

OHIO SHALE REPORT

A map of Ohio showing its 88 counties. Twenty-five counties are highlighted in orange, indicating shale regions. These counties are: Ashtabula, Geauga, Trumbull, Portage, Mahoning, Columbiana, Stark, Wayne, Ashland, Medina, Summit, Cuyahoga, Lorain, Huron, Erie, Sandusky, Seneca, Hancock, Putnam, Van Wert, Allen, Mercer, Auglaize, Hardin, Wyandot, Crawford, Richland, Morrow, Knox, Holmes, Tuscarawas, Carroll, Jefferson, Harrison, Belmont, Guernsey, Noble, Monroe, Washington, Morgan, Perry, Fairfield, Licking, Delaware, Union, Logan, Champaign, Clark, Madison, Franklin, Pickaway, Fayette, Ross, Pike, Adams, Scioto, Jackson, Meigs, Gallia, Lawrence, Vinton, Hocking, Athens, and Meigs. The remaining 63 counties are shaded in light gray.

Table of Contents

A Message from Director Dungey.....	2
Introduction.....	3
Core Shale-Related Industry Employment	3
Business Establishments in Core Industries.....	4
Ancillary Shale-Related Industry Employment	5
Business Establishments in Ancillary Industries.....	6
Demand for Workers in Shale-Related Occupations	7
Key Shale-Related Occupations	8
Shale-Related Industries' Worker State of Residence	10
Total Wage Growth in the Core Shale-Related Industries.....	11
Regional Workforce Development Plans	12
Summary.....	12



A Message from Director Dungey

Ohio's shale-related industries experienced change in 2015. As a result of lower oil and gas prices worldwide, the number of oil and gas drilling rigs nationally and in Ohio dropped. The growth experienced through 2014 slowed in some industries and reversed in others. By the end of 2015, the number of oil and gas rigs in Ohio was less than half of the state's 2014 peak.

At the same time, however, the number of Ohio business establishments in the core shale-related industries grew by 47 from 2014 to 2015, a 5.8 percent increase. In addition, employment and wage losses in Ohio were modest. Employment in the core shale-related industries declined only 2.9 percent from 2014 to 2015, and total wages in those industries declined only 1.1 percent. In the fourth quarter of 2015, the number of online job ads in both the core and ancillary industries increased substantially (170.1 percent and 66 percent) over the fourth quarter of 2014. In May 2015, 29 of the 38 key shale-related occupations had median annual wages above the state annual median wage of \$35,030.

In partnership with the U.S. Department of Labor's Bureau of Labor Statistics, the Ohio Department of Job and Family Services' Bureau of Labor Market Information collects and analyzes shale-related employment data for Ohio. The pages that follow provide a synopsis of this information for 2015. For more frequent reports, see *Ohio Shale: Quarterly Economic Trends for Ohio Oil and Gas Industries*. Both the quarterly and annual reports can be found at ohiolmi.com.

A handwritten signature in black ink that reads "Cynthia C. Dungey". The signature is fluid and cursive.

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

Introduction

Ohio Revised Code section 6301.12 calls for the publication of an annual report assessing the direct and indirect economic impact of businesses engaged in the production of horizontal wells. This report fulfills that requirement by presenting available economic data on businesses engaged in the production of oil and gas wells in Ohio. This report focuses on employment in core and ancillary shale industries. It does not encompass all economic activity related to Ohio's shale industry. For example, increased business and employment at restaurants and retail stores located near shale development is not reflected in this report. Much of the information in this report reflects data for a group of six industries defined as "core" shale-related industries and a group of 30 industries defined as "ancillary" shale-related industries. 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-related 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.

This report shows annual employment and business establishment changes in core and ancillary shale-related industries from 2014 to 2015. This includes data for government employment (federal, state and local) in shale-related industries that have significant non-private employment, most notably engineering services, water supply and irrigation systems, sewage treatment facilities, and highway, street and bridge construction. This report also shows worker demand, key occupations in shale-related industries, residency status of new hires in core and ancillary industries, and average wages. It also offers a summary of regional workforce development plans. The final section summarizes the impact of these factors.

Core Shale-Related Industry Employment

Employment in core shale-related industries declined slightly from 2014 to 2015. Overall employment in the core industries dropped 2.9 percent, a loss of 401 jobs, but activity was mixed among the industries. Four core industries declined: crude petroleum and natural gas extraction, natural gas liquid extraction, drilling oil and gas wells, and oil and gas pipeline construction. Oil and gas pipeline construction had the largest job loss at 322; crude petroleum and natural gas extraction had the largest percentage loss at -15.5 percent. Support activities for oil and gas operations added 388 jobs, a 10.3 percent increase. Pipeline transportation of natural gas added 47 jobs, a 13.6 percent increase. See Figure 1 for details about employment in the core shale-related industries.

Figure 1. Core Shale-Related Industry Annual Employment Averages and Year-to-Year Change

NAICS	Title	Average Employment, 2014	Average Employment, 2015	Numeric Change	Percent Change
211111	Crude Petroleum and Natural Gas Extraction	1,877	1,586	-291	-15.5%
211112	Natural Gas Liquid Extraction	449	435	-14	-3.1%
213111	Drilling Oil and Gas Wells	1,709	1,500	-209	-12.2%
213112	Support Activities for Oil and Gas Operations	3,771	4,159	388	10.3%
237120	Oil and Gas Pipeline Construction	5,739	5,417	-322	-5.6%
486210	Pipeline Transportation of Natural Gas	345	392	47	13.6%
Core Industries Totals		13,890	13,489	-401	-2.9%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Business Establishments in Core Industries

The number of Ohio business establishments in the core shale-related industries grew by 47 from 2014 to 2015, a 5.8 percent increase. The growth in core industry establishments was led by support activities for oil and gas operations, which added 35 establishments. Crude petroleum and natural gas extraction declined by 13 establishments. See Figure 2 for details about establishment growth in the core shale-related industries.

Figure 2. Core Shale-Related Industry Annual Establishment Averages and Year-to-Year Change

NAICS	Title	Average Number of Establishments, 2014	Average Number of Establishments, 2015	Numeric Change	Percent Change
211111	Crude Petroleum and Natural Gas Extraction	203	190	-13	-6.4%
211112	Natural Gas Liquid Extraction	18	20	2	11.1%
213111	Drilling Oil and Gas Wells	103	111	8	7.8%
213112	Support Activities for Oil and Gas Operations	273	308	35	12.8%
237120	Oil and Gas Pipeline Construction	153	166	13	8.5%
486210	Pipeline Transportation of Natural Gas	41	43	2	4.9%
Core Industries Totals		791	838	47	5.9%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Ancillary Shale-Related Industry Employment

Ancillary shale-related industries are indirectly involved with shale oil and gas well drilling and development. These industries provide products or support services to the core shale-related industries and many other industries, as well. Although data show that employment in ancillary shale-related industries grew by 1.8 percent from 2014 to 2015, much of this increase was not actual employment growth, but the result of an industry reclassification after a routine North American Industry Classification System (NAICS) review. See Figure 3 for details about employment in the 30 ancillary shale-related industries.

Figure 3. Ancillary Shale-Related Industry Annual Employment Averages and Year-to-Year Change

NAICS	Title	Average Employment, 2014	Average Employment, 2015	Numeric Change	Percent Change
221112	Fossil fuel electric power generation	3,742	3,763	21	0.6%
221210	Natural gas distribution	4,021	5,316	1,295	32.2%
221310	Water supply and irrigation systems	6,008	5,991	-17	-0.3%
221320	Sewage treatment facilities	3,813	3,788	-25	-0.7%
237110	Water and sewer line system construction	5,283	5,240	-43	-0.8%
237310	Highway, street, and bridge construction	15,609	16,196	587	3.8%
238912	Nonresidential site preparation contractors	5,994	6,073	79	1.3%
325110	Petrochemical manufacturing	328	327	-1	-0.3%
325120	Industrial gas manufacturing	742	732	-10	-1.3%
331110	Iron, steel mills and ferroalloy manufacturing	8,938	8,532	-406	-4.5%
331210	Iron, steel pipe and tube from purchased steel	2,955	2,770	-185	-6.3%
333131	Mining machinery and equipment manufacturing	454	427	-27	-5.9%
333132	Oil and gas field machinery and equipment	428	246	-182	-42.5%
423810	Construction equipment merchant wholesalers	3,417	3,567	150	4.4%
423830	Industrial machinery merchant wholesalers	16,861	17,292	431	2.6%
423840	Industrial supplies merchant wholesalers	5,552	5,626	74	1.3%
484110	General freight trucking, local	12,400	13,109	709	5.7%
484220	Other specialized trucking, local	8,221	8,207	-14	-0.2%
484230	Other specialized trucking, long-distance	5,720	5,960	240	4.2%
531190	Lessors of other real estate property	935	974	39	4.2%
532412	Other heavy machinery rental and leasing	2,161	2,304	143	6.6%
541330	Engineering services	29,258	28,893	-365	-1.2%
541360	Geophysical surveying and mapping services	315	352	37	11.7%
541380	Testing laboratories	6,228	6,292	64	1.0%
541620	Environmental consulting services	1,824	1,934	110	6.0%
562910	Remediation services	3,616	3,700	84	2.3%
811310	Commercial machinery repair and maintenance	7,820	8,094	274	3.5%
924110	Air, water, and waste program administration	6,108	6,164	56	0.9%
924120	Administration of conservation programs	5,731	5,805	74	1.3%
926130	Utility regulation and administration	115	141	26	22.6%
Ancillary Industry Totals		174,597	177,815	3,218	1.8%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Business Establishments in Ancillary Industries

The number of business establishments in ancillary shale-related industries increased by 166 from 2014 to 2015, a 1.3 percent increase. However, some of this was the result of an industry reclassification after a routine NAICS review. See Figure 4 for details.

Figure 4. Ancillary Shale-Related Industry Annual Establishment Averages and Year-to-Year Change

NAICS	Title	Average Establishments, 2014	Average Establishments, 2015	Numeric Change	Percent Change
221112	Fossil fuel electric power generation	70	72	2	2.9%
221210	Natural gas distribution	145	149	4	2.8%
221310	Water supply and irrigation systems	263	267	4	1.5%
221320	Sewage treatment facilities	209	212	3	1.4%
237110	Water and sewer line system construction	367	364	-3	-0.8%
237310	Highway, street, and bridge construction	726	724	-2	-0.3%
238912	Nonresidential site preparation contractors	602	629	27	4.5%
325110	Petrochemical manufacturing	5	5	0	0.0%
325120	Industrial gas manufacturing	43	44	1	2.3%
331110	Iron, steel mills and ferroalloy manufacturing	57	60	3	5.3%
331210	Iron, steel pipe and tube from purchased steel	37	38	1	2.7%
333131	Mining machinery and equipment manufacturing	13	12	-1	-7.7%
333132	Oil and gas field machinery and equipment	12	10	-2	-16.7%
423810	Construction equipment merchant wholesalers	196	201	5	2.6%
423830	Industrial machinery merchant wholesalers	1,606	1,605	-1	-0.1%
423840	Industrial supplies merchant wholesalers	485	491	6	1.2%
484110	General freight trucking, local	1,351	1,395	44	3.3%
484220	Other specialized trucking, local	1,047	1,051	4	0.4%
484230	Other specialized trucking, long-distance	328	347	19	5.8%
531190	Lessors of other real estate property	280	286	6	2.1%
532412	Other heavy machinery rental and leasing	192	193	1	0.5%
541330	Engineering services	2,377	2,397	20	0.8%
541360	Geophysical surveying and mapping services	57	59	2	3.5%
541380	Testing laboratories	375	384	9	2.4%
541620	Environmental consulting services	318	322	4	1.3%
562910	Remediation services	187	203	16	8.6%
811310	Commercial machinery repair and maintenance	1,056	1,046	-10	-0.9%
924110	Air, water, and waste program administration	155	159	4	2.6%
924120	Administration of conservation programs	175	173	-2	-1.1%
926130	Utility regulation and administration	6	8	2	33.3%
Ancillary Industry Totals		12,740	12,906	166	1.3%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Demand for Workers in Shale-Related Occupations

Figures 5 and 6 show the number of online job ads by quarter for the core and ancillary shale-related industries during 2014 and 2015. For the first three quarters of 2015, the number of online job ads for the core shale-related industries was lower than for the same period in 2014. In the fourth quarter of 2015, the number of online job ads increased substantially (170.1 percent) over the fourth quarter of 2014.

For the first two quarters of 2015, the number of online job ads for the ancillary shale-related industries was lower than in the same periods in 2014. The third quarter of 2015 showed a modest (26.4 percent) increase over 2014, and the fourth quarter of 2015 had significantly more ads (2,096, 66.6 percent) than 2014.

These data are from the Help-Wanted OnLine® data series; they are an indicator of occupational demand. The series does not include all online job ads, nor does it include jobs not advertised online.

Figure 5. Help Wanted OnLine® Job Ads
for Core Shale-Related Industries

Quarter	2014	2015	Numeric Change	Percent Change
Q1	135	59	-76	-56.3%
Q2	126	42	-84	-66.7%
Q3	99	56	-43	-43.4%
Q4	67	181	114	170.1%

Source: The Conference Board, Help Wanted OnLine® data series

Figure 6. Help Wanted OnLine® Job Ads
for Ancillary Shale-Related Industries

Quarter	2014	2015	Numeric Change	Percent Change
Q1	3420	3215	-205	-6.0%
Q2	3867	3596	-271	-7.0%
Q3	3581	4526	945	26.4%
Q4	3149	5245	2096	66.6%

Source: The Conference Board, Help Wanted OnLine® data series

Key Shale-Related Occupations

The occupations listed in this report are not exclusive to any particular industry, but they have a high presence in shale-related industries. Figure 7 shows key occupations in core and ancillary shale-related industries. These occupations are likely to provide family-sustaining wages and tend to require higher skill sets. In May 2015, 29 of the 38 occupations had median annual wages above the state annual median wage of \$35,030.

Figure 7. Key Occupations in Shale-Related Industries

SOC Code	SOC Title	Median Annual Wage	Typical Education, Work Experience, On-the-Job Training Needed
53-7062	Laborers and Freight Stock and Material Movers Hand	\$24,370	Less than HS, Short-term OJT
45-4022	Logging Equipment Operators	\$28,180	HS dipl./GED, Moderate-term OJT
43-9061	Office Clerks General	\$28,590	HS dipl./GED, Short-term OJT
43-4051	Customer Service Representatives	\$30,510	HS dipl./GED, Short-term OJT
47-5071	Roustabouts Oil and Gas	\$30,510	Less than HS, Moderate-term OJT
43-6014	Secretaries Except Legal Medical and Executive	\$32,620	HS dipl./GED, Short-term OJT
53-7073	Wellhead Pumpers	\$33,850	Less than HS, Less than 5 yrs Exp, Moderate-term OJT
47-5013	Service Unit Operators Oil Gas and Mining	\$34,280	Less than HS, Moderate-term OJT
43-3021	Billing and Posting Clerks and Machine Operators	\$34,290	HS dipl./GED, Short-term OJT
43-3031	Bookkeeping Accounting and Auditing Clerks	\$35,800	HS dipl./GED, Moderate-term OJT
51-9061	Inspectors Testers Sorters Samplers and Weighers	\$36,170	HS dipl./GED, Moderate-term OJT
51-4121	Welders Cutters Solderers and Brazers	\$36,340	HS dipl./GED, Moderate-term OJT
47-2061	Construction Laborers	\$36,730	Less than HS, Short-term OJT
51-4122	Welding Soldering and Brazing Machine Setters Operators and Tenders	\$36,750	HS dipl./GED, Moderate-term OJT
47-5011	Derrick Operators Oil and Gas	\$40,000	Less than HS, Short-term OJT
53-3032	Truck Drivers Heavy and Tractor-Trailer	\$40,860	HS dipl./GED, Short-term OJT
47-5012	Rotary Drill Operators Oil and Gas	\$40,980	Less than HS, Moderate-term OJT
49-9052	Telecommunications Line Installers and Repairers	\$42,760	HS dipl./GED, Long-term OJT
53-7072	Pump Operators Except Wellhead Pumpers	\$42,810	Less than HS, Moderate-term OJT
43-5061	Production Planning and Expediting Clerks	\$44,240	HS dipl./GED, Moderate-term OJT
49-9041	Industrial Machinery Mechanics	\$47,040	HS dipl./GED, Long-term OJT
49-3042	Mobile Heavy Equipment Mechanics Except Engines	\$47,480	HS dipl./GED, Long-term OJT
47-2073	Operating Engineers and Other Construction Equipment Operators	\$48,860	HS dipl./GED, Moderate-term OJT
19-4041	Geological and Petroleum Technicians	\$50,240	Associate's Deg., Moderate-term OJT
47-2152	Plumbers Pipefitters and Steamfitters	\$51,780	HS dipl./GED, Apprenticeship
53-1031	First-Line Supervisors/Managers of Trans.and Material-Moving Machine and Vehicle Operators	\$54,980	HS dipl./GED, Less than 5 yrs Exp
51-1011	First-Line Supervisors/Managers of Production and Operating Workers	\$55,490	Post-HS non-Deg. award, Less than 5 yrs
13-1051	Cost Estimators	\$56,610	Bachelor's Deg.
17-3025	Environmental Engineering Technicians	\$57,450	Associate's Deg.
17-3023	Electrical and Electronic Engineering Technicians	\$59,680	Associate's Deg.
47-1011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	\$59,710	HS dipl./GED, More than 5 yrs Exp
49-1011	First-Line Supervisors/Managers of Mechanics Installers and Repairers	\$60,240	HS dipl./GED, Less than 5 yrs Exp
17-2151	Mining and Geological Engineers Including Mining Safety	\$65,620	Bachelor's Deg.
19-2042	Geoscientists Except Hydrologists and Geographers	\$65,640	Bachelor's Deg.
49-9051	Electrical Power-Line Installers and Repairers	\$67,040	HS dipl./GED, Long-term OJT
53-7071	Gas Compressor and Gas Pumping Station Operators	\$67,360	Less than HS, Moderate-term OJT
41-4011	Sales Representatives Wholesale and Manufacturing Technical and Scientific Products	\$68,370	Bachelor's Deg., Moderate-term OJT
17-2112	Industrial Engineers	\$76,680	Bachelor's Deg.

Source: U.S. Bureau of Labor Statistics, Occupational Employment Statistics, May 2015

From 2014 to 2015, the estimated number of construction trades jobs in core shale-related industries in Ohio decreased by 3.3 percent, from 4,160 to 4,023. Oil and gas pipeline construction had the largest losses. The number of extraction trade jobs increased by 0.9 percent, from 2,096 to 2,115. Most of that increase was in support activities for oil and gas operations. See Figure 8 for details.

Figure 8. Estimated Number of Construction and Extraction Jobs in the Core Shale-Related Industries

NAICS	Title	2014		2015		2014-2015 Numeric Change	
		Construction Trades	Extraction Trades	Construction Trades	Extraction Trades	Construction Trades	Extraction Trades
211111	Crude Petroleum and Natural Gas Extraction	49	163	41	138	-8	-25
211112	Natural Gas Liquid Extraction	12	39	11	38	0	-1
213111	Drilling Oil and Gas Wells	345	531	303	467	-42	-65
213112	Support Activities for Oil and Gas Operations	762	1,173	840	1,293	78	121
237120	Oil and Gas Pipeline Construction	2,979	189	2,811	179	-167	-11
486210	Pipeline Transportation of Natural Gas	14	0	16	0	2	0
Core Industries Totals		4,160	2,096	4,023	2,115	-137	19

Source: Ohio Bureau of Labor Market Information

Shale-Related Industries' Worker State of Residence

Although data are not available on the state of residence for all workers, limited information is available from the State Directory of New Hires. This database was developed to help collect child support. State law requires all Ohio employers to report all independent contractors and newly hired and rehired employees to the directory within 20 days of the hire or rehire date.¹ Hiring activities that generate W-4 tax forms are included in the data.

On average in 2015, core-industry Ohio employers reported 815 new hires from Ohio and 568 new hires from other states each quarter. This was a 25.7 percent decrease over 2014 numbers for in-state new hires and a 20.3 percent decrease for out-of-state new hires. Ohioans accounted for 58.9 percent of new hires in the core industries; this was down slightly from 60.6 percent in 2014. See Figure 9 for details.

Ancillary shale-related industry Ohio employers reported an average of 8,681 Ohio new hires and 2,927 out-of-state new hires each quarter during 2015. This was a 10.3 percent decrease over 2014 for Ohio new hires and a 65.1 percent decrease for out-of-state new hires. In 2015, 74.8 percent of new hires in ancillary shale-related industries were from Ohio; this was up substantially from 53.6 percent in 2014. See Figure 10 for details.

¹ Ohio Revised Code Section 3121.89-3121.8911 and the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996, 42 U.S.C. 653a.

Figure 9. 2014 and 2015 Average Quarterly
New Hires in the Core Shale-Related Industries

State of Residence	2014	2015	Numeric Change	Percent Change
Ohio	1,097	815	-282	-25.7%
Total Out-of-State	713	568	-145	-20.3%
Indiana	12	10	-2	-16.7%
Kentucky	31	31	0	0.0%
Michigan	15	68	53	353.3%
Pennsylvania	110	102	-8	-7.3%
West Virginia	148	83	-65	-43.9%
All Other States	398	274	-124	-31.2%

Source: Ohio Directory of New Hires

Figure 10. 2014 and 2015 Average Quarterly
New Hires in the Ancillary Shale-Related Industries

State of Residence	2014	2015	Numeric Change	Percent Change
Ohio	9,677	8,681	-996	-10.3%
Total Out-of-State	8,391	2,927	-5464	-65.1%
Indiana	533	277	-256	-48.0%
Kentucky	386	224	-162	-42.0%
Michigan	468	175	-293	-62.6%
Pennsylvania	543	339	-204	-37.6%
West Virginia	279	204	-75	-26.9%
All Other States	6,182	1,708	-4474	-72.4%

Source: Ohio Directory of New Hires

Total Wage Growth in the Core Shale-Related Industries

Total wages in the core shale-related industries declined 1.1 percent from 2014 to 2015. In comparison, total wages across all industries in Ohio increased 1.4 percent over the same period. Total wages in the pipeline transportation of natural gas industry increased 25.9 percent. Wages for crude petroleum and natural gas extraction declined 20.2 percent. See Figure 11 for detailed industry wage data.

Figure 11. Core Shale-Related Industry Total Wages and Year-to-Year Change

NAICS	Title	Total Wages (thousands), 2014	Total Wages (thousands), 2015	Numeric Change (thousands)	Percent Change
211111	Crude Petroleum and Natural Gas Extraction	\$132,712	\$105,907	-\$26,805	-20.2%
211112	Natural Gas Liquid Extraction	\$28,295	\$31,020	\$2,725	9.6%
213111	Drilling Oil and Gas Wells	\$122,594	\$107,047	-\$15,547	-12.7%
213112	Support Activities for Oil and Gas Operations	\$270,876	\$272,237	\$1,361	0.5%
237120	Oil and Gas Pipeline and Related Structures Construction	\$448,351	\$468,367	\$20,016	4.5%
486210	Pipeline Transportation of Natural Gas	\$27,351	\$34,447	\$7,096	25.9%
Core Industries Totals		\$1,030,179	\$1,019,025	-\$11,154	-1.1%

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages

Regional Workforce Development Plans

Ohio's workforce development boards establish local policies for workforce services funded by the federal Workforce Innovation and Opportunity Act. They also develop four-year plans to identify target populations, in-demand occupations and employment trends, in order to guide service delivery to support growing industries and successful job placement. The workforce development boards are required to submit these plans to the Ohio Department of Job and Family Services, which reviews them for viability, especially as they relate to compliance and performance. New plans are due no later than March 31, 2017.

Local workforce development boards are required to submit biannual amendments to their plans. The amendments reflect planned changes in service delivery to respond to evolving economic and occupational needs. Local areas that identify occupations in shale-related core and ancillary industries as in-demand occupations include that information in their local plans and policies.

Summary

Overall employment in core shale-related oil and gas industries in Ohio declined slightly in 2015, although a few industries had modest growth. From 2014 to 2015, average annual employment for the core industries dropped from 13,890 to 13,489, a 2.9 percent decrease. Support activities for oil and gas operations and pipeline transportation of natural gas added a combined 345 jobs, but oil and gas pipeline construction, crude petroleum and natural gas extraction, drilling oil and gas wells, and natural gas liquid extraction lost 836 jobs. The number of business establishments in the core industries increased 5.9 percent, from 791 to 838.

Employment growth in the ancillary shale-related industries increased slightly, from 174,597 to 177,818, but a significant part of this increase was from NAICS

industry reclassification, not actual employment growth. It is important to note that ancillary shale-related businesses serve other industries in addition to oil and gas extraction.

Employer demand for occupations in the core shale-related industries, as measured by online job ads, was down in the first three quarters of 2015 compared to 2014. However, demand was up significantly in the fourth quarter of 2015. The estimated number of construction trade jobs in the core shale-related industries dropped by 3.9 percent from 2014 to 2015, and the number of extraction trade jobs increased by 0.9 percent.

Median annual wages for key occupations in the shale-related industries range from \$24,370 to \$76,680. Total wages for the core shale-related industries declined 1.1 percent from 2014.

The number of new hires in Ohio's core shale-related industries who were Ohio residents decreased 25.7 percent from 2014 to 2015, and out-of-state new hires decreased by 20.3 percent. Among the core shale-related industries, 58.9 percent of new hires were Ohio residents in 2015, a slight decrease from 2014. Among the ancillary industries, 74.8 percent of new hires were Ohio residents in 2015, a substantial increase from 2014.

Local workforce development areas with in-demand shale occupations include that information in their local plans and policies, in order to help individuals become trained in the skills employers need.

John R. Kasich, Governor

State of Ohio
<http://Ohio.gov>

Cynthia C. Dungey, Director

Ohio Department of Job and Family Services
<http://jfs.ohio.gov>

Office of Workforce Development
<http://jfs.ohio.gov/owd/>

Bureau of Labor Market Information
<http://OhioLMI.com>

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