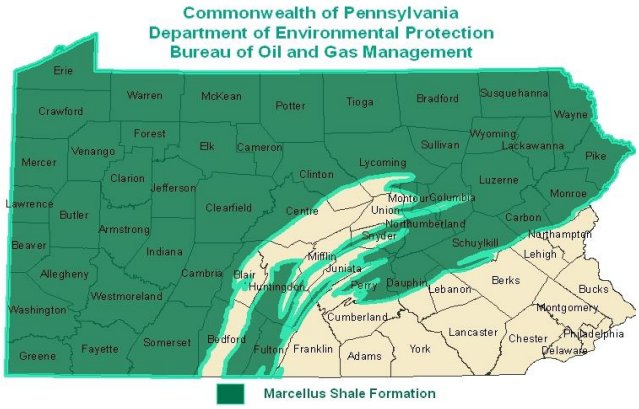
# Southwest Corner

## Pennsylvania's Marcellus Shale Formation

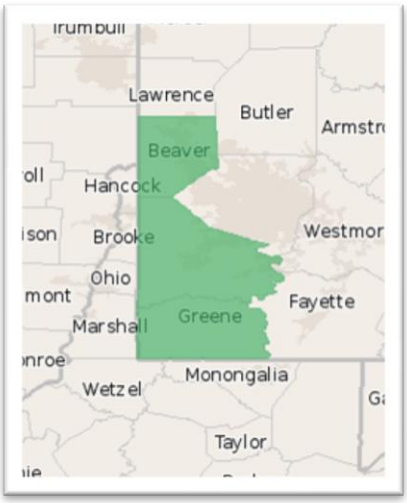



The Marcellus Shale is a rock formation that underlies much of Pennsylvania and portions of New York, Ohio and West Virginia at a depth of 5,000 to 8,000 feet. It is believed to hold trillions of cubic feet of natural gas. This formation has long been considered prohibitively expensive to access but recent advances in drilling technology and rising natural gas prices have attracted new interest in this previously untapped formation.

The Center for Workforce Information & Analysis (CWIA) used the North American Industry Classification System (NAICS) to define the Marcellus Shale industry sector. Much of the information included in this document reflects data on a group of six industries identified as "core," and a group of 30 identified as "ancillary" to the processes involved in accessing the resources in the Marcellus Shale formation. The six Workforce Investment Areas (WIAs) most closely involved in Marcellus Shale activities are Central, North Central, Northern Tier, Southwest Corner, Tri-County, West Central, and Westmoreland-Fayette.

## Regional Population Demographics

The Southwest Corner WIA encompasses Beaver, Green, and Washington Counties. The WIA's unemployment rate was 7.5% in September, which was eight-tenths of a percentage point lower than the state unemployment rate.

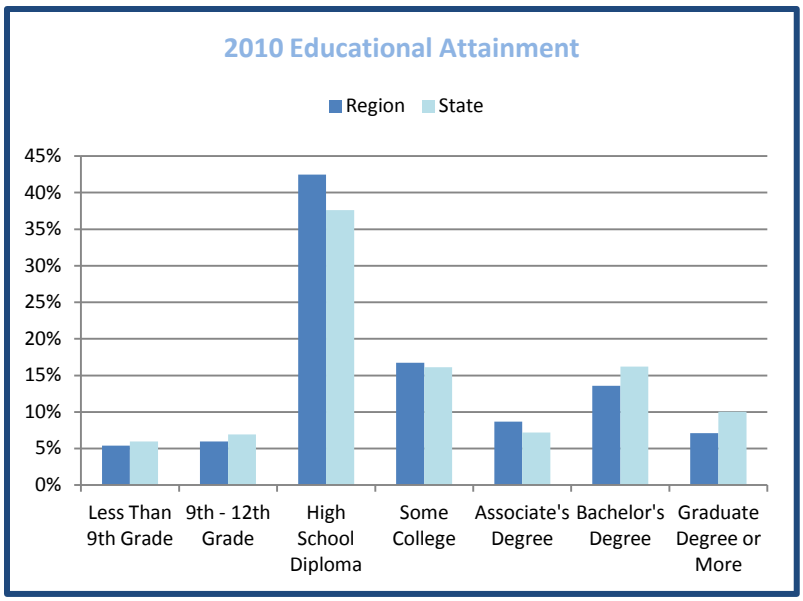



### *Unemployment Rates*

| Area | September 2011 Preliminary Seasonally Adjusted Unemployment Rate |
|---|---|
| Beaver County | 7.7% |
| Greene County | 7.0% |
| Washington County | 7.4% |
| Southwest Corner WIA | 7.5% |
| Pennsylvania | 8.3% |
| United States | 9.1% |

Source: Pennsylvania Department of Labor & Industry, Local Area Unemployment Statistics

While 88.6% of the population had a high school degree or above, only 20.7% had achieved a four-year degree or higher. The state had a similar percentage of those with a high school degree and higher - 87.1% - but a larger percentage of people who achieved a more advanced degree.



Source: Economic Modeling Specialists, Inc.

The Southwest Corner region had a smaller increase in population than both the state and the nation in the 1990s. While Pennsylvania and the U.S. continued to show growth in the 2000s, the region actually lost more residents than it gained in the previous decade. In 2010, the region was 91.8% white, non-Hispanic, and 48.7% male.

### *Population*

| Area | 1990 Population | 2000 Population | 2010 Population | 1990-2000 % Change | 2000-2010 % Change |
|---|---|---|---|---|---|
| Southwest Corner WIA | 430,227 | 424,981 | 417,045 | -1.2% | -1.9% |
| Pennsylvania | 11,881,643 | 12,281,054 | 12,702,379 | 3.4% | 3.4% |
| United States | 248,709,873 | 281,421,906 | 308,745,538 | 13.2% | 9.7% |

Source: U.S. Census Bureau

## Industry Demographics

Across the region as well as the state as a whole, the industries making up the Marcellus Shale sector had a predominantly male workforce. Across the state, most industries had a higher percentage of employment in the 45 to 54 year old age range than any other age group. The industry groups in the tables below encompass, but are not limited to, all of the industries defined by the CWIA as core and ancillary to the Marcellus Shale industry sector.

### *Industry Gender Demographics, 4th Quarter 2010*

| NAICS Code | NAICS Title | Pennsylvania | |
|---|---|---|---|
| | | Male | Female |
| 2111 | Oil and Gas Extraction | 81.1% | 18.9% |
| 2131 | Support Activities for Mining | 92.3% | 7.7% |
| 2211 | Electric Power Generation, Transmission and Distribution | 83.1% | 16.9% |
| 2212 | Natural Gas Distribution | 74.2% | 25.8% |
| 2213 | Water, Sewage and Other Systems | 73.4% | 26.6% |
| 2371 | Utility System Construction | 88.9% | 11.1% |

| | | | |
|---|---|---|---|
| 2373 | Highway, Street, and Bridge Construction | 85.8% | 14.2% |
| 2389 | Other Specialty Trade Contractors | 89.0% | 11.0% |
| 3251 | Basic Chemical Manufacturing | 77.9% | 22.0% |
| 3311 | Iron and Steel Mills and Ferroalloy Manufacturing | 89.6% | 10.4% |
| 3312 | Steel Product Manufacturing from Purchased Steel | 87.3% | 12.7% |
| 3331 | Agriculture, Construction, and Mining Machinery Manufacturing | 86.0% | 14.0% |
| 4238 | Machinery, Equipment, and Supplies Merchant Wholesalers | 75.6% | 24.4% |
| 4841 | General Freight Trucking | 88.9% | 11.1% |
| 4842 | Specialized Freight Trucking | 87.4% | 12.6% |
| 4862 | Pipeline Transportation of Natural Gas | 88.6% | 11.4% |
| 5311 | Lessors of Real Estate | 56.3% | 43.7% |
| 5324 | Commercial and Industrial Machinery and Equipment Rental and Leasing | 76.5% | 23.5% |
| 5413 | Architectural, Engineering, and Related Services | 74.8% | 25.2% |
| 5416 | Management, Scientific, and Technical Consulting Services | 54.0% | 46.0% |
| 5629 | Remediation and Other Waste Management Services | 81.7% | 18.3% |
| 8113 | Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance | 85.5% | 14.5% |
| 9241 | Administration of Environmental Quality Programs | 71.4% | 28.6% |
| 9261 | Administration of Economic Programs | 61.0% | 39.0% |
| All Industry Groups | | 49.4% | 50.6% |

Source: U.S. Census Bureau, Local Employment Dynamics

## *Industry Age Demographics, 4th Quarter 2010*

| NAICS Code | NAICS Title | Pennsylvania | | | | |
|---|---|---|---|---|---|---|
| | | 14-24 | 25-34 | 35-44 | 45-54 | 55+ |
| 2111 | Oil and Gas Extraction | 7.8% | 28.0% | 21.0% | 26.5% | 16.7% |
| 2131 | Support Activities for Mining | 15.4% | 32.8% | 22.2% | 19.4% | 10.1% |
| 2211 | Electric Power Generation, Transmission and Distribution | 3.0% | 14.3% | 18.4% | 37.7% | 26.5% |
| 2212 | Natural Gas Distribution | ------ | ------ | ------ | ------ | ------ |
| 2213 | Water, Sewage and Other Systems | 3.1% | 12.0% | 20.2% | 33.2% | 31.4% |
| 2371 | Utility System Construction | 8.2% | 21.3% | 22.5% | 28.2% | 19.9% |
| 2373 | Highway, Street, and Bridge Construction | 5.5% | 17.5% | 23.3% | 32.0% | 21.8% |
| 2389 | Other Specialty Trade Contractors | 10.6% | 21.2% | 23.3% | 26.4% | 18.6% |
| 3251 | Basic Chemical Manufacturing | 2.6% | 14.8% | 23.2% | 33.0% | 26.4% |
| 3311 | Iron and Steel Mills and Ferroalloy Manufacturing | 2.3% | 10.2% | 20.6% | 33.5% | 33.4% |
| 3312 | Steel Product Manufacturing from Purchased Steel | 3.9% | 12.2% | 21.2% | 31.9% | 30.9% |
| 3331 | Agriculture, Construction, and Mining Machinery Manufacturing | 5.3% | 17.4% | 22.7% | 29.3% | 25.3% |
| 4238 | Machinery, Equipment, and Supplies Merchant Wholesalers | 7.0% | 16.3% | 21.5% | 28.7% | 26.5% |
| 4841 | General Freight Trucking | 4.2% | 13.0% | 24.4% | 32.5% | 25.9% |
| 4842 | Specialized Freight Trucking | 6.5% | 16.1% | 22.6% | 30.0% | 24.8% |
| 4862 | Pipeline Transportation of Natural Gas | 2.3% | 14.8% | 21.1% | 40.4% | 21.4% |
| 5311 | Lessors of Real Estate | 7.7% | 16.3% | 18.8% | 27.0% | 30.2% |
| 5324 | Commercial and Industrial Machinery and Equipment Rental and Leasing | 7.6% | 26.2% | 27.4% | 25.2% | 13.5% |
| 5413 | Architectural, Engineering, and Related Services | 5.6% | 22.6% | 21.9% | 25.7% | 24.2% |
| 5416 | Management, Scientific, and Technical Consulting Services | 6.6% | 26.8% | 24.8% | 23.4% | 18.4% |

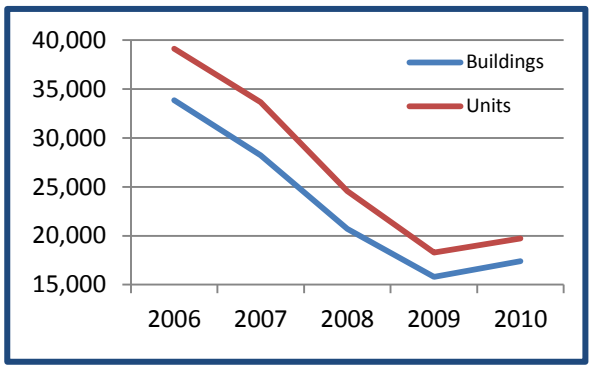
| | | | | | | |
|---|---|---|---|---|---|---|
| 5629 | Remediation and Other Waste Management Services | 8.6% | 21.5% | 24.8% | 28.4% | 16.7% |
| 8113 | Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance | 9.0% | 18.4% | 22.4% | 29.1% | 21.1% |
| 9241 | Administration of Environmental Quality Programs | 2.7% | 15.4% | 21.8% | 31.8% | 28.3% |
| 9261 | Administration of Economic Programs | ------ | ------ | ------ | ------ | ------ |
| All Industry Groups | | 13.0% | 20.0% | 20.9% | 24.6% | 21.5% |

Source: U.S. Census Bureau, Local Employment Dynamics

## Building Permits

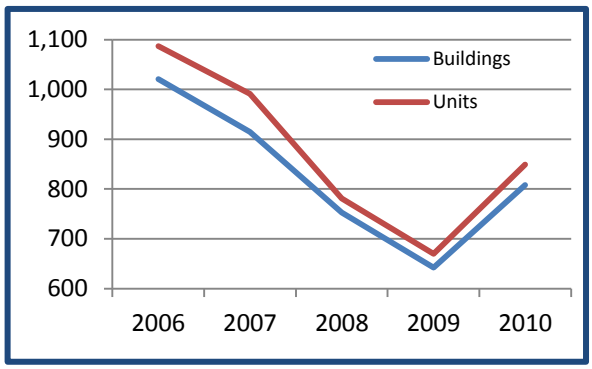
Both the state and the region have seen a fall in building permits since 2006. But while the state saw a 10% increase between 2009 and 2010, the Southwest Corner region had a 26% increase. This correlates with the large increase in jobs in the Marcellus Shale industries in 2009-2010.

### Statewide Building Permits




Source: U.S. Census Bureau

### Southwest Corner Building Permits




Source: U.S. Census Bureau

## Employment

Marcellus Shale industries have added over 2,000 jobs to the regional economy since early 2008. Core industries' employment has nearly tripled between first quarter 2008 and first quarter 2011. Ancillary industries, which already had over 10,000 jobs at the beginning of 2008, expanded employment by 7.2 percent over the last three years.

### *Average Employment, 1st Quarter 2008 – 1st Quarter 2011*

| Industry Group | 2008 Q1 | 2011 Q1 | Change | % Change |
|---|---|---|---|---|
| Core | 670 | 1,999 | 1,329 | 198.4% |
| Ancillary | 10,034 | 10,759 | 725 | 7.2% |

Source: Pennsylvania Department of Labor & Industry, Quarterly Census of Employment and Wages

## Wages

In 2010, the core industries had an average annual wage of $73,797 in the Southwest Corner region, which was well above the state average for all industries of $45,747 and almost twice the regional

average of $41,156. The WIA's ancillary industries also had a high average wage of $63,080. The state's average wage for core industries was $73,150 and for ancillary was $61,871.

## New Hires

Marcellus shale industries had over 200 new hires in the second quarter of 2011. New hires in core industries were more than 500 percent higher in second quarter 2011 than in second quarter 2008.

### *New Hires*

| Southwest Corner WIA | 2008 Q2 | 2009 Q2 | 2010 Q2 | 2011 Q2 | Volume Change 2008Q2 – 2011Q2 | Percent Change 2008Q2 – 2011Q2 |
|---|---|---|---|---|---|---|
| Core | 36 | 41 | 243 | 218 | 182 | 505.6% |
| Ancillary | 354 | 308 | 329 | 380 | 26 | 7.3% |

Source: Pennsylvania Department of Labor & Industry, New Hires Program

## Workforce Compatibility

These data provide an understanding of how well the skills of a region's labor force meet the workforce needs of an industry. The first number is the proportion of industry jobs that require higher levels of experience, training, and education. The second number is the proportion of the region's workforce that has the higher skills the industry seeks. For example, in water supply and irrigation systems (NAICS 221310) over 58% of the occupations within the industry require significant levels of on-the-job training and/or post-secondary education, indicating that the industry is very skilled. Furthermore, over 26%--more than 1 in 4—of the region's workers has the skill sets required to meet the occupational needs of the industry sector. Given this information, an analyst can conceivably conclude that the industry is a good fit for the capabilities of the regional workforce.

In the Southwest Corner region, most industries are reasonably compatible with the local workforce. However, potential workforce skill gaps can be found in fossil fuel electric power generation; engineering services; geophysical surveying and mapping services; testing laboratories; and natural gas distribution.

### *Industry and Workforce Compatibility*

| NAICS Code (Core) | NAICS Title | % Skilled Workforce in Industry | % of Region's Workforce Compatible |
|---|---|---|---|
| 211111 | Crude Petroleum and Natural Gas Extraction | 28.3% | 24.3% |
| 211112 | Natural Gas Liquid Extraction | 27.3% | 24.3% |
| 213111 | Drilling Oil and Gas Wells | 16.5% | 25.6% |
| 213112 | Support Activities for Oil and Gas Operations | 18.9% | 25.6% |
| 237120 | Oil and Gas Pipeline and Related Structures Construction | 39.9% | 22.1% |

| | | | |
|---|---|---|---|
| 486210 | Pipeline Transportation of Natural Gas | 47.7% | 18.0% |

| NAICS Code (Ancillary) | NAICS Title | % Skilled Workforce in Industry | % of Region's Workforce Compatible |
|---|---|---|---|
| 221112 | Fossil Fuel Electric Power Generation | 48.2% | 14.0% |
| 221210 | Natural Gas Distribution | 35.8% | 15.6% |
| 221310 | Water Supply and Irrigation Systems | 58.3% | 26.2% |
| 221320 | Sewage Treatment Facilities | 59.1% | 26.2% |
| 237110 | Water and Sewer Line and Related Structures Construction | 40.6% | 22.1% |
| 237310 | Highway, Street, and Bridge Construction | 42.5% | 21.4% |
| 238912 | Nonresidential site preparation contractors | 42.4% | 21.1% |
| 325110 | Petrochemical Manufacturing | -- | -- |
| 325120 | Industrial Gas Manufacturing | -- | -- |
| 331111 | Iron and Steel Mills | 32.3% | 19.7% |
| 331210 | Iron and Steel Pipe and Tube Manufacturing from Purchased Steel | 22.8% | 21.2% |
| 333131 | Mining Machinery and Equipment Manufacturing | 27.7% | 22.4% |
| 333132 | Oil and Gas Field Machinery and Equipment Manufacturing | 27.8% | 22.4% |
| 423810 | Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers | 47.0% | 25.1% |
| 423830 | Industrial Machinery and Equipment Merchant Wholesalers | 47.0% | 25.1% |
| 423840 | Industrial Supplies Merchant Wholesalers | 47.0% | 25.1% |
| 484110 | General Freight Trucking, Local | 10.1% | 27.7% |
| 484220 | Specialized Freight (except Used Goods) Trucking, Local | 11.5% | 30.0% |
| 484230 | Specialized Freight (except Used Goods) Trucking, Long-Distance | 11.5% | 30.0% |
| 531190 | Lessors of Other Real Estate Property | 37.2% | 28.3% |
| 532412 | Construction, Mining, and Forestry Machinery and Equipment Rental and Leasing | 34.6% | 22.6% |
| 541330 | Engineering Services | 51.6% | 4.8% |
| 541360 | Geophysical Surveying and Mapping Services | 51.4% | 5.0% |
| 541380 | Testing Laboratories | 35.8% | 4.4% |
| 541620 | Environmental Consulting Services | 31.4% | 22.8% |
| 562910 | Remediation Services | 20.5% | 20.5% |
| 811310 | Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance | 50.1% | 21.2% |
| 924110 | Admin. Of Air & Water Resources & Solid Waste Management Programs | -- | -- |
| 924120 | Admin. Of Conservation Programs | -- | -- |
| 926130 | Regulation & Admin. Of Communications, Electric, Gas, & Other Utilities | -- | -- |

Source: Economic Modeling Specialists, Inc.