



DOMINGUEZ OIL FIELD REDEVELOPMENT: EXPLORATION AND PRODUCTION

ECONOMIC IMPACT ANALYSIS



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This report was prepared by the Economic and Policy Analysis Group of the Los Angeles County Economic Development Corporation (LAEDC) in July, 2010.

As the Southern California region's premier economic development organization, the mission of the LAEDC is to attract, retain and grow businesses and jobs in the regions of Los Angeles County.

The LAEDC Economic and Policy Analysis Group offers objective economic and policy research for public agencies and private firms. The Analysis Group focuses on economic impact studies, regional industry analyses, economic forecasts and issue studies, particularly in water, transportation, infrastructure and environmental policy. Projects are selected based on their relevance to the *L.A. County Strategic Plan for Economic Development* and the potential for the research to shape policy that supports the LAEDC mission.

Summary of Findings

Occidental Petroleum Corporation has proposed investments to redevelop the Dominguez Oil Field in Carson, California. Initial exploratory work at the Dominguez Oil Field will involve an investment of \$15 million. Given favorable results, the company will invest \$53.0 million in start-up costs, and anticipates spending \$61 million annually for production operations thereafter.

The total economic impacts, which include direct, indirect and induced activity, generated by each stage of the Occidental Petroleum project are shown in the exhibit below.

Economic Impact of Dominguez Oil Field Redevelopment			
	Initial Exploration	Ramp-Up Investment	Annual Ongoing Operations
Output (\$ millions)	\$ 21.4	\$ 55.1	\$ 70.7
Employment (jobs)	100	320	330
Labor income (\$ millions)	\$ 7.1	\$ 22.5	\$ 25.5
State and local taxes (\$ millions)	\$ 1.0	\$ 2.6	\$ 3.0

Sources: Occidental Petroleum Corporation; estimates by LAEDC

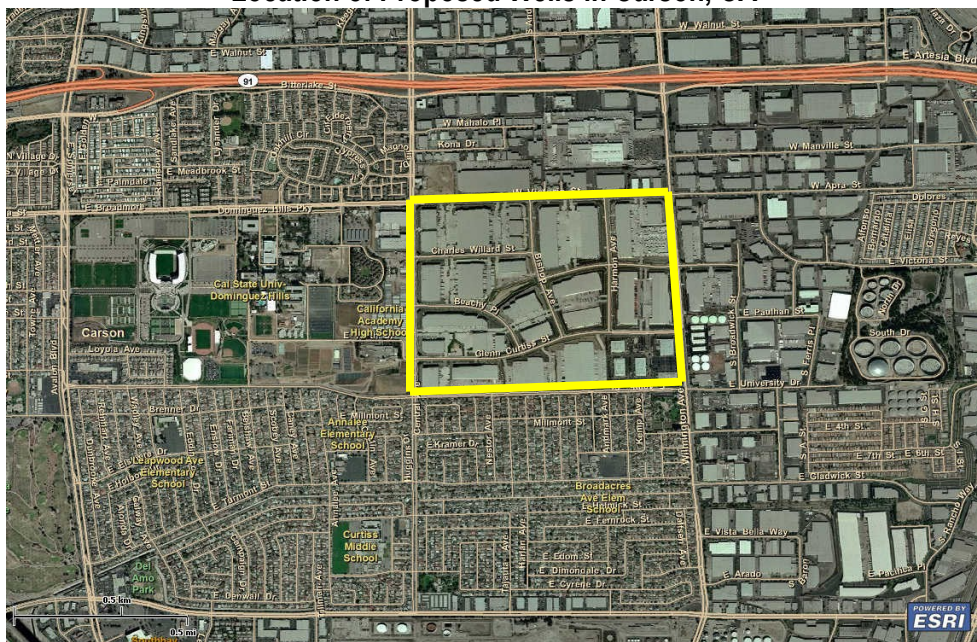
If the annual ongoing production activity, including the expenditure and employment levels, is maintained at this level for at least 15 years as anticipated, operations will cumulatively produce \$1.06 billion in output (measured as business revenues), total labor income of \$382 million, and as much as \$120 million in state and local taxes.

I Introduction

Occidental Petroleum Corporation (Oxy) has proposed investments to redevelop the Dominguez Oil Field in Carson, California. The drilling site will just east of California State University Dominguez Hills, in the area bounded Victoria Boulevard on the north, Wilmington Avenue on the east, University Drive to the south and South Central Avenue to the west. (See map.) Oxy believes oil can be extracted from this abandoned field once again with an investment in new technology and the employment of the latest oilfield techniques given the prevailing and expected market price for oil.

Oxy is anticipating a three-month exploratory period. If the initial results are positive, production will commence as soon as permits can be secured from AQMD, a process expected to take approximately three years. The oil produced from the Dominguez Oil Field will likely be sold to local refineries, which include those owned by BP, ConocoPhillips and Shell Oil.

Location of Proposed Wells in Carson, CA



In this report, the Economic and Policy Analysis Group of the Los Angeles County Economic Development Corporation (LAEDC) estimates the total economic impact in Los Angeles County related to the redevelopment of the Dominguez Oil Field in three parts. Part I covers the initial investment in exploration; Part II describes the total economic impact of the one-time ramp-up for production. Part III estimates the ongoing annual impact from incremental production.

II Initial Investment in Exploration

Oxy anticipates a three-month exploratory period during which it will spend \$15 million. Of this amount, approximately sixty percent will be spent on contract oil field services, such as drilling, cementing, and trucking, all of which will be supplied from local area firms. Approximately \$1.7 million will be spent on contract for engineering, design and field supervision. The remainder, or \$4 million, will be spent on the purchase of specialized drilling and pumping equipment such as tubing, casing, valves, pumps, etc., which will be purchased from local wholesalers but will be imported from other domestic or international wholesalers. The value of the manufactured goods from outside the region represent a leakage of funds and as such does not generate an economic impact in Los Angeles apart from the value added of the local wholesalers.



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Given these data, we estimate that this exploratory work will generate economic output (measured by business revenues) in Los Angeles County in the amount of \$21.4 million. The investment will create 100 jobs with total earnings of \$7.0 million. Of this employment, fifty workers will be added for the three month period; the remainder will be indirect and induced jobs generated over the course of the year. Our estimates are summarized in Exhibit 1 below.

Exhibit 1 Economic Impact of Initial Exploration Investment	
Project Spending	
Direct investment (\$ millions)	\$ 15.0
Total Economic Impact	
Output (\$ millions)	\$ 21.4
Employment (jobs)	100
Earnings (\$ millions)	\$ 7.0

Sources: Occidental Petroleum Corporation; estimates by LAEDC

This one-time investment will generate tax revenue for the city, county and state. All workers' earnings are subject to income taxes, as are corporate profits. A proportion of the earnings are spent on sales-taxable goods and services, which also generate tax revenues. Altogether, we have identified \$1.0 million in state and local tax revenues will be generated by the proposed investment, as shown in Exhibit 2.

Exhibit 2	
Fiscal Impact of Initial Exploration Investment (\$ 000)	
Sales taxes	\$ 319
Income taxes	277
Property taxes	257
Fees, fines	90
Social insurance	28
Other taxes	65
Total *	\$ 1,036

* May not sum due to rounding

Source: Estimates by LAEDC

Our estimates of tax revenues are incomplete since we do not account for permits and fees payable on the project, which could be considerable for an investment of this size.

Industry Sector Impacts

The economic impact spills across industries in Los Angeles County through indirect and induced effects. The top five industry sectors affected (by employment) appear in Exhibit 3.

Exhibit 3			
Impact of Initial Exploration Investment by Industry Sector			
Industry	Output (\$ 000)	Jobs	Earnings (\$ 000)
Mining	\$ 9,439	27	\$ 2,348
Professional, scientific and technical services	2,876	19	1,651
Wholesale trade	2,677	14	1,015
Real estate and rental and leasing	1,126	2	105
Finance and insurance	1,053	4	411
All others	4,257	34	648
Total *	\$ 21,428	100	\$ 7,006

* May not sum due to rounding

Source: Estimates by LAEDC

In addition to the direct impact in the mining sector, much of the indirect and induced impacts will occur in the professional, scientific and technical services industry and in wholesale trade.

The values in the table should be interpreted as illustrative of the industry effects rather than precise given model and data limitations. A description of these industries is provided in the Appendix.

III One-Time Initial Production Investment

Presuming the exploratory work yields positive results, Oxy expects to begin production operations within three years (subject to regulatory and permitting approval). An initial investment of \$53 million during the first year will consist of a pipeline extension and the purchase of processing equipment. We estimate that approximately 55 percent of this investment will be for equipment and material purchases, of which only fifteen percent will be manufactured locally. The remainder will be purchased locally but will be imported from



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domestic or international manufacturers, again representing a leakage from the regional economy. The value of the manufactured goods from outside the region represent a leakage of funds and as such does not generate an economic impact in Los Angeles apart from the value added of the local wholesalers.

Given these data, we estimate that the initial investment in production operations will generate economic output (measured by business revenues) in Los Angeles County in the amount of \$55.1 million. The investment will create 320 jobs with total earnings of \$22.5 million. Our estimates are summarized in Exhibit 4 below.

Exhibit 4 One-Time Economic Impact of Initial Investment	
Project Spending	
Direct spending (\$ millions)	\$ 53.0
Total Economic Impact	
Output (\$ millions)	\$ 55.1
Employment (jobs)	320
Earnings (\$ millions)	\$ 22.5

Sources: Occidental Petroleum Corporation; estimates by LAEDC

We have identified \$2.6 million in state and local tax revenues will be generated by the proposed investment, as shown in Exhibit 5.

Exhibit 5 Fiscal Impact of Initial Investment (\$ 000)	
Sales taxes	\$ 731
Income taxes	786
Property taxes	591
Fees, fines	259
Social insurance	82
Other taxes	151
Total *	\$ 2,600

* May not sum due to rounding
Source: Estimates by LAEDC

Our estimates of tax revenues are incomplete since we do not account for initial permits and fees payable on the project, which could be considerable for an investment of this size.

Industry Sector Impacts

The economic impact spills across industries in Los Angeles County through indirect and induced effects. The top ten industry sectors affected (by employment) due to spending for this project appear in the table below.

Exhibit 6 Impact of One-Time Initial Investment by Industry Sector			
Industry	Output (\$ 000)	Jobs	Earnings (\$ 000)
Professional, scientific and technical services	\$ 16,870	113	9,926
Construction	10,422	62	4,359
Wholesale trade	5,815	30	2,205
Retail trade	1,401	16	594
Manufacturing	7,561	15	1,203
Health care and social assistance	1,513	15	843
Administrative and waste management	925	15	503
Accommodations and food services	795	12	301
Other services	801	10	327
Finance and insurance	2,078	8	724
All others	6,954	6	1,563
Total *	\$ 55,135	320	\$ 22,548

* May not sum due to rounding
Source: Estimates by LAEDC

Much of the impacts will occur in professional, scientific and technical services industry, but other sectors affected include construction, wholesale trade, retail trade and manufacturing.

The values in the table should be interpreted as illustrative of the industry effects rather than precise given model and data limitations. A description of these industries is provided in the Appendix.

IV Ongoing Production Operations

Annual expenditures are expected to be \$61 million, which includes spending on contract oil field services, materials (including tubing, casings, valves, pumps, etc.), engineering and design labor, utilities, and permits and taxes.



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We estimate that the ongoing production operations of the field will generate annual economic output (measured by business revenues) in Los Angeles County in the amount of \$70.7 million. The investment will create 330 jobs with total earnings of \$25.5 million. Our estimates are summarized in Exhibit 7 below.

Exhibit 7 Annual Economic Impact of Production Operations	
Project Spending	
Direct spending (\$ millions)	\$ 61.0
Total Economic Impact	
Output (\$ millions)	\$ 70.7
Employment (jobs)	330
Earnings (\$ millions)	\$ 25.5

Sources: Occidental Petroleum Corporation; estimates by LAEDC

We have identified at least \$8.0 million in state and local tax revenues will be generated annual by ongoing production operations, as shown in Exhibit 8.

Exhibit 8	
Annual Fiscal Impact of Production Operations (\$ 000)	
Sales taxes	\$ 790
Income taxes	992
Property taxes **	5,640
Fees, fines	287
Social insurance	107
Other taxes	163
Total *	\$ 7,979

* May not sum due to rounding

** See text for discussion of property taxes

Source: Estimates by LAEDC

Our estimates of property tax revenues are conservative. The field is currently non-productive and property taxes are therefore minimal. As a working oil field, however, the land will be assessed a valuation based on the discounted present value of the expected revenue stream that the field will produce, which in turn is a function of the ongoing extraction rate, the market valuation of the extracted oil, and the total reserves in the ground.

We have estimated the property taxes based on a production of 2 million barrels per year with a market price of \$60 per barrel. As production continues, the extraction rate may decline, but this will likely be offset by an escalating market price. The interplay among the various factors is difficult to assess without proprietary data. Hence, we estimate that annual property taxes on the incremental valuation of the land will be *at least* \$5 million but recognize that they could be considerably higher.

Industry Sector Impacts

The economic impact spills across industries in Los Angeles County through indirect and induced effects. The top ten industry sectors affected (by employment) due to spending for this project appear in the table on the following page.

In addition to the impact in the mining sector, much of the impacts will occur in the government sector, in professional, scientific and technical services, and wholesale trade.

The values in the table should be interpreted as illustrative of the industry effects rather than precise given model and data limitations. A description of these industries is provided in the Appendix.

Exhibit 9 Annual Impact of Production Operations by Industry Sector			
Industry	Output (\$ 000)	Jobs	Earnings (\$ 000)
Mining	26,383	86	7,974
Government and non-NAICS	11,087	54	5,172
Professional, scientific and technical services	7,602	50	4,325
Wholesale trade	4,178	21	1,584
Health care and social assistance	1,721	17	961
Retail trade	1,466	17	621
Administrative and waste management	965	14	490
Finance and insurance	3,278	13	1,268
Accommodations and food services	855	13	324
Other services	811	11	337
All others	12,312	34	2,418
Total *	\$ 70,658	330	\$ 25,474

* May not sum due to rounding
Source: Estimates by LAEDC

Cumulative Impacts

If the production activity, including the expenditure and employment levels, is maintained at this level for at least 15 years as anticipated, operations will cumulatively produce \$1.06 billion in output (measured as business revenues), total labor income of \$382 million, and as much as \$120 million in state and local taxes.

Appendix

Methodology

The total estimated economic impact includes direct, indirect and induced effects. **Direct activity** includes the materials purchased and the employees hired by Occidental Petroleum Corporation and its contractors during the project construction period. Here we account for field workers which have been added due to the project and the materials purchased for the project. **Indirect effects** are those which stem from the employment and business revenues motivated by the purchases made by Occidental Petroleum and its contractors. For example, indirect jobs are sustained by the suppliers of the office supplies and insurance purchased by contractors hired for the field work. **Induced effects** are those generated by the spending of employees whose wages are sustained by both direct and indirect spending.

We used information supplied by Occidental Petroleum for initial spending, and estimated the direct, indirect and induced effects using models developed with data and software from the Minnesota IMPLAN Group. In all cases, we have proceeded as if the spending will take place within a single year, as is customary in this type of impact analysis. For long-term projects such as multi-year transportation improvement projects, the reader is cautioned to note that the modeling system does not account for changes in prices and wages over time. Our estimates for labor income and output are expressed in current (2010) dollars.

The estimated economic impacts are based on spending within Los Angeles County. Data limitations prevent us from estimating how much of the spending will take place outside of the county; for example, construction materials or equipment might be *purchased* locally but be manufactured elsewhere. In some instances, spending related to a project may occur in neighboring counties and thus generate *additional* economic impact that spills over from those neighboring counties. This spillover is not captured by our single-county analysis.

Job creation estimates are measured on a job-count basis for both wage-and-salary workers and proprietors regardless of the number of hours worked.

Description of Industry Sectors

The industry sectors used in this report are established by the North American Industry Classification System (NAICS). NAICS divides the economy into twenty sectors, and groups industries within these sectors according to production criteria. Listed below is a short description of each sector as taken from the sourcebook, *North American Industry Classification System*, published by the U.S. Office of Management and Budget (2007).

Agriculture, Forestry, Fishing and Hunting: Activities of this sector are growing crops, raising animals, harvesting timber, and harvesting fish and other animals from farms, ranches, or the animals' natural habitats.

Mining: Activities of this sector are extracting naturally-occurring mineral solids, such as coal and ore; liquid minerals, such as crude petroleum; and gases, such as natural gas; and beneficiating (e.g., crushing, screening, washing and flotation) and other preparation at the mine site, or as part of mining activity.

Utilities: Activities of this sector are generating, transmitting, and/or distributing electricity, gas, steam, and water and removing sewage through a permanent infrastructure of lines, mains, and pipes.

Construction: Activities of this sector are erecting buildings and other structures (including additions); heavy construction other than buildings; and alterations, reconstruction, installation, and maintenance and repairs.

Manufacturing: Activities of this sector are the mechanical, physical, or chemical transformation of material, substances, or components into new products.

Wholesale Trade: Activities of this sector are selling or arranging for the purchase or sale of goods for resale; capital or durable non-consumer goods; and raw and intermediate materials and supplies used in production, and providing services incidental to the sale of the merchandise.

Retail Trade: Activities of this sector are retailing merchandise generally in small quantities to the

general public and providing services incidental to the sale of the merchandise.

Transportation and Warehousing: Activities of this sector are providing transportation of passengers and cargo, warehousing and storing goods, scenic and sightseeing transportation, and supporting these activities.

Information: Activities of this sector are distributing information and cultural products, providing the means to transmit or distribute these products as data or communications, and processing data.

Finance and Insurance: Activities of this sector involve the creation, liquidation, or change of ownership of financial assets (financial transactions) and/or facilitating financial transactions.

Real Estate and Rental and Leasing: Activities of this sector are renting, leasing, or otherwise allowing the use of tangible or intangible assets (except copyrighted works), and providing related services.

Professional, Scientific, and Technical Services: Activities of this sector are performing professional, scientific, and technical services for the operations of other organizations.

Management of Companies and Enterprises: Activities of this sector are the holding of securities of companies and enterprises, for the purpose of owning controlling interest or influencing their management decision, or administering, overseeing, and managing other establishments of the same company or enterprise and normally undertaking the strategic or organizational

planning and decision-making of the company or enterprise.

Administrative and Support and Waste Management and Remediation Services: Activities of this sector are performing routine support activities for the day-to-day operations of other organizations, such as: office administration, hiring and placing of personnel, document preparation and similar clerical services, solicitation, collection, security and surveillance services, cleaning, and waste disposal services.

Educational Services: Activities of this sector are providing instruction and training in a wide variety of subjects. Educational services are usually delivered by teachers or instructors that explain, tell, demonstrate, supervise, and direct learning. Instruction is imparted in diverse settings, such as educational institutions, the workplace, or the home through correspondence, television, or other means.

Health Care and Social Assistance: Activities of this sector are operating or providing health care and social assistance for individuals.

Arts, Entertainment and Recreation: Activities of this sector are operating facilities or providing

services to meet varied cultural, entertainment, and recreational interests of their patrons, such as: (1) producing, promoting, or participating in live performances, events, or exhibits intended for public viewing; (2) preserving and exhibiting objects and sites of historical, cultural, or educational interest; and (3) operating facilities or providing services that enable patrons to participate in recreational activities or pursue amusement, hobby, and leisure-time interests.

Accommodation and Food Services: Activities of this sector are providing customers with lodging and/or preparing meals, snacks, and beverages for immediate consumption.

Other Services (except Public Administration): Activities of this sector are providing services not specifically provided for elsewhere in the classification system. Establishments in this sector are primarily engaged in activities, such as equipment and machinery repairing, promoting or administering religious activities, grant-making, advocacy, and providing dry-cleaning and laundry services, personal care services, death care services, pet care services, photofinishing services, temporary parking services, and dating services.

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