



The Economic Contribution of the Oil and Gas Industry In Kern County

INTRODUCTION

Kern Economic Development Foundation (KEDF) was contracted by the Western States Petroleum Association (WSPA) to conduct a study on the oil and gas (O&G) industry in Kern County. The purpose of this report is to provide an analysis of the economic benefits gained by Kern County as a result of the O&G industry's presence. While emphasis is on county-wide benefits, the economic impact reaches far beyond the County line, therefore state- and nation-wide benefits are also included here.

Publicly-available data was gathered for this report in order to quantify industry benefits. Sources include the County of Kern; the Department of Conservation's Division of Oil, Gas and Geothermal Resources (DOGGR); Kern Economic Development Corporation; personal surveys; Brookings Institution; Bureau of Economic Analysis; National Bureau of Economic Research; Bureau of Labor Statistics; and U.S. Census Bureau.

This report focuses on the following key areas:

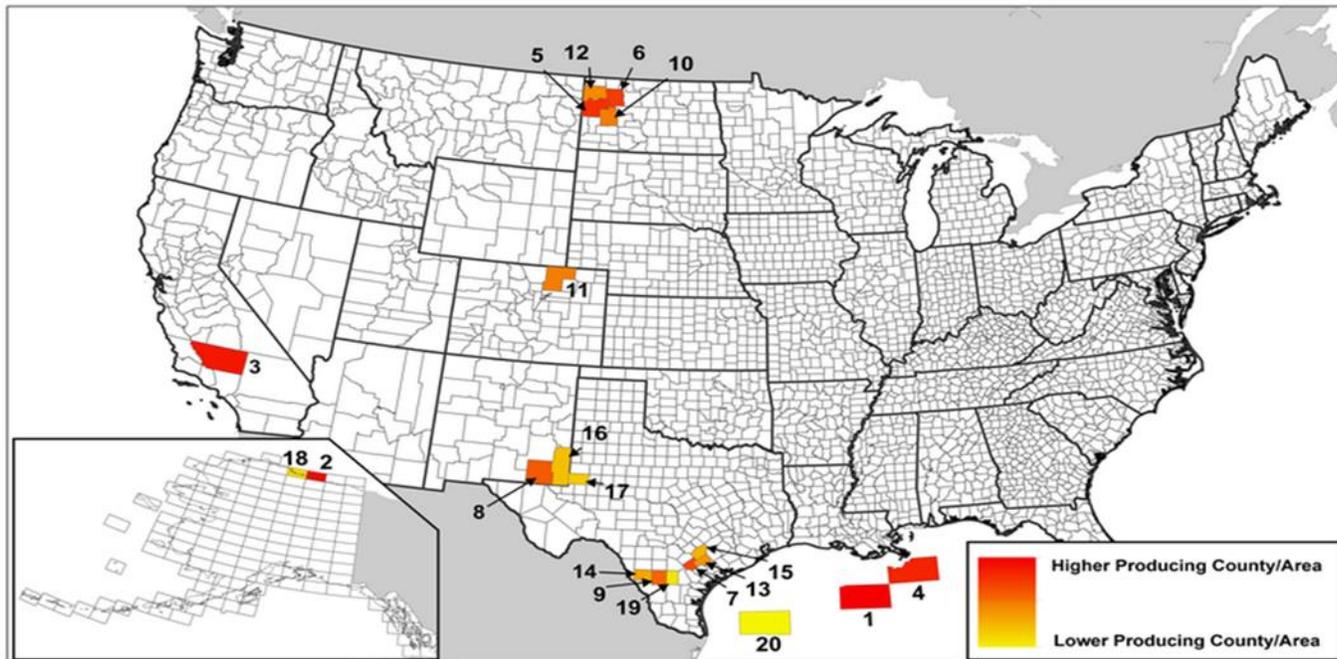
1. Employment Numbers and Wage Levels
2. Concentration of O&G Jobs in Kern County
3. Job and Earnings Multipliers Impact Economy
4. Upward Mobility Opportunities
5. Tax Impact of the Industry
6. Charitable Contributions by O&G Companies/Employees
7. Kern County O&G Production Aids in Energy Stability/Security
8. Predicting Community Impact of Future Oil Price Fluctuations

OVERVIEW

Kern County has been an oil and gas powerhouse since the 1890's, when oil was first discovered on the county's west side. Today, Kern is the leading oil-producing county in the nation (Figure 1), yielding 145 million bbl of oil and 132 billion CF of gas annually, according to 2014 DOGGR data. These amounts represent 71% of California's oil production and 10% of the total U.S. oil production. Kern County produces 66% of the state's total gas production.

Not surprisingly, the O&G industry is the number-one industry in Kern County in terms of gross domestic product and tax contributions. The benefit of the O&G industry, however, is by no means limited to Kern County. The industry generates significant regional economic activity. Extraction, production, refining, and petroleum product manufacturing result in highly tradable products that are consumed domestically and are also exported. These efforts produce high revenues, create high wage jobs, and contribute significant tax revenue to all levels of government. The impact of the O&G industry is, indeed, very far-reaching.

Figure 1. Top 20 Oil Producing Counties/Regions



drillinginfo
Top Producing Counties/Areas - 2013

KEY INDUSTRY ELEMENTS

Significant Employment and Wage Levels Bolster Local Economy

Kern County’s O&G cluster is not only a significant source of overall employment, but it is also a provider of high-paying jobs that require moderate-to-high skill levels (i.e. jobs in technical and engineering occupations). O&G cluster employment accounts for approximately 1 in 7 jobs in the county. Almost all segments of the industry pay higher wages than the Kern County average. In some more specialized or highly-skilled areas, wages are *triple* the 2014 county average of \$41,100. Across the O&G industry in 2014, there were approximately 50,000 direct, indirect, and induced energy-related jobs in Kern County.

Figure 2. Oil and Gas Direct Employment in Kern County, 2013 vs. 2014

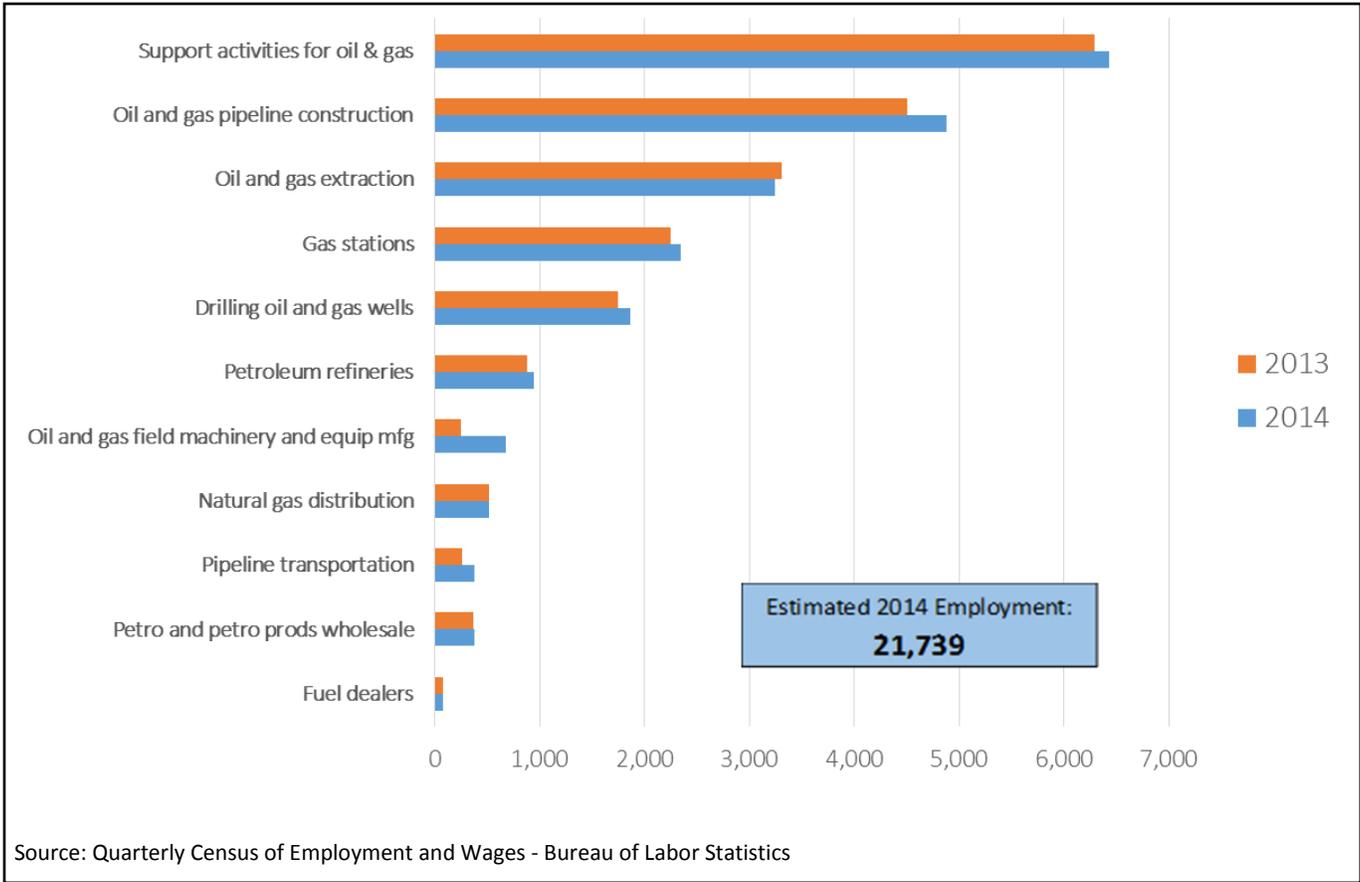


Figure 3. Kern County Oil and Gas Industry Annual Wages, 2014

NAICS Sub-Sector	Annual Establishments	Annual Average Direct Employment	Total Annual Wages	Annual Wages per Employee
NAICS 211 Oil and gas extraction	56	3,243	\$462,232,109	\$142,543
NAICS 213111 Drilling oil and gas wells	25	1,864	\$149,487,414	\$80,219
NAICS 213112 Support activities for oil and gas operations	112	6,432	\$503,666,507	\$78,307
NAICS 2212 Natural Gas Distribution	4	492	ND	ND
NAICS 23712 Oil and gas pipeline construction	20	4,876	\$266,098,995	\$54,574
NAICS 32411 Petroleum refineries	26	949	\$119,544,267	\$125,980
NAICS 333132 Oil and gas field machinery and equipment mfg	12	680	\$43,305,000	\$63,684
NAICS 4247 Petroleum merchant wholesalers	23	375	\$25,277,050	\$67,376
NAICS 447 Gasoline stations	199	2,349	\$49,312,745	\$20,992
NAICS 45431 Fuel dealers	11	74	\$3,102,702	\$42,071
NAICS 486 Pipeline transportation	13	376	\$34,280,826	\$91,152
Total, Oil and Gas Industry	501	21,710	\$1,656,307,615	\$76,292
Total, All Industries	16,267	254,620	\$10,466,665,862	\$41,107

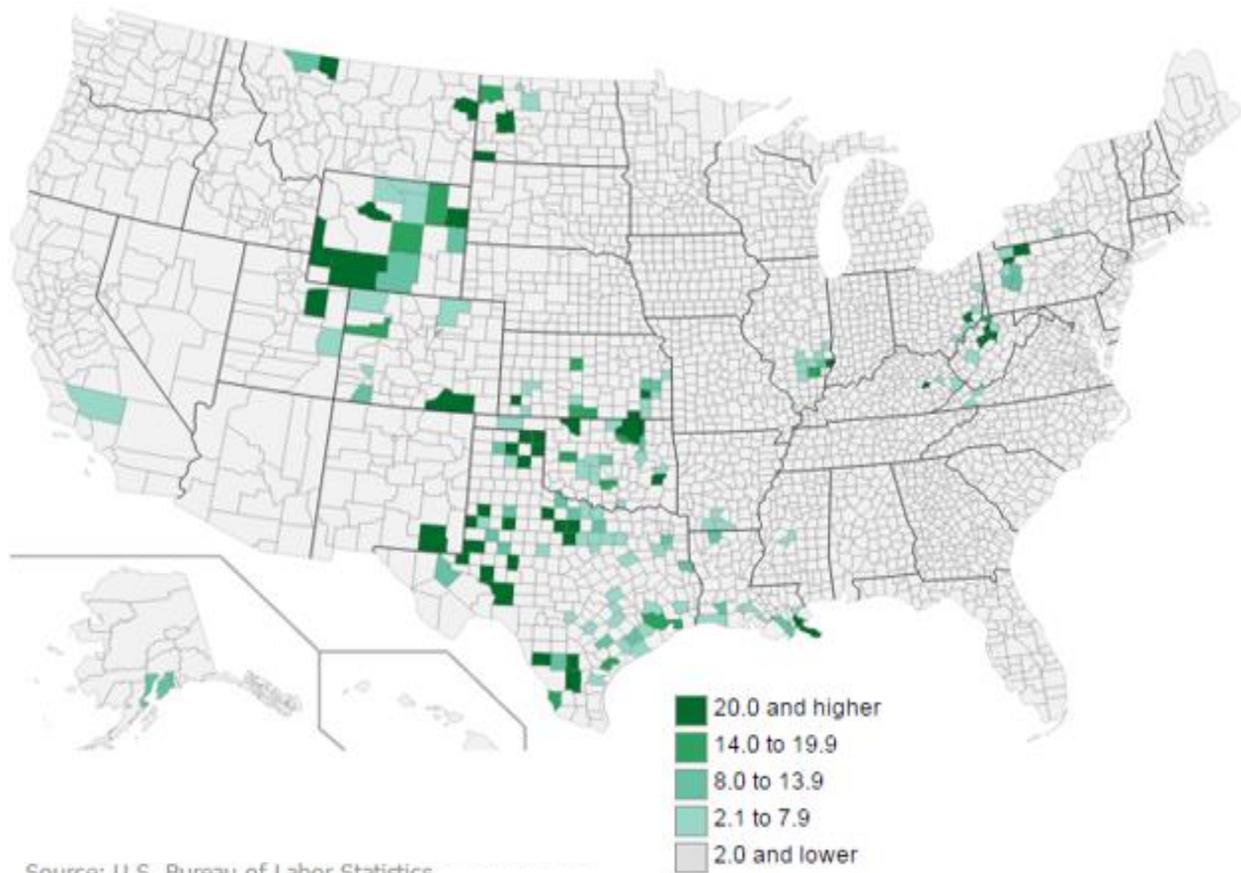
Source: Bureau of Labor Statistics

As illustrated in Figure 3, the O&G cluster, almost without fail, offers higher-than-average wages in Kern County. Oil and gas extraction, consisting of highly skilled engineering and geological jobs, was the highest-paying segment of the cluster with an average annual salary of nearly \$143,000. The average annual salary for the entire sector was \$78,000, which is nearly double the “all industries” annual average of \$41,100.

Concentration of O&G Jobs in Kern County Far Exceeds National Average

“Location quotient” is used to compare a region’s relative industry employment size to that of the United States; it is the key measure of employment concentration. Figure 4 illustrates that Kern County is the only county in the western region with an above average concentration of O&G jobs. Among cluster segments, Kern County is heavily concentrated in oil and gas extraction (7.5) as well as in oil and gas pipeline construction (16.3).

Figure 4. Counties with the Highest Relative Concentration of Employment (Location Quotient) in the Oil and Gas Extraction Industry, 2014



O&G Industry Features High Job and Output Multipliers

The oil and gas industry is one of the most “impactful” industry sectors (Figure 5) on economic activity throughout the region.

Figure 5. Economic Impact of O&G Expenditures and Production

<i>Impact per \$1 million of O&E Extraction Expenditures</i>				
Impacts	Jobs	Wages	Value Added	Gross Output
Direct	1.39	\$134,740	\$395,179	\$1,000,000
Indirect	2.44	\$174,982	\$278,836	\$562,231
Induced	<u>2.00</u>	<u>\$102,470</u>	<u>\$183,927</u>	<u>\$305,457</u>
Total	5.83	\$412,191	\$857,942	\$1,867,688
<i>Impact per \$1 million O&E Production</i>				
Direct	1.80	\$133,757	\$542,968	\$1,000,000
Indirect	2.18	\$157,460	\$281,037	\$469,367
Induced	<u>1.83</u>	<u>\$93,727</u>	<u>\$168,233</u>	<u>\$279,367</u>
Total	5.80	\$384,945	\$992,238	\$1,748,733

Source: Implan (CA Model)

In addition, the approximately \$3.8 billion paid in 2013 to local O&G employees creates a significant “ripple effect” phenomenon in the local economy. “Direct activity” includes the materials purchased and the employees hired by the industry itself. “Indirect effects” are those which stem from the employment and business revenues motivated by the purchases made by the industry and any of its suppliers. Increased output generates new money in the community, resulting in increased spending on new homes, durable goods such as cars and appliances, plus additional spending on restaurants and entertainment options.

Industry Offers Enhanced Upward Mobility Opportunities

According to the National Bureau of Economic Research, Kern County recently ranked in the Top 10 in the U.S. in terms of upward mobility and in the overall concentration of STEM (Brookings Institution) and engineering jobs (Forbes). A majority of Kern County’s hi-tech employment is in the O&G industry (an estimated 65%), where most positions require technical degrees vs. advanced degrees.

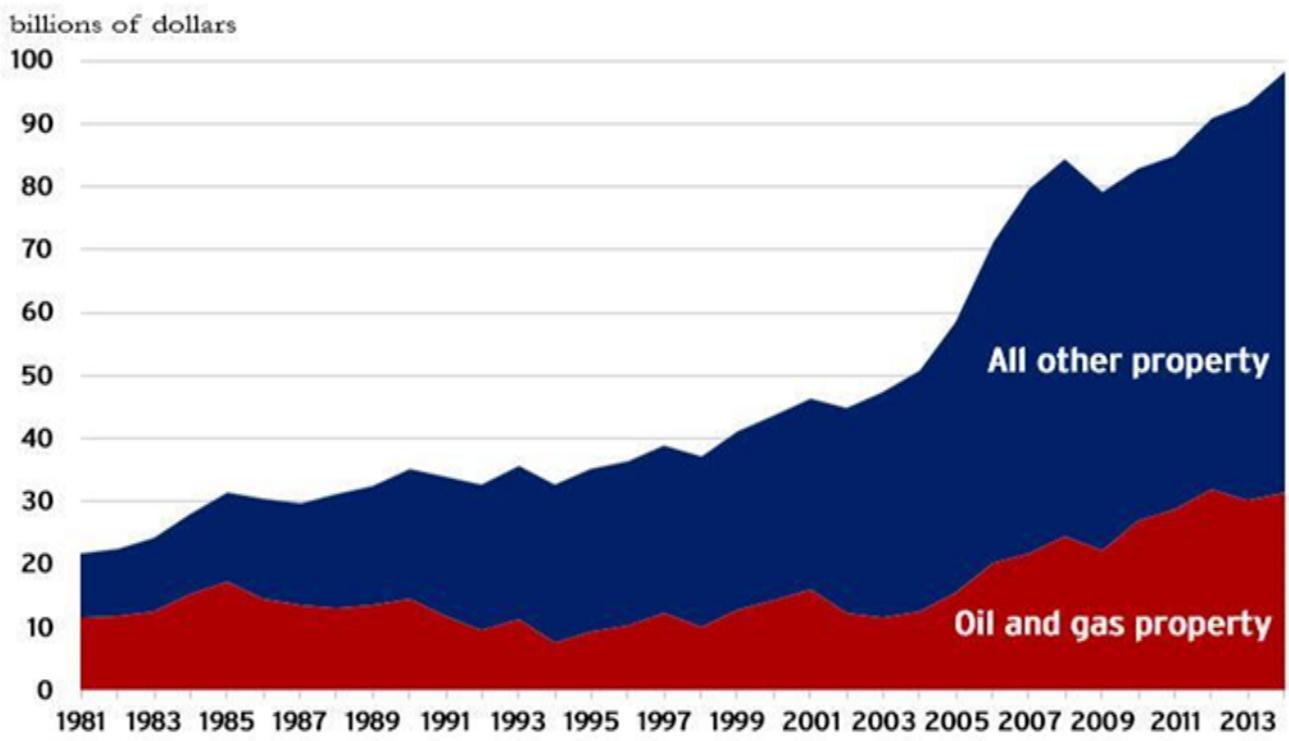
A 2015 report by the Brookings Institution analyzed two-year and four-year colleges across the U.S. to determine which schools’ graduates received “added value,” based on their mid-career earnings levels. Bakersfield College (BC) ranked 6th in the nation among similar schools. BC students were predicted to earn \$56,957 annually based on student characteristics and college type, but their mid-career salaries surpassed that prediction, coming in at an average of \$67,200 (15% higher than predicted). California State University, Bakersfield also scored well, with graduates earning \$75,400 at the mid-career point, 11.6% better than the predicted \$66,599. The high performance of these colleges and their graduates

was due to a combination of factors, including extensive STEM (Science, Technology, Engineering and Math) curriculum in the schools, and the programs' proximity to energy employment centers.

Industry Has Significant Tax Impact, Benefitting All Levels of Government

The O&G industry accounted for roughly 30% of the Kern County's \$100 billion in property tax valuations in 2014 (Figure 6). In 2013, economic activity associated with the O&G industry in Kern County is estimated to have generated \$1.15 billion in state and local tax revenue, plus \$1.02 billion in federal tax revenue. Of the state and local government revenues, \$607 million came from sales taxes (including those paid on the consumption of oil and gas products); \$286 million came from property taxes paid by households and businesses; and \$149 million came from personal and corporate income taxes.

Figure 6. Kern County Assessed Property Values, 2014



Data source: Kern County, CA assessor's office

Taxes paid by the O&G industry play a major role in the support of local infrastructure, including schools, public safety, streets and roads, and parks.

Clearly, the O&G industry represents a major source of tax revenue, generated by businesses operating within the industry, as well as consumers. The production, refining, distribution, sale and consumption of oil and gas all face taxes levied by local, state and federal governments. Following is a description of the taxes and fees paid by the O&G industry and its consumers:

Ad Valorem (Property Taxes): Ad valorem taxes (property taxes) are locally assessed and administered by each county. The State of California dictates that ad valorem taxes have a one percent maximum; however, individual counties have the option to add to this rate to satisfy local voter-approved debt.

DOGGR Assessment: The State imposes an assessment on O&G production in California in order to support the Department of Conservation's Division of Oil, Gas, and Geothermal Resources (DOGGR).

State Excise Taxes: Excise taxes are levied on the purchase of certain goods and are paid by the end user at the time of sale. California imposes an excise tax on both natural gas and oil sales. The state excise tax levied on natural gas consumption in California varies among the different private utility gas distributors in the state and with the type of customer (residential, commercial, industrial, etc.), while excise taxes levied on the purchase of fuel varies by fuel type.

Federal Excise Tax: The federal government levies an excise tax on fuel consumption in addition to those levied by the State of California. The federal excise tax applied to the purchase of fuel (from point of sale, terminal, refinery or from outside of the U.S.) also varies by fuel type, including gasoline, aviation gasoline, diesel and jet fuel. Compressed natural gas used as a fuel for motor vehicles is also subject to a federal excise tax.

Sales Tax: Sales tax is levied on the sale of gasoline by both state and local governments; the purchaser incurs the tax burden at the point of sale. State and local (county and city) sales tax rates are usually bundled together. The total rate varies from county to county (and even different areas within the same county), based upon voter-approved measures specific to that geography. Diesel fuel sales in California are subject to an additional sales tax levied by the state.

Federal (Public) Lease and Royalty Payments: O&G operations involving extraction may enter into a mineral lease with the federal government in order to obtain the right to explore, drill, extract, remove, and dispose of oil and gas deposits on federally owned lands. Leases are purchased, bonus lease payments are paid, rental rates apply and once production is underway the lessees are subject to royalty fees.

Figure 7. Economic and Fiscal Contribution of the O&G Industry in Kern County, 2013

Total Economic and Fiscal Contribution of Oil & Gas Industry Kern County 2013				
ECONOMIC CONTRIBUTION	Employment	Labor Income (\$ millions)	Value Added (\$ millions)	Output (\$ millions)
Direct	23,857	\$2,954.2	\$4,891.6	\$15,152.3
Indirect	7,073	\$359.1	\$517.7	\$955.7
Induced	<u>13,615</u>	<u>\$508.0</u>	<u>\$957.6</u>	<u>\$1,580.8</u>
TOTAL CONTRIBUTION	44,544	\$3,821.4	\$6,366.9	\$17,689.1
<i>Percent of Total CA Contribution</i>	11.8%	11.6%	10.0%	9.2%
<i>Percent of County Total</i>	11.0%	17.0%	17.9%	27.0%
FISCAL CONTRIBUTION	State and Local (\$ millions)	Federal (\$ millions)	Total Taxes (\$ millions)	
Sales and excise taxes	\$607.6	\$164.7	\$772.3	
Property taxes	\$285.6	-	\$285.6	
Personal income taxes	\$117.2	\$307.7	\$424.9	
Corporate profits taxes	\$31.6	\$125.2	\$156.8	
Social insurance taxes	\$13.9	\$387.9	\$401.8	
Other taxes	\$63.6	\$28.9	\$92.5	
Fees and permits	<u>\$26.3</u>	<u>\$7.3</u>	<u>\$33.7</u>	
TOTAL TAX REVENUES	\$1,145.7	\$1,021.8	\$2,167.5	

Source: Estimates by LAEDC

Unsurpassed Financial and Volunteer Support of Local Charities and Education

Kern County’s O&G industry significantly impacts the community through its philanthropic activity through its contributions to local education efforts. According to a survey of six local O&G companies in Kern County, more than \$5.5 million was donated to more than 130 local non-profits and educational programs in 2014. Kern County’s two community colleges, California State University, Bakersfield, and K-12 funding are the most frequent beneficiaries of the financial support. Social service non-profits (e.g., the Homeless Center/Alliance Against Family Violence) and health-related organizations (e.g., the American Heart Association) also rank among the top recipients.

Several STEM (Science, Technology, Engineering and Math) programs were started or sustained thanks to O&G funding at Taft College and Bakersfield College. California State University, Bakersfield opened its new Fabrication Lab in 2014 due, in large part, to O&G funding. These programs, plus others like a local welding program and a hands-on research program for high school students help prepare students for a variety of careers.

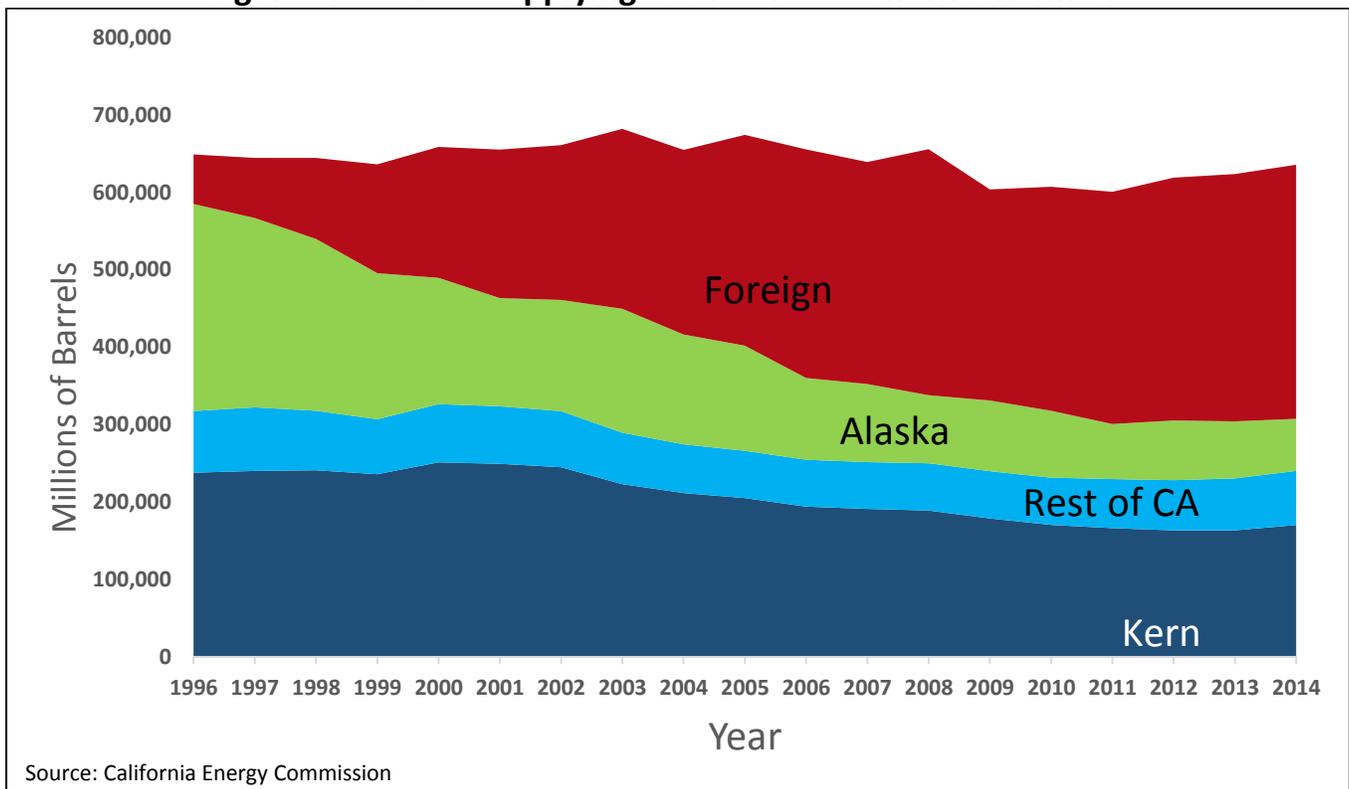
An industry-funded program at Taft College places students in positions with local non-profit organizations; some are traditional students, and some are part of the Transition to Independent Living (TIL) program which serves students with developmental/intellectual disabilities. The O&G funding provides wages for these students.

These are just a few examples of how O&G companies contribute to the community. Add to that the impact made by employees of the O&G industry; they are generous with their time and money as well. More than 15,000 O&G employee hours were volunteered for local programs in 2014, and the United Way states that O&G employees (plus oilfield service company employees) donated nearly \$400,000 during the 2013/14 fiscal year.

Energy Independence Creates Stability and Security

According to California Energy Commission, California is currently a net importer of oil, producing only about 37 percent of the petroleum that it uses (Figure 8). (Importing comes at an expensive price: In 2007, the state spent nearly \$50 billion for gasoline and \$9.7 billion for diesel.) Dependence on foreign oil makes the state vulnerable to energy shortages and price spikes, and makes us dependent on foreign countries for energy. In addition, Californians then miss out on critical infrastructure funding since imported oil is exempt from California taxes (while high-paying O&G jobs then go to foreign countries or other states). All oil and gas produced in California is used here and is produced under the most stringent regulations in the world.

Figure 8. Sources Supplying Crude Oil to California Refineries



REGIONAL ECONOMIC IMPACT OF OIL PRICE VOLATILITY

Measuring Oil Price Fluctuations and Their Local Economic Impact

Recent oil price volatility serves as a reminder of why the region must gauge how local economic output might be affected in the future—and how that will affect the region as a whole. Local drilling activity and production are critical factors in predicting future outcomes.

Figure 9 shows the strong positive correlation between rising oil prices and regional economic growth. In addition, the coefficient of determination (R^2) shows how well a regression model fits the data. Its value represents the percentage of variation that can be explained by the regression equation. Analysis confirms that a staggering 70% of GDP growth (2001-2013) could be directly attributed to rising oil prices.

Figure 9. Change in Kern Oil Prices vs. Kern GDP Growth, 2001-2013

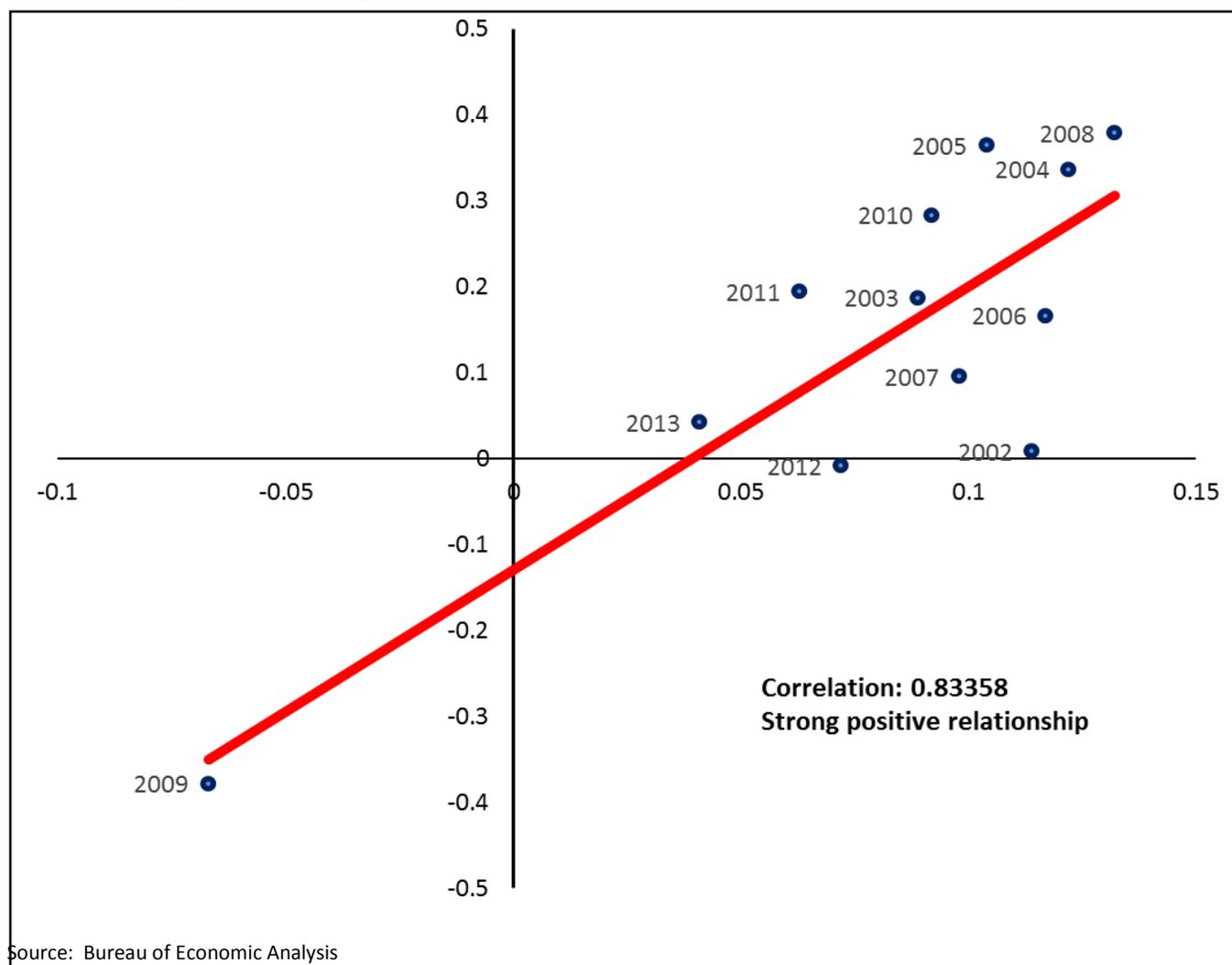


Figure 10 highlights the impact oil prices have on Kern County’s O&G industry employment. Significant local employment increases/decreases typically lag dramatic shifts in oil prices by 6-9 months.

Figure 10. Kern County O&G Industry Employment vs. Kern Oil Prices, 2001-2014

