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The Writing on the Wall: Why California Refineries Are Closing

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Summary

Over the last several years, California has experienced a wave of petroleum refinery closures and conversions.[1,2] These are not isolated events, but only the most recent manifestations of a long-term decline in the state's oil industry. Crude oil production within the state has fallen by 75 percent since the 1980s (Figure 1a).[3] In turn, the in-state refining sector has significantly consolidated, with in-state refining capacity declining since at least 1982 (Figure 1b).[4]

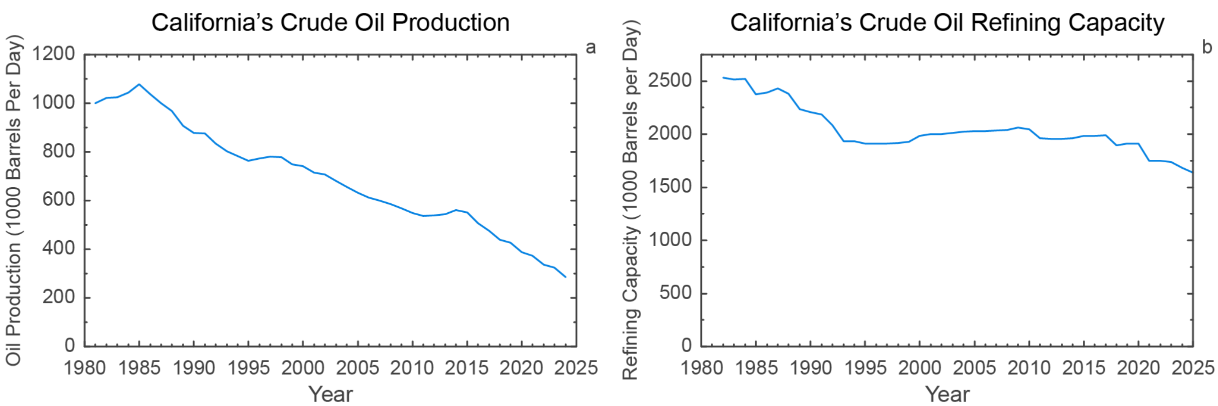

Figure 1: California's crude oil production (Panel a) and crude oil refining capacity (Panel b). Y-axis units for both panels represent a thousand barrels per calendar day. Refining capacity refers to operable atmospheric crude oil distillation capacity. No refining capacity data were reported for 1996 and 1998; data for these years were interpolated to create this graph. Data obtained from the United States Energy Information Administration.[3,4]

The downward trend in refining activity reflects myriad factors, including most critically: (**1**) the depletion of California's crude oil fields and a corresponding decrease in the economic viability of in-state crude oil production, (**2**) declining in-state gasoline sales, (**3**) declining in-state fossil diesel consumption, (**4**) ongoing national and global consolidation of the oil industry, and (**5**) increased availability of imported finished fossil fuel products. For these reasons, the downward trajectory in California petroleum refining capacity is likely to continue in the years to come.

Crucially, California does not have the legal authority to meaningfully affect the larger domestic and international factors at play. At the same time, the oil companies that own private refineries in California make business decisions guided by their legal obligation to maximize corporate and shareholder value in the context of a global marketplace for oil.

This market reality presents both challenges and opportunities. California's remaining refineries are located primarily in populated urban areas where land is scarce and expensive, including four in Los Angeles County and three in the San Francisco Bay Area. Several of these refineries were built more than one hundred years ago; even the newest of them predate contemporary environmental laws. Collectively, the state's most recently closed refinery, the Phillips 66 Los Angeles Refinery, and the remaining gasoline-producing refineries occupy nearly 8,000 acres that could become available for new uses with future closures. Given the content of California's heavy crude oil and decades of refining activity at these sites, however, all of these facilities likely sit on contaminated soil and groundwater that will need to be addressed before repurposing can occur.

Communities and policymakers face significant questions around decommissioning, remediation, and appropriate redevelopment. In the absence of advance planning, these frontline communities and the state face very short windows to react to closures: Refineries typically make (re)investment decisions on a three to five year timeline driven by maintenance "turnaround" cycles.[5] At minimum, California should expect this question of (re)investment or closure to reoccur on this cycle. Comprehensive anticipatory planning for community and worker transitions with inclusive stakeholder processes can blunt the economic shock of sudden closure decisions when they eventually occur. However, to take advantage of the generational opportunity for economic, social, and environmental transformation at the remaining refinery sites, state and local policymakers will need to plan proactively.

Key Factors

1. California Crude Oil Has Become Comparatively More Expensive to Produce and Refine Due to Its Natural Characteristics, Long-Term Depletion, and the Increased Advantage of Crude Oil Incompatible with California Refineries

As the Phillips 66 CEO remarked in 2025, California has lost its "crude advantage."[6] Crude oil drilling in California began in the mid-1880s, and most of the state's oil fields were developed before 1950.[7] As these fields were exploited over many decades, productivity naturally and inevitably declined: Average California oil well productivity peaked at 25 barrels per day in 1963 and has since fallen to only 8 barrels per day.[8] Between 2000 and 2024, the declining productivity of California oil wells accelerated, decreasing by 52 percent (Figure 2b); at the same time, the total number of production wells remained relatively constant (Figure 2a). That decline reflects the physical reality of oil field depletion.

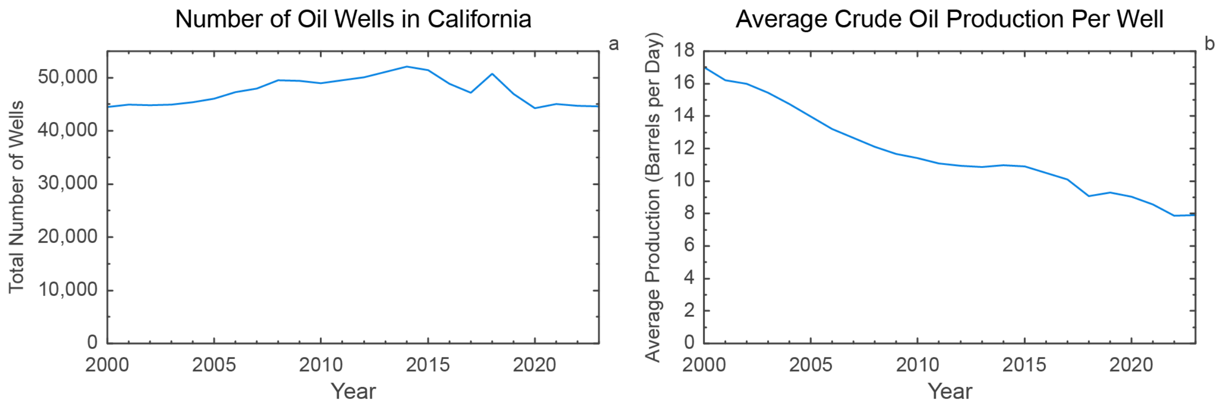

Figure 2: Number of oil wells in California (panel a) and average daily crude oil production per oil well in California (panel b), as reported by the United States Energy Information Administration.[9]

To compensate for the ongoing geologic depletion of California's once-rich oil fields, most drillers now employ more costly enhanced recovery techniques. Conventional fracking is typically not effective for boosting production of California's heavy crude oil; instead, oil field operators inject steam or heated water to reduce the viscosity of the heavy crude and facilitate its flow to the surface, typically burning natural gas to fuel this process. Such injection of steam or heated water increases the energy-intensity, production cost, and greenhouse gas emissions of drilling crude oil from California's declining fields.[8,10]

In contrast to California's aging refineries, which were built to process "heavy sour" crude, the construction and operation of refining facilities built to process "light sweet" crude elsewhere have become more economically desirable. California crude tends to be "sour"—that is, higher in corrosive and toxic sulfur content, unlike lower-sulfur "sweet" crude drilled in places like Texas, Oklahoma, and North Dakota.[11] In the early 2000s, the "fracking boom" lowered the price of "light sweet" crude.[12,13] Yet the challenge of refining "heavy sour" crude continues to be costly.

In summary, rising production costs for a less desirable commodity means that California crude is increasingly less competitive in the national and global marketplace. After peaking in the 1980s, in-state crude oil production has fallen by nearly 75 percent (Figure 1a). Unsurprisingly, in-state refining capacity has followed suit. Notably, this long-term decline in California production and refining capacity is a trend that predates state climate policies and market shifts to electric vehicles and hybrids.

As California crude has become less economically competitive, in-state refineries have steadily increased their reliance on imported crude (Figure 3). There are little data available to understand the continued impact of this shift. For example, there is neither publicly available data nor does the state collect information on whether, or to what degree, marginal amounts of in-state crude oil impact efficiency at each refinery. Additionally, there are no studies that have analyzed the net change in emissions that may result from increasing crude oil imports while decreasing in-state extraction.

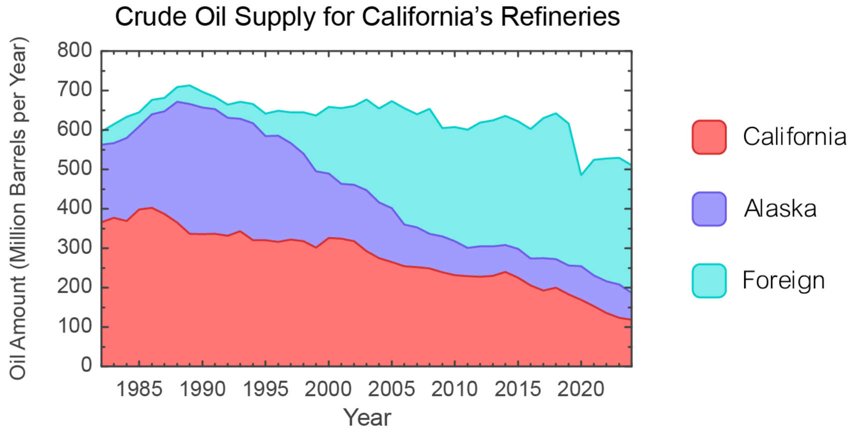

Figure 3: The origin of crude oil for California's oil refineries, as reported by the California Energy Commission.[14]

2. Declining Demand for Gasoline Is Contributing to Reduced Need for In-State Refining Capacity

While the relative cost of California crude oil is rising, the in-state demand for petroleum-based transportation fuel is falling. The majority of gasoline produced by California refineries is sold in state, with less than 20 percent exported, primarily to Nevada and Arizona.[1,15] In-state gasoline consumption peaked in 2005 and, as of 2024, has declined by 15 percent (Figure 4), with further decline projected to continue.[16,17] Increasing fuel efficiency and the shift to low- or zero-emission vehicles is primarily responsible for this decline.[18,19]

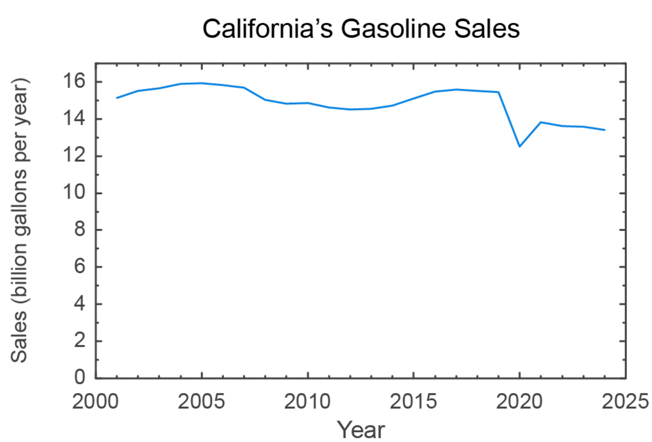

Figure 4: Annual taxable gasoline sales, as reported by the California Department of Tax and Fee Administration.[20] *Reported numbers include aviation gasoline, which accounts for approximately 0.1 percent of total sold gasoline.*

Because gasoline production accounts for roughly 65 percent of California's refining capacity,[21] declining in-state demand reduces the need for in-state refining capacity. The amount of refining capacity projected for utilization, in turn, has a strong influence on refinery profitability.[18,22] With a physical and financial "minimum viable scale" required to operate each refinery, the continued decline of the sector will not follow a smooth, linear decline.[5] Oil companies may decide to close refineries earlier than in-state demand projections might otherwise indicate.[5]

3. California Diesel Production Has Shifted Dramatically from Fossil Diesel to Renewable Diesel and Biodiesel, Affecting Profitability of In-State Refining

Along with gasoline, California refineries produce other distillates, including most significantly fossil diesel and jet fuel.[1] California's heavy crude, in particular, generates a relatively fixed gasoline-to-diesel ratio.[23] Yet in-state consumption of fossil diesel has declined precipitously over the last decade, shifting to "renewable" diesel and biodiesel in response to federal and state renewable fuel policies (Figure 5).[24,25] In California, that shift is largely attributable to significant subsidies from the state's Low Carbon Fuel Standard (LCFS), which was adopted to incentivize the use of lower carbon liquid transportation fuels.[26] In 2024, renewable diesel and biodiesel comprised 74 percent of the state's diesel consumption,[27] 72 percent of which was imported.[28] Reduced in-state consumption of fossil diesel leaves California refineries with excess fossil diesel supply that must be exported, which further reduces profitability.[23]

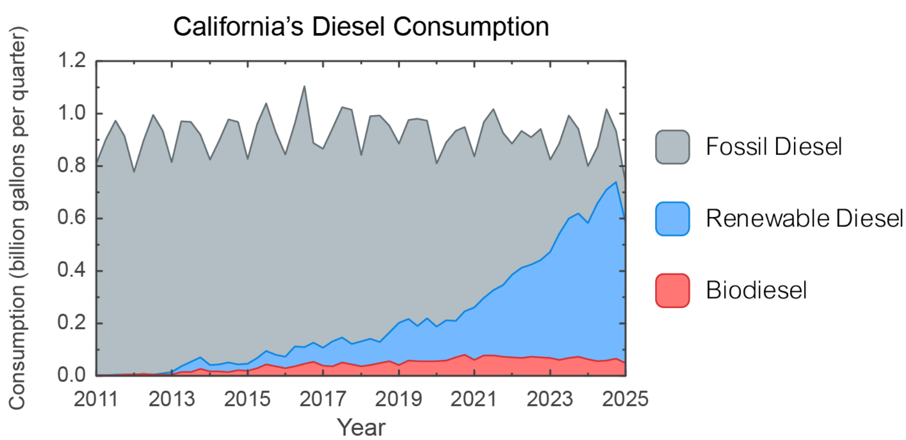

Figure 5: Quarterly diesel consumption, as reported by the California Air Resources Board.[27]

4. Global and National Consolidation of Refining Capacity Places Economic Pressure on California's Remaining, Older Refineries

Refineries operate most profitably when they can take advantage of operational efficiencies from economies of scale.[29] Accordingly, the oil industry has a history of consolidating oil infrastructure to maximize profits: Less competitive refineries are closed as other refineries are expanded. Since the 1940s, domestic refineries have steadily consolidated operations.[29] This is true in California, as well. California refineries are now, on average, twice as large as they were in the 1980s (Figure 6).

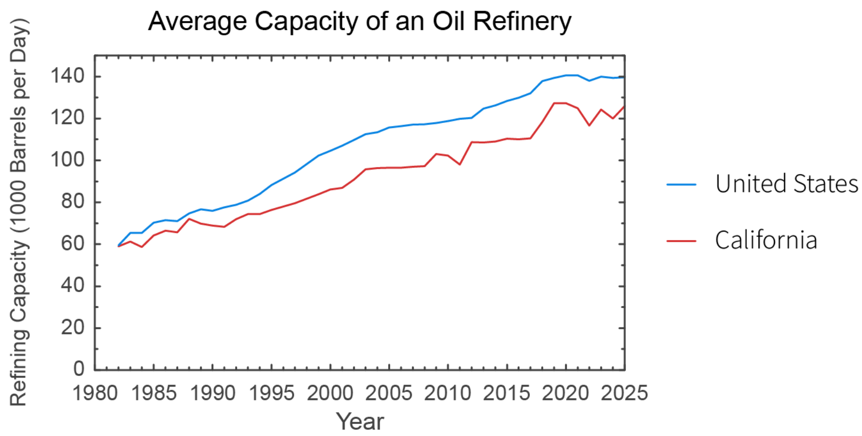

Figure 6: Average oil refining capacity, obtained by dividing the total refining capacity in the United States or California by the number of oil refineries in these areas. Data obtained from the United States Energy Information Administration.[30]

In recent years, the consolidation of domestic refineries has shifted refining capacity away from the East and West Coasts to inland states and the Gulf Coast.[31,32] These domestic trends, driven by the rational business decisions of national and international oil market players, are not limited to the U.S.; similar activity is occurring around the world. European refineries must now compete with newer and more efficient refineries in Nigeria and the Middle East, causing disinvestment in Europe's refining capacity.[33,34] Within the growth regions of Asia, the Middle East, and parts of Africa, investment has focused on newer, larger, more complex refineries that capture economies of scale while less competitive refineries have been closed.[35,36]

As in Europe, North American refineries are considered less competitive in the global oil market.[35] Despite their size, complexity, and high level of consolidation within the state, California refineries are no exception. While there are many different costs that can affect refining profit margins, California refineries have a significant fixed comparative disadvantage on the global stage—their age. Refinery age is a major risk factor for closure: Older refineries have less efficient equipment, are more prone to mechanical failures, and are less attractive for reinvestment.[22,31,37]

5. Imported Gasoline Is Now Available to Backfill Reductions in California-Refined Supplies

As production of California crude oil becomes more expensive, in-state demand for fossil products declines, and more efficient refining capacity shifts elsewhere, out-of-state and foreign refineries have been able to supply refined California-blend gasoline in sufficient quantities to help satisfy in-state demand.[38–40] Recent closure announcements by two sizeable California refineries (Phillips 66 in Wilmington and Carson, Valero in Benicia) confirm that these companies plan to replace at least some of the lost gasoline supply with products from out-of-state or abroad.[6,41–43]

Conclusion

These five irreversible trends all point in the same direction: California's refining sector is in decline and refineries will likely continue to close in the future, with significant consequences for surrounding communities. Yet there is scant publicly available information that would allow communities and policymakers to anticipate and plan for future closures. State law now requires one-year advance notice for a refinery closure, but notice alone is insufficient to allow for thoughtful and deliberative community planning. Phillips 66, for example, announced closure of its 130,000-barrel-per-day Wilmington/Carson refinery (roughly 1,300 acres) in October 2024 and shuttered that facility just over a year later, in December 2025. Valero has provided a similar one-year notice of its intent to close the 145,000-barrel-per-day Benicia refinery (900 acres) in April 2026. But local officials, union workers, and frontline communities have been left scrambling to participate meaningfully in the cleanup and redevelopment process.

Because it takes advance preparation to address the potentially significant impacts of plant closures, and because such closures provide a transformative opportunity to repurpose substantially sized urban parcels for other beneficial uses, state and local policymakers should act now to begin planning for California's eventual exit from the oil refining sector. Even without knowing the exact timing of future closures, there is significant work to be done. For example, there are major regulatory gaps around refinery asset retirement obligations that create immense financial risks to the public purse and to the communities where these facilities are located.[37,44–47] Fortunately, over the last five years, state and local government-sponsored stakeholder engagement and academic research,[48–51] alongside other academics, experts, and analysts,[37,45,52–56] have developed significant policy consensus about how to prepare proactively to maximize the public good for communities, workers, and all Californians.

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