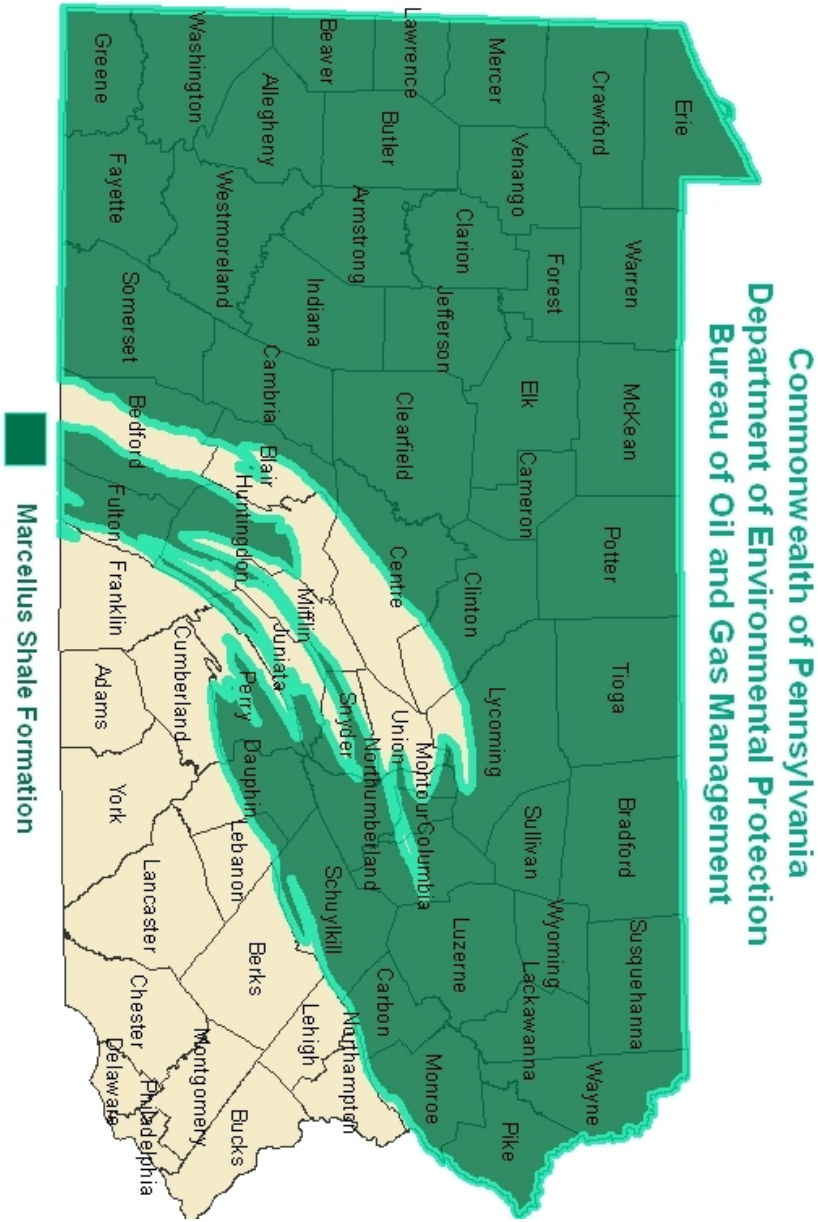
Marcellus Shale Formation



Marcellus Shale

FAST FACTS

November 2013 Edition *

Each of the following sections is a quick snapshot of labor market information for Pennsylvania's Marcellus Shale (MS) related industries and related economic activity.

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*Note: Data sets from the Quarterly Census of Employment and Wages (QCEW) and the New Hires Program in this edition are for 2013Q1 and 2013Q3, respectively. For both data sets, this is the most current data available. Because neither data set is seasonally adjusted, the same quarter must be used when analyzing growth over time, in order to ensure seasonal factors are not influencing employment change. Therefore, 2013Q1 QCEW data are compared to 2009Q1, and 2013Q3 New Hire data are compared to 3rd quarter data for 2010, 2011, and 2012.

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CWIA-MS

pennsylvania
DEPARTMENT OF LABOR & INDUSTRY
100th Anniversary 1913-2013

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Background Information

The purpose of this Fast Facts publication is to provide the most current available data on Marcellus Shale related economic activity. While several data sources are utilized in this document, the primary source is the Quarterly Census of Employment and Wages (QCEW).

The QCEW program derives its data from quarterly tax reports submitted to the Pennsylvania Unemployment Compensation system by employers subject to the state's unemployment insurance laws. This includes 95 percent or more of all wage and salary civilian employment in Pennsylvania.

In 2009, CWIA used the North American Industry Classification System (NAICS) to define the Marcellus Shale related industries. Much of the information included in this document reflects data on a group of six industries identified as "core," and a group of 30 industries identified as "ancillary" for Marcellus Shale related activity (see notes section below).

As Marcellus Shale related activity develops further in Pennsylvania, additional industries may be added to the ancillary group, based on factors such as significant employment gains in an industry in a Marcellus Shale geographic region or identification of a group of companies in the same industry involved in Marcellus Shale related activity. Of the current 30 ancillary industries, nine have been added since the April 2011 edition of this publication (* denotes one of the new nine).

Also included in this publication are several additional data sources that capture employer demand and hiring activity. For an explanation of all data sources, please refer to the "Definitions" section on page 17.

The data in this edition include government (federal, state, and local) employment in all Marcellus Shale related industries because significant non-private employment is present in a number of these industries, most notably: Highway, Street, & Bridge Construction; Engineering Services; Water Supply & Irrigation Systems; and Sewage Treatment Facilities.

Notes:

Marcellus Shale Core Industries (NAICS): Crude Petroleum & Natural Gas Extraction (211111); Natural Gas Liquid Extraction (211112); Drilling Oil & Gas Wells (213111); Support Activities for Oil & Gas Operations (213112); Oil & Gas Pipeline & Related Structures Construction (237120); and Pipeline Transportation of Natural Gas (486210).

Marcellus Shale Ancillary Industries (NAICS): Fossil Fuel Electric Power Generation (221112); Natural Gas Distribution (221210); Water Supply & Irrigation Systems (221310); Sewage Treatment Facilities (221320); Water & Sewer Line & Related Structures Construction (237110); Highway, Street, and Bridge Construction (237310)*; Nonresidential Site Preparation Contractors (238912); Petrochemical Manufacturing (325110)*; Industrial Gas Manufacturing (325120); Iron & Steel Mills & Ferroalloy Manufacturing (331110[1]); Iron & Steel Pipe & Tube Manufacturing from Purchased Steel (331210); Mining Machinery & Equipment Manufacturing (333131); Oil & Gas Field Machinery & Equipment Manufacturing (333132); Construction and Mining (except Oil Well) Machinery and Equipment Merchant Wholesalers (423810)*; Industrial Machinery and Equipment Merchant Wholesalers (423830)*; Industrial Supplies Merchant Wholesalers (423840)*; General Freight Trucking, Local (484110)*; Specialized Freight Trucking, Local (484220); Specialized Freight Trucking, Long-Distance (484230); Lessors of Other Real Property (531190); Construction, Mining & Forestry Machinery & Equipment Rental & Leasing (532412); Engineering Services (541330); Geophysical Surveying & Mapping Services (541360); Testing Laboratories (541380); Environmental Consulting Services (541620); Remediation Services (562910); Commercial & Industrial Machinery & Equipment Repair & Maintenance (811310); Administration of Air and Water Resource and Solid Waste Management Programs (924110)*; Administration of Conservation Programs (924120)*; Regulation and Administration of Communications, Electric, Gas, and Other Utilities (926130)*.

While the vast majority of Marcellus Shale related employment can be found in these industries, not all establishments in these industries are involved in Marcellus Shale. Asterisks indicate industries that have been added to the group of ancillary industries since the April 2011 edition of this publication.

[1]NAICS 331110 replaced NAICS 331111 due to a change made by the Bureau of Labor Statistics – for an explanation of the implications of this change, please refer to page 19 in the "Definitions" section.

Definitions:

New hires - *Source: The Pennsylvania Department of Labor & Industry*

New Hire Reporting is a process by which employers report information on all employees hired on or after January 1, 1998 to locate non-custodial parents, establish child support orders, or enforce existing orders. Company and individual data are confidential and cannot be reported on. However, the data can be aggregated to show where and in what industries hiring is taking place as an indication of which sectors of the economy are experiencing growth or decline. Approximately sixty percent of all new hires are captured. New hire counts by industry are an indication of trend only.

Help Wanted Online Ads - *Source: The Conference Board Help Wanted OnLine™ data set*

The Conference Board Help Wanted OnLine data set provides real-time insight into the employment marketplace through the world's largest database of online job ads. Jobs ads can be classified by industry, occupation, employer, and geographic area. Data are analyzed for employment trends and to forecast economic conditions. The underlying data for The Conference Board HWOL are provided by Wanted Technologies Corporation.

Map of Marcellus Shale Formation - *Source: Department of Environmental Protection*

Workforce Investment Area (WIA)

A WIA is labor market area that is usually a group of contiguous counties, where employment, training and educational services are provided. Established through the Workforce Investment Act to provide services for dislocated workers and other eligible individuals, Pennsylvania's 22 WIAs are based on common geographic and economic factors.

NAICS Changes

The North American Industry Classification System (NAICS), established in 1997, is reviewed for potential revisions every five years. The latest revision (2012) was implemented by BLS in the QCEW program with the release of 1st quarter 2011 data. As part of this revision, the NAICS code of only one Marcellus Shale related industry was impacted: NAICS 331111 (Iron & Steel Mills). The NAICS 2012 structure eliminated NAICS 331111, combining it with NAICS 331112 (Electrometallurgical ferroalloy product manufacturing) to form NAICS 331110 (Iron & Steel Mills and Ferroalloy Manufacturing). To account for this change, the Marcellus Shale ancillary industry list was modified to change NAICS 331111 to NAICS 331110, and all ancillary industry data will now include NAICS 331110. **To retain comparability, for time periods prior to 2011, data for NAICS 331111 & 331112 will be combined and shown under NAICS 331110.**

Definitions:

Quarterly Workforce Indicators - *Source: U.S. Census Bureau, Local Employment Dynamics*

The Quarterly Workforce Indicators (QWI) are a set of economic indicators that can be queried by different levels of geography as well as by industry, gender, and age of workers. The QWI are built upon wage records in the Unemployment Insurance (UI) system and information from state Quarterly Census of Employment and Wages (QCEW) data.

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

Employment: Employment data include all employment covered under the Pennsylvania Unemployment Compensation program for each of the three months in the quarter. The employment count represents the number of full-time and part-time employees who worked during or received pay for the payroll period including the 12th of the month. The employment totals for each month are averaged for the quarter employment count. Included are persons on paid vacations or on paid sick leave. Workers temporarily earning no wages due to labor-management disputes, layoffs or other reasons are not reported as employed. Persons on the payroll of more than one employer during the same reference week are reported more than once.

Establishment: The location of a certain economic activity, such as a factory, store, office, or mine, that produces goods or services. It is typically at a single physical location and engaged in one, or predominantly one, type of economic activity. An employer may have one or more establishments.

Wages: Total wages include total compensation paid during a calendar quarter (including bonuses). Average wages are calculated by dividing total wages for a quarter by average employment in that quarter.

Staffing Patterns - *Source: Pennsylvania Department of Labor & Industry*

Staffing Pattern: A listing of the occupations most commonly found within a particular industry. This information comes from the biennial *Long-Term Occupational Employment Projections* data.

Average Annual Wage: The mean annual wage earned by workers in the occupation, assuming 40 hours per week, 52 weeks a year. Wage data is derived from the annual *Occupational Employment Statistics (OES)* survey.

Educational Attainment: The Bureau of Labor Statistics (BLS) provides information about entry-level education, related work experience, and typical on-the-job training requirements for each of several hundreds of occupations.

Educational Attainment Level Abbreviations:

- Short-term or Moderate-term OJT – basic tasks and skills are learned through a period of on-the-job training lasting up to one year. A high school diploma may be required.
- Long-term training – a high school diploma and at least one year of on-the-job training or an apprenticeship.
- HS diploma plus experience – a high school diploma and training gained through hands-on work in a similar occupation.
- Postsecondary training – training is gained through a postsecondary training program. Some period of related work experience may be required.
- Associate degree – degree completed after two years of full-time schooling beyond high school. Some period of related work experience may be required.
- Bachelor's degree – degree completed after four years of full-time schooling beyond high school. Some period of related work experience may be required.
- Master's Degree – degree completed after two years of full-time schooling beyond a bachelor's degree. Some period of related work experience may be required.
- Doctoral, or Professional degree – degree programs requiring 3-6 years of education at the college or university level beyond a four-year bachelor's degree.

Pennsylvania Economic Background

- **Pennsylvania's seasonally adjusted unemployment rate for October 2013 was 7.5%.**
  - This was higher than the U.S. rate of 7.3%.
  - O-T-M change was -0.1 percentage points.
  - O-T-Y change was -0.5 percentage points.

- **Pennsylvania's seasonally adjusted total nonfarm jobs for October 2013 was 5,763,900.**
  - O-T-M change was 0 (0.0%).
  - O-T-Y change was +29,400 (+0.5%).
  - PA was still down 48,600 jobs since the start of the recession (December 2007).

- **Pennsylvania's new hire activity increased.**
  - There were 669,100 new hires across all industries in the 3rd quarter of 2013.
  - This was an increase of 48,900 (7.9%) from the 3rd quarter of 2012.

- **Employer demand increased slightly in Pennsylvania.**
  - 216,000 job ads were posted online in October 2013.
  - This was an increase of 8,100 (3.9%) over October 2012.

- **In Pennsylvania there were 2.5 unemployed persons for every online job posting in October 2013.**
  - The Pennsylvania rate was greater than the U.S. rate, which stood at 2.3.
  - The Pennsylvania rate was down from a peak of 4.8 unemployed per online job posting in late 2009.

O-T-M: Over-the-Month
O-T-Y: Over-the-Year

Marcellus Shale Related Industries Employment: Summary Statistics

Employment (2009Q1 to 2013Q1):

- Core industries were up 17,414 (+162.1%).
- Ancillary industries were up 13,352 (+7.0%).
- All industries increased 63,078 (+1.2%).
- 2013Q1 Marcellus Shale related industries total employment is 231,969.

Establishments (2009Q1 to 2013Q1):

- 1,114 establishments were added (347 core, 767 ancillary).
- This represented 45.2% growth in the core industries and 6.3% growth in the ancillary industries; over the same time period, PA experienced 1.6% growth for all industries.
- Marcellus Shale related industries totaled 14,109 establishments in 2013Q1.

Wages (2012Q2 through 2013Q1):

- The average wage across all industries was about $48,500.
- The average wage in the core industries was about $83,300 which was approximately $34,800 greater than the average for all industries.
- The average wage in the ancillary industries was about $65,000, which was approximately $16,500 greater than the average for all industries.

New Hires (2010Q3 to 2013Q3):

- Statewide new hires in the core industries were 17.7% higher in 2013Q3 than in 2010Q3.
- Statewide new hires in the ancillary industries were 16.9% higher in 2013Q3 than in 2010Q3.
- New hire counts decreased in core industries (-15.7%), but increased in Ancillary industries (3.0%) from 2012Q3 to 2013Q3.
- Statewide new hires across all industries were 20.7% higher in 2013Q3 than in 2010Q3; statewide new hires across all industries increased by 7.9% from 2012Q3 to 2013Q3.

Online Job Postings (October 2013):

- There were about 4,100 online job postings statewide in core and ancillary industries.

Definitions:

Labor Force Statistics* - *Source: Pennsylvania Local Area Unemployment Statistics (LAUS)*
The labor force and unemployment data are based on the same concepts and definitions as those used for the official national estimates obtained from the Current Population Survey (CPS). The Local Area Unemployment Statistics (LAUS) program measures employment and unemployment on a place-of-residence basis and produces estimates using equations based on regression techniques. This method utilizes data from several sources, including the CPS, the Current Employment Statistics (CES) program, and state unemployment insurance (UI) programs. The LAUS program does not produce estimates for any demographic groups.

Unemployment Rate: The number of unemployed as a percent of the labor force.

Unemployment: All persons aged 16 years and older who had no employment during the reference week (contains the 12th day of the month), were available for work (except for temporary illness), and had made specific efforts to find employment sometime during the four-week period ending with the reference week. Persons who were waiting to be recalled to jobs from which they had been laid off need not to have been looking for work to be classified as unemployed.

Employment: All persons who, during the week which includes the 12th day of the month, (a) did any work as paid employees, worked in their own businesses or professions or on their own farm, or worked 15 hours or more as unpaid workers in enterprises operated by members of their families, or (b) were not working but who had jobs from which they were temporarily absent. Each employed person is counted only once, even if the person holds more than one job. Included are the self-employed, unpaid family workers, agricultural workers, and private household workers, who are excluded by the CES survey.

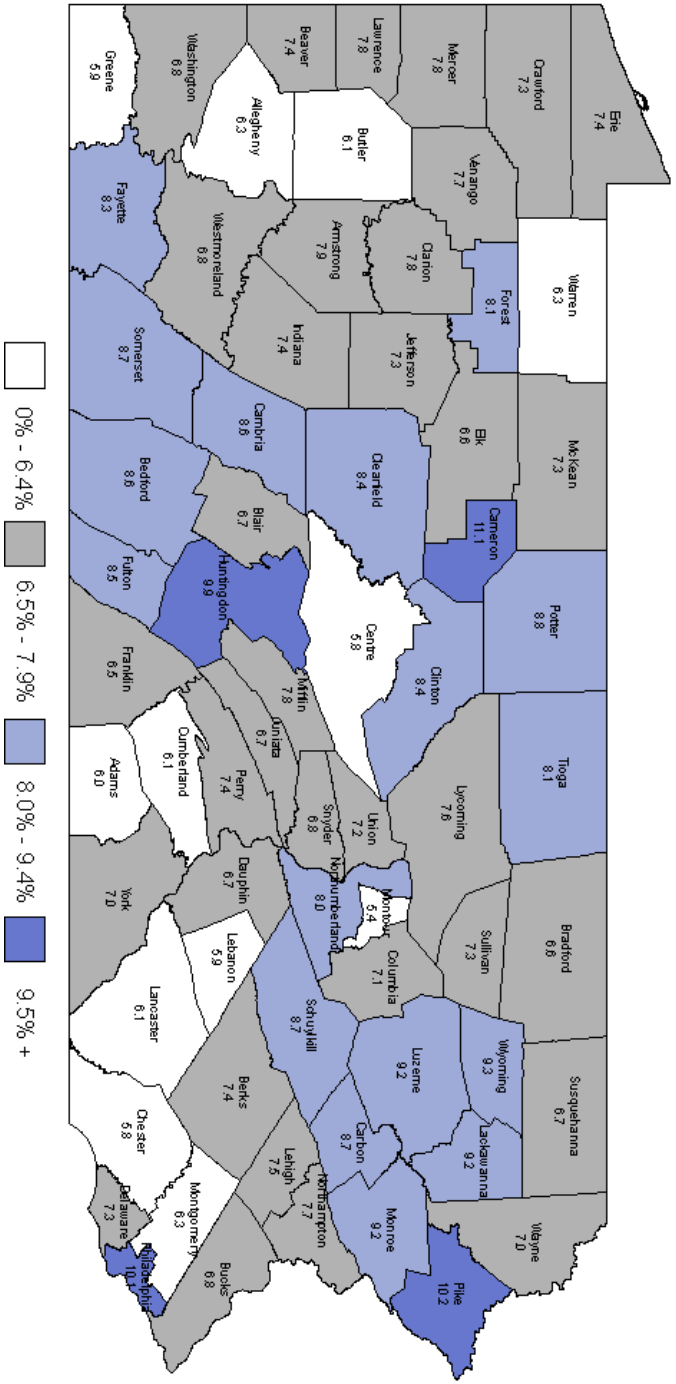
Labor Force: All persons either working or looking for work or classified as employed or unemployed.

Jobs* - *Source: Pennsylvania Department of Labor & Industry, Current Employment Statistics (CES)*
Each month the CES program surveys about 140,000 national businesses and government agencies in order to provide detailed industry data on employment, hours, and earnings of workers on non-farm payrolls. This is a collaborative effort between BLS and the states. CES produces a count of jobs, not of people.

Nonfarm Jobs: The total number of persons on establishment payrolls employed full or part time who received pay for any part of the pay period that includes the 12th day of the month. Temporary and intermittent employees are included, as are any employees who are on paid sick leave, on paid holiday, or who work during only part of the specified pay period. A striking employee who only works a small portion of the survey period, and is paid, would be included as employed under the CES definitions. Persons on the payroll of more than one establishment are counted in each establishment. Data exclude proprietors, self-employed, unpaid family or volunteer workers, farm workers, and domestic workers. Persons on layoff, strike, or leave without pay for the entire pay period, or who have not yet reported for work are not counted as employed. Government employment covers only civilian employees.

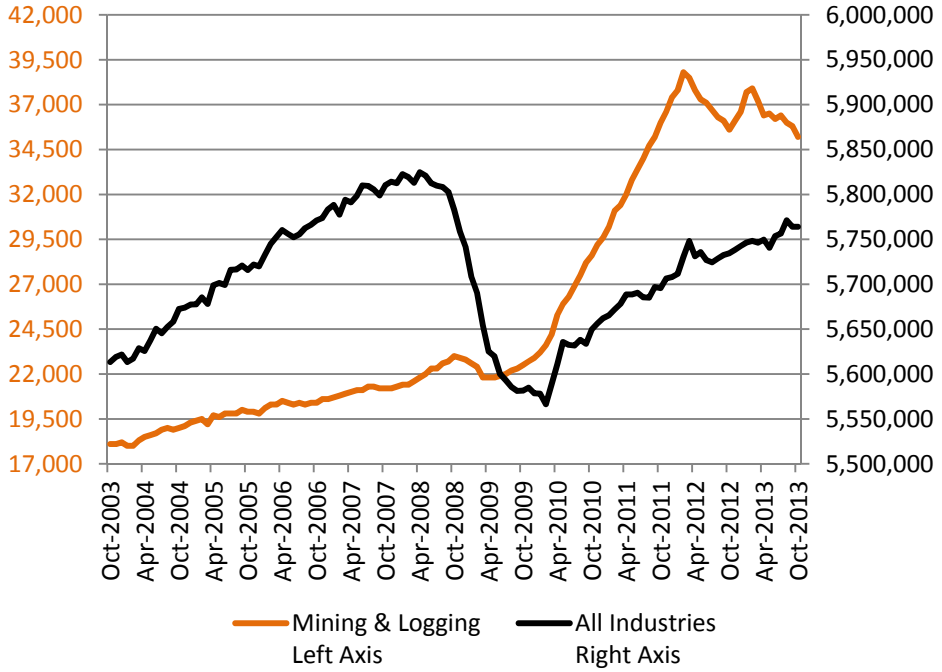
THESE DATA ARE SEASONALLY ADJUSTED: Seasonal adjustment removes the change in employment that is due to normal seasonal hiring or layoffs (holidays, weather, etc.), thus leaving an over-the-month change that reflects only employment change due to trend and irregular movements.

Pennsylvania Unemployment Rates by County September 2013



Mining Jobs vs. Total Jobs in Pennsylvania

Mining & Logging[1] Compared to Total Employment



Current Employment Statistics *(All data are seasonally adjusted)*

- Total Pennsylvania jobs were 5,763,900 (October 2013).
  O-T-M change was 0 (0.0%).
  O-T-Y change was +29,400 (+0.5%).
  Change from 10 years ago was +150,500 (+2.7%).

O-T-M: Over-the-Month
O-T-Y: Over-the -Year

- Mining & Logging employment in Pennsylvania was 35,200.
  O-T-M change was -6,00 (-1.7%).
  O-T-Y change was -400 (-1.1%).
  Change from 10 years ago was +17,100 (+94.5%).

[1] Mining & Logging data are seasonally adjusted. Mining data, which are included in Mining & Logging, are not seasonally adjusted.

Pennsylvania Marcellus Shale Related Industries Data

Establishments & Employment in CWIA's Identified Core & Ancillary Marcellus Shale Related Industries

Core Industries		2009Q1		2013Q1[1]		Vol. Change	
NAICS	Title	Est.	Emp.	Est.	Emp.	Est.	Emp.
211111	Crude Petroleum & Natural Gas Extraction	200	2,650	248	5,337	48	2,687
211112	Natural Gas Liquid Extraction	14	142	22	629	8	487
213111	Drilling Oil & Gas Wells	87	1,755	115	3,376	28	1,621
213112	Support Activities for Oil & Gas Operations	134	2,736	426	11,101	292	8,365
237120	Oil & Gas Pipeline & Related Structures	68	2,119	169	6,285	101	4,166
486210	Pipeline Transportation of Natural Gas	125	1,339	135	1,427	10	88
Totals		**628**	**10,741**	**1,115**	**28,155**	**487**	**17,414**
Ancillary Industries		**2009Q1**		**2013Q1[1]**		**Vol. Change**	
NAICS	**Title**	**Est.**	**Emp.**	**Est.**	**Emp.**	**Est.**	**Emp.**
221112	Fossil Fuel Electric Power Generation	64	4,366	70	3,709	6	-657
221210	Natural Gas Distribution	153	4,870	174	5,335	21	465
221310	Water Supply & Irrigation Systems	372	6,681	378	6,843	6	162
221320	Sewage Treatment Facilities	476	4,295	484	4,290	8	-5
237110	Water, Sewer, & Related Structure Const.	379	5,739	361	5,408	-18	-331
237310	Highway, Street, & Bridge Construction	532	17,591	521	17,893	-11	302
238912	Nonresidential Site Preparation Contractors	635	8,548	669	8,823	34	275
325110	Petrochemical Manufacturing	3	652	5	595	2	-57
325120	Industrial Gas Manufacturing	33	1,670	34	1,499	1	-171
331110*	Iron & Steel Mills & Ferroalloy Mfg.	62	12,855	59	13,531	-3	676
331210	Iron, Pipe, & Tube Mfg. from Prchsd. Steel	41	3,935	40	3,351	-1	-584
333131	Mining Machinery & Equipment Mfg.	23	3,369	22	3,334	-1	-35
333132	Oil & Gas Field Machinery & Equip. Mfg.	8	338	14	570	6	232
423810	Const. & Mining Mach. Equip. Wholesalers	221	3,962	203	3,758	-18	-204
423830	Industrial Machinery & Equip. Wholesalers	995	11,808	943	12,154	-52	346
423840	Industrial Supplies Merchant Wholesalers	318	3,267	338	3,616	20	349
484110	General Freight Trucking, Local	1,206	8,085	1,380	11,802	174	3,717
484220	Specialized Freight Trucking, Local	1,042	9,336	1,267	12,943	225	3,607
484230	Specialized Freight Trucking, Long-Distance	262	3,430	293	3,362	31	-68
531190	Lessors of Other Real Estate Property	243	764	252	830	9	66
532412	Const., Mining, & Forestry Equip. Rental	115	2,202	169	3,349	54	1,147
541330	Engineering Services	2,462	41,691	2,540	43,279	78	1,588
541360	Geophysical Surveying & Mapping Services	55	237	58	342	3	105
541380	Testing Laboratories	394	7,224	404	8,914	10	1,690
541620	Environmental Consulting Services	482	2,954	504	3,358	22	404
562910	Remediation Services	231	2,432	252	2,842	21	410
811310	Comm. & Industrial Mach. & Equip. Repair	1,031	8,009	1,074	7,987	43	-22
924110	Admin. of Air & Water Res. & Waste Mgmt.	105	4,450	110	4,307	5	-143
924120	Admin. of Conservation Programs	317	4,226	328	4,391	11	165
926130	Reg. & Admin. of Comm., Elec., Gas, & Util.	48	1,476	48	1,399	0	-77
Totals		**12,308**	**190,462**	**12,994**	**203,814**	**686**	**13,352**

Source: Industry Data is from Pennsylvania's Quarterly Census of Employment and Wages

- From 2009Q1 to 2013Q1, employment in Core industries increased by 162.1%.
- Over the same period, employment in the Ancillary industries was up 7.0%.
- Employment across all industries increased 1.2% (63,078) over the same time period.

[1]2013Q1 QCEW data are initial. These data may be revised upon release of QCEW 2013Q2 data.

Notes: These data are not seasonally adjusted. While most change was due to actual growth or decline, some movement may be due to seasonal patterns or administrative changes to data.

NAICS definition implemented with 2011Q1 data. Please see NAICS Changes in "Definitions" section on Page 19.

ShaleNET Training and Job Placement Data[1]:

(As provided by the Allegheny Conference on Community Development)

ShaleNET is a three-year, $4.9 million grant from the United States Department of Labor, Employment and Training Administration. The mission of the grant is to design a comprehensive recruitment, training, placement, and retention program for high priority occupations in the natural gas drilling and production industry throughout the Marcellus Shale footprint. For more information, visit **www.shalenet.org**.

July 1st 2010 – June 30th 2013	
Participants being served by ShaleNET	14,800
Beginning education and training activities	9,611
Completing training activities and education	5,468
Completed training with degree/certification	1,177
Employed	3,421

Top job placement for ShaleNET graduates, October 2010-January 2012:	
1	Roustabout
2	Floor hand
3	Truck driver
4	Mechanic
5	Casing specialist

[1]Definitions for these indicators are as follows: *Participants served by ShaleNET* equals the total number of people who have registered with ShaleNET.org through the Talent Match System. *Beginning education and training activities* measures those participants who have begun ShaleNET training. *Completed training with degree/certificate* measures participants who have finished ShaleNET training. *Employed* represents training participants who have gained employment during or after ShaleNET training, through on-the-job training grants, as well as, those participants who have found jobs with the help of ShaleNET and Pennsylvania CareerLink.

Quarterly Workforce Indicators

(based on the U.S. Census Bureau, Local Employment Dynamics (LED)

Percentage of Industry[1] Employment by Age Group (2012Q4)

Northern Tier	14-24	25-34	35-44	45-54	55+
All industry groups	13.9%	19.5%	20.3%	24.6%	21.7%
2111 Oil and Gas Extraction	***	33.5%	26.0%	22.6%	10.3%
2131 Support Activities for Mining	15.3%	32.5%	22.9%	19.3%	10.0%
2371 Utility System Construction	13.0%	28.0%	19.2%	22.7%	17.0%
4862 Pipeline Transportation of Natural Gas	***	23.3%	22.0%	33.3%	***

Southwest Corner	14-24	25-34	35-44	45-54	55+
All industry groups	12.1%	20.0%	19.9%	23.8%	24.2%
2111 Oil and Gas Extraction	***	31.0%	21.7%	21.8%	13.2%
2131 Support Activities for Mining	***	37.1%	23.0%	15.7%	8.0%
2371 Utility System Construction	11.8%	23.8%	22.2%	23.9%	18.4%
4862 Pipeline Transportation of Natural Gas	4.5%	18.5%	22.5%	28.5%	26.5%

Central	14-24	25-34	35-44	45-54	55+
All industry groups	13.1%	19.2%	20.1%	24.2%	23.5%
2111 Oil and Gas Extraction	11.0%	31.1%	28.7%	14.6%	14.0%
2131 Support Activities for Mining	14.4%	36.9%	25.1%	16.4%	7.2%
2371 Utility System Construction	12.0%	24.9%	20.8%	23.1%	19.2%
4862 Pipeline Transportation of Natural Gas	***	18.1%	23.8%	35.2%	***

North Central	14-24	25-34	35-44	45-54	55+
All industry groups	12.4%	18.4%	20.3%	25.3%	23.5%
2111 Oil and Gas Extraction	6.2%	25.2%	23.9%	25.0%	19.7%
2131 Support Activities for Mining	***	33.4%	20.8%	20.1%	13.5%
2371 Utility System Construction	12.9%	25.3%	22.2%	24.3%	15.4%
4862 Pipeline Transportation of Natural Gas	3.1%	15.4%	20.2%	35.5%	25.9%

Tri-County	14-24	25-34	35-44	45-54	55+
All industry groups	13.1%	20.0%	19.7%	24.0%	23.3%
2111 Oil and Gas Extraction	***	24.3%	21.8%	27.1%	22.1%
2131 Support Activities for Mining	12.2%	32.0%	22.8%	20.1%	12.8%
2371 Utility System Construction	5.4%	18.5%	20.7%	28.5%	26.9%
4862 Pipeline Transportation of Natural Gas	***	56.3%	9.4%	18.8%	9.4%

Westmoreland & Fayette	14-24	25-34	35-44	45-54	55+
All industry groups	12.6%	18.8%	19.8%	24.4%	24.5%
2111 Oil and Gas Extraction	6.3%	33.0%	21.1%	25.1%	14.5%
2131 Support Activities for Mining	18.6%	32.4%	22.2%	17.0%	9.7%
2371 Utility System Construction	11.0%	24.5%	26.0%	24.7%	13.7%
4862 Pipeline Transportation of Natural Gas	***	21.9%	19.6%	29.1%	20.4%

**** Indicates that data cannot be disclosed due to confidentiality restrictions or data quality standards*

- Workers in the Marcellus Shale related industry groups tended, on average, to be younger than the total across all industries.
- The percentage of workers in core related industry groups aged 55 and over was smaller than found across all industries.

[1] Local Employment Dynamics data are only available at the 4-digit NAICS level. While these industry groups contain some employment from non-Marcellus Shale related core industries, they help to provide an understanding of the industries' employment composition by age.

Workforce Investment Area Marcellus Shale Related Industries Data[1]

The tables below depict employment growth in the core and ancillary industries for Workforce Investment Areas (WIA) with substantial Marcellus Shale drilling activity.

Northern Tier	2009Q1	2013Q1[1]	Vol. Change	Pct. Change
Core	105	2,914	2,809	2675.2%
Ancillary	1,697	4,010	2,313	136.3%

Southwest Corner	2009Q1	2013Q1[1]	Vol. Change	Pct. Change
Core	734	4,242	3,508	477.9%
Ancillary	10,238	11,796	1,558	15.2%

Central	2009Q1	2013Q1[1]	Vol. Change	Pct. Change
Core	134	2,484	2,350	1753.7%
Ancillary	8,595	10,259	1,664	19.4%

North Central	2009Q1	2013Q1[1]	Vol. Change	Pct. Change
Core	2,029	2,367	338	16.7%
Ancillary	3,824	4,521	697	18.2%

Tri-County	2009Q1	2013Q1[1]	Vol. Change	Pct. Change
Core	2,720	3,140	420	15.4%
Ancillary	9,034	9,059	25	0.3%

Westmoreland & Fayette	2009Q1	2013Q1[1]	Vol. Change	Pct. Change
Core	515	1,947	1,432	278.1%
Ancillary	9,925	10,293	368	3.7%

6 WIA Total	2009Q1	2013Q1[1]	Vol. Change	Pct. Change
Core	**6,237**	**17,094**	**10,857**	**174.1%**
Ancillary	**43,313**	**49,938**	**6,625**	**15.3%**

Source: Industry Data is from Pennsylvania's Quarterly Census of Employment and Wages

- Southwest Corner WIA experienced the largest volume increase in Marcellus Shale Core Industries employment, with an increase of 3,508 employees; Northern Tier WIA was second with a volume increase of 2,809 employees. Northern Tier WIA experienced the largest percentage increase in Core industry employment, equal to 2675.2%; second was Central WIA with an increase of 1753.7%.
- Northern Tier WIA experienced the largest volume increase in Marcellus Shale Ancillary Industries employment, adding 2,313; Northern Tier WIA also had the largest percentage increase with 136.3%.
- Across all six WIAs, employment in the Core industries increased by 174.1%; Ancillary industries employment increased by 15.3%.

[1]2013Q1 QCEW data are initial. These data may be revised upon release of QCEW 2013Q2 data.
Notes: These data are not seasonally adjusted. While most change was due to actual growth or decline, some movement may be due to seasonal patterns or administrative changes to data.

Wages for Marcellus Shale Core and Ancillary Industries[1]

NAICS	Core Industries Title	Average
211111	Crude Petroleum & Natural Gas Extraction	$110,119
211112	Natural Gas Liquid Extraction	$100,841
213111	Drilling Oil & Gas Wells	$84,862
213112	Support Activities for Oil & Gas Operations	$70,401
237120	Oil & Gas Pipeline & Related Structures Construction	$82,127
486210	Pipeline Transportation of Natural Gas	$85,747
	Average	**$83,305**
	Ancillary Industries Title	**Average**
221112	Fossil Fuel Electric Power Generation	$114,588
221210	Natural Gas Distribution	$80,601
221310	Water Supply & Irrigation Systems	$56,358
221320	Sewage Treatment Facilities	$45,560
237110	Water & Sewer Line & Related Structures Construction	$66,741
237310	Highway, Street, & Bridge Construction	$55,315
238912	Nonresidential Site Preparation Contractors	$53,191
325110	Petrochemical Manufacturing	$80,377
325120	Industrial Gas Manufacturing	$127,737
331110*	Iron & Steel Mills & Ferroalloy Manufacturing*	$75,429
331210	Iron & Steel Pipe & Tube Manufacturing from Purchased Steel	$61,927
333131	Mining Machinery & Equipment Manufacturing	$62,927
333132	Oil & Gas Field Machinery & Equipment Manufacturing	$69,128
423810	Construction & Mining Machinery Equipment Wholesalers	$64,843
423830	Industrial Machinery & Equipment Merchant Wholesalers	$68,483
423840	Industrial Supplies Merchant Wholesalers	$62,247
484110	General Freight Trucking, Local	$42,582
484220	Specialized Freight Trucking, Local	$45,646
484230	Specialized Freight Trucking, Long-Distance	$51,771
531190	Lessors of Other Real Estate Property	$37,233
532412	Construction, Mining, & Forestry Machinery & Equip. Rental	$78,119
541330	Engineering Services	$79,147
541360	Geophysical Surveying & Mapping Services	$60,462
541380	Testing Laboratories	$65,211
541620	Environmental Consulting Services	$68,561
562910	Remediation Services	$57,223
811310	Commercial & Industrial Mach. & Equip. Repair & Maintenance	$54,323
924110	Admin. of Air & Water Res. & Solid Waste Mgmt. Programs	$60,803
924120	Admin. of Conservation Programs	$48,738
926130	Reg. & Admin. Of Communications, Electric, Gas, & Other Utils.	$79,973
	Average	**$65,045**

Source: Industry Data is from Pennsylvania's Quarterly Census of Employment and Wages

- The average wage across all industries for 2012Q2 through 2013Q1 was $48,511.
- The average wage in the core industries was $34,794 greater than the average for all industries; the average wage in the ancillary industries was $16,534 higher.

1 Average Wages for these industries were calculated by combining the most recent four quarters of available wage data; in this case 2012Q2 through 2013Q1.
[2]2013Q1 QCEW data are initial. These data may be revised upon release of QCEW 2013Q2 data.

NAICS definition implemented with 2011Q1 data. Please see NAICS Changes in "Definitions" section on page 19.

Workforce Investment Area Marcellus Shale Related Industries New Hires

The tables below depict the number of new hires in the core and ancillary industries for WIAs with substantial Marcellus Shale drilling activity during the third quarter of each year from 2010 to 2013. Volume change and percent change are both based on 2010Q3 to 2013Q3 calculations.

Northern Tier	2010Q3	2011Q3	2012Q3	2013Q3	Vol. Change	Pct. Change
Core	90	174	336	252	162	180.0%
Ancillary	68	210	161	347	279	410.3%

Southwest Corner	2010Q3	2011Q3	2012Q3	2013Q3	Vol. Change	Pct. Change
Core	157	343	682	509	352	224.2%
Ancillary	322	365	408	356	34	10.6%

Central	2010Q3	2011Q3	2012Q3	2013Q3	Vol. Change	Pct. Change
Core	169	225	90	57	-112	-66.3%
Ancillary	259	455	323	307	48	18.5%

North Central	2010Q3	2011Q3	2012Q3	2013Q3	Vol. Change	Pct. Change
Core	396	368	77	71	-325	-82.1%
Ancillary	130	126	116	151	21	16.2%

Tri-County	2010Q3	2011Q3	2012Q3	2013Q3	Vol. Change	Pct. Change
Core	142	241	100	169	27	19.0%
Ancillary	341	551	453	337	-4	-1.2%

Westmoreland/Fayette	2010Q3	2011Q3	2012Q3	2013Q3	Vol. Change	Pct. Change
Core	36	42	29	77	41	113.9%
Ancillary	522	680	752	729	207	39.7%

6 WIA Total	2010Q3	2011Q3	2012Q3	2013Q3	Vol. Change	Pct. Change
Core	**990**	**1,393**	**1,314**	**1,135**	**145**	**14.6%**
Ancillary	**1,642**	**2,387**	**2,213**	**2,227**	**585**	**35.6%**

- Southwest Corner WIA had the largest volume (352) and percent (224.2%) increases in core industry New Hires; Northern Tier WIA experienced the second largest volume (162) and percentage (180.0%) growth.
- For ancillary industries, Northern Tier had the largest increases in both volume (279) and percentage (410.3%) of New Hires; Westmoreland/Fayette WIA was second in growth for both volume (207) and percentage (39.7).
- Across these six WIAs, there were 14.6% more new hires in the Marcellus Shale related core industries in 2013Q3 than in 2010Q3; there were greater than 35% more new hires in the ancillary industries in 2013Q3 than in 2010Q3.

Pennsylvania Marcellus Shale Related Industries New Hires

Core Industries	Volume of New Hires by Quarter				Change 2010Q3 - 2013Q3	
Title	**2010Q3**	**2011Q3**	**2012Q3**	**2013Q3**	**Vol.**	**Pct.**
Crude Petroleum & Natural Gas Extraction	236	366	186	386	150	63.6%
Natural Gas Liquid Extraction	18	70	59	49	31	172.2%
Drilling Oil & Gas Wells	391	440	195	201	-190	-48.6%
Support Activities for Oil & Gas Operations	898	1,190	624	953	55	6.1%
Oil & Gas Pipeline & Related Structures	131	205	1,274	378	247	188.5%
Pipeline Transportation of Natural Gas	7	10	8	11	4	57.1%
Total	**1,681**	**2,281**	**2,346**	**1,978**	**297**	**17.7%**
Ancillary Industries	**Volume of New Hires by Quarter**				**Change 2010Q3 - 2013Q3**	
Title	**2010Q3**	**2011Q3**	**2012Q3**	**2013Q3**	**Vol.**	**Pct.**
Fossil Fuel Electric Power Generation	16	34	48	31	15	93.8%
Natural Gas Distribution	98	103	223	115	17	17.3%
Water Supply & Irrigation Systems	34	55	41	51	17	50.0%
Sewage Treatment Facilities	33	43	57	151	118	357.6%
Water, Sewer Line & Related Structures	403	378	334	364	-39	-9.7%
Highway, Street, & Bridge Construction	2,039	2,256	2,012	1,980	-59	-2.9%
Nonresidential Site Preparation Contractors	595	637	651	781	186	31.3%
Petrochemical Manufacturing	26	9	5	7	-19	-73.1%
Industrial Gas Manufacturing	21	25	23	32	11	52.4%
Iron & Steel Mills & Ferroalloy Mfg.*	326	432	386	312	-14	-4.3%
Iron, Steel Pipe, Tube Mfg. from Prchsd. Steel	136	158	103	173	37	27.2%
Mining Machinery & Equipment Mfg.	184	288	223	206	22	12.0%
Oil & Gas Field Machinery & Equipment	12	7	19	15	3	25.0%
Const. & Mining Mach. Equip. Wholesalers	128	173	107	203	75	58.6%
Industrial Mach. & Equip. Wholesalers	426	500	605	591	165	38.7%
Industrial Supplies Merchant Wholesalers	274	284	243	247	-27	-9.9%
General Freight Trucking, Local	595	635	650	1,038	443	74.5%
Specialized Freight Trucking, Local	619	1,001	769	880	261	42.2%
Specialized Freight Trucking, Long-Distance	158	158	390	192	34	21.5%
Lessors of Other Real Estate Property	23	30	42	75	52	226.1%
Const., Mining, & Forestry Mach. & Equip.	164	224	293	225	61	37.2%
Engineering Services	3,327	3,782	3,699	3,725	398	12.0%
Geophysical Surveying & Mapping Services	6	29	29	17	11	183.3%
Testing Laboratories	542	519	743	631	89	16.4%
Environmental Consulting Services	228	261	204	196	-32	-14.0%
Remediation Services	349	540	328	387	38	10.9%
Commercial & Industrial Mach. & Equip.	331	376	350	327	-4	-1.2%
Admin. Of Air & Water Res. & Waste	3	5	4	1	-2	-66.7%
Admin. of Conservation Programs	4	11	25	25	21	525.0%
Reg.&Admin. of Comm., Elec., Gas & Util.	0	0	0	0	0	0
Totals	**11,100**	**12,953**	**12,606**	**12,978**	**1,878**	**16.9%**

- In 2013Q3 there were 1,978 New Hires in the Marcellus Shale related core industries. This was 17.7% higher than 2010Q3, but 15.7% lower than 2012Q3.
- In 2013Q3 there were 12,978 New Hires in the Marcellus Shale related ancillary industries. This was 16.9% higher than 2010Q3 and 3.0% higher than 2012Q3.
- Across all industries in Pennsylvania, total New Hires in 2013Q3 were 20.7% higher than in 2010Q3 and 7.9% higher than 2012Q3.

Note: In every economy there is job creation and job destruction every month and the result is employment change. New hires are linked to job creation; however, an increase in new hires does not directly equate to an increase in the total employment count. The new hires count is simply an indication of hiring activity in an industry. Separations, in the form of layoffs or quits, are linked to job destruction and account for the other half of the employment change equation. The balance of hires and separations result in the employment change.

NAICS definition implemented with 2011Q1 data. Please see NAICS Changes in "Definitions" section on page 19.

Pennsylvania & Workforce Investment Area Marcellus Shale Related Industries Online Job Posting Activity[1]

Pennsylvania Statewide Online Job Postings

Area	October-2013	October-2012	Pct. Change
Total All Industries[2]	**216,032**	**207,914**	**3.9%**
Core Industries	272	215	26.5%
Ancillary Industries	3,786	3,610	4.9%
Total MS related	**4,058**	**3,825**	**6.1%**

Select WIA Online Job Postings (core & ancillary combined)

WIA	October-2013	October-2012	Pct. Change
Northern Tier	51	40	27.5%
Southwest Corner	205	177	15.8%
Central	226	152	48.7%
North Central	56	53	5.7%
Tri-County	199	258	-22.9%
Westmoreland & Fayette	95	131	-27.5%
Total	**832**	**811**	**2.6%**

- **Pennsylvania Online Job Postings**
  - In October 2013, total job postings across all industries for Pennsylvania increased by 3.9% over October 2012.
  - Online postings for statewide Marcellus Shale related (core + ancillary) industries increased by 6.1% over the same period.
- **WIA Online Job Postings**
  - Four of the six WIAs with substantial Marcellus Shale drilling activity experienced an increase in online job posting activity O-T-Y, while the other two saw an annual decrease in HWOL postings.
  - The Central WIA experienced the largest O-T-Y percentage increase in Marcellus Shale related job posting activity, rising by 48.7% followed by Northern Tier WIA, which rose 27.5%
  - The six WIAs with substantial Marcellus Shale drilling activity saw online job postings increase by a combined 2.6% O-T-Y.

[1] Job Postings are counted using Wanted Analytics' Help Wanted Online job posting Spidering tool. Job posting increases should be viewed as an indication of **trend only**. For a complete explanation of this data set, please refer to the Definitions section of this document.

[2] Total Job postings in this table may not be equal to total postings for October 2013 published in the November 2013 edition of the Pennsylvania Fast Facts, due to continuous updates to the data.

2013 Statewide High-Priority Occupations Related to Marcellus Shale

The occupations listed in the table below are found within the staffing patterns of Marcellus Shale related core and ancillary industries and have been identified as High-Priority for Pennsylvania. High-Priority Occupations (HPOs) are identified as in demand by employers, have higher skills needs, and are most likely to provide family sustaining wages.

A Standard Occupational Code (SOC) is provided for each occupation. For a complete list of terms, please refer to the Staffing Pattern definition on page 18.

SOC Code	SOC Title	Average Annual Wage	Education Level
13-2011	Accountants & Auditors	$70,420	Bachelor's degree
43-3031	Bookkeeping & Accounting Clerks	$36,310	Moderate-term OJT
49-3031	Bus, Truck & Diesel Mechanics	$41,830	Long-term training
17-2051	Civil Engineers	$78,190	Bachelor's degree
47-4011	Construction & Building Inspectors	$47,430	HS diploma plus expr
47-2061	Construction Laborers	$35,470	Short-term OJT
43-4051	Customer Service Representatives	$33,830	Short-term OJT
49-9051	Electrical Power-Line Installers & Repairers	$61,680	Long-term training
53-3032	Heavy & Tractor-Trailer Truck Drivers	$41,920	HS diploma plus expr
49-9041	Industrial Machinery Mechanics	$45,250	Long-term training
51-9061	Inspectors, Testers, Sorters, Samplers & Weighers	$39,200	Moderate-term OJT
53-3033	Light Truck or Delivery Services Drivers	$32,720	Short-term OJT
49-9071	Maintenance & Repair Workers, General	$37,080	Moderate-term OJT
17-2141	Mechanical Engineers	$78,480	Bachelor's degree
47-2073	Operating Engineers	$46,110	Moderate-term OJT
47-2152	Plumbers, Pipefitters & Steamfitters	$51,450	Long-term training
47-5012	Rotary Drill Operators, Oil & Gas	$44,090	Moderate-term OJT
41-4012	Sales Representatives	$63,770	Moderate-term OJT
43-6014	Secretaries	$32,090	Short-term OJT
47-5013	Service Unit Operators, Oil, Gas & Mining	$49,090	Moderate-term OJT
47-1011	Supervisors - Construction/Extraction Workers	$67,600	HS diploma plus expr
53-1031	Supervisors - Transportation & Vehicle Oprs	$58,450	HS diploma plus expr
51-4121	Welders, Cutters, Solderers & Brazers	$37,670	Moderate-term OJT
53-7073	Wellhead Pumpers	$39,390	Moderate-term OJT

Source: The Center for Workforce Information & Analysis

Workforce development funding in the commonwealth may be available for training programs required to enter these occupations.

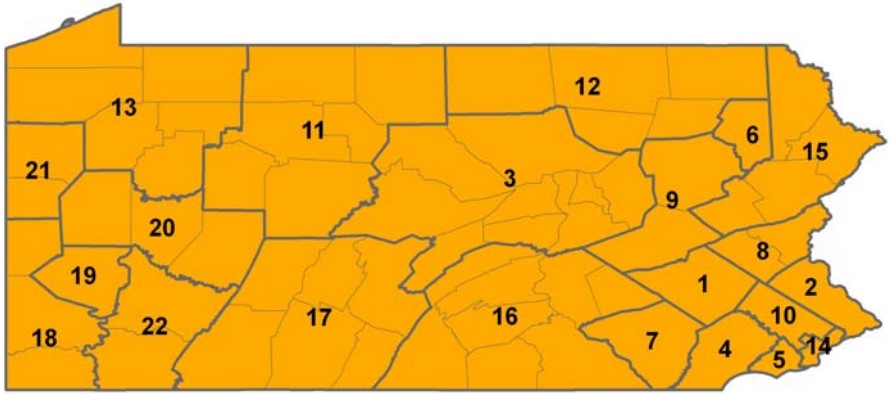
2013 Regional High-Priority Occupations Related to Marcellus Shale

The occupations listed in the table below are found within the staffing patterns of Marcellus Shale related core industries and have been identified as High-Priority for certain Workforce Investment Areas (WIAs).[1] High Priority Occupations (HPOs) are identified as in demand by employers, have higher skills needs, and are most likely to provide family sustaining wages.

A Standard Occupational Code (SOC) is provided for each occupation. For a complete list of terms, please refer to the Staffing Pattern definition on page 18.

SOC Code	SOC Title	Education Level	HPO in WIA Numbers
17-3011	Architectural & Civil Drafters	Associate degree	13,19,22
47-5011	Derrick Operators, Oil & Gas	Short-term OJT	3
17-2071	Electrical Engineers	Bachelor's degree	4
53-7032	Excavating & Loading Machine Oprs	HS diploma plus expr	8
53-7071	Gas Compressor/Pumping Station Oprs	Moderate-term OJT	3
11-1021	General & Operations Managers	Associate plus expr	1,3
43-9061	Office Clerks, General	Short-term OJT	1,3
53-7072	Pump Operators	Moderate-term OJT	3
47-5071	Roustabouts, Oil & Gas	Moderate-term OJT	3,11,12,13,19,21,22

Source: The Center for Workforce Information & Analysis



Workforce development funding in the commonwealth may be available for training programs required to enter these occupations.

[1] These occupations were added to Local Workforce Investment Areas HPO lists through the HPO petition process.

WIA #	WIA Name	WIA #	WIA Name
1	Berks County WIA	12	Northern Tier WIA
2	Bucks County WIA	13	Northwest WIA
3	Central WIA	14	Philadelphia County WIA
4	Chester County WIA	15	Pocono Counties WIA
5	Delaware County WIA	16	South Central WIA
6	Lackawanna County WIA	17	Southern Alleghenies WIA
7	Lancaster County WIA	18	Southwest Corner WIA
8	Lehigh Valley WIA	19	Three Rivers WIA
9	Luzerne-Schuylkill Counties WIA	20	Tri-County WIA
10	Montgomery County WIA	21	West Central WIA
11	North Central WIA	22	Westmoreland-Fayette Counties WIA