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California Energy Commission

DRAFT STAFF REPORT

Draft Framework of Refinery Resupply Regulations

Assembly Bill X2-1 Implementation

Docket Number 25-PIIRA-01

February 2025

PREFACE

Assembly Bill (AB) X2-1 was signed into law in October 2024 and tasked the California Energy Commission (CEC) with considering new proactive planning requirements for refiners to mitigate gasoline price spikes. Since the legislation took effect on January 13, 2025, the CEC has been working expeditiously to implement various aspects of the bill with a focus on ensuring consumer benefit as early as possible.

The CEC's immediate focus is on the deployment of a resupply planning requirement for refiners undergoing a planned maintenance event, which could be a critical tool in stabilizing California's gasoline supply and prices. Of the tools given to CEC under AB X2-1, resupply planning would be the most straightforward to implement. In designing and implementing such a requirement, the CEC intends to build on lessons learned to continue to refine the deployment of this and other regulatory tools, balancing both expediency of deployment and the rigor necessary to ensure that any risks to the market are understood and managed.

Therefore, CEC staff believe, if a refinery resupply rule is adopted in 2025, that a flexible implementation approach is appropriate in its infancy. Using 2025 as a pilot year, the continued collaboration with the Labor and Workforce Development agency, industry, labor groups, community leaders, and other key players will provide opportunities to learn, refine, and adapt in the future to achieve the objectives outlined in AB X2-1.

This report summarizes the CEC's considerations behind developing regulations regarding the management of planned refinery maintenance events and turnarounds that would protect the health and safety of employees and the public while minimizing the impact of maintenance-related production losses on fuel prices. The mechanisms proposed in the resupply framework are complimentary to and do not conflict with or compromise worker and community safety. Further, the analysis that informs this policy, and any future iterations, is ongoing. Additional data collection, future changes to gasoline market structure, and the implementation of other policy tools may result in refinements to an adopted refinery resupply regulation.

Policy Background

Background and History

The Warren-Alquist Act established the CEC as California's primary energy policy and planning agency. The CEC is mandated to evaluate the economic and environmental costs and impacts of petroleum use, and costs of other transportation fuels and establish a state transportation energy policy that results in the least environmental and economic cost to the state. Among several objectives, it is state policy to use all practicable and cost-effective conservation and improvements in the efficiency of energy use and distribution. Furthermore, the law states that petroleum use as an energy resource contributes substantially to such public health and environmental problems as air pollution, acid rain, and climate change.

Legislative Criteria

With the passage of Senate Bill (SB) X1-2 (Stats. 2023, 1st Ex. Sess. 2023-2024, ch. 1), the California Energy Commission (CEC) was given new data collection authority to increase transparency into California transportation fuels market and identify policy options to mitigate the risk of gasoline price spikes.

AB X2-1 (Stats. 2024, 2nd Ex. Sess. 2023-2024, ch. 1) tasked the CEC with considering new proactive planning requirements for refiners to reduce the risk of gasoline price spikes caused by decreased market liquidity. The first proactive planning requirement to consider is requiring refineries to resupply for lost production during planned maintenance events and turnarounds. The second proactive planning requirement to consider is establishing a minimum inventory level for petroleum fuels and blending components at refineries to increase slack in the system.

Problem Statement

Background

In Fall 2022, Californians experienced gasoline prices exceeding $6.00 per gallon even though the price of crude oil and gasoline in the rest of the country remained stable. In Fall 2023, California gasoline prices again spiked to over $6.00 per gallon while the United States average price remained at normal levels.

While California's total in-state refining capacity has decreased over the last several years, declining consumption and an increase in marine imports has kept gasoline supply and demand in balance. However, planned and unplanned refinery outages can

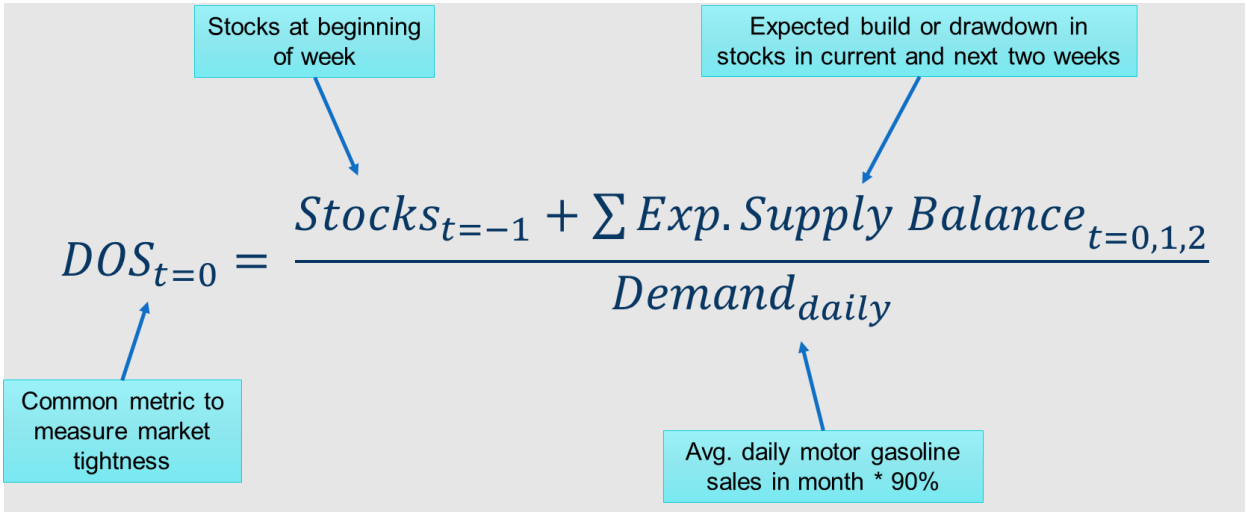
disrupt this balance, requiring drawdown of gasoline inventories and an increase in marine imports to meet demand. Utilizing the enhanced data collection authority granted by SB X1-2, the CEC observed that California gasoline prices spiked in the late summers of 2022 and 2023 relative to the United States average price when the total supply of gasoline in California, a combination of in-state refinery production, inventory of finished fuel and blending components, and marine imports from outside the state, was low relative to consumer demand.

The CEC developed a statistical model to establish the relationship between gasoline supply, demand, and prices. There are two key variables in the California gasoline price model:

1. California gasoline days of supply, a measure of market tightness; and
2. California gasoline spot market price spread, a measure of how expensive California gasoline is relative to a global benchmark.

In the California gasoline price model, days of supply is a measure of the near-future California gasoline supply and demand balance and is calculated as shown in Figure 1. California days of supply starts with the total inventory of reformulated blendstocks for oxygenate blending (RBOB) on the West Coast (PADD 5).[1] Added to the current RBOB stocks is the expected build or drawdown of those stocks over the next three weeks based on expected refinery production, known planned or unplanned outages, known and expected marine imports, and expected demand based on seasonal averages. Finally, this total value is divided by the average daily gasoline demand expected over the next three weeks.

Figure 1: Days of Supply Metric



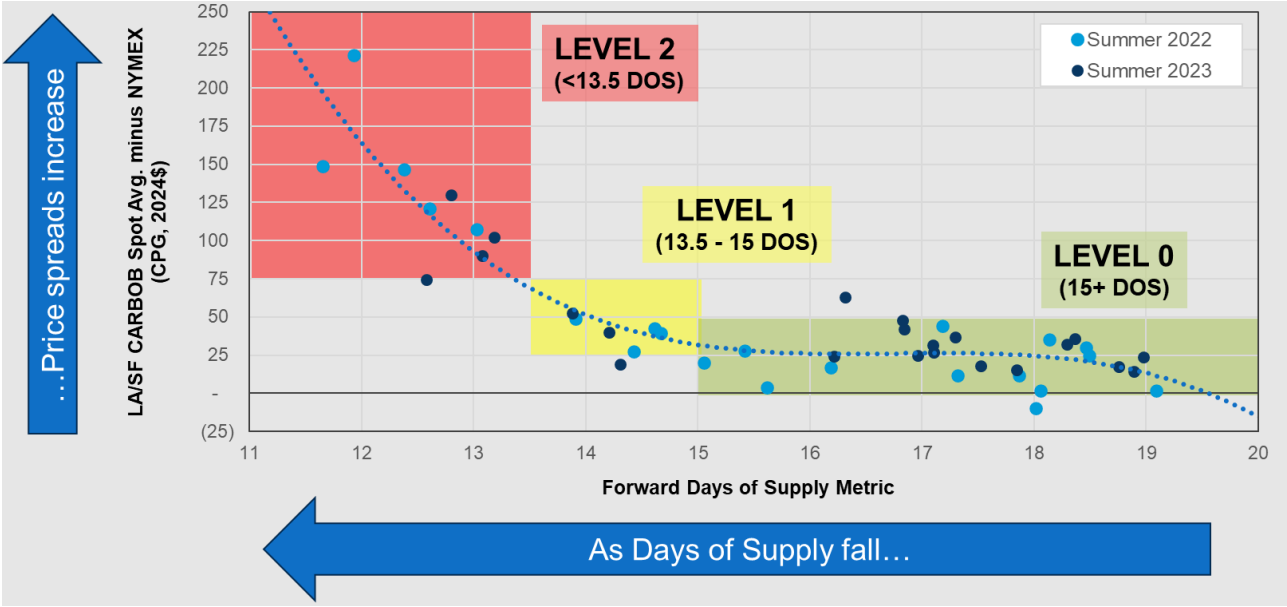
Source: CEC staff.

[1] U.S. Energy Information Administration West Coast (PADD 5) Stocks of Crude Oil and Petroleum Products

The spot market price is the current market price of gasoline that is available for immediate delivery between market participants. Market participants, including refiners and distributers, purchase fuel at this price when they do not have enough fuel to meet their contractual obligations and sell fuel when they have a product surplus. The trades are priced in reference to the New York Mercantile Exchange (NYMEX) futures price. Spot trades and the spot price spread, or differential, have a significant impact on California's retail prices. If the spot market spread increases, gasoline prices increase down the rest of the supply chain, ultimately raising the retail price consumers pay at the pump.

In the California gasoline price model, the spot market price spread is the difference between the weekly average price for regular California gasoline (CARBOB-R) traded in the Los Angeles and San Francisco markets relative to the NYMEX futures price. Following the chart in Figure 2**Error! Not a valid bookmark self-reference.** from right to left, as the days of supply falls, which means the combination of refinery production, gasoline stocks, and marine imports has decreased relative to demand, the price spread to the NYMEX increases. There is a flat relationship down to an inflection point around 15 days of supply. This region is colored in green and indicates market liquidity is high and the risk of price spikes is low. Below this point, however, there is a rapid increase in the price spread as days of supply falls. If days of supply drops to between 13.5 and 15, we are nearing conditions that lead to price spikes. Once days of supply falls below 13.5, the price spread can exceed $1.00 per gallon, triggering a spike in the retail price of gasoline.

Figure 2: California Gasoline Spot Price Spread vs. Days of Supply



Source: CEC staff.

Supporting Analysis

Outage Threshold Analysis

The CEC worked with ICF to determine the impact refinery outages have on gasoline supply and prices. Using the California gasoline price model, an outage threshold analysis was set up by comparing a baseline case with no refinery outages to scenarios in which refinery outages occurred over an 8-week period in late summer with cumulative gasoline supply losses ranging from 1 to 5 million barrels in increments of 1 million barrels. This model assumed:

- Starting days of supply was 16.7 (approximately 13.15 million barrels of RBOB stocks in PADD 5).
- California retail prices start at $4.25 per gallon.
- Supply and demand were balanced at 790,000 barrels per day.
- There was no resupply from marine imports.
- There were no unplanned outages occurring simultaneously with planned outages.
- Spot price fluctuations resulting from changes in days of supply are passed through fully to retail prices.

The results of this analysis, which were presented at the AB X2-1 pre-rulemaking workshop on February 25, 2025,[2] showed that days of supply would fall from 16.7 at the start of the 8-week period to 15.3 in the 1-million-barrel outage scenario and down to 10.2 in the 5-million-barrel outage scenario. Further, retail prices would increase from $4.25 per gallon to over $4.50 per gallon in the 1-million-barrel outage scenario and to about $7.40 per gallon in the 5-million-barrel outage scenario. This would translate to a $100,000 increase in consumer spending over 8 weeks for the same volume of gasoline under the 1-million-barrel outage scenario up to $3.8 billion for the 5-million-barrel outage scenario. These results showed that larger outage events without resupply result in exponentially increasing costs to consumers. ICF's analysis also showed that the impact to consumers is sensitive to the initial market tightness (days of supply at the start of the planned outage).

Refinery Resupply Planning Analysis

The CEC also worked with ICF to determine how different levels of resupply would protect against the outcomes observed in the outage threshold analysis. In this analysis the same baseline case was used with an 8-week planned refinery outage event resulting in a total gasoline production loss of 2.5 million barrels. This time, however,

[2] Session 1 - AB X2-1 Pre-Rulemaking Workshop on Refinery Resupply Planning and Second Meeting of the Independent Consumer Fuels Advisory Committee

the supply and price impacts were modeled with out-of-state resupply requirements of 0%, 25%, 50%, 75%, and 100%.

The results showed that the different levels of resupply for the 2.5-million-barrel outage event would result in different consumer cost savings, as shown in Table 1.

Table 1: Consumer Cost Savings by Resupply Requirement

Resupply Requirement	Consumer Cost Savings
0%	$0
25%	$309 million
50%	$501 million
75%	$613 million
100%	$680 million

Source: ICF.

These results indicate that higher levels of resupply result in larger consumer cost savings overall but that the marginal consumer benefits decrease incrementally – meaning that the magnitude of the savings decreases as the resupply requirement increases. However, consumers still realize higher cumulative cost savings with each percent-increase in the resupply requirement, all the way up to 100%.

High-level Description of Proposed Regulatory Framework

Under SB X1-2 and AB X2-1, the CEC is required to consider ways to manage necessary refinery turnarounds and maintenance that would protect the health and safety of employees, local communities, and the public, and minimize the impact of maintenance-related production losses on fuel prices. The CEC is authorized to establish rules governing the timing of refinery turnaround and maintenance, in consultation with the Labor and Workforce Development Agency, labor, and industry stakeholders. Any such requirements:

- Must protect the health and safety of refinery employees, communities, and the public.
- Must include resupply planning and reporting requirements for planned maintenance to minimize the impact of production loss on fuel prices.
- Would not impact refinery workers' authority to perform emergency shutdown.

- Would not impact refinery health and safety rules.

The CEC is considering planning criteria for refinery turnaround or planned maintenance events, including requirements that refiners demonstrate resupply plans or other arrangements to ensure California specification gasoline production loss during the planned event does not adversely affect the California transportation fuels market.

The proposed criteria are intended to promote advance planning by refinery operators to mitigate foreseeable supply constraints that flow from reduced production during planned maintenance, thereby protecting consumers, ensuring employee and public safety, and providing refiners with flexibility in their operational planning. The criteria would apply for the critical period of 2025 most susceptible to gas price spikes. Once the CEC has had time to evaluate how the proposed process worked, apply information gleaned from improved reporting and further analysis due to changes in the marketplace occurring this year and next, and identify improvements, including possibly syncing these criteria with other regulatory tools the CEC has, CEC staff will commence another rulemaking to adopt resupply criteria for 2026 and beyond.

These are the five primary components of the proposed resupply framework. These components describe the conditions upon which a refinery must resupply for lost production, as well as what source and level of resupply is sufficient.

The five components being considered are:

- The minimum production loss of a planned maintenance event to trigger resupply requirements.
- The resupply amount and qualifying sources.
- The period for which these rules would apply to planned maintenance events.
- The reporting criteria to show the resupply plans are satisfactory leading up to and after the event.
- Potential pathways for a refiner to request an exemption from needing to resupply for lost production during a planned maintenance event.

Minimum Production Loss Trigger

When considering which planned refinery maintenance and turnaround events these rules should apply to, the CEC is considering the potential impact events may have on fuel supply and prices. Refinery maintenance events vary in size and duration. Refineries may also have multiple events or multiple refineries may have overlapping events. Each of these scenarios will likely have different impacts to market supply and prices based on:

- The daily production loss (barrels per day).
- The length of the event (in days).

- The total production loss (in barrels), which is calculated by multiplying the daily loss by the duration of the event.

The threshold may need to consider both the daily impact as well as overall loss of production as some events may be split into multiple overlapping stages. Currently, the draft resupply framework proposes that events resulting in a daily loss of gasoline production of 20,000 barrels per day or more for at least 21 days or events resulting in a total loss of gasoline production of at least 450,000 barrels will require resupply.

Resupply Amount and Sources

The CEC is considering what fraction of the total production loss due to a planned maintenance event should be resupplied. If the resupply percentage is set too low, the California days of supply may drop too low, resulting in a gasoline price spike. Further, not all resupply strategies provide the same net increase to the California days of supply, and thus protection against price spikes. There are three primary resupply strategies to be considered in this rule:

1. Marine imports from outside California, which would provide the greatest increase in total gasoline supply in the state while a refinery is undergoing maintenance. Marine imports from some sources, such as the Pacific Northwest, can arrive relatively quickly. Imports from more distant sources, like India and South Korea, from which California receives much of its gasoline imports, can take up to a month to arrive.
2. Refinery gasoline inventory build - when a refinery holds a fraction of production or reduces short-term and/or non-contracted sales to increase inventory levels stored at the refinery before maintenance commences. This strategy may not directly increase the net supply of gasoline in California but may reduce the overall impact of the event by spreading out the supply loss over a longer period.
3. In-state purchase from other market participants - when a refiner purchases fuel, either as a bulk purchase or in the spot market, from another refiner or distributor to offset their production loss. This does not increase the overall state supply of gasoline and may increase the spot market price, which would raise prices for consumers.

Currently, the draft resupply framework proposes that refiners must offset at least 85% of lost gasoline production with resupply during a planned maintenance event or turnaround. Due to the greatest increase in California gasoline supply, each barrel of resupply obtained via imports will count as 1.3 barrels of resupply.

Applicable Period

The next component of the resupply framework under consideration is the period of the year for which planned maintenance events would be subject to the rules. There are multiple factors to consider when designing resupply requirements for different months of the year.

1. California gasoline demand is variable throughout the year, with the peak summer driving month typically occurring in August. The CEC has observed that gasoline demand is about 10% higher in August than in January, when demand is lowest. Higher demand periods may justify higher levels of resupply to best stabilize supply and prices.
2. California has different gasoline specifications in summer months than winter months. These specifications, established by the California Air Resources Board to reduce air pollution, also impact supply and prices. Winter-blend gasoline is cheaper to produce and, due to the addition of butane, results in slightly increased supply compared to the summer-blend. However, winter-blend is not produced in the summer due to it evaporating more quickly in warmer weather and increasing air pollutants.

The current draft resupply framework proposes that any planned refinery maintenance events or turnarounds that meet or exceed the minimum production loss trigger between September 1 and October 31 would require resupply. This is the same period for which California experienced gasoline price spikes in 2022 and 2023.

Reporting Intervals

The CEC is considering increasing reporting requirements regarding planned refinery maintenance events to ensure resupply plans are developed consistent with these proposed rules. Refiners are currently required to submit a CEC Form EBR-1P (California Refinery Planned Refinery Maintenance and Turnaround Report) at least 120 days before the event starts, thereby notifying the CEC of the potential production loss. Refiners are also required to resubmit this report as a final version 2 days after the event ends.

To ensure compliance, as well as gather information as to how resupply plans may are honed leading up to the event, the CEC is considering additional reporting requirements that provide details of the resupply plan at least 120 days prior to the event, with any revisions due no later than 60 days prior to the start of the event. The CEC is also considering requiring an additional report with final details on the resupply no later than 30 days after the event ends.

Pathways for Exemption

A core premise for any CEC regulation regarding refinery resupply is that they should provide protections to consumers without unintended consequences. Therefore, the CEC is considering a pathway for a refiner to request an exemption from the resupply requirements if they can adequately prove that adhering to the resupply rule:

- Is unnecessary due to current market factors, such as demand, inventory levels, or prices.
- Would result in substantial financial or operational harm to the refinery.
- Would negatively impact the safety of the workers, community or public.