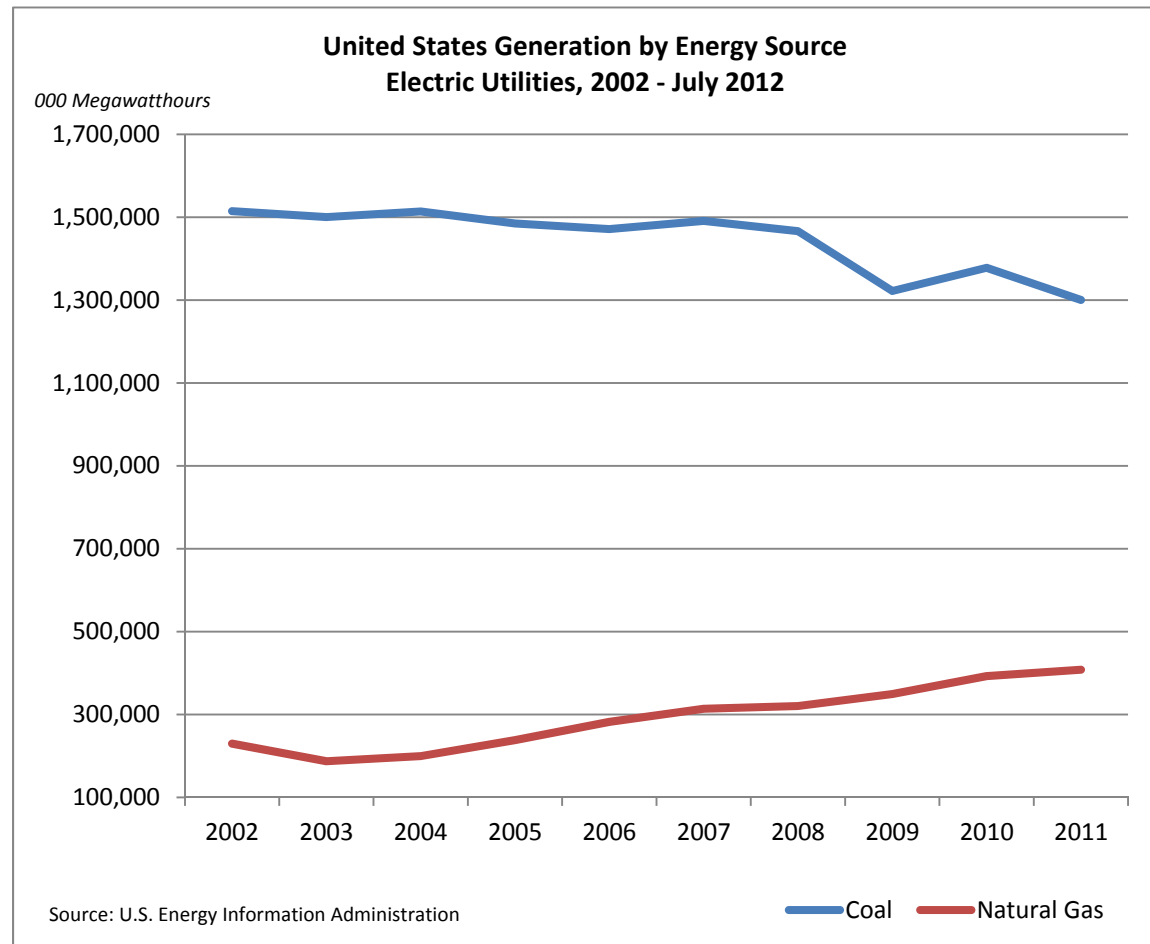


# The Influence of the Marcellus Shale on Employment and Wages in West Virginia



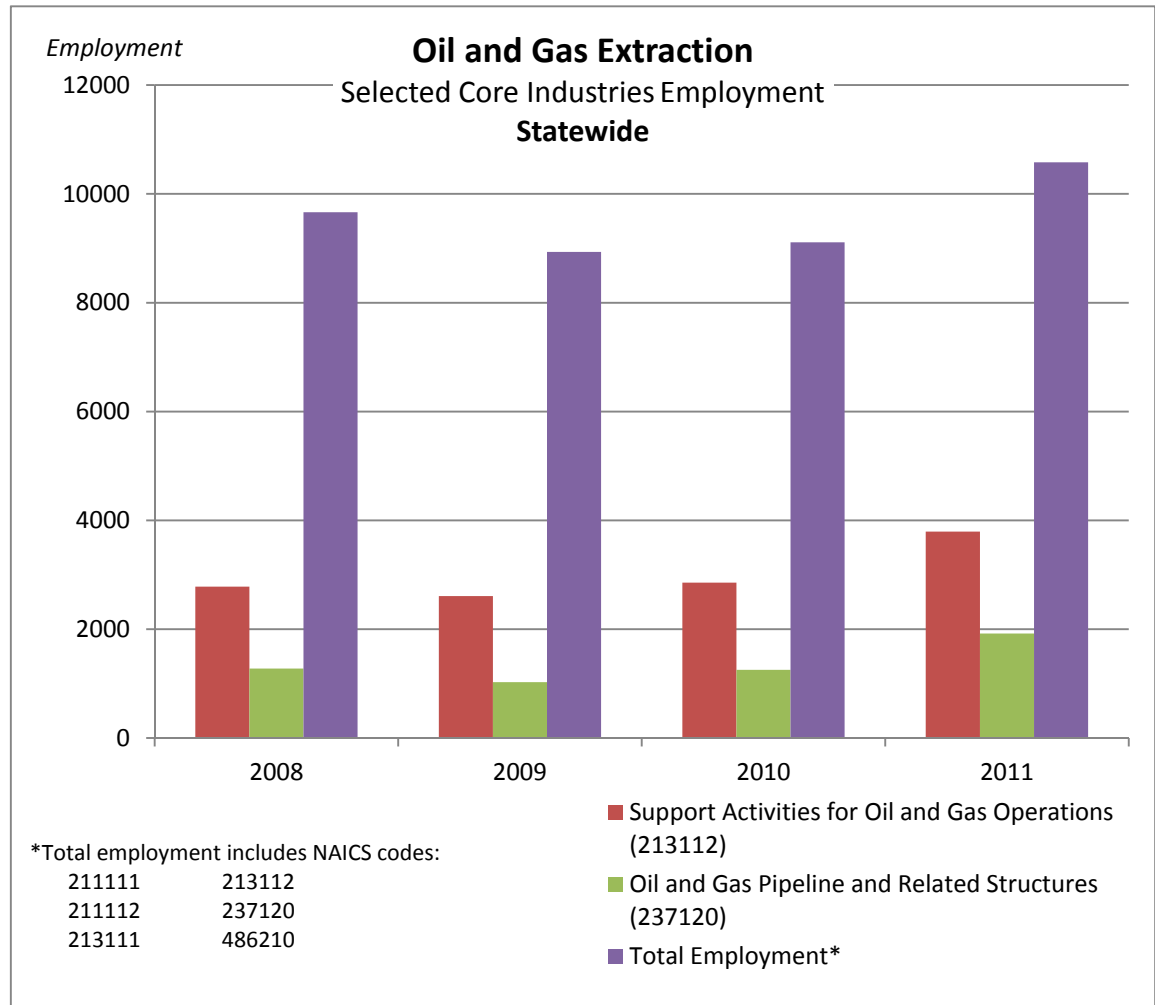
## Employment and Wages and the Marcellus Shale

Data from the U.S. Energy Information Administration for the past decade reveal a subtle, yet distinct shift in the use of fossil fuels for the generation of electricity in the United States. Graph 1 reflects significant movement toward natural gas as a power generation fuel source, and even more, portends the impending influence of the Marcellus Shale in the eastern U.S. The overall effect on specific industries in West Virginia due to activity within the Marcellus Shale gas field is becoming more evident as an examination of the most recent forty-eight month interim confirms. Data from the Quarterly Census of Employment and Wages (QCEW) reveals employment and wages in at least two specific industries sectors (Graph 2), have risen appreciably in some areas of the state. Statewide, employment in oil and gas extraction core industries in 2011 has grown by 916, which represents an improvement of 9.5 percent since 2008. The average wage has increased by more than \$8,100 during this period from a level of \$61,898 to an annual average pay of \$70,082 in 2011. Primary employment and wage growth, however, has occurred mostly in two



Graph 1

industry sectors. (1) Establishments engaged in the construction of oil and gas pipelines, mains, refineries, and storage tanks have shown significant increases over the past four years. Employment in this sector stood at 1,276 in 2008 and in 2011 had grown by more than 50 percent to a level of 1,920. Wages during this period grew by approximately 18.9 percent from an average of \$60,329 in 2008 to \$71,723 in 2011. (2) Similarly, businesses engaged in support activities such as excavation, well surveying, running and cutting casings and other well work showed employment and wage gains. In 2008 statewide employment was recorded at 2,782 and by 2011 had reached a level of 3,793. This represents an increase of more than 36 percent. Wages for this industry in the interim increased more than 28 percent from an average wage of \$46,615 in 2008 to a level of \$59,969 in 2011. Though both industry sectors include **oil and gas** in their definition of activities, there can be no doubt the recent upswing in activity within the two can only be attributed to measurable activity in the Marcellus Shale gas field.

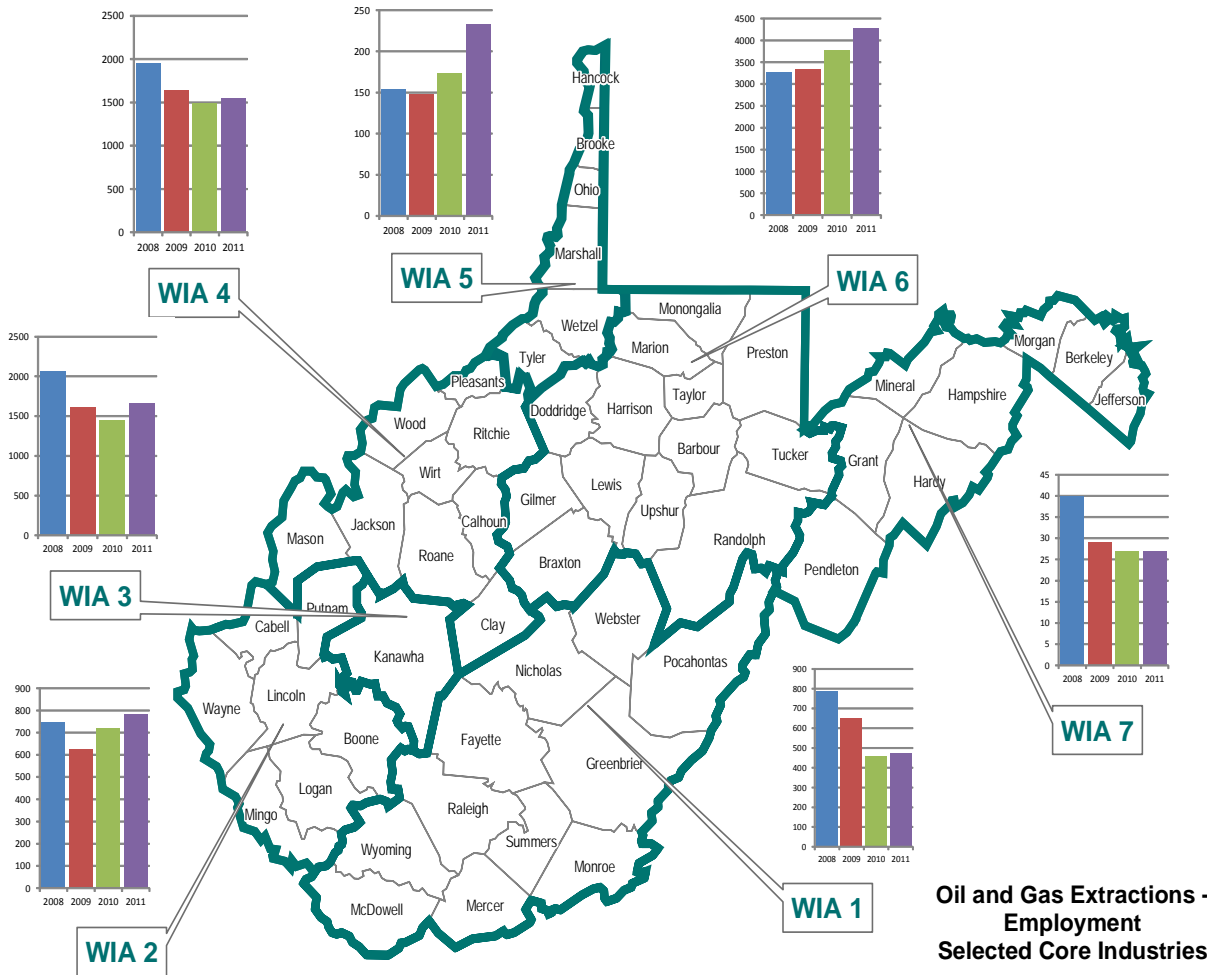


Graph 2

Employment and wage activity within the seven state workforce investment areas (WIA) was varied (Graph 3). Of the six core oil and gas industry sectors<sup>1</sup> in WIA 1, there were some modest wage gains while total employment fell by more than 39 percent. Although total employment

grew less than five percent in WIA 2 and average wages improved by 20 percent, one core sector revealed a marked expansion in the four-year analysis. The drilling of gas wells in 2008 employed 14. By 2011 this activity employed 178, a gain of more than one thousand percent. Only time will tell if other core oil and gas extraction industries show similar gains within this WIA. In a comparable manner, WIA 3 total employment lost 397 (-19 %) over the four years. However,

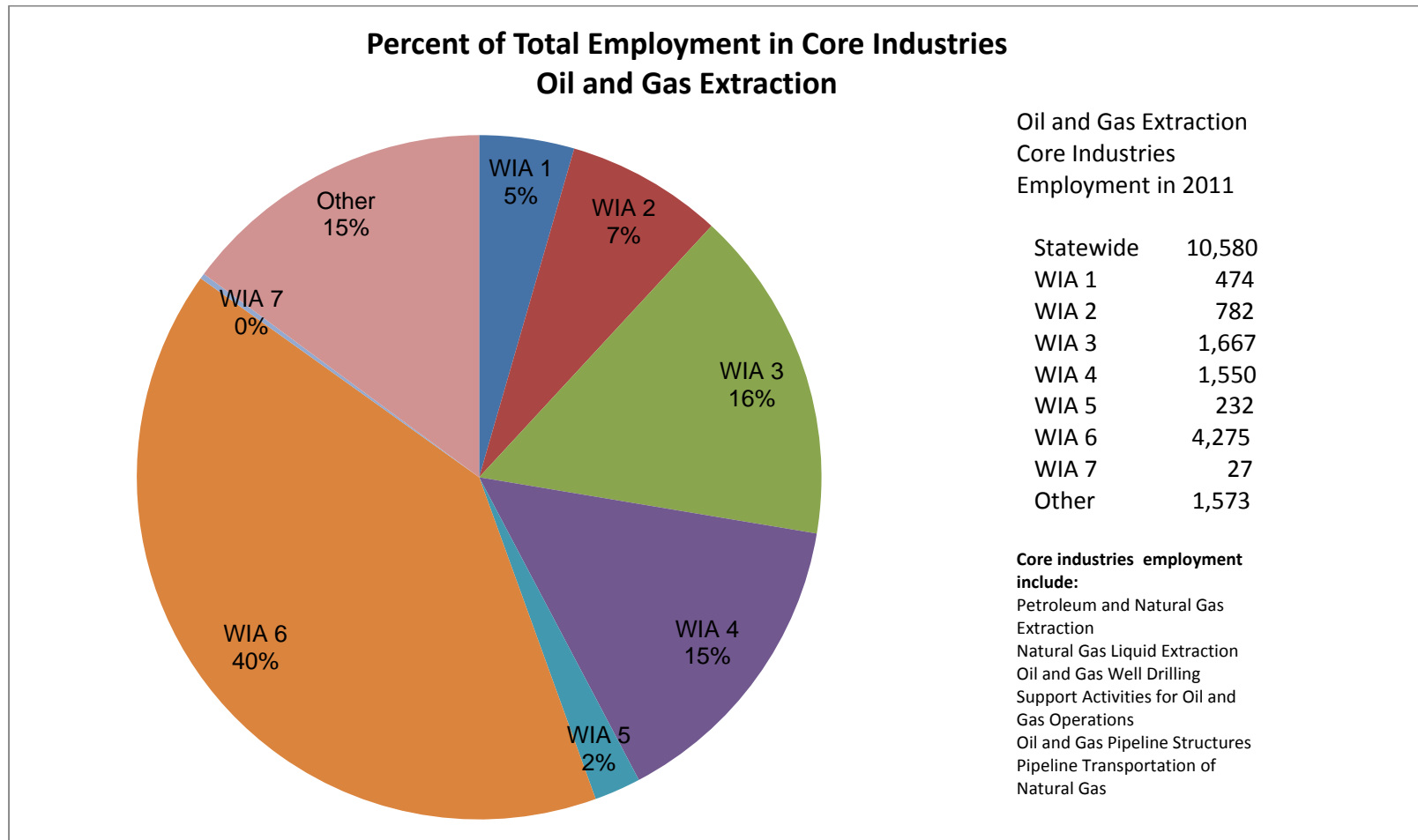
the oil and gas pipeline and related structures sector grew by 303 in this period, a gain of more than 168 percent. WIA 4 has a less impressive story to tell by posting a total employment loss of 409 in the analysis. As in WIA 3, the oil and gas pipeline and related structures sector provided some improvement by expanding modestly (+2 %), adding nine jobs. WIA 5 revealed some development in nearly all core sectors with total employment expanding by 78 to a level of 232.



Graph 3

The most notable gains occurred in support activities for oil and gas operations where

employment increased from two in 2008 to a level of 68 in 2011. The average wage improved as well from \$21,862 to \$60,350 over the four years. This represents an improvement of more than 176 percent. Workforce Investment Area 6 is, as the saying goes, where the action is. Of the 10,580 total employees in the state engaged in some form of oil and gas extraction, 4,275 or 40 percent (Graph 4) of the workforce labor in this area.



Graph 4

The region has increased its total employment by more than 1,000 over the four-year analysis, representing an increase of approximately 31 percent. Most notably, however, the support activities for oil and gas operations sector has expanded more than 112 percent, and boosted employment 1,106. The average wage has expanded 42 percent from a level of \$44,968 in 2008 to \$63,889 in 2011. Lastly, WIA 7 sees little effect from the oil and gas industry, employing only 27 among all the core sectors in this region. Clearly, the early influence of the Marcellus Shale activity is centered in Workforce Investment Area 6. This is expected to continue in the months ahead with more measured growth anticipated in other regions of the state.

Graph 5



**Note:**

<sup>1</sup> **Core Industries NAICS codes used for employment and wage analysis:**

211111	Crude Petroleum and Natural Gas Extraction
211112	Natural Gas Liquid Extraction
213111	Drilling Oil and Gas Wells
213112	Support Activities for Oil and Gas Operations
237120	Oil and Gas Pipeline and Related Structures
486210	Pipeline Transportation of Natural Gas

## Select Oil and Gas Data for Workforce Investment Areas from Quarterly Census of Employment and Wages

Core Industries		2008				2009				2010				2011			
NAICS	Title	Est.	Emp.	Total Wages	Avg. Wage	Est.	Emp.	Total Wages	Avg. Wage	Est.	Emp.	Total Wages	Avg. Wage	Est.	Emp.	Total Wages	Avg. Wage
<b>STATEWIDE</b>																	
213112	Support Activities for Oil & Gas Operations	77	979	\$44,023,583	\$44,968	78	1,060	\$49,536,199	\$46,732	95	1,490	\$83,525,835	\$56,058	108	2,085	\$133,208,320	\$63,889
237120	Oil & Gas Pipeline & Related Structures	9	139	\$8,101,766	\$58,286	10	161	\$9,083,250	\$56,418	8	315	\$18,525,409	\$58,811	11	189	\$11,216,842	\$59,348
<b>Totals</b>		<b>216</b>	<b>3,259</b>	<b>\$202,290,844</b>	<b>\$62,071</b>	<b>209</b>	<b>3,335</b>	<b>\$211,032,145</b>	<b>\$63,278</b>	<b>227</b>	<b>3,779</b>	<b>\$246,996,790</b>	<b>\$65,360</b>	<b>248</b>	<b>4,275</b>	<b>\$303,730,245</b>	<b>\$71,048</b>
<b>Workforce Investment Area 1</b>																	
<b>Totals</b>		<b>33</b>	<b>787</b>	<b>\$55,514,358</b>	<b>\$70,539</b>	<b>33</b>	<b>648</b>	<b>\$42,777,745</b>	<b>\$66,015</b>	<b>32</b>	<b>460</b>	<b>\$32,320,284</b>	<b>\$70,261</b>	<b>40</b>	<b>474</b>	<b>\$32,685,002</b>	<b>\$68,956</b>
<b>Workforce Investment Area 2</b>																	
213111	Drilling Oil & Gas Wells	5	14	\$406,205	\$29,015	4	51	\$4,216,498	\$82,676	4	170	\$14,337,507	\$84,338	4	178	\$19,159,660	\$107,639
<b>Totals</b>		<b>55</b>	<b>747</b>	<b>\$44,706,361</b>	<b>\$59,848</b>	<b>59</b>	<b>623</b>	<b>\$35,949,476</b>	<b>\$57,704</b>	<b>59</b>	<b>721</b>	<b>\$47,019,232</b>	<b>\$65,214</b>	<b>57</b>	<b>782</b>	<b>\$56,165,768</b>	<b>\$71,823</b>
<b>Workforce Investment Area 3</b>																	
237120	Oil & Gas Pipeline & Related Structures	7	180	\$14,564,556	\$80,914	9	100	\$6,157,596	\$61,576	12	251	\$22,473,029	\$89,534	12	483	\$39,655,186	\$82,102
<b>Totals</b>		<b>89</b>	<b>2,064</b>	<b>\$165,196,111</b>	<b>\$80,037</b>	<b>89</b>	<b>1,616</b>	<b>\$141,166,308</b>	<b>\$87,355</b>	<b>98</b>	<b>1,448</b>	<b>\$123,829,115</b>	<b>\$85,517</b>	<b>94</b>	<b>1,667</b>	<b>\$148,852,897</b>	<b>\$89,294</b>
<b>Workforce Investment Area 4</b>																	
237120	Oil & Gas Pipeline & Related Structures	15	384	\$19,965,312	\$51,993	13	243	\$12,430,150	\$51,153	15	193	\$11,716,474	\$60,707	16	393	\$23,780,774	\$60,511
<b>Totals</b>		<b>186</b>	<b>1,959</b>	<b>\$81,411,562</b>	<b>\$41,558</b>	<b>180</b>	<b>1,634</b>	<b>\$67,589,948</b>	<b>\$41,365</b>	<b>186</b>	<b>1,488</b>	<b>\$65,894,349</b>	<b>\$44,284</b>	<b>187</b>	<b>1,550</b>	<b>\$73,857,121</b>	<b>\$47,650</b>
<b>Workforce Investment Area 5</b>																	
213112	Support Activities for Oil & Gas Operations	1	2	\$43,723	\$21,862	2	2	\$95,205	\$47,603	5	27	\$1,200,773	\$44,473	7	68	\$4,103,791	\$60,350
<b>Totals</b>		<b>22</b>	<b>154</b>	<b>\$8,732,990</b>	<b>\$56,708</b>	<b>19</b>	<b>148</b>	<b>\$9,033,726</b>	<b>\$61,039</b>	<b>25</b>	<b>173</b>	<b>\$11,606,242</b>	<b>\$67,088</b>	<b>33</b>	<b>232</b>	<b>\$15,841,970</b>	<b>\$68,284</b>
<b>Workforce Investment Area 6</b>																	
213112	Support Activities for Oil & Gas Operations	77	979	\$44,023,583	\$44,968	78	1,060	\$49,536,199	\$46,732	95	1,490	\$83,525,835	\$56,058	108	2,085	\$133,208,320	\$63,889
<b>Totals</b>		<b>216</b>	<b>3,259</b>	<b>\$202,290,844</b>	<b>\$62,071</b>	<b>209</b>	<b>3,335</b>	<b>\$211,032,145</b>	<b>\$63,278</b>	<b>227</b>	<b>3,779</b>	<b>\$246,996,790</b>	<b>\$65,360</b>	<b>248</b>	<b>4,275</b>	<b>\$303,730,245</b>	<b>\$71,048</b>
<b>Workforce Investment Area 7</b>																	
<b>Totals</b>		<b>6</b>	<b>40</b>	<b>\$2,425,443</b>	<b>\$60,636</b>	<b>6</b>	<b>29</b>	<b>\$2,083,727</b>	<b>\$71,853</b>	<b>6</b>	<b>27</b>	<b>\$1,981,611</b>	<b>\$73,393</b>	<b>6</b>	<b>27</b>	<b>\$1,934,842</b>	<b>\$71,661</b>

Source: US Department of Labor, Bureau of Labor Statistics, Quarterly Census of Employment and Wages



### Key Occupations in Marcellus Shale Related Core Industries

SOC	SOC / Job Title	Ann Wage*	Education	Work Experience	Job Training
17-2171	Petroleum Engineers	\$91,525	Bachelor's Degree		
19-2042	Geoscientists	\$63,575	Bachelor's Degree		
47-2061	Construction Laborers	\$33,402	Less than High School		Short-term on-the-job training
47-2073	Operating Engineers	\$40,521	High school diploma or equivalent		Moderate-term on-the-job training
47-2152	Plumbers, Pipefitters, and Steamfitters	\$46,304	High school diploma or equivalent		Apprenticeship
47-5011	Derrick Operators, Oil & Gas	\$45,067	Less than high school		Short-term on-the-job training
47-5012	Rotary Drill Operators, Oil & Gas	\$47,228	Less than high school		Moderate-term on-the-job training
47-5013	Service Unit Operators, Oil & Gas	\$43,806	Less than high school		Moderate-term on-the-job training
47-5071	Roustabouts, Oil & Gas	\$27,210	Less than high school		Moderate-term on-the-job training
49-9041	Industrial Machinery Mechanics	\$41,304	High school diploma or equivalent		Long-term on-the-job training
51-4121	Welders	\$38,329	High school diploma or equivalent	Less than 1 year	Moderate-term on-the-job training
51-8092	Gas Plant Operators	\$63,708	High school diploma or equivalent		Long-term on-the-job training
53-3032	Truck Drivers, Heavy and Tractor-Trailer	\$34,711	High school diploma or equivalent	1 to 5 years	Short-term on-the-job training
53-7071	Gas Compressor and Gas Pumping Station Operators	\$54,608	Less than high school		Moderate-term on-the-job training
53-7073	Wellhead Pumpers	\$35,414	Less than high school	Less than 1 year	Moderate-term on-the-job training

Source: US Department of Labor, Bureau of Labor Statistics, WorkForce West Virginia, Research, Information and Analysis

\* 2012 First Quarter, Occupational Employment Statistics