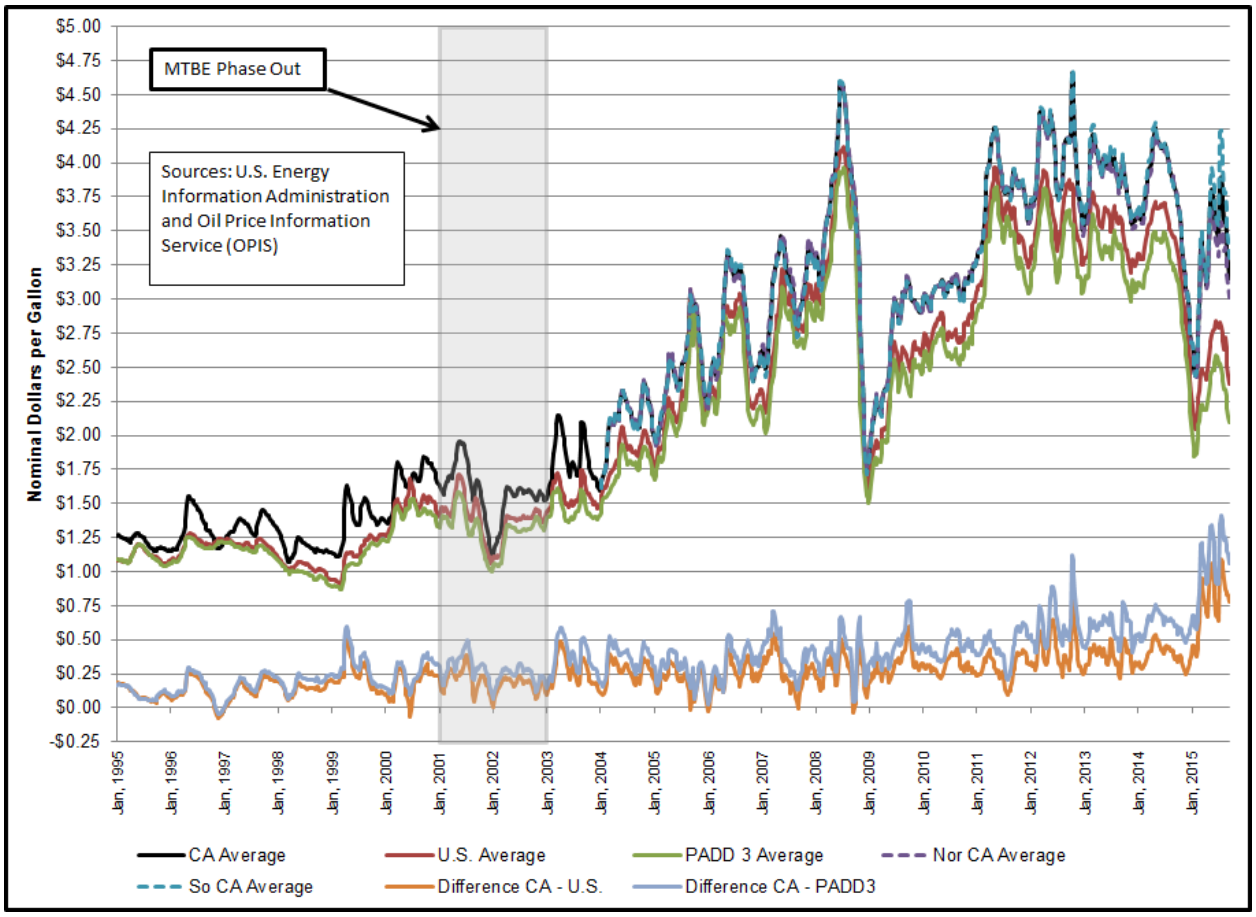
Fact Sheet and Questions for October 13, 2015 workshop of the Petroleum Market Advisory Committee, prepared by Committee Chair Severin Borenstein

October 2, 2015

California introduced its CARB-standard cleaner burning gasoline in 1996, creating a market for gasoline in California that is separate from the market in the rest of the country. In the most recent decade before this year, 2005 to 2014, California retail gasoline prices have averaged 31 cents above the national average. That differential is roughly in line with the state's higher gas taxes plus the long-run additional cost of producing CARB gasoline.

That *average* differential, however, masks fluctuations that led California monthly average retail prices to be as much as $0.81 above national average and as much as $0.03 below national average from 2005 through 2014. Before 2015, however, substantial departures from the expected price differential were short-lived, generally not more than a month or two. See Figure 1. Abnormally low differentials were mitigated by reduced CARB gasoline imports into or greater exports out of California, or lower production at in-state refineries. And abnormally high differentials triggered increased production from in-state refineries and increased imports of CARB-specification gasoline.

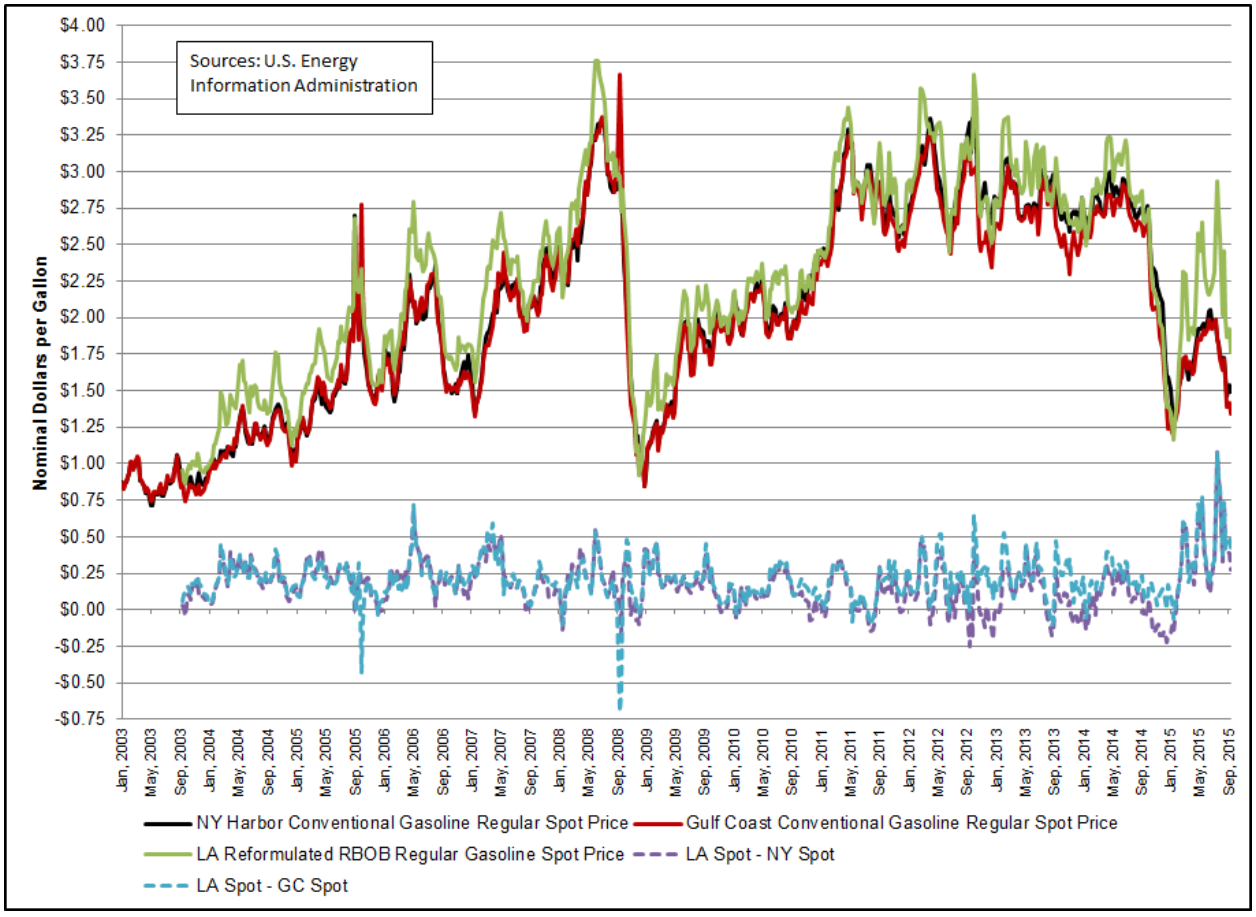
FIGURE 1: RETAIL GASOLINE PRICES FOR U.S. AND CALIFORNIA



Transportation fuels came under the state's Cap-and-Trade (CaT) program starting on January 1, 2015. Some market participants expressed concerns in the media that inclusion in the CaT program would cause a large price spike, but both institutional and empirical evidence suggests that CaT added about 10 cents per gallon. With this extra cost, one would expect that California retail gasoline prices should now average about 40 cents above national average. During the first six weeks of 2015, California's retail gasoline price averaged $0.42 above national average. But on February 18, when Exxon's Torrance refinery suffered a major disruption that forced a large reduction in its output of CARB gasoline, the situation changed drastically.

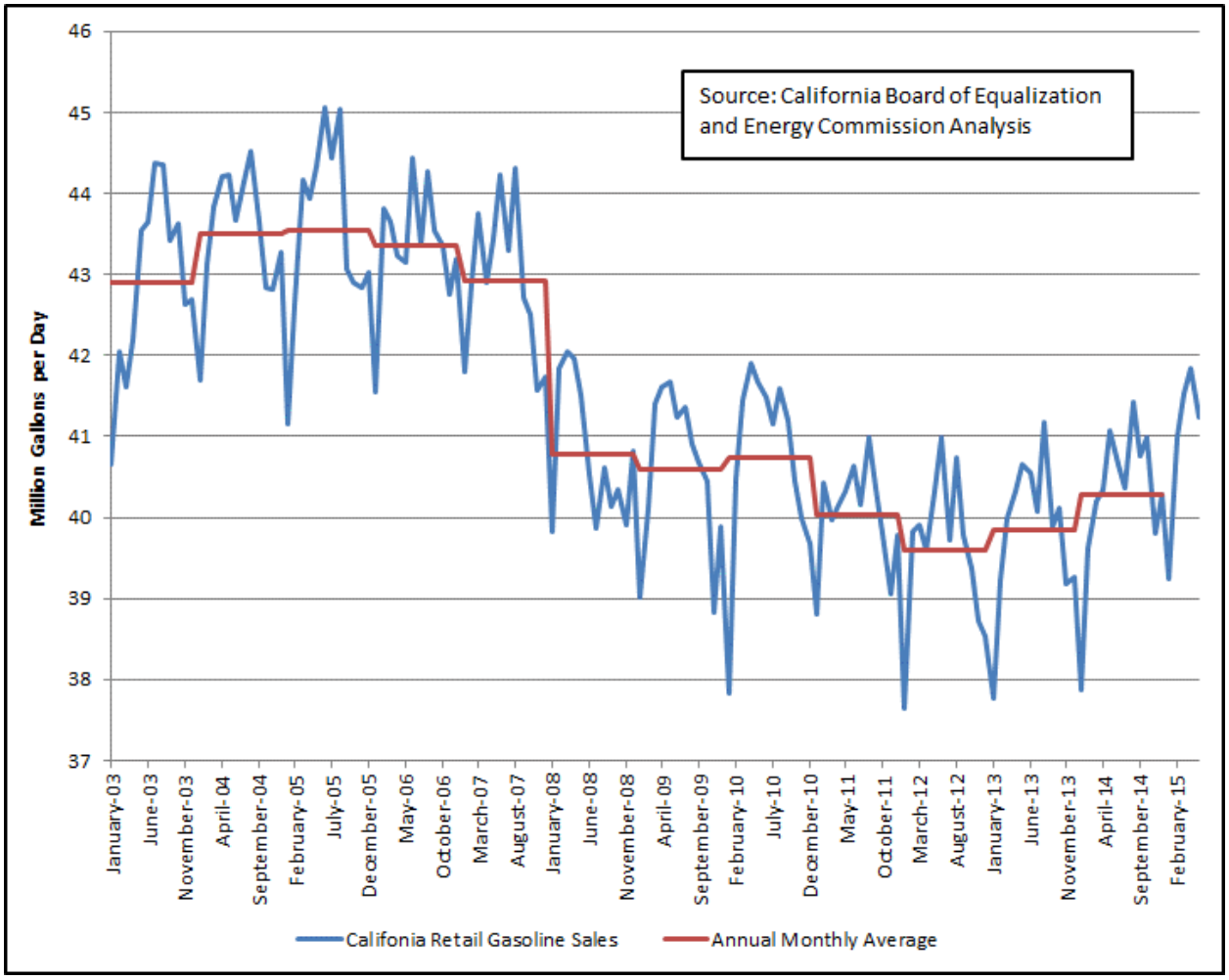
While lower oil prices have held down gasoline prices across the country, it is apparent from figure 1 that since February, California prices have risen relative to the U.S. average and have stayed elevated for a much longer time than in the past 20 years. As of September 30, AAA reports California's average retail price was still $0.67 above the national average. Spot prices for commodity CARB gasoline have also been abnormally high relative to the spot price for conventional gasoline on the Gulf coast or East coast. See Figure 2.

FIGURE 2: SPOT GASOLINE PRICES FOR L.A., N.Y., AND GULF COAST



This increase in California's relative gasoline price is most likely attributed to a combination of increased demand and reduced supply compared to the rest of the country. Figure 3 shows gasoline sales in California. The figure suggests that demand is up slightly in 2014, and possibly somewhat more in 2015, though still below levels of a few years ago.

FIGURE 3: CALIFORNIA MONTHLY CARB GASOLINE SALES QUANTITY (through May 2015)



Figures 4 and 5 present data on the supply side of the picture. Figure 4 shows production sof CARB gasoline from California refineries. Figure 5 presents gasoline inventories.

FIGURE 4: CALIFORNIA CARB GASOLINE PRODUCTION (WITH 5-YEAR HIGH/LOW BAND)

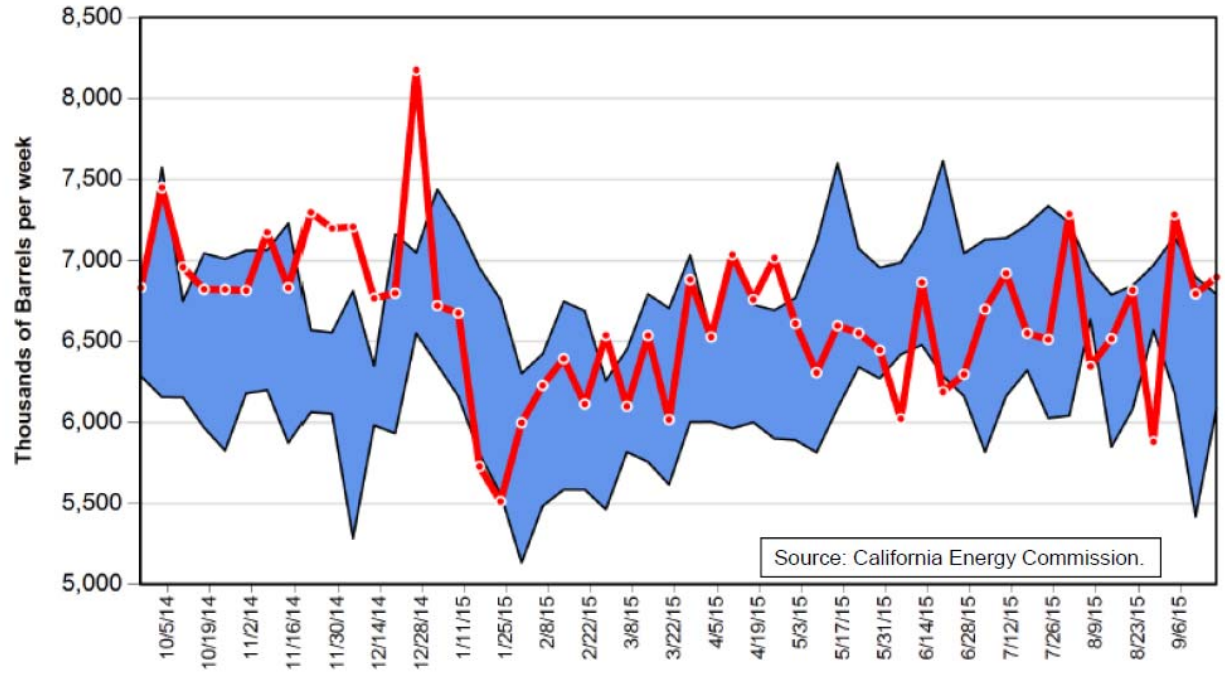


FIGURE 5: CALIFORNIA CARB GASOLINE INVENTORIES (WITH 5-YEAR HIGH/LOW BAND)

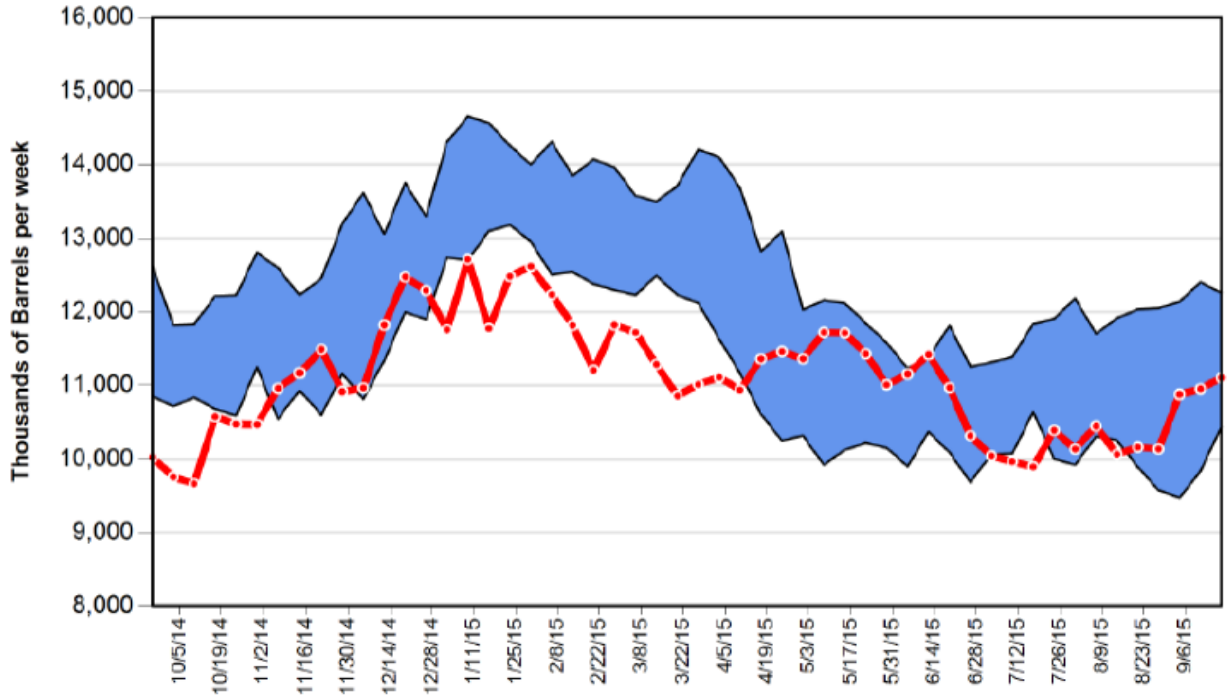


Figure 6 presents data on imports of gasoline into the state. California both imports and exports gasoline. Figure 6 presents only imports. Imports seem likely to be CARB specification while exports are likely of fuel that doesn't meet CARB specification, though we do not have specific data on that.

FIGURE 6: CALIFORNIA GASOLINE IMPORTS (WITH 5-YEAR HIGH/LOW BAND)

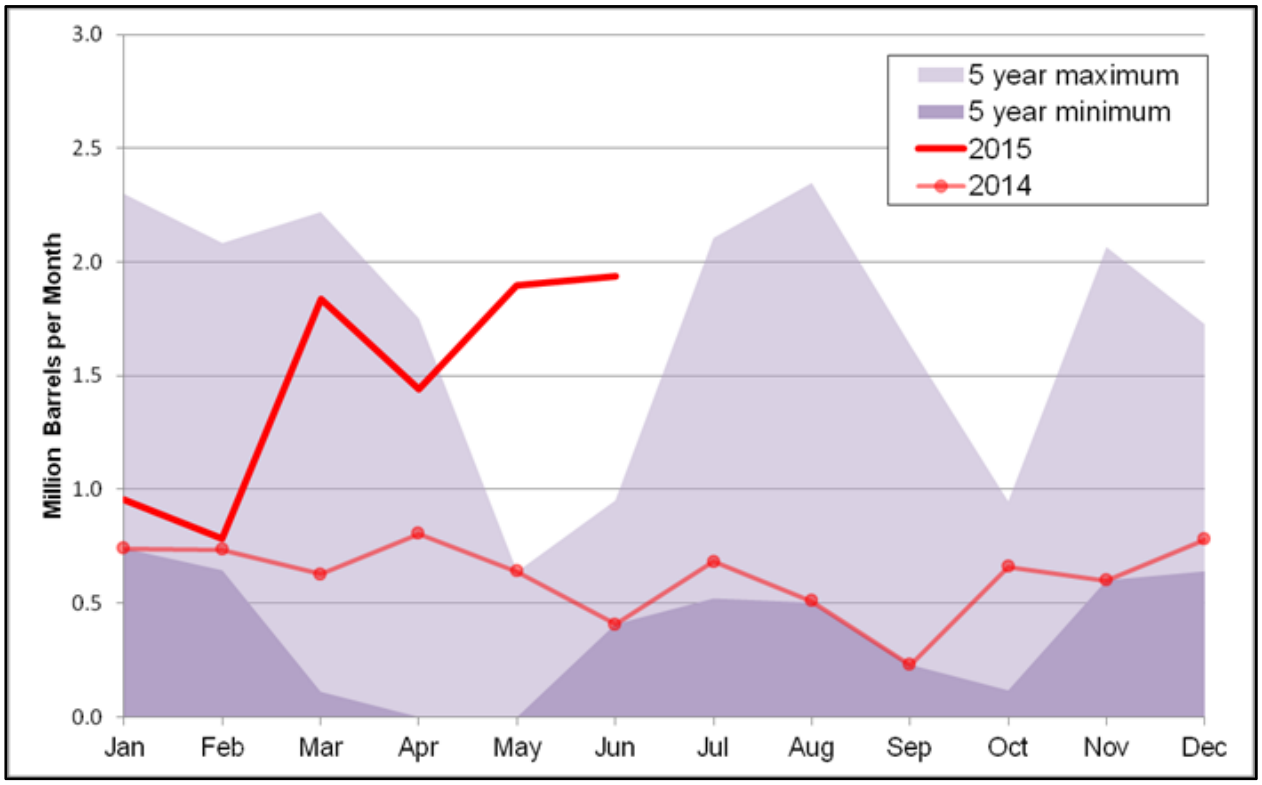
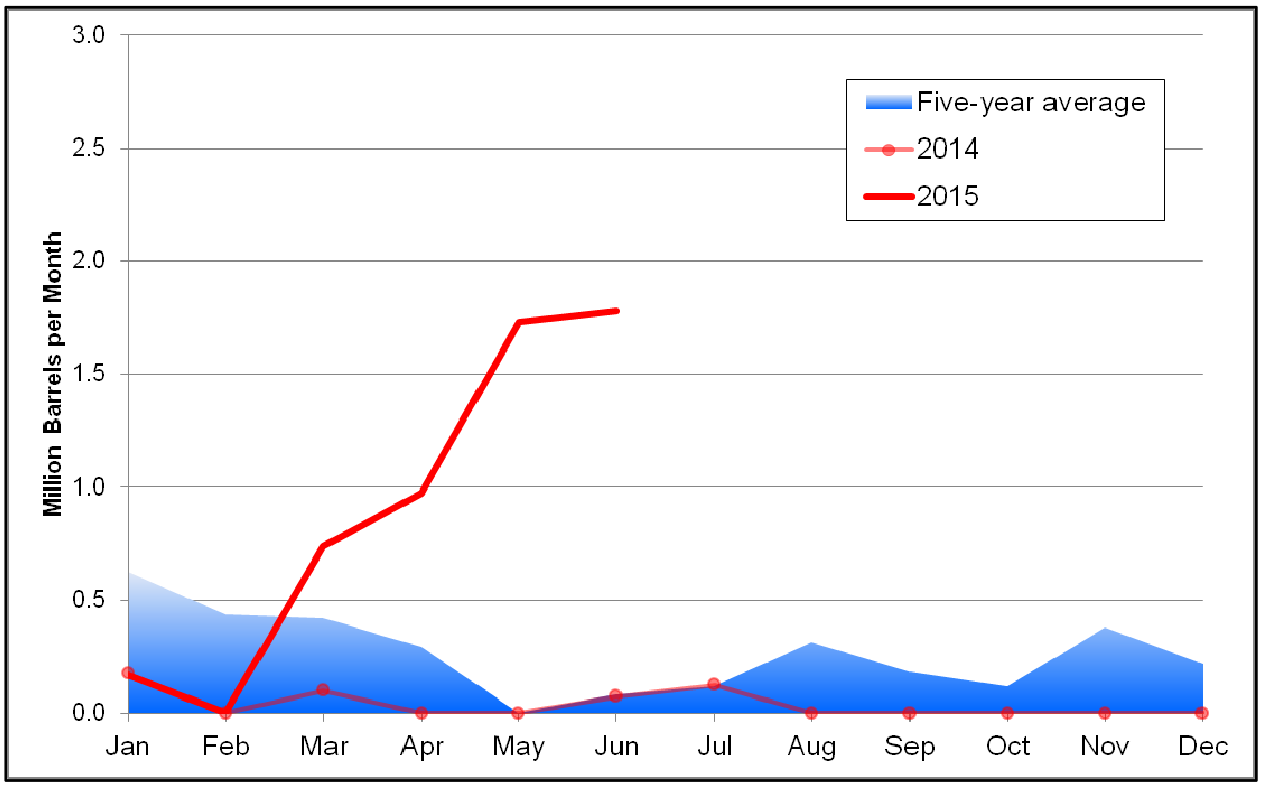


Figure 7 presents import data for only Southern California, where prices have been most elevated since February. In addition to the import data shown in Figure 7, it is noteworthy that through June there have been no gasoline exports from Southern California in 2015. The situation was not much different in 2014, when exports were zero for seven months and the annual total exports were only 700,000 barrels, with the high being 264,000 barrels in December.

FIGURE 7: SOUTHERN CALIFORNIA GASOLINE IMPORTS (WITH 5-YEAR AVERAGE)



Questions for workshop participants:

How does your business (or group members) fit into the fuel supply chain?

How does it function under normal market conditions?

With regard to the gasoline supply disruptions seen in the spring and summer of 2015:

- What is the impact on your business if there is a supply disruption like a major unplanned refinery outage? What changes to other parts of the supply chain impact your business? How do you adjust to those changes? (including a qualitative mention of price changes—e.g., higher, much higher.)
- Have the supply disruptions changed over time in their magnitude or nature?
- Do you have any future expectations of disruptions and in what time frame—weeks, months, during planned turnarounds, etc?
- What could lessen or minimize the impact of the disruptions on your segment of the supply chain? These could be activities of other segments or activities of your own segment. Very specific points or broad generalities are perfectly acceptable.

Any other relevant points we should know about to understand supply/demand imbalances in the California gasoline market?