PETROLEUM WATCH
California Energy Commission
March 2017

Recent Petroleum News and Outside Analyses

Prices

- **Crude Oil Prices:** Brent and West Texas Intermediate (WTI) crude prices closed at $54.69 and $53.99 respectively on February 27 (**Page 2**).
- **California Retail Gasoline Prices:** On February 27, prices increased to $2.95, a gain of $0.16 since the end of January. Through February, California prices averaged $0.59 higher than the national average (**Page 4**).
- **California Retail Diesel Prices:** On February 27, prices reached $2.96, an increase of $0.03 from the end of January. Through February, California prices averaged $0.39 higher than the national average (**Page 5**).

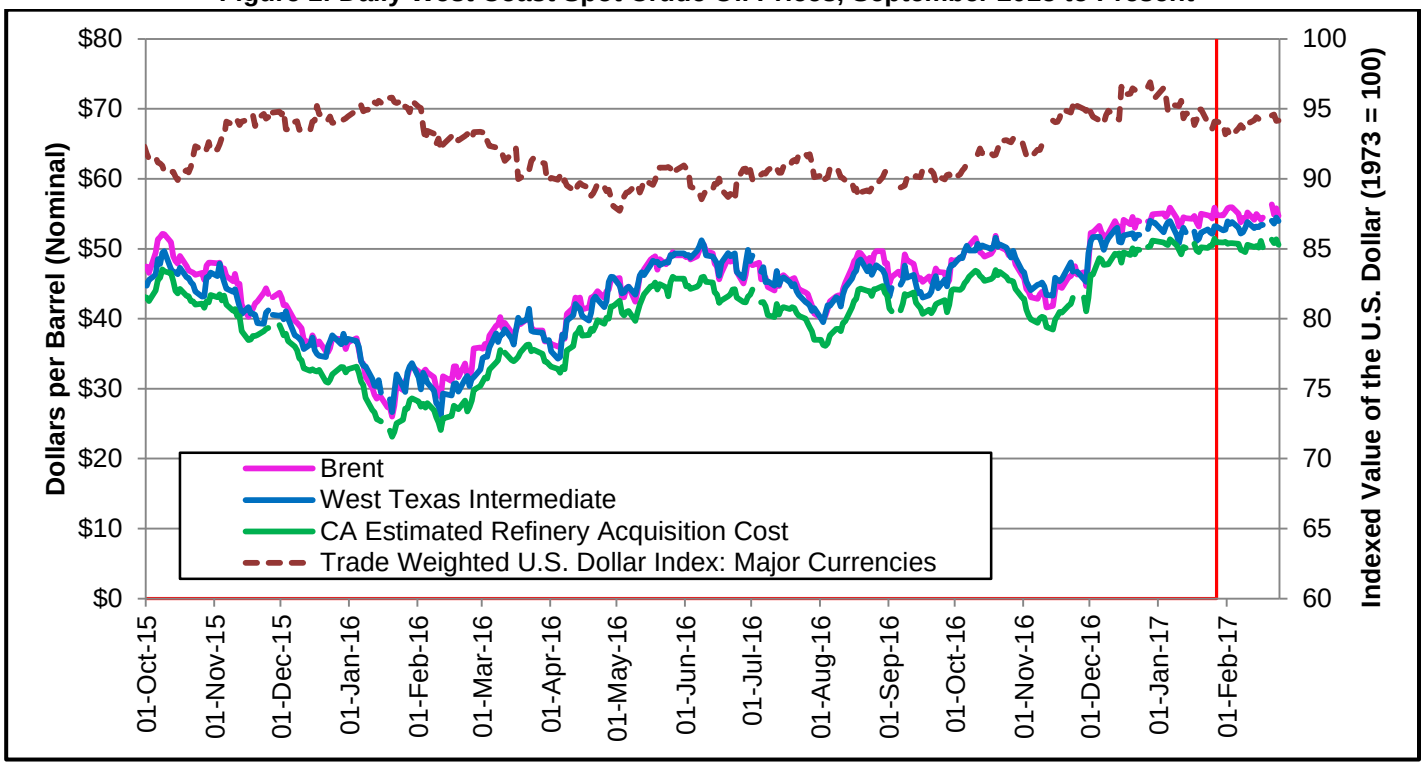
Refining News

- **Tesoro Wilmington Refinery:** February 12, the refinery restarted two units that underwent planned maintenance on January 13. February 13, the refinery brought back online a hydrocracker unit that started planned maintenance on February 4.
- **San Joaquin Refinery:** February 19, the 23,400 barrel per day (bpd) refinery completed its scheduled plant-wide maintenance that began on February 4.
- **PBF Torrance Refining LLC:** February 27, the 155,000 bpd refinery restarted its crude unit after it was forced to shut down due to a pump fire on February 18.
- **Tesoro Golden Eagle Refinery:** February 28, the 167,000 bpd refinery experienced a loss of power that caused a shut down. The refinery is expected to be back online by March 10.
- **Valero Benicia Refinery:** March 1, the 144,000 bpd refinery completed scheduled maintenance that began on January 13.

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

Crude Oil Prices

Figure 1: Daily West Coast Spot Crude Oil Prices, September 2015 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 increased slightly in February to 15 month highs (Figure 1). The price of Brent crude oil reached $56.34 per barrel on February 21, the highest price since August 2015. On February 23, West Texas Intermediate (WTI) crude reached $54.48 per barrel, the highest price since August 2015. The California Estimated Refiner Acquisition Cost (CA-RAC)[1] of crude oil reached $51.35 on February 23.

Prices for all grades of crude oil remained considerably higher than year-ago levels (**see Crude Oil Prices table to the right**). Throughout this period, CA-RAC remained roughly $3 lower than WTI and $5 lower than Brent. Crude oil price increases were consistent with the Organization of the Petroleum Exporting Countries' (OPEC) strategy of reducing supply in 2017, relative to 2016. While non-OPEC countries appeared to have raised production in response to the cuts, OPEC's February Monthly Oil Report still reports a "contraction of 0.66 million bpd" of world production.[2]

Crude Oil Prices

February 2017 vs 2016
(Percent Change)

Brent	**71% higher**
WTI	**76% higher**
CA-RAC	**85% higher**

February 2017 Averages

Brent	**$54.94**
WTI	**$53.40**
CA-RAC	**$50.53**

February 27, 2017

Brent	**$54.69**
WTI	**$53.99**
CA-RAC	**$50.59**

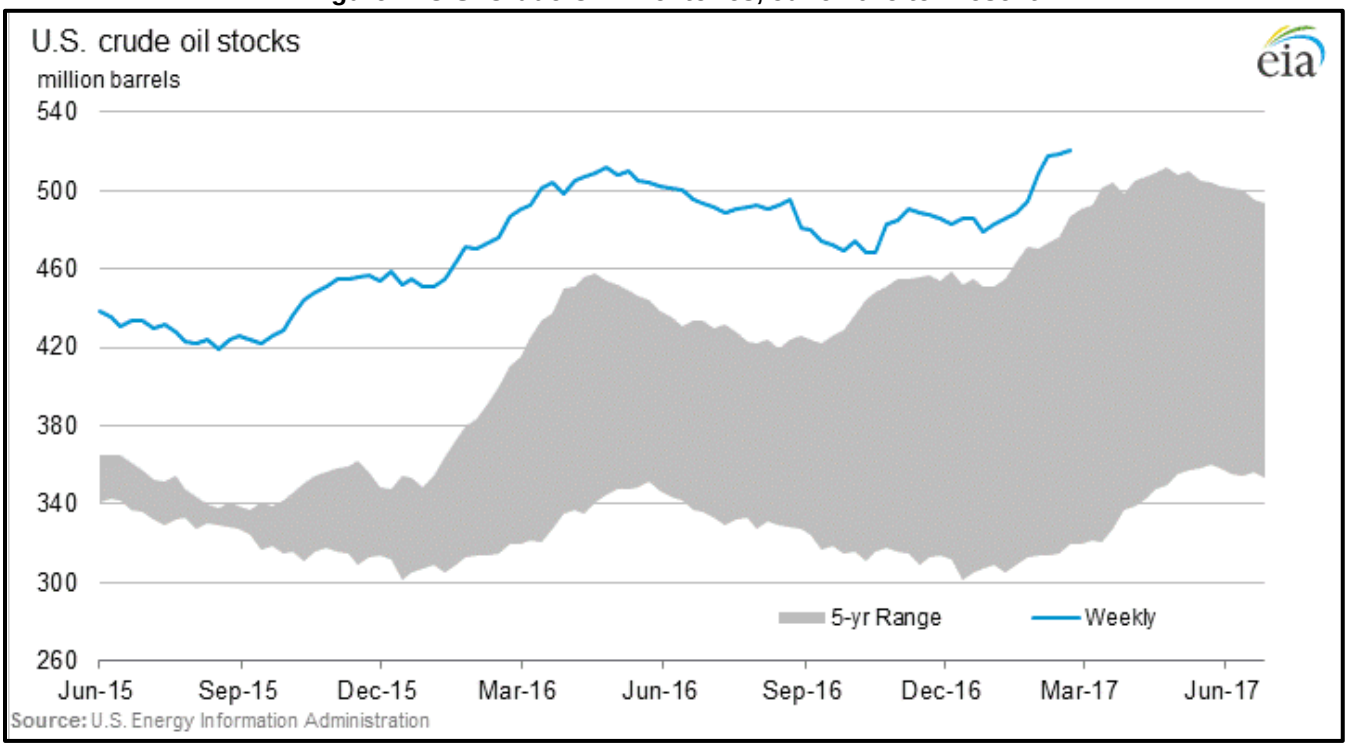
1 California estimated refiner acquisition cost is a weighted average of the prices of California (San Joaquin Valley) crude, Alaskan crude, and foreign crude.
[2] OPEC February Monthly Report, page 1: http://www.opec.org/opec_web/static_files_project/media/downloads/publications/MOMR%20February%202017.pdf

Crude Oil Production and Storage

U.S. crude oil inventories have risen since February's *Petroleum Watch* (**Figure 2**). Domestic crude oil production and crude oil imports continue to rise, while refineries' inputs decreased across the United States.

- U.S. crude oil production for February is estimated by the U.S. Energy Information Administration (EIA) at 8.99 million bpd, a slight 40,000 bpd increase over January levels. This is an 80,000 bpd decline from year-ago production levels of 9.07 million bpd. United States crude oil imports continued to rise in February to an estimated 8.2 million bpd, down from 8.4 million bpd in December. When compared to import levels from February 2016, this is an increase of 401,000 bpd.
- U.S. crude oil refinery inputs decreased by 820,000 bpd from January input levels, finishing February at 15.6 million bpd. Refinery inputs are 150,000 bpd higher than year-ago levels.
- Crude oil inventories in the United States increased by 8.7 million barrels during January to 494.8 million barrels. The gap between year-ago (a previous five-year high) and current inventories remains at 23.5 million barrels. The combination of increased production and imports with lower refinery inputs has allowed inventories to rise.

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



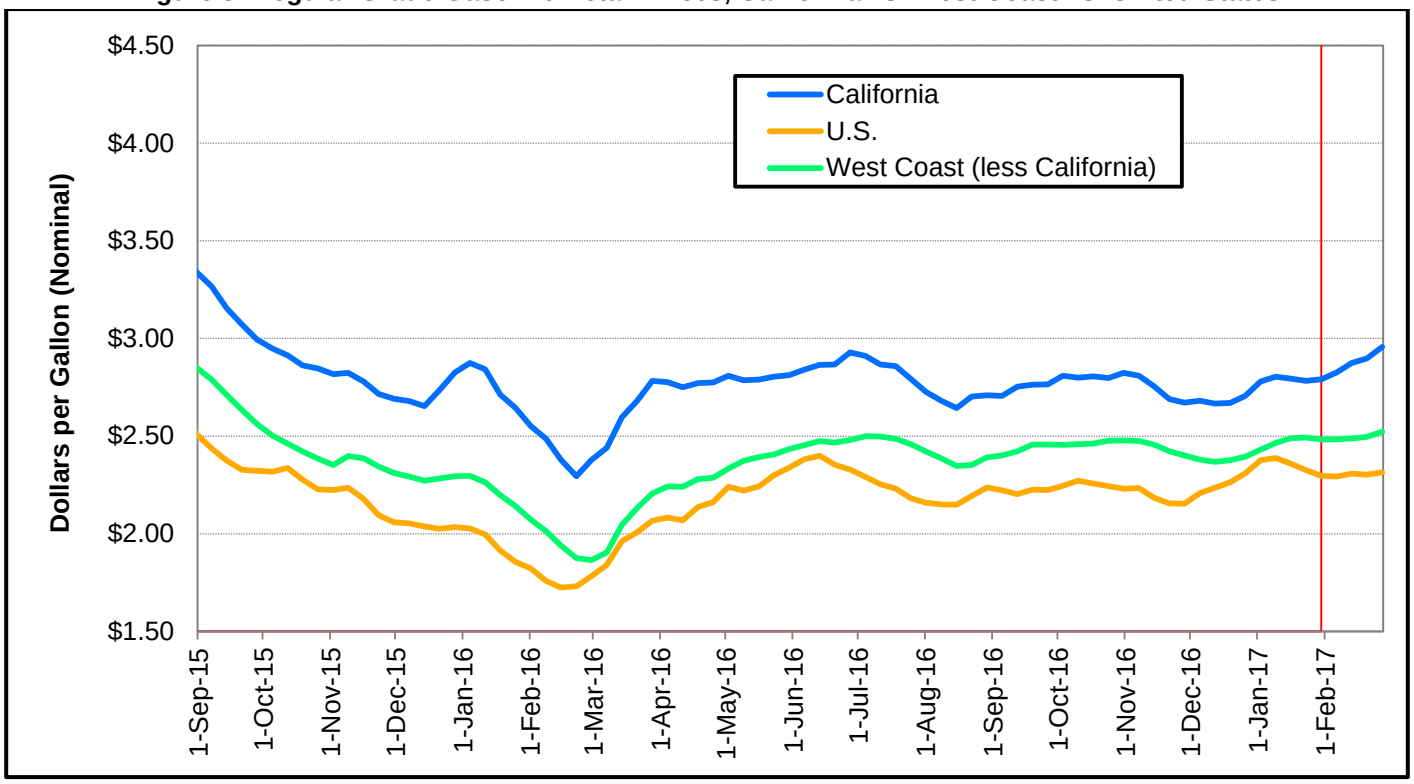
Source: U.S. EIA

- According to OPEC's February Monthly Oil Report, total January OPEC production decreased by 890,200 bpd to 32.14 million bpd. This has surpassed OPEC's original target number set in November 2016, at 32.5 million bpd. OPEC is reporting 90 percent compliance with the agreement with nearly all OPEC participants decreasing output with the exception of Iran, Iraq, Libya, and Nigeria.[3]

[3] http://money.cnn.com/2017/02/10/investing/oil-opec-production-cut-iea/

Gasoline and Diesel Retail Prices

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



Source: U.S. EIA

Throughout February 2017, California retail gasoline prices increased after the small price drop in January 2017 (**Figure 3**). From February 6, 2016 to February 27 2017, California prices went from $2.82 to $2.95. The $0.13 increase outpaced the $0.02 and $0.04 gasoline price increases seen in the United States and West Coast (less California) respectively.

West Coast retail gasoline prices (minus California) increased from $2.48 on February 6, 2017 to $2.52 on February 27, 2017. For the rest of the nation, gasoline prices reached $2.29 on February 6, 2017, and $2.31 on February 27, 2017. February marked the largest California less U.S. differential since April 2016. February's differential increased $0.11, moving from $0.53 to $0.64.

The widening California less U.S. differential indicates that California gasoline prices are rising due to factors other than crude oil prices (**see page 6**). A crude oil price hike should affect all gasoline prices rather than California prices alone. One possibility is that California refineries typically undergo maintenance during this time of year. California gasoline standards also switch over to the more stringent summer blend in March and refineries use the downtime to modify their production to match the summer blend standard.

Gasoline Prices

February 2017 vs 2016
(Percent Change)

California	**19% higher**
U.S.	**31% higher**
West Coast	**28% higher**

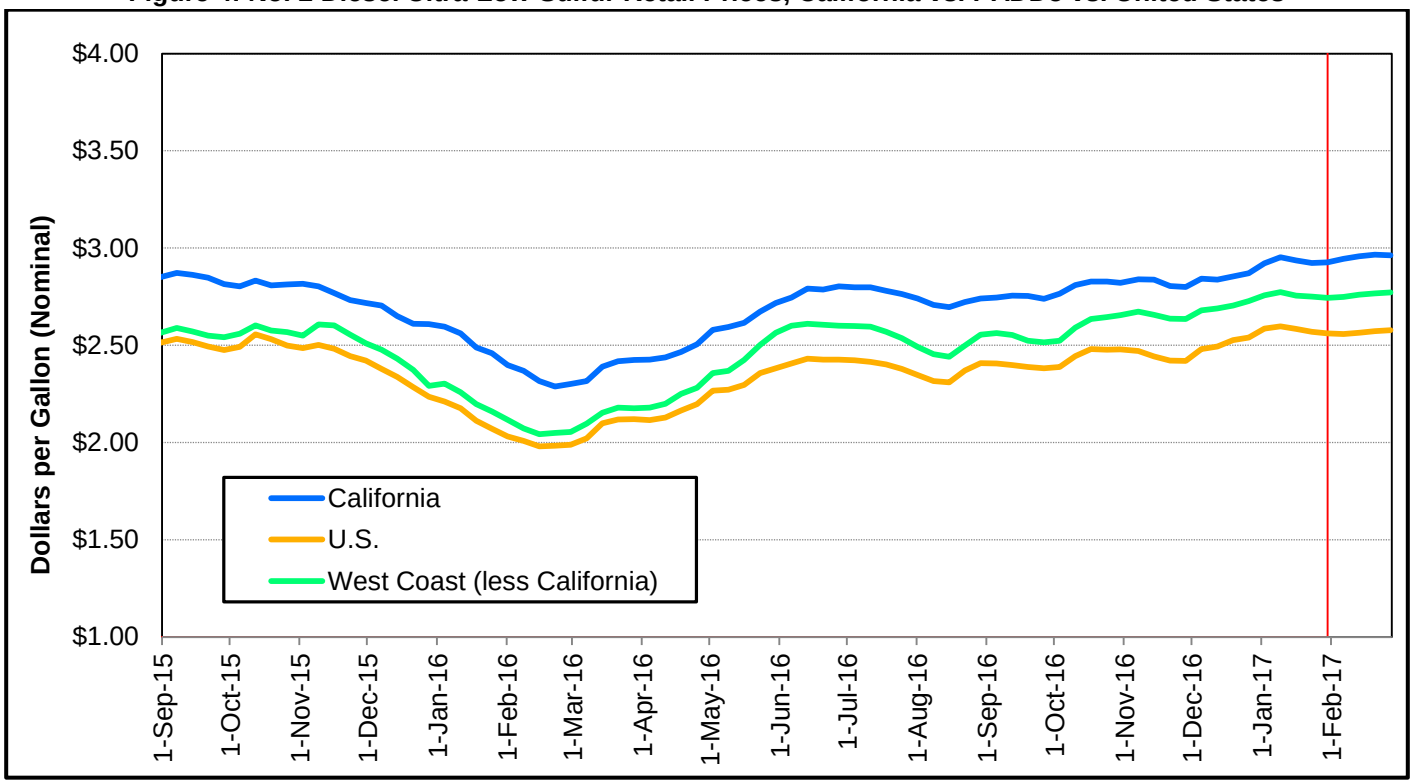
February 2017 Averages

California	**$2.89**
U.S.	**$2.30**
West Coast	**$2.50**

Week of February 27, 2017

California	**$2.95**
U.S.	**$2.31**
West Coast	**$2.52**

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



Source: U.S. EIA

California diesel prices increased slightly in February reaching $2.96 on February 27 **(Figure 4)**, an increase of $0.04 compared to the last week in January. United States. and West Coast (less California) prices rose at similar rates, both average prices increased $0.02 to $2.58 and $0.02 to $2.77, respectively. California prices averaged $0.39 higher than United States prices throughout February.

Trends for diesel prices in the months ahead indicate a rise. While California's diesel supply tends to be stable throughout the year, as most refineries have excess production capacity, demand often rises as diesel fuel use for farm equipment increases during planting season. That said, California has experienced a very wet February that has likely pushed back the planting season, delaying a spike in diesel demand.

Diesel Prices

February 2017 vs 2016
(Percent Change)

California	**14% higher**
U.S.	**8% higher**
West Coast	**12% higher**

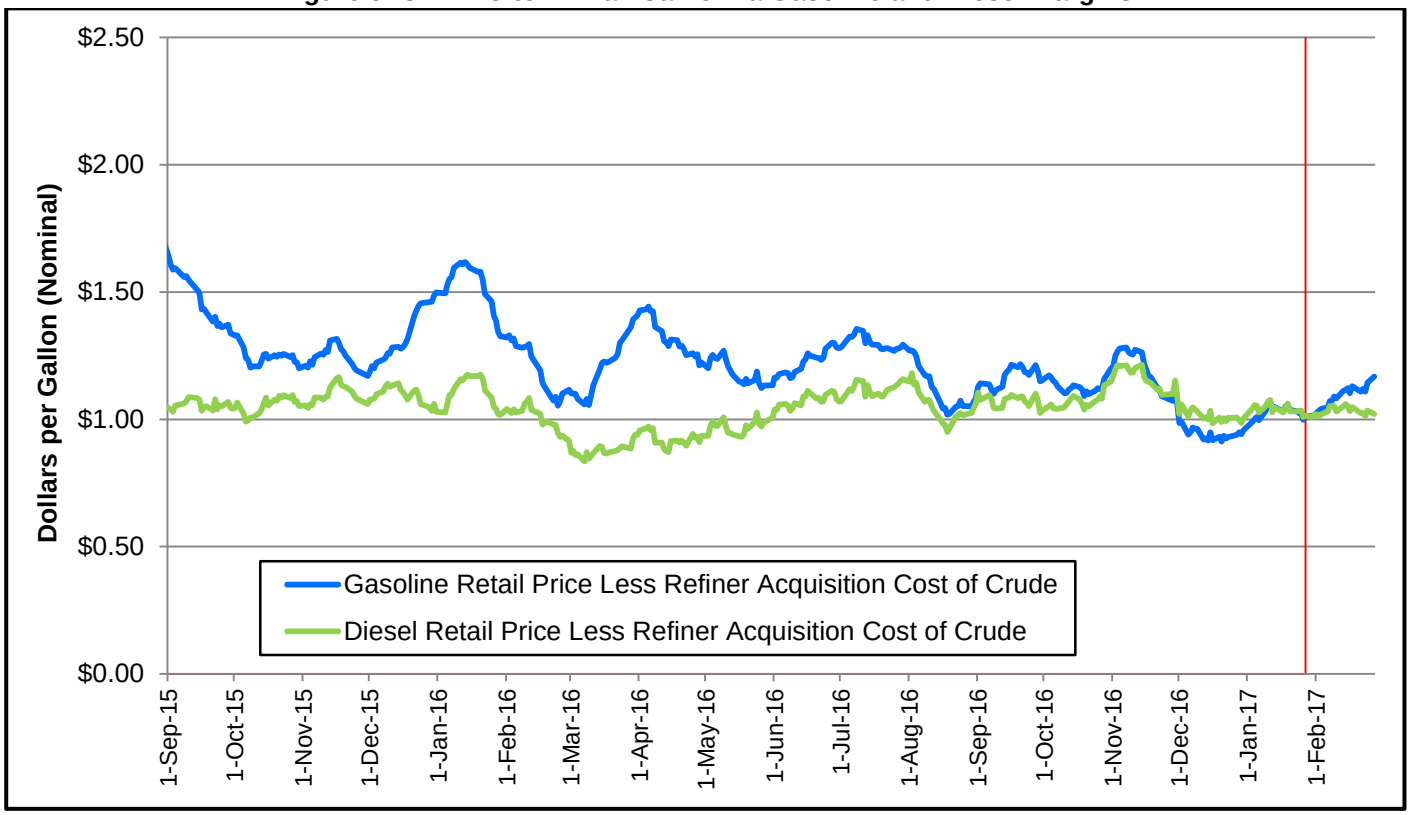
February 2017 Averages

California	**$2.96**
U.S.	**$2.57**
West Coast	**$2.76**

Week of February 27, 2017

California	**$2.96**
U.S.	**$2.57**
West Coast	**$2.77**

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



Source: U.S. EIA and OPIS

After four months of gasoline and diesel CA-RAC-to-Retail margins exhibiting price parity (October 2016 to January 2017 average difference was $0.00), these margins again began to delink in February 2017. This delinking can be attributed to the gasoline CA-RAC-to-Retail margin increasing $0.14 in February, from $1.03 on February 1 to $1.17 on February 27 (also the high for the month). In contrast, the diesel CA-RAC-to-Retail margin remained steady both opening and closing the month at $1.02. The current difference between the two margins is $0.15, a level not seen since June 22, 2016. This value is still $0.20 less than the average March 2015 to June 2016 margin difference (time period of the Torrance Refinery outage) and $0.77 less than that period's high difference.

While both margins remain less than the margin value experienced in 2015, the gasoline CA-RAC-to-Retail margin increases appear to be a reaction to recent refinery issues (**page 1**) and the seasonal switch from winter to summer blend gasoline. This switch in fuel reduces Reid Vapor Pressure (RVP) for gasoline from 14 to 5.99 for Northern California and from 12.5 to 5.99 in Southern California. This shift in RVP helps prevent vapor lock on hot summer days and improves vehicle ignition in winter for California vehicles. This switch to summer blend also reduces the types of blending components refiners can use to make gasoline, typically making gasoline more expensive during the summer.

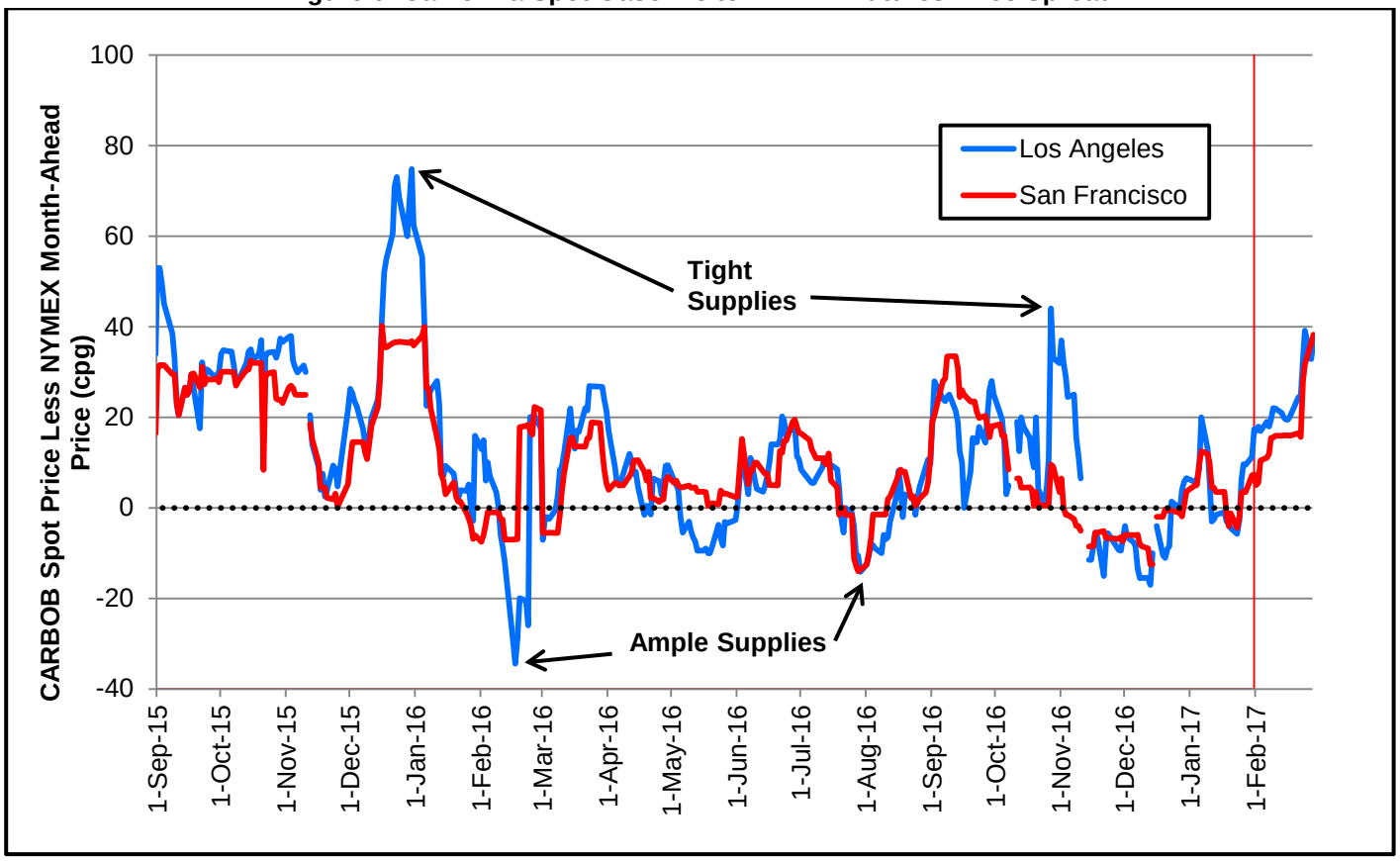
Crude to Retail Margins

February 2017 vs 2016 (Percent Change)	
Gasoline	**9% lower**
Diesel	**3% higher**

February 2017 Averages	
Gasoline	**$1.09**
Diesel	**$1.04**

February 27, 2017	
Gasoline	**$1.17**
Diesel	**$1.02**

Figure 6: California Spot Gasoline to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS

The Los Angeles (LA) and San Francisco (SF)-less-New York Mercantile Exchange (NYMEX) spot gasoline price differentials increased steadily throughout February 2017 (**Figure 6**). The SF-less-NYMEX differential reached $0.39 on February 28, the highest since January 2016. The LA-less-NYMEX differential reached $0.40 on February 24, the highest since October 2016, before falling to $0.33 on anticipation of the Torrance refinery returning to full operations. On news of a delay to the restart, the LA-less-NYMEX differential returned to $0.37 on February 28.

Various factors contributed to the gasoline spot market increases. At the beginning of February, CARB gasoline and blendstock inventories were well below the five-year band (**Figure 8**), with the bulk of the deficit in the San Francisco Bay Area. This combined with San Francisco refinery issues, like the planned large-scale turnaround at Valero Benicia in January, and the unexpected incidents at Chevron's Richmond and Tesoro's Golden Eagle Martinez refineries, further constrained the California gasoline market and created a need for additional barrels in the market. The Los Angeles gasoline market also had refinery issues with incidents at the Chevron El Segundo, Tesoro Wilmington, and PBF Torrance refineries.

Gasoline Spot–Futures Spread

February 2017 vs 2016

Los Angeles	**26¢ higher**
San Francisco	**14¢ higher**

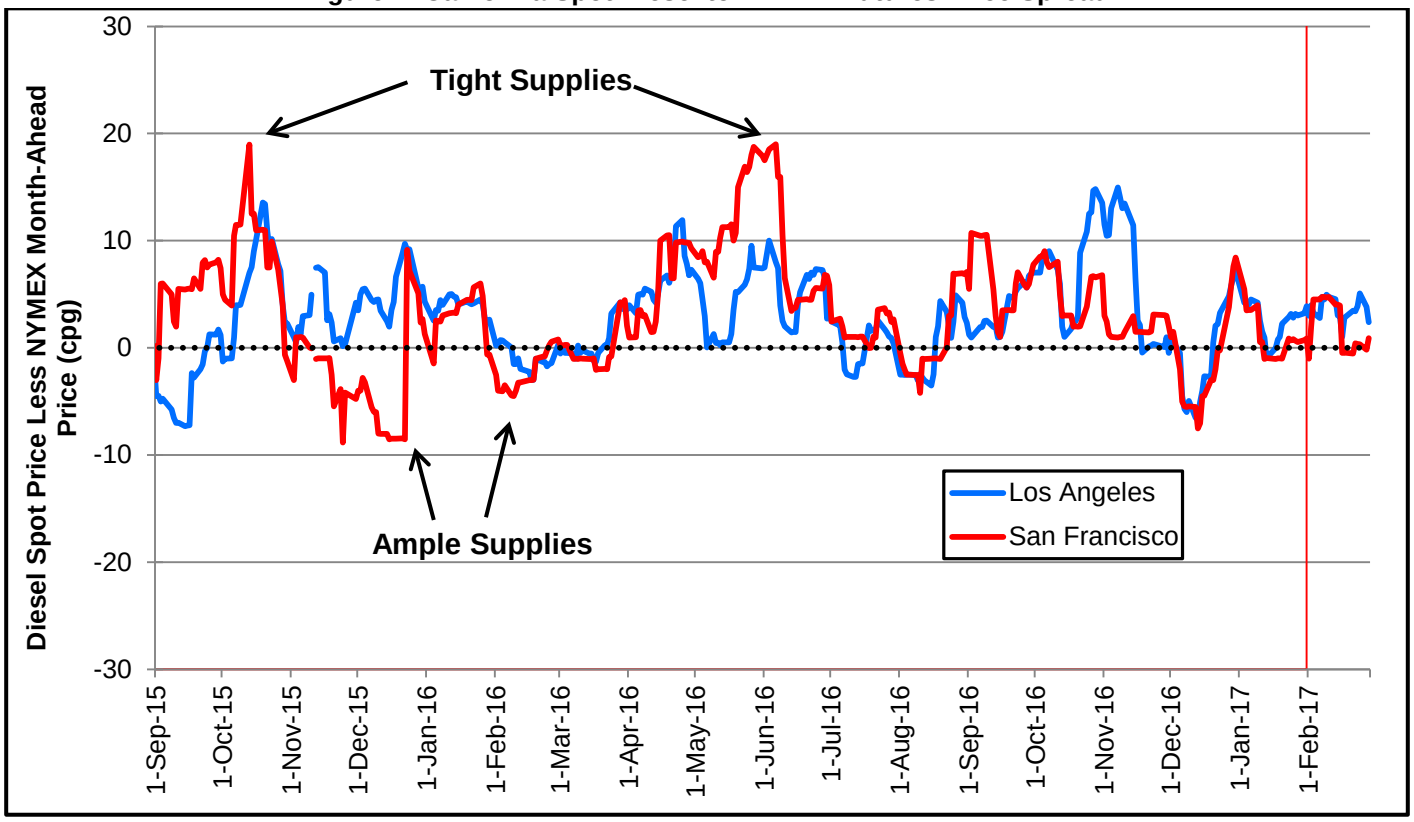
February 2017 Averages

Los Angeles	**24¢**
San Francisco	**18¢**

February 28, 2017

Los Angeles	**37¢**
San Francisco	**39¢**

Figure 7: California Spot Diesel to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS

The LA-less-NYMEX diesel differential throughout February was small in value (**Figure 7**). It oscillated around $0.04, but stayed mostly below that number resulting in a monthly average of $0.03. Remarkably, this is $0.01 higher than a month ago and $0.05 higher than a year ago even at these low price points. The LA diesel spot market remained above the NYMEX due to Southern California's low diesel production levels, but was tempered by high California inventory levels (**Figure 9**).

The SF-less-NYMEX diesel differential, on the other hand, began below the NYMEX price in February. It quickly rose to $0.04 on February 3, where it hovered for the first half of the month before dropping to $0.00 on February 16. The monthly average for the SF-less-NYMEX differential was $0.02, which is just $0.01 higher than last month and $0.05 higher than a year ago. Valero's Benicia Refinery maintenance likely influenced the differential in the early part of the month, but with wrap up occurring at the end of February, the differential dropped.

Neither differential was exceedingly high in February, likely held in check by California's high diesel inventory levels. EIA data[4] shows refinery utilization rates dropping in February, with refiners scaling distillates production (**Figure 9**), rather than gasoline production (**Figure 8**).

Diesel Spot–Futures Spread

February 2017 vs 2016	
Los Angeles	5¢ lower
San Francisco	5¢ higher

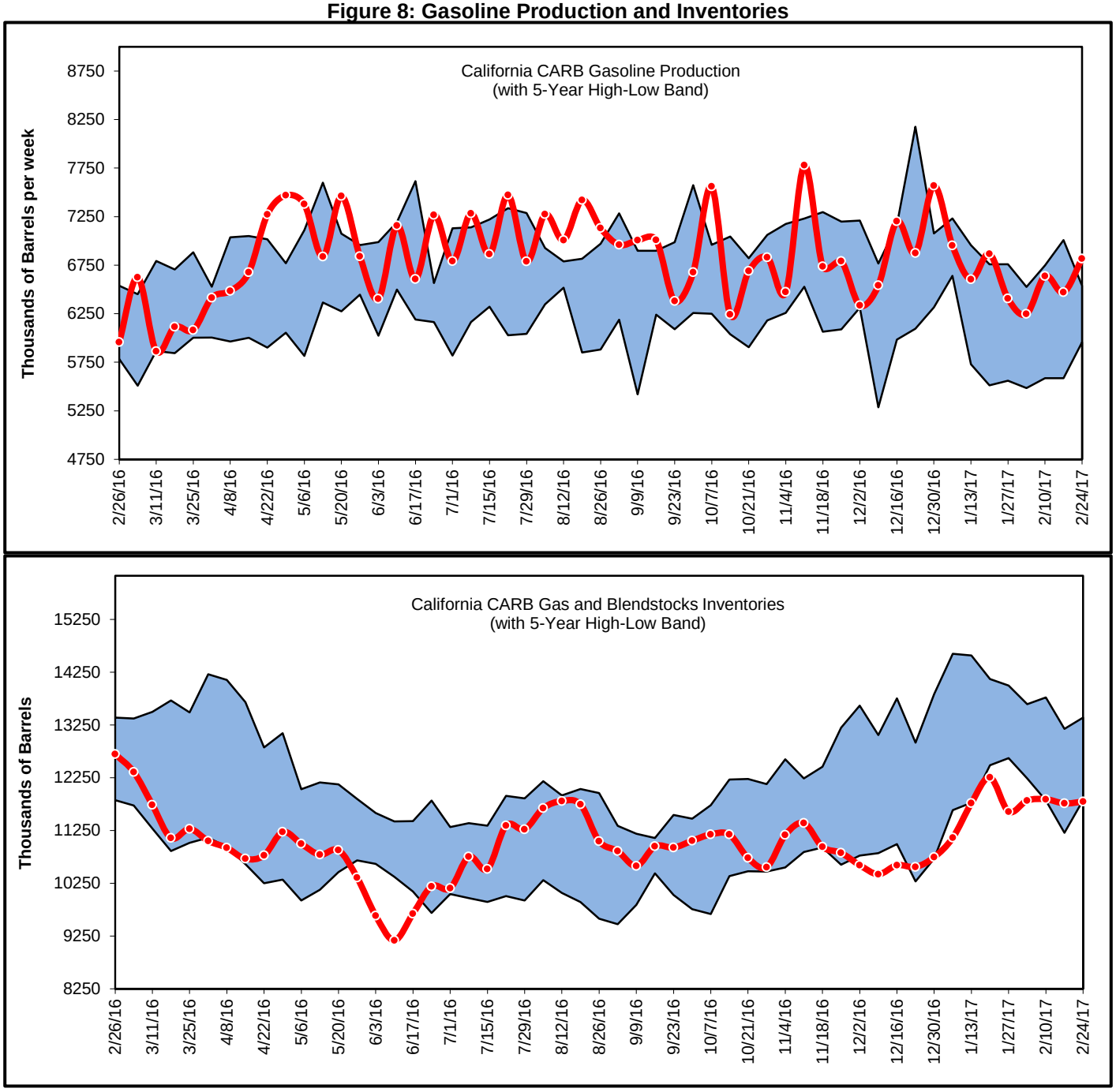
February 2017 Averages	
Los Angeles	3¢
San Francisco	2¢

February 28, 2017	
Los Angeles	2¢
San Francisco	1¢

[4] PADDV Utilization Data:
http://www.eia.gov/opendata/qb.php?sdid=PET.W_NA_YUP_R50_PER.W

California Gasoline and Diesel Production and Inventories

Figure 8: Gasoline Production and Inventories

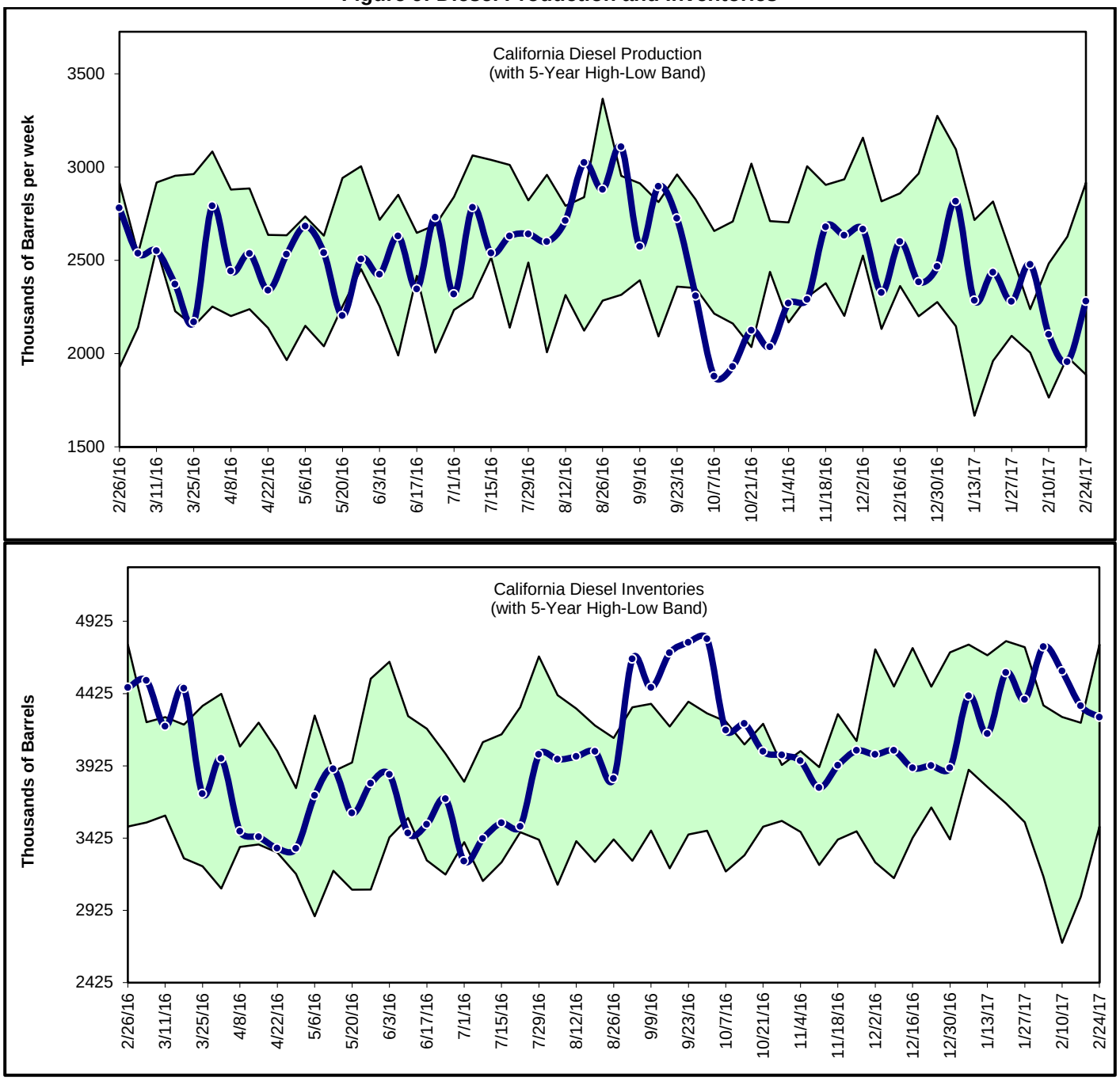


Source: PIIRA data

Gasoline production has increased 0.6 million barrels from 6.2 million barrels per week (bpw) on February 3 to 6.8 million bpw on February 24 (**Figure 8**). Production finished the month of February at 0.9 million barrel per week higher than the same time last year and, once again, above the five-year band.

Since the beginning of the year, gasoline inventories have struggled, averaging 0.2 million barrels below the low five-year band, and finished February below the five-year band at 11.8 million barrels.

Figure 9: Diesel Production and Inventories



Source: PIIRA data

For the first time this year, diesel production fell below the five-year band to 1.9 million bpw on February 17, 26 thousand barrels under the band (**Figure 9**). Diesel production improved by the end February to 2.3 million bpw, but averaged 221 thousand barrels less than February 2016.

California has absorbed the reduced diesel production, because diesel inventories are well-stocked and the week of February 3 experienced a 2017 high of 4.7 million barrels. Inventory has since decreased by 0.4 million barrels, ending February 24 at 4.3 million barrels.