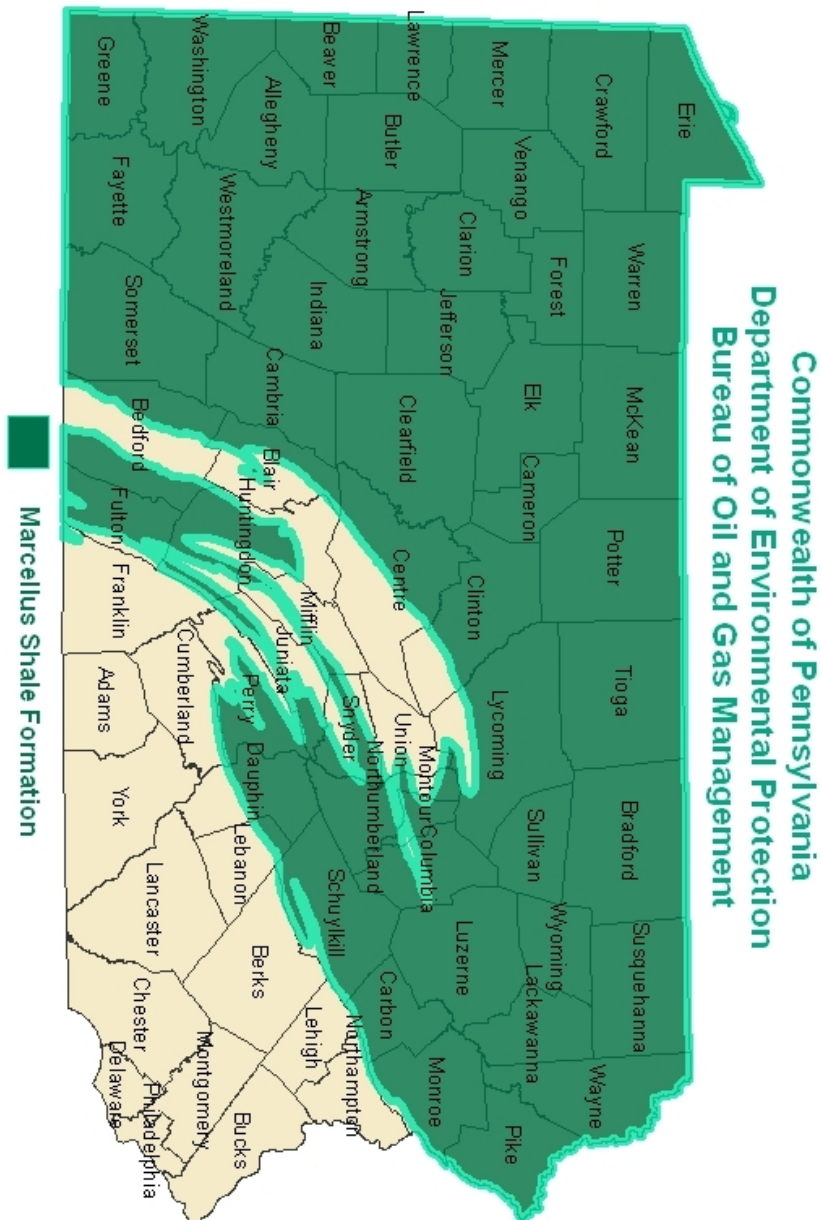


# MARCELLUS SHALE FORMATION



# MARCELLUS SHALE FAST FACTS

## NOVEMBER 2014 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 2014Q1 and 2014Q3, 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, 2014Q1 QCEW data are compared to 2010Q1, and 2014Q3 New Hire data are compared to 3<sup>rd</sup> quarter data for 2011, 2012, and 2013.

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**pennsylvania**  
 DEPARTMENT OF LABOR & INDUSTRY

**Release Date: 12-04-2014**

# **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<sup>1</sup>); 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.*

<sup>1</sup>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 1<sup>st</sup> 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 12<sup>th</sup> 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 2014 was 5.4%.**
  - This was lower than the U.S. rate of 5.8%.
  - O-T-M change was -0.3 percentage points.
  - O-T-Y change was -1.7 percentage points.
- **Pennsylvania's seasonally adjusted total nonfarm jobs for October 2014 was 5,802,300.**
  - O-T-M change was +12,600 (+0.2%).
  - O-T-Y change was +48,200 (+0.8%).
  - PA was still down 10,600 jobs since the start of the recession (December 2007).
- **Pennsylvania's new hire activity increased.**
  - There were about 741,900 new hires across all industries in the 3<sup>rd</sup> quarter of 2014.
  - This was an increase of about 72,800 (10.9%) from the 3<sup>rd</sup> quarter of 2013.
- **Employer demand increased in Pennsylvania.**
  - About 225,000 job ads were posted online in October 2014.
  - This was an increase of about 19,000 (+9.2%) over October 2013.
- **In Pennsylvania there were 1.6 unemployed persons for every online job posting in October 2014.**
  - The Pennsylvania rate was lower than the U.S. rate, which stood at 1.8.
  - 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 (2010Q1 to 2014Q1):**

- Core industries were up 15,170 (+116.2%).
- Ancillary industries were up 16,313 (+8.8%).
- Employment for all industries increased 186,442 (+3.5%).
- 2014Q1 Marcellus Shale related industries total employment is 228,930.

#### **Establishments (2010Q1 to 2014Q1):**

- 1,075 establishments were added (375 core, 700 ancillary).
- This represented 48.8% growth in the core industries and 5.7% growth in the ancillary industries; over the same time period, PA experienced 3.2% growth (+10,744) for all industries.
- Marcellus Shale related industries totaled 14,066 establishments in 2014Q1.

#### **Wages (2013Q2 through 2014Q1):**

- The average wage across all industries was about \$49,600.
- The average wage in the core industries was about \$93,000 which was approximately \$43,400 greater than the average for all industries.
- The average wage in the ancillary industries was about \$65,000, which was approximately \$15,400 greater than the average for all industries.

#### **New Hires (2011Q3 to 2014Q3):**

- Statewide new hires in the core industries were 16.6% higher in 2014Q3 than in 2011Q3.
- Statewide new hires in the ancillary industries were 6.6% higher in 2014Q3 than in 2011Q3.
- New hire counts increased in both core industries (29.8%), and in Ancillary industries (3.3%) from 2013Q3 to 2014Q3.
- Statewide new hires across all industries were 31.0% higher in 2014Q3 than in 2011Q3; statewide new hires across all industries increased by 10.9% from 2013Q3 to 2014Q3.

#### **Online Job Postings (October 2014):**

- There were about 4,800 online job postings statewide in core and ancillary industries. This is an O-T-Y increase of about 700 (16.8%).

## **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)

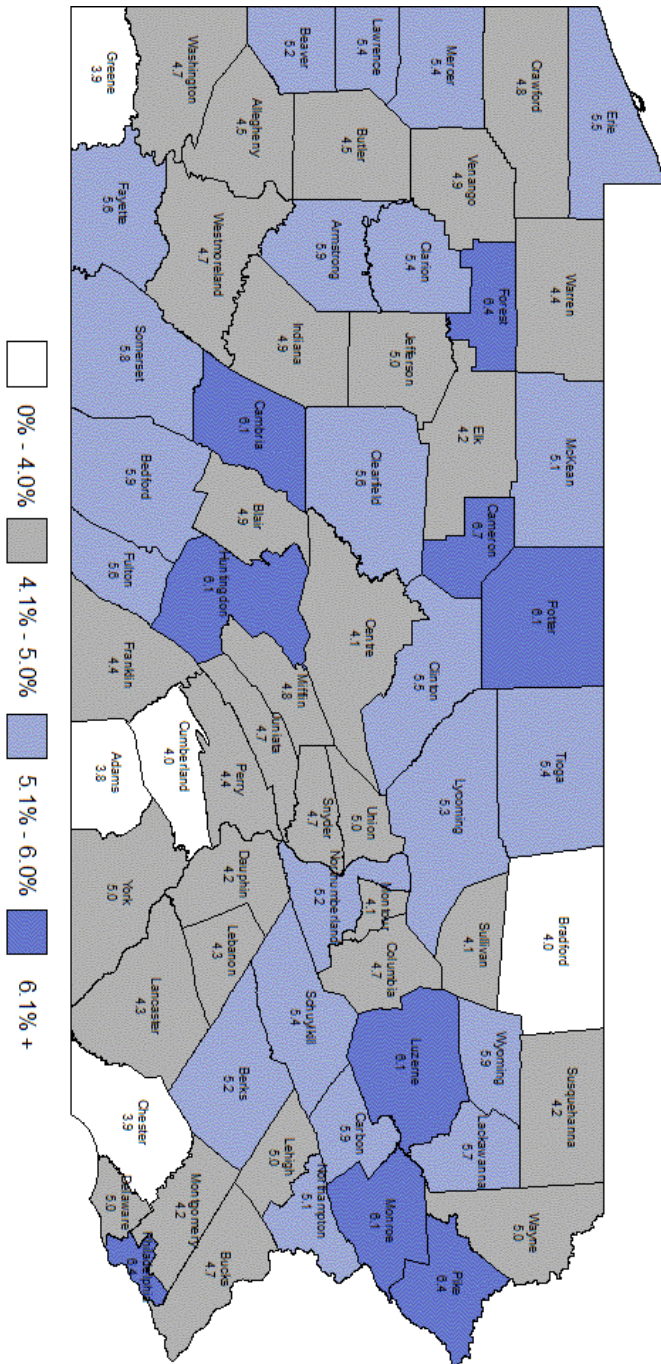
Each month the CES program surveys about 140,000 national businesses and government agencies in order to provide detailed industry data on employment, hours, and earnings of workers on non-farm payrolls. This is a collaborative effort between BLS and the states. CES produces a count of jobs, not of people.

**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.

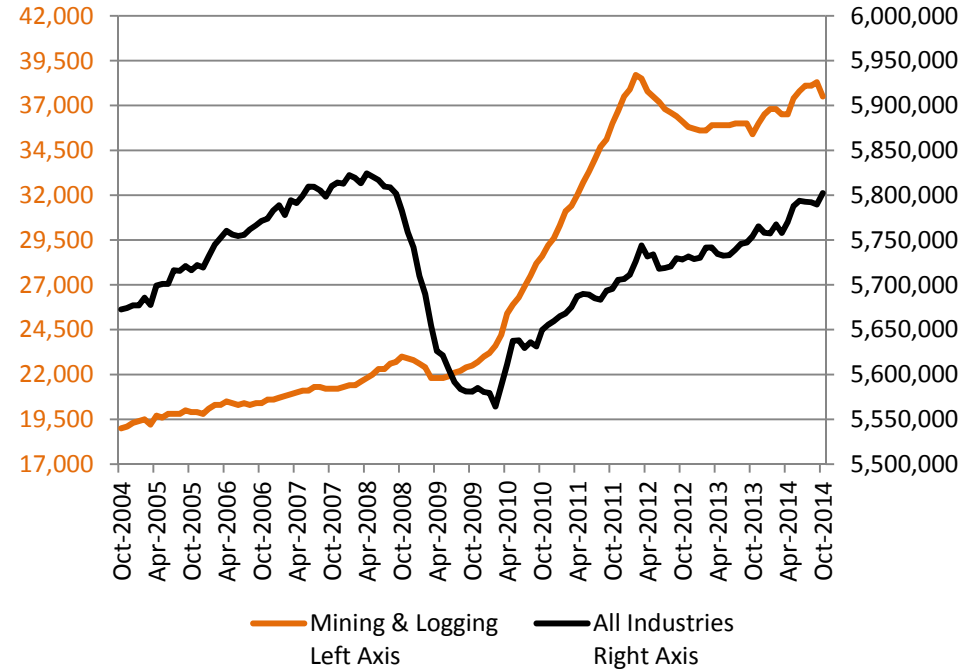


# PENNSYLVANIA UNEMPLOYMENT RATES BY COUNTY OCTOBER 2014



# MINING JOBS VS. TOTAL JOBS IN PENNSYLVANIA

Mining & Logging<sup>1</sup> Compared to Total Employment



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

- Total Pennsylvania jobs were 5,802,300 (October 2014).  
 O-T-M change was +12,600 (+0.2%).  
 O-T-Y change was +48,200 (+0.8%).  
 Change from 10 years ago was +129,700 (+2.3%).
- Mining & Logging employment in Pennsylvania was 37,500.  
 O-T-M change was -800 (-2.1%).  
 O-T-Y change was +2,100 (+5.9%).  
 Change from 10 years ago was +18,500 (+97.4%).

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

<sup>1</sup> 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		2010Q1		2014Q1 <sup>1</sup>		Vol. Change	
NAICS	Title	Est.	Emp.	Est.	Emp.	Est.	Emp.
211111	Crude Petroleum & Natural Gas Extraction	211	3,066	260	5,547	49	2,481
211112	Natural Gas Liquid Extraction	19	250	21	669	2	419
213111	Drilling Oil & Gas Wells	106	2,549	115	3,371	9	822
213112	Support Activities for Oil & Gas Operations	218	3,611	451	12,388	233	8,777
237120	Oil & Gas Pipeline & Related Structures	88	2,307	161	4,833	73	2,526
486210	Pipeline Transportation of Natural Gas	126	1,276	135	1,421	9	145
<b>Totals</b>		<b>768</b>	<b>13,059</b>	<b>1,143</b>	<b>28,229</b>	<b>375</b>	<b>15,170</b>
Ancillary Industries		2010Q1		2014Q1 <sup>1</sup>		Vol. Change	
NAICS	Title	Est.	Emp.	Est.	Emp.	Est.	Emp.
221112	Fossil Fuel Electric Power Generation	68	4,249	67	3,369	-1	-880
221210	Natural Gas Distribution	155	4,707	173	5,361	18	654
221310	Water Supply & Irrigation Systems	377	6,740	378	7,111	1	371
221320	Sewage Treatment Facilities	478	4,306	485	4,385	7	79
237110	Water, Sewer, & Related Structure Const.	369	5,018	358	5,200	-11	182
237310	Highway, Street, & Bridge Construction	530	17,325	514	17,220	-16	-105
238912	Nonresidential Site Preparation Contractors	633	7,520	651	8,520	18	1,000
325110	Petrochemical Manufacturing	4	533	0	0	-4	-533
325120	Industrial Gas Manufacturing	37	1,448	35	1,505	-2	57
331210	Iron, Pipe, & Tube Mfg. from Prchsd. Steel	39	3,338	39	3,496	0	158
333131	Mining Machinery & Equipment Mfg.	23	3,066	23	3,099	0	33
333132	Oil & Gas Field Machinery & Equip. Mfg.	9	303	17	573	8	270
423810	Const. & Mining Mach. Equip. Wholesalers	210	3,427	197	3,743	-13	316
423830	Industrial Machinery & Equip. Wholesalers	963	10,969	938	12,264	-25	1,295
423840	Industrial Supplies Merchant Wholesalers	343	3,601	341	3,634	-2	33
484110	General Freight Trucking, Local	1,152	8,335	1,404	11,359	252	3,024
484220	Specialized Freight Trucking, Local	1,045	9,627	1,214	12,700	169	3,073
484230	Specialized Freight Trucking, Long-Distance	267	3,301	282	3,351	15	50
531190	Lessors of Other Real Estate Property	232	736	249	947	17	211
532412	Const., Mining, & Forestry Equip. Rental	134	2,304	175	3,288	41	984
541330	Engineering Services	2,468	41,264	2,543	43,209	75	1,945
541360	Geophysical Surveying & Mapping Services	57	235	54	312	-3	77
541380	Testing Laboratories	389	7,164	407	8,802	18	1,638
541620	Environmental Consulting Services	463	3,018	494	3,235	31	217
562910	Remediation Services	236	2,434	268	2,970	32	536
811310	Comm. & Industrial Mach. & Equip. Repair	1,015	7,514	1,072	7,791	57	277
924110	Admin. of Air & Water Res. & Waste Mgmt.	103	4,235	108	4,185	5	-50
924120	Admin. of Conservation Programs	317	4,092	325	4,281	8	189
926130	Reg. & Admin. of Comm., Elec., Gas, & Util.	48	1,498	50	1,388	2	-110
<b>Totals</b>		<b>12,223</b>	<b>184,388</b>	<b>12,923</b>	<b>200,701</b>	<b>700</b>	<b>16,313</b>

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

- From 2010Q1 to 2014Q1, employment in Core industries increased by 116.2%.
- Over the same period, employment in the Ancillary industries was up 8.8%.
- Employment across all industries increased 3.5% (186,422) over the same time period.

<sup>1</sup>2014Q1 QCEW data are initial. These data may be revised upon release of QCEW 2014Q2 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<sup>1</sup>:

(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](http://www.shalenet.org).

July 1 <sup>st</sup> 2010 – June 30 <sup>th</sup> 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

<sup>1</sup>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<sup>1</sup> Employment by Age Group (2013Q4)

Northern Tier	14-24	25-34	35-44	45-54	55+
All industry groups	13.3%	19.6%	20.0%	24.3%	22.8%
2111 Oil and Gas Extraction	6.9%	31.2%	25.6%	23.5%	12.6%
2131 Support Activities for Mining	14.7%	33.4%	20.2%	19.6%	12.1%
2371 Utility System Construction	15.1%	28.6%	21.3%	21.0%	14.1%
4862 Pipeline Transportation of Natural Gas	0.0%	16.7%	19.4%	37.0%	24.1%

Southwest Corner	14-24	25-34	35-44	45-54	55+
All industry groups	12.6%	20.1%	19.7%	23.0%	24.6%
2111 Oil and Gas Extraction	8.3%	30.6%	22.4%	22.7%	15.7%
2131 Support Activities for Mining	14.5%	37.6%	24.4%	15.5%	8.0%
2371 Utility System Construction	12.1%	26.2%	22.6%	21.1%	18.0%
4862 Pipeline Transportation of Natural Gas	3.7%	18.8%	23.9%	31.7%	20.6%

Central	14-24	25-34	35-44	45-54	55+
All industry groups	13.1%	19.3%	19.8%	23.8%	24.0%
2111 Oil and Gas Extraction	8.5%	37.2%	25.6%	18.3%	11.0%
2131 Support Activities for Mining	14.4%	38.9%	23.0%	16.4%	7.4%
2371 Utility System Construction	13.2%	21.2%	21.8%	23.4%	20.3%
4862 Pipeline Transportation of Natural Gas	2.8%	19.8%	22.6%	32.1%	21.7%

North Central	14-24	25-34	35-44	45-54	55+
All industry groups	12.3%	18.3%	20.0%	24.8%	24.5%
2111 Oil and Gas Extraction	8.2%	24.2%	22.6%	23.3%	21.6%
2131 Support Activities for Mining	12.1%	32.5%	22.2%	19.9%	13.4%
2371 Utility System Construction	15.4%	28.4%	23.3%	20.4%	12.5%
4862 Pipeline Transportation of Natural Gas	5.4%	16.1%	22.3%	29.9%	25.0%

Tri-County	14-24	25-34	35-44	45-54	55+
All industry groups	13.2%	19.7%	19.4%	23.7%	24.1%
2111 Oil and Gas Extraction	5.7%	22.5%	22.8%	25.9%	23.1%
2131 Support Activities for Mining	11.9%	33.9%	22.2%	19.2%	12.7%
2371 Utility System Construction	7.8%	15.5%	19.4%	28.2%	29.2%
4862 Pipeline Transportation of Natural Gas	0.0%	30.8%	23.1%	30.8%	0.0%

Westmoreland & Fayette	14-24	25-34	35-44	45-54	55+
All industry groups	13.6%	18.9%	19.1%	23.4%	25.0%
2111 Oil and Gas Extraction	6.4%	32.1%	21.6%	26.7%	13.5%
2131 Support Activities for Mining	13.7%	41.2%	25.5%	13.6%	6.1%
2371 Utility System Construction	8.4%	21.4%	24.5%	26.8%	18.9%
4862 Pipeline Transportation of Natural Gas	2.4%	17.3%	23.1%	33.7%	23.6%

\*\*\* 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.

<sup>1</sup> 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<sup>1</sup>

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	2010Q1	2014Q1 <sup>1</sup>	Vol. Change	Pct. Change
Core	726	2,866	2,140	294.8%
Ancillary	1,928	3,575	1,647	85.4%

Southwest Corner	2010Q1	2014Q1 <sup>1</sup>	Vol. Change	Pct. Change
Core	884	4,627	3,743	423.4%
Ancillary	9,693	11,209	1,516	15.6%

Central	2010Q1	2014Q1 <sup>1</sup>	Vol. Change	Pct. Change
Core	466	2,362	1,896	406.9%
Ancillary	8,879	10,080	1,201	13.5%

North Central	2010Q1	2014Q1 <sup>1</sup>	Vol. Change	Pct. Change
Core	1,876	2,249	373	19.9%
Ancillary	3,761	4,452	691	18.4%

Tri-County	2010Q1	2014Q1 <sup>1</sup>	Vol. Change	Pct. Change
Core	2,501	3,294	793	31.7%
Ancillary	8,718	8,830	112	1.3%

Westmoreland & Fayette	2010Q1	2014Q1 <sup>1</sup>	Vol. Change	Pct. Change
Core	786	1,557	771	98.1%
Ancillary	9,227	10,213	986	10.7%

6 WIA Total	2010Q1	2014Q1 <sup>1</sup>	Vol. Change	Pct. Change
Core	7,239	16,955	9,716	134.2%
Ancillary	42,206	48,359	6,153	14.6%

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 3,743 employees; Northern Tier WIA was second with a volume increase of 2,140 employees. Southwest Corner WIA experienced the largest percentage increase in Core industry employment, equal to 423.4%; second was Central WIA with an increase of 406.9%.
- Northern Tier WIA experienced the largest volume increase in Marcellus Shale Ancillary Industries employment, adding 1,647; Northern Tier WIA also had the largest percentage increase with 85.4%.
- Across all six WIAs, employment in the Core industries increased by 134.2%; Ancillary industries employment increased by 14.6%.

<sup>1</sup>2014Q1 QCEW data are initial. These data may be revised upon release of QCEW 2014Q2 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<sup>1</sup>

NAICS	Core Industries Title	Average
211111	Crude Petroleum & Natural Gas Extraction	\$119,737
211112	Natural Gas Liquid Extraction	\$103,077
213111	Drilling Oil & Gas Wells	\$85,705
213112	Support Activities for Oil & Gas Operations	\$76,068
237120	Oil & Gas Pipeline & Related Structures Construction	\$85,563
486210	Pipeline Transportation of Natural Gas	\$87,332
	<b>Average</b>	<b>\$92,914</b>
NAICS	Ancillary Industries Title	Average
221112	Fossil Fuel Electric Power Generation	\$118,178
221210	Natural Gas Distribution	\$90,581
221310	Water Supply & Irrigation Systems	\$58,793
221320	Sewage Treatment Facilities	\$46,862
237110	Water & Sewer Line & Related Structures Construction	\$66,788
237310	Highway, Street, & Bridge Construction	\$56,665
238912	Nonresidential Site Preparation Contractors	\$53,450
325120	Industrial Gas Manufacturing	\$85,704
331110*	Iron & Steel Mills & Ferroalloy Manufacturing*	\$77,517
331210	Iron & Steel Pipe & Tube Manufacturing from Purchased Steel	\$61,301
333131	Mining Machinery & Equipment Manufacturing	\$62,309
333132	Oil & Gas Field Machinery & Equipment Manufacturing	\$58,099
423810	Construction & Mining Machinery Equipment Wholesalers	\$64,197
423830	Industrial Machinery & Equipment Merchant Wholesalers	\$70,079
423840	Industrial Supplies Merchant Wholesalers	\$64,021
484110	General Freight Trucking, Local	\$44,356
484220	Specialized Freight Trucking, Local	\$46,958
484230	Specialized Freight Trucking, Long-Distance	\$51,330
531190	Lessors of Other Real Estate Property	\$46,752
532412	Construction, Mining, & Forestry Machinery & Equip. Rental	\$79,891
541330	Engineering Services	\$80,392
541360	Geophysical Surveying & Mapping Services	\$63,281
541380	Testing Laboratories	\$64,328
541620	Environmental Consulting Services	\$68,226
562910	Remediation Services	\$59,368
811310	Commercial & Industrial Mach. & Equip. Repair & Maintenance	\$55,417
924110	Admin. of Air & Water Res. & Solid Waste Mgmt. Programs	\$60,989
924120	Admin. of Conservation Programs	\$48,005
926130	Reg. & Admin. Of Communications, Electric, Gas, & Other Utils.	\$81,602
	<b>Average</b>	<b>\$65,015</b>

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

- The average wage across all industries for 2013Q2 through 2014Q1 was \$49,586.
- The average wage in the core industries was \$43,328 greater than the average for all industries; the average wage in the ancillary industries was \$15,429 higher.

<sup>1</sup> Average Wages for these industries were calculated by combining the most recent four quarters of available wage data; in this case 2013Q2 through 2014Q1.

<sup>2</sup>2014Q1 QCEW data are initial. These data may be revised upon release of QCEW 2014Q2 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 second quarter of each year from 2011 to 2014. Volume change and percent change are both based on 2011Q3 to 2014Q3 calculations.

Northern Tier	2011Q3	2012Q3	2013Q3	2014Q3	Vol. Change	Pct. Change
Core	174	336	253	328	154	88.5%
Ancillary	210	161	370	200	-10	-4.8%

Southwest Corner	2011Q3	2012Q3	2013Q3	2014Q3	Vol. Change	Pct. Change
Core	343	682	518	616	273	79.6%
Ancillary	365	408	455	345	-20	-5.5%

Central	2011Q3	2012Q3	2013Q3	2014Q3	Vol. Change	Pct. Change
Core	225	90	60	54	-171	-76.0%
Ancillary	455	323	278	354	-101	-22.2%

North Central	2011Q3	2012Q3	2013Q3	2014Q3	Vol. Change	Pct. Change
Core	368	77	74	82	-286	-77.7%
Ancillary	126	116	152	89	-37	-29.4%

Tri-County	2011Q3	2012Q3	2013Q3	2014Q3	Vol. Change	Pct. Change
Core	241	100	169	235	-6	-2.5%
Ancillary	551	453	343	447	-104	-18.9%

Westmoreland/Fayette	2011Q3	2012Q3	2013Q3	2014Q3	Vol. Change	Pct. Change
Core	42	29	84	136	94	223.8%
Ancillary	680	752	734	707	27	4.0%

6 WIA Total	2011Q3	2012Q3	2013Q3	2014Q3	Vol. Change	Pct. Change
Core	1,393	1,314	1,158	1,451	58	4.2%
Ancillary	2,387	2,213	2,332	2,142	-245	-10.3%

- For core industry New Hires, Southwest Corner had the largest volume increase (273), followed by Northern Tier (154); Westmoreland/Fayette had the largest percent increase (223.8%), followed by Northern Tier (88.5%).
- For ancillary industries, Westmoreland/Fayette was the only WIA which experienced an increase in New Hires: volume (27); percent (4.0%).
- Across these six WIAs, Marcellus Shale related core industry New Hires increased by 4.2% from 2011Q3 to 2014Q3; there were 10.3% fewer New Hires in the ancillary industries in 2014Q3 than in 2011Q3.



# PENNSYLVANIA MARCELLUS SHALE RELATED INDUSTRIES NEW HIRES

Core Industries Title	Volume of New Hires by Quarter				Change 2011Q3 - 2014Q3	
	2011Q3	2012Q3	2013Q3	2014Q3	Vol.	Pct.
Crude Petroleum & Natural Gas Extraction	366	186	387	273	-93	-25.4%
Natural Gas Liquid Extraction	70	59	49	23	-47	-67.1%
Drilling Oil & Gas Wells	440	195	202	285	-155	-35.2%
Support Activities for Oil & Gas Operations	1,190	624	1,020	1,428	238	20.0%
Oil & Gas Pipeline & Related Structures	205	1,274	380	648	443	216.1%
Pipeline Transportation of Natural Gas	10	8	11	2	-8	-80.0%
<b>Total</b>	<b>2,281</b>	<b>2,346</b>	<b>2,049</b>	<b>2,659</b>	<b>378</b>	<b>16.6%</b>
Ancillary Industries Title	Volume of New Hires by Quarter				Change 2011Q3 - 2014Q3	
	2011Q3	2012Q3	2013Q3	2014Q3	Vol.	Pct.
Fossil Fuel Electric Power Generation	34	48	30	11	-23	-67.6%
Natural Gas Distribution	103	223	115	220	117	113.6%
Water Supply & Irrigation Systems	55	41	64	60	5	9.1%
Sewage Treatment Facilities	43	57	155	62	19	44.2%
Water, Sewer Line & Related Structures	378	334	370	264	-114	-30.2%
Highway, Street, & Bridge Construction	2,256	2,012	1,989	2,047	-209	-9.3%
Nonresidential Site Preparation Contractors	637	651	809	952	315	49.5%
Industrial Gas Manufacturing	25	23	32	18	-7	-28.0%
Iron & Steel Mills & Ferroalloy Mfg.*	432	386	316	396	-36	-8.3%
Iron, Steel Pipe, Tube Mfg. from Prehds. Steel	158	103	195	188	30	19.0%
Mining Machinery & Equipment Mfg.	288	223	284	258	-30	-10.4%
Oil & Gas Field Machinery & Equipment	7	19	24	36	29	414.3%
Const. & Mining Mach. Equip. Wholesalers	173	107	211	218	45	26.0%
Industrial Mach. & Equip. Wholesalers	500	605	595	553	53	10.6%
Industrial Supplies Merchant Wholesalers	284	243	259	110	-174	-61.3%
General Freight Trucking, Local	635	650	1,099	1,117	482	75.9%
Specialized Freight Trucking, Local	1,001	769	909	920	-81	-8.1%
Specialized Freight Trucking, Long-Distance	158	390	212	187	29	18.4%
Lessors of Other Real Estate Property	30	42	76	54	24	80.0%
Const., Mining, & Forestry Mach. & Equip.	224	293	225	359	135	60.3%
Engineering Services	3,782	3,699	3,757	4,009	227	6.0%
Geophysical Surveying & Mapping Services	29	29	18	29	0	0.0%
Testing Laboratories	519	743	600	620	101	19.5%
Environmental Consulting Services	261	204	210	214	-47	-18.0%
Remediation Services	540	328	388	482	-58	-10.7%
Commercial & Industrial Mach. & Equip.	376	350	382	367	-9	-2.4%
Admin. Of Air & Water Res. & Waste	5	4	1	4	-1	-20.0%
Admin. of Conservation Programs	11	25	25	37	26	236.4%
<b>Totals</b>	<b>12,944</b>	<b>12,601</b>	<b>13,350</b>	<b>13,792</b>	<b>848</b>	<b>6.6%</b>

- In 2014Q3 there were 2,659 New Hires in the Marcellus Shale related core industries, Statewide. This was 16.6% higher than 2011Q3, and 29.8% higher than 2013Q3.
- In 2014Q3 there were 13,792 New Hires in the Marcellus Shale related ancillary industries, Statewide. This was 6.6% higher than 2011Q3 and 3.3% higher than 2013Q3.
- There were 741,938 New Hires across all industries in Pennsylvania in 2014Q3. This was 31.0% higher than in 2011Q3 and 10.9% higher than 2013Q3.

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<sup>1</sup>

## Pennsylvania Statewide Online Job Postings

Area	October-2014	October-2013	Pct. Change
<b>Total All Industries<sup>2</sup></b>	<b>225,285</b>	<b>206,390</b>	<b>+9.2%</b>
Core Industries	289	289	0.0%
Ancillary Industries	4,514	3,823	+18.1%
<b>Total MS related</b>	<b>4,803</b>	<b>4,112</b>	<b>16.8%</b>

## Select WIA Online Job Postings (core & ancillary combined)

WIA	October-2014	October-2013	Pct. Change
Northern Tier	51	50	2.0%
Southwest Corner	272	218	24.8%
Central	203	225	-9.8%
North Central	79	55	43.6%
Tri-County	209	208	0.5%
Westmoreland & Fayette	106	100	6.0%
<b>Total</b>	<b>920</b>	<b>856</b>	<b>7.5%</b>

- **Pennsylvania Online Job Postings**
  - In October 2014, total job postings across all industries for Pennsylvania increased by 9.2% over October 2013.
  - Online postings for statewide Marcellus Shale related (core + ancillary) industries increased by 16.8% over the same period.
- **WIA Online Job Postings**
  - Five of the six WIAs with substantial Marcellus Shale drilling activity experienced an increase in online job posting activity O-T-Y, while one saw an annual decrease in HWOL postings.
  - The North Central WIA experienced the largest O-T-Y percentage increase in Marcellus Shale related job posting activity, rising by 43.6% followed by Southwest Corner, which rose 24.8%.
  - The six WIAs with substantial Marcellus Shale drilling activity saw online job postings increase by a combined 7.5% O-T-Y.

<sup>1</sup> 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.

<sup>2</sup> Total Job postings in this table may not be equal to total postings for October 2014 published in the November 2014 edition of the Pennsylvania Fast Facts, due to continuous updates to the data.

## **2014 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	\$70,380	Bachelor's degree
43-3021	Billing & Posting Clerks & Machine Operators	\$33,910	Short-term OJT
43-3031	Bookkeeping, Accounting & Auditing Clerks	\$36,380	Moderate-term OJT
49-3031	Bus, Truck & Diesel Engine Mechanics	\$42,250	Long-term training
47-2031	Carpenters	\$44,370	Long-term training
17-2051	Civil Engineers	\$81,600	Bachelor's degree
47-4011	Construction & Building Inspectors	\$49,350	HS diploma plus expr
47-2061	Construction Laborers	\$35,130	Short-term OJT
13-1051	Cost Estimators	\$61,120	Bachelor's degree
43-4051	Customer Service Representatives	\$34,070	Short-term OJT
49-9051	Electrical Power-Line Installers & Repairers	\$67,200	Long-term training
47-5081	Helpers--Extraction Workers	\$36,500	Moderate-term OJT
17-2112	Industrial Engineers	\$81,520	Bachelor's degree
49-9041	Industrial Machinery Mechanics	\$46,680	Long-term training
53-7051	Industrial Truck & Tractor Operators	\$34,330	Short-term OJT
51-9061	Inspectors, Testers, Sorters, Samplers & Weighers	\$39,690	Moderate-term OJT
51-4041	Machinists	\$40,130	Long-term training
49-9071	Maintenance & Repair Workers, General	\$37,850	Long-term training
17-2141	Mechanical Engineers	\$83,010	Bachelor's degree
47-2073	Operating Engineers	\$47,220	Moderate-term OJT
47-2152	Plumbers, Pipefitters & Steamfitters	\$53,460	Long-term training
43-5061	Production, Planning & Expediting Clerks	\$48,730	Moderate-term OJT
47-5012	Rotary Drill Operators, Oil & Gas	\$51,210	Moderate-term OJT
47-5071	Roustabouts, Oil & Gas	\$36,880	Moderate-term OJT
41-4012	Sales Representatives	\$63,690	Moderate-term OJT
41-4011	Sales Representatives, Scientific & Technical	\$96,100	Bachelor's degree
43-6014	Secretaries	\$32,720	Short-term OJT
47-5013	Service Unit Operators, Oil, Gas & Mining	\$46,180	Moderate-term OJT
43-5071	Shipping, Receiving & Traffic Clerks	\$32,890	Short-term OJT
47-1011	Supervisors - Construction/Extraction Workers	\$68,490	HS diploma plus expr
49-1011	Supervisors - Mechanics, Installers & Repairers	\$65,510	HS diploma plus expr
43-1011	Supervisors - Office & Admin Support Workers	\$54,910	HS diploma plus expr
51-1011	Supervisors - Production & Operating Workers	\$58,980	Postsecondary training
53-1031	Supervisors - Transportation & Vehicle Operators	\$58,410	HS diploma plus expr
53-3032	Truck Drivers, Heavy & Tractor-Trailer	\$42,340	Postsecondary training
53-3033	Truck Drivers, Light or Delivery Services	\$33,080	Short-term OJT
51-4121	Welders, Cutters, Solderers & Brazers	\$39,020	Moderate-term OJT
53-7073	Wellhead Pumpers	\$42,330	HS diploma plus expr

Source: The Center for Workforce Information & Analysis

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

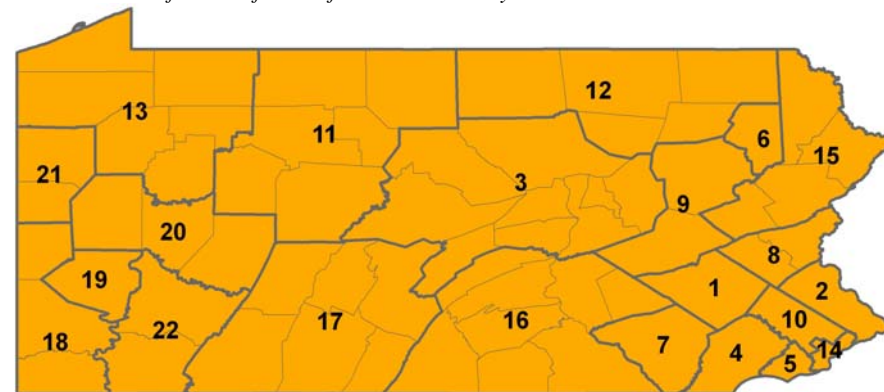
## **2014 REGIONAL HIGH-PRIORITY OCCUPATIONS RELATED TO MARCELLUS SHALE**

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).<sup>1</sup> 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	18,19,22
51-4031	Cutting, Punching & Press Machine Oprs	Moderate-term OJT	11
47-5011	Derrick Operators, Oil & Gas	Short-term OJT	3
17-2071	Electrical Engineers	Bachelor's degree	4
43-6011	Executive Secretaries & Admin Assist's	HS diploma plus expr	3,4,5,8,14,19
53-7071	Gas Compressor/Pumping Station Oprs	Moderate-term OJT	3
11-1021	General & Operations Managers	Bachelor's degree	1,3
43-9061	Office Clerks	Short-term OJT	1,3
53-7072	Pump Operators	Moderate-term OJT	3

Source: The Center for Workforce Information & Analysis



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

<sup>1</sup> 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