Contributions of the Oil and Gas Industry to Los Angeles County

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Western States Petroleum Association

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About the Author

Brad Williams joined Capitol Matrix Consulting (CMC) in 2011 after serving in various positions in California state government for nearly 33 years. During the past nine years at CMC, Mr. Williams has been involved in hundreds of projects covering energy and regulatory policy, economic forecasting, economic impact analysis, and state and local government taxation and finance. During his prior three decades in state government, Mr. Williams served in key positions in the State Treasurer's office, Assembly Appropriation Committee and the Legislative Analyst's Office, where he was chief economist and Director of Budget Overview and Fiscal Forecasting. During his government career, Mr. Williams was regarded as one of the state's top economic and fiscal experts, and he was recognized by the Wall Street Journal as the most accurate forecaster of the California economy in the 1990s.

Executive Summary

The Los Angeles County Regional Sustainability Plan includes a provision that phases out oil and gas production and refining in the County. Our firm has been commissioned to evaluate the provision's impact on jobs, economic output, and state and local taxes currently paid in the County, as well as various subdivisions within the County. Our key findings are:

- We estimate that about 37,000 employees and independent contractors work in the O&G industry in Los Angeles County. This includes: (1) 4,471 jobs in upstream industries, primarily oilfield extraction, oil well drilling, and oil and gas mining support industries; (2) 5,198 jobs in midstream industries, mainly in petroleum and petroleum products merchant wholesalers, pipeline construction and transportation; and (3) 27,371 jobs in downstream industries, including petroleum refineries, natural gas distribution, and gasoline stations.
- Average pay rates in each of the upstream, midstream and downstream segments are well above the private-sector average – even though many of the jobs are available to workers with less than college degrees.
- Taking into account multiplier impacts, the O&G industry supports 113,000 jobs, $32 billion in gross regional product and $4 billion in state and local taxes and other revenue. These revenues support transportation, schools, health, social services, housing and homeless services, and public safety programs in the County.
- The O&G industry supports about 36,000 jobs and $8.6 billion in gross regional product in the City of Los Angeles (including multiplier effects). The industry also accounts for about $250 million in City General Fund revenues each year, or about 4 percent of the City's total General Fund budget.
- The O&G industry makes substantial economic and revenue contributions in local communities throughout the County. Its impacts are most intense in Supervisorial Districts 2 and 4 – each of which have major oil refineries, bulk petroleum terminals and related logistical operations. District 4 also has large oil and gas production operations. City budgets in these districts are heavily dependent on the O&G industry, with revenues generated by this industry accounting for more than 30 percent of the General Fund budget totals in two of the cities we examined.

These economic and fiscal contributions would be curtailed and eventually eliminated by the phase-out of oil production and refining in the County. This would raise unemployment rates and reduce household incomes at a time when the economy and local governments are reeling from the economic fallout of the COVID-19 pandemic.

Introduction

On August 6, 2019, the Los Angeles County Board of Supervisors adopted a regional sustainability plan that is organized around 12 goals in areas such as transit-oriented development, accessibility to parks and beaches, diversion from landfills, improved access to public services, and clean water. One of the 12 goals is a "fossil fuel-free LA County," which would require a phase-out of all petroleum and natural gas production and refining in the County. The plan states that "…(b)y eliminating fossil fuel production in the County, including drilling, extraction, and refining, the County will protect its residents from harmful local pollution that inequitably burdens workers, low-income communities, and communities of color."[1]

Aside from its enormous implications for users of petroleum products and natural gas, a major concern is that the adopted sustainability report will have the opposite impact on the very workers and communities it purports to help. It will eliminate tens of thousands of full-time, high-paying jobs, which are currently available for workers with varying levels of education and technical training. The impact will be on all communities in the County – including the lower-income communities cited in the sustainability report.

In view of this concern, the Western States Petroleum Association commissioned our firm to estimate the economic and tax revenue contributions currently being made by the O&G industry, both for Los Angeles County as a whole, and for regions within the County.

Our analysis focuses on the economic contributions of the O&G industry as a major employer, a major purchaser of goods and services from other businesses, and as a major taxpayer in the County. An equally important impact not covered in this report is the devastating effect that a phase-out of oil production and refining would have on households and businesses customers throughout Southern California, Southern Nevada, and much of Arizona, which depend on the oil and gas products produced, refined and distributed by O&G businesses in Los Angeles County.

Background on Los Angeles County

Los Angeles County is home to 10 million people, making it the largest county in the U.S. Total gross regional product was $800 billion in 2019. Businesses in the County employed 6.6 million full- and part-time workers during the year. This includes 4.7 million employees, and 1.9 million independent contractors.[2]

While the County remains one of the largest economic regions in the nation, it has faced significant economic challenges during the past three decades, as middle-tier jobs have disappeared due to the flight of manufacturing from the region. Over the past 9 years, non-farm employment rose at an annual rate of 0.7 percent on the County, or about one-half the 1.4 percent pace for the rest of California. Moreover, the COVID-19 pandemic has

[1] Source: Our County: The Los Angeles Countywide Sustainability Plan. Adopted August 6, 2019. https://ourcountyla.lacounty.gov/

[2] Source: CMC estimates for 2019 based on annual data from the Bureau of Economic Analysis through 2018, (BEA, Regional Data. Employment by State. https://www.bea.gov/data/employment/employment-by-state)

taken a major toll on the County, causing a major economic contraction and a dramatic increase in the unemployment rate, which stood at 20.3 percent in April 2020, the fifth highest rate for a county in the state.[3] The weakness has already resulted in large projected shortfalls in local government budgets throughout the County, and the effects could be long-lasting, given the uncertainty regarding the timing and strength of the recovery from the recession.

A phase-out of the essential O&G industry would have major consequences even in good economic times. Given the enormous challenges currently facing the County in the wake of the COVID-19 pandemic, the economic disruptions caused by the phase-out of this essential industry will be even more dire in terms of its impact on the economy and government budgets.

[3] Source: California Employment Development Department, Employment by Industry Data. https://www.labormarketinfo.edd.ca.gov/data/employment-by-industry.html

O&G Infrastructure in Los Angeles

Los Angeles is a major O&G hub for all of Southern California, Southern Nevada, and Arizona. The industry is often divided into three segments – upstream, midstream and downstream – with many workers and businesses involved in all three segments within the County.

Upstream Activities (Oil and Gas Production)

Los Angeles is the second largest oil-producing county in California. It has over 40 operating oil fields that produced 19 million barrels of oil in 2018. Of this total, 12 million barrels were from on-shore wells and 7 million barrels were from off-shore sources. Figure 1 shows the major oilfields in the County, along with their annual production totals in 2018. [4]

Figure 1
Top Oil Fields in Los Angeles County (2018)

Oil Field	Oil Produced (Thousands of Barrels)	Gas Produced (Thousands of BOE)
On-shore:		
Wilmington On-shore	4,529	170
Inglewood	1,977	154
Long Beach	1,265	84
Santa Fe Springs	691	42
Placerita	563	—
Beverly Hills	317	61
Montebello	395	36
Torrance	368	15
Seal Beach*	241	42
Las Cienegas	173	24
San Vicente	140	18
Off-shore:		
Wilmington Off-shore	6,289	395
Belmont Off-shore*	255	16

* Represents estimated production in portion of field located inside Los Angeles County.

By far, the largest source of both on-shore and off-shore oil production is Wilmington field, which is the third largest field in the U.S. in terms of cumulative oil production and, after 85 years of production, still remains the fifth largest producing field in California.

[4] Source of estimates in Figure 1 is the Department of Conservation. Oil, Gas, and Geothermal Statistics and Production (CalGEM). https://www.conservation.ca.gov/calgem/pubs_stats/Pages/stats_prod.aspx. For oilfields crossing county boundaries, we estimated the share attributable to Los Angeles County using individual well data available from DOGGR's geographical information system (GIS) map. We specifically obtained API identification code for each well within the County boundaries, recorded annual production levels for individual wells, and combined them to arrive at total production taking place within the County.

Wilmington accounts for over one-half of all oil produced in the County.[5] Other fields with more than 500,000 barrels of annual production include Inglewood, Long Beach, Santa Fe Springs, Placerita, and Beverly Hills. A modest amount of natural gas is also produced in the county, primarily from the Wilmington and Inglewood fields.

Mid-stream and Downstream Activities

Los Angeles is a major refinery and distribution center, serving all of Southern California, Southern Nevada, and Arizona. Over 60 percent of California's statewide refinery capacity is in Los Angeles County. As indicated in Figure 2, there are 5 major refineries operating in the County**,** with a combined rated capacity of 1 million barrels per day. Two of the refineries have linked facilities. One is the Phillips 66 refinery, which has a Carson facility that processes crude oil and sends it to its Wilmington facility (in the City of Los Angeles) where it is upgraded into finished products. The other is the Marathon Petroleum Corporation Oil Refinery, which consists of a facility in Carson and one in Wilmington (in the City of Los Angeles). There are also 2 smaller refineries shown in Figure 2 that are involved in the production of asphalt and other non-gasoline petroleum products.

The major Los Angeles refineries are among a relatively small number in the U.S. that are capable of producing gasoline and diesel that meets the California Air Resources Board (CARB) fuel product specifications.[6] The facilities receive crude oil mainly through a network of pipelines coming directly from California oilfields or from marine terminals at the Long Beach and Los Angeles maritime ports. Once refined, fuels are moved through a system of pipelines and bulk storage terminals to destinations throughout Southern California, Las Vegas, Nevada, and Phoenix, Arizona. A listing of the two-dozen major active fuel terminals operating in Los Angeles County is shown in Figure 3.

The final stage of the supply chain is the distribution between fuel terminals and gas stations or other fuel facilities, normally by truck. There are approximately 2,100 retail gasoline stations in the County, which sold over 3.6 billion gallons of gasoline and 350 million gallons of diesel during 2018.[7]

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[5] Off-shore portions of Wilmington Field lie under Long Beach Harbor and San Pedro Bay, with much of the oil accessed through the THUMS artificial islands in San Pedro Bay. On-shore production is from wells located in and around the Port of Los Angeles and the City of Long Beach.

[6] U.S. Energy Information Administration. West Coast Transportation Fuels Markets. September 2015.

[7] Source: California Retail Fuel Outlet Annual Reporting (CEC-A15) Results, California Energy Commission. https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html

Figure 2
Refineries in Los Angeles County

Refineries in Los Angeles County	City (or Cities)	Rated Capacity (Barrels Per Day)	Markets Served
Marathon Petroleum Corp.	Carson and Los Angeles	355,340	So. Cal., Las Vegas
Chevron U.S.A. Inc., El Segundo	El Segundo	269,000	So. Cal., Las Vegas, Phoenix
PBF Energy, Torrance	Torrance	151,300	So. Cal., Las Vegas
Phillips 66 Los Angeles	Carson and Los Angeles	139,000	So. Cal., Las Vegas
Valero Energy, Wilmington	Los Angeles	85,000	So. Cal., Las Vegas, Phoenix
World Oil Refining	South Gate	8,500	Local
Valero, Wilmington (Asphalt)	Los Angeles	6,300	Local

Source: California Energy Commission. https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/californias-oil-refineries

Figure 3
Petroleum Bulk Terminals in Los Angeles County

Petroleum Bulk Terminals in Los Angeles County	
City (Community)	**Facility**
Carson	Tesoro Logistics Operations LLC
	Kinder Morgan Tank Storage Terminal LLC
Commerce	BNSF
El Segundo	Chevron USA, Inc.
Long Beach	Tesoro Logistics
	Petro Diamond Terminal Company
	Tesoro Logistics Operations LLC
	Chemoil Terminals Corporation
	Phillips 66 PL - LA Terminal
Montebello	Chevron USA, Inc.
Paramont	AltAir Paramount
San Pedro	The Jankovich. Company
	Rancho LPG Holdings
Signal Hill	Shell Oil Products US
	Tesoro Logistics Operations LLC
South Gate	Tesoro Logistics Operations, LLC
Van Nuys	Shell Oil Products
	Chevron USA, Inc.
Vernon	Torrance Logistics Company
Los Angeles (Wilmington)	Tesoro Logistics Operations LLC
	Ultramar, Inc.
	Vopak Terminal Los Angels, Inc
	Shore Terminals LLC

Source: Active Fuel Terminals as of 4/30/2020, IRS. https://www.irs.gov/pub/irs-utl/tcn_db.pdf

Economic Contributions of the Los Angeles County O&G Industry

The O&G industry in Los Angeles actually consists of 15 specific industry segments designated by the North American Industry Classification System (NAICS) – a system created by the federal government to track business establishments based on the primary commodities they produce.

Number of Jobs

The total number of jobs in these industries was 37,040 in 2019 (see Figure 4).[8]

Figure 4
O&G Industry Jobs in Los Angeles County – 2019

Industry (NAICS)	Jobs
Upstream	
Oil and gas extraction (211)	1,685
Drilling oil and gas wells (23111)	613
Support activities for oil and gas operations (213112)	2,017
Oil and gas field machinery and equipment manufacturing	156
Total	**4,471**
Midstream	
Oil and gas pipeline and related structure construction (2312)	2,529
Petroleum and petroleum products merchant wholesalers (4247)	1,790
Pipeline transportation (486)	879
Total	**5,198**
Downstream	
Petroleum refineries	4,628
Petrochemical manufacturing	63
Petroleum lubricating oil and grease manufacturing	474
All other petroleum and coal products manufacturing	378
Natural gas distribution (2212)	8,582
Motor vehicle fuel trucking (484220)	653
Fuel dealers (45431)	367
Gasoline stations (447)	12,226
Total	**27,371**
Grand Total	**37,040**

[8] Primary source of the job totals in Figure 4 is the IMPLAN database and modeling system (described in Appendix 1 of this report), which in turn is based on several public data sources. These include the Census of Employment and Wages (Bureau of Labor Statistics); the Regional Economic Accounts (Bureau of Economic Analysis); and County Business Patterns (U.S. Census Bureau). In a few instances, CMC allocated broader industry totals included in the IMPLAN database to O&G specific industries based on more detailed employment and wage information available from the Quarterly Census of Employment and Wages data from the California Employment Department. CMC also made downward adjustments to O&G extraction industry job totals to reflect detailed information from SEC 10 (k) reports and company feedback regarding the number of non-employee independent contractors used in the Los Angeles region.

The total number of jobs consists of:

- 4,471 upstream O&G extraction and support industries. This category includes employees of the major and independent oil producers operating in Los Angeles. It includes and include oilfield workers, petroleum engineers, geologists, and management. This category also includes workers involved in drilling and support services to producers.
- 5,198 workers in midstream industries. These include workers involved in oil and gas pipeline construction, pipeline transportation, and employees of petroleum bulk terminals (which are in the petroleum and petroleum products merchant wholesaler industry).
- 27,371 workers in downstream industries. These include employees working for the 8 refineries as well as those working in petroleum-product manufacturing, natural gas distribution, petroleum-product trucking, fuel dealers, and in the 2,100 gasoline stations in the County.

Average Wages Compared to Rest of Economy

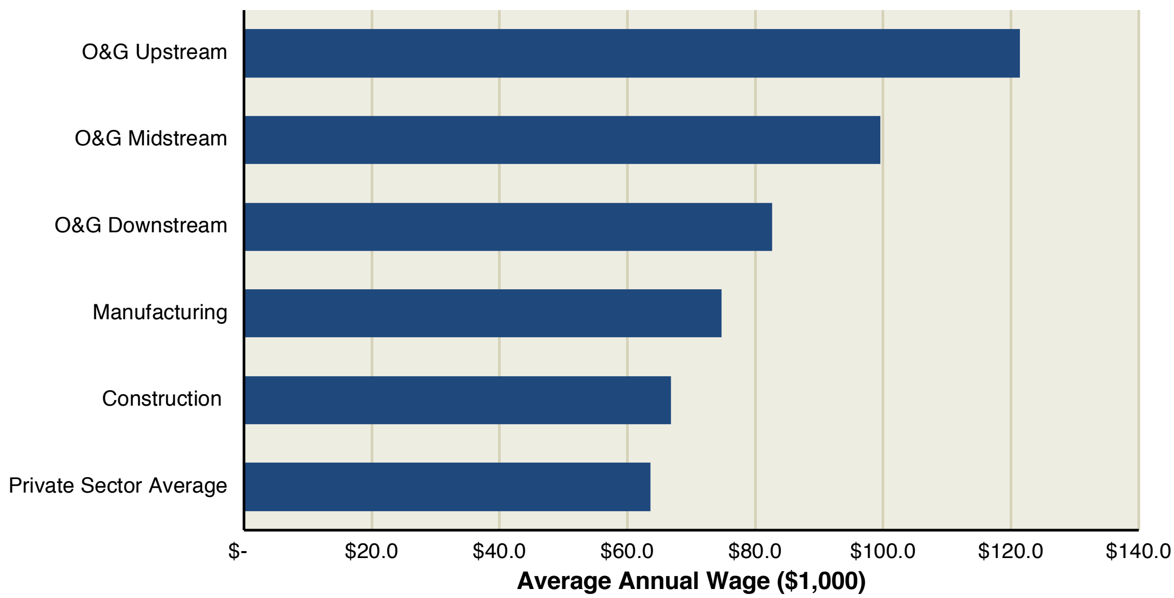
Most O&G jobs pay well. The overall industry average is $95,000 per year, or about 50 percent higher than the economy-wide average in Los Angeles County.[9] As indicated in Figure 5, the average wage for the upstream segment is $120,000 per year (excluding benefits), nearly double the economy-wide average.

The average pay rate for mid-stream industries is just under $100,000 per year. These reflect high pay rates in the pipeline construction and pipeline transportation industries, and in petroleum product merchant wholesalers.

The average for the downstream segment is just over $80,000 per year, reflecting high pay rates in the petroleum refining, natural gas distribution and various petroleum-product manufacturing sectors. Wage rates for gasoline station employees are relatively low, reflecting the entry level and part-time nature of many of the jobs. However, proprietor income to franchise owners is quite high. When both wage and proprietor income is included, gasoline station average pay is $121,000 per year.

[9] Ibid.

Figure 5
Average Annual Wage, O&G Industry Segments and the Private Sector Economy



The above-average pay rates in in all three segments of the O&G industry is especially impressive given that many of the jobs involving oilfield work, pipeline construction, storage, refinery, other manufacturing activities are in technical occupations that require less than a college degree. We also note that wage totals do not include benefits, such as retirement, health, and sick leave.

O&G Contributions to the Broader Los Angeles County Economy

Background. In order to estimate the full impacts of the O&G industry on the Los Angeles County economy, we developed estimates using the IMPLAN input-output model for Los Angeles County and many of its subdivisions. This model and database system is described Appendix 1. Generally, the IMPLAN estimates start with *direct impacts* – that is, the employment (shown in Figure 4), wages, gross output and regional product attributable to the O&G industry itself. These direct-impact estimates are based on publicly available data from the Census of Employment and Wages (Bureau of Labor Statistics), the Regional Economic Accounts (Bureau of Economic Analysis, and County Business Patterns (Census Bureau).

The model then estimates *multiplier effects* of spending by the primary industry and its employees on supplying businesses (as well as their suppliers). The multiplier effects, which ripple through the economy and impact many industries, are based on benchmark U.S. input-output accounts produced by the U.S. Bureau of Economic Analysis (BEA), which in turn are based on government surveys of the interrelationship among industries in the U.S. economy. The IMPLAN modeling system adapts the national benchmark accounts to local regions based on based on a variety of industry and population characteristics of the local area being studied.

IMPLAN estimates for Los Angeles County. Taking into account both direct and multiplier effects, the O&G industry supports 112,941 jobs, $9.6 billion in labor income (wages of employees and self-employed proprietors), $79 billion in total output, and $32 billion in gross regional product in Los Angeles County (see Figure 6).[10] [11] The O&G industry accounts for about 5 percent of the private sector gross regional product in Los Angeles County.

Figure 6
Economic Impacts of O&G Industry on Los Angeles County, 2019
(Dollars in Millions)

Type of Impact	Number of Jobs	Labor Income	Total Output	Gross Regional Product
Direct Impacts	37,040	$4,338	$61,933	$21,619
Multiplier Effects	75,901	$5,225	$17,180	$10,504
Total	112,941	$9,563	$79,113	$32,123
Multiplier	3.0	2.2	1.3	1.5

The job multiplier is quite large in the O&G industry. Each job in the O&G industry generates two additional jobs in the County's economy. The high multiplier occurs because O&G production, refining, and bulk terminals are capital-intensive businesses that must make large annual expenditures to sustain operations. They are major purchasers of goods and services from chemical manufacturers, engineering firms, equipment manufacturers and distributers, repair and maintenance companies, and construction contractors. While not all equipment purchased by O&G firms is produced in California (for example, storage tanks are largely produced outside of the state), the sales and installation of the equipment still creates economic activity in this state.

[10] Economic output is the annual value of sales generated by the oil and gas production industry and its suppliers. Gross regional product is akin to the widely-cited U.S. gross domestic product, and it is the measure we cite most frequently in this report when measuring the O&G industry's contribution to the overall economy. It is equal to the "value added" by the oil and gas industry and its suppliers. Value added for each industry is equal to its total economic output minus the cost of inputs sold (i.e. purchases from other industries). In the case of refineries, for example, these inputs include, crude oil, energy, chemicals, and other materials it purchases for its refining process. By backing out the cost of inputs, gross regional product avoids "double counting" raw materials, parts, and business services used as O&G products are refined, stored, transported and sold in retail markets.

[11] Estimates of direct and multiplier impacts for jobs, labor income, gross regional product, and output are primarily based on IMPLAN data and modeling. The IMPLAN data used for estimation of direct impacts is based on public sources including the Census of Employment and Wages (Bureau of Labor Statistics); the Regional Economic Accounts (Bureau of Economic Analysis); and County Business Patterns (U.S. Census Bureau). In a few instances, CMC allocated broader industry totals included in the IMPLAN database to O&G specific industries based on more detailed employment and wage information available from the Quarterly Census of Employment and Wages data from the California Employment Department. CMC also made downward adjustments to O&G extraction industry job totals to reflect detailed information from SEC 10 (k) reports and company feedback regarding the number of non-employee independent contractors used in the Los Angeles region.

The other reason for the large job multiplier is that a significant share of the above-average pay received by O&G employees is spent locally, which boosts sales and jobs throughout the Los Angeles County economy.

In short, the purchases made by O&G companies and their employees recycle a considerable portion of O&G revenues back into the local economy, stimulating jobs, output, and income in many sectors throughout the region.

State and Local Tax Contributions

The O&G industry is a major contributor to state and local tax revenues, which support highways, streets and roads, public schools, health services, social services, housing and homelessness services, and public safety programs in Los Angeles County.

We estimate that the O&G industry directly and indirectly accounts for about $3.1 billion in state taxes (see Figure 7).[12] This is about 7 percent of all state taxes paid by people and businesses in the County. Of this total, about $1.2 billion is from excise taxes on gasoline, diesel, and jet fuel. The balance is related to (1) sales taxes paid on purchases by O&G businesses and the households of their employees; (2) income taxes on employee wages, royalties and business earnings generated by the industry; and (3) a variety of other taxes, regulatory fees, tideland royalties, and cap and trade allowance purchases.

While the state taxes are paid to Sacramento, over one-quarter of the revenue is allocated back to Los Angeles County to support transportation projects, health services, social services, schools, housing and homelessness services, and public safety in the region.

The industry also accounts for $920 million in local taxes and fees. These include $550 million in property taxes and $180 million in local sales taxes on motor vehicle fuels and other purchases by O&G companies and the households of their employees. And it includes $190 million in other payments, including utility user taxes, local extraction taxes, oil production agreements, business license fees, and franchise fees.[13]

[12] State and local taxes shown are CMC estimates based on publicly available federal, state, local, and company-related data sources. Key sources include property tax data from the Los Angeles County Assessor and the State Board of Equalization, local sales tax data from the State Department of Tax and Fee Administration, county level income tax data from the State Franchise Tax Board, other state tax data from the California Department of Finance, and other local data from city and county budgets and the U.S. Census of State and Local Government Finances. The methods used by CMC to estimate industry-related and total taxes in the County and its subregions are discussed in Appendix 1.

[13] Ibid.

Figure 7
State and Local Taxes Generated by O&G Industry in Los Angeles County
(Direct and Multiplier Impacts, In Millions of Dollars)

Taxes	Estimated Amount in FY 2019	Share of County Total
State Taxes		
Excise taxes on fuels	$1,160	100%
General sales tax	$290	3.0%
Income taxes	$880	3.3%
Other taxes and fees	$800	16.5%
Total, State Taxes and Fees	$3,130	7.3%
Local taxes		
Property	$550	3.3%
Sales	$180	3.2%
Other	$190	7.8%
Total, Local	**$920**	**3.7%**
Total, Combined State & Local	**$4,050**	**6.0%**

Economic and Fiscal Impacts on Communities and Regions Within the County

The O&G industry makes major economic contributions in virtually all areas of Los Angeles County. The multiplier effects generated by the industry – that is, the subsequent rounds of spending by suppliers and their employees – is dispersed throughout the County, so even communities that do not have major O&G assets indirectly benefit from the ripple effects of O&G spending. However, the industry contributions do vary significantly from community to community within the County, depending on the location of key assets (such as oilfields, refineries, and bulk terminals) and the associated workforces. In this section, we present our estimates of O&G contributions in communities – large and small – within Los Angeles County. Specifically, we include estimates for the City of Los Angeles, the County's five supervisorial districts, and selected cities within each district.

City of Los Angeles

We start with the City of Los Angeles ("City") because of its size (population of 3.9 million), and because each supervisorial district includes communities within in the City. The O&G industry has a major presence in the City, including three major refineries, four major bulk terminals, and a large number of businesses involved in the distribution and sale of petroleum and natural gas. The City also has numerous oilfields, which when combined, produce about 2.5 million barrels of oil each year. About 40 percent of the city-wide total is from on-shore portions of the Wilmington Field, pumped by wells located in and around the Port of Los Angeles. Other active fields with significant production include Las Cienegas, San Vincente, and Cascade, as well as portions of the Beverly Hills and Torrance fields.

Direct Employment

The O&G industry directly employs 11,386 workers in the City of Los Angeles. [14] This includes 832 workers involved in oil and gas extraction from the City's oilfields. It also includes 1,257 workers employed in midstream industries such as oil and gas pipeline construction and transportation. Another 9,297 workers are employed in downstream industries. These include 797 workers in the city's four refineries, 4,089 workers involved in natural gas distribution, 3,678 workers in gasoline stations, and 733 employees in other businesses such as fuel dealers and truckers that move refined oil products from terminals to gasoline stations.

[14] Source: Primarily IMPLAN, which is based on publicly available data from the Census of Employment and Wages and County Business Patterns. In a few instances, CMC allocated broader industry totals included in the IMPLAN database to specific O&G industries based on more detailed employment and wage information available from the Quarterly Census of Employment and Wages data from the California Employment Department. CMC also made downward adjustments to O&G extraction industry job totals to reflect detailed information from SEC 10 (k) reports and company feedback regarding the number of non-employee independent contractors used in the Los Angeles region.

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Full Economic Contributions

The O&G industry supports 36,222 jobs when direct and multiplier effects are taken into account.[15] As indicated in Figure 8, each job in the O&G industry generates another two jobs in the City. These include employees of businesses that supply goods and services to O&G companies and their employees. The industry also directly and indirectly supports $3.2 billion in labor income and $8.6 billion in gross regional product. The industry accounts for about 3 percent of economic output in the City.

Figure 8
Economic Impacts of O&G Industry on the City of Los Angeles, 2019
(Dollars in Millions)

Type of Impact	Number of Jobs	Labor Income	Total Output	Gross Regional Product
Direct Impacts	11,386	$1,398	$13,470	$5,582
Multiplier Effects	24,836	$1,758	$5,986	$3,009
Total	36,222	$3,156	$19,456	$8,591
Multiplier	3.2	2.3	1.4	1.5

Contributions to City Revenues

We also estimate that the O&G industry accounts for about $250 million in Los Angeles City General Fund revenues.[16] This takes into account the taxes directly paid by O&G businesses, as well as those paid by its workers and its suppliers. The total represents about 4 percent of the City's overall General Fund budget.

A key factor behind its significant revenue contribution is the large assessed valuations of O&G properties in the City. For example, the owners of two major refineries within City boundaries – Valero Energy Corporation and Phillips 66 Company – were the fourth and seventh largest property taxpayers located in the City in 2019. The large contributions also reflect major utility-user tax payments by refineries, oil producers, and O&G businesses, due to their large consumption of electrical energy. Finally, the large contributions reflect sales taxes on major purchases made by O&G producers and refiners.

The O&G industry's revenue contribution is of special importance given the budget shortfalls facing the City of Los Angeles caused by the fallen revenues due to the economic fall-out of the COVID-19 crisis. The City also faces reductions in the Los Angeles water and power budget due to reduced revenues from ratepayers.

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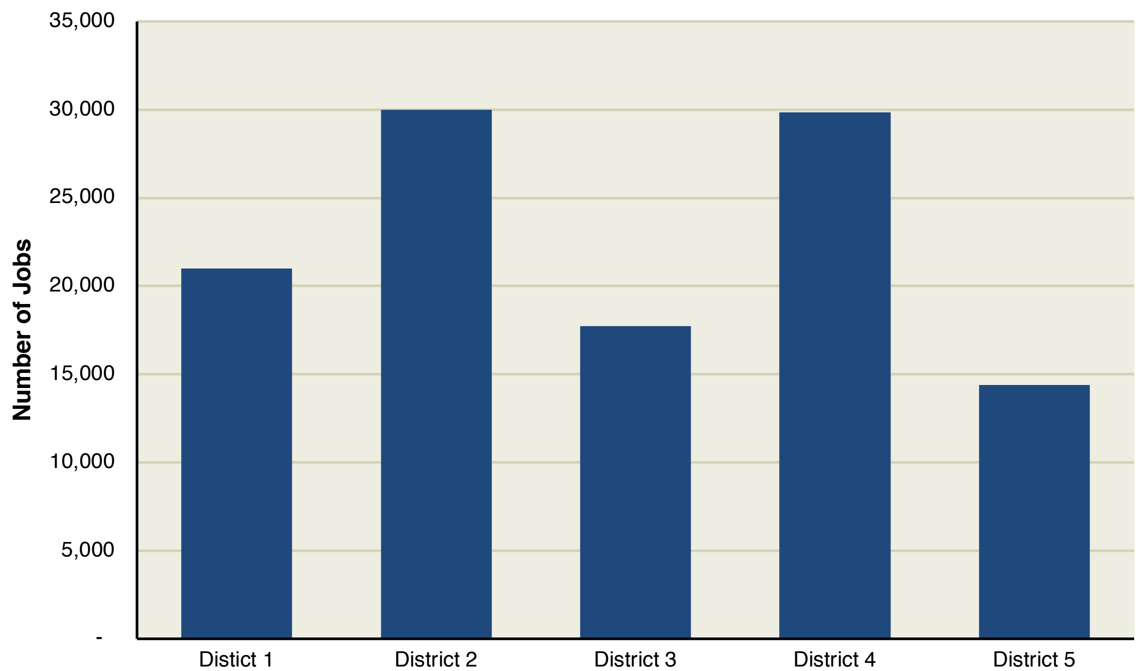
[15] Sources: IMPLAN with CMC adjustments as described in footnote 13. See Appendix 1 for additional detail.

[16] Source: CMC calculations based on data and methodology described in the appendix and budget data from the City of Los Angeles (City of Los Angeles, Fiscal Year 2019-20 Budget Summary. http://cao.lacity.org/budget/summary/2019-20BudgetSummaryBooklet.pdf

Impact by Supervisorial District

The O&G industry makes major contributions in all five Supervisorial Districts ("Districts"). However, the size of these contributions varies substantially. As shown in Figure 9, the total employment impacts range from under 15,000 jobs (in District 5) up to 30,000 jobs (in both District 2 and District 4.)[17] Footnote 12 covers the city but what is the source for the supervisorial districts.

Figure 9
Jobs Attributable to the O&G Industry by Supervisorial District



In this section, we discuss in more detail the economic and fiscal contributions of the O&G industry on individual districts and selected cities within each district.

Supervisorial District 1

District 1 contains much of the southeastern part of Los Angeles County. It includes portions of the City of Los Angeles, including Silverlake and the downtown area. It extends south through the cities of Vernon, Bell Gardens, and Southgate. The eastern portion of the district includes the cities of Montebello, Baldwin Bark, Irwindale, West Covina, Pomona and Claremont. Significant O&G assets in District 1 include major fuel terminals in the cities of Vernon and South Gate, as well as a refinery in South Gate. District 1 also includes the Montebello oilfield.

[17] Job totals for supervisorial districts are based on IMPLAN estimates of direct and multiplier impacts of the O&G industry. As discussed in footnote 13, IMPLAN estimates are based on public data from the U.S. Department of Labor, Department of Commerce, and Census Bureau. Estimates for supervisorial districts are based on a crosswalk of zip codes (the building blocks for local IMPLAN estimates) to each district. This process is described in Appendix 1.

Figure 10 summarizes the economic and revenue impacts of O&G on District 1. It shows that the industry directly and indirectly supports just under 21,000 jobs; $1.8 billion in labor income; and $5.2 billion in gross regional product, which represents 4 percent of the total gross regional product for all industries and government in the region.[18] The O&G industry directly and indirectly generates $589 million in state excise, sales, income, and other taxes and fees.[19] It also generates $171 million in local property, sales, and utility user taxes, as well as business license and franchise fees to cities, the County, special districts and schools.

Figure 10
O&G Industry Contributions to Supervisorial District 1

Economic Impact	O&G Contribution	Share of District Total
Jobs	20,979	1.8%
Labor income ($ Millions)	$1,786	2.3%
Gross regional product ($ Millions)	$5,182	4.0%
Taxes ($ Millions):		
State:		
- Excise taxes	$226	100%
- Other taxes	$363	4.5%
Total	**$589**	**7.1%**
Local		
- Property taxes	$86	3.1%
- Other taxes	$86	5.2%
Total	**$171**	**3.5%**
Total, Combined State and Local	**$754**	**6.3%**

Impact on Selected Communities Within Supervisorial District 1

In this section, we look at the impact of the O&G industry on the economies and city budgets for two cities in Supervisorial District 1 – Montebello and South Gate.

Montebello (population 62,000). Montebello is located east of Los Angeles City. Its median household income was $53,677 during the 2014-2018 period, or about $10,500 less than the median for all of Los Angeles County during the same period. It is the site of the Montebello oil field, which produces about 400,000 barrels of crude oil annually. The producer in that field, Sentinel Peak Natural Resources, was the third largest property taxpayer in the City in 2018-19.[20] Chevron USA also has a bulk terminal in this city.

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[18] Source: IMPLAN with CMC adjustments as described in footnote 13. See Appendix 1 for additional detail.

[19] Source: CMC estimates based on publicly available federal, state, and local data sources. See Appendix 1 for additional detail.

[20] Source: City of Montebello, Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2019. Page 140. https://www.cityofmontebello.com/images/finance/Budget%20and%20Financial%20Statements/CAFR/CAFR%202019.pdf

The O&G industry supports 777 employees in Montebello, which is about 2.4 percent of all jobs in this city. It generates about $567 million in gross regional product, which represents about 16 percent of the total attributable to all industries in the community. The industry also directly and indirectly supports about $5 million in City General Fund revenues – representing about 10 percent of Montebello's budget.[21]

Figure 11
Impact of the O&G Industry on the Cities of Montebello and South Gate

O&G Economic and Revenue Contributions	Montebello	South Gate
Number of Jobs	777	1,548
- Percent of Total	2.4%	5.3%
Gross Regional Product ($ Millions)	$567	$408
- Percent of Total	16.0%	11.4%
City General Fund Revenues ($ Millions)	$5.0	$4.9
- Percent of City Total	9.8%	9.4%

South Gate (population 93,444). Median household income in this city was $50,246 in the 2014-2018 period, or about $14,000 below the county-wide average. O&G infrastructure in South Gate includes a large bulk storage terminal (the third largest property taxpayer in the city) and a refinery (the 10th largest property taxpayer in the city).[22]

We estimate that the O&G industry directly and indirectly supports 1,548 jobs, $408 million in gross regional product, and $4.9 million in General Fund revenues in the City of South Gate. The O&G industry accounts for about 5 percent of total employment and 9 percent of General Fund revenues to this city.[23]

A phase-out of O&G would hit both of these cities hard, raising unemployment and reducing revenues to local governments that were already struggling with budget shortfalls and rising pension costs even before the COVID-19 recession.

Supervisorial District 2

District 2 contains several cities in the southwestern portion of Los Angeles County. It includes Carson, Compton, Culver City, Gardena, Hawthorne, Inglewood, Lawndale, a portion of Los Angeles, and Lynwood. Significant O&G assets in this district include the

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[21] Source: CMC calculations based on methodology described in the appendix and Montebello City Budget Data. (City of Montebello, Annual Budget, FY 2019-20). https://www.cityofmontebello.com/images/finance/Budget%20and%20Financial%20Statements/Budget//2019-2020%20Budget.pdf

[22] Source: City of South Gate, Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2018. Page 140. Page 188. https://www.cityofsouthgate.org/DocumentCenter/View/5177/South-Gate-Financial-Report-CAFR-2017-2018?bidId=

[23] CMC calculations based on methodology described in the Appendix and budget data from the City of South Gate. (City of South Gate, Proposed Municipal Budget, FY 2019-20). https://www.cityofsouthgate.org/DocumentCenter/View/5536/FY-2019-20-Approved-City-Budget

Inglewood oilfield, which is the largest on-shore-producing field in the County, as well as two major oil refineries and two major bulk distribution centers, both located in the City of Carson.

Figure 12 summarizes the economic and revenue impacts of O&G on District 2. It shows that the industry supports just under 30,000 jobs, $2.7 billion in labor income and $9.5 billion in gross regional product.[24] The jobs supported by the industry are about 2.9 percent of total employment and the gross regional product supported by the industry represents 7.6 percent of the combined gross regional product from all industries and government in District 2.

Figure 12
O&G Industry Contributions to Supervisorial District 2

Economic Impacts	O&G Contribution	Share of District Total
Jobs	29,985	2.9%
Labor income ($ Millions)	$2,682	3.8%
Gross regional product ($ Millions)	$ 9,477	7.6%
Taxes ($ Millions):		
State:		
- Excise taxes	$244	100%
- Other taxes	$479	8.5%
Total	**$723**	**11.0%**
Local		
- Property taxes	$155	5.9%
- Other taxes	$105	8.1%
Total	**$260**	**6.7%**
Total, Combined State and Local	**$983**	**9.8%**

The O&G industry generates $723 million in state revenues from excise, income, sales, and various other taxes and fees.[25] This is about 11 percent of total state revenues generated by all industries in the District. It also generates $260 million in local revenues, mostly from property taxes, sales taxes, utility user taxes, business license and franchise fees. These revenues – which go to cities, the County, special districts and schools – account for 6.7 percent of total local taxes in the District.

[24] Source: IMPLAN with CMC adjustments as described in footnote 13. See Appendix 1 for additional detail.

[25] Source: CMC estimates based on publicly available federal, state, and local data sources. See Appendix 1 for additional detail.

Impact on Selected Communities in Supervisorial District 2

Carson (population 91,000). Clearly, the city in District 2 that would be most impacted by a phase-out of O&G operations is Carson. The city is located south of Compton and is bordered by the cities of Torrance to the west and Lakewood to the east. Carson had a median household income $78,580 during the 2014-2018 period covered by the most recent Census estimate. This was about $14,000 more than the median for all of Los Angeles County during the same period.

Major O&G infrastructure in Carson includes the Marathon and Phillips 66 refineries, as well as two major bulk terminals. The refineries are the largest and second largest property taxpayers in the City, accounting for over 13 percent of the assessed value within Carson's boundaries.[26]

We estimate that O&G industry supports 9,376 jobs in Carson, which is about 11.9 percent of the total employment in this city (see Figure 13). It generates $4.7 billion in gross regional product, which represents 41 percent of the city-wide total from all industries and government. The industry also directly and indirectly supports about $32 million in City General Fund revenues – representing about 37 percent of Carson's total General Fund budget.[27]

Figure 13
Impact of the O&G Industry on the Cities of Carson and Culver City

O&G Economic and Revenue Contributions	Carson	Culver City
Number of Jobs	9,376	590
- Percent of Total	11.9%	2.7%
Gross Regional Product ($ Millions)	$4,702	$121
- Percent of Total	41.1%	4.3%
City General Fund Revenues ($ Millions)	$32	$5.7
- Percent of City Total	37.2%	4.5%

Elimination of the O&G industry would clearly have a devastating impact on Carson's economy and city budget. Given the central role that refinery and distribution operations play in terms of the region's distribution network, it would also have a devastating impact on other communities throughout Southern California.

Culver City (population 39,185). Impacts of the O&G industry are less intense in other cities in District 2, but still significant. For example, in Culver City, we estimate that the O&G industry supports about 590 jobs and $121 million in gross regional product. The industry also directly and indirectly accounts for about $5.7 million in taxes and fees paid

[26] Source: City of Carson, Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2019. Page 166.

[27] CMC calculations based on methodology described in the appendix and City of Carson Budget Data. (City of Carson, Budget, FY 2019-20. http://ci.carson.ca.us/content/files/pdfs/budgets/budget19-20/2019-20DraftBudgetFULL.pdf

into Culver City's General Fund, representing 4.5 percent of its General Fund Budget.[28] A phase-out of the O&G industry would put at risk those jobs and revenues, adding to major budget shortfalls that already facing Culver City.

Supervisorial District 3

Supervisorial District 3 is located in the northwest portion of Los Angeles County. It encompasses 10 cities, dozens of unincorporated areas, and portions of Los Angeles City. Significant O&G assets in this District include the Beverly Hills oilfield and two oil bulk terminals in the community of Van Nuys (located in the San Fernando Valley area of the City of Los Angeles).

Figure 14 summarizes the economic and revenue impacts of the O&G industry on District 3. It shows that the industry supports 17,711 jobs, $1.0 billion in labor income, and $3.0 billion in gross regional product.[29] The gross regional product represents 1.5 percent of the total from all industries and government in the District.

Figure 14
O&G Industry Contributions to Supervisorial District 3

Economic Impacts	O&G Contribution	Share of District Total
Jobs	17,711	1.0%
Labor income ($ Millions)	$1,030	0.8%
Gross regional product ($ Millions)	$3,047	1.5%
Taxes ($ Millions):		
State:		
- Excise taxes	$240	100%
- Other taxes	$278	1.7%
Total	**$518**	**4.4%**
Local		
- Property taxes	$50	1.2%
- Other taxes	$34	2.3%
Total	**$84**	**1.3%**
Total, Combined State and Local	**$601**	**3.9%**

The O&G industry generates $518 million in state revenues from excise, income, sales, and various other taxes and fees.[30] This is about 4.4 percent of total revenues generated by all taxpayers in District 3. It also generates $84 million in local revenues, mostly from property taxes, sales taxes, utility user taxes, and business license and franchise fees.

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[28] CMC calculations based on City of Culver City Adopted Budget, FY 2019-20. https://www.culvercity.org/Home/ShowDocument?id=18215

[29] Source: IMPLAN with CMC adjustments as described in footnote 13. See Appendix 1 for additional detail.

[30] Source: CMC estimates based on publicly available federal, state, and local data sources. See Appendix 1 for additional detail.

These revenues – which go to cities, the County, special districts and schools – account for 1.3 percent of local taxes paid by all taxpayers in District 3.

Impact on Selected Communities in Supervisorial District 3

Figure 15 shows our estimates of the O&G industry's impacts on the City of Beverly Hills and the community of Van Nuys, which is located in the San Fernando Valley within the City of Los Angeles.

Figure 15
Impact of the O&G Industry on the Localities of Beverly Hills and Van Nuys

O&G Economic and Revenue Contributions	Beverly Hills	Van Nuys
Number of Jobs	366	1,294
- Percent of Total	0.3%	1.2%
Gross Regional Product ($ Millions)	$72	$365
- Percent of Total	0.5%	3.3%
City General Fund Revenues ($ Millions)	$10.2	$9.0
- Percent of City Total	3.9%	NA

Beverly Hills (population 41,000). The City of Beverly Hills contains a portion of the Beverly Hills oilfield, which produces about 544,000 barrels of crude oil per year. The O&G industry supports 366 jobs, and it generates about $72 million in gross regional product and $10 million in General Fund revenues. The revenue total, which represents about 4 percent of Beverly Hill's General Fund, is partly due to royalties on oil production.[31] A phase-out of O&G production would result in a significant loss of revenues at a time when Beverly Hills is already facing a budget shortfall of over $50 million in 2020-21 due to the economic fallout of the coronavirus pandemic.

Van Nuys (population 161,974).[32] We estimate that the O&G industry supports 1,294 jobs in Van Nuys, or 1.2 percent of the combined job total for all industries and government in the city. The industry also supports $365 million in annual gross regional product, which is about 3.3 percent of the Van Nuys total for all industries and government. Taxes paid by the industry contribute about $9 million to the Los Angeles City General Fund.[33]

[31] CMC calculations based on methodology described in the appendix and budget data from the City of Beverly Hills. (City of Beverly Hills, FY 2019-20 Adopted Operating Budget.) http://www.beverlyhills.org/cbhfiles/storage/files/5771375758619509/12-12-19AdoptedFY20BudgetBook.pdf

[32] Includes zip codes 91401, 91404, 91405, 91406, 91408, 91409, 91410, and 91411. The area corresponds closely to the U.S. Census Public Use Microdata Area (PUMA) of Van Nuys and Northern Sherman Oaks.

[33] Calculations based on methodology described in the appendix and budget data from the City of Los Angeles. (City of Los Angeles, Fiscal Year 2019-20 Budget Summary. http://cao.lacity.org/budget/summary/2019-20BudgetSummaryBooklet.pdf

Supervisorial District 4

Supervisorial District 4 is a “U” shaped district located in the Southern portion of Los Angeles County. On the west side, it encompasses the cities of Marina Del Ray, Redondo Beach, El Segundo, Torrance, and Rolling Hills. The District curves to the north and east, encompassing the cities of Long Beach, Signal Hill Lakewood, Hacienda Heights and Diamond Bar. District 4 also encompasses communities within Los Angeles City, including San Pedro and Wilmington.

District 4 contains a substantial share of the O&G operations in Los Angeles County. It includes four major refineries, over a dozen oil terminals and storage facilities, and a major share of the County’s oil production operations (mostly associated with extraction from on-shore and off-shore portions of the Wilmington Field).

Figure 16 shows that the O&G industry supports 29,834 jobs, which is about 2.2 percent of the total from all industries and government in the District.[34] The industry contributes $12.2 billion in gross regional product, which is 7 percent of total economic activity in the District. Its large share of economic activity reflects the presence of capital-intensive (and high value-added) refinery, oil production, and bulk terminal operations in the District.

The O&G industry also generates $745 million in state revenues from excise, income, sales, and various other taxes and fees.[35] This is about 10.7 percent of total revenues generated by all industries in the District. The O&G industry also generates $335 million in local revenues, mostly from property taxes, sales taxes, utility user taxes, and business license and franchise fees. These revenues – which go to cities, the County, special districts and schools – account for 6.4 percent of local taxes paid by all taxpayers in District 4.

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[34] Source: IMPLAN with CMC adjustments as described in footnote 13. See Appendix 1 for additional detail.

[35] Source: CMC estimates based on publicly available federal, state, and local data sources. See Appendix 1 for additional detail.

Figure 16
O&G Industry Contributions to Supervisorial District 4

Economic Impacts	O&G Contribution	Share of District Total
Jobs	29,834	2.2%
Labor income ($ Millions)	$2,814	3.0%
Gross regional product ($ Millions)	$12,207	7.3%
Taxes ($ Millions):		
State:		
- Excise taxes	$230	100.0%
- Other taxes	$515	8.2%
Total	**$745**	**10.7%**
Local		
- Property taxes	$200	5.7%
- Other taxes	$120	11.1%
Total	**$335**	**6.4%**
Total, Combined State and Local	**$1,080**	**9.4%**

Impact on Selected Communities in Supervisorial District 4

Several cities within District 4 have a significant share of their workforces tied to O&G operations, and thus would be severely impacted by a phase-out of the industry. Figure 17 shows our estimates for El Segundo, Torrance, Long Beach and Santa Fe.

Figure 17
Impact of the O&G Industry on Selected Cities in Supervisorial District 4

O&G Economic and Revenue Contributions	El Segundo	Torrance	Long Beach	Santa Fe
Number of Jobs	4,770	4,466	5,530	921
- Percent of Total	4.5%	2.3%	2.4%	1.4%
Gross Regional Product ($ Millions)	$4,291	$1,867	$1,027	$338
- Percent of Total	21.6%	13.6%	4.0%	4.4%
City General Fund Revenues ($ Millions)	$23.6	$30.9	$50.2	$3.0
- Percent of City Total	30.7%	15.0%	8.9%	5.6%

El Segundo (population 16,610). El Segundo is the location of the second largest oil refinery in California and an associated bulk terminal, both owned by Chevron U.S.A. The two facilities account for over 18 percent of the total assessed value of properties in El Segundo, making Chevron the largest property taxpayer in this city.[36] El Segundo also

[36] Source: City of El Segundo, Comprehensive Annual Financial Report, Fiscal Year Ended September 30, 2019. Page 172.

has limited oilfield operations associated with the El Segundo oilfield, which has an annual production of about 22,000 barrels.

We estimate that the O&G industry supports 4,770 jobs, representing 4.5 percent of total jobs in El Segundo. The O&G industry contributes $4.3 billion in gross regional product, which is over one-fifth of the total for all industries and government in this city.

We estimate that the O&G industry is responsible for $24 million in General Fund tax payments, which is 31 percent of El Segundo's General Fund budget. The large share reflects major payments related to property taxes on assessed values, sales taxes on equipment and materials purchased for refining operations, and utility user taxes on purchases of energy for these operations.[37]

Torrance (population 143,592). Torrance is the location of the PBF oil refinery (the largest property taxpayer in the city[38]). The city also includes portions of the Torrance oilfield, which has annual production of about 368,000 barrels of oil.

We estimate that the O&G industry supports 4,466 jobs, representing 2.3 percent of total jobs in Torrance. The O&G industry contributes $1.9 billion in gross regional product, which is about 14 percent of the total for all industries and government in this city. Tax and fee payments attributable to the O&G industry total about $31 million, which is 15 percent of the city's General Fund budget.[39]

Long Beach (population 462,628). This city is the location of major oil and gas production operations, primarily involved in oil extraction from the off-shore portions of the Wilmington oilfield. It also has five bulk oil terminals, including two major terminals located at the Port of Long Beach.

The O&G industry supports 5,530 jobs (2.4 percent of total jobs in the city), and $1.1 billion in gross regional product (4.1 percent of the city-wide total from all industries and government). O&G operations accounted for $51 million in revenues to the City of Long Beach, representing about 9 percent of the city's general budget.[40] The total includes significant contributions from property taxes, sales taxes, oil production taxes, business taxes and franchise fees. It also includes profits from its oil-production agreements associated with oil recovery in the Wilmington oilfield.

Santa Fe Springs (population 17,630). Santa Fe Springs is a smaller community in the eastern portion of District 4. It contains the Santa Fe Springs oilfield, which produces just

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[37] CMC calculations based on methodology discussed in the appendix and data from the City of El Segundo. (El Segundo, CA Adopted Operating and Capital Improvement Budget, FY 2019-20.) https://www.elsegundo.org/Home/ShowDocument?id=1287

[38] City of Torrance, Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2019. Page 156.

[39] CMC calculations based on methodology discussed in the appendix and data from the City of Torrance. (City of Torrance, Budget at a Glance, 2019-2021). https://www.torranceca.gov/home/showdocument?id=57556

[40] CMC calculations based on methodology discussed in the appendix and data from the City of Long Beach. (Adopted Fiscal Year 2020 Budget.) http://www.longbeach.gov/finance/city-budget-and-finances/budget/budget-information/

under 691,000 barrels of oil per year. In 2018-19, Breitburn, which was the operator in the field at the time, was the second largest property taxpayer in Santa Fe Springs, accounting for 2.2 percent of total assessed value in this city.[41]

The O&G industry accounts for 920 jobs in Santa Fe Springs and contributes $337 million in gross regional product, which represents 1.4 percent and 4.4 percent of the city totals, respectively. General Fund revenues attributable to the industry are about $3 million, representing 5.6 percent of Santa Fe Springs's General Fund budget.[42]

Supervisorial District 5

Supervisorial District 5 is located in the northeast portion of Los Angeles County. It borders San Bernardino to the east, Ventura County to the west, and Kern County to the north. It includes 22 cities and 87 unincorporated communities. The region includes several oilfields near the border with Ventura County, including Oak Canyon, Aliso Canyon, Cascade, and Placerita. Production from these fields ranges from a few thousand barrels up to 880,000 barrels per year.

Figure 18 summarizes the economic and revenue impacts of the O&G industry on District 5.[43] It shows that the industry supports 14,387 jobs, $1.2 billion in labor income and $2.4 billion in gross regional product. The gross regional product represents 1.8 percent of the total from all industries and government in the District.

Figure 18
O&G Industry Contributions to Supervisorial District 5

Economic Impacts	O&G Contribution	Share of District Total
Jobs	14,387	1.2%
Labor income ($ Millions)	$1,233	1.5%
Gross regional product ($ Millions)	$2,422	1.8%
Taxes ($ Millions):		
State:		
- Excise taxes	$226	100%
- Other taxes	$290	2.1%
Total	**$516**	**4.7%**
Local		
- Property taxes	$68	1.4%
- Other taxes	$46	2.8%
Total	**$114**	**1.6%**
Total, Combined State and Local	**$630**	**4.2%**

[41] Source: City of Santa Fe Springs, CA, Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2018. Page 122.

[42] CMC calculations based on methodology discussed in the appendix and data from the City of Santa Fe Springs. (City of Santa Fe Springs, Approved Budget Fiscal Year 2019-2020).) https://www.santafesprings.org/civicax/filebank/blobdload.aspx?blobid=13024

[43] Source of economic impact estimates: IMPLAN with CMC adjustments as described in footnote 13. See Appendix 1 for additional detail.

O&G also generates $516 million in state revenues from excise, income, sales, and various other taxes and fees.[44] This is about 4.7 percent of total revenues generated by all taxpayers in the District. It also generates $114 million in local revenues, mostly from property taxes, sales taxes, utility user taxes, and business license and franchise fees. These revenues – which go to cities, the County, special districts and schools – account for 1.6 percent of local taxes paid by all taxpayers in District 5.

Impact on Communities in Supervisorial District 5

Most of the O&G production activity is in unincorporated parts of the County, so the economic and fiscal benefits tend to be dispersed throughout the District and County as a whole. One exception is **Santa Clarita (population 212,979**), which is the site of logistical operations for a major oil producer and is located near some of the oil production operations in the western portions of District 5. We estimate that the O&G industry generates 2,433 jobs, representing 1.8 percent of total jobs in this city. The industry accounts for $400 million in gross regional product, and $3.2 million in revenues to Santa Clarita's General Fund – in both cases, the amounts represent 2.8 percent of the city-wide totals from all industries and government.[45]

Figure 19
Impact of the O&G Industry on the City of Santa Clarita

O&G Economic and Revenue Contributions	Santa Clarita
Number of Jobs	2,433
- Percent of Total	1.8%
Gross Regional Product ($ Millions)	$400
- Percent of Total	2.8%
City General Fund Revenues ($ Millions)	$3.2
- Percent of Total	2.8%

[44] Source: CMC estimates based on publicly available federal, state, and local data sources. See Appendix 1 for additional detail.

[45] CMC calculations based on methodology discussed in the appendix and data from the City of Santa Clarita.(City of Santa Clarita, Operating Budget and Capital Improvement Program, FY 2019-20). https://www.santa-clarita.com/city-hall/departments/city-manager-s-office/city-budget/budget-fy-2019-2020

Conclusion

The O&G industry plays a major role in the Los Angeles County economy. It supports nearly 113,000 employees, $32 billion in gross regional product and $4 billion in combined state and local taxes. The industry provides jobs with above-average wages to workers with a variety of education and technical skills, and its contributions are substantial in local communities throughout the County. The industry's positive impacts are felt in virtually all regions of the County, but they are especially strong in communities in the southwest portion, where the O&G industry as much as 41 percent of economic activity and as much as 37 percent of city General Fund revenues.

These contributions would be curtailed and eventually eliminated by the implementation of the O&G provisions in the County's sustainability plan. The impacts of such a loss would be serious under the best of circumstances. A phase-out of these high-paying jobs over the next decade would be devastating to the County as it struggles to recover from the current recession.

Appendix 1 – Data Sources and Methods

In this Appendix, we highlight the data sources and methods used to develop the estimates contained in this report.

Economic Estimates

Our estimates of the direct and multiplier impacts of the O&G industry are based on the IMPLAN data and modeling system for Los Angeles County, Los Angeles City, the County's five supervisorial districts, and for selected cities within each district.[46]

Description of IMPLAN. IMPLAN is an input-output database and modeling system that enables users to calculate the direct and multiplier effects of spending in one industry on other industries located within a geographical region (national, state, county, metropolitan statistical area, or zip code). IMPLAN is widely used by academic institutions, federal, state, and local government agencies, and private companies for economic impact analyses.

The direct estimates of employment, labor income, gross regional product and output in the IMPLAN system are based on public data sources. These include the Census of Employment and Wages (Bureau of Labor Statistics), the Regional Economic Accounts (Bureau of Economic Analysis, and County Business Patterns (Census Bureau).

The multiplier estimates are based on the benchmark U.S. input-output accounts produced by the U.S. Bureau of Economic Analysis (BEA). These accounts describe the relationship among 405 industry sectors in the U.S. economy. They specifically show the commodity inputs that are used by each industry to produce its output, the commodities produced by each industry, and the use of commodities by final consumers. The relationships in the national accounts are then modified by IMPLAN for each local region to take into account such factors as the relative size of the region's various industrial sectors.

Based on these inter-industry tables, IMPLAN enables users to estimate the full impacts (including multiplier effects) of a given change in output in one industry on all other industries in the local economy. (For additional information on sources and methods used by IMPLAN, see "About IMPLAN," https://implanhelp.zendesk.com/hc/en-us/articles/360044985833-About-IMPLAN.)

How we used IMPLAN to develop estimates of O&G industry impacts on Los Angeles County. The local area building blocks for IMPLAN are zip codes. Thus, the first step of our modeling process was to "cross-walk" zip codes to the supervisorial districts and cities covered in this report. In cases where a zip code overlaps two or more local jurisdictions, we assigned the zip code to the jurisdiction having the greatest concentration of O&G assets and jobs. We made these determinations using GIS mapping

[46] For a discussion of direct and multiplier impacts see page 9. A description of IMPLAN is found in footnote 10.

software with overlays for supervisorial districts, cities, oilfields, refineries, and industrial land uses.[47]

Using IMPLAN, we calculated the direct and multiplier impacts of the O&G industry on Los Angeles County as a whole. We then calculated direct impacts for each of the local jurisdictions, again using the IMPLAN modeling system. We allocated the county-wide multiplier impacts to each local jurisdiction based on a weighted average of the jurisdiction's share of county-wide direct O&G economic impacts (as measured by IMPLAN) and population. Use of direct impacts in the allocation formula for multiplier effects recognizes the observed tendency of households and suppliers to locate relatively near the primary businesses.

Tax Estimates

Our estimates of state and local taxes attributable to the O&G industry were based on three general approaches: direct estimates based on actual data; indirect estimates based on publicly available company level data; and apportionments of general taxes paid in the local region.

Direct estimates. Estimates of property taxes on major O&G assets, gasoline excise taxes, local production agreements and certain excise taxes were calculated directly based on public information from the following sources:

- The property tax data portal maintained by the Los Angeles County Assessor, which we used to help identify assessed values for O&G assets, such as refineries, bulk terminals, and gasoline stations.
- Budget documents and annual reports for the State of California, the County of Los Angeles, the City of Los Angeles, and the other cities in each of the supervisorial districts for which we developed estimates. These documents contain detailed information on revenues by type of tax and major property taxpayers within local jurisdictions.
- Taxable sales data for gasoline collected by the California Department of Tax and Fee Administration.
- State-assessed property tax data from the California Board of Equalization, which we used to help estimate property taxes attributable to intercounty O&G pipelines.

Indirect estimates based on publicly available company data. The second approach, used when direct tax payment information was not available, involved estimation of tax liabilities based on publicly available economic and financial data from O&G companies. A key example of this approach is our estimate of sales taxes paid by O&G businesses. Sales tax information is reported by the California Department of Tax and Fee Administration based on the business category of the seller, not the buyer. Thus, we cannot directly calculate, from government data, the amount of sales taxes paid on purchases made by O&G businesses of equipment and materials. We can, however, indirectly estimate the sales tax liability by applying the

[47] https://www.esri.com/en-us/home

local rate to an estimate of taxable purchases made by the business. We developed such estimates using company-specific expenditure information contained in public financial documents, such as SEC 10(k) annual reports, or publicly available industry impact studies.[48]

Apportionment of total taxes in the region. The final approach, which mainly applied to taxes on income and spending of O&G employee households, was based on an apportionment of taxes and fees paid by all taxpayers in the local region. The principal apportionment factor used was the ratio of O&G-generated labor income (calculated using IMPLAN) to total labor income in the region.

Our estimates of total taxes paid by all taxpayers in the County, or supervisorial district within the County, followed the same general approach as discussed above for O&G-related taxes. The estimates were based direct information on such property tax assessed value information from Los Angeles County property tax rolls; taxable sales data, by locality, from the California Department of Tax and Fee Administration; county level income tax data from the Franchise Tax Board; and other tax and information from the U.S. Census' Annual Survey of State and Local Government Finances.[49] In instances where we did not have county-level (or supervisorial district level) data for a specific statewide tax or fee, we allocated statewide totals to the local jurisdiction based primarily on the ratio of labor income in the local jurisdiction relative to the statewide total. City-level tax data cited in the report is based on current budget documents for each of the cities for which we developed estimates.

[48] See, for example, "Economic Impacts of the Torrance Refining Company LLC, Torrance Refinery. " Capitol Matrix Consulting, August 2017. https://torrancerefinery.com/wp-content/uploads/2018/01/TORC_Torrance_Refinery_Economic_Impact_8-24_FINAL.pdf

[49] U.S. Census, "Annual Survey of State and Local Government Finances." https://www.census.gov/programs-surveys/gov-finances.html. We apportioned the tax data included in this survey, which is combined statewide, to Los Angeles County.