

DOCKETED	
Docket Number:	25-OIIP-02
Project Title:	Informational Proceeding on Petroleum Supply Stabilization
TN #:	266756
Document Title:	Western States Petroleum Association Comments - WSPA Citations Part 2 on Petroleum Supply Stabilization OIIP Workshop Docket 25-OIIP-02
Description:	N/A
Filer:	System
Organization:	Western States Petroleum Association
Submitter Role:	Public
Submission Date:	10/22/2025 3:14:46 PM
Docketed Date:	10/22/2025

*Comment Received From: Western States Petroleum Association
Submitted On: 10/22/2025
Docket Number: 25-OIIP-02*

**WSPA Citations Part 2 on Petroleum Supply Stabilization OIIP
Workshop Docket 25-OIIP-02**

Additional submitted attachment is included below.



OFFICE OF THE GOVERNOR

April 21, 2025

Mr. Siva Gunda
Vice Chair
California Energy Commission
715 P Street
Sacramento, CA 95814

Dear Vice Chair Gunda,

Thank you for your leadership in protecting consumers and ensuring that California has a safe, affordable and reliable supply of transportation fuels during our energy transition over the next two decades, including through implementation of Senate Bill X1-2 (Skinner, 2023) and Assembly Bill X2-1 (Hart, 2024).

I write to direct you to redouble the State's efforts to work closely with refiners on short- and long-term planning, including through high-level, immediate engagement, to help ensure that Californians continue to have access to a safe, affordable, and reliable supply of transportation fuels, and that refiners continue to see the value in serving the California market, even as demand for fossil fuels continues its gradual decline over the coming decades.

Further, I am directing you, as my Administration's lead representative on this issue, to reinforce the State's openness to a collaborative relationship and our firm belief that Californians can be protected from price spikes and refiners can profitably operate in California – a market where demand for gasoline will still exist for years to come.

Additionally, I am directing you to engage with the Petroleum Strategy Task Force, a cross-agency effort convened by California Natural Resources Agency Secretary Wade Crowfoot and California Environmental Protection Agency Secretary Yana Garcia. That task force is evaluating the State's progress and risks in managing an energy transition in which supply and in-state demand for



petroleum products are both decreasing over the next 20 years. Building on that engagement and the California Energy Commission's (CEC) Transportation Fuels Assessment, I direct you to recommend, by July 1, any changes in the State's approach that are needed to ensure adequate supply during this transition.

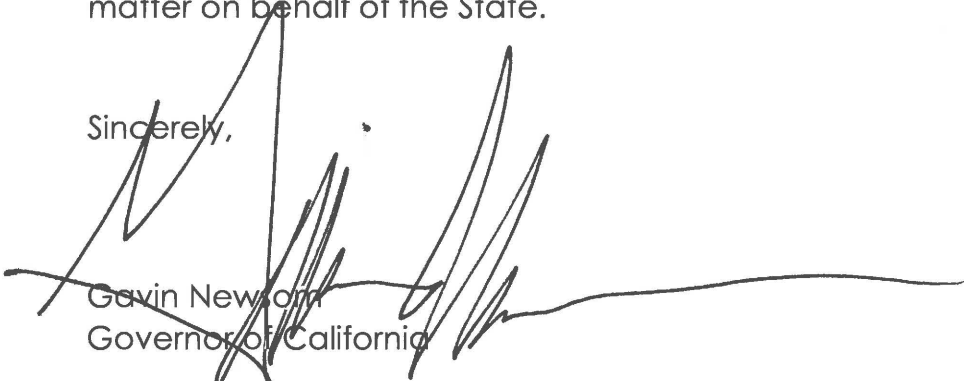
As you know, increasingly in recent years, Californians have experienced rapid fluctuations in retail gasoline prices that too often mean abrupt increases followed by a slow and gradual decline, causing families to incur higher costs unexpectedly for everyday needs. The Legislature responded to this growing problem with SBX1-2, which provided the CEC with critical data transparency tools that facilitate real-time market monitoring.

Using this critical new data provided by SBX1-2, the Division of Petroleum Market Oversight (DPMO), in collaboration with the CEC, was able to identify the root causes of the fall 2022 and fall 2023 retail gasoline price spikes: inadequate supply when refineries went offline for maintenance, low inventories that led to supply shortages during unplanned outages, and a volatile spot market that has an outsized influence on the wholesale price of gasoline. These findings led the Legislature to respond by enacting ABX2-1, which provided the CEC with new tools to mitigate price spikes. The data provided by SBX1-2 has also allowed DPMO to inform the public, in real time, when volatile spot market conditions threaten to raise prices at the pump.

While we've made great progress in addressing spikes and irregularities in the gasoline market, refineries across the country and around the world are facing unprecedented uncertainty. The new federal administration has added more uncertainty and instability to the global economy than ever before – with the oil industry on the front lines of this market turmoil. Refineries have been restructuring, transitioning, consolidating, and closing across the country for years. In January, the 700-hundred-acre LyondellBasell refinery in Houston announced its closure as the company transitions to "broader decarbonization and sustainability objectives." California is not immune to this national trend.

California will continue to lead the way in this transition, but it is imperative that we continue to ensure a safe, affordable and reliable supply of transportation fuels over the next two decades. Thank you for your attention to this critical matter on behalf of the State.

Sincerely,



Gavin Newsom
Governor of California



**CALIFORNIA
ENERGY COMMISSION**



California Energy Commission
COMMISSION REPORT

Transportation Fuels Assessment

**Policy Options for a Reliable Supply of
Affordable and Safe Transportation Fuels in
California**

Gavin Newsom, Governor
August 2024 | CEC-200-2024-003-CMF

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ACKNOWLEDGEMENTS

The California Air Resources Board and the California Energy Commission appreciate the additional contributions from the following CEC staff:

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ABSTRACT

The Transportation Fuels Assessment is a leading component of SB X1-2. This assessment identifies potential alternative methods to ensure a reliable supply of affordable and safe transportation fuels in California, evaluates the price of transportation fuels, considers supply conditions, assesses the impact of refinery closures, analyzes impacts on production from refinery maintenance and turnarounds, evaluates the feasibility of alternative methods to maintain adequate supply of fuels, and proposes solutions to mitigate impacts described elsewhere in the assessment. This report includes policy options that can help address price spikes that are unique to the California market. Each policy has an accompanying one-page summary table or set of tables with a summary of that policy.

Keywords: Transportation Fuels Assessment, SB X1-2, gasoline, price spikes, gasoline demand scenarios

Please use the following citation for this report:

Gee, Quentin, and Aria Berliner and Alexander Wong. 2024. *2024 Transportation Fuels Assessment*. California Energy Commission. Publication Number: CEC-200-2024-003-CMF.

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EXECUTIVE SUMMARY

Senate Bill X1-2 (SB X1-2, Skinner, Chapter 1, Statutes of 2023 First Extraordinary Session) directs the CEC to identify methods to “ensure a reliable supply of affordable and safe transportation fuels in California.” This assessment does this by examining two distinct but related issues. The first is mitigating or eliminating gasoline price spikes. The second is maintaining an overall affordable, reliable, equitable, and safe supply of gasoline during the transition to zero-emission vehicles (ZEVs). This assessment also serves as a key contribution to the forthcoming Transportation Fuels Transition Plan, which is also called for by SB X1-2. Transportation fuels include gasoline, diesel, natural gas, electricity, hydrogen, and renewable combustion fuels. The scope of this assessment is primarily focused on gasoline and, to a lesser extent, on diesel and ethanol (a gasoline additive). Gasoline fuels most of the vehicle miles traveled in California, and gasoline price volatility impacts nearly all Californians through prices at the pump or through the transportation costs of products.

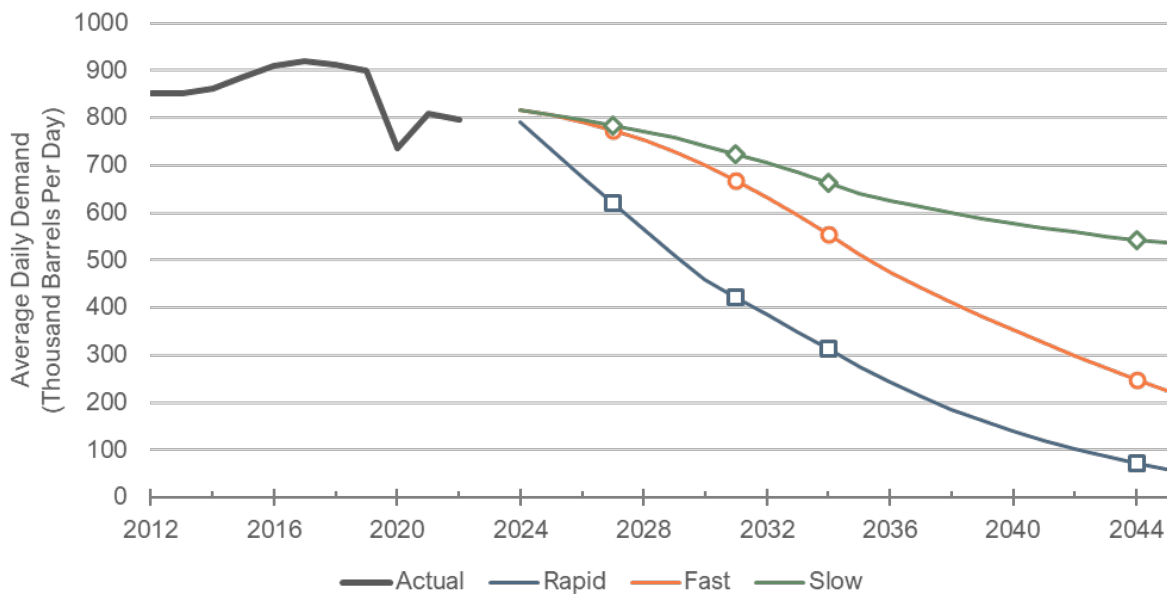
Like most product prices, gasoline prices should ideally obey the laws of supply and demand. However, supply dynamics in California’s transportation fuels market differ from many other markets in the United States. Despite being directly geographically connected to other states, California’s relatively isolated transportation fuels market makes it essentially a fuel island. In addition, the critical need to address the state’s unique air quality challenges means that the state must require a unique fuel specification that differs from the rest of the nation. Related to the isolated market, the state’s opaque spot market appears to have an outsized influence on prices in a way that does not align with supply or demand fundamentals.

These factors have led to several challenges for the stability of transportation fuel prices. For example, in the last two years (2022 and 2023), California had two gasoline price spikes in September and October. Spikes were not seen in regions outside of the western part of the United States.

Although gasoline demand peaked in 2005 and is expected to decline markedly in the next two decades, gasoline remains California’s dominant transportation fuel, and demand is not especially responsive to short-term price spikes. New options, especially the state’s transition away from combustion fuels in favor of ZEVs, have started to reduce drivers’ dependency on gasoline, with a sharp decline expected within a decade. Figure ES- 1 shows potential demand pathways for gasoline under a rapid, fast, and a slow transition away from gasoline. Highlighted are 3-, 7-, 10-, and 20-year points for the three pathways.

Gasoline demand is expected to continue a downward trend as demand for ZEVs increases and other climate-friendly strategies unfold. However, the CEC projects that gasoline demand will remain above two hundred thousand barrels per day (TBD) at least through 2035 if not longer. Even under the most aggressive scenario transition to ZEVs, millions of petroleum-fueled vehicles are anticipated to remain on California’s roads and highways beyond 2035. These vehicles will need fuel to operate, and many of the vehicles may be owned by lower income individuals and families, making it even more compelling to identify ways to ensure an affordable, reliable, equitable, and safe supply.

Figure ES- 1. Gasoline Consumption and Demand Scenarios Under Consideration for the Assessment

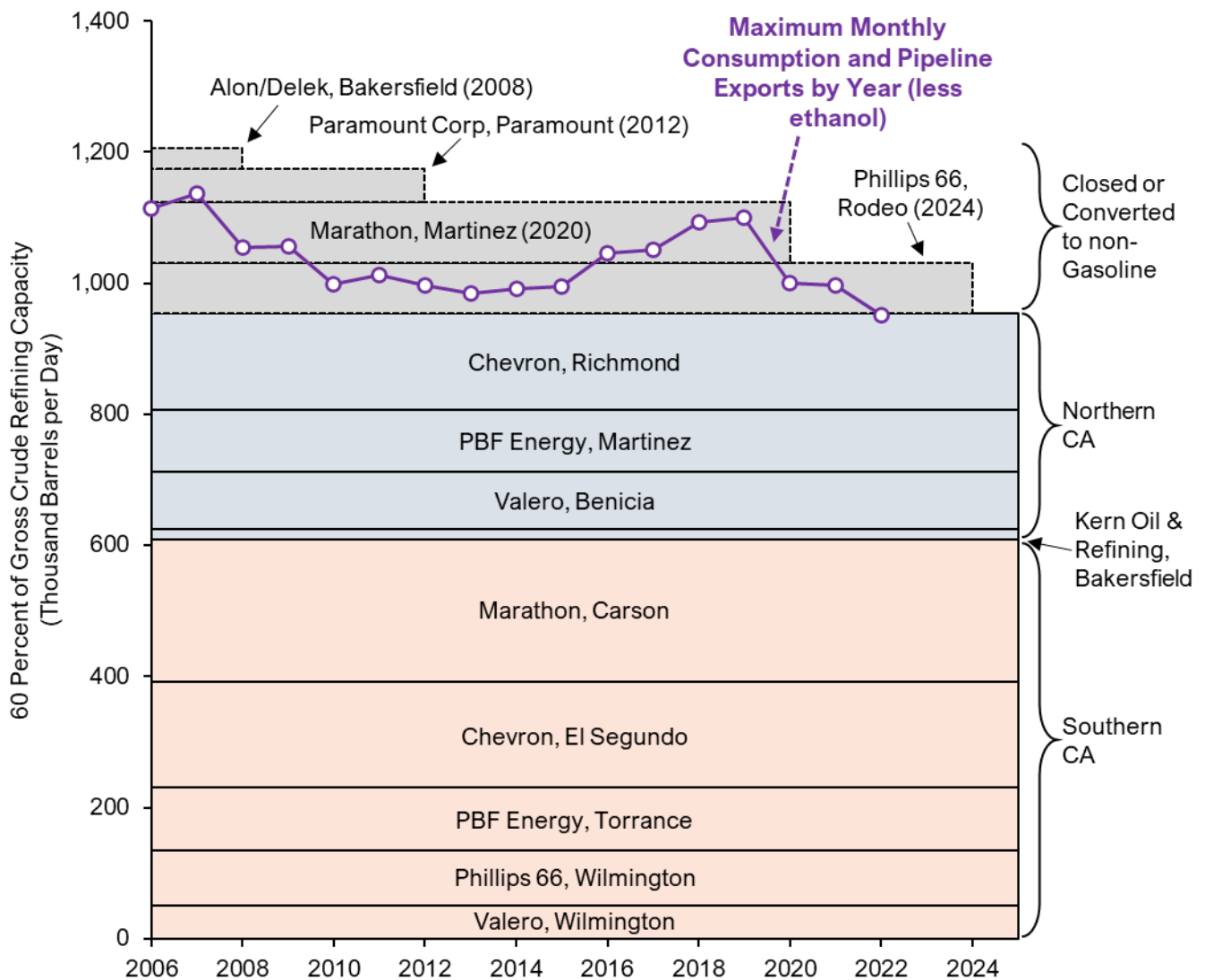


Both Supply and Demand are Key

The deployment of ZEVs and a robust mass transit system are critical for achieving the state’s climate goals, reducing local air pollution, and eventually eliminating dependence on the volatile global petroleum markets. As demand for gasoline shrinks, refineries may close or convert to processing clean transportation fuels. This will lead to fewer gasoline refineries, with increased market concentration and associated market problems that often accompany it. However, some refineries will be converted to producing renewable diesel, such as the Phillips 66 Rodeo refinery, a sign of the success of clean fuel policies such as the state’s Low Carbon Fuel Standard (LCFS). These converted refineries, however, will no longer be a source of gasoline.

As of March 2024, nine California refineries produce California-specific gasoline, California Reformulated Blendstocks for Oxygenate Blending (CARBOB). Moreover, supply of gasoline in the state is highly regionalized. Except for one small refinery in central California, nearly all in-state supply in the near term will come from three refineries in northern California and five refineries in Southern California. The temporary reduction of refining capacity at a single refinery in either the north or the south would represent a critical reduction of refining capacity for each respective region because the regions are not connected via pipeline, though waterborne transportation is available. Figure ES- 2 illustrates roughly estimated gasoline refining capacity (at 60% stated crude processing capacity), along with recent refinery closures, remaining capacity, and the maximum monthly demand by year.

Figure ES- 2. Approximate Peak Gasoline Refinery Capacity Compared to Maximum-Monthly Consumption



Credit: CEC Staff

In Northern California, a single refinery outage would represent up to a 45 percent reduction of regional refining capacity. In Southern California, a temporary closure of a single refinery could represent up to a 35 percent reduction of regional capacity. Intrastate movements of fuel must occur by marine cargos, so supply shocks can pose immediate challenges.

As demand for gasoline continues to decline in California, refineries will likely continue to transition from refining petroleum and may permanently close or convert to the refining of renewable feedstocks for renewable diesel or other types of bio-based fuels. A single supply shock in the north or south, be it from an unplanned maintenance event, a severe accident, a criminal act, or a natural disaster, would make it even more difficult to supply transportation fuel needs in the coming decade.

Independent of supply shocks, Californians already pay higher than the national average for gasoline, which is only partially due to state and federal mandates for improved air quality. CARBOB has been a critical tool for reducing chronically high concentrations of air toxins and meeting state and federally mandated clean and healthy air quality standards. Failing to meet federal air quality standards puts California's residents' lives and federal transportation funding at risk. By requiring CARBOB, California has enjoyed numerous benefits. For example, there has been an 80 percent reduction in cancer risk associated with exposure to gasoline-related pollutants between 1996 and 2014. Despite this and other successes, California continues to face challenging air quality management, exacerbated by climate change impacts.

With reduced demand or more flexible consumer demand, supply shocks should become less impactful. Where travelers can substitute electricity, active transportation, or other alternative travel approaches in lieu of gasoline, price spikes may be easier to manage and have less of an impact on Californians. This report presents several policy approaches that can affect gasoline demand.

Outside of crude oil dynamics, refined gasoline supply is influenced by three primary factors: production capacity, storage, and gasoline or gasoline blendstock imports. Statewide petroleum refinery capacity has declined in recent years, closely following or even exceeding the ongoing decline in demand that is due in part to more consumers adopting ZEVs. The petroleum refining industry in California appears to have sufficient infrastructure to produce, procure, and store enough gasoline to meet current levels of demand. However, as discussed, unique conditions in California make it more difficult to stabilize supply when there are acute disruptions.

Production

As discussed above, there are now nine refineries operating in California producing gasoline. In the last five years, two major refineries have converted to producing renewable diesel and stopped producing gasoline, and in-state production has fallen as a result. In the face of declining refinery production, there are several short- and long-term alternatives to maintain or increase production, though each alternative presents significant potential tradeoffs.

Short-term policies may boost production and encourage a corresponding decrease in price, particularly when California is faced with acute supply disruptions. For example, in 2022 and 2023, Governor Newsom called for the California Air Resources Board (CARB) to accelerate the annual winter fuel blend transition by one month. This resulted in an increase in supply and a sharp decline in gasoline prices at the pump. However, accelerating the winter fuel blend transition presents environmental impacts. Other strategic options that may help increase supply are discussed in Chapter 3 of the assessment.

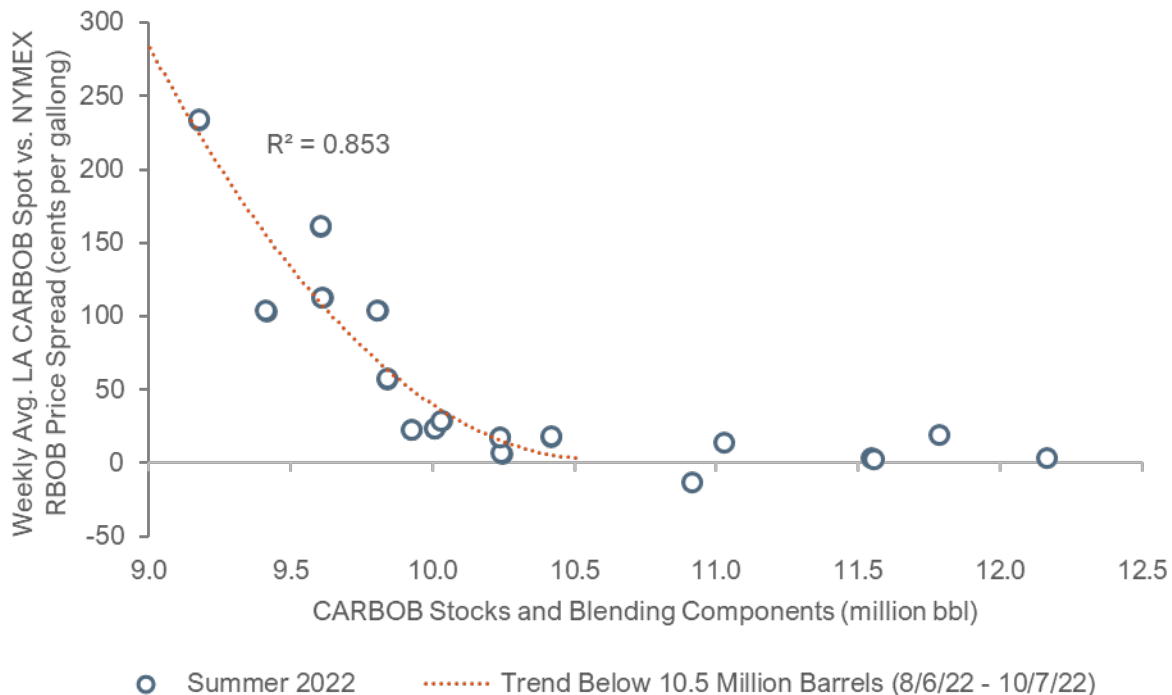
On a longer-term basis, other modifications to requirements for refined fuels may make for a more resilient supply system, but also come with potential environmental and other policy tradeoffs, all of which must be weighed carefully. For both short- and long-term approaches to production, further analysis is necessary. The Transportation Fuels Transition Plan is a related document that will be prepared jointly by the CEC and CARB for submission by the end of 2024.

Storage

Storage adds resiliency to the fuel supply system by offering a buffer that can be drawn down during supply disruptions. Statewide, gasoline storage capacity for the state represents approximately two weeks' worth of demand. Storage facilities are owned by various entities, most commonly refiners at their respective refineries, at port reception points, and by pipeline operators.

There is an observable inverse correlation between total storage levels and price spikes, though there are other important variables as well, including seasonality and demand. This broadly suggests that when storage levels of gasoline decline, the risk of price spikes increases. This was seen most dramatically in the summer of 2022. Figure ES-3 shows the correlation between storage and the 2022 price spike.

Figure ES-3. CARBOB Stocks vs. CARBOB Price Spreads: Total Weekly Stocks vs. Los Angeles Spot Market Price (July 2022 – October 2022)



As reflected in the chart, a California price spike is typically measured by the difference between the LA CARBOB spot market price and NYMEX RBOB market price, meaning that the higher prices were unique to California rather than part of a national trend. The quantities plotted on the chart include publicly available data that is reported to CEC by in-state refineries.

At petroleum refineries, storage is often used by individual refiners to blend and store products during normal operations and to provide back-up supply during periods of planned and unplanned maintenance. Requiring or incentivizing a minimum level of in-state petroleum storage could increase fuel stocks statewide and assist in mitigating or avoiding gasoline price spikes. For example, minimum petroleum storage requirements with exemptions during certain supply shock conditions may help establish a new baseline approach for storage operators. An

incentive approach may also be effective and allow for more flexibility for operators. It is unclear how operators would adjust to requirements or incentives, and additional public discussion and analysis of these types of approaches is warranted.

New storage solutions are also possible. A critical tradeoff for either private or public investment in storage is the long-term expected decline in gasoline demand. There may be a case for additional storage as a matter of maintaining supply resiliency for the next two decades, but such investments do pose a stranded assets risk. More analysis is needed to determine whether the benefits of enhanced supply resiliency are worth the investment in the near term.

Imports

Currently, most of the State's consumed gasoline is refined in state, with a limited portion of the supply coming from out-of-state or overseas refineries. However, as demand continues to decline and in-state refineries convert to renewable fuels or close completely, a strategy to bolster the State's imports of gasoline will be imperative to avoid potentially systemic undersupply problems.

At present, the only practical way to import finished fuel and blending components is by marine imports. There are no pipelines for refined fuel (e.g. diesel, jet, and gasoline) going into the state, only pipelines for export out of the state (to Arizona and Nevada). Rail could theoretically be a source of imports, but so far this import approach has not been seen at any significant scale, and it would take three to five 100-car trains of gasoline or gasoline blending components to match the capacity of one ship. One typical tanker ship of gasoline represents about one third of the state's current daily demand of gasoline. Thus, routine marine imports are likely the most feasible option navigating the uncertainties arising from refineries reducing or stopping production (i.e., losing tens of thousands of barrels of daily production) while demand reduces in a much more gradual manner.

Marine imports of refined fuel from Washington state, Asia, and Europe are already a regular source of fuel, helping to balance out a sophisticated market of multiple flows in various directions. CEC data shows that imports appear to be increasing in northern California, the likely result of one large refinery conversion in 2020.

Marine imports generally tend to have higher prices compared to in-state refining, as ships can be expensive to operate compared to pipelines and present different environmental risks. However, the increased supply resiliency added by an import strategy could result in a net price benefit to consumers.

Harbor traffic is another issue to consider for any strategy relying on increased marine imports. As shown in the demand pathways above, the need for crude imports will decline with the overall decline in demand for gasoline and other fuels. This will free up some space at critical import points, but there are differences between crude import logistics and refined fuel import logistics that merit additional analysis.

The Need for Information and Oversight

The petroleum refining industry has relatively few market participants due to high fixed costs and other barriers to entry. This makes it possible for firms to exercise degrees of market power that would not be possible in perfectly competitive markets. In California, this risk of market power appears to be more pronounced than in other states. A relatively small portion of this California-specific gasoline is traded on California's local commodity markets (called "spot markets") in which a market-wide price is set. In the spot market, there are limited trades reported and fewer participants compared to a national market. Despite this characteristic of the market, the spot market price is linked through contracts to a large portion of all wholesale and thus retail gasoline sold in the state. Spot market trades can have an outsized influence on gasoline prices, with the potential susceptibility to market manipulation. With price reporting based on voluntary reports of trading, the lack of spot market transparency has contributed to incomplete information, leading to volatility in retail prices contrary to consumer interests.

In addition to price spike risk, Californians have paid consistently higher gasoline prices compared to the rest of the U.S. that cannot be fully explained by differences in fuel formulations and gasoline taxes or fees. This unexplained premium paid by California drivers has been identified by academic researchers as the California "mystery gas surcharge."

Active oversight of the increasingly concentrated petroleum and rather opaque industry is an essential component of California's transition to a low-carbon economy. Petroleum refining is a high fixed-cost industry, with costly and years-long development required for entry, thinly traded spot markets, and significant vertical integration—all of which combines in a market that is far from perfect competition. Due to the high fixed-cost structure and other barriers to entry in this industry, only a small number of firms have the resources to supply California petroleum markets. As demand for gasoline declines, the industry will become more concentrated and potentially less competitive. Economists sometimes refer to such dynamics as a type of market failure, a misalignment between producers' profit incentives and consumer welfare. In these situations, protecting consumers, and reducing incentives for market manipulation requires both robust enforcement of competition laws and potential market interventions to realign incentives. Market interventions vary widely by industry and market conditions.

Some of the challenging market dynamics in California's petroleum industry are familiar in other industries. There are many examples of highly concentrated, high fixed-cost industries such as airlines, telecommunications, and utilities—all of which are highly regulated and generally profitable. Market power in the airline industry is primarily tempered through antitrust enforcement and federal oversight. Competition among telecommunications firms is protected through antitrust enforcement and regulations requiring fair access. Finally, utilities, which bear some key similarities to energy refiners, are often highly regulated monopolies that navigate rate regulations and limits on their rates of return. These are only a few examples. Each industry and the markets they serve are unique. Enforcement of competition laws and market interventions require information about market behavior and outcomes. Therefore, an

important component of petroleum market oversight should include detailed industry data collection to facilitate transparency and well-informed public policy.

As discussed in workshops and hearings held by the CEC and in stakeholder comments, there is concern about market power abuse in the petroleum sector, and the state appears to be increasingly susceptible to price spikes as seen over the last decade. Stakeholders at CEC workshops and hearings have expressed concern about unfair market dynamics resulting from increased market power in California's petroleum industry and potential market gaming by industry participants. Moreover, stakeholders have expressed concern that harmful industry conduct will be amplified by bad actors acting anticompetitively. During this critical transition period, additional oversight is necessary to protect Californians from further market dysfunction and potential market manipulation.

SB X1-2 established the Division of Petroleum Market Oversight (DPMO). This division operates independently of the CEC's authority but is housed within and supported by the CEC for close coordination with the new data collection provisions of SB X1-2. DPMO assesses and investigates petroleum market conditions with authority to subpoena firms and refer matters for prosecution.

Californians Deserve a Strategic Transition Away from Petroleum Transportation Fuels

The Transportation Fuels Assessment is only one component of SB X1-2. The Assessment identifies methods that may help in smoothing and managing retail prices under a general framework of the transition away from petroleum fuels, with an emphasis on gasoline. It also contributes to the understanding of gasoline price spikes and identifies potential actions that can help to mitigate or eliminate them. However, a series of additional considerations with a more careful eye on environmental impacts, market dynamics at the retail level, and other issues, will be critical parts of the Transportation Fuels Transition Plan, developed by both the CEC and CARB.

California is leading the United States in a bold zero-emission, clean energy future. Moving forward also requires attention to ensure that no one is left behind. There are critical lessons to be learned in building out the state's clean energy systems, as well as those from smoothly and equitably transitioning away from the fossil fuel dominated energy systems. These lessons will be fundamental in both assisting other economies and helping to ensure that the state's residents can benefit from clean energy.

CHAPTER 1:

Transportation Fuels in California

The Need for a Transportation Fuels Assessment

California's legislature directed the CEC to address transportation fuels in the context of a gasoline price spike in 2022 and the state's bold climate change vision. Senate Bill X1-2 (Stats. 2023, 1st Ex. Sess. 2023, ch. 1) requires the development of an assessment to address the key issue of ensuring a reliable supply of affordable and safe transportation fuels for combustion vehicles in California in the context of transitioning to a zero-emission future.

California's transportation fuels market is currently dominated by gasoline and diesel, the main fuels of consideration in this assessment. These two fuels have two major challenges that affect the stability of transportation fuels prices: an ongoing challenge and a long-term challenge. The ongoing challenge is that supply of these fuels is increasingly constrained with the potential for significant supply shocks, while demand is falling at a gradual pace and there is a significant segment of the population that continues to rely on gasoline (even at very high prices) for their essential transportation needs. California has only two sources of transportation fuel: in-state refining of crude and marine imports of refined fuels. While fuel storage facilities exist to provide some buffer, they are limited and can assist only with short-term fluctuations in refining or gaps in imports. Increased vehicle fuel economy, adoption of zero-emission vehicles (ZEVs), and the recent growth in telework have contributed to gasoline demand contraction since its peak in the early 2000s. Despite these factors and a likely substantial decline in demand moving forward, gasoline is likely to remain the leading transportation fuel for at least a decade, and customers are often captive to changes in prices given limited transportation alternatives.

The longer-term challenge is that ZEV adoption will lead to the most significant change in transportation since the mass production of the internal combustion engine vehicle – the complete transition away from petroleum-based vehicles to zero-emission vehicles, which will fundamentally alter the transportation fuels market.

Understanding the implications of these two challenges and potential options for addressing them is an essential first step in a near-, mid-, and long-term planning effort for the state. This chapter further explores the context that has led to this assessment.

California's Fuel Landscape

California's transportation fuels market differs from many others in the United States. Despite being directly geographically connected to other states, its relatively isolated transportation fuels market makes it essentially a fuel island. Figure 1 shows the fuel pipeline flows for California, Nevada, and Arizona. California has limited fuel connectivity with other states. Some refined fuel is exported to Arizona and Nevada via pipeline. Other refined fuels are, on occasion, exported by ship out of state. However, unlike most other states in the country, there are no gasoline pipelines for import into California, since none of the adjacent states

have fuel refineries.¹ Additionally, the northern part and southern part of the state are not connected by a gasoline pipeline, making them somewhat isolated from each other. The only other way California receives significant quantities of gasoline or gasoline blending stocks is by ship.

Figure 1. Map Showing Pipeline Flows for California, Nevada, and Arizona



Credit: EIA West Coast Transportation Fuels Markets²

Other states in the federal Petroleum Administration for Defense District 5 (PADD 5)³ have similar limited connectivity issues and similar long lead times for deliveries of refined fuels. However, California's unique CARBOB gasoline specification differs from all other states.⁴ The CARBOB specification in the California Reformulated Gasoline (CaRFG) Regulation reduces air pollution and is an essential strategy adopted as part of California's State Implementation Plan (SIP). The SIP is a federally mandated plan to ensure that the state is on a path to significantly reduce harmful environmental pollutants that impact public health in California. Current air quality detriments contribute to billions of dollars per year in health-based

1 The closest fuel producing refinery hubs are in Washington state, where the product is received through both a marine terminal and pipeline; Utah, where there is a pipeline through to Nevada; and New Mexico/El Paso, Texas, which has a pipeline that goes directly to Phoenix but is not connected to Southern California.

2 Adapted from U.S. Energy Information Administration Analysis & Projections of West Coast Transportation Fuels Markets. 2015. Available at: <https://www.eia.gov/analysis/transportationfuels/padd5/>

3 PADD 5 states include Alaska, Arizona, Hawaii, Nevada, Oregon, and Washington, in addition to California.

4 The CARBOB specification was developed to help address the state's unique air quality challenges. CARBOB is blended with 10 percent ethanol prior to distribution to retail stations. The formula changes during summer months to a specification that reduces evaporation during warmer conditions but remains distinct from other formulations used in the United States since it has lower sulfur content and much lower benzene content.

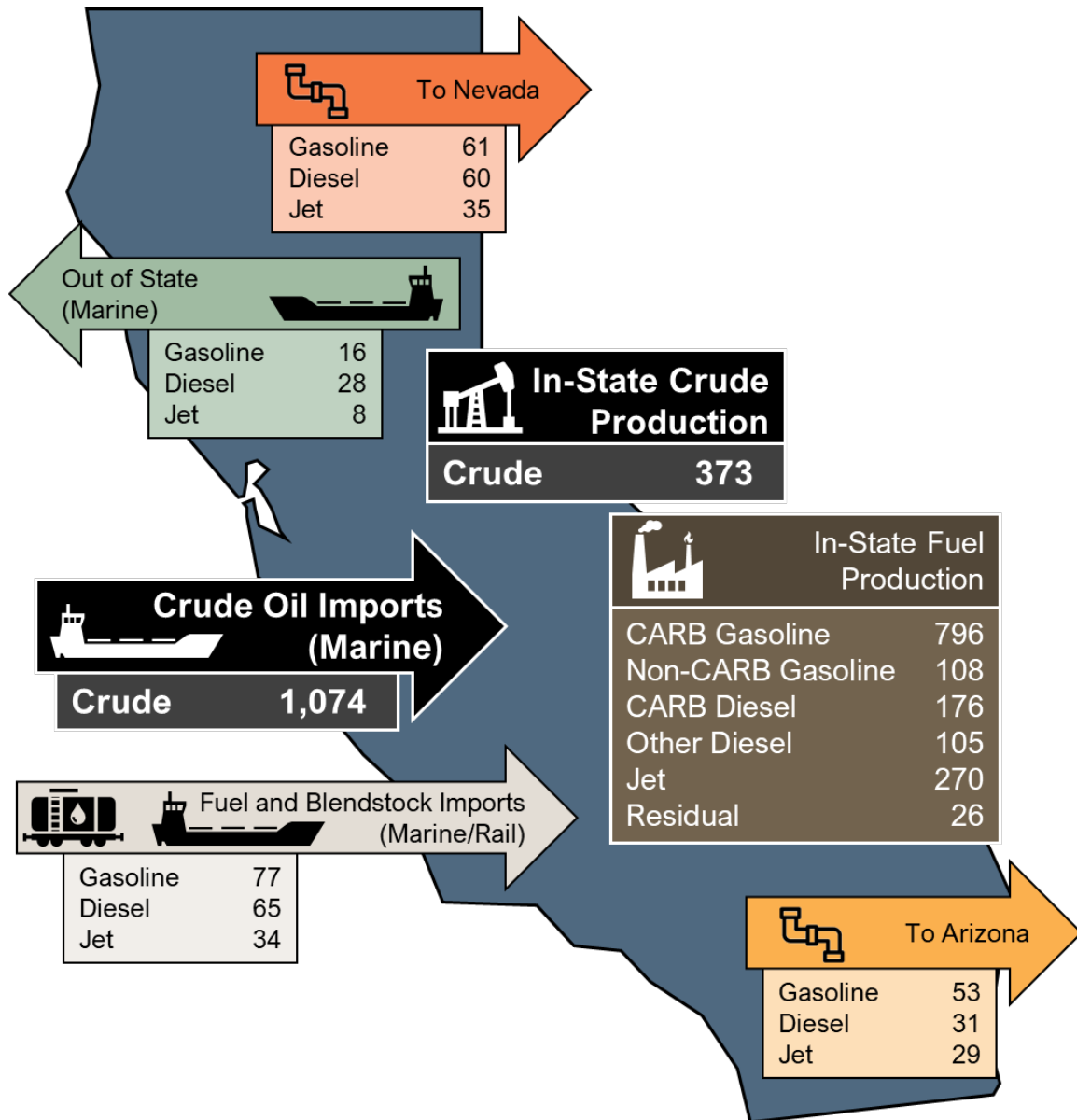
damages. Presently, out of state CARBOB production is limited to a few refineries outside of the state.

The result of this unique specification is that nearly all of California's gasoline is refined in the state, over 85 percent in 2022. Gasoline and blendstock ship cargos take three to six weeks to arrive from overseas, presenting significant challenges for unplanned events that constrict supply.

In 2022, Californians purchased 13.6 billion gallons of gasoline at the retail level, approximately 885 thousand barrels per day (TBD). Given that 10 percent of retail gasoline is ethanol, this amounts to about 800 TBD of CARBOB.

Figure 2 shows the average daily movements and processing of crude and fuel for 2022. The figure shows exports into Nevada and Arizona and to other states by marine vessels. It also shows crude imports and fuel outputs from refineries. Of note are diesel fuel movements. California imports a large amount of biodiesel and renewable diesel (RD), encouraged by the state's low-carbon fuel standard. The state also exports much more diesel fuel than gasoline as a proportion of production, again influenced by the low-carbon fuel standard's incentivization of lower-carbon imports. The figure shows the approximate breakdown of crude-to-fuel conversion: for five units of input crude, refining typically produces about three units of gasoline, one unit of diesel, and one unit of jet fuel. There is some flexibility to get a greater proportion of specific fuel proportions from input crude, but this capability is limited.

Figure 2. 2022 Daily Average California Fuel and Crude Movements and Production Volumes (Thousand Barrels per Day, TBD)

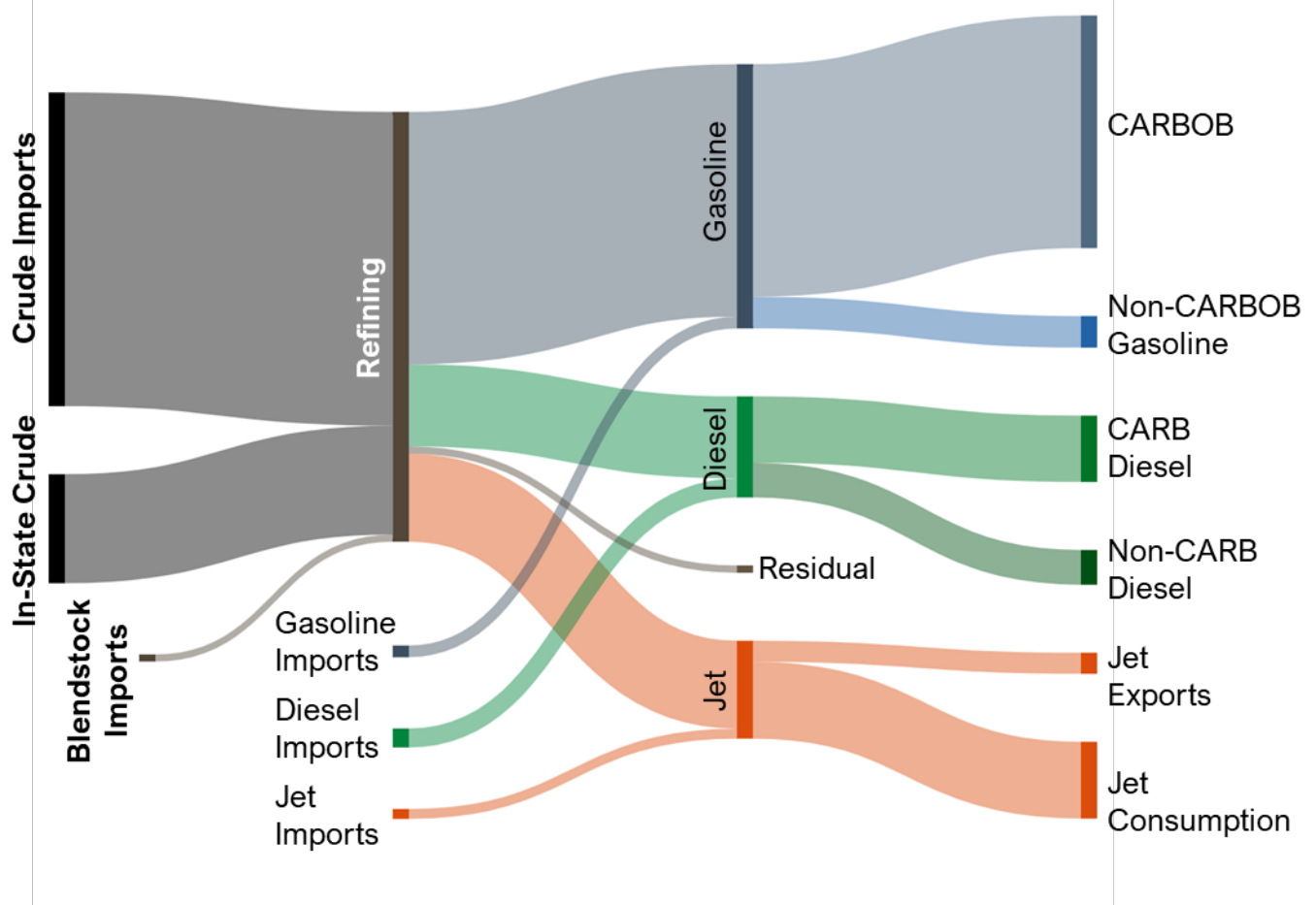


Note: Non-CARB fuel produced in-state is exported to Arizona and Nevada via pipeline, or otherwise out of state via marine vessels.

Credit: CEC Staff

Figure 3 shows the approximate magnitudes and import and export pathways described in the previous figure in the form of a Sankey diagram. On the left are in-state crude production, crude imports, and imports of gasoline and blendstocks that may be used at various stages of refining or pass through refineries into the gasoline supply. Refined gasoline, diesel, and refined jet fuel, along with imports of each, combine with production to result in a set of outputs that are either in a CARB formulation for in-state consumption or exported out of the state.

Figure 3. Approximate Fuel Pathways and Magnitudes for Crude and Other Imports



Credit: CEC Staff

The gasoline refining process is complicated, but in broad terms, California has a refining capacity comparable with its demand. Figure 4 shows the refineries responsible for in-state gasoline production, along with recently closed or converted refineries. While there are 9 CARB specification gasoline producing refineries in the state, four companies own more than one refinery within California, meaning that, of the over 1,000 TBD of California's gasoline refining capacity, five companies control over 90 percent.⁵

Figure 4 shows the approximate maximum CARBOB production capacity of each refinery based on a simple 60 percent conversion assumption of refinery crude input processing capacity:⁶

- Blue tinted bars represent northern California refineries.
- Salmon tinted bars represent southern California refineries.

⁵ Staff analysis of publicly available data on [California's Oil Refineries](https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/californias-oil-refineries). Available at <https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/californias-oil-refineries>

⁶ This simple assumption is not intended to be precise. Detailed production data is confidential in accordance with PIIRA.

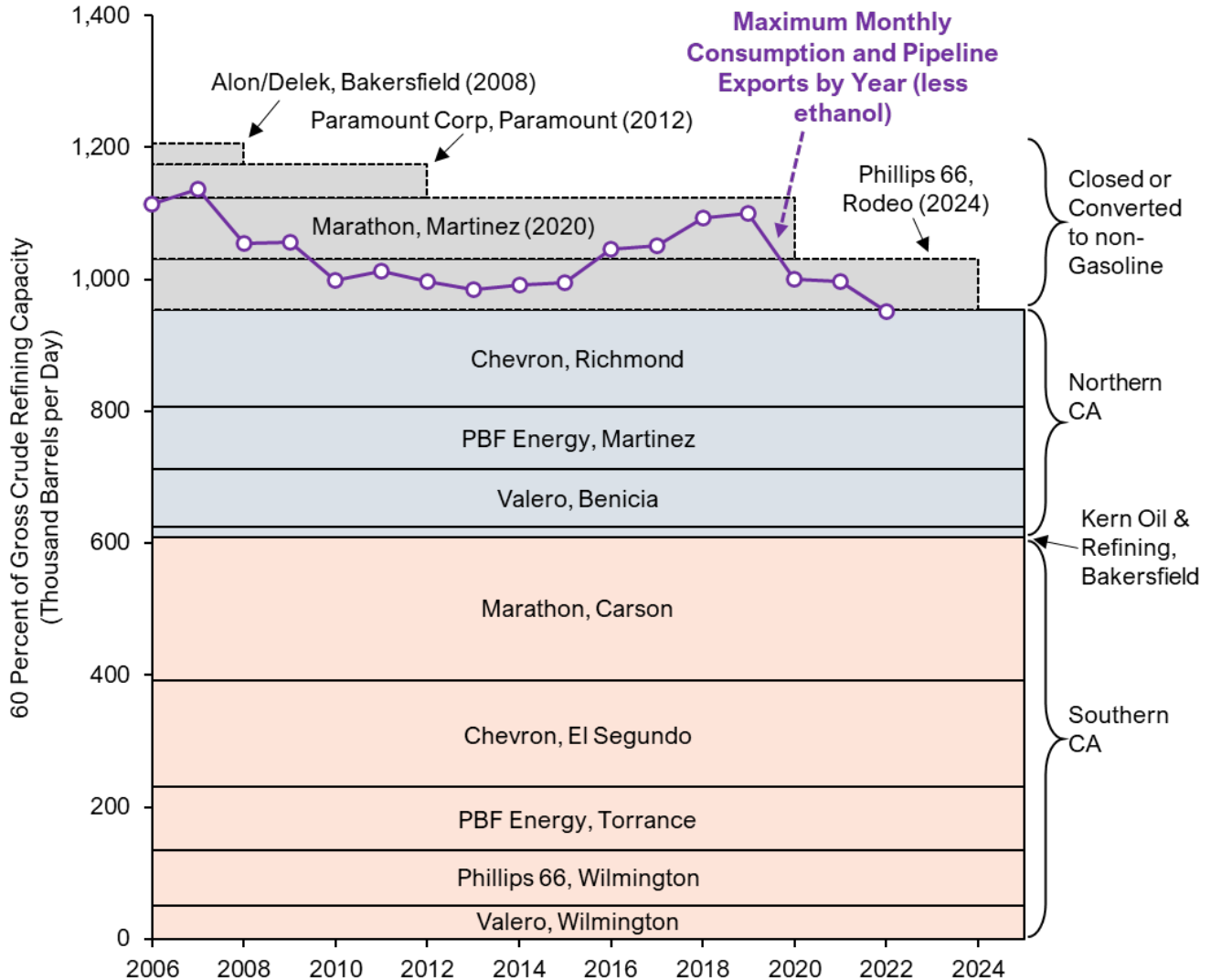
- Gray bars represent gasoline refineries that have closed or are scheduled to close by 2024.
- This figure only shows the CARB specification gasoline producing refineries. It does not include the refineries that only produce CARB specification diesel, such as the San Joaquin Refining Company's Bakersfield refinery.

As California refineries have closed or converted away from gasoline production in the last two decades, maximum gasoline refining capacity has decreased by more than 200 TBD. For example, in 2020, the Marathon Martinez refinery converted to renewable diesel production with no crude refining capacity. Similarly, the Phillips 66 Rodeo refinery ceased production of CARBOB in 2024 and converted to renewable diesel. With these conversions, statewide gasoline refining capacity decreased by nearly 200 TBD.

Refineries typically operate at their maximum stated capacity when possible. Some gasoline produced is non-CARBOB and exported out of the state, much of it on a contractual basis going to Arizona and Nevada. California refineries meet nearly all of California's gasoline demand, with imported gasoline meeting the small residual demand. In Figure 4, the purple line represents the maximum monthly consumption and pipeline exports, which shows that peak demand and supply capacity for gasoline is very tight.

When gasoline prices are high, the more costly marine imports of refined fuels and blendstocks satisfy some of the state's gasoline demand. Refineries occasionally order marine imports ahead of time to address expected supply shortages, but these imports, if any, do not typically replace the full measure of lost production. Moreover, long lead times make marine imports of refined gasoline less feasible for meeting immediate demand when California refineries experience unplanned reductions in capacity or have other supply shortages.

Figure 4. Approximate Peak Gasoline Refinery Capacity Compared to Maximum-Monthly Consumption



Credit: CEC Staff

California is essentially a fuel island. There are no pipeline inflows of refined fuel into the state, and cargo ships delivering CARBOB take three to six weeks to arrive from distant facilities capable of producing CARBOB. By contrast, many other states have a broad network of pipeline flows, multiple regular sources of marine imports, and similar fuel specifications to neighboring states, all of which help to maintain supply resiliency and hence price stability in the market. However, California's petroleum refining industry isolation is driven by several factors.

First, the state is geographically large (164 thousand square miles), topographically complex, and neighboring states are far from California's population and economic centers. The state's population and economic centers are largely clustered in Southern California and in the San Francisco Bay Area—nearly 400 miles apart. While the state is adjacent to three states, the

prospect of building a pipeline distribution system, traversing mountain ranges and deserts to reach the coast or between urban centers may be economically unattractive.

Another reason for California's petroleum isolation is that the petroleum refining industry is an inherently high fixed-cost industry. When industries face extremely high costs, it is inefficient for multiple firms to compete and duplicate infrastructure, which would be prohibitively expensive. The result is increased market concentration and potential risk to consumers.

A third factor in explaining California's petroleum refining isolation is the state's CARBOB requirement. To meet federal air quality standards California phased in its reformulated gasoline requirements in 1992, 1996, and 2003. Californians have benefited from this change in terms of reduced air toxins, improved health, better environmental outcomes, transportation fuels innovation, and other benefits. For example, the California Office of Environmental Health Hazard Assessment found an 80 percent reduction in cancer risk associated with exposure to gasoline-related pollutants between 1996 and 2014.⁷ Despite this and other successes, California continues to face challenging air quality management, exacerbated by climate change impacts. By adopting CARBOB, the state also faces an additional trade-off of further isolating the state's petroleum refining industry.

Petroleum refining isolation and market concentration leave California's gasoline market vulnerable to price instability due to crude oil uncertainty, few substitution opportunities on the supply and demand side, and incentives for market manipulation by suppliers with market power. While no state is immune to the broader challenges of crude oil price instability, California faces fuel price instability even when the crude oil markets are stable. Gasoline price stability in the state is closely tied to the available refining capacity, which is highly sensitive to planned and unplanned refinery shutdowns.

A planned refinery shutdown is known well in advance by the refiner, sometimes several years in advance. A refiner with planned maintenance will sometimes build up inventories of product or schedule imports ahead of time to create a supply buffer to replace some lost production. Refiners are not compelled to store fuel, and supply buffers for planned shutdowns typically are not sufficient to prevent an unexpected tightening of statewide supply. When an unexpected refinery shutdown occurs in California, refiners have limited options to resupply quickly, especially with gasoline.

Demand for gasoline is also challenging. Although demand for gasoline peaked in 2005 and ZEV adoption makes fewer drivers dependent on gasoline, demand remains high. Californians must often drive far distances for work and other activities. During price spikes, sales may often remain high because of the difficulty many Californians have in meeting transportation needs with lower cost options. September 2022 and October 2022 gasoline sales were higher than traditional index values for each of those months, despite a price spike in September

⁷ California Office of Environmental Health Hazard Assessment. 2018. Gasoline-Related Air Pollutants in California. Available at

<https://oehha.ca.gov/media/downloads/air/report/oehhagasolinereportjanuary2018final.pdf>

2022.⁸ This “inelasticity” of demand means that price spikes can result in significant costs to Californians who have limited options.

Major Supply and Demand Drivers

Figure 5 plots monthly CARBOB demand against in-state CARBOB production, both actual production and an estimated maximum sustainable production.^{9,10} The figure shows that CARBOB demand post-2020 is down approximately 100 TBD (11 percent) from pre-2020 levels. The market rebalanced with the conversion of one refinery in 2020.

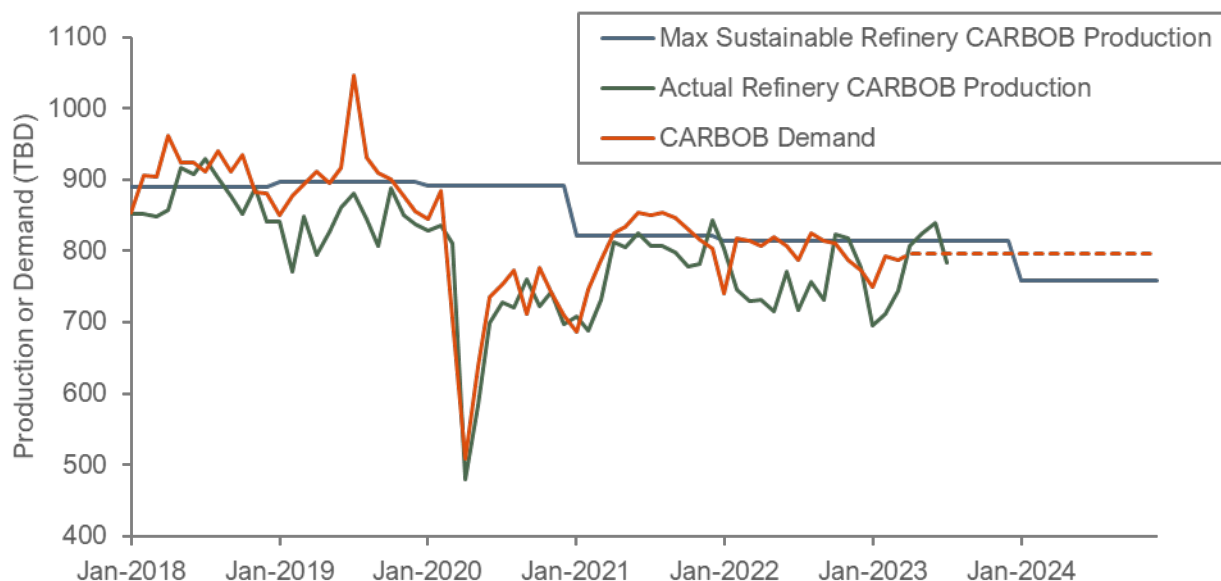
Although post-2020 maximum sustainable refinery CARBOB production remains capable of meeting current demand, actual refinery production has lagged maximum levels due in part to planned and unplanned refinery outages. Maximum sustainable refinery CARBOB production has declined further with the 2024 conversion of the Phillips 66 Rodeo refinery. The small gap between production capacity and demand increases price spike risk. Even if spikes do not occur every year, small production problems or other market effects make them more likely.

8 CEC staff analysis of gasoline sales data from the [California Department of Tax and Fee Administration](https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm). Available at <https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm>

9 CARBOB lines in the chart do not include the total volume of supply and demand of gasoline, of which 10 percent is ethanol. Actual supply and demand of retail gasoline should be taken to be 10 percent larger.

10 Maximum sustainable refinery CARBOB production is estimated by taking the total operating California refinery capacity as of January 1 each year and assuming a 52 percent CARBOB yield and a 90 percent maximum sustainable capacity utilization. The maximum sustainable refinery CARBOB production is projected forward through the end of 2024, assuming the shutdown of the TBD Phillips 66 Rodeo refinery in 2024. A simple flat calculation of 57 TBD of maximum sustainable yield of CARBOB is assumed for this refinery’s stated capacity of 128 TBD of crude refining capacity. Demand is projected forward from March 2023 using a flat assumption of 800 TBD.

Figure 5. Actual and Maximum Sustainable California Refinery CARBOB Production vs. CARBOB Demand, January 2018 - December 2024



Credit: ICF analysis of EIA and CEC data

The 2022 Gasoline Price Spike

In 2022 the world faced an energy crisis triggered by Russia's invasion of Ukraine. Months after the onset of the war, September 2, 2022, California wholesale gasoline prices (also known as the CARBOB Spot market) began steadily rising, resulting in a price spike that peaked at \$6.21 on October 3, 2022, \$2.61 higher than the U.S. average. The spike ended shortly after Governor Newsom sent a letter to CARB on September 30, 2022, calling for an early transition to winter blend fuel specifications to increase supply, which allows refiners to produce higher gasoline volumes. Thereafter, prices began to decline for several weeks, marking one of the sharpest 4-week declines in gasoline prices in CEC records for the last 20 years. In 2022, petroleum companies reported record profits.¹¹ CEC is still evaluating the in-state costs and profits associated with the 2022 spike in the context of seasonal variability.

The figure below shows the average gas prices for California and the United States. In 2022, it is shown that the second price spike was only experienced in California and not the rest of the country.

¹¹ See the Governor's January 31, 2023 press release. Available at <https://www.gov.ca.gov/2023/01/31/big-oil-made-record-2022-profits-while-fleeing-california-families/>

Figure 6. California and U.S. Retail Gas Prices in \$/gallon¹²



Credit: EIA Data

In response to the 2022 gasoline price spike, the CEC held a hearing on November 29, 2022, to examine the factors behind this price spike.¹³ The hearing discussed differences between the 2022 September-October price spike contrasted with previous price spikes. Unique to the 2022 price spike was the lack of a major unplanned shutdown event. Instead, planned maintenance at several refineries extended past their projected completion dates. Of the ten refineries that then produced CARBOB, four refinery maintenance periods overlapped. This led to a significant reduction in production beyond the decline typically occurring with maintenance. This reduction cumulatively totaled six percent, or 55 TBD, and held longer than anticipated for weeks, while inventory levels remained at decade lows. The spike ultimately pushed retail prices to \$2.61 higher than the rest of the United States.

A discussion panel at the hearing identified the conversion of Marathon Martinez refinery, completed in October 2020, as a contributing factor to the low inventory levels and general supply tightness underlying the 2022 price spike. A leading cause for Marathon Martinez's early conversion was due to the COVID-19 pandemic's demand shortfalls. The hearing panel identified many other factors that contributed to the spike. Many of these factors were similar to those in previous price spikes. Some panelists stated that refineries exerted market power

12 These values are not adjusted for inflation. That is, they are nominal values rather than inflation-adjusted "real" values.

13 See CEC's website for a transcript of the November 29, 2022, "Commissioner Hearing on California Gasoline Price Spikes, Refinery Operations, and Transitioning to a Clean Transportation Fuels Future." Available at [Commissioner Hearing on California Gasoline Price Spikes, Refinery Operations, and Transitioning to a Clean Transportation Fuels Future](#)

to take advantage of a shortage, while others acknowledged the general concentrated supply dynamics of the California market.

Spot Market Concerns and Manipulation Risks

The conditions surrounding the 2023 gasoline price spikes raised already heightened concerns about possible market manipulation in the petroleum refining industry. The Division of Petroleum Market Oversight (DPMO), recently established under SB X1-2, identified a potential concern in the spot market. An unusual transaction on September 15, 2023, caused the spot market price to increase by nearly \$0.50 per gallon within one day.¹⁴ Changes in the spot market directly affect contracts indexed to the reported price and also heavily influence overall market participant perceptions. This in turn impacts other wholesale and retail prices in very short order. DPMO also identified several other critical issues that may have exacerbated the price spike, including unnecessarily low inventories and inadequate imports to address backfill production shortfalls. Continued price increases throughout this price spike period were a significant cost to consumers.

The spot market is of concern because it is opaque and susceptible to manipulation. Not all transactions on the spot market are reported to price information companies such as OPIS, and in some cases, there may be an incentive for an actor to make a large high-cost purchase and report it to encourage a spike when there is no underlying supply tightness. The spot market is discussed in more detail in Chapter 2, and is an important place for policy reform, as discussed in Chapter 3.

Longer-Term Challenges with Price Stability

Although recent late summer-early fall gasoline price spikes caused undue financial strain for Californians, each was addressed relatively quickly compared to other price spikes. The spikes did, however, serve as a broader indication of potential gasoline price stability challenges as Californians transition to a low-carbon economy.

California is leading the way to a low-carbon economy, including through dramatically reduced gasoline consumption from just a few years ago. The significant changes that have occurred in commute patterns and adoption of ZEVs in the past several years have resulted in Californians consuming nearly two billion fewer gallons of gasoline in 2022 and 2023 than in 2019.¹⁵ As noted above, this marked change in consumer demand is expected to be much more gradual going forward than it was in the wake of the Covid-19 pandemic. However, supply will likely constrict in a manner which is lumpy -- as observed in the last several years, additional refineries are likely to convert to producing other non-CARBOB fuels or discontinue operation, resulting in significant and sudden reductions in supply.

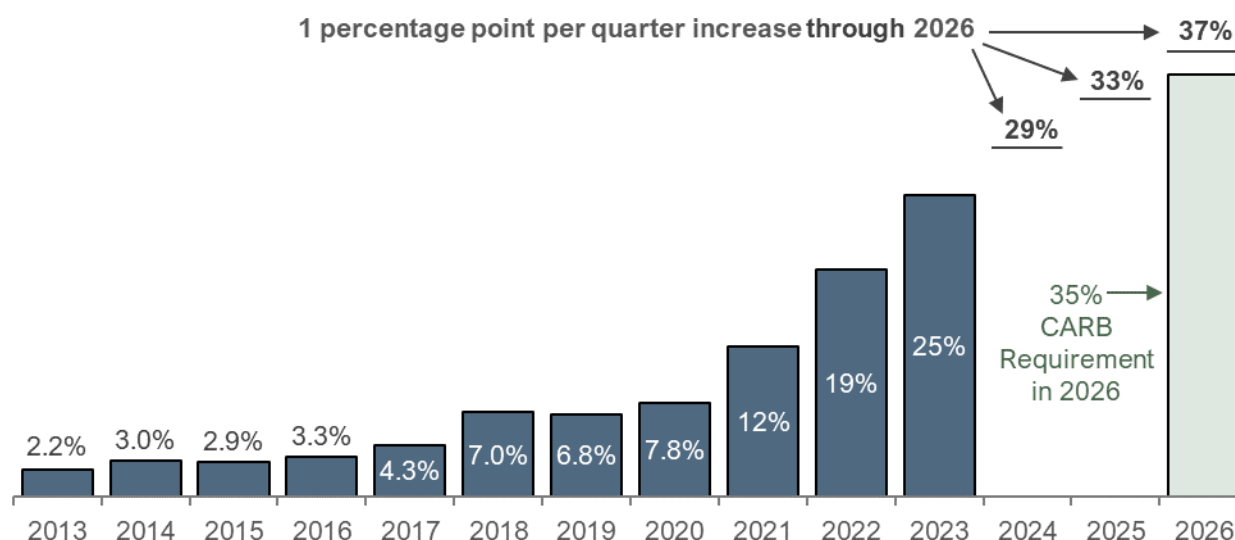
¹⁴ [State Officials Provide Update on Gas Prices, Unusual Petroleum Market Transaction \(ca.gov\)](https://www.energy.ca.gov/news/2023-09/state-officials-provide-update-gas-prices-unusual-petroleum-market-transaction). Available at <https://www.energy.ca.gov/news/2023-09/state-officials-provide-update-gas-prices-unusual-petroleum-market-transaction>

¹⁵ See 2024 California Energy Commission and California Department of Tax and Fee Administration Joint Report to Legislature, at Figure 2.

Of note is the increase in new ZEV sales seen in the last few years, growing to one in four new cars in 2023. Continued growth in ZEV sales share is expected from increasing manufacturer investments as well as the CARB's Advanced Clean Cars II Regulation. This regulation increases requirements starting in 2026 for ZEVs to ultimately reach 100 percent of new light-duty vehicles sold in 2035.¹⁶ The most recent market data from the CEC's ZEV sales dashboard suggests that vehicle manufacturers in the state are on a trajectory to exceed the regulation.¹⁷

Figure 7 shows the ZEV market share seen in the last decade. A conservative extension of continued market growth in ZEV sales (one percentage point per quarter) shows that ZEV sales will meet or even exceed the 2026 ZEV sales share requirement of 35 percent.

Figure 7. ZEV Market Share of New Passenger Vehicle Sales and Simple Projections



Credit: CEC ZEV Dashboard

In the medium- and heavy-duty vehicle market, ZEVs are also poised for rapid growth. New regulations by CARB will require these fleets to increase their proportion of ZEVs to improve air quality and address climate change. While this is expected to occur slightly behind the pace of the light-duty sector, technological advancements seen in the light-duty sector will likely translate into high levels of growth in this sector as well.

Increasing customer interest in ZEVs combined with new ZEV sales requirements are changing customer demand currently and may further change customer behavior. For example, with more ZEV ownership, demand elasticity for gasoline may increase. This could occur in cases where a family owns both an electric car and a gasoline-powered car. During a price spike for gasoline, the family may opt to drive the electric car more. This transportation substitution effect would be a substitution behavior that was previously more limited. Such a behavior may

¹⁶ California Air Resources Board. 2024. "Advanced Clean Cars II." Available at <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-cars-program/advanced-clean-cars-ii>

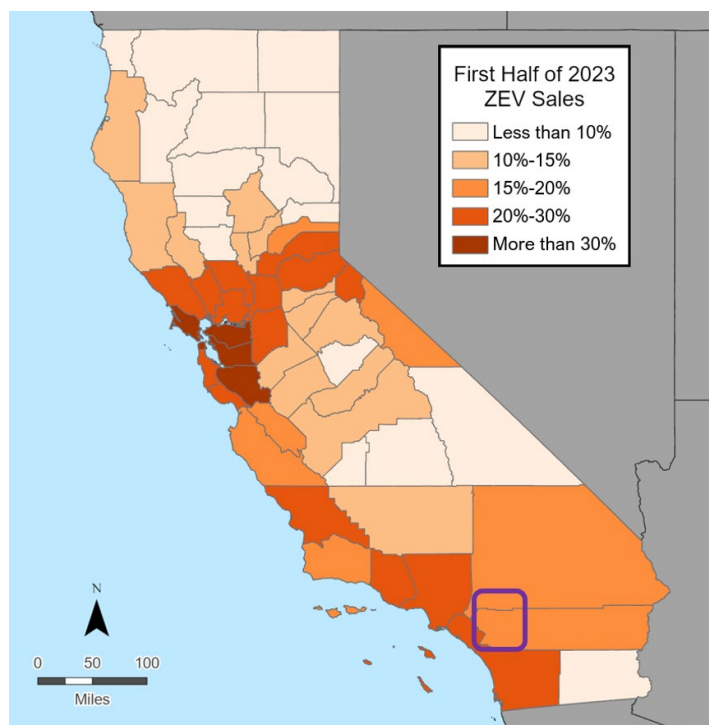
¹⁷ California Energy Commission. "New ZEV Sales in California." Available at <https://www.energy.ca.gov/data-reports/energy-almanac/zero-emission-vehicle-and-infrastructure-statistics/new-zev-sales>

provide enhanced demand responsiveness that could add to price stability. It should be noted, however, that lower-income families tend to have lower levels of multiple vehicle ownership. Families that only own only one car, if it is not a ZEV, would not benefit from a direct fuel substitution effect, but they may benefit from the broader price stability effects.¹⁸

Even with the successful implementation of CARB's Advanced Clean Cars II and other regulations with 100 percent sales requirements in 2035 and 2036, internal combustion engine (ICE) vehicles will not completely disappear in the mid-2030s. For at least one or two decades following full implementation of these regulations, ICE vehicles will remain on roads, although their presence will decline. These vehicles will need gasoline.

The distribution of ICE vehicles on the road in future decades in the state will present equity challenges. Figure 8 shows the distribution of ZEV new sales share by county. The figure indicates that rural areas of the state do not have the sales penetration that more urban areas of the state have. The purple box in the figure shows dense urban areas in the far western portions of counties that are otherwise rural — a county may look higher overall because of the dense urban areas in the western portion.

Figure 8. New ZEV Sales Share by County



Credit: CEC Staff

Given that many ICE vehicles will remain on the road and many of the owners may be in less affluent regions of the state, an equity challenge arises when thinking of ZEV deployment. A less stable gasoline price may not have any impact on an upper middle-class resident who

¹⁸ For example, CEC staff analysis for transportation forecasting shows that, for families with a household income of \$80,000 per year or less, the ownership rate of more than one vehicle is 35 percent. For families with a household income of greater than \$80,000, the ownership rate of more than one vehicle is 72 percent.

lives in Los Angeles and drives a ZEV. By contrast, it is likely that many or perhaps most rural and lower income residents may be most impacted by future gasoline price spikes. The state has programs that enhance ZEV access for many low-income California families. For example, the Clean Cars 4 All program allows low-income families that live in or near a disadvantaged community to receive large incentives to scrap an older, higher emitting vehicle for a clean mobility option. Under the Funding Plan for Clean Transportation Incentives, 63% of the 2023-2024 fiscal year's investment funds will go toward bolstering equitable access, resources, and support for low-income and disadvantaged communities.¹⁹ Although these efforts to build towards an equitable transition are critical, the state must also address gasoline demand that remains.

In addition to the challenge of the long-term demand for fuel, albeit at a lower volume, as described above, there is a challenge with the supply of fuel. With only nine refineries in the state producing gasoline, permanent declines in demand will have unknown effects on the market. It is possible that more refineries will close or convert to producing renewable fuels, decreasing the resiliency of CARBOB supply to the California market. Another supply shock in these conditions could lead to price spikes, which would have the largest impact on vulnerable communities.

Future Demand Disruption

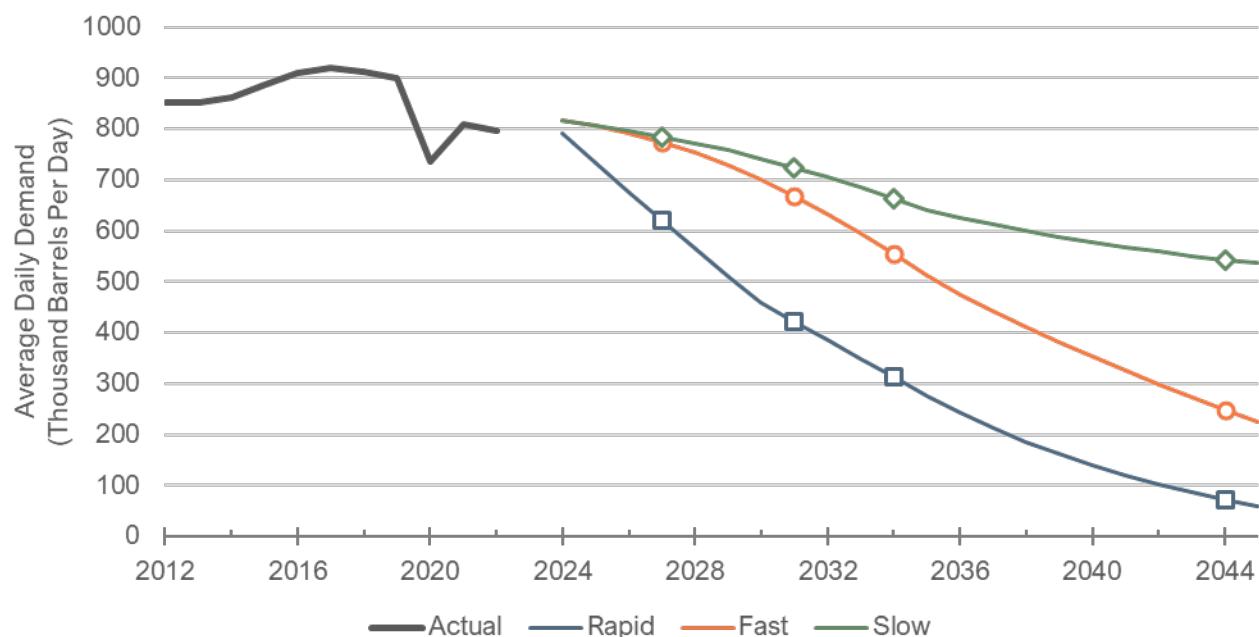
With the proliferation of zero-emission technologies, there are implications for the combustion fuels market. As demand for combustion fuels declines, refineries may close, resulting in a less resilient supply. With fewer refineries, unplanned maintenance or extension of planned maintenance at one or more remaining refineries will mean that a larger proportion of in-state supply is offline. Further, the pace of ZEV deployment still has some uncertainties. A wide variety of scenarios with different trajectories is important to envision the implications of the transition.

Fuel Demand Scenarios Considered

Figure 9 shows historical consumption and three demand scenarios of gasoline associated with potential ZEV adoption and customer behavior changes. The scenarios are drawn from CARB's 2022 Scoping Plan and CEC's Integrated Energy Policy Report (IEPR) forecast and includes a rapid development, a fast development, and a slow development of ZEV adoption (and associated gasoline demand decline). Refinery dynamics are likely to differ in each scenario but may reveal important patterns and sensitivities. Markers for each scenario are applied at 3-year, 7-year, 10-year, and 20-year intervals from 2024 for reference.

¹⁹ CARB Press Release: CARB approves incentive funding plan that invests in equitable transition to zero-emission future. Available at <https://ww2.arb.ca.gov/news/carb-approves-incentive-funding-plan-invests-equitable-transition-zero-emission-future>

Figure 9. CARBOB Consumption and Demand Scenarios Under Consideration for the Assessment



Credit: CEC Staff, CARB Scoping Plan Data ²⁰

The rapid development shows a sharp decline in gasoline demand in early years and continued decline through 2045. This development is based on CARB's 2022 Plan Update for Achieving Carbon Neutrality (Scoping Plan). Driving the decline in demand is a rapid market expansion of ZEVs and a marked decline in per capita passenger vehicle miles traveled (VMT). The Scoping Plan scenario includes a 25 percent reduction in per capita VMT by 2030 compared to 2019, growing to 30 percent by 2045. The Scoping Plan discusses a series of strategies for achieving this goal, but there are no statutory or regulatory mandates that require VMT to decline. One such strategy to reduce VMT is to foster more compact, transportation-efficient development in infill, urban areas.

The fast development shows a gradual decline in gasoline demand through 2028, with a transition to a steep descent through around 2037. Remaining ICE vehicles and other sources of demand slow the decline of demand through 2045. This scenario is an extension of the CEC's 2022 transportation energy demand forecast scenario called Additional Achievable Transportation Electrification Scenario 3. This scenario through 2035 is a regular component of the CEC's IEPR. The scenario incorporates ZEV adoption as required with CARB regulations, such as Advanced Clean Cars II and Advanced Clean Fleets. The extension of fuel demand past 2035 is somewhat limited in the CEC's transportation energy modeling framework, but it does present a distinct picture from the CARB scenario. The difference between this scenario

²⁰ Actual demand for 2023 will be available in mid-2024.

and the rapid scenario primarily results from a difference in per capita VMT. The fast development does not assume a decline in per capita VMT.

The slow development shows a noticeable decline through 2035 but then only slightly declines in demand post 2035. This scenario is an extension of the IEPR transportation forecast baseline forecast, which has lower ZEV adoption than the fast development. This scenario is not driven by the CARB regulations in the fast development scenario. Rather, the slow development scenario is driven primarily by 2022 market trends and existing and projected consumer preferences for ZEVs. This type of scenario could occur if federal preemption or judicial decisions were to limit the ability of CARB to enforce its vehicle regulations.

Fuel Supplier Pathways in Response to Demand Scenarios

As gasoline demand declines in the coming years (consistent with the demand scenarios above), refiners and suppliers will need to determine how to modify their operations as CARBOB demand declines. These actions may differ among refiners due to each having different perceived market risks as demand profiles decline. Below are two general response pathways. The actual response pathway may represent a combination of different responses from each refiner and within Northern California or Southern California.

One possible pathway is that refining declines as demand declines and California has adequate supplies to meet demand, resulting in refinery closures. Another pathway is for refiners to pivot towards exports of refined fuels or blendstocks. However, if refineries close, or if export strategies result in lower CARBOB production capacity, demand could quickly outpace supply and price spike risk will increase. The purpose of this report is to explore different future scenarios and identify how the state might intervene to assure an affordable, reliable, equitable, and safe supply of gasoline for consumers who need it.

Pathway One: Reduced Gasoline Production

In pathway one, penetration of ZEVs and the associated decline in gasoline demand will drive a reduction in CARBOB production in the state.²¹ In this scenario, refiners would reduce crude refining runs to lower the production of gasoline. Eventually, declining refinery operations will lead to refinery closures or conversions to non-gasoline biofuels.

Although there is some flexibility with refining crude oil into different fuels besides gasoline, this capability is limited. Petroleum diesel is an unlikely alternative, as renewable diesel penetration has grown to more than half of all diesel consumed in the state as of 2022.²² The limitation of gasoline production shifting to diesel production is also suggested by the recent increase in diesel marine exports as a proportion of total marine exports. Diesel production will also decline as renewable diesel production or imports into California continue to grow. Shifting some gasoline production to jet fuel production is more likely, but the ability to do so is limited for each refinery.

²¹ This assumes that Nevada and Arizona demands are stable.

²² California Air Resources Board. "[Low Carbon Fuel Standard Reporting Tool Quarterly Summaries](https://ww2.arb.ca.gov/resources/documents/low-carbon-fuel-standard-reporting-tool-quarterly-summaries)." Available at <https://ww2.arb.ca.gov/resources/documents/low-carbon-fuel-standard-reporting-tool-quarterly-summaries>

The specific refineries that would shut down under this pathway are uncertain, but the in-state capacity for refining would not be a smooth decline like the demand scenarios. Rather, the supply response will be “lumpy” in the sense that a typical refinery is capable of supplying about 10 to 20 percent of overall state demand. Should one refinery close or convert (to renewable diesel), a large portion of in-state CARBOB supply essentially vanishes. The position of other refineries will be temporarily bolstered, resulting in an increase in market concentration. However, suppliers could choose to secure additional CARBOB supply from other domestic or foreign refiners if it is economically viable.

Declining demand may make it more difficult for smaller refiners to remain in the market. This could result in only the larger refiners remaining in each of the northern and southern parts of the state and consolidating the market, reducing competition. Although the northern and southern parts of the state are somewhat isolated, intrastate shipping from one part of the state to another could become a more common practice (See Appendix A on Marine Imports Evaluation). It may be that in one part of the state the last remaining large refinery completely shuts down and the state becomes reliant entirely on imports or intrastate movements. Under these conditions of lower supply, shipping capacity at reception ports should be relatively feasible, as intrastate movement was quite common in previous years.

The specific assets that would shut down under this scenario are highly dependent on the refiners’ strategies as they see how their current sales mix may or may not optimize their business.²³ Exports to Arizona and Nevada may also play a role, given that demand in these states may remain strong.

23 For instance, the refiner’s sales mix of dealer tankwagon sales, branded or unbranded sales, bulk sales, etc., would impact the decision to shut down operations. Dealer tankwagon sales are delivered sales of branded fuel by a refiner or supplier to a service station. These sales prices are typically higher than Branded rack sales since they include the cost of delivery to the service station.

Table 1 lays out some possible pathways of refineries that could continue to produce gasoline under declining demand. Conceivably under the rapid development scenario, California could be down to one or no refineries by 2044, due to the decreased demand for gasoline in the State.

Table 1. Possible Gasoline Refineries Remaining Under Each Demand Scenario Under Pathway One

Year	Rapid Scenario	Fast Scenario	Slow Scenario
2027 3 years	620 TBD Demand 3 Northern refineries 4 Southern refineries	780 TBD Demand 4 Northern refineries 5 Southern refineries	785 TBD Demand 4 Northern refineries 5 Southern refineries
2031 7 years	420 TBD Demand 2 Northern refineries 3 Southern refineries	670 TBD Demand 4 Northern refineries 4 Southern refineries	720 TBD Demand 4 Northern refineries 4 Southern refineries
2034 10 years	310 TBD Demand 1 Northern refinery 2 Southern refineries	555 TBD Demand 3 Northern refineries 3 Southern refineries	660 TBD Demand 4 Northern refineries 4 Southern refineries
2044 20 years	70 TBD Demand Extremely low demand, possibly no refineries	250 TBD Demand 1 Northern refinery 1 Southern refinery	540 TBD Demand 3 Northern refineries 3 Southern refineries

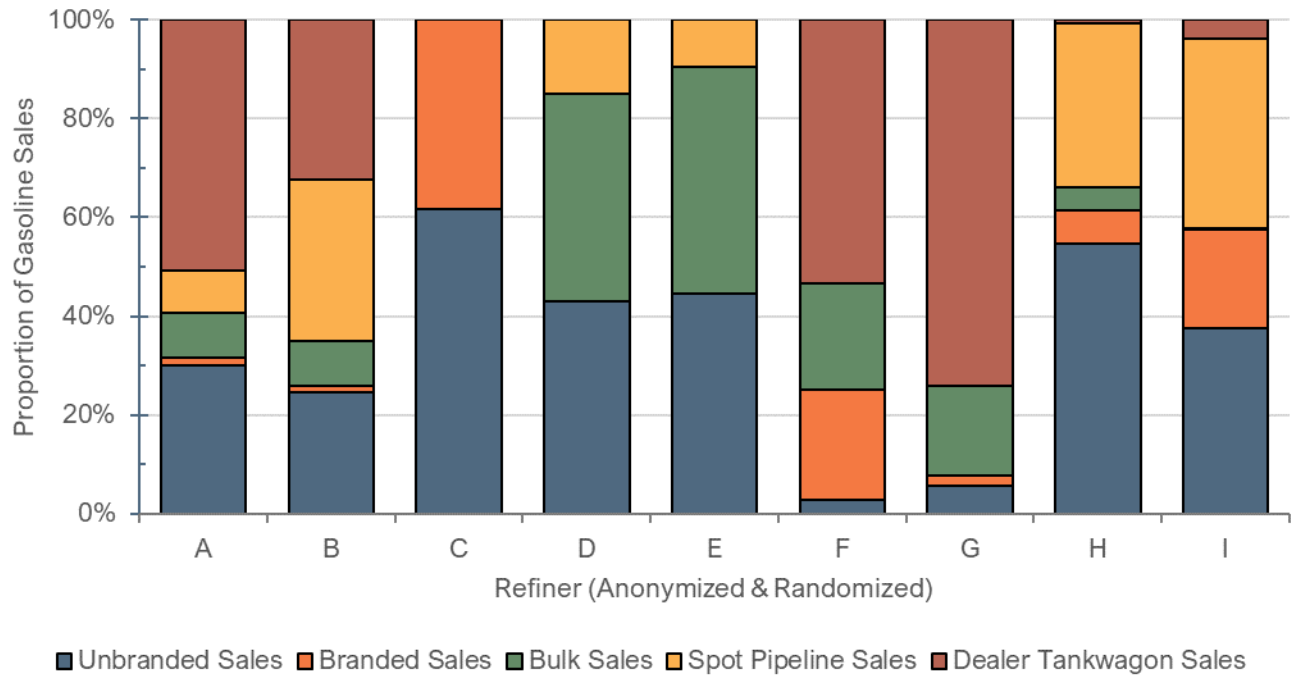
There are significant logistical issues that need to be resolved during the demand decline and supply phase down, which will be a primary component of the Transportation Fuels Transition Plan established in SB X1-2. The remaining refineries will need to be suited for access to their associated market. The response by infrastructure owners (i.e., terminals and pipelines) with much lower volumes is uncertain. Addressing other petroleum needs (e.g., lubrication products) may become challenging if the only refinery on the west coast capable of producing them closes. Jet fuel imports would need to increase substantially even with moderate penetration of reasonable substitute aviation services (e.g., sustainable aviation fuel, hydrogen, or electric aviation).

The precise response under the refinery closure pathway is also dependent on other factors besides refinery capacity, so the Pathway One supply responses in

Table 1 remain merely possible and not at the confidence level of a forecast. For example, individual refiner gasoline marketing and production optimization strategies are very diverse. For example, anonymized refiner data for July 2023 shows very diverse sales strategies (see

Figure 10) for CARBOB in California. Some refiners sell significant delivered dealer tank wagon (DTW) volumes, others a high percentage of unbranded fuel, and others spot market sales or bulk sales. It is uncertain which sellers would tend to leave the market first or how shifts in their sales strategies will unfold in response to declining demand.

Figure 10. Refinery Gasoline Sales Type, July 2023 by Refiner



Credit: CEC Staff

In addition to the uncertainties associated with supply reactions to declining demand, the associated gasoline price consequences are even more challenging. As mentioned above, increasing ZEV penetration may increase the elasticity of demand for gasoline in addition to the general demand for gasoline. Increased elasticity means that supply disruptions may be less problematic. However, general market concentration factors and the lumpiness of the decline suggest that higher prices and price spike risk may continue to be challenging, especially for lower-income California families. This speaks to the importance of policies to mitigate price spikes, discussed in Chapter 3.

While Pathway One shows a future where the refineries will gradually close over time as the demand for CARBOB declines, the CEC notes that refiners could continue to process crude and export product to domestic and foreign markets, extending the effective life of some refineries at least.

Pathway Two: Maintain Crude Runs and Export Non-CARBOB Gasoline

In light of declining demand for CARBOB, it is possible that some refiners may maintain crude processing and export gasoline or gasoline blendstocks to other states or foreign countries.²⁴

24 The study assumes that the Phillips’ Rodeo refinery will close as planned in 2024.

The likely main export markets would be to foreign countries via marine cargos. Pipeline exports to Nevada have stabilized in recent years, and most of the state's gasoline comes from California. While pipeline exports to Arizona have increased in recent years, representing only about half the state's consumption, other imports into Arizona are competitive. Both Nevada and Arizona have low levels of ZEV adoption compared to California, but they are experiencing exponential growth in ZEV registrations.²⁵ Although demand for gasoline may not decline on the same pathway as California, it is not likely that demand will increase significantly in the near term, and ZEV penetration within those states by the end of the decade may mean a decline in demand. Other nearby states such as Oregon and Washington have adoption rates that are closer to California.

The reason for pivoting to export is that each refinery has fixed costs (labor, maintenance, etc.) that do not decrease when crude refining runs decrease, so they have a financial incentive to keep their crude input high. One challenge for this strategy is that export products, either gasoline or diesel, must compete with fuel provided by export refineries in Korea, Singapore, India and other Asian markets. The "netback" to California refiners after accounting for freight will lower the margin for those export barrels. However, the California refiners may be competitive into Latin America, so there may be some export potential.

Each refinery conducts detailed planning for its operations and the products it manufactures. There are several questions that demonstrate the areas of complexity in this pathway:

1. Do potentially lower export profits erode refinery margins so much that California refineries continue to close or convert to renewable diesel?
2. Since California crude production is going to decline (fracking and conventional production), does it make economic sense to import crude with much of it going to refined exports?
3. What are reasonable market limits on the volumes of fuel that can be exported to domestic and global markets? How much surplus gasoline and diesel are economic to export?
4. Does this "run and export" scenario provide a cushion during gasoline shortfalls in the transition by sustaining refinery operating capacity to produce more CARBOB if needed?
5. What are the impacts to fence line communities as California demand drops and some refiners utilize exports to stay in business and balance their production?
6. Would there be adequate shipping available to export required volumes to foreign markets, or pipeline capacity to export more to Nevada or Arizona?

It would be surprising if California refiners did not attempt to continue to operate their refineries to produce fuel and find export markets for their products, although the extent to which this is feasible is uncertain. Viable export markets in Mexico or Latin America may be reasonable to expect but could be limited. Refiners who import crude from the Persian Gulf and then seek to export to the Far East may find that the marginal cost of the foreign crude

25 For ZEV registrations by state, see: [TransAtlas](#)

and the low net returns to move the products into the Far East may not be economic. This could drive crude run reductions or further refinery conversions to renewable diesel.

During the August 17, 2023, workshop on the Transportation Fuels Assessment, participants noted that there would be additional supply resiliency against outages at remaining refineries by sustaining some CARBOB production capacity in California above statewide demand.

While CARBOB demand falls under the rapid, fast, and slow scenarios, refiners will have to decide whether to compete for shrinking CARBOB demand or to find export markets (domestic or foreign) for their product. The ability of refiners to maintain crude refining runs as demand for CARBOB and diesel fuel declines will become very challenging due to port constraints, limited market outlets, and weakened refinery economics.

CHAPTER 2: Petroleum Basics

The CEC's experience with petroleum issues goes back to the inception of the agency in 1975, spurred by energy crises at the time, some of them involving petroleum. This Chapter provides a broad overview of refining, explores a suite of petroleum issues, and provides context for the CEC's role in understanding petroleum.

The Petroleum Industry Information Reporting Act of 1980

Enacted in 1980, the Petroleum Industry Information Reporting Act of 1980 (PIIRA) (Public Resources Code § 25350 *et seq.*) enables the CEC to require data from various petroleum industry participants, including refiners and marketers. The business and product information from industry participants are collected as reports at weekly, monthly, and annual frequencies. The CEC holds confidential information collected under PIIRA as confidential at the individual company level but publishes aggregated data.

Senate Bill 1322 (Allen, Chapter 374, Statutes of 2022), enacted in September 2022, establishes new reporting requirements under PIIRA on the gross margin of gasoline sold in California by refineries. The bill requires refiners that produce gasoline meeting California specifications to report the following: volume-weighted average gross gasoline refining margin, volume of crude oil purchased, price of crude oil purchased, volumes and prices by type of sale, and estimated LCFS and Cap and Trade compliance costs of gasoline sold in California. The data provided in the reports allows for a gross margin to be calculated at various types of petroleum wholesale distribution: branded, unbranded, bulk, and dealer tank wagon (DTW). The CEC publishes margin information from these reports on its website in an aggregated and anonymized format, per PIIRA provisions, 45 days after reports are due.

Senate Bill X1-2 requires additional information from refiners, traders, importers, and other market participants. Refineries are required to report additional information regarding their refining margins such as refined gasoline purchases, operational costs, and a net gasoline refining margin. SB X1-2 also introduced maintenance reporting, including the requirement that maintenance plans be submitted to the CEC 120 days before work commences, daily spot market transaction reporting, and marine imports reporting with a minimum of 96-hour ahead notice. This expanded information improves monitoring of maintenance, provides better insights into the operations and profits of gasoline refiners, and increases visibility into the spot market and petroleum product imports. With the additional data, the CEC can determine if a maximum gross gasoline refining margin should be applied, what the maximum value should be, and potentially a penalty for exceeding that value.

A Primer on Petroleum

The purpose of this section is to provide readers with a base of knowledge for understanding SBX 1-2. This section is a simple narrative explanation of the process that crude oil takes to become gasoline fuel into a customer's tank in California. This narrative introduces terms and concepts in common use within the petroleum industry.

Crude Oil Basics

Crude oil, or petroleum, is composed of hydrocarbons and other organic materials found in the Earth's crust. Crude oil is refined primarily to provide energy through transportation fuels, such as gasoline and diesel, and to produce petrochemicals used in various products like fertilizers and plastics.

Crude oil is graded mostly by its density and sulfur content. Light crudes are less dense than water, while heavy crudes tend to be denser than water. More technically, in California, crude less than 20 API gravity²⁶ is referred to as "heavy crude."²⁷ A sweet crude has a sulfur concentration below 0.5 percent and a sour crude has a sulfur concentration above 0.5 percent. These properties of crude oil determine its market value. Crude oil that is light and sweet is usually more expensive than crude that is heavy and sour.

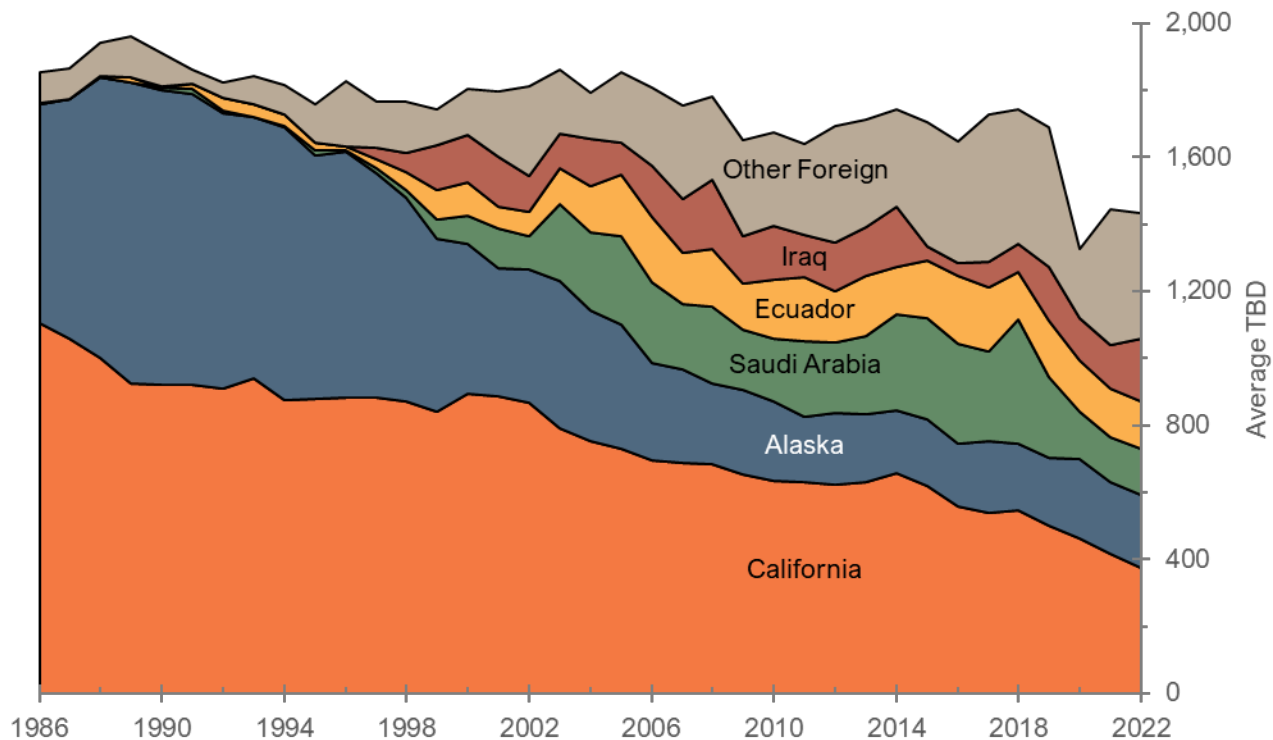
Crude oil is priced by the barrel (bbl), equal to 42 gallons. Crude oil markets use marketable crude named grades for pricing. The price of Brent North Sea (Brent), a sweet and light crude, reflects the price of crude from Europe, and many other foreign grades use this price as a benchmark, asking above or below the Brent price depending on crude quality. The CEC uses this price to estimate the price of foreign crude coming into California. West Texas Intermediate (WTI), also sweet and light (but heavier than Brent), reflects the price of crude oil from the United States. California's own grade San Joaquin Valley (SJV), being heavy and sour, prices below WTI most of the time, but the CEC uses WTI as an estimate of domestic crude oil prices.

In general, light and sweet crudes are less energy-intensive to refine than heavy and sour crudes. California refineries favor heavy and sour types of crude oil, as this matches the properties of California's crude that these refineries were originally built to run. Refiners in California mix many types of crude oil from both foreign and domestic sources to target a crude mix that allows their refinery to operate at an optimum economic level based on market conditions. Figure 11 shows California crude oil sources and trends since 1986.

26 The American Petroleum Institute (API) adopted the API gravity ($^{\circ}\text{API}$) as a measure of the crude oil density.

27 Penn State College of Earth and Mineral Sciences. Petroleum Processing. [FSC 432 Petroleum Processing: API Gravity](#).

Figure 11. Crude Oil Supply Sources to California Refineries, 1986 – 2022



Credit: CEC analysis of EIA data

Key numbers on crude oil supply in California in 2022, in terms of average TBD, are as follows:

- Refineries based within California received an average of 1,446 TBD of crude.
- California oil fields are still the largest single source for refinery inputs, about 372 TBD of crude for California refineries (25.8 percent).
- The next largest source is Alaska, or an average of 219 TBD (15.2 percent).
- Other states supplied a minimal amount of crude (less than 0.01 percent).
- Iraq is the third largest source and largest foreign supplier, averaging 187 TBD (12.9 percent).
- Foreign crude from Iraq and all other countries, including Saudi Arabia and Ecuador, averaged 853 TBD (59.0 percent, from multiple sources).

Refining Crude Oil

Oil refineries convert the mixture of hydrocarbon molecules that is crude oil into refined products that people use, such as gasoline and diesel. Refineries primarily sort these hydrocarbons from lightest to heaviest using large processing units with four major functions: cleaning, distillation, cracking, and reconfiguration.

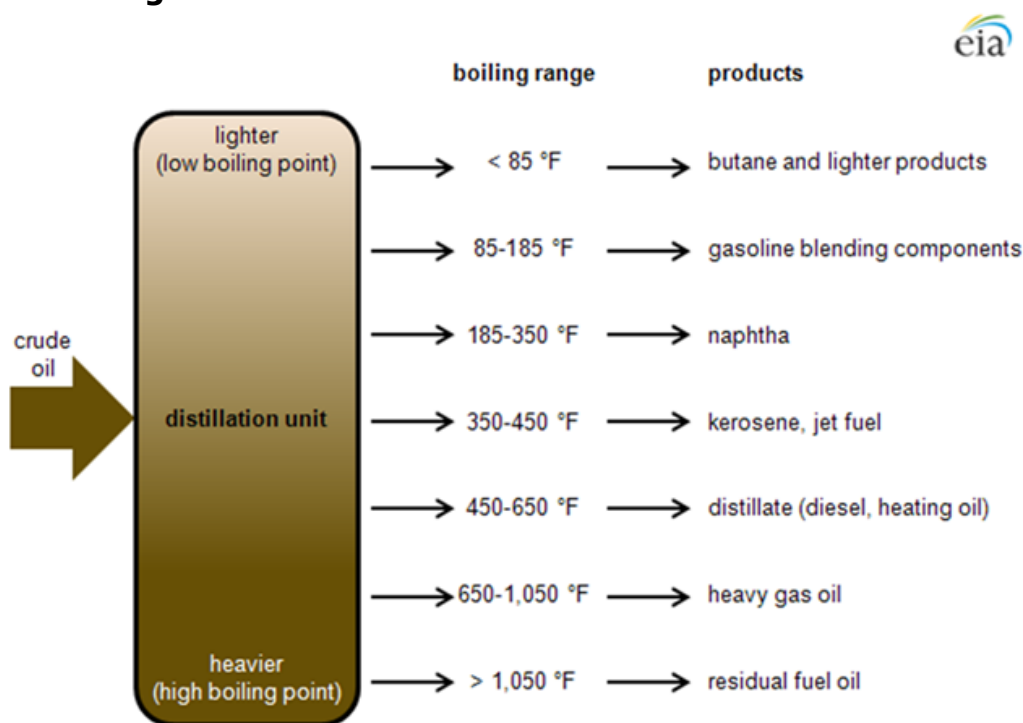
Cleaning and Distillation

Cleaning or scrubbing units remove sulfur, metals, salts, and other non-hydrocarbons out of the crude oil mixture and out of finished products. Sulfur forms compounds in hydrocarbons that are corrosive, explosive, and dangerous in downstream units. Sulfur also creates acid rain in the Earth's atmosphere when burned in fuel, so removal is critical. Sulfur cleaning is usually

the first stage for crude oil at California's fuel producing refineries. In California, most refineries perform additional sulfur cleaning at many stages along the refining process with hydro-desulfurization units. Hydro-desulfurization units, or hydrotreaters, use hydrogen and pressure to bond hydrogen to sulfur and remove it from the feedstock. These units are used to clean feedstock like gas oil headed to downstream units or to clean gasoline, diesel, and jet fuel, before sale.

Distillation, performed by a crude distillation unit, or crude unit, is the primary refinery unit and the centerpiece of most refineries. A distillation unit will boil the crude using a very large still tower and boiler, leaving the bottom of the still with heavy oils called gas oils. Boiling crude oil separates it into light and heavy hydrocarbon portions called a cut. Each cut refers to the temperature that it took for the product to boil out of the crude. A secondary distillation unit, the vacuum distillation unit, takes the gas oils and remaining material, commonly referred to as the bottoms, or bottom cut, from crude units and boils them again at lower pressures to further sort these gas oils to extract further cuts. The amount produced from each distillation cut depends on the composition of the crude oil put in. Figure 12 shows various fuel products and their distillation temperature ranges.

Figure 12. Crude Oil Distillation Unit and Products



Credit: EIA

Cracking and Reconfiguration

All other units after the distillation stage of the refining process are called downstream units. These units specialize in handling a specific range and combination of the distilled cuts from crude oil. Downstream units allow refiners greater control of final products from just distillation alone.

Cracking units, a broad category of processes, crack very heavy cuts into lighter ones. Thermal cracking uses extreme heat. Catalytic cracking uses chemical catalysts to speed up the process. California refineries use three types of cracking processes: hydrocracking, catalytic cracking, and coking.

Hydrocracking units take gas oils, add hydrogen and a metal catalyst at high temperature and pressure. This is like the hydrotreater cleaning process but goes further to break gas oils into diesel and jet fuel-sized molecules. As a bonus, hydrogen attaches to sulfur, allowing input of dirtier gas oils while producing cleaner outputs.

Fluid catalytic cracking units, or cat crackers, use specialized catalysts to break gas oils into mainly gasoline and lighter molecules with higher octane ratings for gasoline. This unit is fed only low sulfur inputs.

Coking, often considered its own process, is a thermal cracking process. Coking units use the higher temperatures that the distillation units avoid, because the carbon coke fouls the distillation units. In a coker, this carbon is formed by design, the heaviest oils are baked at high temperatures in drums until carbon, called coke, forms inside the drum. The resulting vapor becomes more gas oil to feed downstream cracking units. The coke in the drum is cleaned out and sold as fuel or as precursor for steel and aluminum industries.

Reconfiguration, another broad category of units that are focused on converting small, light, gaseous molecules such as propylene or butylene into a heavier molecule in the gasoline cut. At California refineries, alkylation units, or alky units, are an example. Alkylation units process using an acid catalyst which allows a wide range of light molecules to combine into gasoline-sized ones. Other types in this category reshape simple line-shaped molecules into branched snowflake-shaped molecules. These molecules add desirable qualities like high octane ratings to gasoline. In California, many refineries have catalytic reforming units that are an example of this type of reconfiguration unit.

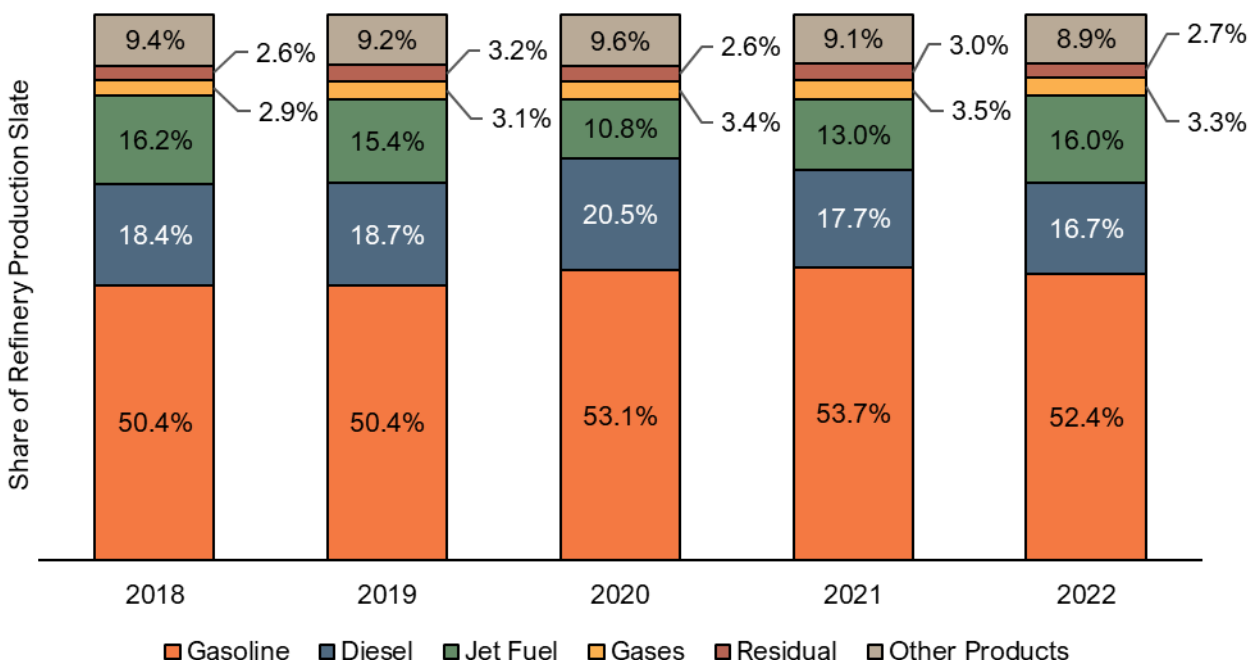
Blending

The last task the refinery performs is blending. Blending is done in batches, where a fixed volume of components mix into a final finished product for later shipment. Petroleum products are a mixture of cuts, some portion coming directly from the distillation unit. Gasoline, for example, will contain portions from an alkylation unit that combines gases. It may also come from a catalytic cracking unit that processes heavy gas oils from the bottom cuts of the atmospheric distillation unit. The combined blendstocks form the refinery's product "slate," or marketable products the refinery can produce.²⁸ The refiner will mix combinations of distillation cuts with downstream cuts together as blendstocks to match a blend specification.

Figure 13 shows the combined refinery slate by product type and percentage from 2018 to 2022.

²⁸ Reference units for refinery product slate are energy units, commonly expressed as either barrel of oil equivalent (BOE) or megajoules (MJ). One BOE is equal to about 6,118 MJ.

Figure 13. California Refinery Product Slate 2018 to 2022



Credit: CEC analysis of EIA data

Key numbers for refineries in California are as follows:

- There are eleven fuel producing refineries in California, totaling 1,723 TBD of crude input capacity.
- Nine of the eleven can produce CARBOB: three in the San Francisco Bay area, five in Los Angeles County, one small refinery in Kern County.
- These refineries input an average of 1,412 TBD of crude oil during 2022.
- Gasoline production made up 52.4 percent of the production slate in 2022 including out-of-state specifications.²⁹
- Diesel fuel made up 16.7 percent of the production slate in 2022.
- Jet fuel made up 16.0 percent of the production slate in 2022.

Overall, gasoline, diesel and jet fuel combine for 85.1 percent of all marketable production from the refineries in California during 2022. The remainder of the refinery slate includes

²⁹ The reference units for this chart are energy units (MJ or BOE). Thus, gasoline production represents 52.4 percent of the total energy of the product slate. The product slate and percentage are distinct metrics from the assumed 60 percent crude-to-gasoline production assumption discussed in

Figure 13 above, which is a volumetric conversion assumption (thousand barrels of crude converting to thousand barrels of gasoline).

products such as: bunker oils for ships, lubricating oils, petroleum coke, propane, and industrial inputs like acetylene.

California Gasoline

In California, the blend of raw gasoline is referred to as California Reformulated Blendstocks for Oxygenate Blending (CARBOB). Reformulated, instead of conventional blendstock (CBOB), refers to the blend's lower Reid Vapor Pressure (RVP), a measure of vapor pressure that relates to evaporation rate, that all reformulated blendstock specifications (RBOB) in the United States adjust for.³⁰ Oxygenate blending is the process of adding ethanol (an oxygenate), so CARBOB, CBOB, and RBOB are all intended to be blended with ethanol. The CARBOB formula changes during summer months to a specification that reduces evaporation and production of organic compounds that lead to ozone formation during warmer conditions but remains distinct from other formulations used in the United States since it has lower sulfur content and much lower benzene content.

All California fuel refineries sell gasoline in CARBOB form, specifically for transportation within California.³¹

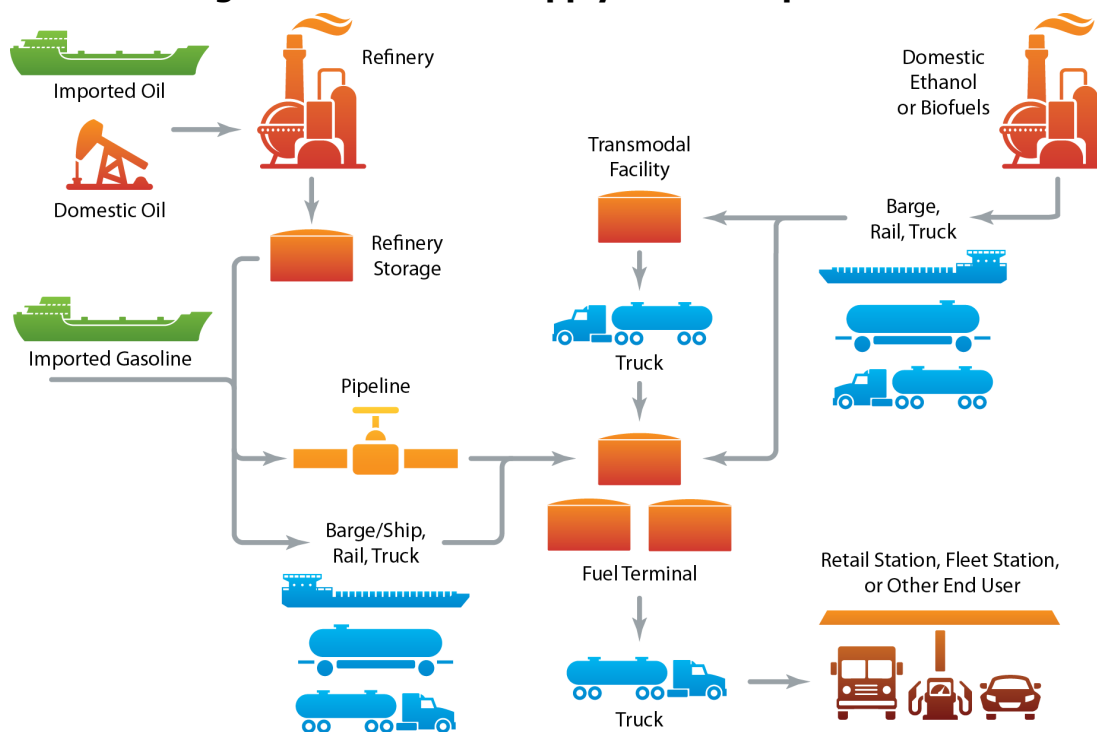
Moving Product

Figure 14 shows the process of product movement from crude oil to retail stations. After the refinery has blended fuel to the correct specification, the fuel needs to be moved to product storage terminals that are closer to gas stations and customers. The largest terminals in California are connected through pipelines. Pipelines allow petroleum products to move quickly and affordably. Pipeline companies often will combine different refineries' deliveries together to utilize the pipeline system's capacity efficiently. At terminals CARBOB gasoline is blended with ethanol and ready to be pumped for use. This finished gasoline is called California Reformulated Gasoline (CaRFG).

30 US EPA. Gasoline Standards. 1999. "[Phase II Reformulated Gasoline](https://nepis.epa.gov/Exe/ZyPDF.cgi/00000FG5.PDF?Dockkey=00000FG5.pdf)." Available at <https://nepis.epa.gov/Exe/ZyPDF.cgi/00000FG5.PDF?Dockkey=00000FG5.pdf>

31 Refineries may also sell gasoline in other forms for export purposes to NV, AZ, or out of the state.

Figure 14. Gasoline Supply and Transportation



Credit: Dean Armstrong, National Renewable Energy Laboratory

Pipeline Specifications

Refiners blend to standard specifications like CARBOB making it possible to easily transport products on a pipeline system. Pipeline companies and all the refineries served agree to the pipeline's own fuel specifications beforehand. This makes the products "fungible", allowing products from various refineries to be comingled together. The pipeline standard specifications are often stricter versions of the government fuel standards.

The stricter pipeline specification gives refiners flexibility on meeting the actual specification and ensures that contamination from another refinery's product is less of a problem. For example, if a small contamination of CARBOB gasoline occurs at a storage terminal in California, simply adding more pipeline standard product will dilute the contamination. The contaminated gasoline will never enter the pipeline system again but since it meets the overall CARBOB standard the gasoline can still be sold at stations near the terminal.

Pipeline Operations

Multiple types of refined products are pumped through the same pipeline via a sequencing system known as batching.³² Batching keeps a steady pressure within the pipeline and lessens the mixing of products. Using one pipeline saves on the cost of building separate pipelines for each product. A pipeline operator, such as Kinder Morgan in California, earns revenue by how much volume is moved through the pipeline and by the distance to the destination terminals. This financial incentive encourages the pipeline operator to maximize the throughput on the

³² US Department of Energy

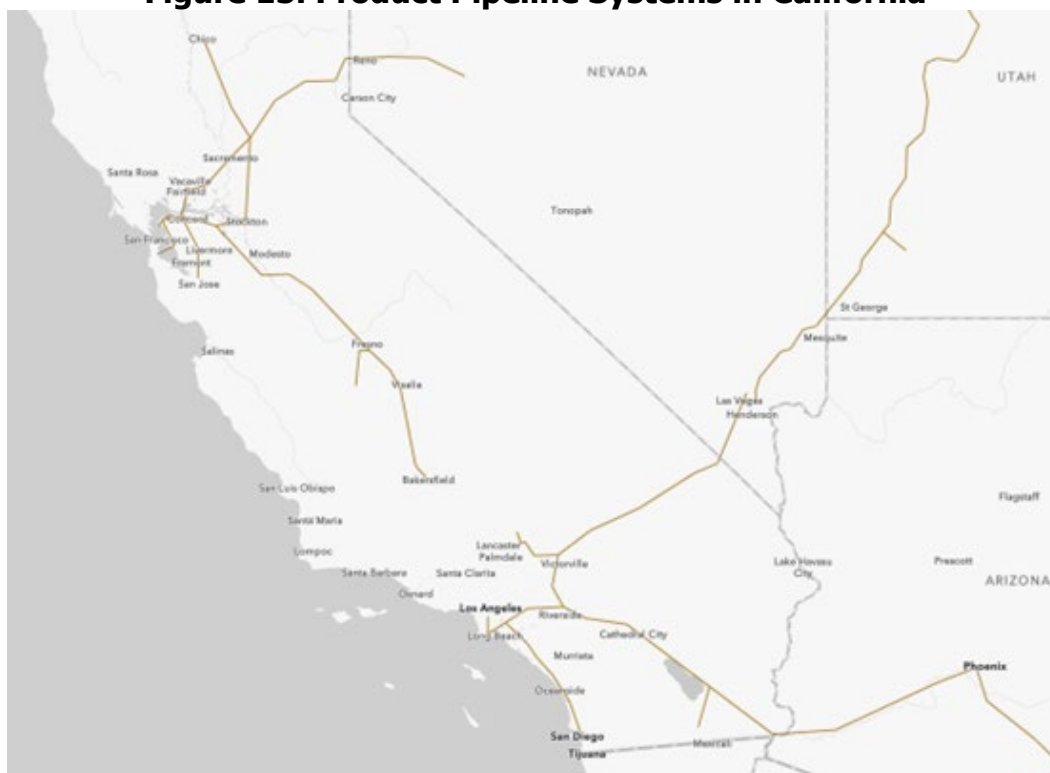
pipeline. However, the pipeline company only offers use of pipeline time and capacity. Shippers, usually marketer/refiners, nominate the product to move on the pipeline from refineries or commercial storage facilities.

Pipeline schedules follow a defined process, with pipelines requiring qualified shippers to nominate batch sizes and destinations in advance of each pipeline cycle. Kinder Morgan has 48 pipeline cycles per year (about every 7 days). Shippers who have been historical shippers are prioritized over parties who may only ship periodically. When pipelines are nominated at maximum throughput or higher, the pipeline “allocates” shipments based on the shippers’ pipeline history. Refineries and other shippers are certified to inject their fuel into the pipeline only after they’ve tested their fuel to ensure quality and for substances that might taint the pipeline sequence or damage the pipeline.

For example, ethanol is not transported via refined product pipelines because it is corrosive and causes damage. Once scheduling is done and the refinery’s testing certifications are up to date, the batch is loaded into the pipeline per the pipeline schedule towards distribution terminals located all along the pipeline system. Distribution terminals receive refined products from several suppliers that are held together in community storage tanks for like types of fuel. This is another reason why fuel standards are enforced, as lower quality products could contaminate other deliveries held in storage.

Kinder Morgan operates the only common carrier pipeline network within California. All the other product pipelines are exclusively owned by a company for its own purposes such as moving products from marine port terminals to refineries. Kinder Morgan runs multiple pipelines within California, serving two major refining sources with the West and North lines. The West line collects products from Los Angeles refineries and ends in San Diego in the south, and Las Vegas and Phoenix to the east. The North line, which collects products from the San Francisco Bay area, runs through to Chico, CA in the north, Fresno, CA southward and to Reno, Nevada eastward. There is no pipeline connection between the West and North lines and therefore no pipeline connection between Northern and Southern California refining centers. Figure 15 shows the California and Nevada portions of Kinder Morgan’s Pacific pipeline system.

Figure 15. Product Pipeline Systems in California



Credit: CEC Staff

Spot Markets

Spot markets are so-called “physical” markets where contracts for physical delivery of gasoline, diesel, and jet fuel are bought and sold. The contracts traded on spot markets can require delivery within 30 days of the deal or can be on a “prompt” basis – meaning delivery in the next several days. Spot market transactions allow refiners, wholesalers, and traders to sell CARBOB that may be surplus or buy product if needed. As noted in the January 31, 2024 letter from the Division of Petroleum Market Oversight to Governor Newsom, only a fraction of all the cleaner-burning CARBOB gasoline consumed in California every day is traded on the spot market, but it plays an important role in setting prices across the state. The spot market can be a first trading stop as gasoline flows from refineries, cargo ships, and pipelines to the “racks” where gasoline trucks are loaded and on to retail gasoline stations.

Traders in the spot market include some California refiners, large wholesalers and retailers, and international trading firms who buy and sell relatively large quantities of gasoline, often tens of thousands of barrels. 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.

The spot market in California is currently an unregulated, over-the-counter market. Spot market deals are negotiated directly between buyers and sellers or mediated by brokers. California has two spot markets: one for Los Angeles (LA) and one for the San Francisco Bay Area. Other U.S. spot market locations include the Pacific Northwest (Portland), Houston, Chicago, and New York. The LA spot market is more active than the San Francisco market and the LA spot price impacts the largest portion of retail gasoline prices across the state.

Spot market transactions and average prices for the LA market are published by price reporting agencies ("PRAs"). PRAs have an outsized influence on market dynamics through their assessment of current market prices. Buyers and sellers negotiate the contract price for individual deals, but only some of those deals are voluntarily (or selectively) reported to the PRA. The PRA then publishes what it assesses to be the current market price for California gasoline. The Oil Price Information Service ("OPIS"), a for-profit company, is the industry-leading PRA in California and on the West Coast.

A common way that spot contracts are priced is an "exchange of futures for physical" or "EFP" trade, which are contracts that are priced relative to the New York Mercantile Exchange ("NYMEX") futures RBOB contract at the close of a specific day. RBOB is a common benchmark for gasoline sold in other parts of the United States. In an EFP transaction, the spot market parties agree to a differential to the NYMEX RBOB price. This differential is the measure of the difference between the L.A. spot market and the NYMEX. This differential is a key benchmark for observers to determine if the L.A. market is experiencing supply/demand issues.

Spot market prices are the biggest driver of statewide gasoline prices, even though they represent a small portion of gasoline sales each day. According to OPIS: "Nearly every gallon of gasoline, diesel and jet fuel sold on the West Coast references OPIS spot prices."³³ That is because many other spot, bulk, rack, and marine cargo transactions, including high-volume transactions between refiners and distributors or retailers under long-term contracts, set their pricing by reference to the OPIS-assessed spot market price that can change daily. As a result, the prices for relatively small trades (compared to statewide volumes) on the spot market have a magnified or exaggerated effect on retail gasoline prices across the state.

Unfortunately, California has been experiencing more frequent and extreme price spikes that seem to be driven by price swings in the spot market. More than twenty years ago, the Attorney General's Office produced a Report on Gasoline Pricing in California, which examined the unique volatility of the state's gasoline market.³⁴ In the years since that initial appraisal, the market has seen gasoline price spikes in 2012, 2015, 2019, 2022, and 2023. It appears that price spikes have become more common over time, with gasoline price spikes occurring in three of the last five years, with the exceptions being during the COVID pandemic. These spikes have been generally driven by periodic episodes of undersupply of gasoline (in the form of reduced refinery production, lower inventories of stored gasoline, or both) that are exacerbated by the dynamics of trading and reporting on the spot market. DPMO's initial analysis of the most recent gasoline price spikes in California noted that spot market volatility, illiquidity, and lack of transparency may all be contributing to and exacerbating price spikes during periods of undersupply.

33 OPIS West Coast Spot Market Report website. Available at <https://www.opisnet.com/product/pricing/spot/west-coast-spot-market-report>

34 Office of the California Attorney General. Report on Gasoline Pricing in California. May 2000. <https://oag.ca.gov/sites/all/files/agweb/pdfs/antitrust/gasstudy/gasstudy2.pdf>

Product Racks

Distribution terminals utilize truck loading “racks” to load tanker trucks. Racks are also located where the last blending stages for finished gasoline take place. Ethanol, additives, and detergents are added at the rack either by in-line rack blending or the less precise “splash” blending. A tanker truck at the rack is loaded with CARBOB, additives, and detergent packages, and simultaneously blended with ethanol to produce E10 gasoline. This blended product, California Reformulated Gasoline (CA RFG), is what is sent to service stations.

Retail marketers, or distributors for service stations, buy product from refiners at the distribution rack. There are three main ways these terminal sales are separated: branded rack sales, unbranded rack sales, and dealer tank wagon (DTW) sales.

- Branded rack sales are sales of branded fuel that has branded additives and detergents. These are ultimately sold by a branded service station such as Chevron or Shell. Branded service stations generally have priority through the branded rack, as well as DTW sales.
- Unbranded sales have generic additive and detergent packages. They are sold by unbranded service stations such as Costco or local convenience store chains. These customers can shop around for the best unbranded rack price offered at the closest distribution terminals.
- DTW sales are a delivery sale, where delivery is included in the price for branded service stations. DTW sales include a wholesale price (usually higher than rack) plus the cost of delivery to the station, mostly the cost of the tanker truck service. Most common customers for DTW sales are company owned and operated.

Branded Gasoline and Fuel Additives

Several brands of gasoline contain fuel additives, generally understood as TOP TIER® certified gasoline. These are offered by companies such as Chevron, Shell, Exxon, 76, Valero, Costco, and ARCO. There is some evidence that these fuels offer improved performance over standard gasoline available in the United States broadly.³⁵ However, these fuels do not appear to provide superior performance above and beyond the stringent standards required by CARBOB. These standards include a reduction in some standard gasoline constituents such as sulfur and the addition of special detergents to burn cleaner. In 2019, the CEC asked fuel providers for evidence of superiority, but the CEC did not receive any evidence. Additionally, CEC staff independently searched for studies that could substantiate the superiority and were unable to find any evidence.³⁶

35 For example, the American Automobile Association conducted a 2016 study in which it found that Top Tier fuel did provide benefits and improved fuel economy. However, the fuels tested, both Top Tier certified and non-Top Tier certified, were from Texas, which does not use CARBOB. See [AAA FUEL QUALITY RESEARCH: Proprietary research into the effectiveness of fuel additive packages in commercially-available gasoline](#)

36 See [Additional Analysis on Gasoline Prices in California](#) for more information.

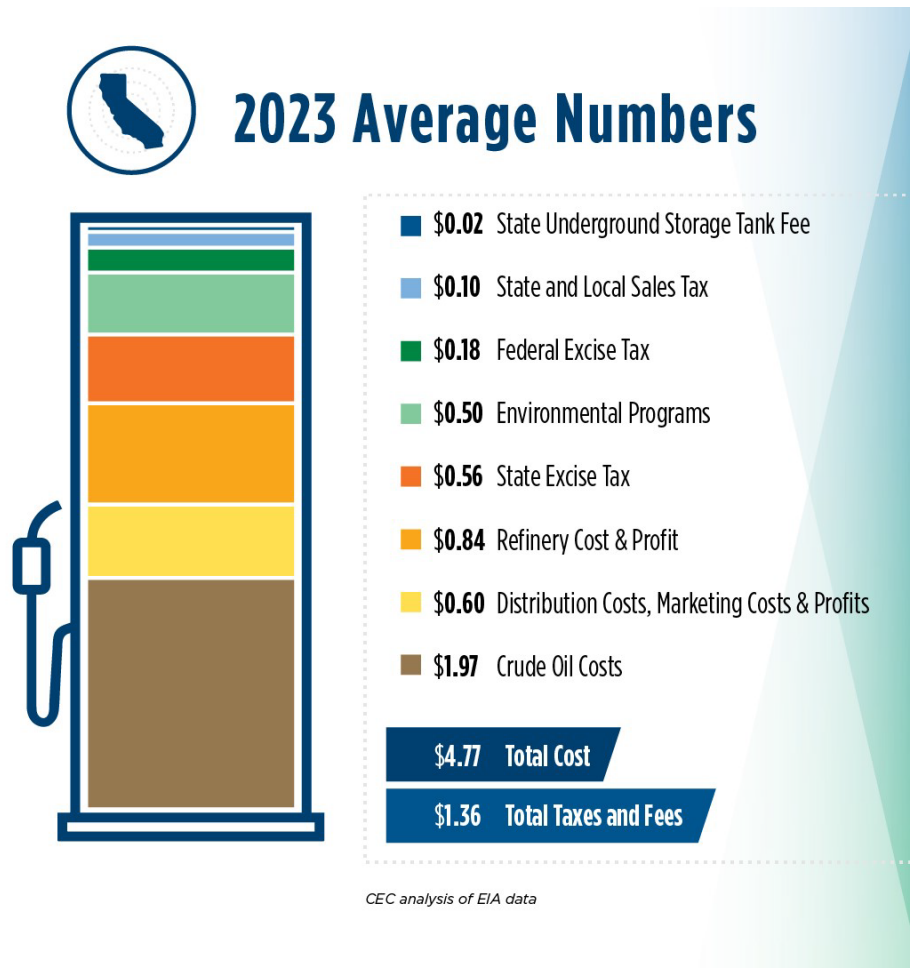
Margin Basics

Rack and DTW sales are an important point to measure prices in relation to each other. These sales mark the critical point where products are no longer counted as inventory but as sold, making it easier to classify sales after the rack as retail and before the rack as wholesale. This is helpful in categorizing sales to calculate margins.

A margin is an estimate of net revenues per unit sold by subtracting the cost of inputs from the price of product produced. For refineries, the gross gasoline refining margin is calculated by subtracting the cost of crude oil from the price of product at the rack and DTW. There's remaining margin to account for as prices at the gas pump are usually higher. This retail margin is calculated by subtracting the price of product at the rack from the prices at the pump. Margins that only subtract input costs are called gross margins, as they do not account for any operating costs. A net margin will subtract both operating and input costs.

For gasoline retail margins that the CEC calculates, the CEC subtracts taxes and fees from the average retail price, giving an average gross margin after taxes. Figure 16 shows California's 2023 year-to-date average components of the retail price of gasoline.

Figure 16. Breakdown of California 2023 Average Retail Price Components, through 2023



Credit: CEC Staff Analysis of EIA Data on for 2023

In 2023, the cost of crude accounted for the largest portion, \$1.97, or 41.3 percent of California's retail gasoline price. Combined refiner and retail margins (referred to in the figure as "Refinery Cost & Profit" and "Distribution Costs, Marketing Costs & Profits") total the next largest portion, \$1.44 or 30.2 percent, while all taxes and fees combine as the remaining \$1.36 or 28.5 percent of the retail price.

Refinery Outages

As mentioned above, refineries' planned maintenance may involve going partially or completely offline. Some refiners use storage and increase imports to help address supply as part of their plans and to meet their contractual obligation to retail entities. However, unplanned refinery outages can occur at any time, and planned maintenance does not always align with the anticipated timeline. The impact of either of these events can be compounded if other refiners are already undergoing planned turnarounds for maintenance work. The unplanned outage or extension of maintenance of one large refinery can be extremely disruptive, especially if statewide refinery capacity is lower in the future. When unplanned outages occur, even the impacted refiner may not know the longer-term impact of the outage for several days, and other refiners may not be aware of the incident (although refinery fires and extended flaring³⁷ are obvious). The uncertainty on event duration can lead to delays on refiners making decisions on purchasing marine cargos for replenishment.

Through SB X1-2, the CEC has more insight into planned and unplanned maintenance outages. For planned maintenance, refineries are required to report their planned maintenance event at least 120 days prior to the event. If a planned event is scheduled less than 120 days in advance, refiners must report within 48 hours of identifying the need for maintenance. For unplanned maintenance events lasting more than 24 hours, refineries are required to file a report within 48 hours of the unplanned maintenance. In their report, refineries are required to provide CEC information about the expected inventory impacts, expected length of the maintenance, and if the refinery intends to backfill the lost supply with imports.

An illustrative example of the complicated dynamics is the Torrance Refinery shutdown of 2015. The extent of the shutdown was initially unknown, which led to delays in arranging imports from other countries. The Torrance shutdown was one of the largest supply disruptions California has faced, and the uncertainty that followed resulted in an extended period of supply shortages and higher prices for California. During that incident, a significant amount of replenishment fuel was shipped from Northern California to Southern California by marine vessel (much more than was imported). This was helpful in sustaining supply to Southern California, although the "relief" may not have been possible if Chevron's Richmond refinery was undergoing a turnaround or had its own unplanned event. Moreover, with Marathon Martinez conversion and Phillips Rodeo having converted in 2024, the Bay area will no longer be in surplus of gasoline to ship to Southern California in the future. In cases of coincident multiple refineries shutting down, perhaps due to a major localized catastrophic

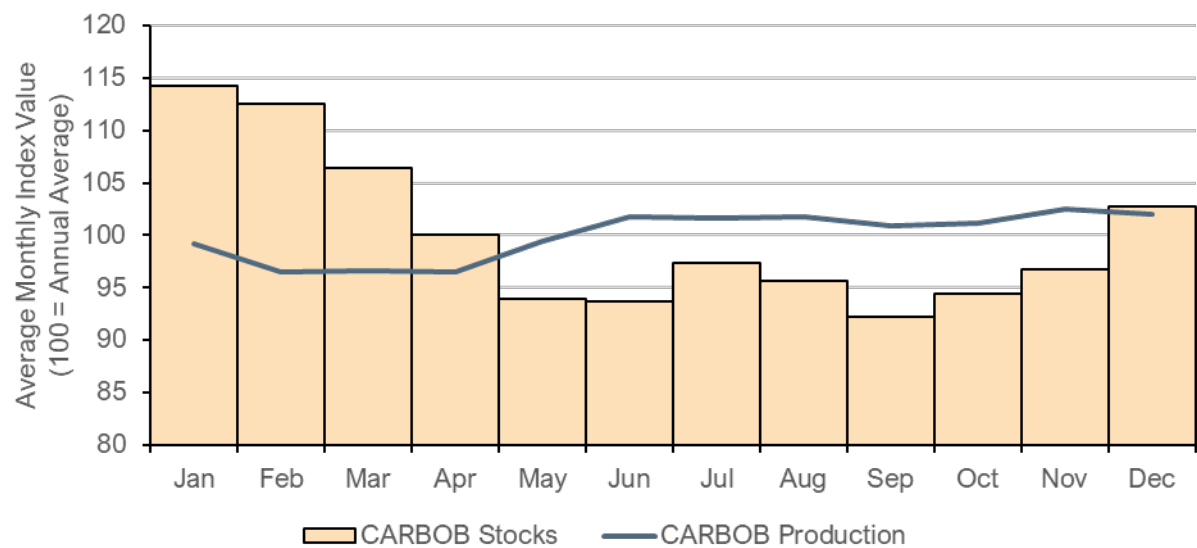
37 Flaring occurs when a refiner must burn flammable gases that are released to prevent pressure buildup in equipment. Flaring can be planned or unplanned.

event, the supply response may require significant cargo transport and perhaps measures to conserve fuel and allow non-CARB gasoline to be secured.

Seasonal Dynamics

Demand for CARBOB declines in the early part of typical years, while demand peaks in the summer. Figure 17 shows an index of CARBOB stocks (or storage) and CARBOB production at refineries from 2006 to 2022. CARBOB production partially tracks the consumption, but a drawdown of stocks built from previous months also helps satisfy some demand without production. However, as stocks draw down and demand remains high, additional risk from supply disruptions may occur. Although production declines very slightly in September, stocks tend to be at the lowest levels of the year, an indication of low resiliency.

Figure 17. Average Monthly CARBOB Production Index and CARBOB Stock Index (2006-2022)



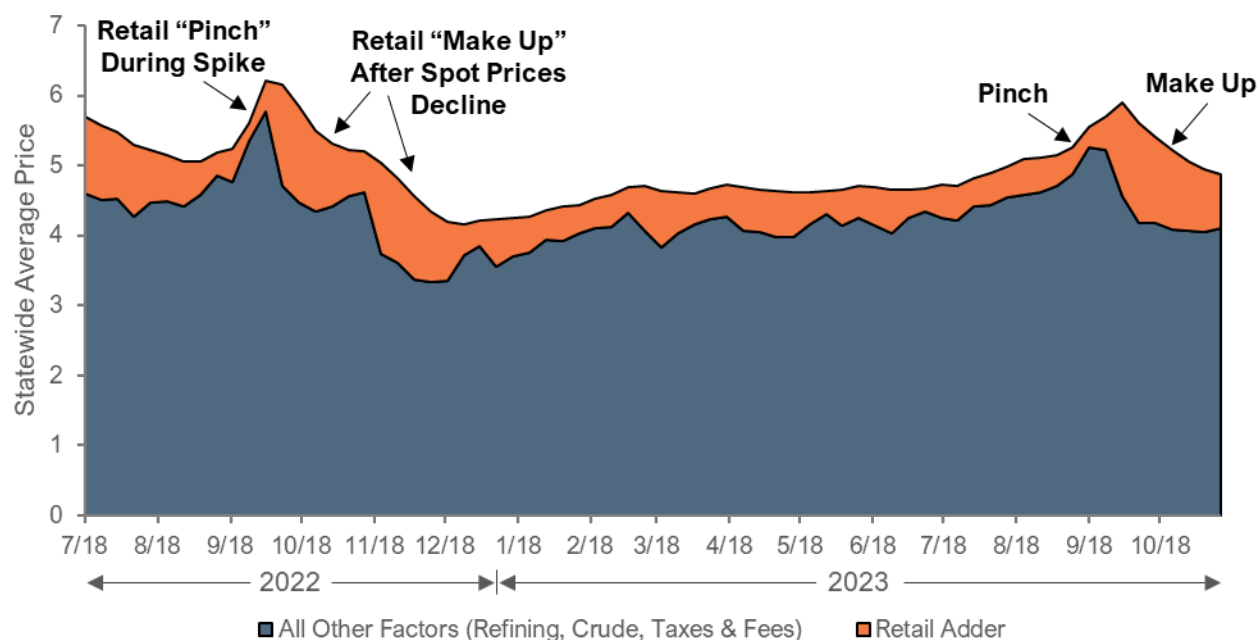
Credit: CEC Staff

Retail Dynamics

A common pattern observed in the gasoline market is that retail prices can rapidly increase with the spot market, but they are slower to decline even as the underlying spot prices go down quickly. This dynamic of “up like a rocket, down like a feather” in retail prices can be seen from CEC’s analysis of the slopes of price increases and declines.³⁸ Figure 18 highlights the retail adder components in orange (delivery to station, retail marketing, station profits) on top of other standard existing cost adders, such as taxes and fees, crude oil prices, and refining prices, in blue.

38 For more information on gasoline prices, see [Estimated Gasoline Price Breakdown and Margins](#)

Figure 18. Retail Margins Compared with Other Price Components Combined July 2022 - October 2023



Credit: CEC Staff analysis of OPIS and EIA data

Spikes in the spot market and crude market can increase rapidly and flow into retail prices somewhat quickly, creating a close “pinch” that keeps the retail adder fairly consistent until the spike abates. After the spot market price spikes abates, there is an observable delay in retail prices declining. Retail prices remain somewhat high, the result of retailers attempting to make up for potential losses or tight margins during the spike. This phenomenon can be seen for the 2023 spike as well. Overall, the slow decline allows retailers to realize sustained, high retail margins.

CEC does not currently have the ability to analyze retail issues at a more geographically refined level given the structure of tax reporting to the California Department of Tax and Fee Administration.³⁹ For example, although the CEC collects sales data at stations, this reporting is only at the annual level, which is not temporally detailed enough to evaluate patterns associated with price spikes.

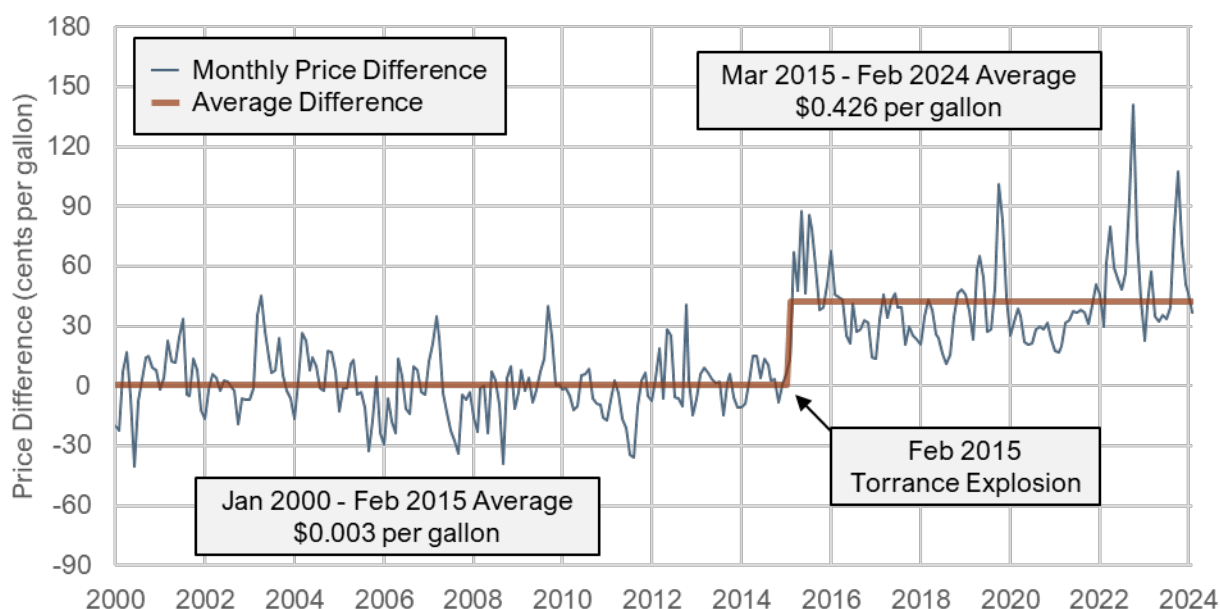
During the November 29, 2022 gasoline price hearing⁴⁰, Dr. Severin Borenstein cited a phenomenon he has termed the “mystery gasoline surcharge.” Gasoline prices in California are higher than those in other U.S. States, but even when accounting for well-established factors,

³⁹ The California Department of Tax and Fee Administration collects excise taxes from fuel suppliers before delivery at retail stations, so taxes are only available at a very aggregate level. Available at [Fuel Tax and Fee Guides](#)

⁴⁰ Commissioner hearing on California Gasoline Price Spikes, Refinery Operations, and Transitioning to a Clean Transportation Fuels Future. Available at <https://www.energy.ca.gov/event/workshop/2022-11/commissioner-hearing-california-gasoline-price-spikes-refinery-operations>

a distinct pattern has emerged since the Torrance refinery explosion in early 2015. Prior to 2015, after accounting for known contributors to higher gasoline prices in California such as the underground tank storage fee, environmental fees, slightly higher state excise taxes, and the cost of producing CARBOB gasoline, the price of non-California gasoline was essentially identical to California retail gasoline. However, after the 2015 Torrance explosion, the price difference emerged, and it continues to persist as of the most recent data collection period (February 2024). Borenstein estimates that this surcharge represents more than \$40 billion dollars that Californians have borne since 2015.

Figure 19. The Mystery Gasoline Surcharge: California Gasoline Price Premium After Removing Differences in Taxes and Fees and California Specification Gasoline Production Costs (2024 dollars)



Credit: Severin Borenstein, University of California, Berkeley.

Borenstein has cited several potential reasons for the mystery gasoline surcharge, but he does not intend for them to explain everything.⁴¹ Refiners own downstream retail outlets (e.g., Chevron is a major refiner and operates many Chevron branded gasoline stations) and have an influence on other downstream brands.⁴² Less gasoline is sold as off-brand gasoline compared to the rest of the U.S. There is also a marked difference in off-brand prices compared to branded prices when looking at California compared to the rest of the U.S.

41 For instance, see Borenstein's June 30, 2022, testimony to the California Select Committee on Gasoline Supply and Pricing. Available at <https://www.assembly.ca.gov/sites/assembly.ca.gov/files/borensteingasolinetestimony220630.pdf>

42 Commissioner hearing on California Gasoline Price Spikes, Refinery Operations, and Transitioning to a Clean Transportation Fuels Future. Available at <https://www.energy.ca.gov/event/workshop/2022-11/commissioner-hearing-california-gasoline-price-spikes-refinery-operations>

Borenstein believes that these factors show that there is less competition at the retail level. The ultimate set of causes is still uncertain.

Ethanol

California is a reformulated gasoline market, blending 10 percent ethanol by volume (E10) into CARBOB. Blends with higher ethanol content, such as E15 (15 percent ethanol by volume), have been used in other states. At the federal level, EPA has issued waivers allowing year-round use of E15 starting in 2022.^{43,44} More recently in February 2024, EPA issued a final rule to approve the permanent waiver for eight Midwest states, effective April 28, 2025.⁴⁵ California does not currently allow the sale of E15. E15 fuel evaluation is required to determine whether it would create any significant new environmental or public health impacts.⁴⁶

As part of an evaluation process from CARB, recent research on E15 indicates that it may represent a lower environmental harm compared to E10. Researchers at the University of California at Riverside performed emissions testing on a fleet of 20 Tier 3 light-duty vehicles using a baseline CaRFG and a splash-blended CaRFG with fuel-grade denatured ethanol creating E15 for testing.⁴⁷ Each vehicle and fuel combination was tested using the Federal Test Procedure on a chassis dynamometer. Major results were as follows:

- No statistically significant fuel effect on nitrogen oxide (NOx) emissions for E15.
- Particulate matter showed statistically significant reductions of 18 percent for E15 compared to E10. Solid particle number emissions were a statistically significant 12 percent lower for E15 than E10.
- Total hydrocarbons, non-methane hydrocarbons, and carbon monoxide showed either marginally or statistically significant reductions for E15.
- Statistically significant increase of 32% in acetaldehyde.

The researchers reported that the study only found a 1 percent reduction in fuel economy. Strictly relying on the energy content difference between E10 and E15 suggests that an E15 blend should result in about a 3 percent reduction in fuel economy.

43 Regan, Michael. 2022. *RE: May 1, 2022 E15 Reid Vapor Pressure Fuel Waiver*. United States Environmental Protection Agency. Available at <https://www.epa.gov/system/files/documents/2022-04/nationwide-fuel-waiver-allowing-e15-gasoline.pdf>

44 [EPA Fuel Waivers](https://www.epa.gov/enforcement/fuel-waivers). United States Environmental Protection Agency. Available at <https://www.epa.gov/enforcement/fuel-waivers>

45 [Request From States for Removal of Gasoline Volatility Waiver](https://www.govinfo.gov/content/pkg/FR-2024-02-29/pdf/2024-04023.pdf). United States Federal Registrar. Available at <https://www.govinfo.gov/content/pkg/FR-2024-02-29/pdf/2024-04023.pdf>

46 The California Health and Safety Code (CHSC) requires that a multimedia evaluation be conducted and reviewed by the California Environmental Policy Council (CEPC) before specifications for new motor fuels can be adopted by the California Air Resources Board (CARB).

47 Comparison of Exhaust Emissions Between E10 CaRFG and Splash Blended E15 (available online [here](#)). The research was funded by CARB, Renewable Fuels Association, Growth Energy, National Corn Growers Association, and the United States Council for Automotive Research (USCAR). Available at <https://ww2.arb.ca.gov/resources/documents/comparison-exhaust-emissions-between-e10-carfg-and-splash-blended-e15>

This research suggests that E15 would likely not introduce additional harms. The testing results show the use of E15 versus E10 will reduce the tailpipe emissions of most pollutants with no statistically significant impact on evaporative emissions.

CHAPTER 3:

Policy Options to Mitigate Price Spikes

Addressing the Supply Challenge

As discussed in detail in Chapter 1, California faces a significant supply challenge, with price spikes of particular concern. The state's fuel supply market is already somewhat concentrated at the wholesale level. Other supply factors such as market isolation and a unique fuel blend add to price spike risk. As demand declines over the next 20 years, due to California's increasing adoption of ZEVs, refineries may close or convert to renewable fuels, and as a result, the supply conditions may increase baseline prices and add to price spike risk. Price spike risk is especially concerning, as demand reduction is expected to be on a relatively smooth trajectory, while supply declines from refinery closures or conversions will result in steep, sudden declines in gasoline production capacity. Immediate declines in CARBOB production will have uncertain effects on the market, especially if an unplanned outage occurs shortly after a refinery closure.

There are some potential mitigating factors in the market independent of targeted fuel price spike mitigation policies. One example is a family that owns one ZEV and one ICE vehicle, who drives the ZEV during price spikes. Across millions of families, such behavior could increase the elasticity of demand and reduce price spike risk for all drivers. Another possibility is that some refineries may maintain their crude refining for some period and pivot to export refined products. With higher overall supply capacity in the state, CARBOB supply could be more resilient during a supply shock.

Despite some potential mitigating factors—including extensive programs designed to make ZEVs more affordable for lower-income families—there is still risk to lower-income communities as market concentration increases, especially if capacity declines as well. This chapter presents a suite of policy options that state government could take to help reduce price spike pressure on Californians, the leading issue for ensuring a reliable supply of affordable and safe transportation fuels.

Equity Challenges and Tradeoffs

While various policy options to mitigate gasoline price spikes could result in various environmental impacts, it is crucial to acknowledge and carefully consider the potential environmental justice (EJ) and equity implications associated with each of these options. Currently, it is challenging to quantify these impacts definitively, as they depend on numerous variables, including the extent of policy adoption, the duration of implementation, and the specific pathways through which these policies would be enacted. Nevertheless, this section aims to provide a qualitative evaluation, highlighting the potential EJ and equity consequences that may emerge from the adoption and implementation of these policy measures. It is also noteworthy that the Transportation Fuels Transition Plan will serve as a crucial instrument for thoroughly assessing the equity implications of fuel prices and ZEV accessibility for communities in California.

While it is not desirable to put a financial burden on drivers in EJ communities, it is possible that sustained lower fuel prices can generally incentivize more driving and make driving gasoline-powered vehicles more economically attractive in comparison to ZEVs. As a result, the prolonged operation of gasoline vehicles on California's roadways could lead to continued pollution from both refineries and vehicles.

These EJ issues are particularly challenging. As highlighted in Chapter 1, lower income communities often have limited access to ZEVs or other dependable and affordable alternative modes of transportation. It is therefore critical to develop policy options that both safeguard vulnerable communities from volatile fuel prices and actively work to reduce their exposure to pollution and transition them towards safer transportation fuels. The State, however, through various vehicle purchase incentive programs, is working to make ZEVs more accessible to those who are low-income and living in disadvantaged communities. Incentive programs such as Clean Cars 4 All and the Clean Vehicle Assistance Program provide point-of-sale incentives for these consumers to afford these vehicles more easily. Additionally, the Clean Vehicle Assistance Program, through its partner banks, provides lower interest loans for its participants, which can sometimes be a barrier to vehicle ownership. Through October 22, 2023, both programs have issued more than 17,814 vehicle grants.⁴⁸

Some of the options examined in this report could have adverse impacts on the environment and result in adverse health impacts and higher health costs, challenges to ensuring a safe supply of transportation fuels. While policy impacts are intended to control dramatic increases in spot market prices that are quickly passed on to consumers, potential health risks cannot be ignored. In the long term, the shift towards higher adoption of ZEVs could result in a reduction of refineries operating in the state, as well as a decrease in tailpipe emissions. It is crucial that the implementation of EV infrastructure and access to cost-effective EVs lead the transition, accompanied by a corresponding decrease in refinery capacity. Furthermore, increased EV adoption will enable more dual vehicle households to own both an EV and a gasoline vehicle, potentially increasing the elasticity of gasoline demand in response to price fluctuations.

The following subsections delve deeper, providing a more detailed qualitative analysis of the EJ impacts associated with various policy options, specifically focusing on emissions originating from refineries and vehicles.

Impacts of Continued Refinery Operations

Refineries are often near marginalized and disadvantaged communities, leading to disproportionate impacts on air quality and, consequently, the health of these populations. Although there are regulations that restrict the amount of pollution that refineries can emit, the California Office of Environmental Health Hazard Assessment identifies some levels of toxic air contaminants from refineries, including various Proposition 65-listed chemicals in petroleum products, pose significant health risks.⁴⁹ These risks range from various types of cancers, such as leukemia, lung cancer, and cancers of the nose, throat, and sinuses, to developmental and

⁴⁸ [Data from Insights on CA Light-Duty ZEV Incentive Programs](#).

⁴⁹ California Office of Environmental Health Hazard Assessment. "Toxic Air Contaminants". <https://oehha.ca.gov/air/toxic-air-contaminants>

reproductive harm, particularly during pregnancy. Notable chemicals contributing to these risks include benzene, 1,3-Butadiene, carbon monoxide, lead, and sulfur dioxide, among others. Exposure to these chemicals and the resulting health impacts can vary across different refinery regions.

The communities near refineries frequently comprise low-income families and people of color, who bear the brunt of the air pollution from refinery operations. Additional health risks of compromised air quality can lead to a higher incidence of respiratory issues, cardiovascular diseases, and other health problems. These communities often lack the resources and political influence to advocate for a safer fuel supply and stricter regulatory oversight, perpetuating a cycle of environmental injustice. While the impact of short-term policies to address price spikes on the longevity of refinery operations remains uncertain, it is imperative to acknowledge and consider the public health and safety risk of prolonged refinery activity and increased production.

Emissions from Policy Impacts on Driving

Short-term price spikes have a limited effect on demand, but long-term lower fuel costs can lead to an increase in vehicle travel, also known as the rebound effect. While enhanced gasoline price stability is beneficial in terms of economic predictability, it carries the potential risk of increasing gasoline-powered vehicle activity and, consequently, pollution. Increased ZEV adoption is expected to mitigate air quality, but air quality standards are not static, and the state must continue to improve air quality. Continued or otherwise delayed reductions in pollution from gasoline combustion is expected to be more pronounced in low-income areas, which tend to have a higher concentration of older, less environmentally friendly vehicles. This could exacerbate local air quality issues and public health challenges, further compounding the environmental injustices faced by these populations.

Although policies that keep average prices low may encourage more driving in the long-term, it is important to note that, due to relatively low elasticity, price spike mitigation policies are not likely to significantly increase driving. Therefore, policies that reduce price spike risk will not necessarily contribute to more pollution. Policies that keep average prices low may result in more driving, and hence, more pollution. This is an important trade-off for considering longer term issues with the Transportation Fuels Transition Plan.

Emissions due to Changes in Fuel Composition

Switching from California's unique gasoline composition to U.S. reformulated gasoline (RFG) or providing short-term allowances for it could have noticeable impacts on air pollution levels. California's gasoline blend is specifically designed to address the state's unique air quality challenges, with stricter standards for volatility and content of certain compounds that reduce emissions of ozone precursors, particulate matter, and toxic air contaminants. According to a 2005 United States Government Accountability Office's (GAO) report,⁵⁰ the U.S. Environmental Protection Agency (EPA) has analyzed various gasoline blends' impacts on emissions, finding

50 [Special Gasoline Blends Reduce Emissions and Improve Air Quality, but Complicate Supply and Contribute to Higher Prices](#)

that California's unique blend significantly reduces volatile organic compounds (VOCs) by 25 percent to 29 percent, NOx by about 6 percent, and reduces emissions of toxic chemicals. This is contrasted with a commonly used blend in the Gulf Coast region, which offers lesser reductions in VOCs (12 percent to 16 percent) and NOx (less than 1 percent). These estimates are somewhat uncertain, as they are based partially on data from older vehicles and may not be fully applicable to newer vehicles with advanced emissions controls. While adding oxygenates to gasoline has been shown to reduce emissions from older vehicles, newer vehicles automatically reduce certain pollutants, potentially reducing or eliminating the benefits of oxygenates. Despite these complexities, experts and the EPA agree that special gasoline blends have contributed to air quality improvements in some regions, although comprehensive studies isolating their specific impact are limited.

Understanding the dose-response relationship of modifying fuel composition is a complex task, particularly for short-term changes, as their proportional impact on air quality and emissions might not be immediately noticeable. For instance, introducing 50 TBD of Nevada specification fuel into an existing demand of 800 TBD would constitute a 6 percent alteration in the gasoline mix. However, the impact on vehicle or evaporative emissions would not be instantaneous, as it takes time for the new fuel blend to diffuse into the myriad gas tanks across the region. Moreover, if such a policy adjustment is only temporary, lasting a mere couple of weeks, discerning its effects becomes even more challenging. Despite these complexities, it is crucial to acknowledge and analyze these potential impacts, particularly on air quality and public health, to ensure informed and responsible policy making. This consideration is especially pertinent in low-income and disadvantaged communities, where older vehicles equipped with less advanced emissions control systems are more prevalent. In these areas, the impact of changes to fuel composition could be more pronounced, necessitating careful attention and mitigation strategies to protect vulnerable populations.

Enhanced Mobility

Despite the various environmental justice issues outlined above, it is important to highlight the improvement in mobility that stable and inexpensive gasoline prices bring, particularly in low-income and disadvantaged communities. For many residents in these areas, dependable and affordable transportation is crucial for accessing employment, education, and essential services. Policy initiatives aimed at stabilizing gasoline prices contribute significantly to these goals, making daily transportation more predictable and financially manageable. This enhanced mobility can lead to improved economic opportunities and quality of life, helping to alleviate some of the burdens faced by these communities.

It is also important to note that there are other policy approaches that could improve mobility that are not directly related to stable gasoline pricing. For instance, building denser housing or mixed-use developments, increasing alternative mobility options, and reducing headways for public transit⁵¹ could all improve mobility and reduce the impacts of price spikes on lower-

51 For example, reduced headways could involve more frequent public transit or additional stops along transit corridors.

income families without directly addressing gasoline price spikes. This approach is explored below as well.

Additional Policy Options to Mitigate Price Spikes

Based on initial comments from CEC workshops and CEC staff review, this section lists several options which may mitigate price spikes in California gasoline, along with brief one-page summary tables. The list is broken out into various categories of policy types, including the following:

- Policies that Address Gasoline Demand
- Policies that Address Gasoline Supply
- Policies that would Involve Highly Complex Implementation (supply or demand)
- Policies that Intend to Address Unique Emergency Circumstances

Some policies may have more of a benefit in terms of mitigating short-term price increases, while others may intend to reduce fuel prices overall. Nearly all these options require additional and extensive analysis to better understand their potential market impacts and may require statutory modifications and commensurate state funding to sufficiently implement. The following bullets characterize the key components of the policy option tables listed.

- **Statement of Initiative.** A broad characterization of the policy option.
- **Scope.** The likely or potential extent of the policy impact, in TBD, thousand barrels per day, or reference to other methods with approximate quantitative values. Where a TBD or other quantitative estimate is not readily estimable, the scope will highlight.
- **Pros.** Why will the initiative help? What benefits does it have?
- **Cons.** What are the possible roadblocks? What are the drawbacks of the policy?
- **Issues to Resolve.** Important matters that are not necessarily a pro or con but should be considered on further analysis.
- **Other.** Where applicable, potential questions or considerations outside of issues that need to be addressed.

Every policy option involves trade-offs. Additional supply may come at the cost of environmental impacts or costs to the State. These will need to be weighed by policymakers.

The CEC does not take a formal position on whether these policies should be adopted or not. Rather, these options are simply analyses of proposals the CEC has received throughout its proceedings and that staff have identified as policy options. Some policies appear to be more effective, but critical trade-offs exist for them all. Some policies are either inconsistent with each other or somewhat duplicative in some ways with each other, so adoption of all these policy options are not feasible.

Shortcut for Framing the Policy Scope

CARBOB demand currently runs between 750 and 850 TBD. Bearing in mind this level will help to broadly compare some policy options with reasonably estimable impact that can mitigate supply losses in the event of an unexpected supply shock.

One way to categorize the supply policy options involves the distinction between storage, production, and imports. Generally, storage options include stock minimums for refiners and terminals, utilization of existing non-operating storage, and state-run product reserves. These policy options would likely require large investments or other spending for infrastructure construction or leasing but may have a minimal impact on the environment. Increasing the available storage for refiners could help reduce supply and inventory shortages that contribute heavily to price spikes, but there are some unknowns that merit further exploration.

Production strategies focus on changes to the CARBOB specification, increasing the ethanol content in finished fuels, and allowing refiners to temporarily use non-CARBOB fuel for gasoline retail stations in the State. Certain changes to the CARBOB specification could have a negative impact on the environment and public health, with potential risk of non-attainment of Federal air quality standards. These are, however, the most likely strategies to cost the State and refiners less money to implement, resulting in a higher direct financial savings to consumers, but with uncertain long-term health detriments.

Import strategy options focus on increasing imports of finished fuel into the State. Maintaining the supply of finished fuel via imports can alleviate inventory shortages attributed to planned maintenance, which may contribute to gasoline price stability. Depending on the timing and the policy, there could be a benefit in cases of unplanned maintenance. Import strategies can be implemented over both the short-term and long-term. It is possible that an effective import strategy could have little to no net environmental impact because the imports would supply existing demand. The cost of policies for importing finished fuel tends to be high, as there is a cost associated with shipping the fuel.⁵²

There are many other policy options not captured on the supply side. For example, policy options that target demand of gasoline lead to reduced consumption of gasoline and to increased demand elasticity reducing the impact of price spikes. These policy options decrease reliance on gasoline-fueled ICE vehicles by increasing availability of mobility options to support the overall transition away from petroleum-fueled ICE vehicles to zero-emission vehicles (ZEVs). The associated tables discuss these policy options in more detail.

Short descriptive tables and individual matrix assignments are presented per policy option or specific strategy of a given policy option. Utilizing all options or strategies would be infeasible, and the goal would be to select options that can effect changes in supply and markets, with the least environmental or cost tradeoffs.

Some options also may be considered during a major disaster such as an earthquake, major pipeline outage, a catastrophic fire like that of the 2015 Torrance Refinery outage, or some other acute event. There may be limitations on these options if needed assets are damaged. See the next section on Emergency Response actions.

⁵² At the same time, reducing shipping of crude could have potential beneficial impacts as well. The precise impact is uncertain.

List Summary of Additional Policy Options

Policy Options Targeting the Demand of Gasoline

1. Enhanced ZEV Access
2. VMT Reduction Strategies
3. Fuel Conservation

Policy Options Targeting the Supply of Gasoline

4. Storage Strategies
5. Production Enhancement Strategies
6. Alignment of Gasoline Specifications for Western States
7. Import Strategies

Highly Complex Implementation Policies

8. Gas Price Stabilization Fund
9. Cost of Service Model
10. State-Owned Refineries
11. Retail Margin Management

Emergency Implementation Policies

12. Railcar Replenishment

Policy Options Targeting the Demand of Gasoline

1. Enhanced ZEV Access

Table 2. Overview of Enhanced ZEV Access

Topic	Description
Statement of Initiative	Accelerate ZEV adoption by offering additional incentives for zero-emission vehicles, with an emphasis on equity. The equity-focused programs, Clean Cars 4 All and the Clean Vehicle Assistance Program, have had large impacts in encouraging ZEV adoption.
Scope	Uncertain scope of impact and dependent on resource investment. By encouraging and incentivizing ZEV adoption, fuel consumption will be reduced.
Pros	▪ Potential increase in demand elasticity, reducing the impact of supply shocks. ▪ More ZEVs on the road will lead to less gasoline consumption. ▪ ZEVs have no tailpipe emissions and higher adoption will lead to higher usage of a safer fuel supply.
Cons	▪ Programs can become over-subscribed if they do not continue to receive an infusion of appropriated state funding, which means they may have an uncertain impact on gasoline demand year over year. ▪ ZEV adoption does not reduce VMT, which may have negative impacts on congestion.
Issues to Resolve	▪ Clean Cars 4 All and the Clean Vehicle Assistance Program will need a continued source of state funding.

2. VMT Reduction Strategies

Table 3. Overview of VMT Reduction Strategies

Topic	Description
Statement of Initiative	Develop and implement statewide policies to accelerate infill and mixed-use development in existing transportation-efficient places, deploy strategic resources to create more transportation-efficient locations, and build a statewide transportation demand management (TDM) framework with VMT mitigation requirements for large employers and large developments.
Scope	In terms on accelerating infill and mixed-use development, notwithstanding the recent passage of laws that expand property owners' ability to create multiple units on single-family lots and limit local governments' ability to block new housing in certain circumstances, ⁵³ many barriers to infill development remain in place, discouraging this important development type in ways that need to be addressed. If barriers can be overcome, infill development will lead to less VMT, prompt shorter transit headways, and eventually reduce gasoline usage in those areas. The goal of TDM is to provide people with information, incentives, and other support programs that help them utilize sustainable transportation options such as remote work, alternative work schedules, transit, ridesharing, bicycling, and walking and rely less on cars. A strategic point of focus for TDM program implementation could be large employers (more than 100 employees), who often incentivize driving alone by offering free parking, gas stipends, and similar perks, and do not offer similar levels of support to employees to take transit, ride their bicycle, or walk.
Pros	▪ Infill and mixed-use development may promote VMT reduction and in turn reduce gasoline consumption in favor of safer fuels. ▪ Potential increase in demand elasticity, reducing the impact of supply shocks.
Cons	▪ Unclear total impact in terms of reducing demand in response to supply shocks. ▪ Some areas are not amenable to high density, so price spikes may continue to affect some regions. ▪ High transit usage is historically only seen in dense communities. ▪ May not be feasible for less dense and more rural communities.
Issues to Resolve	▪ Would require high levels of coordination and cooperation at the local municipal level who are the lead on land-use policies.

⁵³ California Department of Housing and Community Development. See [Accessory Dwelling Units](#)

3. Implementation of Fuel Conservation Measures

Table 4. Overview of Fuel Conservation Measures

Topic	Description
Statement of Initiative	Develop and implement tools to encourage fuel conservation by using the media to alert the public to potential shortages of fuel or enact direct consumption policies to increase conservation, increase availability and affordability of alternatives to light-duty vehicles (e.g., bikes, e-bikes, scooters), prioritizing needs of underserved communities, and authorizing and implementing roadway pricing strategies, such as toll roads and high occupancy toll lanes.
Scope	Develop a State Marketing, Education, and Outreach (ME&O) strategy to encourage demand reduction during months that have high gasoline demand (July-October). Additionally, the State and local governments could increase access to active transportation modes, which may result in a reduction of light-duty vehicle travel, which would in turn result in lower fuel consumption. Likewise, authorizing transportation pricing strategies is essential to promote more efficient use of vehicles and to further transit and active transportation improvements. Pricing strategies present an opportunity to fund the transportation system in a more equitable and fiscally sustainable way than current funding sources, promote more efficient functioning of existing infrastructure, and fund new transportation options.
Pros	▪ The ME&O strategy is a low-cost option to call for voluntary conservation to reduce gasoline consumption. ▪ Potential increase in demand elasticity, reducing the impact of supply shocks.
Cons	▪ Could spur panic buying, increasing demand and exacerbating the price spike. This does not tend to occur in the case of electric power conservation alerts but could be more likely in the case of gasoline, where fuel can be purchased in advance. ▪ Unclear total impact in terms of reducing demand in response to supply shocks. Consumer responsiveness to electricity alerts is likely not analogous to responsiveness to gasoline alerts. ▪ May not be feasible for less dense and more rural communities.
Issues to Resolve	▪ What measures should be prioritized? ▪ What measures are the most productive? ▪ This would require support from multiple State agencies.
Other	▪ Will need to develop “messaging” that stimulates conservation but not panic.

Policy Options Targeting the Supply of Gasoline

4. Storage Strategies

The listed storage strategies will help maintain an adequate buffer supply that, upon the release of the stored supply, can allow for a short-term boost to overall supply and mitigate in cases of supply shock.

A. Storage Strategy: Stock Minimums for Refiners and Terminals

Table 5. Storage Strategy: Stock Minimums for Refiners and Terminals

Topic	Description
Statement of Initiative	Require refiners and terminals to maintain contingency reserves of gasoline fuel in refineries and terminals. During supply shocks, temporary release of minimum requirements to supply the market.
Scope	Variable scope of impact but could create an effective reserve of several hundred thousand barrels.
Pros	▪ The requirement could mitigate short-term price spikes. ▪ Maintaining minimum stocks will provide a quickly available reserve. ▪ Additional stored gasoline would be distributed in Northern and Southern California at key locations, like refineries.
Cons	▪ If the refiners withhold stocks to maintain the minimum, it may artificially create shortages in downstream markets (refiners may need to hold back a shipment to sustain the legal minimum stocks, which could cause a terminal to run lower than expected). ▪ Could increase average prices for refiners to maintain additional storage. ▪ The pipeline cycle process requires terminals to always be low on stocks before a batch is delivered, so this may be best applied at refineries and/or pipeline storage. ▪ A process or program will need to be developed to orchestrate the use of the volumes held in reserve.
Issues to Resolve	▪ What volume should be held in reserve and what would be the basis? ▪ Can it be held as finished CARBOB or as blendstocks? ▪ Downstream impacts could impact spot market prices in uncertain ways, although a market equilibrium may likely emerge at a higher price level. ▪ What is the cost to the refiner, and will this be passed to consumers?
Other	▪ Potential exists for the state to be criticized for requiring refiners to withhold fuel from the market.

B. Storage Strategy: Existing Non-Operating Storage

Table 6. Storage Strategy: Utilization of Existing Non-Operating Storage

Topic	Description
Statement of Initiative	Lease tankage at closed refineries to hold gasoline in reserve in the event of supply shortages.
Scope	Variable scope of impact depending on existing capacity, up to several hundred thousand barrels.
Pros	▪ No need to build tanks for a reserve, reducing stranded asset risk. ▪ Existing storage has existing logistical pathways for rapid distribution. ▪ Can start sooner with agreed protocols.
Cons	▪ Limited locations. Some refiners have indicated their “at refinery” storage is fully utilized. ▪ Current possibilities at Martinez and Rodeo refineries in Northern CA may not be available if they plan to import or use for renewable fuel purposes.
Issues to Resolve	▪ How large should the reserve target be? ▪ What capacity is available? ▪ How would seasonal RVP changes be managed? The fuel will need to be sold to dispose of high RVP stocks in the Spring and summer RVP purchased, and the converse in the Fall. ▪ Should it be the state leasing the storage and owning the fuel? Or use a private partner to lease and operate it? ▪ How would the reserves be utilized?
Other	▪ It might be difficult to see a refiner agreeing to use their tanks for this purpose. ▪ It may make sense for each refiner/supplier to be required to store a certain volume to use at their discretion.

C. Storage Strategy: State-Owned Product Reserve

Table 7. Storage Strategy: State-Owned Product Reserve

Topic	Description
Statement of Initiative	Establish state-owned product reserves in the North and South Regions to allow rapid deployment of fuel when needed.
Scope	Variable scope of impact, up to several hundred thousand barrels. Potential to build to size for Northern and Southern California needs.
Pros	▪ Having fuel available in state-owned reserves would provide quick access to fuel in the event of refinery outages. ▪ The state may be able to control the use of the fuel so that industry does not use it as a crutch to lower stocks. In other words, the state would only use the reserve for situations where events may cause significant price spikes.
Cons	▪ Industry may lower their stock levels if the reserves are released by the State every time there is a price spike. ▪ Risk of stranded assets if the state builds the reserve system. ▪ Price spikes are typically short-lived, while a state-managed storage system would require sustained operation, opening the question about the benefit-cost. ▪ Rotation of fuel for RVP purposes may increase regular costs slightly.
Issues to Resolve	▪ Must identify locations in the north and south. ▪ Protection against industry gaming of the inflow/outflow system. ▪ How would the fuel integrate with the existing system? ▪ How would seasonal RVP changes be managed? ▪ There may need to be several variations of this option evaluated. ▪ Existing spare storage in the KM system is minimal, but new build tanks for modest reserves in key locations may be possible. ▪ How would the reserves be utilized? Open bidding once CEC indicates the situation calls for use of the reserve? Who conducts the sale? Who is allowed to bid? Can the SPR model be used?
Other	▪ It will be important to get the product from the reserve into the system quickly. ▪ Will need to review the 2002 study in the context of the current market and infrastructure. ▪ The DOE product reserves have only been utilized once – for hurricane Sandy – and that was diesel fuel for electric generator usage.

5. Production Enhancement Strategies

Production enhancement covers several distinct approaches that have different features but are categorized as attempting to increase the supply of gasoline by modifications to standards outside of any sort of interstate agreement.

A. Production Enhancement Strategy: E15

Table 8. Production Enhancement Strategy: E15

Topic	Description
Statement of Initiative	Allow increased blending of ethanol with CARBOB from 10 percent (E10) to 15 percent (E15), effectively augmenting the existing CARBOB supply.
Scope	Could increase supply up to 40 TBD (5 percent), or about 17 additional unit trains (100-car trains) of ethanol per month from the Midwest.
Pros	▪ Likely to lower the price of CA fuel due to additional supply. ▪ Fewer environmental harms than E10, with a 1 percent loss of fuel economy.^{54,55} ▪ E15 is allowed by the EPA and currently sold in 31 states.⁵⁶ ▪ The U.S. already exports about 60 TBD ethanol.
Cons	▪ Refineries may rebalance production for higher ethanol blends, potentially limiting the long-term ability for this strategy to reduce costs. ▪ E15 fuel specifications have not been adopted in California, and it could take years to conduct proper regulatory processes. ▪ Ethanol price may increase with higher demand.
Issues to Resolve	▪ Additional analysis is necessary to understand the pollution impacts of E15. ▪ Some equipment may not be capable of dispensing E15 and require upgrades, although this appears to be limited.⁵⁷ ▪ Blending processes and procedures will need to be in place.

54 Karavalakis, et. al., 2022. Comparison of Exhaust Emissions Between E10 CaRFG and Splash Blended E15. Prepared for CARB. Available online at: [Comparison of Exhaust Emissions Between E10 CaRFG and Splash Blended E15](#).

55 Tang, et. Al., 2023. Expanding the ethanol blend wall in California: Emissions comparison between E10 and E15. Fuel (350). Available online at: [Expanding the ethanol blend wall in California: Emissions comparison between E10 and E15](#).

56 Of the 31 states approved for E15 sales, 12 have 10 or fewer stations in operation. See [New EPA ruling expands sale of 15 percent ethanol blended motor gasoline](#).

57 A recent report of multimedia evaluation submitted to CARB indicates that some gaps of E15 compatibility for some equipment. "Some equipment currently in use in California is... listed [by Underwriters Laboratories] only to E10. Equipment with a UL listing of E10 could be considered compatible with E15 with a manufacturer's statement of compatibility, however research and previous requests show that not all manufacturers will provide this document for blends above E10." See CARB's Multimedia Evaluation Report, page 31. Available at https://ww2.arb.ca.gov/sites/default/files/2022-07/E15_Tier_I_Report_June_2020.pdf

B. Production Enhancement Strategy: RVP Modification

Table 9. Production Enhancement Strategy: RVP Modification

Topic	Description
Statement of Initiative	Consider various modifications to RVP requirements to address tight supply conditions. Examples include early allowance for winter grade RVP, shifting the time period of winter RVP, or a permanent modification of summer RVP specification.
Scope	Timing of mitigation needs may limit implementation effectiveness. Staff estimate a potential of up to 90 TBD of added supply during early allowance periods, an approximate 10 percent supply increase. Longer-term shift of summer blend RVP could increase supply by about 4 percent.
Pros	▪ Increase in supplies during high-risk periods. ▪ Evidence of contributing to a significant ramping down during the 2022 and 2023 price spikes.
Cons	▪ Increased risk of violation of federal air quality attainment standards and related sanctions or litigation. ▪ RVP and other gasoline specifications are included in the federally required State Implementation Plan for air quality and cannot be weakened without identifying substitute emission reductions. ▪ Could increase evaporative emissions and ozone levels for at least those two months, with potential persisting effects for several months. ▪ Permanently shifting the RVP time period may result in shifting when price spikes occur instead of mitigating them. ▪ RVP shifting options only available during certain months of the year.
Issues to Resolve	▪ Will require CARB input on air quality risks on community safety. ▪ What market conditions would trigger implementing some actions? ▪ Timing of implementation. ▪ Vapor lock risk.

C. Production Enhancement Strategy: Non-CARBOB Fee-Based Allowance

Table 10. Production Enhancement Strategy: Non-CARBOB Fee-Based Allowance

Topic	Description
Statement of Initiative	Create a fee-based non-CARBOB allowance program that can be activated during a price spike or in response to a reasonable expectation of one. ⁵⁸ Revenue from fees would be used for air quality improvement strategies in non-attainment regions or other EJ communities.
Scope	On average, there are 1,200 thousand barrels (24 days at 50 TBD) of non-CARBOB gasoline in CA refineries and 100-130 TBD non-CARBOB production. Using a small portion of these resources or allowing the importation of non-CARBOB gasoline could mitigate a price spike without jeopardizing supply to Nevada or Arizona. For nearby imports, a cargo size of 250-300 thousand barrels per ship. One ship per week is approximately 40-50 TBD.
Pros	▪ Widespread access to non-CARBOB gasoline in stock or in nearby locations during critical periods could be used to reduce the spot market price during a supply shock. ▪ In-state supply could be rapidly available for pipeline batches. Out-of-state non-CARBOB supply could be more quickly secured than CARBOB. ▪ May minimize the intensity of a price spike with the lowest volume of CARBOB substitution. ▪ Direct support of communities most impacted generally by air quality impacts.
Cons	▪ Introducing non-CARBOB gasoline could impose a negative pollution effect and potential risk to federal air quality attainment standards. ▪ RVP and other gasoline specifications are included in the federally required State Implementation Plan for air quality and cannot be weakened without identifying substitute emission reductions.
Issues to Resolve	▪ Deeper analysis and public deliberation on policy implementation, economic underpinnings, and environmental impacts. ▪ The state will need an authority to activate the policy quickly and have an effective fee structure in place prior to a spike. ▪ Uncertainty on potential gaming behavior during spike periods. ▪ When to activate and deactivate an allowance period. ▪ How to set fees to address the spike and minimize non-CARBOB used.

⁵⁸ This policy approach is discussed in broader terms as part of 2015 the Petroleum Market Advisory Committee docket (Borenstein, Bushnell, and Lewis, 2004. "Market Power in California's Gasoline Market"). See [MARKET POWER IN CALIFORNIA'S GASOLINE MARKET](#) for more information.

Other	▪ May impact NV and AZ supply, but those markets (except Reno) can be partially supplied from the East.
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D. Production Enhancement Strategy: CARBOB for Reno

Table 11. Production Enhancement Strategy: CARBOB for Reno

Topic	Description
Statement of Initiative	Supply CARBOB gasoline and diesel into Reno market terminals long-term. This will make more storage available for CARBOB product or blendstocks in northern California refineries and large storage terminals.
Scope	Would require Bay area refiners to produce 5 percent more CARBOB instead of Nevada gasoline in exchange for more supply flexibility.
Pros	▪ More effective storage for CARBOB product due to elimination of a need to hold Reno-specification gasoline in refineries and the terminal storage-pipeline system. ▪ Relatively easy to implement with refiner capability. ▪ Air quality improvements for Reno residents.
Cons	▪ Refiners in Northern CA will have to regularly make more CARBOB based on demand in Reno (about 20 TBD CARBOB). ▪ Potential price impacts in Reno.
Issues to Resolve	▪ What would be the process to implement? Who is involved? ▪ Would pipeline operators see advantages on costs and potentially impact tariffs? ▪ Interstate relations impacts. ▪ Ability to make more CARBOB with declining refinery capacity.

6. Alignment of Gasoline Specifications for Western States

Table 12. Overview of Alignment of Gasoline Specifications for Western States

Topic	Description
Statement of Initiative	Establish a unified gasoline specification for several states in the West. (Note: RVP would remain the same as current).
Scope	Unknown direct impact from the policy, but a market shift that could expand the market coverage and increase competition for fuel via marine cargos.
Pros	▪ If gasoline products have identical specifications in all three states, shorter associated import timelines could reduce supply shock effects in California. ▪ If CARBOB were to be the agreed upon specification, there would be positive air pollution impacts in all regionalized states. ▪ Import and export flexibility could be enhanced for all three states. ▪ Increased competition could decrease prices and reduce price spike risk.
Cons	▪ The states must agree on common specifications. Legislative or at least regulatory changes would be necessary in all states. ▪ With CARBOB being the most difficult to produce, it is possible that the agreed specification could lead to a less stringent emissions standard for California. Cost and benefit impacts of such alignment must be assessed. ▪ RVP and other gasoline specifications are included in the federally required State Implementation Plan for air quality and cannot be weakened without identifying substitute emission reductions. ▪ Refiners may use the fungible fuel as a rationale to lower stocks and/or storage, potentially increasing price spike risk.
Issues to Resolve	▪ Concurrence among multiple state entities in all states, which may not be feasible.
Other	▪ Northeast states were able to better manage heating oil and diesel stock levels and demand surges when both products were aligned on sulfur specifications.

7. Import Strategies

Import strategies intend to increase supply directly or indirectly by bringing in fuel from refineries outside of the state. Across all strategies listed, timing is a critical challenge.

A. Import Strategy: Resupply Compensation

Table 13. Import Strategy: Resupply Compensation

Topic	Description
Statement of Initiative	If companies or traders are reluctant to purchase gasoline during a price spike or supply shortage, ⁵⁹ a program could provide compensation to those parties to stimulate transport of CARBOB fuel to California.
Scope	Cargo size is 250-300 thousand barrels per ship. Limited supply sources for CARBOB may make this a one-to-two ship per week option, approximately 40 to 80 TBD, or about 5 percent to 10 percent.
Pros	▪ Incentives to stimulate shipments may result in additional CARBOB fuel arriving in California. ▪ CARBOB consumption would remain approximately similar to existing expectations.
Cons	▪ Timing of resupply may occur too late due to logistical timelines. Identification of refiner, manufacture of CARBOB, and vessel movement to CA could take up to six weeks. ▪ Refiners or blenders who can produce CARBOB fuel are limited. At best one-to-two ships per week (5 percent to 10 percent of demand) for planning purposes. ▪ Could be very expensive if freight and price risk are “covered” for the importer by the designated authority or program. ▪ Policy may also cause refiners to “wait and see” what the state may do before they act, which would be counterproductive.
Issues to Resolve	▪ Program development will require additional work. A bidding system or reverse auction may be useful in this process. ▪ Would this option allow compensation for purchases of key blendstocks (e.g., alkylate), or only CARBOB? ▪ Who is allowed to compete for the incentives and how will the program control who gets the incentive? ▪ Could this create a market distortion?
Other	▪ Any program will need an ongoing authority to manage this process, including timing and scope. ▪ Will the program be perceived as picking winners and losers? Will the program be perceived as aiding Big Oil? ▪ While the program itself may become a short-term response mechanism, delineating all the issues here may make take time.

⁵⁹ During the Commissioner hearing on California Gas Price Spikes on November 29, 2022, CEC staff pointed out that importers may be reluctant to purchase ships due to the expectation that in-state refinery capacity may recover. This was evidenced in an attempted refinery restart during the 2015 Torrance refinery outage.

B. Import Strategy: Short-Term Imports

Table 14. Import Strategy: Short-Term Imports

Topic	Description
Statement of Initiative	The state creates a program or hires a trading company that takes on a series of regular delivery contracts during critical risk periods to augment gasoline supply via imports for a defined period.
Scope	Cargo size 250-300 thousand barrels per ship; one ship per week amounts to about 35-50 TBD, about 5 percent of CA supply.
Pros	▪ Provides security during times of increased supply shock risk. ▪ Increasing total supply could decrease spot prices. ▪ May be a good buffer for longer-term larger shortages that arise during the defined period.
Cons	▪ Potential high cost to the state. Because marine cargos are more expensive, gasoline brought to the spot market will likely be sold at a loss. ▪ CARBOB refiners outside of California are limited. ▪ Highly uncertain market reactivity to the program, depending on the extent the program's actions are known and market actors understand how to optimize their behavior to the supply increase. ▪ State actions in the spot market may result in objections of unfair competition or "dumping."
Issues to Resolve	▪ How many cargo ships can be deployed to California ports? ▪ Does the pipeline have enough capacity to handle an increase in marine imports? ▪ Is there enough storage to handle the product imported? ▪ How will the state negotiate with the Kinder Morgan pipeline system to move fuel? ▪ How well known will the contracts, volumes, and spot market additions be to other market participants? ▪ How will costs from likely losses in the spot market be paid for?
Other	▪ If put in place, the state must establish an authority or program to manage the entire process, as well as a contractor to manage the logistical aspects of all stages of the program (e.g., purchase, shipping, offloading, selling on the market, etc.).

C. Import Strategy: Reliable Imports

Table 15. Import Strategy: Reliable Imports

Topic	Description
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Statement of Initiative	As the transition unfolds, California may wish to consider developing a relationship with a supplier and refiner or marketer to bring CARBOB into California via regular ship loads so consumers are assured a reliable import supply.
Scope	Based on refinery gasoline production vs demand, a strategy may establish 5 percent to 10 percent greater supply than planned refinery production to preserve a baseline supply above expected demand.
Pros	▪ Having a CARBOB term contract with a major refiner (Reliance, Korea, or a country in the Middle East) to provide (for example) 50 TBD – one-to-two cargo ships per week. This would provide a cushion as State CARBOB demand declines and refiners’ behavior remains uncertain.
Cons	▪ It may be difficult to make appropriate financial and logistical arrangements, such as import location and other logistics (how the fuel is stored and sold, etc.). ▪ CARBOB refinery capacity outside of California is limited, although a term commitment may better ensure reliable supply. ▪ The State would be actively engaging in the market as a mechanism to control supply, which may cause other market participants to disengage or engage in other market gaming strategies.
Issues to Resolve	▪ Will depend on where the ZEV transition impacts gasoline demand the most and how refiners choose to operate their business in that environment. That is, the option may need to react to how the refining business changes with decreased demand.
Other	▪ This is a transition-focused option and may not be something California can direct. It is like Hawaii’s approach, which is heavily dependent on imports but managed by industry stakeholders.

D. Import Strategy: Jones Act Vessels

Table 16. Import Strategy: Jones Act Vessels

Topic	Description
Statement of Initiative	State-leased or state-owned (i.e., state-managed) Jones Act tankers ⁶⁰ may provide resiliency if the right refineries can produce the necessary gasoline for the state's needs in a timely fashion.
Scope	Standard ship capacity. Provide California with an available ship to move fuel between domestic ports.
Pros	▪ Would provide prompt marine capacity to load and discharge gasoline or blendstocks.
Cons	▪ Placing a vessel under lease on a "stand-by" basis will be extremely expensive, with unknown vessel management challenges (e.g., crew, maintenance, etc.). ▪ Standby location must be near port capable of rapid production shift capacity to CARBOB, with associated uncertainties. ▪ While there is some CARBOB production capability in the Pacific Northwest, it may still take time to produce a batch suitable to load a vessel. ▪ There would need to be a commercial arrangement with a refiner to supply the fuel to load the vessel.
Issues to Resolve	▪ Leasing capability and costs, terms of use and fuel acquisition assurance. ▪ How would the state direct the ship operation and market the gasoline after loading on the vessel? ▪ What would be the procedure for utilizing the vessel and discharging the gasoline?
Other	▪ Should the State be in the business of buying and selling fuel?

60 The Jones Act requires that any cargo traveling by sea between two U.S. must be built in the United States and be crewed by mostly U.S. citizens.

Highly Complex Implementation Policies

8. Gas Price Stabilization Fund

Table 17. Overview of Gas Price Stabilization Fund

Topic	Description
Statement of Initiative	During times of lower gas prices, fees would be levied in a variable manner to then allow for stabilization initiatives during California-specific price spikes.
Scope	A means-tested fund disbursement program for middle- and low-income gasoline vehicle owners would provide an offset to California-specific gasoline price spikes.
Pros	▪ Financial assistance provides some insulation against price spikes for middle-to-low income Californians. ▪ Fungibility of disbursement funds may also encourage conservation.
Cons	▪ Gas prices may remain consistently high throughout the year and the difference between the average price in California and the average price in the U.S. may widen. ▪ Public perceptions of the fund's purpose may present a communications challenge, as funds would not be disbursed for national price spikes (e.g., when California spot markets prices are in alignment with NYMEX RBOB prices). ▪ It may be difficult to adopt a means-tested benefit program.
Issues to Resolve	▪ How to optimize fees during lower gas price periods? ▪ Mitigating potential shortfalls in the fee offset fund?

9. Cost of Service Model

Table 18. Overview of Cost-of-Service Model

Topic	Description
Statement of Initiative	California would actively regulate the operating rules, prices, and rate of return of petroleum fuel market operators similar to the current structure used to manage private electric and fossil natural gas utilities as natural monopolies.
Scope	California sellers would be required to have prices approved by the designated State authority and spending would have to be approved for cost recovery in prices.
Pros	▪ The state would have more control over the margins.
Cons	▪ Current market operators do not have natural or logistical monopolies like standard private electric and fossil natural gas utilities. ▪ Challenging to optimize operations and yields due to stricter regulatory environment. ▪ Unclear how this would control trading parties.
Issues to Resolve	▪ Is there concern about regulating fuels by California that are destined for other states? ▪ Would permission need to be granted to change crude oil processing and refinery product slate (refiners may produce 30 or more products at a given refinery – not just one product such as electric utilities)?
Other	▪ Are there other countries that utilize a model like this?

10. State-Owned Refineries

Table 19. Overview of State-Owned Refineries

Topic	Description
Statement of Initiative	The State of California would purchase and own refineries in the State to manage the supply and price of gasoline.
Scope	Could range from one refinery to all refineries in the state.
Pros	▪ The State would operate a market independent source of production which would eliminate potential market manipulation
Cons	▪ It is very expensive to purchase or compensate for refinery infrastructure and will raise questions of liability and cost effectiveness when the projected demand of gasoline will decline in the State over time. ▪ There are complex industrial processes that the State has no experience in managing. ▪ Significant legal issues would need to be addressed.
Issues to Resolve	▪ What does the State procurement process look like for such a transaction? ▪ How would the state purchase crude, blendstocks, etc., and sell the diverse products from one or more refineries? ▪ What would drive how the State managed the refinery? Profit? Maximize production? Minimize production?
Other	▪ As demand for fossil fuel declines, will the presence of State-owned refineries inhibit an orderly phase out of refinery capacity?

11. Retail Margin Management

Table 20. Overview of Retail Margin Management

Topic	Description
Statement of Initiative	Measure, publicize, and potentially manage retail margins.
Scope	Assure that all gasoline that is sold at retail stations in California is not sold at excessive retail margins.
Pros	▪ Linking allowable retail dealer margins to a ceiling can reduce the lag in restoration of retail prices after a spike. ▪ Transparency may foster faster responses to spot market changes. This will likely mean prices increase faster, but the retailers will need to lower prices faster as well, which will benefit consumers more based on chronic lags in retail price declines.
Cons	▪ Retail associations may object to publishing retail margins based on actual data or limiting retail margins. ▪ Price caps do not have a history of effective implementation. ▪ It may be difficult to determine “reasonable” retail margins based on varying costs of rent, land, labor at different stations or regions of CA. ▪ Burden for dealers to report their weekly fuels delivered costs vs the average price for their sales (less taxes) to the administering body.
Issues to Resolve	▪ As gasoline demand declines, increasing margin allowances may help keep dealers in business and minimize job losses.
Other	▪ Evidence presented to CEC indicates that retail prices increase with the spot market but lag when the spot market declines. ▪ Historical evidence also shows that while refinery margins have gone up and down, retail margins have consistently grown over time.

Emergency Implementation Policies

Emergency Implementation Policies reflect potential actions the State may need to consider in severe emergencies where physical supply of fuel is paramount. These types of events could include earthquakes and other events, including major pipeline failures, extensive port dock damage, broad power outages that close multiple refineries for multiple days. These policies may have effects on fuel pricing, but their focus is more directed to managing emergency supply shocks than addressing prices.

12. Railcar Replenishment

Table 21. Overview of Railcar Replenishment

Topic	Description
Statement of Initiative	Use railcars to provide CARBOB or Conventional BOB to California.
Scope	A unit train (100 railcars) of refined gasoline hold 70 thousand barrels of fuel – 3 million gallons. One unit train per day would cover about 8 percent of California demand.
Pros	▪ Option for additional supply of finished fuel or blendstocks. ▪ May be faster than marine movements from the Gulf Coast.
Cons	▪ Limited locations to load unit trains of gasoline or blendstocks at Gulf Coast refineries. ▪ Limited locations in CA to offload – which could be impacted by the event, but this could be mitigated to an extent if transloaded from rail cars into trucks. ▪ Timing concerns of loading and unloading may limit the effectiveness. ▪ Likely will not be effective if CARBOB is the required fuel (few non-California refiners can produce it).
Issues to Resolve	▪ Will need to confirm that rail receiving facilities in California are operational for both gasoline and ethanol. ▪ Should develop a catalogue of all terminals in California and their rail and truck loading and receiving capability (or lack of). ▪ Are there adequate railcars available?
Other	▪ Further study of this approach may indicate that there are potential private sector pathways for a more commercial approach. ▪ The volume of demand that needs to be covered may be less than normal if earthquakes impact roads and ability to commute.



Sophie Ellinghouse

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December 12, 2023

California Energy Commission
Docket Unit, MS-4
Docket No. 23-OIIP-01
715 P Street
Sacramento, California 95814

Uploaded/E-mailed to docket@energy.ca.gov

RE: WSPA Comments on SB X1-2 Workshop on Maximum Gross Gasoline Refining Margin and Penalty [Docket #23-OIIP-01]

Thank you for the opportunity to comment on the California Energy Commission's (CEC) November 28, 2023, workshop to "explore potentially establishing" a maximum gross gasoline refining margin and penalty per Senate Bill (SB) X1-2 (2023). The statute is clear that the CEC *shall not* set a margin cap or penalty *unless* it finds that the likely benefits to consumers outweigh the potential costs to consumers and will "not lead to a greater imbalance between supply and demand" nor "lead to higher average prices at the pump on an annual basis."¹ We urge the CEC to do its due diligence – including determining the multiple factors that have long contributed to supply and pricing issues in California, and assessing whether a cap would exacerbate problems for consumers, the market, and California itself. We believe it would.

The Western States Petroleum Association (WSPA) is a non-profit trade association representing companies that import and export, explore, produce, refine, transport and market petroleum, petroleum products, natural gas, and other energy supplies in California. These comments are based on WSPA's review of the materials and statements at the workshop, and we reserve the right to amend these comments or add to the docket as necessary to reflect additional materials or changes in the CEC's decisions.

In responding to comments made and information presented at the November 28 workshop, this letter: (1) reiterates requirements in place to prevent disclosure of market-sensitive information and explains why refiners did not appear individually; (2) provides historical context for the CEC's decisions about whether or not to impose a penalty; (3) provides an overview of a literature review of the economic and policy impacts of regulatory intervention on fuel prices; and (4) responds to stakeholder roundtable questions from the workshop. WSPA would be happy to provide any further information or context that the CEC requests to answer the important questions it faces.

ONGOING NECESSITY FOR THE CEC AND INDIVIDUAL COMPANIES TO PROTECT COMPETITIVELY SENSITIVE INFORMATION

California law has long recognized the critical need to prevent public disclosure of business information that is required to be reported to the State, but which could cause adverse effects to market competition or harm to businesses if disclosed. The State Legislature strongly reaffirmed this principle in SB X1-2, which specifically addresses the confidential treatment, aggregation, or

¹ Cal. Pub. Res. Code ("PRC") § 25355.5(e)

anonymization of information if public disclosure of that information would: 1) “result in unfair competitive disadvantage to the person supplying the information;” or 2) “adversely affect market competition.”² Moreover, SB X1-2 amended and further strengthened the confidentiality provisions of California’s Petroleum Industry Information Reporting Act of 1980 (“PIIRA”) to provide that information submitted to the CEC pursuant to SB X1-2 “shall be held in confidence by the commission or aggregated to the extent necessary to ensure confidentiality if public disclosure of the specific information or data would result in unfair competitive disadvantage to the person supplying the information or would adversely affect market conditions.”³

Other provisions of SB X1-2 presume the confidentiality and prohibit the public disclosure of information regarding transportation fuel sales prices and contracts (including gasoline prices charged by retailers by location and gasoline grade),⁴ related “business affairs and trade secrets” provided to the state in preparation of annual gasoline price reports,⁵ and refineries’ maintenance and turnaround planning.⁶ Still other provisions presume the confidentiality and prohibit the public disclosure of matters regarding crude oil transport and require aggregation of any such information publicly disclosed “to the extent necessary to ensure confidentiality if public disclosure of the specific information or data would result in unfair competitive disadvantage to the person supplying the information or would adversely affect market competition.”⁷ Such information, if publicly disclosed in an unaggregated format, could be misused by a business’ competitors to harm the business, and could lead to adverse anticompetitive impacts in that market sector generally.

Accordingly, both Federal and State law recognize that certain information is inherently sensitive and should be protected from public disclosure. This information includes, for example, any price, cost, output, or strategic information that is likely to be confidential in nature and, therefore, a competitive concern. There are also multiple safeguards in place – not only PIIRA and the relevant provisions of SB X1-2, but also various other Federal and State antitrust and competition rules – to protect this sensitive information and to prevent anticompetitive practices. Release of such information could harm an individual company, a competitive market, and ultimately, California consumers.

There is, therefore, little that an individual refiner could share about how it might react to a CEC penalty without risking harm to market competition. Competition in the refining sector is critical to providing high quality transportation fuels at the lowest possible prices, and each refiner has a different strategy for how to compete. When it comes to pricing, for example, costs to acquire crude oil, transport it, produce gasoline, and then distribute and market it throughout California depend on the unique business circumstances of each individual company and thus are not uniform. The respective California markets each company chooses to serve similarly have unique facts and circumstances. This is in part why individual companies have their own sensitivities and tendencies when competing for consumers, who have choices in this market (unlike, for example, their regulated electric service provider – which operates as a monopoly). This dynamic means that each refiner has a unique and competitively sensitive market strategy

² Pub. Resources Code §§ 25354(f)(2), 25355.7(c), 25364(b), and 25372.4(a); *see also id.* §§ 25355(c), 25371.2, and 25372.4(c) (requiring aggregation of data gathered or reported by the CEC); *id.* §§ 25354(n)(1) and uncodified Sections 11 and 12 of SBX1-2 (declaring information submitted to the CEC exempt from the Public Records Act and Article I, Section 3 of the California Constitution)

³ Pub. Res. Code § 25364(b). Elaborate procedures to prevent the disclosure of unaggregated information are set forth in subsections (c) through (i).

⁴ Pub. Res. Code § 25355.7.

⁵ *Id.*

⁶ Pub. Res. Code § 25354(n)(1).

⁷ Pub. Res. Code § 25354(f)(2).

that it cannot discuss in public without some risk of anticompetitive harm. It is better for the competitiveness of the market (and, in turn, for consumers) for industry participants to speak through WSPA about matters that affect all refiners in common.

In addition, individual WSPA members have their own reasons to avoid discussing potentially market-sensitive information in a public setting, including at this most recent CEC workshop. Because release of any business confidential or trade secret information can hurt a company's business position and diminish any earned advantage over competitors, nearly all companies will take pains to preserve the confidentiality of that information. That is why PIIRA provides protection for refiners when they turn over this type of information to the CEC.

Knowledgeable about this context, the CEC understands that the release of competitively sensitive information could damage a company if it were to be disclosed, and therefore must provide protection as outlined in State and Federal laws. CEC Executive Director Drew Bohan recognized this during the workshop, noting "...the industry is opaque, partly by design, because we don't want industry players to know what their competitors are doing, because that could have a negative impact on prices."⁸

Even broad statements that refiners might be asked to make at a public event like the November 28 workshop could have the effect of summarizing, analyzing, and disclosing the vast amount of confidential information that they turn over to the CEC on a daily, weekly, monthly, and yearly basis under PIIRA, and would risk both competitive disadvantage and harms to the market. As the CEC continues to collect an enormous amount of information from WSPA members, any public disclosure of that information, including in summary format in response to questions posed at public meetings such as this workshop, could result in an unfair competitive disadvantage to the member supplying the information and to adversely affect market competition, contrary to the mandate of SB X1-2.

Accordingly, while refiners will of course cooperate with any CEC regulatory process to the extent doing so will not result in a competitive disadvantage or market harm, they will opt to participate through WSPA where necessary to avoid being placed in such a position.

A HISTORICAL CONTEXT WORTH REPEATING

WSPA has written in the past to address the causes of price spikes and the history of the refining industry in California, but this context is critical background for the CEC before it makes any decision in this matter and is accordingly worth repeating here. In particular, WSPA previously detailed why California has become a "fuel island," with policies intended to reduce the State's supply and consumption of fossil fuels – even as these fuels remain in high demand.⁹ As a result, there are strong *disincentives* for companies to make long-term investments necessary to maintain California's current level of refining capacity. The State is now – by design^{10,11,12,13} – unable to supply all its own gasoline to meet consumer demand,

⁸ CEC Event Recording, November 28, 2023, at 09:07 mark

⁹ Western States Petroleum Association Comments on Transportation Fuels Assessment Report Workshop filed September 11, 2023 at <https://efiling.energy.ca.gov/GetDocument.aspx?tn=252218&DocumentContentId=87224>

¹⁰ <https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-dramatically-reduce-demand-for-fossil-fuel-in-californias-fight-against-climate-change/>

¹¹ AB 1279 (2022) at https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1279

¹² CARB 2022 Scoping Plan Update at <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>

¹³ CEC Draft 2023 Integrated Energy Policy Report at <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2023-integrated-energy-policy-report>

which in turn increases costs for California consumers due to the need to import increasing amounts of gasoline from out-of-State and foreign markets.

Multiple CEC Integrated Energy Policy Reports (IEPR) over the past two decades predicted that California would have an increasingly difficult time avoiding market volatility due to the pressures of diminished local supply in the face of continued strong consumer demand. The CEC forecasted elevated gasoline costs to consumers in the 2003/2004 IEPR, given that fuel prices are driven by these larger market forces of supply and demand. It continued with the 2005 IEPR, which specifically noted that, “California’s petroleum infrastructure operates at near capacity. Breakdowns and outages at in-State refinery and pipeline facilities quickly tighten gasoline and diesel fuel supplies and create market volatility. Since California is not directly connected by pipeline to other domestic refining centers, in-State refiners cannot readily procure gasoline, diesel, and other blending components when outages do occur. This contributes to higher and more prolonged price spikes.” The 2009 IEPR further recognized the constraints additional imports would place on California’s transportation fuels system: “Reliance on foreign oil imports increasingly puts the state’s fuel supply at risk, not only because of security and reliability concerns, but also because the marine ports are not expanding to meet expected growth in demand...The Energy Commission forecasts that crude oil imports will continue to increase, requiring expansion of the existing crude oil import infrastructure. This infrastructure is critical in ensuring a continued supply of feedstocks to enable refiners to operate their facilities and maintain a reliable supply of fuel for California and neighboring states.”

Given these conclusions, the CEC has made several recommendations towards improving and expanding petroleum infrastructure and facilitating the permitting process for nearly two decades. Unfortunately, little has been done; instead, California has actively sought to make it *more difficult* to domestically source, produce, and transport gasoline to California consumers, resulting in the need for greater and greater imports of refined transportation fuel from outside California (and the increased emissions and climate impacts that come with forcing more imports of refined product). The growing costs of the multitude of California’s policies and programs are further compounded by multiple layers of Federal, regional, and local regulations; these add costs and impact a fragile, volatile, and constrained California fuels market.

It is in this context that CEC is now asked to consider the wisdom of margin limits, price controls and other measures that will have the effect of further limiting local supply of transportation fuels in California, thus worsening the existing disparities between market demand and local supply capacity.

ENERGY PRICE CONTROLS HAVE BEEN TRIED BEFORE – AND FAILED

In preparation for this workshop, and this Informational Proceeding more generally, WSPA commissioned Catalyst Environmental Solutions (“Catalyst”) to conduct a comprehensive literature review on price controls in energy markets. This information is relevant to the CEC’s careful consideration of whether attempting to determine price controls at the wholesale, spot, or retail levels would benefit or harm consumers. The Catalyst broad literature review includes the economic and policy impacts of regulatory intervention on fuel prices both in the oil and gas markets globally, and most specifically within the United States.

The annotated bibliography with a brief policy analysis and summary of the literature was previously submitted to the CEC¹⁴ and contained several key findings we highlight here:

- Federal market interventions in the 1970's and 1980's, especially under the "Crude Oil Profit Tax Act of 1980" (Public Law No. 96-223), were ultimately ineffective in lowering consumer prices.
- Excise taxes aimed at capturing "excess profits" have had the opposite effect: creating artificial constraints in supply, often resulting in higher prices for consumers.
- Price setting laws and regulations in Hawaii and elsewhere in the United States, as well as experiments in windfall profit caps in the United Kingdom, have resulted in increases in demand for foreign crude and refiner products. One study on Hawaii's price cap, found that their formula may lead to higher prices in some situations, potentially led to gas shortages, and decreased future investment.¹⁵
- Retail price controls (i.e., price setting at the pump) or spot market price controls are usually out of sync with global crude markets, resulting in hedging and other strategies that increase consumer costs.

It is worth noting, upon reviewing the literature contained in the Catalyst report, that Federal "price gouging" laws have previously been proposed in Congress, but have never passed. One key concern that stymied the passage of these proposals in past Congresses has been that any Federal regulation of energy prices could have the unintended effect of reducing competition, promoting dependence on foreign oil, and preventing the private market from operating efficiently. Indeed, the effect of the 1978 United States crude oil price controls was monopolization of U.S. crude oil producers, increased dependence on imported oil, and the subsidization of domestic consumption. The Crude Oil Windfall Profit Tax Act of 1980 was an excise tax on oil produced domestically; it was found that such taxes increased marginal production costs, resulting in reduced output and higher prices. The global fluctuation in crude prices was not easily accounted for in Great Britain's price cap formula – nor did the gas cap lower the price of retail gasoline for consumers.

Another concern for California, should the CEC seek to impose margin limits on transportation fuels, is that margin limits can result in the degradation of a reliable supply of gasoline. Investment supports a diverse infrastructure needed to be resilient and manage distribution under a variety of supply challenges due to geopolitics, weather, or unplanned maintenance.

Fortunately, SB X1-2 requires the CEC to gather real-world evidence on whether a cap on refinery margins could have unintended consequences that would harm California consumers. The law provides that the CEC "*shall not* set a maximum gross gasoline refining margin or accompanying penalty . . . *unless* it finds that the likely benefits to consumers outweigh the potential costs," considering factors such as whether action would lead to a greater supply and demand imbalance in California's fuels market or lead to higher pump prices."¹⁶ No analysis can be adequate and accurate unless the CEC looks at *all* variables impacting the market, including land use decisions, the lack of permitting, and regulatory actions. The CEC will not be in a position to make a well-informed decision, supported by a meaningful and fair analysis, without considering and analyzing these variables.

¹⁴ "Western States Petroleum Association Comments - literature review on Energy Price Controls" filed November 27, 2023: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=253336&DocumentContentId=88551>

¹⁵ See Catalyst report at Brown, M., Rewey, C., & Gagliano, T. (2003). Findings on Hawaii Gasoline Prices and Policies. Honolulu: NCSL Energy Program. Retrieved October 2023, from

https://energy.hawaii.gov/wpcontent/uploads/2011/10/HIGasPricesPolicies_2003.pdf

¹⁶ PRC Section 25355.5(l) (emphasis added)

WSPA RESPONSES TO STAKEHOLDER ROUNDTABLE QUESTIONS

“Do the benefits to consumers outweigh the costs?”

The CEC cannot answer this question without first evaluating the potential impacts and any unintended consequences of adopting a gross gasoline refining margin cap. Only with this information can CEC then assess, based on actual market evidence, whether a margin cap will do anything to address the fundamental underlying market reasons for rising prices in California: i.e., ongoing market volatility due to diminishing supply capacity in a market accompanied by very strong demand. A cap that only further *constricts* local fuel supply capacity is no benefit to California consumers at all.

Yet it was troubling to hear indications by some State policymakers at the workshop that instituting a margin cap/penalty was seemingly a foregone conclusion – despite a number of variables suggesting less-than-full consideration of all necessary information, including a mere three months of data reported. These policymakers and some stakeholders seemed to show little interest in actually gathering the facts, or in giving the CEC a fair chance to consider those facts. In fact, the CEC’s ongoing information gathering efforts are happening concurrently with a significant new CEC staffing effort, and a recently adopted and ongoing rulemaking to seek clarification of and consistency with the reported data that would underpin such a determination. Also, the CEC does not yet have the benefit of the yet to be released Transportation Fuels Assessment or Transportation Fuels Transition Study, and the vast majority of members of the Independent Consumer Fuels Advisory Committee have not even been appointed to opine on these critical issues. Indeed, implementing a penalty before the CEC takes these steps runs counter to what some of these same policymakers previously stated publicly: that the CEC’s new authority is significant in nature (as it has been touted as a first-in-the-nation regulation), that the question itself is very complicated, that the CEC enters the process earnestly and would seek to tour all of California’s refineries to better understand these complex issues, and that decisions must be made thoughtfully and in a transparent manner – which requires the CEC to be objective.

As outlined above, price caps have been tried before. They have failed, and resulted in net harm to consumers and the transportation fuel sector. Imposing margin limits, while simultaneously trying to lower prices *and* expecting the industry to comply with increasingly stringent regulations (which cost money and resources to implement), results in conflicting and often contradictory outcomes: i.e., a lack of incentive to continue investing in California’s energy infrastructure, degrading service quality, a more inefficient market, supply issues coupled with a greater dependence on foreign oil, and higher costs to comply.

In addition to the fact that margin and price limits have been demonstrated not to work, the CEC must seriously consider the troubling precedent it would set outside the utility context by attempting to replace market supply and demand with price setting by government fiat.

“What is the likely impact on gasoline supply?”

As discussed above, chronic structural fuel-supply obstacles that cause price volatility today remains unaddressed in California. Some of these supply constraints at work – even prior to instituting any first-in-the-nation regulation capping refinery margins – include the following:

- 1) Most refineries outside of California *do not* produce fuels that meet the State’s strict gasoline specifications, leaving a very restricted set of suppliers who can supplement in-State refining

capacity. As will be discussed in more detail later, natural geography isolates and disconnects the West Coast from other supply centers – which adds both time and cost for out-of-State products.

- 2) California has become increasingly dependent on the global crude oil market and imported crude oils – which present efficiency and utilization challenges for in-State refineries.
- 3) California continues to enact and implement policies that do not promote greater availability of transportation fuels for Californians and that discourage capital investments in new infrastructure. WSPA previously noted that there is already an artificially expedited, downward trend on California's own crude oil supply. The California Air Resource Board (CARB) assumed an approximately 3% annual production decline in the 2022 Scoping Plan Update,¹⁷ CalGEM data has shown an approximately 10-15% decline depending on the data set used.¹⁸

In his remarks at the workshop, Dr. Matthew Zaragoza-Watkins noted that a margin cap would be effective only if refiners have capacity to increase production.¹⁹ If refiners “don’t have an opportunity to increase output in response to a penalty, then... **prices will still be high for transportation fuel in California.**” As he observed, California’s refinery utilization is lower than in other parts of the nation. He did not, however, include the critically important description of *why* this is the case nor *how* refinery utilization was being defined. Without this explanation, only a partial picture of the current situation is presented.

Understanding the reasons for lower utilization of California’s refineries is a key point.

Some of California’s remaining refineries were designed to process *California crude oil*. The declining availability of *California crude oil* means that some in-State refiners are not able to run as efficiently as they were designed to; where some units in a refinery will be overworked others will be under-utilized. WSPA also notes that refinery utilization itself is a metric that can easily be misunderstood. Capacity can change depending on the crude type. It can also change with a reduction in hydrofiner capacity space necessary to produce renewables. To ensure consistency in terminology and meaning, it is important to cite the data being referenced. The federal Energy Information Administration uses data about the number and capacity of petroleum refineries;²⁰ this standardized data shows a lower utilization rate, though similar on average since 2011 data in Petroleum Administration for Defense Districts (PADD) 5.²¹ It is important to ensure we are collectively referencing the same terminology and data sets with a common understanding.

- a. **Dwindling California Crude Oil Supply Can Lead to Some Under-utilized California Refineries.** For a variety of reasons, crude production has declined significantly in California in recent years, as outlined above. This decline is largely due to statutory, regulatory, and permitting issues, both for in-State oil producers and for the pipelines that deliver that oil to refineries. Producers depend on the pipelines to deliver their product, and the pipelines depend on sufficient crude supply to maintain their operations. Thus, limitations in one part of the system may affect the entire supply chain. For example, the new “setback rule” (SB 1137, 2022) is expected to cause further shutdowns of in-State crude production. This may,

¹⁷ CARB. 2022 Scoping Plan for Achieving Carbon Neutrality, Page 103. Available at: <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>. Accessed: August 2023.

¹⁸ California Department of Conservation, WellSTAR monthly production data reports, 2018-2023, https://www.conservacion.ca.gov/calgem/Online_Data/Pages/WellSTAR-Data-Dashboard.aspx

¹⁹ See Event Recording at 50:00 mark, emphasis added, at <https://www.energy.ca.gov/event/workshop/2023-11/sb-x1-2-workshop-maximum-gross-gasoline-refining-margin-and-penalty>

²⁰ https://www.eia.gov/dnav/pet/PET_PNP_CAP1_DCU_SCA_A.htm

²¹ https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=W_NA_YUP_R50_PER&f=W

in turn, lead to operational challenges for some pipelines. As in-State production continues to dwindle, and pipeline infrastructure continues to age, these issues may compound and lead to the further loss of local supplies.

To offset the loss of local crude supplies, some California refiners increasingly rely on imports of *foreign crudes*. However, the chemical composition of these foreign crude imports is different than *California's local crudes* – which some California's refineries *are designed to run on*. ***Because of these chemical compositional differences, it is not possible to operate some California refineries at the same utilization rates with foreign crudes.***

The chemical composition mismatch exacerbates this issue. While the refineries could be reconfigured to optimize for processing foreign crudes, this would require significant capital investments – at a time when the State is actively seeking to shut down the refining industry.²² CARB specifically noted in its 2022 Scoping Plan Update that, “[a]n assessment of ongoing progress and efforts to reduce demand for petroleum fuels and of opportunities to phase down oil and gas extraction and refining will be included in the next Scoping Plan update.”

The relationship between crude composition and refinery throughput rates is complex, but it is a major factor in the underutilization of some California's refinery assets and therefore must be considered in the economic analysis. Because refineries have a rating that is based on the maximum crude throughput they can physically handle (and sometime this is based on permitted local/regional limits), when crude oil is processed with a different composition, some portions of the refinery will be “maxed out” while other portions of the refinery will not be. Therefore, the overall crude processing rate is less than the rated volume. When a portion of the refinery is under-utilized, it may be able to be loaded with refinery intermediate feedstocks. However, to do this optimally requires a flexible pipeline/waterborne delivery system for the refinery to receive the feedstocks; and, as discussed below, infrastructure constraints may limit availability of these feedstocks as well.

Moreover, it must be noted that California crudes have a cost advantage over crudes imported from overseas. The delivery of crudes from around the world comes with a high transportation cost (and, incidentally, a higher carbon footprint) relative to locally produced crudes. Thus, artificial constraints on California crude add directly to the price Californians pay at the pump. Any accounting for the cost of California gasoline would be incomplete unless this factor is considered.

- b. Waterborne Access and Other Logistical Asset Constraints Lead to Underutilized Refineries.** The CEC noted in March 2020 “[t]he only way for California to receive large amounts of crude and refined products is by marine.”²³ Refineries rely on waterborne vessel and barge movements for an increasing proportion of their crude feedstock and movements of finished products. However, access to docks is limited, due to physical limitations and regulatory constraints and permitting issues. In some cases, the size of cargoes may be limited due to tankage limitations adjacent to the dock – and permitting for new or expanded tank capacity is difficult, if not impossible, to obtain in California.

²² California Air Resources Board's 2022 Scoping Plan Update, at pages 74, 87, 100-01, 106; <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>

²³ CEC, March 2020. Petroleum Watch: How Petroleum Products Move. https://www.energy.ca.gov/sites/default/files/2020-03/March_2020_Petroleum_Watch.pdf

There is increased need for additional dock access in part due to shifting feedstock and product demand within the State. The increased demand for foreign crudes is one obvious example. Another is the need to export diesel; it is impossible to produce gasoline at a refinery without also producing a certain amount of diesel. However, much of the diesel demand in the State has been displaced by renewables, so diesel exports must be increased to maintain sufficient gasoline supplies. Limitations on dock availability may place constraints on the ability to move materials in and out of a refinery, in turn constraining its ability to produce at maximum rates.

A complex balancing act is required to optimize California's refinery operations while also accounting for limitations of the surrounding logistical assets including tank storage, pipelines, and dock access. Under some circumstances, a refinery may be forced to operate under otherwise suboptimum conditions due to limited availability of dock space or tank storage. In other words, inadequate infrastructure leads to underutilized refineries. Therefore, an analysis of refinery utilization must account for these factors. Particularly when comparing California's refinery utilization to that of other states, it is essential to account for the relative inadequacy of refining logistics assets in California (versus other states), and how that inadequacy affects the ability of California refineries to run at optimum rates.

These are significant constraints on California's refining sector which limit its ability to increase gasoline output. We urge the CEC to consider these constraints in its analysis, including the concerns raised by WSPA's Catherine Reheis-Boyd in the stakeholder roundtable discussion. These constraints are a fundamental and well-documented reason for higher gas prices in California, and the reason a margin cap would be ineffective (and could in fact exacerbate the issue) in providing relief to California's gasoline consumers. The most effective way for the State to moderate gas prices is by addressing these concerns directly.

Resupplying California's market has increasingly been, and remains, difficult. This will likely only worsen as new, more restrictive State policies take effect or are pending approvals. For example, because CARB's new At-Berth Regulation will soon require all tankers to utilize emissions control technology that has not yet been implemented in practice, many existing tankers may not be able to meet the Regulation's requirements by the first compliance deadline of January 1, 2025. If these tankers are prohibited from calling on California ports and terminals, the overall result will be to limit the number of calls and/or the availability of tankers that can call on California's ports beginning in 2025 – the very same facilities that will need to absorb the delivery of increasing imports due to artificially constrained in-State production and refining policies. In addition, WSPA previously shared concerns with the CEC's other effort under SB X1-2, to change refinery maintenance/turnaround schedules based on market dynamics instead of existing safety standards, which could constrict fuel supply and create serious health and safety concerns.²⁴ These market and policy dynamics that constrain California's fuel supply are all already occurring – before the CEC even seeks to establish a first-in-the-nation gross gasoline refining margin cap and penalty.

The West Coast is increasingly reliant on gasoline imports. This is especially due to planned and unplanned refinery maintenance, an increasingly constrained infrastructure supply system, and refinery conversions to renewable facilities. When refiners have advance awareness of a supply disruption, they can mitigate the effects on consumers. For example, when refiners

²⁴ Western States Petroleum Association Comments on November 3 SB X1-2 Pre-Rulemaking Workshop; filed November 21, 2023 at <https://efiling.energy.ca.gov/GetDocument.aspx?tn=253283&DocumentContentId=88484>

schedule maintenance in advance, they can import finished gasolines (i.e., CARBOB) or gasoline components (e.g., alkylate) from other refineries along the West Coast.

Finally, under the margin cap proposed in SB X1-2, the motivation for capital investments would be further dampened. The literature cited elsewhere in this comment letter makes it clear: imposing limits on a free-market system leads to underinvestment, which ultimately leads to diminished supply. By design, the margin cap ensures refiners' future profits are less than they otherwise would be. In an environment where refiners' future prospects are limited by fiat, there is a diminished rationale for making the long-term investments so badly needed to maintain and improve infrastructure and indeed the refineries themselves. The margin cap therefore creates a risk that the supply/demand imbalance will worsen over time.

“What is the likely impact on the price at the pump?”

Passage of SB X1-2 indicates that State policy leaders are increasingly concerned about the affordability of gasoline in California; a concern WSPA has long shared. Yet the documented facts and expert analyses show that affordability concerns have consistently been related to the ongoing influences of diminishing local supply capacity in the face of steady or increasing consumer demand. The CEC's own IEPR predicted elevated gasoline costs to consumers dating back 20 years based on the same considerations we have outlined above – i.e., that fuel prices are driven by larger market forces of supply and demand. Due to these factors, and the relative inelasticity of Californians' demand for gasoline, even relatively small disruptions in supply can have large impacts on fuel costs for California consumers. The 2005 IEPR specifically noted that, “California's petroleum infrastructure operates at near capacity. Breakdowns and outages at in-State refinery and pipeline facilities quickly tighten gasoline and diesel fuel supplies and create market volatility. Since California is not directly connected by pipeline to other domestic refining centers, in-State refiners cannot readily procure gasoline, diesel, and other blending components when outages do occur. This contributes to higher and more prolonged price spikes.” Natural geographic boundaries (i.e., the Pacific Ocean and the Rocky Mountains) isolate the West Coast and make the import of refined petroleum products more expensive, so disruptions in supply can have an outsized impact in California compared with other states. But WSPA members and their refineries cannot change these geographic realities.

Adding to the impact of California's unique geography on gasoline prices is the fact that the State has enacted policies in the last 20 years that have caused consumers to become increasingly dependent on a global commodity market that WSPA members do not and cannot control.

“What other factors should the CEC consider?”

In order to comprehensively understand supply and pricing issues for gasoline in California, the CEC should also compare California's market with other domestic markets – such as the Gulf Coast – while taking into account the unique aspects of the California market, including, but not limited to, logistical constraints and the unique regulatory environment. Gulf Coast refiners produce gasoline in accordance with the United States Environmental Protection Agency (EPA) standards, which protect environmental and consumer safety. But refiners can produce EPA-compliant gasoline more efficiently and cheaply without having to comply with California's regulations required for CARBOB production. Additionally, this EPA-compliant gasoline is easier to produce, easier to transport by pipeline to the rest of the United States, and has the major

advantage of being fungible across a much larger market. The CEC should consider these differences between the California and Gulf Coast markets as factors explaining California's higher gasoline prices:

- 1) The West Coast refineries represent 13% of U.S. refining runs while having 16% of gasoline demand, whereas, the Gulf Coast has 55% of refining capacity with 15% of U.S. gasoline demand.
- 2) The Gulf Coast has incentivized and enabled significant capital investments in its energy infrastructure, enabling increased crude production and refining capacity, whereas, California has disincentivized such investments.
- 3) The Gulf Coast markets are also home to more producing, midstream, refining, marketing, and retail companies compared to California, which enables increased competition and efficient, flexible markets to supply the lowest-cost gasoline to its consumers; in comparison, California has imposed burdensome and complex legislation that has made operating current businesses and investing in new businesses difficult for new entrants and market participants, stifling further competition and causing unintended consequences that could further eliminate existing businesses. Fifteen years of environmental policies explicitly targeting the hydrocarbon industry have brought California to where it is today, as it has devalued energy security in favor of ever more aggressive climate goals.
- 4) In addition, the CEC must consider the continued motivation for investment into California's gasoline production infrastructure. There is an investment dilemma that oil companies have when reviewing the cracked spread, a metric used to help monitor gross refining margin potential, from the West Coast versus the Gulf Coast. Since 2020, the 5-3-2 cracked spread comparison between these coasts, there is no longer a West Coast premium. This shows it is even more important for California to help define a more certain regulatory environment to be more competitive as a place to do business as investors are looking to safeguard investments from risk.

A comparison of fuel costs – and indeed refinery utilization rates – between these two regions is incomplete unless all the above factors are properly accounted for.

WSPA has also submitted additional information from HSB Solomon Associates LLC for the CEC's consideration.²⁵ The key takeaways identified in their report:

- 1) That California refiners have faced growing operating cost pressures since 2000;
- 2) That California refiners' margins (gross and net) have eroded since 2000 due to increasing crude prices and increasing operating cost pressures; and
- 3) That, since crude is a global commodity, replacing California crude increases costs.

WSPA previously urged²⁶ the CEC to consider fundamental fuels market issues, including: (1) how a gross refining margin would impact petroleum cost or statewide supply; (2) what precedent the CEC would set as a government entity attempting to determine the "allowable" income for California businesses; (3) why the State government should determine the "appropriate" profit (or loss) for privately-owned companies in just one industry singled out by the government; (4) what specific factors the CEC would consider in even attempting to set such a level; (5) how to determine what percentage of a refiner's income it would be required to pay to the State; and (6) what financial support the CEC would offer to facilities operating at a loss (as California has already done for the electric industry with respect to power plants).

²⁵ Western States Petroleum Association Comments – Solomon Report: California Refiners' Cost and Margin Analysis, 2000-2002 filed November 27, 2023 at <https://efiling.energy.ca.gov/GetDocument.aspx?tn=253316&DocumentContentId=88543>

²⁶ Western States Petroleum Association Comments – WSPA Comments on SB 2 Implementation filed May 30, 2023 at <https://efiling.energy.ca.gov/GetDocument.aspx?tn=250404&DocumentContentId=85146>

We continue to be concerned that use of SB X1-2 and SB 1322 (2022) data collected to date would be misleading. This data cannot be reasonably relied upon to establish a maximum gross refining margin and penalty without first addressing the inconsistencies and ambiguities in the statute itself and through the completion of a formal rulemaking, as we have previously explained and requested.^{27,28,29,30} It is evident from the CEC's posting of public data that there are widely varied and inconsistent interpretations of statutory text and of informal CEC guidance offered to date. The importance of needing accurate data was repeatedly raised during the workshop – including by Division of Petroleum Market Oversight Director Tai Milder,³¹ who proceeded to ask CEC-invited panelist Dr. Matthew Zaragoza-Watkins to expand upon “why it’s critical to have accurate data” towards setting any penalty – indicating that a “firm may leave the market if the penalty is set at the wrong level.”³² Dr. Zaragoza-Watkins’ response was, “...fundamentally, the reason it’s important to have accurate data is because you want to understand the incentives the firms face.”³³ He later underscored that the importance around data about costs that are necessary to support the continued operation of the refining industry and that those costs are covered.³⁴ It would be unfair to assess any penalty on gross margins that fails to account for operation costs.

“Why is what the refineries report to CEC in the 1322 form different than what is reported to the SEC? This is even more evident when you look at companies that only have California refineries. Do diesel and jet fuel production really make a difference in net margins?”

Just as we have noted in our prior letters, WSPA continues to strongly believe that a formal rulemaking process is necessary to ensure clarity, consistency, and accuracy for both the CEC staff and all regulated entities in interpreting, implementing, and properly complying with SB X1-2 (including SB 1322). At the outset, WSPA seeks clarification as to what the CEC is referring to by “SEC filings.” Based on comments made during the workshop, it appears that the CEC might be referring to quarterly press releases and *not* materials filed with the U.S. Securities Exchange Commission (SEC). In some quarterly press releases, one can find non-Generally Accepted Accounting Principles (GAAP) measures, such as gross margin detail for refineries, whereas in a SEC filing, companies generally provide a GAAP-consolidated gross margin for all refining operations.

More broadly, some of the key distinctions between data reported in the CEC’s M1322 form and SEC filings are that:

- 1) The CEC’s M1322 form calls for the calculation of something that does not exist: a gross gasoline refining margin. It improperly focuses on one product, but that is not how refineries operate or report data. Refineries purchase and produce *slates of products*. The SEC filings include profit or margin numbers for *all* products – not just gasoline.

²⁷ WSPA Petition for Formal Rulemaking Regarding SB 1322 Implementation filed January 6, 2023

²⁸ WSPA Request for Reconsideration of WSPA Petition for SB 1322 Rulemaking and Stay of Penalties filed February 15, 2023

²⁹ WSPA Petition for Formal Rulemaking filed May 11, 2023

³⁰ Western States Petroleum Association Comments – Request for SB X1-2 Data Reporting Clarifications, filed June 8, 2023

³¹ CEC SB X1-2 Workshop on Maximum Gross Gasoline Refining Margin and Penalty, November 28, 2023, Event Recording, at 00:53:40 mark, https://energy.zoom.us/rec/play/wU2L-vR2hfe2L4R8F11toxwaE5V63sjjRGlb8edbl5u3Sy9o14VJhxW3EEUI9JxoNiJbkNxU4jXVCb9G.jsolS8ulU0HN-ueJ?canPlayFromShare=true&from=share_recording_detail&startTime=1701191019000&componentName=rec-play&originRequestUrl=https%3A%2F%2Fenergy.zoom.us%2Frec%2Fshare%2FuXlrCUuIYKe0C2uVD-1oA104IYqFYS_22ajzNlWxY5GR0alA5lpVCweJZUtpCGm.ZS35oDRJ1t5n6vo8%3FstartTime%3D1701191019000

³² CEC Event Recording, November 28, 2023, at 00:54:02 mark

³³ CEC Event Recording, November 28, 2023, at 00:54:15 mark

³⁴ CEC Event Recording, November 28, 2023, at 01:11:52 mark

- 2) SEC filings usually follow GAAP or some other appropriate accounting methodology for calculating profit or margin, where the CEC's M1322 form does not. Companies may apply GAAP differently to their margin calculations. For example, some companies record turnaround costs as expenses when incurred, which impacts margin, while others may opt to capitalize such costs, which impact costs vs. depreciation over time.
- 3) SEC filings are usually based on *quarterly or annual periods*, where the CEC's M1322 form calls for *monthly* data.
- 4) The geographic, location, and/or commodity split detail might also be different for SEC reports; for example, these could include operations *outside of California* in some cases, where the CEC's M1322 form focuses *solely* on California operations.
- 5) Each company's segment reporting to the SEC may differ. For example, some companies combine refining and market results in the same segment while other companies may account for the results of these distinct businesses in separate segments.
- 6) In SEC reporting, companies define measures that are intended to be most comparable to industry benchmarks, such as realized refining margin and realized marketing margin. These measures are defined by each company and may be defined differently between companies. The measures "gross margin," "net margin," and "realized margin," for example, may be defined differently at each company and differently from the CEC's definitions.

It is otherwise difficult to comment on the specific sub-set of this question without being able to review data cited and how data figures are being calculated.

"Today you saw some scoping around the max margin and the penalty and an introduction to energy markets. How are refineries avoiding manipulating the market? With over 5 companies producing more than 90%, how can we ensure that price fixing is not occurring?"

The transportation fuel refining industry, like all other major industries in the United States free market, is bound by and adheres to strict antitrust laws. Refineries do not "manipulate the market" and do not engage in "price fixing," and decades of real-world research have confirmed this over and over again.

Gasoline markets are amongst the most highly scrutinized and regulated in the world. California's gasoline industry has been subject to multiple investigations by different Attorney Generals. No evidence of price fixing or any anticompetitive conduct by refiners has ever been found. Yet certain California policymakers continue to promote the false claim that high fuel prices in California are somehow being caused by "market manipulation."

We urge CEC to reject that false claim. With so few refiners left in California, the State should be actively working to help keep those that are left – operating under the strictest regulatory environment in the world – to meet our ongoing energy demands in the world's third largest fuels market.

Further, in April 2019, the CEC undertook a study of "the causes of the increased differential between national and California gasoline prices" from 2015 forward. After studying the issue for five months, the CEC released its final report on October 21, 2019. The report found that, while refiner margins had some "short term" spikes, due primarily to refinery outages (e.g., the extraordinary impact of the 2015 Torrance outage), refiner margins "do not account for the sustained price elevation seen over the past five years." The CEC explained that, except for the short-term "outage-driven spikes, there has been little to no growth in the difference between

the United States and California refiner margin” – i.e., that refiner margins in California are consistent with those in the rest of the United States – such that it was “*ruling out refinery price margins as the cause of the residual price increase.*”³⁵

Indeed, at the workshop, the CEC made clear that the “penalty” being considered as part of a margin cap is ***not linked to any evidence of market manipulation whatsoever***. CEC Executive Director Drew Bohan also made clear at the workshop “that one thing that the penalty is ***not*** meant to be [is] a punishment for conduct that is already criminal”³⁶ (e.g., price fixing)...and that “the penalty we’re talking about today is not about illegal behavior.” He also noted that, “***We are not suggesting that as the staff of the Energy Commission today, we don’t have clear evidence that something like [market manipulation] is happening.***”³⁷ WSPA submits that, in the absence of any evidence to substantiate fears of improper market manipulation – the ***very*** fears that prompted consideration of a margin cap in the first place – the CEC should decline to impose a margin cap and reject unsubstantiated claims of manipulation as both misplaced and improper.

“The industry says that the transition is going to bring volatility to the market. How do we protect affected communities from the downsides of this volatility and transition?”

To be clear, SB X1-2 is not the appropriate means to address an energy transition. There are numerous other California laws, regulations, and policies in place to address various components of an energy transition. The legislative intent of SB X1-2 was clear in including provisions regarding data collection and monitoring requirements from across the petroleum sector; refinery maintenance; the authority to be able to establish a refining margin cap and penalty ***if*** certain conditions are met; establishing an Independent Consumer Fuels Advisory Committee, an independent new oversight division, and three distinct near-term reports – on gas prices, an assessment to identify methods to ensure a reliable supply of affordable and safe transportation fuels in California, which will then inform a Transportation Fuels Transition Plan with CARB. Any discussion regarding how to use a margin cap or penalty to shift away from fossil fuels would be misplaced and improper. Director Tai Milder specifically noted at the workshop that the CEC’s singular mandate here is “how do we protect the consumers.”³⁸

WSPA is concerned that increasing *market volatility*, as noted above, will affect all Californians. Ensuring the availability of an affordable, abundant, and reliable quantity of transportation fuels is a central tenet of SB X1-2, and what this Commission is tasked with achieving. We have urged the State to incorporate more robust cost containment mechanisms in California’s policies, especially as they result in increasingly higher costs for consumers. This could include affordability guard rails to protect low- and moderate-income Californians, supply-based guard rails to address unforeseen implementation or manufacturing challenges, and infrastructure guard rails to address reliability impacts (e.g., due to ongoing permitting challenges).

With regard to *air quality* issues and the protection of affected communities, WSPA urges the State to better fund and support the Community Air Protection Program developed in response to Assembly Bill (AB) 617 (2017). As a member of the AB 617 Consultation Group since the program’s inception, WSPA is deeply committed to the protection and reduction of exposure in

³⁵ Additional Analysis on Gasoline Prices in California, CEC, October 2019 (emphasis added) https://www.energy.ca.gov/sites/default/files/2019-11/Gas_Price_Report.pdf

³⁶ CEC Event Recording, November 28, 2023, at 07:55 mark (emphasis added)

³⁷ CEC Event Recording, November 28, 2023, at 10:13 mark (emphasis added)

³⁸ CEC Event Recording, November 28, 2023, at 55:37 mark

communities most impacted by air pollution. These communities are also likely to be vulnerable to the unintended consequences or growing pains associated with this transition. Many of WSPA's members and staff live and work in affected communities and we remain committed to finding solutions that result in real emission reductions and thriving communities; a well-funded and robust AB 617 Program provides the framework for those efforts.

California has made tremendous progress in addressing air quality issues. The State has the nation's cleanest-burning gasoline, regulates increasingly stringent engine standards, has incorporated liquid fuels under the world-recognized Cap-and-Trade program, and is soon set to further increase the carbon intensity (CI) targets for transportation fuels under the Low Carbon Fuel Standard (LCFS). However, this ongoing and nation-leading pursuit of innovative policies to reduce greenhouse gas emissions does come at a cost. For example, CARB recently noted in its "Standardized Regulatory Impact Assessment" for the 2023 LCFS amendments,³⁹ that the estimated pass-through cost for gasoline to California consumers would increase from \$0.12 per gallon in 2024 to \$0.47 per gallon in 2025 due to a "near-term step-down in CI benchmark stringency in 2025." Next year, CARB is also expected to finalize amendments to further strengthen the Cap-and-Trade program, anticipated to become effective on January 1, 2025. Recent independent modeling commissioned by CARB demonstrated there that "most of the alternative scenarios yield prices that follow the price ceiling through at least 2035" with Cap-and-Trade program prices reaching the "price ceiling" in all four alternative scenarios by 2030.⁴⁰ (For reference, the 2023 price ceiling is \$81.50;⁴¹ the auction settlement prices have increased from \$12.10 in the first auction held in 2014 to \$38.73 at the 37th auction held most recently on November 15, 2023.⁴²) Also on January 1, 2025, CARB's Ocean-Going At-Berth Regulation will newly apply to tanker vessels visiting the Ports of Los Angeles or Long Beach.⁴³

With these (and other) compounding regulatory requirements – all of which come at a cost – WSPA is concerned about imposing an unproven margin cap and penalty on refiners. It is extremely hard to imagine how such a policy would make matters better for California consumers – especially low- and middle-income consumers who can least afford and are highly dependent on an abundant, affordable, and reliable supply of transportation fuels for their everyday lives.

"California is the third largest gas market in the world after the United States and China. Would refineries leave the state if a max margin was imposed, and if so, why?"

WSPA does not know how each refinery would respond, but a margin cap in any industry – including this one – would undoubtedly make it more difficult for market participants to continue operations and to continue to justify investment of capital in their California assets.

Stakeholders are correct to recognize that a maximum margin under SB X1-2 could have dramatic impacts on the continued viability of California's refining market. The gross gasoline refining margin dramatically undercounts fuel costs and excludes operational costs altogether.

³⁹ CARB LCFS SRIA, Table 22, at <https://dof.ca.gov/wp-content/uploads/sites/352/2023/09/LCFS-SRIA-to-DOF-ADA-Compliant.pdf>

⁴⁰ CARB/Quebec Joint Cap-and-Trade Program Workshop, November 16, 2023, at slides 34-45, "Modeled Prices Under Different Scenarios" at https://ww2.arb.ca.gov/sites/default/files/2023-11/nc-combinedSlides_Nov162023.pdf

⁴¹ <https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/cost-containment-information/price-ceiling-information>

⁴² <https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/program-data/cap-and-trade-program-data-dashboard>

⁴³ CARB FAQ, revised November 8, 2023, at Page 10, <https://ww2.arb.ca.gov/sites/default/files/2023-11/Updated%20At%20Berth%20FAQ%20ADA.pdf>

That means that even if the CEC allows refiners to make a positive gross margin, it could still be imposing a negative *net* margin – i.e., preventing refiners from operating at a profit, at least for parts of the year. This could, in turn, force refiners to choose between producing gasoline at a loss and exiting the market altogether.

Compounding this problem, a SB X1-2 penalty would force refiners to engage in a high-stakes guessing game: refiners would be forced to try to adjust their prices *in real time* so that their *monthly* gross refining margins would remain below any maximum imposed by the CEC. And although refiners purchase crude oil weeks in advance of using it, they draw on different sources of oil throughout the month based on availability, need, and chemistry – making monthly acquisition costs impossible to reliably predict in advance (i.e., what prices will be later in the month). This, again, places refiners in a position to choose. They can try to adjust their prices to bring their margins below the maximum – but risk violating any CEC-imposed cap if they guess wrong about the future of wholesale prices or acquisition costs. Or, they can set prices so far below what is required to comply with any maximum margin that it would no longer make economic sense to refine in California. Either option would jeopardize the transportation fuels markets and give rise to serious constitutional concerns.

Imposing a gross gasoline refining margin would thus likely run counter to meeting the ongoing demand of Californians for their energy needs for the foreseeable future. The CEC should seriously consider what could happen to California's already-volatile fuels market if another refiner decides to leave the State, with no one willing to take their place given the ever-increasing burden imposed upon in-State refineries, including the extremely challenging regulatory environment they are required to operate in. It is also important to recognize that strict regulations and eroding profit margins have *already* forced many refiners to shut down their operations in, and leave, California.

We fully recognize that managing volatility in the world's third largest fuels market will not be easy. Nor will it be easy or inexpensive to significantly upgrade and dramatically expand California's electric grid to accommodate the anticipated electrification of the transportation (and building) sectors – especially in underserved areas. It is therefore equally important that the State closely evaluate what investments must be made in both systems to meet the diverse energy demands of all Californians, as well as steps that can be taken to facilitate a more expedient permit review process to enable these necessary investments. This includes ensuring that the remaining refineries can operate safely, efficiently, and profitably to ensure their continued in-State presence.

Imposing a gross gasoline refining margin would be counter to meeting the ongoing demand of Californians for decades into the future.

“Is the current gasoline market structure appropriate for California with OPIS essentially setting the spot price?”

This question rests on the disputable premise that the Oil Price Information Service (OPIS) “sets” the spot market price. OPIS collects information about spot trades and then, using a publicly available formula, calculates and reports a daily price assessment. WSPA does not presume to speak on OPIS’ behalf about its price assessment, and questions about its methodology would be more appropriately directed to OPIS itself.

CONCLUSION

WSPA appreciates the opportunity to provide you with our comments on these issues of critical importance not only to us, but to all California citizens who rely on affordable and reliable sources of transportation fuel every single day. At the same time, we are concerned that – aside from proposing a staff recommendation on the margin cap and penalty by “Late 2024” – the CEC has not provided the public any specific timeline for further workshops, hearings or other opportunities for public input. We believe the stakeholders and the public are always better served with a full accounting of the anticipated timeline for debating major changes to CEC regulations, and are provided enough time to fairly weigh and discuss the facts relevant to those proposed changes. As stated above, the overwhelming evidence gathered by the CEC and other independent researchers over the past few decades demonstrates that market forces, and not illegal market manipulation, have been and continue to be responsible for chronic pressures on fuels supply and market prices. Basic concepts of due process require CEC to allow for sufficient time in this proceeding to properly consider that evidence.

Thank you for considering our comments. We look forward to working with the CEC to provide ongoing input and to ensure that all market-sensitive, confidential, and proprietary data is well-protected. Please do not hesitate to contact me at with any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "S. Ellinghouse", with a stylized, cursive script.

Sophie Ellinghouse
Vice President, General Counsel & Corporate Secretary



Sophie Ellinghouse

Vice President, General Counsel & Corporate Secretary

April 25, 2024

California Energy Commission
Docket Unit, MS-4
Docket No. 23-OIIP-01
715 P Street
Sacramento, California 95814

Uploaded to Docket

RE: WSPA Comments on SB X1-2 Workshop on Maximum Gross Gasoline Refining Margin and Penalty Structure [Docket #23-OIIP-01]

Thank you for the opportunity to comment on the California Energy Commission's (CEC) April 11, 2024, workshop, the stated purpose of which was "to explore structures for determining a maximum gross gasoline refining margin (max margin) and penalty" per Senate Bill (SB) X1-2 (2023). The Western States Petroleum Association (WSPA) is a non-profit trade association representing companies that import and export, explore, produce, refine, transport and market petroleum, petroleum products, natural gas, and other energy supplies in California. These comments are based on WSPA's review of the materials and statements at the workshop, and we reserve the right to amend these comments or add to the docket as necessary to reflect additional materials or changes in the CEC's decisions.

We are increasingly concerned that a predetermined outcome has already been established^{1,2} and encourage the CEC to first complete its due diligence and advance its understanding of the multiple complex factors affecting California's unique transportation fuel supply and pricing issues **before** seeking to implement a novel policy that could only exacerbate an already challenging market and lead to higher gas prices for California's consumers. To address today's challenging gasoline price environment, the CEC should instead be pursuing measures to increase local supplies and ease price pressures resulting from a constricted supply.

The CEC must fully evaluate all potential impacts and consequences of adopting a gross gasoline refining margin cap and penalty, whether intended or unintended. The CEC cannot simply hope or speculate that the likely benefits to consumers will outweigh the potential costs. A cap that only further constricts the State's fuel supply capacity will only harm California's consumers, not help them. We have seen this before: California has, in recent memory, advanced novel energy pricing policies, with good intentions, only to face substantial implementation issues – including energy supply shortages that resulted in even **higher** prices.

To summarize the main points of this letter:

- California's ongoing market volatility can be directly attributed to chronic (and compounding) supply-side policy obstacles that artificially limits refiners' ability to meet the State's demand;

¹ Indeed, the CEC's initial Request for Information (dated April 26, 2024) stated: "[Can we include an explanation of why a penalty might be needed? I.e. that the state has experienced more frequent price spikes and that those higher prices have boosted profits but those higher prices have not led to increasing imports of supplies that mitigate price spikes? Or include some of the SBX 1-2 language that describes why a penalty is being contemplated?]"

² See April 11, 2024, CEC Workshop Event Recording, Vice Chair Siva Gunda, at 00:06:59 mark: "...really move forward on making sure the penalty lands this year..." at: <https://www.energy.ca.gov/event/workshop/2024-04/workshop-sb-x1-2-maximum-gross-gasoline-refining-margin-and-penalty>

- The CEC and its own consultants have recognized that there is no excess capacity available across California's refining fleet to produce more gasoline to meet California's demand;
- Rushing to impose a first-in-the-nation margin cap and penalty *only upon* California's refiners will likely lead to *less supply* – not more – for the numerous reasons identified; and
- California's refiners would not willingly and knowingly violate State law.

In responding to the information presented and comments made at the April 11 workshop, this letter incorporates by reference our prior comment letters^{3,4,5,6,7} on this topic and: (1) further explains why a margin cap and penalty would not address California's ongoing supply imbalance issues; (2) responds to the CEC Division of Petroleum Market Oversight's (DPMO) Chief Economist's workshop presentation; (3) responds to the Stillwater workshop presentation; and (4) responds to the ICF workshop presentation. WSPA would be happy to provide further information necessary to help answer important questions the CEC faces on this policy matter.

A MARGIN CAP AND PENALTY WILL NOT SOLVE CALIFORNIA'S LONG-STANDING SUPPLY PROBLEMS

SB X1-2 ***expressly prohibits*** the CEC from adopting a margin cap and penalty if they will ***potentially hurt*** California's consumers more than ***likely help*** them. The law mandates that the only way the CEC can make a factually complete and informed decision on this threshold finding is by first evaluating actual market evidence and assessing whether a margin cap will likely lead to an even greater imbalance between supply and demand than what we already have today – or lead to even higher prices at the pump. The evidence collected over two decades by third party experts, government oversight agencies, and even the State itself has been clear about the underlying market reasons for California's high gasoline prices: **ongoing market volatility can be traced directly back to chronic (and compounding) obstacles to bringing supply to market despite the sustained, strong demand from California's consumers.**⁸

A margin cap would address none of these foundational issues, and very likely would exacerbate them.

We have previously explained why California – the world's third largest fuel market – is a “fuel island,” and the CEC's Draft Transportation Fuels Assessment agrees.⁹ California enforces the most stringent gasoline emissions requirements in the nation and, as such, is dependent on domestic refinery production or alternative supplies from global sources that meet these stringent requirements. As the State's own analyses recognize, transportation fuels remain in high demand by California consumers¹⁰ and will remain in high demand for decades to come.¹¹

³ Western States Petroleum Association Comments - on SB 2 Implementation; May 30, 2023.

⁴ Western States Petroleum Association Comments - on Transportation Fuels Assessment Report Workshop; September 11, 2023.

⁵ Western States Petroleum Association Comments - Solomon Report California Refiners' Cost and Margin Analysis, 2000-2022; November 27, 2023.

⁶ Western States Petroleum Association Comments - literature review on Energy Price Controls; November 27, 2023.

⁷ Western States Petroleum Association Comments - on Nov 28 SB X1-2 Margin Cap and Penalty Workshop; December 12, 2023.

⁸ See, e.g., “[Distinct Factors Drive High Gasoline Prices in California: OPIS | Rigzone](#)” (Feb. 22, 2024); “[West Coast gasoline prices have been volatile this year - U.S. Energy Information Administration \(EIA\)](#)” (Dec. 2, 2022); “Petroleum Market Advisory Committee Final Report,” Sept. 25, 2017 (found at <https://efiling.energy.ca.gov/GetDocument.aspx?tn=221306&DocumentContentId=22709>); California Attorney General Bill Lockyer, “Report on Gasoline Pricing in California,” May 2000 at: <https://oag.ca.gov/sites/all/files/agweb/pdfs/antitrust/gasstudy/gasstudy2.pdf>

⁹ CEC Draft Transportation Fuels Assessment, published on April 12, 2022, at: <https://content.govdelivery.com/accounts/CNRA/bulletins/3961f08>

¹⁰ Western States Petroleum Association Comments on Transportation Fuels Assessment Report Workshop filed September 11, 2023 at: <https://efiling.energy.ca.gov/GetDocument.aspx?tn=252218&DocumentContentId=87224>

¹¹ See California Air Resources Board's 2022 Scoping Plan Update and CEC's Integrated Energy Policy Reports (linked below).

But State policies specifically designed to **reduce** in-State supply and the availability of fossil fuels send a strong signal to companies **not** to make the long-term investments necessary to maintain California's current level of refining capacity and production.

And make no mistake – the State's policy choices have already reduced the availability of in-State produced gasoline to California's citizens. As a direct result of California's regulatory policies,^{12, 13, 14, 15} Marathon's Martinez refinery and Phillip's Rodeo refinery have stopped producing gasoline, as both have converted to renewable fuel facilities. The CEC notes that, with these two refinery conversions, "statewide gasoline refining capacity decreased by nearly 200 TBD [Thousands of Barrels per Day]."¹⁶ In fact, California is now no longer able to produce all of its own gasoline to meet its own citizens' demand, thereby forcing an increased reliance on importing fuel from outside the State and country. Even the CEC acknowledges that "a strategy to bolster the state's imports of gasoline will be imperative to avoid potentially systemic undersupply problems."¹⁷ In sum, the CEC explicitly recognizes that the refinery conversions to renewable fuels production contributed to a loss of in-State gasoline production, ultimately causing the State to shift to more reliance on marine imports.

We have explained why there is very little supply "help" on the way from outside of California.¹⁸ Most refineries outside of California *cannot produce* fuels that meet California's strict gasoline specifications. For the few refineries that can, getting this fuel to California's market can be challenging; California is neither directly connected by pipeline to domestic refining centers in the Gulf Coast (due to the Rocky Mountains), nor easily able to import foreign sources of gasoline into California (due to the Pacific Ocean). As the CEC has noted, "[m]arine imports generally tend to have higher prices compared to in-state refining, as ships can be expensive to operate compared to pipelines and present different environmental risks."¹⁹ The CEC also acknowledged that "long lead times makes marine imports of refined gasoline less feasible for meeting immediate demand when California refineries experience unplanned reductions in capacity or have other supply shortages."²⁰ The more product we must import across an ocean – into a State with limited import infrastructure – the more unnecessary costs and transportation emissions are incurred to supply gasoline to California's consumers.

This increasing reliance on gasoline imports exposes California's industry and, by extension, California's consumers, to the uncertainties of a complex global commodities market our members cannot control.

Penalizing California's remaining refiners for providing much-needed gasoline to California consumers will only exacerbate this systemic undersupply issue. As Dr. Matthew Zaragoza-Watkins previously noted,²¹ a margin cap would be effective **only if** refiners have capacity to increase production. If refiners do not have the capacity to increase production, "then ... *prices will still be high* for transportation fuel in California." WSPA emphatically agrees. In fact, the

¹² <https://www.gov.ca.gov/2020/09/23/governor-newsom-announces-california-will-phase-out-gasoline-powered-cars-dramatically-reduce-demand-for-fossil-fuel-in-california-fight-against-climate-change/>

¹³ AB 1279 (2022) at: https://leginfo.ca.gov/faces/billNavClient.xhtml?bill_id=202120220AB1279

¹⁴ CARB 2022 Scoping Plan Update at: <https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan/2022-scoping-plan-documents>

¹⁵ CEC Draft 2023 Integrated Energy Policy Report at: <https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2023-integrated-energy-policy-report>

¹⁶ CEC Draft Transportation Fuels Assessment, published on April 12, 2024.

¹⁷ CEC Draft Transportation Fuels Assessment, published on April 12, 2024.

¹⁸ See WSPA Comments Regarding SB X1-2 Transportation Fuels Assessment Workshop [Docket #23-SB-02], filed Sept. 11, 2023.

¹⁹ CEC Draft Transportation Fuels Assessment, published on April 12, 2024.

²⁰ CEC Draft Transportation Fuels Assessment, published on April 12, 2024.

²¹ See November 28, 2023, SB X1-2 Workshop Event Recording at 50:00 mark (emphasis added) at:

<https://www.energy.ca.gov/event/workshop/2023-11/sb-x1-2-workshop-maximum-gross-gasoline-refining-margin-and-penalty>

CEC has recently acknowledged that refiners usually do not have the capacity to increase production: “Refineries typically operate at their maximum stated capacity when possible.”²² The CEC’s own expert consultants in this effort agreed as well.^{23,24} This inability of refiners to increase production therefore renders a margin cap not only ineffective but costly for Californians.

We have explained how energy price controls have been tried – and failed – before. WSPA commissioned a broad literature review by Catalyst Environmental Solutions that included both the economic and policy impacts of regulatory intervention on fuel prices, both in the oil and gas markets globally and domestically.²⁵ The literature shows that historic Federal market interventions were ultimately ineffective in lowering consumer prices, and that efforts aimed at capturing “excess profits” actually had the opposite effect: creating artificial supply constraints in the face of strong demand, often (predictably) resulting in higher prices for consumers. The literature demonstrated how such efforts may also decrease future investment,²⁶ which could result in the further degradation of a reliable supply of gasoline in California.

We have explained why chronic structural fuel supply obstacles create gasoline price volatility. The CEC, through multiple Integrated Energy Policy Reports, also predicted that California would have an increasingly difficult time avoiding market volatility due to the pressures of diminished local supply in the face of continued strong consumer demand. These obstacles remain unaddressed and are only compounded when the State: (1) continues to pursue policies that shrink in-State production of transportation fuels for Californians; (2) simultaneously discourages capital investments in California’s petroleum infrastructure; (3) proposes to increase both the stringency and cost of compliance with existing State programs; (4) seeks to ban the sale of internal combustion engine vehicles even with California’s significant and ongoing electric infrastructure and pricing challenges; and (5) adopts regulations that will make it more difficult to import transportation fuel supplies through California’s ports in the near future. It is hard to imagine how adding a novel margin cap and penalty to this mix would do anything but compound California’s fuel supply and pump price challenges.

We have explained that refining is a challenging, complex, and fluctuating business. The CEC’s own data demonstrates this. WSPA has submitted information from HSB Solomon Associates LLC²⁷ which demonstrates that California refiners’ margins (gross and net) have eroded since 2000 due to increasing crude prices and increasing operating cost pressures, and that replacing California’s domestic crude with imports contributes to those increasing costs. Yet the CEC continues to discount the operating costs and *net* margins in favor of *gross* margin reporting and publicly available data. It is apparent that now is the time for the CEC to consider how to incentivize the remaining refiners to continue making investments in our gasoline production infrastructure by providing a more certain regulatory environment.

We have explained that the refining industry – like all other major free market industries – is bound by and adheres to strict antitrust laws. Refineries do not “manipulate the market” nor engage in “price fixing.” Decades of real-world research have repeatedly confirmed this.

²² CEC Draft Transportation Fuels Assessment, published on April 12, 2024.

²³ See April 11, 2024, CEC Workshop Event Recording, Dave Hackett, upon questioning, at 02:28:12 mark.

²⁴ See April 11, 2024, CEC Workshop Event Recording, Tom O’Connor, upon questioning at 02:28:41 and 02:28:56 marks.

²⁵ “Western States Petroleum Association Comments - literature review on Energy Price Controls,” November 27, 2023:

<https://efiling.energy.ca.gov/GetDocument.aspx?tn=253336&DocumentContentId=88551>

²⁶ See Catalyst report at Brown, M., Rewey, C., & Gagliano, T. (2003). Findings on Hawaii Gasoline Prices and Policies. Honolulu: NCSL Energy Program. Accessed Oct. 2023, https://energy.hawaii.gov/wpcontent/uploads/2011/10/HIGasPricesPolicies_2003.pdf

²⁷ Western States Petroleum Association Comments – Solomon Report: California Refiners’ Cost and Margin Analysis, 2000-2002; November 27, 2023 at <https://efiling.energy.ca.gov/GetDocument.aspx?tn=253316&DocumentContentId=88543>

California's gasoline industry is amongst the most highly scrutinized and regulated industries in the world and has been subject to multiple investigations by different State Attorneys General. And the results of this fact-finding are clear: no evidence of price fixing or any anticompetitive conduct by refiners has ever been found. Even the CEC, after studying this issue for months, found in October 2019 that, while refiner margins had some "short term" spikes, due primarily to refinery outages (e.g., the 2015 Torrance outage), refiner margins "do not account for the sustained price elevation seen over the past five years." The CEC therefore "rul[ed] out refinery price margins as the cause of the residual price increase."²⁸

In addition, our refiners would not willingly and knowingly violate the law. Refiners may determine that, to avoid revenues from exceeding a margin cap and causing potential violations, they would be required to ramp down production. If refiners respond in this way, in-State fuel supplies would be reduced further – which, in the face of sustained strong fuel demand from California's consumers – is an economic recipe to create higher prices at the pump. This would hurt, not help, Californians.

The CEC surely must recognize this. If it does not, we advise the CEC to meet individually with every in-State refinery operator under the protections afforded by the Petroleum Industry Information Reporting Act of 1980 and ask them: Would they continue running their refinery at the same rate if doing so would violate a margin cap imposed by the State of California?

WSPA RESPONSE TO PRESENTATION BY DPMO CHIEF ECONOMIST DR. MORENO

Comments by both Drs. Moreno and Zaragoza-Watkins seem to rely on the ill-founded notion that California refiners are somehow choosing to operate below capacity for the purpose of constraining supply, raising prices, and driving higher profits. They further argue that by imposing a penalty, refiners will then respond by raising outputs. What both economists fail to realize is that refiners seek to run at maximum capacity to meet demand. Capacity only becomes underutilized as a result of either unplanned interruptions or planned maintenance, two modes of operation refiners prefer to minimize as much as possible. As a result, refiners seek to mitigate lost capacity (and therefore, lost earnings) by performing preventive maintenance in the most efficient way possible and to prevent unplanned outages. Simply put, refiners **lose** money when their facility's capacity is diminished by maintenance or unplanned interruptions. And we must repeat here the remark by Dr. Zaragoza-Watkins²⁹ that if in-State excess capacity is not available, higher prices will persist to incentivize additional supplies from outside the State, which bring with them higher transportation emissions and greater expense in getting that fuel to California's market.

WSPA emphasizes that petroleum refineries cannot safely be pushed beyond their capacity – even when presented with the opportunity of reaping higher prices. Pushing a refinery beyond its capacity to "just produc[e] a little bit more"³⁰ threatens to compromise that refinery's maximum safe level of operation and would likely result in the very types of unplanned maintenance events that can lead to supply constraints and gasoline price spikes – something that the CEC wants to avoid. WSPA's refining members share this desire to avoid increasing unplanned maintenance events.

²⁸ Additional Analysis on Gasoline Prices in California, CEC, October 2019 (emphasis added)

https://www.energy.ca.gov/sites/default/files/2019-11/Gas_Price_Report.pdf

²⁹ See CEC November 28, 2023, Workshop Event Recording at 50:00 mark at: <https://www.energy.ca.gov/event/workshop/2023-11/sb-x1-2-workshop-maximum-gross-gasoline-refining-margin-and-penalty>

³⁰ See April 11, 2024, CEC Workshop Event Recording at 49:40 mark.

We also recognize the State's intention to transition to lower carbon energy sources. However, California must also acknowledge this will be a decades-long transition, and constraining in-State gasoline supply does not magically accelerate this transition; it only punishes Californians who rely on those fuels every day. Rather, along with investments in lower carbon sources, the State should encourage more private sector-led investments into new crude and gasoline production in order to decrease the risk of supply shortfalls that lead to short-term gasoline price volatility. Instead, as we have explained, California increasingly and deliberately constrains in-State-produced gasoline supply in the face of robust consumer demand. This is the type of economic paradigm that easily lends itself to the very types of problems we see today. We would urge the CEC to reject the invitation to deliver a hollow political victory while doing nothing to address the underlying issues for the rest of California's citizens. Imposing a margin cap instead of fixing supply-side issues is a recipe for disaster.

A margin cap would not increase in-State supply; indeed, it is likely to have the opposite effect. What would increase supply is promoting policies that **actually increase in-State gasoline supply**. Supporting local, in-State production would be a great step towards increasing and then stabilizing our gasoline supply.

In terms of the penalty scheme being considered by the CEC, WSPA previously noted how a penalty structure would be unworkable in practice, and urged³¹ the CEC to consider fundamental fuels market issues, including: (1) how a gross refining margin cap would impact petroleum cost or statewide supply; (2) what precedent the CEC would set as a government entity attempting to determine the "allowable" income for California businesses; (3) why the State government should determine the "appropriate" profit (or loss) for privately-owned companies in just one industry singled out by the government; (4) what specific factors the CEC would consider in even attempting to set such a level; (5) how to determine what percentage of a refiner's income it would be required to pay to the State; and (6) what financial support the CEC would offer to facilities operating at a loss (as California has already done for the electric industry with respect to power plants). There are few easy answers to these questions, and no evidence that any penalty scheme proposed by the CEC would reduce price volatility and actually help California consumers rather than hurt them.

To specifically address Dr. Moreno's proposal, WSPA offers the following comments:

- **Excess Capacity Assumption.** Dr. Moreno incorrectly assumes that there is excess California refinery capacity. She further assumes that this excess capacity is a result of California refiners somehow limiting production to achieve an artificially high price (despite, as noted above and below, that there is no evidence that refiners are actually limiting production in an attempt to influence prices, and that the State has incentivized the conversion of two in-State refineries away from gasoline refining). Based on these incorrect assumptions, she wrongly argues that the margin cap will incentivize refiners to increase gasoline production, thereby lowering gasoline prices.
 - 1) Importantly, Dr. Moreno acknowledges the inevitable market implications of her assumptions being incorrect: "If the industry does not have capacity...there is no way that industry can respond by increasing output. Then you do have a situation where the policy looks more like a price cap within the refining sector...If there is no capacity, what's going to happen is that you could potentially increase price at the retail end of the market."³²

³¹ Western States Petroleum Association Comments – WSPA Comments on SB 2 Implementation filed May 30, 2023, at <https://efiling.energy.ca.gov/GetDocument.aspx?tn=250404&DocumentContentId=85146>

³² See April 11, 2024, CEC Workshop Event Recording at 57:01-58:00 mark.

- 2) The critical question therefore becomes: Is there actually capacity for California's gasoline producers to increase production? As discussed above, even the CEC has acknowledged that refineries have already been incentivized to utilize all possible excess capacity in order to maximize production. As discussed below, both Mr. O'Connor and Mr. Hackett also agree that there is no capacity to substantially increase in-State refining production.³³
- 3) This lack of excess capacity results in two important points: (a) Dr. Moreno's assumption that the margin cap will incentivize increased production is incorrect, and (b) where there is no capacity to increase production, a margin cap will, in fact, have the effect of reducing output at the wholesale level, resulting in increased price pressure at the retail level. Dr. Moreno even concedes this latter point.
- 4) The industry has historically maintained a delicate supply/demand balance within the State. Indeed, 90% of California's gasoline consumption is produced in-State; though domestic crude supply, one of the major cost components, is limited and must be sourced from out-of-State, subject to global markets. The remaining 10% of California's gasoline is imported. Factors such as rising demand or operational upsets can upset these supply/demand balances. When the market is short (*i.e.*, characterized by low supply), an economic signal needs to occur and be sustained long enough to encourage supplies to flow in from other markets. Out-of-State refiners also need to tune their operations, and overseas transportation needs to be secured for voyage times that can take weeks (*i.e.*, from Asian markets, this can take 30-45 days). Upon arrival, docks in the California market can also be constrained, further delaying resupply to the market. California's resupply options are often limited to the costliest modes of fuel transportation, *i.e.*, marine vessels, which are exposed to the uncertainties of weather and global geopolitical events. Conversely, when supply exceeds demand, inventories will rise.
- 5) We must not confuse total profit and loss with marginal economics. In periods of shortage, prices must rise to attract additional supplies from offshore, often from foreign markets. These higher prices can set the overall market pricing.
- 6) Finally, the CEC should take note that the California Air Resources Board's (CARB) recent amendments to the Ocean-Going Vessels At-Berth Regulation (At-Berth Regulation) will serve to *further* constrain gasoline and crude supply into California. By requiring petroleum tankers to use emissions capture or shore power technology not yet developed, tested, or implemented on the vast majority of California's tanker fleet or tanker terminals, CARB's At-Berth Regulation will force many tankers to reduce visits to California ports starting in 2025 to meet the At-Berth Regulation's requirements. This is another example of a State policy that will further restrict the availability of gasoline in the State of California, and will limit the State's ability to mitigate in-State shortages of gasoline supply with marine imports. And it is another policy that will likely hurt California consumers rather than helping them.
- **Use of Gross Margins.** Dr. Moreno stated that "in the real world, we rely on accounting concepts of profitability, such as gross margins."³⁴ WSPA has previously explained why it would be unfair to assess any penalty on gross margins, including that:
 - 1) Gross margins, as defined by the CEC, dramatically understates costs of goods sold and exclude operational costs altogether, which means that even if the CEC allows refiners to make a positive **gross** margin, it could still be imposing a negative **net** margin – *i.e.*, forcing refiners to operate at a loss, at least for parts of the year. This could, in turn,

³³ See April 11, 2024, CEC Workshop Event Recording at 2:28-2:30 mark.

³⁴ See April 11, 2024, CEC Workshop Event Recording at 44:58 mark.

force refiners to choose between producing gasoline at a loss or exiting the market altogether.

- 2) A “gross gasoline refining margin” concept does not actually exist, as it improperly focuses on one product, but that is not how refineries operate or report data (*i.e.*, refineries purchase and produce **slates** of products).
 - 3) Imposing a penalty based upon a gross margin would force refiners to engage in a high-stakes guessing game; *i.e.*, refiners would be forced to try to adjust their prices in real time so that their monthly **gross** refining margins would hopefully remain below any maximum cap imposed by the CEC – something they would, of course, not know until after the fact. The timing of crude purchases, operational performance, and market supply/demand dynamics make it very difficult to accurately estimate margins on a daily or monthly basis. This, again, forces refiners to choose. They can try to adjust their prices to bring their margins below the maximum – but risk violating any CEC-imposed cap if they estimate wrong about the future of wholesale prices or acquisition costs. Or, where contract formulas are not pre-established, they can set prices so far below what is required to comply with any maximum margin that it would no longer make economic sense to refine in California. Either option would jeopardize California’s transportation fuels markets and give rise to serious constitutional and other legal concerns related to the arbitrary penalization of refiners without any connection to the benefits the State Legislature intended through enacting SB X1-2.
 - 4) Imposing a gross margin would run counter to meeting the ongoing demand of Californians – especially given California’s already-volatile fuels market. If another refiner decides to leave the State, there is no guarantee that another company will be willing to take its place.
- **Excess Margin.** Dr. Moreno argues that California’s refiners earn excess margins: *i.e.*, margins that exceed some arbitrary and subjective “reasonable” benchmark. But no benchmarks proposed to date fairly and accurately represent the California transportation fuels market.
 - 1) **Comparison with Baseline Year(s).** Dr. Moreno identified 2012 through 2014 as a period establishing a “reasonable benchmark.” However, as noted above, California had 200 TBD more capacity in 2012-2014 than it does currently (*i.e.*, roughly 20% more capacity).³⁵ With the conversion of the Rodeo refinery in March 2024, California can no longer adequately supply its own gasoline and must now increasingly rely on costly imports. Such a comparison must also account for the increased cost of doing business in California over that time span. A simple inflation adjustment would be inadequate, because the cost of doing business in California has outpaced inflation. The increased costs of operating a refinery in California must all be accounted for as well.
 - a. Before Dr. Moreno’s presentation, the CEC staff displayed a historical “Refiner Margin” chart, which was defined as rack price minus crude oil cost and imported refined gasoline minus environmental costs. If Dr. Moreno is using that definition, then it excludes operating costs, capital investments, overhead allocation, etc., which would be an inappropriate benchmark for assessing whether refiners are making “too much” profit.
 - 2) **Comparison with Other Geographic Locations.** Dr. Moreno included Dr. Severin Borenstein’s “Mystery Gas Surcharge” graph in her presentation and suggested a geographic benchmark could also be used to measure “excess” margins. However, this approach suffers from the same shortcomings as using the 2012-2014 period to “benchmark” a profit baseline: the “US (ex-CA)” benchmark is not properly

³⁵ CEC Draft Transportation Fuels Assessment, published on April 12, 2024.

representative of baseline conditions in the *California market*. There are important market considerations when comparing California with other geographic locations that must be understood and accounted for before arriving at such a benchmark:

- a. If the CEC is going to reference a different geographical area in determining a benchmark, it would be more appropriate to compare gasoline prices in California to prices in “PADD 5 West Coast (ex-CA)” because both markets are isolated markets and both markets have experienced an increasingly tight supply of petroleum products and declining refinery capacity.
- b. Because we are often asked what makes the Gulf Coast different from the West Coast, please refer to the following:
 - Gulf Coast refiners produce gasoline in accordance with U.S. Environmental Protection Agency (EPA) standards, which protect both environmental and consumer safety. These refiners can produce EPA-compliant gasoline more efficiently and more cheaply without having to comply with California’s regulations required for CARBOB production. Additionally, this EPA-compliant gasoline is easier to produce, easier to transport by pipeline to the rest of the United States, and has the major advantage of being fungible across a much larger market.
 - The West Coast refineries represent 13% of U.S. refining runs while having 16% of gasoline demand, whereas, the Gulf Coast has 55% of refining capacity with 15% of U.S. gasoline demand.
 - The Gulf Coast has incentivized and enabled significant capital investments in its energy infrastructure, enabling increased crude production and refining capacity, whereas California has disincentivized and continues to discourage such investments. This lack of infrastructure (e.g., dock space) leads to liquidity issues when there is a supply disruption, which is also a key factor in California price spikes.
 - The Gulf Coast markets are also home to more producing, midstream, refining, marketing, and retail companies compared to California, which enables increased competition and efficient, flexible markets to supply the lowest-cost gasoline to its consumers. In comparison, California has imposed burdensome and complex legislation that has made operating current businesses and investing in new businesses difficult for new entrants and market participants, stifling further competition and causing unintended consequences that could further eliminate existing businesses. Decades of policies explicitly targeting the hydrocarbon industry have brought California to where it is today, as it has devalued energy security and made it more difficult for Californians to affordably access a reliable in-State supply of transportation fuel.
 - In addition, the CEC must consider the continued motivation for investment into California’s gasoline production infrastructure. There is an investment dilemma that oil companies have when reviewing the “crack spread,” i.e., the difference between the purchase price of crude oil and the selling price of finished products. Crack spread is a metric used by energy market experts to help monitor gross refining margin potential, from the West Coast versus the Gulf Coast. Since 2020, with the 5-3-2 crack spread comparison between these coasts, there is no longer a West Coast premium. This shows it is even more important for California to help define a more certain regulatory environment to be more competitive as a place to do business, as investors are looking to safeguard investments from risk. See **Appendix A**.

- From 2000–2022, US (ex-CA) invested in refining capacity (with the Gulf Coast’s capacity increasing 27%). In contrast, California’s refining capacity declined 12%.³⁶
- Further, the Gulf Coast is interconnected and is not a gasoline island like California is.
- **Turnarounds Require Detailed Planning.** Refineries develop turnarounds premised upon considerations including operational capability, regulatory compliance, asset integrity, reliability, and risk management several years beforehand. Typically, detailed work planning, engineering, and procurement begins years before the event to ensure sound execution and to develop staffing plans. To further demonstrate that safety and operational sustainability are of the utmost importance, refiners incentivize their work force to ensure minimal downtime by implementing a bonus structure that is tied to mechanical availability and safe operations. As refiners face real constraints and strive to maximize their operable capacity, refinery utilization reductions usually occur due to either planned or unplanned events.
 - 1) In a competitive marketplace with limited materials and skilled contract labor, operators must proactively secure resources many months, and in some cases years, in advance. Turnaround contractors are informed of planned work scopes at least a year ahead of the outage, enabling them to obtain competent leadership and skilled workers to efficiently execute complex tasks within a short timeframe, thereby allowing refineries to resume normal operations promptly. Additionally, arrangements for blend stocks or products must be made in advance, or alternative supplies must be planned to ensure uninterrupted operation of dependent process units during planned maintenance. Refineries collaborate with contract companies, vendors, and trading partners to secure necessary supplies. There are critical differences between each refinery and distribution systems, as well as safety considerations, that also drive the planning of maintenance. Allegations suggesting coordination with other operators to manipulate the market are baseless and unfounded.
 - 2) Given that unplanned events pose substantial risks to process unit equipment, personnel, and the environment, operators endeavor to minimize such occurrences. Operators prioritize reliability aimed at maximizing the availability of operating process units. Proactive reliability programs include operator care, quality control processes, preventive maintenance programs (ex. vibration monitoring, visual inspections, lube oil changes), and careful selection of the right turnaround work scope and interval. Operators are incentivized to minimize unplanned downtime as this reduces repair costs, emissions, and maximizes production.
- **Need to Stabilize Gasoline Supplies.** Inherent in the passage of SB X1-2, the State Legislature sent a clear message through the rejection of the Governor’s first legislative proposals (*i.e.*, to immediately impose a “windfall profits” penalty) in favor of a more thoughtful approach: *i.e.*, that the CEC *first* gather real-world evidence on whether a cap on refinery margins could have unintended consequences that would harm California consumers. The law explicitly requires that the CEC “**shall not** set a maximum gross gasoline refining margin or accompanying penalty . . . **unless** it finds that the likely benefits to consumers outweigh the potential costs,” considering factors such as whether action would lead to a greater supply and demand imbalance in California’s fuels market or lead to higher pump prices.”³⁷ As such, the Legislature’s expectation of the CEC is clear: evaluate the facts, not the politics, in promoting solutions that benefit Californians rather than hurting

³⁶ See https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=8_NA_8D0_SCA_4&f=A (California) and https://www.eia.gov/dnav/pet/hist/LeafHandler.ashx?n=PET&s=8_NA_8D0_R30_4&f=A (PADD 3 (Gulf Coast)).

³⁷ PRC Section 25355.5(l) (emphasis added).

them. The Commission has historically been the State's energy planning entity, and given the vast quantities of data now being collected about the petroleum sector, the CEC should refocus on its original mission of evaluating how best to ensure stable energy supplies in the State – including for gasoline.

In sum, implementing a margin cap will not solve California's supply issues or change market behaviors. Allowing periodic adjustment of such a maximum margin would not improve things, but would only introduce an element of uncertainty which could severely discourage capital investment and exacerbate future supply issues. As previously mentioned, investment decisions are driven by a reasonable expectation of future profits. Instead, we urge the Commission to take a proactive approach to finally resolving the State's long-standing supply issues. By working with in-State refiners and supporting them through the development of reliable infrastructure, the CEC can help increase production of transportation fuels to meet California's increasing fuel demands, thereby attacking the root causes of market volatility and benefitting California consumers over the long run.

WSPA RESPONSE TO PRESENTATION BY STILLWATER'S DAVE HACKETT

WSPA appreciates Mr. Hackett's efforts to present a real-world analysis of the impact of a cap on gross refining margins. In this and in past presentations, Mr. Hackett has described for the CEC the complexity of the refining industry and the broader gasoline supply chain, including the impact that public policy has had. While some of his comments about refiner responses to a gross margin cap were speculative and do not necessarily reflect actual refiner intent, we support his assessment of the potential market impacts a cap could have. We also agree with his statements that he "do[es]n't think there's spare capacity to increase production"³⁸ and that he believes that in-State refineries are "running as hard as they can."³⁹

The Margin Cap Does Not Solve California's Undersupply Problem. Mr. Hackett stated, "I don't see anything within this program that would increase supply...Fundamentally this [program] doesn't improve logistics, it doesn't increase refining capacity, it doesn't provide incentives for investment."⁴⁰ He continued, "Here we are in 2024 and we are down two refineries, and so the going forward here is going to be rougher than it's been. I think that the market is short on the order of 15% of supply. Some of that comes from the refineries in the Pacific Northwest [via marine shipments], and the balance will come from around the world." WSPA agrees.⁴¹

The Margin Cap Will Exacerbate Elevated Prices. Mr. Hackett also stated, "[I]f the program is implemented...refiners would probably leave prices up close to the maximum level...we come to this conclusion from our experience in Hawaii...The government set a maximum gasoline price and refiners moved their prices to as close to the maximum as they could get them."⁴² He continued, analyzing his graph, "what this illustrates is that consumers might... be worse off with a maximum gasoline margin..."⁴³ While WSPA does not agree with the exact mechanism of consumer harm as outlined by Mr. Hackett, WSPA agrees that the margin cap will likely ultimately increase retail prices (as Dr. Moreno, in fact, acknowledged as a possibility). WSPA

³⁸ See April 11, 2024, CEC Workshop Event Recording, Dave Hackett, upon questioning, at 02:28:00 mark.

³⁹ See April 11, 2024, CEC Workshop Event Recording, Dave Hackett, upon questioning, at 02:28:12 mark.

⁴⁰ See April 11, 2024, CEC Workshop Event Recording, Dave Hackett, Stillwater Presentation at 2:10 mark.

⁴¹ See April 11, 2024, CEC Workshop Event Recording, Dave Hackett, Stillwater Presentation at 2:23 mark.

⁴² See April 11, 2024, CEC Workshop Event Recording, Dave Hackett, Stillwater Presentation at 1:29-1:30 mark.

⁴³ See April 11, 2024, CEC Workshop Event Recording, Dave Hackett, Stillwater Presentation at 1:33 mark.

also agrees that price volatility is inevitable in periods of tight supply, and that a permanent solution to price volatility requires a permanent solution to the underlying supply issues.

To address Stillwater's presentation, WSPA offers the following specific comments:

- **Business Profitability.** Mr. Hackett claimed during his presentation that gross margin calculations are commonly used to approximate business profitability – though it is not a comprehensive picture of refiner profitability. In fact, **gross margin calculations are not commonly used to approximate business profitability.** As discussed above, crack spreads are.
- **Flaws with GGRM.** Mr. Hackett also acknowledged that the Gross Gasoline Refining Margin is a flawed measure. He estimated that an average of 63 cents separated the highest from the lowest historical margins among refiners and stated that this metric is not a “complete picture” of profitability. He also suggested that a penalty based on this measure could have the opposite of its intended effect by increasing average prices.
- **Market Manipulation.** Mr. Hackett further claimed that trading patterns suggested the possibility of market manipulation. This claim is unfounded. Mr. Hackett pointed to litigation regarding trading activity after the 2015 Torrance refinery explosion as “evidence” of this claim. But no refiner was named as a defendant in this litigation, which addressed only a scattered handful of trades and which has since been resolved with no finding of wrongdoing by the court.⁴⁴ And while another group of plaintiffs did sue refiners claiming that refiners manipulated spot prices, they found no evidence to support their claim after extensive discovery, resulting in summary judgment against the plaintiffs.⁴⁵ In short, no court or regulator has, in recent memory, identified any evidence of market manipulation by refiners, despite the gasoline industry being among the most closely scrutinized in the world. WSPA strenuously objects to the suggestion that refiners engage in anticompetitive activity, let alone that this activity is systemic.
- **Refiners' Short-Term Options.** Mr. Hackett suggested that refiners may consider numerous short-term options to avoid the penalty (e.g., closely managing rack gasoline prices, generating other opportunities to improve margins under the cap like adding fee-based revenue generators, buying crude at higher prices from affiliates or blend in other components or lease a refinery tank from an affiliate; or establishing a buy-sell agreement with another company on purchased gasoline). While not specifically addressing Mr. Hackett's suggestion, we have articulated our views herein on the actions our members could be forced to take if they are penalized for their profits.

WSPA RESPONSE TO PRESENTATION BY ICF'S TOM O'CONNOR

Mr. O'Connor presented a profit-sharing concept while also recognizing that (1) a “gross margin” does not present a complete view of refinery profits as it does not include operating costs, impacts from refinery performance issues, or the value of other products produced; (2) applying a singular “gross margin” would result in significant variations (especially among California's refiners versus non-California refiners and other wholesale-only purchasers); (3) it is impossible for refiners to allocate expenses to just one product; and (4) this mechanism will not create more fuel supply for California (especially given recent refinery conversions). In addition, during

⁴⁴ Joint Stipulation and Order to Stay Proceeding, *California v. Vitol Inc.*, Case No. CGC-20584456 (S.F. Super Ct. filed May 4, 2020).

⁴⁵ *Persian Gulf Inc., v. BP West Coast Products*, 15-cv-1749-JO-AGS, Dkt. 847 (S.D. Cal. Sept. 30, 2022).

questioning, Mr. O'Connor agreed with Mr. Hackett that California's "refiners are running as hard as they can"⁴⁶ and "trying as hard as they can"⁴⁷ to meet California's demand.

To address ICF's presentation and proposal, WSPA offers the following specific comments:

- **The Margin Cap Does Not Solve California's Undersupply Problem.** Mr. O'Connor stated, "I do not believe that this mechanism is going to create more fuel for California...it's going to take more than one regulatory action to kind of harness the [energy] transition that we're going to be going through over the next few years."⁴⁸ Similar to Mr. Hackett, he also notes how significant the undersupply has become: "The closure of the Marathon Martinez refinery in late 2020 results in a much tighter gasoline market in California, particularly as demand increased in the 2021 post-COVID recovery period. In other words, the game has changed. We're not in 2013 anymore, or even 2015. There's less production. Refiners, in order to meet their sales demands, you know, have to import more, and that's more expensive. So, the Rodeo refinery closure in March [of 2024] is going to tighten the market in Northern California significantly further."⁴⁹ WSPA agrees with Mr. O'Connor that the margin cap does not solve California's undersupply problem.
- **Mr. O'Connor Acknowledges that He Does Not Know the Effects of His Proposed Variation of the Margin Cap on Price and Quantity.** Mr. O'Connor stated, "Obviously, refiners are going to find ways to try to maximize their profits under this regulatory structure and we're not quite sure how they may do it...I don't know whether this strategy that we proposed here is something that would possibly endure the incentive for them to continue producing fuel and not try to shrink...or export fuel."⁵⁰
- **Flaws with GGRM:** Like Mr. Hackett, Mr. O'Connor pointed out a number of flaws with the Gross Gasoline Refining Margin. First, it ignores operating costs, which he noted are higher in California than elsewhere (in WSPA's view, because of burdensome regulations that make production more costly). Second, it ignores seasonal variations in gasoline margins, which can vary by more than 20 cents between winter and summer. Third, because refiners have different "sales mixes" and distribution channels, applying one margin to all can create an "unfair situation." WSPA agrees that these factors pose a serious challenge to any CEC effort to implement a maximum margin.
- **Rolling Average Benchmark.** Mr. O'Connor suggested that a refinery-specific profit-sharing concept would use an individual refiner's history to develop a routinely updated, 10-year rolling average benchmark.
 - 1) While this approach does appear to address concerns that the current gross margin calculation is not a comparable data point for each refiner, there are significant concerns with choosing an appropriate benchmark as the market has significantly changed since 2020. A benchmark would have to be adjusted for changes to a refiner's business strategy (refinery rationalization), inflation, and other costs such as investments to improve reliability or environmental emission reductions. This benchmark has potential to unwittingly give certain refiners an advantage.
 - 2) Even when tailored to better fit individual refineries, this model would still be dependent on the flawed definition of Gross Gasoline Refining Margin dictated by SB X1-2.
- **Disproportionate Application.** Mr. O'Connor suggested that this concept does not place a ceiling on the market while still providing an incentive to run the refineries. The downside is that a profit cap and penalty still only impact refineries – wholesale purchasers do not suffer

⁴⁶ See April 11, 2024, CEC Workshop Event Recording, Tom O'Connor, during questioning at 02:28:41 mark.

⁴⁷ See April 11, 2024, CEC Workshop Event Recording, Tom O'Connor, during questioning at 02:28:56 mark.

⁴⁸ See April 11, 2024, CEC Workshop Event Recording, Tom O'Connor, ICF Presentation at 2:02 mark.

⁴⁹ See April 11, 2024, CEC Workshop Event Recording, Tom O'Connor, ICF Presentation at 1:43-1:44 mark.

⁵⁰ See April 11, 2024, CEC Workshop Event Recording, Tom O'Connor, ICF Presentation at 2:01 mark.

any penalties if their profits rise while refineries' profits are capped. He speculated that the "rocket/feather effect" (*i.e.*, the phenomenon of gasoline prices rising like rockets and falling like feathers) may become more pronounced and needs to be studied separately, and he believes that because refiners will find ways to maximize their profits, a cap and penalty would not necessarily create an incentive to produce fuel rather than shrinking the market or exporting fuel.

CONCLUSION

WSPA appreciates the opportunity to provide our comments on these issues of critical importance not only to us, but to all California citizens who rely on affordable and reliable sources of transportation fuel every single day. The overwhelming evidence gathered by the CEC and other independent researchers over the past few decades demonstrates that market forces, and not illegal market manipulation, have been and continue to be responsible for chronic pressures on fuels supply and market prices. This is not an "industry" conclusion. This is the conclusion drawn by reputable independent and government-sponsored studies we have seen looking at California gasoline market price volatility over nearly the past quarter-century.

Not surprisingly, no participants at the recent workshop could articulate a viable economic rationale for how a margin cap and penalty would help consumers in a supply-constrained market, and indeed, the outside economists who presented to the CEC opined that a cap was a flawed measure that could actually *harm* consumers. Even the CEC's own economist said that a penalty could "potentially increase price at the retail end of the market," and DPMO's own analysis of options for reforming the spot market contained no evidence or allegation of market manipulation by the refining industry. WSPA continues to urge the CEC to prioritize facts over politics and reject a cap and penalty that will only hurt California's consumers rather than help them.

Thank you for considering our comments. Please do not hesitate to contact me with any additional questions.

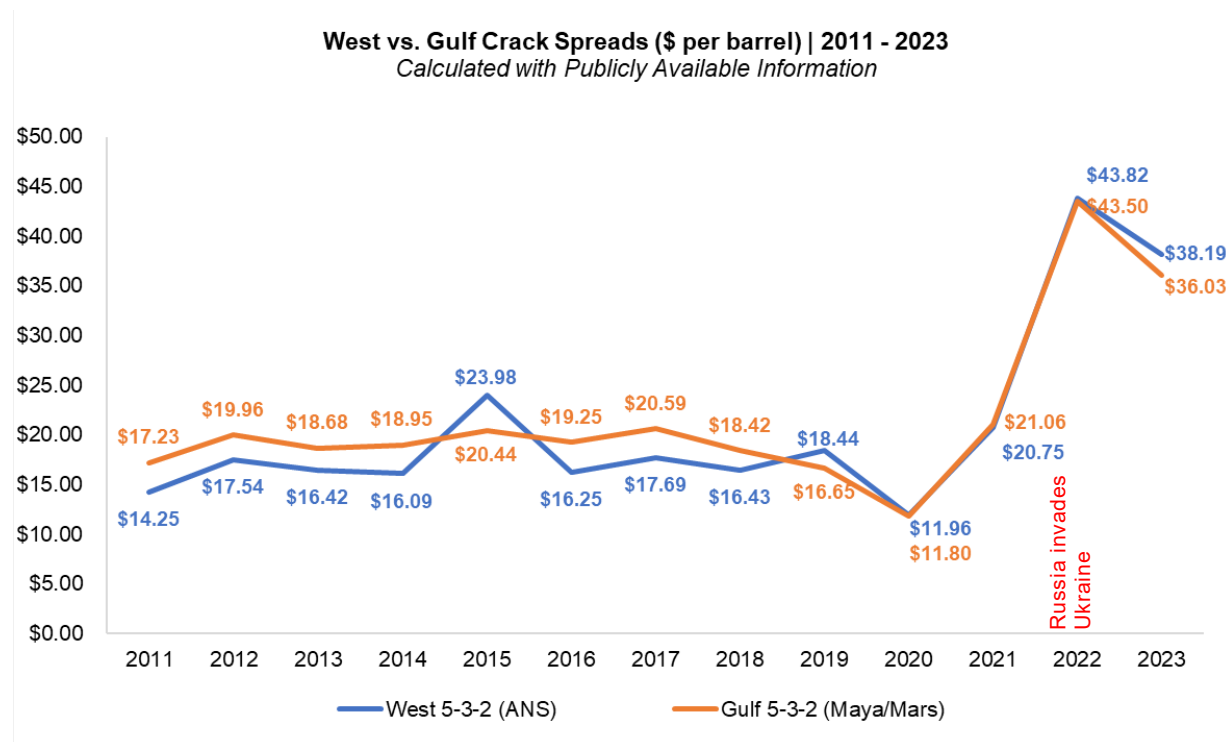
Sincerely,

A handwritten signature in blue ink, appearing to read "S. Ellinghouse".

Sophie Ellinghouse
Vice President, General Counsel & Corporate Secretary

Appendix A

Calculated 5-3-2 Crack Spreads West Coast vs. Gulf Coast





Catherine Reheis-Boyd

President and CEO

June 20, 2024

California Energy Commission
Docket Unit, MS-4
Docket No. 23-SB-02
715 P Street
Sacramento, California 95814

Uploaded to Docket

RE: WSPA Comments on Gasoline Summer Outlook Workshop [Docket #23-SB-02]

Thank you for the opportunity to comment on the California Energy Commission (CEC) and the Division of Petroleum Market Oversight's (DPMO) June 6, 2024, Senate Bill (SB) X1-2 (2023) workshop "to discuss the summer outlook for gasoline supplies and factors impacting the market." In responding to the information presented and comments made at the workshop, including the ongoing focus on price spikes, this letter incorporates by reference our prior comment letters^{1,2,3,4,5,6} and responds to the CEC and the DPMO staff presentations. The Western States Petroleum Association (WSPA) would be happy to provide further information as deemed necessary. WSPA is a non-profit trade association representing companies that import and export, explore, produce, refine, transport and market petroleum, petroleum products, natural gas, and other energy supplies in California.

To summarize the main points of this letter:

- The DPMO has shown that economists who understand the complex dynamics of the California gasoline market are not surprised by price increases that coincide with unplanned and planned maintenance activities, as this is a sign of a supply market with little slack. WSPA advises the CEC to steer clear of any good-intentioned measures to reduce price spikes that involve restrictions on when a refinery can or cannot carry out maintenance activities required for safety, as this may have unintended consequences, including but not limited to, endangering the safety of workers and nearby communities.
- The CEC has started to examine the data and patterns of California's persistent structural fuel supply barriers that affect the State's production capacity, restrict the amount of fuel that can reach the market quickly, raise the cost of delivering that fuel, and thus also lead to higher costs for California's consumers. WSPA cautions against adopting well-meaning solutions for price spikes, such as margin caps with penalties, that do not add "slack" back into the supply system.
- WSPA continues to denounce false allegations that refiners are somehow gouging California consumers, engaging in any anticompetitive activity, or are performing any kind of "market manipulation." No court or regulator has, in recent memory, identified any evidence of market manipulation by refiners.

¹ Western States Petroleum Association Comments - on SB 2 Implementation; May 30, 2023.

² Western States Petroleum Association Comments - on Transportation Fuels Assessment Report Workshop; September 11, 2023.

³ Western States Petroleum Association Comments - Solomon Report California Refiners' Cost and Margin Analysis, 2000-2022; November 27, 2023.

⁴ Western States Petroleum Association Comments - literature review on Energy Price Controls; November 27, 2023.

⁵ Western States Petroleum Association Comments - on Nov 28 SB X1-2 Margin Cap and Penalty Workshop; December 12, 2023.

⁶ Western States Petroleum Association Comments - on April 11 SB X1-2 Margin Cap and Penalty Structure Workshop; April 25, 2024.

We would first like to address some potential ongoing misunderstandings regarding “price spikes,” and specifically, repeated claims from DPMO Director Tai Milder that “price spikes at the gas pump are profit spikes for the oil industry.”⁷ This claim is simply misleading. From a fundamental economics perspective, it ignores the reality of all the costs associated with operating a complex refinery in California. In fact, as the data now being provided to the CEC shows, the volume-weighted gasoline refining margin for California refiners turned *negative* in October, reflecting net losses on gasoline produced and sold. It is a fact that West Coast refiners face *lower margins, higher costs, and higher risks* than their counterparts in other regions – while also under increasing pressure to maintain a reliable and affordable supply of gasoline for Californians despite the many structural supply obstacles we have previously detailed.

WSPA also wants to address another source of confusion: *i.e.*, the focus on *gross* vs. *net* margins as a way to intentionally promote false and unsupported “price gouging” claims.⁸ Relying solely upon gross margin data in isolation provides little insight into actual refinery profit and can be highly misleading in attempting to represent the true financial situation at California’s refineries. *Gross* margins do not provide an accurate picture of *net profit* because gross margins, by definition, exclude all business costs. But, as the CEC well knows, the cost of running a business in California matters. Operating a business in California costs more than operating a business in nearly every other state. Some of these costs, such as California’s very high state taxes, are significant but relatively steady and reasonably predictable from year to year. California’s other environmental-related fees imposed on refining are not so steady or predictable.

Indeed, for decades California has enacted novel and increasingly ambitious environmental programs that purposefully impose substantial fees upon industry. The State assumes these fees will be passed along to consumers, intending for the fees to act as an intentional signal to consumers to change their behaviors in ways desired by the State.^{9,10} These fees can vary significantly from year to year, and predictably increase when the State itself increases the stringency of the underlying environmental requirements. California certainly may choose to adopt extremely stringent environmental regulatory policies in the pursuit of aggressive energy policies, but such policy choices necessarily have the consequence of increasing the cost of producing the gasoline and diesel Californians rely on every day, and in some cases, making it more difficult to supply transportation fuel to the California market. It is a simple reality that most other states have far fewer obstacles to supplying gasoline to their consumers, and they have notably different energy policy priorities too. The critical point is that gasoline prices reflect the net impacts of all these realities. Gross margins do not.

Rather, what the CEC *should* be focused on is ensuring there is a sufficient supply in the system to meet California’s ongoing – and strong – demand for gasoline in an affordable manner.

⁷ See April 24, 2024, California State Legislature’s Senate Rules Committee confirmation hearing of DPMO Director Tai Milder at 1:03:00 mark: <https://www.senate.ca.gov/media-archive>

⁸ See April 24, 2024, California State Legislature’s Senate Rules Committee confirmation hearing of DPMO Director Tai Milder at 1:02:18 mark: <https://www.senate.ca.gov/media-archive>

⁹ Legislative Analyst’s Office, “California’s Cap-and-Trade Program: Frequently Asked Questions,” October 4, 2023, at: <https://www.lao.ca.gov/Publications/Report/4811>

¹⁰ CARB Low Carbon Fuel Standard, Standardized Regulatory Impact Assessment, September 8, 2023, at page SRIA – 53: https://ww2.arb.ca.gov/sites/default/files/2023-09/lcfs_sria_2023_0.pdf

Furthermore, that California's gasoline market is and has been cyclical for decades should not be a surprise to anyone. The State's own draft Transportation Fuels Assessment¹¹ both recognized California's long-standing structural supply issues (that make California a "fuel island") and illustrated the effect of seasonal dynamics. WSPA has explained this concept numerous times before as well.^{12,13,14,15} Indeed, Figure 17 of the draft Assessment shows how CARBOB storage and production at refineries from 2006 to 2022 typically diverge every summer. Production from refineries remains elevated, but stocks draw down due to higher consumer demand in the summer. This has been a feature of Californians' fuel purchasing patterns for many decades, and neither refiners nor the State can force California consumers to purchase less transportation fuel in the summer months. The market simply dictates that available inventory supplies **must** be drawn down to help meet this heightened demand.

California's efforts to force a transition to lower carbon energy sources has also reduced flexibility for California consumers. Despite the State's desire to accelerate this transition, the State has yet to find affordable gasoline alternatives for the tens of millions of vehicles driven by California's citizens today. Instead, the State's efforts have focused on *decreasing* California's local in-State refining capacity. But with reductions in consumer demand not keeping up with this policy of in-State capacity reduction, the result has been the artificial constricting of in-State gasoline supplies below the level needed by California's citizens, subjecting these consumers to rising energy costs on the global crude oil market and rising energy costs associated with meeting California's increasingly ambitious environmental programs. The State cannot make up for its inability to force its desired pace of consumer demand decline for liquid transportation fuels by simply limiting local supply capacity. This does nothing to accelerate the zero emission vehicle transition, it only punishes Californians who continue to rely upon the need for more affordable and lower carbon fuel options.

To specifically address issues raised in the CEC and DPMO staff's presentations – including the underlying data set utilized, WSPA would recommend that the CEC meet individually with regulated entities under the protections afforded by the Petroleum Industry Information Reporting Act of 1980 (PIIRA). Such discussions may help clarify certain issues for the CEC staff, including the potential impact of excluding non-refiners from inventory details and any associated modeling activities.

WSPA RESPONSE TO PRESENTATION BY DPMO CHIEF ECONOMIST DR. MORENO

Refinery Maintenance Activities Must Remain Focused on Safety

WSPA repeats our serious safety concerns if the CEC were to attempt to dictate or restrict the timing of refinery turnarounds and maintenance activities based on an attempt to "time the market" in terms of fuel prices. We continue to note that the CEC does not have any expertise in operating complicated refining facilities, and does not have experience with the numerous long-standing California, Federal, and industrial regulations and standards that impose requirements

¹¹ "Draft Transportation Fuels Assessment," published on April 12, 2024, available at: <https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-SB-02>

¹² WSPA Comments Regarding SB X1-2 Transportation Fuels Assessment Workshop [Docket #23-SB-02] filed September 11, 2023.

¹³ WSPA Comments on SB X1-2 Workshop on Maximum Gross Gasoline Refining Margin and Penalty [Docket #23-OIIP-01] filed December 12, 2023.

¹⁴ WSPA Comments on SB X1-2 Workshop on Maximum Gross Gasoline Refining Margin and Penalty Structure [Docket #23-OIIP-01] filed on April 25, 2024.

¹⁵ WSPA's "SB X1-2 Draft Transportation Fuels Assessment" comments filed on May 17, 2024.

and timelines on refinery operators to perform maintenance ***focused on safety***. The CEC has not yet addressed significant questions raised regarding potential liability associated with delaying maintenance mandated by safety regulations and standards, and still has not (to our knowledge) participated in ongoing discussions before the Interagency Working Group on Refinery Safety. We have repeatedly expressed our grave concerns that dictating when a refinery can or cannot perform safety-mandated maintenance activities will compromise the safety of workers and surrounding communities. If the State forces a refiner to defer otherwise required or necessary maintenance, it could create a situation where supply shocks and price volatility becomes even greater with unplanned upsets due to pushing refineries beyond the State's own mechanical integrity regulations.

Planned maintenance activities typically take years of planning and the coordination of logistics, highly skilled laborers, specialized equipment, and inventories. Turnarounds can involve one or more processing units, wide sections of the refining operations, or the entire shutdown of a refinery. Process safety and mechanical integrity are key reasons that turnarounds are done at predetermined intervals. Inspecting, replacing, and repairing units or pipelines is of the utmost importance to ensure the safe and efficient production of transportation fuels. As we have previously explained,^{16,17,18} refinery maintenance and safety are so important that there are multiple Federal, State and local laws and rules governing them. That the CEC would insert itself into this carefully calculated process at any time to “time the market” based on a singular desire to lower fuel prices is deeply concerning and highly inadvisable.

California's Refining Capacity and Potential for Market Coordination

Dr. Moreno noted that California's top four fuel producers control 90% of refining capacity, which she claims presents a highly concentrated industry with “a high risk of coordination and collusion.”¹⁹ She further assumes that increasing market concentration will exacerbate price impacts, and that constrained supply and price volatility will make the market more susceptible to market manipulation. While we agree that it is not in the State's interest to drive California's few remaining refiners out of the State and further concentrate the market, the suggestion that California's refiners have somehow engaged or are engaging in manipulation is unfounded and promotes a narrative that even the State knows is false. Again, no court or regulator has, in recent memory, identified any evidence of market manipulation by refiners,²⁰ despite the gasoline industry being amongst the most closely scrutinized industries in the world. WSPA strenuously objects to the suggestion that refiners engage in anticompetitive activity, or the spurious allegation by some that CEC is incapable of discharging its authority to monitor and decisively address any such activity were it ever to occur. As many in the Senate Energy, Utilities and Communications Committee oversight hearing observed,²¹ given the very few refiners left in California, the State should be actively working in the best interests of all Californians to help retain those that are left – operating under the strictest regulatory

¹⁶ WSPA Comments on General Rulemaking Proceeding for Developing Regulations, Guidelines, and Policies for Implementing SB X1-2 and SB 1322, filed November 21, 2023.

¹⁷ WSPA Comments on March 18, 2024, SB X1-2 and SB 1322 Pre-Rulemaking Workshop, filed April 1, 2024.

¹⁸ WSPA Comments on SB X1-2 Workshop on Maximum Gross Gasoline Refining Margin and Penalty Structure filed April 25, 2024.

¹⁹ See June 6, 2024, CEC Workshop Event Recording, Dr. Gigi Moreno at 00:55:52 mark available from “Gasoline Summer Outlook Workshop – Zoom” link: <https://www.energy.ca.gov/event/workshop/2024-06/rescheduled-gasoline-summer-outlook-workshop>

²⁰ See Joint Stipulation and Order to Stay Proceeding, *California v. Vitol Inc.*, Case No. CGC-20584456 (S.F. Super Ct. filed May 4, 2020) and *Persian Gulf Inc., v. BP West Coast Products*, 15-cv-1749-JO-AGS, Dkt. 847 (S.D. Cal. Sept. 30, 2022).

²¹ See “May 7, 2024 -- Oversight Hearing -- California Energy Commission Update to the Legislature on Implementation SBX1 2 (Chapter 1, Statutes of 2023) Transportation Fuels” at: <https://seuc.senate.ca.gov/content/2023-2024-informationaloversight-hearings/2023-2024-oversightinformational-hearings>

environment in the world – in order to meet the ongoing energy demands of citizens in the world's third largest fuels market.

WSPA RESPONSE TO PRESENTATION BY CEC STAFF

Gasoline Inventory and CARBOB Production and Demand Trends

The CEC has astutely highlighted several chronic structural fuel supply obstacles that challenge the State's production capabilities, limit the amount of fuel that can get to market in a timely manner, increase the cost of supplying that fuel, and thereby also result in ever increasing costs being passed on to California's consumers. Respectfully, we submit that the State has yet to articulate a policy to directly address these obstacles. Instead, the State continues to advance policies that *do not promote* greater availability of transportation fuels and *discourage* capital investments in new infrastructure and incentives for more efficient internal combustion engine vehicles. It should be no surprise, then, that several refiners have left California over the past decade, and that the remaining California refiners continue to be disincentivized to invest in local in-State California transportation fuel production to most directly and efficiently meet the fuel needs of California consumers.

Indeed, the State continues to openly pursue policies that actively seek to reduce California's own local crude oil supplies – supplies long relied upon by the State and California's refineries to meet strong California consumer demand. And the data shows that these policies of reducing local capacity have indeed resulted in reduced local crude and refined fuel production, while coinciding with a less-than-anticipated reduction in consumer demand. For example, while the California Air Resource Board (CARB) assumed an approximately 3% annual local in-State crude oil production decline in its 2022 Scoping Plan Update,²² CalGEM data shows that the actual in-State production decline rate has been three to five times faster, depending on the data set used.²³ Moreover, CARB's preferred Scoping Plan scenario generously assumes a precipitous decline in transportation sector emissions from conventional gasoline from 2021 onward,²⁴ assuming (while conceding uncertainty) that per-capita vehicle miles travelled will be reduced 4% below 2019 levels by 2045.²⁵ In contrast, the CEC has extrapolated CARBOB demand to decline only 1% from 2023 levels this year,²⁶ while CARBOB production from refineries would drop 5% from the 2021-2023 average given refinery conversions.²⁷ Clearly, CARB's exaggerated predictions of consumer demand falloff have not come to pass, leaving it to this agency to reassess a more realistic future path for California consumer demand and available local supply. At some point, both the CEC and the State will need to reconcile these differing policy priorities, assumptions, and associated ramifications for California consumers.

When California constrains its own in-State production, industry must depend more upon the global crude oil market and imported crude oils to help meet the continuing transportation fuel needs of California's citizens. This raises its own market pressures and challenges. For example, it becomes more logistically challenging to supplement diminishing in-State refining capacity because most refineries outside of California *do not* produce fuels that meet California's strict gasoline specifications. Also, it is yet unknown whether California's marine

²² CARB's 2022 Scoping Plan Update, pg. 103, at: <https://ww2.arb.ca.gov/sites/default/files/2023-04/2022-sp.pdf>.

²³ California Department of Conservation, WellSTAR monthly production data reports, 2018-2023, https://www.conservation.ca.gov/calgem/Online_Data/Pages/WellSTAR-Data-Dashboard.aspx

²⁴ CARB's 2022 Scoping Plan Update, AB 32 GHG Inventory Sectors Modeling Data Spreadsheet

²⁵ CARB's 2022 Scoping Plan Update, Appendix J: Uncertainty Analysis at pg. 5.

²⁶ CEC Staff Workshop Presentation on "Gasoline Summer Outlook" at slide 13, "California CARBOB Demand."

²⁷ CEC Staff Workshop Presentation on "Gasoline Summer Outlook" at slide 16, "CA Refinery CARBOB Production."

ports and terminals will have the physical capacity to accommodate these increased imports, and as discussed below, recent amendments to CARB's Ocean-Going At-Berth Regulation, taking effect starting in 2025, will make it difficult for these ports and terminals to legally host adequate tanker visits even if they do have the physical capacity to do so.

California Gasoline Marine Import Trends

WSPA has previously explained^{28,29,30,31} why supplying California's fuels market is so difficult. It is true that the West Coast – particularly California – is increasingly reliant on gasoline imports. CARB's 2022 Scoping Plan Update acknowledged this, noting that "[i]f California's finished fuel demand is not met by continued refining activity in California, the state would need to import finished fuels to meet the ongoing demand. This would likely result in a two- to five-fold increase in the number of finished fuel ship deliveries to marine terminals."³² This is especially true when such imports are necessary to supplement local transportation fuel supply during both planned and unplanned refinery maintenance events. As such, when refiners have advance awareness of a fuel supply disruption, they can mitigate consumer impacts. For example, when refiners schedule maintenance activities well in advance, they can also plan for bringing in more finished gasoline imports and/or gasoline components from other refineries.

However, continuing these practices will be extremely challenging beginning in 2025 due to aggressive new restrictions adopted by CARB that will apply to all tanker vessels calling on California ports and terminals. CARB's 2020 amendments to its Ocean-Going At-Berth Regulation (17 Cal. Code Regs. §§ 93130-93130.22) will soon require all tankers either to use shore power when transferring cargo at berth (despite the fact that the current tanker fleet is not designed to utilize such power), or to utilize emissions control technology that has not yet been tested, approved, or implemented in practice for tankers. As a result, many existing tankers likely will not be able to meet the Regulation's requirements by the first compliance deadline of January 1, 2025. The overall result will be to limit the number of calls and/or the availability of tankers that can legally call on California's ports beginning in 2025 – the very same facilities that will need to absorb the delivery of increasing imports that will be necessary due to artificially constrained in-State production and refining policies.

That there is *already* rising pressure to increase fuel imports is clear. The CEC's own presentation demonstrates a marked increase in marine imports in the past decade: *i.e.*, a 61% increase in the 2021-2023 average barrels per day imported over the 2014-2019 period, and an assumed 23% increase in 2024 from the 2021-2023 average.³³ Thus, there is little dispute that increased imports will be a critical component of meeting Californians' fuel demand going forward. Unfortunately, with less than six months remaining before the Ocean-Going At-Berth Regulation amendments take effect for the major Southern California ports, we have no guidance on how the State plans to accommodate this import trend while enforcing the strict limitations set forth in that Regulation.

²⁸ WSPA Comments Regarding SB X1-2 Transportation Fuels Assessment Workshop [Docket #23-SB-02] filed on Sept. 11, 2023.

²⁹ WSPA Comments on SB X1-2 Workshop on Maximum Gross Gasoline Refining Margin and Penalty [Docket #23-OIIP-01] filed December 12, 2023.

³⁰ WSPA Comments on SB X1-2 Workshop on Maximum Gross Gasoline Refining Margin and Penalty Structure [Docket #23-OIIP-01] filed April 25, 2024.

³¹ WSPA Comments on SB X1-2 Draft Transportation Fuels Assessment filed on May 17, 2024.

³² CARB's 2022 Scoping Plan Update, at pg. 107.

³³ CEC Staff Workshop Presentation on "Gasoline Summer Outlook" at slides 17-19, "California Gasoline Marine Imports."

WSPA again notes that these significant market and policy dynamics, which will constrain California's fuel supply, *are already in motion*.

PRICE SPIKE MITIGATION STRATEGIES

The CEC's workshop notice indicated that, amongst the topics that could be discussed, were "price spike mitigation strategies." WSPA recommends that the CEC evaluate the following:

- **Stabilize In-State Gasoline Supplies.** For the reasons identified above, WSPA continues to urge the CEC to work on pathways to increase and stabilize California's valuable fuel supplies. This includes support for local crude oil production that can easily be delivered to California's refineries for refining into gasoline and other transportation fuel products.
- **Do Not Impose a Margin Cap and Penalty.** Inherent in the passage of SB X1-2, the State Legislature directed the CEC that, before considering the adoption of any maximum gasoline margin cap or penalty, it must first gather real-world evidence on whether a cap on refinery margins could have unintended consequences that would harm California consumers. The law explicitly requires that the CEC "***shall not*** set a maximum gross gasoline refining margin or accompanying penalty...***unless*** it finds that the likely benefits to consumers outweigh the potential costs," considering factors such as whether action would lead to a greater supply and demand imbalance in California's fuels market or lead to higher pump prices."³⁴ As such, the Legislature's expectation of the CEC is clear: evaluate the facts, not the politics, in promoting solutions that benefit Californians rather than hurting them. Implementing a margin cap will not solve California's supply issues or change market behaviors. Allowing periodic adjustment of such a maximum margin would not improve things, but would only introduce an element of uncertainty which could severely discourage capital investment and exacerbate future supply issues. As previously mentioned, investment decisions are driven by a reasonable expectation of future profits. Instead, we urge the Commission to take a proactive approach to finally resolving the State's long-standing supply issues as previously recognized by the CEC. By working with in-State refiners and supporting them through the development of reliable infrastructure, the CEC can help increase production of transportation fuels to meet California's increasing fuel demands, thereby attacking the root causes of market volatility and benefitting California consumers over the long run.
- **Incentivize Ongoing Infrastructure Investments.** As discussed above, *it is manifestly in the interest of all Californians to preserve and foster California's remaining refining capacity*. Local supply of transportation fuel avoids the significant costs, market volatility, and risks that come with reliance on fuel supplies from out-of-State and overseas. More importantly for the environment and health, local refining and supply of transportation fuels allows the State to avoid the impacts of additional harmful pollution and carbon emissions that would result from having to transport most or all of California's refined fuel supplies from elsewhere. The CEC can take actions to minimize market volatility by identifying policy changes to support (not hinder) critical investments in the maintenance and build-out of necessary California infrastructure to support in-State fuel demand. Also, the CEC can help promote more certain and streamlined local supply of transportation fuel by evaluating barriers to local fuel supply, and by identifying and addressing regulatory obstacles that prevent or impede needed maintenance activities and/or prevent challenging infrastructure from being repurposed.
- **The CEC Must Address Concerns with the Coming Restrictions on Import That Will be Caused by the Ocean-Going At-Berth Regulation.** As discussed above, WSPA strongly

³⁴ PRC Section 25355.5(l) (emphasis added).

urges the CEC to engage CARB in discussions about how the Ocean-Going At-Berth Regulation amendments may be modified to avoid the imposition of harsh restrictions on tanker visits at California ports starting in 2025. Tanker operators and ports have attempted to address these issues with CARB in advance of the January 1, 2025, deadline, and have pointed out that no viable tanker shore power or emissions capture technology alternative exists today, six months before the regulatory implementation deadline. To date, CARB has not been willing to even discuss considering regulatory relief for tankers or tanker ports or terminals, and has been unwilling to concede that the technologies required by the Regulation amendments will not be implementable by the California tanker fleet by January 1, 2025. If this issue is not addressed in advance of the 2025 amendments' effective date, tankers will be left with no other practical choice but to limit visits to California ports and terminals, and we expect that this will only exacerbate the State's current fuel supply problems by limiting the State's ability to use imports to close the supply gap.

- **Support Availability of Lower-Carbon Fuels.** WSPA has been actively engaged in CARB's pending rulemaking to strengthen the Low Carbon Fuel Standard (LCFS). WSPA continues to support CARB's decision *not* to include arbitrary caps on crop-based feedstocks or fuels derived from crop-based feedstocks as doing so would limit proven emissions reductions strategies that are working *today*. WSPA has, however, expressed concern that accelerating programmatic benchmarks even further – while meritorious in intent – will likely impact California's gasoline prices. The LCFS program currently adds approximately \$0.10 per gallon³⁵ for California consumers, which can disproportionately burden low- and moderate-income Californians. As such, WSPA has urged CARB to revise its potential program amendments to create a more cost-effective and less burdensome regulatory program that protects a diverse transportation energy portfolio. An aggressive step-down in program stringency in 2025 could place upward pressure on California's gasoline prices.
- **Support Affordability of Lower-Carbon Fuels.** WSPA has also expressed concerns with CARB's forthcoming amendments to the Cap-and-Trade program that are also likely to have an impact on transportation fuel supply and costs. According to the CEC, Cap-and-Trade adds over three times as much (\$0.32 - \$0.33) to the cost of California's gasoline as LCFS does. Proposed amendments could exacerbate existing impacts by further compromising the supply reliability of critical transportation fuels, leading to increased energy costs and possibly further burdening California drivers. WSPA has reiterated that programmatic updates must be consistent with Assembly Bill (AB) 32 (2006), SB 32 (2016), and AB 398 (2017). AB 32 and SB 32 directed CARB to adopt regulations to ensure that the emissions reductions are technologically feasible and *cost-effective* while minimizing leakage potential. AB 398 included important cost containment measures and that CARB consider any adverse business impacts. To date, analysis has failed to appropriately quantify and assess potential consumer impacts or leakage risks under various proposed update scenarios. Despite prior State analyses quantifying potential impacts,^{36,37,38} the 2024 Standardized Regulatory Impact Assessment instead notes that, "Predicting how allowance price changes

³⁵ See the CEC's monthly "Refiner Margin Data" at: <https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market/california-oil-refinery-cost-disclosure>

³⁶ 2010 Cap-and-Trade Appendix N. Economic Analysis, see Table N-3 at <https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2010/capandtrade10/capv4appn.pdf>

³⁷ 2016 Standardized Regulatory Impact Assessment (SRIA) Proposed Amendments to the Cap-and-Trade Regulation, see Table 3 at https://dof.ca.gov/wp-content/uploads/sites/352/Forecasting/Economics/Documents/ARB_Cap-and-Trade_SRIA_2016_Final.pdf

³⁸ 2018 Standardized Regulatory Impact Assessment, Proposed Amendments to the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms Regulation, June 2018, see page 42 at https://dof.ca.gov/wp-content/uploads/sites/352/Forecasting/Economics/Documents/Cap-Trade_SRIA_ARB_6-2018.pdf

impact these complex pricing strategies and the per gallon gasoline and diesel prices paid at the pump in the future by consumers is beyond the scope of this work.”³⁹ An aggressive ramp-down in the cap decline rate and industrial allowance allocations beginning in 2025 could place upward pressure on California’s gasoline prices.

CONCLUSION

We again emphasize here that imposing a margin cap and penalty will only exacerbate these challenges and harm California’s consumers. Margin caps, by design, discourage the making of “too much” profit, thereby discouraging the production that might result in that profit, and inducing market scarcity. We urge the CEC to work with industry to find solutions that address the root causes of high gasoline prices, rather than scapegoating refiners that, as the CEC’s own expert consultants have acknowledged, are running as hard as they can to serve the needs of this State.⁴⁰ WSPA continues to request a balanced conversation with how best to manage these opportunities for affordable, reliable, and lower carbon fuels.

WSPA appreciates the opportunity to provide our comments on these issues of critical importance not only to us, but to all California citizens who rely on affordable and reliable sources of transportation fuel every single day. These comments are based on WSPA’s review of the materials and statements at the workshop, and we reserve the right to amend these comments or add to the docket as necessary to reflect additional materials or changes in the CEC’s decisions.

Please do not hesitate to contact me with any additional questions.

Sincerely,



Catherine Reheis-Boyd
President and CEO

³⁹ CARB Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms 2024 Amendments, Standardized Regulatory Impact Assessment, dated April 9, 2024, at page 54: https://dof.ca.gov/wp-content/uploads/sites/352/2024/04/nc-Cap-and-Trade_SRIA2024.pdf

⁴⁰ See April 11, 2024, CEC Workshop Event Recording, Dave Hackett, upon questioning, 02:28:12 mark; Tom O'Connor, during questioning at 02:28:41 and 02:28:56 marks: <https://www.energy.ca.gov/event/workshop/2024-04/workshop-sb-x1-2-maximum-gross-gasoline-refining-margin-and-penalty>



June 27, 2025

Dear Governor Newsom,

Thank you for the opportunity to respond to your April 21, 2025, letter soliciting recommendations from our office on changes to state policy to ensure adequate transportation fuels supply during this pivotal time in our state's clean energy transition. In the months since receiving your letter, your energy team has engaged with the Petroleum Strategy Task Force, continued deep research into global petroleum market trends, convened roundtables and discussions with diverse stakeholders representing varied interests, and utilized new data afforded to us by legislation enacted over the last several years to better understand the petroleum industry.

This letter offers our strategies and recommendations to address your request for actions to ensure that Californians have access to safe, affordable, and reliable transportation fuels and that petroleum refiners continue to see value in serving the California market, even as in-state demand for petroleum-based fuels declines over the coming decades. These recommendations reflect the complexity of the issue, input from a multitude of stakeholders, and a faithful synthesis of robust data and discussions. We believe that these actions are necessary as the State considers its next steps to further our clean energy transition.

We look forward to working with members of the Legislature, fellow state agencies, industry, and stakeholders to implement these strategies. Together, we will evolve California's strategy to successfully phase out petroleum-based fuels by 2045 while protecting communities, workers, and consumers, and foster market conditions that support the industry's ability to operate safely, reliably, and successfully to meet demand through the transition.

Executive Summary

California's petroleum market is evolving rapidly, as California's pioneering climate and air quality policies, which are critical to protecting our communities' health, have accelerated the adoption of highly fuel-efficient conventional vehicles and zero emission vehicles (ZEVs), leading to a decline in demand for petroleum-based fuels. The decreasing demand for petroleum-based fuels underscores California's success in its transition to a sustainable, clean energy future. But the decreasing demand, economic factors, and volatility of the international petroleum market also introduces uncertainty to the petroleum industry, which impacts consumers, the workforce, and frontline communities. That uncertainty has only been compounded this year by actions of the current federal administration, which have both added more shocks to the global petroleum market and sought to undermine California's transition away from reliance on petroleum-based fuels.

In California, recent years have been marked by higher gasoline retail prices, in-state petroleum refinery conversions and exits, and a growing reliance on fuel imports to meet consumer demand. These impacts are not isolated to California and are also being felt nationally and globally. To address dramatic gasoline retail price spikes, you partnered with the Legislature in 2023 and 2024 to provide the CEC with new industry and market transparency tools to better understand the causes behind gasoline price spikes and to develop strategies to protect consumers during the transition to clean, alternative fuels.

Current analysis indicates a continued decline in gasoline demand; a credible risk of rapid near-term conversions or exits of existing refineries, which is consistent with global refinery industry consolidation; impacts to other critical infrastructure across the upstream, midstream and downstream segments; and safety and reliability challenges associated with disinvestment along the petroleum value chain.

The success of California's decarbonization strategies are transforming the state's transportation sector from its early transition phase into its pivotal and challenging "mid transition" phase.¹ In this phase, demand for the

¹ Grubert and Hastings-Simon (2022). *Designing the mid-transition: A review of medium-term challenges for coordinated decarbonization in the United States*. WIREs Climate Change. <https://doi.org/10.1002/wcc.768>

incumbent petroleum-based fuel system, while declining, remains substantial, as the clean, alternative fuel system continues to scale. In this phase, investor confidence in the incumbent system is expected to falter change due to long-term uncertainty about the trajectory and pace at which these two systems evolve.

During this mid-transition phase, the State must simultaneously continue supporting the rapid expansion of new clean, alternative fuels while actively managing a gradual responsible phase-down of the incumbent systems that millions of Californians will continue to depend upon for years to come. Successfully managing this transition and continuing the State's long-standing leadership in addressing climate, air quality, health, and environmental issues will require coordinated actions and strategic alignment of state, regional, and local jurisdictions.

As a result of all of these factors, immediate State actions are necessary to stabilize the near-term vulnerabilities of the entire transportation system and implement a comprehensive strategy to support a successful transition. Given sufficient time, the petroleum market is likely to find a new equilibrium following the disruption of a refinery closure, but in the near term, an abrupt loss of refining capacity and the increased need for imported fuel to compensate is likely to create new risks for stable fuel prices and supply. Keeping in-state and imported fuel competitive will be an important balancing act moving forward, because if the cost of refining fuel in state exceeds the cost of importing fuel, it could further accelerate additional petroleum refinery exits.

Collaboratively, we must harmonize regulations and processes to maximize market-driven solutions and continue to advance State policy goals. By doing so, the State can ensure safe and reliable operations through an orderly, managed transition of the petroleum sector that safeguards California consumers, workers, communities, and the environment.

Since receiving your April 21, 2025 letter, my office has continued its engagement with the cross-agency Petroleum Strategy Task Force, other relevant state and local regulators, industry, and impacted stakeholders and communities. Drawing from this engagement and lessons learned from energy transition challenges in other sectors nationally and internationally, we have identified both risks to fuel supply and

opportunities to support a managed transition in the transportation sector. Our office recommends the pursuit of three concurrent strategies:

1. Stabilize fuel supply through imports of refined fuels and maintaining in-state refining capacity.
 - a. Support necessary import of refined fuel products (such as California-specific gasoline) by addressing regulatory and permitting issues that limit import capacity.
 - b. Retain in-state petroleum refining capacity where possible to maintain resilience of the transportation fuels system.
2. Provide sufficient confidence to industry to invest in maintaining reliable and safe infrastructure operations to meet demand.
 - a. Stabilize in-state crude oil production and distribution to bolster supply for California refineries and support the petroleum fuels system.
 - b. Implement near-term statutory and regulatory changes that improve investment confidence while advancing state policy goals.
 - c. Strengthen coordination across state, regional, and local authorities, communities, and stakeholders to inform policy implementation.
3. Develop and execute a holistic transportation fuels transition strategy.
 - a. Implement a suite of policies and programs to ensure environmental, public health, labor, economic, and consumer protections for a successfully managed transportation fuels transition.

The recommendations laid out in this letter reflect the complexity of the issue, input from a multitude of stakeholders, and a faithful synthesis of robust data and discussions. We believe that these actions are necessary as the State considers its next steps in the clean energy transition.

Introduction and Background:

Over the past two decades, California has embarked on a transformative effort to decarbonize its economy. Through pioneering climate and air quality policies, the state has:

- Catalyzed the development of clean energy technologies,
- Fostered new clean energy industries employing tens of thousands of Californians,
- Decreased annual gasoline demand by more than 2 billion gallons (13.4%) in 8 years,
- Replaced more than 2 billion gallons of fossil diesel with renewable diesel, resulting in nearly 72% of diesel needs met by renewable diesel,
- Increased zero emission vehicle (ZEV) adoption from an annual rate of 7.8 percent new vehicle sales in 2020 to over 25 percent in 2024, and
- Made significant progress in improving air quality for communities across the state, including reducing over 77,500 tons of NOx since 2016.

As a result of the Low Carbon Fuel Standard (LCFS), the variety of transportation fuels and consumer choices have increased including rapid deployment of renewable diesel and zero emission infrastructure and will reduce fuel costs for Californians per mile by 42% translating to savings of over \$20 billion in cost savings by 2045.

At every inflection point—whether driven by market changes, climate and public health imperatives, national and global policy shifts, or technological breakthroughs—California has enacted forward-looking policies, regulations, and processes to continue advancing its decarbonization goals while prioritizing affordability, safety, and reliability.

Now, as the transportation sector enters a new phase in its transition, marked by rapid changes in the petroleum fuels system, California needs to once again continue to evolve its strategy to ensure success. If a lack of proactive management during this phase of the transition leads to rising energy prices and less reliable fuel supplies, that instability could erode support for continued decarbonization. We must take the necessary steps to chart a path for an orderly and safe transition away from legacy

petroleum-based systems that maintains system reliability, protects communities, workers, and consumers, and continues to advance the state's decarbonization trajectory.

Shifts in Petroleum Fuel Supply: A Global Issue and Californian Opportunity

California's petroleum value chain is complex and must be considered holistically in managing the transportation fuels transition (Figure 1). It supplies gasoline, diesel, jet fuel and other petroleum derivatives, and consists of interdependent activities and infrastructure that include:

- Upstream activities related to production of crude oil,
- Mid-stream activities related to gathering, storing, processing, and transporting petroleum products, and
- Downstream activities related to refining and distribution, marketing and sale of refined products.

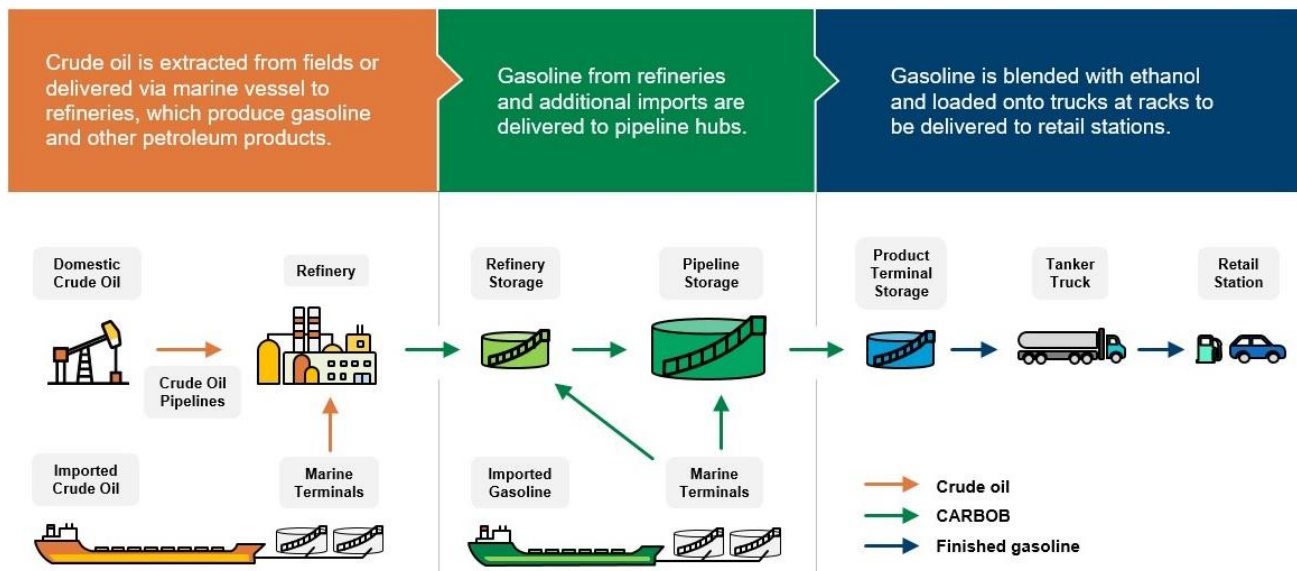


Figure 1. The petroleum value chain is complex and interdependent, and policies should consider the system holistically. Investments across the value chain are necessary for a managed decline.

California currently imports over 75% of its crude oil to meet the demand of in-state petroleum refineries and about 10-20% of its gasoline from out-of-state and foreign sources, depending on refinery maintenance

activities. Gasoline imports statewide could increase to 25-35% of demand by the summer of 2026, and up to 50% in the northern California region after the announced anticipated refinery closures, bringing risk of supply disruptions and price volatility. The interdependent elements of the petroleum-based system therefore cross state and national boundaries and contain critical vulnerabilities tied to changes in local, state, federal, and international policies, markets, and events.

A wide range of factors affecting the petroleum value chain are accelerating the decline and consolidation of the refining industry in many U.S. states, as well as developed economies across the globe. One in five refineries globally risk shutdown by 2030². Across the nation, petroleum refiners face the conjoined challenges of rising operating costs, softening demand for some refined products, and competition from newer, more efficient mega-refineries in other countries. Geopolitical events and changing federal and foreign government policies are also impacting industry decisions. Further, many national petroleum refineries, including some in California, are well over 100 years old and require substantial financial investments to maintain safe and reliable operations. In recent years, these factors have driven the closure of petroleum refineries in places as diverse as Australia, the United Kingdom, and multiple states, including some that have been perceived as especially profitable settings, like Texas.

As a result of such factors and as California's policies continue to drive down demand for petroleum-based fuels, California's in-state petroleum refining capacity has been declining faster than its demand for refined petroleum products and has been supported by increase in imports of refined products. Future trends are uncertain: recent federal actions and policies, including undercutting California's clean air standards and its impact on ZEV adoption combined with global conflicts (currently, about 30% of crude supply to California's refineries comes from the Middle East), are creating further uncertainty in both in-state demand for refined gasoline and global petroleum markets. To prevent a further exacerbated imbalance of supply and demand from harming Californians—whether through disrupted fuel supply, insufficient facility maintenance, or ongoing pollution threatening public health—and to maintain resilience in the

² Wood Mackenzie (2025). *Global 2035 refinery closure threat update: Which assets are most at risk of closure?*. <https://www.woodmac.com/news/opinion/global-refinery-closure-outlook-2035/>

system in light of ongoing uncertainty, the State must actively manage the decline of its legacy petroleum-based systems while maintaining affordable, reliable, safe, and equitable access to transportation fuels statewide.

Proactively Navigating the Challenges of the Mid-Transition

California is entering a pivotal and challenging phase of decarbonization described in scholarly work as the “mid-transition,” in which the demand for the incumbent petroleum-based system, while declining, remains substantial, and the clean alternative fuels, continue to scale up³ (Figure 2). Over the past five years:

- Two Californian refineries, Marathon Martinez and Phillips 66 Rodeo, have converted to producing renewable fuels —transitions that support the State’s shift to cleaner, less carbon-intensive fuels, but that have also reduced gasoline refining capacity in the state.
- Phillips 66 has announced its intent to close its Wilmington refinery in the fourth quarter of 2025. Phillips 66 has committed to working with California to maintain or increase levels of supply to meet consumer needs, including through imports⁴.
- Valero has announced its intent to idle, restructure, or cease refining operations at its Benicia refinery by the end of April 2026.

³ Grubert and Hastings-Simon (2022). *Designing the mid-transition: A review of medium-term challenges for coordinated decarbonization in the United States*. WIREs Climate Change. <https://doi.org/10.1002/wcc.768>

⁴ <https://investor.phillips66.com/financial-information/news-releases/news-release-details/2024/Phillips-66-provides-notice-of-its-plan-to-cease-operations-at-Los-Angeles-area-refinery/default.aspx>

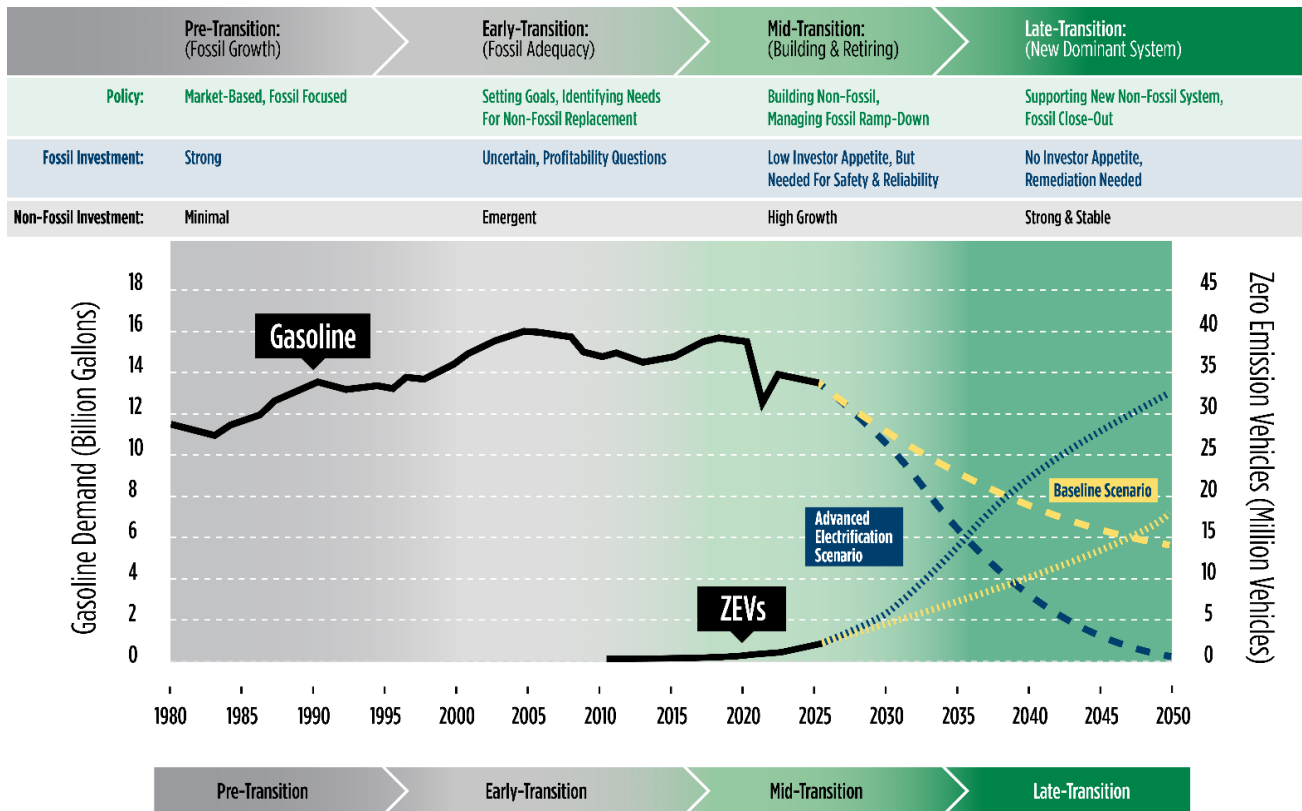


Figure 2. California has entered the mid-transition, a critical phase in which the State must not only support the growth of new clean energy systems but also manage the phase-out of their fossil-fueled predecessors. The CEC's 2024 Integrated Energy Policy Report (IEPR) includes two scenarios for gasoline demand and ZEV adoption: a baseline scenario and a higher transportation-electrification scenario.

To ensure energy reliability and economic stability, sustained investments in both legacy and emerging infrastructures are essential during the mid-transition to support the totality of market needs. Sudden and unmanaged exits of critical legacy energy infrastructure can have significant negative impacts on energy security, local governments, worker safety, consumer prices, public health, environmental protection, and the communities that depend on jobs and revenue from those industries.

To protect consumers, frontline communities, workers, the economy, and the environment, California's policies must simultaneously achieve two objectives:

1. Accelerate deployment of renewable and low-carbon technologies to sustain decarbonization momentum.
2. Establish clear mechanisms and incentives to keep legacy petroleum-based assets safe, reliable, and affordable until the new clean energy system can fully replace them.

Current analysis suggests that under today's market and regulatory conditions, California faces the prospect of continued reduction in in-state petroleum refining capacity that outpaces demand decline for petroleum-based fuels and closures of other critical parts of the state's petroleum-based fuel value chain. Without a clear, state-led transition pathway, these sudden exits create a very real risk of severe price spikes, supply constraints, and long-term liabilities at sites. The industry is likely to become more heavily concentrated with fewer but more powerful incumbent firms. Given sufficient time, the petroleum market is likely to find a new equilibrium following the disruption of a refinery closure, but in the near term, an abrupt loss of refining capacity and the increased need for imported fuel to compensate is likely to increase price volatility. Keeping in-state and imported fuel competitive will be an important balancing act moving forward, because if the state's regulatory paradigms lead to the cost of refining fuel in state exceeding the cost of importing fuel, it could further accelerate additional refinery exits.

By contrast, proactive state policy can not only prevent these potential severe risks, but also achieve a just, least-cost transition to clean energy, while securing major benefits for frontline communities, consumers, petroleum industry workers, and the environment. It will be increasingly important to foster a competitive market open to all. Adjusting conditions that help steer the market in ways that align decline in California's petroleum-based fuel production with in-state and regional demand can also make California's energy systems more resilient in an increasingly unstable national and international context.

These market adjustments must also align with California's trailblazing climate policies. The State's longstanding commitment to protecting air quality, public health, and the environment, as well as recent actions to enhance consumer protections against gasoline retail price spikes, provide a strong foundation on which California can solve the interlocking challenges of the mid-transition. By learning the lessons of past industrial transitions and of refinery closures around the country and the world,

California can once again chart a groundbreaking policy path—this time, for the safe, effective, and necessary transition away from petroleum-based fuels.

In designing policies to manage the decline of California's petroleum fuel system, policymakers face a set of interlocking issues that must be addressed together to support a successful transition:

Reliability and Affordability of Supply: California faces an unusually tight set of constraints on its access to supplies of crude oil and refined petroleum products. Geography and the state's long energy history both largely limit the state to in-state production and marine imports. To combat air pollution and meet federally required air quality standards, California has also long used a specialized gasoline blend that is produced by a limited number of refineries worldwide. Domestic demand for this gasoline already outstrips in-state refineries' cumulative capacity. Under these supply constraints, even a single refinery outage can lead to gasoline price increases.

Increasing marine imports of gasoline to replace lost supply especially in the near term can be costly, slow, and constrained by bottlenecks in import infrastructure. Imports also introduce new vulnerabilities into the fuel supply by making the State more exposed to impacts of geopolitical events, external markets, and regulatory changes in other jurisdictions. Nonetheless, California is likely to become more dependent on imports of refined fuels if the decrease in in-state refining capacity continues to outpace declining demand and proactive planning is needed.

Safety and Reliability of Infrastructure: Petroleum refineries are high-hazard infrastructure that require regular investment in maintenance to protect workers and communities from accidents. Without policy intervention, declining capital inflows could lead to deferred maintenance and heightened dangers. Petroleum refinery accidents can pose grave health risks to workers and residents in the vicinity, and unplanned events impact fuel supply and retail prices, as well as impose unanticipated costs on petroleum refiners, potentially leading to sudden or accelerated closures. For example, Pennsylvania's PES Refinery closed suddenly in 2019 after a major explosion caused by a corroded 50-year-old pipe. Releases and spills can permanently damage entire ecosystems, with acute and chronic public health, ecological, and economic consequences, including potentially many hundreds of millions of dollars in remediation

per site and long-term withdrawal of land from other beneficial uses. It is imperative that refinery operators make necessary investments in refinery maintenance on a timely basis throughout the transition.

Employment Security: Recent petroleum refinery conversions and exits have revealed challenges for displaced workers in finding comparable employment. Workers across the petroleum value chain, including crude oil extraction, similarly face continued job losses and difficult hiring conditions in a declining field. These workers' skills will remain critical for maintaining safe and reliable fuel supplies throughout the duration of the energy transition. Moreover, existing skilled refinery craftsmen are leaving the state to seek similar work in other markets, reducing the experience level of the California petroleum refinery workforce. To retain these workers and their skills, state policy should help ensure that work remains safe and that job transitions are meaningfully supported.

Community Impacts: Petroleum refineries and other elements of the petroleum-based fuel system play significant roles in local economies but also impact the health and safety of fenceline communities. Many examples show that industrial decline can damage community safety, health, and the environment. Because fenceline communities are often dependent on their industrial facilities' tax payments, payrolls, and value chains, a single industrial closure can hollow out the local economy in ways that are very difficult to absorb. Proactive planning and resources will be necessary to prepare communities for a future without petroleum industry, including refineries, and to ensure that fossil fuel-related legacies do not cause new harm.

Smooth Transition for Successful Decarbonization: The many risks posed by an unmanaged clean energy transition also threaten California's continued climate progress. If energy prices rise and fuel supplies become less reliable during the mid-transition, support for continued decarbonization may erode. By contrast, creating clear, transparent, long-term plans for the phase-out of petroleum infrastructure can give the public confidence in the trajectory of state climate policy and create space for industry, state and local governments, and community groups to find least-cost, least-harm solutions to tackling the clean energy transition.

Strategies and Recommendations:

Many impacted stakeholders, including representatives from industry, labor, environmental and environmental justice organizations, and state and local agencies continue to engage with the CEC in productively discussing the interlocking challenges of the clean energy transition. While not all groups align in their preferred strategies to address these challenges, there has been shared recognition of different constituencies' priorities and common goals. A holistic solutions framework developed from this consultation guides this response.

The cross-agency Petroleum Strategy Task Force has additionally provided valuable insight and recommendations for addressing these complex and cross-jurisdictional issues. Building off these engagements, lessons learned from transition challenges in petroleum and other sectors nationally and internationally, and previous work including the CEC's Transportation Fuels Assessment, the CEC has identified needs and opportunities to support affordable, reliable, equitable, and safe fuel supply through a managed transportation fuels transition that pursues three concurrent strategies:

1. Stabilize fuel supply through imports of refined fuels and maintaining in-state refining capacity.
2. Provide sufficient confidence to invest in maintaining reliable and safe infrastructure operations to meet demand.
3. Develop and execute a holistic transportation fuels transition strategy.

Solving the challenge of transportation fuel transition will require state policymakers to pursue solutions that achieve these three objectives together, including near-term stabilization actions as well as long-term holistic transition solutions, and that advance the state's commitment to its overarching priorities.

Strategy 1: Maintain capacity to stabilize fuel supply

TOPLINE: *The CEC thinks it is prudent to immediately stabilize in-state supply by working to retain in-state refining capacity while demand persists, and by supporting sufficient imports, storage, and delivery of refined products.*

PROBLEM: In-state petroleum refining capacity is declining faster than gasoline demand and the abrupt exit of a refinery has numerous consequences to consumers, workers, and communities. Northern

California is already experiencing a net regional shortage in refining capacity and is particularly vulnerable if the State fails to maintain existing Northern California refinery operations in the near term and upgrade the import infrastructure capabilities at Bay Area ports. Due to previously enacted legislation, the state receives a one-year notice prior to petroleum refinery operational changes that helps the State plan for the decline in refining capacity. To support system resilience as in-state refining capacity declines, the State needs to receive sufficient and timely volumes of marine-imported fuel.

1a: Supporting Imports of Refined Products

Background:

Crude oil, gasoline, jet fuel, and other petroleum products are imported into California via marine oil terminals, primarily at the Ports of Long Beach and Los Angeles and in the San Francisco Bay region that includes San Pablo Bay and Carquinez Strait. Gasoline refining capacity in California is already insufficient to meet demand, with the shortfall increasing during refinery maintenance events. The shortfall must be made up through marine imports of refined product. To keep fuel supply and prices stable, the import process must be efficient and surge capacity must be preserved. Investments in third-party marine oil terminals, facilities where oil and petroleum products are stored, are key to incrementally increasing import capacity; these terminals are not associated with one individual refiner and can be utilized by multiple market participants, which in turn increase market competition and protects consumers. Greater import capacity will be necessary to maintain resilience in the system as refining capacity in California continues to fall.

Permitting delays and investment uncertainty can be barriers to repairing, optimizing and increasing import, storage, and delivery capacity – in some instances, permit delays can obstruct project completion by months or years. While the rate at which import reliance will increase is uncertain, State action is needed in the short term to make sure California has an adequate supply of fuel to reliably and affordably serve demand. Projects that increase import capacity, without permitting delays, can take anywhere from three to 24 months, with most projects such as dock improvements or pipeline modifications taking between 12 and 18 months. Specific challenges and opportunities to increase capacity and efficiency vary by location and facilities.

Recommendations:

- Support confidence for the private sector to invest in import, storage, and delivery infrastructure through sector-wide regulatory coordination (see Strategy 2).
- Address regulatory and permitting issues to import capacity and efficiency, especially in regions with major refining capacity loss.
- Establish an interagency workgroup that includes the CEC, the State Lands Commission, relevant Air Districts, local governments, and ports to develop a plan to improve coordination, establish clear lines of communication to prioritize critical energy infrastructure projects, enhance early public engagement, and identify efficiencies and reduce redundancies in permitting.
- Explore ways to increase the throughput capacity of third-party terminals to receive and distribute gasoline and jet fuel.

1b: Prudent Retention of In-state Refining Capacity

Retaining in-state refining capacity while demand for refined fuel persists supports the resilience of the transportation fuels system in California. It can also maintain employment and local revenue while giving workers and communities time to plan for the future.

The CEC is engaging with market players to explore strategies to retain operations at existing refineries.

Strategy 2: Provide sufficient confidence to industry to invest in maintaining reliable and safe operations to meet continued demand

TOPLINE: System-wide needs must be addressed in the near term to protect consumers and fenceline communities and ensure needed investments are made to safely meet demand while achieving climate goals and public health protective standards.

PROBLEM: Increasing petroleum business uncertainty in California is leading to reduced industry confidence to invest in the state as they continually seek other, higher-return opportunities. This has prompted company decisions to discontinue operations in California, especially when faced with significant investment decisions (e.g. refinery turnarounds) and uncertain future returns on those investments. Disinvestment in fossil infrastructure with closure on the horizon poses risk to safety and reliability. Due to the interdependencies of the petroleum

value chain (up-, mid-, and downstream), disruptions can have widespread consequences to the entire system (Figure 1). Additional closures and operational challenges elsewhere in the value chain (e.g. viability of crude oil pipelines with low throughput volumes) are likely in the near term and inevitable in the long term.

Industry participants have identified several intersecting regulatory and administrative issues in maintaining system-wide stability: crude oil extraction and delivery, CEC's regulatory tools, At-Berth regulations, Cap-and-Trade, and issues related to other regional, state and local authorities. CEC continues to engage with a wide range of impacted stakeholders and communities to discuss these issues and possible solutions. While not all groups are unified in their preferred approach to these challenges, there has been general recognition of the benefit of a holistic approach and strategically aligning state and local regulation of the petroleum system to support the achievement of state goals and priorities.

In consultation with industry, labor, fenceline communities, and the cross-agency Petroleum Strategy Task Force, the CEC has identified a suite of measures to bolster confidence in the California market and ensure reliable and safe operations during the transportation sector's mid-transition. These measures are organized into two tiers:

- Tier 1 – Immediate Actions: Options for near-term adoption via administrative directives or statutory modifications.
- Tier 2 – Further Exploration: Options requiring additional analysis, stakeholder consultation, and impact assessment before implementation.

Tier 1: Issues to Prioritize for Immediate Action

1. Stabilizing In-State Crude Oil Production and Distribution.

Background:

Crude oil production in California in recent years has dropped far faster than demand from in-state refineries, largely because of California Environmental Quality Act (CEQA) litigation that stalled crude oil production permitting in Kern County. That decline in in-state crude oil production has forced a shift toward increased foreign and Alaskan crude oil imports. This rapid decline in crude production introduces several challenges that include:

- *Refinery Adaptation Challenges and Cost Pressures:* Many California refineries were engineered for the specific qualities of local crude oil. Several refineries are not logistically well set up to receive waterborne imported crude. Without retrofit investment, they incur higher processing costs and reduced efficiency when processing imported crude.
- *Pipeline Throughput Decline and Infrastructure Risk:* California has a network of pipelines, primarily in Kern County, that deliver crude oil to in-state refineries. Reduced in-state crude production has driven several crude pipelines to shut down due to low throughput. Several remaining crude oil pipelines now run intermittently due to low volumes, inflating crude transportation costs.
- *Exposure to Geopolitical Risks:* Relying heavily on imported crude oil ties California's energy security to volatile foreign-policy dynamics and geopolitical tensions.
- *Economic and Fiscal Impacts:* The contraction in domestic crude oil production erodes high-wage jobs and shrinks local tax bases, placing additional strain on oil-dependent communities and public services.

Recognizing the interdependence between in-state crude oil production and related critical infrastructure across the petroleum value chain, we think it is prudent to stabilize in-state crude production to support resilience in the petroleum system.

Recommendation:

As part of a managed transition strategy, we recommend that the State take action to achieve targeted stabilization of crude oil production in California to supply in-state refineries while ensuring that production is consistent with critical health and environmental protections. Specifically, limited production that is needed to achieve targeted stabilization should be prioritized in existing established, and densely developed oilfields, and outside of Health Protection Zones (HPZs) surrounding homes, schools, and other sensitive receptors where new permitting is prohibited by law; and production should not include methods that are prohibited by important environmental protection laws, such as California's ban on new offshore oil and gas leases and California's ban on well stimulation treatments.

The Legislature may wish to consider, for example, statutory changes to declare the Kern County Zoning Ordinance Second Supplemental Environmental Impact Report (SCH20130879) in compliance with CEQA and conclusive for purposes of its use by responsible agencies to allow the County's ministerial approval of oil and gas wells with the mandatory mitigation measures identified in the ordinance. This change would allow for a more appropriate amount of extraction in Kern County's well-established oil fields. While clarifying that oil extraction on those already-disturbed lands, away from neighborhoods, is permissible, the Legislature may also wish to expand the current limitations on new offshore oil and gas development and codify the ban on well stimulation treatments in statute.

Additional legislative or administrative actions could include a targeted regulatory framework that ties crude production and permitting more directly to demand over the transition period. The objective would be to facilitate more timely, predictable, and legally durable permitting for crude oil production outside of HPZs in established, densely developed oilfields coupled with a requirement to permanently seal at least two wells for each new well drilled – one located in that same oilfield and the other located in an HPZ. This would facilitate a managed production decline that aligns with and adapts to declining demand throughout the transition to create more certainty, maintain critical infrastructure investment, and protect consumers, workers, and fenceline communities.

2. Regulatory Tools.

Background:

Several intersecting regulatory authorities supporting the achievement of the State's climate, public health, and consumer protection priorities impact the petroleum industry. Strategic implementation of the State's suite of regulatory tools can support the necessary investment confidence to retain safe and reliable industry operations and achieve policy goals.

To protect California consumers from extraordinary spikes in retail gasoline prices, such as those during 2022 and 2023, you called for two special sessions of the Legislature in 2023 and 2024 resulting in the passage of SB X1-2 (Skinner, Chapter 1, Statutes of 2023 First Extraordinary Session) and AB X2-1 (Hart, Chapter 1, Statutes of 2024 Second Extraordinary Session). These efforts collectively:

- Expanded the CEC's data collection authority that significantly increased transparency into various aspects of the petroleum market and helped identify the key factors that contribute to fuel price volatility;
- Created a new independent market oversight division, the Division of Petroleum Market Oversight (DPMO), responsible for oversight, investigations, economic analysis, and policy recommendations regarding the transportation fuels market;
- Required development of two planning efforts 1) an assessment of California's transportation fuels market with potential strategies to address price spikes, and 2) a Transportation Fuels Transition Plan with CARB; and
- Provided CEC with new regulatory authorities to mitigate retail gasoline price spikes and protect consumers: establishing a maximum gross gasoline refinery margin (GGRM) and penalty, setting minimum inventory requirements for refiners, and establishing resupply requirements for planned refinery maintenance events.

The Legislature required that CEC engage in careful consideration of the impacts to consumers and the petroleum sector from implementing the new regulatory authorities. The CEC has exercised caution by focusing on gathering the necessary information to develop a holistic view of the petroleum value chain and establishing the best ways to protect consumers during this transition. The CEC has exercised caution by focusing on gathering the necessary information to develop a holistic view of the petroleum value chain and establishing the best ways to protect consumers during this transition.

To protect the public health of local communities near ports, CARB adopted its at-berth regulation in 2007 to address emission reductions from ocean-going vessels when they are docked at California ports. The regulations were most recently amended in 2020 and of January 2025, crude oil and petroleum product tankers at the Port of Los Angeles and the Port of Long Beach are subject to the regulation.

The majority of tanker industry partners are complying with the regulation through one of two approved pathways: (a) the Innovative Concepts, an alternative compliance approach that applies the emissions reductions from approved projects towards vessel visits, or (b) the Remediation Fund, used as an interim solution until their chosen primary control

technologies—such as shore power or barge-based capture systems—are installed. One barge-based system for tankers has received CARB approval, with additional systems under review. Small terminals may comply under the low-use exception or by using the Remediation Fund in combination with barge-based systems or shore power as approvals are finalized. While systems are undergoing approval, capture and control companies can offer research exceptions to vessel and terminal operators for participating in testing. Tankers will be subject to the regulation at all ports as of January 2027.

AB 32 (Nuñez, 2006) enables CARB to implement programs that are globally recognized as cost-effective tools for reducing carbon pollution and for generating billions in proceeds to support investment in innovative and pollution-reducing projects. One of these tools is the Cap-and-Trade program, which was officially launched in 2012 and carefully balances the steady decline of greenhouse gas emissions, provides utility ratepayer benefits through the climate credit, and provides industry credits to mitigate for leakage. Petroleum market participants are regulated entities under the Cap-and-Trade program.

Recommendation:

- The CEC believes that its available refinery regulatory tools should be implemented holistically and prudently to maximize consumer benefit and avoid unintended consequences. The CEC's analyses have demonstrated a relationship between California's volume of gasoline inventory ("days of supply") and retail prices, whereby low inventory volumes are associated with higher retail prices. The CEC sees value in continuing to assess, in collaboration with the industry, how the resupply and minimum inventory strategies could be implemented to promote market liquidity during refinery outages and stabilize prices.

The CEC has determined that additional analytical work is necessary to establish a maximum GGRM and to impose a penalty for exceeding it that would protect California consumers as intended.

In order to prioritize CEC's development and implementation of the resupply and/or minimum inventory regulatory tools, we recommend that the CEC adopt a pause for a reasonable length of time on implementing a maximum GGRM and penalty.

- We recognize that there are challenges in technological compliance specifically for tanker vessels and that the regulation can add unanticipated cost and operational burden. We recommend that you request that CARB meet with each refiner and terminal covered by the at-berth regulation and discuss current status and barriers to implementation of all technical tools intended to achieve emissions reductions from tankers at berth to assess the timelines for deployment of those emissions reductions.
- We recommend that the Air Resources Board continue to work on the regulatory process for continued implementation of the Cap-and-Trade program, including progress towards required targets, cost containment strategies and minimizing leakage.

Tier 2: Issues for Further Exploration

3. Local and Regional Authority.

Background:

Petroleum infrastructure is subject to various local and regional regulations and often requires permits from a variety of local agencies.

In California, the local air districts have primary authority to regulate all non-mobile pollution sources of air pollution, including stationary sources. This means that local air districts are responsible for adopting regulations to reduce emissions from stationary sources, such as refineries, and for permitting of these sources. All districts with refineries have adopted, implemented, and are enforcing regulations to reduce emissions from the refineries. The regulations reflect the air quality issues in each area and aim to address criteria pollutant emissions in order to comply with the federally enforceable State Implementation Plan, and toxic emissions that impact local communities. The district permits generally require facilities to be in compliance with all applicable regulations, depending on the district and the facility type.

Industry has asserted that the stringency, inconsistency, and compliance costs of air quality requirements placed on refineries, along with extended permitting timelines at air districts and other local and regional agencies, pose uncertainty and risk to their longer-term planning. Industry also has asserted that the potential for new local taxation, fees, and regulatory initiatives causes significant investor uncertainty.

Recommendation:

As noted above, we recommend the formation of an interagency working group to address immediate coordination challenges. In addition, we recognize the importance of working with the Legislature and local stakeholders to address concerns. We think the Administration should consider partnering with the Legislature to advance solutions to strategically align regulations and permitting processes across all levels of government that could best support achievement of State policy goals.

Strategy 3: Holistic Transition Strategy

TOPLINE: Near- and medium-term actions must be part of a holistic transition strategy that is built on shared understanding, collaboration, and development of policies across state agencies and stakeholders. A managed transition is critical for protecting Californians and will depend on coordination and collective action.

PROBLEM: Transitioning California's transportation fuel system away from petroleum-based fuels is providing substantial benefits to consumers, workers, communities, and the environment, but an unmanaged transition poses significant and acute risks to safety, health, environment, economy, and affordability.

While concurrently addressing the previous objectives, the State should implement policies and plans to support a successful transition, which could include:

- Identify and pursue necessary transition funding to support climate, health, community, and worker priorities.
- Protect workers and communities such as through robust process safety management regulations at refineries, which has the added benefit of increasing reliability of the facilities.
- Support and protect California's authority to set emission standards and achieve climate goals.
- Further California's ability to diversify and evolve its transportation sector to comply with federal and state air quality standards and meet climate goals, such as by continuing to expand the availability and reduce the cost of ZEVs.
- Identify challenges, opportunities, and strategies for the future of land affected by the transition (e.g. remediation, marketability, and

value), such as Asset Retirement Obligations and standards for refinery remediation and decommissioning plans.

- Evaluate whether new approaches to California's fuel specifications could continue to protect public health and meet federally required air quality standards while making the State more resilient to disruptions during its fossil fuel transition.
- Continue to evaluate additional options presented in the Transportation Fuels Assessment, e.g. product reserve and production enhancement strategies such as E15 or Reid Vapor Pressure (RVP) modification.
- Explore further pathways to increase resilience in the system, such as improving connectivity between Northern and Southern California fuel markets, e.g. through increased marine oil terminal capacity or repurposing of existing fossil fuel transportation infrastructure.
- Develop strategies that can support a managed phase-out especially during the late transition phase of the transportation sector, such as state management or ownership of assets.

Conclusion

The problems laid out in this letter are complex but solvable. California has entered a critical but challenging phase in its transition to a decarbonized transportation sector, which is made more challenging by California's unique petroleum market, global changes in the refining sector and across the petroleum value chain, and new disruptions at the federal level. The strategies and recommendations laid out here represent our careful, comprehensive, collaborative assessment of the petroleum market and the future of the clean energy transition.

Thanks to your leadership and commitment and the expertise of agencies, stakeholders, and communities, California is rising to the challenge. Equipped with new data made available by forward-thinking policies led by you and the Legislature in the past two years, we have a much clearer understanding of the causes of gasoline price spikes and the strategies needed to protect consumers and communities in the future. We are working closely with a broad range of partners to continue to evolve the State's approach so that we may successfully 1) accelerate momentum to decarbonize California's economy, and 2) ensure that

petroleum firms can continue to supply petroleum-based fuels while the clean, alternative fuels continue to scale.

We are thankful for the opportunity to share this analysis with you, the Legislature, our partners, and the public. We look forward to collaborating with the Legislature, state and local agencies, industry partners, and impacted stakeholders to ensure a reliable, affordable, and safe clean energy future for all Californians.

Sincerely,

A handwritten signature in black ink that reads "G. S. Gargadher". The signature is written in a cursive, slightly stylized font.

Siva Gunda
Vice Chair
California Energy Commission



DIVISION OF PETROLEUM MARKET OVERSIGHT



September 16, 2025

The Honorable Gavin Newsom
Governor
1021 O Street, Suite 9000
Sacramento, CA 95814

The Honorable Mike McGuire
Senate President pro Tempore
1021 O Street, Suite 8518
Sacramento, CA 95814

The Honorable Robert Rivas
Speaker of the Assembly
1021 O Street, Suite 8330
Sacramento, CA 95814

Re: California Gasoline Market Update and Consumer Advisory

Dear Governor Newsom, President pro Tempore McGuire, and Speaker Rivas:

The Division of Petroleum Market Oversight (DPMO) is providing this California Gasoline Market Update pursuant to its oversight function described in the California Gas Price Gouging and Transparency Law, Senate Bill X1-2 (Skinner, 2023, Statutes of 2023-2024 First Extraordinary Session) (SBX1-2). DPMO is an independent division of the California Energy Commission (CEC). This Market Update provides additional transparency for consumers, policy makers, and market participants as we look ahead through the end of 2025.

Following the PBF Energy Martinez refinery incident on February 1, retail gasoline prices in California increased but did not spike, despite significant volatility in the spot markets where wholesale gasoline is traded.¹ High import levels of gasoline and blending components kept prices relatively stable during the spring and summer. Looking ahead, we expect in-state refinery production to be reduced in the coming months, largely because of planned and unplanned maintenance. This necessitates advance planning by market participants (including responsibly resupplying lost production and building adequate inventories) to keep prices stable.

¹ DPMO, "California Gasoline Market Update and Consumer Advisory" (Feb. 14, 2025), <https://efiling.energy.ca.gov/GetDocument.aspx?tn=261778&DocumentContentId=98245>.

Spring and Summer 2025 Market Conditions

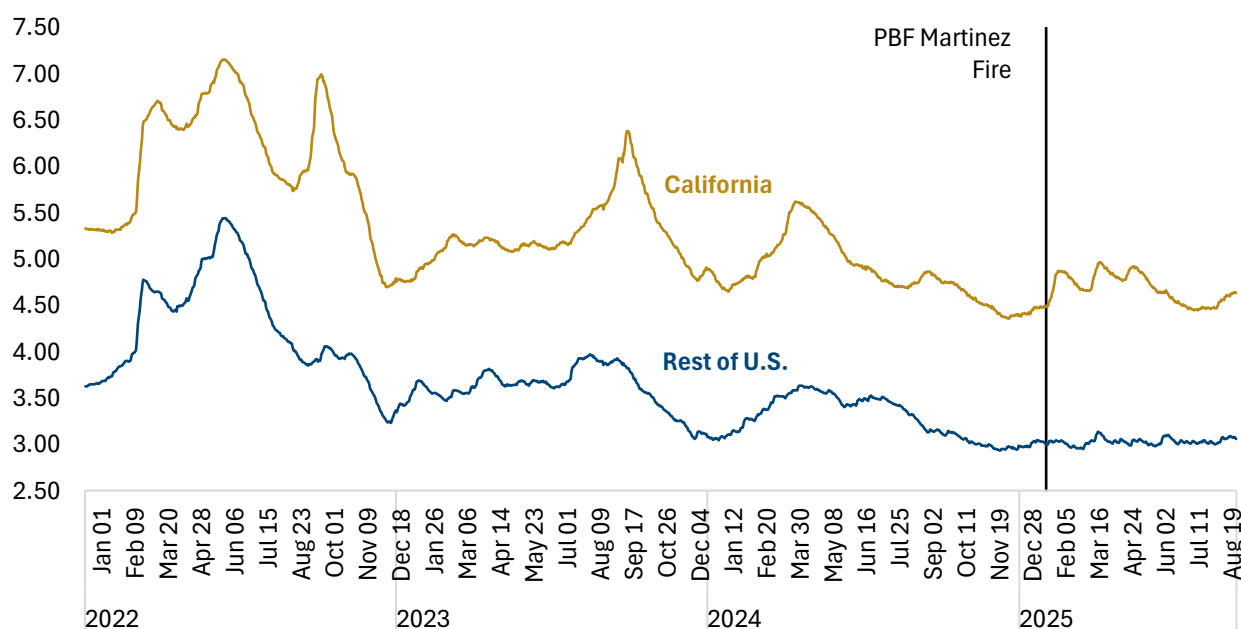
On February 1, 2025, a large fire broke out at the PBF Energy refinery in Martinez, California. The refinery halted gasoline production in the aftermath of the incident and has since partially restarted. According to its most recent earnings call, PBF Energy anticipates a full restart of the refinery by the end of the year.²

While retail gasoline prices increased in subsequent weeks, we did not experience a major statewide price spike like those seen in previous years. California retail gasoline prices peaked at an average of \$4.97 in April 2025, far lower than prices seen during the fall 2022, fall 2023, and spring 2024 price spikes.³ See Exhibit 1.

Exhibit 1. California Retail Gasoline Prices Have Been Lower and More Stable in 2025 Than in Previous Years

Daily Retail Gasoline Prices in California and Rest of U.S., 2025\$/gal

Jan. 1, 2022 - Sept. 12, 2025



Notes: DPMO analysis of OPIS Retail Prices as of Sept. 12, 2025.

Retail price increases in spring 2025 were associated with three significant run-ups on the Northern and Southern California spot markets, where wholesale gasoline is traded. The Northern California spot market saw the most price volatility (as this is the region of the impacted Martinez refinery). According to the Oil Price Information Service (OPIS), the Northern California spot market peaked at \$1.11 over the New York Mercantile Exchange (NYMEX) on May 8,

² PBF Energy, 2025 Q2 Earnings Call (July 31, 2025).

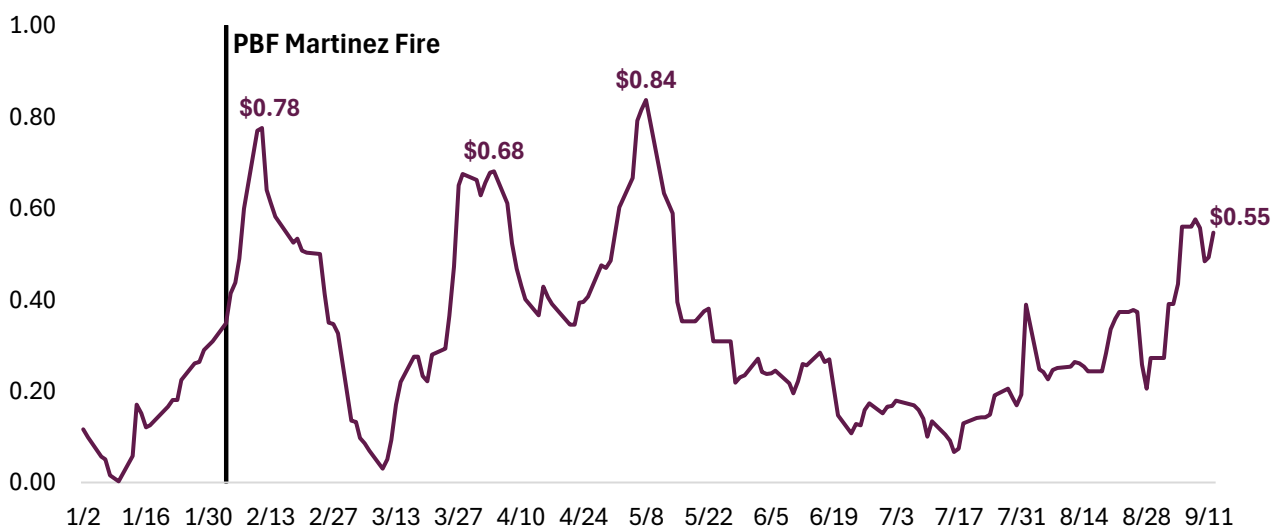
³ All prices are in constant dollars 2025 based on Bureau of Labor Statistics Consumer Price Index less Energy, Series CUSR0000SA0LE, <https://data.bls.gov/cgi-bin/srgate>. Applies to all figures.

2025, and the Southern California spot market peaked at \$0.62 over the NYMEX on March 28, 2025. Spot market prices decreased and stabilized in June and July.⁴ See Exhibit 2.

Exhibit 2. California Spot Market Experienced Three Separate Run-Ups Between February and June 2025

2025 Average California-NYMEX Spot Price Differential, 2025\$/gallon

Jan 2, 2025 - Sep 12, 2025



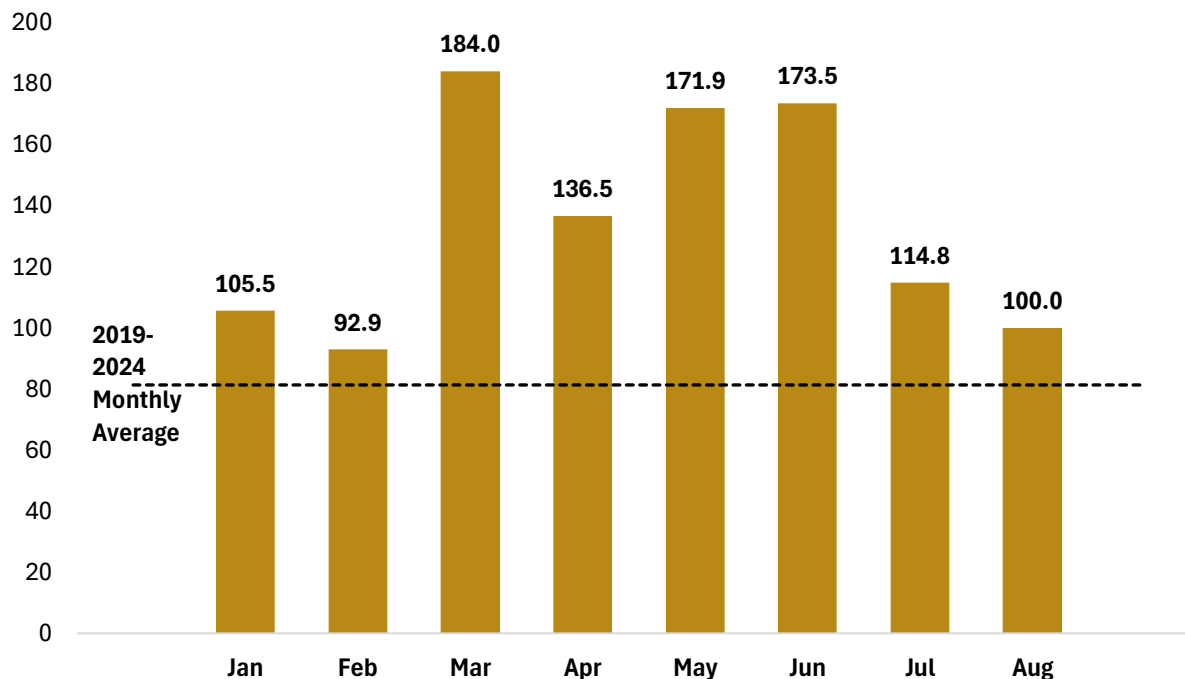
Notes: DPMO analysis of spot prices from OPIS.

It appears that strong gasoline and blending component imports have played a critical role in keeping wholesale and retail prices stable through the spring and summer. According to CEC and U.S. Energy Information Administration (EIA) data, California received 18 million barrels of gasoline and blending component imports (averaging 150,000 barrels per day) between February and May 2025, peaking at 5.7 million barrels (184,000 barrels per day) in March 2025. See Exhibit 3.

⁴ However, the spot price run-ups do not account for the full unexplained difference between retail gasoline prices in California and the rest of the U.S. after accounting for taxes, fees, and environmental programs. This unexplained difference – often referred to as the “mystery gasoline surcharge” – averaged \$0.59 per gallon between February and May (when spot prices surged repeatedly) but only decreased by 27 percent to \$0.43 per gallon between June and July (when spot prices dropped to just \$0.13 above NYMEX – an 88 percent drop relative to the May peak). This suggests that potential causes for elevated retail prices are also occurring downstream of the spot market.

Exhibit 3. California Received High Levels of Gasoline and Blending Component Imports in Spring and Summer 2025

Monthly Imports, Thousands of Barrels per Day



Notes: Imports data for January-June are from CEC M700 and EIA Form 814. Data for July-August are projections from CEC EBR 700, which may underestimate imports due to incomplete reporting. All data include imports of gasoline and blending components.

Late Summer and Fall 2025 Market Conditions

Based on multiple sources, it appears that there will be production shortfalls from in-state refiners in the coming months because of planned and unplanned maintenance. This is also the time of year when California has been more vulnerable to retail gasoline price spikes.

Recent market activity suggests that gasoline market participants have awareness of these events. According to OPIS's West Coast report, Los Angeles spot market forward pricing above NYMEX is elevated for October and November delivery. These reports of elevated forward pricing are corroborated by the CEC's spot market transactions reports, which show similarly elevated pricing across California's two physical spot markets.

California's late summer and fall 2025 gasoline import needs are consistent with the level of imports received in previous months. West Coast gasoline and

blending component inventories are also relatively healthy.⁵ However, price stability will depend on market participants' continued advance preparation through maintaining adequate inventories, ordering sufficient cargoes, and avoiding reactive spot market behavior. As part of its oversight function, DPMO will engage with individual market participants to reinforce this message.

In fall 2022 and fall 2023, spot market prices experienced extreme volatility and unprecedented retail price spikes, necessitating an early switch to winter blend gasoline. These extraordinary measures were not necessary in 2024, in part because market participants maintained higher inventories, brought in more imports, and avoided reactive spot market actions. Given these positive trends, DPMO anticipates the gasoline specification will switch to winter blend as normally scheduled.

Enforcement Bulletin

As DPMO has previously identified, California's spot market is uniquely vulnerable to potential manipulation because it can be thinly traded and is reliant on voluntary reporting to price reporting agencies like OPIS.⁶ DPMO monitors the spot market each trading day to detect and deter misconduct and proactively engages with market participants to encourage responsible behavior. Market participants that make purchases on the spot market that drive up the market price unnecessarily (e.g., while holding long positions) will face scrutiny from DPMO, particularly if that market participant also sells in spot-market-linked transactions and would profit from spot market price increases.⁷

Consumer Advisory

DPMO continues to encourage Californians to shop around for less expensive gasoline, especially "unbranded" or generic gasoline. While branded gasoline can be significantly more expensive than unbranded gasoline, DPMO is not aware of public evidence confirming that branded gasoline outperforms

⁵ See EIA, "West Coast (PADD 5) Stocks," https://www.eia.gov/dnav/pet/pet_stoc_wstk_dcu_r50_w.htm.

⁶ See DPMO, "Core Options for Reforming the California Gasoline Spot Market" (Jan. 31, 2024), <https://efiling.energy.ca.gov/GetDocument.aspx?tn=254283>, and "A Seller's Market: The Challenge of Market Concentration and Price Spikes," Presentation before the Assembly Petroleum and Gasoline Supply Committee (Sept. 19, 2024), <https://www.assembly.ca.gov/media/assembly-petroleum-and-gasoline-supply-committee-20240919>.

⁷ In May 2020, the Attorney General sued two international trading companies for manipulating the California spot market during the 2015 price spike. According to the allegations, the trading firms reported trades to OPIS thereby moving up the spot market price to inflate the value of other contracts pegged to the OPIS-reported price. See Complaint, *The People of the State of California v. Vitol Inc., et al.*, No. CGC-20-584456 (S.F. Super. Ct.).

unbranded or generic gasoline in California.⁸ Consumers can be confident in shopping around because all gasoline sold in California must meet stringent Air Resources Board standards, which are the strongest in the nation and require an effective detergent or cleaning additive to protect engine performance.⁹

Conclusion

DPMO is committed to working with you, the CEC, the Attorney General's Office, and other state agencies to navigate this mid-transition phase, when it will be critical to make the import process more efficient, eliminate bottlenecks, and facilitate competition to protect consumers and prevent price spikes.¹⁰ Should you have any questions about this Market Update or about our market oversight work, please contact us at DPMO@energy.ca.gov.

Sincerely,



Tai S. Milder
Director
Division of Petroleum Market Oversight

CC: Members, Senate Committee on Energy, Utilities, and Communications
Members, Assembly Committee on Utilities and Energy Members
David Hochschild, Chair, California Energy Commission
Siva Gunda, Vice Chair, California Energy Commission

⁸ CEC, "Additional Analysis on Gasoline Prices in California" (Oct. 21, 2019), at pp. 8-9, https://www.energy.ca.gov/sites/default/files/2019-11/Gas_Price_Report.pdf.

⁹ CARB, "California Reformulated Gasoline," <https://ww2.arb.ca.gov/our-work/programs/fuels-enforcement-program/california-reformulated-gasoline>.

¹⁰ CEC Vice Chair Siva Gunda, Response to Governor Newsom (June 27, 2025), https://www.energy.ca.gov/sites/default/files/2025-07/CEC%27s_Response_to_Governor_Newsom%27s_Letter_June-27-2025_ada.pdf.

EIA is continuing normal publication schedules and data collection until further notice.

Petroleum & Other Liquids

Weekly Stocks

(Thousand Barrels)

Area: PADD 5 Period: Weekly

Show Data By:

☐ Product ☐ Area Graph Clear

		08/22/25	08/29/25	09/05/25	09/12/25	09/19/25	09/26/25	View History
Commercial Crude Oil (Excl. Lease Stock)	☐	45,017	45,648	45,877	45,019	46,462	46,792	1990-2025
Commercial Crude Oil (Incl. Lease Stock)	☐							1990-2016
Total Motor Gasoline	☐	31,554	30,214	30,367	30,043	30,048	30,290	1990-2025
Finished Motor Gasoline	☐	1,340	1,252	1,383	1,461	1,538	1,448	1994-2025
Reformulated	☐	24	23	23	22	26	22	1993-2025
Blended with Fuel Ethanol	☐	24	23	23	22	26	22	2004-2025
Conventional	☐	1,316	1,229	1,360	1,439	1,512	1,426	1994-2025
Blended with Fuel Ethanol, Ed55 and Lower	☐	0	0	0	0	0	0	2004-2025
Blended with Fuel Ethanol, Greater than Ed55	☐	0	0	0	0	0	0	2010-2025
Other	☐	1,316	1,229	1,360	1,439	1,512	1,426	2004-2025
Motor Gasoline Blending Components	☐	30,214	28,963	28,984	28,582	28,511	28,842	2004-2025
RBOB	☐	14,532	14,496	14,315	14,176	14,375	14,195	2004-2025
RBOB for blending with Alcohol	☐							2004-2010
RBOB for blending with Ether	☐							2004-2010
CBOB	☐	8,053	7,164	7,035	7,025	7,059	7,124	2004-2025
GTAB Reformulated	☐							2004-2010
GTAB Conventional	☐	0	0	0	0	0	0	2004-2025
All Other	☐	7,629	7,303	7,634	7,381	7,077	7,524	2004-2025
Fuel Ethanol	☐	2,372	2,377	2,461	2,531	2,656	2,413	2010-2025
Kerosene-Type Jet Fuel	☐	11,438	11,268	11,294	11,725	12,352	12,407	1990-2025
Distillate Fuel Oil	☐	11,037	11,725	12,139	12,152	12,737	12,875	1990-2025
15 ppm Sulfur and Under	☐	10,218	10,894	11,253	11,079	11,534	11,680	2004-2025
> 15 ppm to 500 ppm Sulfur	☐	333	295	256	386	358	345	1993-2025
> 500 ppm Sulfur	☐	485	537	630	687	845	850	1993-2025
Residual Fuel Oil	☐	4,046	4,087	4,442	4,067	3,649	3,604	1990-2025
Propane, Fractionated and Ready for Sale	☐	2,013	2,243	2,230	2,152	2,324	2,492	2023-2025

Click on the source key icon to learn how to download series into Excel, or to embed a chart or map on your website.

-- = No Data Reported; -- = Not Applicable; NA = Not Available; W = Withheld to avoid disclosure of individual company data.

Notes: Stocks include those domestic and Customs-cleared foreign stocks held at, or in transit to, refineries and bulk terminals, and stocks in pipelines. Stocks held at natural gas processing plants are included in "Other Oils" and in totals. All stock levels are as of the end of the period. Data may not add to total due to independent rounding. Weekly data for RBOB with Ether, RBOB with Alcohol, and Reformulated GTAB Motor Gasoline Blending Components are discontinued as of the week ending June 4, 2010 reporting period. Monthly data for RBOB with Ether, RBOB with Alcohol, and Reformulated GTAB Motor Gasoline Blending Components are discontinued as of the January 2010 reporting period. Beginning with data for January 2005 total crude oil and petroleum products stocks do not include lease stocks. With the publication of the estimates for week ending April 10, 2020, propane/propylene inventories no longer include propylene inventories held at terminals. These volumes have been removed from the data back to the January 2, 2015 reporting period and are not included in any relevant U.S. totals, PADD sub-totals, or Total Inventory calculations. See Definitions, Sources, and Notes link above for more information on this table.

Release Date: 10/1/2025

Next Release Date: 10/8/2025