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Oil and Natural Gas Stimulate American Economic and Job Growth

Vendor Survey Findings Report

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America is blessed with abundant oil and natural gas resources.

OVERVIEW

America's Oil and Natural Gas Economy

This report presents the findings of a 2014 survey of U.S. businesses that constitute America's domestic oil and natural gas supply chain.[1] The survey was undertaken by the American Petroleum Institute (API), the only national trade association that represents all segments of America's oil and natural gas industry. Its more than 600 members produce, process, and distribute most of the nation's energy. Included in the survey are companies that provide goods and services for onshore oil and natural gas development, whether as operators, contractors, service companies, suppliers, or other vendors.

Over the past decade, America has undergone a major energy revolution, rapidly shifting from an era of energy scarcity to an era of energy abundance. Advances in the proven process of hydraulic fracturing—or "fracking"— in conjunction with horizontal drilling have allowed the United States to emerge as the number one producer of natural gas in the world. By 2015, America is also projected to become the world's number one producer of oil.

These new resources have driven the economy forward, resulting in new jobs, higher revenues, and lower energy costs. Abundant oil and natural gas resources have also dramatically strengthened America's energy security, once considered one of the country's most alarming economic vulnerabilities. Domestic energy abundance has provided U.S. consumers with critical insulation against price spikes and supply disruptions due to turmoil overseas.

The key to this success, according to a study sponsored by the Manhattan Institute for Policy Research, has not been the efforts of "a handful of 'Big Oil' companies." Instead, it is "a broad array of small and midsize oil and gas companies that are propelling record economic and job gains."[2]

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1 American Petroleum Institute, "API Onshore Oil and Gas Vendor Identification Survey" (Washington, D.C., 2014). The survey was distributed to API members in January 2014 to collect information for the period October 2012 to September 2013.

2 Mark P. Mills, "Where the Jobs Are: Small Businesses Unleash America's Energy Employment Boom," *Manhattan Institute's Power and Growth Initiative*, 4 (February 2014). See Key Findings, i.

Overall, as of 2011, the oil and natural gas industry supported 9.8 million full-time and part-time U.S. jobs and 8 percent of the U.S. economy.[3] Of that total, energy development utilizing hydraulic fracturing and horizontal drilling supported more than 2.1 million jobs in the U.S. economy. By the year 2025, that number is projected to rise to 3.9 million jobs.[4]

The top 15 states, in terms of the total number of jobs directly or indirectly attributable to the oil and natural gas industry in 2011, were, in order of number of industry-related jobs, Texas, California, Louisiana, Oklahoma, Pennsylvania, Florida, New York, Illinois, Ohio, Colorado, Michigan, Kansas, North Carolina, New Jersey, and Georgia.[5] The total number of jobs directly or indirectly supported by oil and natural gas industry operations ranged in that year from 13,700 in the District of Columbia to 1.9 million in Texas.

This report provides a list of nearly 30,000 American businesses, located in every state and the District of Columbia, that are contributing to and benefiting from the U.S. energy revolution. Oil and natural gas development relies upon a diverse array of businesses across the economic spectrum, including small equipment suppliers, warehousers, large container makers, real estate companies, wild land restoration companies, modular laboratory and housing manufacturers, uniform suppliers, port-o-john rental companies, administrative support firms, and many more. In fact, the nearly 30,000 companies included in this report provide a mere sampling of the diversity, scope, and economic impact of today's oil and natural gas industry businesses. The actual number of such businesses within the industry supply chain is in reality much higher. For example, whereas this report includes the names of more than 600 businesses operating throughout every Congressional district in Ohio, the Ohio Department of Job and Family Services has reported that the state actually has more than 13,000 shale-related (oil and gas drilling-related) business establishments in the state.

State Profiles

Beyond the thousands of Americans directly employed by large oil and natural gas companies, the energy revolution has yielded major gains throughout the economy, stimulating the growth of countless businesses, small and medium-sized, private and public, in every state in the nation.

As part of the 2014 survey, this report's state chapters provide a tally of industry vendors operating in each state and the District of Columbia, listed by congressional district. Also included is a map of each state and the District of Columbia showing the location of industry vendors within congressional districts. Many of the state chapters also include vendor profiles.

Of the 50 states and the District of Columbia, 14 are considered top energy producers. That means that statewide production of oil or natural gas (or both) is among the 10 highest in the country.[6] These states, in alphabetical order, are Alaska, Arkansas, California, Colorado, Kansas, Louisiana, New Mexico, North Dakota, Oklahoma, Pennsylvania, Texas, Utah, West Virginia, and Wyoming. The top energy-producing state in the country is Texas, first both in oil and natural gas development. Colorado, Louisiana, New Mexico, Oklahoma, and Wyoming also rank within the top 10 in terms of both oil and natural gas production.

However, as this report shows, states at the lower end of the production spectrum are not excluded from the economic benefits of the energy revolution. Residents in these states continue to enjoy strong employment and revenue gains tied to the oil and natural gas industry.

For example, in Indiana, which ranks 24th in oil production and 25th in natural gas production, the average annual oil and gas industry salary (excluding gas stations) is $80,512 – significantly higher than the state average of $41,792. Overall the oil and natural gas industry contributes $16.6 billion to the Indiana economy, 6.3 percent of the state's total economic activity.

In Delaware, which does not produce any oil or natural gas, the average annual salary across all industries and sectors

3 PriceWaterhouseCoopers, *Economic Impacts of the Oil and Natural Gas Industry on the U.S. Economy in 2011* (Washington, D.C., July 2013), pp. 6, 7. Prepared for API using the IMPLAN input-output modeling system, based on 2011 U.S. Bureau of Economic Analysis data.

4 IHS, *America's New Energy Future: The Unconventional Oil and Gas Revolution and the U.S. Economy, Volume 3: A Manufacturing Renaissance* (Washington, D.C., September 2013).

5 PriceWaterhouseCoopers, *Economic Impacts*, E-2.

6 Information cited in this paragraph and the next three comes from the Bureau of Labor Statistics, Quarterly Census of Employment and Wages (preliminary data for 2013 accessed July 2014); U.S. Energy Information Administration; and PriceWaterhouseCoopers, *Economic Impacts*, 7/12/13 (based on 2012 IMPLAN database).

is $52,026. However, the average annual salary for jobs related to the oil and gas industry (excluding gas stations) is $77,876. Overall the oil and natural gas industry supports $2 billion of the Delaware economy, or 4 percent of the state's total economic activity.

Given the widespread economic benefits, it's not surprising that Americans strongly support energy production. A 2014 telephone poll of 1,003 registered voters across the country, conducted on behalf of the American Petroleum Institute, found that 77 percent of Americans, regardless of party affiliation, answered that they support increased production of oil and natural gas resources located here in the United States.[7]

Conventional and Unconventional Oil and Natural Gas Development

Historically, most oil and natural gas development in the United States can be considered "conventional," utilizing methods pioneered more than 150 years ago. Conventional resources can be extracted by drilling, through the pressure of the wells and pumping, or compression operations. However, conventional energy resources have become harder to extract, resulting in less production, and that lower production has driven the development of "unconventional" sources of energy.

Conventional and unconventional oil and gas come from the same original geologic formations, where sediments accumulated in multiple layers of the earth over millions of years.[8] Over time these sediments formed sedimentary rocks. Ground pressure and extremely high temperatures transformed the organic matter contained in these rock layers into oil and gas. As long as the oil and gas can flow easily through porous rock, the reservoir and its associated oil and gas, as well as the methods for extracting it, are considered conventional. When the oil and gas are locked in "tight" formations of impermeable rock, the resources and the methods necessary to extract them have been referred to as "unconventional."

While the process is more difficult and more costly, most of the recent growth in energy production has been the result of extracting resources from these unconventional formations. Technological breakthroughs in fracturing—pumping water, sand, and chemicals into the ground at high pressure to hydraulically fracture or "frack" shale rocks and extract trapped oil and gas— and steerable horizontal drilling (in contrast to the vertical drilling of conventional energy development), as well as sensing and control information technology, have made it commercially viable to "follow the richest seams to release tightly bound oil and gas."[9] It is these technological breakthroughs that are responsible for revolutionizing America's energy future, making the development of these resources commonplace, and as a result, much more "conventional." And the industry has made great strides in advancing the environmental safety of fracking and horizontal drilling.

The 20 largest shale formations or "plays" are located in some 16 states. These plays include the Bakken and Marcellus Shale, as well as other emerging oil or natural gas plays. The states that are home to these formations are Arkansas, California, Colorado, Kansas, Louisiana, Mississippi, Montana, New Mexico, North Dakota, Ohio, Oklahoma, Pennsylvania, Texas, Utah, West Virginia, and Wyoming.

Three of the best known shale formations are the Eagle Ford Shale in Texas, the Marcellus Shale in the Northeastern United States, and the Bakken Shale, centered in North Dakota.

Mark Mills talks about the impressive economic results associated with the Eagle Ford Shale: "In the 23 counties atop the Eagle Ford Shale, average wages for all citizens have grown by 14.6 percent annually since 2005, compared with the 6.8 and 6.3 percent average for Texas and the U.S. respectively over the same period. The top five counties in the Eagle Ford Shale have experienced an average 63 percent annual rate of wage growth."[10]

The Marcellus Shale is named for a distinctive outcrop near the village of Marcellus, New York. In this region, five states are considered to have the greatest potential for economic benefits, due largely to untapped natural gas reserves close to high-demand markets on the East Coast. These states

7 "What America is Thinking on Energy Issues." http://www.api.org/news-and-media/news/newsitems/2014/apr-2014/poll-large-majorities-support-us-investments-in-oil-and-natural-gas, the results of a national poll conducted by Harris for API April 3-9, 2014. Click on "a new poll" to see how percentages of voters answered this and other questions.

8 Background information on conventional and unconventional energy development comes from http://www.2b1stconsulting.com/conventional-oil-and-gas/ and http://www.capp.ca/canadaIndustry/naturalGas/Conventional-Unconventional/Pages/default.aspx.

9 Mills, "Where the Jobs Are," p. 4.

10 Mills, "Where the Jobs Are," p. 8.

KEY SALARY AND ECONOMIC ACTIVITY STATISTICS

Total Number of Vendors – 29,838

State	Number of Vendors	Industry Annual Pay	Average Oil and Natural Gas Industry Annual Pay	Value Added	
				($ Million)	Percent of State Total
Alabama	101	$41,399	$63,832[1]	$11,327.8	6.4%
Alaska	505	$50,624	$125,794[1]	$19,277.0	34.7%
Arizona	124	$45,525	$56,822	$9,016.6	3.4%
Arkansas	225	$38,623	$67,962	$8,062.7	7.8%
California	1,980	$56,590	$120,802	$131,445.1	6.7%
Colorado	1,198	$51,124	$105,025[1]	$25,811.4	9.1%
Connecticut	73	$63,169	$72,071	$7,683.0	3.3%
Delaware	22	$52,026	$77,876	$1,965.6	4.1%
District of Columbia	49	$76,946	-	$2,702.6	1.9%
Florida	183	$42,896	$64,463	$23,154.0	3.1%
Georgia	349	$47,515	$61,239	$12,902.3	3.0%
Hawaii	4	$41,492	$65,853	$2,167.2	2.9%
Idaho	34	$36,751	$46,471	$1,796.9	3.1%
Illinois	932	$52,625	$81,633	$33,307.9	5.1%
Indiana	133	$41,792	$80,512[1]	$16,595.7	6.3%
Iowa	38	$40,489	$59,273	$4,419.0	3.1%
Kansas	245	$42,294	$66,918	$12,902.8	9.5%
Kentucky	74	$40,589	$65,495	$7,867.8	4.6%
Louisiana	1,711	$44,332	$87,929	$73,925.4	35.5%
Maine	11	$38,782	$45,861	$2,370.5	4.2%
Maryland	93	$51,928	$60,903	$7,084.8	2.2%
Massachusetts	209	$62,317	$75,687	$12,638.9	2.9%
Michigan	295	$46,673	$75,492[1]	$15,761.3	4.1%
Minnesota	189	$50,475	$76,853	$14,305.7	5.0%
Mississippi	80	$35,885	$66,281[1]	$9,055.3	9.4%
Missouri	189	$43,441	$70,637	$9,810.9	3.8%
Montana	226	$36,499	$81,226	$4,546.7	10.8%
Nebraska	37	$39,358	$68,848	$4,722.2	5.4%
Nevada	40	$42,941	$57,722	$4,539.9	3.8%
New Hampshire	20	$49,433	$60,369[1]	$2,250.3	3.3%
New Jersey	177	$58,998	$88,205	$19,875.5	4.0%
New Mexico	902	$39,660	$71,505[1]	$11,273.6	14.2%
New York	392	$64,197	$80,843	$35,196.8	3.0%
North Carolina	137	$43,758	$51,651	$12,479.2	3.0%
North Dakota	876	$48,740	$90,171	$6,575.1	12.3%
Ohio	636	$44,059	$72,238	$28,444.7	5.7%
Oklahoma	2,513	$42,733	$93,992	$39,001.9	23.1%
Oregon	58	$44,383	$55,472	$5,027.0	3.0%
Pennsylvania	1,347	$48,785	$78,898	$34,654.3	5.8%
Rhode Island	11	$45,770	$47,055	$1,650.0	3.2%
South Carolina	40	$39,131	$49,801	$4,672.8	2.8%
South Dakota	36	$37,086	$55,257	$1,459.0	3.9%
Tennessee	82	$44,273	$62,435[1]	$8,918.5	3.4%
Texas	11,033	$52,146	$117,272	$308,346.0	23.2%
Utah	498	$41,702	$78,730	$8,376.7	6.9%
Vermont	7	$41,236	$49,406	$1,042.2	3.6%
Virginia	120	$51,665	$60,721	$12,460.6	2.9%
Washington	185	$52,869	$87,333	$14,004.8	4.0%
West Virginia	230	$39,519	$74,450[1]	$5,756.1	8.7%
Wisconsin	108	$42,572	$69,083[1]	$7,901.5	3.1%
Wyoming	1,081	$44,699	$84,994	$13,018.7	32.9%

[1] Data includes NAICS code 324 which may count some coal product manufacturing jobs.

Sources: Bureau of Labor Statistics, Quarterly Census of Employment and Wages (preliminary data for 2013, accessed July 2014); PriceWaterhouseCoopers, *Economic Impacts*, 7/12/13 (based on 2012 IMPLAN database)

are Maryland, New York, Ohio, Pennsylvania, and West Virginia.

Similarly, the Bakken Shale formation ranks as one of the largest domestic oil developments in the past 40 years. In 2012, North Dakota became the country's second largest oil producing state, behind only Texas. As a result, the state enjoys widespread economic growth and the lowest unemployment rate in the country—2.6%.[11]

However, the economic benefits of unconventional energy development can also be seen in states such as Indiana and Delaware, where little or no energy production takes place. In Indiana, for example, the total number of jobs supported by unconventional activities was 15,973 in 2012. That job total is expected to climb to 27,303 in 2020 and to 33,366 in 2035. In Delaware, the total number of jobs supported by unconventional energy activities reached 2,195 in 2012. That job total is projected to rise to 3,841 in 2020 and to 4,907 in 2035.[12]

Job Opportunities for Minorities and Women in the Oil and Natural Gas Industry

Employment opportunities in the oil and natural gas industry are projected to expand dramatically in the coming years for African Americans, Hispanics, and women, according to a new study undertaken for the American Petroleum Institute.[13] This study projects that the oil, natural gas, and petrochemical (chemical products derived from petroleum) industries will generate 955,000 new direct job opportunities through 2020 and nearly 1.3 million through 2030. African American, Hispanic, and women workers are expected to represent a vital portion of this projected growth in the labor force. Notably, 23 percent of new opportunities through 2030 are projected to be in scientific and managerial positions, requiring training in fields such as engineering, geoscience, management, business, finance, and technical skills.

Within the industry, the share of African American and Hispanic employment is expected to rise from one quarter in 2010 to one third through 2030. This shift will translate into nearly 408,000 minority jobs—32 percent of the new job opportunities projected through 2030. Among jobs in management, business, and finance, African American and Hispanic workers are expected to fill nearly 20 percent of new positions.

In 2010, women working in the oil, gas, and petrochemical industries totaled 226,000, representing 19 percent of the workforce. Based on current and projected trends in workforce participation rates and educational attainment, women are expected to fill 185,000 of the projected job opportunities through 2030. And these will be good jobs—many as petroleum engineers, managers, and other professionals.

In addition to white collar jobs, blue collar positions are expected to constitute 63 percent of new job opportunities in the industry through 2030. This rapid growth represents an enormous opportunity for workers with high school diplomas and some post-secondary training (for example, certificates or community college education) in skills related to the industry.

Vendor Highlights

Vendor profiles received in response to the 2014 survey provide a glimpse into the rich variety of businesses that are part of the oil and natural gas supply chain. Most are small and midsize businesses, the backbone of the energy revolution.

For example, one vendor in Georgia manufactures environmentally friendly "combustion solutions" that reduce emissions and increase efficiency. A vendor in Florida specializes in the design and construction of mobile/modular laboratories and primary containment equipment. These mobile laboratories enable companies to perform complex analyses, helping customers to be more efficient in field operations. In Massachusetts, another vendor helps clients develop geomechanical models to minimize operational risk when drilling and developing new reservoirs.

In North Carolina, a vendor that manufactures industrial work gloves focuses on impact-resistant hand covering, contributing to a safer work environment for drillers. And in Louisiana, a vendor helps clients achieve an injury-free work environment by providing on-site safety technicians, industrial safety training services, and Health, Safety, and the Environment (HSE) consultants.

A number of companies in the survey offer services and

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11 Bureau of Labor Statistics, May 2014, http://www.bls.gov/web/laus/laumstrk.htm.

12 IHS, *America's New Energy Future: The Unconventional Oil and Gas Revolution and the U.S. Economy* (Washington, D.C., December 2012).

13 IHS, *Minority and Female Employment in the Oil & Gas and Petrochemical Industries* (Washington, D.C., March 2014).

products to support hydraulic fracturing and horizontal drilling. One vendor in Michigan offers coating and manufacturing expertise that greatly increases the life of fracturing pump components. In Kentucky, another vendor restores used fluids to customer-specified performance levels, making possible high-yield waste recovery and lower unit costs. And in Pennsylvania, a vendor has treated and recycled more than one million barrels of flowback water.

In addition, the number of companies in the oil and natural gas supply chain that focus on environmental concerns is striking. A Nevada vendor tests water, soil, and air to ensure environmental compliance, health, and safety, and provides field test equipment and supplies, such as sampling pumps, air gas monitors, water quality meters, and safety supplies. And in Alaska, a vendor associated with the Iñupiat tribe describes the company role as follows: “As stewards of this land, we are able to provide clients with personnel who are extensively trained to prevent or mitigate damage to the environment. Our sense of stewardship and our training make us uniquely qualified to assist with responsible development.”