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California Energy Commission and
California Department of Tax and Fee Administration

JOINT AGENCY REPORT

2025 Review of the Price of Gasoline in California and Related Effect on State Revenues

Gavin Newsom, Governor
May 2026 | CEC-200-2026-006

California Energy Commission and California Department of Tax and Fee Administration

Eric Anderson – California Department of Tax and Fee Administration
Gentian Droboniku – California Department of Tax and Fee Administration
Reid Johnsen – California Department of Tax and Fee Administration
Liang Ma – California Department of Tax and Fee Administration
Jamie Mason – California Department of Tax and Fee Administration
Bryan Neff – California Energy Commission
Primary Authors

Jamie Mason – California Department of Tax and Fee Administration
Bryan Neff – California Energy Commission
Project Managers

Max Solanki
Branch Manager, Fuels Analysis Branch, California Energy Commission

Aleecia Gutierrez
Director, Energy Assessments Division, California Energy Commission

Trista Gonzalez
Chief Deputy Director, California Department of Tax and Fee Administration

Drew Bohan
Executive Director, California Energy Commission

Nicolas Maduros
Director, California Department of Tax and Fee Administration

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Nicole Abercrombie – California Department of Tax and Fee Administration

Olivia Figueroa – California Department of Tax and Fee Administration

Katie Glenn – California Department of Tax and Fee Administration

Michael Hanson – California Department of Tax and Fee Administration

Gordon Mohr – California Department of Tax and Fee Administration

Sunit Chawla – California Energy Commission

Kelsie Goff – California Energy Commission

Fernando Greve – California Energy Commission

Foua Moua – California Energy Commission

Derek Richards – California Energy Commission

Jesten Ruiz – California Energy Commission

Eric Sanchez – California Energy Commission

TJ Singh - California Energy Commission

Alexander Wong – California Energy Commission

Varsha Sarveshwar – Division of Petroleum Market Oversight

Esther Shears – Division of Petroleum Market Oversight

ABSTRACT

California Public Resources Code Section 25355.7 requires the California Energy Commission (CEC) and California Department of Tax and Fee Administration (CDTFA) to prepare a report every year to review the price of gasoline in California and the effect on state revenues. This report looks at information collected by the CEC through the Petroleum Industry Information Reporting Act of 1980, as modified by Senate Bill X1-2 (Skinner, Chapter 1, Statutes of 2023) Energy: transportation fuels: supply and pricing: maximum gross gasoline refining margin and Senate Bill 1322 (Allen, Chapter 374, Statutes of 2022), and information collected by CDTFA through the records request authority provided by SB X1-2. The information collected is used for analyzing trends that influence the price of gasoline, which in turn affects state revenues. Staff from both agencies also analyzed other data sources to provide a more comprehensive discussion of gasoline prices in California.

Topics included in this report:

- Update on refinery operations and retail fuel outlets
- Tax revenue
- Retail prices
- Wholesale market
- Refiner margins

Keywords: California Energy Commission, California Department of Tax and Fee Administration, gasoline, refinery, margins, prices

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EXECUTIVE SUMMARY

Senate Bill X1 2 (Skinner, Chapter 1, Statutes of 2023) mandates the California Energy Commission (CEC) and the California Department of Tax and Fee Administration (CDTFA) to provide an annual report to the Legislature on California gasoline prices and the associated effect on state tax revenue. This second annual report covers the fiscal year 2023-2024 for tax information, 2023 for retail gasoline sales information, and builds upon the foundational analysis of the first report, incorporating new data collected under SB X1-2, SB 1322, public sources, and proprietary information through 2024.

This report includes updates on refiner operations and retail outlets, gasoline sales and tax revenue trends, and retail gasoline station pricing. This report presents new analysis on the gasoline wholesale spot market, and gross gasoline refining margins. Below is a summary of the key findings of this report.

- Refinery operations and market trends: In 2023, refinery operations remained stable since the closure of Phillips 66 Santa Maria. Overall, gasoline sales held steady, while name-brand gasolines of Shell and 76 gained market share.
- Production: CARB-compliant gasoline, other RBOB, and CARB diesel output decreased in 2023 compared to 2022, while conventional gasoline, EPA diesel, other diesel, and jet fuel experienced an increase in output in 2023 compared to 2022.
- Gasoline sales and tax revenue: The report details gasoline sales trends and the effect of tax policy changes, such as the Fuel Tax Swap (2010). While excise tax revenue increased from $7.1 billion to $7.59 billion in calendar year 2023, estimated sales tax revenue declined from $1.56 billion to $1.40 billion due to decreased gasoline sales (13.6 billion gallons, 10.8 percent below 2019 levels).
- Retail gasoline price: California's retail gasoline prices diverged further from national averages, rising from a 4 percent difference (2004 – 2014) to 14 percent in 2023. Refinery margins have increased 127 percent since 2013, while retail margins increased 139 percent.
- Wholesale gasoline market and imports: Wholesale gasoline pricing influences retail prices, with imports responding to wholesale price premiums rather retail prices. Spot price data collected under SB X1-2 differs from publicly reported data, leading to pricing discrepancies.
- Gasoline Refining Margins: Monthly refiner-reported data shows less volatility than weekly estimates, with wholesale price fluctuations driving gross gasoline margins.

CHAPTER 1:
Update on California's Oil and Gasoline Industry

This is the second annual report to the Legislature on California gasoline prices and the associated impact on state tax revenue from the California Energy Commission (CEC) and the California Department of Tax and Fee Administration (CDTFA) as required by Senate Bill X1-2 (Skinner, Chapter 1, Statutes of 2023) Energy: transportation fuels: supply and pricing: maximum gross gasoline refining margin. The first report, *2024 Review of the Price of Gasoline in California and Related Impact on State Revenues*, discussed state and local gasoline tax revenue, but also included a general background on California's oil and gas industry.[1] This background provided a baseline understanding of retail gasoline sales in the state and what factors may be driving retail prices higher. This report is available on the CEC website under the SB X1-2 docket, 23-SB-02.[2]

Since that time, the CEC has expanded data collection efforts under the authority provided by SB X1-2. The CEC and CDTFA have compiled this report using information collected under the Petroleum Industry Information Reporting Act of 1980 (Public Resources Code Sections 25350 et seq.) (PIIRA), SB X1-2, and SB 1322, as well as information collected by CDTFA through records request authority provided by SB X1-2, public sources, and proprietary sources.

This report takes on a new structure compared to the first report. It provides updates on California's oil and gas industry through 2023 where appropriate (Chapter 1), reports on state and local gasoline tax revenue for the fiscal year 2023 (July 2023 to June 2024) (Chapter 2), and presents analysis that builds on previous work, making use of new data collected through 2024 (Chapters 3 through 6). This analysis is divided into chapters on retail station pricing (Chapter 3), wholesale market (Chapter 4), and refiner margins (Chapter 5). The data referenced vary based on best available information for the topic at the time of analysis due to data collection timelines. For instance, data in Chapter 1 is collected on an annual basis, whereas data in Chapter 5 is collected on a monthly basis.

Changes to California's Refining Capacity

The number of California refineries producing California's unique gasoline specification (California Reformulated Gasoline Blendstock for Oxygenate Blending or CARBOB) has steadily declined. In 1996, California had 25 active refineries. By 2020, only 15 refineries in California were producing CARBOB, and that number dropped to 10 in 2022. In January 2023, the Phillips 66 Santa Maria facility ceased operation, which is reflected in **Table 1.** In early 2024,

1 Droboniku, Gentian, Reid Johnsen, Nicolas Maduros, Jamie Mason, and Bryan Neff. *2024 Review of the Price of Gasoline in California and Related Impact on State Revenues*. California Energy Commission and California Department of Tax and Fee Administration. Publication Number: CEC-200-2024-007, https://efiling.energy.ca.gov/GetDocument.aspx?tn=256163&DocumentContentId=91945.

2 SB X1-2 Implementation, Docket log 23-SB-02: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-SB-02.

Phillips 66 Rodeo ceased petroleum operations as well. This second closure, however, is not reflected in **Table 1** nor in the subsequent product slate as these specifically represent refining capacity in 2023.

Table 1: Refineries in California with Capacity, 2023

Refinery Name	Barrels Per Day	% of California Crude Oil Capacity	CARB Diesel	CARB Gasoline
Marathon Petroleum Corp., Los Angeles Refinery*	363,000	21.22%	Yes	Yes
Chevron U.S.A. Inc., El Segundo Refinery	269,000	15.73%	Yes	Yes
Chevron U.S.A. Inc., Richmond Refinery	245,271	14.34%	Yes	Yes
PBF Energy, Torrance Refinery	160,000	9.35%	Yes	Yes
PBF Energy, Martinez Refinery	156,400	9.14%	Yes	Yes
Valero Energy, Benicia Refinery	145,000	8.48%	Yes	Yes
Phillips 66, Los Angeles Refinery	139,000	8.13%	Yes	Yes
Phillips 66, Rodeo San Francisco Refinery**	90,200	5.27%	Yes	Yes
Valero Energy, Wilmington Refinery	85,000	4.97%	Yes	Yes
Kern Energy, Bakersfield Refinery	26,000	1.52%	Yes	Yes
San Joaquin Refining Company Inc., Bakersfield Refinery	15,000	0.88%	Yes	No
Lunday Thagard, South Gate Refinery	8,500	0.50%	No	No
Valero Wilmington Asphalt Refinery	6,300	0.37%	No	No
Talley Asphalt Inc., Kern Refinery	1,700	0.10%	No	No
Grand Total	1,710,371	100%		

*** Marathon Carson and Wilmington began reporting as one entity known as Marathon Los Angeles Refinery as of 2019.**

****Phillips 66 Rodeo and Santa Maria began reporting as one entity as of 2017. Phillips 66 Santa Maria officially ceased operations in January 2023.**

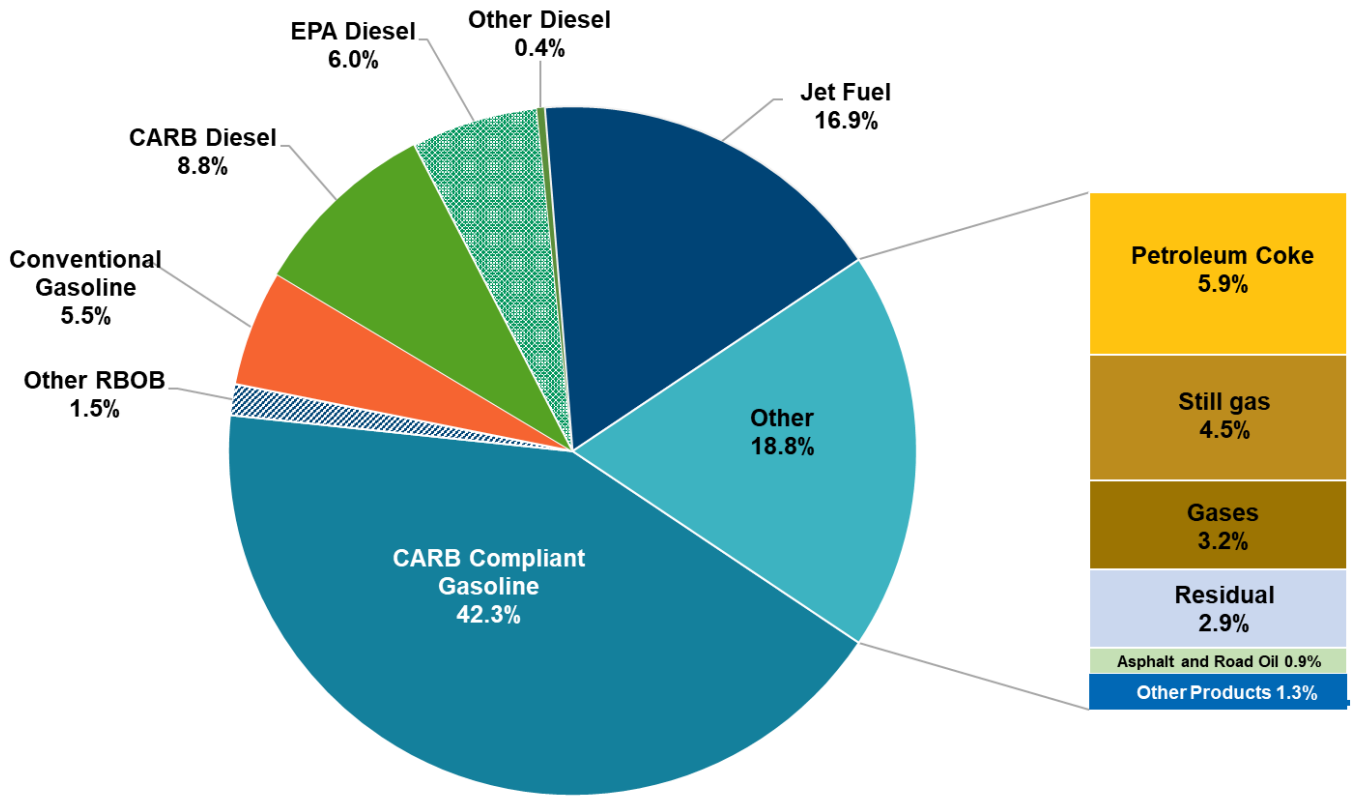
Source: United States (U.S.) Energy Information Administration (EIA), CEC Transportation Fuels Data.

Product Slate Update

California refineries produce a mix of petroleum products, including gasoline (California Air Resources Board [CARB]-compliant, conventional, and RBOB), diesel (CARB diesel, Environmental Protection Agency [EPA] diesel, and other diesel), jet fuel (commercial and military), various gases (butane, isobutane, and propane), residual fuel oil (the heavier oil remaining after lighter hydrocarbons are distilled), and products such as petroleum coke, asphalt, road oil, and lubricants.

The closure of Phillips 66 Santa Maria changed the mix of overall products produced at California's refineries. **Figure 1** illustrates the refined petroleum products of statewide refinery output during 2023, referred to as a *product slate*.

Figure 1: Product Slate of California Refineries, 2023



***Note: Does not include ethanol.**

Source: CEC analysis of the California Refinery Monthly Report (M810) and the EIA Monthly Refinery Report (EIA-810)

CARB-compliant gasoline, other RBOB, and CARB diesel output decreased in 2023 compared to 2022, while conventional gasoline, EPA diesel, other diesel, and jet fuel experienced an

increase in output in 2023 compared to 2022. Detailed changes to products are shown in **Table 2**.

Table 2: Changes in Product Slate of California Refineries 2023

Product	2023 Output Change (percent)	Difference from 2022 (percent)
CARB-compliant gasoline	-0.1	-42.4
Other RBOB	-0.9	-2.4
CARB diesel	-1.2	-10.0
Conventional gasoline	0.3	5.2
EPA diesel	0.2	5.8
Other diesel	0.2	0.2
Jet fuel	1.6	15.3
Products composing "Other"	No change	No change

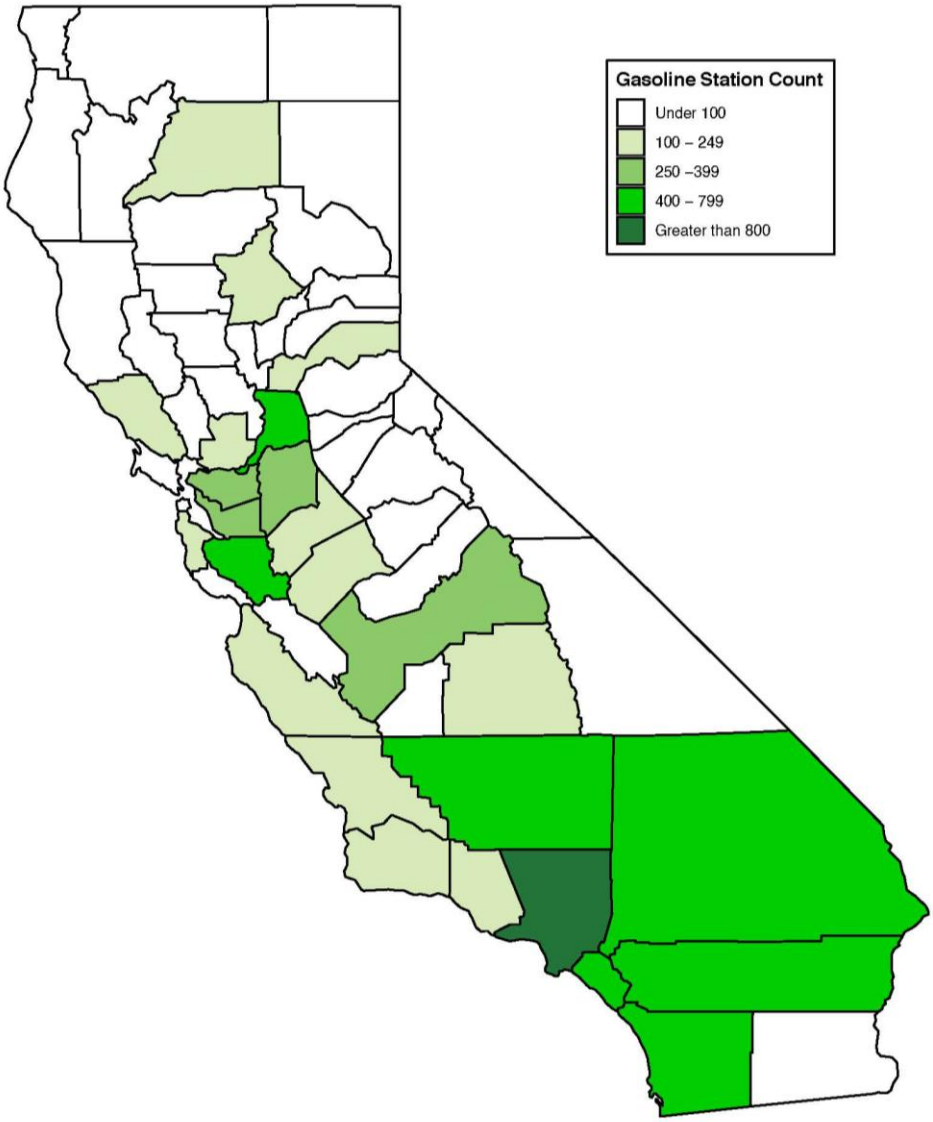
Source: CEC

Annual Fuel Retail Outlet Report Update

PIIRA requires all retail transportation fueling stations in California to file a Retail Fuel Outlet Annual Report (CEC-A15) to the CEC. In 2023, 8,947 stations filed a report, with 8,435 stations reporting that they dispense gasoline.[3] The CEC used this information to estimate the total number of stations, which is estimated to be 10,957 stations. This is roughly a 1,000-station increase since 2010. Unsurprisingly, California gasoline stations are generally in population centers and near transportation corridors. **Figure 2** below shows the gasoline station count by county for 2023. On a per capita basis, California had about 22 gas stations per 100,000 residents in 2023, while the U.S. average is closer to 33 stations.

3 California Retail Fuel Outlet Annual Reporting (CEC-A15) Results, CEC, https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-retail-fuel-outlet-annual-reporting.

Figure 2: Gasoline Station Count by County



Source: CEC analysis of A15 data

Retail Station Market Share by Affiliation

For this report, retail gasoline stations are classified into three categories: branded stations, unbranded stations, and hypermarts. *Branded stations* are typically those affiliated with large refiners and sell fuel with branded additives. In California, branded stations are ARCO, Chevron, Shell, 76, Exxon Mobil, and Valero.[4] ARCO is treated as a branded station because of its retail branding even though it does not strictly adhere to selling gasoline associated with a major oil production or refinery company, despite being under the ownership of Marathon

4 Petroleum Watch, January 2020. CEC. https://www.energy.ca.gov/sites/default/files/2020-02/2020-01_Petroleum_Watch.pdf

Petroleum Corporation. Although Shell no longer owns a refinery in California, Shell-branded fuel is still available and at the rack and retail levels.[5]

Unbranded stations generally sell gasoline without proprietary additives, though the gasoline sold is still required to contain a cleaning additive that meets CARB specifications. Unbranded stations can be small, independently owned gas stations or large chains. The gasoline these unbranded stations sell is produced by the same refineries as branded stations and drawn from the same tanks as branded fuel.

A *hypermart* is a gas station owned or operated by a supermarket or wholesale store that sells fuel at its retail location. In California, they are Costco, Sam's Club, Walmart, Food 4 Less, Foods Co, Safeway, Raley's, and Vons. Typically, hypermarts sell unbranded gasoline without additional proprietary cleaning additives, though Costco blends in a proprietary additive at its stations.

All gasoline sold in California must meet the specifications set by CARB. The fuel itself, within the various grades, is essentially interchangeable, regardless of the company that refined the fuel. The fuel sold under one brand name may have been produced by a different refiner.

While hypermarts make up a very small percentage of gasoline retail outlets (3.1 percent in 2023 according to CEC data), they account for more than 21 percent of all gasoline sold in California. The average California hypermart retail location sells eight times the volume of gasoline as the average non-hypermart station. Hypermart market share has nearly doubled since 2010, growing from 10.9 percent to roughly 21 percent. CEC reporting for 2023 includes 268 responding locations characterized as hypermarts compared to 8,292 non-hypermart locations. Hypermarts reported a total of 2.5 billion gallons sold, for an average of 766,000 gallons per location per month. Non-hypermarts reported a total of 9.4 billion gallons sold, for an average of 94,000 gallons per location per month.

This data is highly relevant for how California gasoline prices are represented publicly. The American Automobile Association (AAA) — the most widely cited source for retail gasoline prices — calculates a simple average across stations, which over-weights branded stations that charge higher prices but sell lower volumes. The U.S. Energy Information Administration (EIA) uses a volume-weighted average that accounts for the large volumes sold at hypermarts and unbranded stations at lower prices. As a result, AAA prices a) tend to be higher than EIA prices in California, and b) overstate what the average California consumer actually pays per gallon. Given that hypermarts alone account for 21 percent of all gasoline sold in California at prices consistently below the branded average, the difference between these two methodologies is meaningful.

Figure 3 shows California's gasoline station count by brand as reported to the CEC. Chevron has the most stations for a specific gasoline brand, followed in descending order by 76, Shell, ARCO, ExxonMobil, and Valero. There are more unbranded stations than any one brand.

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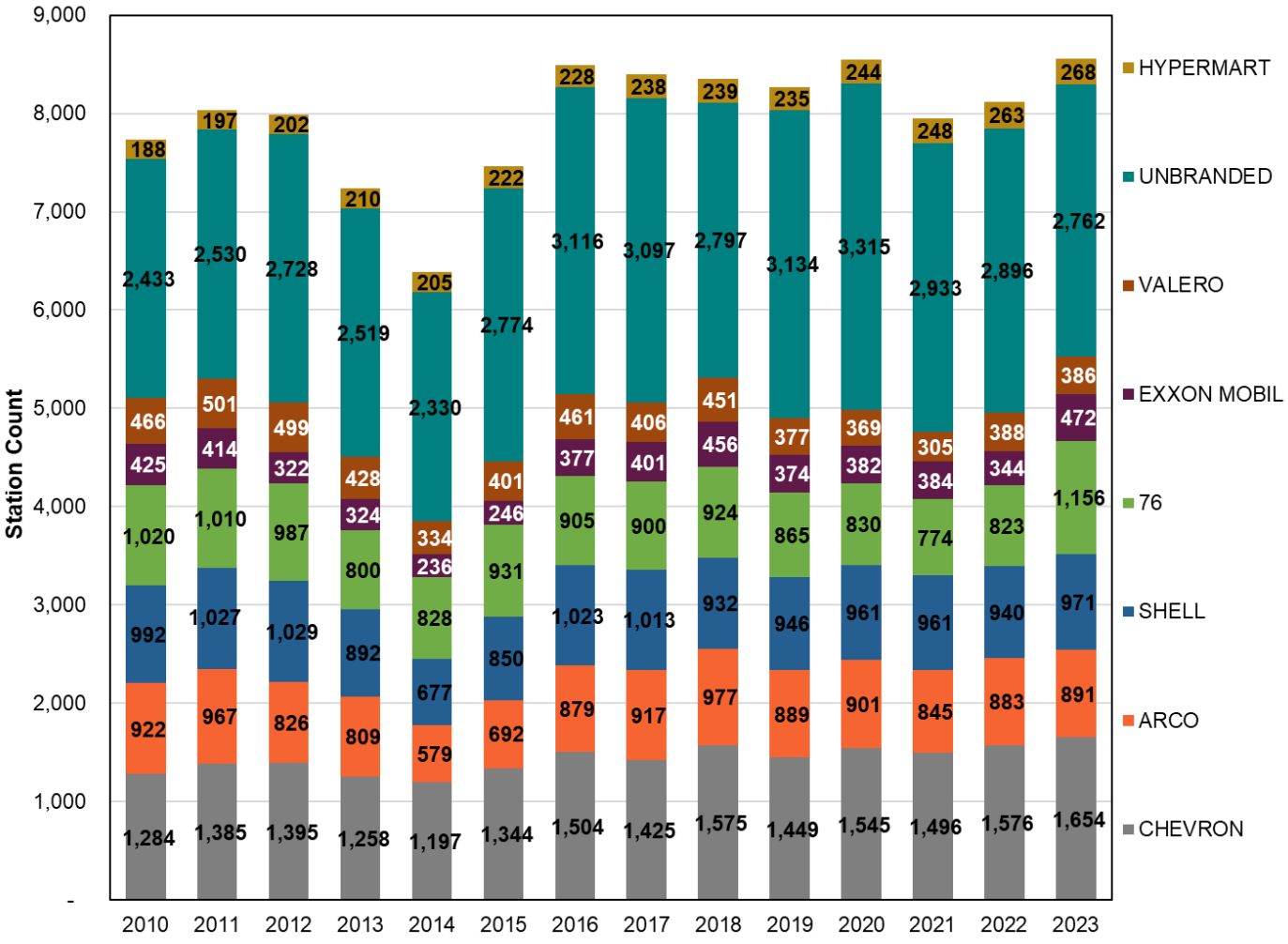
5 Shell Finalizes Sale of Martinez Refinery. January 31, 2020. https://www.shell.com/news-and-insights/newsroom/news-and-media-releases/2020/shell-finalizes-sale-of-martinez-refinery.html

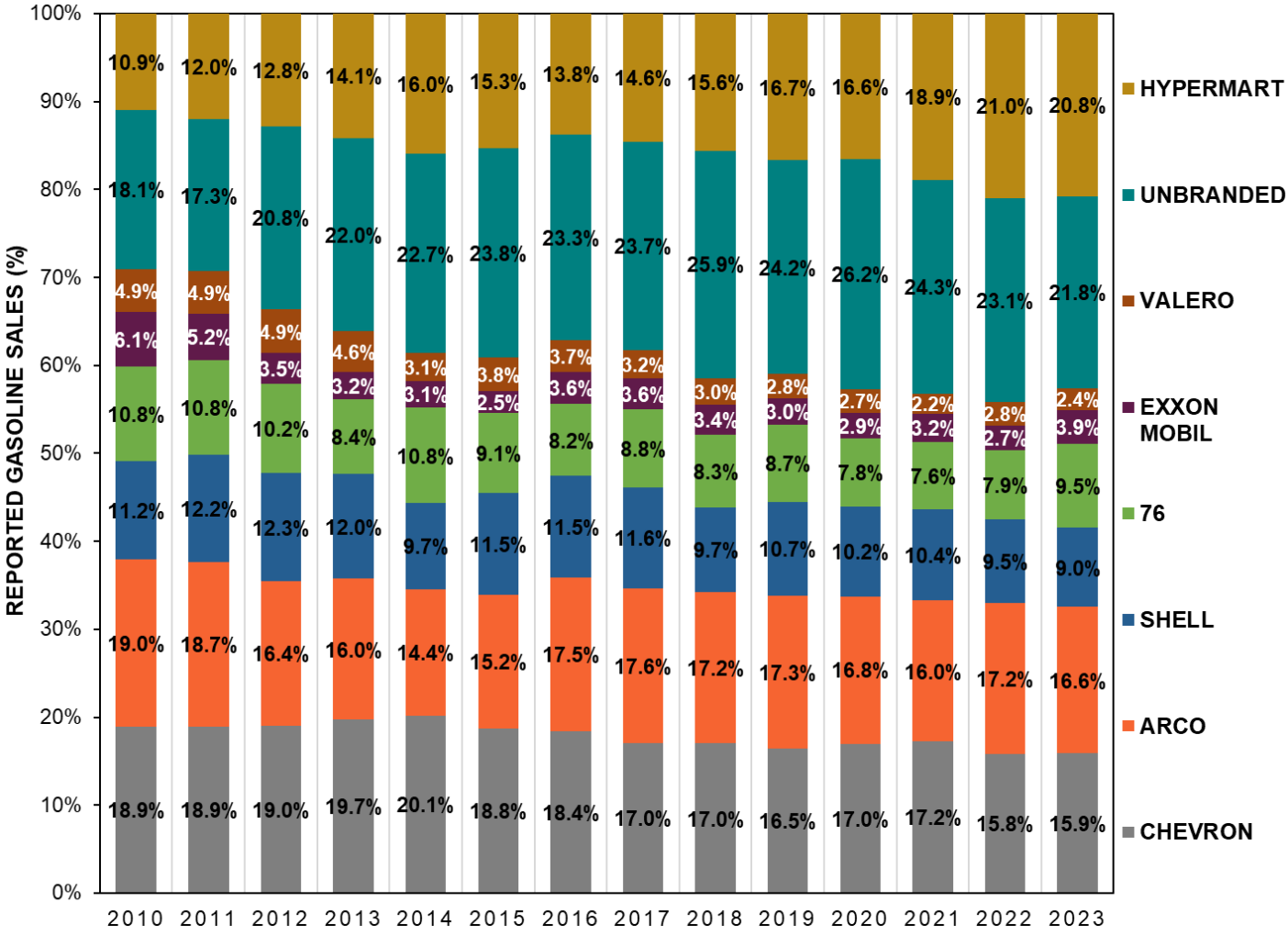
Hypermart has the fewest number of stations, less than any brand. **Figure 4** shows the market share of the major brands, along with the hypermart and unbranded categories.

Figure 3: California Gasoline Station Count by Brand, 2010–2023



Source: CEC analysis of A15 data

Figure 4: California Retail Gasoline Market Share, 2010–2023



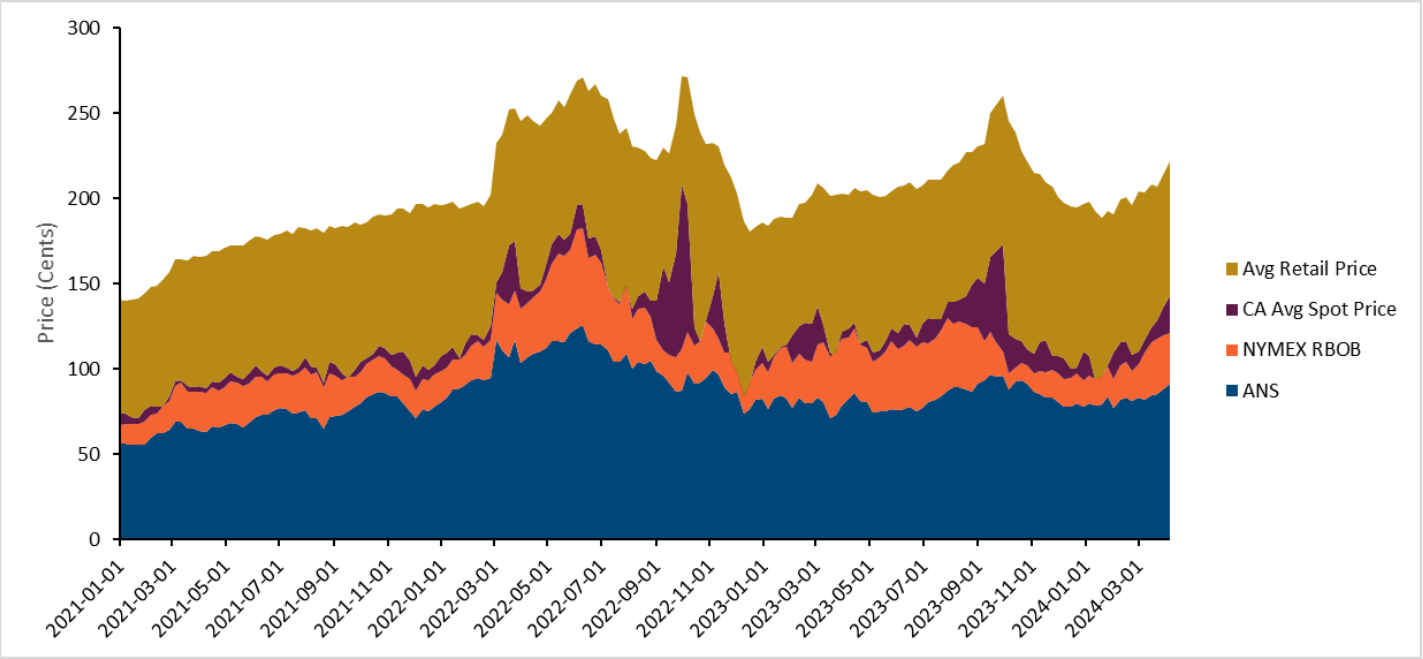
Source: CEC analysis of A15 data

Components of Gasoline Price

A way of looking at retail price is by breaking it down using market price indicators. **Figure 5** illustrates this breakdown using the following four published price indicators:

- Alaska North Slope (ANS) serves as a benchmark for California's crude oil cost.
- New York Mercantile Exchange (NYMEX) Reformulated Blendstock for Oxygenate Blending (RBOB) is the U.S. benchmark for wholesale gasoline.
- California average spot market is the average of Los Angeles and San Francisco spot prices.
- California average retail price is the California average retail price as reported by EIA.

Figure 5: Gasoline Price: Retail, Spot, NYMEX RBOB, and Crude Oil (ANS)



Source: CEC analysis of OPIS data

Separating the components of retail price in this manner helps in identifying the underlying cause of a change in retail price. Retail price includes distribution and marketing costs and profits, environmental costs, taxes, and fees. The combined spot market price and NYMEX RBOB represent refining costs and profits, while separated they represent the difference between California's wholesale market and that of the wider United States.

Changes occurring only at the retail price level signify potential issues in distribution supply chains or retail market competition. Changes in the spot market signal potential changes to California's refinery production, localized supply tightness, and spot market illiquidity or volatility. Changes in NYMEX RBOB indicates events or trends impacting the broader U.S. market, such as severe weather events and international incidents. Changes in ANS price can indicate changes in the international market, such as Organization of Petroleum Exporting Countries (OPEC) decisions and world events.

A world event example is the increase in ANS price in March of 2022, which highlights the combination of Russia's invasion of Ukraine with low global crude oil inventories.[6] Concerns over low inventories persisted over the summer of 2022 while demand across the United States increased from vehicular travel following the COVID-19 pandemic, leading to record-high retail prices. Another example is the increase in spot and retail prices during the fall of 2022 and 2023. These prices increases were indicative of a more California-centric issue with localized supply tightness, spot market illiquidity, and volatility. In September 2022 and 2023, Governor Newsom wrote letters to CARB directing an early switch to winter blend as a way to

6 U.S. Energy Information Administration. January 4, 2023. "Crude Oil Prices Increased in First-Half 2022 and Declined in Second-Half 2022," https://www.eia.gov/todayinenergy/detail.php?id=55079#.

quickly increase in-state supply, which curtailed high prices. [7] The sudden drop in spot and retail prices in October 2022 and October 2023, shows the market's response to Governor Newsom's letters.

A more conventional way of looking at gasoline retail price is by separating it into its main cost components. The main components are crude oil, refining costs and profits, distribution and marketing costs and profit, environmental costs, and taxes and fees.[8] **Figure 6** shows the breakdown comparison of these various components of the retail price of gasoline for California and the United States.[9] Crude oil costs can vary daily, but were less in November 2024 than in November 2023. Distribution and marketing costs declined $0.19 to $0.68 from $0.87 a year ago. Refining costs and profits declined $0.13 to $0.40 from $0.52 a year ago. Taxes and fees stayed the same, and environmental costs increased $0.01 from a year ago.

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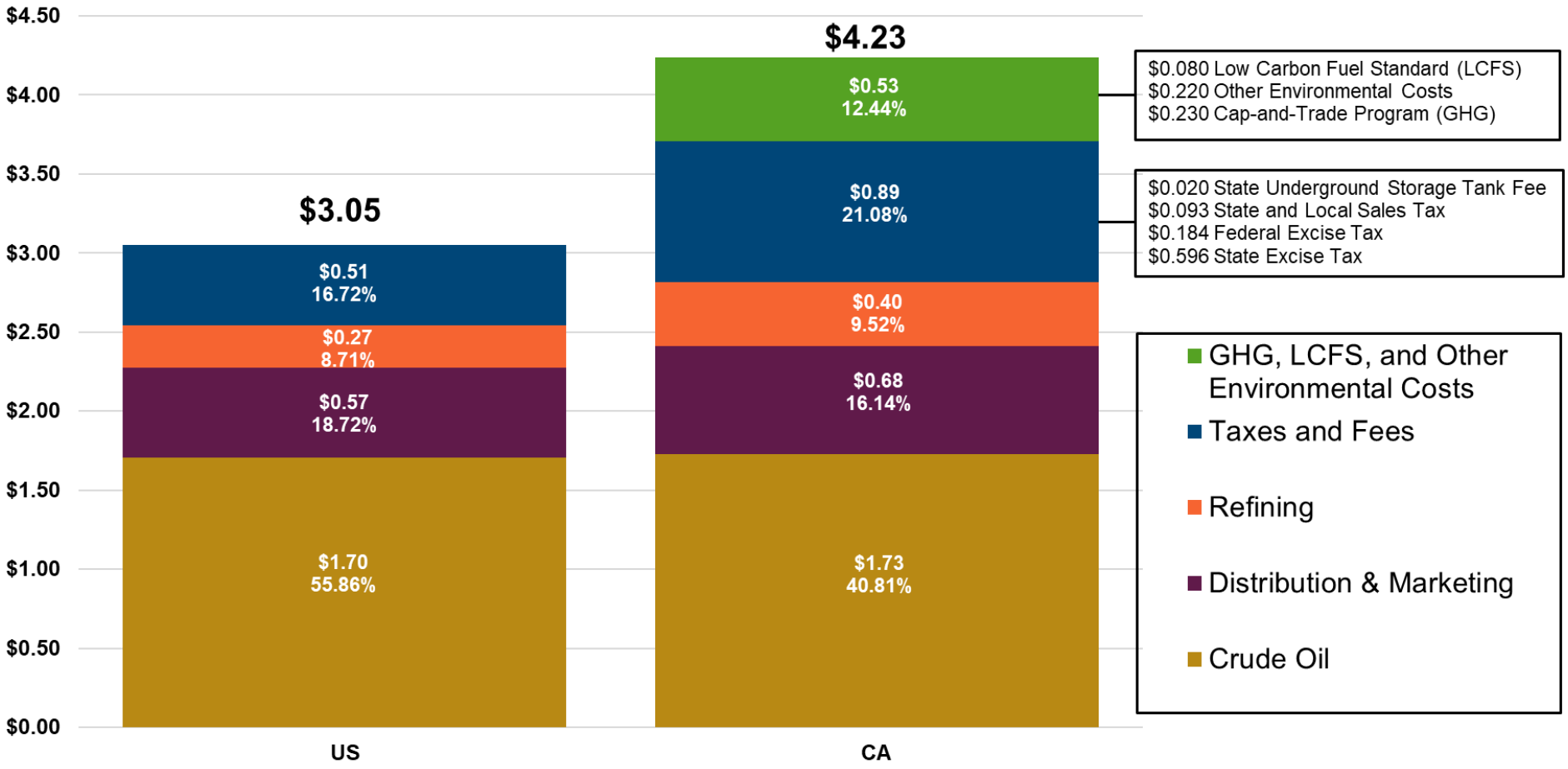
[7] California Air Resources Board. Regulatory Advisory: September 30, 2022, Early Transition to Winter-Blend Gasoline, https://ww2.arb.ca.gov/sites/default/files/2022-09/RVP%20Advisory%202022.pdf.

California Air Resources Board. Regulatory Advisory: September 28, 2023, Early Transition to Winter-Blend Gasoline, https://ww2.arb.ca.gov/sites/default/files/2023-09/RVP_Advisory_2023.pdf.

8 An average state sales tax rate of 2.25 percent is used in the calculation. The actual sales tax rate varies throughout California. For Fiscal Year 2023–2024, the average special district tax was 1.46 percent, which increases the total sales tax rate to 3.71 percent.

9 The U.S. average is based on U.S. EIA data (https://www.eia.gov/petroleum/gasdiesel/gaspump_hist.php). California average is based on CEC analysis of industry data (https://www.energy.ca.gov/estimated-gasoline-price-breakdown-and-margins) and LAO estimates for greenhouse gas emissions compliance and Low Carbon Fuel Standard costs (https://lao.ca.gov/Transportation/FAQs).

Figure 6: Composition of a Gallon of Gasoline November 2024



Source: EIA, CEC, CDTFA, and Legislative Analyst's Office (LAO)

CHAPTER 2
Tax Revenue

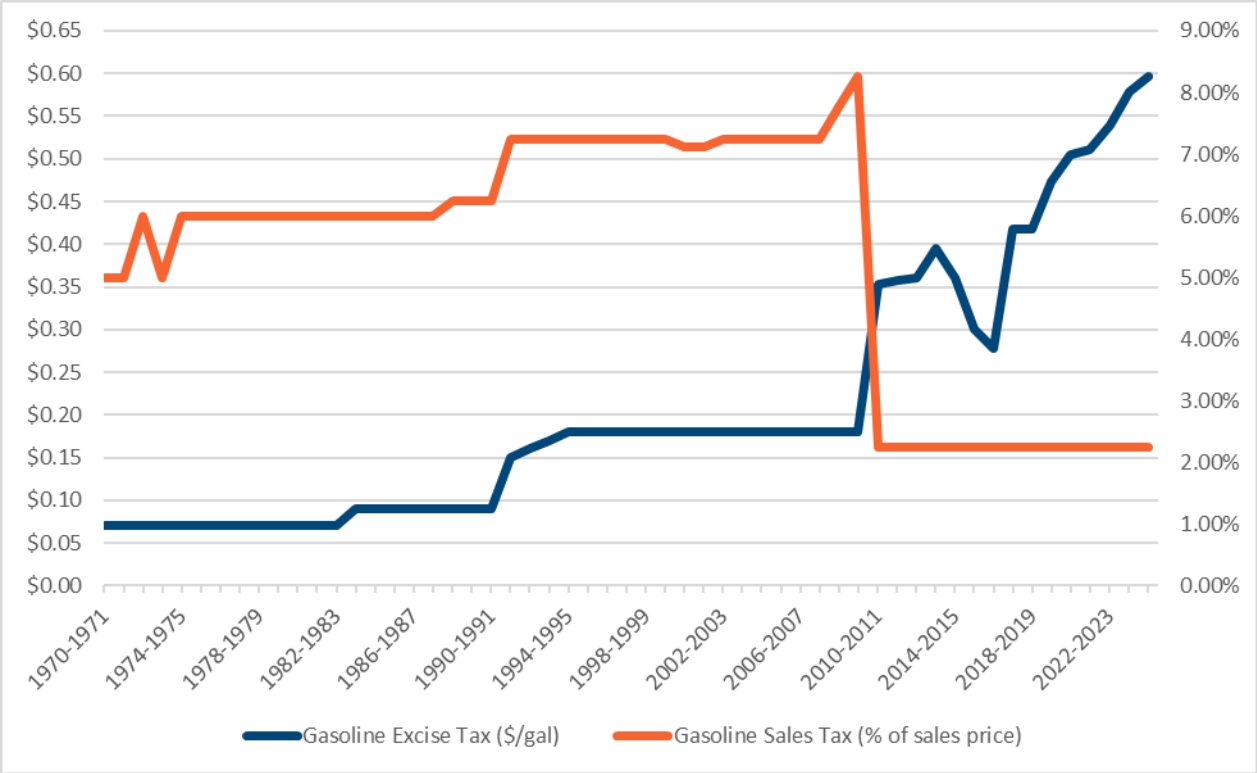
History of California Taxes on Motor Fuel

California's history with gasoline taxes dates to 1923 when voters approved the Motor Vehicle Fuel License Tax Act, which imposed an excise tax of $0.02 per gallon. Although a statewide sales tax was introduced in 1933, gasoline was initially exempt. This changed with the Transportation Development Act of 1971, which reduced the statewide sales tax by 0.25 percent and extended it to include gasoline. Over time, local jurisdictions also began adding their own district taxes on gasoline sales. As of Fiscal Year 2023–2024, California's gasoline taxes comprise several components:

- Excise tax: 53.9 cents per gallon (July 1, 2022, through June 30, 2023) and 57.9 cents per gallon (July 1, 2023, through June 30, 2024).
- Statewide sales tax: estimated at 17 cents per gallon based upon average sales price of $4.60 and an average sales tax rate of 2.25 percent (1.25 percent for the Bradley-Burns Tax, 0.50 percent for the Local Public Safety Fund, and 0.50 percent for the Local Revenue Fund).
- Underground storage tax fee: 2.0 cents per gallon.

Furthermore, local district sales taxes, which apply to gasoline and other taxable sales, range from zero percent to 3.71 percent. The statewide average district tax rate is 1.46 percent, or roughly 7 cents per gallon based on average prices. **Figure 7** shows California's historical tax rates for gasoline between 1970 and 2024.

Figure 7: California Gasoline Excise Tax ($) and State Sales Tax (%) Rates (Fiscal Year 1971-2024)



Source: CDTFA

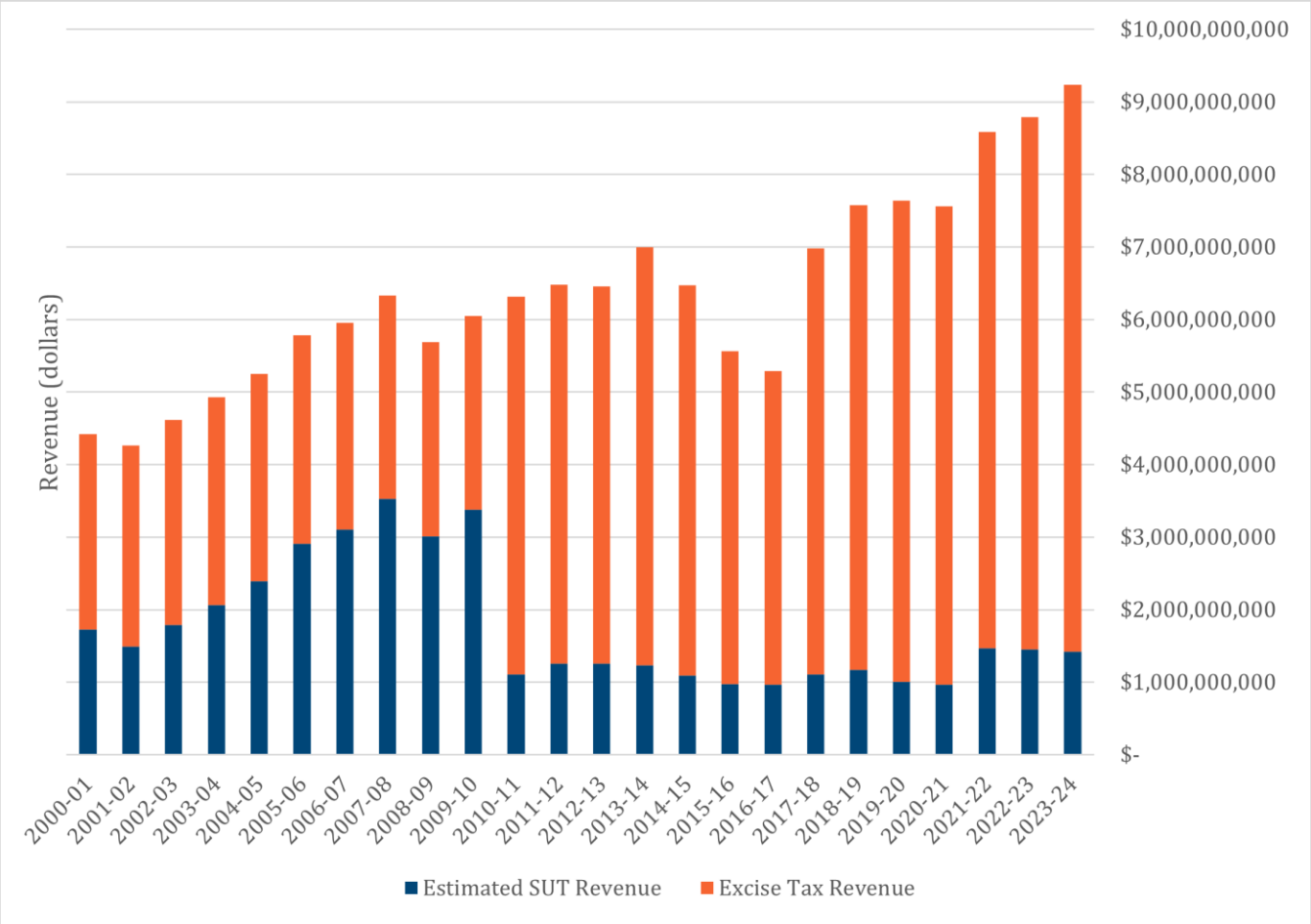
Gasoline Revenues and Sales Volume

Higher gasoline prices generally increase sales tax revenue, unless they cause a drop in consumption that offsets the increase in gross sales. Since the Fuel Tax Swap of 2010, gasoline has been subject only to a lowered sales tax rate of 2.25 percent.[10] As a result, the state revenue impact of the retail price fluctuation is less pronounced than prior years. In 2017, the Legislature enacted Senate Bill 1 (Beall, Chapter 5, Statutes of 2017), increasing the excise tax on gasoline by 12 cents per gallon, from 29.7 cents to 41.7 cents. SB 1 also requires CDTFA to adjust the gasoline excise tax rate annually to reflect any change in the California Consumer Price Index. Gasoline sales are also subject to local district taxes, which vary by jurisdiction.

Figure 8 displays excise and sales tax revenues from gasoline sales. Estimated sales use tax revenue decreased in fiscal year 2023-2024 from the previous year, down from $1.45 billion to $1.42 billion. Excise tax revenue increased in fiscal year 2023-2024 from the previous year, up from $7.34 billion to $7.82 billion.

10 Assembly Bill X8-6 (Assembly Budget Committee, Chapter 11, Statutes of 2010), http://www.leginfo.ca.gov/pub/09-10/bill/asm/ab_0001-0050/abx8_6_bill_20100322_chaptered.pdf, and Senate Bill 70 (Committee on Budget and Fiscal Review, Chapter 9, Statutes of 2010), http://www.leginfo.ca.gov/pub/09-10/bill/sen/sb_0051-0100/sb_70_bill_20100323_chaptered.pdf.

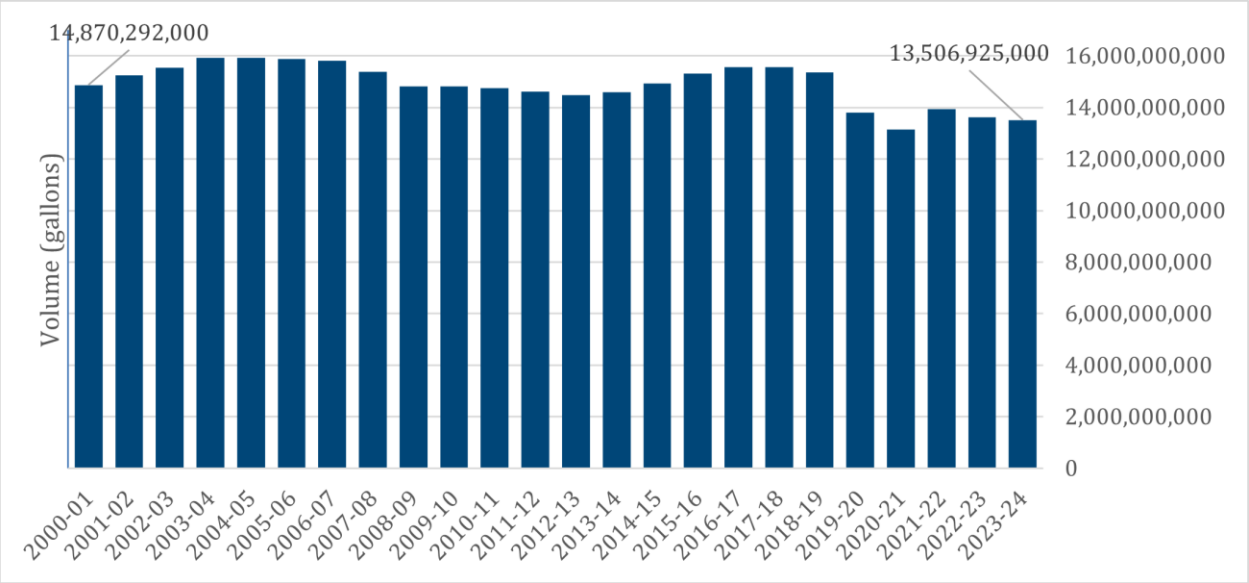
Figure 8: Gasoline Tax Revenues (Fiscal Year 2000–2024)



Source: CDTFA

Gasoline sales volume remained relatively stable between 2000 and 2019. In fiscal year 2000–2001, California gasoline sales totaled roughly 14.8 billion gallons, and sales had increased slightly to about 15.3 billion gallons by fiscal year 2018–2019. During the COVID-19 pandemic, the sales volume decreased to about 13.1 billion gallons, or by about 14.4 percent compared to 2019. Since the pandemic, sales volume has increased slightly but has not reached pre-pandemic levels. In fiscal year 2023–2024 gasoline sales totaled about 13.5 billion gallons, or 11.7 percent below the 2019 pre-pandemic volume. **Figure 9** shows the annual total volume of gasoline sold since 2001.

Figure 9: Gasoline Volume Sold (Fiscal Year 2000–2024)



Source: CDTFA

Among the factors contributing to this decline in gasoline sales are the increased sales of electric and hybrid vehicles, improved efficiency of gas-powered vehicles, and a decrease in miles traveled by California drivers. In 2016, electric and plug-in hybrid vehicles accounted for 4 percent of total registered vehicles in California.[11] By 2024, this figure increased to 9 percent. Hybrid and electric vehicles sales continued to grow in 2024, comprising 22 percent of total car sales and 25 percent of new car sales.[12] About 35 percent of all electric vehicles in the United States are registered in California.

California also leads the nation in fuel efficiency for gasoline powered vehicles. In 2024, the average miles per gallon (MPG) for 1- to 5-year-old gasoline-powered vehicles in California was 33.5 MPG, compared to a national average of 27.5.[13] Moreover, California is also one of the 10 states that have experienced a decline in total vehicle miles traveled over the past decade. In 2012, Californians traveled about 326 billion miles. [14] By 2022, that number had

11 U.S. Department of Energy. Alternative Fuels Data Center. Alternative Fuels Data Center: Vehicle Registration Counts by State (energy.gov). Retrieved January 2, 2025, https://afdc.energy.gov/vehicle-registration?year=2023.

12 *California Auto Outlook*, "Comprehensive Information on the California Vehicle Market. Volume 20, Number 4," October 2024. California New Car Dealer Association. Cal-Covering-3Q-24.pdf (cncda.org). https://www.cncda.org/wp-content/uploads/Cal-Covering-3Q-24.pdf.

New ZEV Sales in California, California Energy Commission. https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics-collection/new-zev

13 "The Best and Worst States for Fuel Efficiency and Hybrid/EV Adoption." iSeeCars.com. Retrieved on January 2, 2025, https://www.iseecars.com/green-car-adoption-study.

14 National Highway Traffic Safety Administration. *Traffic Safety Facts, 2012 Data: State Traffic Data*, https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812033.

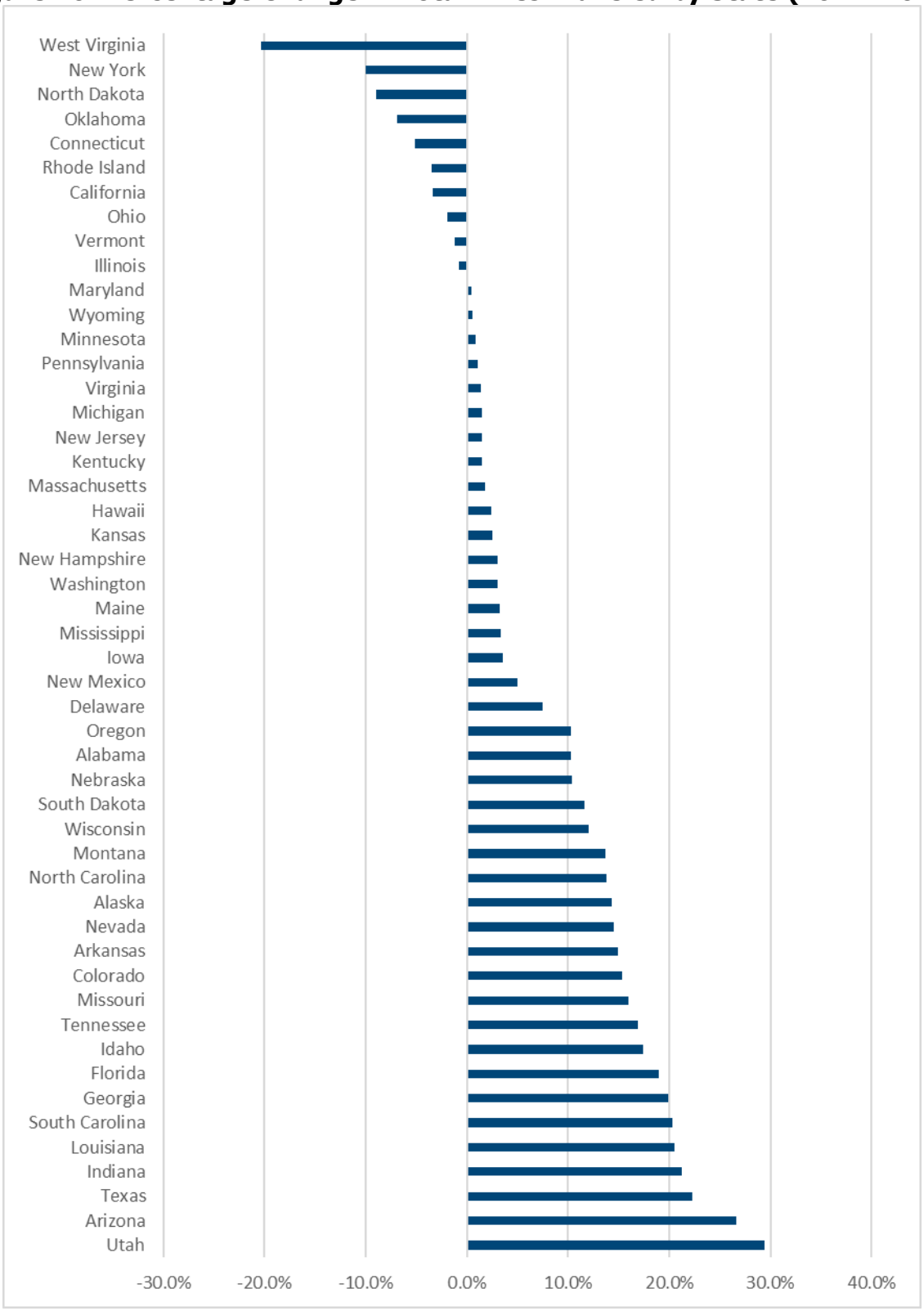
dropped to 315 billion miles, or a 3.4 percent decline.[15] In contrast, the other 40 states experienced an increase ranging from 0.5 to 29.5 percent, with Utah experiencing the largest increase (29.5 percent). **Figure 10** shows the percentage change in total miles traveled by state between 2012 and 2022. These figures appear to stem largely from remote working trends and may change as remote work policies change.

As many Californians switch to hybrid and electric vehicles and the state continues its transition to 100 percent zero-emission new vehicles sales by 2035, excise tax and sales and use tax receipts from the sale of gasoline will decline. As the CEC and CDTFA reported last year, the LAO published a report estimating that gasoline excise tax revenues will decline by $5 billion, or 65 percent, over the next 10 years.[16]

15 Insurance Institute for Highway Safety. "Fatality Facts 2022, State by State." Retrieved on January 2, 2025, https://www.iihs.org/topics/fatality-statistics/detail/state-by-state.

16 Legislative Analyst's Office. December 2023. *Assessing California's Climate Policies — Implications for State Transportation Funding and Programs*, https://lao.ca.gov/Publications/Report/4821.

Figure 10: Percentage Change in Total Miles Traveled by State (2012–2022)



Source: National Highway Traffic Safety Administration

CHAPTER 3
Retail Station Pricing

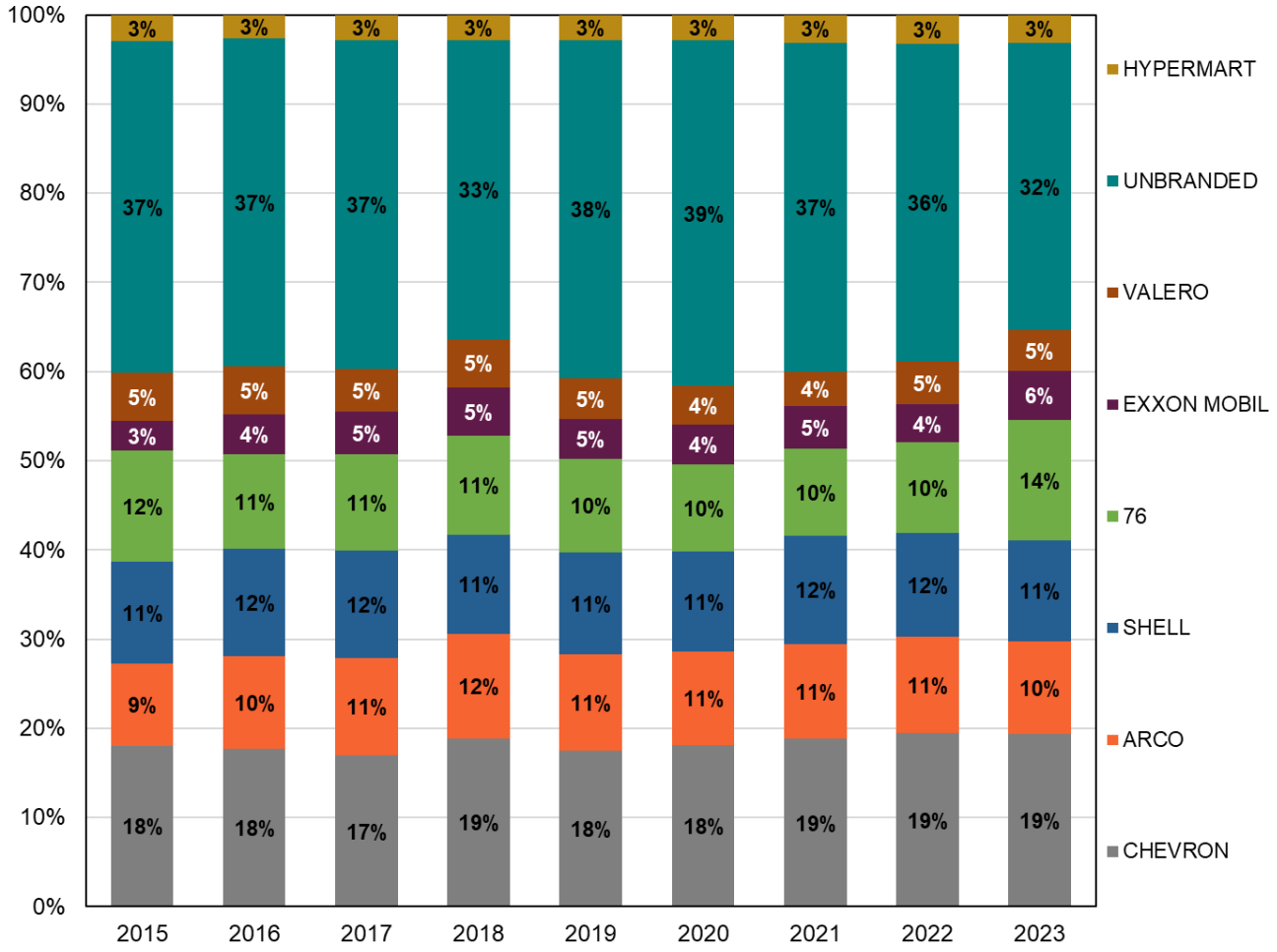
California's Retail Gasoline Landscape

California's retail gasoline landscape is different from the rest of the United States. On a per capita basis, California has fewer gas station than any state other than Hawaii. In 2023, California had roughly 22 gas stations per 100,000 residents, compared to the U.S. average of 33 gas stations per 100,000 residents. In addition, only 32 percent of gas stations in California sell unbranded fuel, compared to 50 percent nationwide.[17] Industry experts have attributed the predominance of branded fuel stations in California to the guaranteed access to supply when supply is limited, access to knowledge of the fuel industry, and access to capital during the contract terms to make improvements to a gas station.

Supply issues arise from planned and unplanned refinery outages. When these outages occur, California refineries, which operate at near capacity, cannot compensate for lost production. **Figure 11** below shows how the composition of the California retail market has changed. In 2015, unbranded retail gasoline stations made up 37 percent of the stations in California, and as of 2023, unbranded retail gasoline stations make up 32 percent. California gasoline retail prices are notably higher partly due to the increased presence of branded stations.

17 CEC analysis of A15 data and NACS Fuel Sales: https://www.convenience.org/Research/Convenience-Store-Fast-Facts-and-Stats/FactSheets/FuelSales.

Figure 11: Percentage of Gas Stations Owned by Brand (2015–2023)



Source: CEC analysis of A15 data

Besides the fact that California doesn't have the same composition of branded versus unbranded stations as the rest of the United States, there is also a difference in the markup of gasoline at the retail station level. California branded gas stations charge a higher markup than the national average — 15.9 percent compared to the national average of 11.2 percent reported by the National Association of Convenience Stores (NACS) in 2023.[18] Unbranded and hypermart stations in California are roughly in line with the national average at about 11 percent. This branded premium is a contributing factor to California's higher retail prices and is examined in more detail later in this chapter.

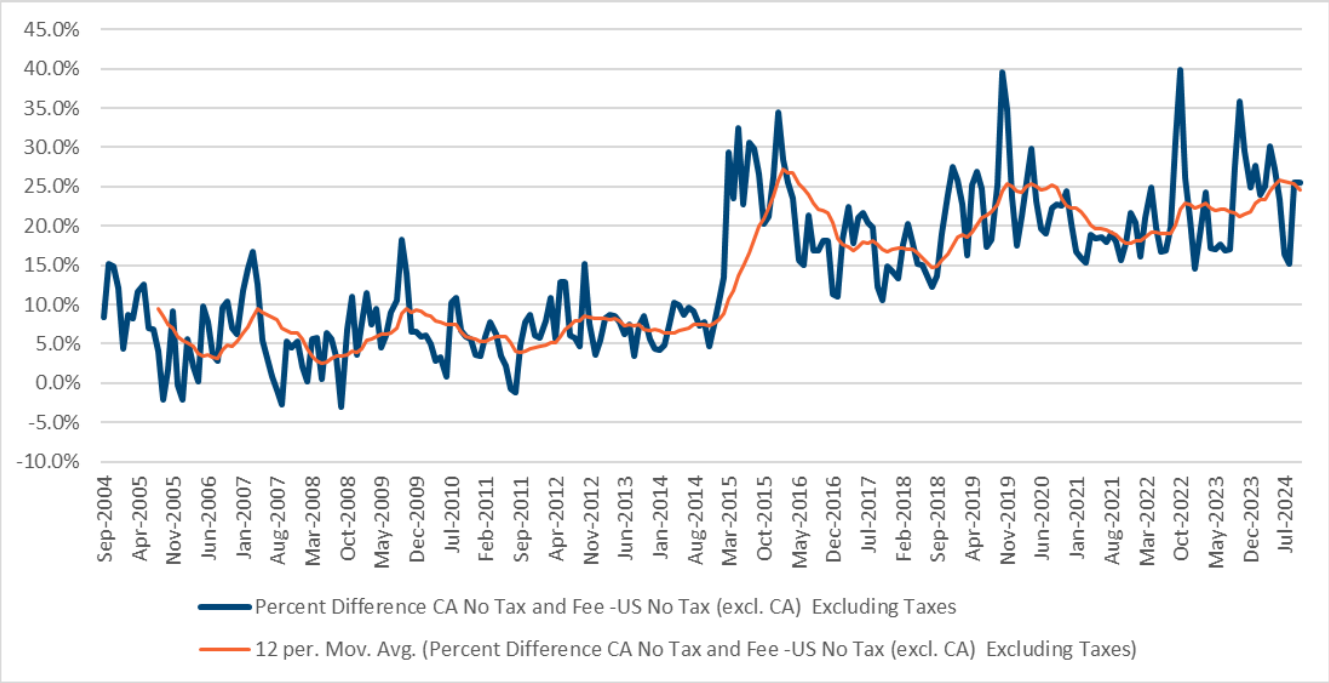
California Gas Prices vs. Other States

Last year's report noted the difference in retail prices between California and the rest of the United States — a pattern that continued into 2024. Between 2004 and 2014, the average retail price difference was roughly 6.5 percent. This gap spiked to about 30 percent in 2015, following the Torrance Refinery fire, and as **Figure 12** shows, it has remained well above

18 NACS fuel margins: https://www.convenience.org/Topics/Fuels/The-US-Petroleum-Industry-Statistics-Definitions.

2015 levels. In 2024, the average price difference between California and the rest of the United States was about 24 percent. **Figure 12** below shows California gas prices compared to the average price in the rest of the United States, excluding taxes and fees. The causes and implications of this persistent premium are examined in the Division of Petroleum Market Oversight's (DPMO) annual report.[19]

Figure 12: Percentage Difference in Retail Gasoline Price, California-United States Excluding Taxes and Fees, 2004–2024 (All Formulations)



Source: CDTFA calculations of EIA data

Retail gasoline price differences increasingly occur in other West Coast states. As **Figure 13** shows, the gap between these states (excluding California) and the rest of the United States began increasing in 2014.[20] From 2004 to 2014, the average price difference was roughly 4 percent but rose to 12 percent between 2015 and 2023. In 2024, the price percentage difference reached 14 percent.

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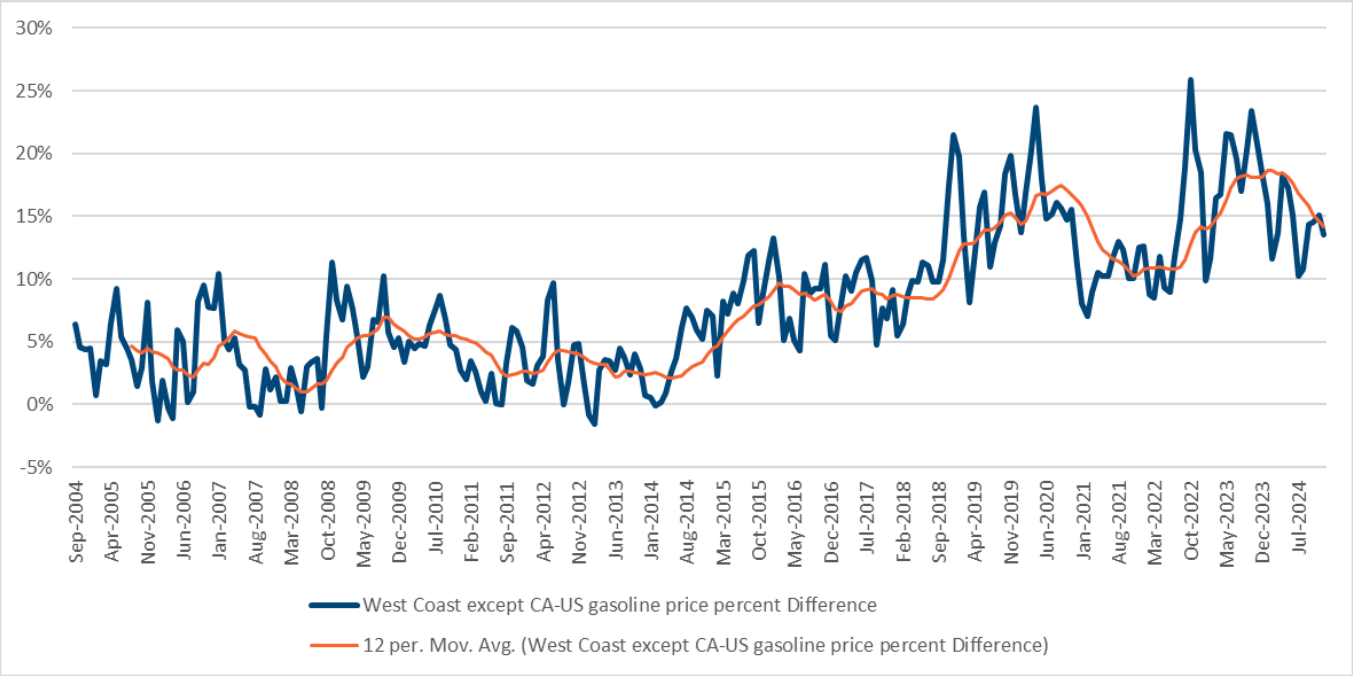
19 Moreno, Gigi, Esther Shears, Wenche Wang, Varsha Sarveshwar, Chase Madson, Tai Milder, and Ryan McCauley. 2025. 2024 Annual Report. Division of Petroleum Market Oversight. Publication Number: CEC-900-2025-001. (https://www.energy.ca.gov/sites/default/files/2025-10/CEC-900-2025-001.pdf)

20 This includes EIA Petroleum Administration for Defense District 5 (West Coast): Alaska, Arizona, Hawaii, Nevada, Oregon, and Washington.

Figure 13: Percentage Difference in Retail Gasoline Price, West Coast-United States, 2004–2024 (All Formulations)



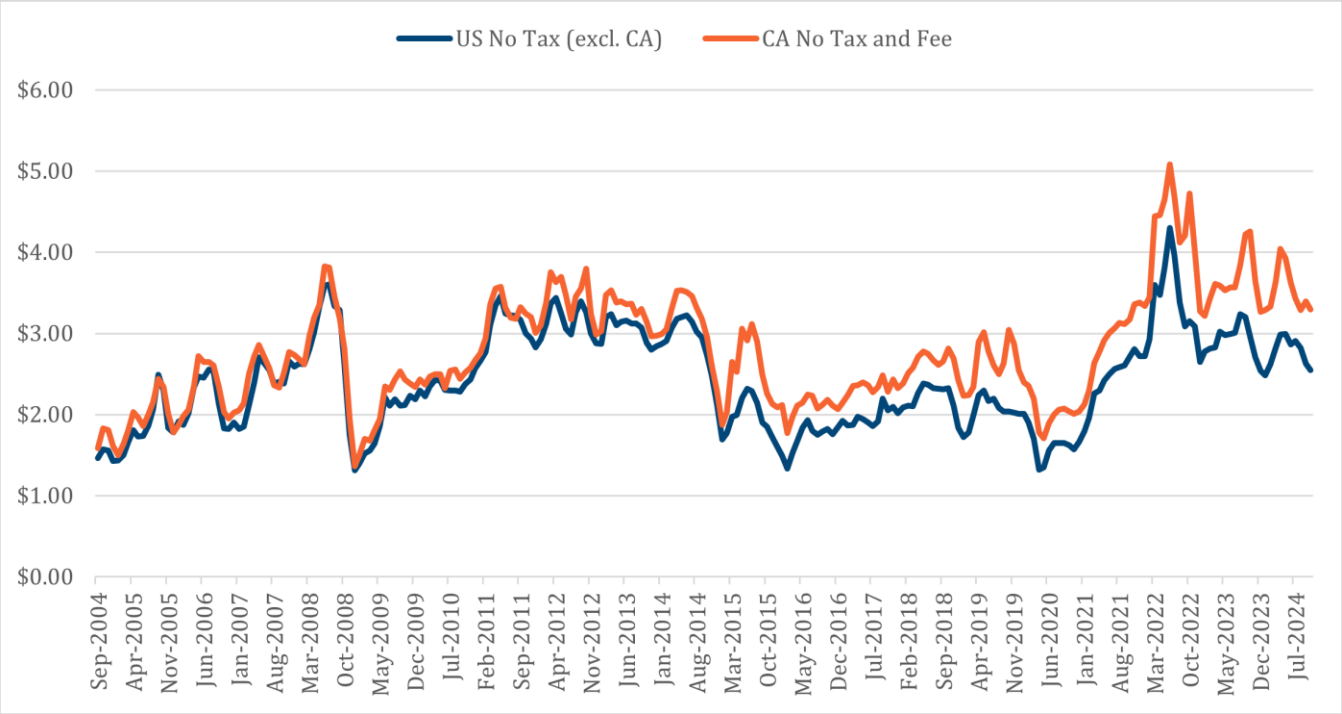
Source: CDTFA calculations of EIA data

Tax and Fee Components of Gasoline Prices

The main components of the retail price of gasoline include crude oil costs, refining costs and profits, distribution and marketing costs and profits, environmental costs, taxes, and fees. **Figure 5** in Chapter 1, summarizes the impact of these various components on the retail price of gasoline for California and the United States. Industry groups attribute the price differential between California and the rest of the country to taxes and environmental fees unique to California. It is worth noting that Washington, Oregon, and Massachusetts all have a carbon pricing concept like California's LCFS.[21] Although California's statewide gasoline taxes in 2024 — including all environmental fees and costs — were about 61 cents per gallon higher than the national average, these differences in taxes and fees do not fully explain the $1.37 per gallon difference observed at retail. As **Figure 14** shows, the gasoline price gap between California and the rest of the nation has grown noticeably since 2015, even after accounting for taxes.

[21] Climate Xchange. 2025. Carbon Polluting Pricing. https://www.climatepolicydashboard.org/policies/cross-sector/carbon-pollution-pricing

Figure 14: California Gas Prices vs. All Other States, Excluding Tax, 2004–2024 (All Formulations)



Source: CDTFA calculations of EIA and CEC data

Impact of Business Costs in California

Industry also continues to maintain that high prices and large margins reflect the higher costs of doing business in the state. Last year's report used federal, state, and industry data to confirm that California is a higher-cost state in which to do business. Labor, rental, equipment, and other costs are between 26 percent and 39 percent higher in California than in many other states.

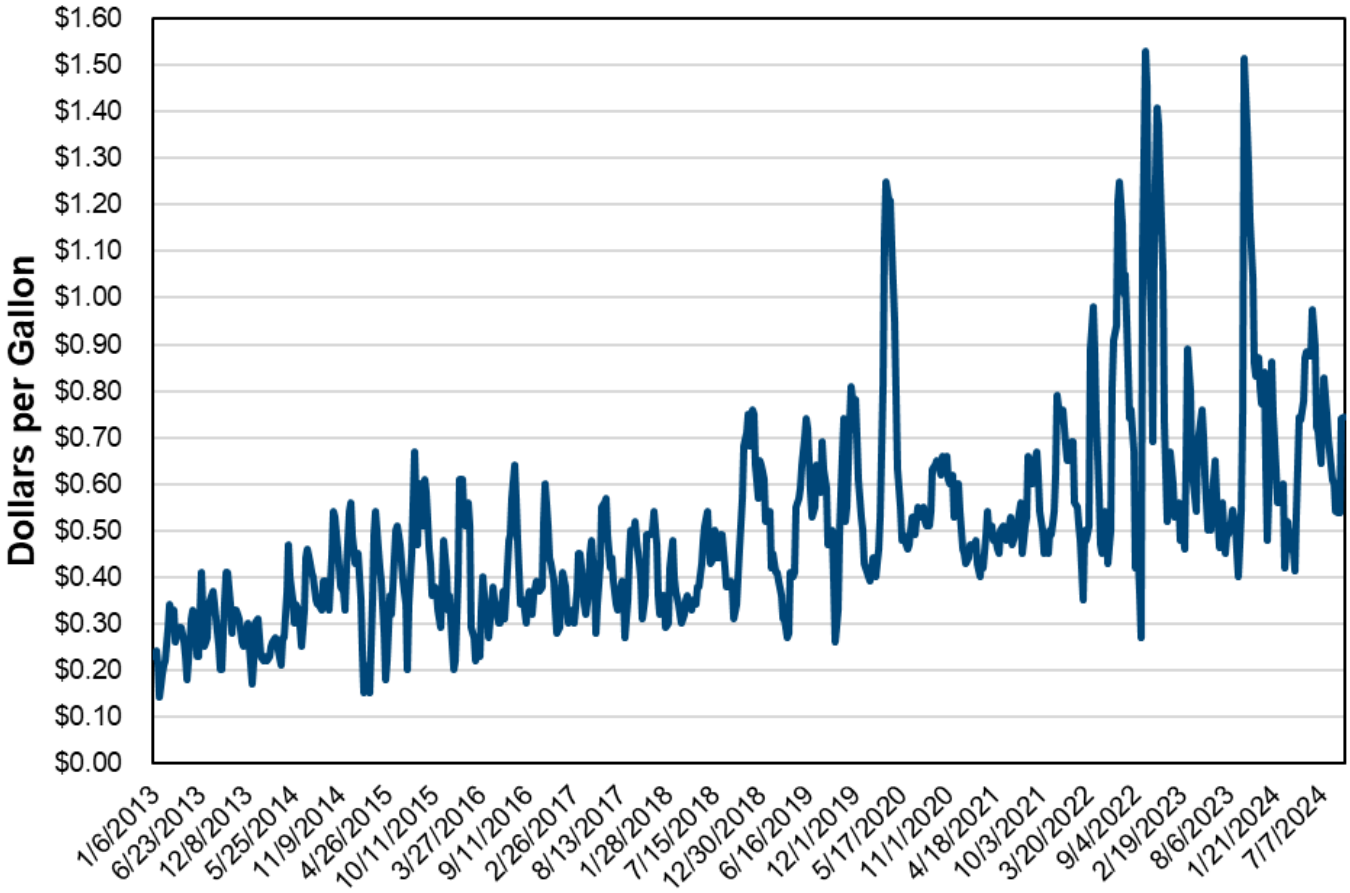
While clearly a contributing factor, higher costs do not fully explain California's high gas prices. As noted in last year's report and in other sections of this report, the margins for refiners and retail stations have more than doubled over the last decade. Between 2013 and 2024, the refinery margin increased by $0.33 cents per gallon or 127 percent, from $0.26 to $0.59. The retail margins increased even more steeply, from $0.28 per gallon in 2013 to $0.67 in 2024, an increase of 139 percent. CDTFA has found no data showing business costs in California have increased by a similar magnitude.

Retail Margins Push Prices Higher

As noted above, a significant factor contributing to the retail price of gasoline is the growing retail margin. As with the refining margin discussed in Chapter 5, the retail margin is distinct from, but certainly related to, profit. Without knowing all business costs, it is difficult for the CDTFA to determine the exact profit of a retailer. The CDTFA does, however, have insight into the difference between what a gas station operator pays for gasoline and the price at which they sell that gasoline to consumers. In recent years, this margin is higher than it has been historically, both in nominal dollars and as a percentage of the retail price. In 2013, retail

margins averaged 28 cents, or 7.1 percent of the retail price. By 2024, retail margins had increased to 67 cents, or 14.3 percent of the retail price — a 139 percent increase. **Figure 15** shows the average retail margins between January 2013 and September 2024.

Figure 15: Average Retail Margin for All Gasoline Grades

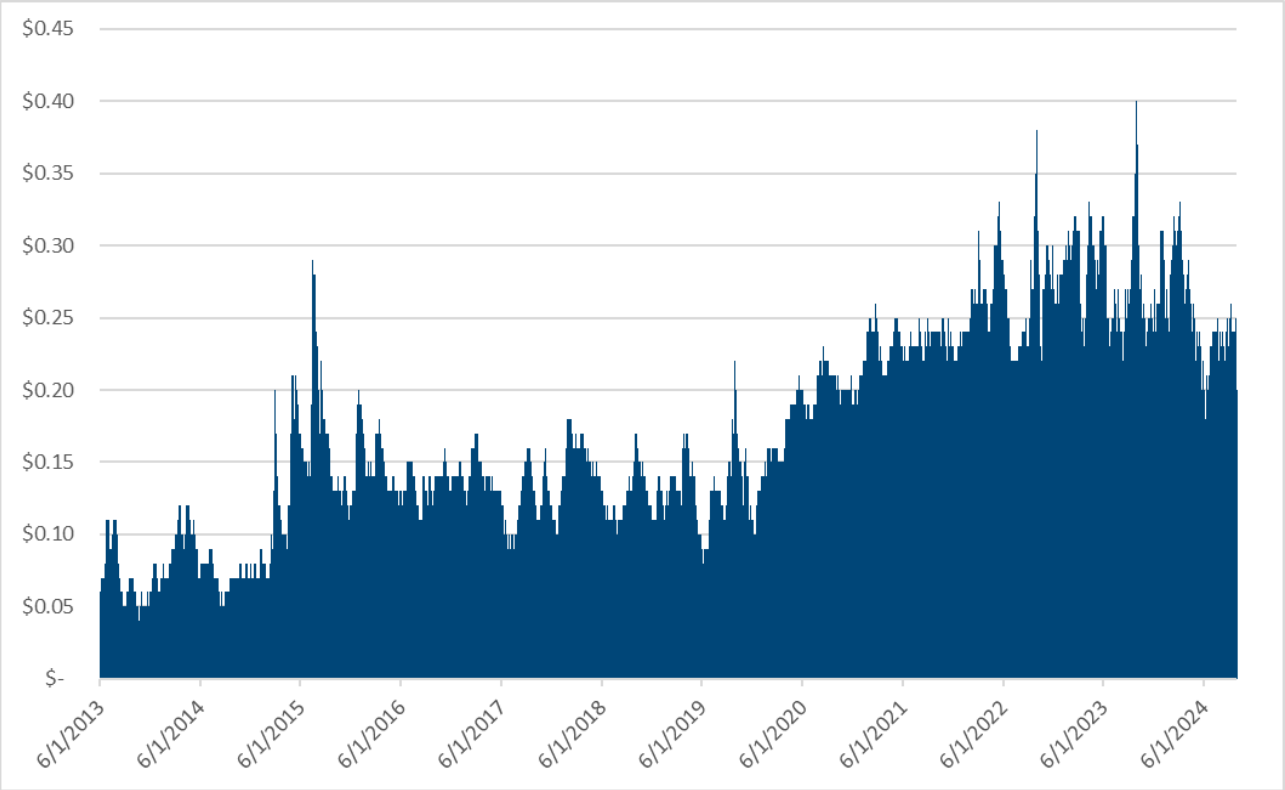


Source: CDTFA analysis of OPIS data

Gasoline Prices and Retail Margins by Brand

In the previous section, this report discussed the overall retail margin increases for all brands and retailers in California. **Figure 16** illustrates the growing price gap between branded and unbranded gasoline from January 2013 to September 2024. In 2013, the difference was 7 cents, and by 2024, it had increased to 24 cents. Nationally the price difference between branded and unbranded gasoline is only 4 cents.

Figure 16: Price Difference Between Branded and Unbranded in California



Source: CDTFA analysis of OPIS data

Table 3 and **Table 4** illustrate how retail margins vary widely among and within brands. Retail margins for branded gasoline increased between 156 percent to 400 percent from 2013 to 2024. Unbranded stations and hypermarts experienced roughly a 200 percent increase over the same period. **Table 3** shows annual retail prices and margins for various gasoline brands. **Table 4** shows retail prices and margins for unbranded and hypermarts.[22]

22 The data derived from CDTFA's review of transactions occurring in 2022 and 2023 between refiners and retailers are consistent with the retail margin information reported by the CEC.

Table 3: Branded Retail Price and Margin

Year	Chevron Retail Price	Chevron Retail Margin	Chevron Retail Margin as % of Price	Shell Retail Price	Shell Retail Margin	Shell Retail Margin as % of Price	76 Retail Price	76 Retail Margin	76 Retail Margin as % of Price	Arco Retail Price	Arco Retail Margin	Arco Retail Margin as % of Price
2013	$4.06	$0.30	7.4%	$4.04	$0.28	7%	$4.04	$0.27	6.7%	$3.87	$0.11	3%
2014	$3.93	$0.37	9.4%	$3.91	$0.35	9%	$3.90	$0.33	8.5%	$3.69	$0.14	4%
2015	$3.40	$0.48	14.1%	$3.38	$0.46	14%	$3.38	$0.47	13.9%	$3.15	$0.23	7%
2016	$2.98	$0.54	18.1%	$2.95	$0.51	17%	$2.93	$0.50	17.1%	$2.67	$0.23	9%
2017	$3.26	$0.55	16.9%	$3.25	$0.52	16%	$3.21	$0.49	15.3%	$2.94	$0.21	7%
2018	$3.82	$0.60	15.7%	$3.81	$0.56	15%	$3.76	$0.53	14.1%	$3.50	$0.25	7%
2019	$4.00	$0.70	17.5%	$3.98	$0.67	17%	$3.91	$0.62	15.9%	$3.67	$0.35	10%
2020	$3.50	$0.81	23.1%	$3.48	$0.76	22%	$3.38	$0.70	20.7%	$3.11	$0.43	14%
2021	$4.51	$0.76	16.8%	$4.48	$0.69	15%	$4.39	$0.63	14.4%	$4.12	$0.38	9%
2022	$5.87	$1.07	18.2%	$5.84	$1.00	17%	$5.71	$0.90	15.8%	$5.48	$0.67	12%
2023	$5.13	$0.96	18.7%	$5.10	$0.91	18%	$4.95	$0.81	16.4%	$4.68	$0.58	12%
2024	$5.12	$0.84	16.4%	$5.08	$0.82	16%	$4.93	$0.69	14.0%	$4.67	$0.55	12%

Source: Analysis of OPIS data done by the CEC's Transportation Fuels Data and Analysis Unit, CDTFA calculated retail margins as percentage of price

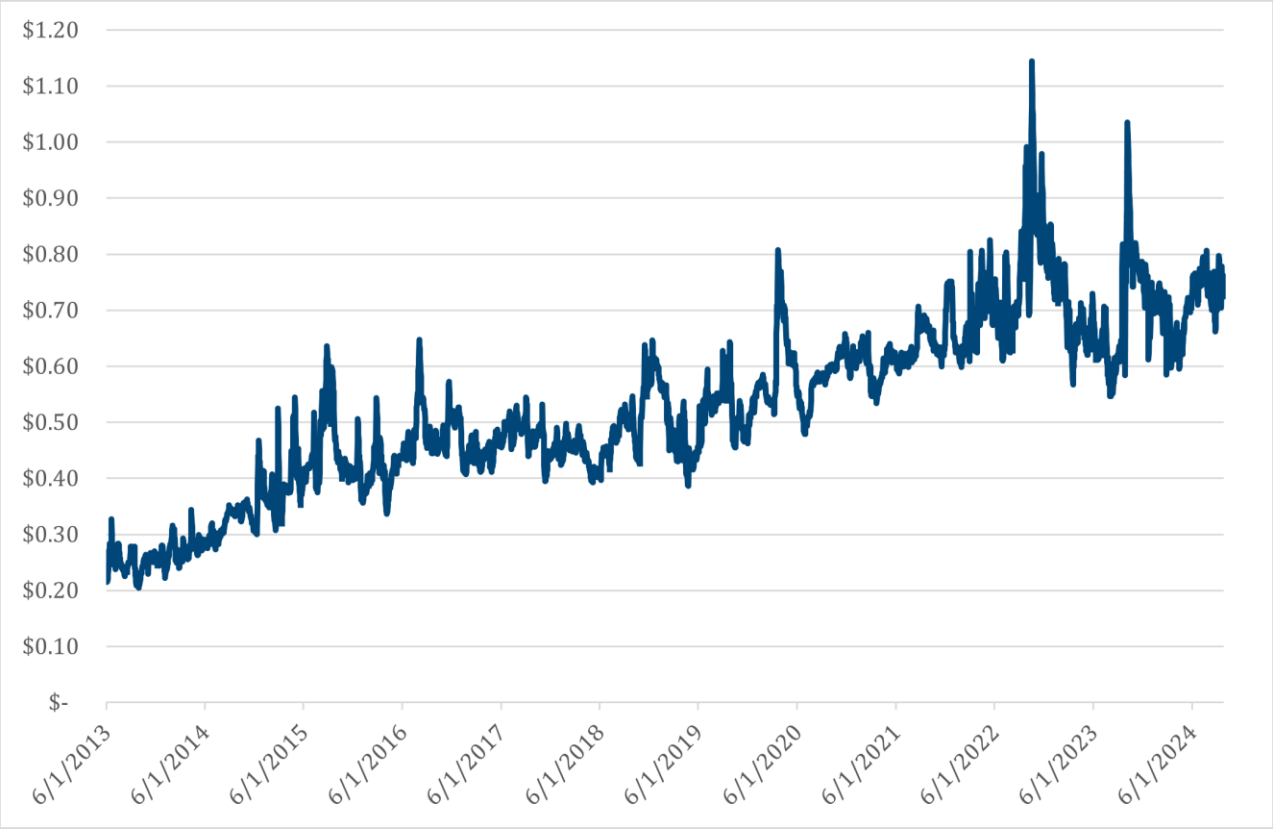
Table 4: Unbranded and Hypermart Retail Price and Margin

Year	Unbranded Retail Price	Unbranded Retail Margin	Unbranded Retail Margin as % of Price	Hypermart Retail Price	Hypermart Retail Margin	Hypermart Retail Margin as % of Price
2013	$3.92	$0.23	6%	$3.84	$0.13	3%
2014	$3.77	$0.32	8%	$3.68	$0.21	6%
2015	$3.19	$0.42	13%	$3.11	$0.27	9%
2016	$2.74	$0.41	15%	$2.61	$0.27	10%
2017	$3.03	$0.41	14%	$2.89	$0.26	9%
2018	$3.57	$0.45	13%	$3.45	$0.29	8%
2019	$3.75	$0.53	14%	$3.60	$0.37	10%
2020	$3.17	$0.61	19%	$3.02	$0.43	14%
2021	$4.10	$0.52	13%	$4.04	$0.33	8%
2022	$5.45	$0.70	13%	$5.28	$0.45	9%
2023	$4.65	$0.66	14%	$4.52	$0.42	9%
2024	$4.67	$0.59	13%	$4.51	$0.41	9%

Source: Analysis of OPIS data done by the CEC's Transportation Fuels Data and Analysis Unit, CDTFA calculated retail margins as percentage of price

The price disparity between the most expensive and least expensive gasoline has widened in recent years. Branded gasoline, such as Chevron, Shell, and 76, has become increasingly expensive relative to unbranded and hypermart gasoline. In 2013, the retail price difference between Chevron and unbranded gasoline was 14 cents ($4.06 and $3.92, respectively). By 2024, that difference had increased to 48 cents, an increase of 243 percent. **Figure 17** shows the difference between the retail pricing of Chevron and Costco gasoline from 2013 to 2024.

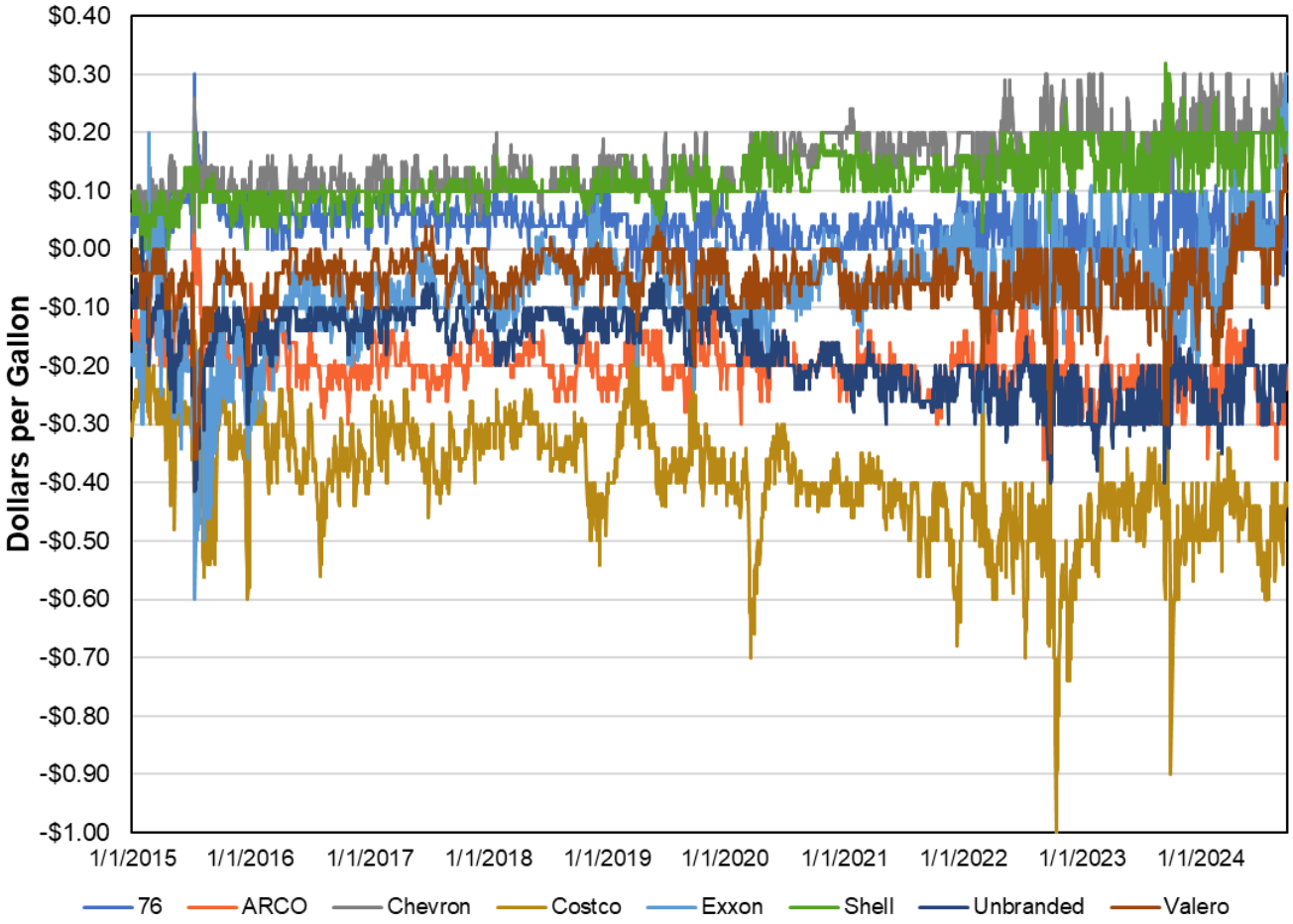
Figure 17: Retail Price Difference Between Chevron and Costco



Source: CDTFA calculations and analysis of OPIS data

Figure 18 demonstrates that brands appear to be priced at retail in relation to one another. Even though the gasoline sold by the various brands are essentially interchangeable, particularly if one looks at the fuels with additives beyond the minimum requirement, some brands are consistently more expensive than others. The branded prices typically increase and decrease together, with each brand holding its place in the pricing structure relative to the other brands as shown in **Table 3**. Looking at prices statewide, Chevron is typically the most expensive, followed by Shell, 76, ARCO, unbranded, and hypermart. Costco's price has consistently been the cheapest, well below the statewide average, over the last decade.

Figure 18: Difference from Median Retail Gasoline Price by Brand



Source: CDTFA calculations and analysis of OPIS data

Price Variation Among Nearby Stations Selling the Same Brand Appears to Be the Result of Retailer Margin

In 2023, the CDTFA received data from several California refiners for all gasoline sales to a sample of more than 500 retail gas stations throughout the state. Among other things, the data included the date refiners sold the gasoline to retailers, volume sold, sales price (how much the retailer paid), transportation costs, tax amounts, and additional costs such as those related to California's Cap-and-Trade Program and Low Carbon Fuel Standard requirements. In 2024, the CDTFA requested the same information for an additional 150 stations, totaling about 650 stations statewide.

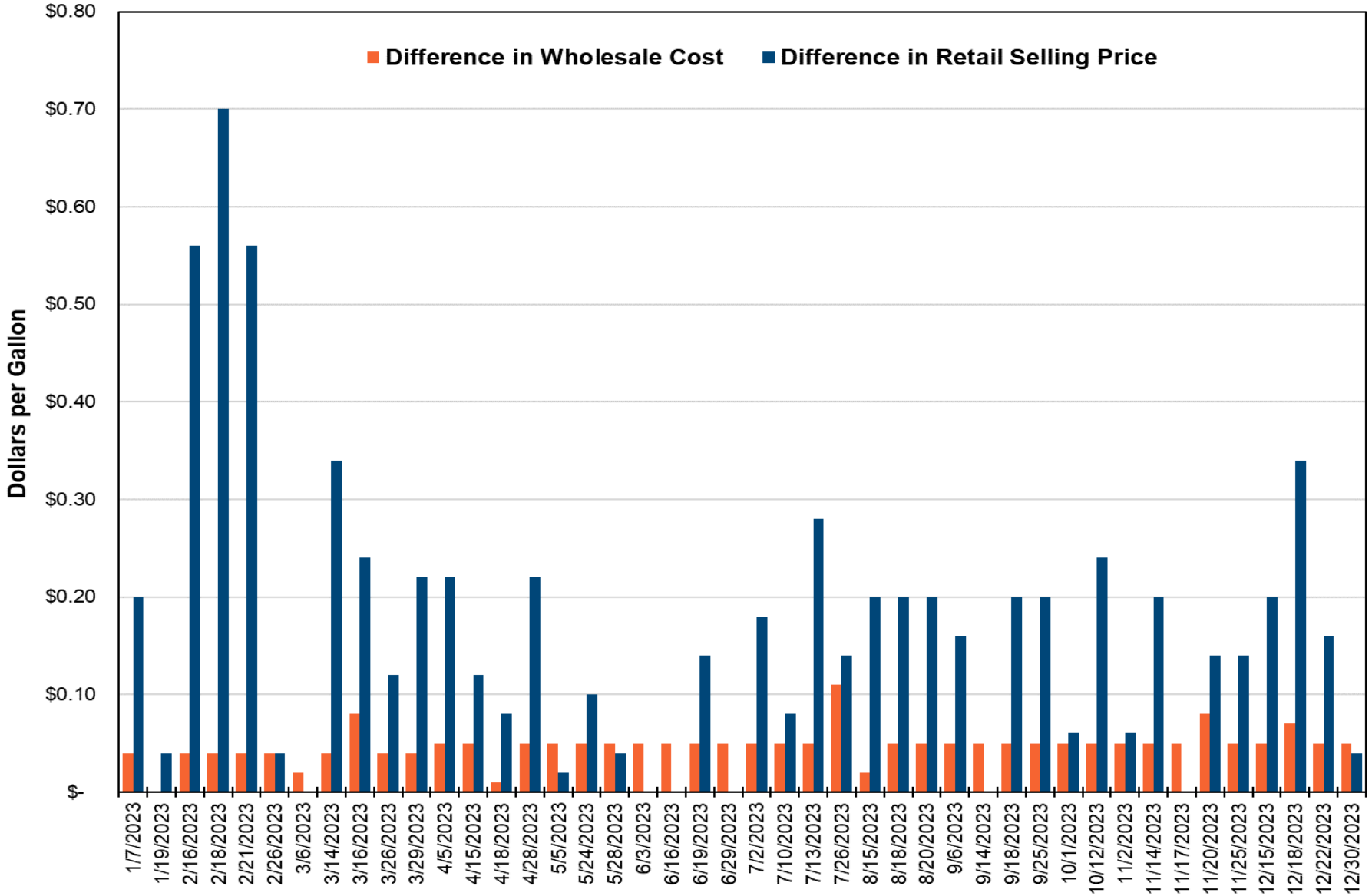
Last year's report noted that detailed, station-specific wholesale data enabled the CDTFA to analyze costs, volume delivered, and sales at individual gas stations. With this level of detail, it was possible to discern how much of the retail price difference between like-branded stations in the same community was due to variations in wholesale pricing. The agencies noted instances where refiners sold gasoline to multiple stations for the same or similar price on the same day. These stations resided near each other and sold the same grade and brand of gasoline for retail prices that varied by up to $1.00/gallon. To capture any delayed effects, the

CDTFA tracked prices over the following days and observed no significant change in retail pricing.

This year, the same analysis was conducted using the additional samples of gas stations in Southern California, the Bay Area, and the Sacramento Region. Results are in line with those from the prior report. For example, on September 18, 2023, two gas stations in Anaheim, both selling the same brand of gas, purchased the same grade of fuel from the same refiner at nearly identical prices. However, one station sold its gasoline for $6.30 per gallon, while the other charged $6.50. To track any delayed price adjustments, the CDTFA monitored the retail prices over the following days and weeks but found no significant change in the price gap between the two stations. Similar patterns emerged in other regions.

While refinery costs and margins significantly influence retail gasoline prices, the examples above and other sections of this report demonstrate that rising retail margins also drive California's high gasoline prices. **Figure 19** illustrates the purchase and selling prices of gasoline for the two Anaheim stations. The same analysis across multiple gas stations statewide produced similar results.

Figure 19: Anaheim Case Study: Difference Between Two Gas Stations



Source: CDTFA calculations and analysis of OPIS data

Local Competition and Market Concentration

The CDTFA, in collaboration with the Stanford Institute for Economic and Policy Research, is studying how the entry of a new gas station or a brand switch affects consumer pricing. Preliminary results indicate that prices drop slightly when a new station enters the market, but this effect fades within several months to a year. This pattern suggests that consumer preferences for different gasoline brands may be relatively inelastic. The CDTFA intends to expand the analysis to a statewide level in next year's report.

The CDTFA, in coordination with the Division of Petroleum Market Oversight, is also studying the impact of market concentration on retail gasoline prices. One common method for measuring market concentration is the Herfindahl-Hirschman Index (HHI), a widely used tool for assessing competition within industries. To calculate HHI, the CDTFA analyzed data from the CEC's Retail Fuel Outlet Annual Reports (Form CEC A-15), which provide information on businesses and their gasoline sales volumes.

Initial results indicate a low HHI, suggesting a competitive retail market. However, one challenge is that some CEC A-15 respondents were providing incomplete or overly generalized data. As of collection year 2024, the CEC has standardized the collection of data by limiting parameters of input fields and providing standardizing responses to the data fields. As the CEC collects more standardized and detailed data, the CDTFA will continue refining its market concentration analysis and focus more on regional retail competition.

A key factor in the market concentration study is gas station ownership. The CDTFA maintains ownership registration data, but over time, the number of individually registered gas stations has declined, while registrations under limited liability companies (LLCs) have increased significantly. Although businesses may choose LLC structures for various reasons, this shift makes it harder to determine how many gas stations are controlled by the same entity. Since 2018, the number of gas stations registered as individually owned businesses has dropped by 38 percent, while those registered as LLCs have increased by 28 percent. Standardizing the CEC A-15 data would lead to greater transparency in ownership data and would improve staff's understanding of the market and enable more robust market concentration studies.

Pricing Software

In last year's report, the joint agencies noted how a significant number of California gas stations, and other upstream petroleum participants, are using sophisticated pricing software to maximize profits. In subsequent discussions with gas station owners and operators, the CDTFA confirmed the widespread usage of pricing software and artificial intelligence in price setting. A recent study, "Algorithmic Pricing and Competition: Empirical Evidence from the German Retail Gasoline Market," published in the *Journal of Political Economy,* analyzed retail gasoline pricing data from more than 14,000 gas stations across Germany, which had adopted algorithmic pricing (AP). Researchers found that when stations adopted AP, their margins increased by roughly 15 percent. The study also raises important policy questions about the potential of pricing software to undermine competitive pricing dynamics and harm consumers. The study concludes that pricing software weakened market competition and "facilitated tacit

collusion."[23] Various studies across different industries have also analyzed the impacts of pricing software and found that these systems negatively affect consumers.[24]

23 Assad, S., R. Clark, D. Ershov, and L. Xu. 2024. *Algorithmic Pricing and Competition: Empirical Evidence from the German Retail Gasoline Market*. *Journal of Political Economy*, 132(3), p. 759. University of Chicago Press.

24 MacKay, A. and J. Weinstein. 2023. "Algorithmic Pricing and Competition: Empirical Evidence and Implications. Harvard Business School Working Paper No. 22-050." Retrieved from https://www.hbs.edu/ris/Publication%20Files/22-050_ec28aaca-2b94-477f-84e6-e8b58428ba43.pdf.

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CHAPTER 4:
Wholesale Market

Spot Price

The spot market is the financial marketplace where commodities like gasoline, diesel, and jet fuel are traded. California has two spot markets (Los Angeles and San Francisco). While only a small fraction of CARBOB gasoline consumed in California is traded on the spot market, it plays a significant role in setting prices across the state. Most wholesale gasoline is not sold on the spot market, but some wholesale gasoline volumes are sourced from the spot market and tied to spot market prices. As a result, these spot markets directly affect the price Californians pay at the pump.

The Oil Price Information Service (OPIS), a for-profit Dow Jones Company, is the industry-leading price reporting agency in California and on the West Coast. According to OPIS, nearly every gallon of gasoline, diesel, and jet fuel sold on the West Coast references OPIS spot prices. All transactions, including spot, bulk, rack, marine shipments, and high-volume transaction, reference OPIS prices when negotiating contracts. As a result, the prices for relatively small volume trades (compared to statewide volumes) on the spot market have a magnified or exaggerated effect on retail gasoline prices across the state. The function of the gasoline spot market is to provide buyers and sellers the opportunity to trade large quantities of gasoline for near-term delivery in California.

Impact of Spot Pricing on Retail Prices

SB X1-2 requires all refiners, marketers, and traders involved in spot market transactions to report all completed spot market transactions to the CEC. Initial spot market data collection started July 23, 2023. The data format was amended February 8, 2024, to allow for separate reporting of trade and settlement information. Large oil marketers either have long-term supply contracts with refiners tied directly to a spot price or purchase gasoline from the spot market to meet their short-term gasoline supply deficits. Spot market price changes appear the following day in rack price spikes and, within days, in retail prices.

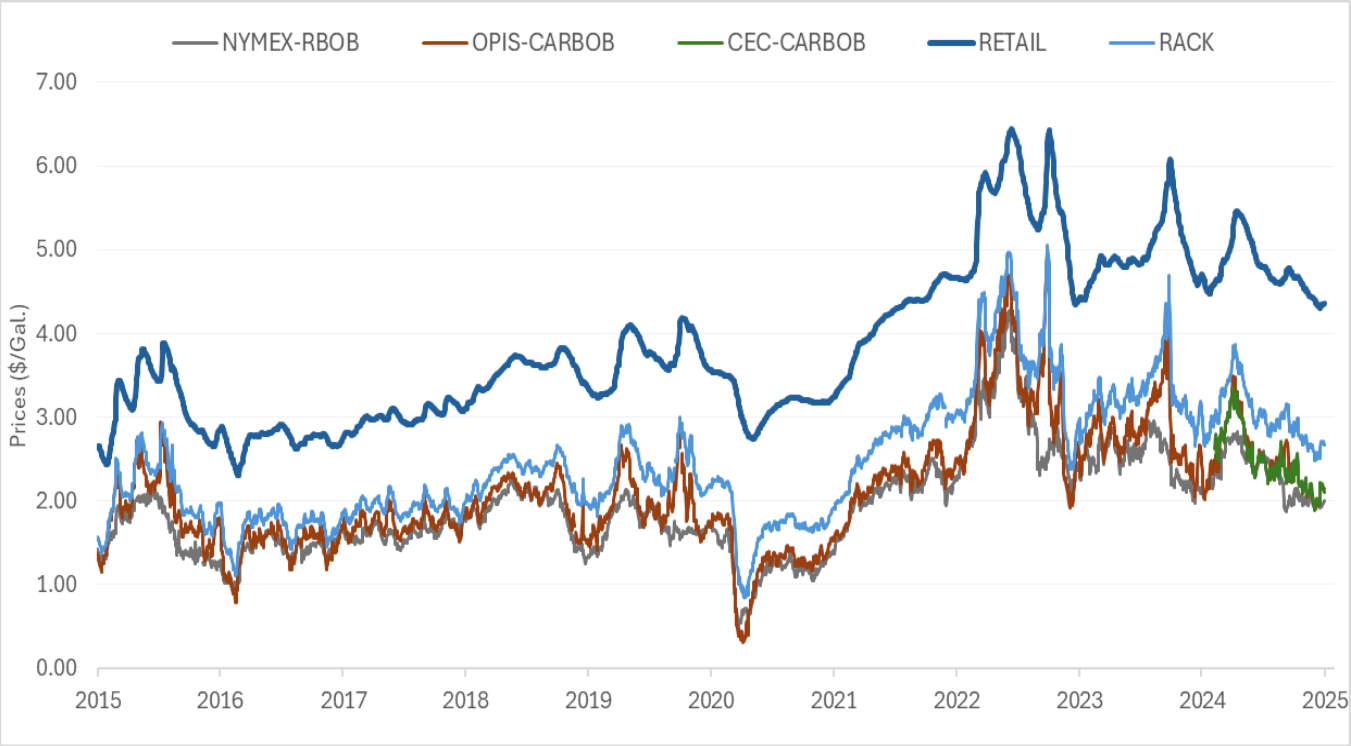
The most common way that spot contracts are priced is an exchange of futures for physical (EFP) trade, which are contracts that are priced relative to NYMEX RBOB futures contracts. RBOB is a standard benchmark for gas sold in other parts of the United States. In an EFP-based transaction, the spot market parties may agree to a price differential to the NYMEX RBOB price. These differentials are key benchmarks for marketers, traders, and observers to determine if the California market is experiencing supply or demand issues.

Figure 20 shows the last 10 years of spot transaction data, traded in California at a price differential over NYMEX RBOB. The spot market tracks closely with the rack (wholesale) and retail prices of gasoline. Retail prices are somewhat smoother than rack and spot prices.

One reason for the undulating line for spot prices is the daily traded volume reflecting the demand and supply gap and localized illiquidity and volatility with prices that are directly or

indirectly based on NYMEX RBOB. While the rack prices (wholesale) reflect price fluctuations of spot markets, these largely get absorbed at the retail end as retailers change their price less frequently. Another reason is that it is aggregated using large numbers of retail sellers' data.

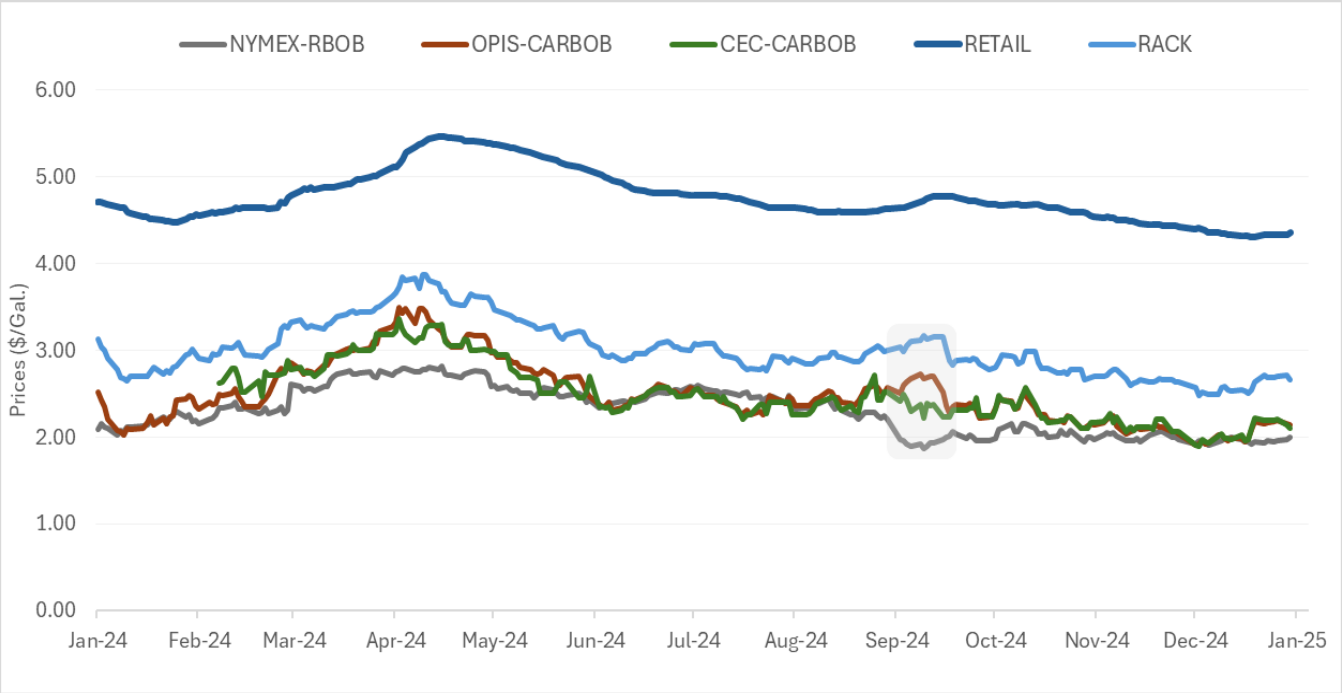
Figure 20: Daily Spot, Rack, and Retail Prices of Regular Gasoline, 2015–2024



Source: CEC, OPIS

Figure 21 zooms in on spot market prices (prompt) 2024 reported to the CEC and compares them with retail, rack, and OPIS spot transactions. The difference in the OPIS spot price line and CEC spot transactions data is due to a difference in the number of trades and price information reported. OPIS collects volunteered trade information and publishes the average trade price on the same day by 3:00 PM PDT. CEC data collection is through mandatory self-reporting, and it lags by a day but results in the submission of more trade information. Also, OPIS reports calculated carried forward prices for Los Angeles and San Francisco markets, even if there is no trade deal. This difference became prominent from September 9 to September 16, 2024, when no CARBOB-Regular trade was reported in the San Francisco Trading location (grey-shaded area). This led to the highest average reported price difference of 36 cents on September 16, 2024.

Figure 21: Daily Spot, Rack, and Retail Prices of Regular Gasoline, 2024



Source: CEC trading data as submitted by reporting entities from February 8, 2024 onward, OPIS

Impact of Imports on Spot and Retail Prices

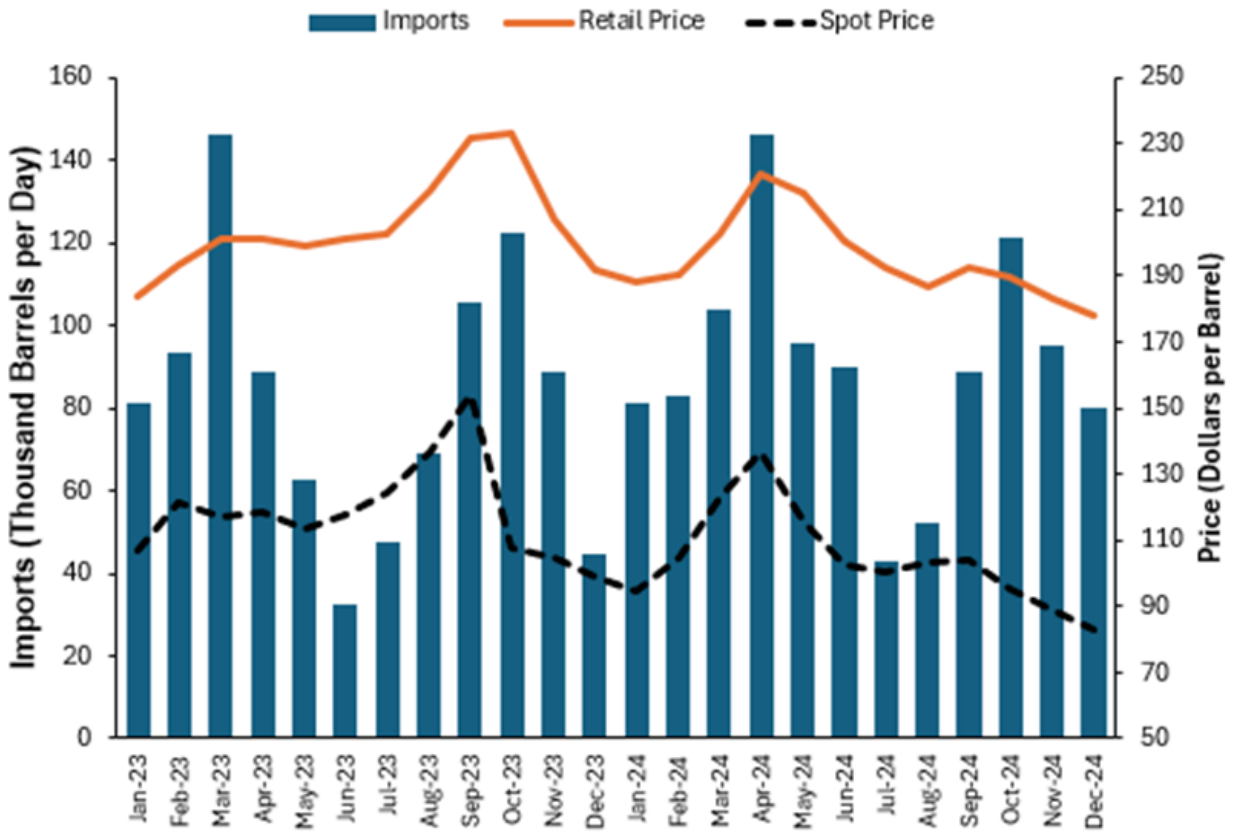
When California's refineries cannot meet in-state demand, they rely on gasoline imports. California does not have pipelines to receive gasoline from out-of-state and rail shipments are too small relative to the size of California's market, so gasoline imports coming from outside the state rely on marine transportation. It takes several weeks to obtain gasoline cargoes for import to the West Coast. A shipment of gasoline blending components from Asia takes three weeks to arrive, while shipments from Europe take roughly four weeks. Because of this isolation, wholesale and retail prices frequently rise more than would be anticipated in other areas, such as the East Coast and Gulf Coast, where alternative sources of supply are more accessible.

Figure 22 shows reported gasoline imports, California average retail price, and spot price for 2023 and 2024. Imports are highest in the spring and fall and lowest in the winter and summer. California's refineries typically perform scheduled maintenance around the same time as the seasonal blend switch. Summer blend is used in Southern California from April 1 to October 31; however, because of pipeline cycles, Southern California terminals may begin to receive summer blend gasoline in February to meet the April control period for that region.[25] Price spikes occurred in the fall of 2023 and spring of 2024. These show up in the spot and retail prices. The spot price, however, declines more quickly, while the retail price has a more

25 *Petroleum Watch,* September 2020. California Energy Commission, https://www.energy.ca.gov/sites/default/files/2020-09/2020-09_Petroleum_Watch_ADA.pdf.

gradual decline, staying higher for longer. While imports are highest during these switching periods, retail and spot prices only increased during half of these occurrences.

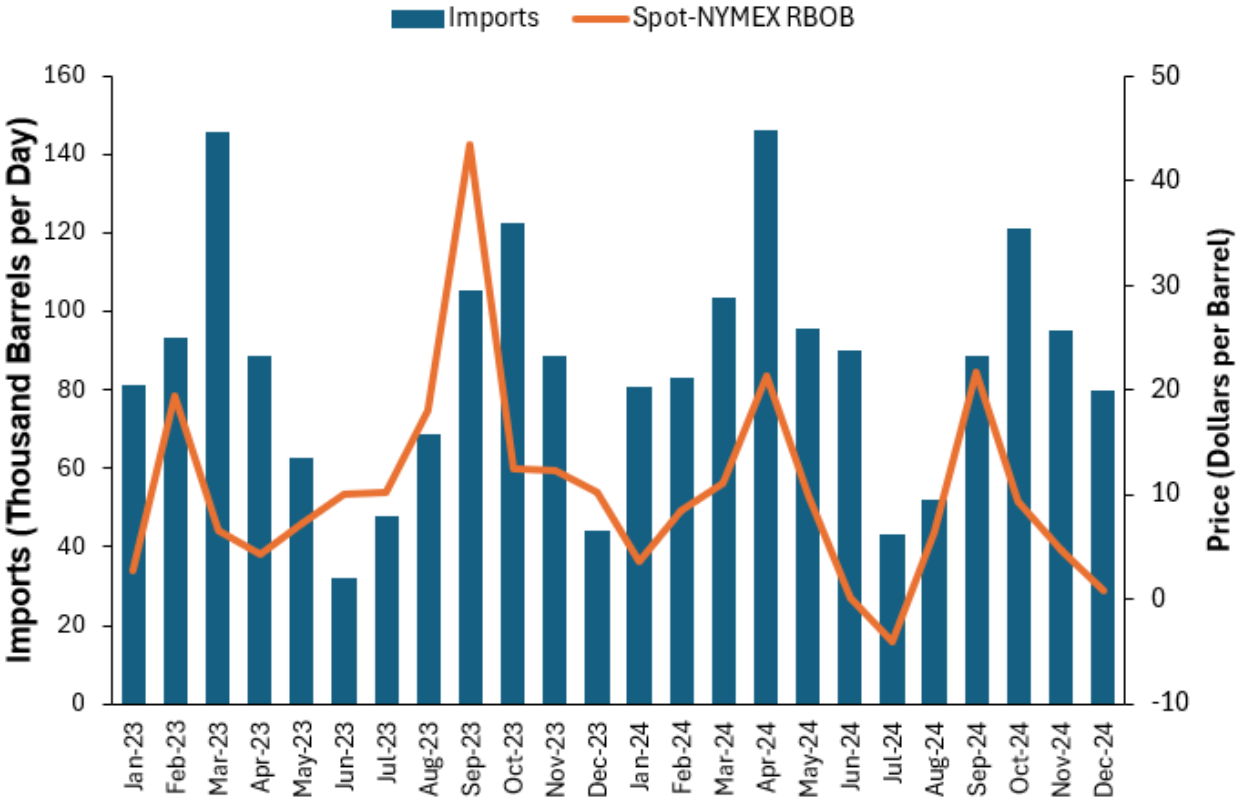
Figure 22: Gasoline Imports, Retail Price, and Spot Price, 2023–2024



Source: CEC, OPIS, and EIA

A different measure to capture the market functioning is spot-NYMEX RBOB, which is the difference between the average price of spot markets in California and NYMEX RBOB. The California spot price usually trades at a higher price than NYMEX RBOB, so this positive difference is called a price premium. **Figure 23** shows reported gasoline imports and spot-NYMEX RBOB. When the price premium grows, it is a signal to the market that imports are needed in California and more money could be made from them. Importers should respond to the higher price premium, and imports into the state should increase. This is the behavior seen in **Figure 23**: imports increase when spot-NYMEX RBOB is higher and decreases when spot-NYMEX RBOB is lower. Due to the lag in shipping times, the peak in imports tends to be after the peak in spot-NYMEX RBOB premium. In summary, it is when California wholesale prices are at a higher premium to U.S. prices that importers respond to and increase imports.

Figure 23: Gasoline Imports and Spot-NYMEX RBOB Premium



Source: CEC, OPIS and EIA

CHAPTER 5:
Refining Margins

Gasoline refining margins function as an indicator of profitability for gasoline production in the state but are not equivalent to profit. The CEC has historically analyzed this using the weekly data from the Estimated Gasoline Price Breakdown and Margins series (**Figure 5**). Under SB 1322 and SB X1-2, the CEC has received monthly gasoline refining margin data directly from California oil refineries starting in January 2023. This expanded data collection authority has given the CEC its first window into actual refinery margin data directly reported by California refiners — a significant improvement over the proxy estimates that previously formed the basis of public analysis. Having a second set of margin data allows for comparison between the two sets of data and analytical methods.

The weekly gross gasoline refining margin is an estimate that takes the difference between crude oil cost and wholesale rack gasoline price (less taxes and fees) for each week. The crude oil price used is the ANS price for the Monday of the week and the weekly California retail price for regular gasoline (also posted on Monday).[26] While ANS is the best source proxy for California refinery crude oil acquisition costs, it is not a direct measure of these costs. This method also does not capture the actual price refiners sell gasoline to wholesale markets.

The monthly gross gasoline refining margin is a self-reported calculation by each refinery of gasoline price (excluding taxes and fees) minus crude oil cost. Each refinery in California has different operations and capacities, meaning different sales volumes, prices, and costs. The refinery margins can be calculated individually based upon these differences. Having separate reports for each refinery allows the CEC to directly calculate the monthly average statewide gross gasoline refining margin.

Instead of a wholesale rack average price, refiners report their volume-weighted average wholesale gasoline sales price for the month. Refiners sell their gasoline through multiple wholesale channels such as racks (branded and unbranded), spot pipeline, bulk, and dealer tank wagon (DTW). Prices and volumes vary between the wholesale channels, so volume-weighting the average price across these channels gives more accurate total sales price for each refinery. These prices excluded taxes and fees as well.

Crude oil costs from the monthly refiner margin reports include foreign and domestic volumes and prices, allowing for a volume-weighted average crude oil cost for each refiner. In addition to ANS, refiners account for other crude oil prices like Brent (foreign crude oil benchmark) and San Joaquin Valley (California crude oil benchmark). Crude oil prices vary based on the

26 "Alaska Crude Oil and Natural Gas Prices." Alaska Department of Revenue, Tax Division, https://tax.alaska.gov/programs/oil/dailyoil/dailyoil.aspx.

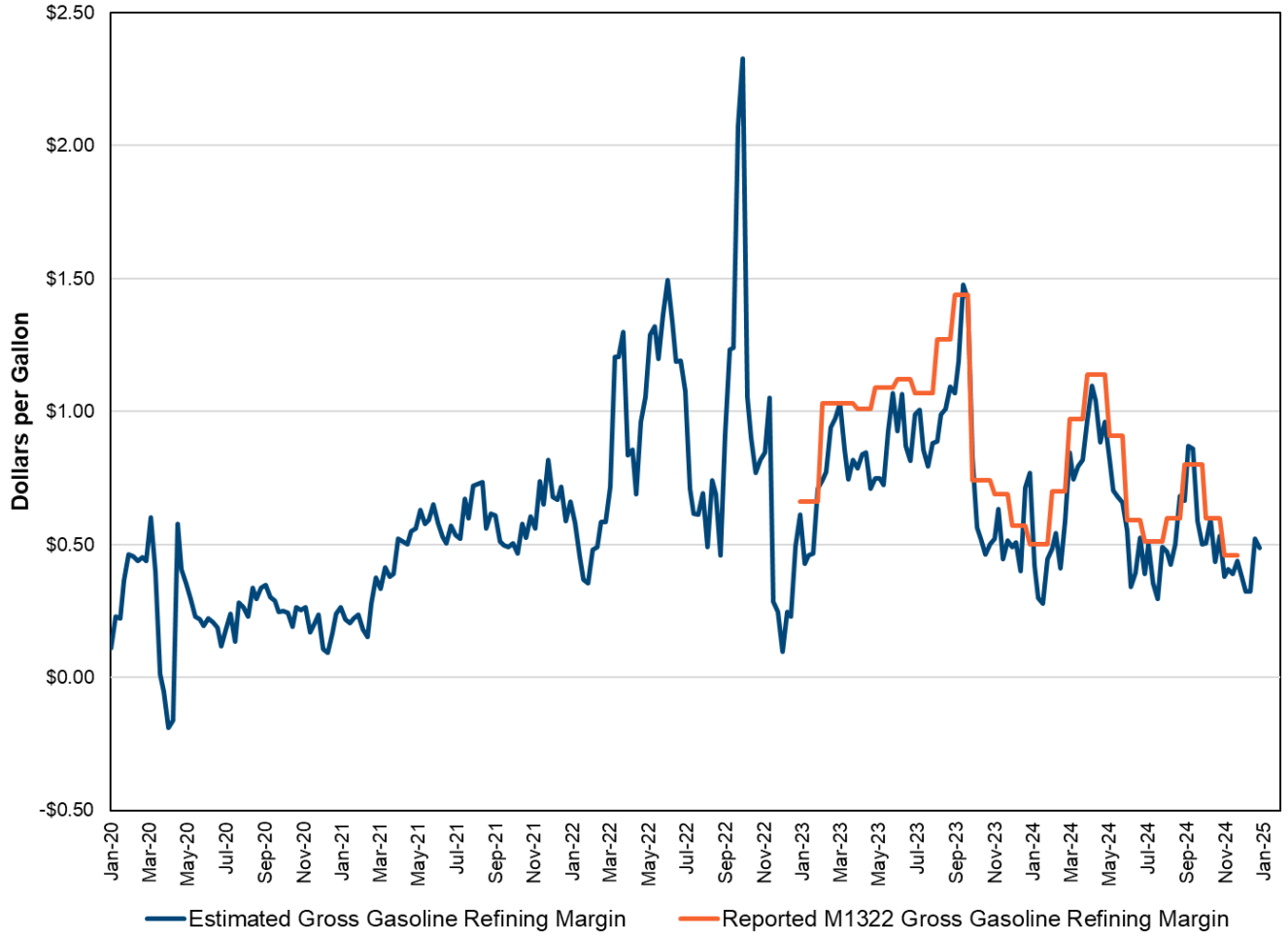
"EIA Weekly California Regular Gasoline Prices." U.S. Energy Information Administration, https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=EMM_EPMR_PTE_SCA_DPG&f=W.

country of origin, physical properties, and other variables, so this weighted average is a more accurate accounting of crude oil cost.

Gasoline sales and crude purchases are difficult to capture on a weekly basis; the monthly reporting allows for better timing and alignment of a refinery's accounting operations. While the monthly estimates provide a more accurate measure of gross refining margins, individual refinery reports contain proprietary and trade secret information and must be aggregated to maintain confidentiality.

Figure 24 shows the two Gross Gasoline Refining Margins: estimated weekly and reported monthly. Both follow similar trends and patterns between January 2023 and November 2024 with more fluctuations in the estimated (blue line) due to the weekly frequency. Spikes in the refinery margins occur in September 2023, March 2024, and September 2024. These times are when the seasonal blend switch for gasoline happens, and refiners experience tighter supplies, resulting in higher prices. Unless there are steep discounts in the crude oil market that month, wholesale gasoline prices will be the driving factor for the gross gasoline margins.

Figure 24: Estimated and Reported Gross Gasoline Refining Margins



Source: CEC analysis of the California Oil Refinery Cost Disclosure Act Monthly Report (M1322) and OPIS data, https://www.energy.ca.gov/estimated-gasoline-price-breakdown-and-margins

The reported monthly margins (orange line) are generally higher than the estimated weekly margins, averaging $0.15 per gallon higher between 2023 and 2024. The average reported monthly gross gasoline refining margin in 2023 was $0.97 per gallon and $0.71 per gallon through November 2024. The average weekly estimated gross gasoline refining margin in 2023 was $0.80 per gallon and $0.54 in 2024. Occasionally, the estimated weekly margin rises above the reported monthly margin due to the more granular price data captured in that week's wholesale rack average. In 2023, these occurrences of higher price were during the weeks January 30 ($0.05), September 18 ($0.04), October 2 ($0.09), and December 25 ($0.14). For 2024, these higher-price occurrences occurred during the weeks of January 1, 2024 ($0.27), August 26, 2024 ($0.08), September 9, 2024 ($0.07), and September 16, 2024 ($0.06).

While these disparities are small and infrequent, these times of high variability in crude oil or wholesale gasoline prices may lead to underestimation of the profitability of refinery operations. SB X1-2 transparency provisions require refiners to report gross gasoline refining margins based on their monthly crude oil costs and wholesale gasoline prices. This new data provides a more consistent measure of gasoline refining profitability in California and will continue to improve the state's ability to monitor market conditions.

ACRONYMS

Acronym	Term
ANS	Alaska North Slope
CARBOB	California Reformulated Gasoline Blendstock for Oxygenate Blending
CARB	California Air Resources Board
CDTFA	California Department of Tax and Fee Administration
CEC	California Energy Commission
DPMO	Division of Petroleum Market Oversight
DTW	Dealer Tank Wagon
EFP	Exchange of futures for physical
EIA	United States Energy Information Administration
EPA	Environmental Protection Agency
HHI	Herfindahl-Hirschman Index
LAO	Legislative Analyst's Office
LLC	Limited liability corporation
MGS	Mystery gasoline surcharge
NACS	National Association of Convenience Stores
NYMEX	New York Mercantile Exchange
OPEC	Organization of Petroleum Exporting Countries
OPIS	Oil Price Information Service
PIIRA	Petroleum Industry Information Reporting Act
RBOB	Reformulated Gasoline Blendstock for Oxygenate Blending
SB	Senate Bill
WTI	West Texas Intermediate

APPENDIX A:
Glossary

Term	Definition
Alaska North Slope	A crude stream produced in northern Alaska that serves as a reference or "marker" for California refiner crude oil acquisition costs.
Blendstocks	Any material that is blended in an oil refinery to make a product, especially for making gasoline.
Brent North Sea (Brent)	A blended crude stream produced in the North Sea region that serves as a reference or "marker" for pricing a number of other crude streams.
California Air Resources Board (CARB)	The "clean air agency" in California government. CARB's main goals include attaining and maintaining healthy air quality, protecting the public from exposure to toxic air contaminants, and providing innovative approaches for complying with air pollution rules and regulations.
California Department of Tax and Fee Administration	The state agency that administers California's sales and use, fuel, tobacco, alcohol, and cannabis taxes, as well as a variety of other taxes and fees that fund specific state programs.

Term	Definition
California Energy Commission (CEC)	The state agency established by the Warren-Alquist State Energy Resources Conservation and Development Act in 1974 (Public Resources Code, Sections 25000 et seq.) responsible for energy policy. The Energy Commission's seven major areas of responsibilities are: • Forecasting statewide energy demand. • Licensing of power plants and transmission lines sufficient to meet those needs. • Promoting energy conservation and efficiency measures. • Promoting the development of renewable energy. • Promoting the transition to clean transportation fuels. • Investing in energy innovation. • Planning for and supporting the state's response to energy emergencies. Funding for the Commission's activities comes from the Energy Resources Program Account, Federal Petroleum Violation Escrow Account, and other sources.
California Estimated Refinery Acquisition Cost (CA-RAC)	A weighted average of the prices of California (San Joaquin Valley) crude, Alaskan crude, and foreign crude.
Division of Petroleum Market Oversight	An independent agency within the CEC created to monitor petroleum markets and flag potential market manipulation.
Herfindahl-Hirschman Index	A method for measuring market concentration and competition within industries.
Hypermart	A station that is a company-owned or -operated supermarket or wholesale chain store that sells its own fuel at the same location
New York Mercantile Exchange Reformulated Gasoline Blendstock for Oxygenate Blending	Benchmark for gasoline blendstock prices located at New York Harbor.
Oil Price Information Service (OPIS)	A company that provides crude oil and petroleum pricing data.

Term	Definition
Petroleum Industry Information Reporting Act (PIIRA)	Legislation enacted in 1980 that enables a complete response to possible shortages of fuel or other disruptions. The information also helps develop and administer energy policies in the interest of the state's economy and the public's well-being.
Port Import/Export Reporting Service (PIERS)	A company that provides import and export data at the bill-of-lading level.
Product slate	The mix of overall products produced at California's refineries.
United States Energy Information Administration (EIA)	An independent agency within the U.S. Department of Energy that develops surveys, collects energy data, and analyzes and models energy issues. The agency must meet the requests of Congress, other elements within the Department of Energy, Federal Energy Regulatory Commission, the Executive Branch, its own independent needs, and assist the public, or other interest groups, without taking a policy position. See more information about EIA at http://www.eia.gov/about/
Volume-weighted average	An average that takes into account the amount of sales at each price level.
West Texas Intermediate (WTI)	A crude stream produced in Texas and southern Oklahoma that serves as a reference or "marker" for pricing several other crude streams and which is traded in the domestic spot market at Cushing, Oklahoma.