

MacroVoices

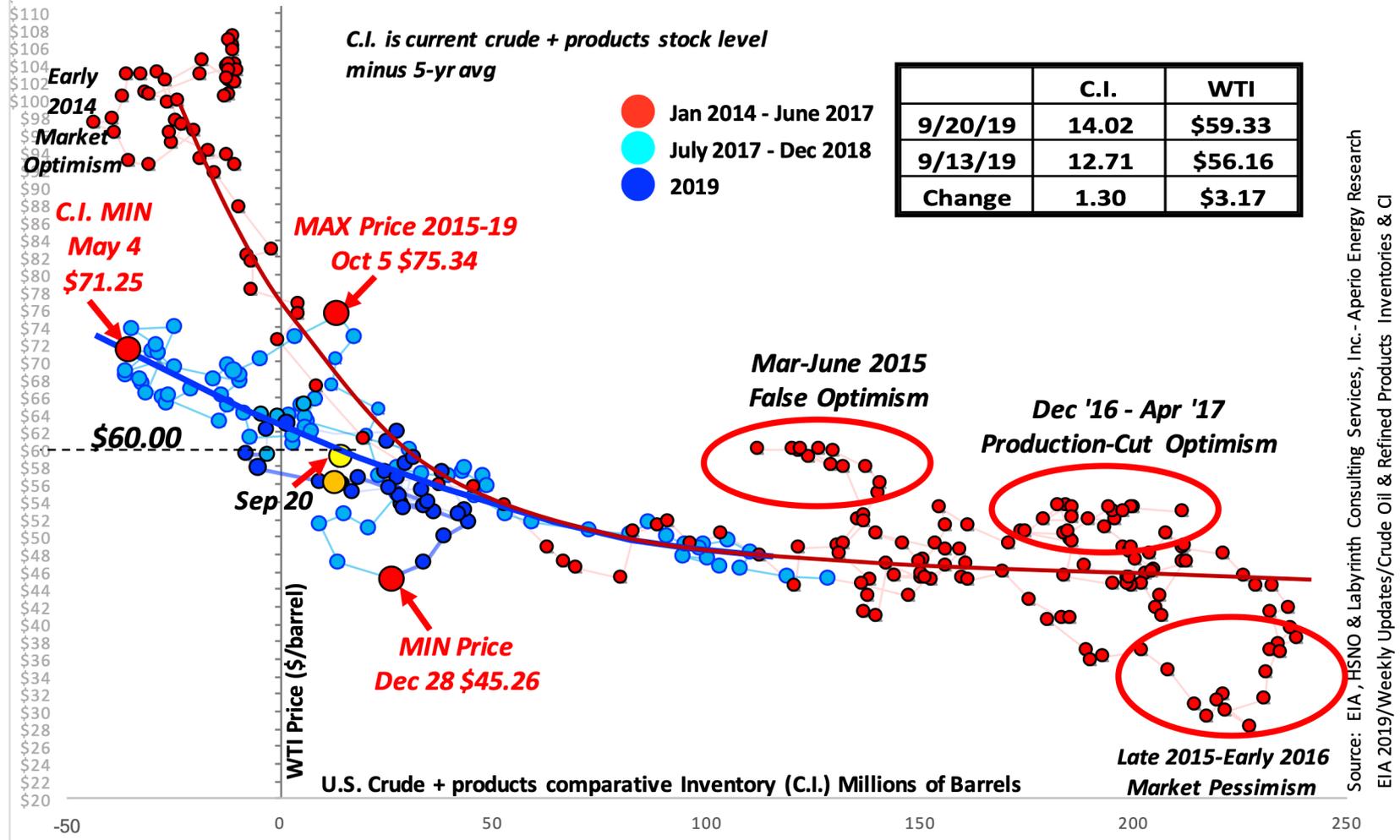
September 25, 2019

Art Berman
Labyrinth Consulting Services, Inc.

WTI was correctly priced at \$59.33 weekly average for week ending Sept 20

Current front-month price of \$55.91 is ~\$4 under-valued

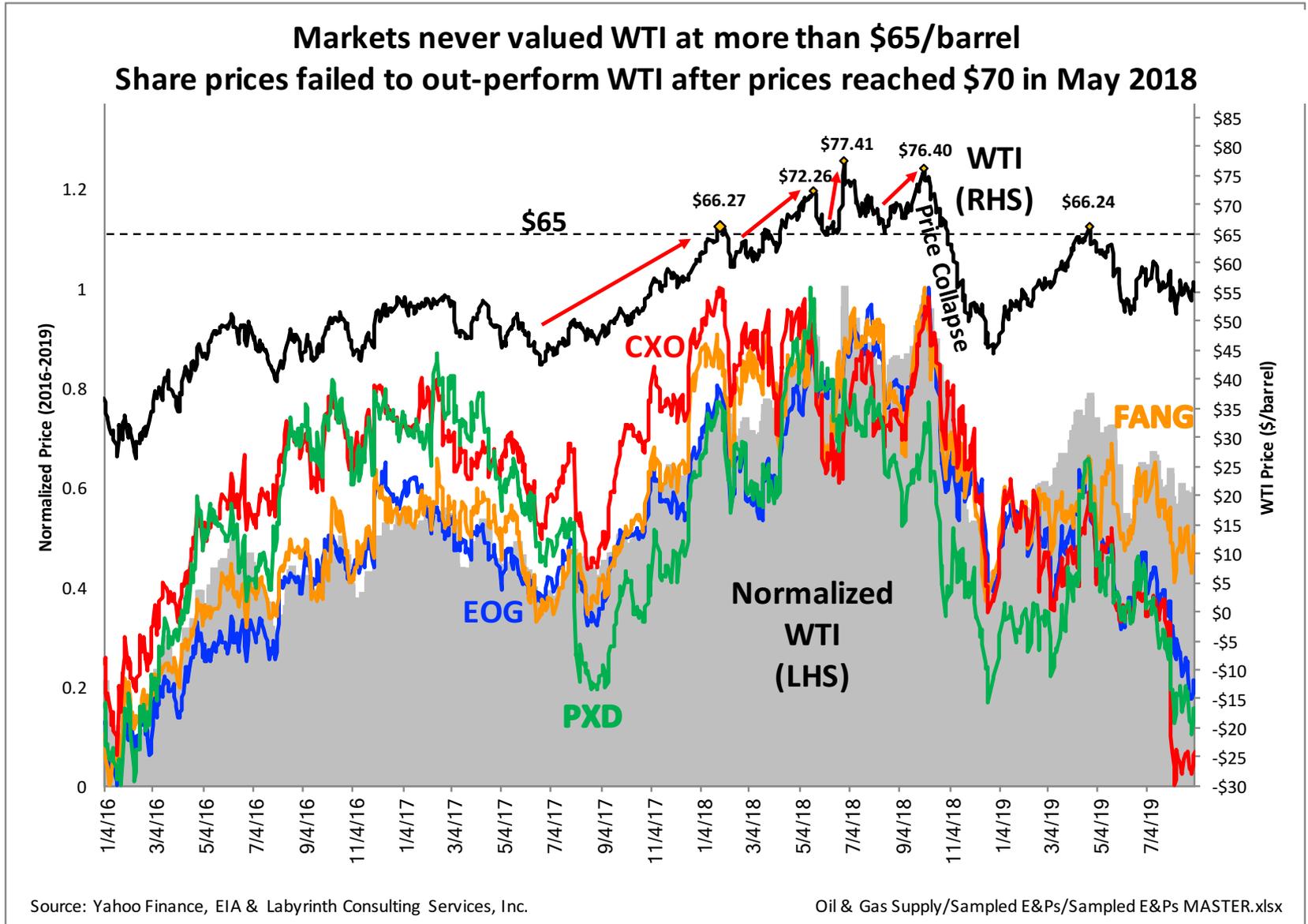
WTI comparative inventory increased +1.3 mmb week ending September 20
Weekly avg price of \$59.33 was correctly valued based on C.I.-price yield curve
Current front-month price of \$56.11 is ~\$4 under-valued



Source: EIA, HSN0 & Labyrinth Consulting Services, Inc. - Aperio Energy Research
EIA 2019/Weekly Updates/Crude Oil & Refined Products Inventories & CI

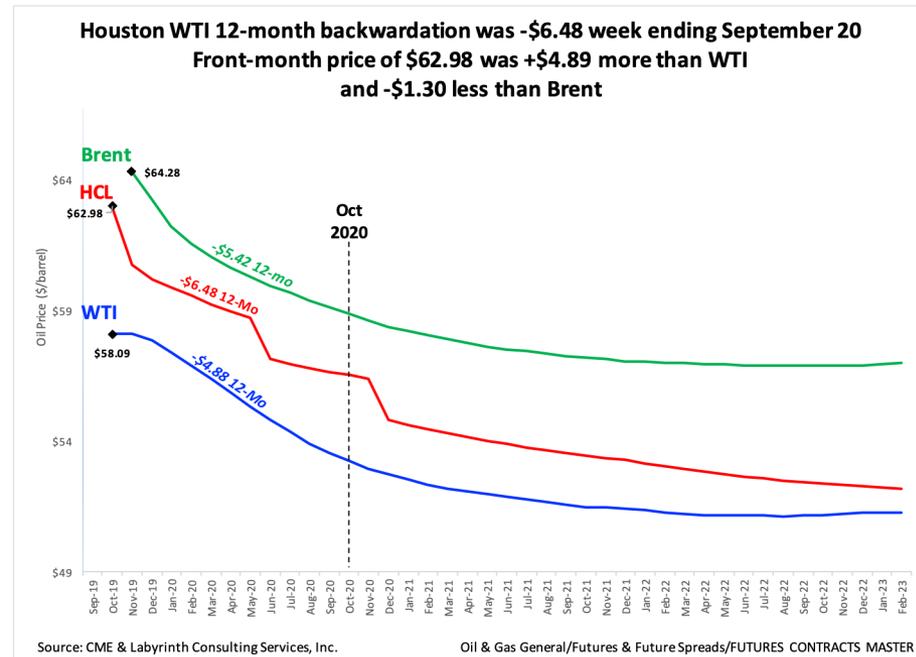
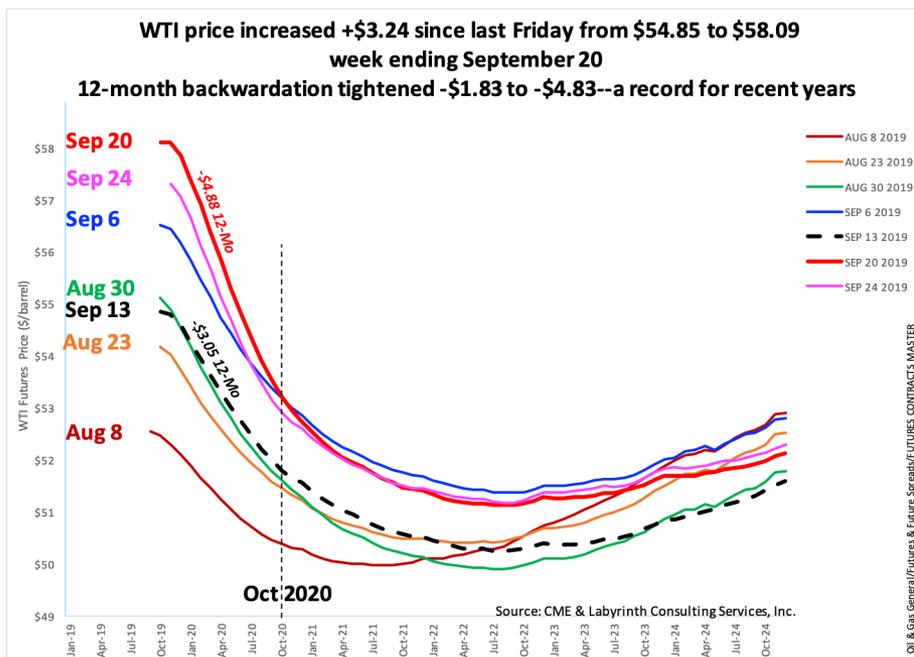
Markets never valued WTI at more than \$65/barrel

Share prices failed to out-perform WTI after prices reached \$70 in May 2018



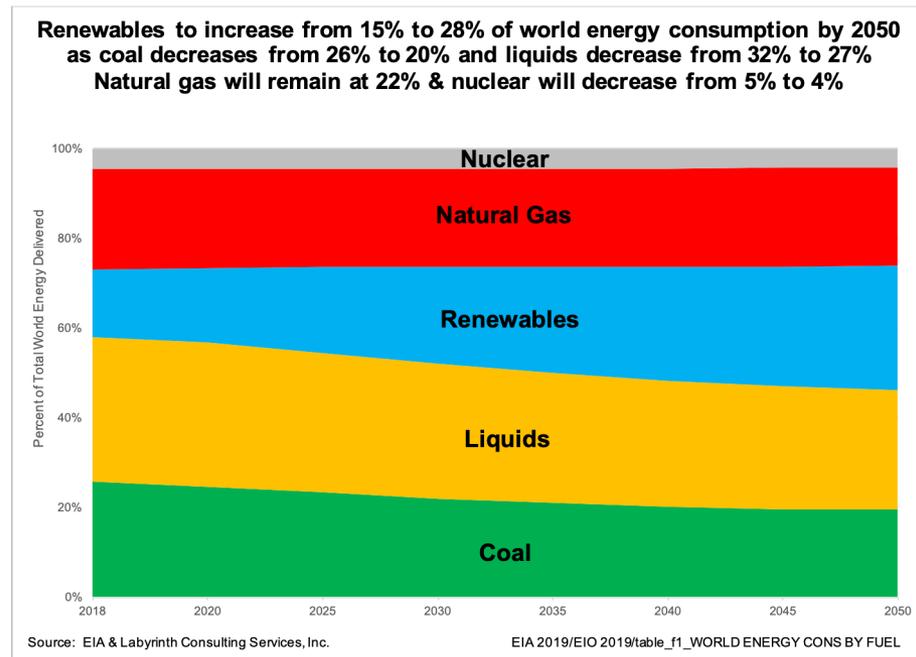
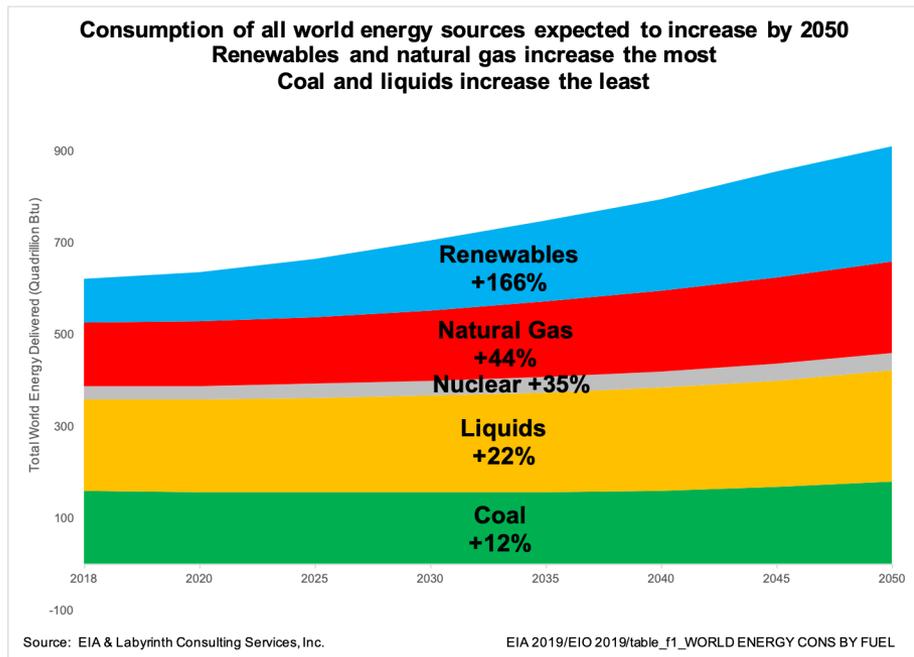
Many analysts focused on lack of price response to Saudi refinery attacks

Forward curves tell a somewhat different story



- All crude futures in “super-backwardation.”
- Brent 12-month spreads are -\$5.42.
- WTI are -\$4.88.
- HCL are -\$6.48.

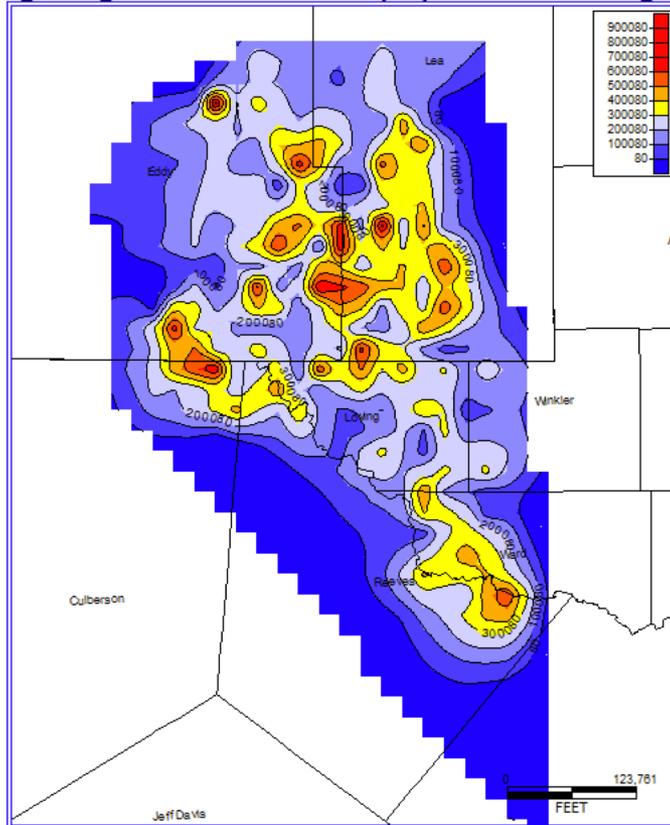
End of the Age of Oil?



- Consumption of all world energy sources expected to increase by 2050.
- Renewables and natural gas increase the most.
- Coal and liquids increase the least.
- Renewables to increase from 15% to 28% of world energy consumption by 2050.
- Coal decreases from 26% to 20% and liquids decrease from 32% to 27%.
- Natural gas will remain at 22% & nuclear will decrease from 5% to 4%.

Concerns about Permian “Tier 1” production

BONE_SPRING_WELL - BONESPRINGEURBOE [AEB] - BONESPRINGEURBOE_LAR



| BONE SPRING | EUR OIL | EUR GAS | BOE 14 |
|---------------|---------|-----------|---------|
| CONCHO | 432,818 | 2,538,811 | 614,161 |
| DEVON | 252,900 | 883,664 | 316,019 |
| EOG | 349,415 | 1,214,138 | 436,139 |
| ANADARKO | 178,606 | 296,505 | 199,784 |
| MEWBOURNE | 423,646 | 749,279 | 477,166 |
| ANADARKO 2015 | 169,158 | 718,613 | 220,488 |
| ANADARKO 2016 | 161,952 | 238,123 | 178,961 |
| ANADARKO 2017 | 542,807 | 1,065,665 | 618,926 |
| ANADARKO 2018 | 520,891 | 1,160,817 | 603,807 |

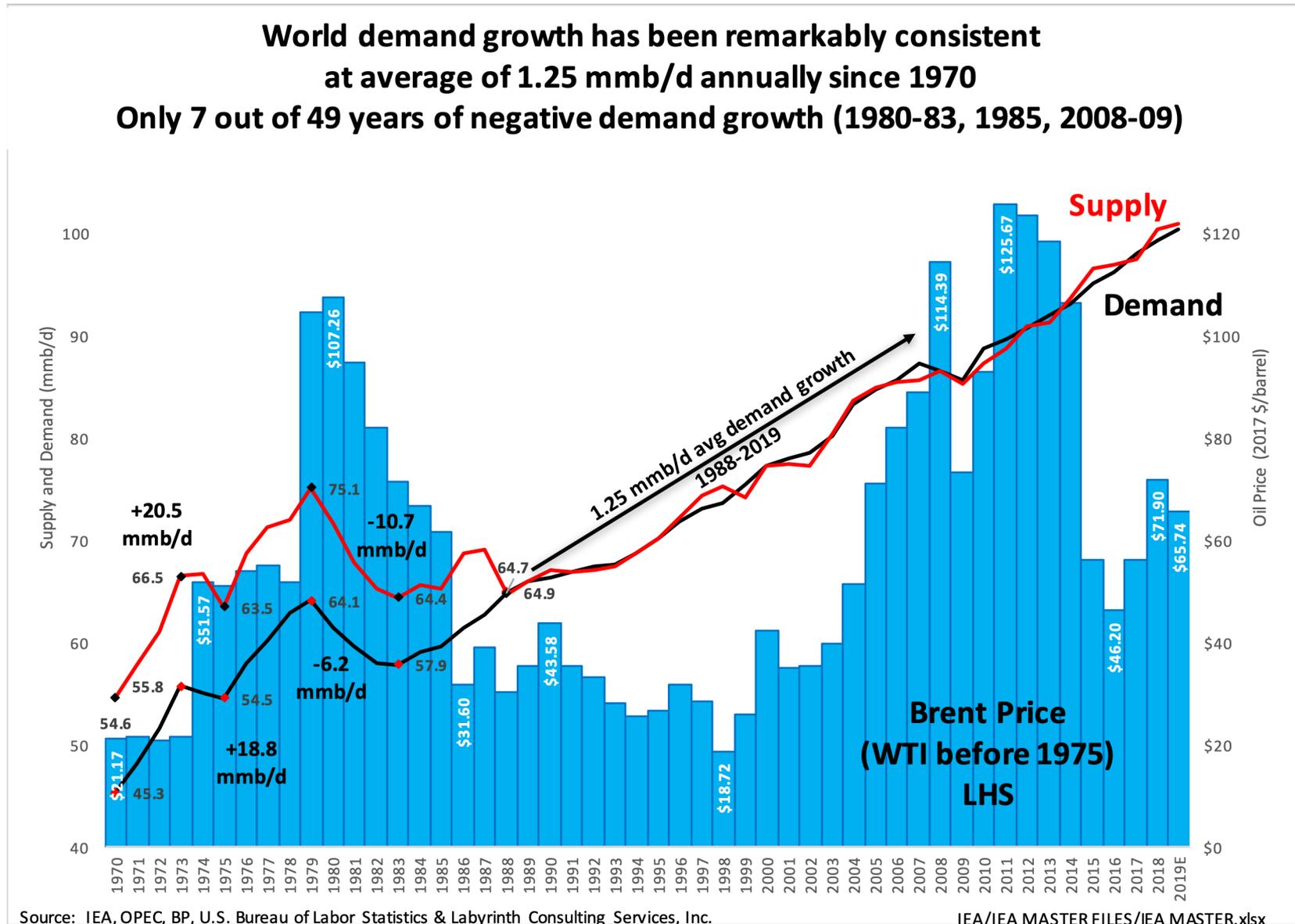
- Bone Spring evaluation indicates that weighted-average well for Concho, EOG & Mewbourne are more than commercial limit of 380 kboe.
- Anadarko average well is sub-commercial but 2017 & 2018 well performance has been excellent.
- Bone Spring commercial area is 1.2 mm acres with 3,807 wells = ~300 acre/well spacing—lots of room for “Tier 1” infill.

World liquids demand has increased 1.25 mmb/d last 49 years

2019 estimate is 1.1 - 1.3 mmb/d

World demand growth has been remarkably consistent
at average of 1.25 mmb/d annually since 1970

Only 7 out of 49 years of negative demand growth (1980-83, 1985, 2008-09)



Source: IEA, OPEC, BP, U.S. Bureau of Labor Statistics & Labyrinth Consulting Services, Inc.

IEA/IEA MASTER FILES/IEA MASTER.xlsx