Attitudes Toward Oil and Gas Drilling in the Los Angeles Region

Julian Covarrubias
India Davis
Anya Desai
Hennessy Martinez
Isabella McRae
Jasmine Nuyen
Claire Rutenberg
Julia Vadehra

Advisor: Professor Alesia Montgomery

Table of Contents

1. Abstract

Whether or not oil drilling in California should continue near homes, schools, and other sensitive receptors has long been politically debated. The California Oil and Gas Well Regulations Referendum is on the ballot in 2024; the referendum will decide whether to uphold Senate Bill 1137 (SB1137), a measure intended to prohibit the installation and operation of new wells within health protection zones. This paper examines perspectives toward oil and gas drilling in the Los Angeles region amongst potential voters, focusing on attitudes toward SB1137.

We aim to (1) identify the factors that influence views about oil drilling near homes and schools and (2) provide accurate, nonpartisan information about the environmental, health, and economic impacts of this oil drilling to inform potential voters. The focal point of this research, the Los Angeles region, is a hotbed for oil production and drilling– particularly South Los Angeles, where a high percentage of minority and low-income populations are concentrated. Survey data was collected from a convenience sample of individuals in the Los Angeles region who are 18 or older to gauge how knowledge of oil drilling influences attitudes about regulation. Additionally, we reviewed relevant literature about the environmental and health impacts of oil drilling and analyzed economic research to determine the extent to which SB1137 would impact jobs and gas prices. A GIS analysis was also conducted to provide quantitative data concerning the percentages of sensitive receptors within the proposed health protection zones and the number of oil wells near each sensitive receptor. The aforementioned research was compiled into infographics and an ArcGIS StoryMap as deliverables that can be used to educate Californians about the potential health and economic impacts of Senate Bill 1137.

2. Introduction

Whether or not oil drilling should continue near areas where California residents live, work, play, and study has been widely debated. The Los Angeles region is a major site for oil production and drilling. A recent study found that approximately 630,000 residences, 213 elder care facilities, 184 daycares, and 130 schools in Los Angeles were within half a mile of an active oil or gas well (Shonkoff and Hill, 2019). Much of this oil drilling occurs in South Los Angeles, where a high percentage of low-income people of color are concentrated.

Oil drilling's detrimental effects on both the environment and the health of communities surrounding wells have been well documented. Oil and gas extraction releases carcinogenic benzene and formaldehyde as well as other volatile organic compounds (VOCs) (McKenzie et al., 2018) and PM2.5, which has been associated with a wide variety of health issues including premature death, preterm birth, and worsening of preexisting conditions like asthma and chronic obstructive pulmonary disorder (State of California, n.d.). In addition to physical impacts, the noise and fume production associated with oil drilling may harm the mental health of residents living in the area. Senate Bill 1137 was created to provide some level of protection for communities surrounding oil wells and to move California away from fossil fuel reliance.

SB1137 would establish 3,200-foot "health protection zones" around sensitive receptors such as schools, medical facilities, residential areas, and shops. The bill would prohibit new wells from being built within these zones and preexisting wells would have to comply with more stringent health and environmental regulations (i.e. limiting sound, light, and dust levels, installing leak detection systems, and chemically analyzing water that leaves the premises). Senate Bill 1137 was passed and signed by Gavin Newsom in 2022; however, the California Independent Petroleum Association (CIPA) led a campaign to add the bill to the next ballot as a

veto referendum. Claims made by CIPA during their campaign included that closing oil drilling in California would increase gas prices to $10 a gallon and that high-paying oil industry jobs would be lost. We aimed to determine the validity of claims made by CIPA and other organizations promoting the production and sale of oil through our economic analysis.

To gauge general attitudes related to SB1137 and oil drilling, we partnered with Esperanza Community Housing, a social justice nonprofit based in South LA working towards achieving community development, to conduct a mixed-method survey analysis. Esperanza advised us which survey distribution methods would most effectively reach the surrounding population and provided us with background information on the community we would be largely focusing our research on.

Statements by Supporters and Opponents of SB1137

It has been demonstrated that major oil companies have known about and hidden the negative environmental impacts of drilling for decades (Joint Staff Report, 2024). A class action lawsuit by the State of California against major oil companies alleges a history of deception about climate change (People of the State of California, 2023). The lawsuit states seven causes of action:

- Public Nuisance
- Action For Equitable Relief For Pollution, Impairment, And Destruction of Natural Resources
- Untrue or Misleading Advertising
- Misleading Environmental Marketing
- Unlawful, Unfair, or Fraudulent Business Practices
- Strict Products Liability

- Negligent Products Liability.

A verdict has not been reached yet. As our focus is solely on Big Oil's statements about SB1137, assessing the merits of this case is beyond the scope of this report.

After gathering enough petition signatures to place the California Oil and Gas Well Regulations Referendum on the ballot, CIPA posted a press release about SB1137 on its website (Figure 1).

FOR IMMEDIATE RELEASE
December 12, 2022

Contact: Hector Barajas
(323) 314-3342
hector@amplify360inc.com

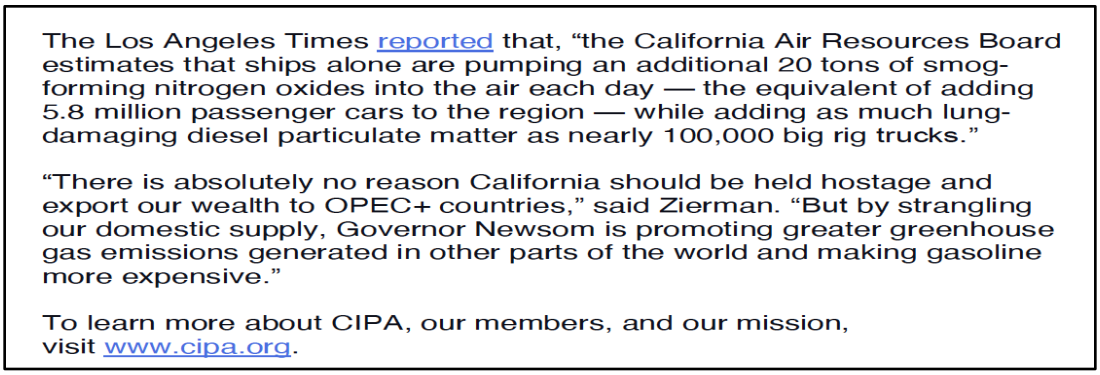
Californians Rush to Sign Petition to Stop Increased Imports of Energy from Foreign Countries

SACRAMENTO, CA (Dec. 12, 2022) – In less than two months, over 978,000 Californians rushed to sign the *Stop the Energy Shutdown* petition, which has been turned in to county registrar of voter offices throughout California.

The petition seeks to put a referendum of Senate Bill (SB) 1137 before the voters, which instituted a statewide 3,200-foot oil well setback without any scientific basis. Five days before the end of the 2022 legislative session, Governor Gavin Newsom circumvented the normal bill review process by introducing Senate Bill 1137, which curtails in-state production of oil. By his admission, he had to cajole legislators to change their vote in the final hours of session to get it passed.

The law threatens to further increase California's already high gas prices by decreasing in-state energy supplies and replacing those barrels with expensive imported foreign oil that contributes greater Greenhouse Gas emissions. Before SB 1137's passage, existing state and local laws already required various setback distances from oil wells established by thoughtful scientific review.

"California-produced oil is the most climate-compliant oil in the world. Producers in our state must adhere to the state's greenhouse gas reduction program and account for all emissions. Foreign oil imports are totally exempt from those requirements," said Rock Zierman, Chief Executive Officer of the California Independent Petroleum Association (CIPA), which is spearheading this effort.



The Los Angeles Times reported that, "the California Air Resources Board estimates that ships alone are pumping an additional 20 tons of smog-forming nitrogen oxides into the air each day — the equivalent of adding 5.8 million passenger cars to the region — while adding as much lung-damaging diesel particulate matter as nearly 100,000 big rig trucks."

"There is absolutely no reason California should be held hostage and export our wealth to OPEC+ countries," said Zierman. "But by strangling our domestic supply, Governor Newsom is promoting greater greenhouse gas emissions generated in other parts of the world and making gasoline more expensive."

To learn more about CIPA, our members, and our mission, visit www.cipa.org.

Figure 1. CIPA Press Release about SB1137.

The CIPA press release argues that "by strangling our domestic supply, Governor Newsom is promoting greater greenhouse gas emissions generated in other parts of the world and making gasoline more expensive." CIPA asserts that SB1137 "threatens to further increase California's already high gas prices by decreasing in-state energy supplies and replacing those barrels with expensive imported foreign oil that contributes greater Greenhouse Gas emissions…. Producers in our state must adhere to the state's greenhouse gas reduction program and account for all emissions. Foreign oil imports are totally exempt from these requirements… [Furthermore, shipping foreign oil adds] smog-forming nitrogen oxides into the air each day…[and] lung damaging diesel particulate matter…." Interestingly, CIPA suggests that its position supports greenhouse gas reduction (thus, mitigating climate change) and that "scientific research" supports its claims.

The State Building and Construction Trades Council of California also opposes SB1137, stating that it "would eliminate thousands of high wage industrial manufacturing union jobs in California's most disadvantaged and underserved communities" (Ballotpedia, undated).

In contrast, environmental organizations support SB1137 as necessary to protect the health and safety of low-income, racialized communities and to reduce climate change. Beyond

threatening lives, environmentalists say these environmental and health concerns impose economic burdens on impacted families and taxpayers.

3. Economic Analysis

As identified in the preceding section, supporters and opponents of SB1137 have made statements about the impact of oil and gas well closures on oil and gas prices, jobs, the environment, and health. Claims made by opponents of SB1137 include that oil well closure will result in increases in gas prices and job loss. To address these concerns, an analysis on government sources, research studies, and oil and gas reports was performed to evaluate the validity of these statements.

History of Misleading Claims

Oil and gas companies are facing a class action lawsuit for manipulating environmental and economic information. In 2023, a lawsuit was filed by The People of the State of California and Attorney General Rob Bonta against major oil and gas companies (*THE PEOPLE OF THE STATE OF CALIFORNIA,* 2023). Companies involved included Exxon Mobil, Chevron, Shell, and American Petroleum Institute (API) (*THE PEOPLE OF THE STATE OF CALIFORNIA,* 2023). The suit disclosed that many of the claims made by oil companies today, spanning from environmental to economic, were disproven decades ago by these companies' own research (*THE PEOPLE OF THE STATE OF CALIFORNIA,* 2023). One of the complaint's primary arguments was that despite having access to information linking human activity and fossil fuels to climate change, these companies publicly denied a connection. The complaint cited research done by scientists at the petroleum companies and API dating back to the 1960s acknowledging the role of fossil fuel consumption in atmospheric CO2 increase and global warming. An Exxon report as early as 1979 stated that "[T]he present trend of fossil fuel consumption will cause

dramatic environmental effects before the year 2050. … The potential problem is great and urgent" (Madrigal, 2023). Shell, API, and other organizations produced several similar reports.

Despite being equipped with scientifically backed knowledge that matched the findings of external scientists, these companies willingly propagated misleading information to mitigate consumers' concerns regarding the role of fossil fuels in climate change. Examples include Exxon's 1996 publication which described the greenhouse effect as "unquestionably real and a good thing" and API's creation of a report the same year that "argued falsely that 'no conclusive — or even strongly suggestive — scientific evidence exists that human activities are significantly affecting sea levels, rainfall, surface temperature or the intensity and frequency of storms'" (Madrigal, 2023).

These companies have been consistently advertising false claims to the public, leading many experts to deem them untrustworthy. A former Exxon scientist, Martin Hoffert, stated, "The advertisements that Exxon ran in major newspapers raising doubt about climate change were contradicted by the scientific work we had done and continue to do… Exxon was publicly promoting views that its own scientists knew were wrong" (Madrigal, 2023). The willingness of oil companies to deny the connection between the use of fossil fuels and climate change, despite having access to scientific evidence to the contrary, has been documented in the above and other instances for decades. In addition to making false claims about the climate, these companies have also made a variety of economic claims to promote their product: oil. The following sections will examine whether these claims have factual validity.

Overview of Economic Research

The claim that the opening or closure of oil and gas wells will drastically influence California gas prices is not substantiated. This can be attributed to crude oil being the biggest

cost in gas prices, with the price of crude oil being decided on the global market. Also, foreign oil imports have increased over the past 30 years, while California's oil supply has decreased. Ninety percent of California's oil is refined in-state, but two-thirds of this oil comes from outside the state (b. California Energy Commission, 2022). Higher fuel costs in California can be attributed to higher state taxes and refinery costs. Fuel gouging by oil companies in California has also been a source of higher fuel costs.

Pricing of gas depends largely on the cost of crude oil. Crude oil is sold on the global market, therefore the price is largely uniform worldwide. In addition, OPEC nations decide the market price due to their large amount of oil reserves. Companies in other nations and states, such as California, respond to this market price. Thus, California's oil and gas drilling has little influence on the crude oil price.

The other claims regarding job and overall economic loss are more uncertain. If jobs are immediately lost, it will be as a result of oil wells shutting down in response to operating costs increasing due to the added health and environmental regulations: the bill does not shut down any existing wells. Although there could be job loss, a report found that investment in the creation of new jobs and health outcomes in the green energy sector could outnumber those lost. However, these jobs will generally have less benefits and less compensation and California has not made investments into a just transition to compensate those who do lose their jobs.

Evaluation of Claims: Oil and Gas Prices in California

In recent years, oil and gas prices have drastically increased, especially in California (NRDC, 2022). Despite crude oil prices decreasing from $100 to $80 per barrel, gas prices in California have risen (Myers, 2023). Gas companies often claim that these price hikes are due to bans on oil drilling (NRDC, 2022). Companies such as Chevron and the American Petroleum

Institute (API) have responded to price hikes by suggesting that increasing U.S. and California-based drilling would make fuel more affordable (Chevron, 2023). However, even if permits are granted to open new oil and gas sites, production sites can take over ten years to stabilize (NRDC, 2022).

Governor Gavin Newsom has highlighted the issue of price gouging by big oil companies, which resulted in a $33 billion profit for these companies over a few months, all at the expense of the consumer (State of California, 2023). This price gouging has resulted in the enactment of a law allowing the California Energy Commission to set a maximum refining margin between crude oil and wholesale gas prices, with companies exceeding this margin forced to face penalties (EWG, 2023).

Moreover, most of the oil used by California residents is imported from OPEC nations (c. California Energy Commission, 2023), and California does not control this oil's prices (NRDC, 2022). Therefore, increasing – or decreasing – local oil production would not significantly impact pricing, as most oil is globally sourced (NRDC, 2022). OPEC exports 60% of internationally traded petroleum and holds 72% of the world's oil reserves. The economic impact of OPEC, particularly through major producers such as Saudi Arabia, is substantial (EIA, 2024).

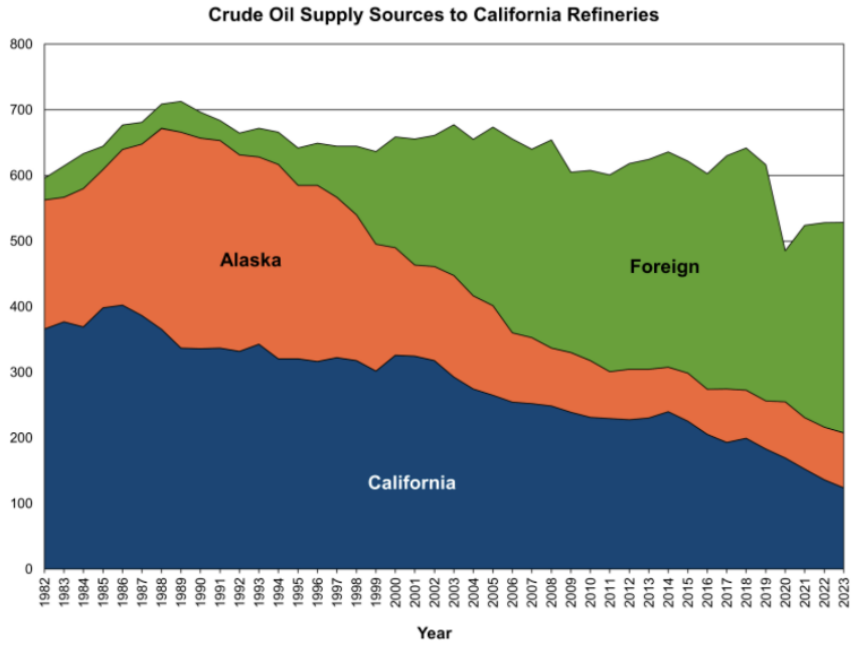


Figure 2. Crude Oil Supply Sources to California Refineries (1982-2023). From California Energy Commission, 2023.

For more information regarding the determination of oil prices globally, see Appendix C.

Examining Claims: Job Loss

Oil companies have long emphasized the connection between decreasing oil production and job loss. Exxon, Chevron, and API developed a plan in 1998 to pay for a series of advertisements in *The New York Times* that raised concerns about "a big run-up in energy prices" and "a substantial loss of U.S. jobs and manufacturing capacity," should oil wells close.

Research concludes that closing oil and gas wells to achieve net-zero emissions *will* result in job loss. With around 112,000 California residents employed by the oil industry, reducing oil production will affect their job stability. The State Building and Construction Trades Council of California (Trades), one of the unions representing workers employed by the oil industry, previously opposed SB 467, a bill including buffer zones on oil extraction much like SB1137. They claimed that this reduction in production would cause job losses (Bedayn, 2022). With ⅔ of the workers in this industry having less than a bachelor's degree, the Trades worry

that California's emphasis on moving away from fossil fuels will also reduce the quality of the jobs available to these workers (Pollin et al., 2021). California currently does not have a statewide just-transition plan. Therefore, some unions will continue to disagree with this legislation. However, this effect can be mitigated by creating energy transition plans for those affected to stabilize the economy.

According to a report titled "A Program for Economic Recovery and Clean Energy Transition in California," if California invested $75.8 billion into energy efficiency and renewable energy from 2021-2030, an estimated 417,910 new jobs would be created (Pollin et al., 2021). These jobs would be a mixture of direct jobs, indirect jobs, and induced jobs. Indirect jobs are defined as "the jobs associated with industries that supply intermediate goods for the building retrofits or solar panels, such as glass, steel, and transportation." Induced jobs are defined as "the expansion of employment that results when people who are paid in the construction or steel industries spend the money they have earned on other products in the economy." Excluding induced jobs, a total of 294,661 new jobs will be created, which exceeds the 112,000 people who may have their jobs lost due to completely shutting down the oil industry in California. For a breakdown of all jobs created and sectors that the jobs are created, see Figure 3.

TABLE 3.5
Annual Job Creation in California through Combined Clean Energy Investment Program
Average annual figures for 2021 – 2030

Industry	Number of direct and indirect jobs created	Number of direct, indirect and induced jobs created
$9.3 billion in energy efficiency		
1) Building retrofits	21,090	28,490
2) Industrial efficiency, including combined heat and power	7,600	10,830
3) Electrical grid upgrades	5,040	7,140
4) Public transportation expansion/upgrades, including rail	19,040	22,960
5) Expanding high efficiency automobile fleet	651	930
6) Total energy efficiency job creation	*53,421*	*70,350*
$66.4 billion in clean renewables		
7) Solar	99,600	146,080
8) Onshore wind	35,640	51,480
9) Low emissions bioenergy	38,000	54,000
10) Geothermal	31,000	44,500
11) Small-scale hydro	37,000	51,500
12) Total job creation from clean renewables	*241,240*	*347,560*
13) TOTALS *(= rows 6+12)*	**294,661**	**417,910**
14) TOTAL AS SHARE OF 2019 CALIFORNIA LABOR FORCE *(Labor force at 19.4 million)*	**1.5%**	**2.2%**

Sources: Tables 3.2 and 3.4, U.S. Department of Labor.

Figure 3. Annual Job Creation in California through Combined Clean Energy Investment Program. From Pollin et. al, 2021.

The report made a few assumptions in order to create these job estimates. Out of the $75.8 billion total in spending, $9.3 billion would be spent on energy efficiency upgrades, with 40% of the budget spent on building retrofits, 20% on combined heat and power (CHP) and other industrial efficiency measures, 15% on electrical grid upgrades, 15% on public transportation expansion/upgrades, and 10% on expanding high-efficiency auto fleet. For the remaining $66.4 billion spent on renewable energy investment, it is assumed that 50% is spent on on solar PV energy, 20% on onshore wind energy, 15% on low-emissions bioenergy, 7.5% on geothermal energy, and 7.5% on small-scale hydro.

While this report claims that the combined amount of direct and indirect jobs created by investing in green infrastructure will exceed those lost by phasing out oil and gas, the quality of these new jobs will be less than those currently in the fossil fuel industry. Some quality

indicators are percent of workers with health insurance coverage, retirement plans, union coverage, and average compensation. Looking at existing working conditions for people in the industries outlined, we see that on average green energy sector workers have lower percentages of health insurance coverage, retirement plans, and union membership. Of all of the sectors, less than half of the workers are on employer-sponsored health insurance and less than one third of workers are are provided an employer-sponsored retirement plan. Average salary is also lower in these green industry jobs with even the highest sector, solar energy, having a lower average compensation than the the oil industry. To compare benefits of green energy sector jobs and those in the fossil fuel industry, look at figure 4 and 5 below.

TABLE 3.6
Indicators of Job Quality in California Clean Energy Industries: Direct Jobs Only

	Energy Efficiency Investments				
	1. Building retrofits *(13,690 workers)*	**2. Industrial efficiency** *(5,510 workers)*	**3. Grid upgrades** *(3,920 workers)*	**4. Mass transit** *(16,800 workers)*	**5. High-efficiency autos** *(279 workers)*
Average total compensation	$73,700	$91,900	$83,300	$37,600	$88,700
Health insurance coverage, percentage	37.2%	49.5%	47.8%	34.4%	67.9%
Retirement plans, percentage	24.4%	32.7%	28.1%	20.1%	51.1%
Union membership, percentage	18.7%	7.5%	15.7%	17.2%	7.2%

	Clean Renewable Energy Investments				
	6. Solar *(69,720 workers)*	**7. Onshore wind** *(23,760 workers)*	**8. Low-emissions bioenergy** *(30,000 workers)*	**9. Geothermal** *(23,000 workers)*	**10. Small-scale hydro** *(29,500 workers)*
Average total compensation	$96,500	$94,000	$83,500	$92,600	$79,700
Health insurance coverage, percentage	46.2%	46.8%	37.4%	43.4%	40.0%
Retirement plans, percentage	31.6%	32.0%	24.4%	29.4%	26.5%
Union membership, percentage	13.1%	17.7%	17.2%	14.9%	18.5%

Figure 4. Indicators of Job Quality in California Clean Energy Industries: Direct Jobs Only. From Pollin et al. 2021.

TABLE 6.2
Characteristics of Workers Employed in California's Fossil Fuel-Based Sectors

	Fossil fuel-based industries
Average total compensation	$129,800
Health insurance coverage*	70.0%
Retirement benefits*	64.7%
Union membership coverage	22.7%
Educational credentials	
Share with high school degree or less	29.5%
Share with some college or Associate degree	35.3%
Share with Bachelor's degree or higher	35.2%
Racial and gender composition of workforce	
Pct. Black, Indigenous and People of Color	44.6%
Pct. female workers	21.5%

Source: See Appendix 2.
Note: *Due to small sample sizes, these figures are based on the Pacific region rather than California only.

Figure 5. Characteristics of Workers Employed in California's Fossil Fuel-Based Sectors. From Pollin et. al, 2021.

Investing in clean energy systems will create jobs and opportunities for those with less than a college degree. Of all 10 of the green industries outlined in the report, nine of the industries have more than ⅓ of their employees with high school degrees or less. They also employ a substantial percent of workers with associate's degrees or some college. Compared to education demographics of fossil fuel workers (as shown in Figure 5) many of these industries have higher levels of people with lower educational attainment. While the trades are worried that the green transition will leave behind those without college degrees, the evidence shows that there will be plenty of new opportunities for those demographics. For the full demographic info of those employed in the green sector, look at figure 6.

TABLE 3.7
Educational Credentials and Race/Gender Composition of Workers in California Clean Energy Industries: Direct Jobs Only

	Energy Efficiency Investments				
	1. Building retrofits *(13,690 workers)*	2. Industrial efficiency *(5,510 workers)*	3. Grid upgrades *(3,920 workers)*	4. Mass transit *(16,800 workers)*	5. High-efficiency autos *(279 workers)*
Share with high school degree or less	60.8%	18.7%	60.9%	42.6%	35.7%
Share with some college or Associate degree	25.0%	19.7%	24.4%	34.2%	30.5%
Share with Bachelor's degree or higher	14.3%	61.6%	14.7%	23.3%	33.8%
Racial and gender composition of workforce					
Pct. Black, Indigenous and People of Color	62.0%	44.6%	63.9%	64.5%	69.7%
Pct. female	8.7%	34.6%	9.0%	19.8%	22.4%

	Clean Renewable Energy Investments				
	6. Solar *(69,720 workers)*	7. Onshore wind *(23,760 workers)*	8. Low-emissions bioenergy *(30,000 workers)*	9. Geothermal *(23,000 workers)*	10. Small-scale hydro *(29,500 workers)*
Share with high school degree or less	46.7%	51.4%	61.2%	51.0%	57.1%
Share with some college or Associate degree	21.6%	25.2%	24.0%	22.9%	24.5%
Share with Bachelor's degree or higher	31.7%	23.4%	14.8%	26.1%	18.4%
Racial and gender composition of workforce					
Pct. Black, Indigenous and People of Color	61.0%	60.1%	63.2%	60.5%	60.5%
Pct. female	19.0%	13.6%	10.6%	15.6%	10.0%

Sources: See Appendix 2.

Figure 6. Educational Credentials and Race/Gender Composition of Workers in California Clean Energy Industries: Direct Jobs Only. From Pollin et al., 2021.

SB1137 on its own will likely not cause widespread job loss in the fossil fuel industry. According to interviews with economic experts from California universities, SB1137 by itself will not result in the direct closure of oil and gas wells. However, because oil wells existing within the buffer zone are subject to increased health and safety regulations, operating costs for the wells will increase. Oil companies may close down wells if operating costs are too expensive, but this does not directly result from SB1137. California does not have plans for a just green energy transition that includes providing new job training, increased benefits and wages in the green energy sector, and temporary assistance for those who lost their fossil fuel jobs. Therefore,

if jobs are lost indirectly due to SB1137, there are no existing programs to support workers or guarantee them the same quality jobs as before. Due to this, it is likely that the trades and oil and gas workers may oppose green legislation such as SB1137 until they are provided plans to a just job transition.

Between 2020 and 2050, investments in clean energy are expected to create 4.2 to 4.6 billion jobs globally, reducing overall unemployment from 5% to 2.6% (Pollin, 2021). These investments, estimated at $551 billion in energy supply and demand expenditures, will have direct, indirect, and induced positive effects on employment (Pollin, 2021). Another study projects that a $1.2 trillion investment in the clean energy transition could result in an "economic reboot" worth $2.1 trillion by 2040 (Bezdek, 2022). Increasing energy expenditure by 40% could lead to 8.7 million new jobs by 2040, while a complete energy transition could create 20 million jobs (Bezdek, 2022).

To reduce reliance on foreign oil, the United States must invest in green industries and develop alternative energy sources (Bezdek, 2022). An annual investment of $30 billion in green energy over ten years could add 3.3 million jobs to the economy and increase GDP by $1.4 trillion (Bezdek, 2022).

The Political Economy Research Institute (PERI) assessed the impact of clean energy spending compared to fossil fuels investments and found that, on average, $1 million invested in fossil fuels creates 2.7 full-time-equivalent (FTE) jobs while the same amount invested in renewable energy generates 7.5-7.7 FTE jobs. Thus, every $1 million invested in green energy would result in a net gain of five jobs (Bezdek, 2022).

Table 3.1. Job Creation through Energy Supply Investments
Job Creation per $1 million in spending

3.1A) Figures at Existing U.S. Domestic Content Levels

Investment Area	Direct Jobs	Indirect Jobs	Direct Jobs+ Indirect Jobs	Induced Jobs	Direct Jobs + Indirect Jobs + Induced Jobs
Clean renewables	2.8	3.0	5.9	4.4	10.2
Transmission/ storage	1.0	1.4	2.4	2.8	5.1
Additional supply technologies	5.5	2.9	8.5	5.7	14.2
Fossil fuels	1.6	2.7	4.4	4.2	8.5
Other investments	3.3	2.8	6.1	4.7	10.8

Figure 7. Job Creation From Investing in Energy Supply (Bezdek, 2022).

Table 3.5 Average Annual Net Job Creation through Combined Energy Supply and Energy Demand Expenditure Program, 2020 – 2050, Assumption: Current Levels of Domestic Content

	Number of Direct and Indirect Jobs Created		Number of Direct, Indirect and Induced Jobs Created	
	Jobs Created at Existing Domestic Content Levels	Jobs Created at 100% Domestic Content	Jobs Created at Existing Domestic Content Levels	Jobs Created at 100% Domestic Content
1) $388.7 billion in net average annual energy supply investments	1.8 million	2.1 million	3.2 million	3.5 million
2) $162.6 billion in net average annual energy efficiency expenditures	529,801	632,331	978,919	1.1 million
3) $551.3 billion in net average annual combined expenditures	2.3 million	2.7 million	4.2 million	4.6 million
4) Total net job creation as share of projected 2035 labor force *(projection is 175 million U.S. workforce in 2035)*	1.3%	1.5%	2.4%	2.6%

Sources: Tables 3.1 – 3.4. U.S. 2035 workforce projection is an extension of the U.S. Bureau of Labor Statistics projection through 2028, which assumes a 0.5 percent average annual labor force growth rate: https://www.bls.

Figure 8. Average Annual Net Job Creation Through Energy Expenditures (Bezdek, 2022).

In addition, the quality of jobs is expected to increase, with expected salaries ranging from $70,000 to $130,000 depending on education and occupation (Bezdek, 2022). Focusing on these strategic investments and energy transition plans can offset the negative impacts of job losses in the oil and gas sector, paving the way for a more sustainable and economically robust future.

Movement Away From Oil

In the future, the economic impact of the oil and gas industry may not be as significant as it previously was. Los Angeles accounts for only 7% of statewide oil production (California

State Oil and Gas Supervisor, 2020). In 2017, California spent $27 billion on foreign oil imports. Since 1985, California's oil production has steadily decreased by an average of 2.2% per year (California State Oil and Gas Supervisor, 2020). More recently, onshore oil production in California has declined by 42% since 2015 (Carbon Tracker, 2023).

This decrease in oil production aligns with an increasing push for alternative energy sources. California is transitioning from relying on oil toward more sustainable energy options. According to a 2023 report from the U.S. Energy Information Administration, between 2016-2022, 46% of federal energy subsidies were allocated to renewable energy sources (Federal Financial Interventions and Subsidies in Energy in Fiscal Years 2016–2022, 2023). Furthermore, 6% of energy-specific subsidies were apportioned to the research and development of energy discovery (Federal Financial Interventions and Subsidies in Energy in Fiscal Years 2016–2022, 2023).

4. Health Impacts of Oil Drilling

Socioeconomic Factors and Health

Social determinants of health are societal factors of the human environment that affect a population's levels of health (Meng et al., 2012). These factors include access to care, disease severity, housing conditions, exposure to environmental triggers, and comorbidities of other issues such as diabetes (Meng et al., 2012). Disparities in access to mental health services, general health care, and education may cause lower-income areas to face higher amounts of certain negative health outcomes (Los Angeles City Council District 9, 2018). Most often, low-income and minority populations suffer the impacts of living close to oil drilling. Preexisting socioeconomic disparities which existed before oil drilling and will continue to exist should oil

drilling cease entirely may interact synergistically with oil drilling to exacerbate negative impacts.

Reproductive Health

Some studies have shown that proximity to oil wells can cause preterm birth, low birth weight, neural tube defects, congenital heart defects, and high-risk pregnancies; however, this evidence varies. Local variations in particulate matter and carbon monoxide have been linked to preterm birth and low birth weight (Wilhelm & Ritz, 2005). Multiple studies have found links between oil drilling and preterm birth (Shonkoff & Hill, 2019). Some other studies have also found links between oil extraction and low birth weight (Shonkoff & Hill, 2019). However, some studies have found no link or a statistically insignificant correlation, indicating that oil may not affect reproductive health (Shonkoff & Hill, 2019).

Respiratory Illness

The release of air pollutants from oil extractions can increase respiratory issues. A community in New Mexico built on an oil field had statistically significantly higher levels of chronic bronchitis, asthma, coughing, rhinitis, shortness of breath, and wheezing compared to another local community not built on an oil extraction site (Dahlgren et al., 2007). Unconventional natural gas development (UNGD) has also increased the odds of hospitalization for pediatric asthma by 19% in a study in Pennsylvania (Shonkoff & Hill, 2019). Another study in Pennsylvania showed increases in extreme and mild asthma exacerbations for those highly exposed to UNGD by 50% and 440% respectively (Shonkoff & Hill, 2019). A community health-based survey in South LA found that communities with oil and gas extraction sites had higher asthma and recurrent wheezing or coughing rates. Another LA-based study found

significantly reduced forced expiratory volume, an indicator of all-cause mortality and respiratory disease, in communities downwind of active oil wells.

Neurological Symptoms

Some communities living next to oil extraction sites have reported higher levels of neurological symptoms. When a community near an active oil extraction site was surveyed, increased levels of self-reported dizziness, fatigue, and ringing of the ears in active oil well zones were found compared to those near an abandoned well (Johnston et al., 2021). A community built on an abandoned oil field found a significantly higher prevalence of neurological symptoms like dizziness, issues with memory, lightheadedness, and loss of balance (Dahlgren et al., 2008). One study found that benzene and other alkenes levels close to oil wells exceed 18 hazard indices, indicating that exposure to those pollutants could cause neurological symptoms.

Cardiovascular Disorders

There is also evidence that oil well exposure can cause cardiovascular disorders. Two studies found that those living near active oil wells or in communities built on old oil wells had statistically significant increases in chest tightness, chest pain, and angina (Dahlgren et al., 2008; Johnston et al., 2021). Another study also found that people living closer to oil wells in areas with heavy oil extraction had higher levels of inflammation indicators in the blood (Shonkoff & Hill, 2019). There is also evidence that the inhalation of hydrocarbons, a byproduct of oil extraction, can increase emergency visits for cardiovascular issues and cardiovascular mortality (Shonkoff & Hill, 2019).

Cancer

Although some studies have found association between residential exposure to oil wells and cancer, other studies found little association. One study found an increased cancer risk of 8.3

per 10,000 individuals within 152 meters of oil extraction – higher than the EPA's upper threshold of acceptable cancer risk levels of 1 per 10,000 individuals (McKenzie et al., 2018). Another study found that combined VOC (volatile organic compound) exposure from gas and oil extraction caused a lifetime cancer risk of 4.3 cases per 100,000 people (Shonkoff and Hill, 2019).

Mental Health Impacts of Oil Drilling

Air pollutants, such as PM 2.5 and NO2, produced from oil and gas wells are associated with neurodevelopmental disorders, neurodegenerative diseases, and mental disorders. As of 2019, Los Angeles has a yearly average of PM 2.5 level of 13.4 micrograms per cubic meter, compared to the national average of 7.4 (Air Pollution, 2020). Toledo-Corral et al., (2021). A study that observed the effect of short-term PM 2.5, NO2, and O3 exposure on HPA-axis dysregulation in Latino youth concluding that long-term PM 2.5 exposure is associated with lower cortisol levels, which may play a factor in causing depression (Toledo-Corral et al., 2021).

A study from the Seoul National University College of Medicine that analyzed long-term exposure to PM 2.5 suggested that exposure causes neural inflammation, leading to an increased risk of major depressive disorder (Kim et al., 2016). However, the sample lacks racial diversity and there are too many variables in this study to identify PM 2.5 as the only factor that contributed to mental health decline.

Volatile organic compounds (VOC) are damaging air pollutants associated with "automobile emissions, cigarette smoke, and industrial emissions from oil and coal combustion," with the most toxic VOCs coming from oil (Zhuang et al., 2018). One study compared a group of workers exposed to the pollutants toluene and xylene to another group unexposed to the chemicals but did not find a significant connection between exposure and psychological

disorders (Thetkatheuk et al., 2015). However, this study was short-term, had a small sample size, and only assessed low concentrations of the chemicals (Thetkatheuk et al., 2015). The workers also use protective gear, therefore not accurately depicting the effect these chemicals may have on the general public (Thetkatheuk et al., 2015).

In contrast, a study measuring the blood concentration of VOCs in participants after chemical exposure found those with higher concentrations of benzene and ethylbenzene reported more depression (Zhuang et al., 2018). The University of Pittsburgh School of Medicine looked at the effects of exposure to paint chemical solvents in painters versus non-painters and found a significant link between mental health issues and pollutant exposure (Condray et al., 2000). Another large-scale study by Visser et al. (2011) found that levels of mood disorders were elevated among long-term exposure causing cognitive impairment known as chronic solvent-induced encephalopathy (CSE).

Over the past 30 years, multiple studies have concluded that VOCs are correlated to declines in mental health, specifically depression. Again, the limited sample sizes for Thetkathuek et al. (2015) and Condry et al. (2000) explain the mixed results. Additionally, no random trials or neurobiological pathways were studied to confirm the findings further (Visser et al., 2011). Furthermore, no studies focus on younger populations or Los Angeles County. The studies are also dated, and, therefore, updated research is necessary to explain how these pollutants affect depressive symptoms, whether pollutants have a greater effect today, and the effect on children. Zhuang et al. (2018) do not account for higher or lower concentrations of exposure that may be more closely associated with oil and gas drilling emissions.

Psychosocial Stress

Proximity to unconventional oil and gas wells has been directly associated with higher levels of depression and anxiety from psychosocial stress, which is stress that produces adverse mental health outcomes as a result of social factors (Malin, 2020). According to Malin (2020), living near oil wells creates chronic stress for citizens due to the uncertainty of health risks and a lack of power to politically change unconventional oil and gas production (Malin, 2020). Similarly, interviews with Ohio county citizens revealed that uncertainties of future development and the risk of noise pollution caused psychological stress from gas development (Fisher et al., 2018). Another study surveyed residents and found that fracking and UNGDs created environments with community distress, lack of trust in government, and anxiety about potential carcinogens (Soyer et al., 2020). These chronic stressors cause the citizens in these neighborhoods to be at a higher risk of developing depression and anxiety (Malin, 2020).

However, both studies focused on the Midwestern US with a small sample size. Similar approaches must be taken in Los Angeles to prove that psychosocial stress is a pattern across the United States.

5. Research Questions

To aid in our aims of identifying and analyzing the knowledge gap about Senate Bill 1137 in varying Los Angeles communities, we posed the research questions:

1. What are commonly held attitudes/general knowledge of college students, high schoolers, and parents about SB1137? What factors influence these attitudes?
2. How does access to information or lack thereof impact attitudes toward SB1137?
3. How are those living in proximity to oil wells (3,200 ft) impacted, mental health-wise and economic-wise?

6. Methods

Survey Experiment

To aid Esperanza Community Housing in understanding beliefs and conceptions about SB1137 and oil drilling, we surveyed various groups that we believed would have differing perspectives and experiences related to oil drilling in South Los Angeles (see Appendix for the full list of contacts). Due to time and budget constraints we chose to use a convenience sample. In order to get this sample, we reached out to high schools, elementary schools (where surveys were distributed to parents), college professors (who similarly distributed surveys to students), and community organizations. These organizations were all located in areas within close proximity to oil drilling.

The survey was conducted on Google Forms. Ultimately, there were 36 responses, 20 in English and 16 in Spanish. The survey was written both in Spanish and English, as Los Angeles contains a high level of Spanish-speaking residents. Due to our chosen convenience sampling, the survey is not generalizable; however, it may be able to provide information regarding beliefs about oil drilling and SB1137 in the communities that the surveys were distributed to. Additionally, the survey contained an optional raffle for a $50 Target gift card in order to incentivize more responses; however, participants were not obligated to fill out the survey in order to be entered into the raffle. Survey questions, intro, and outro slides are listed in Appendix B.

Once survey responses were received, they were analyzed using cross tabulation for the Discussions section.

GIS Analysis

CalGEM updates a dataset containing locations and attributes of all oil and gas wells in California daily. A 3,200-foot buffer to simulate the Health and Safety Protection Zones was created around all active, idle, plugged (but not sealed), recently permitted/in the process of being drilled, and unknown status wells. These wells were chosen because they are, will be, or can become active. Plugged wells may emit toxic gasses due to not being sealed. To err on the side of caution, wells with unknown status are also included in the analysis in case any are still productive.

The latest datasets for locations of schools, hospitals/healthcare buildings, childcare centers, nursing homes, places of worship, and prison boundaries, were downloaded from the Homeland Infrastructure Foundation-Level Data Open Data portal (HIFLD) to identify the numbers and percentages of sensitive receptors that are within 3,200 feet of an oil and gas well currently. Due to dataset availability and time constraints, we could not digitize satellite imagery and other maps to find the number and percentages of homes or buildings with businesses open to the public within the buffer zone. We also did not analyze population data because of uncertainties associated with manipulating existing data. The smallest scale the U.S. Census Bureau collects data for is a census block. Research has found that only the total population data is accurate at this level, with inconsistencies increasing when population data is derived from the number of housing units (Bozick et al., 2023). Additionally, since census blocks may be partially located in buffer zones, scaling down census block data to reflect the area within the buffer introduces significant variability and uncertainty in the estimated results for numbers of homes or populations within the Health and Safety Protection Zone. Our GIS analysis identifies the sensitive receptors located within 3,200 feet of an oil and gas well, quantifies the number of oil

wells within 3,200 feet of the receptor, and finds the minimum distance to a drilling site from the receptor.

Using ArcGIS Pro, the sensitive receptors data were filtered to Los Angeles County and then the intersect tool was repeated for each dataset to select the points within the polygon buffer zone. Since the base layer of oil and gas wells data is updated daily and the intersection process is time-consuming, an R Markdown Script was also written to quantify the sensitive receptors. The R script also creates a column containing the number of wells within the 3,200-foot buffer of each sensitive receptor, as some are located in the middle of oil fields containing tens to hundreds of wells.

7. Preliminary Results

Survey

Demographics

The typical respondent was a woman pursuing a college degree or with a partially completed college degree. Most of our respondents were Latinx, which was expected, given the large Latinx population residing in South LA. However, as some demographic factors are underrepresented, it is best to keep in mind that this sample is not generalizable to the entire population. Of our 36 survey respondents, when asked to identify if their address was inside of an oil well buffer zone on a GIS map provided, 26 (72%) identified themselves as living near an oil well and 10 (28%) identified themselves as living outside of the 3,200 ft buffer zone.

Variable	Category	#	%
Race-ethnicity	Hispanic (any race)	28/36	78%
	Non-Hispanic	6/36	17%
	White	2	
	Black	1	
	Asian	2	
	Other	1	
	No Response	2/36	5%
			100%
Gender	Male	8/36	22%
	Female	25/36	70%
	No Response	3/36	8%
			100%
Age	18 to 29 years old	15/36	42%
	30 to 59 years old	17/36	47%
	Over 60 years old	4/36	11%
			100%
Education	Less than HS diploma	4/36	11%
	HS diploma	10/36	28%
	Some college or more	18/36	50%
	No Response	4/36	11%
			100%

Table 1. Demographic Information of our Study Respondents.

Knowledge and Advertisements

22% of respondents who believe they live within 3,200 feet of an oil well knew prior to taking the survey that they did. Another 33% did not know they lived in close proximity to oil, and 44% of the survey did not answer whether or not they knew.

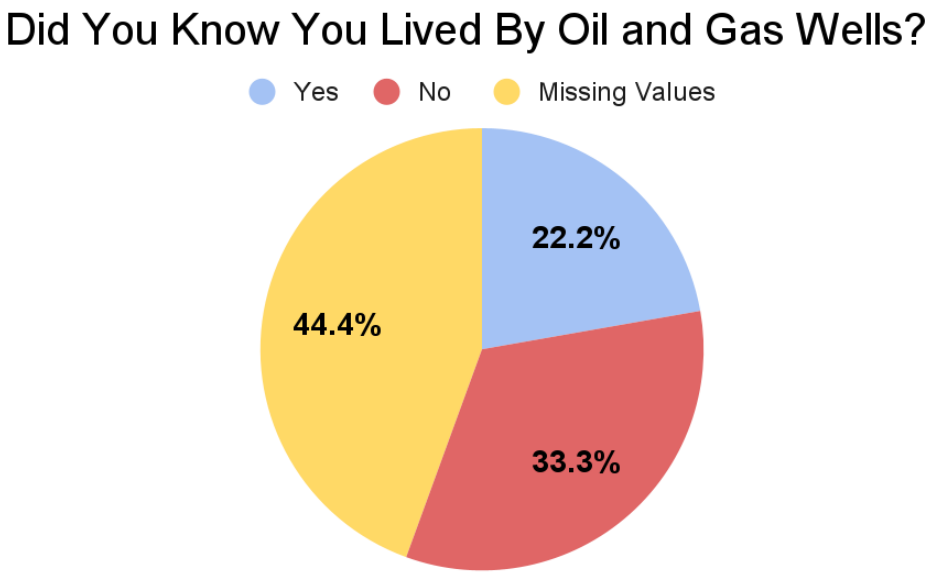


Figure 9. Chart displaying survey results regarding prior knowledge about living near an oil or gas well.

One survey respondent mentioned that while they knew they lived in an area with oil drilling, they did not know that they lived next to multiple oil wells. Regarding knowledge of

SB1137, the majority of respondents, 61%, had not heard of SB1137 prior to taking the survey. 31% of respondents had heard of the bill, and 8% were unsure whether they had heard of the bill or not.

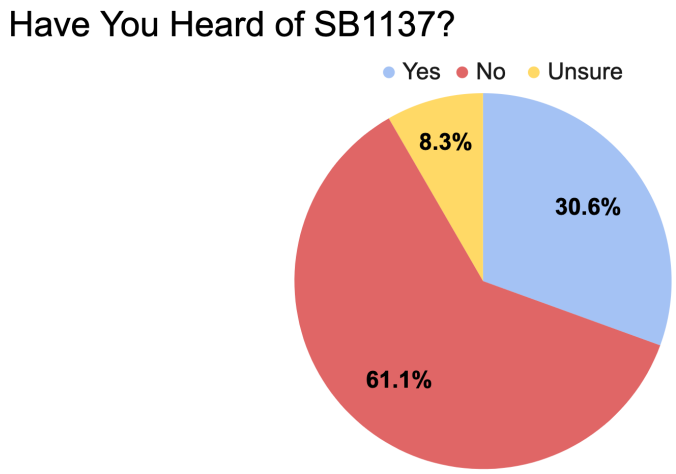


Figure 10. Chart displaying survey results regarding prior knowledge of SB1137.

Respondents Beliefs

Respondents were likely to believe that oil drilling has a "bad impact" on the environment with 34 respondents (94%) believing so. The remaining 2 respondents believed there to be "little or no impact" on the environment. Notably, one of these respondents is either employed or has family members employed by the oil industry. Compared to the question on environmental impacts of oil drilling, respondents were more likely to believe that oil drilling has a positive or little to no economic impact on surrounding communities (11% and 14% respectively). However, the majority of respondents still believed that oil drilling has a negative impact (72%). One respondent declined to answer. Many respondents were "very worried" or "somewhat worried" "about the impacts of oil and gas drilling on [themselves] or [their families]": 58% reported being "very worried" and 29% reported being "somewhat worried," while only 14% of respondent reported being "not worried at all."

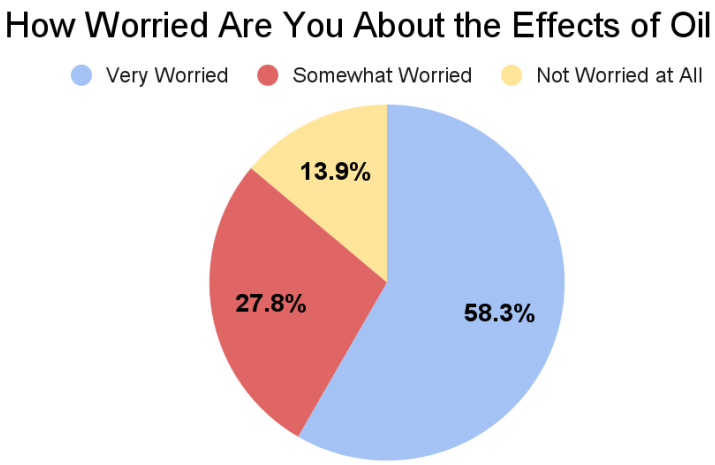


Figure 11. Chart displaying survey results regarding if participants are worried about the effects of oil.

Of the 36 respondents, 23 (64%) stated that they support SB1137. Three respondents (8%) said that they do not support SB1137, 2 of whom are employed or have family members employed by oil companies. Ten respondents (28%) were unsure whether or not they support SB1137.

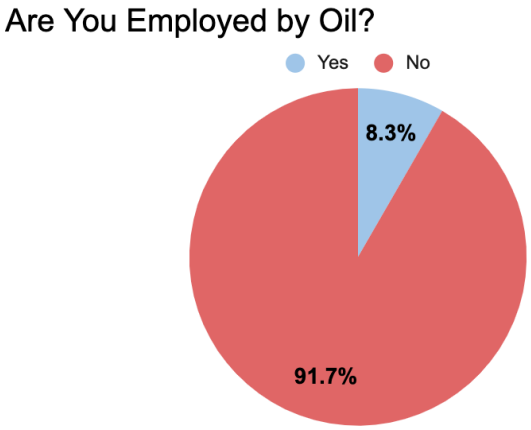


Figure 12. Chart displaying survey results regarding if participants are employed by oil.

Cross Analysis Results

GIS Analysis

Based on data updated on June 1, 2024, California has 241,844 oil and gas wells. Of these, 24,304 wells, about 10.05% are in LA County. The status of these wells is broken down in

Table 1, seen below. CalGEM defines wells using the following criteria: “Active” wells are those that are drilled and completed; “Idle” wells are those that are not currently producing but are capable of being reactivated; “New” wells are those that were recently permitted and are in the process of being drilled; “Plugged Only” are abandoned wells that have been plugged but not sealed; “Plugged” wells are abandoned wells that have been plugged and permanently sealed to current standards; “Canceled” wells are those that had their permits canceled before drilling began; and “Unknown” are generally older, pre-1976 wells where the status is uncertain (CalGEM, n.d.).

Well Status (LA County Wells)	Number	Percentage
Active	3,330	13.70%
Idle	3,289	13.53%
New	30	0.12%
Plugged Only	2	0.01%
Unknown	0	0.00%
Plugged	17,480	71.92%
Canceled	173	0.71%

Table 2. Number and Percentages of Los Angeles County Oil and Gas Wells by Status.

Table 2 below summarizes the numbers and percentages of sensitive receptors in LA County that are within 3,200 feet of an oil and gas well and the minimum distance to an oil well for each sensitive receptor type. The full results listing each individual type of facility are linked in Appendix D.

Sensitive Receptor	Total in LA County	Number Within 3,200 Feet of Drilling	Percentage within 3,200 Feet of Drilling	Minimum Distance to Drilling Site (feet)
Public K-12 Schools	2,250	471	20.93%	52
Private K-12 Schools	740	159	21.49%	52

Colleges and Universities	229	48	20.96%	92
Hospitals	158	51	32.28%	36
Urgent Care Centers	128	27	21.09%	167
VA Medical Facilities	15	8	53.33%	1,624
Dialysis Clinics	213	55	25.82%	62
Prisons	78	21	26.92%	49
Child Care Centers	3,512	727	20.70%	30
Nursing Homes	672	137	20.39%	92
Places of Worship	8,097	1,848	22.82%	30

Table 2. Summary of Sensitive Receptors in LA County Within 3,200 Feet of a Drilling Site.

Of the sensitive receptors located within 3,200 feet of drilling, the majority are places of worship– which is to be expected, as LA County contains a far greater number of places of worship than other receptors. However, of the receptors listed, VA medical facilities, or medical facilities that provide a range of health services for Veterans, see the highest exposure rate (53.33%) to drilling. Many Veterans are older adults, which means that a vulnerable group is risking disproportionate exposure to the effects of drilling. Additionally, almost ⅓ of hospitals in the county are located within 3,200 feet of an oil well, further indicating how vulnerable populations who may already be sick are risking further exposure to potential toxins by seeking healthcare.

8. Discussions

Economic Analysis

The oil and gas supply in LA County has generated an abundance of wells in the county, most notably in marginalized communities of South L.A. The discussion surrounding this topic stems from how the wells will impact the nearby residents in terms of safety and health. To further expand on this knowledge, SB1137 was analyzed to determine how residents felt about

the bill. The general claim from oil companies is that closing down existing wells and halting further oil well expansion will cause already high gas and oil prices to spike. Our economic analysis found that this claim is inaccurate. Local oil drilling does not affect oil and gas prices in California, as oil prices are primarily determined by OPEC countries rather than the domestic oil supply in California.

As mentioned, the wells are mainly found in underrepresented communities. Our Google Form survey results indicate that residents do have negative feelings about being located next to the wells, whether these feelings are related to the economic, environmental, and/or health impacts of said wells. Our results are based on individual data, so we did not come to a consensus, nor can the results be generalized to the South Los Angeles community. Results reveal negative feelings and fears in the South LA area regarding proximity to oil wells and the detrimental impacts this proximity may have. The movement away from gas and oil well drilling is vital for bettering the health and concerns of South LA residents.

In the future, economic returns generated by the oil industry in California May not be as important to the overall economy as they previously were. Los Angeles currently only accounts for 7% of total statewide oil production (California State Oil and Gas Supervisor, 2020). This is an insignificant amount compared to production rates in Kern County, the largest oil production region in California. (Department of Interior, 2017). Much of the oil consumed in California is sourced from various countries, information unknown to the average consumer. In 2017, California spent $27 billion on foreign oil (California State Oil and Gas Supervisor, 2020). Although California is still producing a portion of total production, there has been a steady decrease in California's oil production by an average of 2.2% per year since 1985 (California State Oil and Gas Supervisor, 2020). A decrease in oil production coincides with a further drive

for an alternative energy source that can serve as a replacement. There is an inevitable transition occurring in California, moving away from big oil towards more sustainable options. According to a 2023 report from the U.S. Energy Information Administration, between 2016-2022, 46% of federal energy subsidies were allocated for renewable energy sources. In accordance, only 6% of energy-specific subsidies were apportioned to research and development of renewable energy discoveries, thus emphasizing the need for more research. Recent political agendas are filled with green initiatives and plans to generate renewable energy funding for communities across the nation. For example, the Biden-Harris administration recently enacted the Energy Efficiency and Conservation Block Grant (EECBG) Program in which Los Angeles County is awarded roughly $1.4 million to upgrade energy automation systems in facilities, perform energy efficiency upgrades, and implement more strategies to attempt to transition to large-scale green infrastructure by a proposed goal of 2045 (DOE, 2023). Although the trend may seem positive, Los Angeles's energy system has many interacting technical and governance components that complicate the transition process. Regardless, it is clear that renewable alternatives should be invested in and researched in order to supplement energy production as communities shift away from fossil fuels such as oil.

Survey Experiment

Our results indicate that education, employment, and lifestyle factors, such as car use frequency, may be variables in the knowledge and support of SB 1137 indicated by respondents. In addition, other factors such as proximity to oil drilling and level of concern might indicate gaps in educational information about oil and gas for communities. There is a high possibility of an overall lack of accessible, understandable public information relevant to not only local communities affected by oil and gas, but also those outside of proximity. This inaccessibility to

reliable and factual information regarding oil and gas is where the root of concern stems from. Previous knowledge of SB 1137 varied among different members of surrounding communities and was observed in survey responses.

Knowledge of SB1137

Overall, 61% of respondents were not aware of SB1137, but after being shown information regarding it, 63% of respondents supported the bill by the end of the survey. Providing clear, concise facts on the bill helped a majority of respondents to make an informed choice on whether or not they support SB1137. Respondents that "had heard of SB1137" were those employed in oil and gas (66%), those with less than high school education (75%), and those in proximity to oil drilling (34.7%).

Levels of education showed that those with a Bachelor's degree were less likely to have heard of SB1137 (30%), but 70% of them indicated that they would support SB1137 after being informed about its details. It may be more likely that individuals with less than a high school education are aware of the bill due to the survey being distributed in an area with high levels of employment in the oil and gas sector. They also could be in areas associated with environmental justice organizations who have completed outreach regarding oil and gas drilling. Those with higher educational degrees may be less aware of the bill due to greater distance from oil and gas, as well as industry recruitment.

In addition, 34.7% of those living near oil wells reported having heard of SB1137, in comparison to 20% to those that live beyond 3,200 feet of oil wells. The statistical difference between these percentages is not very significant, but could suggest that overall, those who reside closer to oil and gas wells have a higher chance of knowing about SB1137. Employees involved in the oil and gas industry had higher statistics of knowing about SB1137. This may

suggest that those involved directly with oil and gas operations have more accessible information regarding the topic. Education and availability of information on political bills such as SB1137 may not be publicly accessible. Evidence suggests that distance to oil and gas sites, whether through employment or daily activities, is directly correlated to knowledge about SB1137, thus greater distance from oil results in a lack of knowledge.

Support for the Bill

A variety of factors were found to influence the way that individuals view SB1137, including economic factors, concern for the impacts of oil drilling, and proximity to wells.

Economic factors like being employed or having family member employed by the oil industry, driving a car frequently, and reporting that gas was a financial hardship were associated with lower support for SB1137. Only 33% of those employed by oil and gas support the bill, much lower than the percentage of respondents who do not have family employed by oil drilling (67%). In addition, results revealed the low support among those who reported using a car 4 or more times a week, corresponding 46.7%. Finally, respondents who reported gas being a financial burden were less likely to support the bill than those who did not (59% support compared to 78% support). This may indicate that some respondents believe that SB1137 may have a negative economic impact on their communities, specifically increasing gas prices and decreasing job opportunities. While Esperanza likely will not be able to convince those in the industry of the benefits of SB1137, they may be able to garner support for the bill among those who drive frequently by providing them with information from our economic analysis on gas prices.

Concern for the impact of oil drilling on ones community and proximity to oil drilling was found to be associated with higher support for SB1137. 71% of respondents who expressed

being either “somewhat worried” or “very worried” about the impact of oil and gas drilling in their community support the measure. Those who reported being “not worried at all” about the impact of oil drilling were less likely to support the bill with only 20% of respondents claiming that they would vote yes.

People who believe they live within 3,200ft are more likely to report being worried about the impacts of oil drilling with 73% reporting being “very worried” and 23% being “somewhat worried”. Comparing this to the respondents who do not believe they live in a buffer zone and no one reported being “very worried”, 40% report being somewhat worried, and the majority of these respondents (60%) reported being “not worried at all”. These trends continued to support of the bill with more people who believed they lived in proximity supporting the bill (73%) compared to those who did not believe they lived in a buffer zone (40%). Those who believed they did not live in a buffer zone were more likely to report being unsure about supporting the bill (50%) compared to those who live in a buffer zone (19%). The only two respondents who reported that they did not support SB1137 but lived in a buffer zone had family employed by the oil industry.

Esperanza can use this information to target outreach towards individuals living in buffer zones. For the English responses of those believing they lived in a buffer zone, 47% reported not knowing they lived in a buffer zone. One individual reported knowing by not the full extent of oil drilling in their community. This means that if Esperanza wants to increase the amount of people voting for SB1137, they should target communities living in buffer zones with information regarding the bill and informing them of their proximity to oil drilling. Targeting communities that do not live by oil drilling will not have as much of an affect.

Summary

Most respondents (86%) expressed worry about the oil and gas industry, especially pertaining to the environmental impacts. Those with economic incentives to support the oil and gas industry were less likely to support SB1137. The belief that one lives in proximity to oil drilling increased the likelihood that respondents reported SB1137. Those who did not live in proximity to oil drilling reported being less worried about its impacts on their community and less likely to support the bill, despite many of them reporting that they believed that oil drilling had a negative environmental impact. With 47% of the English respondents not even aware of living near oil and gas indicating that, informing voters of their proximity to oil drilling may be important for Esperanza to increase support for the bill. While the majority of respondents reported supporting SB1137 after being educated on its facts, many people had not heard of it prior to the survey. Information regarding the bill and proximity to oil drilling is lacking and will need to be improved in order for voters to be informed while going to the polls. Esperanza should focus on providing facts for SB1137, informing communities close to oil drilling about their proximity, and disseminating information about our economic analysis's findings on gas prices.

9. Limitations

Similar to any previously conducted study, our research experienced limitations and drawbacks. Due to us using a convenience sample, some demographics, like men and races or ethnicities other than Latinx are underrepresented. Our survey results are not generalizable for LA or even the communities we distributed the survey to however, they provide valuable insights to Esperanza regardless on what factors may influence peoples views on oil drilling and SB1137. Our sample size was also small, with 36 responses. This was due to time constraints

and tense concurrent political events that hindered our collection of further responses. Our method of outreach and survey administration was solely online, excluding those who may not have internet access or technological abilities. In addition, we aimed to word and formulate the survey to prevent misunderstanding or confusion, but this may have occurred, as some responses were left blank.

For our economic analysis, the main limitation we ran into was difficulty finding information on the claim that SB1137 would cause job loss. While experts we interviewed claimed that it might, they were often unable to provide sources to support this. We had to base our conclusion on the assumption that all oil wells will not shut down after SB1137 but this is dependent on oil companies responses to the bill and willingness to spend the money to comply with the new environmental and health regulations required under the bill.

Data availability was the main limitation of our GIS analysis. Publicly available data on homes, apartments, and buildings containing businesses open to the public were not available. Additionally, data that we obtained for different sensitive receptors operate on different updating schedules. For instance, data on public and private schools were last updated on April 18, 2024, and April 23, 2024, respectively. However, the urgent care dataset was the oldest, last updated on April 11, 2018. Therefore, these numbers and percentages of sensitive receptors may also not be the most accurate. Additionally, the code to find the distance between sensitive receptors and the closest oil and gas well depends upon the centroid of the sensitive receptor. Therefore, there may be minute differences in the number of oil wells near each receptor as well as the percentages of sensitive receptors that are within 3,200 feet of an oil well.

References

a. California Energy Commission. (n.d.). California Energy Commission. Retrieved May 17, 2024, from https://tableau.cnra.ca.gov/t/CNRA_CEC_PUBLIC/views/GasolinePriceBreakdownandMargins/GasolinePriceBreakdownandMargins?%3Aembed=y&%3Aiid=5&%3AisGuestRedirectFromVizportal=y

American Petroleum Institute. (2023, April). *Impacts of the Oil and Natural Gas Industry on the US Economy in 2021*. api.org. https://www.api.org/-/media/files/policy/american-energy/pwc/2023/api-pwc-economic-impact-report-2023.pdf

Ash, M. (2018). Racial disparities in pollution exposure and employment at US industrial facilities. *PNAS*, *42*(115). https://www.pnas.org/doi/full/10.1073/pnas.1721640115

b. California Energy Commission. (2022, September). *What Drives California's Gasoline Prices?* California Energy Commission. Retrieved May 17, 2024, from https://www.energy.ca.gov/data-reports/energy-insights/what-drives-californias-gasoline-prices

Bedayn, J. (2022b, February 17). *"Just transition" bill for oil industry workers exposes Labor Rift*. CalMatters. https://calmatters.org/california-divide/2022/02/just-transition-bill-for-oil-industry-workers-exposes-labor-rift/

Bezdek, R. H. (2022). *Do Green Programs Create Jobs or Destroy Jobs?* American Journal of Humanities and Social Sciences Research. Retrieved May 17, 2024, from https://www.ajhssr.com/wp-content/uploads/2022/03/V22603183199.pdf

Bozick, R., Burgette, L. F., Sharygin, E., Shi, R. A., Weidmer, B., Tzen, M., Kofner, A., Brand, J. E., & Beltrán-Sánchez, H. (2023). Evaluating the Accuracy of 2020 Census Block-Level Estimates in California. *Demography 60* (6), p. 1903 -1921. https://doi.org/10.1215/00703370-11075209

CalGEM. (n.d.). Oil and Gas Wells Metadata - READ ME. *California Department of Conservation, Geologic Energy Management*. https://www.conservation.ca.gov/calgem/maps/Documents/GIS-metadata-ReadMe.pdf

c. California Energy Commission. (2023). *Annual Oil Supply Sources To California Refineries*. California Energy Commission. Retrieved May 17, 2024, from https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/annual-oil-supply-sources-california

California State Oil and Gas Supervisor. (2020). California State Oil and Gas Supervisor Annual Report 2020.

Chevron. (2023). Chevron. Retrieved May 17, 2024, from https://www.chevron.com/newsroom/2023/q3/how-increasing-us-oil-and-gas-production-affects-gas-prices

Environmental Protection Agency. (2024, April 9). Health Effects of Ozone Pollution. EPA. https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution

Federal Financial Interventions and Subsidies in Energy in Fiscal Years 2016–2022. (2023, August 2). EIA. Retrieved May 19, 2024, from https://www.eia.gov/analysis/requests/subsidy/pdf/subsidy.pdf

González, D. J. X., Francis, C. K., Shaw, G. M., Cullen, M. R., Baiocchi, M., & Burke, M. (2022). Upstream oil and gas production and ambient air pollution in California.

Science of The Total Environment, 806, 150298. https://doi.org/10.1016/j.scitotenv.2021.150298

Joint Staff Report. (2024). *Denial, Disinformation, and Doublespeak: Big Oil's Evolving Efforts to Avoid Accountability for Climate Change*. https://www.budget.senate.gov/imo/media/doc/fossil_fuel_report1.pdf

Madrigal, J. (2023, October 24). *Clash of the Titans: California v. Big oil*. SanDiego350. https://sandiego350.org/2023/10/20/clash-of-the-titans-california-v-big-oil/#:~:text=On%20September%2016%2C%202023%2C%20California,California%2C%20not%20in%20federal%20court.

McKenzie, L. M. et al. (2018). Ambient nonmethane hydrocarbon levels along Colorado's Northern Front Range: Acute and chronic health risks. Environmental Science & Technology. https://doi.org/10.1021/acs.est.7b05983

Mijin Cha, J., & Wander, M. (2020). Environmental Justice, Just Transition, and a Low-Carbon Future for California. Environmental Law Reporter, 50(10217). https://www.elr.info/sites/default/files/article/2020/02/50.10216.pdf

Myers, I. (2023, April 10). *The system works: How a new law could end Big Oil's gas price gouging in California*. Environmental Working Group. Retrieved May 17, 2024, from https://www.ewg.org/news-insights/news/2023/04/system-works-how-new-law-could-end-big-oils-gas-price-gouging-california

NRDC. (2022, March 28). *The Real Reasons for High Oil and Gas Prices*. NRDC. Retrieved May 17, 2024, from https://www.nrdc.org/stories/real-reasons-high-oil-and-gas-prices

Pollin, R., Wicks-Lim, J., Chakraborty, S., Kline, C., & Semieniuk, G. (2021b, June). A PROGRAM FOR ECONOMIC RECOVERY AND CLEAN ENERGY TRANSITION IN CALIFORNIA. https://static1.squarespace.com/static/60b43a18079fdd42c6d01286/t/60c18578a87f6318ff2a5a1a/1623295356282/Pollin+et+al--CA+Economic+Recovery--Clean+Energy+Transition---6-8-21.pdf

Shonkoff, Seth B.C., and Hill, Lee Ann L. (2019) Human health and oil and gas development: A Review of the peer-reviewed literature and assessment of the applicability to the City of Los Angeles. PSE Healthy Energy. PSE Healthy Energy. https://clkrep.lacity.org/onlinedocs/2017/17-0447_misc_46_07-29-2019.0001.pdf

State of California. (n.d.). Inhalable Particulate Matter and Health (PM2.5 and PM10). California Air Resources Board. https://ww2.arb.ca.gov/resources/inhalable-particulate-matter-and-health#:~:text=Long%2Dterm%20(months%20to%20years,lung%20function%20growth%20in%20children

THE PEOPLE OF THE STATE OF CALIFORNIA, ex rel. ROB BONTA, ATTORNEY GENERAL OF CALIFORNIA, Plaintiff, v. EXXON MOBIL CORPORATION; EXXONMOBIL OIL CORPORATION; SHELL PLC; SHELL USA, INC.; SHELL OIL PRODUCTS COMPANY LLC; CHEVRON CORPORATION; CHEVRON U.S.A. INC. (2023, September 15). oag.ca.gov. Retrieved May 19, 2024, from https://oag.ca.gov/system/files/attachments/press-docs/FINAL%209-15%20COMPLAINT.pdf

U.S. Energy Information Administration. (2023). *Gasoline price fluctuations - U.S. Energy Information Administration*. EIA. Retrieved May 17, 2024, from https://www.eia.gov/energyexplained/gasoline/price-fluctuations.php

U.S. Department of Interior. (2017). *Natural Resource Revenue Data.* Retrieved May 20, 2024, from https://archive.revenuedata.doi.gov/archive/case-studies/kern/

Appendix A: Contacts for Distributing the Survey

Colleges:

- Mt. St. Mary's (responded and tentatively distributed survey)
- USC (responded; Environmental Studies Department tentatively distributed, USC Sustainability Office also distributed)
- LAHC in Long Beach (responded and tentatively distributed survey)
- Los Angeles Southwest Campus (no response)
- L.A. Trade Tech College (no response)
- Cal State LA (idk if we did yet)
- Cal State Dominguez Hills
- El Camino College
- Compton College.

High Schools:

- Carson City (no response)
- Frank D Lanterman high school
- New design charter school
- Alain Leroy Locke College Preparatory Academy
- Larchmont Charter
- UCLA Community K-12

Elementary Schools:

- Norwood street elementary
- Saint vincent school
- UCLA Community K-12
- Carson Street Elementary
- Dr. Theodore T. Alexander Jr. Science Center
- Larchmont Charter K-12.

Community Organizations and Facebooks:

- East Yard Communities for Environmental Justice
- Communities for Better Environment (Youth Program) - Youth for Environmental Justice (YouthEJ)
- 826LA Tutoring
- YMCA- ANDERSON MUNGER FAMILY YMCA
- YMCA- COLLINS & KATZ FAMILY YMCA
- Boy Scout Troops
- LA Girl Scout Council
- Partners for Children South L.A.
- Community Coalition
- Partnership For Los Angeles Schools
- Echo Park/ Silver Lake Moms FB Group
- Friends of LACES FB group
- South Bay Mommies FB groups

- IEP/504 Parent Support Group LAUSD/Southern California Network FB group
- Carson Roots

Appendix B: Survey

Introduction

We are a research team at UCLA studying views about oil and gas drilling near homes and schools in the Los Angeles region. The survey should take roughly 10 minutes to complete and all of your answers will be anonymous. Please do not place your name on the survey.

Your participation is voluntary. You may choose not to take the survey, to stop responding at any time, or to skip any questions that you do not want to answer

After you complete the survey, you have the opportunity to be put into a raffle to win a $50 Target gift card by providing your contact information (your name and your email address or phone number). Your contact information is only for use in the raffle – it will not be linked to your survey responses.

Daily Transportation and Gas Prices

1. How often do you use public transportation (bus, rail, subway) each week?
    a. Rarely or not at all
    b. 1-3 days a week
    c. 4 or more days a week
2. How often do you drive a car each week?
    a. Rarely or not at all
    b. 1-3 days a week
    c. 4 or more days a week
3. What type of car (if any) do you drive?
    a. Gas car
    b. Electric car
    c. Hybrid car
    d. I rarely or never drive a car
4. Are gas prices causing financial hardship for you or your household?
    a. Yes
    b. No

Impacts of Oil and Gas Drilling on California

5. Do you feel that oil and gas drilling in California has a good or bad economic impact on you and your community?
    a. Good impact
    b. Bad impact
    c. Little or no impact
6. Do you feel that oil and gas drilling in California has a good or bad environmental impact on you and your community?
    a. Good impact
    b. Bad impact
    c. Little or no impact

Proximity to Oil and Gas Drilling

Check the map below to see if you live near an oil and gas drilling site. The gray circles are areas in the Los Angeles region near (within 3,200 feet) of oil and gas drilling.

Once you open the URL, click "Open in Map Viewer" at the top right of the screen to open the map. Once the map loads, click the magnifying glass at the bottom right of the screen to input your address.

Link to Map: https://tinyurl.com/OilDrillingSiteMap

7. Do you live in one of the gray circles on the map—a place near oil or gas drilling?
    a. Yes
    b. No
8. How worried are you about the impacts of oil and gas drilling on you or your family?
    a. Very worried
    b. Somewhat worried
    c. Not worried at all

If you answered “Very worried” or “Somewhat worried,” please answer Question #9 and Question #10 below.

9. What worries you about living near oil and gas drilling?
    a. Economic impacts
    b. Health impacts
    c. Environmental impacts
    d. Other

If you answered “Other” to the above question, please specify below:

10. Did you know that you lived near oil and gas drilling before looking at the map here?
    a. Yes
    b. No

Optional: Please Explain your worries below

Oil Company Recruitment

11. Have you seen job ads or been contacted by recruiters related to oil company employment? (*Check all that apply*)
    a. I have seen recruitment ads
    b. An oil company recruiter reached out to me in person or via email;
    c. None of the above
12. Are you or anyone in your family currently employed by an oil company?
    a. Yes
    b. No

SB1137 Referendum

The SB1137 Referendum is on the November 5, 2024 ballot in California. A vote of yes will uphold SB1137, which prohibits the development of new oil and gas wells within 3,200 feet of homes and schools. It also would create stricter environmental and health regulations for pre-existing oil and gas wells within the 3,200 feet buffer zone.

13. Have you heard about SB1137 before taking this survey?
    a. Yes
    b. No
14. Have you seen ads or outreach (for example, a petition or meeting) about oil drilling? (*Check all that apply*)
    a. Yes - I have seen ads or outreach about the benefits of oil drilling
    b. Yes - I have seen ads or outreach about the dangers of oil drilling
    c. No - I have not seen any ads or outreach about oil drilling

    Optional: If you saw an ad or outreach, please describe it below.
15. Do you support SB1137?
    a. Yes
    b. No
    c. Unsure

Optional: If you support—or do not support—SB1137, please explain below.

Demographics

16. Gender
    a. Male
    b. Female
    c. Other
    d. Prefer not to say
17. Age
    a. 18-20
    b. 21-29
    c. 30-59
    d. 60+
    e. Prefer not to answer
18. Race-Ethnicity
    a. American Indian/Alaskan Native/ Native American
    b. Asian/Asian American
    c. Black/African American
    d. Latinx/Latino-a/Latinx
    e. Prefer not to say
    f. Other
19. What is the highest level of education you have completed?
    a. Less than a high school diploma
    b. High school diploma
    c. Some college
    d. Bachelor's degree or higher
    e. Prefer not to say

Thank you for taking the time to fill out this survey. Your response is valuable to us!

If you wish to be put into a raffle to win a $50 gift card, please provide your contact information on the attached page. The page will be removed so that there is no link between your survey and your raffle entry.

***Please enter your email into this separate google form**:*
https://forms.gle/XBWqvKxLLHkD7g4q8

Appendix C: Additional Economic Information

Contribution of Oil and Gas to the Economy

In 2021, the oil and natural gas industry contributed $1.8 trillion to the U.S. economy, representing 7.6% of the US GDP (Bezdek, 2022). The industry accounted for 5.4% of total employment and 10.8 million part-time and full-time jobs (American Petroleum Institute, 2023). Additionally, 6.4% of the national labor income was derived from the oil and gas sector (American Petroleum Institute, 2023). The highest oil and gas industry employment rates were observed in Texas, Louisiana, Oklahoma, North Dakota, and Wyoming, constituting 11%-15% of state employment (American Petroleum Institute, 2023). In 2023 in California, over 1 million jobs were linked to the oil and gas industry, constituting 4.3% of the state employment (American Petroleum Institute, 2023). The state saw $23.3 billion in direct income and a total of $83.3 billion in labor income from this industry, which represents 5% of total income (American Petroleum Institute, 2023). $104.9 billion of value was added to California, making up 6.4% of total value added (American Petroleum Institute, 2023). However, comparing this $104.9 billion revenue in 2023 to that of the $220 billion increase in 2015 indicates a decline in the economic importance of oil and gas extraction in California (North Aliso Canyon Project, 2015).
These totals encompass both direct and indirect contributions across various sectors, including services, finance, insurance, real estate, rental and leasing, wholesale and retail trade, transportation and warehousing, construction, manufacturing, information, utilities, government, agriculture, and mining (American Petroleum Institute, 2023).

Cost Left Behind

A 2023 lawsuit against Big Oil companies in California, if won, would require the companies to pay billions of dollars to cover health, environmental, and taxpayer impacts. Decommissioning old wells in California is estimated to cost $13.2 billion, yet oil and gas

companies have only allocated $106 million toward this effort (Carbon Tracker, 2023). The projected profits of $6.3 billion for California oil companies fall far short of the funds needed for well closures, highlighting a significant financial shortfall (Carbon Tracker, 2023).

In addition, the cost associated with “idle wells” - unplugged, decommissioned wells - remains extremely high. An estimated 5,540 idle wells left behind by oil companies create a net liability of potentially $500 million for the state (Boomhower, 2020). The costs of plugging these wells are not covered in whole by available bonds (Boomhower, 2020). While companies are required to pay fees and develop plans for well closure, their financial inability to meet these obligations poses a significant challenge (Boomhower, 2020).

Prices fluctuate globally in response to changes in OPEC’s production levels. These fluctuations are influenced by political events, as illustrated in Figure 1, and by spare capacity (EIA, 2024). Spare capacity refers to, essentially, “the difference between a country's current oil production and its maximum oil production capacity” (EIA, 2024). In periods of low spare capacity and high demand, oil prices rise substantially, affecting both Saudi Arabia and the global market (EIA, 2024). Meanwhile, oil production outside of OPEC consists of countries such as the U.S. and the former Soviet Union (EIA, 2024). These non-OPEC producers play a less crucial role in the dynamics of global oil pricing (EIA, 2024).

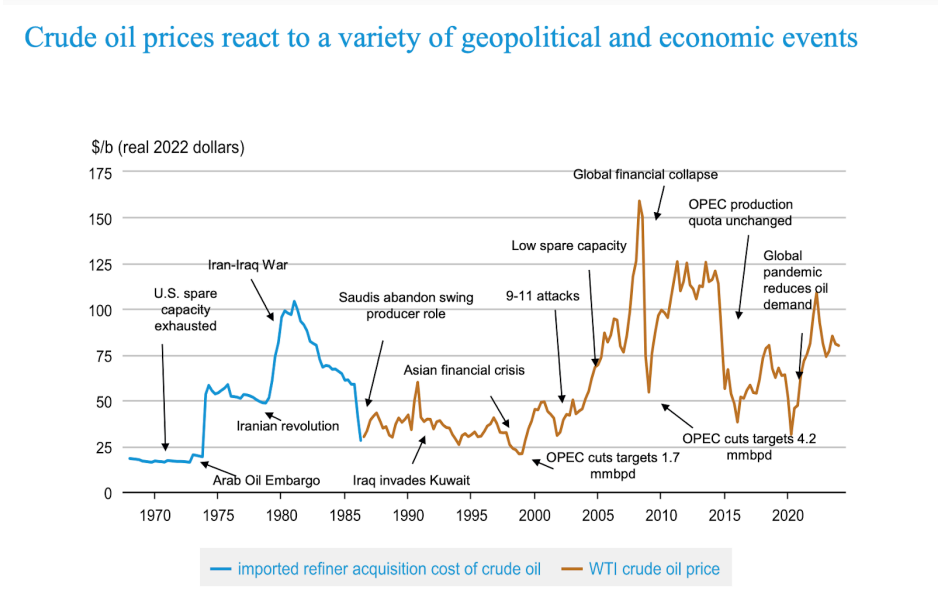


Figure 13. Crude oil prices react to a variety of geopolitical and economic events (EIA, 2024).

Global Influences on United States and California Oil

Crude oil produced in California is primarily managed by international or investor-owned companies (IOCs). While OPEC controls a significant portion of the global oil supply and influences market pricing by not always operating at maximum production levels, the IOCs in the United States respond to market fluctuations (EIA, 2024). IOCs consider future disruptions in oil supply and the "availability of crude oil stocks and if other producers can offset a potential supply loss"(EIA, 2024).

OPEC, even when not producing at maximum capacity, generates 60% of the world's oil (EIA, 2024). In contrast, non-OPEC producers, including those in the United States, often operate at maximum production but lack significant spare capacity (EIA, 2024). This dynamic allows OPEC to maintain substantial control over global oil pricing. The cost of oil production in the United States is considerably greater than that of OPEC companies, contributing to elevated prices domestically (EIA, 2024). Even when non-OPEC supply is high, if OPEC supply is low,

the prices still tend to rise (EIA, 2024). Conversely, if OPEC supply is stable, non-OPEC production can result in lower costs, though OPEC oil always remains the greatest factor in market pricing (EIA, 2024).

Global socioeconomic events significantly impact oil prices worldwide. For example, the COVID-19 pandemic led to global import restrictions, resulting in a loss of 22 billion dollars in 2020 for ExxonMobil alone (Mckee, 2022). Other events, such as the invasion of Ukraine, the Iraq War, and financial crises, may result in substantial fluctuations in oil prices across all countries (Mckee, 2022).

Factors Influencing Fuel Prices in California

Fuel prices are determined by several factors: retailers, refining cost, taxes, distribution market, and, most importantly, crude oil cost (Chevron, 2024). Ninety percent of California's oil is refined in-state, but two-thirds of this oil comes from outside the state (b. California Energy Commission, 2022).

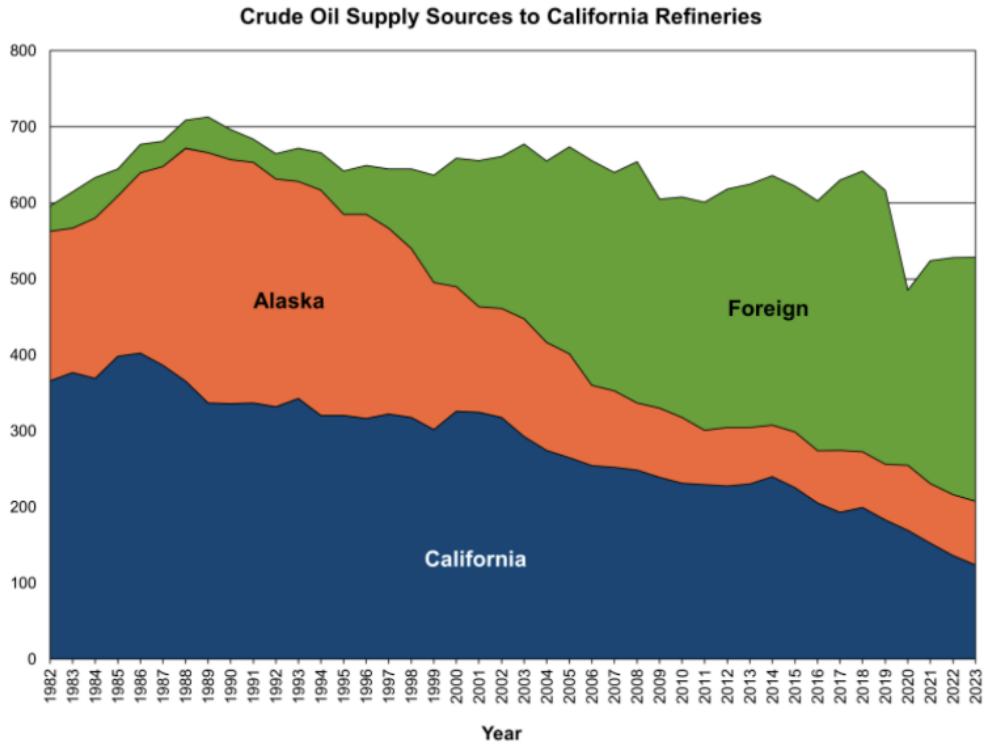


Figure 14. California's Crude Oil Supply Origin (c. California Energy Commission, 2023).

Additionally, not all of the oil drilled in California remains in-state, as significant amounts are exported globally. Most of the oil used by California residents is imported from OPEC nations (c. California Energy Commission, 2023). In 2023, California was the lowest supplier of crude oil to its own refineries, producing its smallest amount of oil since 1982 (b. California Energy Commission, 2022). As foreign oil imports increase, the utilization of California oil declines, signaling a steady decrease in the importance of local oil production (c. California Energy Commission, 2023).

In recent years, California has seen a decline in fuel demand due to the growing availability of electric cars and greener energy sources. Despite this, California consistently experiences higher fuel prices on average compared to the rest of the nation (b. California

Energy Commission, 2022). This disparity is largely due to higher state taxes and refinery costs, which significantly impact gas prices in California (b. California Energy Commission, 2022). Seasonal fluctuations in oil and gas prices are observed in summer and winter, when more expensive formulas are used to counter higher temperatures (U.S. Energy Information Administration, 2023).

	Latest Date April 29, 2024	Week Ago April 22, 2024	4-Weeks Ago April 1, 2024	1 Year Ago May 1, 2023
Distribution Costs, Marketing Costs, and Profits	$0.620	$0.770	$0.410	$0.620
Refinery Costs and Profits	$1.010	$0.940	$0.970	$0.820
Crude Oil Cost	$2.100	$2.070	$2.080	$1.880
State Underground Storage Tank Fee	$0.020	$0.020	$0.020	$0.020
State and Local Sales Tax	$0.110	$0.120	$0.110	$0.100
Environmental Fees	$0.550	$0.550	$0.560	$0.500
State Excise Tax	$0.580	$0.580	$0.580	$0.540
Federal Excise Tax	$0.180	$0.180	$0.180	$0.180
Average Retail prices	$5.170	$5.240	$4.900	$4.660

Figure 15. Breakdown of California Gas Prices 2023-2024 (a. California Energy Commission, n.d.)

Health Economics

Due to the disproportionate effects of oil and gas drilling on low-income communities, the health benefits of closing these facilities will likely outweigh the economic impacts. While decarbonization efforts, including the closing of oil wells, may result in job loss and funding challenges, the potential health improvements for marginalized communities would result in overall economic gains (Mijin Cha & Wander, 2020).

Research has shown that 42% of oil and fossil fuel facilities are located in the areas with the top 25% highest CalEnviroScreen scores, indicating that these communities are among the most burdened by pollution and social health stressors (Mijin Cha & Wander, 2020). The top 25% of "identified communities most burdened by the cumulative impact of multiple sources of pollution and social and health stressors" reside near facilities known to worsen and cause health damage (Mijin Cha & Wander, 2020). These communities are predominantly composed of

people of color, with 85% of residents identifying as such, and an average of 200% below the poverty line (Mijin Cha & Wander, 2020).

A study comparing employment records with exposure data found that most local jobs are low-paying (Ash, 2018). In a study of 712 facilities with high air toxicity, it was found that "[Black people] receive 17.4% of the exposure risk and Latinxs receive 15% (Ash, 2018). In comparison, 10.8% of the jobs and 6.9% of higher-paying better jobs were held by Black people (Ash, 2018). Meanwhile, Latinxs "hold only 9.8% of the jobs and 6.8% of better jobs" (Ash, 2018). In petroleum and coal product manufacturing, Black people and Latinxs in neighboring communities endure 47.9% of pollution exposure but hold only 21.6% of total jobs" (Ash, 2018).

A study projecting a reduction of emissions by 40% by 2024 resulted in "an average annual benefit of a further $112 billion [in 2020 USD] in avoided air pollution and health costs" (Bezdek, 2022).

Prices fluctuate globally in response to changes in OPEC's production levels. These fluctuations are influenced by political events, as illustrated in Figure 1, and by spare capacity (EIA, 2024). Spare capacity refers to, essentially, "the difference between a country's current oil production and its maximum oil production capacity" (EIA, 2024). In periods of low spare capacity and high demand, oil prices rise substantially, affecting both Saudi Arabia and the global market (EIA, 2024). Meanwhile, oil production outside of OPEC consists of countries such as the U.S. and the former Soviet Union (EIA, 2024). These non-OPEC producers play a less crucial role in the dynamics of global oil pricing (EIA, 2024).

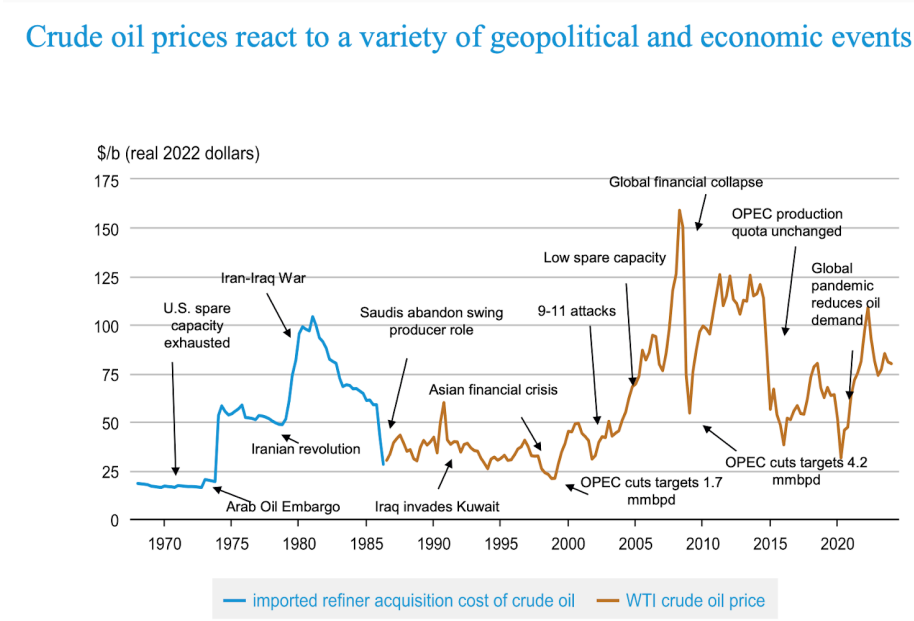


Figure 16. Crude oil prices react to a variety of geopolitical and economic events (EIA, 2024).

Appendix D: Sensitive Receptors Within 3,200 Feet of a Drilling Site

R Results: Sensitive Receptors in LA County

Sensitive Receptor	Total in LA County	Number within 3,200 Feet of Drilling	Percentage within 3,200 Feet of Drilling	Minimum Distance to Drilling Site (feet)
Public K-12 Schools	2,250	471	20.93%	52
Private K-12 Schools	740	159	21.49%	52
Colleges and Universities	229	48	20.96%	92
Hospitals	158	51	32.28%	36
Urgent Care Centers	128	27	21.09%	167
VA Medical Facilities	15	8	53.33%	1,624
Dialysis Clinics	213	55	25.82%	62
Prisons	78	21	26.92%	49
Child Care Centers	3,512	727	20.70%	30
Nursing Homes	672	137	20.39%	92
Places of Worship	8,097	1,848	22.82%	30