Ohio | Department of Job and Family Services

John R. Kasich, Governor
Cynthia C. Dungey, Director

Ohio Shale

Quarterly Economic Trends for Ohio Oil and Gas Industries

April 2017

Ohio | Department of Job and Family Services

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A Message from Director Dungey

Ohio is fortunate to have a natural resource that can provide good jobs for families and reinvigorate many of our communities, especially those in the eastern part of the state. As you'll see in the pages that follow, core shale-related employment, which includes such things as oil and gas pipeline construction and well drilling, increased 46.8 percent from the third quarter of 2011 to the third quarter of 2016. Ancillary employment – for example, freight trucking and environmental consulting – also increased. We expect non-shale industries, such as food and retail businesses near drilling sites and the surrounding communities, to benefit from shale activity, as well.

The average wages of shale-related jobs are excellent: $75,723 in core industries and $65,247 in ancillary industries. In both cases, this is higher than the average wage in all Ohio industries: $47,858.

At the Ohio Department of Job and Family Services (ODJFS), we have been working hard to help more Ohioans take advantage of these opportunities. We've been working closely with local workforce investment areas, community colleges, other post-secondary educational institutions, and employers to identify the occupations most in need of workers and to make sure that appropriate training programs are in place. In any given month, thousands of shale-related job openings are posted online, at **OhioMeansJobs.com**. The Ohio Department of Higher Education also provides an overview of shale-related employment opportunities and information about education and training at **OhioEnergyPathways.org**.

Individuals can sign up for on-the-job training opportunities at any of the state's local OhioMeansJobs centers, which provide job training and other services to Ohioans looking for work and employers looking for workers. Individuals can post their resumes, and employers can post job openings at **OhioMeansJobs.com**.

We encourage any Ohioans in need of work or who may be considering new careers to explore these opportunities. We're committed to improving the well-being of Ohio's workforce and families, and are excited about the potential shale holds to make a difference in so many families' lives.

Cynthia C. Dungey

Cynthia C. Dungey, Director
Ohio Department of Job and Family Services

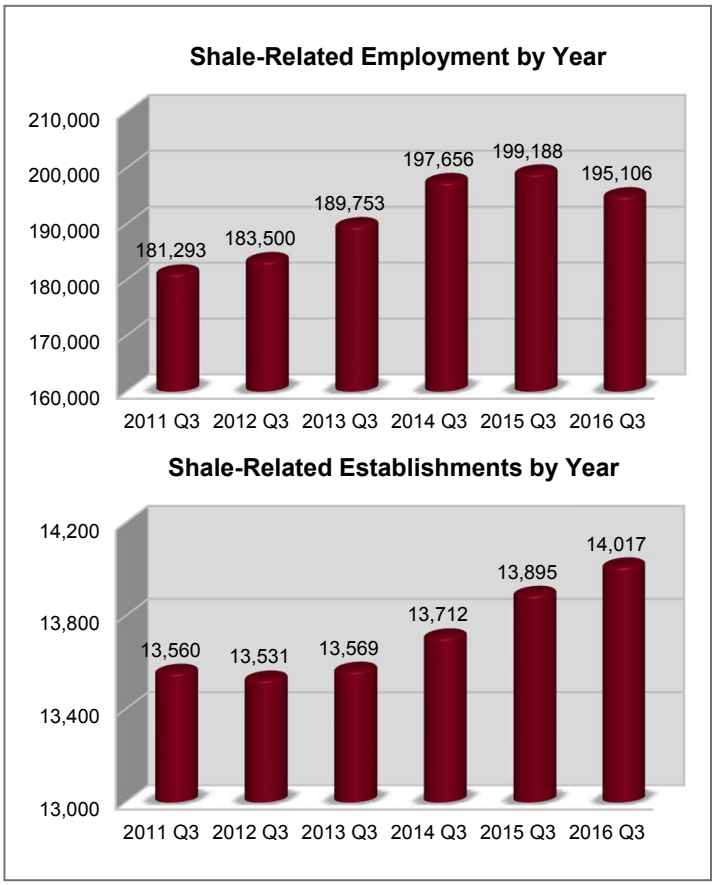
EXECUTIVE SUMMARY

Employment (2011 Q3 to 2016 Q13) See page 6.

- Core shale-related industry employment (such as pipeline construction and well drilling) was up by 3,413 (46.8 percent).
- Ancillary shale-related industry employment (such as freight trucking and environmental consulting) increased by 10,400 (6.0 percent).
- All industry employment was up by 340,557 (6.8 percent).

Business Establishments (2011 Q3 to 2016 Q3) See page 6.

- Core shale-related business establishments increased by 215 (35.2 percent).
- Ancillary shale-related establishments increased by 242 (1.9 percent).
- Over the same time period, Ohio experienced an increase of 4,567 (1.6 percent) business establishments in all industries.
- Shale-related business establishments totaled 13,813 during the third quarter of 2016.



Wages (2015 Q4 through 2016 Q3) See page 9.

- The four-quarter average wage across all industries was $47,858.
- The four-quarter average wage in core shale-related industries was $75,723, which was $27,865 greater than the average for all industries.
- The four-quarter average wage in ancillary shale-related industries was $65,247, which was $17,389 higher than the average for all industries.

Online Job Postings (2017 Q1) See page 10.

- Ohio had 3,923 online job postings in core and ancillary shale-related industries in 2017 Q1.

Stable Employment, All Hires and Separations (2011 Q1 to 2016 Q1) See page 14.

- Stable jobs, those present at the beginning and end of a quarter, increased in three core shale-related industries: support activities for mining, utility system construction, and pipeline transportation of natural gas.

These data are meant to provide a barometer of shale-related economic activity and employment trends. While the vast majority of shale-related employment can be found in certain industries, not all business establishments in those industries are involved in shale activity. For those that are, not all of their products and services and, therefore, their employment, are necessarily linked to shale-related economic activity.

BACKGROUND INFORMATION

Data Sources

The purpose of this quarterly publication is to provide the most current available data on shale-related economic activity in Ohio as compared to the base year of 2011. Although several data sources are cited in this publication, the primary source is the Quarterly Census of Employment and Wages (QCEW).

The QCEW program derives its data from quarterly tax reports of employers subject to state and federal unemployment insurance laws. This includes 95 percent or more of all wage and salary employment in Ohio. Under the QCEW program, employment data represent the number of covered workers who worked during, or received pay for, the pay period including the 12th of the month. Excluded are members of the armed forces, the self-employed, unpaid family workers and railroad workers covered by the railroad unemployment insurance system. Data is published approximately six months after the quarter ends.

Also included in this publication are several additional data sources that capture Ohio's most current overall economic situation (Local Area Unemployment Statistics and Current Employment Statistics), employer demand (The Conference Board Help Wanted OnLine™ Data Set) and hiring activity (Quarterly Workforce Indicators). For an explanation of all data sources, please refer to the "Definitions" section on page 18.

In this edition, most current data from the QCEW program are for the third quarter of 2016. Because the data are not seasonally adjusted, the same quarter of a given year must be used when analyzing growth over time. This will ensure that seasonal factors are not influencing employment change. Therefore, third quarter 2016 QCEW data are compared to third quarter 2011 QCEW data.

Data Limitations

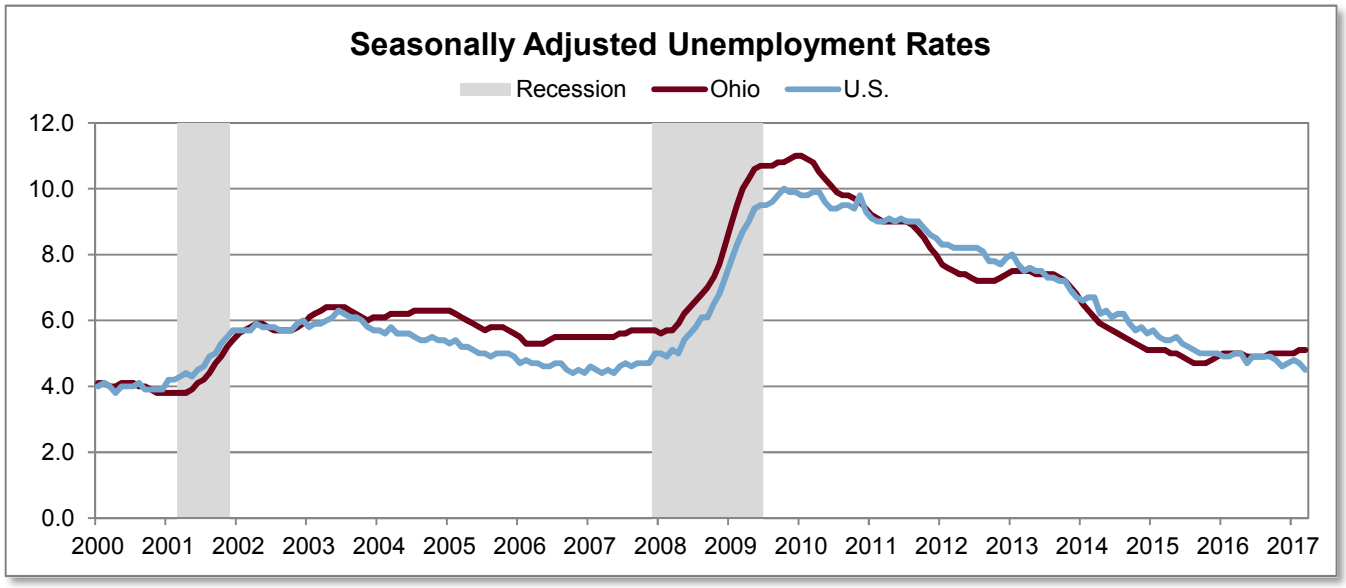
The North American Industry Classification System (NAICS) was used to define shale-related industries. Much of the information included in this publication reflects data on a group of six industries identified as "core" and a group of 30 industries identified as "ancillary." These data are meant to provide a barometer of shale-related economic activity and employment trends. While the vast majority of shale-related employment can be found in these industries, not all business establishments in these industries are involved in shale activity. For those that are, not all of their products and services and, therefore, their employment are necessarily linked to shale-related economic activity. This is particularly true for the ancillary industries.

The data in this publication include government employment (federal, state and local) in all shale-related industries because significant non-private employment is present in a number of these industries, most notably: highway, street and bridge construction; engineering services; water supply and irrigation systems; and sewage treatment facilities.

As shale-related activity develops further in Ohio, additional industries may be added to the ancillary group, based on such factors as significant employment gains in an industry in a geographic region or the identification of a group of companies in the same industry involved in shale-related activity.

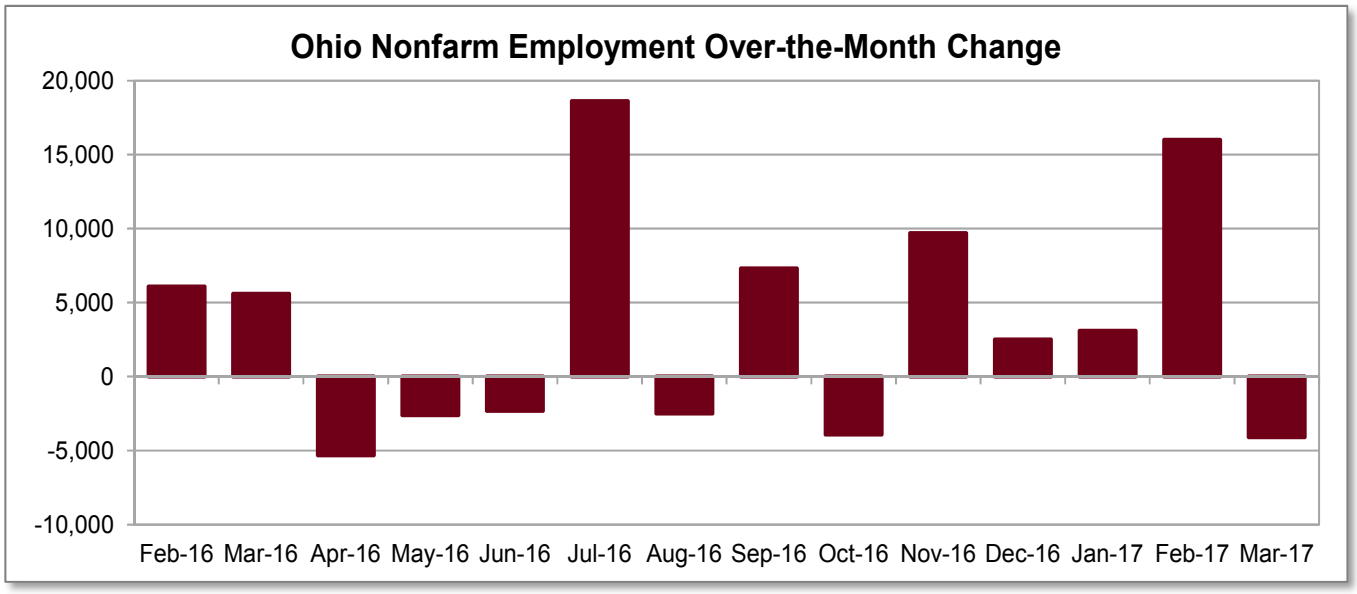
Snapshot of Employment in Ohio

- **Ohio's seasonally adjusted unemployment rate for March 2017 was 5.1 percent.**
  - The rate did not change from February.



Note: Recessionary periods as defined by the National Bureau of Economic Research (NBER).

- **Ohio had 5,518,700 seasonally adjusted nonfarm jobs in March 2017.**
  - Compared to March 2016, employment has increased by 36,500 jobs.



- **In March 2017, 11,300 workers were employed in the mining and logging industries.**
  - From March 2011 to March 2017, employment in the mining and logging industries did not change.

STATEWIDE SHALE-RELATED INDUSTRIES

- From 2011 Q3 to 2016 Q3, employment in core industries increased by 3,413 (46.8 percent). Over the same period, employment in ancillary industries increased by 10,400 (6.0 percent).

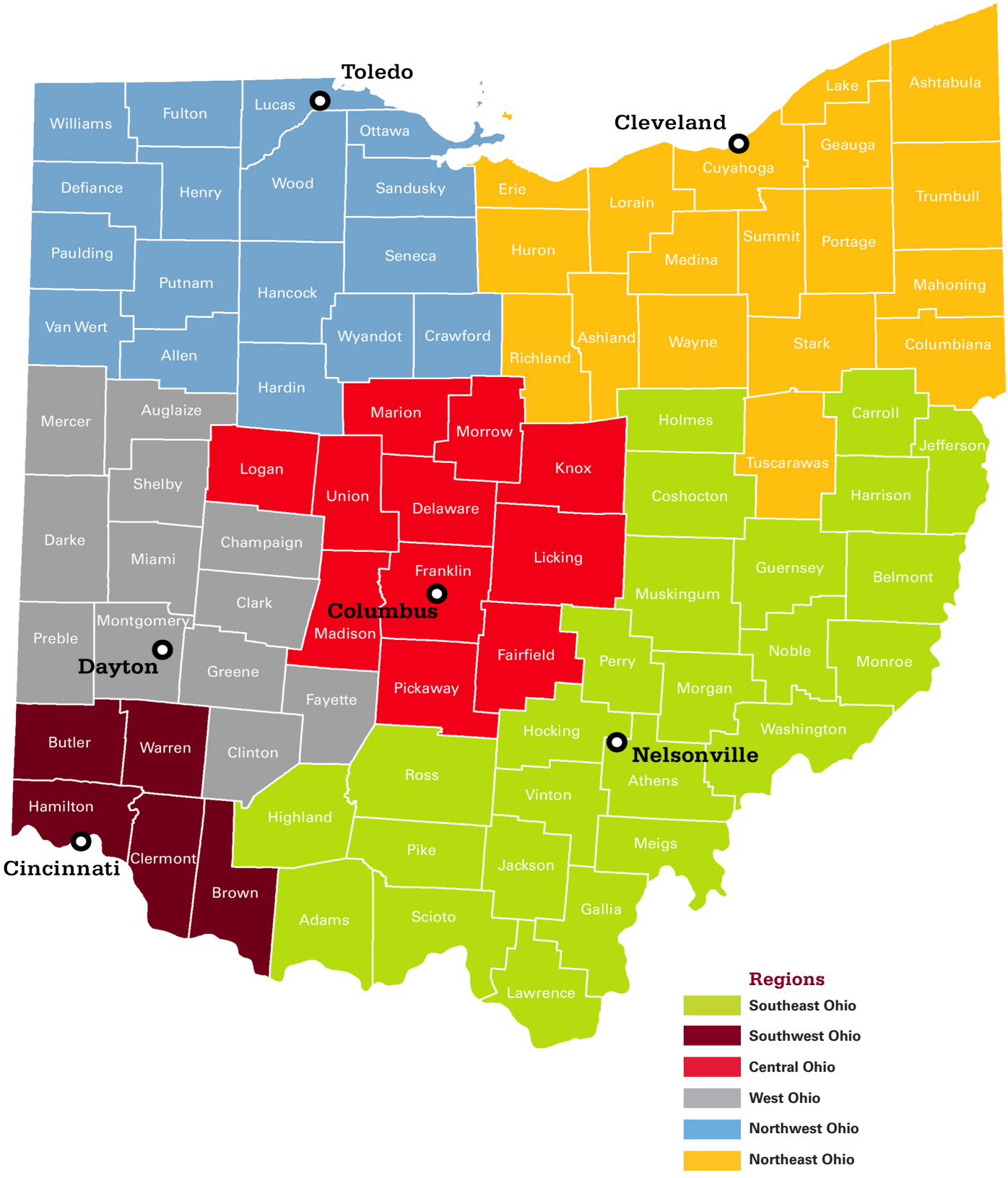
- From 2011 Q3 to 2016 Q3, the number of business establishments in the core industries grew by 215 (35.2 percent), while establishments in ancillary industries increased by 242 (1.9 percent).

Number of Business Establishments and Employment in Shale-Related Industries (2011 Q3 - 2016 Q3)

Core Industries		2011 Q3		2016 Q3		Change	
NAICS	Title	Estab.	Empl.	Estab.	Empl.	Estab.	Empl.
211111	Crude petroleum and natural gas extraction	200	2,894	172	1,258	-28	-1,636
211112	Natural gas liquid extraction	3	24	15	299	12	275
213111	Drilling oil and gas wells	84	628	111	1,121	27	493
213112	Support activities for oil and gas operations	187	1,353	305	2,914	118	1,561
237120	Oil and gas pipeline construction	100	2,083	174	4,624	74	2,541
486210	Pipeline transportation of natural gas	36	310	48	489	12	179
	Core Industry Totals	**610**	**7,292**	**825**	**10,705**	**215**	**3,413**
Ancillary Industries		**2011 Q3**		**2016 Q3**		**Change**	
NAICS	Title	Estab.	Empl.	Estab.	Empl.	Estab.	Empl.
221112	Fossil fuel electric power generation	83	5,302	72	4,113	-11	-1,189
221210	Natural gas distribution	146	3,910	151	5,520	5	1,610
221310	Water supply and irrigation systems	248	6,121	261	5,853	13	-268
221320	Sewage treatment facilities	212	3,859	213	3,849	1	-10
237110	Water and sewer system construction	385	5,611	355	6,176	-30	565
237310	Highway, street, and bridge construction	725	17,435	735	18,841	10	1,406
238912	Nonresidential site preparation contractors	630	5,885	651	6,769	21	884
325110	Petrochemical manufacturing	5	355	5	307	0	-48
325120	Industrial gas manufacturing	45	760	44	811	-1	51
331110	Iron and steel mills and ferroalloy manufacturing	60	10,419	59	7,503	-1	-2,916
331210	Iron, steel pipe and tube from purchase steel	54	3,163	37	2,703	-17	-460
333131	Mining machinery and equipment manufacturing	12	476	10	301	-2	-175
333132	Oil and gas field machinery and equipment	7	141	10	207	3	66
423810	Construction equipment merchant wholesalers	202	2,729	191	2,737	-11	8
423830	Industrial machinery merchant wholesalers	1,701	15,506	1,655	17,496	-46	1,990
423840	Industrial supplies merchant wholesalers	511	4,909	497	5,653	-14	744
484110	General freight trucking, local	1,371	12,256	1,395	13,225	24	969
484220	Other specialized trucking, local	1,013	7,571	1,071	8,643	58	1,072
484230	Other specialized trucking, long-distance	291	4,636	337	5,947	46	1,311
531190	Lessors of other real estate property	294	1,018	290	1,060	-4	42
532412	Other heavy machinery rental and leasing	168	1,363	205	1,977	37	614
541330	Engineering services	2,308	28,371	2,441	29,191	133	820
541360	Geophysical surveying and mapping services	51	272	58	238	7	-34
541380	Testing laboratories	364	6,587	399	6,807	35	220
541620	Environmental consulting services	297	1,766	325	1,961	28	195
562910	Remediation services	189	2,601	208	3,882	19	1,281
811310	Commercial machinery repair and maintenance	1,103	7,417	1,052	8,951	-51	1,534
924110	Air, water, and waste program administration	165	6,359	161	6,321	-4	-38
924120	Administration of conservation programs	281	6,723	272	6,861	-9	138
926130	Utility regulation and administration	29	480	32	498	3	18
	Ancillary Industry Totals	**12,950**	**174,001**	**13,192**	**184,401**	**242**	**10,400**
	Core Industries and Ancillary Industries Totals	**13,560**	**181,293**	**14,017**	**195,106**	**457**	**13,813**
	All Industries Totals	**289,289**	**5,009,939**	**293,856**	**5,350,496**	**4,567**	**340,557**

Source: Quarterly Census of Employment and Wages.

JOBSOHIO NETWORK REGIONS

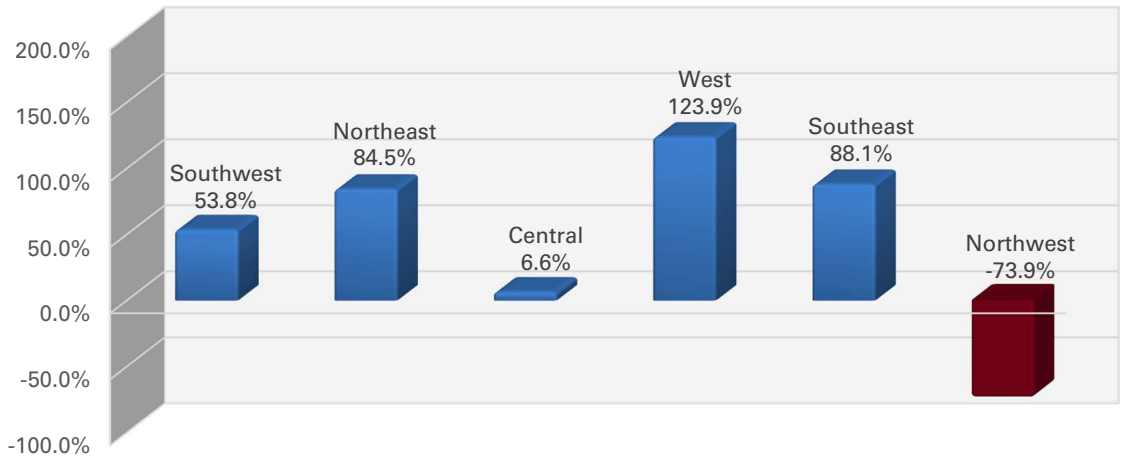


REGIONAL SHALE-RELATED INDUSTRIES

The JobsOhio Network is a partnership of statewide economic development organizations with deep ties to their business communities. The following charts show trends in shale-related employment for each of the six JobsOhio regions.

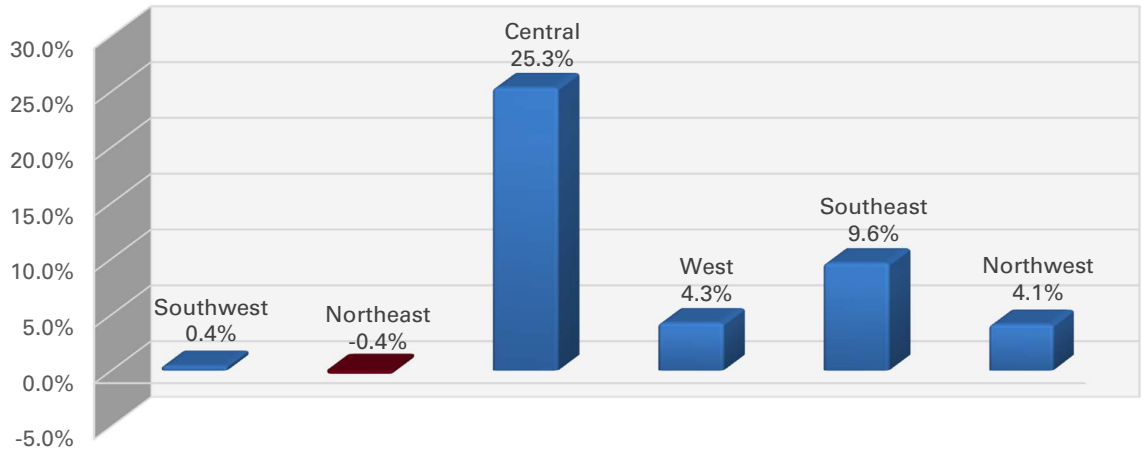
Large percentage increases and decreases in employment may be the result of a change in industry classification following a routine NAICS assignment review. Changes in NAICS assignments are typically done with the publication of the first-quarter data.

Core Shale-Related Industries
Percent Employment Change (2011 Q3 - 2016 Q3)



- The largest percent growth in employment for core shale-related industries was in the West region (123.9 percent), followed by the Southeast region (88.1 percent).

Ancillary Shale-Related Industries
Percent Employment Change (2011 Q3 - 2016 Q3)



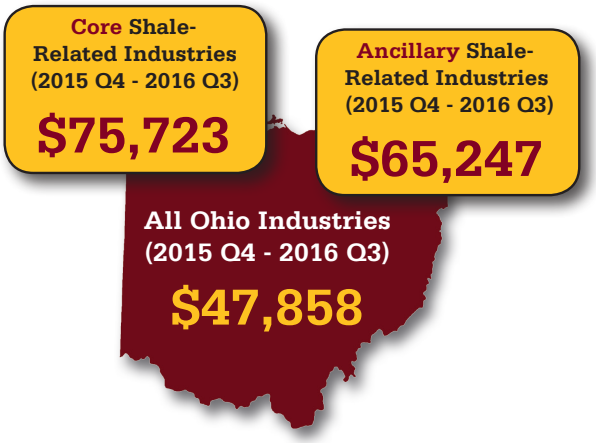
- For ancillary shale-related industries, the largest percent growth in employment was in the Central region (25.3 percent), followed by the Southeast region (9.6 percent).

Source: Quarterly Census of Employment and Wages program, Enhanced Quarterly Unemployment Insurance file.

WAGES FOR OHIO SHALE-RELATED CORE AND ANCILLARY INDUSTRIES

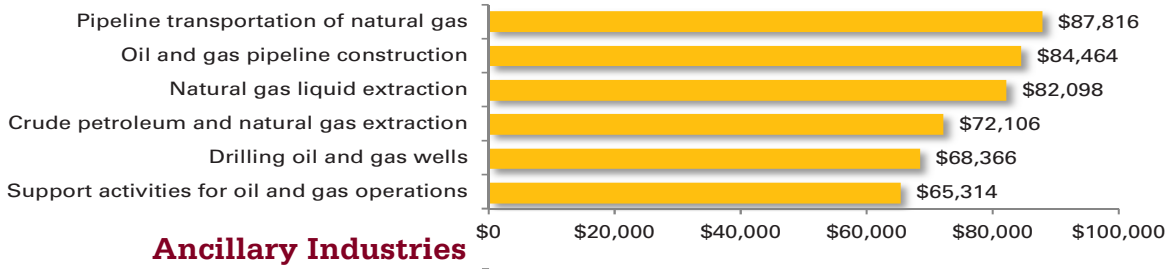
- The four-quarter average wage across all industries for 2015 Q4 through 2016 Q3 was $47,858.
- The four-quarter average wage in the core industries was $27,865 greater than the average wage for all industries.
- The four-quarter average wage in the ancillary industries was $17,389 higher than the average wage for all industries.

Large changes in average wages may be the result of a change in industry classification following a routine NAICS assignment review.

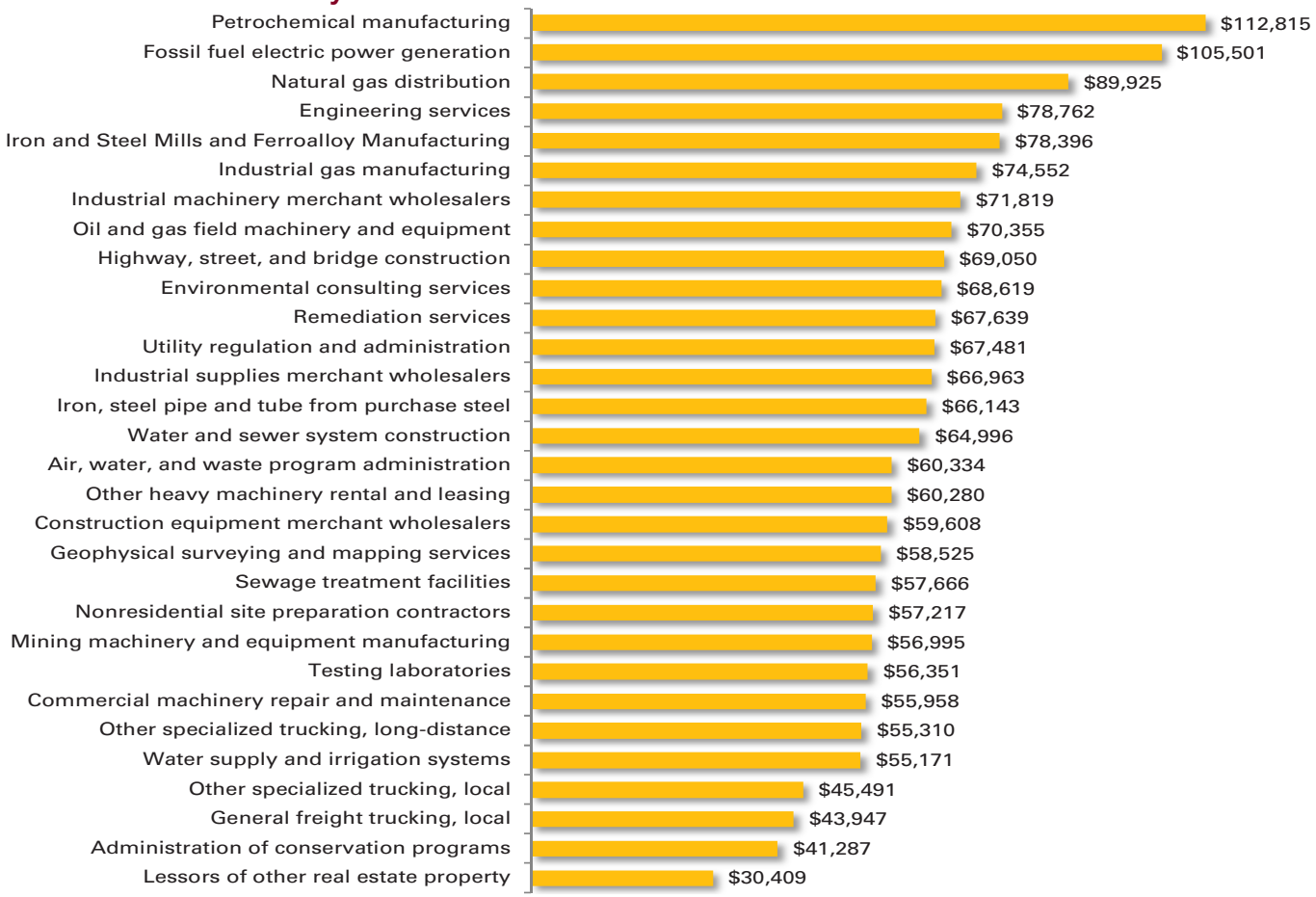


Four-Quarter Average Wage by Industry

Core Industries



Ancillary Industries



Source: Quarterly Census of Employment and Wages.

OHIO SHALE-RELATED ONLINE JOB POSTINGS

Statewide Online Job Postings

	2016 Q1	2017 Q1	% Change
Core Industries	51	73	43.1%
Ancillary Industries	4,297	3,850	-10.4%
Total: ALL Industries	**236,687**	**193,880**	**-18.1%**

Regional Online Job Postings

Core and Ancillary Combined	2016 Q1	2017 Q1	% Change
Southwest Ohio	950	934	-1.7%
Northeast Ohio	1,327	1,280	-3.5%
Central Ohio	870	775	-10.9%
West Ohio	434	340	-21.7%
Southeast Ohio	317	216	-31.9%
Northwest Ohio	420	373	-11.2%
Total*	**4,348**	**3,923**	**-9.8%**

Source: The Conference Board Help Wanted Online® (HWOL). New ads only. Data are subject to revision. Not seasonally adjusted. Excludes miscellaneous ads.

Data are not comparable to previous *Ohio Shale Quarterly Economic Trends for Ohio Oil and Gas Industries* reports due to HWOL 2016 methodological revisions.

**The total includes job ads that may have listed the entire state as the geographical area. As a result, the sum of the job ads for the regions may be lower, since it does not include ads without a city or metropolitan statistical area specification.*

Statewide Online Job Postings

- Overall, job postings increased in core (+43.1 percent) and decreased in ancillary (-10.4 percent) shale-related industries.
- Total job postings across all Ohio industries decreased 18.1 percent in 2017 Q1 compared to 2016 Q1.

Regional Online Job Postings

- Job postings decreased in all JobsOhio Network Regions in 2017 Q1 compared to 2016 Q1.

WELL ACTIVITY STATUS
AS OF APRIL 15, 2017

STATE OF OHIO
John R. Kasich, Governor
DEPARTMENT OF NATURAL RESOURCES
James Zehringer, Director
OFFICE OF INFORMATION TECHNOLOGY
Jeff Kenney, Chief

HORIZONTAL OIL AND GAS WELLS IN THE UTICA/POINT PLEASANT AND MARCELLUS FORMATIONS

OHIO DEPARTMENT OF NATURAL RESOURCES
2017

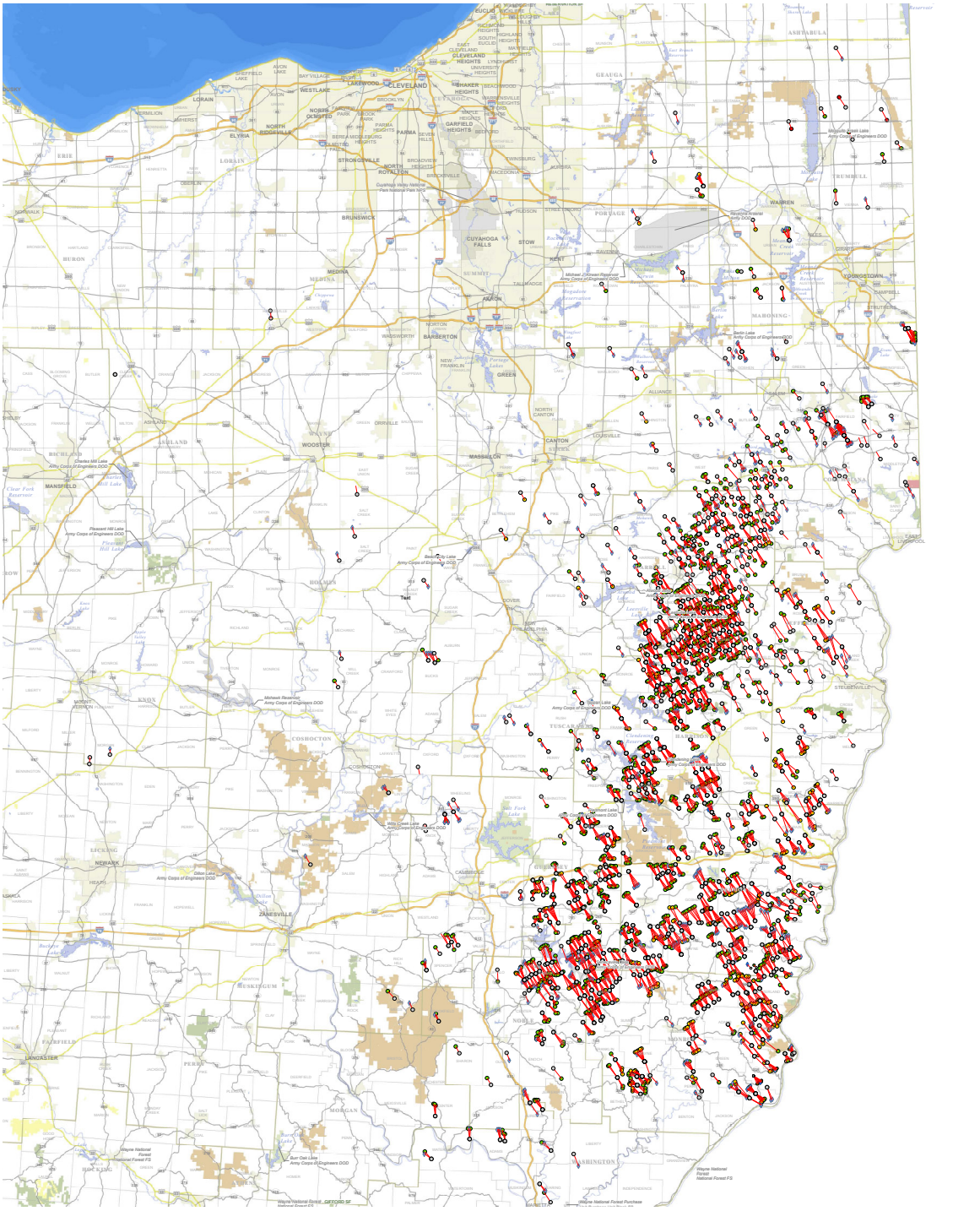
ODNR OFFICE OF INFORMATION TECHNOLOGY
April, 2017

Horizontal Wells Activity Status at end of Saturday 04/15/2017:

Wells Permitted To Date:
Utica: 2469
Marcellus: 46
(3 Utica-Permitted wells are not mapped due to bad locational coordinates.)
(14 Utica-Permitted wells are not mapped due to well length >= 15000 feet.)

Wells Drilled To Date:
Utica: 1964
Marcellus: 28
(2 Utica-Drilled wells are not mapped due to bad locational coordinates.)
(6 Utica-Drilled wells are not mapped due to well length >= 15000 feet.)

Wells Producing To Date:
Utica: 1540
Marcellus: 20
(1 Utica-Producing well is not mapped due to well length >= 15000 feet.)



Data source: The ODNR Division of Oil and Gas Resources provided the Well data from RBDMS; The ODNR Division of Geological Survey provided the S<SUB1</SUB> data; The ODNR Office of Information Technology provided the ODNR lands data; The NationalAtlas.gov provided the federal lands; Ohio Department of Transportation provided the city boundaries, roads, and lakes data.

KEY OCCUPATIONS IN CORE SHALE-RELATED INDUSTRIES

The occupations listed in the table below are found within the national staffing patterns of core shale-related industries. While these occupations are not exclusive to the core shale-related industries, all are in the top 20 of one or more of these industries.

A standard occupation classification (SOC) code is provided for each occupation. For a complete list of terms and definitions, please refer to the Staffing Patterns definition on page 19.

SOC Code	SOC Title	Median Annual Wage[1]	Typical Education, Work Experience, On-the-Job Training (OJT)
17-2171	Petroleum engineers	$109,580	Bachelor's degree
19-2042	Geoscientists, except hydrologists and geographers	$65,640	Bachelor's degree
19-4041	Geological and petroleum technicians	$50,240	Associate's degree; Moderate-term OJT
47-2011	Boilermakers	$57,990	HS/GED; Apprenticeship
47-2051	Cement masons and concrete finishers	$41,120	Less than HS; Moderate-term OJT
47-2151	Pipelayers	$43,890	Less than HS; Short-term OJT
47-2221	Structural iron and steel workers	$58,030	HS/GED; Apprenticeship
47-3015	Helpers--pipelayers, plumbers, pipefitters, and steamfitters	$23,820	HS/GED; Short-term OJT
47-5011	Derrick Operators, oil and gas	$40,000	Less than HS; Short-term OJT
47-5012	Rotary drill operators, oil and gas	$40,980	Less than HS; Moderate-term OJT
47-5021	Earth drillers, except oil and gas	$44,120	HS/GED; Moderate-term OJT
47-5071	Roustabouts, oil and gas	$30,510	Less than HS; Moderate-term OJT
47-5081	Helpers--extraction workers	$40,610	HS/GED; Moderate-term OJT
53-7021	Crane and tower operators	$37,760	HS/GED; 1-5 years experience; Moderate-term OJT
53-7032	Excavating and loading machine and dragline operators	$40,420	HS/GED; 1-5 years experience; Moderate-term OJT
53-7062	Laborers and freight, stock, and material movers, hand	$24,370	Less than HS; Short-term OJT

[1]Annual wages have been calculated by multiplying the hourly mean wage by 2,080 hours.
Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics, May 2015.

Ohio | Department of Job and Family Services

IN-DEMAND SHALE-RELATED OCCUPATIONS

The occupations listed below have been identified as in-demand occupations through the Ohio Workforce Information Exchange — Job Forecast initiative as of November 2016. This initiative works directly with employers with at least one Ohio location to identify employers' most in-demand occupations over the next one, three and five years.

For more information on the Workforce Information Exchange, please refer to page 20.

SOC Code	SOC Title	Median Annual Wage[1]	Typical Education, Work Experience, On-the-Job Training (OJT)
11-1021	General and Operations Managers	$89,950	Bachelor's degree, 1-5 Years Experience
11-9021	Construction Managers	$84,990	Bachelor's degree, Moderate-Term OJT
11-9041	Architectural and engineering managers	$120,520	Bachelor's degree; 5+ years experience
13-1051	Cost Estimators	$56,610	Bachelor's degree
13-1071	Human resources specialists	$54,670	Bachelor's degree
13-2011	Accountants and auditors	$63,350	Bachelor's degree
13-2051	Financial Analysts	$69,580	Bachelor's degree
13-1199	Business Operations Specialists, All Other	$62,410	HS/GED, Long-Term OJT
15-1199	Computer Occupations, All Other	$78,240	Bachelor's degree
17-2051	Civil Engineers	$76,190	Bachelor's degree
43-3031	Bookkeeping, Accounting, and Auditing Clerks	$35,800	HS/GED, Moderate-Term OJT
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	$59,710	HS/GED, 5+ Years Experience
47-2031	Carpenters	$43,780	HS/GED; Apprenticeship
47-2061	Construction Laborers	$36,730	Less than HS, Short-term OJT
47-2073	Operating Engineers and Other Construction Equipment Operators	$48,860	HS/GED, Moderate-Term OJT
47-2111	Electricians	$49,670	HS/GED, Apprenticeship
47-2152	Plumbers, Pipefitters, and Steamfitters	$51,780	HS/GED, Apprenticeship
47-5013	Service unit operators, oil, gas, and mining	$34,280	Less than HS, Moderate-term OJT
49-1011	First-line supervisors of mechanics, installers, and repairers	$60,240	HS/GED, 1-5 Years Experience
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	$43,920	HS/GED, Long-Term OJT
49-3042	Mobile heavy equipment mechanics, except engines	$47,480	HS/GED; Long-term OJT
49-9012	Control and valve installers and repairers, except mechanical door	$64,950	HS/GED, Moderate-term OJT
49-9041	Industrial machinery mechanics	$47,040	HS/GED, Long-term OJT
49-9071	Maintenance and Repair Workers, General	$37,520	HS/GED, Long-Term OJT
51-1011	First-line supervisors of production and operating workers	$55,490	Post-HS cert, 1-5 Years Experience
51-4121	Welders, Cutters, Solderers and Brazers	$36,340	HS/GED, Moderate-Term OJT
51-8093	Petroleum pump system operators, refinery operators, and gaugers	$61,590	HS/GED, Long-term OJT
51-9199	Production workers, all other	$31,460	HS/GED, Moderate-Term OJT
53-3032	Heavy and Tractor-Trailer Truck Drivers	$40,860	HS/GED, Short-Term OJT
53-7073	Wellhead Pumpers	$33,850	Less than HS, Moderate-Term OJT

[1]Annual wages have been calculated by multiplying the hourly mean wage by 2,080 hours.
Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics, May 2015.

STATEWIDE SHALE-RELATED EMPLOYMENT DATA

The Quarterly Workforce Indicators (QWI) are a set of economic indicators derived from state administrative records and basic demographic information from the Census Bureau. They can be examined based on geography, industry, gender and age of workers. Data presented are the most recent available. Because QWI data are not seasonally adjusted, the same quarter must be used when analyzing changes over time. This will ensure that seasonal factors are not influencing employment change. Therefore, in the table below and on the following page, 2011 Q1 data is presented with 2016 Q1 data.

The tables below and on the following page show Ohio shale-related employment. "Stable Employment" is an estimate of the number of jobs that were present at the beginning and end of a quarter. "All Hires" is the estimated number of workers who started a job during the quarter; it includes new and recalled employees. "Separations" is the estimated number of workers whose jobs with a given employer ended during a quarter.

Ohio	2011 Q1			2016 Q1		
	Stable Employment	All Hires	Separations	Stable Employment	All Hires	Separations
All industry groups	4,307,064	590,804	554,621	4,590,058	700,286	681,518
2111 Oil and Gas Extraction	2,784	188	93	1,556	200	245
2131 Support Activities for Mining	2,248	648	469	4,026	579	1,111
2371 Utility System Construction	7,602	1,387	1,417	10,973	5,129	3,133
4862 Pipeline Transportation of Natural Gas	317	13	21	496	44	17

Source: U.S. Census Bureau, Longitudinal Employer-Household Dynamics, Quarterly Workforce Indicators.

QWI are available only at the four-digit NAICS level. Consequently, although these industry groups contain some employment from non-shale-related core industries, they provide an indication of labor activity for these shale-related industries.

- Stable jobs, those present at the beginning and end of a quarter, increased in three core shale-related industries from 2011 Q1 to 2016 Q1: support activities for mining, utility system construction, and pipeline transportation of natural gas.
- The job market has significant turnover as demonstrated by the number of hires and separations.

JOBSOHIO NETWORK SHALE-RELATED EMPLOYMENT

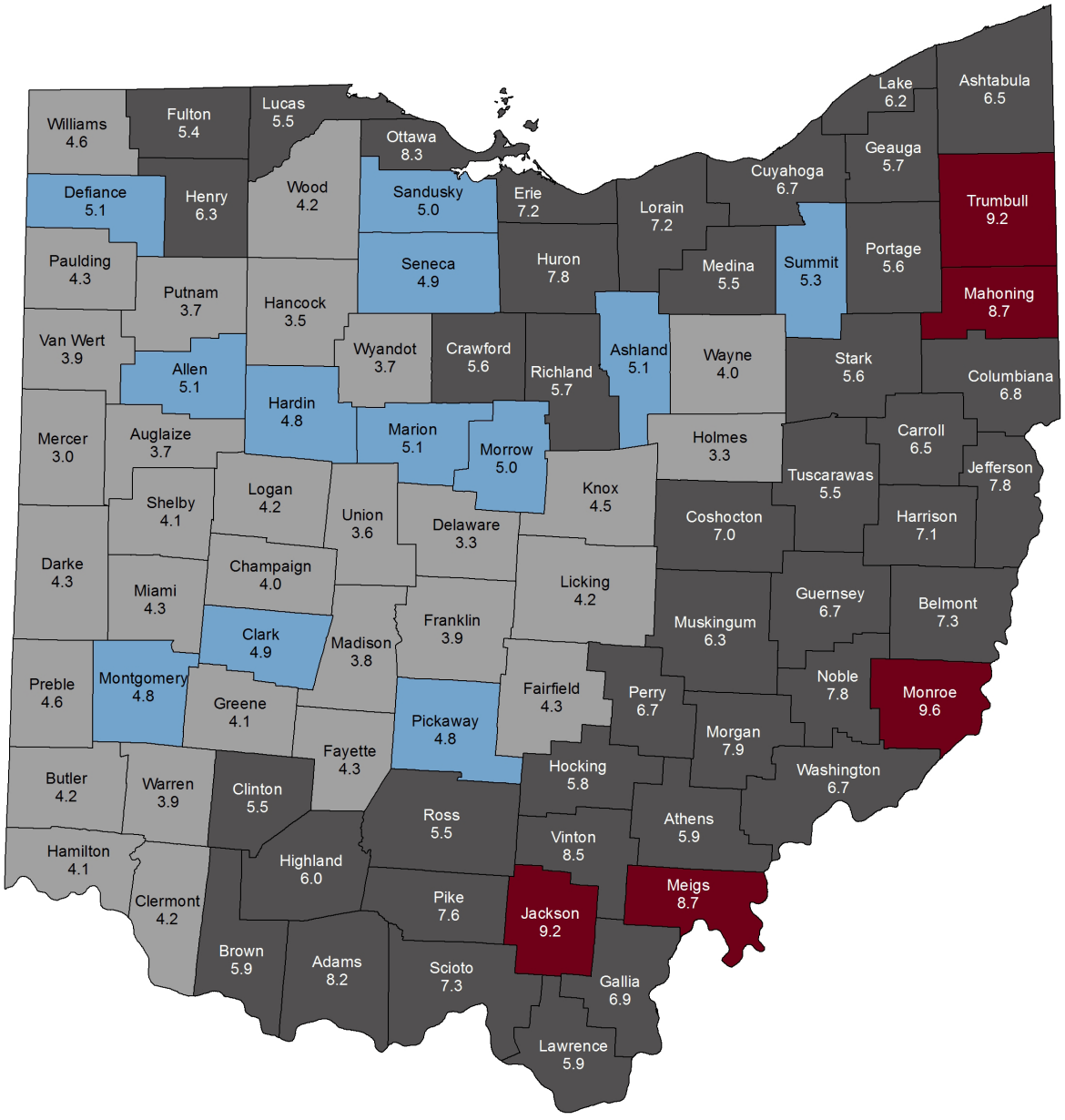
Central Ohio	2011 Q1			2016 Q1		
	Stable Employment	All Hires	Separations	Stable Employment	All Hires	Separations
All industry groups	848,036	124,578	113,319	933,357	150,187	148,778
2111 Oil and Gas Extraction	180	9	5	176	0	15
2131 Support Activities for Mining	145	48	23	185	13	16
2371 Utility System Construction	1,413	272	210	2,627	947	737
4862 Pipeline Transportation of Natural Gas	115	6	8	225	15	7
Northeast Ohio						
All industry groups	1,636,544	215,698	200,875	1,712,439	244,320	244,241
2111 Oil and Gas Extraction	625	61	30	714	89	117
2131 Support Activities for Mining	663	85	90	1,734	241	454
2371 Utility System Construction	2,784	540	604	3,220	1,414	789
4862 Pipeline Transportation of Natural Gas	88	4	6	106	11	6
Northwest Ohio						
All industry groups	448,080	56,916	58,860	476,356	77,380	69,918
2111 Oil and Gas Extraction	1,534	88	30	***	***	***
2131 Support Activities for Mining	18	0	0	28	7	5
2371 Utility System Construction	1,007	110	180	1,446	1,561	599
4862 Pipeline Transportation of Natural Gas	26	***	***	31	***	0
Southeast Ohio						
All industry groups	259,389	34,260	32,331	267,490	38,354	37,104
2111 Oil and Gas Extraction	364	20	26	660	106	106
2131 Support Activities for Mining	1,402	508	351	2,011	266	606
2371 Utility System Construction	570	259	182	873	572	441
4862 Pipeline Transportation of Natural Gas	75	3	4	87	9	4
Southwest Ohio						
All industry groups	665,491	101,271	92,048	728,496	117,603	110,857
2111 Oil and Gas Extraction	80	10	***	6	***	***
2131 Support Activities for Mining	5	***	***	3	5	23
2371 Utility System Construction	1,259	131	161	1,974	476	412
4862 Pipeline Transportation of Natural Gas	***	0	***	46	8	***
West Ohio						
All industry groups	449,525	58,081	57,188	471,920	72,442	70,619
2111 Oil and Gas Extraction	***	0	0	***	***	***
2131 Support Activities for Mining	15	5	4	65	47	7
2371 Utility System Construction	569	75	79	833	159	155
4862 Pipeline Transportation of Natural Gas	***	0	0	0	0	0

Source: U.S. Census Bureau, Longitudinal Employer-Household Dynamics, Quarterly Workforce Indicators.
****Indicates data cannot be disclosed due to confidentiality restrictions or data quality standards.*

Quarterly Workforce Indicators are available only at the four-digit NAICS level. Consequently, although these industry groups contain some employment from non-shale-related core industries, they help provide an indication of labor activity for these shale-related industries.

Ohio | Department of Job and Family Services

COUNTY UNEMPLOYMENT RATES IN MARCH 2017
(Not Seasonally Adjusted)



Unemployment Rates

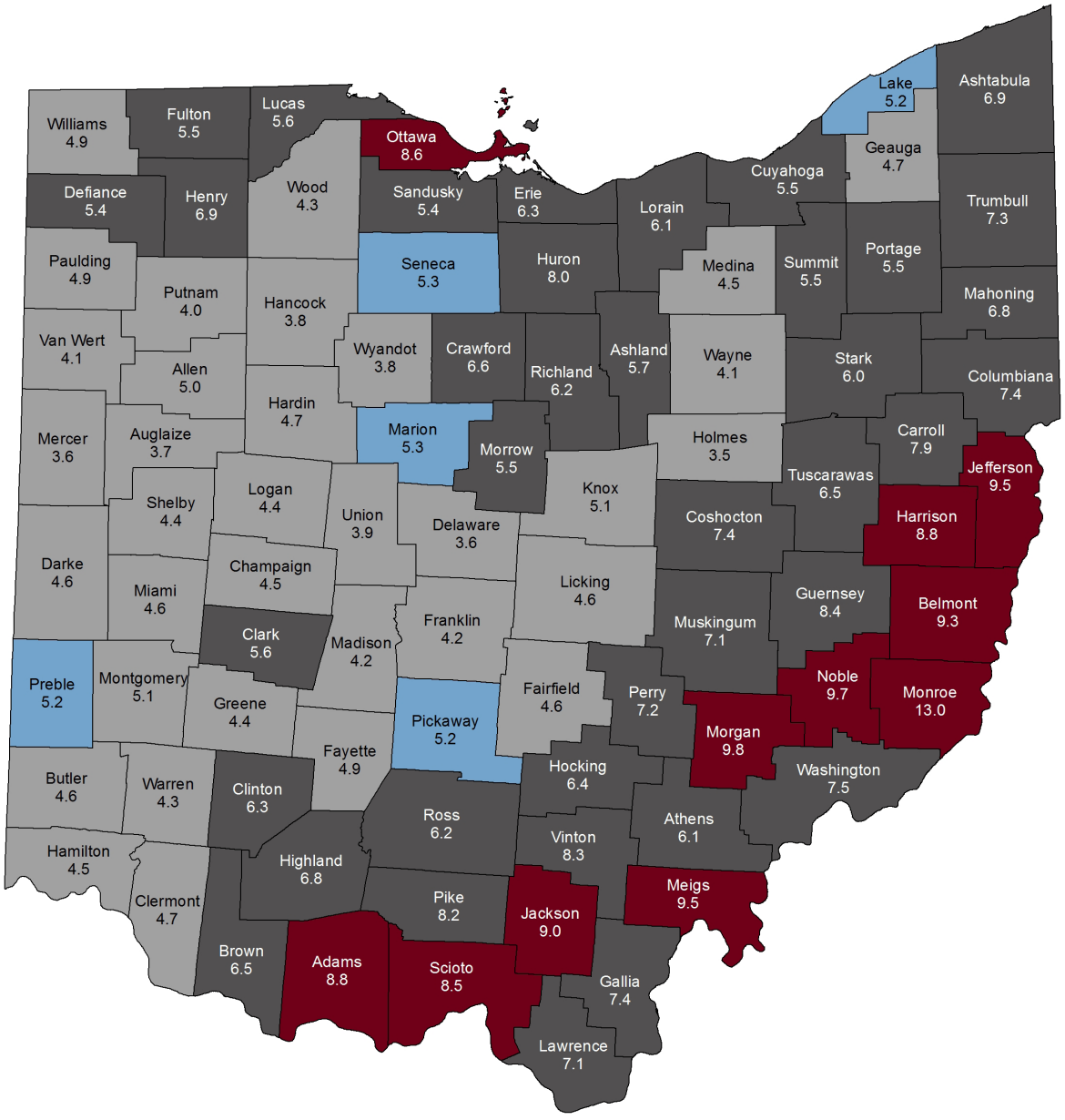
	Not Seasonally Adjusted	Seasonally Adjusted
United States	4.6%	4.5%
Ohio	5.3%	5.1%

4.6% or Lower
4.7% to 5.3%
5.4% to 8.5%
8.6% or Higher

Source: Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
*Data are preliminary and subject to revision.

Ohio | Department of Job and Family Services

COUNTY UNEMPLOYMENT RATES IN MARCH 2016
(Not Seasonally Adjusted)



Unemployment Rates

	Not Seasonally Adjusted	Seasonally Adjusted
United States	5.1%	5.0%
Ohio	5.3%	5.0%

5.1% or Lower
5.2% to 5.3%
5.4% to 8.4%
8.5% or Higher

Source: Ohio Department of Job and Family Services
Office of Workforce Development
Bureau of Labor Market Information
*Data based on 2016 benchmark.

DEFINITIONS

OHIO LABOR FORCE STATISTICS*

Source: Ohio Department of Job and Family Services' Bureau of Labor Market Information, 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 LAUS program measures employment and unemployment on a place-of-residence basis and produces estimates using equations based on regression techniques. This method uses data from several sources, including the CPS, the Current Employment Statistics (CES) program and state unemployment insurance programs. The LAUS program does not produce estimates for any demographic groups.

Employment – A count of all persons who, during the week that 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 – The population of people either working or looking for work, or classified as employed or unemployed.

Unemployment – A count of all persons age 16 and older who had no employment during the reference week (the week containing the 12th day of the month), who were available for work (except for temporary illness), and who had made specific efforts to find employment sometime during the four-week period ending with the reference week. This includes those waiting to be recalled to jobs from which they had been laid off.

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

JOB DATA*

Source: Ohio Department of Job and Family Services' Bureau of Labor Market Information, Current Employment Statistics

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

Nonfarm Jobs – The total number of persons on established 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 worked during only part of the specified pay period. A striking employee who works only a small portion of the survey period, and is paid, is included as employed. Those on payrolls of more than one establishment are counted in each establishment. Data exclude proprietors, self-employed workers, unpaid family or volunteer workers, farm workers, and domestic workers. Those 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.

QUARTERLY WORKFORCE INDICATORS

Source: U.S. Census Bureau

The Quarterly Workforce Indicators are data that can be examined by region, industry, gender and age of workers. These indicators are built on wage records in the unemployment insurance system and information from state Quarterly Census of Employment and Wages (QCEW) data.

*THESE DATA ARE SEASONALLY ADJUSTED. Seasonal adjustment removes changes in employment due to normal seasonal hiring or layoffs (such as holidays, weather, etc.).

DEFINITIONS

QUARTERLY CENSUS OF EMPLOYMENT AND WAGES

Source: Ohio Department of Job and Family Services' Bureau of Labor Market Information, Quarterly Census of Employment and Wages

Business Establishment – An establishment is the location of a certain economic activity, such as a factory, store, office or mine, which 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.

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

Wages – 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: Ohio Department of Job and Family Services' Bureau of Labor Market Information

A staffing pattern is a list of the occupations most commonly found within a particular industry. This information comes from the biennial Long-Term Occupational Employment Projections data.

Annual Median Wage – The annual median wage earned by workers in an occupation, assuming 40 hours of work per week, 52 weeks a year. Wage data is derived from the annual Occupational Employment Statistics survey.

Typical Education, Training and Experience – To assist with career planning, the BLS has determined the typical education needed for entry into an occupation, years of commonly needed work experience in a related occupation, and typical on-the-job training needed to attain competency in the occupation. For definitions of available categories, see **bls.gov/emp/ep_education_tech.htm**.

Typical Education Levels

- Less than high school
- High school diploma or equivalent (HS/GED)
- Postsecondary non-degree award (Post-HS Cert.)
- Associate's degree
- Bachelor's degree
- Master's degree
- Doctoral or professional degree

Work Experience in a Related Occupation

- Five years or more
- One to five years
- Less than one year

Typical On-The-Job (OJT) Training

- Long-term OJT – More than 12 months OJT or combined work experience and formal classroom instruction
- Moderate-term OJT – One to 12 months OJT and informal training
- Short-term OJT – Less than one month OJT

ONLINE JOB POSTINGS

Source: The Conference Board Help Wanted OnLine™ Data Set

The Conference Board HWOL data set provides real-time insight into the employment marketplace through the world's largest database of online job ads. Job 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.

DEFINITIONS

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS) CHANGES

NAICS, established in 1997, is reviewed for potential revisions every five years. The latest revision, in 2012, was implemented by BLS in the QCEW program with the release of first quarter 2011 data. As part of this revision, the NAICS code of only one 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).

Core Shale-Related 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).

Ancillary Shale-Related 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 (3311101); 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); and Regulation and Administration of Communications, Electric, Gas, and Other Utilities (926130).

WORKFORCE INFORMATION EXCHANGE

Source: Governor's Office of Workforce Transformation

(workforce.ohio.gov)

The Governor's Office of Workforce Transformation deployed a statewide jobs forecasting tool to the top companies of predefined industry clusters. These companies represent small, medium and large businesses with at least 10 employees and at least one Ohio location. Through the forecasting tool, businesses identify the top five critical, difficult-to-fill job needs over the next one, three and five years. The information from the forecast tool is aggregated with current job postings and occupation projections from ODJFS to better align the in-demand jobs with education and training providers and Ohio's workforce development system.

John R. Kasich, Governor
State of Ohio

Cynthia C. Dungey, Director
Ohio Department of Job and Family Services

April 2017