



RYSTAD ENERGY

# CAN US SHALE SURVIVE?

CHALLENGES AND OPPORTUNITIES AHEAD

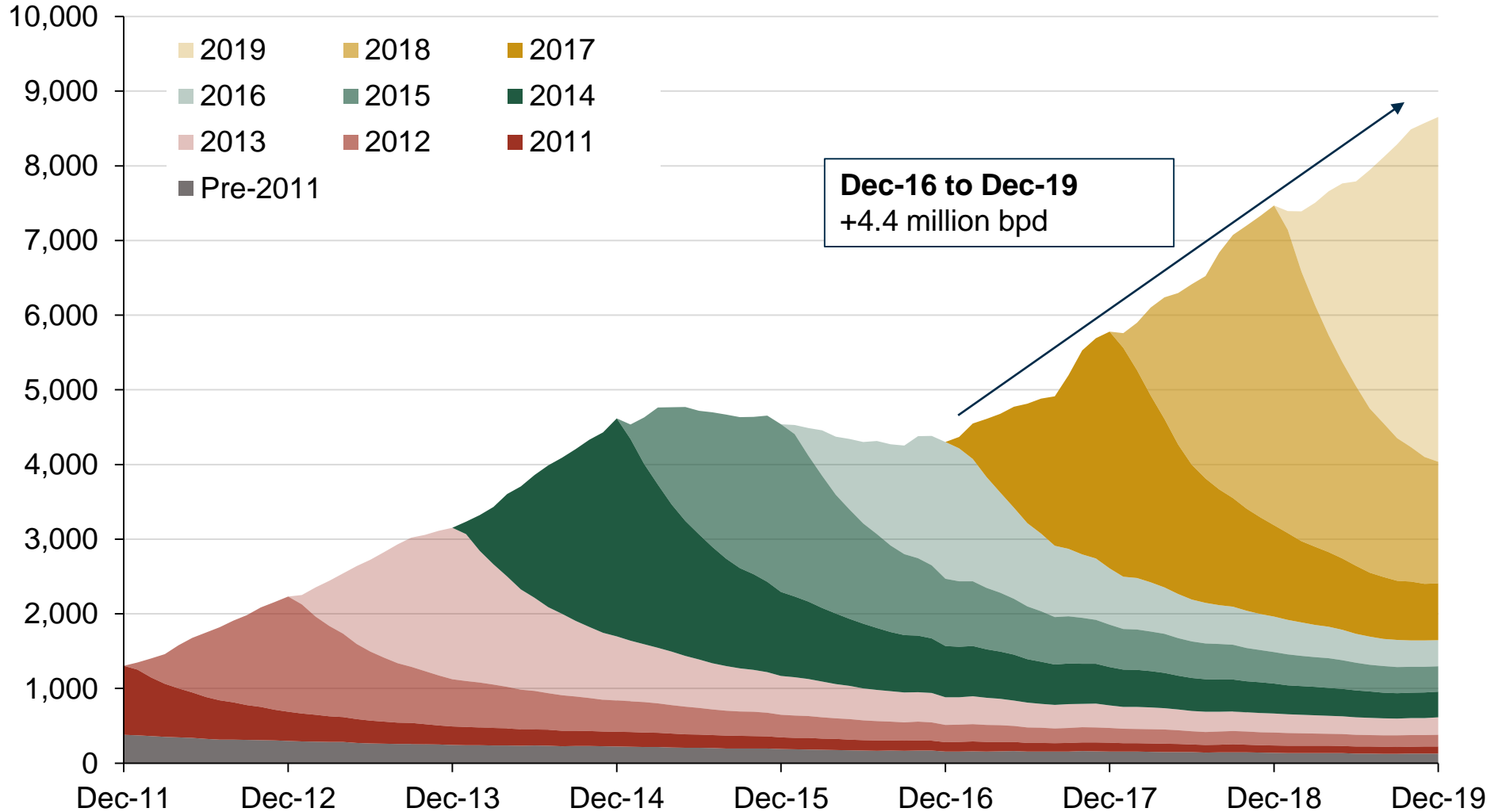
**ARTEM ABRAMOV**

**APRIL 2, 2020**

# US light tight oil production doubled between 2016 and late-2019

## US light tight oil production from horizontal wells by vintage\*

Thousand barrels per day



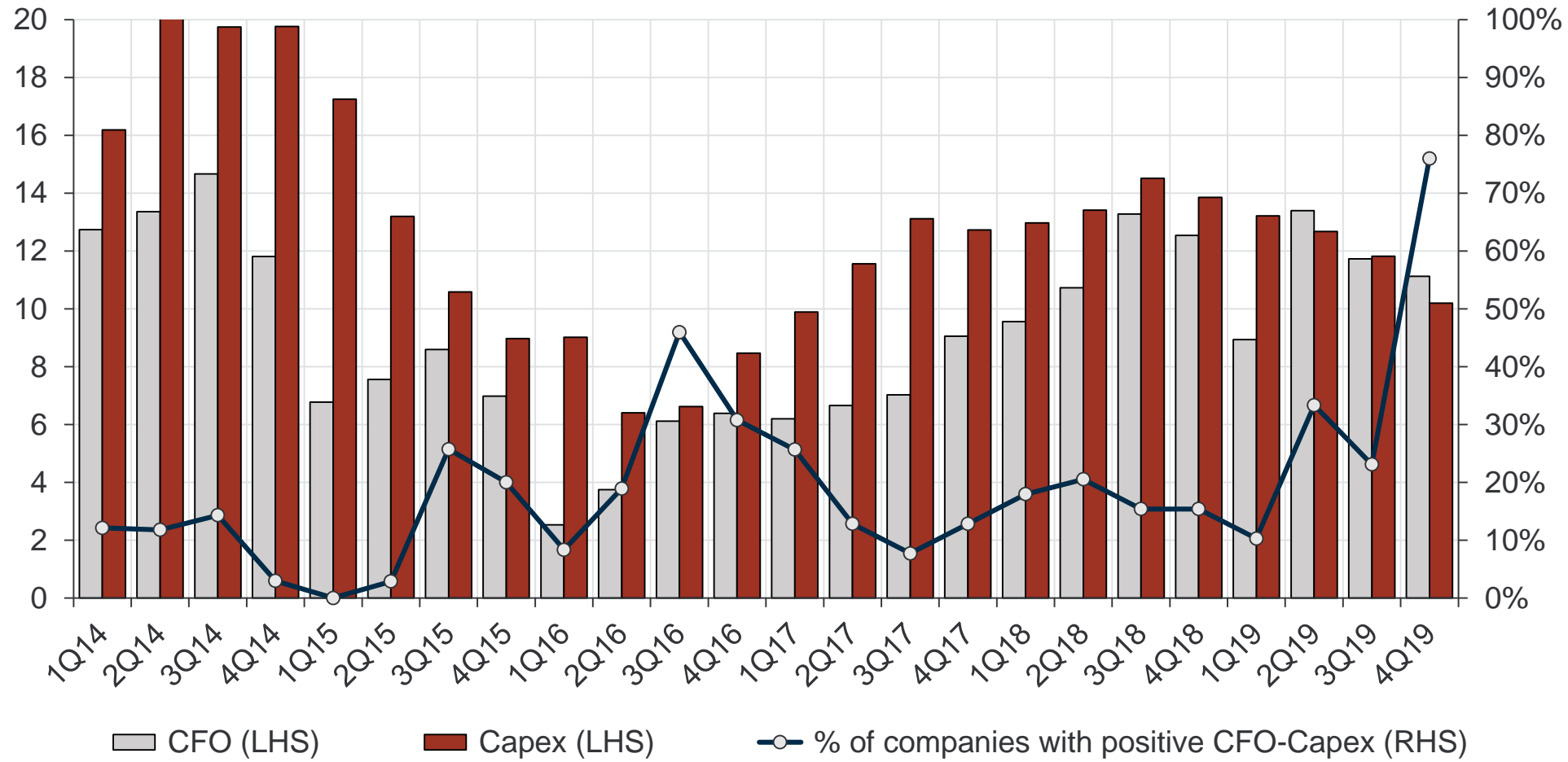
\*Vintage is defined as the year of first oil production  
Source: Rystad Energy ShaleWellCube

# Focus on free cash flow generation has become the standard business model for public E&Ps

## Quarterly CFO\* vs capex for public US shale oil producers

Billion USD

Percent

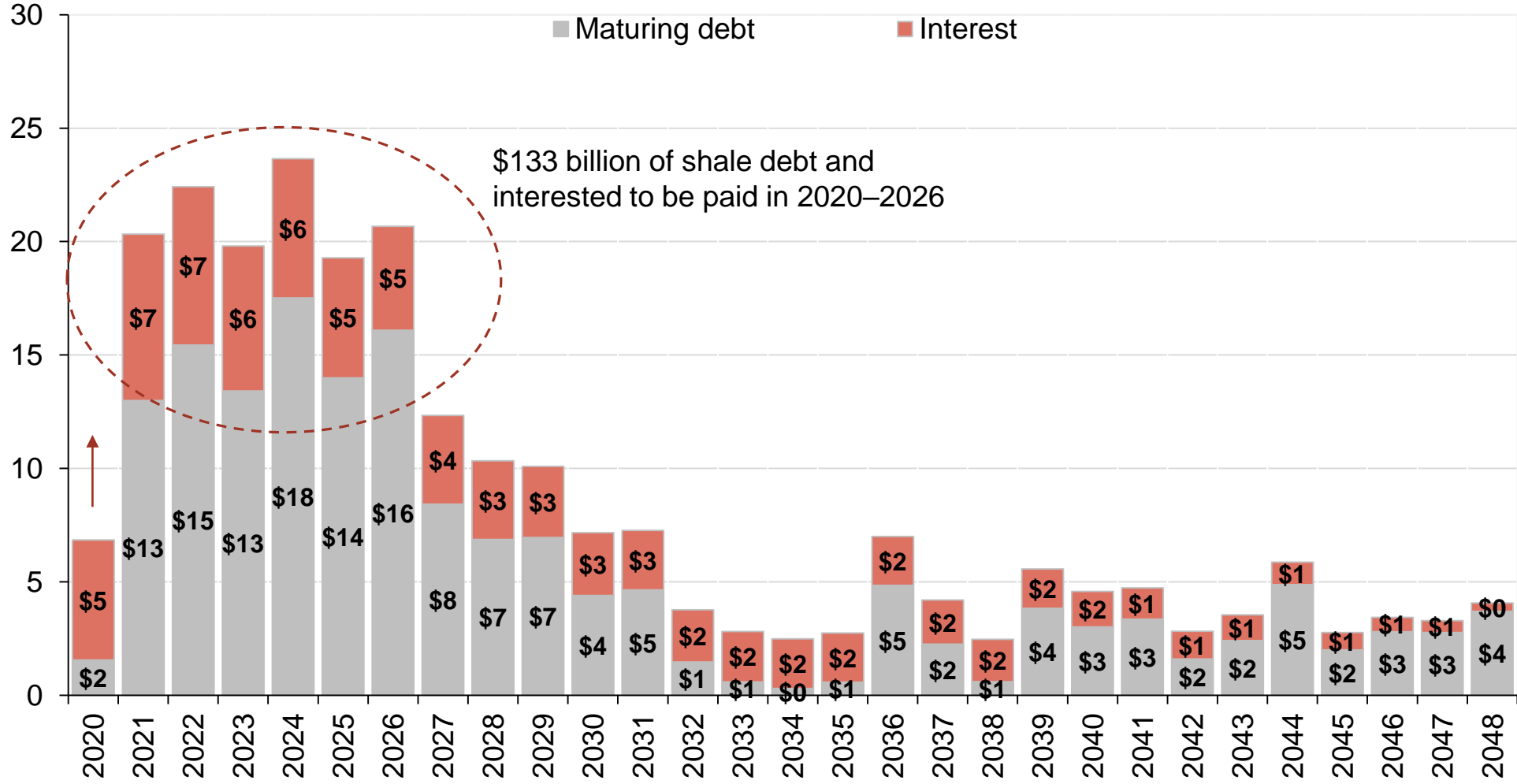


\*The peer group of 39 dedicated US shale oil companies adjusted for CRZO, JAG, SRC, EPEG  
 Source: Company reporting, Rystad Energy research and analysis, February 2020

# Persistent pressure to reduce leverage ratios – E&Ps have to stay committed to FCF targets

## Debt and interest by maturity

Billion USD

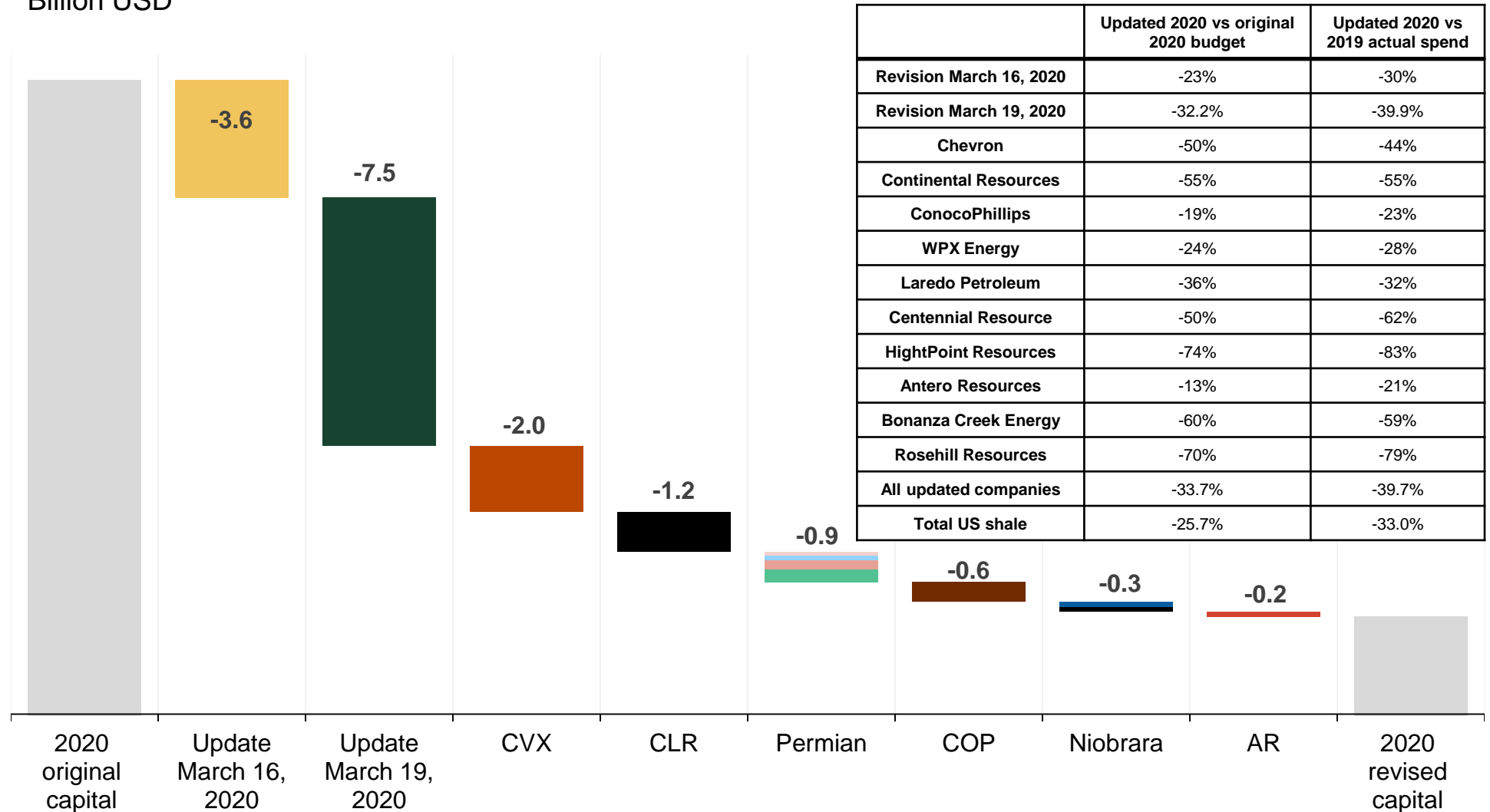


\*Peer group of 29 operators: APA, CPE, CHK, XEC, CXO, COP, CLR, DVN, FANG, ESTE, EOG, HES, HPR, LPI, MRO, MTRD, MUR, NBL, OAS, OVV, OXY, PE, PDCE, PXD, QEP, ROSE, SM, WLL, WPX  
 Source: Company reporting, Rystad Energy research and analysis

# New target spend is 33% below the original guidance, still with \$30 WTI in mind

## Updated 2020 capital guidance vs original 2020 budget by company

Billion USD



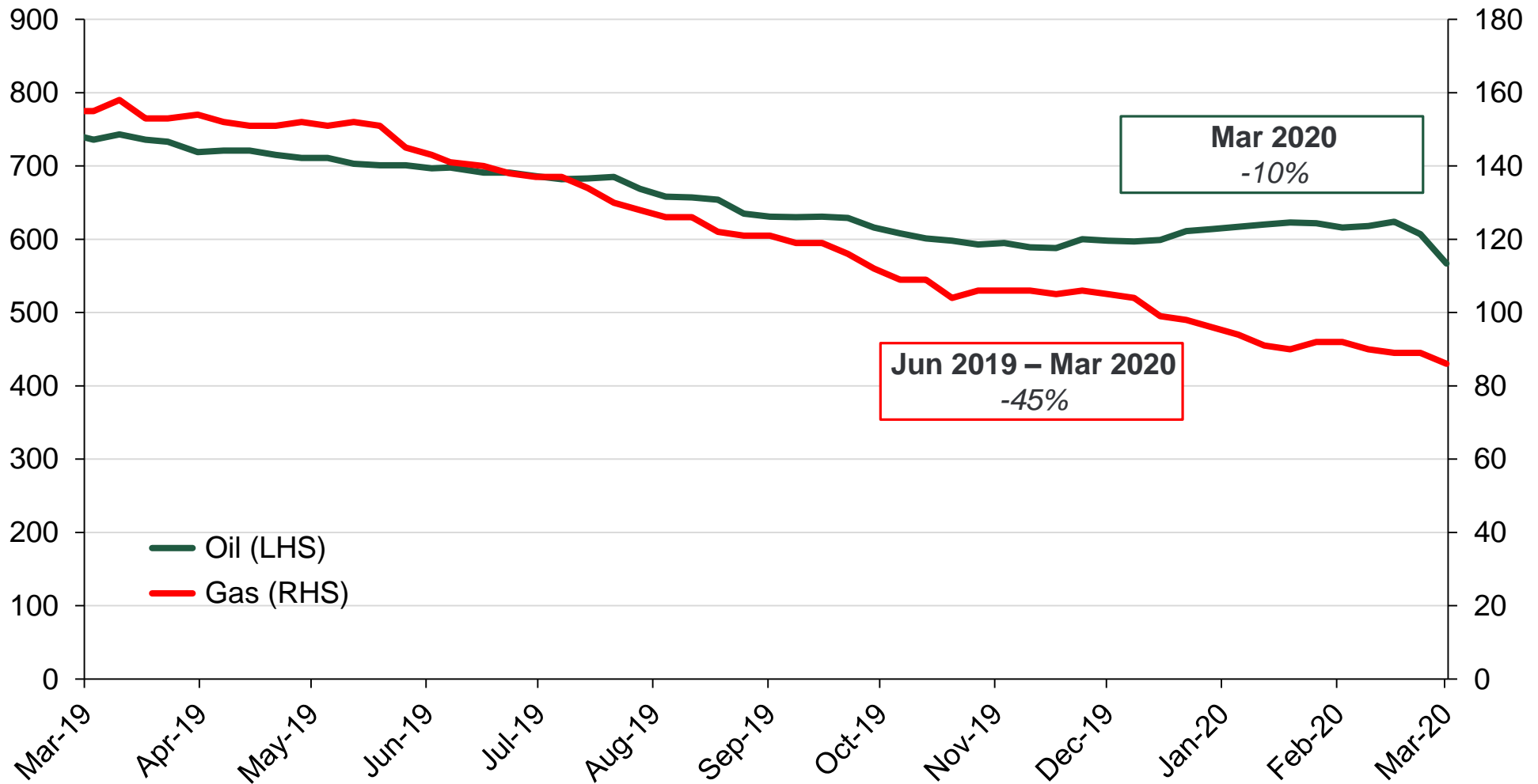
CVX reflects Permian properties only  
 Source: Company reporting, Rystad Energy research and analysis

# Horizontal oil rig count gains from January-February 2020 have already evaporated

## Gas rig activity remains in decline, which started in June 2019

### Horizontal rig count by main hydrocarbon type\*

Number of rigs



\*Oil – Permian, Bakken, Eagle Ford, DJ Basin, SCOOP & STACK, other horizontal drilling targeting oil

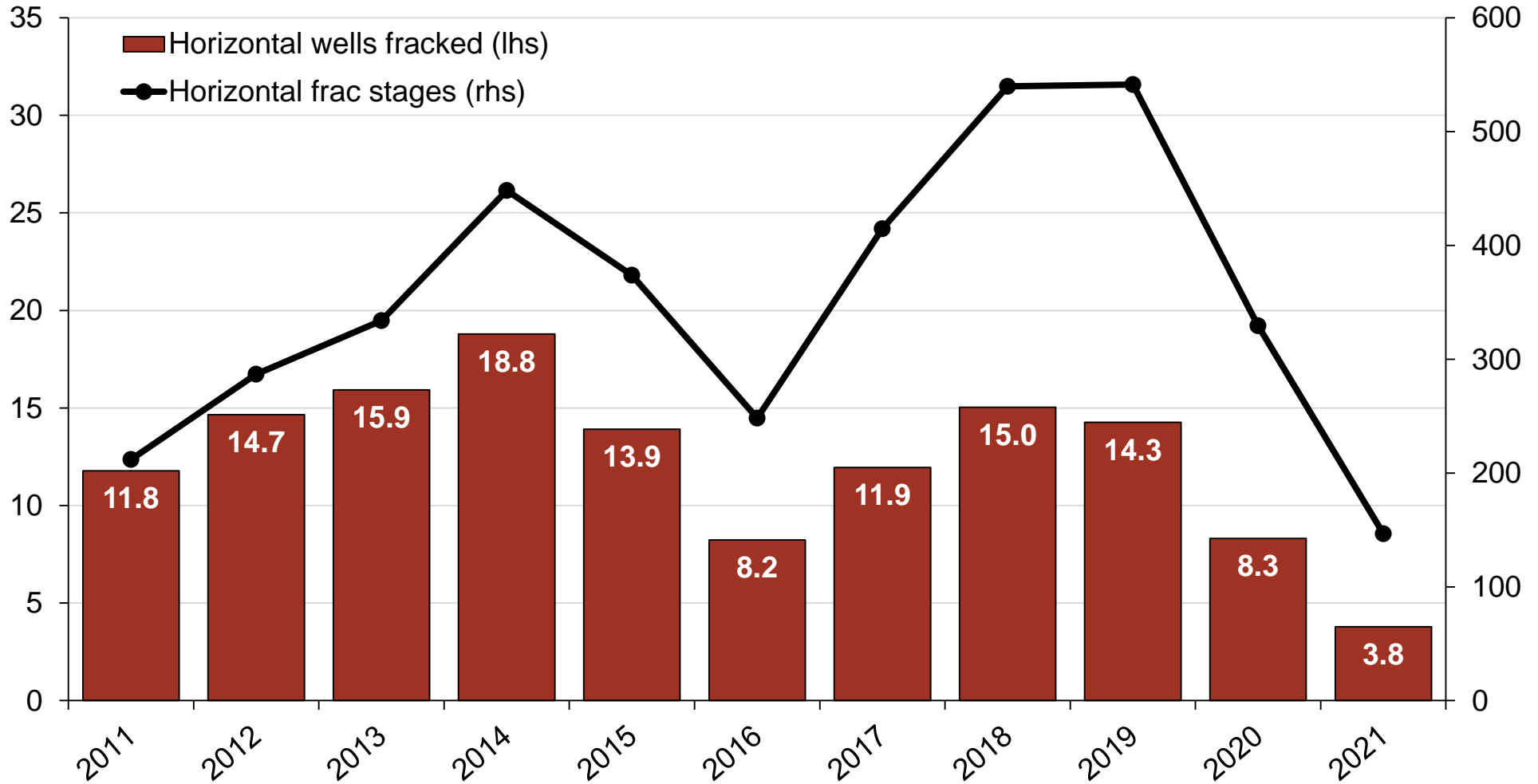
Gas – Appalachia, Haynesville, other horizontal drilling targeting gas

Source: Baker Hughes, Rystad Energy research and analysis, March 2020

Even with WTI of \$30, new well count should return to the level of 2016 already in 2020

### US Land horizontal wells fracked & frac stages (\$30/bbl WTI)

Thousands

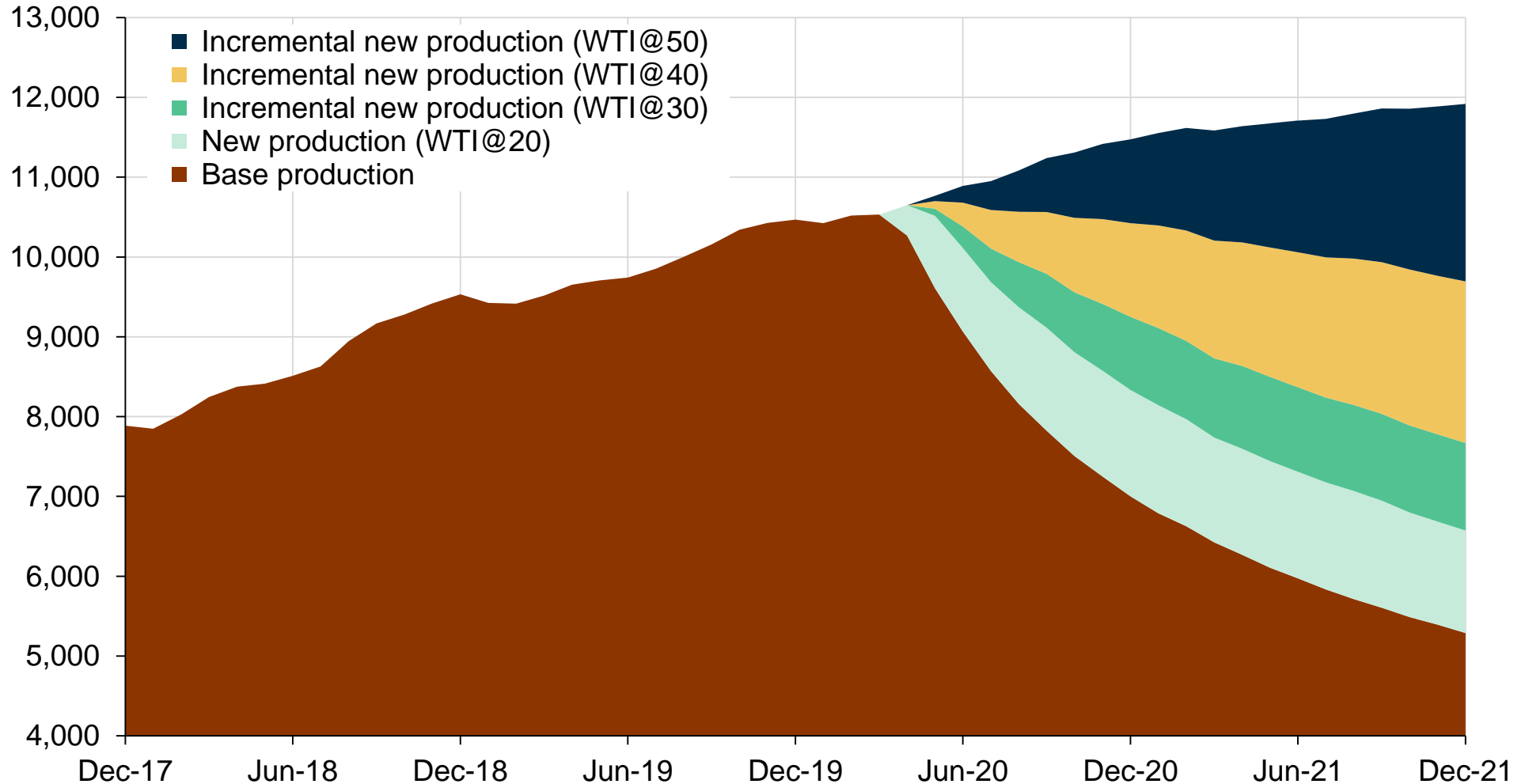


Source: Rystad Energy research and analysis, Rystad Energy ShaleWellCube

# More than 1 million bpd of the US oil production will be lost already by 4Q20

## US L48 ex.GoM oil production outlook

Thousand barrels per day



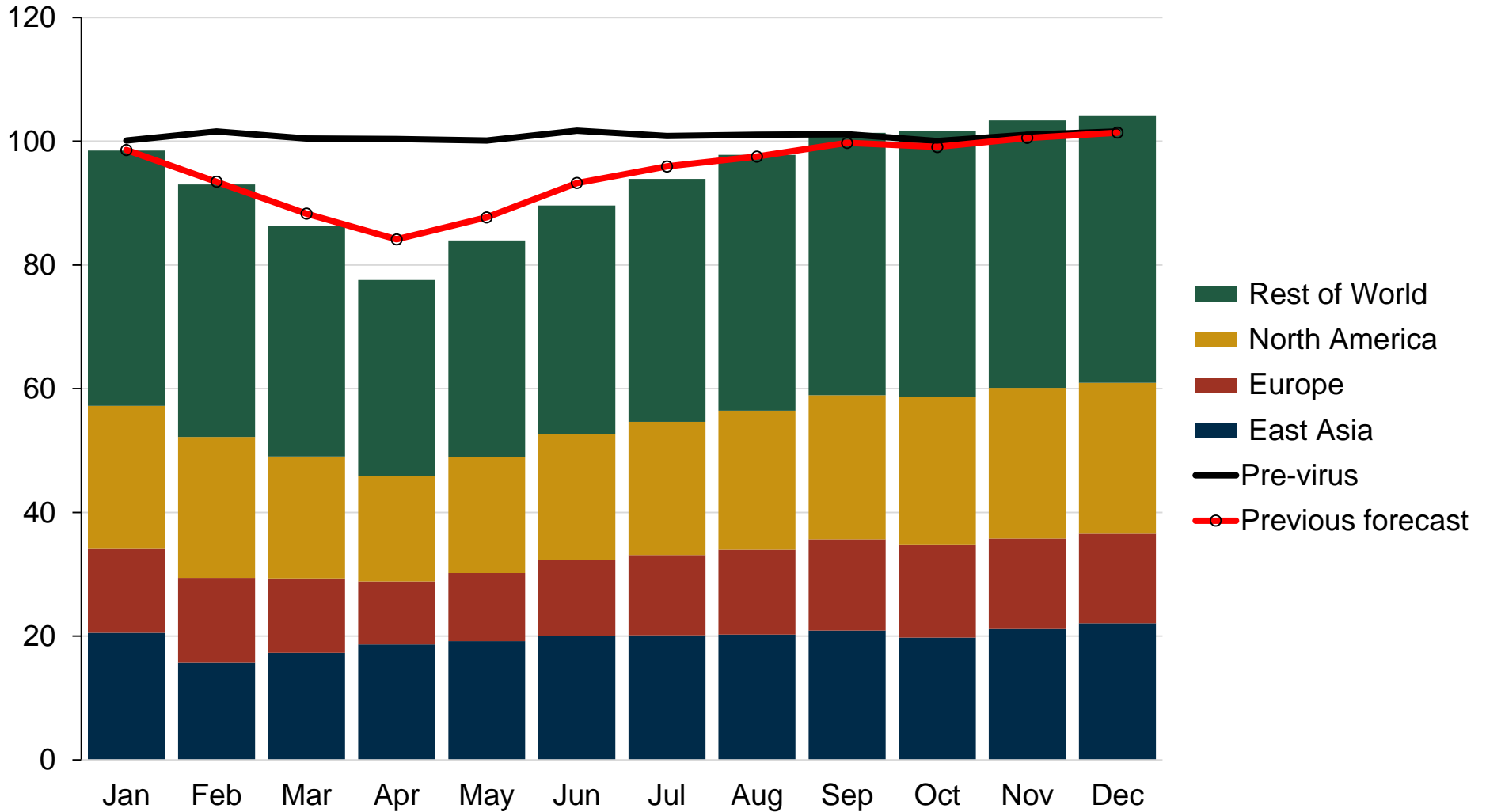
\*All scenarios assume Henry Hub Gas and Mont Belvieu weighted average NGL prices of 1/20 and 0.35 of WTI oil price  
Source: Rystad Energy research and analysis, Rystad Energy ShaleWellCube



# Global liquids demand in 2020 to contract by 5.7% from 2019, 20% in Mar-May 2020

## Global oil demand impact analysis Covid-19 – Effective Prevention Scenario (April 1, 2020)

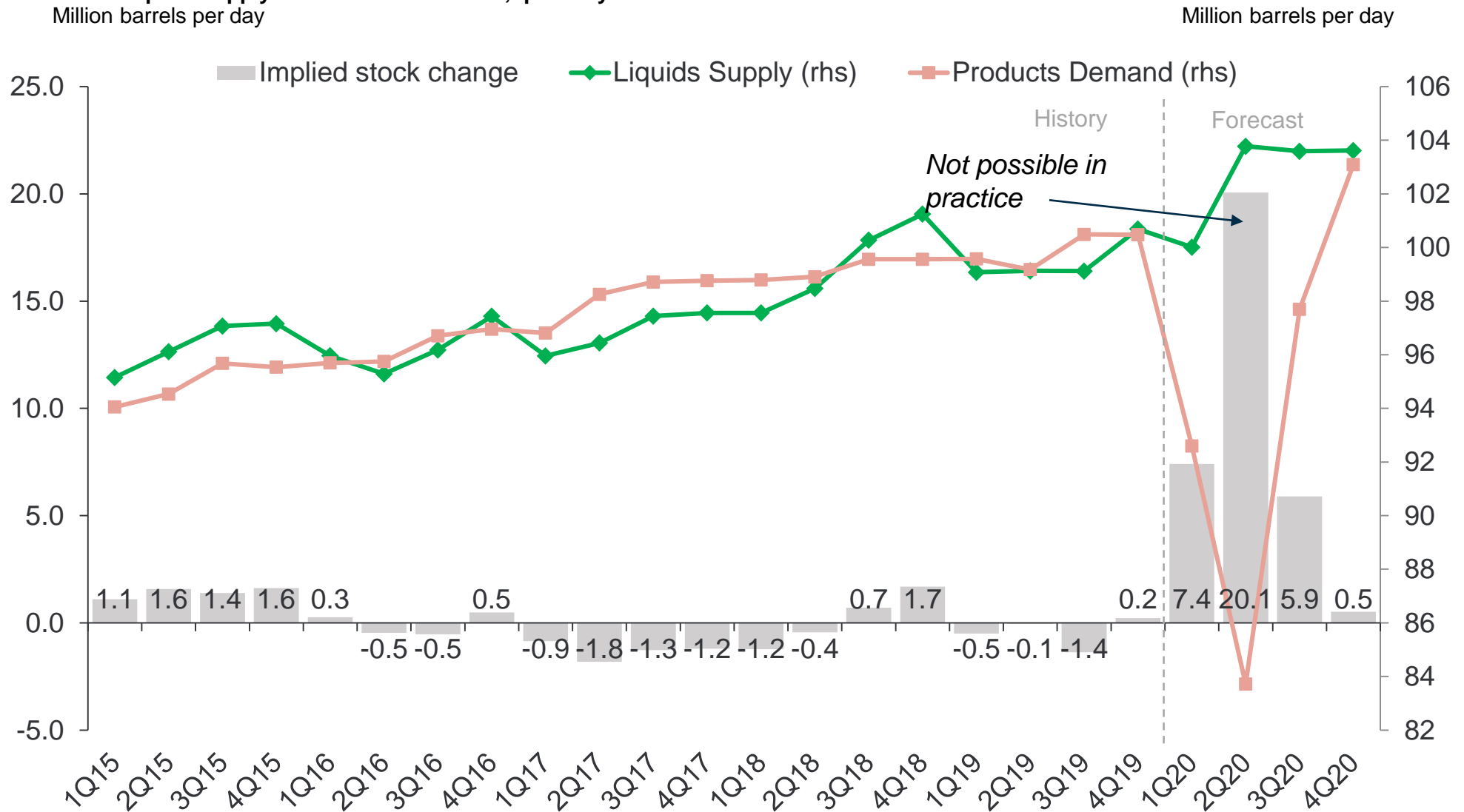
Million barrels per day



Source: Rystad Energy research and analysis

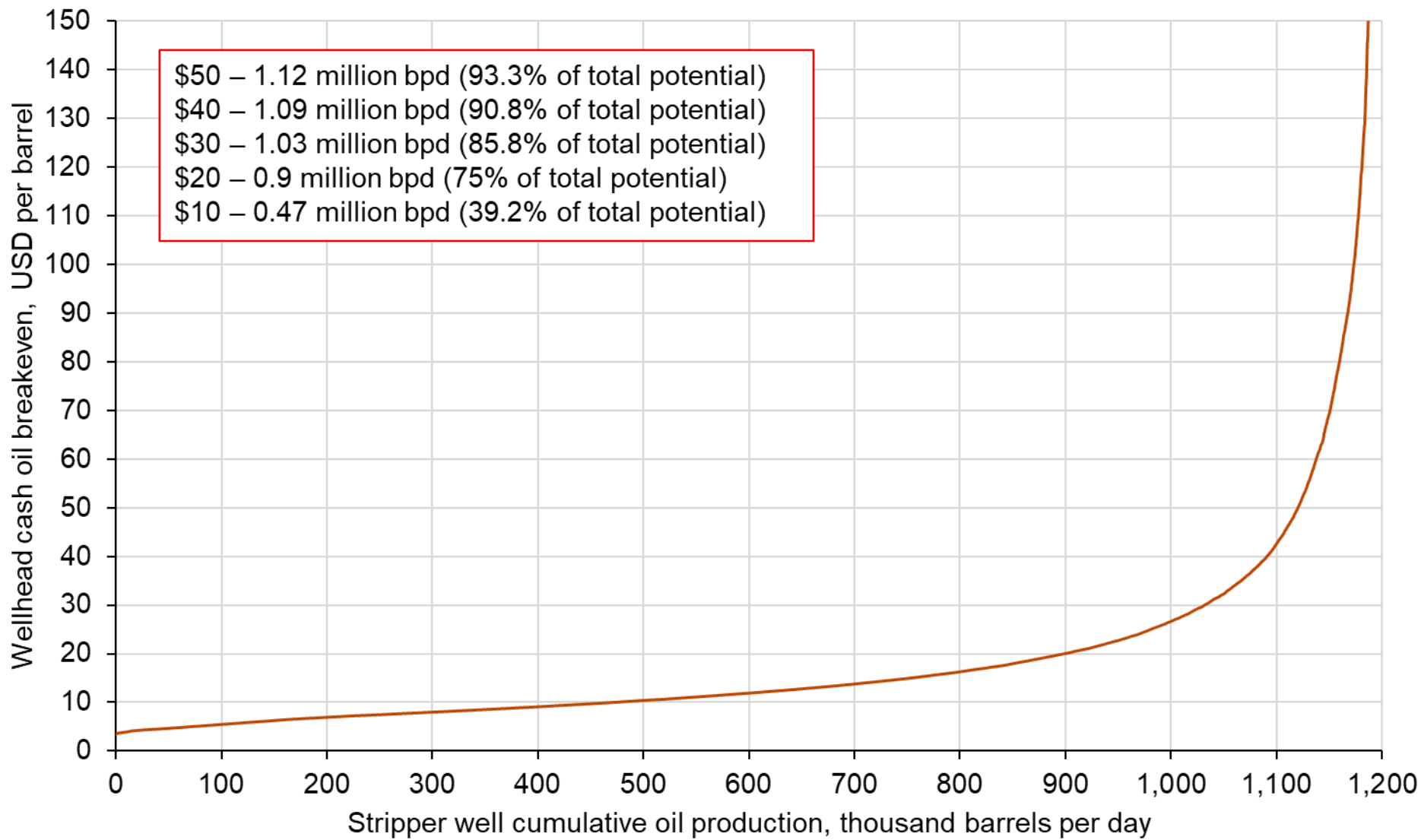
# Global stock build in 2Q cannot be absorbed by remaining storage capacity

**Global liquids supply and demand balances, quarterly**  
 Million barrels per day



Source: Rystad Energy research and analysis, OilMarketCube

# US L48 ex.GoM, stripper\* well cash cost curve for 2020

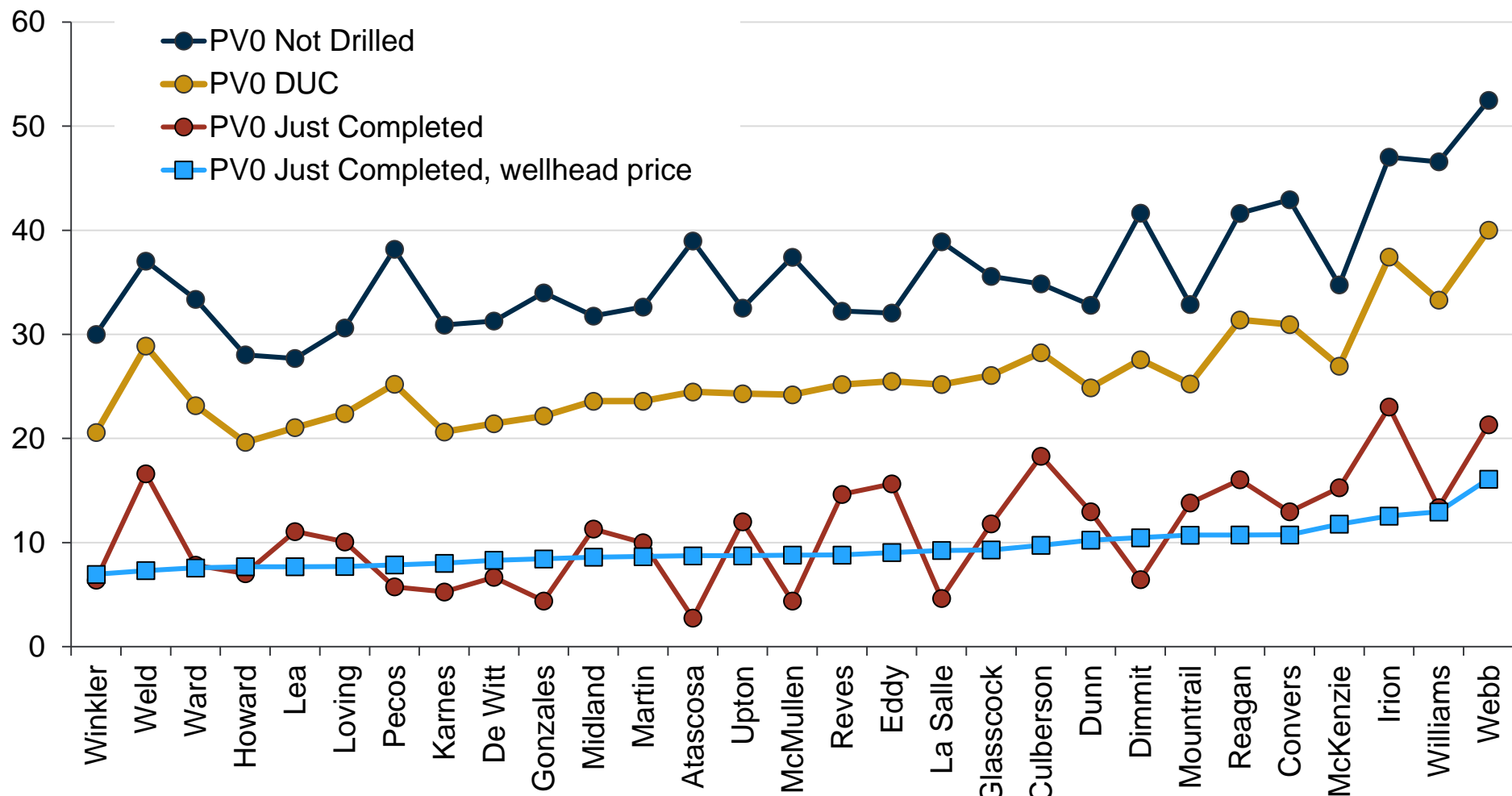


\*Stripper well is a well producing less than 10 barrels of oil per day, defined dynamically each month

Source: Rystad Energy ShaleWellCube, Rystad Energy research and analysis

# Average half-cycle WTI PV0 breakeven by activity type and County

Dollars per barrel of economic oil equivalent\*



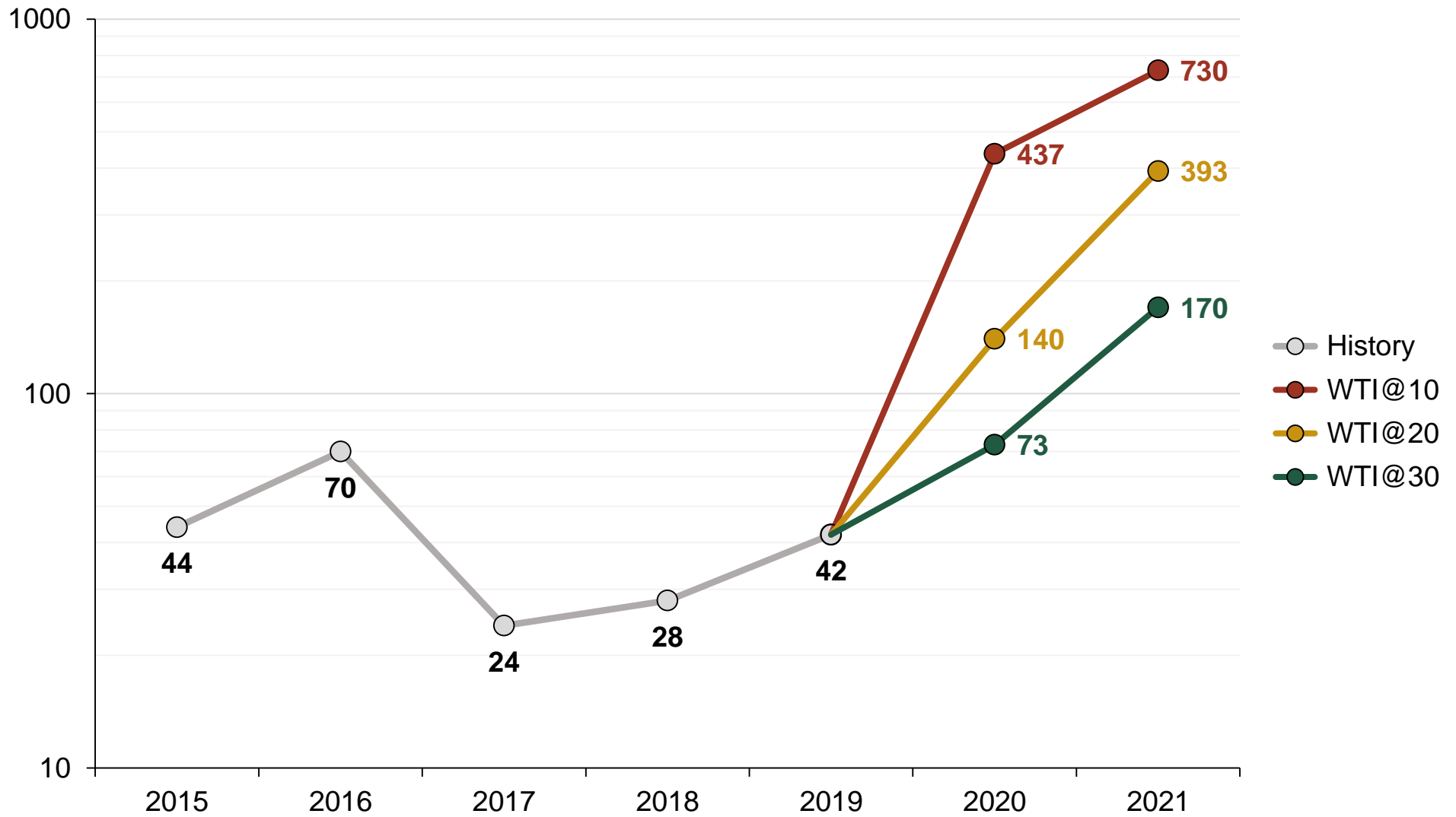
\*Assumes gas and NGL prices – 0.3 and 0.35 of oil price on energy equivalent boe basis

\*\*Well performance and costs are normalized to 10,000' well design

Source: Rystad Energy ShaleWellCube, Rystad Energy UCube, Rystad Energy research and analysis

# Total US E&P Chapter 11 scenarios by year and WTI oil price

Number of cases

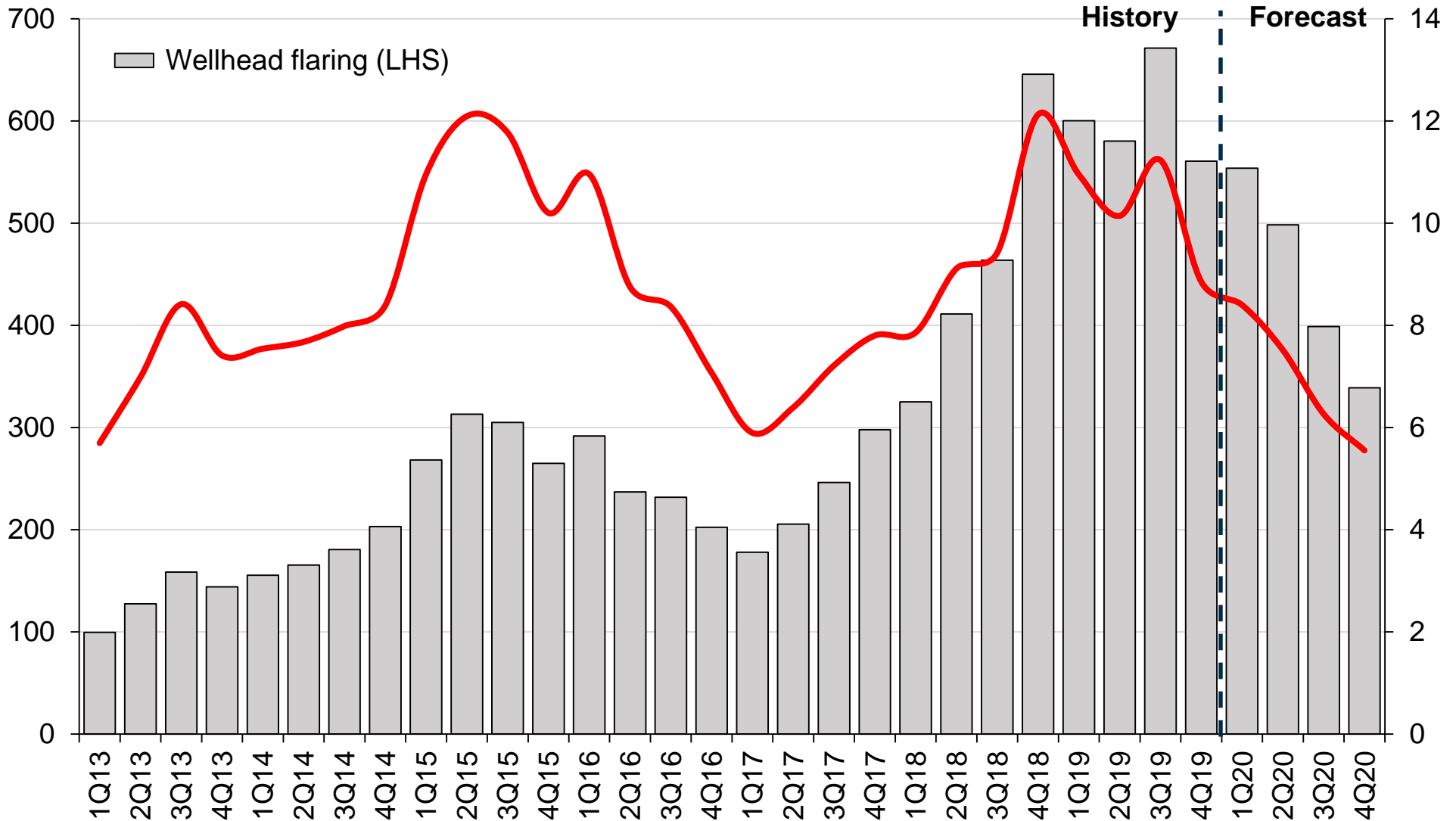


Source: Haynes and Boone Oil Patch Bankruptcy Monitor, Rystad Energy research and analysis

# Permian, wellhead flaring (LHS) and flaring-driven CO2 emissions (RHS)

Million cubic feet per day

KG CO2 per barrel of oil produced



\*CO2 emissions include only emissions related to wellhead gas flaring in the Permian  
 Source: Rystad Energy research and analysis, Rystad Energy ShaleWellCube March 2020

Thank you for your attention



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