**Key points**

➢ **Where we are currently**
  ➢ **Macroeconomy.** After a record shock, third-party consensus expectations are for a rebound to 4.4% y/y growth in 2021
  ➢ **Oil markets** – Historic demand and supply changes
    - Low prices can be painful for industry, but beneficial to consumers and oil & gas competitiveness
    - Oil demand fell by record amounts with the global pandemic, but appeared to bottom out in April and recover in May
    - Historically large supply responses occurred in global oil prices, U.S. drilling activity and production
  ➢ **U.S. natural gas.** Dedicated natural gas drilling now represents 90% of U.S. gas drilling and supported a record 38.9% market share in electricity generation

➢ **Key drivers and uncertainties**
  ➢ Pace of global economic and pandemic recovery
    - Inflation/deflation, debt, foreign exchange rates
  ➢ Industry financial strength
  ➢ U.S. oil & gas well productivity
  ➢ Global gas market evolution
  ➢ International trade
The industry invested $57.8 billion in Q1 2020, down from an average of $67.2 billion per quarter in 2019, due to market conditions.

- Most global integrated companies invested steadily through Q1 2020 but recently announced capex reductions.
- Upstream companies made the largest reductions in their capital expenditure.

### Capital expenditures by industry segment

<table>
<thead>
<tr>
<th>Industry Segment</th>
<th>Q1 2020 Change (%y/y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>-11.3</td>
</tr>
<tr>
<td>Upstream</td>
<td>-21.1</td>
</tr>
<tr>
<td>Midstream</td>
<td>-12.6</td>
</tr>
<tr>
<td>Global Integrated</td>
<td>+1.0</td>
</tr>
</tbody>
</table>

* All other oil & gas industry companies

Sources: Bloomberg, publicly-available company reports
72 pipeline projects and 11.3 MBDOE of additional planned capacity may face liquidity, permitting and construction delays.

Permian Highway $2.0 billion 0.9 MBDOE
Airbuckle $1.4 billion 0.4 MBDOE
EPIC $2.5 billion 0.6 MBDOE
Cheniere MIDSHIP $1.5 billion 0.5 MBDOE

What’s at stake? U.S. pipeline project map

O&G pipeline project capacity additions

Million barrels per day oil-equivalent

- Oil
- Natural gas

Sources: S&P Market Intelligence, Oil & Gas Journal, EIA, API Team calculations
Global economy & oil markets
Deflation is the prime global concern due to unprecedented shocks spurring zero interest rates and $8+ trillion in stimulus

Headlines – Q2 2020

**Bloomberg**
Dangerous Disinflationary Shock Slams Reeling World Economy
Oil Posts Worst Quarter Ever While Physical Market Craters

**INTERNATIONAL MONETARY FUND**
A Global Crisis Like No Other Needs a Global Response Like No Other

**World Oil**
Crashing oil demand drives a 17 MMbpd global output cut in Q2

**ENERCOM**
Post-Crisis Recovery: Oil Supply and Demand is Moving Back Towards Equilibrium with China Leading the Way
Global GDP growth could rebound strongly to 4.4% in 2021, according to third-party consensus estimates

- Historical global real GDP growth averaged 3.0% per year (1970-2019) but can be volatile and cyclical.
- The third-party consensus expects growth of 4.4% in 2021, a rebound following a contraction of 4.0% in 2020.

Global GDP growth, 1970-2019

Global GDP outlook

sources: IMF, Bloomberg  * Market exchange rate basis

Third-party consensus range

June 2020
The U.S. dollar remained a global safe haven and reached its strongest foreign exchange rate in April 2020

- Many factors contribute to oil prices, but a strong U.S. dollar tended to correlate with low oil prices over the last decade
- Oil prices fell by record amounts in Q2 2020, largely due to the same underlying macroeconomic factors

**U.S. broad dollar index and Brent crude oil prices, 2009-2020**

- Brent crude oil (2020 constant dollars per barrel)
- U.S. Federal Reserve broad dollar index (2006=100)

**Currency performance versus U.S. dollar**

- Bars are max depreciation in Q1 2020; points are changes year-to-date through June 5

Sources: Federal Reserve Board, Bloomberg, U.S. BLS
In Q1 2020, U.S. energy exports rose 8.5% y/y, but flattened in March versus year-ago levels as COVID-19 emerged. Crude oil and liquefied natural gas (LNG) have primarily driven U.S. energy trade gains. Trade with China has been relatively small, but may increase under the U.S.-China trade agreement.

**U.S. monthly exports of energy goods**

Billion 2020 dollars

**U.S. select energy exports by country/region**

Billion 2020 dollars

Sources: U.S. Census Bureau
Global oil supply responded strongly to price market signals, with May bringing the largest decreases in drilling on record since 1975.

- With recent low oil prices, the U.S. drilling activity fell the most globally per Baker Hughes.
- U.S. drilling activity fell by 64% year-to-date to a record low 284 rigs as of June 5.

### Global rig count by region

<table>
<thead>
<tr>
<th>Region</th>
<th>Rig Count</th>
<th>Year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>1,176</td>
<td>May 2020</td>
<td>Baker Hughes</td>
</tr>
<tr>
<td>Middle East</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia Pacific</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Latin America</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### U.S. rig count by state as of June 5

```
United States: 284

- Texas: 115
- California: 58
- North Dakota: 11
- New Mexico: 34
- Louisiana: 20
- Wyoming: 19
- Other states: 12
```

Source: Baker Hughes
Global oil demand fell faster than supply, and EIA expects relatively faster demand recovery after Q2 2020

- EIA projects U.S. production to decline, offset by other Non-OPEC nations and OPEC to global markets

Global crude oil and liquids consumption

- Non-OPEC (Emerging economies)
- OECD (Developed economies)

Global crude oil and liquids production

- United States
- OPEC
- Other Non-OPEC
After the immediate demand shock, EIA expects the global oil market to rebalance by Q3 2020

EIA global supply/demand and Brent price estimates as of June 2020

Million barrels per day

2020$/Bbl

Supply less demand
Brent crude oil prices

EIA estimates

sources: EIA STEO (June 2020), Bloomberg
U.S. oil drilling requires at least $40 per barrel in most basins per Btu Analytics, so drilling slowed despite solid productivity.

- BTU Analytics estimates breakeven prices exceeded recent oil prices in most producing regions.
- EIA reported solid oil well productivity, but with the oil price drop drilling fell by the most on record to 206 rigs as of June 5.

Oil estimated breakeven prices – April 2020*

<table>
<thead>
<tr>
<th>Basin</th>
<th>Dollars per barrel ($/Bbl.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eagle Ford - West</td>
<td>Apr. 2020</td>
</tr>
<tr>
<td></td>
<td>Apr. 2019</td>
</tr>
<tr>
<td>Bakken</td>
<td>60</td>
</tr>
<tr>
<td>Eagle Ford - East</td>
<td>40</td>
</tr>
<tr>
<td>Permian - Delaware</td>
<td>40</td>
</tr>
<tr>
<td>Permian - Midland</td>
<td>40</td>
</tr>
</tbody>
</table>

*Half cycle breakevens assuming 10% discount factor and play-specific costs

source: BTU Analytics

U.S. oil well productivity – new production per rig

source: EIA Drilling Productivity Report (Mar. 2020)

Oil-directed drilling activity

source: Baker Hughes

Steep YTD declines
Crude oil storage building paused after an unprecedented increase due to the COVID-19 demand impact

- Strategic Petroleum Reserve leasing of 23 million barrels of storage capacity and also procuring 15.0 million barrels since April helped alleviate energy market concerns
- A potential upside to consumers is that strong inventories could cushion the market through the hurricane season

### U.S. inventories by petroleum product

- Crude Oil
- Motor Gasoline
- Distillates
- Jet Fuel

Source: EIA, API Team Analysis

### U.S. crude oil stocks by PADD

- PADD 1
- PADD 2
- PADD 3
- PADD 4
- PADD 5

Source: EIA, API Team Analysis
Motor gasoline and diesel fuel prices have generally moved with crude oil, and EIA expects limited impact from IMO 2020

Crude oil, retail gasoline and diesel fuel prices, adjusted for consumer price inflation

Sources: EIA, AAA, Bloomberg, BLS
Natural gas
Global natural gas prices decreased to record lows in April 2020

sources: U.S. FERC (June 2020) and METI
With a rise in productivity, nearly 90% of U.S. natural gas drilling is concentrated in Appalachia and the Haynesville.

- BTU Analytics estimates breakeven prices in Appalachia and the Haynesville formation were competitive at recent prices.
- EIA reported record gas well productivity, and with recent market events Appalachia and the Haynesville rose to account for nearly 90% of U.S. natural gas drilling activity.

### Natural gas estimated breakeven prices – April 2020*

<table>
<thead>
<tr>
<th>Formation</th>
<th>Dollars per million Btu (mmBtu)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haynesville</td>
<td>0, 1, 2, 3</td>
</tr>
<tr>
<td>Appalachia - NE PA</td>
<td>0, 1, 2, 3</td>
</tr>
<tr>
<td>Appalachia - SW PA</td>
<td>0, 1, 2, 3</td>
</tr>
<tr>
<td>Appalachia - OH</td>
<td>0, 1, 2, 3</td>
</tr>
</tbody>
</table>

*Half cycle breakevens assuming 10% discount factor and play-specific costs. Source: BTU Analytics.

### Natural gas well productivity – production per rig

- Thousand cubic feet per day nat. gas-equivalent

### Natural gas-directed drilling activity

- Drilling rigs

*Source: EIA Drilling Productivity Report, Baker Hughes.*
In a reversal of recent trends, EIA expects natural gas production and demand to decline

- EIA reports U.S. natural gas production declined beginning in November 2019 and does not project a rise before 2021
- EIA separately expects natural gas consumption to decline in 2020 and again in 2021

Natural dry gas production and consumption by segment

EIA estimates

Net imports

Dry gas production

Industrial

Electricity generation

Transportation

Residential & Commercial

source: EIA
Natural Gas continued to gain share in power generation, and EIA expects low wholesale and retail prices

- EIA expects natural gas’ share of electricity generation to reach 38.9% in 2020; prices at Henry Hub to remain below $3.00 per million Btu through 2021; as well as lower retail margins above Henry Hub

### U.S. electricity generation share by source

- **Natural Gas**: Dominant source throughout the period with a significant share expected to increase to 38.9% in 2020.
- **Wind**: Gains market share steadily, peaking slightly in 2020.
- **Coal**: Shows a decline, with a noticeable drop around 2018/2019.
- **Hydroelectric**: Stays relatively constant, with a minor dip in 2019.
- **Nuclear**: Shows a steady decline, with a slight increase in the early years.

### U.S. natural gas prices

- **Henry Hub (wholesale)**: Prices are projected to remain low, with estimates below $3.00 per million Btu through 2021.
- **Residential**, **Commercial**, **Industrial** prices also show trends of stabilization or slight decline, with EIA estimates indicating a trend towards lower costs.