Gasoline Shortage Boosts California Margins

Motorists pick up the tab.

Morningstar Commodities Research
3 June 2019

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Data Sources for This Publication
EIA
CME Group
California Energy Commission
To discover more about the data sources used, click here.

Planned and Unplanned Outages

Generally, U.S. refiners reported poor first-quarter earnings this year as a result of higher crude prices. In California, by contrast, margins have so far topped last year's levels due to escalating gasoline prices. Planned and unplanned refinery outages left the Golden State short of gasoline by the end of April. Environmental regulations in California dictate unique product specifications, and the lack of alternate supply compounded the shortage. Ironically, the state rules designed to discourage carbon fuels have left refiners enjoying higher margins and motorists picking up the tab. This note details California's recent gasoline price runup.

In an April note, we discussed how refineries in PADD1 advanced planned maintenance and reduced throughput in response to poor margins and how that could affect product supply this summer (see February Shutdown Threatens PADD1 Product Supply). This analysis focuses on California refining where outages and maintenance in March and April have led to a large drawdown in gasoline stocks and the highest prices in the mainland United States. We covered California refining in detail in an August 2017 Outlook (see California Refiners Hostage to Climate Science for the note version or request a copy of the full report via email).

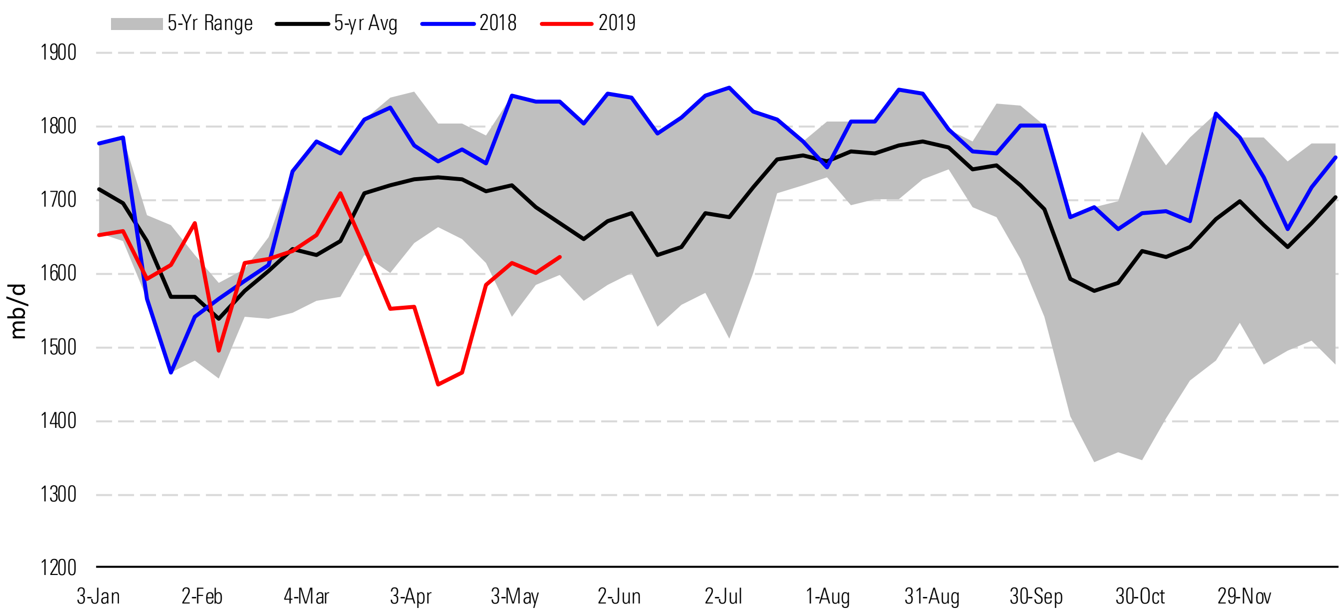
California has 11 oil refineries, with 1.9 million barrels/day capacity among them, that process a combination of local heavy crude, Alaska North Slope, and imports from the Middle East and Latin America. The state's complex refineries produce a high yield of over 60% gasoline from every barrel processed. Like East Coast refineries, California plants have largely missed out on the domestic crude surge in the shale era. In part this is due to geographic isolation from shale basins, but it's also because they mainly process medium and heavy crude. Refined products are produced to the tightest specifications in the U.S., regulated by the California Air Resources Board. CARB requirements mean that California grades are typically too expensive for other markets with less stringent standards and are hard to source from outside the state. Although refining margins remain healthy because of a tight market balance and isolation from competitors, state environmental regulations discourage refiners contemplating upgrades or expansions to improve supply.

Refinery Shutdown

As a result, California refineries are vulnerable to supply squeezes where gasoline prices increase rapidly in response to plant outages or refinery maintenance. This spring, gasoline prices jumped to their highest level in five years when a series of planned and unplanned outages reduced crude throughput to 76% of nameplate capacity in mid-April, according to the California Energy Commission. Six of

California's 11 refineries were affected by a variety of maintenance or outage issues in March and April. The largest impact was a 40-day shutdown of Valero's 145 thousand barrel/day Benicia refinery in the San Francisco area due to excess coke emissions. This coincided with planned maintenance at the 269 mb/d Chevron El Segundo and 383 mb/d Marathon Carson refineries in the Los Angeles area. The state's refineries ran at just 84% of capacity between January and May compared with an average 90% capacity over the same period in 2018. As a result, throughput in March and April was well below the five-year average for this time of year when refineries typically increase output in the runup to the summer driving season (Exhibit 1).

Exhibit 1 Seasonal California Refinery Crude Runs

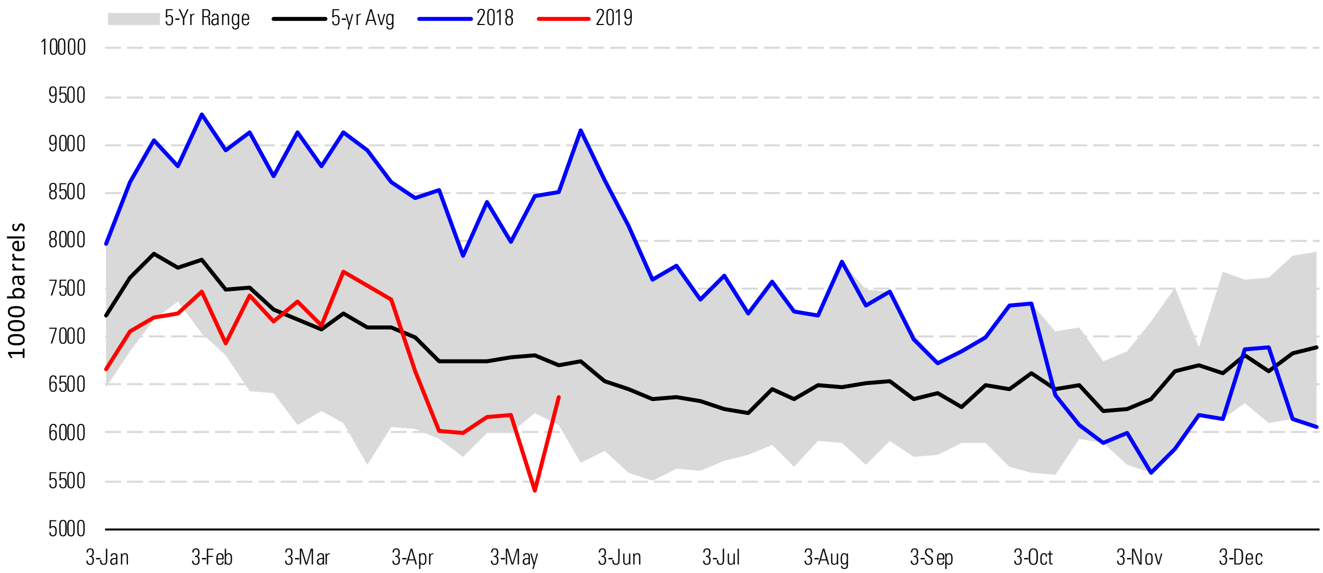


Source: California Energy Commission, Morningstar.

Lower Inventory

Lower crude runs had a predictable impact on refined product inventory levels, particularly gasoline, which is by far the most popular product in California, averaging 939 mb/d demand in 2018 compared with 266 mb/d for diesel, according to the Energy Information Administration. Because there aren't any pipelines from outside the state to replenish supplies, and imports of correct-quality products are hard to organize at short notice, refiners drew down inventory rapidly in March and April to levels 30% below their seasonal average in early May (Exhibit 2). Since the start of May, gasoline stock levels have recovered as refineries came back on line and throughput increased.

Exhibit 2 Seasonal California Gasoline Stocks



Source: California Energy Commission, Morningstar.

Pain at the Pump

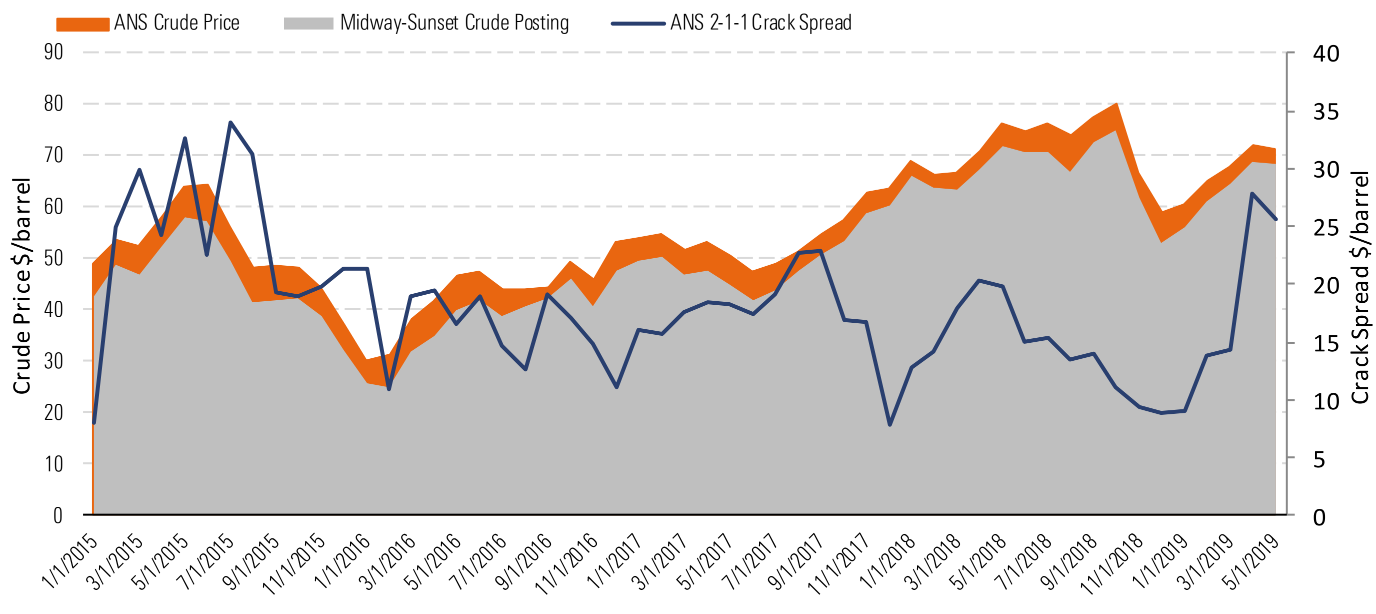
The gasoline shortage pushed prices up to levels last seen in July 2014, and motorists were still paying an average $4.23/gallon for premium gasoline during the week ended May 20, according to CEC data, down slightly from $4.30 earlier in the month. Even though taxes and production costs make California gasoline expensive relative to other states, the $4/gallon price tag at the pump is unusual with crude prices in the $70/barrel range compared with $100/barrel when gas prices were last this high in 2014. Golden State prices are considerably higher than in the rest of the U.S. mainland this year. Wholesale prices for CARB gasoline averaged $0.47/gallon above prompt New York CME Nymex unleaded futures during April and $0.29/gallon above New York over the period from Jan. 1 to May 24. That compares with an average CARB premium to Nymex of just $0.12/gallon throughout 2018.

Crack Spreads

With gasoline prices on a tear, California refining margins remained strong this year. Unlike other regions of the U.S. where margins for processing heavier crude—particularly Canadian oil sands grades—have eroded, gasoline prices protected California margins. Exhibit 3 shows the monthly average ANS 2-1-1 crack spread (blue line, left axis) since January 2015. The crack represents the margin for producing two-thirds gasoline and one-third diesel from a barrel of ANS crude. Margins this year between January and May averaged $18.11/barrel—about $4/barrel higher than last year. While not as high as the $24/barrel average in 2015, these returns protected California refineries from the poor margins experienced by their peers elsewhere in the U.S. during the first quarter.

Higher margins came despite lofty prices for crudes like ANS and Midway-Sunset (shaded areas in Exhibit 3, right axis). Medium sour ANS crude—long a staple of California refineries—has traded at an average premium of $0.20/barrel above international light sweet benchmark Brent this year. That compares with ANS' more typical discount to Brent that averaged $0.26/barrel in 2018. Higher ANS prices reflect lower production in Alaska during the first quarter of 2019 as well as a tight market worldwide for medium sour crudes due to OPEC production cuts. Heavy sour crudes like California's Midway-Sunset have also been in demand since international equivalent grades became more expensive following sanctions on Venezuela and Iran as well as Canadian production cuts this year.

Exhibit 3 ANS California 2-1-1 Crack Spread, Crude Prices



Source: CME Group, Alaska Department of Revenue, Morningstar.

Motorists Paying

Motorists are paying at the pump for the strong performance of Californian refineries in the face of higher crude prices and plant outages. The state's fuel policies have depleted inventories and could risk worse shortages at the pump if unexpected outages continue to plague an aging refinery fleet. Legislators can argue that the pain at the pump is a legitimate tax on carbon usage, but for the moment, internal combustion engines power the state's dominant transport. In the meantime, refiners are rewarded with strong margins for their perseverance in the face of environmental legislation that aims to threaten their existence.

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