



PETROLEUM WATCH

California Energy Commission

August 2017

Recent Petroleum News and Outside Analyses

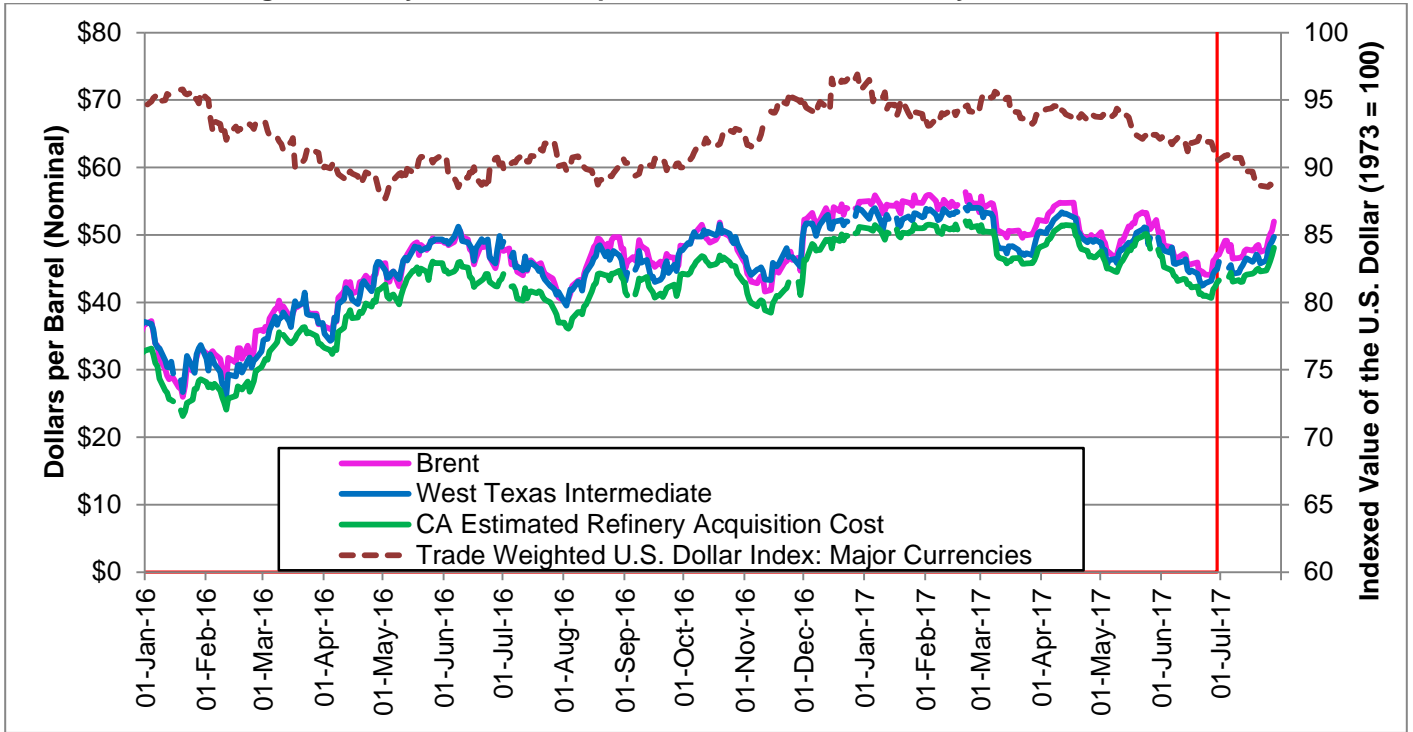
Prices

- **Crude Oil Prices:** Brent and West Texas Intermediate crude prices closed at \$51.99 and \$50.21, respectively, on July 31 (**page 2**).
- **California Retail Gasoline Prices:** On the week of July 31, prices increased to \$2.93, an increase of \$0.3 since the end of June. Through July, California prices averaged \$0.65 higher than the national average (**page 4**).
- **California Retail Diesel Prices:** On the week of July 31, prices reached \$2.91, an increase of \$0.05 from the end of June. Through July, California prices averaged \$0.38 higher than the national average (**page 5**).

Refining News

- **Tesoro Corporation:** On August 1, Tesoro Corporation and Tesoro Logistics LP changed their names to Andeavor and Andeavor Logistics LP, respectively.
- **Tesoro Golden Eagle Martinez Refinery:** On July 15, Tesoro restarted a 30,000 barrels per day (bpd) hydrotreater unit came back on-line after planned maintenance began on June 13, 2017.
- **Phillips 66 Rodeo San Francisco Refinery:** On July 26, Phillips 66 restarted the 42,000 bpd and the 23,000 bpd hydrocracker units after being shut down on July 13, 2017, for unplanned maintenance.
- **Phillips 66 Wilmington Refinery:** On July 26, 2017, Phillips 66 is reported to shut down a hydrotreater unit at the 133,000 bpd Wilmington refinery.

Figure 1: Daily West Coast Spot Crude Oil Prices, January 2016 to Present



Source: U.S. Energy Information Administration (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 spot prices slightly increased in July. Brent crude oil began at \$49.13 on July 3, fell to the monthly low of \$46.47 on July 7, peaked at the monthly high of \$52.00 on July 28, and finished the month at \$51.99 on July 31 (**Figure 1**). The spot West Texas Intermediate (WTI) price followed a similar pattern with a monthly low of \$44.25 on July 7. WTI finished on a monthly high of \$51.21 on July 30. The California Estimated Refiner Acquisition Cost (CA-RAC)¹ recorded a monthly low of \$43.08 on July 7, also finishing on a monthly high of \$48.23 on July 31.

The anticipated summer price increase in crude oil has finally arrived. Rising crude prices indicate one of two possibilities: reduced supply or increased demand. Current market indicators show steady supply increases in crude oil production and imports (**page 3**) leaving increased demand as the main reason for July’s increasing price. Crude oil prices are slightly higher than last year (**sidebar**), indicating that demand is rising but not yet outstripping supply in the United States.

| <u>Crude Oil Prices</u> | |
|---------------------------|------------|
| <u>July 2017 vs 2016</u> | |
| (Percent Change) | |
| Brent | 8% higher |
| WTI | 4% higher |
| CA-RAC | 10% higher |
| <u>July 2017 Averages</u> | |
| Brent | \$48.48 |
| WTI | \$46.63 |
| CA-RAC | \$44.81 |
| <u>July 31, 2017</u> | |
| Brent | \$51.99 |
| WTI | \$50.21 |
| CA-RAC | \$48.23 |

¹ California estimated refiner acquisition cost (CA-RAC) is a weighted average of the prices of California (San Joaquin Valley) crude, Alaskan crude, and foreign crude.

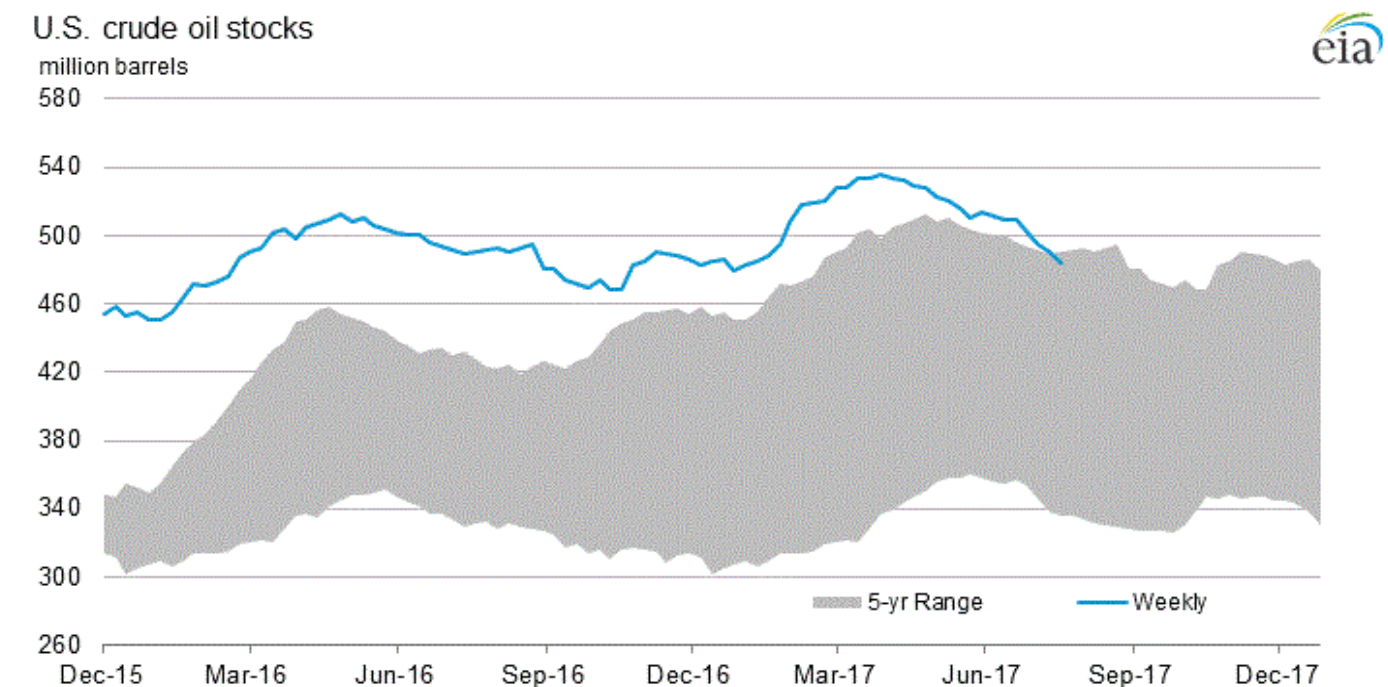
Crude Oil Production and Storage

United States crude oil inventories have decreased, while crude oil production, imports, and refinery inputs increased slightly since July's *Petroleum Watch* (**Figure 2**), indicating strong demand across the nation.

- U.S. crude oil production for July was estimated at 9.4 million bpd, 100,000 bpd higher than June's monthly average of 9.3 million bpd. This is a 960,000 bpd increase from a year ago when production levels were 8.5 million bpd.
- Imports increased slightly by 60,000 bpd to an estimated 8.0 million bpd in July, up from 7.9 million bpd in June. When compared to import levels from July 2016, this is a decrease of 310,000 bpd.
- U.S. crude oil refinery inputs increased by 150,000 bpd above June input levels, finishing July at 17.2 million bpd. Refinery inputs are 550,000 bpd higher than year-ago levels.
- Crude oil inventories in the United States decreased by 21.0 million barrels during July to 481.9 million barrels. Current inventories are 1.0 million barrels lower than one year ago.

Increases in domestic crude oil production and imports were slight, but since May refinery inputs are at the highest recorded levels since 1982. Crude inventories have decreased to the lowest levels recorded since October 2016. All these indicators point to a possible record high demand for petroleum in the United States driven by strong exports and record product demand.

Figure 2: U.S. Crude Oil Inventories, December 2015 to Present



Source: U.S. EIA

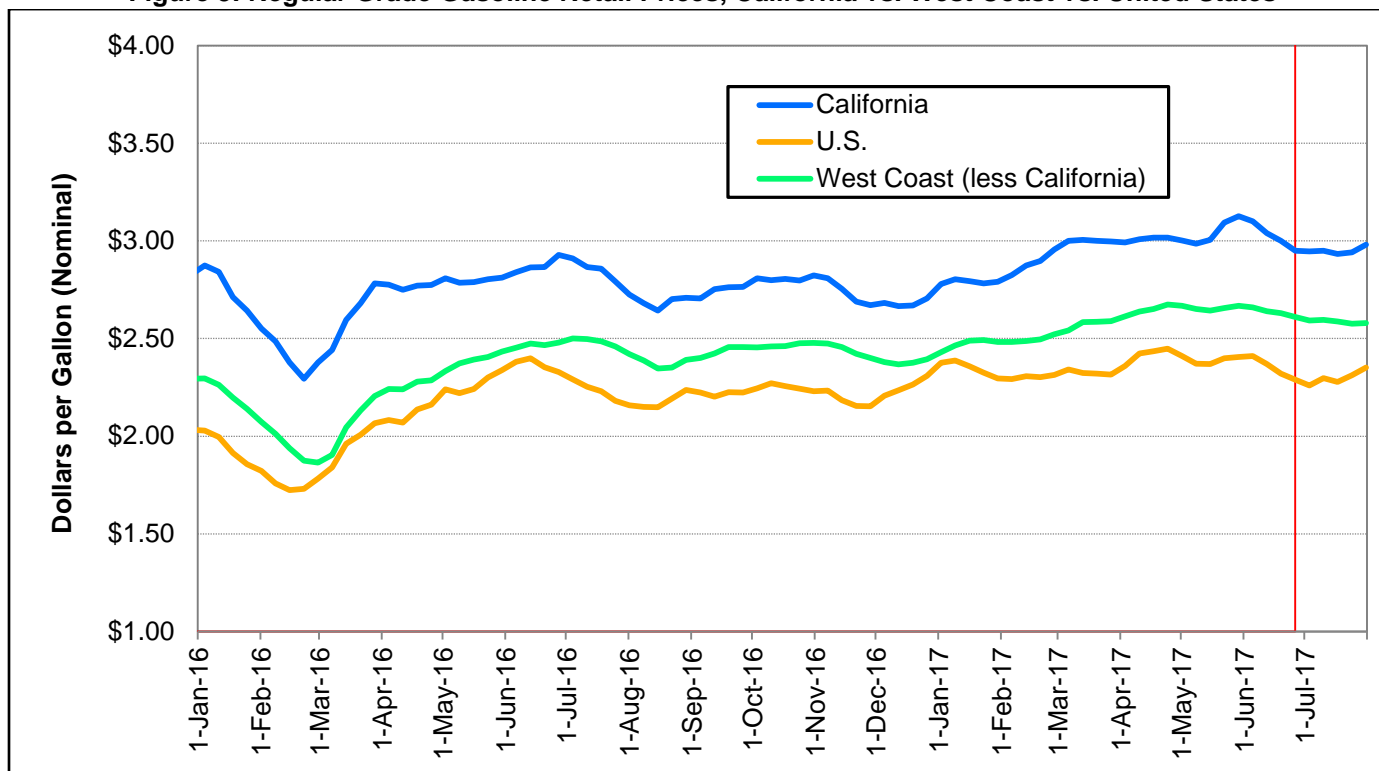
- According to the Organization of the Petroleum Exporting Countries' (OPEC) *July Monthly Oil Market Report*, total June OPEC production increased by 394,000 bpd to 32.6 million bpd. OPEC's target production number set in November 2016 was 32.5 million bpd. OPEC kept its supply-and-demand balance forecast to 0.3 million bpd, unchanged from the forecast reported in the previous *OPEC Monthly Report*.²

² *OPEC June Monthly Report*, page i, page 51:

http://www.opec.org/opec_web/static_files_project/media/downloads/publications/MOMR%20July%202017.pdf.

Gasoline and Diesel Retail Prices

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



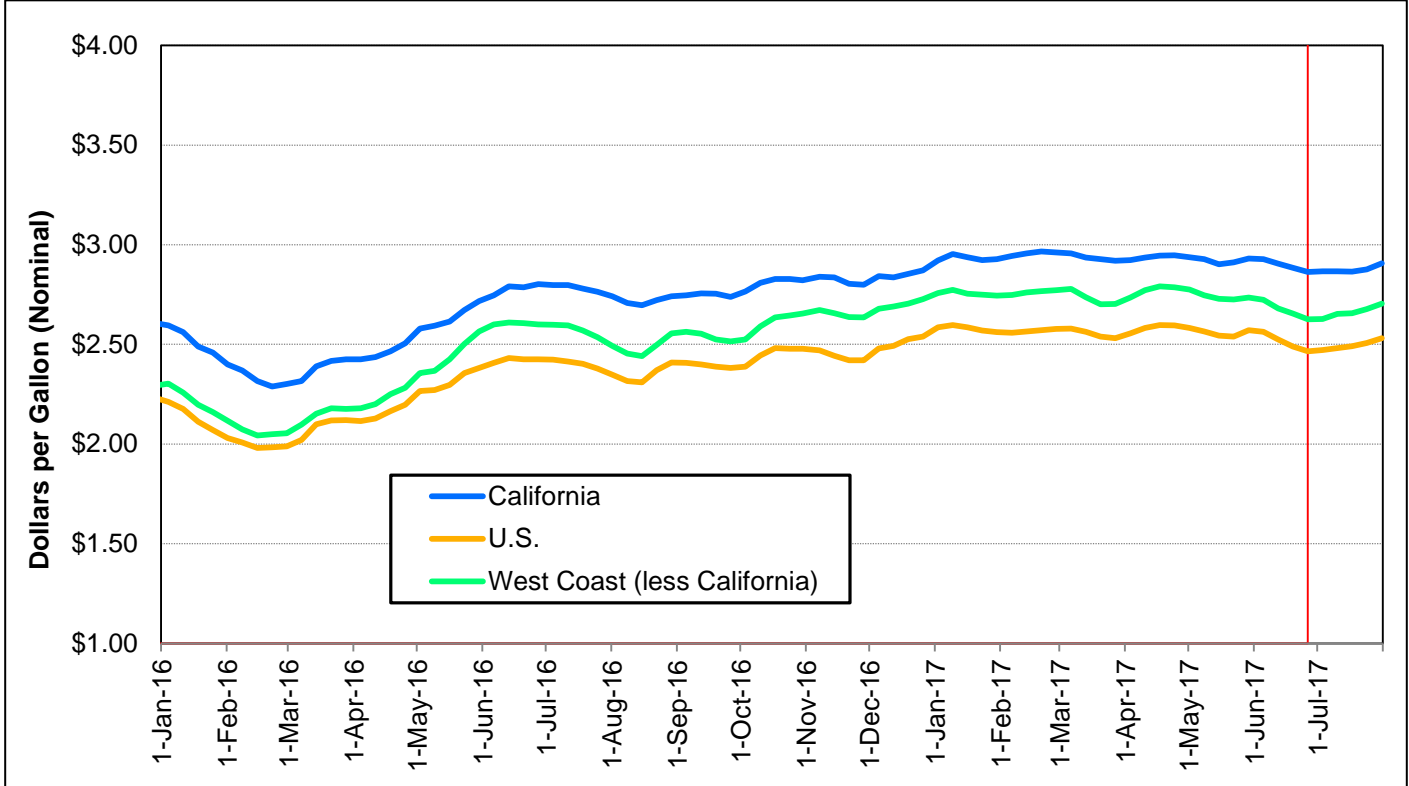
Source: U.S. EIA

Average gasoline retail prices across the United States were lower in July than June. The monthly average California and West Coast (less CA) gasoline retail prices in July were \$2.95 and \$2.59, respectively, \$0.07 and \$0.05 lower than June but \$0.20 and \$0.24 higher than the respective cumulative average from October 2015 to February 2017. The United States gasoline retail price increased \$0.09 from \$2.26 in early July to \$2.35 by July 31, and the monthly average of \$2.30 was \$0.05 lower than June. All three retail prices, however, are 3 to 4 percent above year-ago prices.

California gasoline prices remained stable, as Southern California gasoline production remained strong and at the high end of the five-year range and inventories increased. In Northern California, production trailed the low end of the five-year range because two major refineries, Tesoro Golden Eagle and Phillips 66 Rodeo, were under maintenance. A large buildup of inventories in June buffered the production losses and stabilized prices until production recovered after refinery operations resumed in the last week of July.

| Gasoline Prices | |
|------------------------------|------------------|
| July 2017 vs 2016 | |
| (Percent Change) | |
| California | 3% higher |
| U.S. | 3% higher |
| West Coast | 4% higher |
| July 2017 Averages | |
| California | \$2.95 |
| U.S. | \$2.30 |
| West Coast | \$2.59 |
| Week of July 31, 2017 | |
| California | \$2.98 |
| U.S. | \$2.35 |
| West Coast | \$2.58 |

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



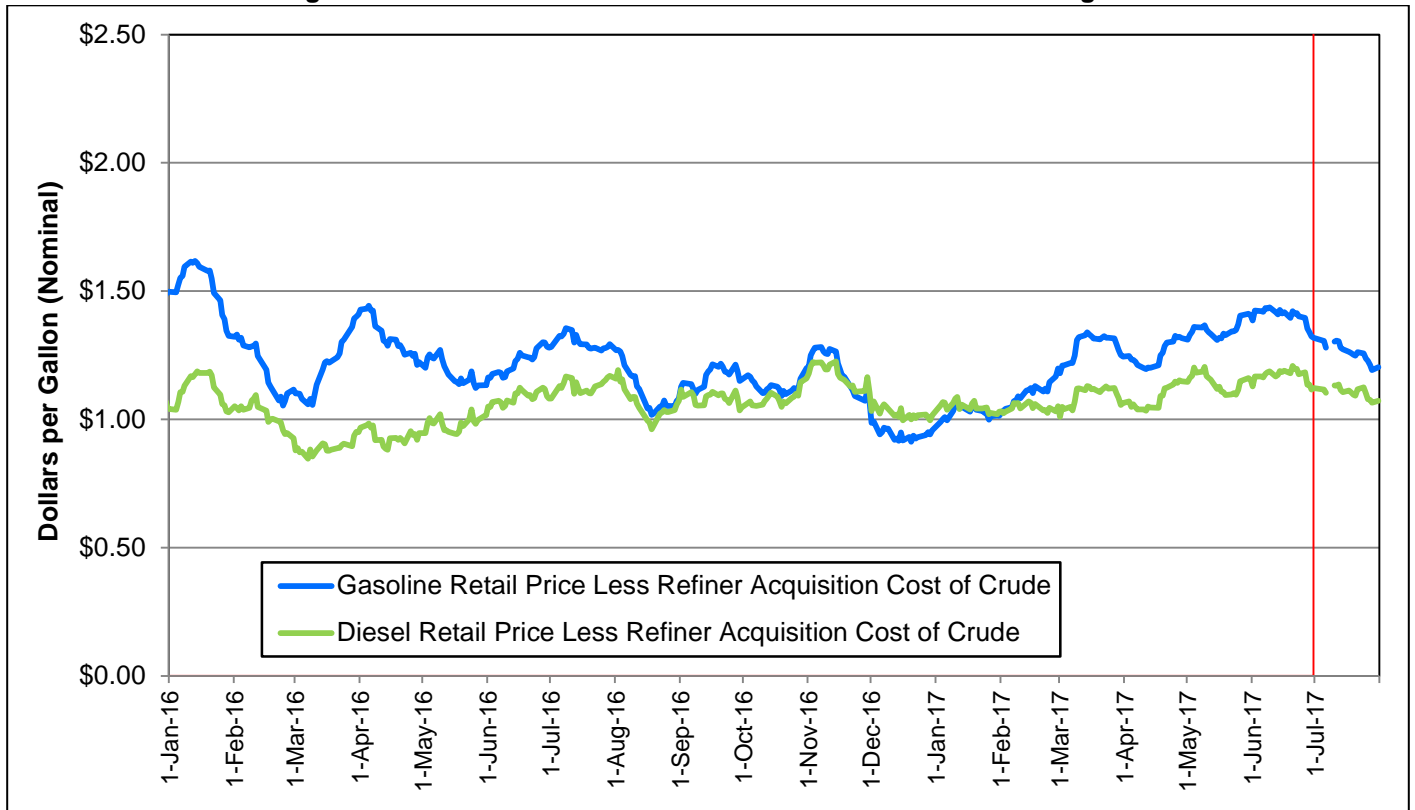
Source: U.S. EIA

July retail diesel prices increased across the United States (**Figure 4**). On July 3, California diesel retail prices were \$2.87 per gallon and remained there through July 24, when prices began to slowly increase \$0.04 to \$2.91 on July 31. Overall, California retail diesel prices averaged \$2.88 in July, 3 percent higher when compared to the July 2016 monthly average of \$2.79. For the first time in 2017, California diesel retail prices averaged under \$2.90. When compared to gasoline prices, California retail diesel remained \$0.07 less than California gasoline retail prices, while the U.S. diesel price was \$0.20 more than U.S. price of gasoline (**Figure 3**).

The average United States retail diesel price fell to \$2.47 on July 3, but the price has increased at least \$0.01 each week afterward. United States and West Coast (less CA) diesel prices increased a total of \$0.06 and \$0.08 during July to end on July 31 at \$2.53 and \$2.70 per gallon, respectively. West Coast diesel prices followed a similar trend as United States diesel prices, while West Coast prices have cumulatively averaged \$0.18 more than U.S. national prices since the beginning of 2017.

| <u>Diesel Prices</u> | |
|------------------------------|-----------|
| <u>July 2017 vs 2016</u> | |
| <u>(Percent Change)</u> | |
| California | 3% higher |
| U.S. | 4% higher |
| West Coast | 3% higher |
| <u>July 2017 Averages</u> | |
| California | \$2.88 |
| U.S. | \$2.50 |
| West Coast | \$2.66 |
| <u>Week of July 31, 2017</u> | |
| California | \$2.91 |
| U.S. | \$2.53 |
| West Coast | \$2.70 |

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



Source: U.S. EIA and OPIS

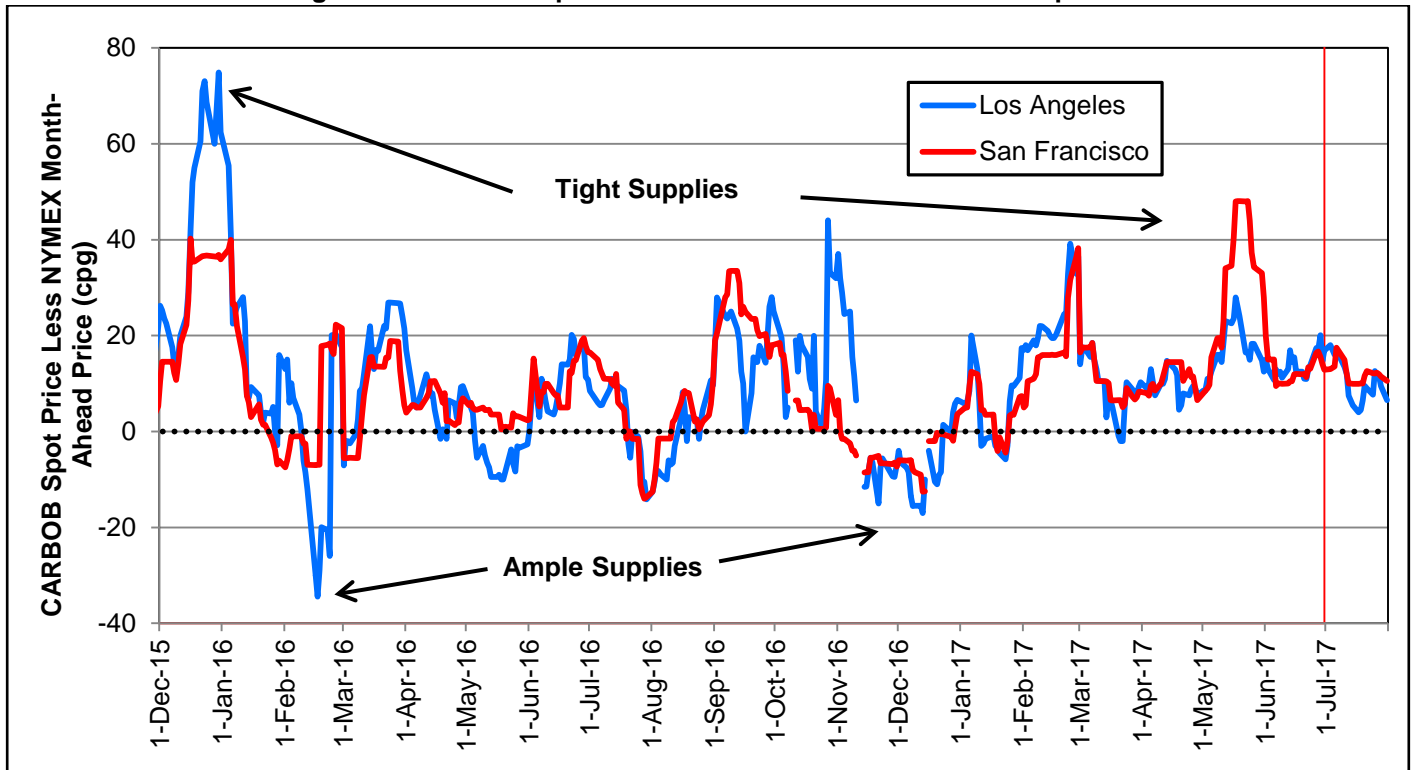
The California Refinery Acquisition Cost (CA-RAC)-to-ex-tax retail gasoline margin fell throughout July. The gasoline margin began the month at \$1.31, remaining stable before falling on July 13, and ended July at \$1.20 (Figure 5). Retail gasoline prices remained stable throughout July, never changing more than 4 cents for July.

Similar to gasoline, the CA-RAC to ex-tax retail diesel margin continued to fall in July. The diesel margin began July at \$1.12 and climbed to \$1.14 on July 12, before settling to \$1.07 on July 31. Both gasoline and diesel margins have fallen 10 percent and 5 percent, respectively, since June.

Margin calculations are based on the retail price, excluding taxes of the product minus the price of the crude oil used to produce the product. Margins are affected by changes in the retail price as well the price of the crude oil. In California, July gasoline and diesel retail prices were stable as no major refinery issues affecting supply occurred. But crude prices eventually increased, after averaging \$43.40 over the first five days; on July 13 prices began to increase, finishing at \$48.23 on July 31. This increase in crude oil prices explains the reduction in margins for both gasoline and diesel for the second half of July

| <u>Crude to Retail Margins</u> | |
|--------------------------------|----------|
| <u>July 2017 vs 2016</u> | |
| (Percent Change) | |
| Gasoline | 3% lower |
| Diesel | 2% lower |
| <u>July 2017 Averages</u> | |
| Gasoline | \$1.26 |
| Diesel | \$1.10 |
| <u>July 31, 2017</u> | |
| Gasoline | \$1.20 |
| Diesel | \$1.07 |

Figure 6: California Spot Gasoline to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS

The Los Angeles (LA) and San Francisco (SF) gasoline spot markets stayed steady through July with both differentials to the New York Mercantile Exchange (NYMEX) price decreasing in comparison to June (**Figure 6**). The average LA-less-NYMEX and SF-less-NYMEX spot gasoline price differentials in July were \$0.10 and \$0.12, respectively, a decrease of nearly 29 percent and 8 percent from June. These averages are higher than year-ago averages by 340 percent for the LA-less-NYMEX and 271 percent for the SF-less-NYMEX spread.

In both the LA and SF spot markets, gasoline was sold at a premium (higher than NYMEX) throughout July. The LA-less-NYMEX spread started from \$0.18 on July 3 and dropped to the monthly low of \$0.04 on July 17 on strong inventory figures. News of refinery outages pushed the premium higher to \$0.13 on July 25 before subsiding to \$0.07 on July 31.

The SF-less-NYMEX price premium resumed the steady decrease that started in June. The SF-less-NYMEX spread was \$0.13 on July 3. The SF gasoline price differential continued to drop to \$0.10 on July 12 and stayed at that level until July 20. By July 31 the SF differential had increased to \$0.11.

Gasoline Spot-Futures Spread

July 2017 vs 2016

| | |
|---------------|-----------|
| Los Angeles | 8¢ higher |
| San Francisco | 9¢ higher |

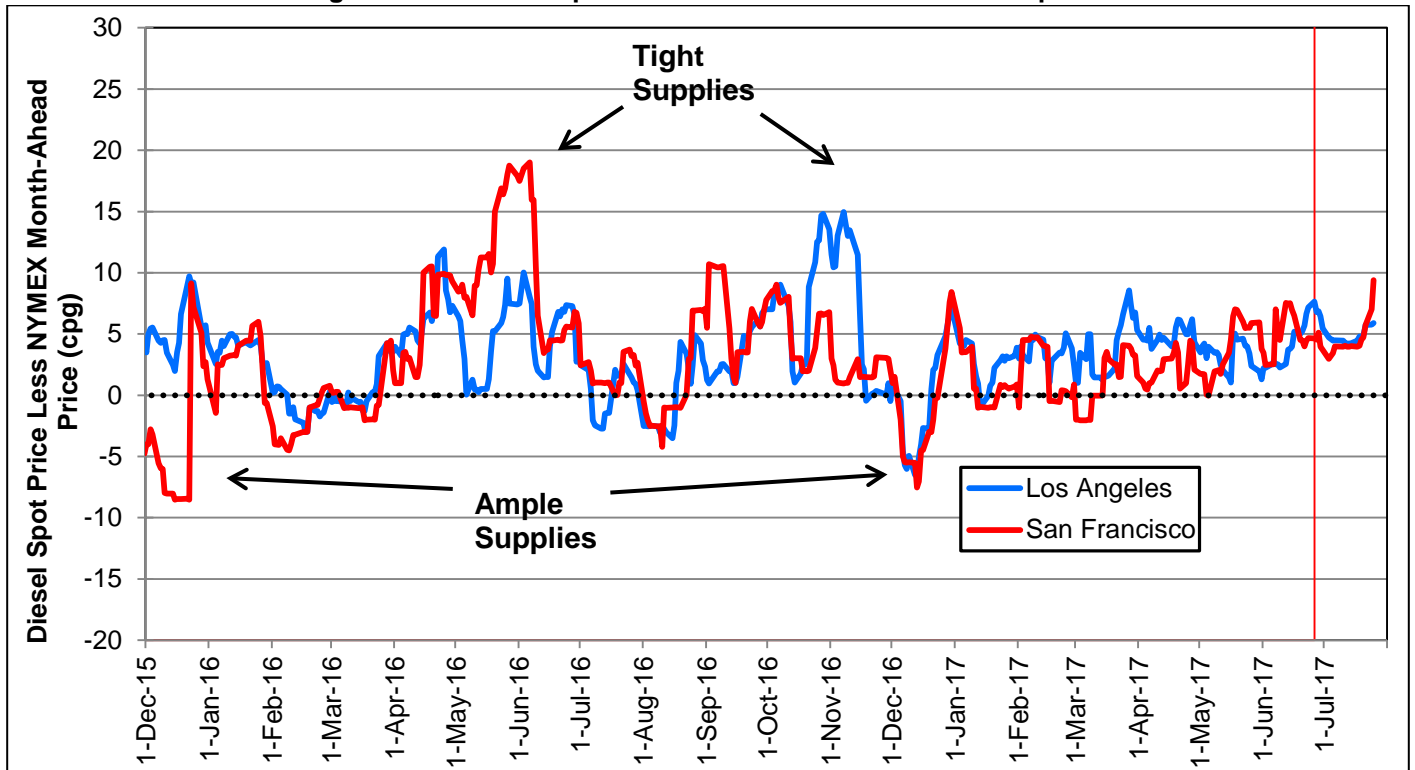
July 2017 Averages

| | |
|---------------|-----|
| Los Angeles | 10¢ |
| San Francisco | 12¢ |

July 31, 2017

| | |
|---------------|-----|
| Los Angeles | 7¢ |
| San Francisco | 11¢ |

Figure 7: California Spot Diesel to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS

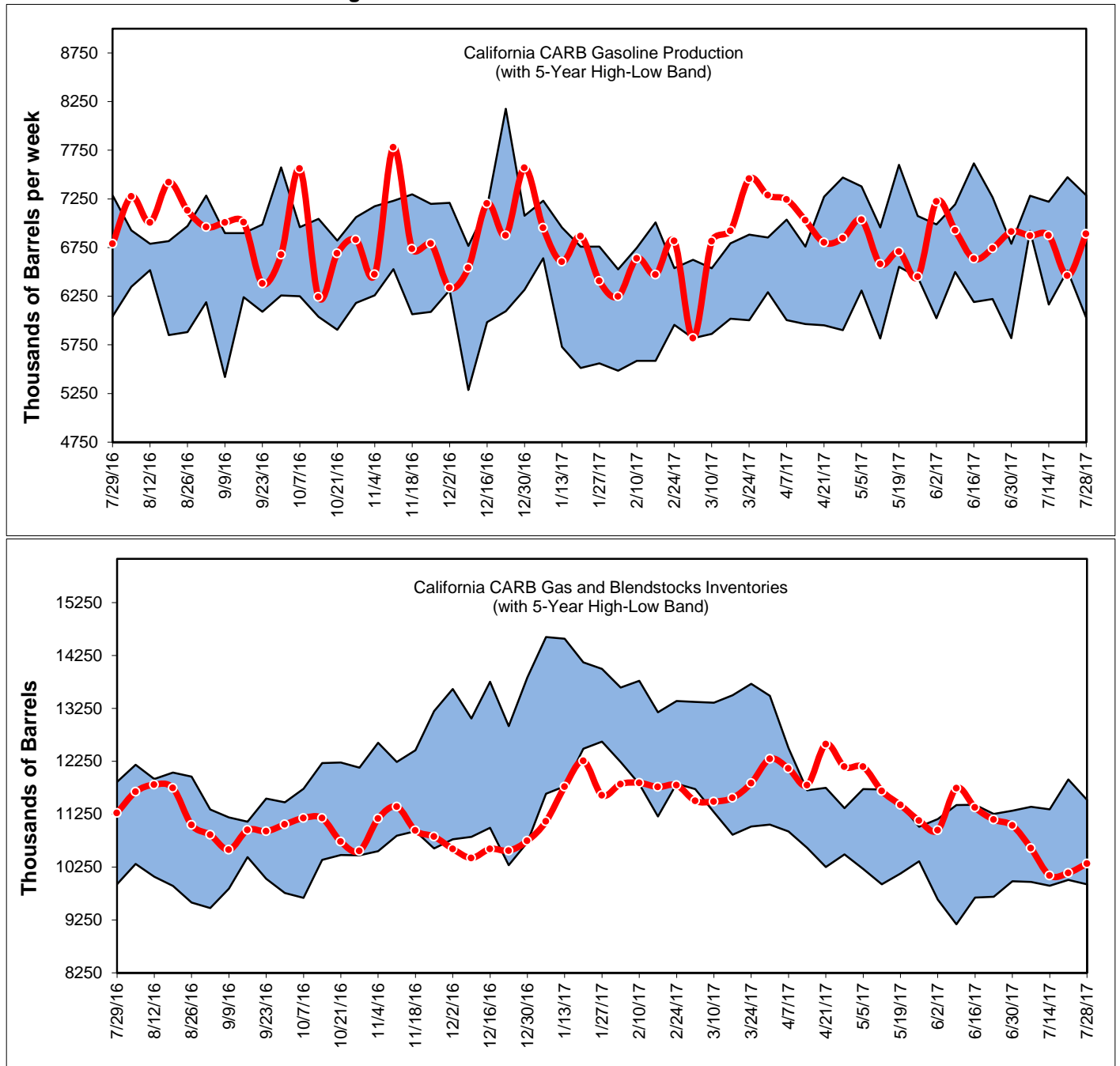
Southern California’s diesel spot price has averaged \$0.05 higher than NYMEX futures prices for July. Since the last *Petroleum Watch*, the LA-less-NYMEX diesel differential was \$0.08 on June 26 and dropped \$0.03 to \$0.05 starting July 3 (**Figure 7**). The LA spread has been relatively steady through the month until July 17 when the spread increased from \$0.04 to \$0.06 ending July 31.

The San Francisco less-NYMEX diesel spread started at \$0.03 on July 3 and increased to \$0.04 on July 17. The SF-less-NYMEX differential increased a total of \$0.05 to end July 31 at \$0.09, the highest positive spread since September 8, 2016, which was the last time SF-less-NYMEX differential was greater than \$0.10. During the same time, Phillips 66 Rodeo had an unplanned repair on July 13 and restarted the units on July 26. Overall, the SF-less-NYMEX did manage to slow down to remain under \$0.10 but \$0.03 higher than LA-less-NYMEX spread.

| <u>Diesel Spot-Futures Spread</u> | |
|-----------------------------------|-----------|
| <u>July 2017 vs 2016</u> | |
| Los Angeles | 4¢ higher |
| San Francisco | 3¢ higher |
| <u>July 2017 Averages</u> | |
| Los Angeles | 5¢ |
| San Francisco | 5¢ |
| <u>July 31, 2017</u> | |
| Los Angeles | 6¢ |
| San Francisco | 9¢ |

California Gasoline and Diesel Production and Inventories

Figure 8: Gasoline Production and Inventories

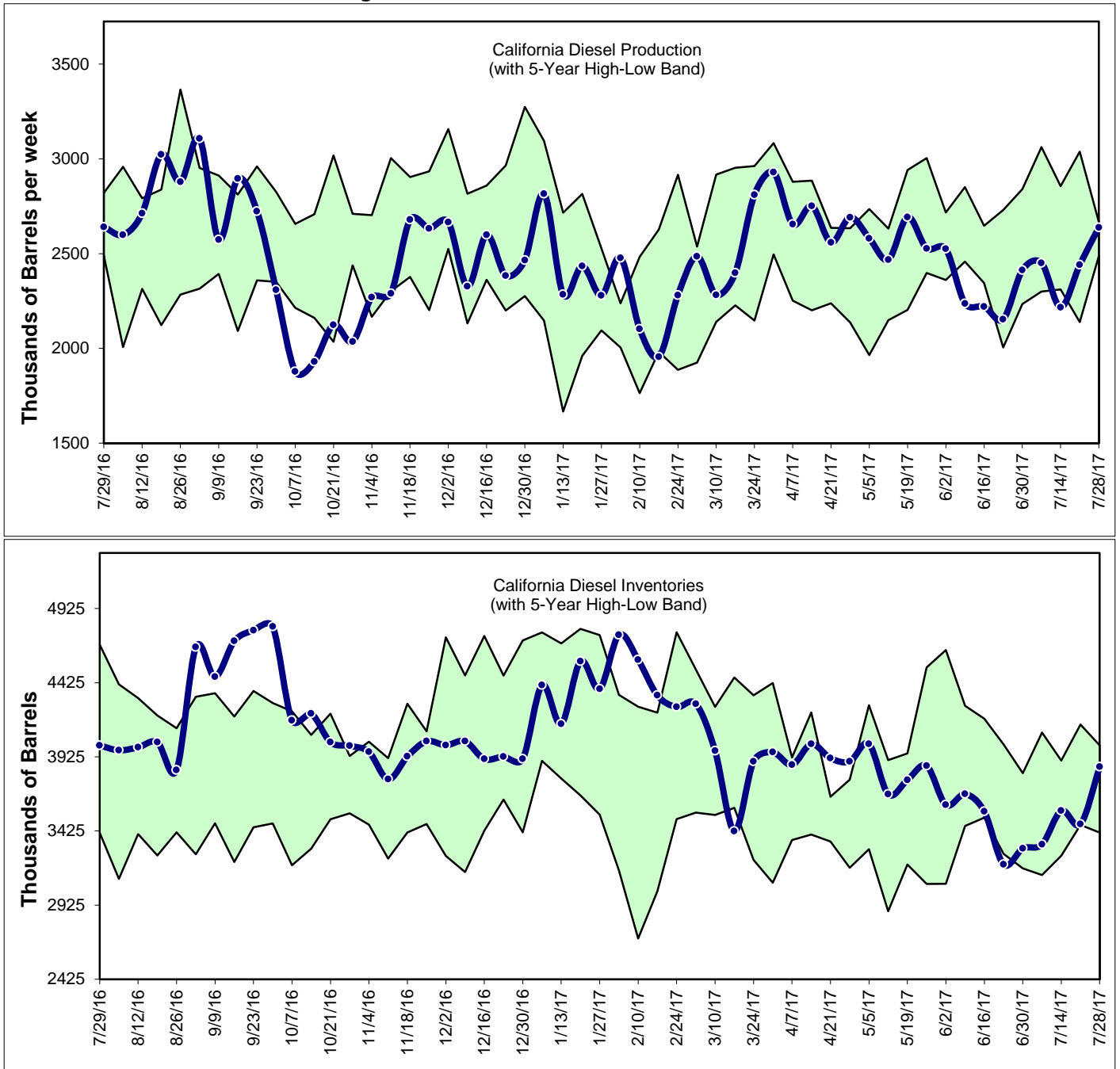


Source: PIIRA data

California gasoline production reached 6.9 million barrels per week (bpw) for the first two weeks of July (**Figure 8**). However, the production dropped 6 percent on July 21 to 6.5 million bpw and finished the month at 6.9 million bpw to remain within the five-year band.

California gasoline inventories continued to decrease in July and fell to 10 million barrels on July 14, the lowest since September 2014 but at the lower part of the five-year band. Overall, gasoline inventory levels in July averaged 0.4 million barrels lower compared to the same time last year.

Figure 9: Diesel Production and Inventories



Source: PIIRA data

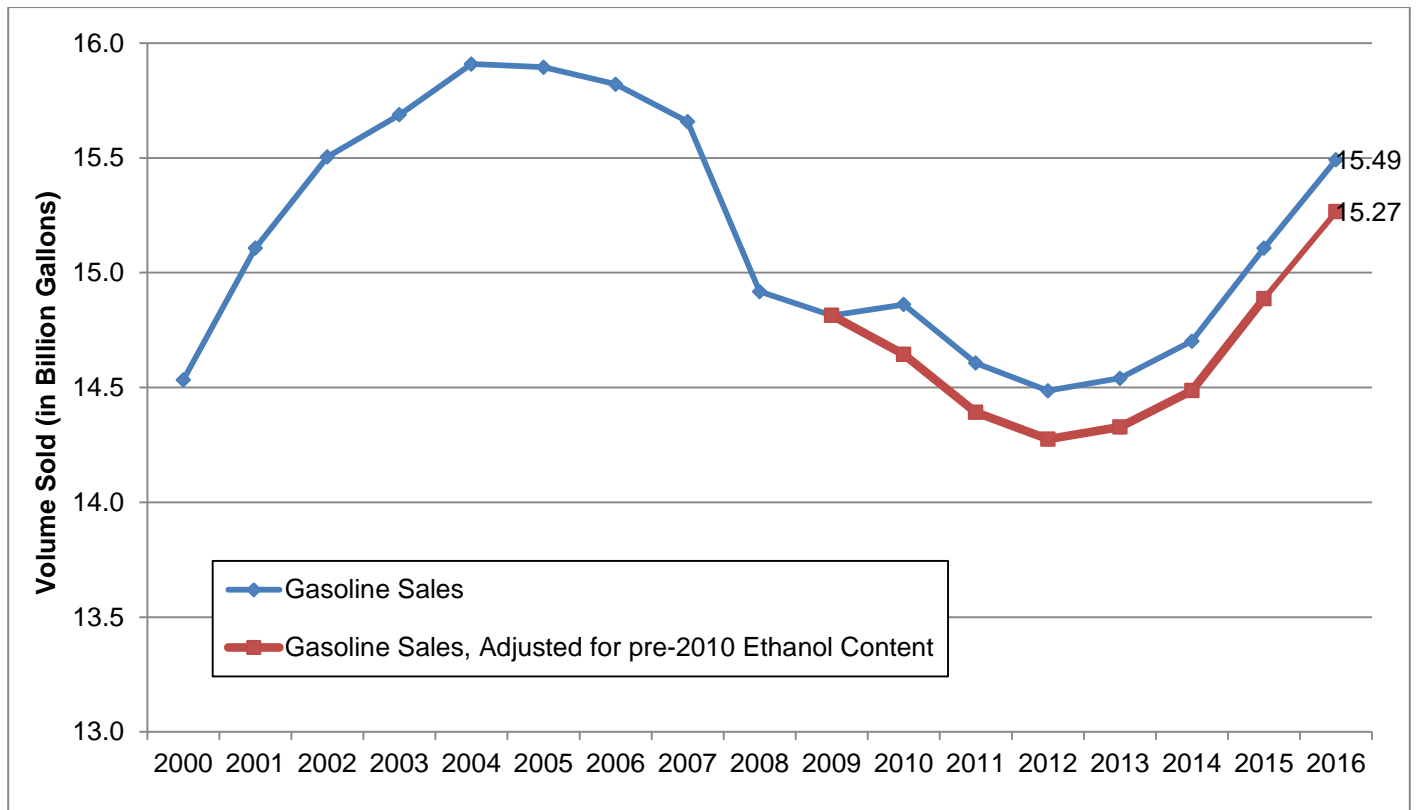
California diesel production reached at 2.5 million bpw on July 7 but reversed direction and went below the five-year band on July 14 to 2.2 million bpw. Production rates improved on July 21 to 2.4 million bpw and concluded the month at 2.5 million bpw. Despite the late increases, diesel production rates in July averaged 145,000 bpw less than July 2016 (**Figure 9**).

California diesel inventories started July at 3.3 million barrels on July 7 and increased 15 percent to finish the month at 3.8 million barrels on July 28. The average diesel inventory level for July was 12,000 barrels greater than the average inventory level in July 2016.

California Petroleum Fuels Consumption in 2016

Gasoline Sales

Figure 10: California Gasoline Sales by Volume 2000 to 2016



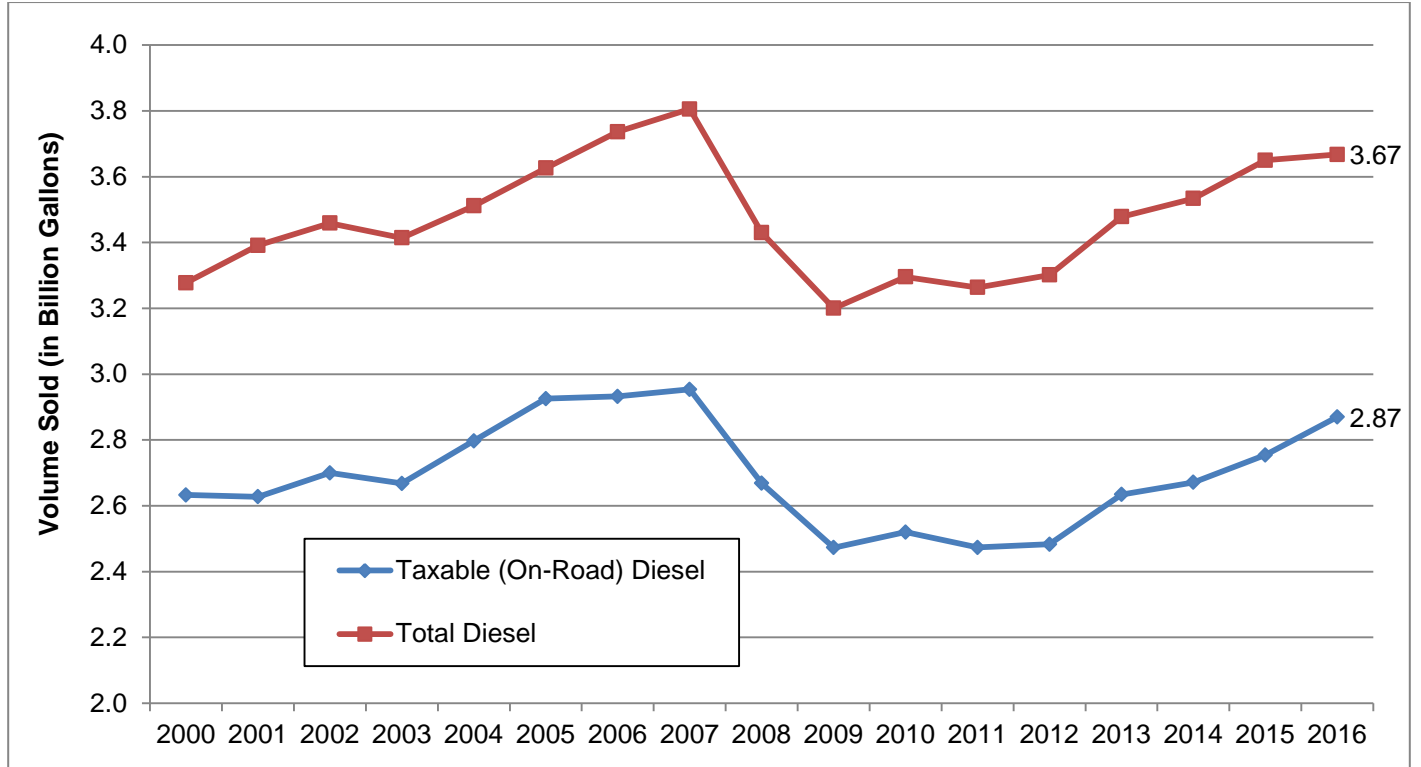
Source: CA Board of Equalization and CEC Transportation Fuels Data Unit

California gasoline sales by volume in 2016 were at 15.49 billion gallons of gasoline, up 2.5 percent higher than in 2015, as reported by the California Board of Equalization (BOE). In 2016, California's gasoline sales were 6.5 percent higher, or 1 billion gallons, more than the last recorded year in which gasoline sales declined (2012, 14.27 billion gallons). The 2016 gasoline sales volume is still 3.5 billion gallons lower than growth rates projected using a 1950-2010 historical sales trend line.

From 2003 to 2009, gasoline fuel specifications required California gasoline blends to contain 5.7 percent ethanol by volume. In 2010, fuel specifications were updated to allow up to 10 percent ethanol blended into finished fuel. This update effectively lowered the fuel economy of all gasoline vehicles by 1.46 percent and explains the increase in gasoline sales from 2009 to 2010 as drivers compensated for the loss (**Figure 10**). Adjusting for ethanol volume for 2010 and beyond allows for more accurate comparisons of petroleum use for prior years. Once adjusted for the ethanol blend (energy loss), gasoline consumption in both 2015 and 2016 are still lower than peak consumption levels seen in 2004.

Diesel Sales

Figure 11: California Diesel Sales by Volume 2000 to 2016



Source: CA Board of Equalization and CEC Transportation Fuels Data Unit

California taxable diesel sales in 2016 (representing on-road fuel usage) were 2.87 billion gallons, 4 percent greater than 2015. Sales are continuing steady growth since the 2008 and 2009 drops in consumption that resulted from the economic recession of 2008. Total diesel sales in 2016 (both on-road and off-road) are up 0.47 percent compared to 2015 and 12.74 percent higher than the 2009 volume. Diesel volumes are still 2 billion gallons lower than the projected 1950-2010 historical sales growth rate.