Center for Arts & Technology	Diploma/GED/Certification	Computer Information Systems Electronic Systems Technology Welding and Metal Arts Engine Technology Algebra Geometry Biology Chemistry Principles of Technology
Central Montco Technical High School	Diploma/GED/Certificate Diploma/GED	Engineering Technology Math for Industry
Central PA Institute of Science & Technology	Diploma/GED/Certification	Heavy Equipment Operation Precision Machine Technology Welding and Metal Fabrication Technology
Clarion County Career Center	Diploma/GED/Certification	Industrial Technology Information Technology Welding and Fabrication
Clearfield County CTC	Diploma/GED/Certification	Electronics Technology Precision Machining Welding

Columbia-Montour AVTS

Diploma/GED/Certification

Computer Technology
Electronics Technology
Machining Technology
Welding Technology
Algebra
Geometry
Trigonometry
Physics
Principles of Technology
Biology
Chemistry

Diploma/GED

Connellsville Area Career & Technical Center

Diploma/GED/Certification

Integrated Math
Integrated Science
Welding and Metal Fabrication

Crawford County CTC

Diploma/GED/Certification

Computer and Information Sciences
Diesel Technology
Electronics Technology
Precision Machining
Welding

CTC of Lackawanna County

Diploma/GED/Certification

Computer Systems Technology
Electronics Technology
Industrial Machine Tool
Welding
Algebra
Geometry
Trigonometry
Pre-Calculus

Cumberland-Perry AVTS

Diploma/GED/Certificate

Computer Information Systems
Diesel Technology
Electrical Construction and Maintenance
Electronics Engineering Technology
Logistics and Warehouse Management
Precision Machine Technology
Welding
Biology
Chemistry
Algebra
Geometry

Dauphin County AVTS

Diploma/GED

Algebra
Geometry
Trigonometry
Calculus
Biology
Chemistry
Physics

Diploma/GED/Certificate

Diesel Technology
Electrical Construction and Maintenance
Electronics Technology
Information Systems Technology
Outdoor Power Equipment Technology
Precision Metal Working

Delaware County AVTS

Diploma/GED/Certificate
Diploma/GED

Applied Engineering Technology
Geometry
Algebra

Eastern Center for Arts & Technology

Diploma/GED/Certificate

Electrical Technology
Electronics Engineering Technology
Welding Technology

Eastern Westmoreland CTC	Diploma/GED/Certificate	Welding
Erie County Technical School	Diploma/GED/Certificate	Computer Information Systems Electrical Engineering Electronics Metal Fabrication Tool and Die
Fayette County AVTS	Diploma/GED/Certificate	Diesel Mechanics Electrical Construction Information Technology Machine Production Welding
Forbes Road CTC	Diploma/GED	Geometry Trigonometry Algebra Physics General Science Computer Business Information Technology Computer and Networking Engineering Technology
Franklin County CTC	Diploma/GED/Certificate	Diesel Technology Electrical Technology Precision Machining Information Systems and Technology Electronics Precision Machining Pre-Engineering Welding Diesel Mechanics Supply and Logistics Management

Fulton County AVTS	Diploma/GED/Certificate	Welding
Greater Altoona CTC	Diploma/GED/Certificate	Automotive/Diesel Technology Computer Technology/Cisco Academy Electrical Trades Electronics Technology Outdoor Power Equipment Technology Precision Machining Welding Technology
Greene County CTC	Diploma/GED/Certificate	Computer Information Technology Precision Machining Welding/Fabrication
Huntingdon Co CTC	Diploma/GED/Certificate	Metalworking and Welding Occupations Computer Servicing Technology
Indiana County Technology Center	Diploma/GED/Certificate	Industry Outreach Program Machining Technology Welding Technology
Jefferson County-DuBois AVTS	Diploma/GED	Algebra Geometry Calculus Applied Biology/Chemistry Principles of Technology Information Technology Welding/Metal Fabrication
Keystone Central CTC	Diploma/GED/Certification	Precision Machining

Lancaster County CTC	Diploma/GED/Certification	Information Technology
Lawrence County CTC	Diploma/GED/Certification	Computer and Office Technology Electronics Technology Welding Science Math
Lebanon County CTC	Diploma/GED	
	Diploma/GED/Certificate	Diesel Truck Technology Computer Repair Technology Welding Technology
Lehigh Career & Technical Institute	Diploma/GED	Biology Chemistry Physics Math
	Diploma/GED/Certificate	Computer Maintenance Technology Diesel/Medium and Heavy Technology Electrical Technology Electro-mechanical Automated Systems Technology Electronics Technology Emerging Engineering Professionals Heavy Equipment Operations and Maintenance Material Handling and Logistics Technology Precision Machine Tool Technology Pre-engineering and Engineering Technology Welding Technology

Lenape Tech	Diploma/GED	Algebra Geometry Trigonometry Pre-Calculus Calculus Chemistry Physics Principles of Technology Electro-optics Mechanical Systems Electrical Systems Material Engineering Precision Machining Technology Welding Technology
Lycoming CTC	Diploma/GED/Certificate	Computer Service Technology
McKeesport Area Tech Ctr	Diploma/GED/Certificate	Biotechnology Computer Service Technology Engineering Technology
Mercer County Career Center	Diploma/GED/Certificate	Diesel Mechanics Precision Production Metals Robotics, Engineering and Design
Middle Bucks Institute of Technology	Diploma/GED/Certificate	Information Technology Science, Technology, Engineering, Math
Mifflin-Juniata CTC	Diploma/GED/Certificate	Metal Working

Mon Valley CTC	Diploma/GED/Certificate	Computer Maintenance and Networking Computer Programming Electrical Power Precision Machining Applied Math
Monroe Career & Tech Inst	Diploma/GED	Biology Chemistry Physics Algebra Geometry Computer Programming Electronics Technology Welding Computerized Machine Technology
North Montco Tech Career Center	Diploma/GED/Certificate	Applied Mathematics Basic Diesel Engine Repair Biotechnology Industrial Pneumatics/Hydraulics Precision Machining Repairs Systems Technician Welding
Northern Westmoreland CTC	Diploma/GED/Certificate	Computer Technology Machine Tool Welding
Northumberland County CTC		Computer Technology Diversified Occupations Welding

Reading Muhlenberg CTC	Diploma/GED/Certificate	Welding and Metal Fabrication Information technology-applications Diesel Truck Technology
Schuylkill Technology Centers	Diploma/GED/Certificate	Electromechanical Technology Machine Trades Technology Welding Computer Programming
Seneca Highlands AVTS	Diploma/GED/Certificate	Computer Maintenance Technology Heavy Equipment Maintenance Metalworking Occupations
Somerset County Technology Center	Diploma/GED/Certificate	Machine Technology Welding Technology
Steel Center AVTS	Diploma/GED/Certificate	Computer Information Systems Diesel Mechanics Electrical Construction Machine Shop
SUN Area Technical Institute	Diploma/GED/Certificate	Precision Machining Welding Diesel and Truck Technology Electronics Technology Information Technology
Upper Bucks County AVTS	Diploma/GED/Certificate	Active Physics Bio-Diversified Science and Technology Diesel Equipment Technology Machining Technologies Welding Fabrication Technology

Venango Technology Center	Diploma/GED/Certificate	Computer Information Systems Equipment Operations/Maintenance Technology Machine Tool Technology Welding Technology
Warren County AVTS	Diploma/GED/Certificate	Computer Systems Technology Machine Technology Power Equipment Technology Pre-Engineering Welding Technology
West Side CTC	Diploma/GED/Certificate	Computer Maintenance Technology Electrical Occupation Machine Tooling Technology
Western Area CTC	Diploma/GED/Certificate	Electrical Occupations Machine Shop Welding
Western Center for Technical Studies	Diploma/GED/Certificate	Computer Information Systems Electro-Mechanical Metal Technology
Wilkes-Barre CTC	Diploma/GED/Certificate	Computer Information Technology Machine Trades Diesel and Heavy Equipment Welding

York Co School of Technology

Diploma/GED/Certificate

Computer Programming
Diesel
Engineering Technology
Mechanical Design
Power Equipment
Precision Machining Technology
Technology
Welding/Metal Fabrication
Math
Science

Diploma/GED

Thaddeus Stevens Coll of Tech

Certificate

Electrical Technology
Machine Tool and Computer Aided Manufacturing
Mechanical Engineering Technology
Metals Fabrication and Welding