

Economic Impacts of the Torrance Refining Company LLC Torrance Refinery

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Torrance Refining Company LLC

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Biographical Sketches

Mike Genest and Brad Williams are partners with Capitol Matrix Consulting (CMC), a firm that provides consulting services on a wide range of economic, taxation, and state-and-local government budget issues. Together, they have over 80 years of combined experience in economic and public policy analysis.

Mike Genest founded Capitol Matrix Consulting (originally Genest Consulting) in 2010 after concluding a 32-year career in state government, which culminated as Director of the California Department of Finance (DOF) under Governor Arnold Schwarzenegger. Prior to his four-year stint as the Governor's Chief Fiscal Policy Advisor, Mr. Genest held top analytical and leadership positions in both the executive and legislative branches of California State government. These included Undersecretary of the Health and Human Services Agency, Staff Director of the Senate Republican Fiscal Office, Chief of Administration of the California Department of Corrections and Rehabilitation, and Director of the Social Services section of California's Legislative Analyst's Office. Mr. Genest received his MPP from the Goldman School of Public Policy at the University of California, Berkeley.

Brad Williams, the lead author of this report, joined Capitol Matrix Consulting in 2011, after having served in various managerial and high-level analytical positions in state government for 33 years. Mr. Williams served for over a decade as the chief economist, and several years as the Director of Budget Overview and Fiscal Forecasting, for the California Legislative Analyst's Office, where he was considered one of the state's top experts on the tax system, the California economy, and government revenues. During his career, he also served as Deputy State Controller and as Executive Director of the California Commission on State Finance. Mr. Williams was recognized by the Wall Street Journal as the most accurate forecaster of the California economy in the 1990s. He received his BA and MA in Economics from the University of California, Davis.

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Introduction

The Torrance Refinery has long had a major economic impact on the Southern California region. The facility started up in 1929 and has been operated by the Torrance Refinery Company LLC (TORC), since July 2016 when TORC took control of the Refinery from ExxonMobil Oil Corporation. The Torrance Refinery is the fifth largest by volume in California.¹ In addition to supplying a very significant portion of California's demand for transportation fuels, the refinery's operations support a large amount of jobs, wages, and sales to its California-based suppliers.

TORC commissioned Capitol Matrix Consulting to estimate the economic impacts of the Torrance Refinery to: the California economy; the Southern California region consisting of Los Angeles, Orange, and Kern counties (which is where the majority of the Refinery's employees and network of suppliers reside); and the City of Torrance. The following sections of this report present the results of our analysis, focusing on:

- The Refinery's annual production and sales;
- The number of jobs and amount of wages paid by the Refinery;
- The amount of purchases made by the Refinery from other California businesses, broken out by industry and geographic region;
- The amount of selected state and local taxes paid by the Refinery; and
- The full impacts of the Refinery in the broader state and regional economies, including estimates of jobs, wages, and sales that are directly and indirectly related to the Refinery's operations.

The estimates in this report are based primarily on data available in February 2017. The estimates include economic impacts of the Torrance Refinery itself, as well as associated commercial and logistics operations located in Los Angeles and Kern Counties.

¹ Source: California Energy Commission. http://www.energy.ca.gov/almanac/petroleum_data/refineries.html

Annual Production and Sales of the Torrance Refinery

Under the TORC's currently 2017 operational plan, average daily production in the Torrance Refinery is expected to be 101,000 barrels of gasoline, 29,000 barrels of jet fuel, and 33,000 barrels of other distillates, liquefied petroleum gases, and related products. As indicated in Table 1, the dollar value of its annual production is expected to be \$3.7 billion in 2017, of which \$2.6 billion is gasoline, \$701 million is jet fuel, and \$398 million is other refined products.

Table 1
Torrance Refinery 2017 Planned Output²

Category	Barrels Per Day	\$ Amount (In Millions)
Gasoline	101,000	\$2,556
Jet fuel	29,000	\$701
Other	33,000	\$398
Total	162,000	\$3,655

Although this report does not address the full impacts of the Refinery's output on California's retail fuel markets, it is worth noting that the Refinery's 101,000 barrels of daily gasoline production represents about 10 percent of overall gasoline demand in the state. Also, the Torrance Refinery is one of only 14 in California that produces reformulated gasoline that meets the California Air Resources Board's (CARB) stringent emission standards.³ Thus, a decline or elimination of gasoline production from the Refinery would have a substantial impact on the price of transportation fuels and economic activity in Southern California and the state.

² The amounts in this table represent the total output of the Torrance refinery, whereas the expenditures shown in subsequent tables for employee compensation and purchases from other businesses represent only the California portion of the refinery's expenditures for these items. Thus, a simple comparison of the output shown in Table 1 to the cost-related measures shown in subsequent tables would produce a major overstatement of the refinery's gross earnings before interest, depreciation, taxes and amortization.

³ Source: California Energy Commission. Reformulated gasoline reduces emissions of gasoline-burning engines. California's reformulated gasoline program was implemented in three phases. Phase 1, which was implemented in 1991, eliminated lead from gasoline and set regulations for deposit control additives and Reid vapor pressure (RVP); Phase 2 set specifications for sulfur, oxygen, and other additives; and Phase 3 eliminated methyl-tertiary-butyl-ether (MTBE) from California gasoline and replaced it with ethanol.

Jobs and Wages Paid by the Torrance Refinery

As shown in table 2, TORC directly employs 621 employees who reside in the Southern California three-county region. The Refinery employs workers in a variety of professional, skilled, and high-paying occupations, including engineers, chemists, plant and system operators, and maintenance and repair construction technicians. Also as shown in Table 2, there are another 92 Torrance Logistics Company LLC employees who support the Torrance Refinery that are located in other areas of the state.

Table 2
Jobs, Payroll, and Average Wages Related to Torrance Refinery Operations

Category	3-County Region*	Other CA	Total CA
Number of Employees	621	92	713
Total Payroll (\$ Millions)			
- Wages + Overtime	\$81.2	\$11.9	\$93.0
- Benefits	\$30.3	\$4.3	\$34.6
Total, Wages + Benefits	\$111.6	\$16.2	\$127.6
Average Wage, (including overtime, excluding benefits), in 000's	\$130.7	\$129.0	\$130.5

*Includes Los Angeles, Orange, and Kern Counties

Annual wages paid to these employees total \$93 million, of which \$81 million is in the Southern California region. We estimate that non-wage compensation for healthcare, retirement, and other benefits totals about \$35 million statewide, bringing total payments for employee compensation to \$128 million. The average wage for these jobs (including overtime but excluding benefits) is \$131,000 per year, which is more than double the average wage for all California workers.⁴

⁴ Torrance refinery wages are based on company data provided by PBF. The statewide average wage – \$63,000 in 2016 – is calculated based on information contained in the *Quarterly Census of Employment and Wages*, provided by the California Employment Development Department.

Purchases From Other California Businesses

In addition to wages and benefits paid to its employees, the Torrance Refinery supports California economic activity through purchases from its network of suppliers in the state. As shown in Table 3, the Torrance Refinery related operations make \$2.1 billion in annual purchases from California-based suppliers, the great majority of which are in the Southern California three-county region.

Table 3
Torrance Refinery Purchases From Other California Businesses

Purchases (\$ Millions)	3-County Region*	Other CA	Total CA
Crude Oil (excluding transportation costs and regulatory fees)	\$1,649	\$0	\$1,649
Contracts, Materials, and Services:			
- Utilities	\$84	\$24	\$108
- All other (detail in Table 6 below)	\$304	\$18	\$322
Total, Contracts, Materials, and Services	\$388	\$42	\$430
Grand Total, All Purchases	\$2,038	\$42	\$2,080

* Includes Los Angeles, Orange, and Kern Counties

Crude oil. By far, the largest purchase from California suppliers is for crude oil. The Refinery purchases an average of 96,000 barrels of California crude per day, which is worth about \$1.6 billion annually. These purchases represent 19 percent of total in-state crude oil production.⁵ In 2017, most of the crude oil purchased by the Refinery is expected to be shipped via pipeline from producers in Kern County, with smaller, but still significant, amounts received from suppliers within the Los Angeles Basin.

Other contracts, materials, and services. In addition to crude oil, the Torrance Refinery spends \$430 million in California annually for other contracts, materials, and services. Of this total, we estimate that \$388 million is from businesses within the Southern California three-county region, and another \$42 million is from sources in other parts of the state. Table 4 indicates that purchases by the Refinery support businesses in a wide range of industries, including utilities, rail and pipeline transportation, maintenance and repair construction, engineering services, wholesale trade, manufacturing, and waste management and remediation services. As discussed more fully below, these purchases generate a large number of jobs, income, and business sales throughout the Southern California region. For example in 2017, a daily average of over 600 building and trade union contract workers are performing maintenance services at the Refinery, with as many as 1,800 working during peak turnaround maintenance periods.

⁵ According to the U.S. Energy Information Agency (EIA), crude oil production in California averaged 508,000 barrels per day in 2016.

Table 4
Distribution of Torrance Refinery Purchases By Industry (\$ Millions)

Supplier Industry	3-County Region*	Other CA	Total CA
Crude Oil (excluding transportation costs and regulatory fees)	\$1,649.00	--	\$1,649.00
Contracts, Materials, and Services:			
- Utilities	\$84.38	\$23.73	\$108.11
- Chemical manufacturing	\$45.62	--	\$45.62
- Maintenance and repair construction of nonresidential structures	\$45.13	--	\$45.13
- Rail Transportation	\$29.74	\$7.44	\$37.17
- Architectural, engineering, and related services	\$35.33	--	\$35.33
- Petroleum Storage	\$27.16	--	\$27.16
- Commercial and industrial machinery and equipment rental and leasing	\$25.31	\$0.85	\$26.15
- Wholesale trade	\$22.07	--	\$22.07
- Industrial gas manufacturing	\$11.62	\$2.70	\$14.32
- Cargo shipping/terminal fees	\$11.33	0	\$11.33
- Waste management and remediation services	\$7.62	--	\$7.62
- Commercial and industrial machinery and equipment repair and maintenance	\$3.50	\$3.81	\$7.31
- Pipeline transportation	\$5.43	--	\$5.43
- Scales, balances, and miscellaneous general purpose machinery manufacturing	\$5.26	--	\$5.26
- Environmental and other technical consulting services	\$4.79	--	\$4.79
- Water, sewage and other systems	\$4.05	--	\$4.05
- Services to buildings	\$3.16	--	\$3.16
- Employment services	\$2.24	--	\$2.24
- Valve and fittings, other than plumbing, manufacturing	\$1.80	--	\$1.80
- Investigation and security services	\$1.53	--	\$1.53
- Other	\$12.90	\$3.54	\$16.44
Total, Other Contracts, Material, and Services	\$388.43	\$42.07	\$430.50
Grand Total	\$2,037.43	\$42.07	\$2,079.50

*Includes Los Angeles, Orange, and Kern Counties

State/Local Taxes and Charitable Contributions of the Torrance Refinery

The Torrance Refinery pays about \$30 million annually in state and local sales taxes, utility user taxes, and property taxes (see Table 5). This does not include additional taxes paid by its employees on their salaries and purchases (which we estimate to be about \$8-9 million annually), nor does it include California corporate income taxes paid on the combined earnings of the Refinery's parent company, PBF Energy Inc. The Refinery also makes several hundreds of thousands of dollars in charitable contributions to entities within its local community.

Table 5
State/Local Taxes Paid by Torrance Refinery (\$ Millions)

Tax Category	3-County Region*	Other CA	Total CA
Sales and Use Tax on Purchases (Estimated)	\$3.43	\$6.87	\$10.31
Property Taxes	\$11.81	\$0.00	\$11.81
Utility Users	\$7.46	\$0.00	\$7.46
Total	\$22.70	\$6.87	\$29.58

*Includes Los Angeles, Orange, and Kern Counties

These totals also do not include regulatory taxes, fees and related expenses incurred by the Refinery. These include fees, but are not limited to: the federal renewable fuel standards program; the federal oil spill liability tax; local, state, and federal permitting; local, state, and federal annual emissions and discharges; emission allowance payments required by California's Cap-and-Trade carbon emission-reduction program; and California's Low Carbon Fuel Standard program. The combined cost for these levies varies from year to year, but generally runs in the mid-to-high tens of millions of dollars annually.

Full Economic Impacts of the Torrance Refinery on the Broader Economy

In this section, we present our estimates of the full economic impacts of the Torrance Refinery on California and the Southern California three-county region. We also break out the impacts for the City of Torrance (“City”).

The full impacts includes both the direct impacts discussed above – that is, the jobs, wages and output of the Refinery itself – as well as the multiplier effects of the Refinery’s activities on other sectors of the economy. These multiplier effects include:

- The indirect impacts of the Refinery’s expenditures – that is, the subsequent rounds of production, employment, and wage payments that occur as the Refinery’s contractors (and their suppliers) step up hiring of workers and their own purchases of inputs needed to produce the goods and services purchased by the refinery.
- The induced effects related to subsequent rounds of production, employment, and wages that arise from spending by households of the refinery and its contractors.

We estimated these multiplier impacts using the IMPLAN model for California and the three-county region of Los Angeles, Orange, and Kern, and for the City of Torrance. Further descriptions of the IMPLAN model and the specific steps involved in our analysis are included in the Appendix to this report.

Results For California and 3-County Region

Table 6 summarizes our results for the Southern California three-county region and the full state of California. It shows that over 11,000 jobs, \$1 billion in wages, and \$7 billion in total sales in California are currently tied, directly or indirectly, to the Torrance Refinery. Approximately 98 percent of the total sales and 95 percent of jobs and wage payments are attributable to businesses and households located in the Southern California region.

Table 6
Full (Direct + Multiplier) Economic Impact of the Torrance Refinery:
Including Purchases of Crude Oil

Type of Impact	3-County Region*			California		
	Jobs	Wages (\$ Millions)	Sales (\$ Millions)	Jobs	Wages (\$ Millions)	Sales (\$ Millions)
Direct Impact	621	\$81	\$3,655	713	\$93	\$3,655
Multiplier effects:						
- Indirect	5,656	\$719	\$2,440	5,855	\$731	\$2,499
- Induced	4,196	\$224	\$996	4,505	\$244	\$1,052
Total Impact	10,474	\$1,024	\$7,091	11,073	\$1,068	\$7,206

*Includes Los Angeles, Orange, and Kern Counties

The statewide totals include direct effects of 713 jobs, \$93 million in wages, and \$3.7 billion in production attributable to the Refinery itself. The totals also include about 10,000 jobs, \$1 billion in wages, and \$3.6 billion in sales attributable to businesses supplying goods and services to the Refinery and its contractors (the indirect effects), as well as the households of the Refinery's employees (the induced effects).

The major indirect and induced effects result in extremely large multipliers, particularly for jobs and wages. The job multiplier (defined as the ratio of total jobs to direct jobs) is over 15, which is more than 7 times that of most other California industries (which are typically in the range of 2 or less). The wage multiplier is a similarly large 11.

These large multipliers are typical for the refining industry. They reflect both the high volume of inputs of crude oil and other products needed to support the refining process, and the large amount of expenditures for parts, supplies, and maintenance needed to maintain safe and reliable refinery operations.

Stated another way, in addition to the hundreds of Torrance Refinery employees involved in managing the production of refined petroleum products, it takes thousands of employees in supplying industries to extract and distribute the crude oil to the Refinery, as well as to produce and distribute other supplies and services needed by the Refinery each year.

What would happen to California crude oil production if the refinery closed?

The large multiplier effects shown in Table 6 include economic activity related to the production of crude oil in California that is purchased by the Torrance Refinery. The inclusion of crude oil production is appropriate when measuring the full scope of economic activity currently supported by the Refinery. However, when considering the potential impacts of a Refinery shutdown on crude oil producers, an important question to consider is whether crude oil producers respond to the shutdown by curtailing their output or by redirecting the heavy crude oil to other refineries.

The market for crude oil is global in nature, so in theory, California producers could redirect their supplies to other destinations. In this case, the economic impact of a refinery shutdown on California crude oil production would be relatively minor. In reality, however, a redirection of California crude oil to other destinations would likely involve significantly higher transportation costs, given that suppliers would need to find other, potentially more remote refineries that are capable of processing California's very heavy crude oil. Efforts to redirect crude oil to nearby destinations would be hampered by the extremely limited amount of unused refinery capacity in California and other states available to produce gasoline that meets CARB's stringent emission standards. Crude oil producers would also need to find alternative modes of delivery that are likely to be more expensive than the efficient pipelines currently used to deliver oil to the Torrance Refinery. Combined, these factors imply that production of the crude oil currently being shipped to the Torrance Refinery would be at serious risk if the Refinery were to shut down. It would be particularly vulnerable if crude oil prices remain low.

Even if producers were able to find suitable alternative markets for their heavy crude oil, and hence crude production activity was unaffected, the impacts of a

shutdown of the Torrance Refinery on other supplying industries would still be enormous. As indicated in Table 7, a shutdown of the Torrance Refinery would impact over 4,300 jobs in businesses that provide supplies (other than crude oil) and services to the Refinery and households of its employees. One obvious example is the 1,800 contract workers who are on-site during peak refinery maintenance periods. Other industries affected range from engineering to pipeline transportation. Nearly \$400 million in wages and \$4.6 billion in sales would also be at risk if the Torrance Refinery were to close.

Table 7
Full (Direct + Multiplier) Economic Impact of Torrance Refinery:
Excluding Purchases of Crude Oil

Category	3-County Region*			California		
	Jobs	Wages (\$ Millions)	Sales (\$ Millions)	Jobs	Wages (\$ Millions)	Sales (\$ Millions)
Direct impact	621	\$81	\$3,655	713	\$93	\$3,655
Multiplier effects:						
- Indirect	2,170	\$177	\$553	2,500	\$201	\$646
- Induced	1,443	\$77	\$224	1,812	\$99	\$289
Total Impact	4,233	\$335	\$4,431	5,025	\$393	\$4,590

*Includes Los Angeles, Orange, and Kern Counties

Impacts on the City of Torrance

The City of Torrance receives significant economic and fiscal benefits from the operation of the Torrance Refinery. About 80 of the refinery’s employees reside in the City and receive \$11 million in wages annually. In addition, over a dozen local businesses supply materials and services to the Refinery, including engineering, maintenance and repair construction, security, and building services. Including multiplier effects, the Refinery supports 362 jobs and \$30 million in wages in the City of Torrance.

Table 8
Full (Direct + Multiplier) Economic Impact of Torrance Refinery
On the City of Torrance

Category	Jobs	Wages (\$ Millions)	Sales (\$ Millions)
Direct effects	80	\$11	\$3,655
Multiplier effects:			
- Indirect	179	\$13	\$30
- Induced	103	\$6	\$13
Total Impact	362	\$30	\$3,698

Economic Impacts of the Torrance Refinery

In addition to the various economic benefits, the City receives \$7.5 million annually in utility user taxes from the Refinery. It also receives hundreds of thousands of dollars in local sales and property taxes related to economic activity generated by the Refinery and its employees.

Conclusion

In addition to its crucial role of supplying a significant share of gasoline and related refined transportation fuels and petroleum products to the California market, operations of the Torrance Refinery directly and indirectly support over \$7 billion in annual sales, 11,000 jobs, and \$1 billion in wages in the California economy each year. The great majority of these impacts are in the Southern California region consisting of Los Angeles, Orange, and Kern counties, where most of its workers and suppliers reside. The Refinery also pays \$30 million in utility, property, and sales taxes, as well as hundreds of thousands of dollars to support civic and community activities to benefit the general public. Beyond these totals, state and local governments benefit from multiple millions of dollars in taxes and fees paid by the Refinery's workers and suppliers each year. All of these economic and fiscal benefits would be at risk if the Refinery's operations were curtailed or shut down.

Appendix – Brief Description of IMPLAN and Our Methodology for Estimating the Full Economic Impacts of the Torrance Refinery

IMPLAN is an input-output modeling system that enables users to calculate the direct, indirect, and induced effects of output and/or 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 model is based on benchmark U.S. input-output accounts produced by the U.S. Bureau of Economic Analysis (BEA). These accounts describe 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 calculates a total requirements table, which estimates the full impacts (including multiplier effects) of a given change in output in one industry on all other industries in the economy.

Our Methodology. Our estimates of the full multiplier impacts of the Torrance refinery are based on the following steps:

- First, TORC provided us with a de-identified listing of its employees and wages, allocated by the geographic region of most employees' places of residence. It also provided us with payments to its California vendors made during the second half of 2016 for inputs such as crude oil, utility services, transportation services, chemicals, valve and piping components, construction, and maintenance services. We annualized the vendor data to derive an initial estimate of full-year expenditure totals, and then made a modest upward adjustment to some expenditures to reflect the higher amount of major refinery maintenance scheduled from 2017 through 2020 under TORC's multi-year capital plan.
- Second, using information in the vendor database, along with online company search services, we allocated the vendor payments to geographic location and industrial classifications. We then entered these expenditures by industry into the IMPLAN regional models. We similarly allocated the distribution of wages, by income level, into the models' household sectors.
- Third, we used the total requirement tables from the IMPLAN model to determine the full impacts of the refinery on the economy. The full effects, which include both direct and multiplier impacts, take into account the jobs, wages, and output of businesses supplying goods and services to the refinery as well as to the households of its employees.