



PETROLEUM WATCH

California Energy Commission

November 2016

Recent Petroleum News and Outside Analyses

Prices

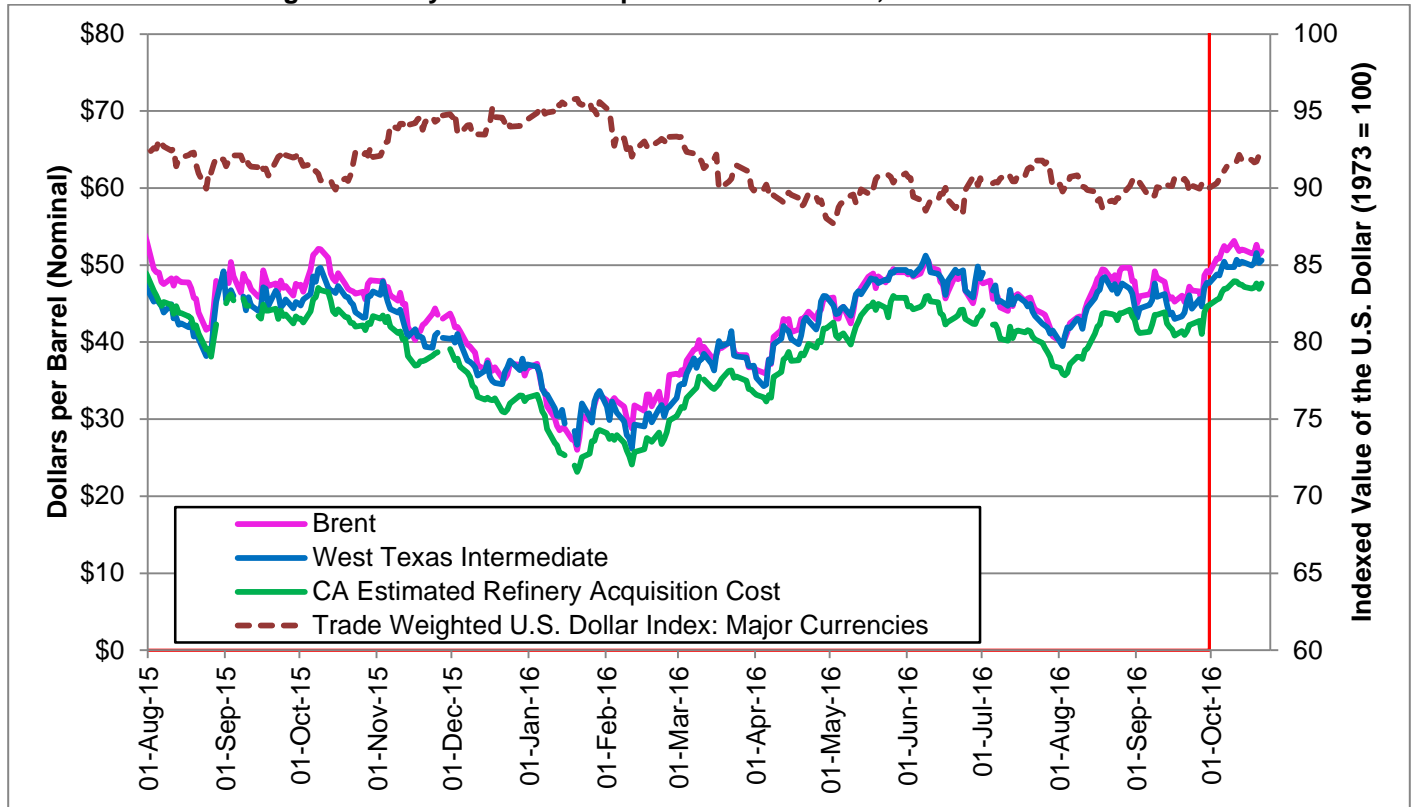
- **Crude Oil Prices:** Prices rose over recent supply news: Brent and West Texas Intermediate (WTI) crude prices closed at \$51.46 and \$50.18 on October 24, respectively, the highest levels since the early June peak. Prices through October are \$4.00 higher than last year.
- **California Retail Gasoline Prices:** On October 24, prices reached \$2.80, a gain of \$0.04 since the end of September. Through October, California prices averaged \$0.56 higher than the national average.
- **California Retail Diesel Prices:** On October 24, prices reached \$2.83, an increase of \$0.06 from the end of September. Through October, California prices averaged \$0.35 higher than the national average.

Refining News

- **Chevron Richmond Refinery:** On October 26, the Richmond refinery underwent unplanned maintenance. Richmond's 40,000 barrel per day (bpd) catalytic reformer was taken offline for repair work projected to take one week.
- **Chevron El Segundo Refinery:** On October 9, the El Segundo refinery completed planned maintenance on a 40,000 bpd hydrotreater unit. Further maintenance work continues on El Segundo's 45,000 bpd hydrocracking unit scheduled to be completed mid-November.
- **Phillips 66 Wilmington:** On October 3, Wilmington refinery began planned maintenance on two hydrotreater units, bringing 85,000 bpd offline. This work was scheduled through November 2.
- **PBF Torrance:** On October 13, the 155,000 bpd Torrance refinery restarted after a power outage. The refinery immediately ran at 75 percent rates and returned to full rates by October 17.

Crude Oil Prices

Figure 1: Daily West Coast Spot Crude Oil Prices, June 2014 to Present



Source: U.S. Energy Information Administration (U.S. EIA), Oil Price Information Service (OPIS), and Federal Reserve Bank of St. Louis.
 Note: Red lines on all graphs indicate end of previous *Petroleum Watch* data. Areas to the right indicate new data since last month.

Crude oil prices have increased substantially since September (Figure 1). West Texas Intermediate moved from \$47.72 on September 30 to \$50.18 on October 24, an increase of 5.15 percent. At the same time, the California Estimated Refiner Acquisition Cost (CA-RAC)¹ of crude oil rose from \$44.84 to \$47.00, an increase of 4.8 percent.

Prices for all grades of crude oil remained well above year-ago levels, as seen in the table at right. Throughout this period, CA-RAC remained roughly \$3 lower than WTI and \$5 lower than Brent prices.

On September 28, the Organization of Petroleum Exporting Countries (OPEC) announced an agreement to cut production to 32.5 million barrels a day, a decline of 700,000 barrels over the current production rates. This announcement signaled a future reduction in supply and pushed Brent prices to increase to \$50 range for the month of October.

<u>Crude Oil Prices</u>	
<u>October 2016 vs 2015</u>	
<u>(Percent Change)</u>	
Brent	7% higher
WTI	8% higher
CA-RAC ¹	7% higher
<u>October 2016 Averages</u>	
Brent	\$51.87
WTI	\$50.11
CA-RAC	\$47.06
<u>October 24, 2016</u>	
Brent	\$51.46
WTI	\$50.18
CA-RAC	\$47.00

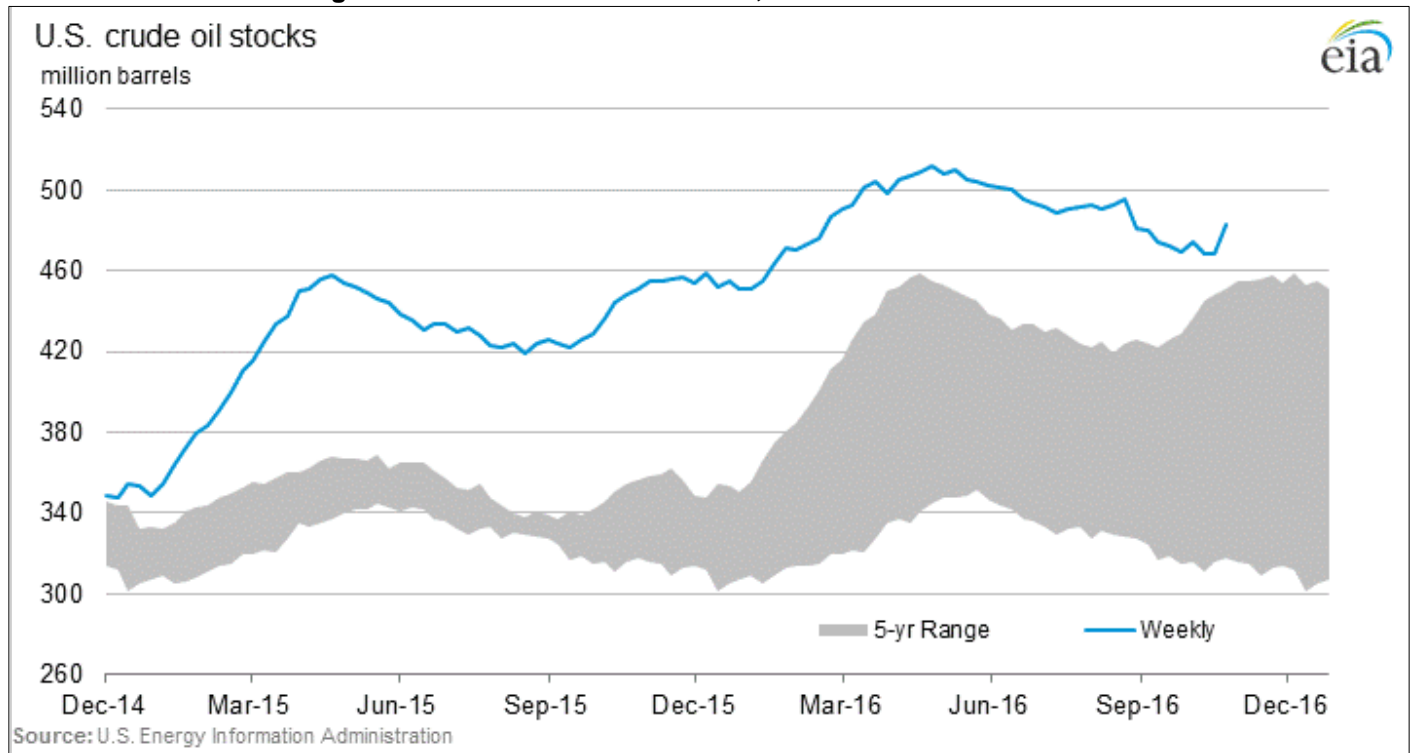
¹ California estimated refiner acquisition cost is an estimate of the average price of crude oil paid by California refineries. Energy Commission staff estimate a weighted average of the prices of California (San Joaquin Valley) crude, Alaskan crude, and foreign crude.

Crude Oil Production and Storage

U.S. crude oil inventories have grown since October's *Petroleum Watch* (Figure 2). Domestic crude oil production was unchanged and refinery inputs fell while crude imports flattened, leading to an overall growth in inventory.

- U.S. crude oil production for October is estimated by the U.S. Energy Information Administration (EIA) at 8.5 million bpd, unchanged from August levels. This is a 600,000 bpd decline from year-ago production levels of 9.1 million bpd. Imports in October were estimated at 7.7 million bpd, down from 7.8 million bpd in September, a decline of 100,000 bpd. Compared to import levels from October 2015, this is an increase of 400,000 bpd.
- U.S. crude oil refinery inputs continued to fall from the peaks set in August with inputs finishing October at 15.5 million bpd. These levels matched levels from the same time last year. Refinery inputs often decline at the beginning of fall as capacity is taken offline for maintenance and demand for gasoline is lower, but there was no noticeable reduction this year.
- Crude oil inventories in the United States rose by 13 million barrels during October to 482 million barrels. Nevertheless, the gap between year-ago and current inventories remains high, at 31 million barrels. Most of the October growth is accounted for by the decline in refinery inputs mentioned above.

Figure 2: U.S. Crude Oil Inventories, December 2014 to Present

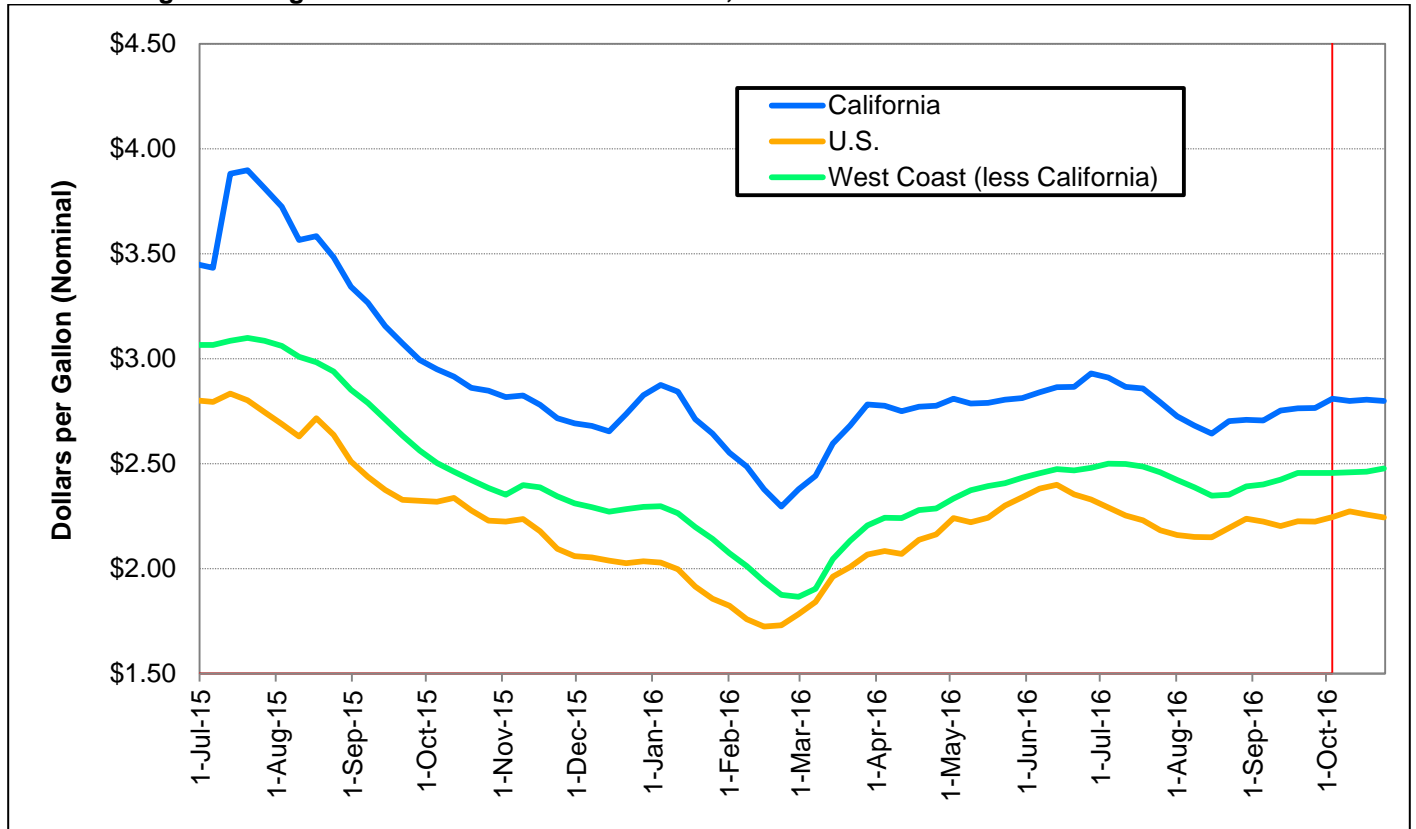


Source: U.S. EIA

- According to OPEC's October Monthly Oil Report, Saudi Arabian crude output decreased from 10.6 million bpd in August to 10.5 million bpd in September. This was an 87,000 bpd drop since last month, but is still 344,000 bpd above the first quarter average of 10.15 million bpd. Total September OPEC production increased to 33.4 million bpd, up 200,000 bpd from August.

Gasoline and Diesel Retail Prices

Figure 3: Regular Grade Gasoline Retail Prices, California vs. West Coast vs. United States



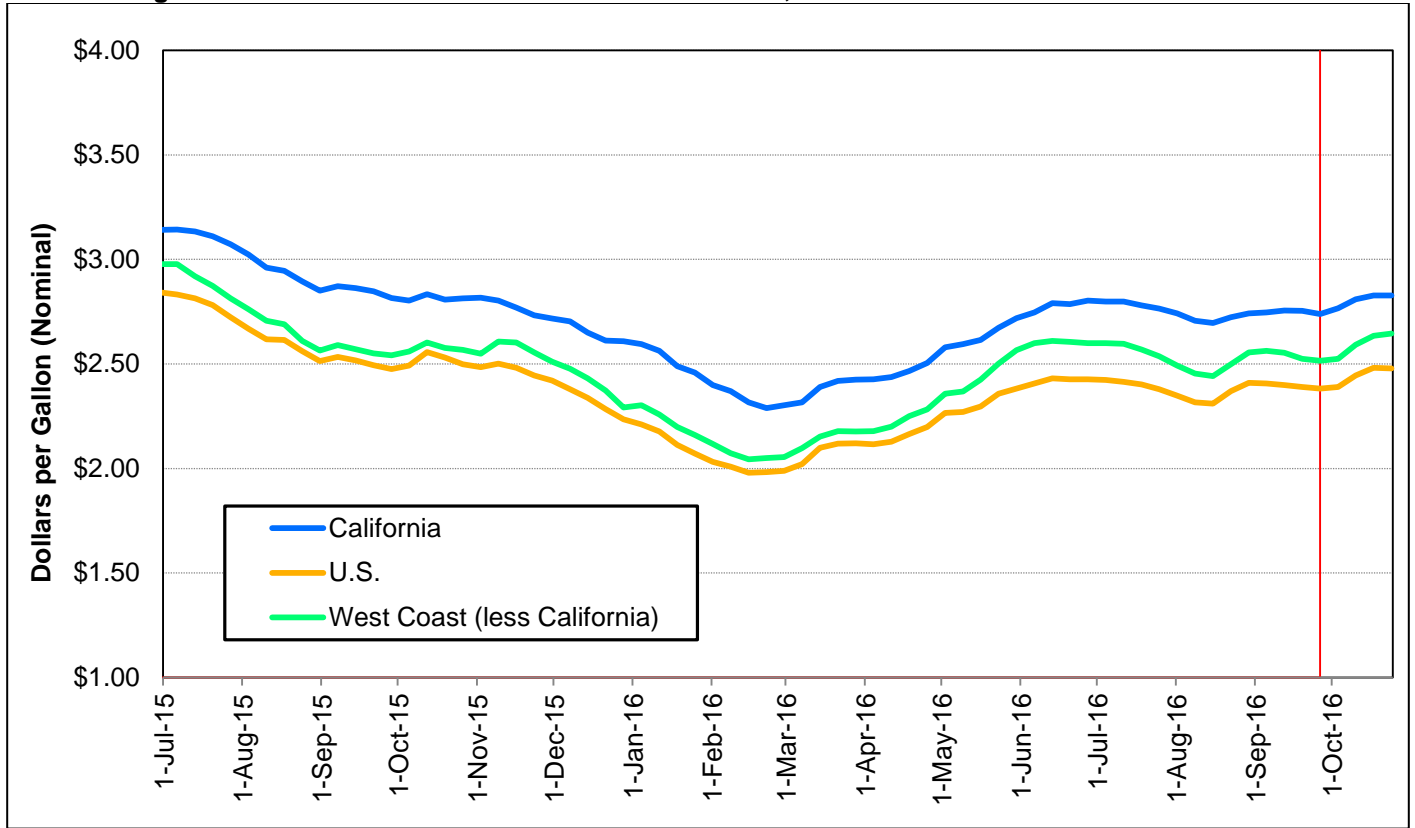
Source: U.S. EIA

California gasoline prices increased \$0.04 from September 26, to \$2.80 on October 26. October's monthly gasoline price was \$0.09 lower, \$2.80, compared to the same month last year. During October, the California price changed little, beginning the month at \$2.81 and ending the month at \$2.80.

Historically, gasoline retail prices decline in the fourth quarter. National gasoline retail prices have been level throughout October with U.S. prices dropping \$0.01 and the West Coast increasing \$0.02 (Figure 3). This level pricing is occurring despite rising crude oil prices.

Gasoline Prices	
October 2016 vs 2015	
(Percent Change)	
California	3% lower
U.S.	2% lower
West Coast	1% lower
October 2016 Averages	
California	\$2.80
U.S.	\$2.25
West Coast	\$2.46
Week of October 26, 2016	
California	\$2.80
U.S.	\$2.24
West Coast	\$2.48

Figure 4: No. 2 Diesel Ultra-Low-Sulfur Retail Prices, California vs. PADD5 vs. United States



Source: U.S. EIA

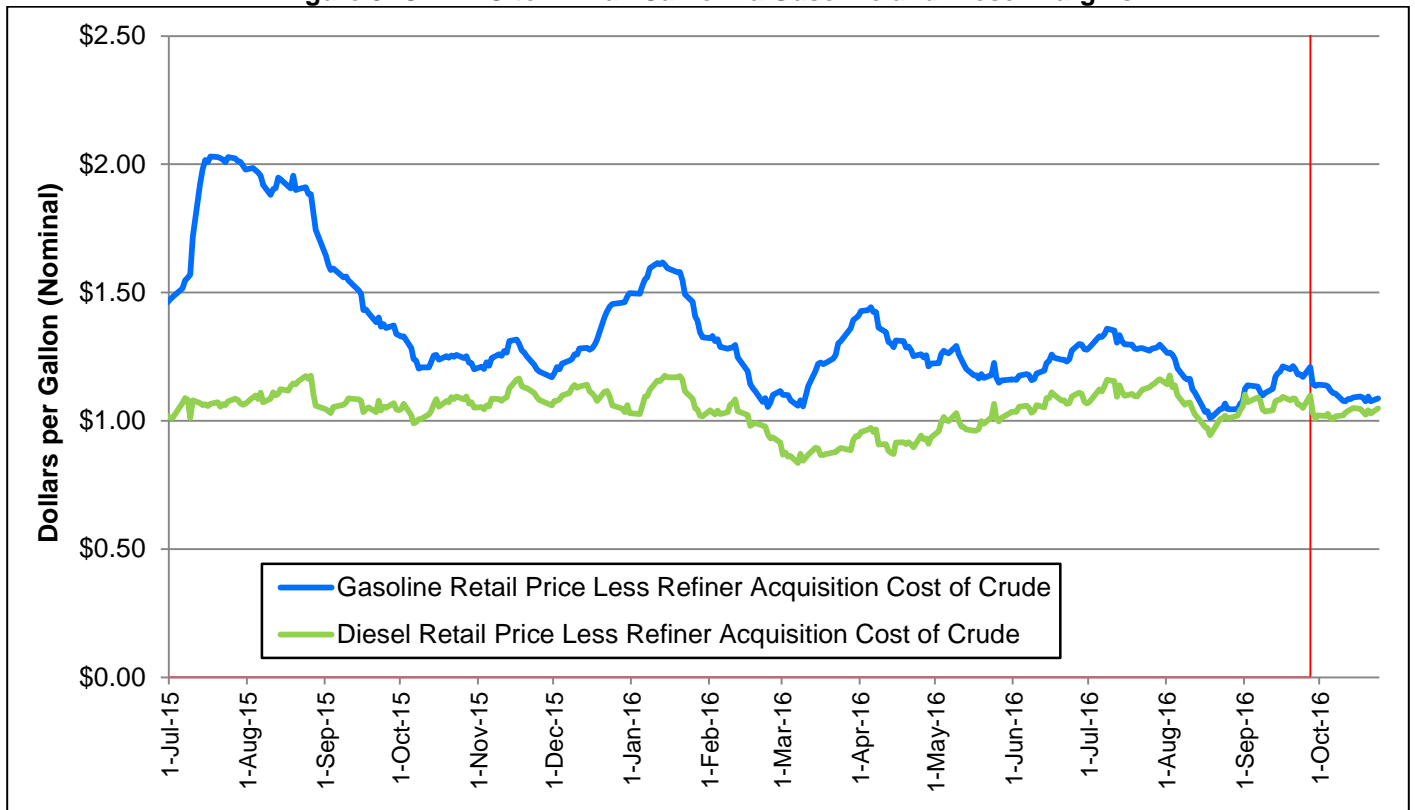
California diesel prices rose slightly in October, ending at \$2.83 (Figure 4). Thus, October’s monthly average price increased \$0.06 to \$2.81.

U.S. prices moved in step with California rising \$0.06 to end the month at \$2.48. Through October, California prices averaged \$0.36 higher than U.S. prices. California has consistently averaged \$0.35 over U.S. retail prices throughout the year.

Beginning October, the average price of diesel was uncharacteristically lower than the average price of gasoline. However, diesel quickly gained \$0.05 by October 10, overtaking the average price of gasoline which stayed more or less flat. By the end of the month, diesel prices were \$0.02 higher than gasoline prices, reversing September’s abnormality and resuming the normal state between the fuel prices.

<u>Diesel Prices</u>	
<u>October 2016 vs 2015</u>	
(Percent Change)	
California	0% lower
U.S.	3% lower
West Coast	1% lower
<u>October 2016 Averages</u>	
California	\$2.81
U.S.	\$2.45
West Coast	\$2.60
<u>Week of October 24, 2016</u>	
California	\$2.83
U.S.	\$2.48
West Coast	\$2.65

Figure 5: CA-RAC to Ex-Tax California Gasoline and Diesel Margins



Source: U.S. EIA and OPIS

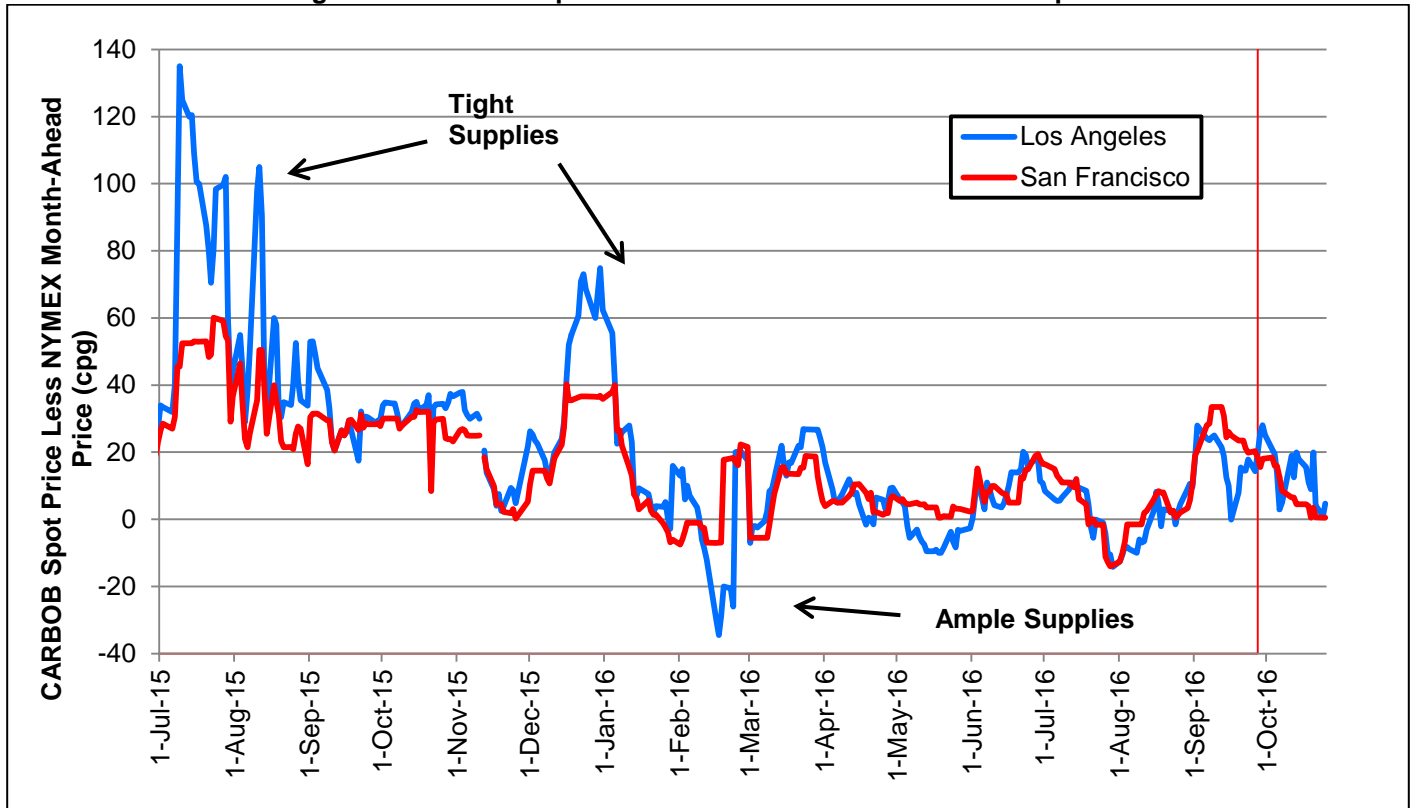
The California Refinery Acquisition Cost (CA-RAC)-to-ex-tax retail gasoline margin decreased to \$1.09 on October 24, from \$1.21 on September 27. Diesel CA-RAC to retail margin decreased \$0.05 to \$1.05.

Between July 18 and August 18, California’s gasoline margin dropped \$0.27 to \$1.01 to an all year low (Figure 5). The gasoline retail price, during the same period, dropped \$0.20 to \$2.64 (Figure 3). Since crude oil inventories fell after August 18, gasoline margin and retail prices increased \$0.08 to \$1.09 and \$0.16 to \$1.80 on October 24, respectively.

The California diesel margin had a similar trend pattern as gasoline through the second half of the year. Diesel margins remained within \$1.05 and \$1.01 since September 28 and within 2 percent price difference from a year ago.

<u>Crude to Retail Margins</u>	
<u>October 2016 vs 2015</u>	
<u>(Percent Change)</u>	
Gasoline	12% lower
Diesel	2% lower
<u>October 2016 Averages</u>	
Gasoline	\$1.09
Diesel	\$1.04
<u>October 24, 2016</u>	
Gasoline	\$1.09
Diesel	\$1.05

Figure 6: California Spot Gasoline to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS

October California gasoline spot market differentials to the New York Mercantile (NYMEX) futures price fell from September highs for both the Los Angeles (LA) spot and San Francisco (SF) spot (**Figure 6**). Both differentials narrowed from a combination of the Colonial Pipeline closure putting upward pressure on the NYMEX spot price and from California pipelines cycling out summer blend gasoline, creating downward pressure on California spot prices from the increased supply.

The October LA-less-NYMEX futures spread averaged \$0.12, which was \$0.20 lower than the October 2015 average of \$0.32. October differentials reached a high on October 3, at \$0.21 before dropping in early October. The LA-less-NYMEX futures spread returned to \$0.20 on October 20, but fell as pipeline cycles finished.

The SF-less-NYMEX futures spread showed a downward trend in October, falling from \$0.18 at the start of the month to \$0.01 on October 25; Northern California held a high level of inventories in October, which cushioned expectations and kept October SF-less-NYMEX spreads narrow.

Gasoline Spot-Futures Spread

October 2016 vs 2015

Los Angeles	20¢ lower
San Francisco	20¢ lower

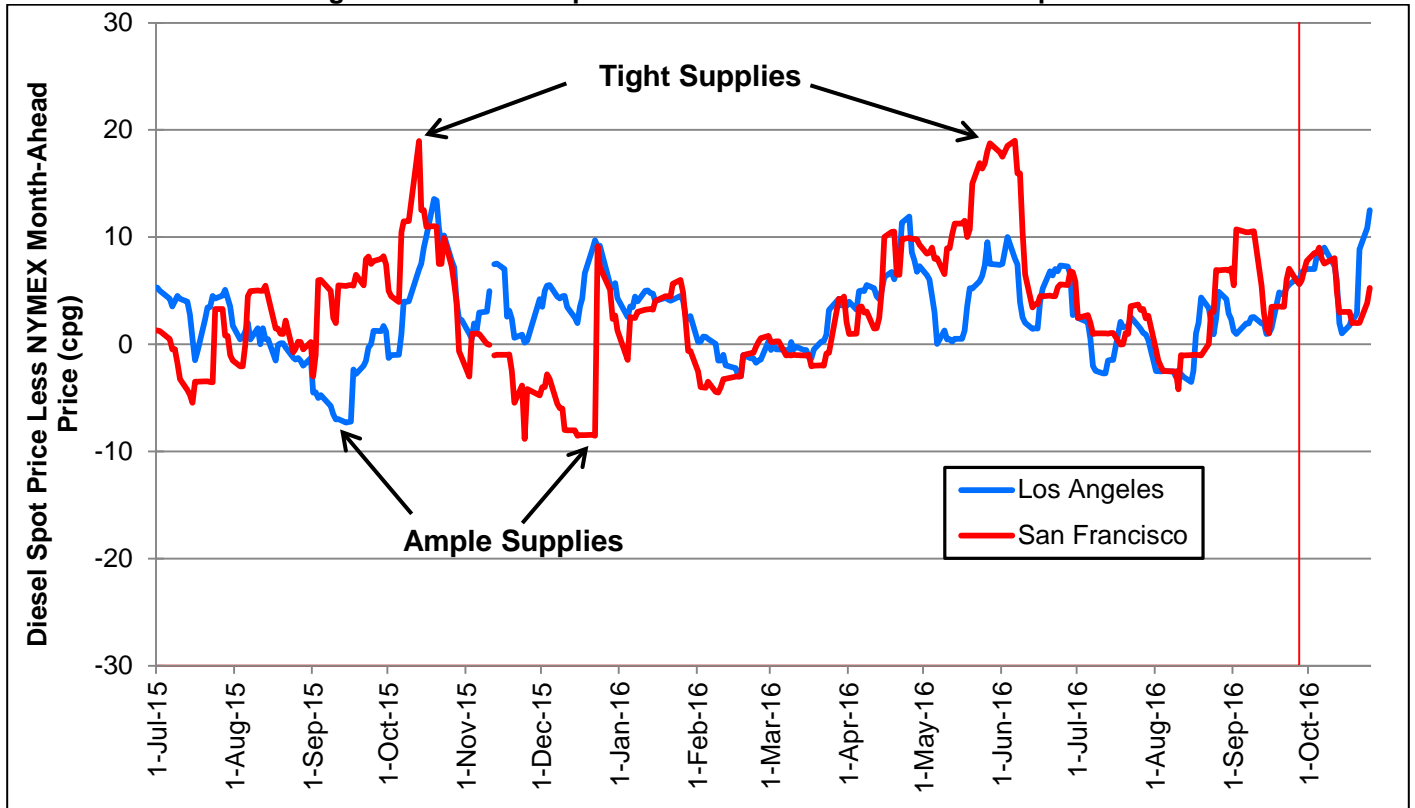
October 2016 Averages

Los Angeles	12¢
San Francisco	7¢

October 25, 2016

Los Angeles	5¢
San Francisco	1¢

Figure 7: California Spot Diesel to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS

Both LA and SF California diesel spot prices were volatile in October, LA in particular (**Figure 7**). The LA-less-NYMEX spread reached a high of \$0.13 on October 25, matching the highest since a year ago, while the average was \$0.06, the highest since April this year. The SF-less-NYMEX differential fell from the monthly high of \$0.09 on October 5, to a low of \$0.02, before recovering to \$0.05 by October 25.

The impending harvest and heating seasons, amid falling distillate inventories across the United States, tightened NYMEX ultra-low-sulfur diesel futures prices early in the month. California CARB diesel inventories were at an eight-month high causing both LA and SF spot differentials to drop uniformly. The trend was soon reversed by several other factors. Exports of diesel fuel from both SF and LA to Mexico and Latin America, although not unusual, produced a spike in both spot market prices. Also, several planned maintenance activities in Southern California refineries, compounded by an interruption in hydrogen supplies for hydro-treating, impacted diesel fuel production. This shortfall placed a further demand on LA CARB diesel for pipeline export to Nevada.

Diesel Spot–Futures Spread

October 2016 vs 2015

Los Angeles	0¢ higher
San Francisco	3¢ lower

October 2016 Averages

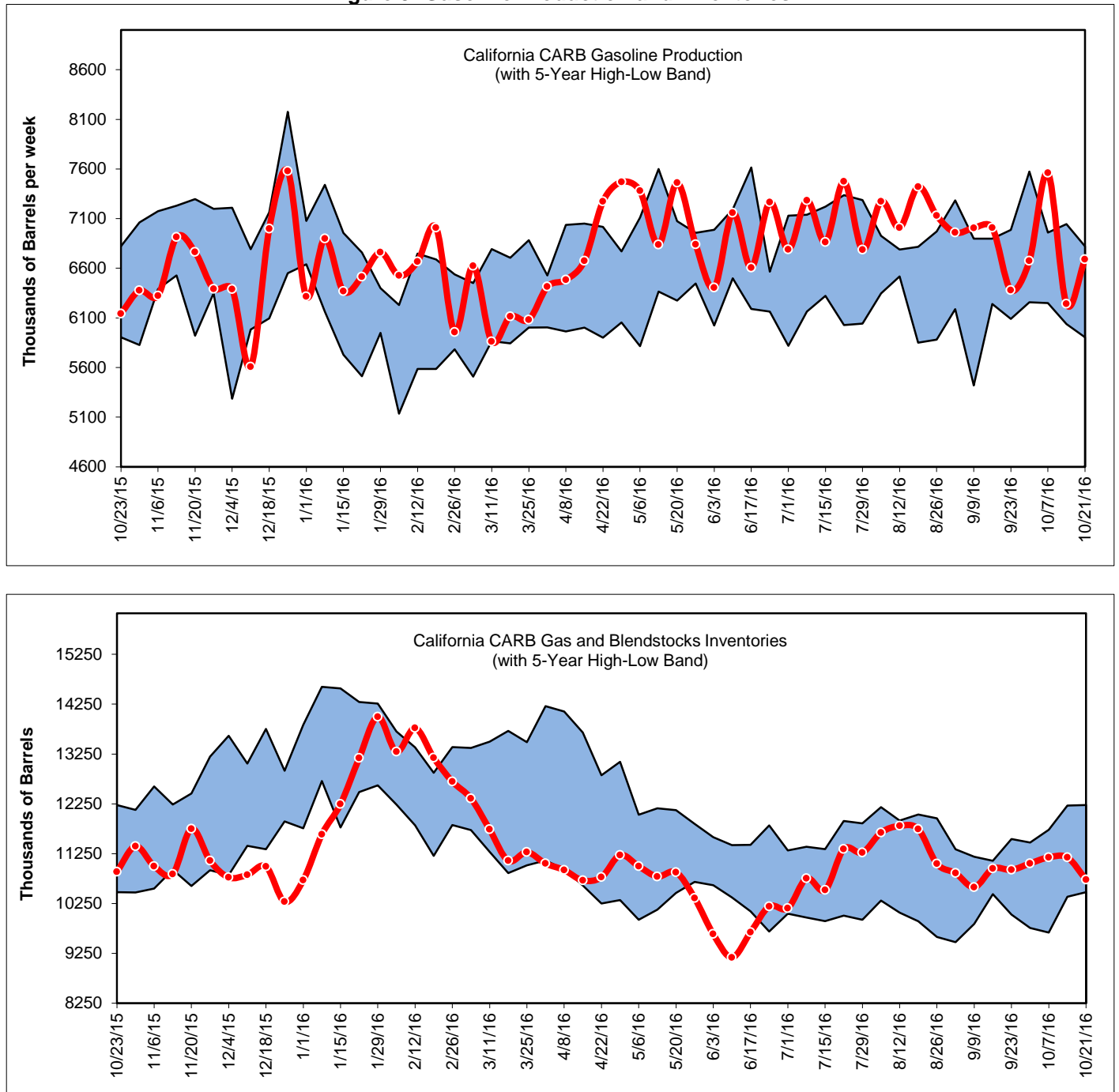
Los Angeles	6¢
San Francisco	5¢

October 25, 2016

Los Angeles	13¢
San Francisco	5¢

California Gasoline and Diesel Production and Inventories

Figure 8: Gasoline Production and Inventories

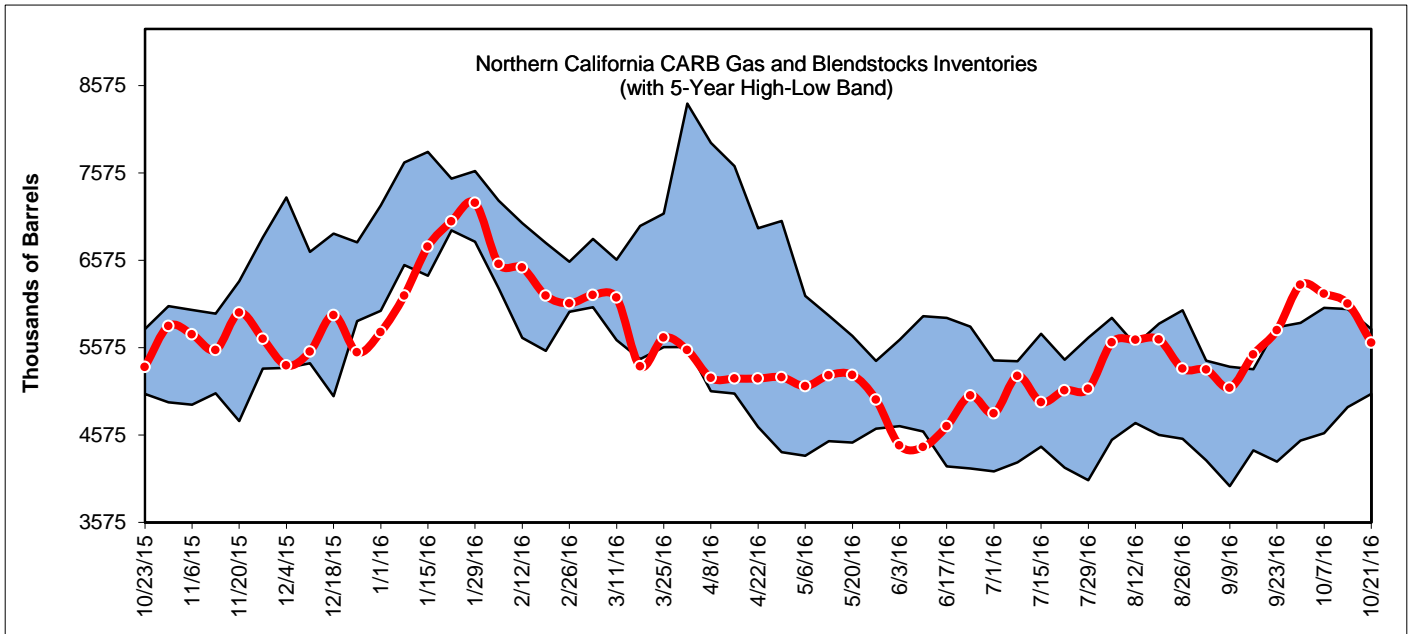
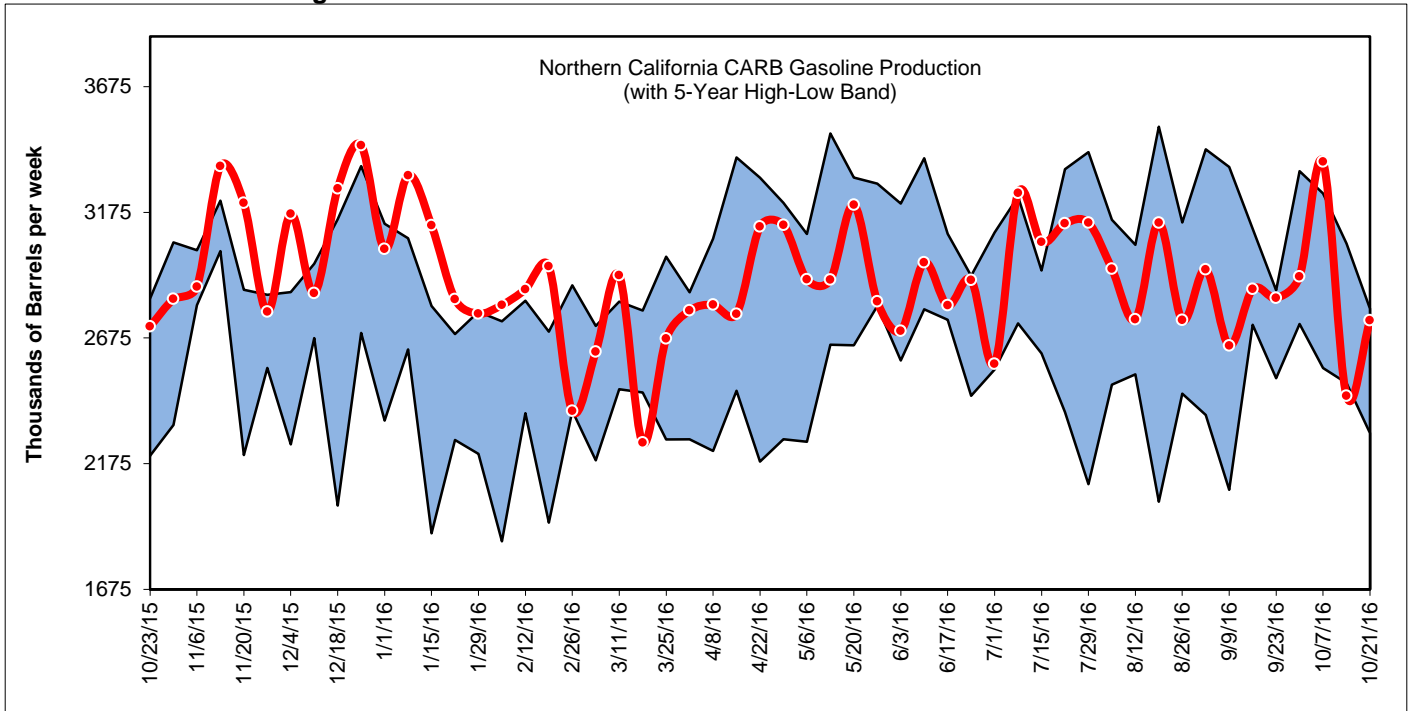


Source: PIRA data

On October 7, gasoline production peaked at levels not seen since December 2015—7.5 million barrels per week (bpw)—before dropping to 6.2 million bpw on October 14 (**Figure 8**). This sudden rise then fall resulted in production levels on October 7, dropping from 7.5 million bpw to 6.2 million bpw on October 14.

California gasoline inventories remained steady at an average of 11 million barrels, greater than the same time last year when inventories were measured at 10.3 million barrels.

Figure 9: Northern California Gasoline Production and Inventories

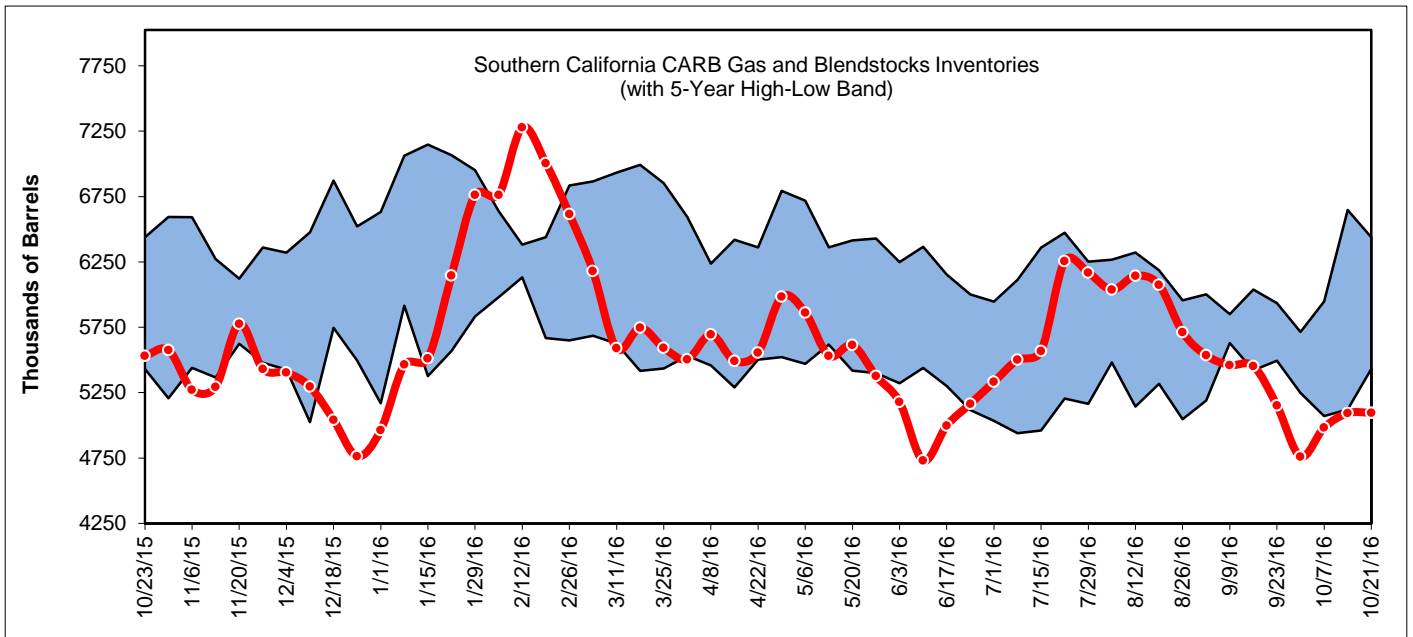
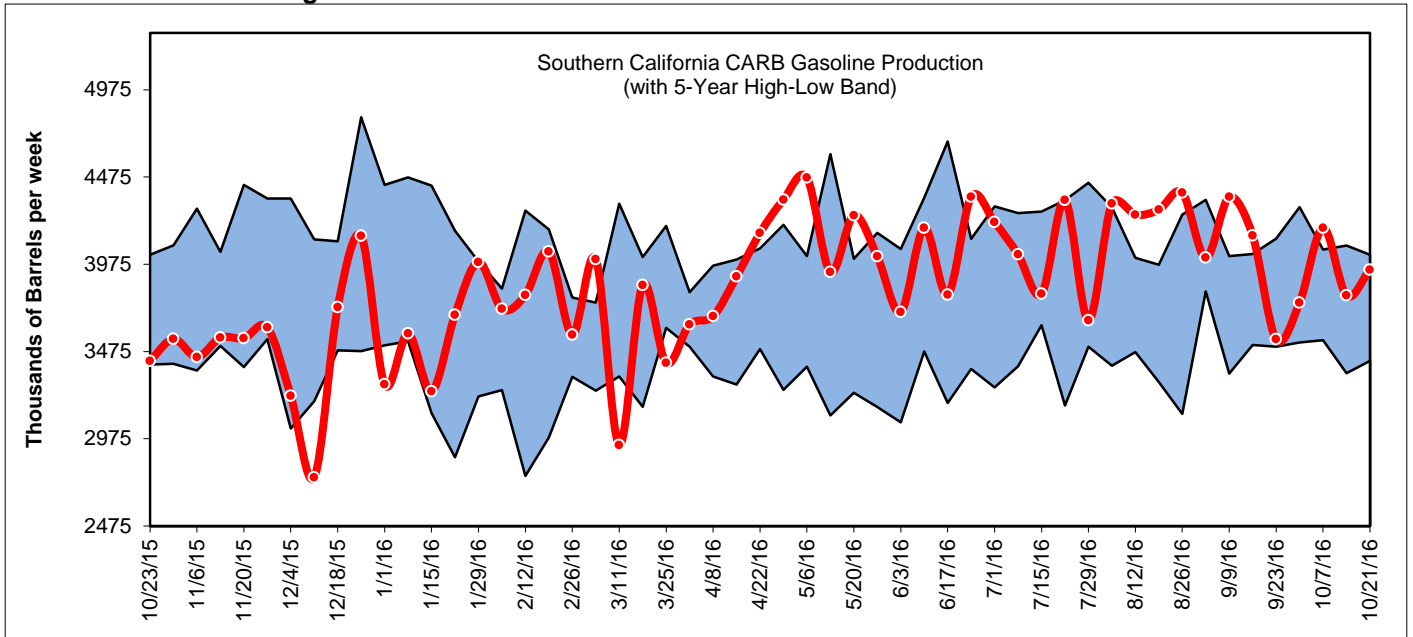


Source: PIIRA data

From September 30 to October 21, Northern California gasoline production increased and reached a new five-year high on October 7, at 3.3 million barrels before dropping below the five-year band. This ramp up and drop in production is likely due to preparation for the turnaround activity that refiners have scheduled for the beginning of October. The production average during this time is similar to last year's at 2.8 million bpw (Figure 9).

Northern California gasoline inventories rose above the five-year band and peaked at 6.3 million barrels on September 30, before falling. The average is higher than this time a year ago, at 6 million compared to 5.3 million a year ago.

Figure 10: Southern California Gasoline Production and Inventories

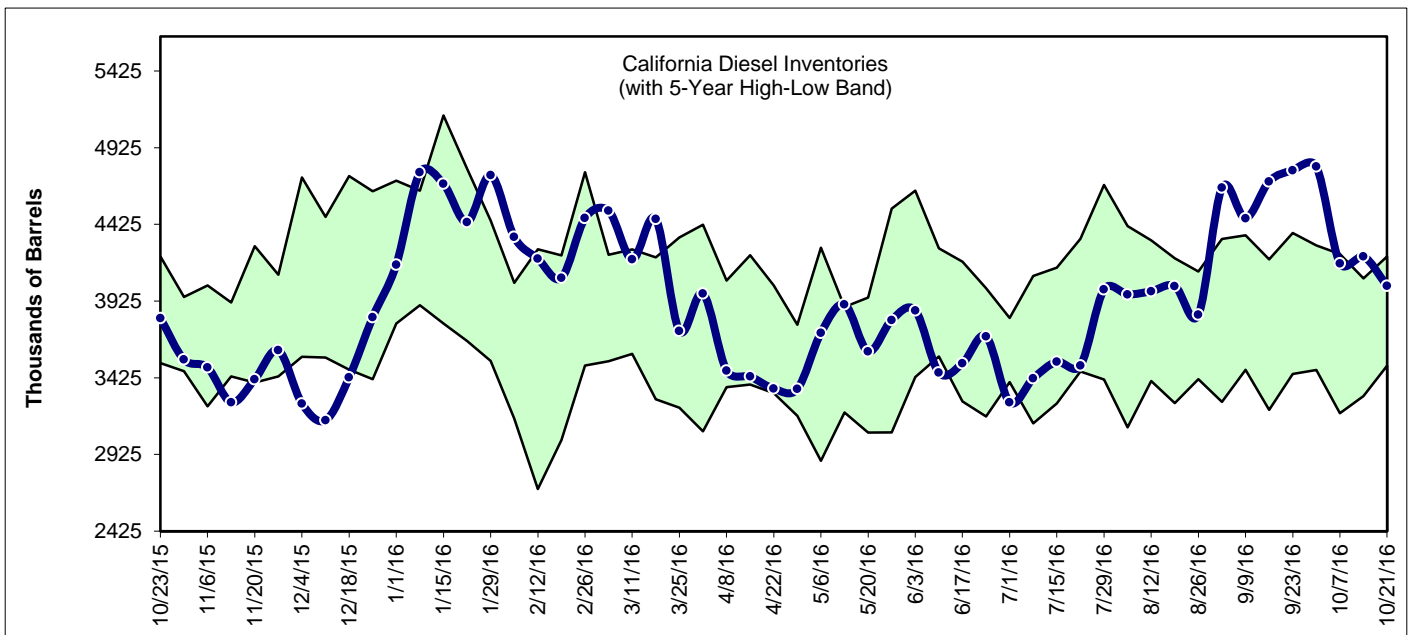
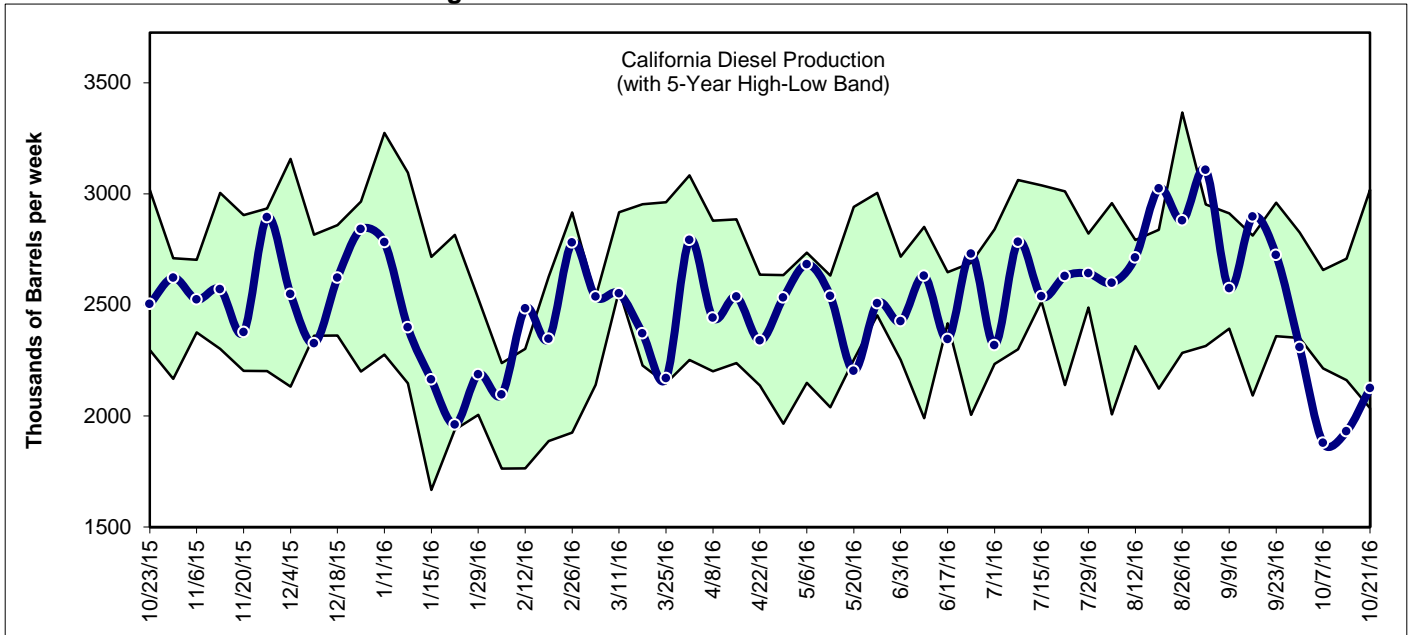


Source: PIIRA data

The return of the Torrance refinery in July, now operated by PBF, provided Southern California with higher levels of gasoline production than last year. From September 30 to October 21, gasoline production rose above the five-year band, similar to Northern California peaking on October 7, at 4.1 million barrels, before dropping. The average during this time was 3.9 million bpw. This is compared to a year ago when gasoline production was at the bottom of the five-year band with an average of 3.6 million bpw (**Figure 10**).

After reaching a low of 4.7 million barrels on September 30, inventory levels in Southern California have slowly increased, but were still below the five-year band on October 21, at 5 million barrels.

Figure 11: Diesel Production and Inventories



Source: PIIRA data

Since September 23, California diesel production continued to decline as turnaround work for many refineries began to take place. At 1.8 million barrels on October 7, California diesel production reached a low not seen since February 2013 before rising back up to the five-year band at 2.1 million barrels on October 21 (**Figure 11**).

California diesel inventories peaked on September 30, at 4.8 million barrels—the highest it has been since January 2011. Inventory then declined to 4 million barrels on October 21.