EXECUTIVE SUMMARY

Just as every March Madness tournament selection begins with top seeds as well as some teams on the proverbial bubble, so it is with U.S. oil market performance in our March report based on data through February.

Our top seeds go to
- U.S. crude oil production, a monthly record eclipsing 12.1 million barrels per day (mb/d) in February; and,
- U.S. total petroleum demand, led by solid annual growth in distillates, gasoline and jet fuel.

On the bubble, however, we have U.S. petroleum net imports, which appeared to backslide to 2.7 mb/d in January but should have set a modern record by falling to 1.1 mb/d in February. However, in the wake of the Federal government furlough, there were material data revisions going back to November 2018 that retroactively suggest petroleum net imports were even lower in November and December than previously reported. Details follow, but the gist is that, by these measures, the global demand responsiveness to lower prices has remained strong, and the U.S. has grown closer to energy independence.

Looking forward, API’s proprietary economic indicator – the Distillate Economic and Financial Indicator (DEFI) – decreased by 0.1 percentage points in February and for the third consecutive month correctly anticipated slowing in year-over-year growth of U.S. industrial production. Please see the following chart for comparisons with U.S. total industrial production.

FEBRUARY HIGHLIGHTS (Click hyperlinks to advance to any section)

Demand
- U.S. petroleum demand 20.4 mb/d in February – strongest for the month since 2007.
  - Gasoline demand (8.9 mb/d) grew by 1.0 percent y/y in February.
  - Distillate demand (4.2 mb/d) strongest for February since 2015.
  - Strongest February jet fuel demand (1.6 mb/d) since 2005.
  - Residual fuel oil demand (0.3 mb/d) lowest for February in three years.
  - Refinery and petrochemical feedstock demand (5.5 mb/d) highest for February on record.

Prices & Macroeconomy
- Oil and gasoline prices continued to rebound in February.
- Mixed signals continue from U.S. leading economic indicators.

Supply
- Record U.S. crude oil production (12.1 mb/d).

International trade
- U.S. petroleum net imports of 1.1 mb/d.

Industry operations
- Refinery throughput (16.1 mb/d) and capacity utilization (86.7 percent) for February.

Inventories
- Total petroleum inventories 4.1 percent above the 5-year average.
The DEFI value of 0.2 for February and three-month average of 0.2 suggests a continued slowing of industrial production from relatively strong levels.

**Industrial production**
- Percentage change year-over-year (3-month average)

**DEFI**
- Percentage change year-over-year (3-month average)

Sources: API Monthly Statistical Report, EIA, CME Group, Moody's, Federal Reserve Board

**MSR heat map – February 2019**
- Heat map of monthly percentage changes – February 2019 compared with January 2019*
  - Crude oil prices increased in February with rising exports compensating for weakened refining activity and domestic demand
  - Total inventories held steady, but those of crude oil grew while refined products shrank

* Bolded colored increases and decreases reflect changes vs. prior month that are in the top or bottom quartile for the past five years

** CFTC long/short open interest comparisons based on month versus same month in prior year

Sources: API Monthly Statistical Report, EIA, CFTC, Baker Hughes
Details by section

**Demand**

U.S. petroleum demand 20.4 mb/d in February – strongest for the month since 2007

U.S. petroleum demand, as measured by total domestic petroleum deliveries, was 20.4 mb/d in February, which was down 1.5 percent from January but up 3.8 percent compared with February 2018. This was the strongest petroleum demand for the month of February since 2007.

**Gasoline**

Gasoline demand (8.9 mb/d) grew 1.0 percent y/y in February

Consumer gasoline demand, measured by total motor gasoline deliveries, was 8.9 mb/d in February. This was almost identical to January and a 1.0 percent increase compared with February 2018.

Demand for reformulated-type gasoline, which is consumed primarily in urban areas, increased by 1.7 percent y/y to 3.0 mb/d in February. By contrast, conventional gasoline is used more in rural areas and increased 0.6 percent y/y to 5.9 mb/d.

**Distillate Fuel Oil**

Distillate demand strongest for February since 2015

In February, distillate deliveries of 4.2 mb/d decreased seasonally by 2.3 percent from January but increased 4.7 percent compared with February 2018.

About 97.0 percent of distillate demand in February was for ultra-low sulfur distillate (ULSD), which is driven mainly by road freight transportation activity. Indicators of freight trucking activity have remained solid, with the Bureau of Labor Statistics’ (BLS) Producer Price Index for freight trucking up by 7.9 percent y/y in February, and the nationwide shortage of truckers gaining traction.

The remaining 3.0 percent of distillate demand was high-sulfur distillate fuel (HSD), which is a heating fuel in the residential and commercial sectors and a marine fuel when blended to upgrade heavy fuel oil. In February, HSD deliveries of 132 thousand barrels per day (kb/d) fell by 15.9 percent from January and 32.3 percent compared with February 2018. This was the lowest HSD demand on record for the month of February.

**Kerosene Jet Fuel**

Strongest February jet fuel demand since 2005

The remaining 3.0 percent of distillate demand was high-sulfur distillate fuel (HSD), which is a heating fuel in the residential and commercial sectors and a marine fuel when blended to upgrade heavy fuel oil. In February, HSD deliveries of 132 thousand barrels per day (kb/d) fell by 15.9 percent from January and 32.3 percent compared with February 2018. This was the lowest HSD demand on record for the month of February.
In February, kerosene jet fuel deliveries of 1.6 mb/d increased by 2.4 percent compared with January and were up by 3.0 percent versus February 2018, which made for the strongest demand for the month of February since 2005. The increase generally was consistent with the International Air Transport Association (IATA) latest report, which showed U.S. domestic air passenger kilometers traveled increased by 5.8 percent y/y in January.

**Residual Fuel Oil**

Residual fuel oil demand (0.3 mb/d) lowest for February in three years

Residual fuel oil deliveries

Weakest demand for February since 2016

Residual fuel oil is used in electric power production, space heating, marine vessel bunkering and other industrial applications. Residual fuel oil demand was 254 kb/d in February, a decrease of 14.5 percent from January and 9.9 percent versus February 2018. The decrease came despite February 2019 bringing the United States an average of 12 percent more heating degree days than one year ago, according to EIA.

Rather, diminished marine vessel bunkering demand appears to be the root cause. Tightening sulfur regulations are generally expected to decrease residual fuel oil demand beginning in January 2020, but the decrease in February appears to be driven by the decrease in shipping activity. As a measure of international shipping prices and activity, the Baltic Dry Index monthly average has dropped by 48.2 percent year-to-date through February.

**Other Oils**

Refinery and petrochemical feedstock demand (5.5 mb/d) highest for February on record

Refining and petrochemical demand for liquid feedstocks, naphtha, and gasoil (“other oils”) was 5.5 mb/d in February, a decrease of 3.9 percent from January but an increase of 14.7 percent — 0.7 mb/d — above February 2018. This was the highest other oils’ demand for February on record. It also is indication of refining and petrochemical expansions and throughput.

**Prices**

Oil and gasoline prices continued to rebound in February

Domestic WTI crude oil prices averaged $54.95 per barrel in February, an increase of 6.9 percent ($3.57 per barrel) from January but a decrease of 11.7 percent ($7.28 per barrel) from February 2018. Similarly, international Brent crude oil prices averaged $63.96 per barrel, up 7.7 percent ($4.55 per barrel) from January. As prices continued to rebound in February, the difference between Brent
and WTI crude oil prices widened to over $9.0 per barrel in February from $8.0 per barrel in January.

In its short-term energy outlook, EIA expects a global oil market surplus to persist through 2019 but oil prices to remain steady around $60 per barrel. EIA also reports crude oil has remained the top input cost to produce gasoline. As WTI crude oil prices fell, the average U.S. gasoline price increased to $2.39 per gallon in February from $2.34 per gallon in January, according to AAA reports.

Natural gas liquids (NGL) prices averaged $6.62 per million Btu (MMBtu) in February, which was an increase of 6.1 percent from January. Among the constituent NGLs, Bloomberg data show ethane, which makes up more than 40 percent of typical NGL production, fell in price by 3.6 percent in February, but the prices of propane, butane and field natural gasoline each rose during the month.

### Macroeconomy
Mixed signals continue from U.S. leading economic indicators

The University of Michigan’s consumer sentiment index edged up to a final reading of 93.8 in February from 91.2 in January. The survey notes, while the overall level of confidence diminished from a reading of 99.7 in February 2018, the present reading is still positive. They suggest that personal consumption expenditures should grow by 2.6 percent in 2019, so this strength in consumer spending would imply that the expansion is expected to set a new record length by mid-year.

The Institute for Supply Management’s Purchasing Managers Index (PMI) registered 54.2 in February, which was an decrease of 2.4 percentage points from a reading of 56.6 in January. Any value above 50.0 suggests an expansion. New orders, production and employment increased. Growth occurred in 16 of the 18 manufacturing sectors surveyed (two more than in January).

API’s Distillate Economic and Financial Indicator (DEFI), which combines industry fundamentals with prices and interest rates, decreased by 0.1 percentage points in February and has correctly identified the continued slowing growth of U.S. industrial production for three consecutive months.
According to the Bureau of Labor Statistics (BLS), labor markets remained tight, as the unemployment rates decreased to 3.8 percent in February from 4.0 percent in January. The unemployment rate fell in February despite U.S. non-farm payrolls having grown by just 20,000 in February – well below consensus expectations of 180,000.

Supply

Record U.S. oil (12.1 mb/d) production

Record U.S. crude oil production of 12.1 mb/d in February – #1 in the world – marked another new high for monthly output. The increased production reflects the rise in drilling activity over the past quarter, which Baker Hughes reported an average of 878 oil-targeted rigs in Q4 2018, up from 863 oil rigs in Q3 2018. The rig count slipped to an average of 853 in February, however, so further production growth may hinge on the extent of productivity and bringing down the backlog of drilled but uncompleted wells (DUCs) that the EIA estimated hit a new high of 8,800 DUCs in January.

Natural gas liquids (NGL) production, a co-product of natural gas production, was 4.7 mb/d in February, an increase of 17.4 percent y/y compared with February 2018.

International trade

U.S. petroleum net imports of 1.1 mb/d

International trade offers some of the most interesting plots this month.

On the heels of its record crude oil production, the United States’ crude oil exports eclipsed 3.0 mb/d for the first time, the highest on record. Including refined products, this propelled total U.S. petroleum exports to 8.1 mb/d, the highest on record for the month of February.

At the same time, crude oil imports fell by nearly 1.0 mb/d between January and February, 0.2 mb/d of which was from Canada.
The change February imports ranked among the largest monthly decreases on record since 1973, well beyond typical seasonality.

The combination of record exports with the sharp fall in imports suggests U.S. net imports of petroleum fell to 1.1 mb/d in February.

This would be a new record for the lowest monthly petroleum net imports since the 1960s if it were not for official revisions to U.S. trade data extending back to November 2018. The most consequential revision was to refined product exports, which on a revised basis for November 2018 were 800 kb/d above the initial estimate from November. Consequently, the history of U.S. net petroleum imports now suggests the U.S. was a net importer of just 0.5 mb/d in November and 0.8 mb/d in December. Retroactively, this is remarkably close to the U.S. becoming a net exporter of petroleum as it already is for natural gas.

**Inventories**

**Total petroleum inventories 4.1 percent above the 5-year average**

In February, total petroleum inventories were 1.26 billion barrels, which an increase of 0.1 percent from January and 4.3 percent over February 2018. Total inventories are now 4.1 percent above the average of the 5-year range. Within the February total, crude oil inventories rose 0.7 percent m/m, while refined product stocks fell 0.3 percent m/m.

**Industry operations**

Refinery throughput (16.1 mb/d) and capacity utilization (86.7 percent) for February

- Refinery throughput fell 1.5 percent y/y in February.
- Distillation unit inputs.
- Crude oil stocks 2.5 percent above the 5-yr. average.

In February, U.S. refinery throughput normalized to 16.1 mb/d, implying a capacity utilization rate of 86.7 percent. These rates were both more than 6.0 percent below their respective levels in January, as Bloomberg reported outages of crude distillation units doubled to 1.4 mb/d in February from 0.7 mb/d in January. Most of this appeared to result from scheduled maintenance, and outages fell to 0.8 mb/d as of March 1.

**Total inventories**

<table>
<thead>
<tr>
<th>Month</th>
<th>5-year range</th>
<th>2019</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>1.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>1.26</td>
<td></td>
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</table>

**Crude oil stocks**

<table>
<thead>
<tr>
<th>Month</th>
<th>5-year range</th>
<th>2019</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>0.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>0.3</td>
<td></td>
<td></td>
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</table>

**Distillation unit inputs**

<table>
<thead>
<tr>
<th>Month</th>
<th>5-year range</th>
<th>2019</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>18.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>17.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Refinery capacity utilization**

<table>
<thead>
<tr>
<th>Month</th>
<th>5-year range</th>
<th>2019</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>90.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>85.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In February, U.S. refiner throughput normalized to 16.1 mb/d, implying a capacity utilization rate of 86.7 percent. These rates were both more than 6.0 percent below their respective levels in January, as Bloomberg reported outages of crude distillation units doubled to 1.4 mb/d in February from 0.7 mb/d in January. Most of this appeared to result from scheduled maintenance, and outages fell to 0.8 mb/d as of March 1.

**Inventories**

**Total petroleum inventories 4.1 percent above the 5-year average**

In February, total petroleum inventories were 1.26 billion barrels, which an increase of 0.1 percent from January and 4.3 percent over February 2018. Total inventories are now 4.1 percent above the average of the 5-year range. Within the February total, crude oil inventories rose 0.7 percent m/m, while refined product stocks fell 0.3 percent m/m.
## ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily average in thousands of 42 gallon barrels)

<table>
<thead>
<tr>
<th>Disposition and Supply</th>
<th>February 2019</th>
<th>2018</th>
<th>% Change</th>
<th>Year-to-Date 2019</th>
<th>2018</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total motor gasoline...</td>
<td>8,904</td>
<td>8,817</td>
<td>1.0</td>
<td>8,905</td>
<td>8,778</td>
<td>1.5</td>
</tr>
<tr>
<td>Finished reformulated</td>
<td>3,046</td>
<td>2,994</td>
<td>1.7</td>
<td>2,960</td>
<td>2,922</td>
<td>1.3</td>
</tr>
<tr>
<td>Finished conventional</td>
<td>5,858</td>
<td>5,823</td>
<td>0.6</td>
<td>5,945</td>
<td>5,856</td>
<td>1.5</td>
</tr>
<tr>
<td>Kerosene-jet...........</td>
<td>1,647</td>
<td>1,599</td>
<td>3.0</td>
<td>1,627</td>
<td>1,592</td>
<td>2.2</td>
</tr>
<tr>
<td>Distillate fuel oil...</td>
<td>4,150</td>
<td>3,962</td>
<td>4.7</td>
<td>4,201</td>
<td>4,189</td>
<td>0.3</td>
</tr>
<tr>
<td>≤ 500 ppm sulfur......</td>
<td>4,018</td>
<td>3,767</td>
<td>6.7</td>
<td>4,057</td>
<td>3,997</td>
<td>1.5</td>
</tr>
<tr>
<td>≤ 15 ppm sulfur.......</td>
<td>4,007</td>
<td>3,756</td>
<td>6.7</td>
<td>4,045</td>
<td>3,974</td>
<td>1.8</td>
</tr>
<tr>
<td>&gt; 500 ppm sulfur......</td>
<td>132</td>
<td>195</td>
<td>(32.3)</td>
<td>145</td>
<td>192</td>
<td>(24.5)</td>
</tr>
<tr>
<td>Residual fuel oil.....</td>
<td>254</td>
<td>282</td>
<td>(9.9)</td>
<td>277</td>
<td>313</td>
<td>(11.5)</td>
</tr>
<tr>
<td>All other oils (incl. crude losses)</td>
<td>5,478</td>
<td>4,777</td>
<td>14.7</td>
<td>5,596</td>
<td>5,053</td>
<td>10.8</td>
</tr>
<tr>
<td>Reclassified...........</td>
<td>(64)</td>
<td>183</td>
<td>na</td>
<td>(69)</td>
<td>138</td>
<td>na</td>
</tr>
<tr>
<td>Total domestic product supplied</td>
<td>20,369</td>
<td>19,619</td>
<td>3.8</td>
<td>20,537</td>
<td>20,062</td>
<td>2.4</td>
</tr>
<tr>
<td>Exports.................</td>
<td>8,057</td>
<td>6,844</td>
<td>17.7</td>
<td>7,758</td>
<td>6,723</td>
<td>15.4</td>
</tr>
<tr>
<td>Total disposition.....</td>
<td>28,426</td>
<td>26,463</td>
<td>7.4</td>
<td>28,295</td>
<td>26,785</td>
<td>5.6</td>
</tr>
</tbody>
</table>

### Supply:

#### Domestic liquids production
- Crude oil (including condensate): 12,059 (10,248) 17.7
- Natural gas liquids: 4,725 (4,023) 17.4
- Other supply: 1,200 (1,236) (2.9)
- Total domestic supply: 17,984 (15,508) 16.0

#### Imports:
- Crude oil (excluding SPR imports): 6,680 (7,493) (10.8)
- From Canada: 3,320 (3,587) (7.5)
- Other: 3,360 (3,906) (14.0)
- Total motor gasoline (incl. blend.comp): 494 (537) (8.0)
- Total imports: 9,128 (9,580) (4.7)
- Total supply: 27,112 (25,088) 8.1
- Total disposition: 27,689 (25,206) 9.6

### Refinery Operations:

- Input to crude distillation units: 16,122 (16,360) (1.5)
- Gasoline production: 9,785 (9,800) (0.2)
- Kerosene-jet production: 1,701 (1,690) 0.7
- Distillate fuel production: 4,852 (4,584) 5.8
- Residual fuel production: 295 (462) (36.1)
- Operable capacity: 18,604 (18,567) 0.2
- Refinery utilization: 86.7% (88.1%) 90.0% (89.7%) na
- Crude oil runs: 15,862 (15,932) (0.4)

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1. Total supply, i.e., production plus imports adjusted for net stock change is equal to total disposition from primary storage. Total disposition from primary storage less exports equals total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Statistical Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.
2. Based on API estimated data converted to a monthly basis.
3. Data for most current two months are API estimates. Other data come from U.S. Energy Information Administration (including any adjustments).
4. An adjustment to avoid double counting resulting from differences in product classifications among different refineries and blenders.
5. Includes unaccounted-for crude oil, withdrawals from the SPR when they occur, processing gain, field production of other hydrocarbons and alcohol, and downstream blending of ethanol.
6. Represents “Input to crude oil distillation units” as a percent of “Operable capacity”.
R: Revised. na: Not available.
## ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily average in thousands of 42 gallon barrels)

<table>
<thead>
<tr>
<th>Stocks (at month-end, in millions of barrels)</th>
<th>February 2019</th>
<th>January 2019</th>
<th>February 2018</th>
<th>% Change From</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crude oil (excluding lease &amp; SPR stocks)</td>
<td>451.5</td>
<td>448.2</td>
<td>423.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Unfinished oils</td>
<td>89.2</td>
<td>87.0</td>
<td>90.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Total motor gasoline</td>
<td>253.1</td>
<td>258.2</td>
<td>252.6</td>
<td>(2.0)</td>
</tr>
<tr>
<td>Finished reformulated</td>
<td>0.1</td>
<td>0.0</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Finished conventional</td>
<td>25.5</td>
<td>27.7</td>
<td>24.9</td>
<td>(7.9)</td>
</tr>
<tr>
<td>Blending components</td>
<td>227.5</td>
<td>230.5</td>
<td>227.6</td>
<td>(1.3)</td>
</tr>
<tr>
<td>Kerosene-jet</td>
<td>42.6</td>
<td>42.1</td>
<td>43.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Distillate fuel oil</td>
<td>135.8</td>
<td>141.7</td>
<td>138.6</td>
<td>(4.2)</td>
</tr>
<tr>
<td>≤ 500 ppm sulfur</td>
<td>124.6</td>
<td>130.5</td>
<td>127.2</td>
<td>(4.5)</td>
</tr>
<tr>
<td>≤ 15 ppm sulfur</td>
<td>121.5</td>
<td>127.1</td>
<td>121.2</td>
<td>(4.4)</td>
</tr>
<tr>
<td>&gt; 500 ppm sulfur</td>
<td>11.2</td>
<td>11.2</td>
<td>11.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Residual fuel oil</td>
<td>28.6</td>
<td>28.7</td>
<td>32.8</td>
<td>(0.3)</td>
</tr>
<tr>
<td>All other oils</td>
<td>261.8</td>
<td>255.5 R</td>
<td>229.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Total all oils</td>
<td>1,262.6</td>
<td>1261.4 R</td>
<td>1,210.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>