



# PETROLEUM WATCH

## California Energy Commission

### December 2015

## Recent Petroleum News and Outside Analyses

### Prices

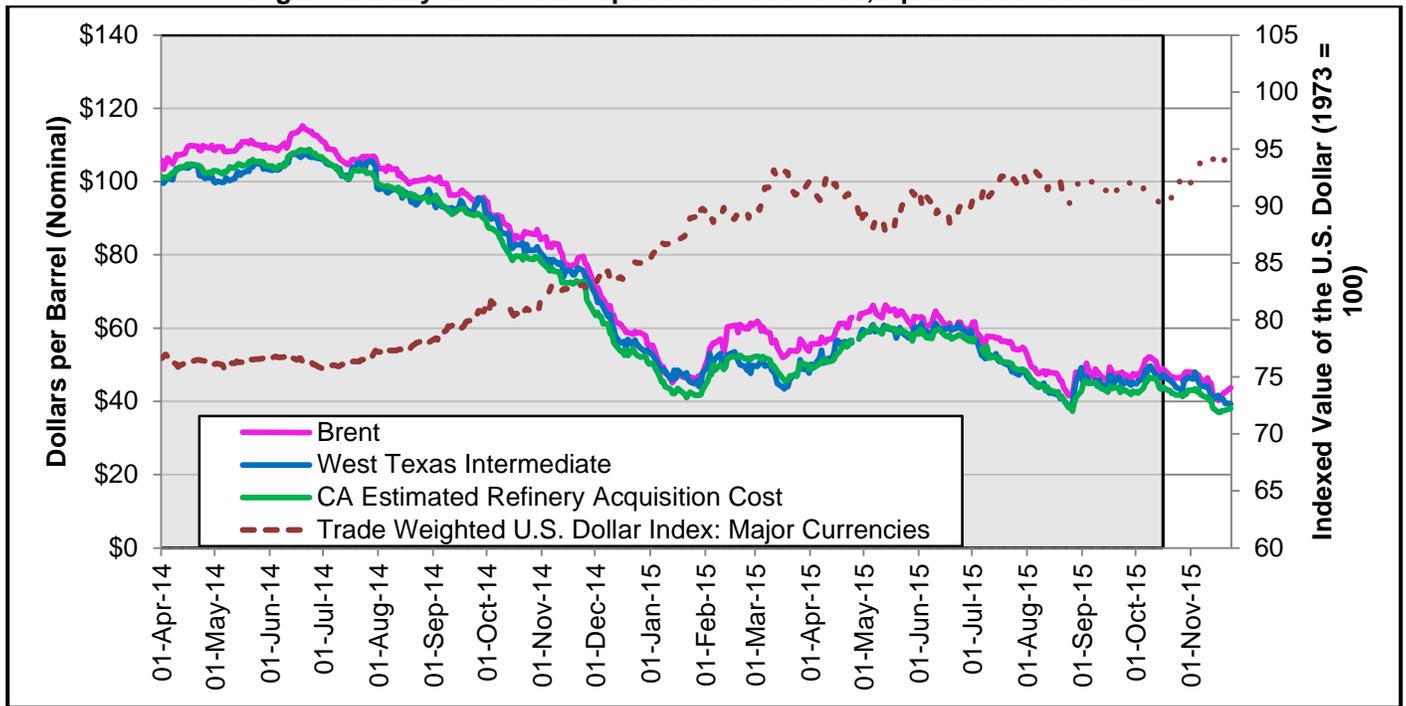
- **California Gasoline Prices:** California gasoline prices were \$0.63 higher than the national average on November 23. This changed little from the October average of \$0.60.
- **California Diesel Prices:** California diesel prices averaged \$2.78 for November, \$0.30 higher than the national average. On November 23, they were \$0.29 higher than the national average.

### Refining News

- **Chevron Richmond Refinery:** Separate incidents in early and late November resulted in partial shutdowns while repairs were made. Repairs and maintenance were expected to be completed by mid-December.
- **Hydrogen supplies:** Hydrogen supplies to refineries in southern California were disrupted by outages at major hydrogen suppliers in mid-October and again in early November.
- **Gasoline imports:** A number of tankers carrying gasoline and blending components arrived in southern California throughout November.

# Crude Oil Prices

Figure 1: Daily West Coast Spot Crude Oil Prices, April 2014 to Present<sup>1</sup>



Source: U.S. Energy Information Administration (U.S. EIA), Oil Price Information Service (OPIS), and Federal Reserve Bank of St. Louis.

Crude oil prices remained low, at just over half of what they were a year ago (**Figure 1**). The California estimated refiner acquisition cost<sup>2</sup> (CA-RAC) of crude oil was \$38.09 on November 23, 2015, compared to \$72.74 on November 24, 2014.

Since the November issue of *Petroleum Watch*, crude oil prices fell by 20 percent, with all three prices tracked moving closely together. At the same time, the U.S. dollar rose, but only by 4 percent. World crude production outpaced consumption by an average of 1.62 million barrels a day for the last 15 months, and by 1.85 million and 1.34 million barrels a day for October and November, respectively. The world-wide oversupply seems to be the dominant factor pushing the price of crude oil back to levels not seen since January 2009.

## Crude Oil Prices

### November 2014 vs 2015

(Percent Change)

WTI	44% lower
Brent	44% lower
CA-RAC	46% lower

### November 2015 Averages

WTI	\$42.86
Brent	\$44.46
CA-RAC	\$40.00

### November 23, 2015

WTI	\$39.27
Brent	\$43.70
CA-RAC	\$38.09

<sup>1</sup> Shaded areas on all graphs indicate previous report data. Unshaded areas indicate new data since November's *Petroleum Watch*.

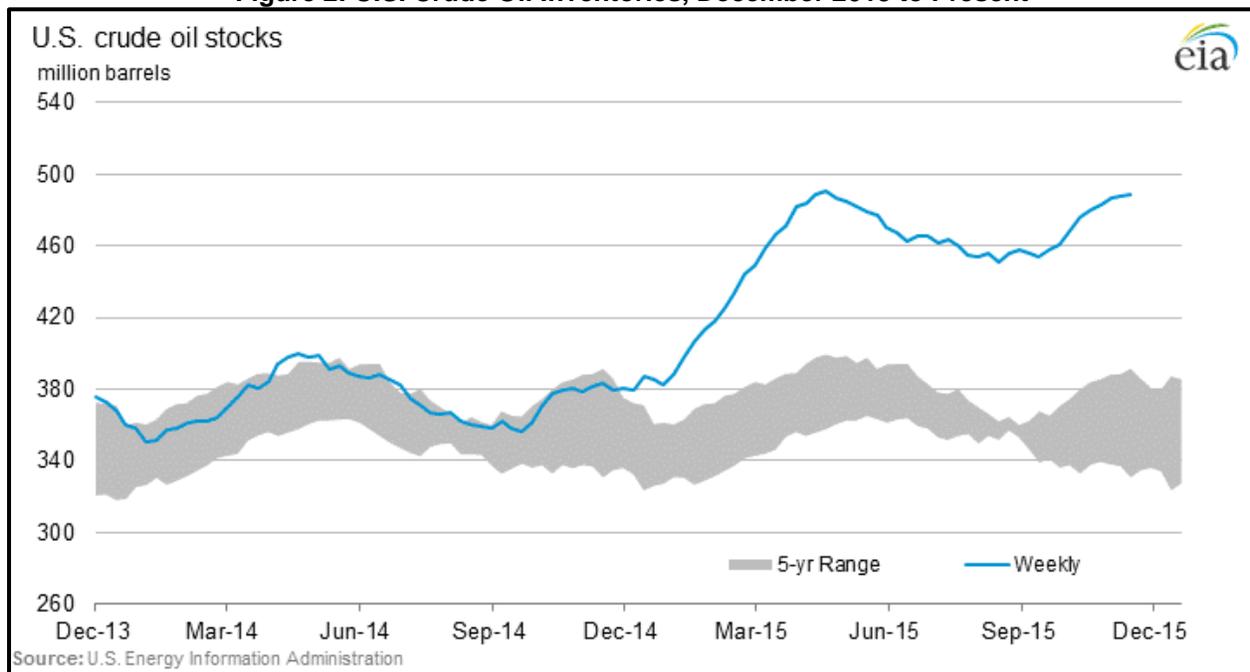
<sup>2</sup> California estimated refiner acquisition cost is an estimate of the average price of crude oil paid by California refineries. It is created using California refinery input proportions of California crude, Alaskan crude, and foreign crude, and multiplying them by the prices of San Joaquin Valley, Alaskan North Slope, and Brent Crude Oil, respectively.

## Crude Oil Production and Storage

U.S. production remained strong as the price of crude oil weakened. In combination with continued high levels of output from the Organization of the Petroleum Exporting Countries (OPEC) producers, crude oil inventories have remained well above historical averages. This overhang of supply should continue to prevent crude prices from rising.

- The U.S. Energy Information Administration's (EIA) estimate of U.S. crude oil output for November was 9.2 million barrels per day (bpd), higher than last year's overall production output of 9.1 million bpd, but lower than the peak of 9.6 million bpd in July.
- Imports of Canadian crude oil rose from 2.8 million bpd in October to 3.0 million bpd in November.
- U.S. crude oil inventories remained at unusually high levels and increased to 498 million barrels in the final week of November (**Figure 2**).
- According to the most recent data from OPEC, Saudi Arabian crude output fell slightly from 10,197 million bpd in September to 10,125 million bpd in October, a decrease of 0.7 percent. Saudi Arabian production remains 5 percent higher than the 2014 average. Total OPEC production increased by 0.8 percent from October to November, 4.3 percent higher than the 2014 average.

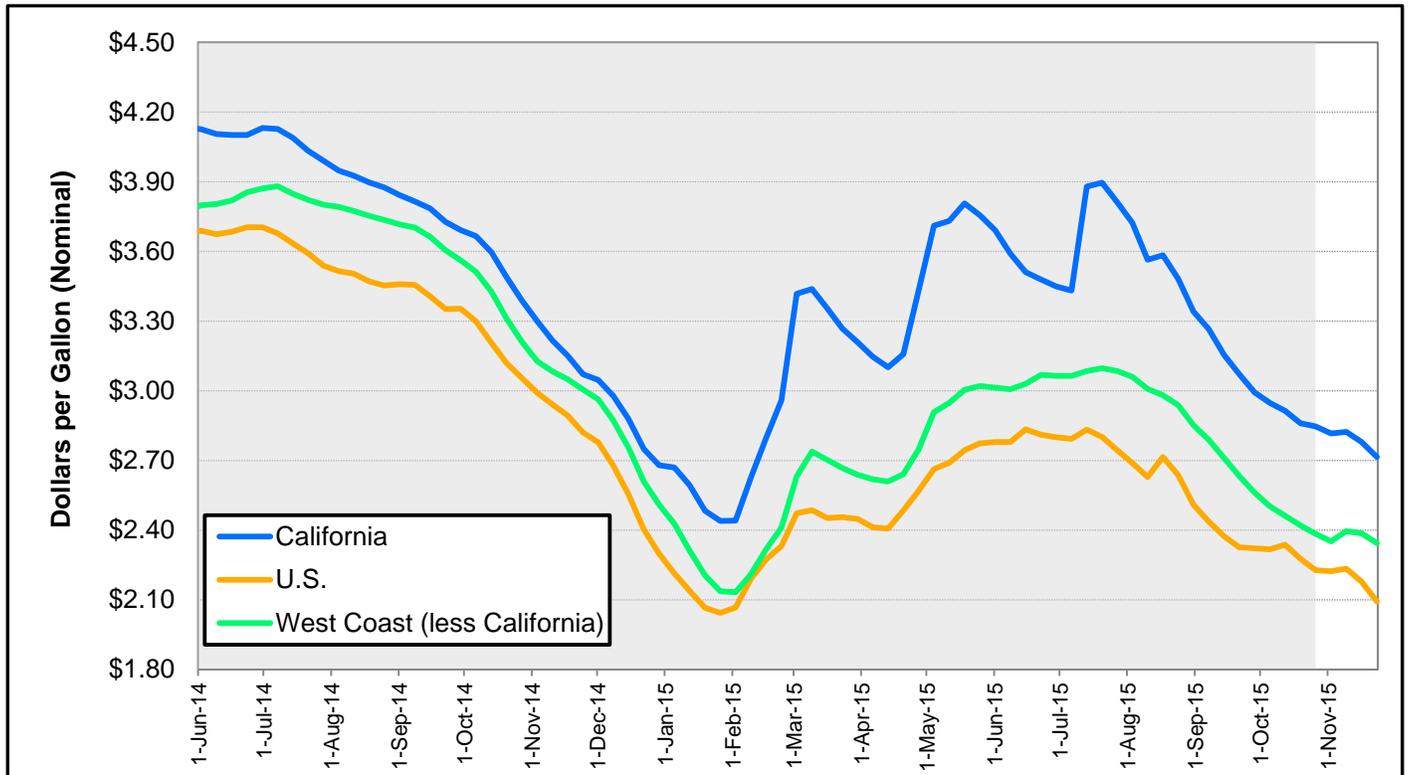
**Figure 2: U.S. Crude Oil Inventories, December 2013 to Present**



Source: U.S. EIA.

# Gasoline and Diesel Retail Prices and Margins

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



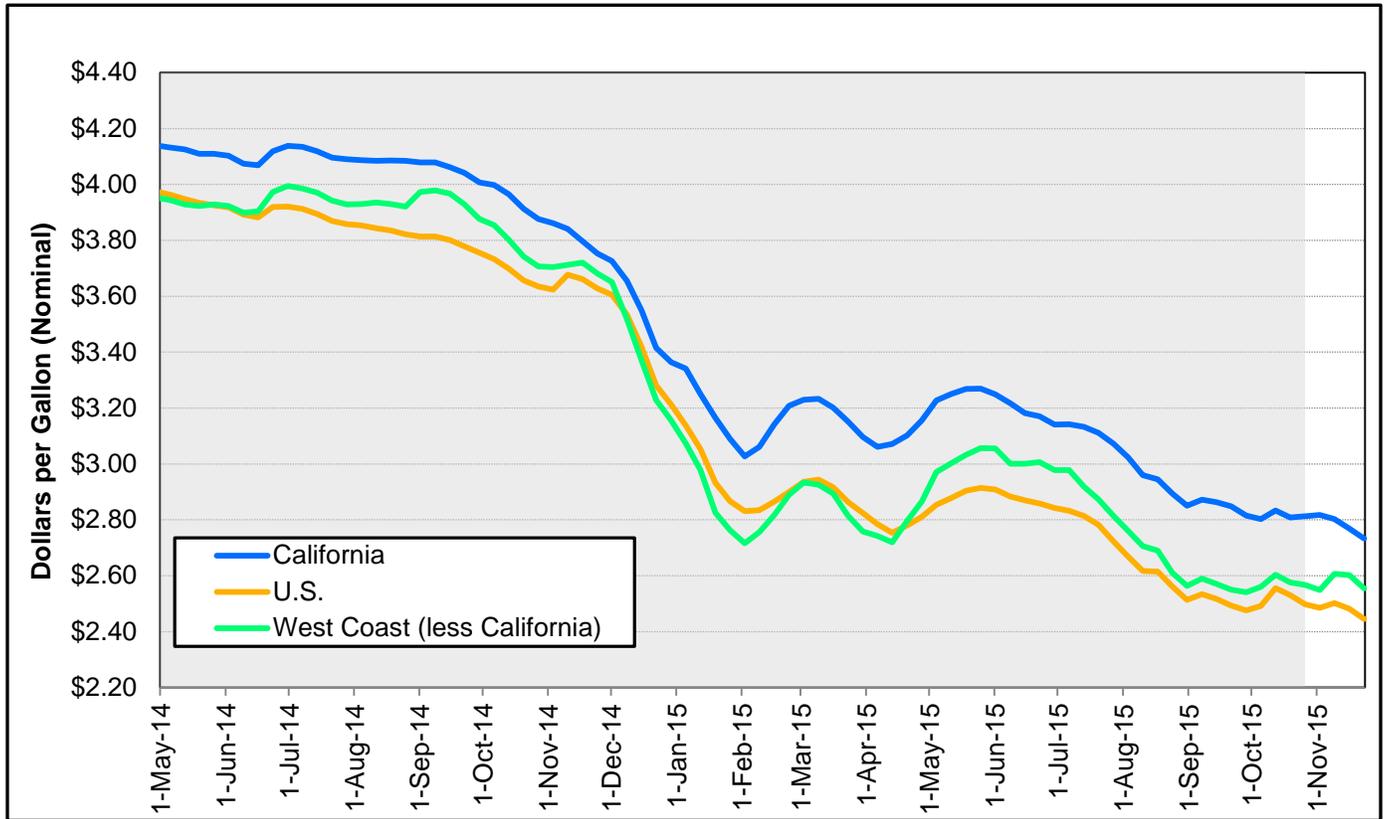
Source: U.S. EIA.

California gasoline prices fell to \$2.72 on November 23 after a steady decline since attaining a new 2015 high in mid-July. This was 4 percent lower than October, a \$0.35 drop, and 13 percent lower than the same time period last year. Relatively lower cost of additives in winter blends of gasoline and continued low crude oil prices resulted in some of the lowest Thanksgiving holiday prices in recent years (\$2.71 for California, \$2.34 for the West Coast, and \$2.09 for the U.S.). Prices for the Thanksgiving holiday week in 2015 were \$0.36 lower in California, \$0.66 lower on the West Coast, and \$0.73 lower in the U.S., compared to the same week in 2014.

California and U.S. gasoline prices trended downward last month, maintaining a price differential of approximately \$0.60. Although the U.S. price of \$2.09 was just \$0.05 above the absolute lowest price in the past 18 months, the California price remained above the corresponding low price.

<u>Gasoline Prices</u>	
<u>November 2014 vs 2015</u>	
(Percent Change)	
California	13% lower
U.S.	25% lower
West Coast	23% lower
<u>October 2015 Averages</u>	
California	\$2.89
U.S.	\$2.29
West Coast	\$2.44
<u>Week of November 23, 2015</u>	
California	\$2.72
U.S.	\$2.09
West Coast	\$2.34

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



Source: U.S. EIA.

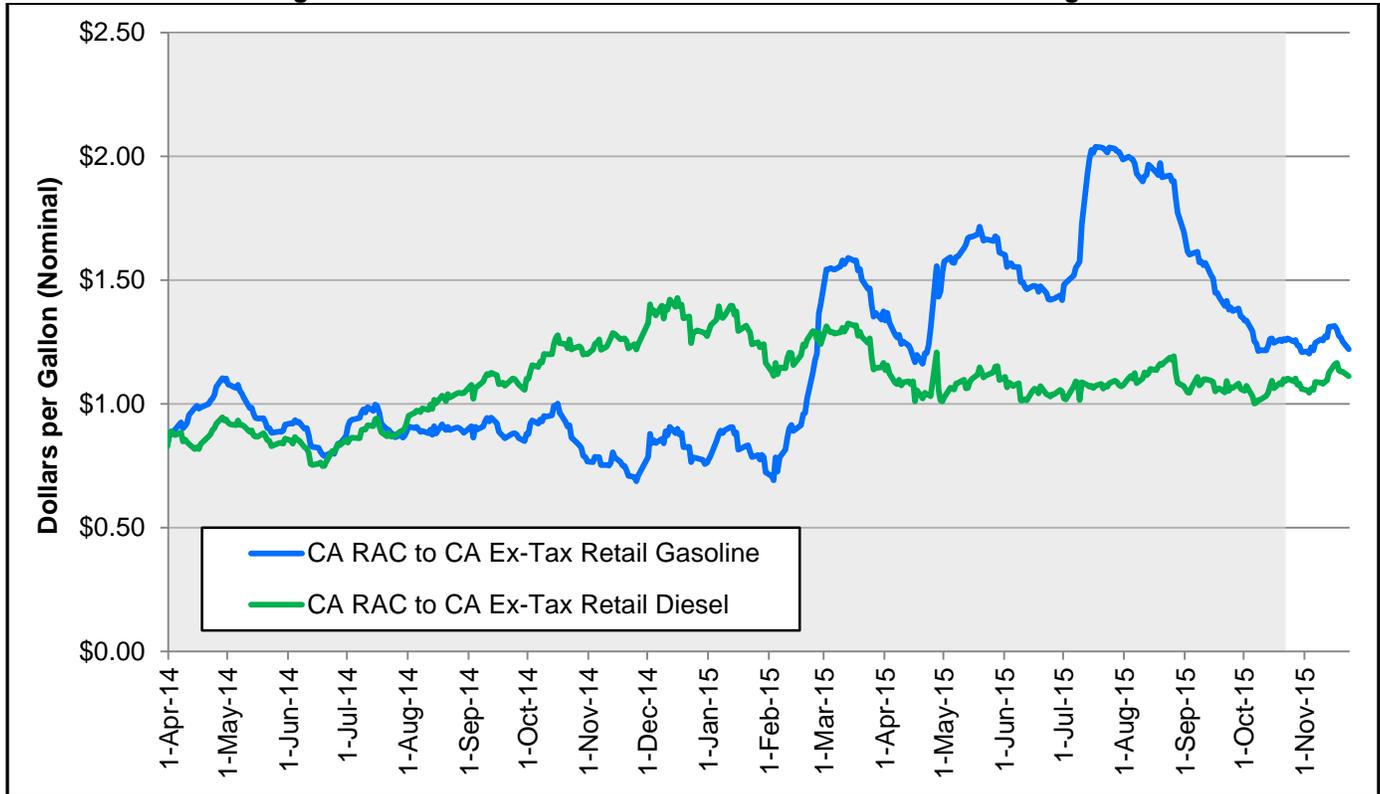
California diesel prices have fallen since June and set a new low (\$2.73) the week of November 23 (Figure 4). The unusual situation of gasoline prices outpacing diesel prices continued, since diesel prices are sustained by holiday shipping. In 2014, California diesel prices averaged \$0.63 more than gasoline prices in November. In 2015, California diesel prices have been roughly \$0.01 less than gasoline.

U.S. diesel prices in November remained 32 percent lower than 2014 prices. For the week of November 23, the difference between U.S. and California diesel prices stood at \$0.29, the same as October.

California diesel prices are \$0.21 more than the West Coast, which saw a \$0.03 decrease since the October average and a \$0.08 decrease since the September average.

<u>Diesel Prices</u>	
<u>November 2014 vs 2015</u>	
(Percent Change)	
California	27% lower
U.S.	32% lower
West Coast	30% lower
<u>November 2015 Averages</u>	
California	\$2.78
U.S.	\$2.48
West Coast	\$2.58
<u>Week of November 23, 2015</u>	
California	\$2.73
U.S.	\$2.44
West Coast	\$2.55

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



Source: U.S. EIA and OPIS.

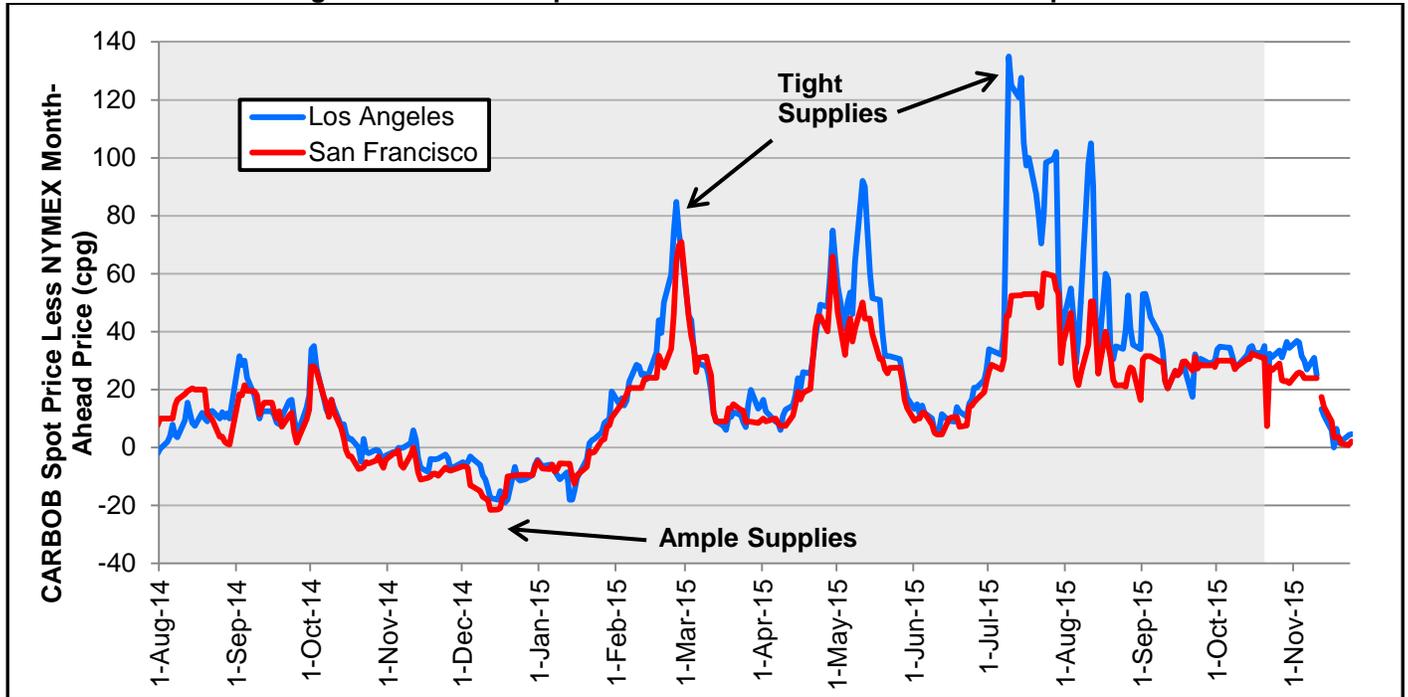
The CA-RAC to ex-tax retail gasoline and diesel retail margins<sup>3</sup> have been stable since the beginning of October averaging \$0.16 differences. The October to November change for the CA-RAC to ex-tax retail margin decreased \$0.03 for gasoline and increased \$0.05 for diesel. For November, the CA-RAC to ex-tax average prices were \$1.22 for gasoline and \$1.11 for diesel.

Drivers traditionally travel more miles during the holiday season, which accounts for a rise in gasoline production and inventories over the past few months (Figure 8). This eased the gasoline margin, however, several California refineries reported unplanned outages from November 3 to November 17. As a result, CA-RAC to ex-tax margin prices jumped \$0.10 for gasoline and \$0.12 for diesel. Another factor, continued maintenance at Exxon’s Torrance refinery, has kept the gasoline margin elevated \$0.51 more over the same time last year.

<u>Crude to Retail Margins</u>	
<u>October 2014 vs 2015</u>	
(Percent Change)	
Gasoline	40% higher
Diesel	15% lower
<u>September 2015 Averages</u>	
Gasoline	\$1.49
Diesel	\$1.07
<u>October 12, 2015</u>	
Gasoline	\$1.22
Diesel	\$1.03

<sup>3</sup> The RAC-to-retail margin refers to the difference between the retail price and the refiners’ acquisition cost for crude oil. It includes all costs of producing gasoline or diesel. Ex-tax refers to the removal of all California taxes on the price of fuel, which is done to remove distortions from taxes that may affect this calculation.

Figure 6: California Spot Gasoline to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS.

California spot gasoline spreads<sup>4</sup> fell from levels seen on October 20 (Figure 6). The Los Angeles (LA) less New York Mercantile Exchange (NYMEX) spot-futures spread fell from \$0.39 on November 10 to \$0.04 on November 23. The monthly average spread for LA-less-NYMEX decreased from \$0.32 in October to \$0.17 in November.

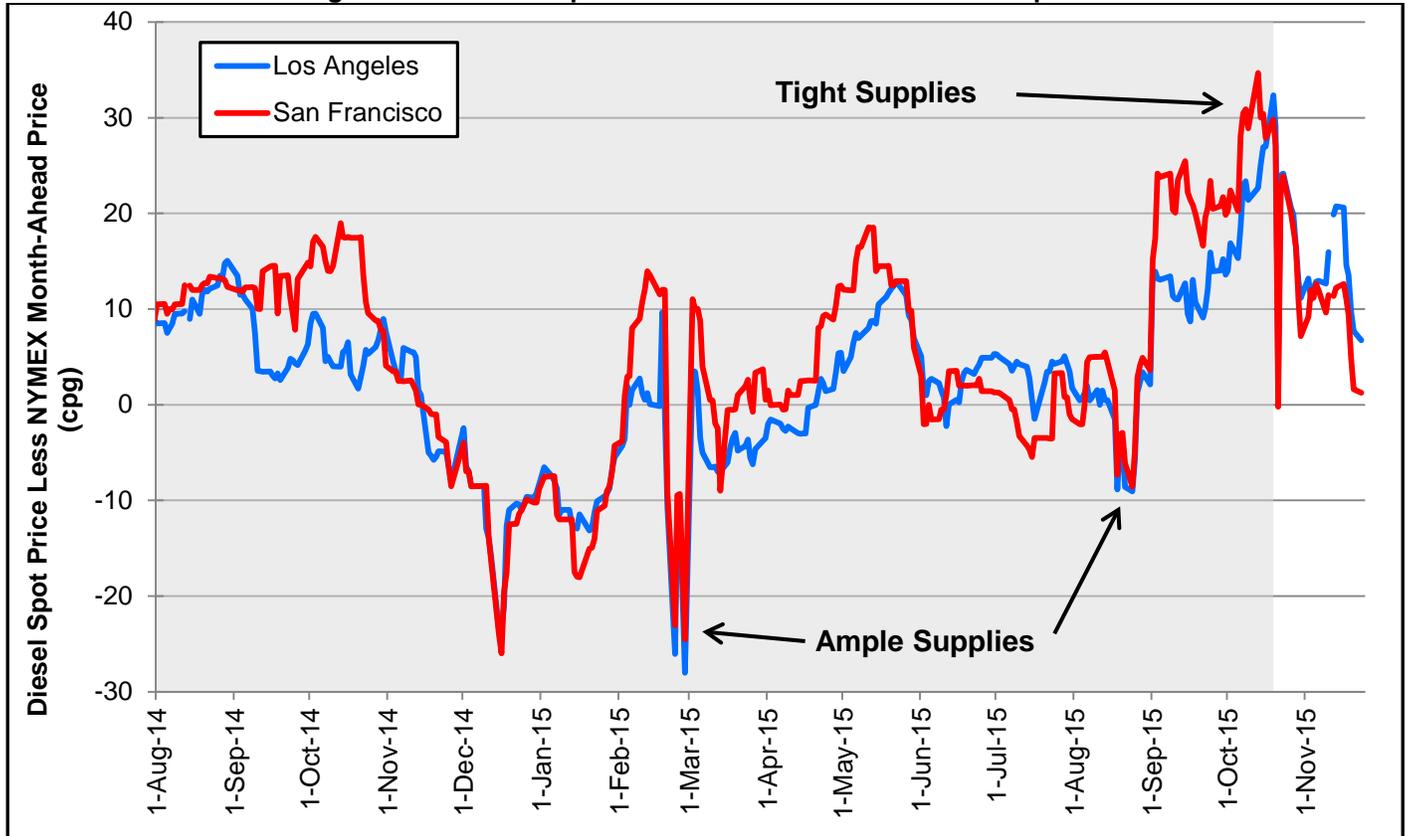
The San Francisco (SF) less NYMEX spot-futures spread narrowed. The SF-less-NYMEX spread narrowed from \$0.24 on November 5 to \$0.01 on November 23. The monthly average for the SF-less-NYMEX spread dropped from \$0.27 in October to \$0.14 in November.

California gasoline supplies tend to increase in November as the state transitions to winter blend gasoline, which is easier to produce and blend. Historically, this has caused California’s gasoline spreads to be negative in fall and winter. However, this was not the case in 2015, as refinery outages plagued gasoline production (see **Recent Refining News**).

<u>Gasoline Spot-Futures Spread</u>	
<u>November 2014 vs 2015</u>	
(cents)	
Los Angeles	19¢ higher
San Francisco	21¢ higher
<u>November 2015 Averages</u>	
Los Angeles	17¢
San Francisco	14¢

<sup>4</sup> A higher spread between the state’s spot fuel prices and the NYMEX futures price indicates supplies are tighter in California, and a lower or negative spread indicates the market is well-supplied compared to the rest of the country. The NYMEX futures price reflects the national market, while California Reformulated Gasoline Blendstock for Oxygenate Blending (CARBOB) is a gasoline blend unique to California and is usually sold at a premium to the NYMEX.

Figure 7: California Spot Diesel to NYMEX Futures Price Spread



Source: U.S. EIA and OPIS.

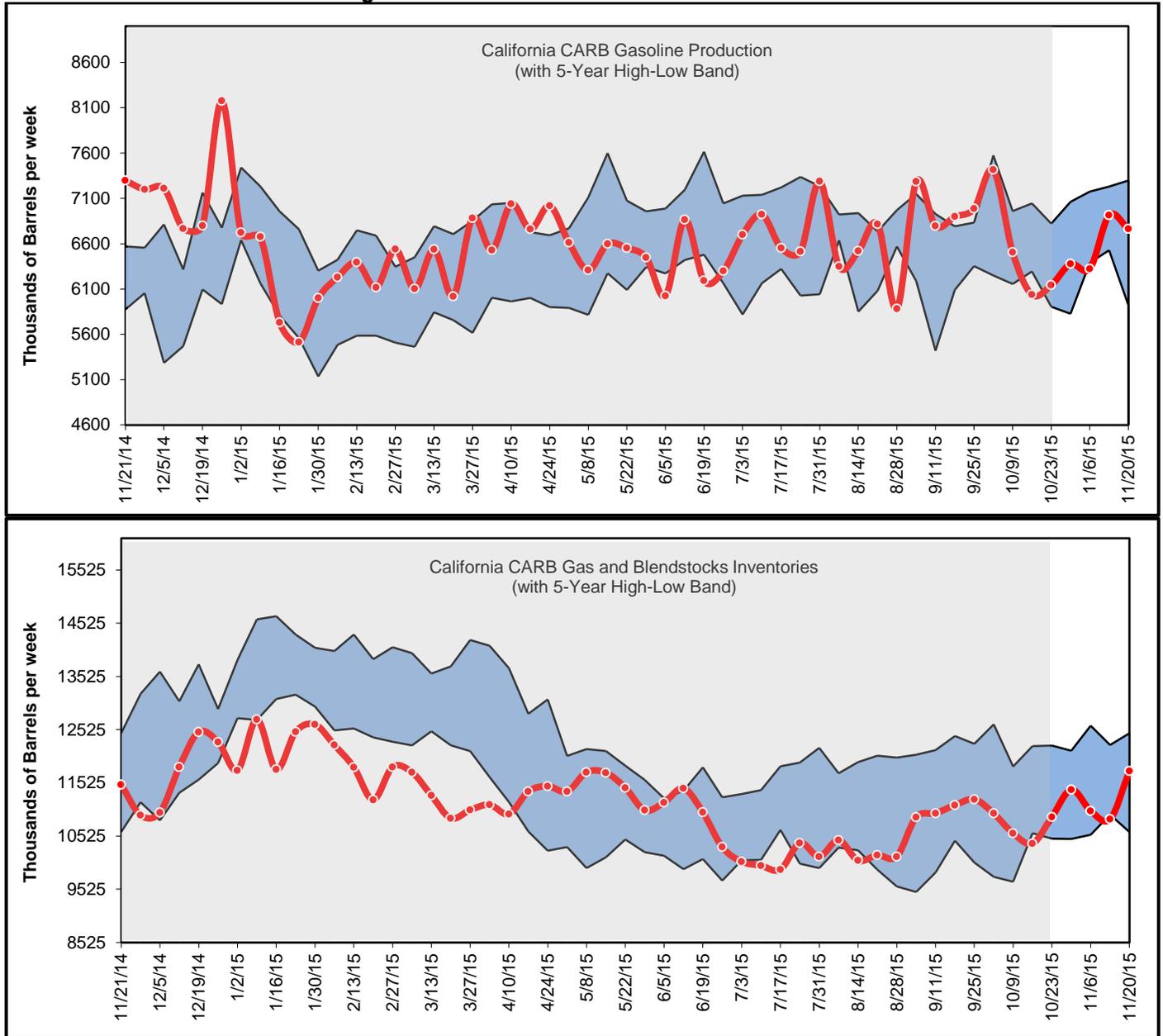
In November, the LA-less-NYMEX and the SF-less-NYMEX diesel spreads saw increased volatility (Figure 7). The LA-less-NYMEX spread fell to \$0.03 on October 21, as the future contract price switched from the November to the December delivery date, and the SF-less-NYMEX spread fell to \$0.00. LA-less-NYMEX and SF-less-NYMEX spreads widened to \$0.24 and \$0.22, respectively, on October 22. Both spreads gradually narrowed in November before a five-day period when the LA-less-NYMEX spread climbed from \$0.13 on November 12 to \$0.20 on November 17. The SF-less-NYMEX spread remained constant at \$0.12. By November 23, the LA-less-NYMEX dropped to its lowest spread in three months, \$0.07, while SF-less-NYMEX fell to \$0.01.

In October both the LA-less-NYMEX and the SF-less-NYMEX increased as a result of tight diesel supplies. In November, diesel spot market movements showed a stark change; price movements never reached the same high levels, but increased and decrease more frequently (Figure 11). Both spreads settled nearly equal to the NYMEX at the end of November.

<u>Diesel Spot–Futures Spread</u>	
<u>November 2014 vs 2015</u>	
(cents)	
Los Angeles	14¢ higher
San Francisco	10¢ higher
<u>November 2015 Averages</u>	
Los Angeles	14¢
San Francisco	9¢

# California Gasoline and Diesel Production and Inventories

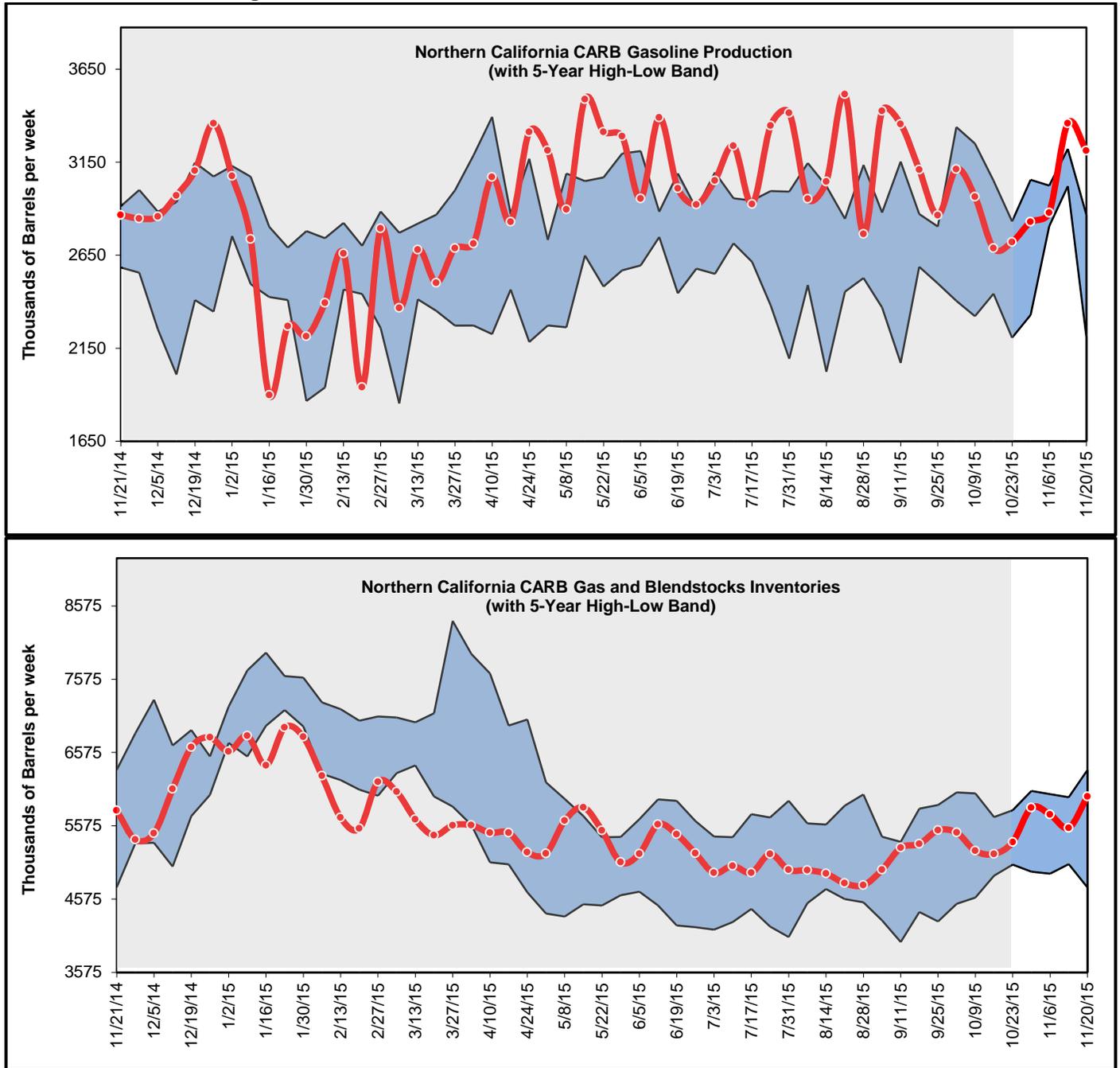
**Figure 8: Gasoline Production and Inventories**



Source: PIIRA data.

From October 16, 2015, through November 20, 2015, gasoline production in California struggled to rise above the five-year low band and averaged 6.5 million barrels per week (**Figure 8**). This is the result of a number of fluid catalytic crackers, from multiple California refineries, experiencing turnaround activity and unexpected outages. Inventory declined to the bottom of the five-year low band to compensate for this loss during the week of November 6, and then rose to 11.8 million barrels during the week of November 20, 2015. This is highest inventory level California has seen since the week of February 27, 2015, just before the ExxonMobil Torrance explosion.

**Figure 9: Northern California Gasoline Production and Inventories**

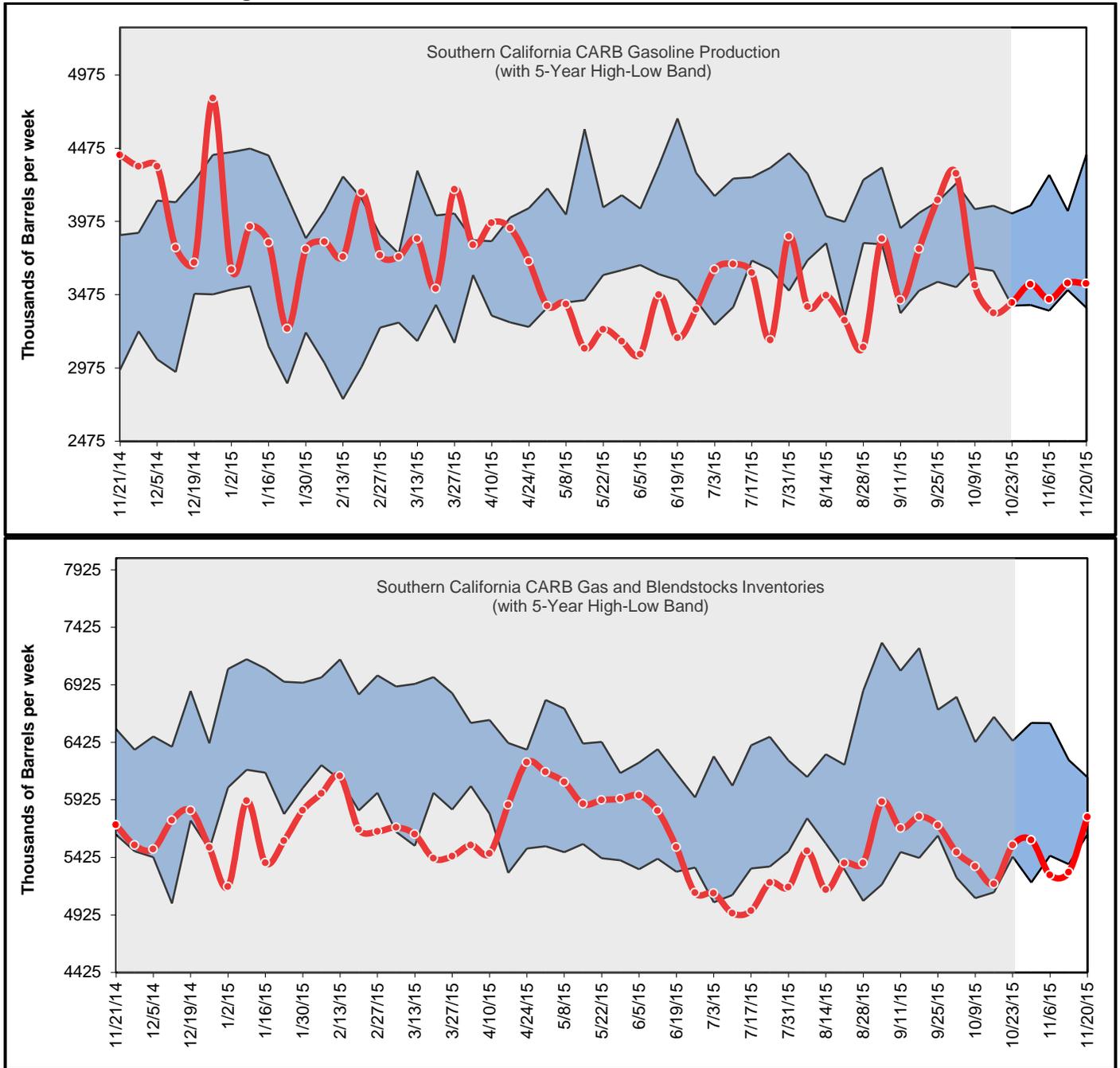


Source: PIIRA data.

From October 16 to November 20, northern California gasoline production recovered from the turnaround activity that began early in October at Chevron’s Richmond refinery. Production reached a high of 3.4 million barrels the week of November 13—well above the 5-year band—and settled to 3.2 million barrels on November 20 (Figure 9).

Northern California inventory was slightly higher a year ago at 6.0 million barrels compared to 5.8 million barrels for the week of November 20, 2015. Demand for gasoline typically declines in November causing inventory to increase.

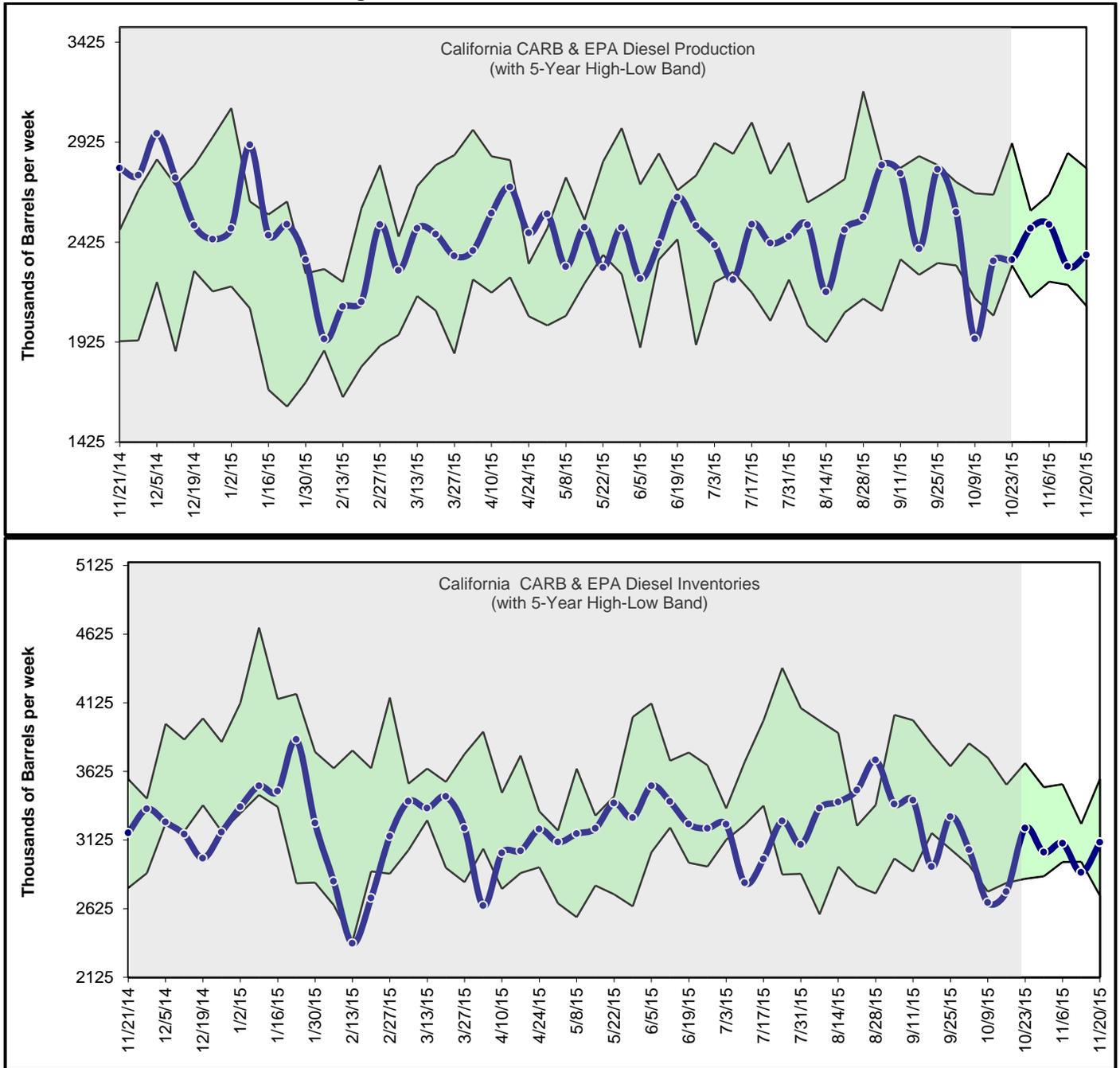
**Figure 10: Southern California Gasoline Production and Inventories**



Source: PIIRA data.

Southern California gasoline production averaged 3.5 million barrels per week over the last five weeks, which is just over the five-year low (**Figure 10**). Multiple refineries were sidelined by planned and unplanned outages from October to December, keeping inventory levels just above the five-year low. A number of imported gasoline and gasoline blending components arrived during the week of November 20, when inventory was at 5.8 million barrels. Additional vessels carrying CARBOB were expected to unload in early December, potentially adding to the region's inventory.

**Figure 11: Diesel Production and Inventories**



Source: PIIRA data.

California diesel production reached 2.5 million barrels the week of November 6 and ended at 2.4 million barrels the week of November 20 (Figure 11). Both production marks are within five-year norms, but appear to be trending towards the bottom of the five-year band.

Diesel inventories, like gasoline, have also been impacted by refinery outages and reached a five-year low the week of November 13, at 2.9 million barrels, which increased to 3.1 million barrels the following week.