PETROLEUM WATCH
California Energy Commission
June 2016

Recent Petroleum News and Outside Analyses

Prices

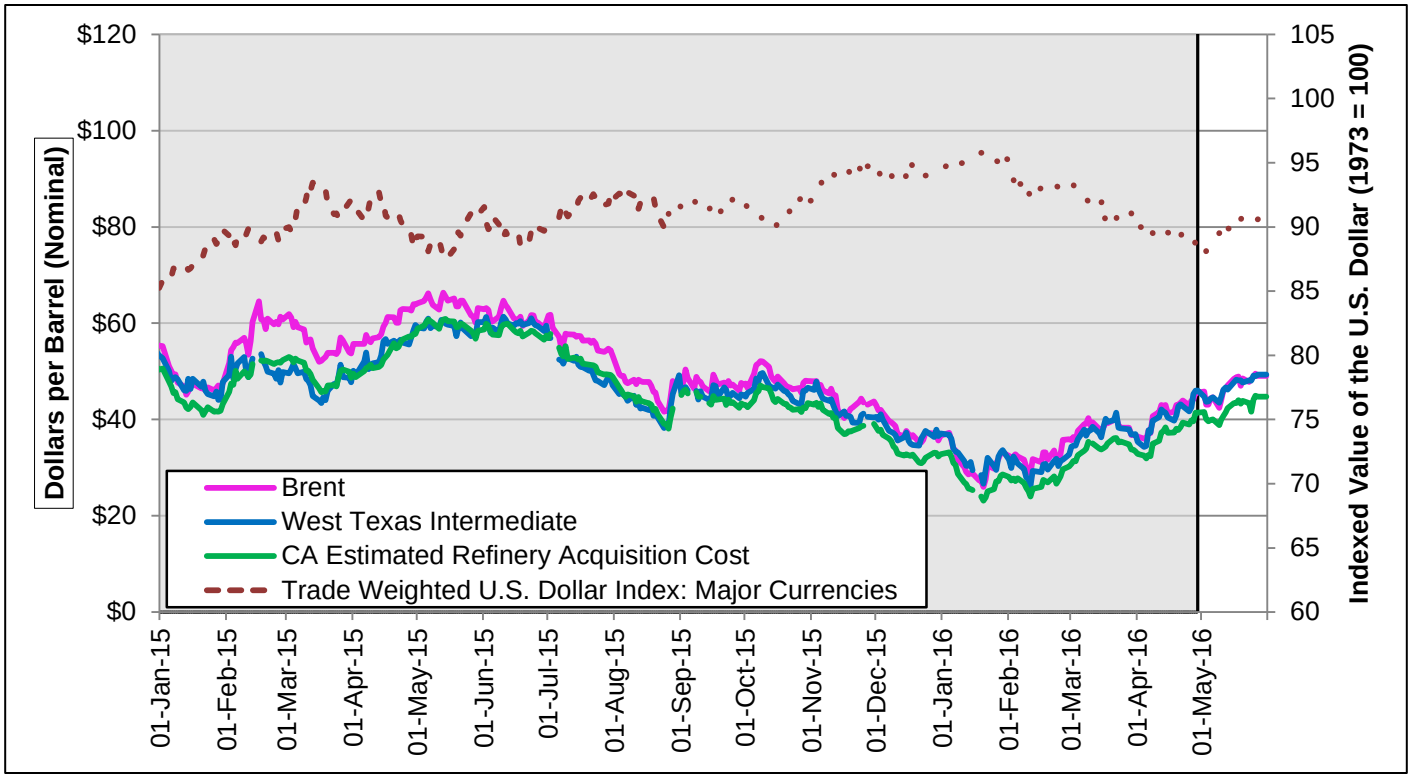
- **Crude Oil Prices:** Prices continue the recent increase: Brent and West Texas Intermediate (WTI) crude prices closed at $49.09 and $49.36 on May 31, respectively, up about 7.5 percent since the end of April. Nevertheless, prices remain 20 to 30 percent below year-ago levels.
- **California Retail Gasoline Prices:** On May 31, California gasoline prices closed the month at $2.81, up $0.03 cents since the end of April.
- **California Retail Diesel Prices:** On May 31, California diesel prices closed the month at $2.72, an increase of $0.22 from the end of April. This increase continues the reversal of a nine-month price decline. In spite of the fact that the increase in diesel prices was $0.19 cents larger than the increase in the price of gasoline, the price of diesel remains lower than the price of gasoline.

Refining News

- **Shell Martinez Refinery**: On April 30, a fluid catalytic cracker was forced offline for a week's worth of unplanned repairs. Around the same time, the refinery also had planned maintenance scheduled for a crude and coker unit.
- **Phillips 66 Rodeo Refinery**: On May 5, the refinery discovered a leak in a hydrocracker unit as the facility was preparing to raise run rates of the unit. The run rates for the unit were low due to the shutdown of the refinery's third-party hydrogen plant in late April, which had recently came back online.
- **ExxonMobil Torrance Refinery:** On May 26, the refinery experienced unplanned flaring after bringing online the fluid catalytic cracker and alkylation units earlier this month. The refinery has to demonstrate it can operate at 100 percent of capacity for two weeks before the transfer to PBF Energy can take place. The transfer in ownership for the refinery has been delayed, with some sources reporting it will not occur until August 1, 2016.
- **Phillips 66 Wilmington Refinery**: On May 31, the 147,000-barrel per day (bpd) refinery experienced flaring due to a breakdown. No information was provided on which units were involved. The Wilmington refinery is one-half of Phillips's 66 Los Angeles refinery complex where processed crude oil is upgraded to finished product from the nearby Phillips 66 Carson plant.

Product of the Energy Assessments Division's Supply Analysis Office.

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: Shaded areas on all graphs indicate previous report data. Unshaded areas indicate new data since last month's *Petroleum Watch*.

Crude oil prices continue to climb from their January lows (**Figure 1**). During May, West Texas Intermediate (WTI) moved from $45.98 to $49.36, an increase of 7.4 percent. Brent prices moved up from $45.64 to $49.09 over the same period, an increase of 7.6 percent.

Although prices for all grades of crude oil have nearly doubled from the January lows of $26 to $27, they remain well below year-ago levels, as seen in the table at right. Throughout this period, the California Refinery Acquisition Cost (CA-RAC) has remained about $4 lower than either the Brent or WTI prices.

Crude Oil Prices

May 2016 vs 2015
(Percent Change)

Brent	**27% lower**
WTI	**21% lower**
CA-RAC[1]	**29% lower**

May 2016 Averages

Brent	**$46.73**
WTI	**$46.72**
CA-RAC	**$42.19**

May 31, 2016

Brent	**$49.09**
WTI	**$49.36**
CA-RAC	**$44.72**

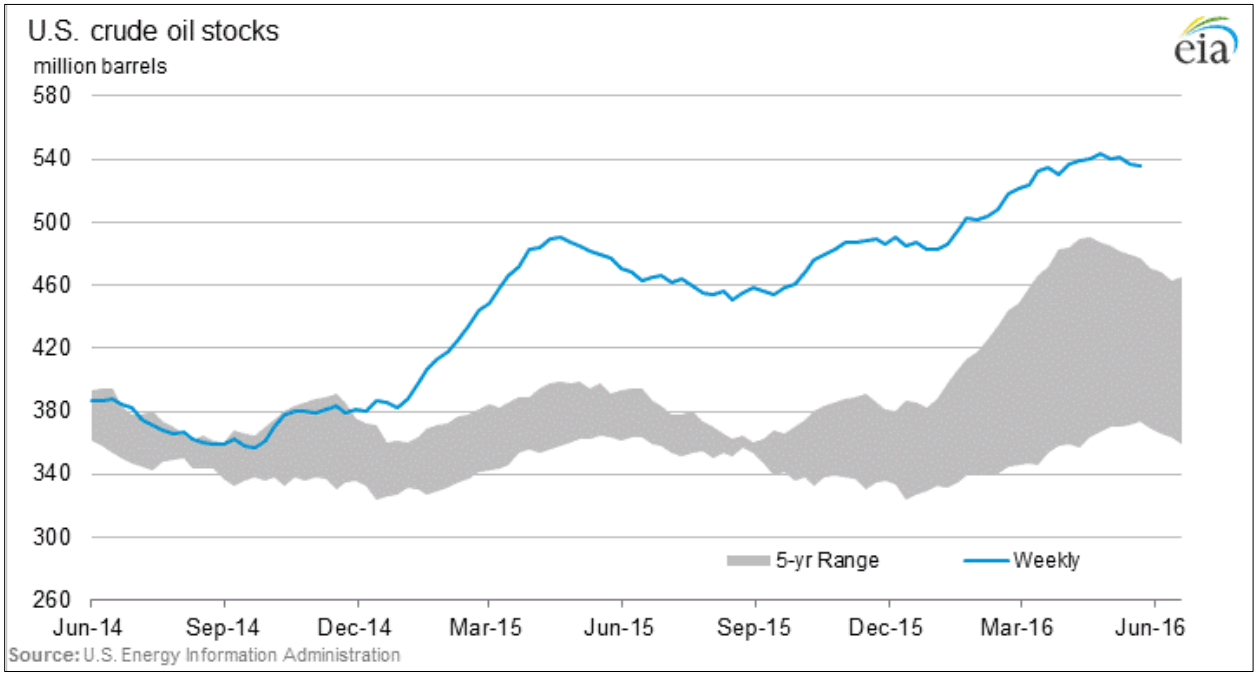
1 California estimated refiner acquisition cost is an estimate of the average price of crude oil paid by California refineries. Energy Commission staff estimates a weighted average of the prices of California (San Joaquin Valley) crude, Alaskan crude, and foreign crude.

Crude Oil Production and Storage

Even though crude oil prices are nearly $50 per barrel, U.S. crude oil inventories have decreased only slightly (**Figure 2**). A slight decline in domestic crude oil production has been offset by an increase in imports. Output from the Organization of the Petroleum Exporting Countries (OPEC) producers remains steady.

- U.S. crude oil production for May is estimated by the U.S. Energy Information Agency (EIA) at 8.8 million bpd, down from 8.9 million barrels in April. This is a 7.2 percent decline from year-ago production levels. For the year-to-date, it is a 3.3 percent decline when compared to the corresponding period in 2015.
- Crude oil inventories in the United States fell by 8 million barrels during May to 536 million barrels on May 27. Inventory levels remain high: 7.6 million barrels for the month of May, unchanged from April. For the year to date, imports are 7.3 percent higher than for the corresponding period a year ago.
- Through late April, inventories increased at an average of 3.1 million barrels per week, just half of the corresponding average for 2015, 6.2 million barrels per week. Since then, inventories have fallen slowly compared to 2015: 1.0 million barrels per week in 2016 compared to 2.7 million bpw in 2015. Although they have begun a seasonal decline, it is small compared to 2015.

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

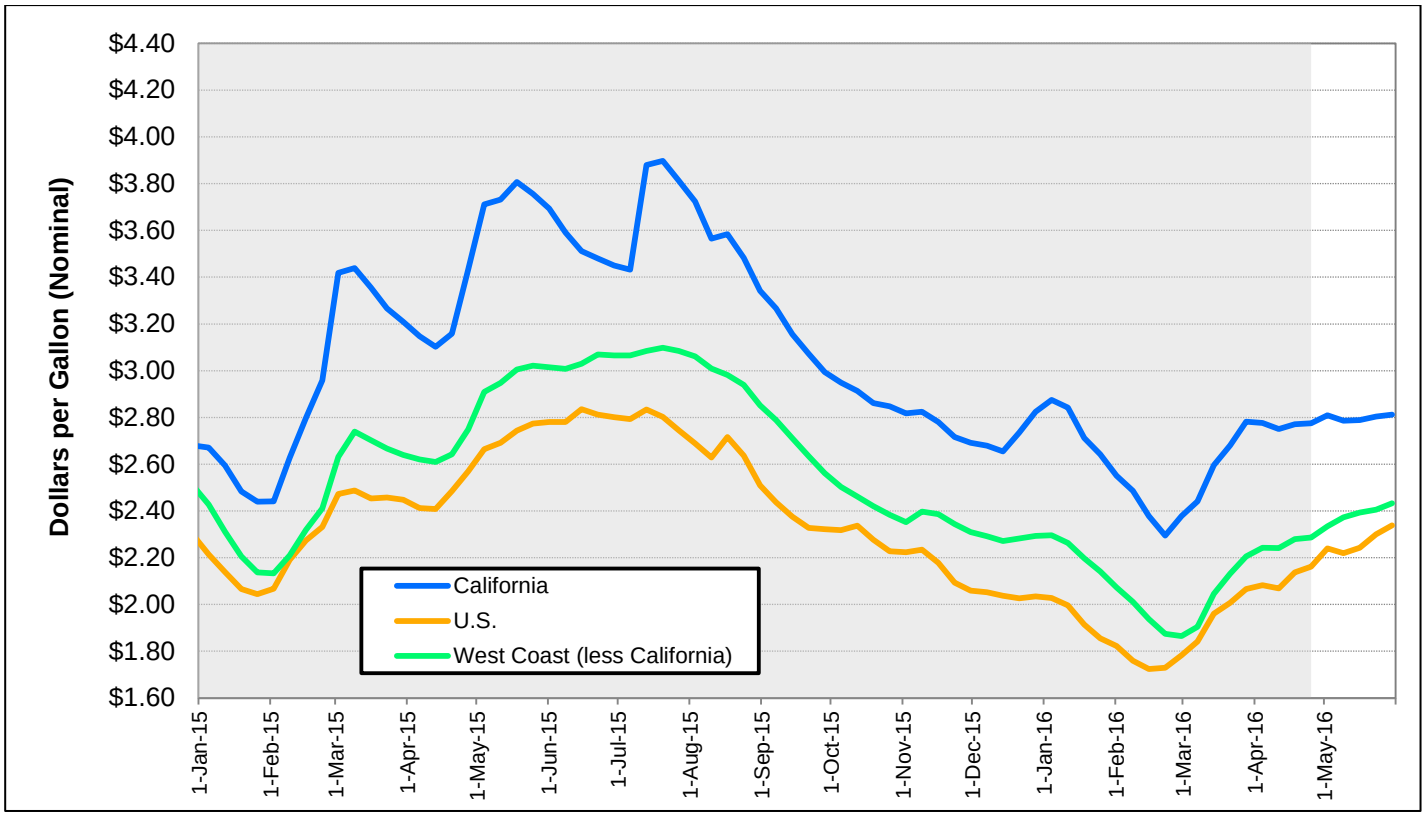


Source: U.S. EIA

- According to the April data from OPEC, Saudi Arabian crude output remained at 10.1 million bpd. Total OPEC production also remained unchanged at 30.8 million bpd.

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 rose from $2.79 on May 9 to $2.81 by May 30 (**Figure 3**). The monthly average retail price increased $0.03 to $2.80, marking the highest average retail price in 2016. While May 2016 had the highest average price seen this year, it is $0.94 less than the May 2015 average of $3.75.

West Coast and U.S. gasoline prices increased during May: starting from $2.22 and $2.79, respectively, on May 9, and finishing at $2.29 and $2.16 on May 30. Since January 2016, California refineries have steadily increased gasoline production, reducing the difference in price between California and the rest of the United States. May gasoline price differences between California and the United States narrowed $0.14, reducing the difference to $0.47.

The price of gasoline remains higher than the price of diesel **(Figures 3 and 4)**. With minor exceptions, this has been the case in California since February 2015, when the explosion at the Exxon Mobil refinery in Torrance reduced in-state gasoline refining. This is unusual because a gallon of diesel contains more energy than a gallon of gasoline. During this same period, U.S. gasoline prices exceeded U.S. diesel prices for only a seven-week period.

Gasoline Prices

May 2016 vs 2015
(Percent Change)

California	**25% lower**
U.S.	**17% lower**
West Coast	**20% lower**

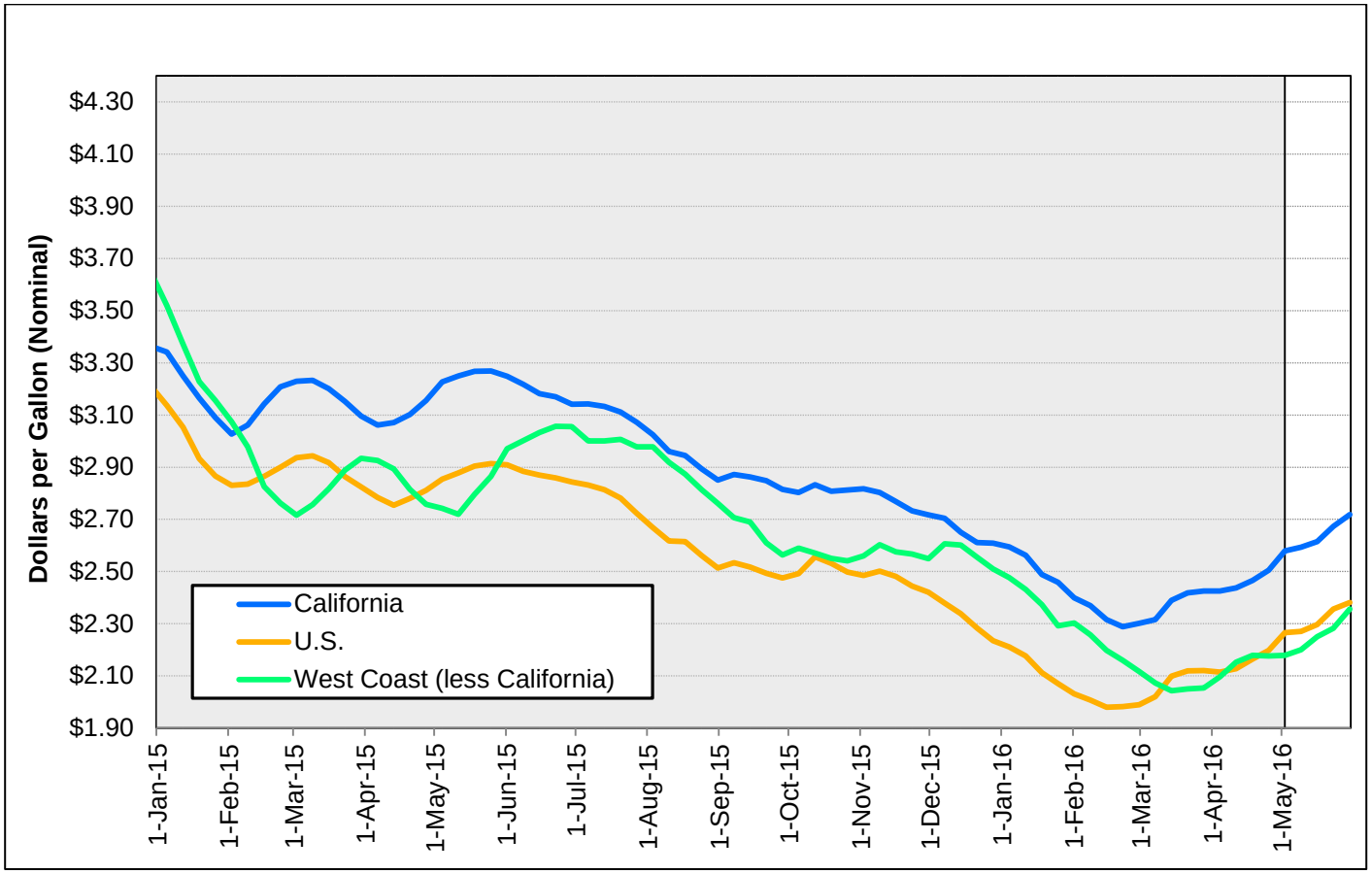
May 2016 Averages

California	**$2.80**
U.S.	**$2.27**
West Coast	**$2.38**

Week of May 30, 2016

California	**$2.81**
U.S.	**$2.34**
West Coast	**$2.43**

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



Source: U.S. EIA

California's average diesel prices are up by $0.17 compared to April. Although this is an increase over last month's prices, May prices remain 19 percent lower than diesel prices at this time last year (**Figure 4**). Similarly, U.S. and West Coast diesel prices both increased during May, reaching $2.38 and $2.57, respectively. These prices reflect May's crude oil prices, which have increased during May but are still lower than 2015 prices (**Figure 1**).

The year-to-date (YTD) average California diesel prices are $0.33 higher than the U.S. average diesel prices, identical to the differential seen last month. U.S. diesel prices remain lower than 2015 prices, by 20 percent in May. Likewise, California and West Coast diesel prices are both 19 percent lower than last year. West Coast diesel prices are increasing at a rate similar to U.S. diesel prices. This month's average West Coast (less California) diesel price is $0.13 higher than the U.S. average diesel price.

Diesel Prices

May 2016 vs 2015
(Percent Change)

California	**19% lower**
U.S.	**20% lower**
West Coast	**19% lower**

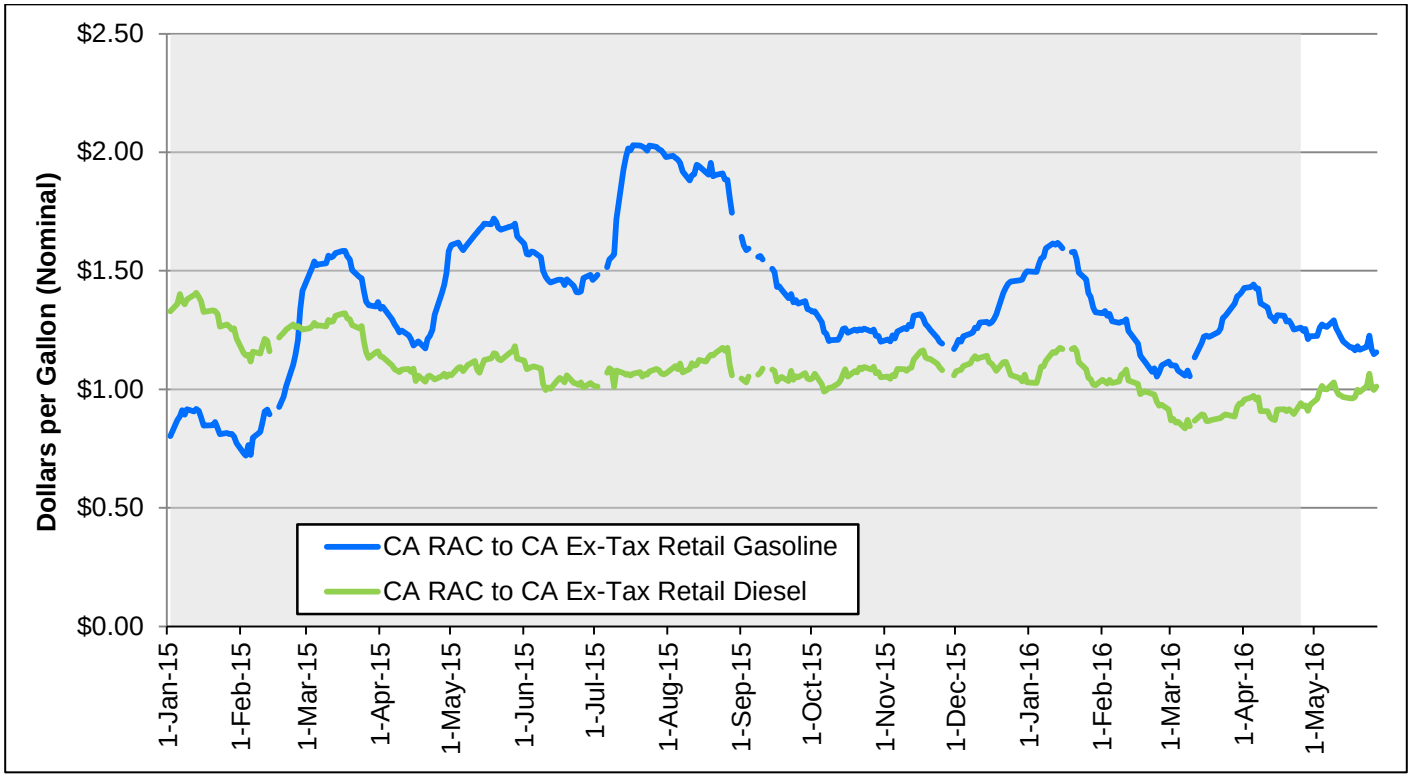
May 2016 Averages

California	**$2.64**
U.S.	**$2.31**
West Coast	**$2.44**

Week of May 30, 2016

California	**$2.72**
U.S.	**$2.38**
West Coast	**$2.57**

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



Source: U.S. EIA and OPIS

Since April 25, the CA-RAC-to-ex-tax retail gasoline margin has gradually declined $0.10 to $1.16 on May 27. The diesel margin slowly rose $0.07, to $1.01 on May 27.

The California's diesel margin has been increasing in the past four months to above the $1 mark (**Figure 5**). While California diesel margins have been fairly steady over the past 12 months, gasoline margins have been on a roller-coaster ride over the past 12 months. They climbed as high as $2.03 on July 7 and reached a low of $1.05 on February 24.

Crude to Retail Margins

May 2016 vs 2015
(Percent Change)

Gasoline	**27% lower**
Diesel	**11% lower**

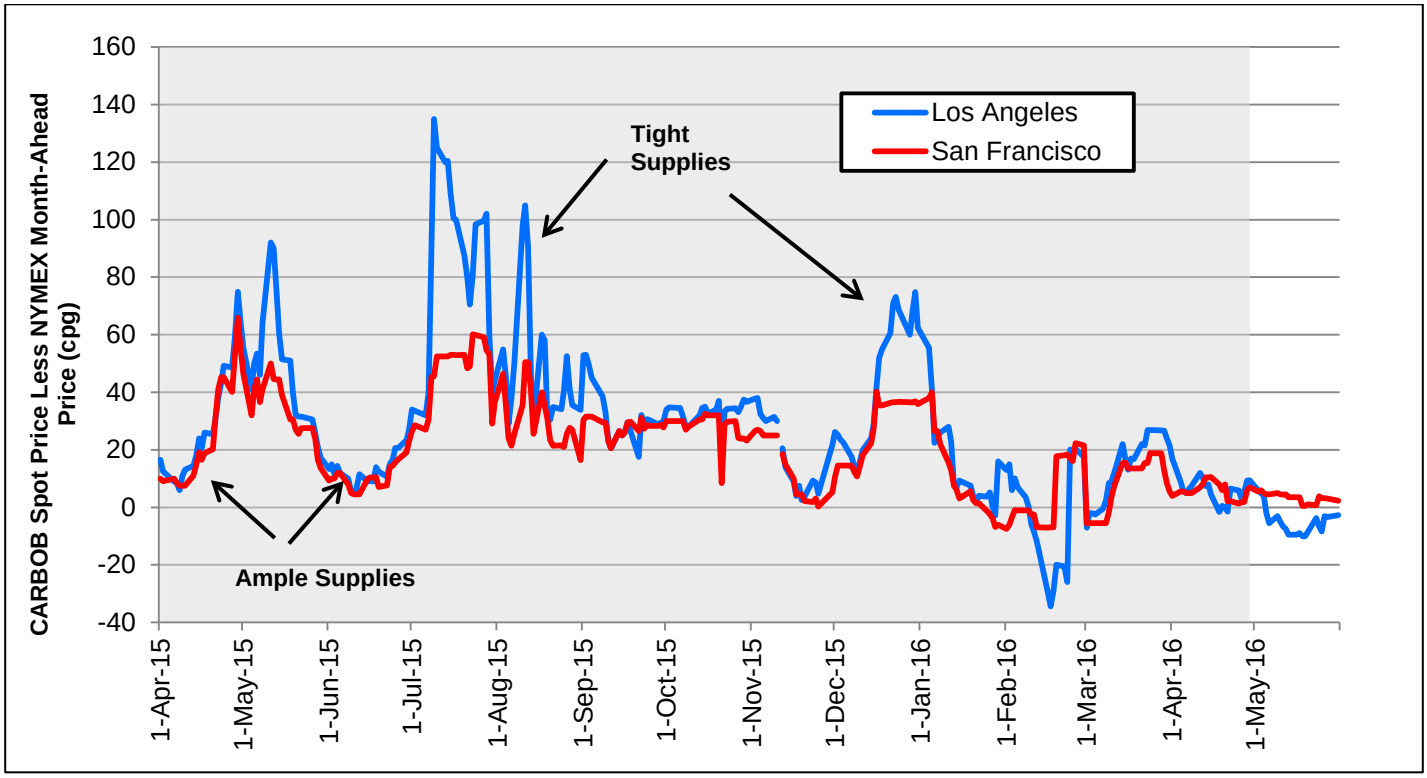
May 2016 Averages

Gasoline	**$1.21**
Diesel	**$0.99**

May 27, 2016

Gasoline	**$1.16**
Diesel	**$1.01**

Figure 6: California Spot Gasoline to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS

During May, the Los Angeles (LA)-less-NYMEX futures spread continued to decrease from the recent peak in late March. For the first three weeks in May, the LA spot price averaged $0.04 below the NYMEX price. The LA-less-NYMEX spread decreased from $0.21 on March 31 to $-0.03 on May 31. The monthly average for the LA-less-NYMEX spread decreased from $0.06 in April to $-0.05 in May.

The San Francisco (SF)-less-NYMEX futures spread decreased for most of May and reached the lowest since March 2016 at $0.005 on May 18 (**Figure 6**), before rebounding to $0.04 on May 24. The monthly average for SF-less-NYMEX decreased from $0.06 in April to $0.03 in May.

Gasoline Spot–Futures Spread

May 2016 vs 2015

(cents)

Los Angeles	**53¢ lower**
San Francisco	**31¢ lower**

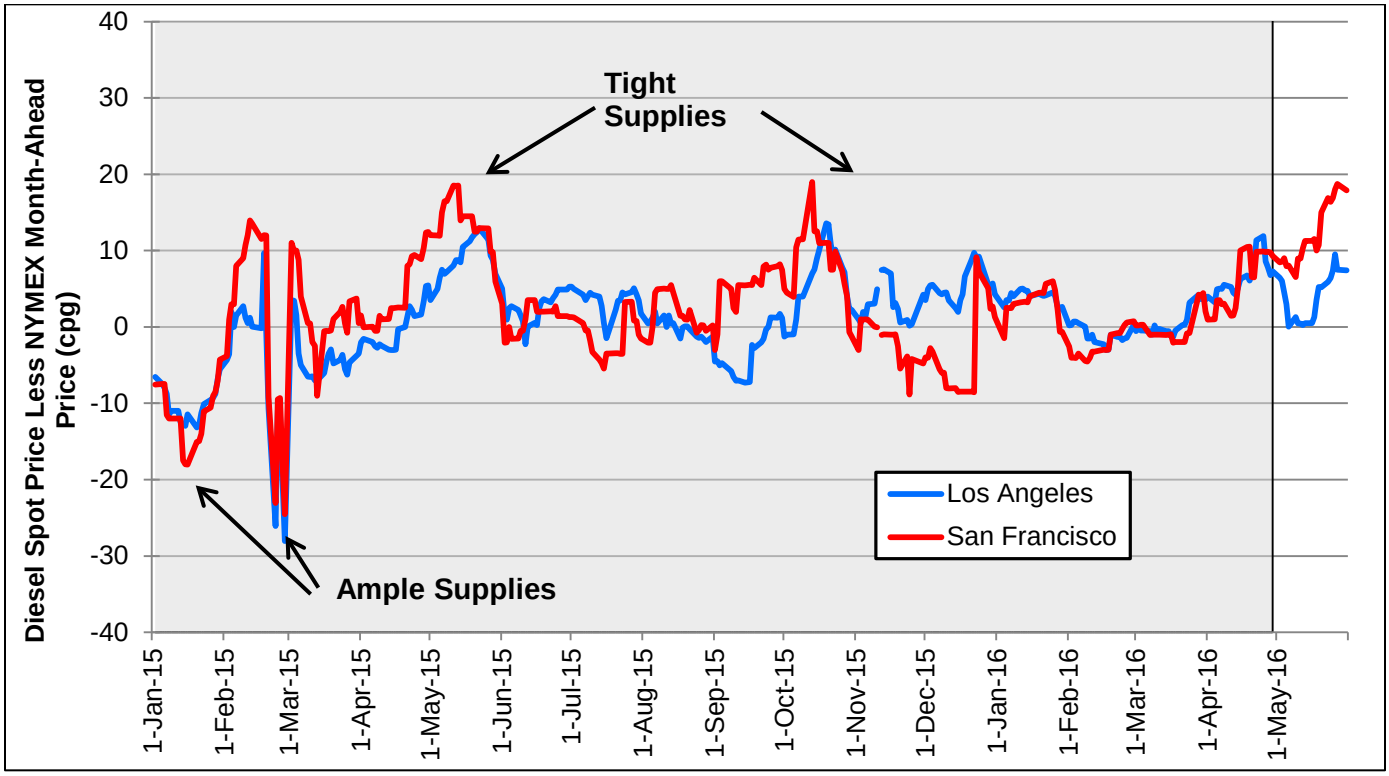
May 2016 Averages

Los Angeles	**-5¢**
San Francisco	**3¢**

May 31, 2016

Los Angeles	**-3¢**
San Francisco	**2¢**

Figure 7: California Spot Diesel to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS

The LA-less-NYMEX spread showed slight volatility in May. The decreasing trend of the LA-less-NYMEX spread witnessed during the last week of April continued through the first week of May. The LA spot price differential was close to zero on May 6 and remained so until May 16 before increasing to the monthly high of $0.10 on May 26 and subsequently falling to $0.07 on May 31. The monthly average LA-less-NYMEX spread decreased to $0.04, which is $0.05 or 56 percent lower than a year ago, and $0.02 or 38 percent lower than a month ago.

The SF-less-NYMEX spread on the other hand, showed a consistent upward trend for most of May. The spread reached a maximum of $0.19 on May 27, the highest since April 2013, which was also seen earlier in October 2014 and again in May and October 2015. The average SF spot price differential for May dropped by $0.02 or 12 percent from a year ago, but increased by $0.06 or 97 percent from April.

The SF CARB diesel fuel spot market remained strong in May as several refiners sought barrels in the spot market. This was due to maintenance at Shell's Martinez and Phillips 66's Rodeo refineries that resulted in lost production.

Diesel Spot–Futures Spread

May 2016 vs 2015
(cents)

Los Angeles	**5¢ lower**
San Francisco	**2¢ lower**

May 2016 Averages

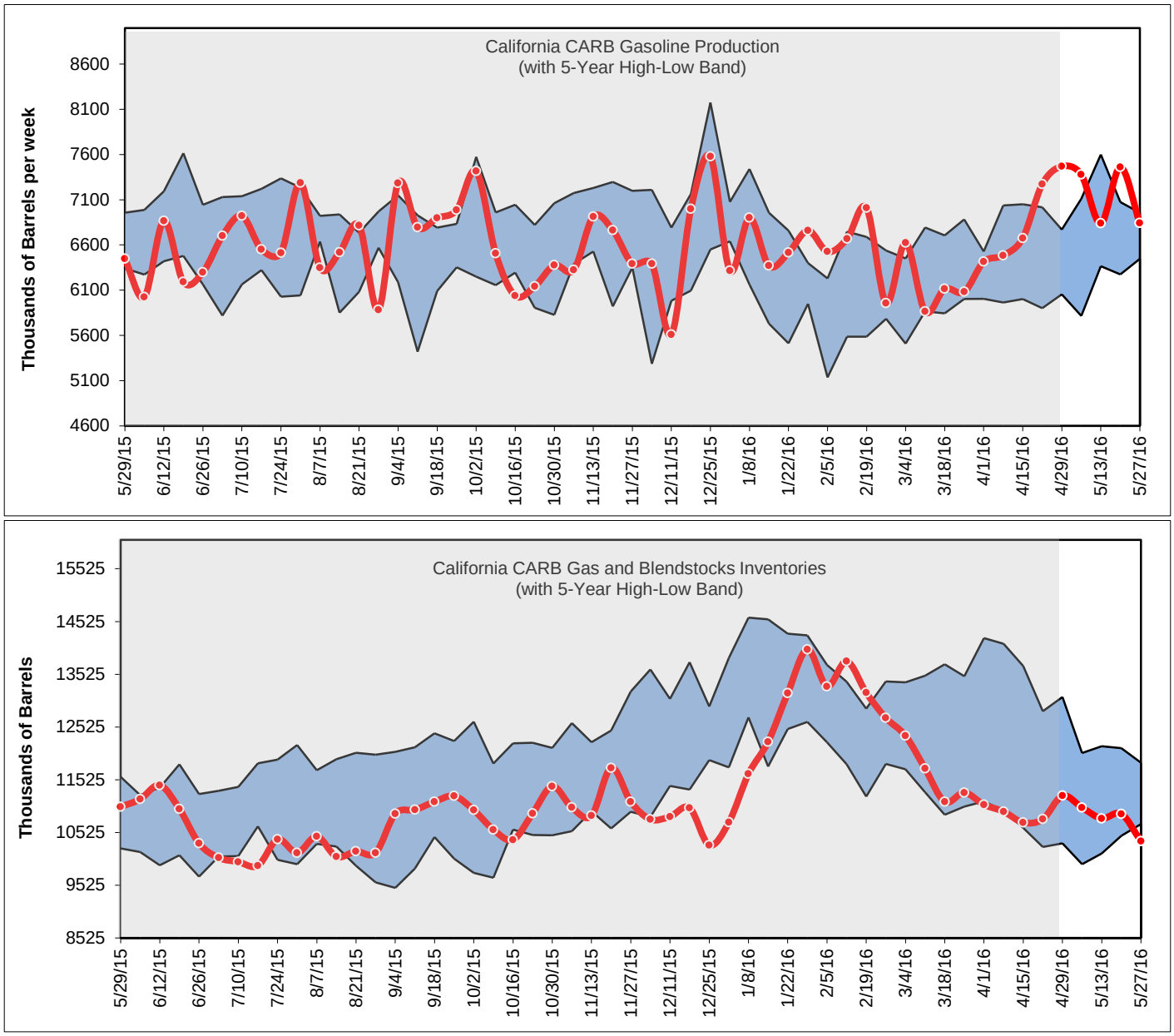
Los Angeles	**4¢**
San Francisco	**12¢**

May 31, 2016

Los Angeles	**7¢**
San Francisco	**18¢**

California Gasoline and Diesel Production and Inventories

Figure 8: Gasoline Production and Inventories

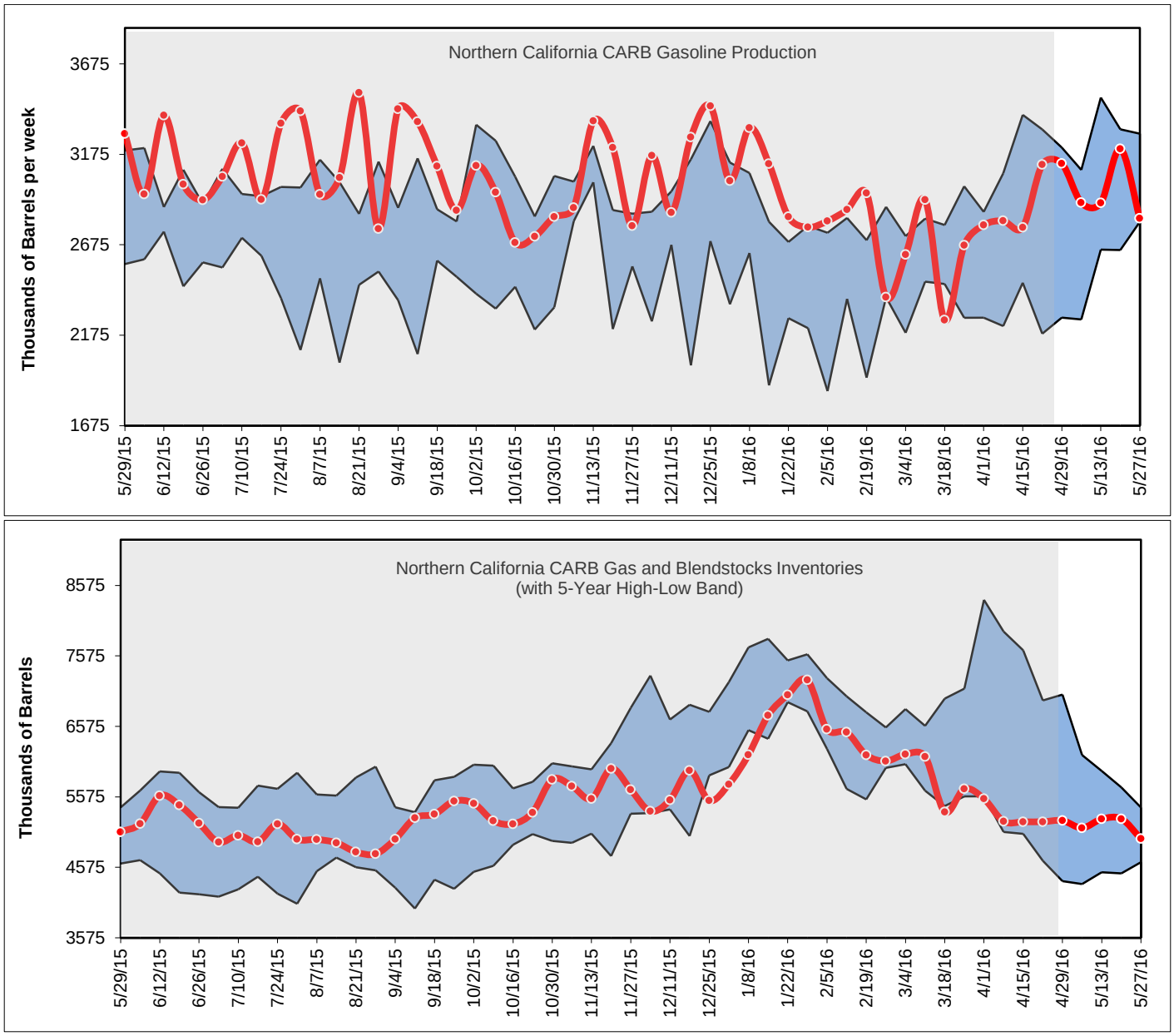


Source: PIIRA data

During the weeks of April 29 to May 27, California gasoline production remained on the high end of the five-year band and averaged 7.2 million barrels-per-week (bpw), which is higher than the 6.6 million bpw seen last year (**Figure 8**). This is at least in part due to the partial restart of gasoline production at Exxon Mobil's Torrance refinery. Year-to-date gasoline production for 2016 averaged 6.6 million bpw. The average gasoline production for 2015 was 6.5 million bpw.

California gasoline inventories continued to decline as approach the summer months. Inventory levels reached a new low for 2016, below the five-year band at 10.4 million barrels. Gasoline inventories averaged 10.8 million barrels in May compared to 11.4 million barrels last year.

Figure 9: Northern California Gasoline Production and Inventories

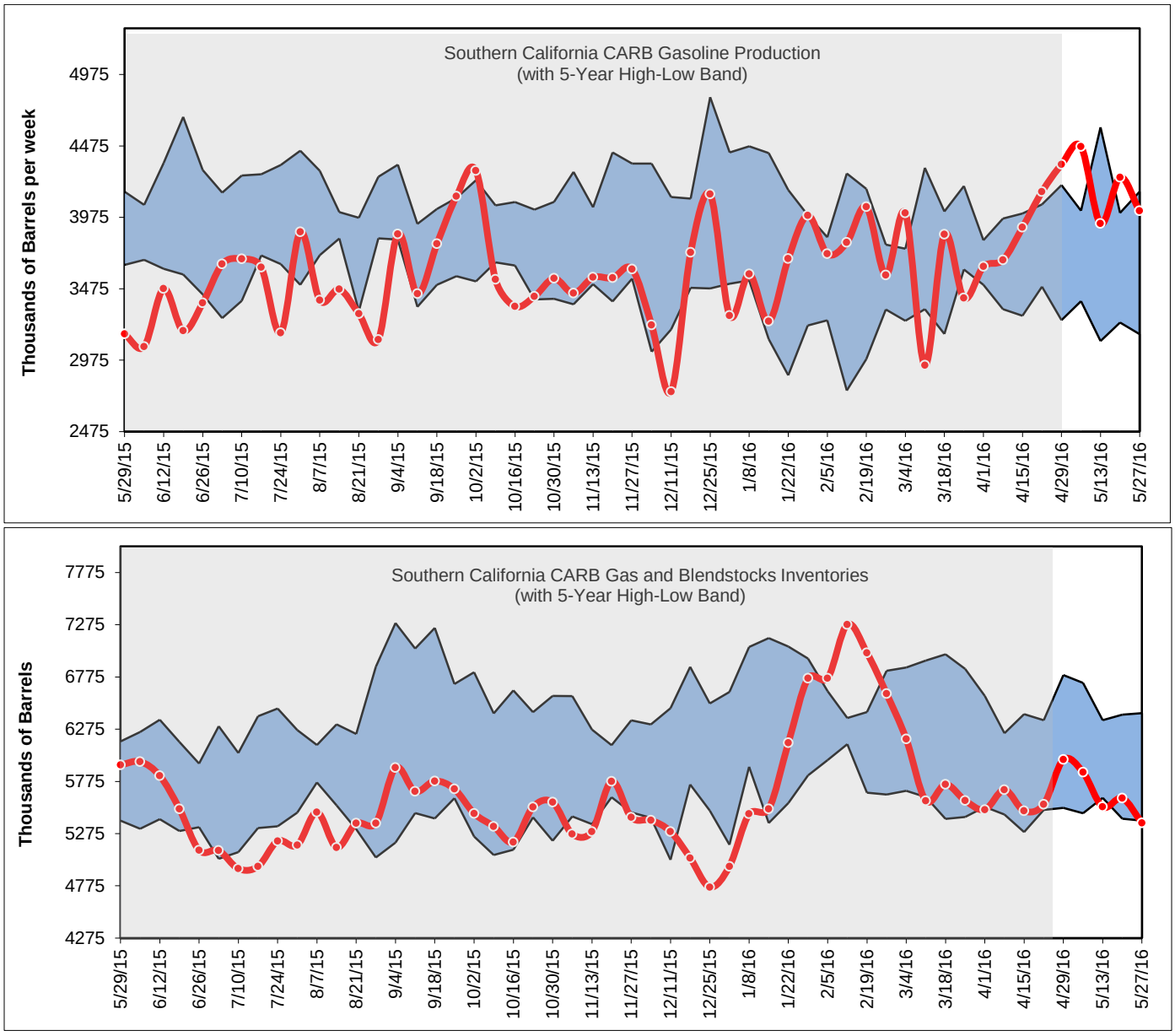


Source: PIIRA data

Northern California gasoline production on April 29 stood at 3.1 million barrels but ended the month at 2.8 million barrels during the week of May 27 (see **Figure 9**). Production in Northern California for the last five weeks averaged 3.0 million bpw, slightly less than 3.2 million bpw a year ago. Production in Northern California has spent 10 consecutive weeks within the five-year band.

Northern California gasoline inventories for the first four weeks of May were fairly consistent before falling to 5.0 million barrels on May 27. Inventory levels averaged 5.2 million barrels in May compared to 5.5 million barrels last year.

Figure 10: Southern California Gasoline Production and Inventories

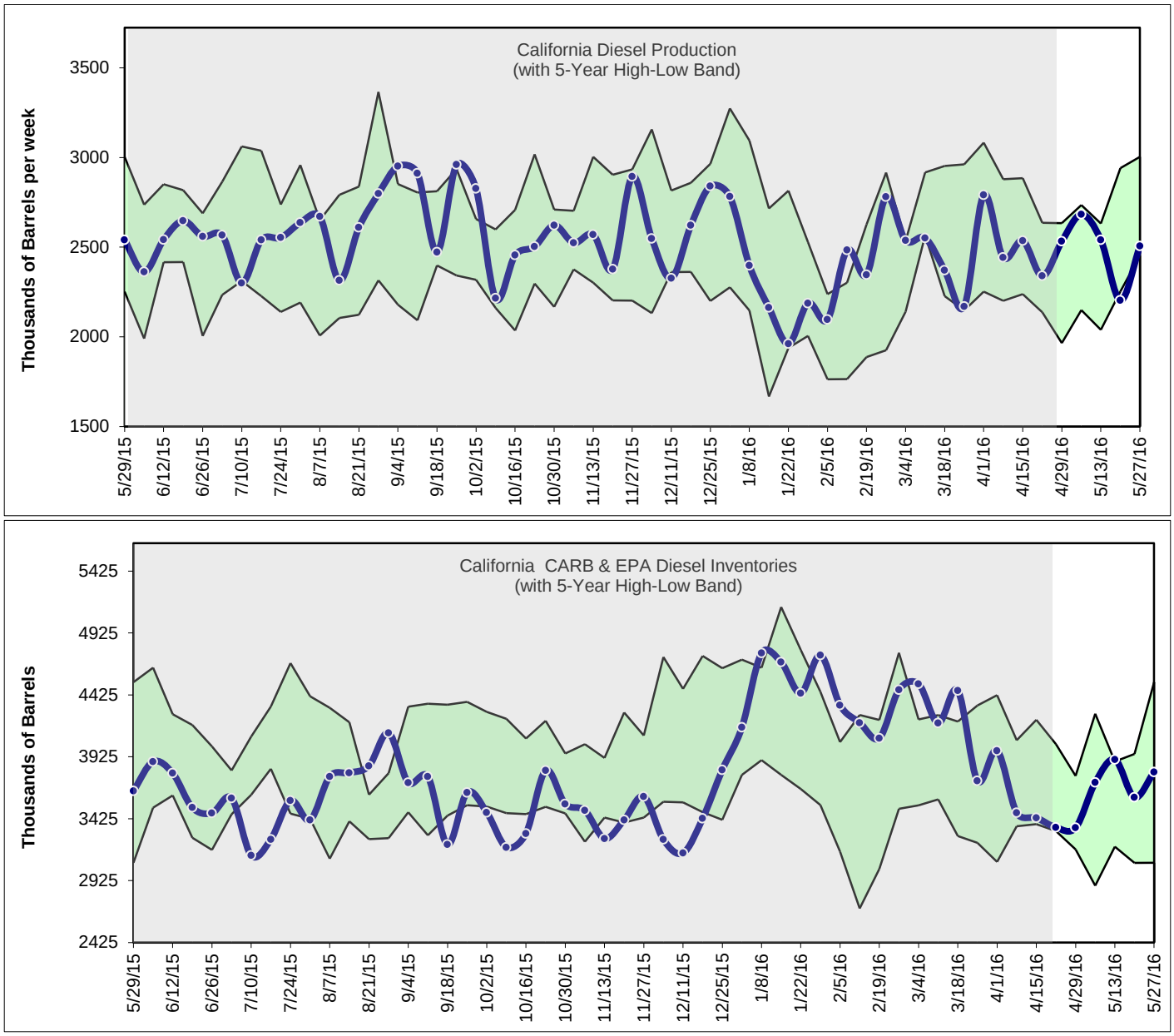


Source: PIIRA data

Adjusting to the partial restart of gasoline production for ExxonMobil's Torrance refinery, Southern California gasoline production during the week of May 6 rose above the five-year band to levels not seen since December 2014 at 4.5 million barrels (**Figure 10**). Gasoline production averaged on the high end of the five-year band at 4.2 million bpw compared to 3.4 million bpw a year ago. ExxonMobil's Torrance refinery has been reported to supply 20 percent of Southern California's gasoline.

Inventory levels struggle to stay above the five-year low band as the Torrance refinery restart has curbed the demand for imports. Inventory levels averaged 5.7 million barrels in the past five weeks compared to 6.0 million barrels a year ago.

Figure 11: Diesel Production and Inventories



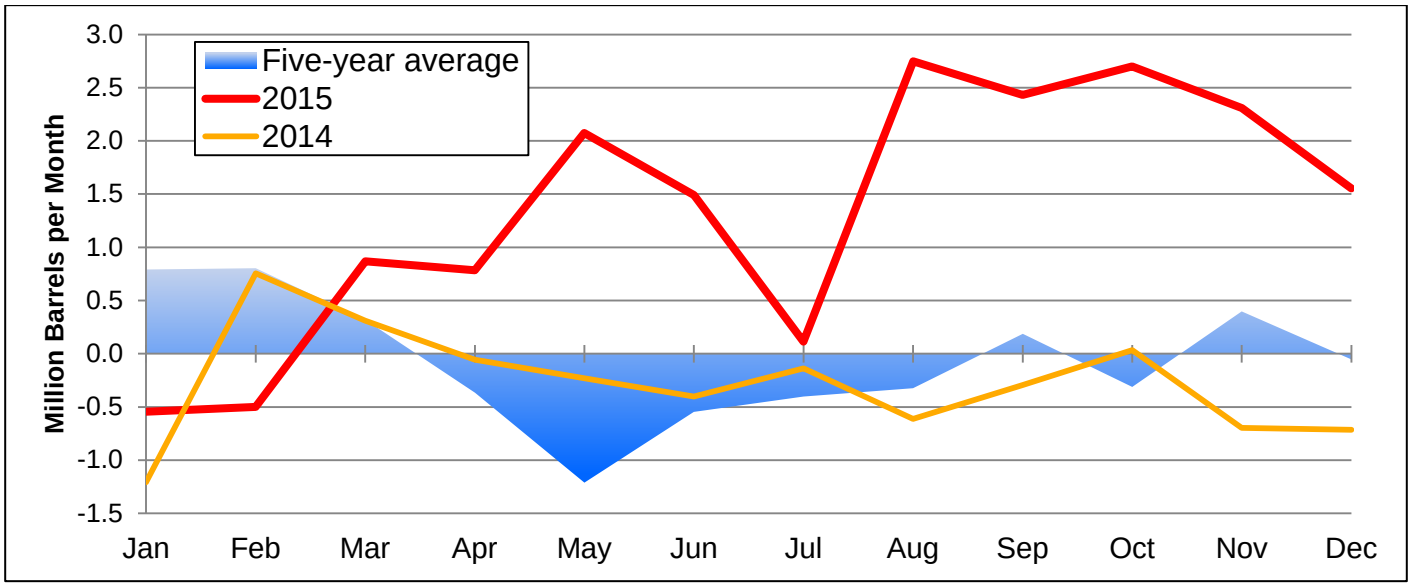
Source: PIIRA data

From April 29 thru May 27, California diesel production levels peaked during the week of May 6 at 2.6 million barrels before settling to the bottom of the band at 2.5 million barrels on May 27 (**Figure 11**). The year-to-date average was at 2.4 million bpw slightly higher than the average in 2015 at 2.5 million barrels.

California diesel inventory began at 3.3 million barrels for the week of April 29, peaked at 3.9 million barrels on the week of May 13, and settled on May 29 at 3.8 million barrels. Despite fluctuations, California diesel production has remained within the five-year band since the week of March 11 and sits at 2.3 million barrels, in the middle of the five-year band.

California Gasoline Imports

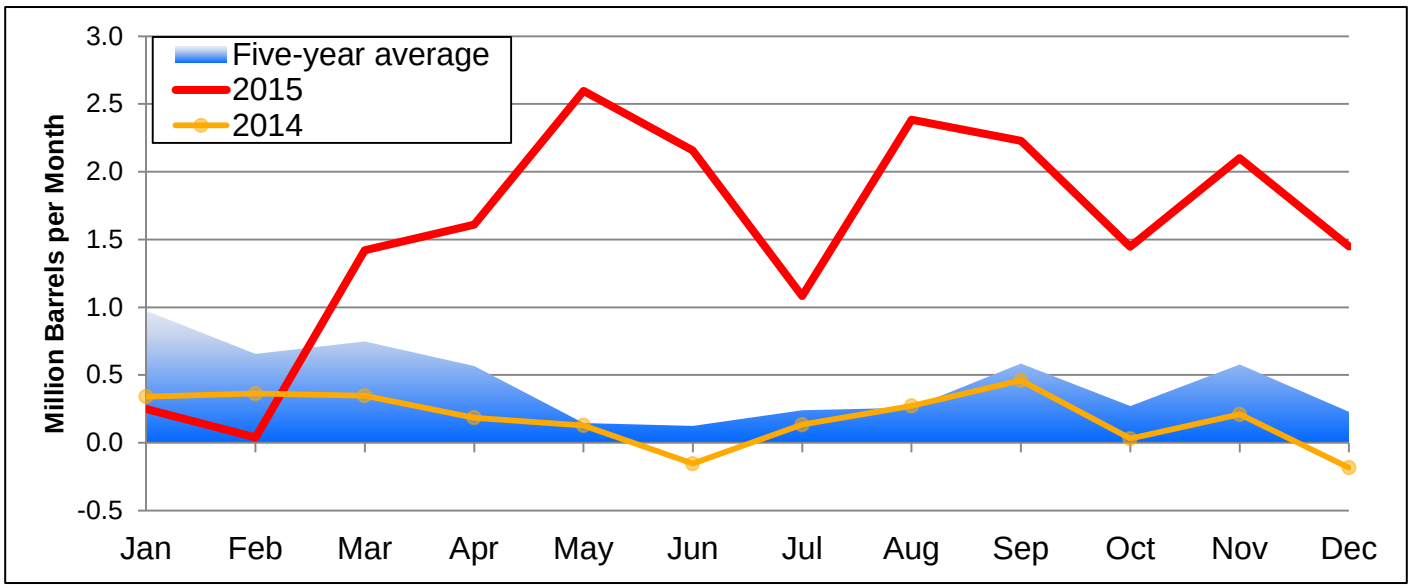
Figure 12: Statewide Gasoline and Blendstock Net Imports With Five-Year Average



Source: Energy Commission Analysis of data from PIIRA, PIERS, and State Lands Commission

In an average year, California switches from being a net importer in the first quarter to being a net exporter in the second and third quarters **(Figure 12)**. During the final four months of the year, net imports or exports are small and variable. In 2014 this pattern was loosely followed, but in 2015 there was a dramatic departure from this pattern following the explosion at Exxon's Torrance refinery in February. Beginning in March, net imports were substantial in every month but July. The jump in imports occurred to offset the gasoline production lost from the Torrance refinery.

Figure 13: Southern California Gasoline and Blendstock Net Imports With Five-Year Average



Source: Energy Commission Analysis of data from PIIRA, PIERS, and State Lands Commission

Southern California is a net importer during every month of an average year. In 2014, there were small net exports for two months, but it was still a fairly average year. In 2015, however, there was a large increase in net imports following the explosion at the Torrance refinery. The bulk of 2015 imports went directly to Southern California to make up for gasoline production lost from the Torrance refinery **(Figure 13)**.