
Jet Demand Takeoff - Strong Prospects for U.S. Refiners

Bunker fuel changes to boost prices in a growing market.

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Data Sources for This Publication

U.S. Energy Information Administration

CME Group

To discover more about the data sources used, [click here](#).

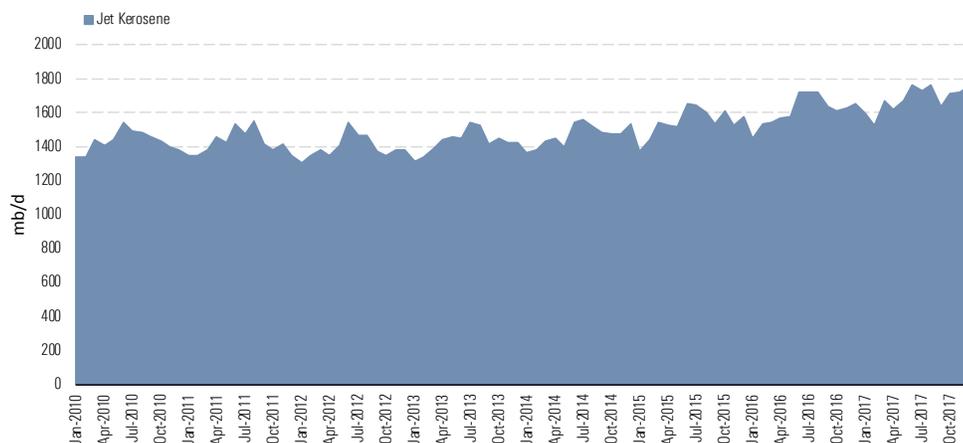
Consistent Returns

At a time when commentators frequently invoke peak demand and contemplate the demise of transport fuels, the thirst for jet kerosene—the aviation turbine fuel—is growing and promises to deliver consistent returns to refiners in the coming decades. Record aircraft traffic has boosted aviation fuel demand over the past two years, and growth is expected to continue. Unlike gasoline and diesel, the jet fuel market is less threatened by viable alternatives like batteries. Coming changes to the bunker fuel oil market will tighten distillate markets and increase refining margins for jet kerosene. This note looks at growing jet kerosene demand today and bullish indicators in the forward curve.

Domestic High

The U.S. is the world's largest air passenger market, according to the International Air Transport Association, and the Department of Transportation reports that systemwide passenger enplanements reached an all-time annual high of 849 million in 2017, up 3.1% from the previous 824 million high, reached in 2016. Growing passenger numbers are reflected in higher demand for jet kerosene. According to the Energy Information Administration, jet kerosene product supplied to the U.S. market increased by 21% from an average 1.4 million barrels/day in 2010 to 1.7 mmb/d in 2017 (Exhibit 1).

Although jet kerosene only has a roughly 10% share of the U.S. transport fuels market, its growth compares favorably with heavyweights gasoline (50% market share) and diesel (30%), which both saw volumes supplied increase by only 3% between 2010 and 2017. The robust market is set to continue according to IATA's latest 20-year forecast published in 2015 that predicted worldwide air passenger miles doubling to 7 billion annually by 2034. With a growing baby boomer population retiring and enjoying leisure travel, the U.S. is set to grab a large share of that expansion.

Exhibit 1 U.S. Jet Kerosene Demand 2010-17

Source: EIA

Growth in jet fuel demand comes despite increased efforts to improve efficiency. IATA passed a resolution in 2008 to improve fuel efficiency by 1.5% between 2009 and 2020. Organizations like IATA have also pushed for increased use of renewable aviation fuels in place of hydrocarbon jet kerosene. However, safety concerns have limited the acceptance of renewable fuels to blending small percentages with refined jet kerosene. So far, for example, U.S. Renewable Fuel Standard legislation has only required a 5% renewable content in jet fuel by 2018, half the 10%-plus targets for gasoline and diesel. Lower renewable targets limit U.S. refiners' exposure to purchasing Renewable Identification Numbers to meet RFS obligations (see our September 2016 note "[Corn Crush and RINS – Tighter Margins for Producing and Blending Ethanol](#)" for more detail on RINS).

International Runway

Over the past eight years, U.S. refineries have supplied most domestic jet kerosene needs with imports only meeting deficits on the East and West Coasts. Countering those imports, increasing Gulf Coast exports have gradually created a balanced overall market with a small net U.S. export in 2017, according to EIA. Although net exports of jet kerosene were up 156% to 25 mb/d in 2017 from a net import of 14 mb/d in 2010, their growth pales in comparison to U.S. gasoline and diesel net exports over the same period. Net exports (imports) of gasoline increased 391% from (negative 539 mb/d) in 2010 to 185 mb/d in 2017 and net diesel exports increased 287% from 428 mb/d in 2010 to 1,228 mb/d in 2017. We expect Gulf Coast refiners to take increasing advantage of export opportunities for jet kerosene in coming years.

Seasonal Change

Jet kerosene prices are generally determined by long-term supply contracts to airlines linked to spot markets. Because jet kerosene is a middle distillate, pricing tends to follow the largest middle distillate product: ultra-low-sulfur diesel. For example, average jet fuel prices at the Gulf Coast have been roughly 5 cents/gallon lower than for ULSD over the past four years, according to CME Group data. In 2013 and 2014, gasoline prices were on average 19 and 16 cents/gallon lower, respectively, than jet at the Gulf

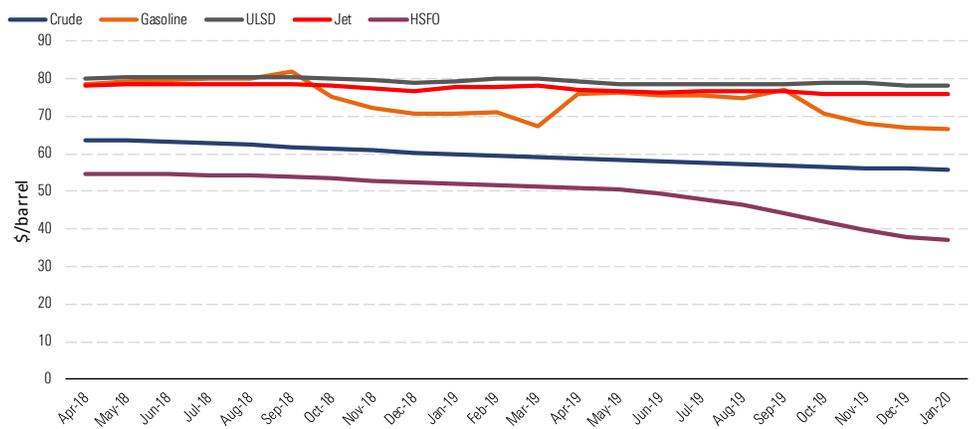
Coast because of lower demand during a high-price era for gasoline. In 2015, gasoline prices recovered to hold an average 8 cents/gallon premium to jet that has narrowed since to 5 cents/gallon in 2017. Historically there has been a seasonal pattern to the relationship between jet, ULSD, and gasoline prices. Jet prices have typically been lower than ULSD by 10-15 cents/gallon during winter, when diesel demand for heating is higher. Gasoline prices have historically been higher than jet in the summer and lower in the winter.

That seasonal pattern has changed at the Gulf Coast in the past two years, with jet prices now sticking close to diesel year-round and gasoline staying higher than both in the summer and falling below both in the winter. This change reflects a tighter market for jet as demand has increased, with prices supported by higher demand for diesel exports. Gasoline demand has been less robust and higher inventories have weakened prices relative to diesel and jet outside the summer driving season.

Forward Curve

This pattern is visible in Gulf Coast forward curves based on CME Group prices for March 20, 2018 (Exhibit 2). The gasoline curve (orange line) increases from \$79/barrel in April 2018 to \$82/barrel in September then drops to \$70/barrel in December 2018 before increasing again in the spring of 2019. The ULSD (green line) and jet (red line) curves remain relatively flat out to January 2020, with jet priced at a \$2/barrel discount to diesel (about 5 cents/gallon).

Exhibit 2 Gulf Coast Forward Curves



Source: CME Group, Morningstar

Although strength in diesel and jet prices could be seen last year as well, there are significant differences to this year’s forward curve. The first is that both jet and diesel stay relatively level (falling only \$2/barrel by 2020) even as crude prices (blue line) fall \$7/barrel over the same period. The summer gasoline peak is also noticeably lower in 2019 than in 2018. This relative strength in distillates reflects the market factoring in expectations associated with the advent of the new International Maritime Organization low sulfur bunker fuel regulations in January 2020.

As we discussed in a November 2016 note (see [“Marine Bunker Deadline to Benefit Refiners and Traders”](#)), the IMO is reducing global permitted sulfur levels in ships bunker fuel to 0.5% content from current levels as high as 3.5%. That affects upwards of 3 mmb/d of high-sulfur fuel oil that may need replacing with alternatives (or treating with exhaust scrubbers). Since the market expects much of that replacement to be low-sulfur distillates, the forward curve reflects a tight market for both diesel and jet kerosene in 2019. The damaging impact of the change on prices for high-sulfur fuel oil (3.5%) can be seen in the purple line on the chart, with prices falling from \$55/barrel today to \$50/barrel in June 2019 and \$37/barrel in January 2020.

Lack of Alternatives

In addition to increasing demand and the boost expected from the 2020 IMO regulations, one more factor increases jet kerosene’s attraction for refiners. That’s the lack of current viable alternatives to hydrocarbon fuel for jet aircraft. As we mentioned earlier, replacement of jet fuel by renewable alternatives has been limited to 5% blends so far. In the longer term, jet faces a much lower threat from replacement by battery technology than that to cars and trucks. Although electric powered planes have been tested, they are small and light so far and the technology to power large commercial electric aircraft is considered at least 50 years away. That’s a reassuring message for refiners feeling threatened by talk of peak demand for gasoline and diesel engine fuels.

Important Niche

Although the market for jet fuel is smaller than gasoline or diesel, it represents an important niche for refiners and looks set to provide stronger margins in coming years. We expect U.S refiners to increase production and exports of jet kerosene as new IMO regulations increase pressure on the distillate pool worldwide. ■■

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