DOCKETED	
Docket Number:	22-IEPR-05
Project Title:	Emerging Topics
TN #:	244556
Document Title:	Gasoline Price Memo May_2019
Description:	Gasoline Price Memo May_2019
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Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	8/11/2022 3:47:09 PM
Docketed Date:	8/11/2022

Gasoline Prices in California

California Energy Commission
May 15, 2019

I. Executive Summary

On April 22, 2019, Governor Gavin Newsom asked the California Energy Commission to provide analysis of "potential irregularities" in California retail gasoline prices. Data shows that gasoline prices in California have for some time been higher than the national average. However, beginning in 2015, the difference between the gasoline prices in California compared to the national average has increased.

After accounting for California's additional taxes and other program costs, a residual price increase appears in gasoline prices over the last four years. Since 2015, this residual price increase ranged between 17 cents and 34 cents per gallon.

The Energy Commission has identified a number of possible causes that could explain a portion or all of this residual price increase. These possible causes include refinery outages, crude oil prices, and several other factors. This memo discusses them and provides preliminary estimates of how much some of them may be contributing to the residual price increase. These preliminary estimates are imprecise. The Energy Commission concludes that a study should be conducted to confirm preliminary estimates and further explore the possible causes. The Energy Commission proposes to spend the next five months examining these possible causes to provide a full report to the Governor.

This subsequent report may conclude that the possible causes identified by the Commission fully account for the price differential. Indeed, preliminary estimates show that at least part of the explanation could be the practice of higher-priced brand retailers of gasoline – Chevron, Shell, Exxon, Mobil, and 76 – to charge higher prices than unbranded, ARCO and hypermart retailers, for essentially the same product. While this practice is not necessarily illegal, it may be an effort of a segment of the market to artificially inflate prices to the detriment of California consumers and could account for at least part of the price differential. After examining this and other possible causes, the Energy Commission will determine whether a significant unexplained price difference remains and evaluate whether inquiry by relevant experts into other causes, such as market manipulation, is warranted.

II. The Gasoline Price Differential

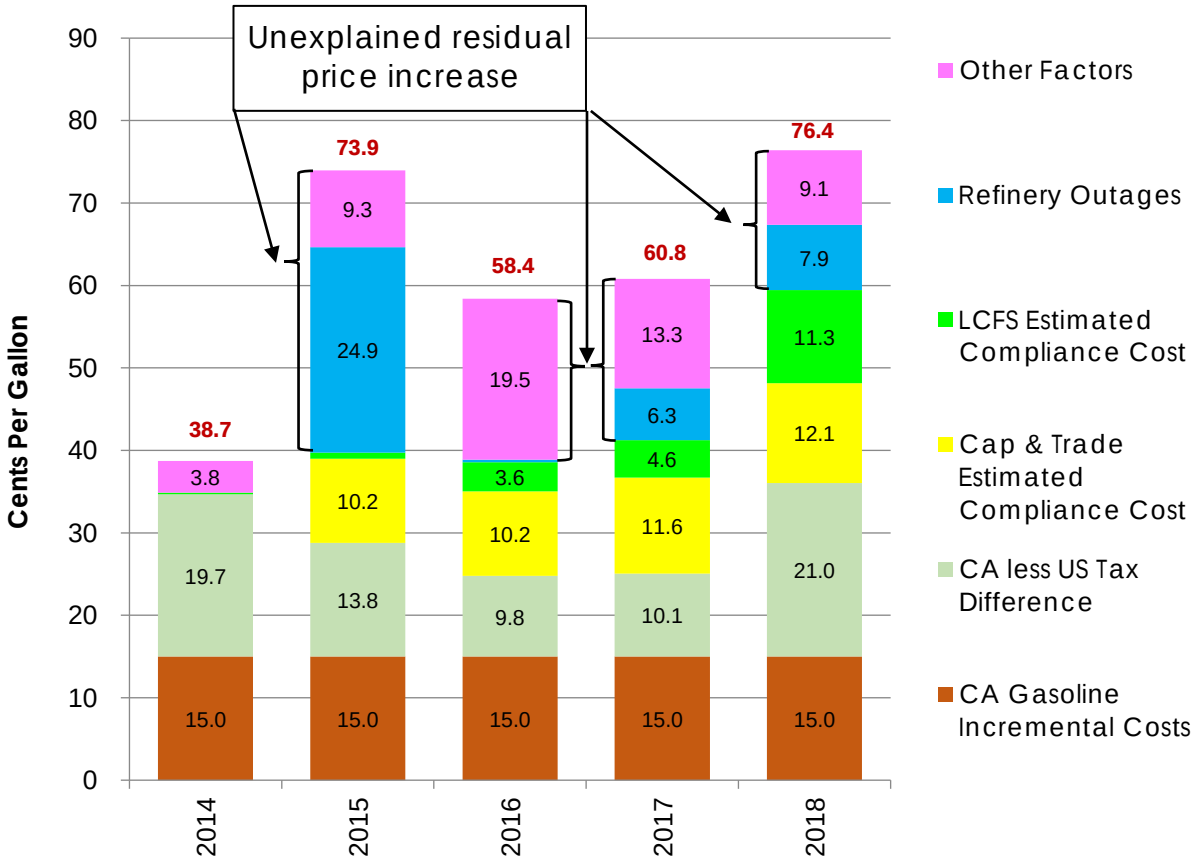
Several factors influence the price of gasoline at the pump, with crude oil prices often playing the most important role. While crude oil prices are often the cause of most gasoline price changes, these costs are experienced across the nation, with prices from different sources often moving in similar fashions since they are pegged to a benchmark price. Before 2015, the average total difference between California and U.S. gasoline retail prices was 34 cents (2008 to 2014). From 2015

onward, this total difference doubled to an average of 69 cents (see **Figure 1** below). In the two most recent weeks (beginning 4/15/19 and 4/22/19), the total difference increased to more than a dollar ($1.11 a gallon for 4/22/19). This is the highest increase ever seen, using federal Energy Information Administration (EIA) data, and roughly matches levels experienced during the 2015 Torrance Refinery accident that left the refinery inoperable for a year and a half.

A. What Accounts for the California Difference?

So what has changed that could explain the residual price increase? **Figure 1** displays an assessment of items that should be considered to account for the gap. After accounting for California's additional taxes and other costs, a residual and unaccounted-for price increase appears in gasoline prices over the last four years. This residual price increase has been discussed in recent media articles by Severin Borenstein Ph.D., faculty director of the Energy Institute at Haas, UC Berkeley and is shown in **Figure 1** as the blue and pink sections.

Figure 1: Components of the Differences Between California and National Gasoline Prices



Sources: California Energy Commission analysis of OPIS, EIA, API, and AAA data

To better understand the gap, the Energy Commission has attempted to break the residual price increase into two parts:

- **Refinery Outages (blue section)**: This is the Energy Commission staff's approximation of the impacts of refinery outages on California prices. This estimate looks at spot market pricing differences between California (the Los Angeles spot market) and New York Harbor

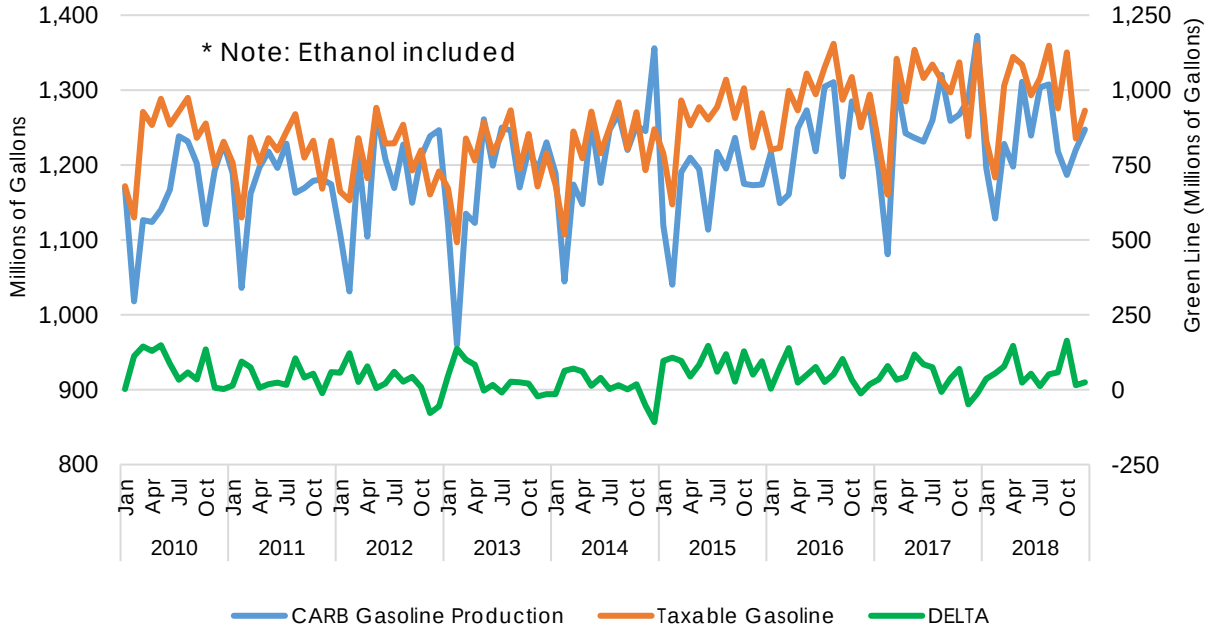
(national standard) to create a cost estimate based on increases from the normal relationship. This estimate is not a definitive calculation and staff acknowledges that there may be other ways to estimate the price impacts due to refinery outages.

- **Other Factors (pink section)**: This section represents the remaining portion of the residual price increase to be explained. Energy Commission staff has identified possible contributing factors, but believes that more analysis and data are needed to determine whether and to what extent these factors contribute to the price increase.

B. Refinery Outages (blue section)

California is a *petroleum island* and often experiences sharp price increases during unplanned refinery outages. Pipelines neither connect the refinery hubs in Los Angeles and the San Francisco Bay Area to each other nor to other refinery areas outside California. The only way to push more gasoline into these regions is by marine transfer, which can take weeks. Furthermore, California refineries typically make just enough California specification gasoline to meet projected needs of California motorists (**Figure 2**). When production assets are lost, petroleum companies often scramble to secure other sources, which can be weeks away and more costly.

Figure 2: California Gasoline Production, Taxable Sales, and the Difference



Sources: California Energy Commission and Department of Tax and Fee Administration

C. Other Factors (pink section)

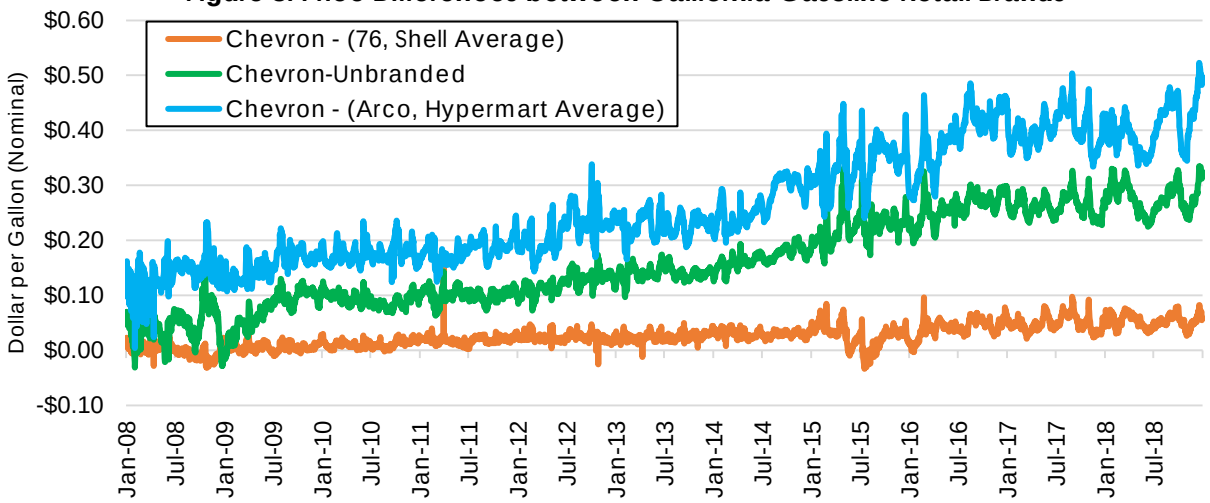
Even with the Energy Commission's estimate of the effects of refinery outages (blue section), there remains a portion of the residual price increase that is not easily attributed to any known and quantifiable source. In 2014, the "other factors" residual price increase estimate was roughly 4 cents a gallon. In 2015 it was 9.3 cents and in 2016 it was 19.5 cents. For 2017 and 2018, it was 13.3 and 9.1 cents, respectively. The following is a discussion of several possible contributors to the

residual price increase. All of these are estimates that need further study and review with outside experts.

1. California Retail Gasoline Pricing by Brand

In California, most gasoline sold meets the "Top-Tier" designation and it can be argued that no brand of gasoline performs significantly better than any other.[1][2] However, in recent years the Energy Commission has observed a doubling in the price that higher-priced gasoline retail brands such as Chevron, Shell, Exxon, Mobil, and 76 are charging above unbranded, ARCO and hypermart retailers of gasoline. **Figure 3** shows that in early 2008, unbranded, ARCO, and hypermart retailer prices were within 15 cents per gallon of Chevron, Shell, and 76 prices. From 2016 on, however, the difference rose to be consistently around 40 cents per gallon or higher.

Figure 3: Price Differences between California Gasoline Retail Brands



Sources: California Energy Commission analysis of OPIS data

Typically, this sort of price divergence would drive more consumers to lower-priced fuel, according to standard economic theory. However, **Figure 4** shows that from 2010 to 2017, the percentage of gasoline sold by Chevron, Shell, and 76 brand retailers combined only dropped by roughly three percentage points.

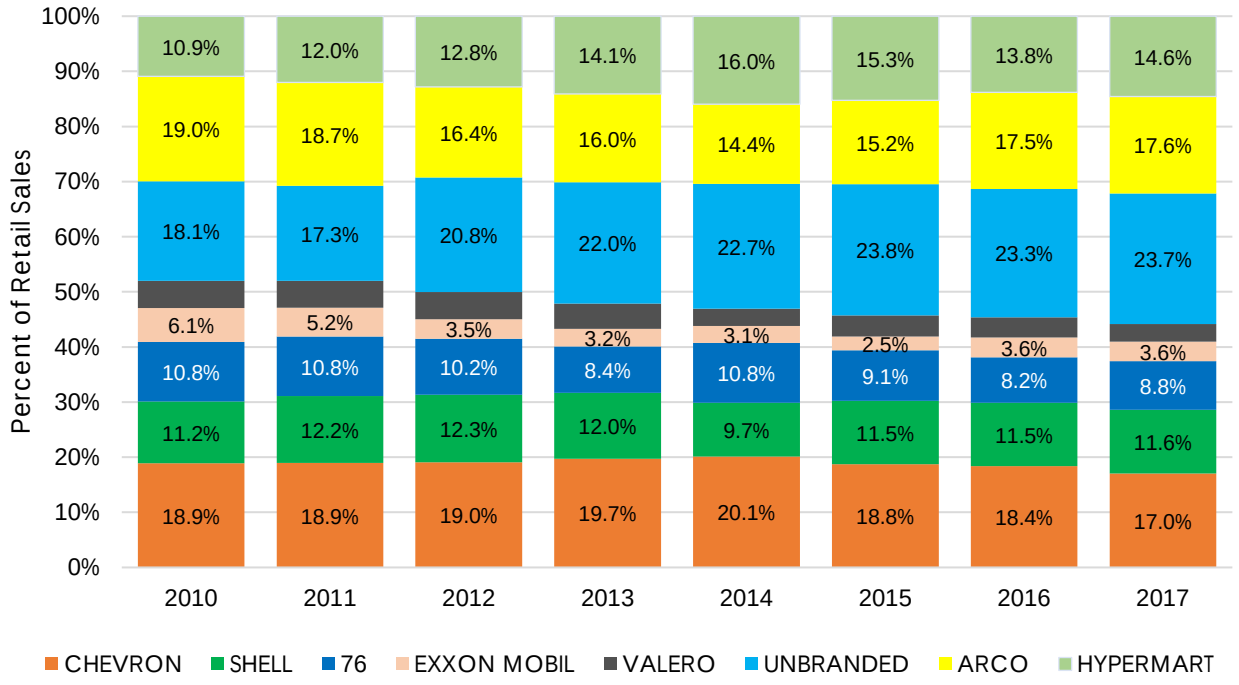
Both hypermart and unbranded sales of gasoline have increased, but their increases appear to be at the expense of ARCO brand gasoline, as well as Valero and Exxon/Mobil. So while higher-priced retail brands such as Chevron, Shell, and 76 are expanding their price premium relative to other gasoline retailers, their combined market share has hardly changed indicating a low sensitivity to price changes by their customers. This trend has helped contribute to higher-priced brand retail prices that are 11 to 16 cents per gallon higher than other brands during the period 2015 to 2018 as compared to 2014. This is possibly one reason the "other factors" portion of the retail price difference has increased since 2014. However, it is not known if this relationship between higher

[1] AAA Fuel Quality Research: http://newsroom.aaa.com/wp-content/uploads/2016/06/Fuel-Quality-Full-Report-FINAL-1.pdf

[2] "Don't be afraid of cheap gas, it won't harm your car, experts say: https://www.ocregister.com/2015/07/20/dont-be-afraid-of-cheap-gas-it-wont-harm-your-car-experts-say/

and lower-priced brands is unique to the California market. To make this determination more analysis is required.

Figure 4: California Gasoline Market Share of Retail Brands

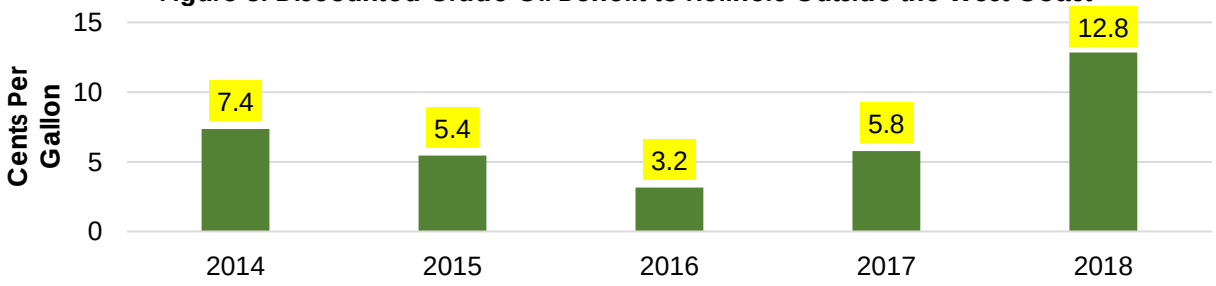


Sources: California Energy Commission

2. Crude Oil

As discussed above, crude oil prices drive most changes in gasoline prices. Since 2010, U.S. crude oil production has been increasing, reaching highs not before seen. The *shale revolution* has led to the Permian Basin in western Texas and southeastern New Mexico becoming the world's leading producers of crude oil by field. This situation has led to a decrease of the refiner acquisition cost of crude oil (also known as RAC) for refiners outside the West Coast. The crude oil discount benefit is estimated to range between 3.2 cents and 12.8 cents per gallon between 2014 and 2018 (**Figure 5**). However, further analysis is needed to verify these figures and how much of the discounted oil benefit was passed on to consumers.

Figure 5: Discounted Crude Oil Benefit to Refiners Outside the West Coast



Sources: Energy Commission analysis of EIA data

3. Items Requiring Additional Study

The Energy Commission also identified other areas that need further study, including lower-than-normal inventory levels for gasoline in California and the West Coast, supply constraints, and others. The Energy Commission considers it prudent to analyze each of these factors further.

III. Conclusion

California gasoline prices have diverged noticeably from U.S. averages starting in 2015 with the Torrance Refinery explosion. While that outage lasted roughly one and a half years, the increase in California gasoline prices remained well after the restoration of normal operations at Torrance. The Energy Commission has identified a number of possible causes that could explain the residual price increase in California, ranging from refinery outages to potentially market manipulation.

The Energy Commission concludes that a study should be conducted to thoroughly quantify the possible causes discussed in this memo. The Energy Commission proposes to spend the next five months examining those causes and reporting back to the Governor.