MERCER CAPITAL

BUSINESS VALUATION &
FINANCIAL ADVISORY SERVICES

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VALUE FOCUS

# Refining Industry

## Year-End 2018

The first half of 2018 provided positive momentum for refineries that had increased revenues and margin expansion in the second half of 2017. Following a period of steady gains, crude prices fell significantly in the fourth quarter of 2018. Lower prices make it more difficult for refiners to extract margin, particularly when declines come at a rapid pace.

Despite the declines, crude differentials persist, particularly between Brent and WTI, which is a positive sign for refiners. Crack spreads are also high and expected to continue with MARPOL 2020 looming.

The future impact of many regulations surrounding the oil & gas industry, such as the RFS, is still uncertain.  U.S. trade is also uncertain as the USMCA still requires ratification and U.S.-China trade lacks a resolution.

# Oil and Gas Industry Services

**Mercer Capital provides business valuation and financial advisory services to companies in the energy industry.**

### Services Provided

- Valuation of oil and gas companies
- Transaction advisory for acquisitions and divestitures
- Valuations for purchase accounting and impairment testing
- Fairness and solvency opinions
- Litigation support for economic damages and valuation and shareholder disputes

### Industry Segments

Mercer Capital serves the following industry segments:

- Exploration & Production
- Refining and Marketing
- Oilfield Services
- Midstream Operations
- Alternative Energy
- Working and Mineral Interests

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## In This Issue



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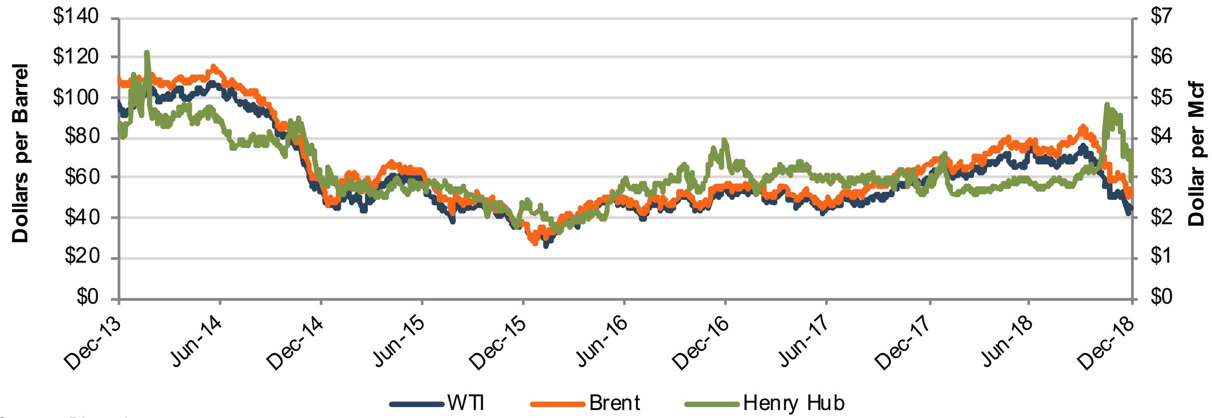
# Oil & Gas Prices

In 2017, oil price volatility was relatively calm as the price stayed within an $18 band all year ($42 – $60). Prices generally trended upwards in the first three quarters of 2018 with WTI peaking over $76 per barrel on October 3rd, before declining to a low under $43 on Christmas Eve. Because refined product price changes generally lag crude prices, the stability of oil prices was welcomed. Conversely, the 38.0% decline in the fourth quarter (24.8% for 2018) was detrimental to refiners.

**Historical Crude Oil and Natural Gas Prices**

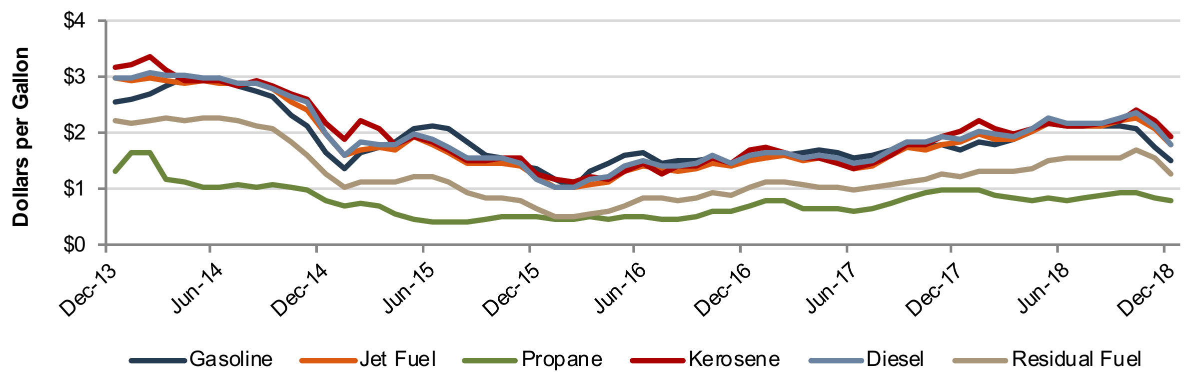



*Source: Bloomberg*

# Refined Product Prices

As crude prices rose, so did refined product prices. However, recent declines have wiped out gains in 2018 as all products except residual fuel (+3.5%) declined for the year. Propane was the hardest hit with declines of 19.4%. Despite the steep drop in the fourth quarter of 2018, refined product prices are still up from two years ago except for gasoline (-4.8%).

**Historical Refined Product Prices**



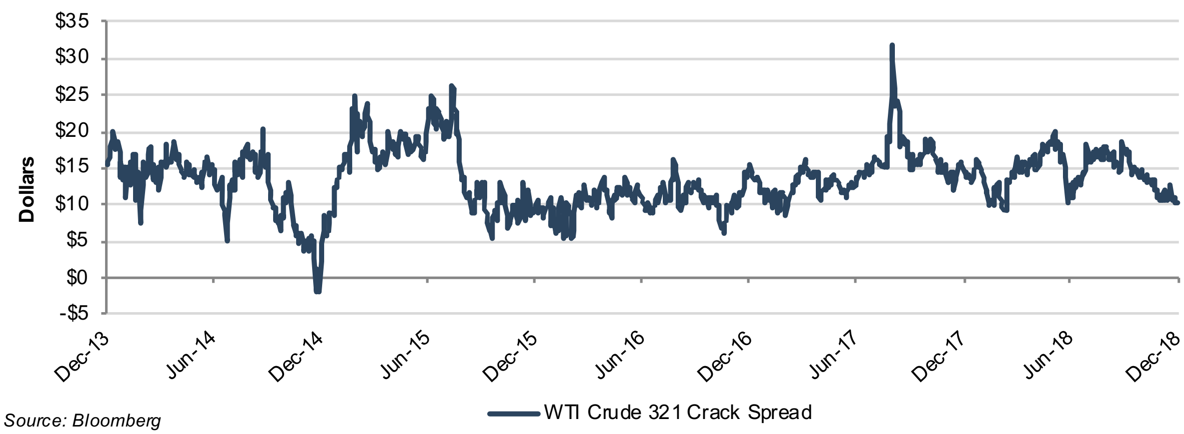

*Source: EIA*

# Crack Spread

The crack spread is the price differential between crude oil and its refined oil products. The 3-2-1 crack spread approximates refinery yield using the industry average for refinery production. For every three barrels of crude oil the refinery processes, it makes two barrels of gasoline and one barrel of distillate fuel. Historically, the WTI Cushing 3-2-1 crack spread was higher than the Brent Crude 3-2-1 crack spread because U.S. producers were not allowed to export crude except to Canada and the price of WTI crude was depressed. However, as the cost of crude fell around the world and the export ban was lifted, crack spreads converged. *Bloomberg* discontinued its Brent Crude 3-2-1 Crack Spread on October 24, 2018.

The crack spread peaked at the end of August 2017. Many refiners were forced to shut down due to damage caused by Hurricane Harvey, and the price of refined products spiked as a result of product shortages. The spread fell back over time and ended 2017 at just under $15 per barrel. Crack spreads averaged about $14.5 per barrel in 2018, including a peak of nearly $20 in early June. The figure stood at over $10 per barrel at year-end 2018. Differences between WTI and Brent have led to higher cracks for refiners that are able to get feedstock at the domestic WTI and sell their product at Brent-related prices. Refiners have been able to achieve higher margins due to pricing dynamics of specific byproducts, such as diesel cracks.

**Historical 3-2-1 Crack Spread**

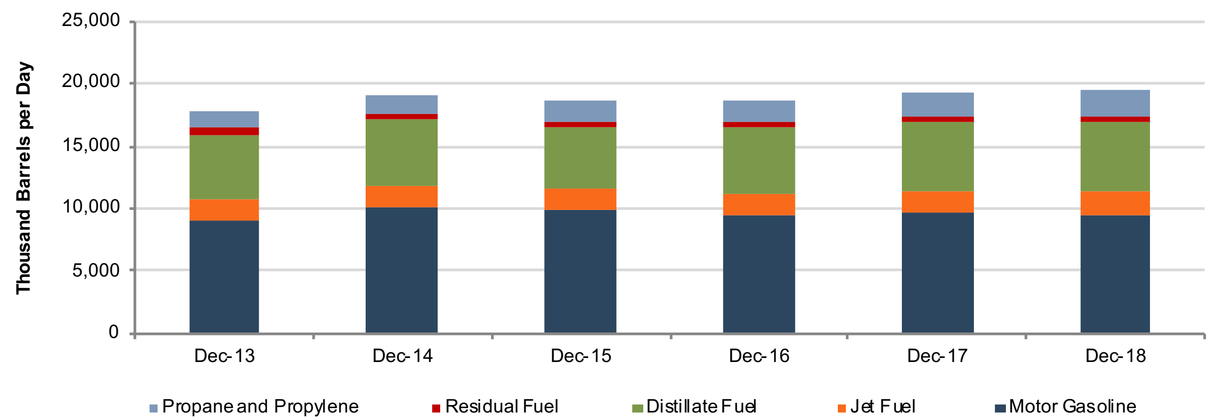



*Source: Bloomberg*

# Refined Product Volumes

Refined product production varied by product type over the last year. The production of propane, jet fuel, and residual fuel increased year-over-year by 10.6%, 6.9%, and 5.1%, respectively. Distillate production was flat and motor gasoline declined 1.5% in 2018. Propane production has increased 8.1% over each of the past five years as it is largely a natural gas processing byproduct and the U.S. has increased production. Despite the recent increase, production of residual fuel has declined 1.9% annually over the past five years due to decreases in both demand for residual fuel and the availability of feedstock for residual fuel production. Refiners have prioritized the production of lighter, more profitable products over residual fuel, which has decreased the supply. Additionally, the power sector has shifted from relying on residual fuel to natural gas, decreasing demand.

**Historical Refined Product Production**

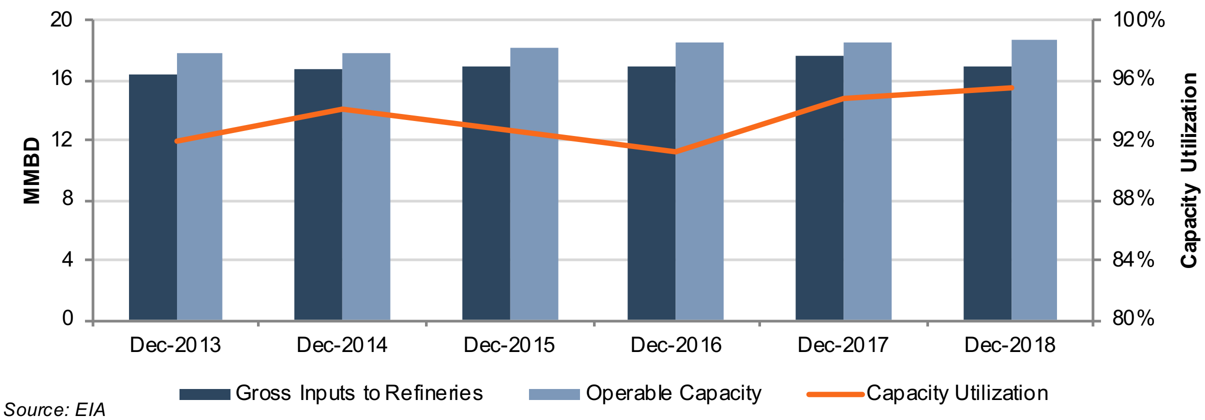



*Source: EIA*

# Capacity of Operating and Idle Refineries

Refinery utilization rates peaked in December 2018 at 95.4%, considerably higher than the five-year average of 91.0%. Capacity utilization is cyclical, typically peaking in July and reaching its low in October. Utilization was higher than any December in the past six years. As a further sign of current productivity, only 0.4% of crude oil distillate capacity sat idle as of December 2018.

**Historical Refinery Operating Capacity**




*Source: EIA*

# Industry Conditions

## Factors Providing Positive Momentum in 2019

### MARPOL Convention

Beginning on January 1, 2020, the International Maritime Organization (IMO) is set to enact the *Annex VI of the International Convention for the Prevention of Pollution from Ships* (MARPOL Convention), which lowers the maximum sulfur content of marine fuel oil used in ocean-going vessels from 3.5% to 0.5%. This will likely have a large impact on the industry, though significant uncertainty exists. "Scrubbers" can be installed which strips sulfur emissions, though this simply pushes the sulfur into the water as opposed to the air and fewer than 900 ships **are expected to have this technology** prior to 2020. Another option is liquefied natural gas, though using LNG is more difficult for old ships and works better in new models. Ships can also sail more fuel efficiently at a slower pace, but the most likely response will be shifting from high-sulfur fuel oil to a lower-sulfur diesel or gasoil. All else equal, this shrinks demand for high-sulfur products, and raises prices on low-sulfur diesel, impacting the trucking industry as well. U.S. refiners with the sophistication to extract a higher proportion of lighter, low-sulfur fuels from each barrel of oil will **stand to profit from the change in legislation**, particularly so if supply is low in the short term following the change.

### Brent-WTI and Crack Spreads

WTI-Brent spreads have persisted for much of the year, averaging $6.79 per barrel for 2018. According to **the EIA's STEO report**, Brent is forecast to be $8/bbl more than WTI in the first quarter of 2019 with that figure falling towards $4 in the latter part of the year and 2020. While these lower domestic prices are not ideal for upstream producers, this can be a boon for downstream players, especially those with access to the Gulf Coast's Brent-related pricing. Crack spreads, which are a proxy for refiner margins, have also been beneficial, as refiners seek to take in inexpensive cheap stock and turn it into these high margin products. **According to Bank of America**, diesel cracks could reach $40 per barrel in 2020.

# Industry Conditions

## Uncertain Factors Moving into 2019

### RFS is Still Uncertain, but RIN prices fall

The final Renewable Fuel Standards (RFS) for 2018 were released on November 30, 2017 and contained a slight reduction in volume requirements, providing some relief for refiners, though a long-term solution regarding the RFS is needed. While large integrated refiners have the capability to blend their own petroleum products with renewable fuels, small and medium sized merchant refiners do not have this capability and are required to purchase RINs, which hurts the profits of merchant refiners. The number of exemptions to this obligation has increased in the past year. With giant Andeavor benefiting from these exemptions citing "disproportionate economic hardship, the industry expressed anger and sent RINs credit prices **tumbling to 3-year lows**." While long term uncertainty persists, lower RIN prices and more waivers represent a positive for the refining industry.

### Potential Tariffs Could Hamper Exports and Increase Costs

Both the U.S. and China have announced rounds of tariffs on several billion dollars worth of goods. In December, the two sides **agreed to postpone new tariffs** that have shaken global markets, including the U.S. postponing $200 billion in tariffs on Chinese goods. Without a formal agreement between the two sides, plenty of uncertainty remains, which could hamper the industry. Concern remains also on ratification by Congress of the United States-Mexico-Canada Agreement (USMCA), which is the replacement for NAFTA. While there were beneficial elements for the energy sector, the deal still has to pass Congress, leading to some uncertainty. The most important aspect of the deal is continuing the integrated market, as North America has been approaching energy self-sufficiency, due in large part to the free flowing market currently afforded by the trade agreement. If USMCA is not passed and the three countries resort to a system with tariffs, the energy industry will be negatively impacted.

### Price of Crude

Crude prices have largely trended upward in the past few years after steep declines. As noted previously, WTI peaked at over $76 per barrel in early October 2018, before declining precipitously to $45 at the end of the year. There are numerous contributing factors to the decline in crude prices, including waivers to Iran sanctions, elevated levels of inventories, and increased production. While crude prices **are not expected to persis**t at the relatively low level seen at the end of 2018, expectations have been reined in, as some thought as recently as October that $100 per barrel was possible again.

# Guideline Public Company Valuation Multiples

Refining and Marketing valuation multiples have declined recently as crude oil declines have coincided with general equity market declines. The only company with a year-over-year increase in enterprise value was Marathon Petroleum, which purchased Andeavor in April 2018. Calumet suffered the largest stock market decline as it deals with a significant debt load.

In addition to lower stock prices, EV/EBITDA multiples have declined as earnings measures have improved. Valero had the lowest growth in EBITDA compared to the prior year, despite growing 19.3%. If these earnings measures persist, one would expect valuation multiples to return to levels seen in recent years.

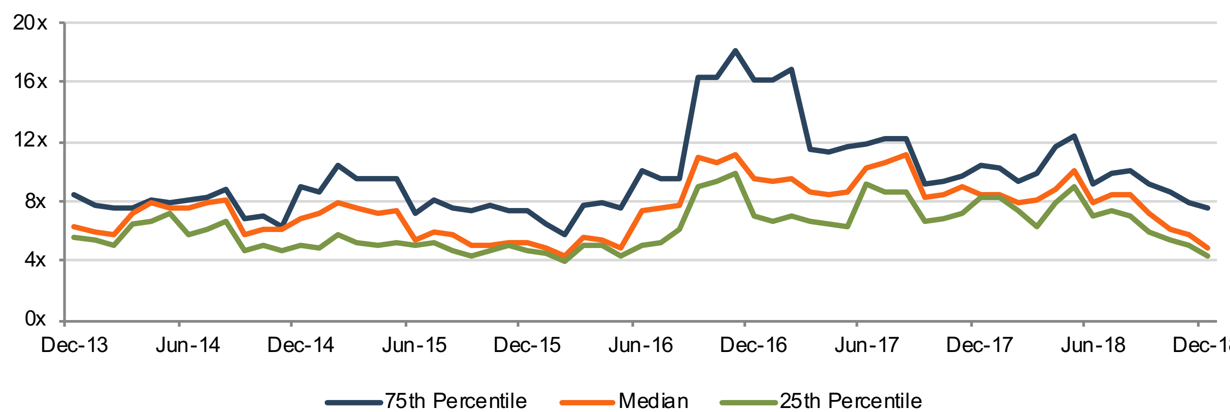
| | | LTM | | | | YOY | |
|---|---|---|---|---|---|---|---|
| Company Name | Ticker | Revenues | EBITDA | EBITDA Margin | Enterprise Value @ 12/31/2018 | Change in Enterprise Value | EV/EBITDA Multiple |
| Marathon Petroleum Corporation | MPC | 96,706 | 8,032 | 8.3% | 76,482 | 53.1% | 9.5x |
| HollyFrontier Corporation | HFC | 17,715 | 2,073 | 11.7% | 10,665 | -6.3% | 5.1x |
| Delek US Holdings, Inc. | DK | 10,233 | 826 | 8.1% | 3,544 | -5.9% | 4.3x |
| Calumet Specialty Products Partners, L.P. | CLMT | 3,498 | 289 | 8.3% | 1,737 | -31.5% | 6.0x |
| Phillips 66 | PSX | 111,461 | 9,187 | 8.2% | 50,367 | -16.9% | 5.5x |
| Valero Energy Corporation | VLO | 111,407 | 6,662 | 6.0% | 39,001 | -11.7% | 5.9x |
| PBF Energy Inc. | PBF | 27,186 | 894 | 3.3% | 5,825 | -4.3% | 6.5x |
| **Average** | | **$54,029** | **$3,995** | **7.7%** | **$26,803** | **-3.3%** | **6.1x** |
| **Median** | | **$27,186** | **$2,073** | **8.2%** | **$10,665** | **-6.3%** | **5.9x** |

Presented in $000,000s
*Source: S&P Capital IQ*

# Refining EV/EBITDA Multiples

Median valuation multiples were at 10.1x EBITDA at the end of May 2018. This represented a peak, and subsequent month-end median multiples have declined, with a low at the end of the year. Low crude prices depress earnings, but frequently, companies will be punished by the stock market when oil prices decline as well, regardless of their position with inventory on hand or their hedging tactics. Conversely, a rebound in oil prices should increase both earnings and valuations.

**Historical Refining EV/EBITDA Multiples**




*Source: Bloomberg*

# Guideline Transaction Activity

There has been little M&A activity over the last few years due to uncertainty in the industry. Wester Refining and Tesoro Corporation merged to form Andeavor. Tesoro bought Western Refining for 10.6x EBITDA and 80% of revenues. The new company was **the fourth largest independent refiner in the U.S**. In the second quarter of 2018, Marathon Petroleum bought the newly formed Andeavor for 12.7x EBITDA making Marathon the largest refiner in the U.S. with approximately 15% of total fuel making ability. The two companies were largely located in different regions and **almost $1 billion of synergies** have been identified to date. Investors of Marathon, however, are asking did Marathon pay too much?

Additionally, Delek US Holdings bought the remainder of Alon USA Partners, LP in the fourth quarter of 2017 in an all-stock transaction. The combination of Delek and Alon created a company that is well positioned near the Permian Basin.

| | | | | | | | Enterprise Value to: | |
|---|---|---|---|---|---|---|---|---|
| Announced Date | Target | Buyer | Total Consideration to Shareholders | Implied Enterprise Value | LTM Revenue | LTM EBITDA | LTM Revenue | LTM EBITDA |
| 5/30/18 | NGL Propane, LLC | Superior Plus Energy Services, Inc. | $900 | $900 | na | $85 | na | 10.6x |
| 5/29/18 | CVR Refining, LP | CVR Energy, Inc. | $1,026 | $4,511 | $5,699 | $347 | 0.8x | 13.0x |
| 4/30/18 | Andeavor | Marathon Petroleum Corp. | $35,536 | $35,103 | $38,000 | $2,761 | 0.9x | 12.7x |
| 11/8/17 | Alon USA Partners, LP | Delek US Holdings, Inc. | $161 | $1,050 | $2,071 | $179 | 0.5x | 5.9x |
| 11/17/16 | Western Refining, Inc. | Andeavor | $6,782 | $6,516 | $7,698 | $586 | 0.8x | 11.1x |
| 10/14/16 | Alon USA Energy, Inc. | Delek US Holdings, Inc. | $1,211 | $1,488 | $3,832 | $90 | 0.4x | 16.6x |
| 10/26/15 | Northern Tier Energy LP | Western Refining, Inc. | $1,855 | $2,671 | $3,303 | $502 | 0.8x | 5.3x |
| **Average** | | | **$6,782** | **$7,463** | **$10,100** | **$650** | **0.7x** | **10.7x** |
| **Median** | | | **$1,211** | **$2,671** | **$4,765** | **$347** | **0.8x** | **11.1x** |

Presented in ($000,000s)
*Source: S&P Capital IQ*

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