

API Industry Outlook

Second Quarter 2021

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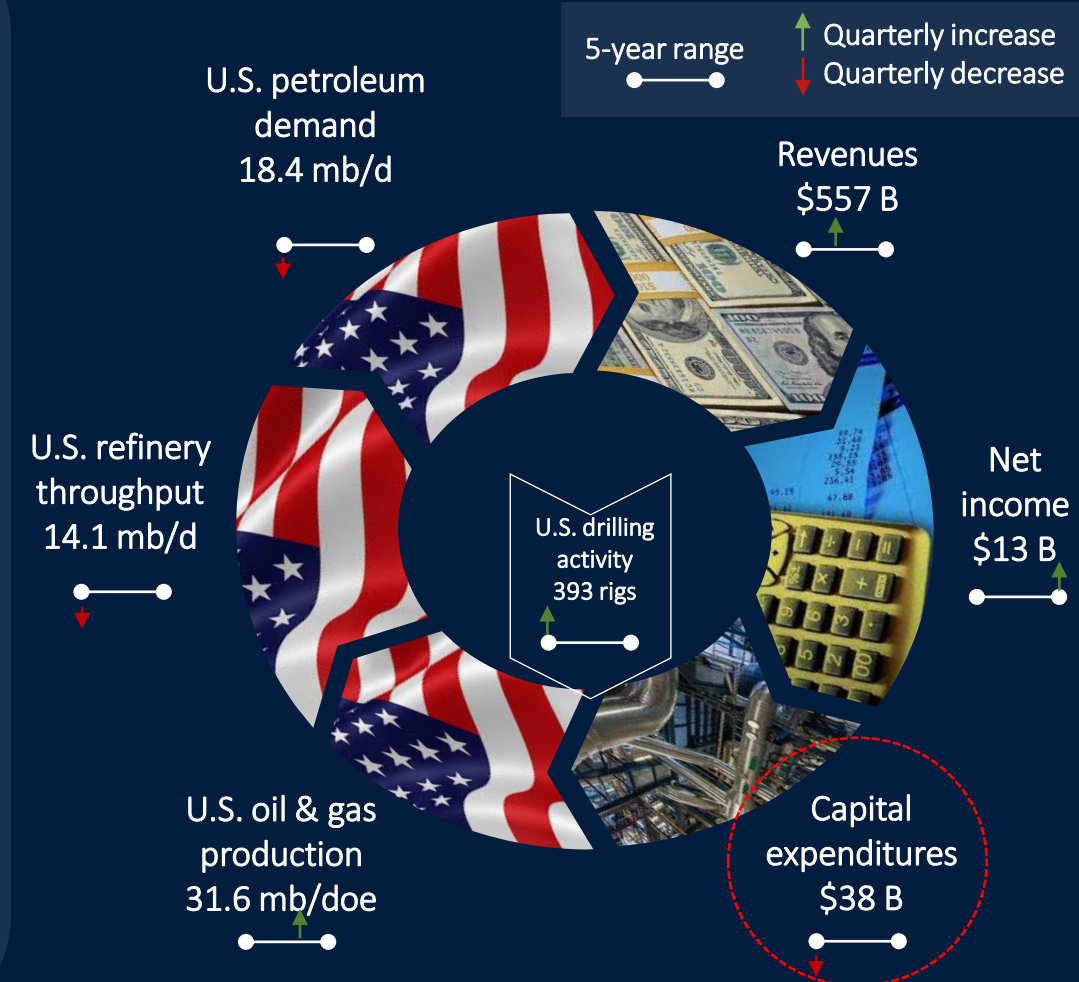
Key points

- ▶ **Global and U.S. economies are on track** - Consensus expectations for the strongest two-year global economic growth since 1972-1973
- ▶ **Global oil market recovery in progress**
 - U.S. petroleum demand of 19.6 mb/d in April 2021 climbed to within 3.5% of its Q2 2019 level, which was its highest for the month in 11 years.
 - **Record growth.** EIA projects growth of +5.4 million barrels per day (mb/d) in 2021 and +3.7 mb/d in 2022 – record 2-year gains and new highs by Q4 2022
 - **Who gains?** Every producing region could participate in the recovery, but U.S. production recovery remains a question
- ▶ **Natural gas** – Solid overall natural gas demand recovery and pull for record U.S. natural gas exports
- ▶ **The crux:** Robust economic and energy market recovery contrasts with historically low capital investment and drilling activity. Global liquids spare capacity could become tight in 2022

First quarter 2021 by the numbers

Benchmark price averages

Brent crude oil: \$60.69 per barrel WTI crude oil: \$58.13 per barrel
NGL composite: \$6.70 per mmBtu Natural gas (Henry Hub): \$3.37 per mmBtu



• Financial compilation based on API 200 companies with shares listed on U.S. stock exchanges.
sources: EIA; API Monthly Statistical Report; Bloomberg and company reports; Baker Hughes; API Team analysis



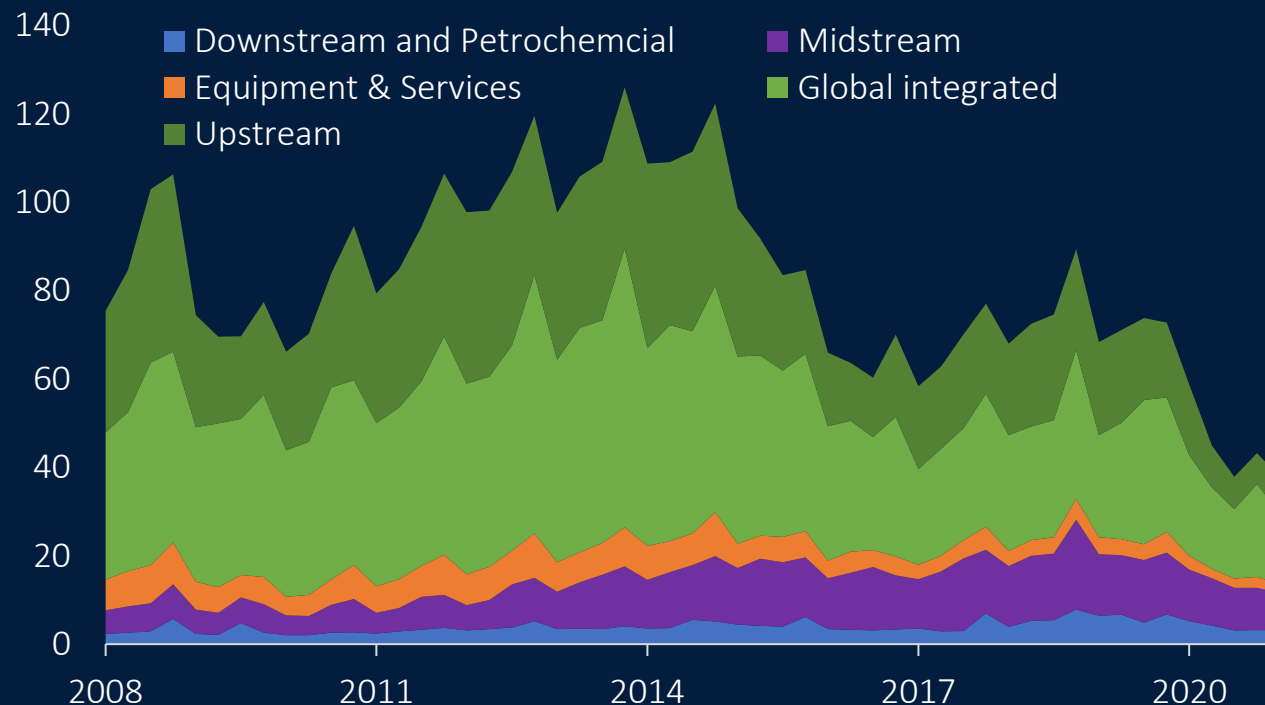
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Industry capital expenditures fell to \$38 billion – lowest on record for any quarter since 2008, and the backlog of U.S. projects under construction shrank to \$174 billion

- The industry invested \$37.8 billion in Q1 2021, compared with \$65.5 billion in the same quarter of 2019
- Across the energy value chain, API is monitoring 94 oil & gas-related projects currently under construction worth \$174 billion

Capital expenditures by industry segment

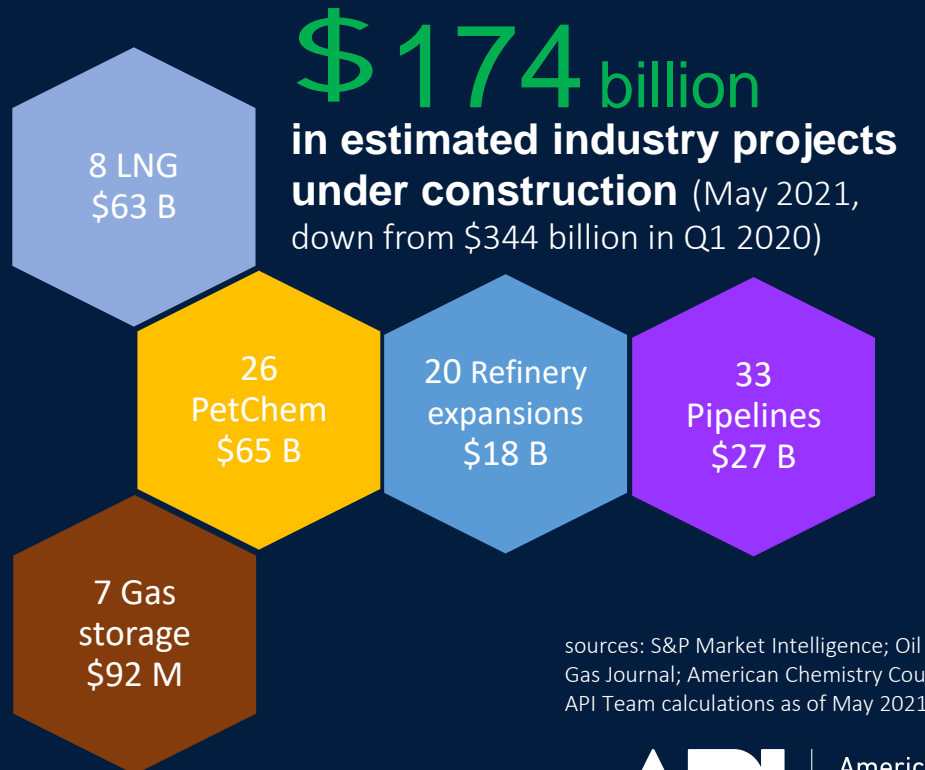
Billion dollars (2021\$)



* All other oil & gas industry companies

sources: Bloomberg; publicly-available company reports; BLS

\$174 billion in current U.S. energy infrastructure investments



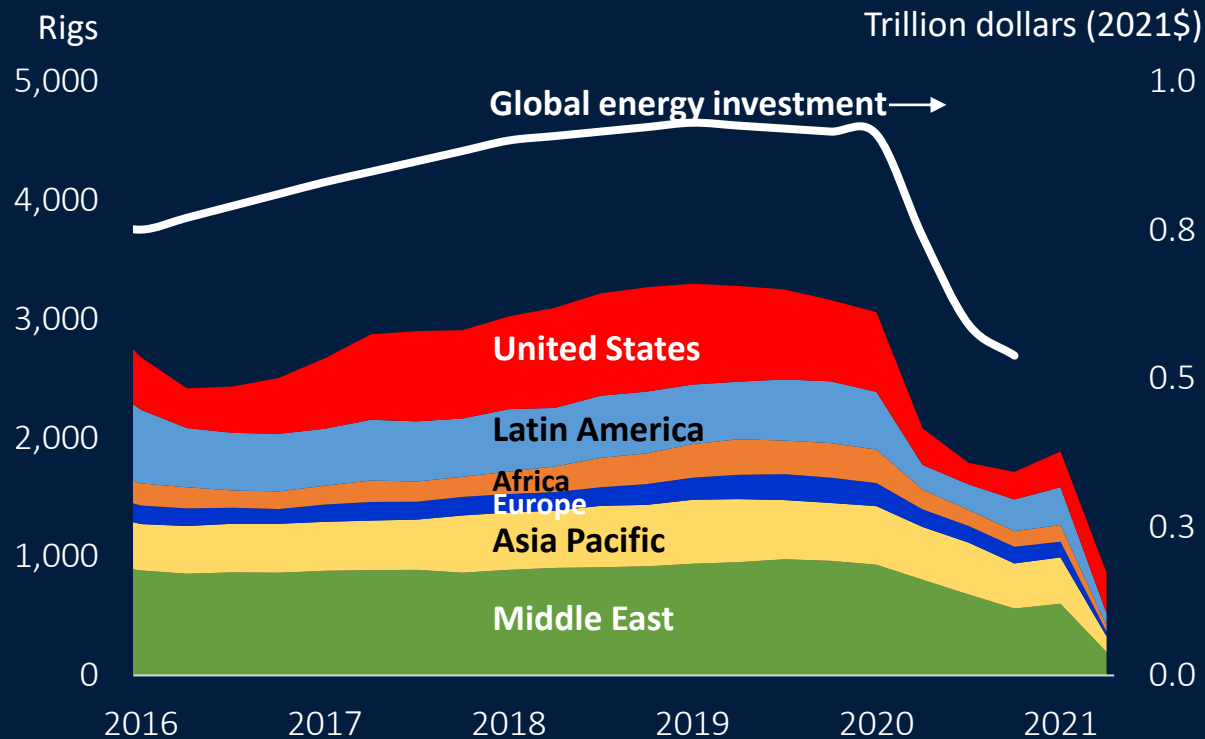
sources: S&P Market Intelligence; Oil & Gas Journal; American Chemistry Council; API Team calculations as of May 2021

Global oil drilling and investment decreased in level and in relation to other energy sources, even in the most consistent region



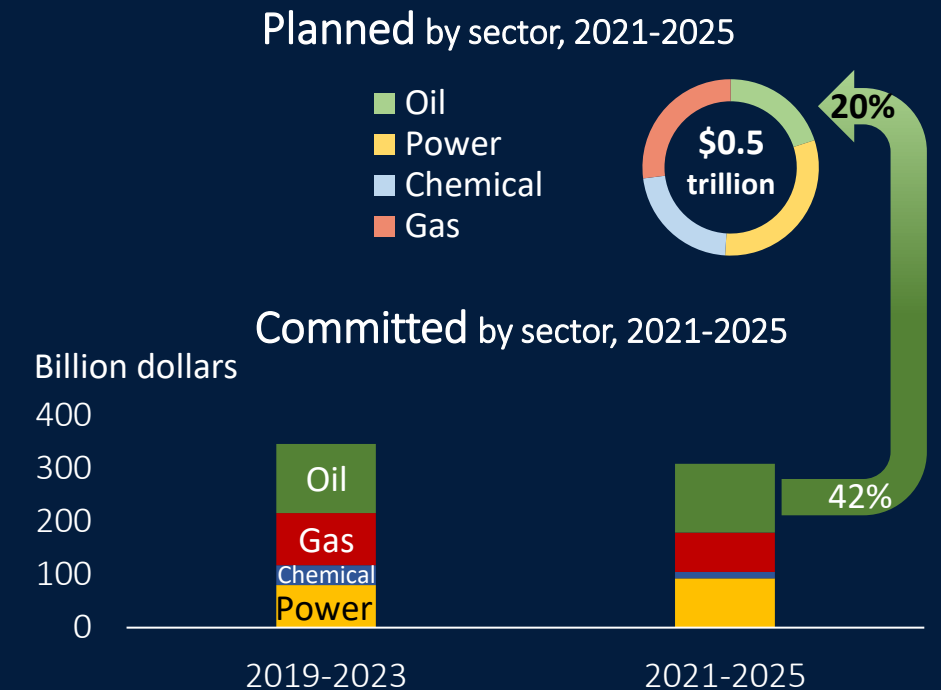
- Middle East & North Africa (MENA) drilling and investment historically have been the most consistent but dropped in 2020
- MENA planned oil investments (2021-2025) decreased and lost share among total energy investments per APICORP

Global oil drilling activity and capital investment, quarterly



sources: Baker Hughes; IEA; Bloomberg; API Team analysis

MENA energy investment outlook



source: Arab Petroleum Investments Corporation



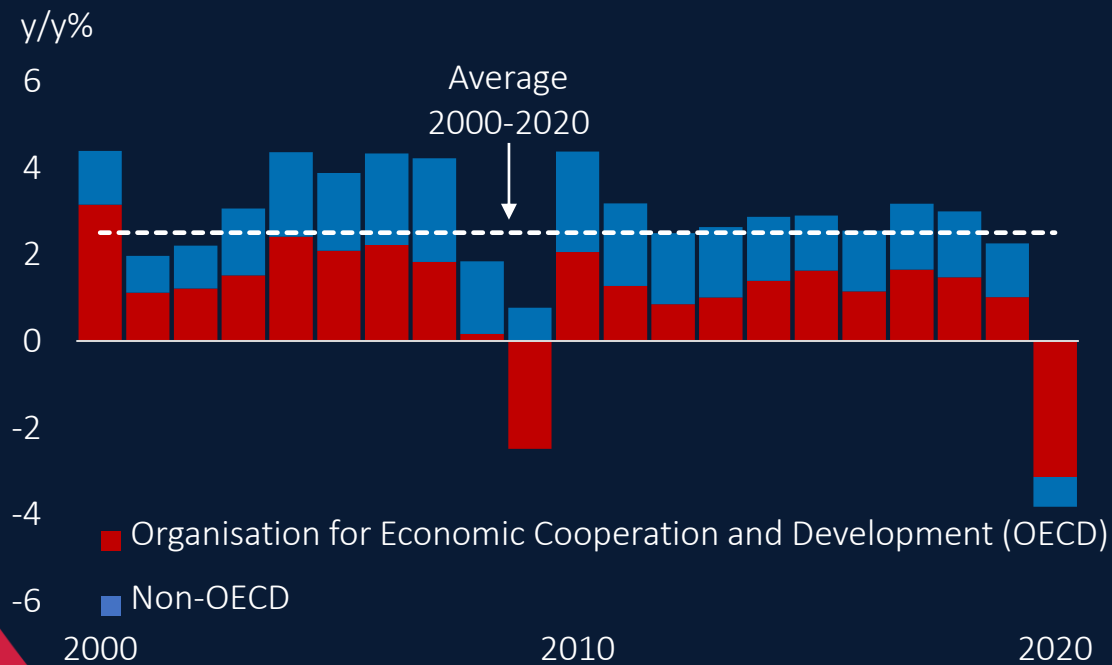
Global Economy

The global economy is broadly expected to sustain above-average growth over the next two years



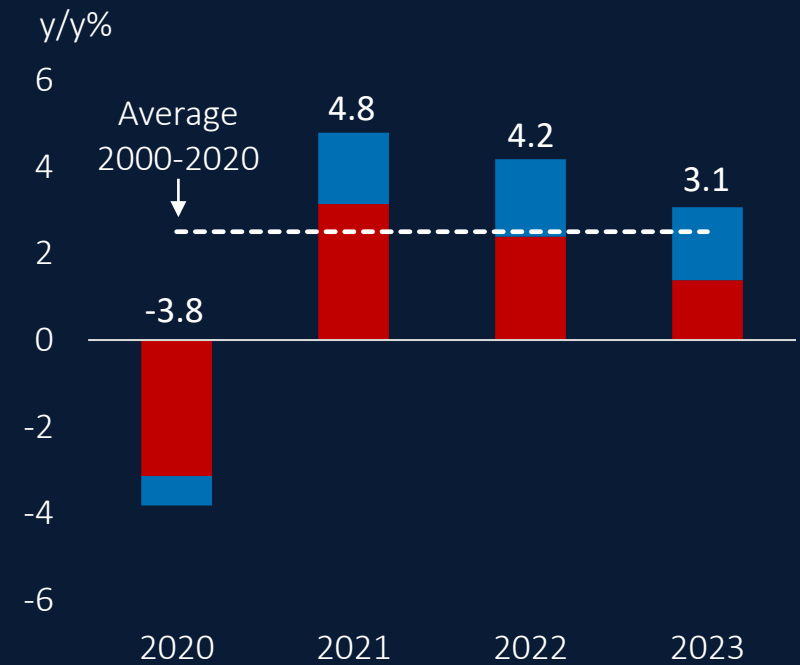
- In a reversal from recent years, developed (OECD) economies are expected to lead global GDP growth in 2021 and 2022

Global GDP growth and contributions by region*



sources: IMF; Bloomberg * Market exchange rate basis

Global GDP outlook



What we're watching now

- Global economic growth has accelerated broadly and unevenly, which sets the stage to address structural barriers to growth in developing Asia per the World Bank and potential oil market tightness per IEA

Global economy on firmer ground, but with divergent recoveries amid high uncertainty

- **Improved outlook.** Upgraded 2021 and 2022 GDP forecasts by +0.8% and +0.2%, respectively
- **Divergent impacts.** Disproportionate losses in countries reliant on tourism, commodity exports and those with “limited policy space to respond”
- **High uncertainty remains** with the health crisis
- **Policy priorities** vary by country but generally should boost productive capacity, foster efficient resource allocations, and scale back gradually (“avoid sudden cliffs”)

[International Monetary Fund](#), April 2021

The Innovation Imperative for Developing East Asia

- Much of global GDP growth depends on East Asia, and the region's developing economies face headwinds of decreased productivity and global trade plus technological advances that threaten the region's traditional growth engine of export-oriented manufacturing
- The region focus must spur innovation via broad adoption and diffusion of existing technologies, not only invention of new ones. This requires improving 1) information on technologies reduced uncertainty about returns to their use; 2) workforce skills and management capabilities; and, 3) access to external financing for technology adoption or broader innovation projects

X. Cirera et. al., [World Bank Group](#) (2021)

Oil Market Report, May 2021

- IEA downgraded its 2021 world oil demand growth projection to a still-strong **5.4 mb/d**
- As vaccination rates rise and mobility restrictions ease, global oil demand is set to soar from 93.1 mb/d in 1Q21 to 99.6 mb/d by year-end
- “Under the current OPEC+ production scenario, supplies won't rise fast enough to keep pace with the expected demand recovery”

[International Energy Agency](#), May 2021

Oil Markets

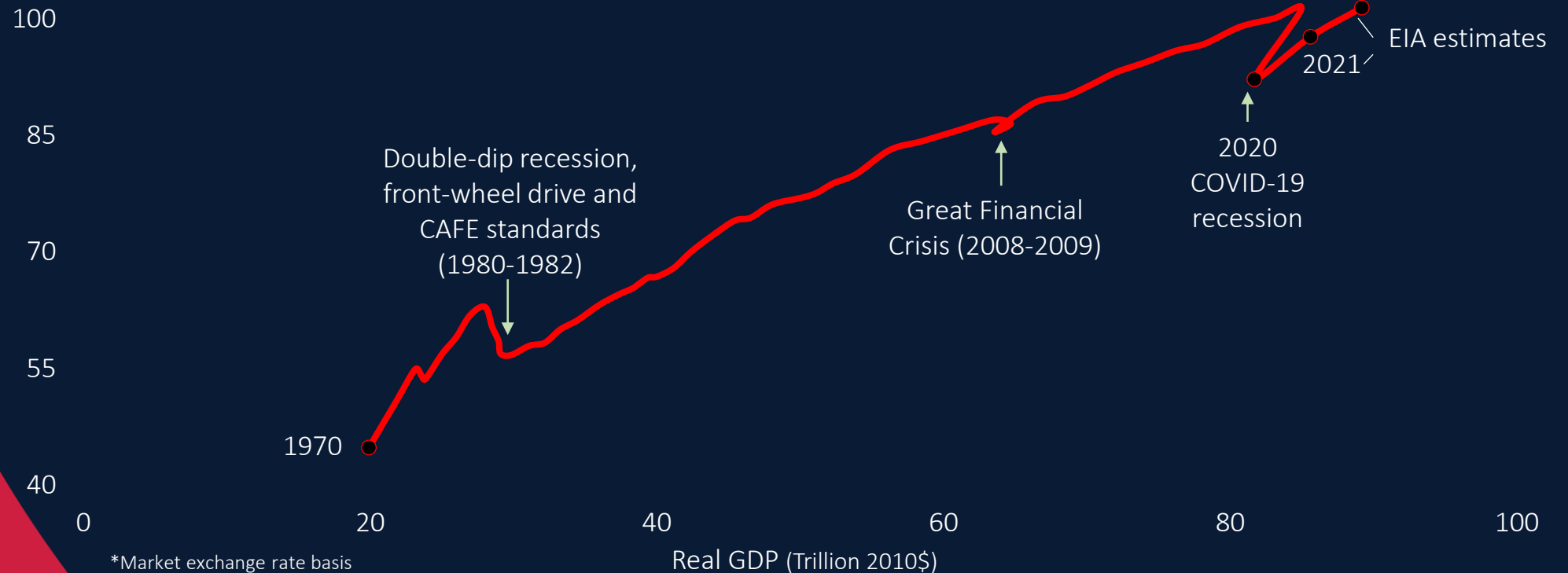


Global oil demand has continued to rebound along with real GDP and could reach new highs in late 2022

» Global oil demand has historically changed in tandem with the economy, and this relationship remained intact through the 2020 COVID-19 recession

Global oil demand and GDP

Million barrels per day



*Market exchange rate basis
sources: EIA; Bloomberg; IMF; API Team calculations

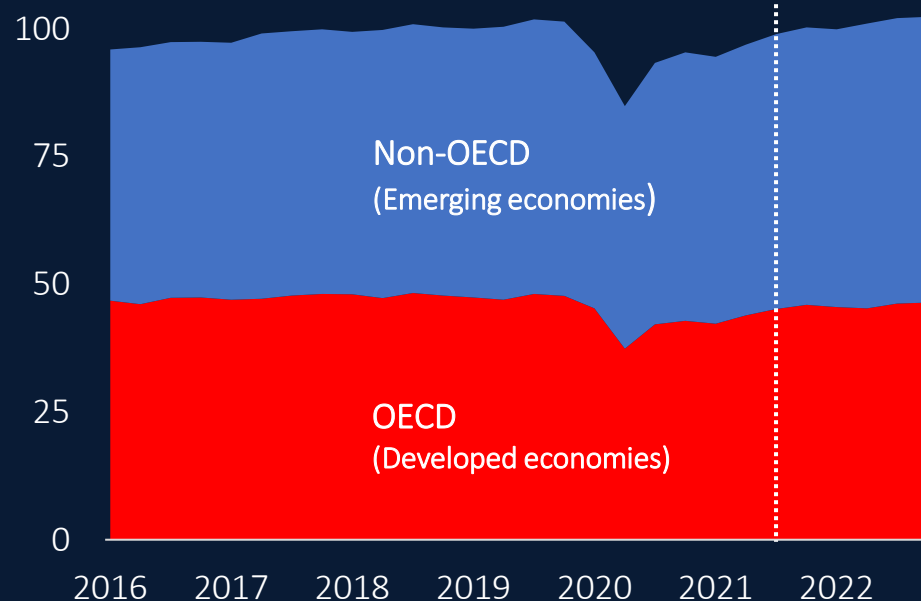
Global oil demand could set a new record-high by the end of 2022 per EIA



- › Led by emerging economies' demand, EIA projects global oil demand could exceed 102 mb/d and achieve record highs over the latter half of 2022
- › EIA projects OPEC and Russian & Caspian producers to redeploy 4.6 mb/d of their spare capacity between Q3 2021 and Q4 2022 – and for the U.S. to add another 0.5 mb/d in the second half of this year and another 1.2 mb/d in 2022, which would require increased investment and drilling

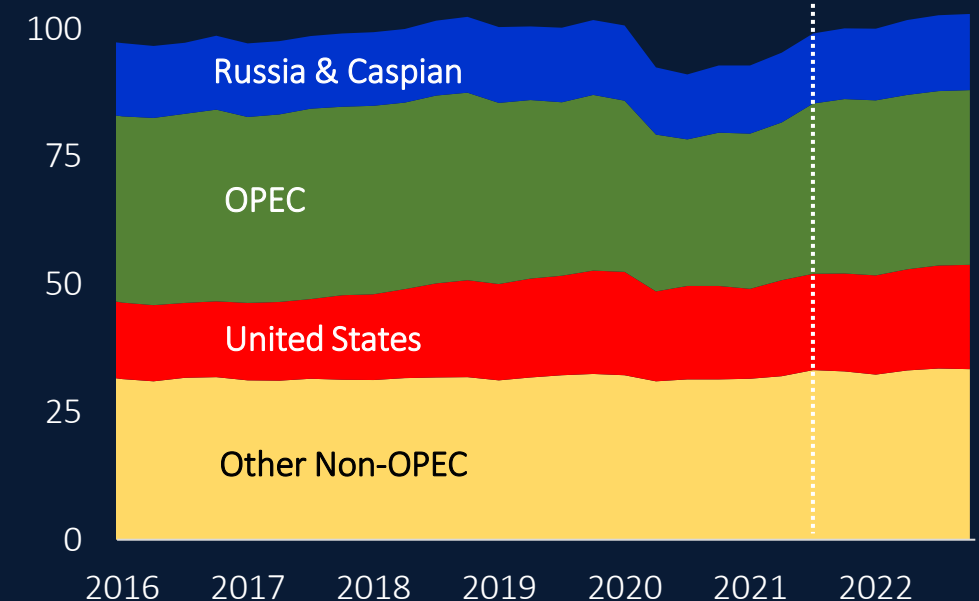
Global oil demand

Million barrels per day



Global oil supply

Million barrels per day



source: EIA STEO (June 2021)



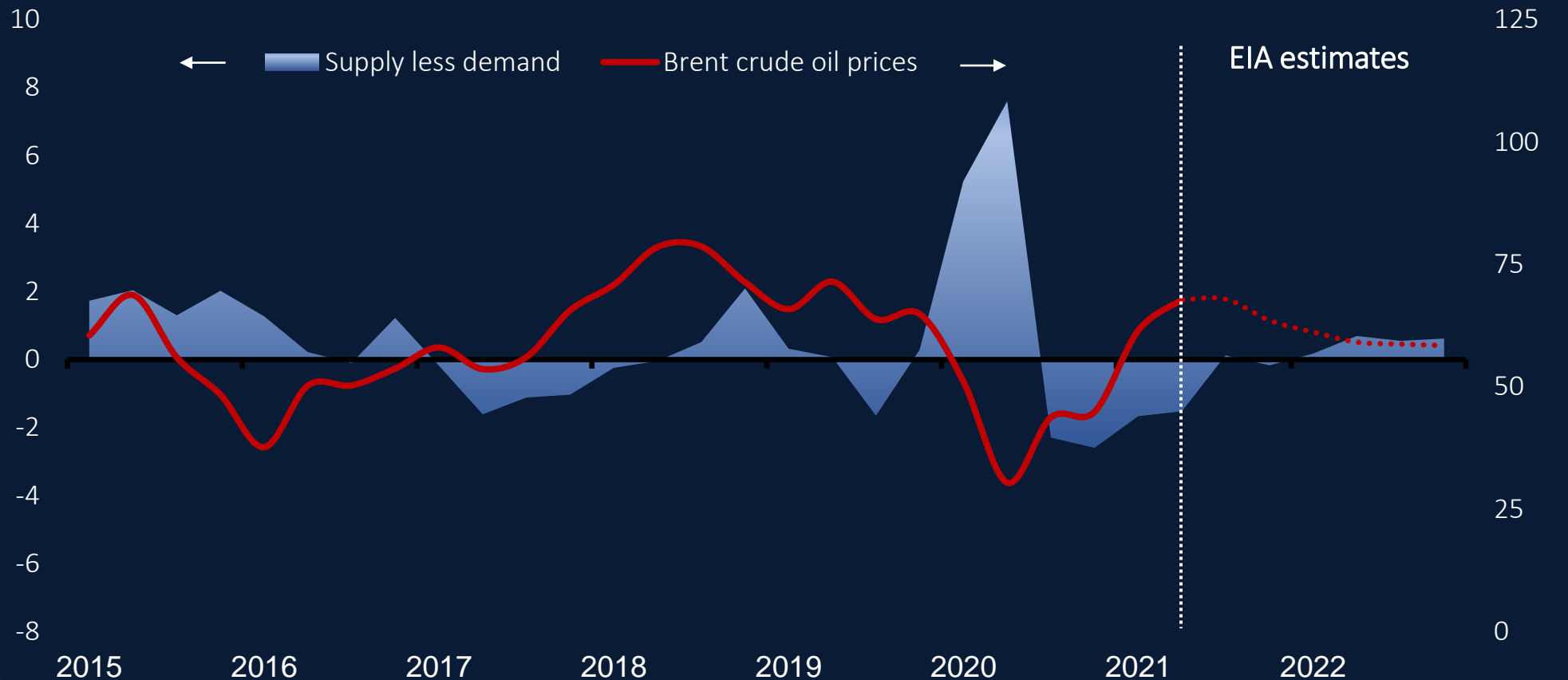
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Despite projected OPEC+ and U.S. supply increases, EIA expects that global oil demand could continue to exceed supply through Q4 2021 and support oil prices of about \$60 per barrel in 2022



EIA global supply/demand and Brent price estimates as of June 2021

Million barrels per day (mb/d)



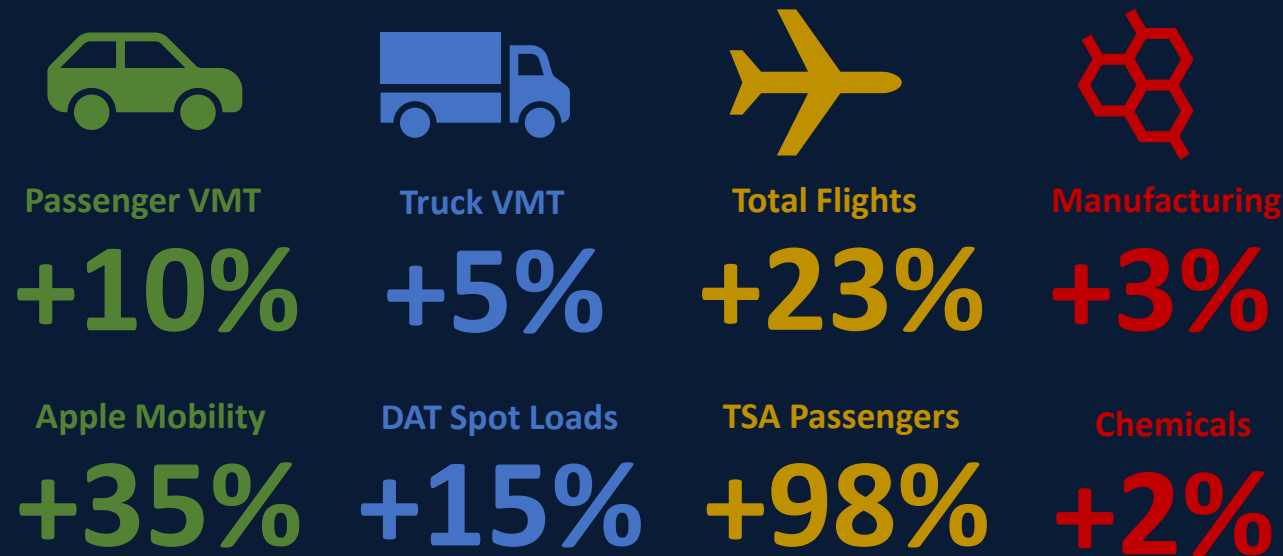
sources: EIA STEO (June 2021); Bloomberg

EIA projects U.S. liquid fuels consumption could return to its 2019 levels by the second half of 2022



- Indicators of industrial and chemical production, daily flights and mobility statistics, and vehicle miles traveled tracking show broad progress year-on-year and year-to-date – with motor fuels now showing single-digit percentage declines from 2019 levels
- EIA projects 2H 2021 to see strongest refined product demand increases in jet fuel and other oil categories

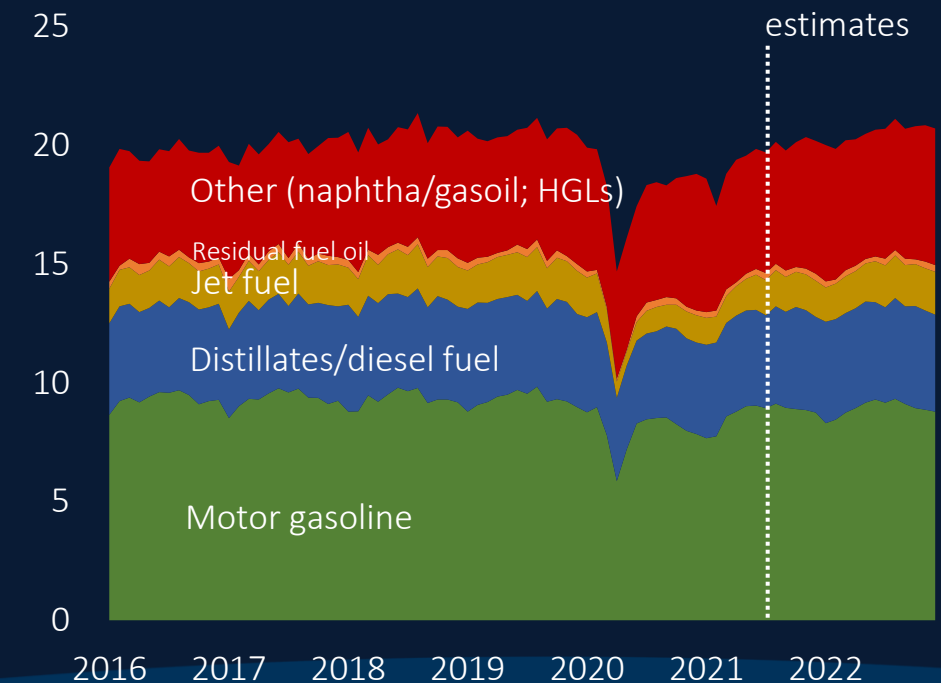
Refined product key U.S. demand indicators, May 2021 year-to-date



source: U.S. Federal Highway Administration; FlightRadar24; ISM PMI; ACC; TSA; Apple; DAT

U.S. liquid fuel consumption by fuel

Million barrels per day



sources: EIA; API MSR

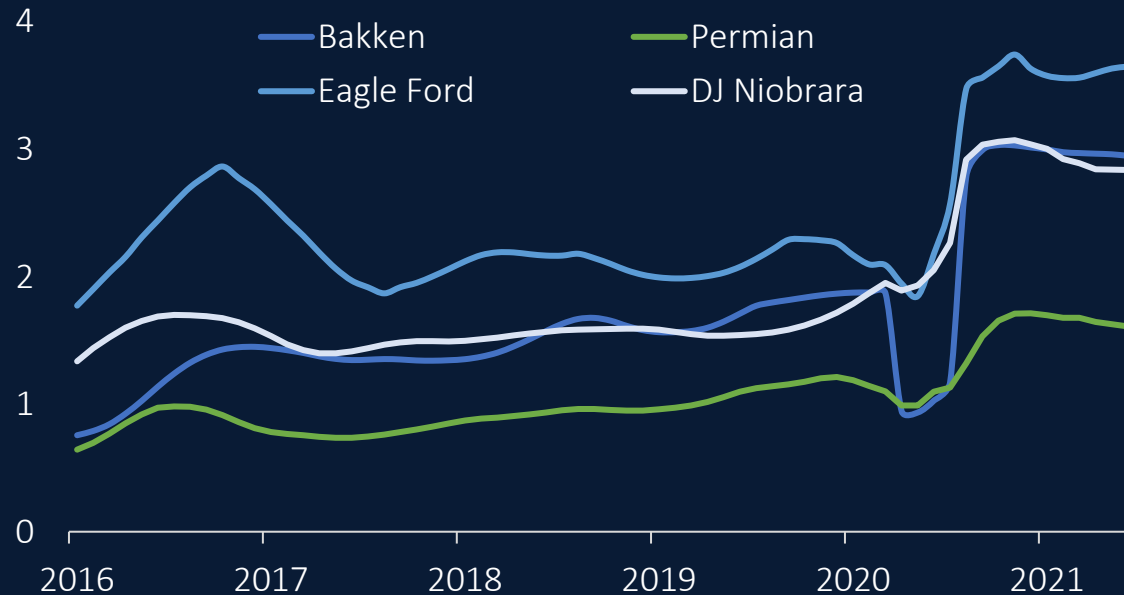
As U.S. oil well productivity edged down from record levels in Q2 2021, estimated breakeven prices have diverged by region



- EIA reported oil well productivity fell by more than 6% year-to-date in the Permian and DJ Niobrara basins
- BTU Analytics' estimated breakeven prices by basin stood below recent market prices

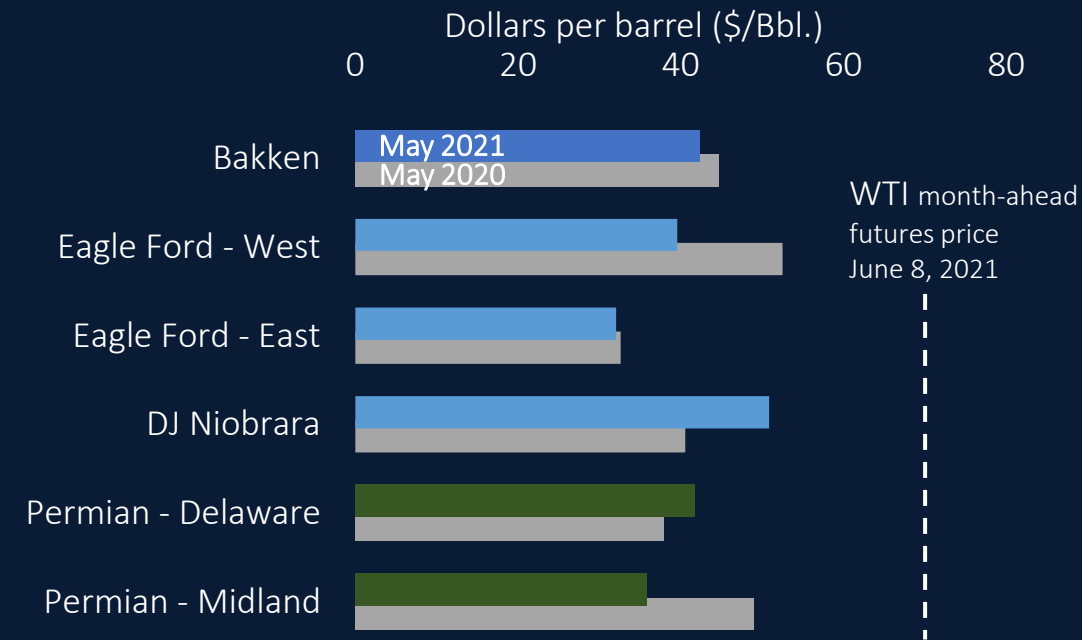
U.S. oil well productivity – new production per rig

Million barrels per day oil-equivalent



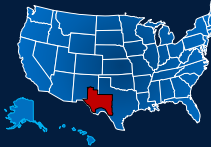
source: EIA Drilling Productivity Report

Oil estimated breakeven prices*



*Half cycle breakevens assuming 10% discount factor. sources: BTU Analytics; CME Group

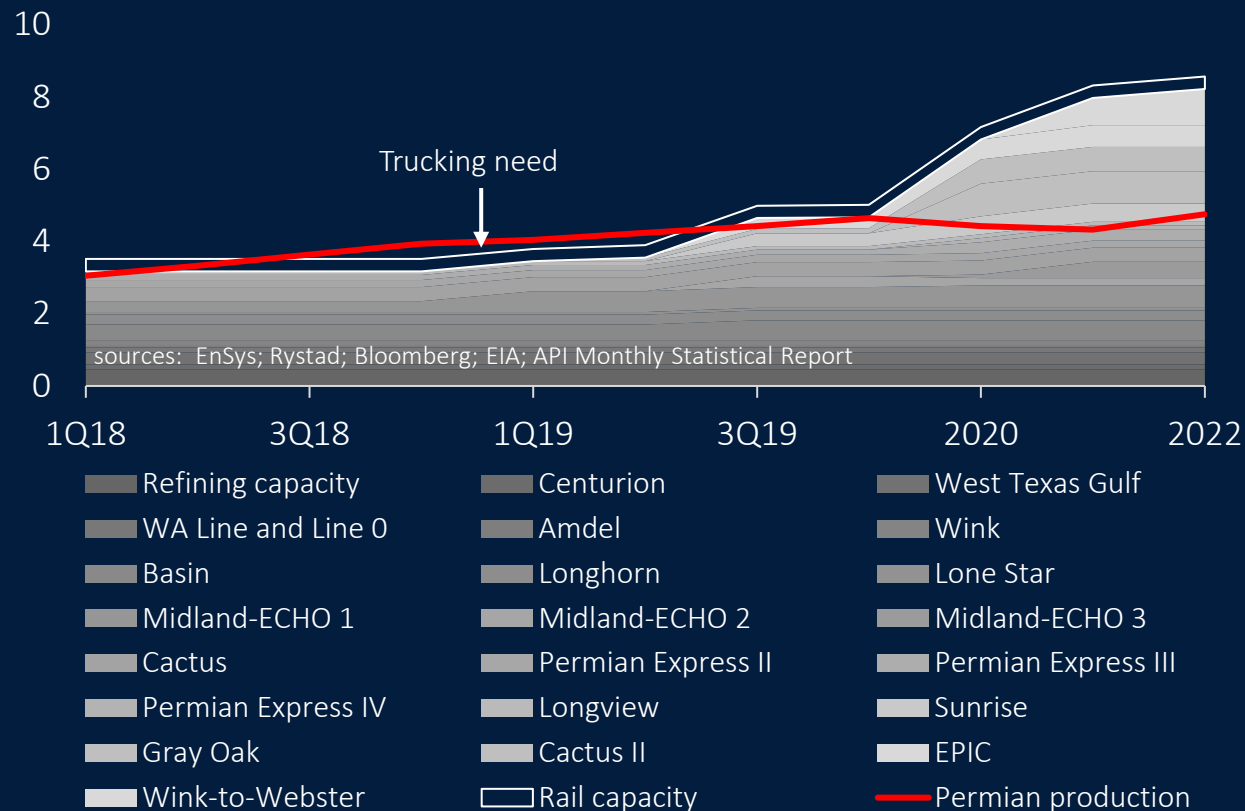
Permian oil pipeline capacity expansions have recently outpaced production, but could position the basin to participate in an oil market recovery



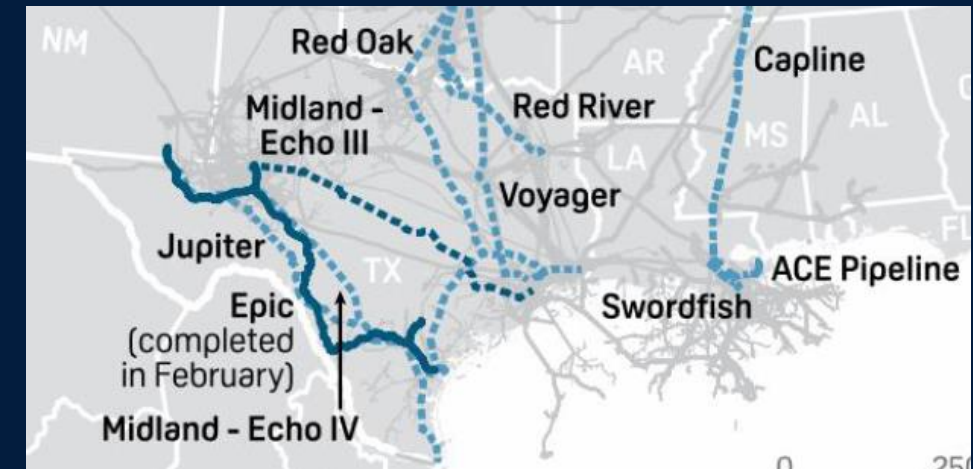
- EIA estimated Permian oil production recovered in Q2 2021 to its December 2020 level and could increase in the near-term
- Pipeline delays and cancellations reflect the current production outlook but also imply there has been spare egress capacity

Permian Basin pipeline capacity balance

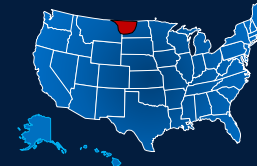
Million barrels per day (mb/d)



Potential midstream project delays



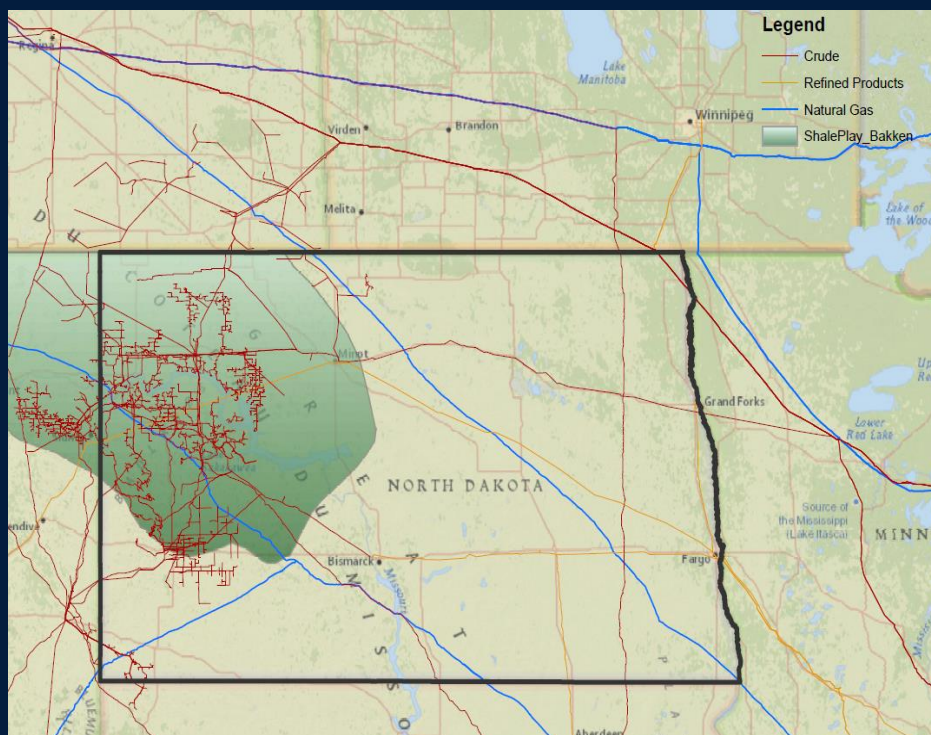
sources: EnSys; S&P Global



Bakken oil production could depend heavily on rail without the Dakota Access Pipeline (DAPL)

- EIA estimated Bakken oil production remained down by more than 8% in Q2 2021 versus its December 2020 level and could remain flat in the near-term
- An oil production recovery in the Bakken could be enabled in part by DAPL

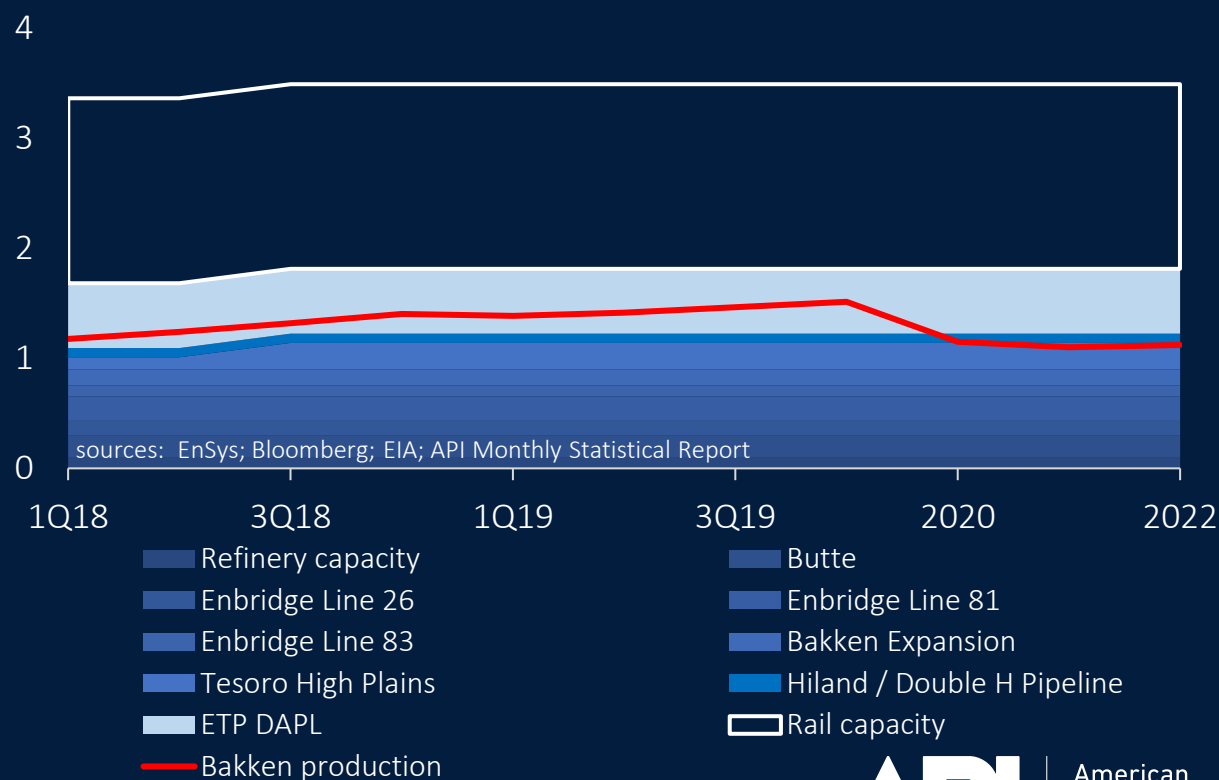
Bakken Formation pipeline infrastructure



sources: EIA, PennWell, National Geographic, ESRI, Garmin, HERE, UNEP, USGS, WCMC, NASA, ESA and API Team analysis

Bakken pipeline capacity balance

Million barrels per day (mb/d)



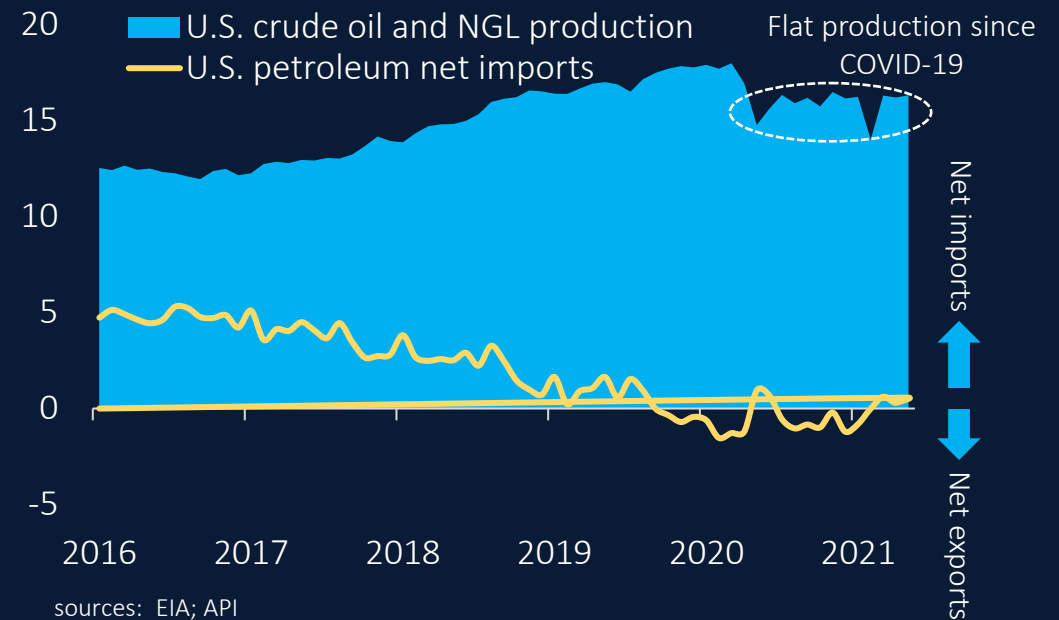
U.S. liquids production fell along with the 2020 COVID-19 recession and has remained steady ever since, propelling a return to petroleum net imports



- In 2020, the U.S. became a petroleum net exporter on an annual basis for the first time since 1958
- However, domestic production fell along with the 2020 COVID-19 recession and has remained flat with historically weak drilling activity since then
- The U.S. reverted to being a net importer in Q2 2020 and EIA projects net imports to continue in 2021 and 2022

U.S. liquids production and petroleum trade

Million barrels per day



Natural Gas



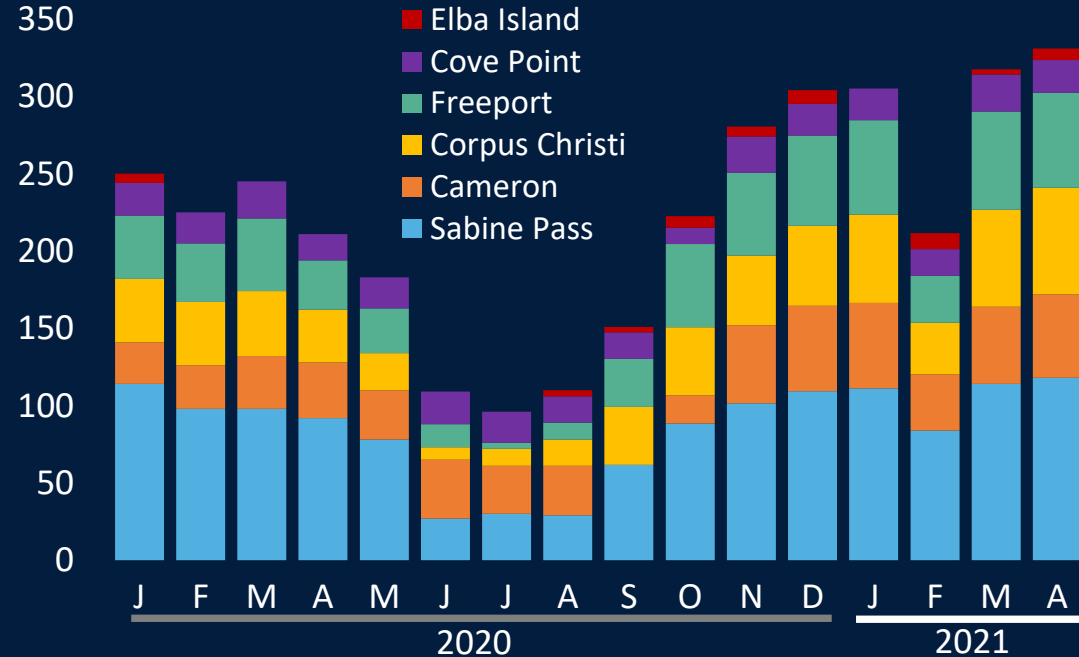
Natural gas market resiliency in Asia Pacific and Europe keyed record trade and U.S. liquefied natural gas (LNG) exports through April 2021



- Following the Q1 winter heating season, Asian and European natural gas demand and benchmark prices have risen
- Despite the U.S. Gulf Coast polar vortex temporarily disrupting liquefaction activities, the U.S. set new natural gas export records in April 2021

U.S. LNG export volume by terminal

Billion cubic feet



sources: DOE; IHS; Marine Traffic; API Team analysis

Regional gas hub pricing

\$2021 per mmBtu, monthly



2016 2017 2018 2019 2020 2021

sources: Bloomberg; Quandl; EIA



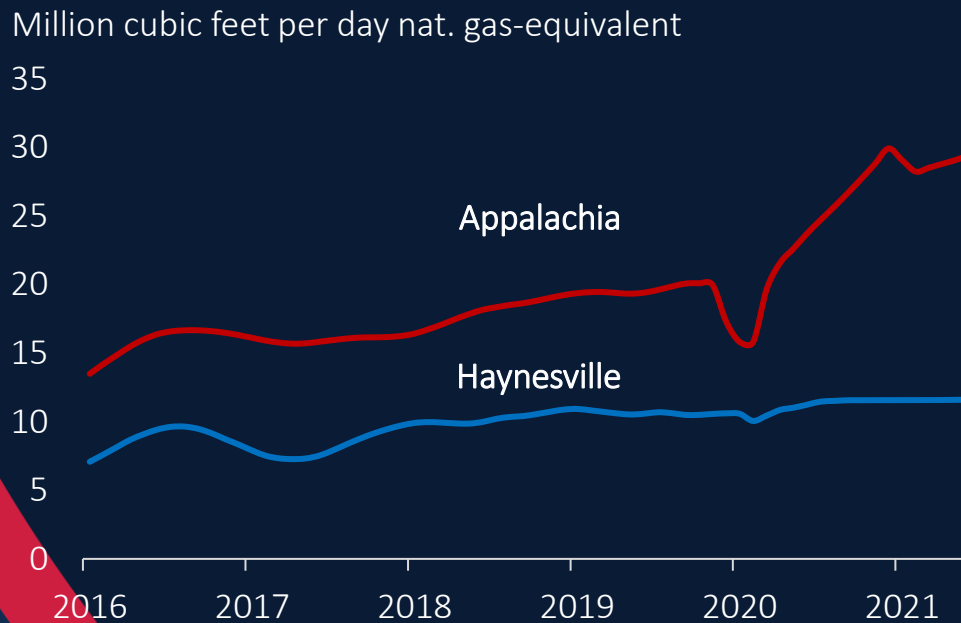
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Natural gas-dedicated drilling has sustained strong productivity and historically low breakeven prices



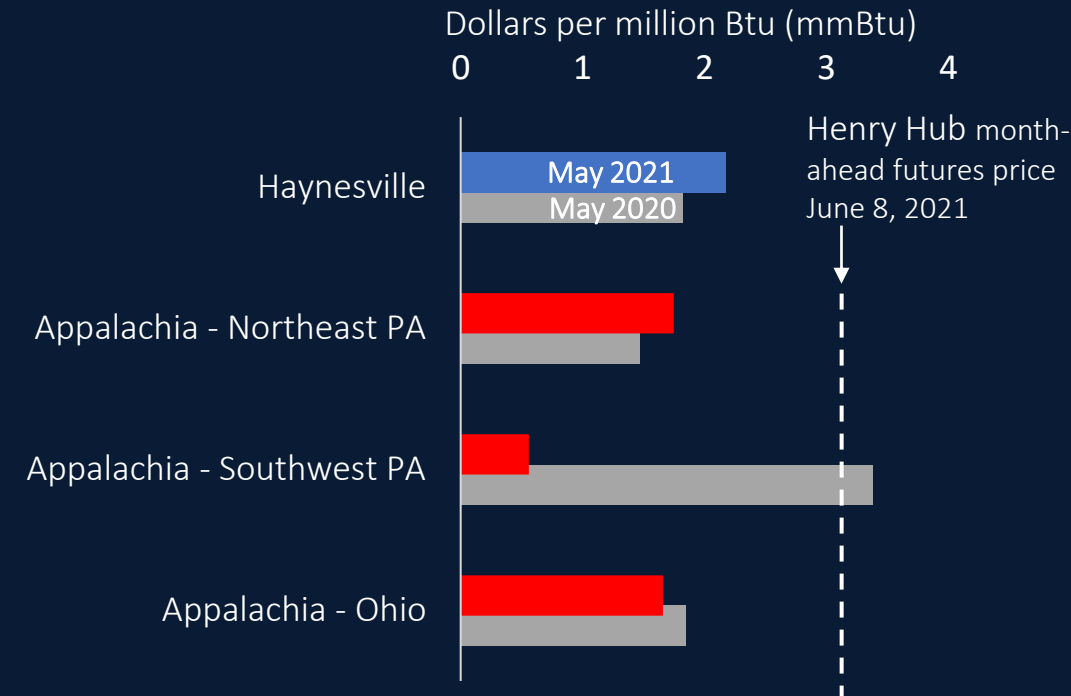
- For dedicated dry gas drilling, producers sustained near-record rig productivity in Q2 2021 per EIA
- Estimated natural gas breakeven prices moved in different directions by producing region but generally remained below recent natural gas futures prices

Natural gas well productivity –production per rig



source: EIA Drilling Productivity Report

Natural gas estimated breakeven prices



*Half cycle breakevens assuming 10% discount factor and play-specific costs
sources: BTU Analytics; CME Group



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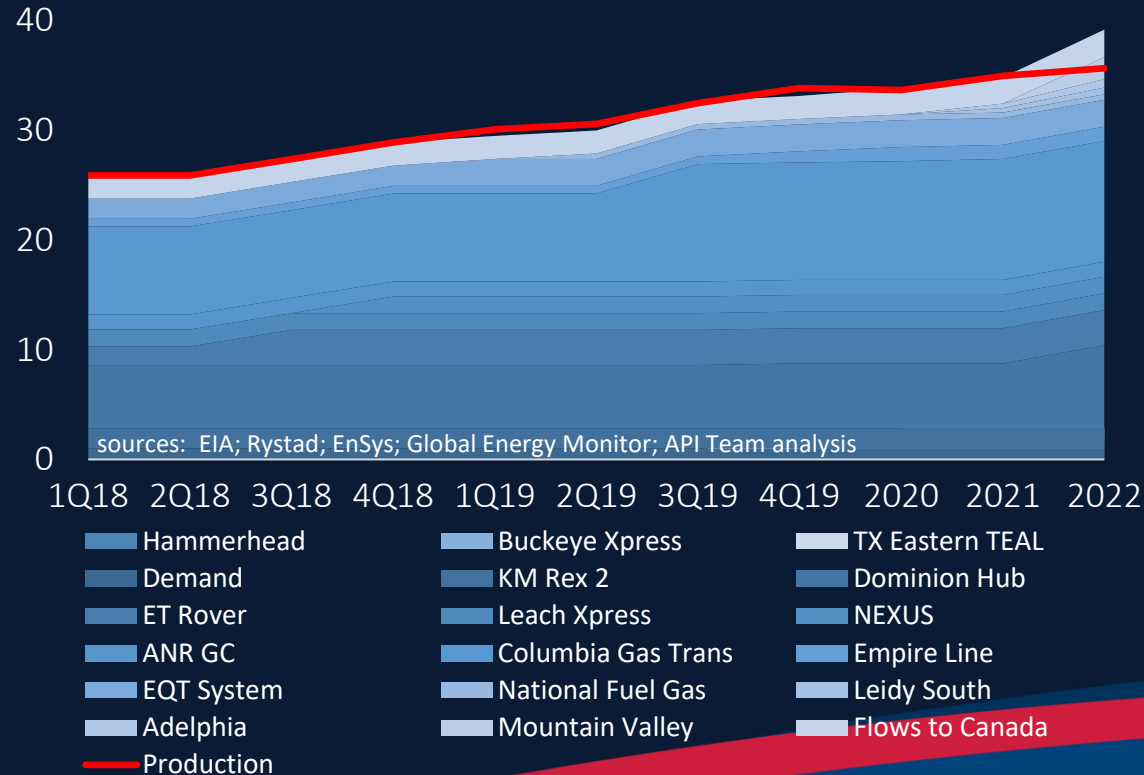
Appalachian natural gas production has continued to grow despite the 2020 COVID-19 recession and likely requires more pipeline capacity to enable future growth



- With natural gas production growth of 3.8% y/y in 2020 and another 2.0% y/y in 2021 per EIA, Appalachian has needed more pipeline egress capacity
- With the Mountain Valley pipeline's tentative completion in 2022, parts of Appalachia could have sufficient egress capacity for the near-term, but cancellations of the proposed Atlantic Coast and Constitution pipelines in 2020 could limit the region's production growth

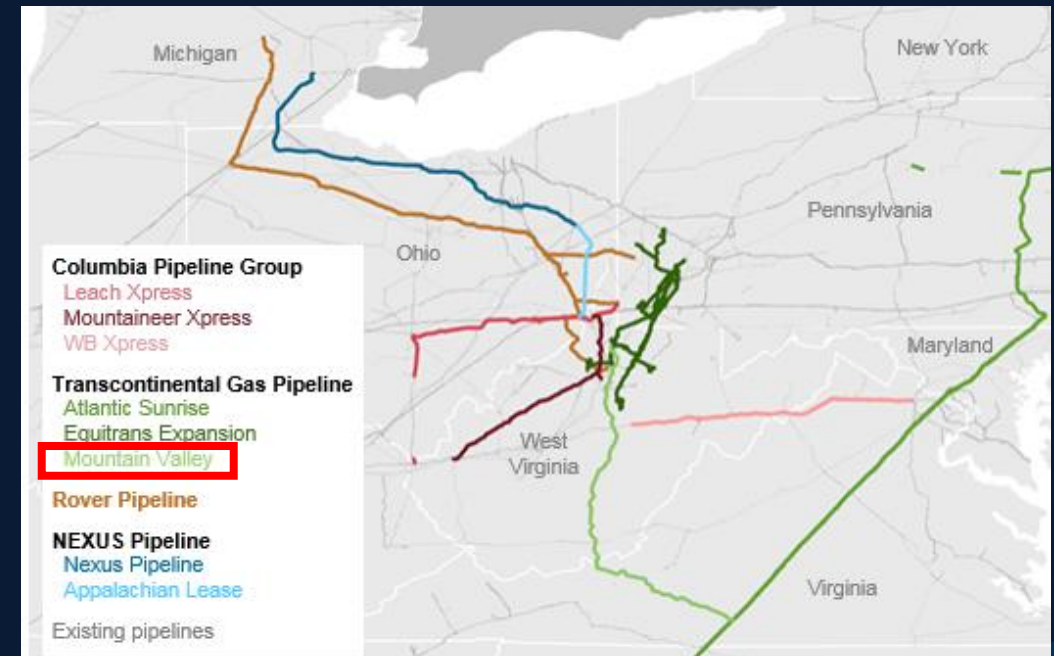
Appalachian Basin gas pipeline capacity utilization

Billion cubic feet per day (bcf/d)



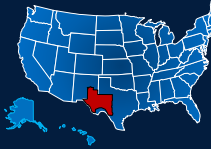
Key Appalachian gas pipeline updates

As of Q1 2021



sources: EIA

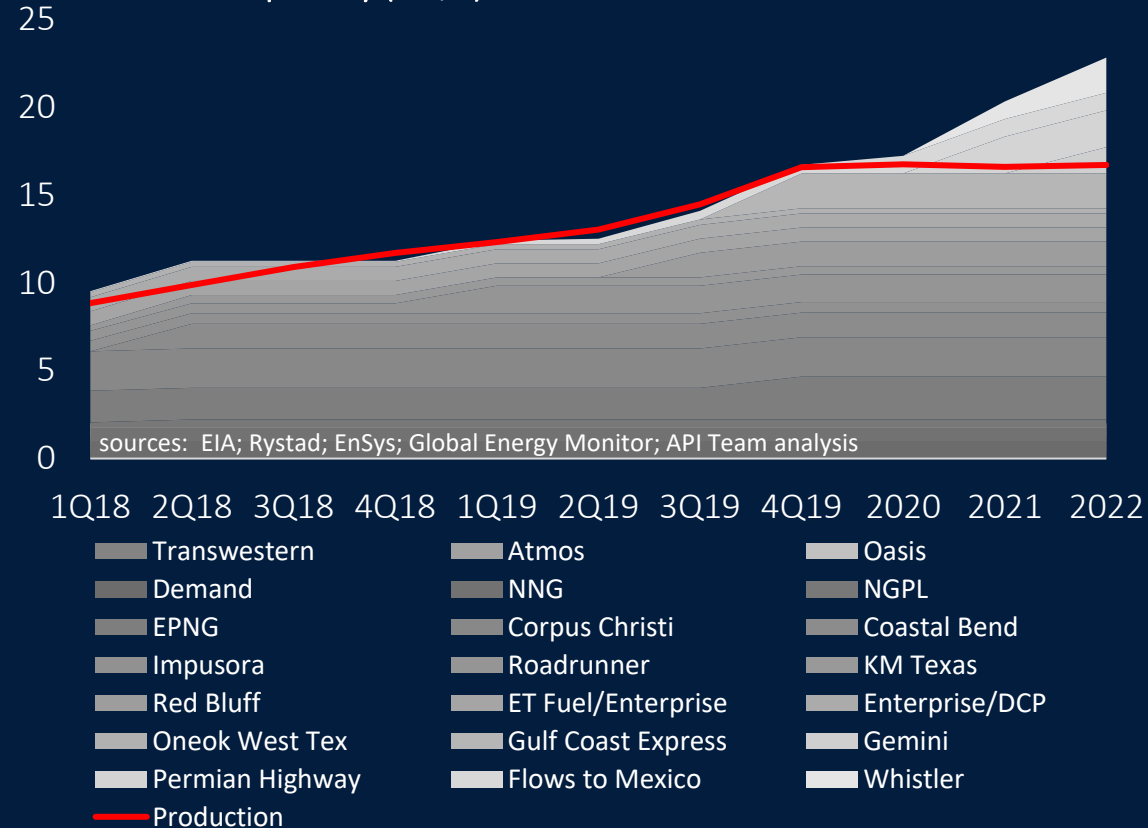
With Permian natural gas pipeline completions, pipeline capacity could readily enable production growth and LNG export opportunities



- With an estimated 6.1 bcf/d of Permian gas pipeline capacity by end of 2021, lines stand to benefit post-COVID from increased demand, dry exports to Mexico, and LNG exports via the Gulf to emerging markets

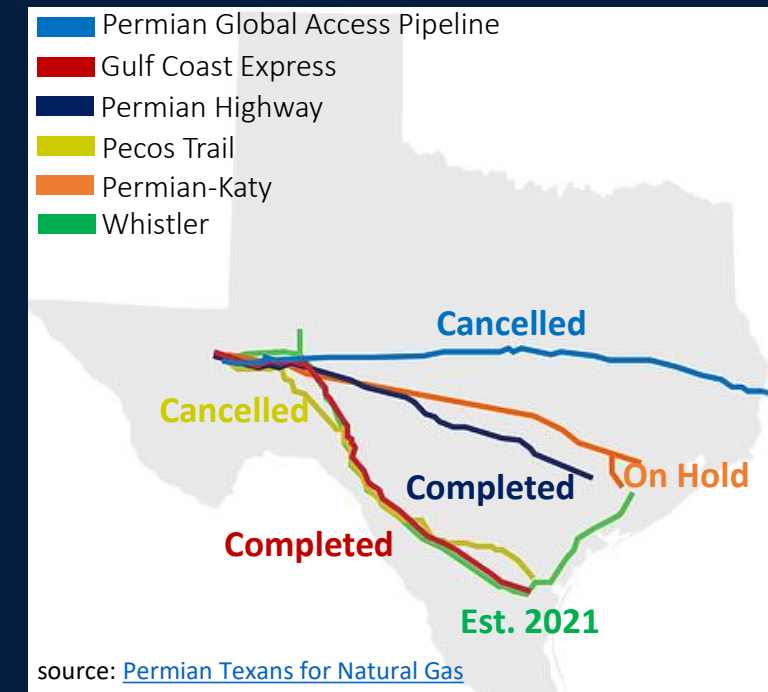
Permian Basin gas pipeline capacity utilization

Billion cubic feet per day (bcf/d)



Key Permian gas pipeline updates

As of Q1 2021



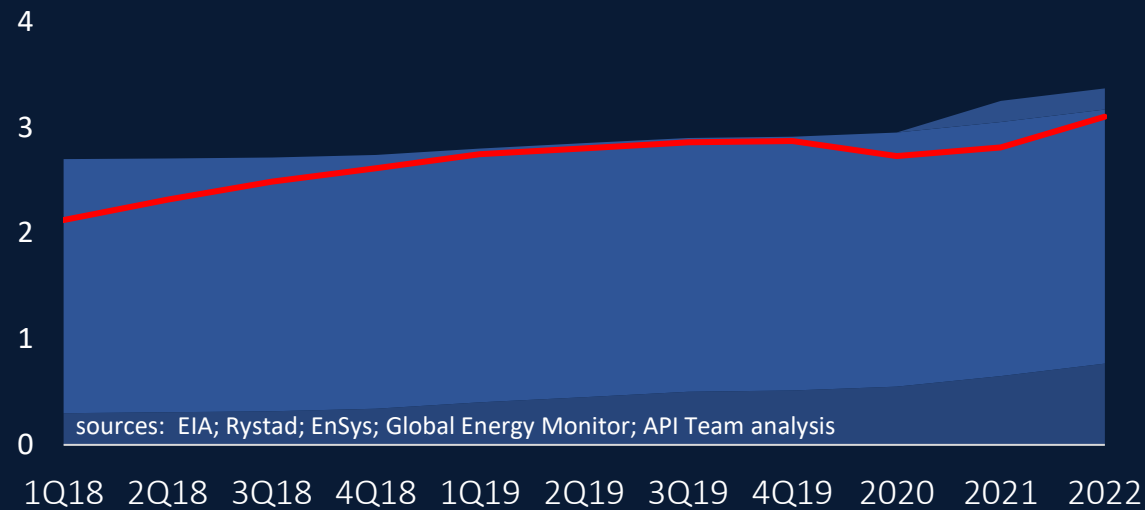
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Bakken natural gas pipeline capacity has historically matched well with production and appeared ample relative to recent changes



Bakken gas pipeline capacity utilization

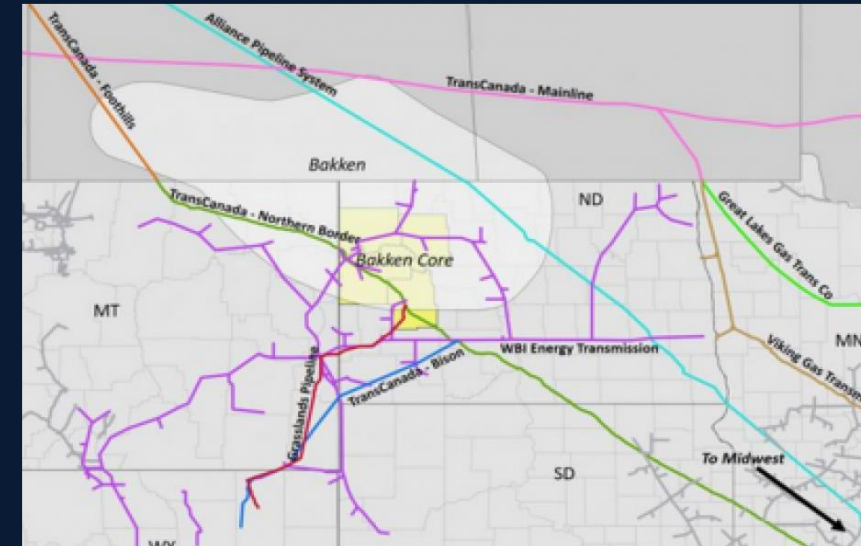
Billion cubic feet per day (bcf/d)



- North Bakken Expansion
- Current Bakken egress on Northern Border and Alliance pipelines
- Demand
- Production

Key Bakken gas pipelines

As of Q2 2021



source: RBN Energy

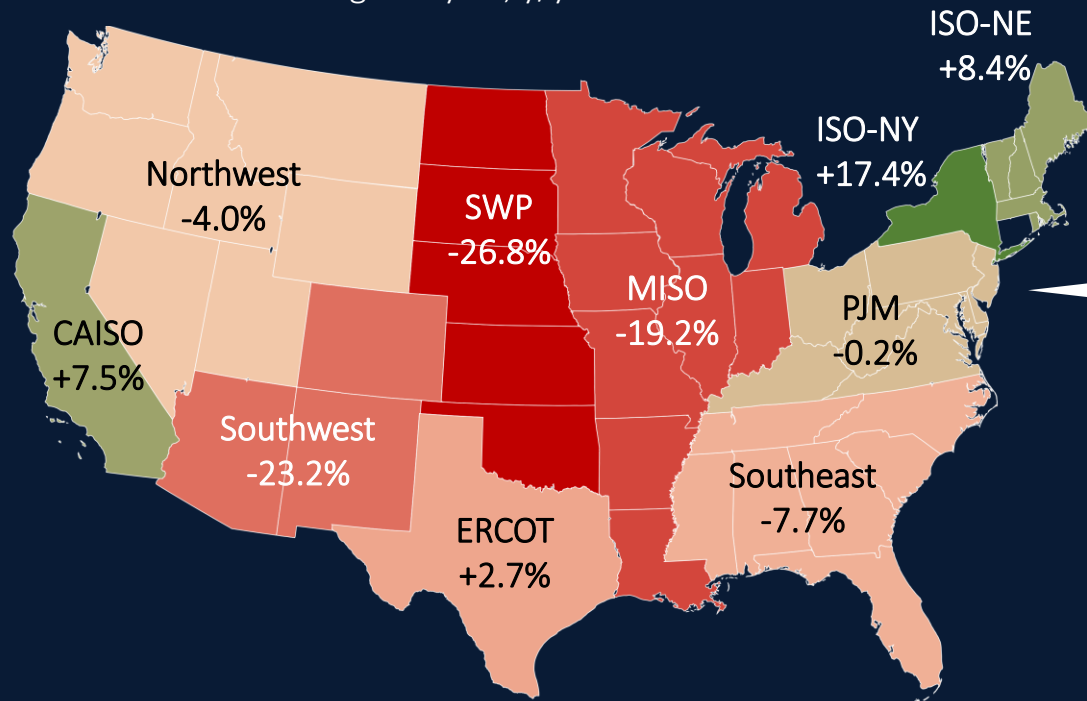
As natural gas prices have recovered, power sector fuel competition has backed out gas in most U.S. regions but been largely offset by increased exports



- Power sector gas consumption, which was affected by February polar vortex disruptions varied by region
- Record natural gas exports have largely offset the power sector's fuel substitution, and EIA projects resumed increases over the next three years

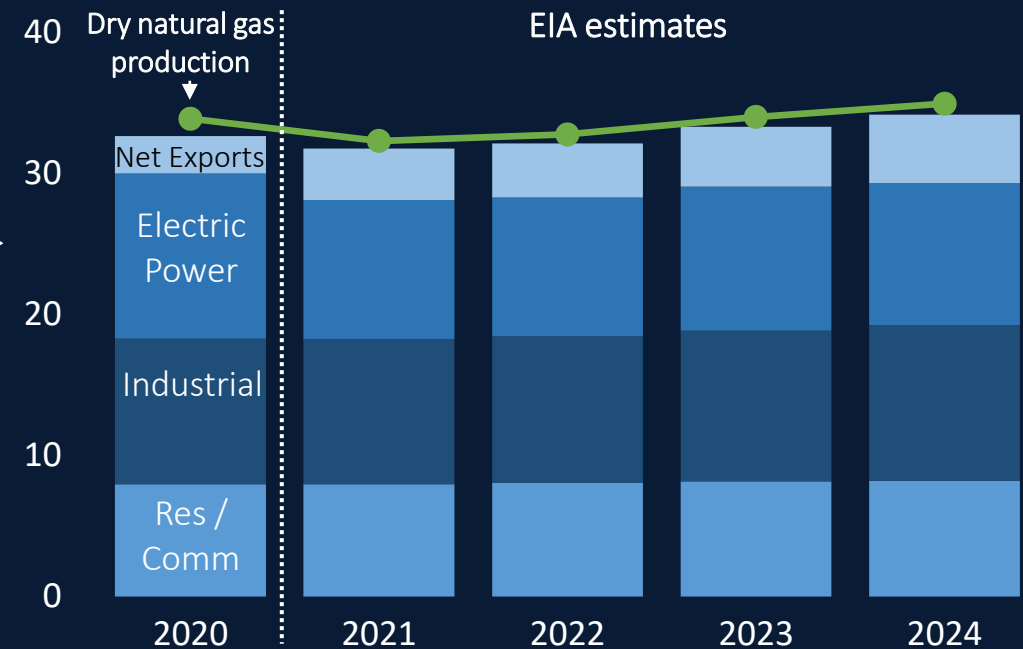
U.S. power sector gas consumption

Year-to-date through May 1st, y/y%



sources: EIA Hourly Grid Monitor; FERC

U.S. natural gas consumption and production by sector, Trillion cubic feet



sources: EIA AEO 2021

API economics resources available at www.api.org

Data Visualization

Explore API's Interactive Data Visualizations.



Tracking U.S. Oil Demand
Primary monthly API data tracking refined product consumption
[Explore Visualization .nl](#)



U.S. Consumer Expenditure Summary
Summarizing leading U.S. consumer expenditure categories over time
[Explore Visualization .nl](#)



API's Distillate Economic Indicator™
API's proprietary Distillate Economic Indicator™ leverages refined product demand estimates to broadly track economic activity
[Explore Visualization .nl](#)



U.S. Consumer Expenditure Flows By Income Level
Mapping U.S. consumer expenditure flows by income level and spending category
[Explore Visualization .nl](#)



U.S. Consumer Expenditure Burden By Income Level
Measuring U.S. consumer expenditure burden by spending category and income level
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