



**Numbers to Count On. Experts to Trust.**

# THE SUPPLY AND DEMAND IMBALANCE LEADING INTO OIL PRICE VOLATILITY

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# OIL GOES NEGATIVE APRIL 20<sup>TH</sup>



## Crude Oil Futures Settlements

View

Information presented herein is publically available from:

1. U.S. Energy Information Administration ([www.eia.gov](http://www.eia.gov))
2. Baker Hughes ([www.bakerhughes.com](http://www.bakerhughes.com))
3. CME Group ([www.cmegroup.com](http://www.cmegroup.com))

# OIL NEWS HEADLINES APRIL 20<sup>TH</sup> & 21<sup>ST</sup>



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## *'I'm Just Living a Nightmare': Oil Industry Braces for Devastation*

Across the United States, companies are laying off workers, shutting down wells and preparing for a prolonged slump as oil prices tumble.

WTI for June delivery plu

By Jonathan Garber | FOXBusiness |

By Silvia Ramoneda and Haley Walter

April 21, 2020, 5:06 AM CDT Updated on April 21, 2020, 3:46 PM CDT

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# WHAT IS THE NYMEX LIGHT SWEET CRUDE FUTURES?

- WTI - West Texas Intermediate
  - WTI is a specific grade of light sweet crude oil
    - Sulfur Content <0.42% by weight
    - Gravity between 37-42 degrees API
    - One of three main benchmarks of crude oil in the world (WTI, Brent, Dubai Crude)
- Cushing, Oklahoma is the delivery location for the NYMEX light sweet crude futures contract.
  - 90-93 MMbbl shell storage capacity with a 76-77 MMbbl working storage capacity (volume between maximum safe fill and quantity above effective pump suction).
  - Accounts for 11-15% of the U.S. storage capacity, which includes refinery, tank, & underground storage.
  - An important gathering hub for shale oil production.



\* Image courtesy of Forbes

# WHAT IS THE NYMEX LIGHT SWEET CRUDE FUTURES?



- At the end of the business day, the NYMEX Light Sweet Crude Futures price is also the Spot Market Cash Price for that day at Cushing.
- This is the only petroleum product benchmark that does this.
- It is a volume-weighted average of the trades made that day for future delivery.
- The Spot Market Cash Price forms the basis of the First-Day-of-the-Month pricing for SEC-compliant reserve reports.

**First Day-of-the-Month Benchmark Oil and Gas (FDOM) Prices**

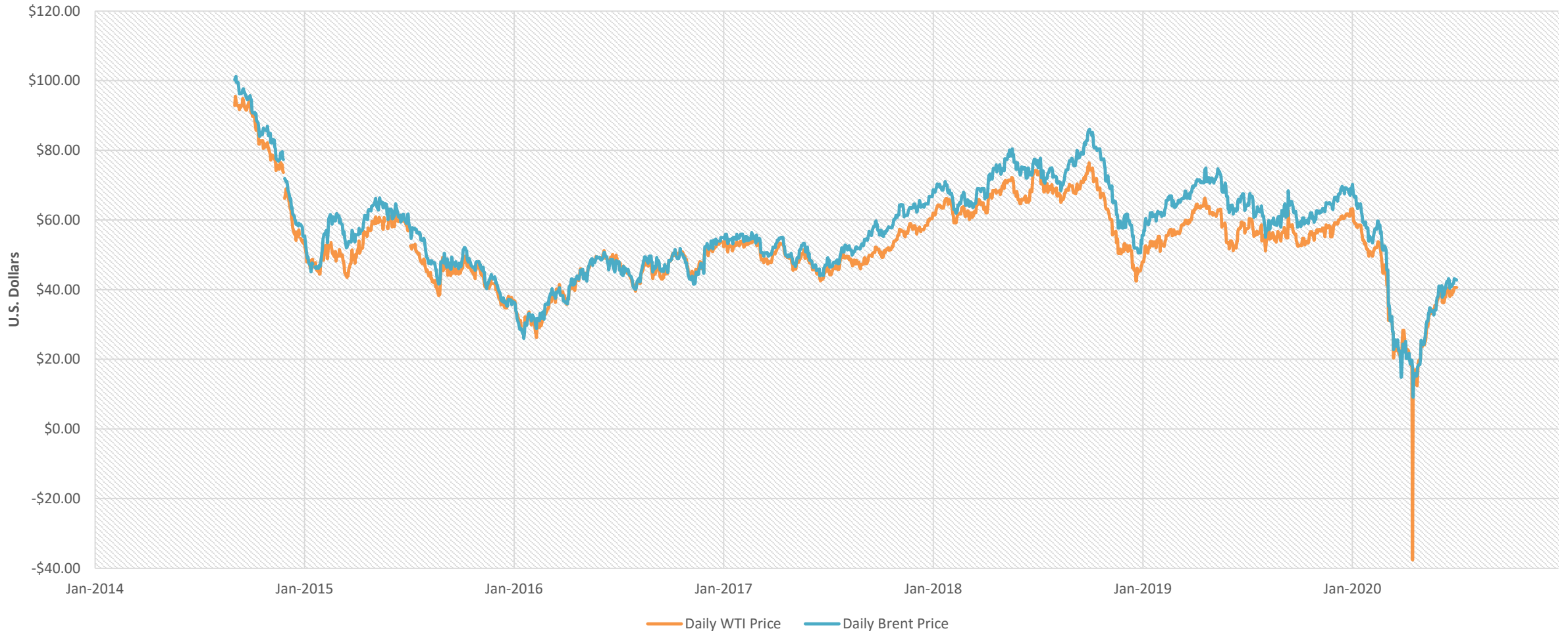
*\*Average of previous 12 months' First-Day-of-the-Month prices*

2020	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	AVG Previous 12 Mos *
<b>OIL (in USD/Bbl)</b>													
WTI Cushing, Okla. SPOT Price Plains Marketing, L.P.	\$61.06	\$51.56	\$44.76	\$20.31	\$19.78	\$35.44	\$39.82						\$45.56

# WTI PRICES VS BRENT PRICES



WTI Price vs Brent Price

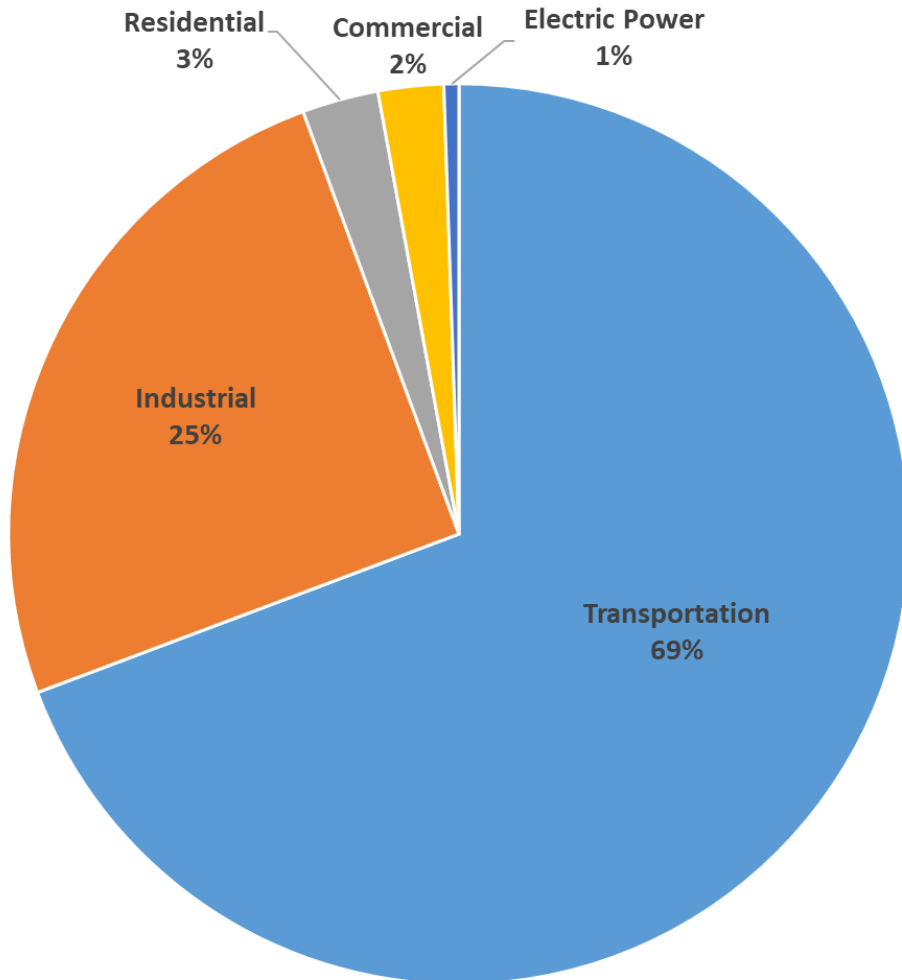


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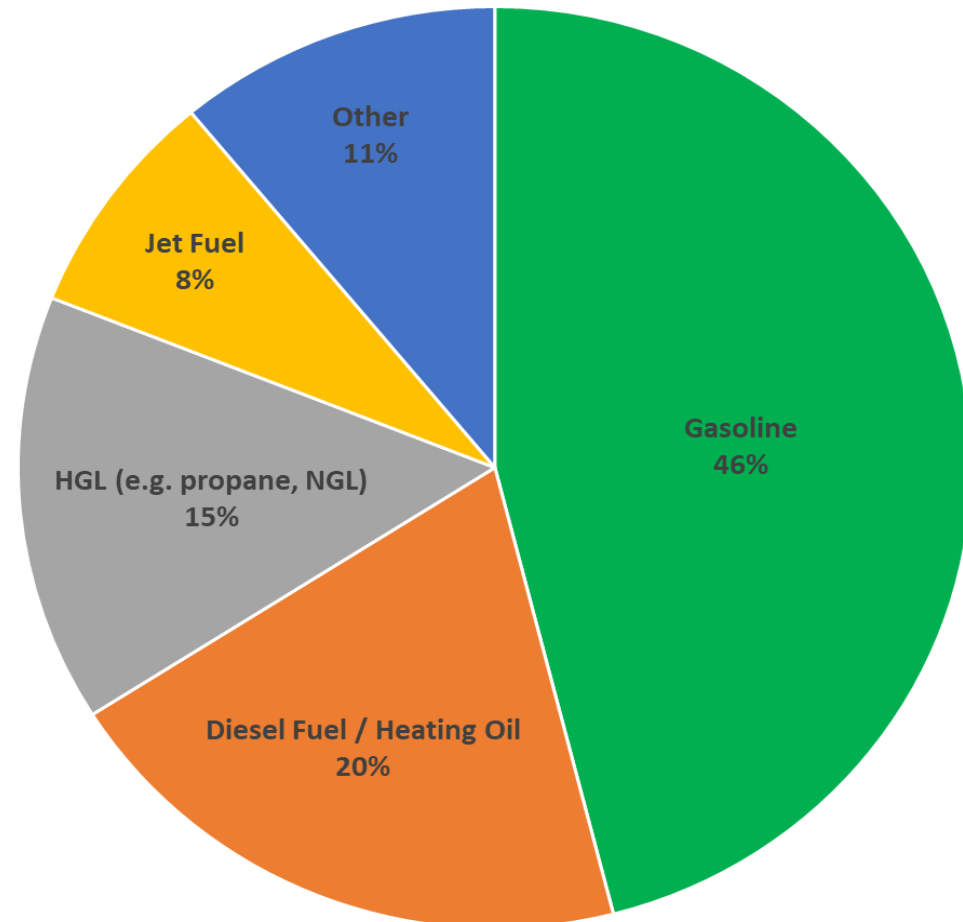
# U.S. PETROLEUM DEMAND IN 2018



2018 US Petroleum Consumption by Sector



2018 US Petroleum Consumption by Product



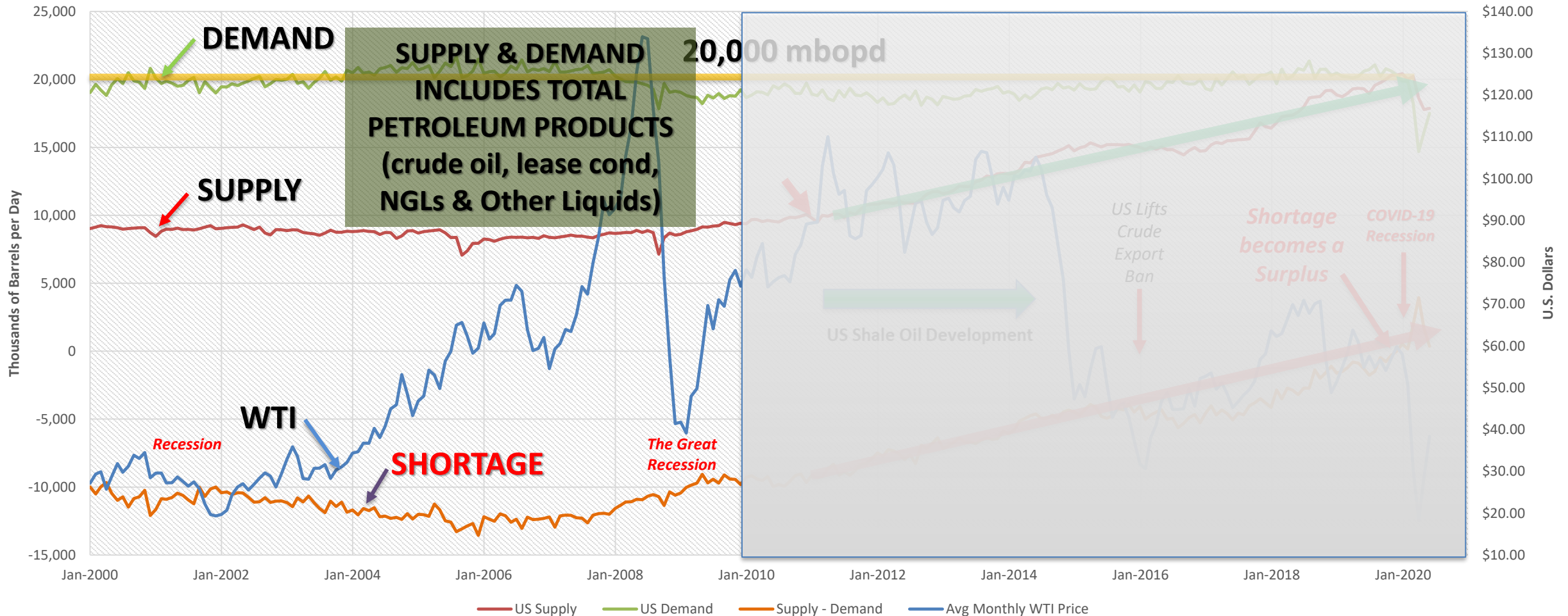
\* Data from the U.S. Energy Information Administration



# SUPPLY, DEMAND, AND WTI PRICES



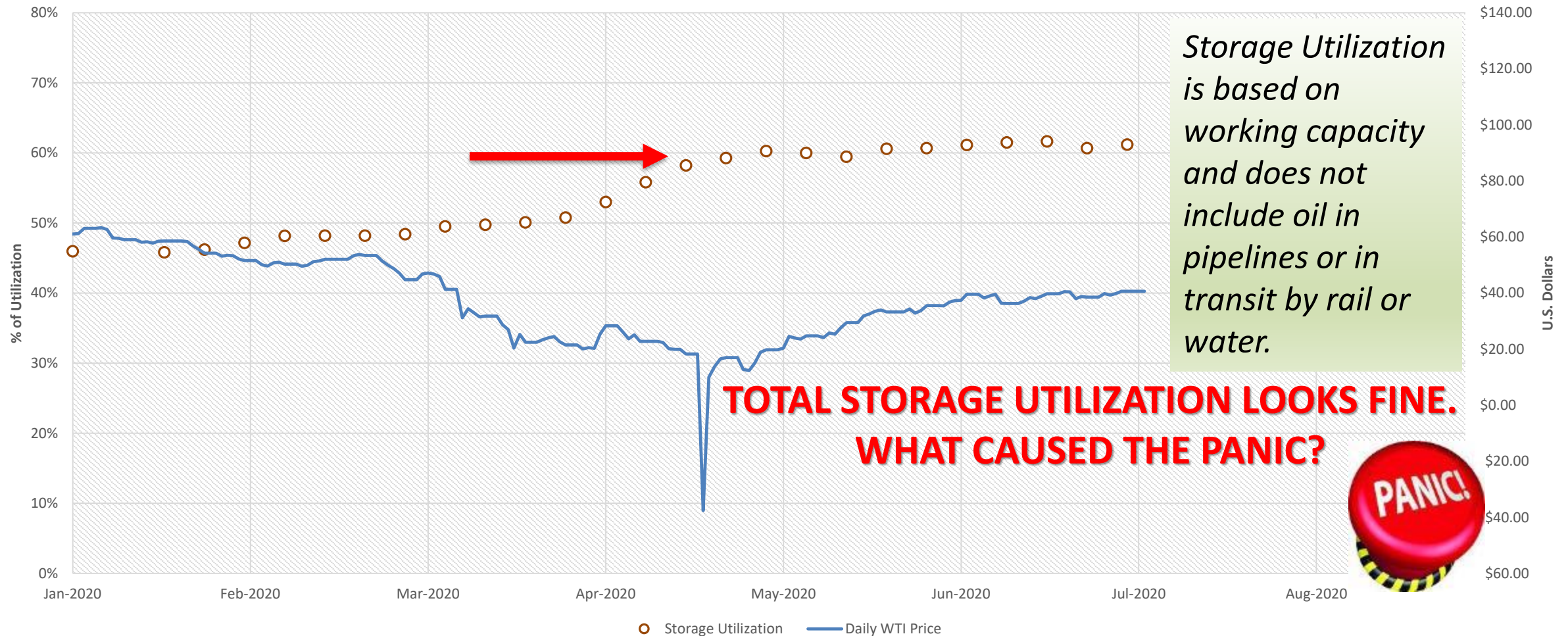
WTI Price vs US Supply/Demand



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# OKAY, WHAT HAPPENED APR 20<sup>TH</sup>

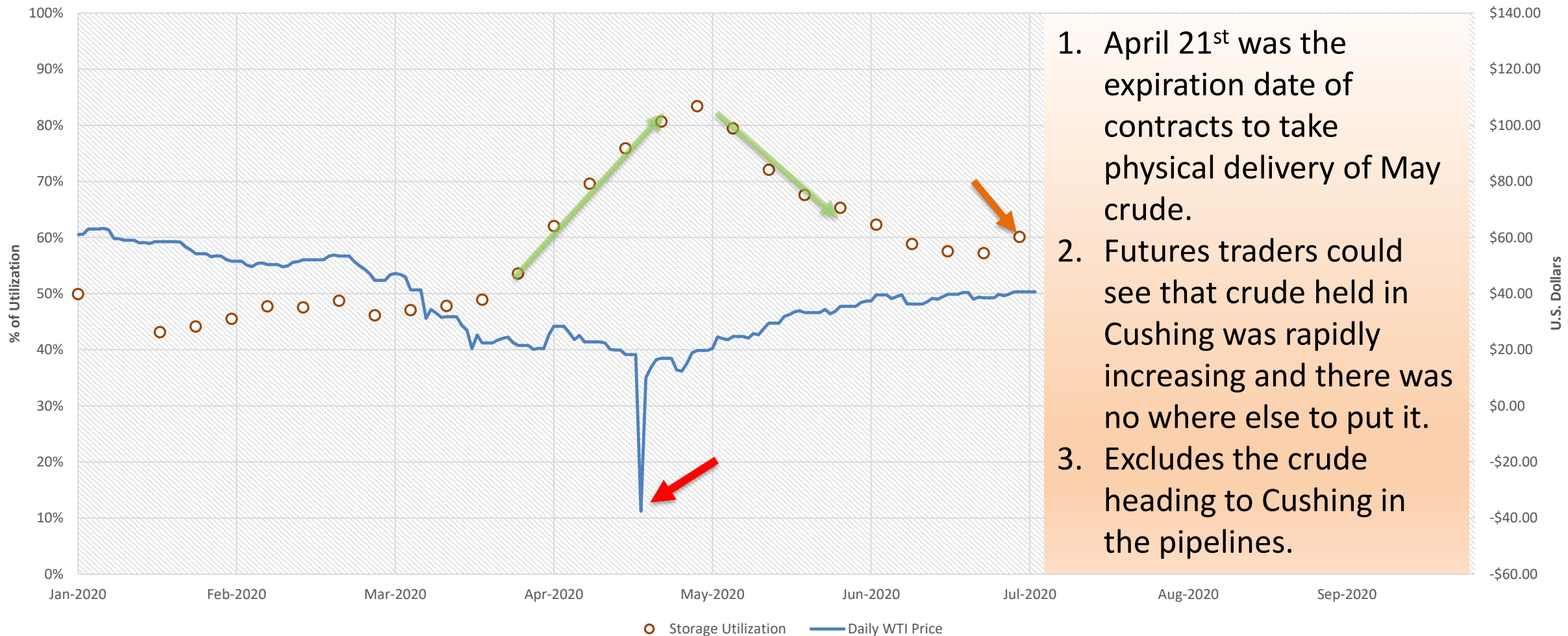
### WTI Price vs Total US Storage Utilization



# OKAY, WHAT HAPPENED APR 20<sup>TH</sup>



### WTI Price vs Cushing Storage Utilization

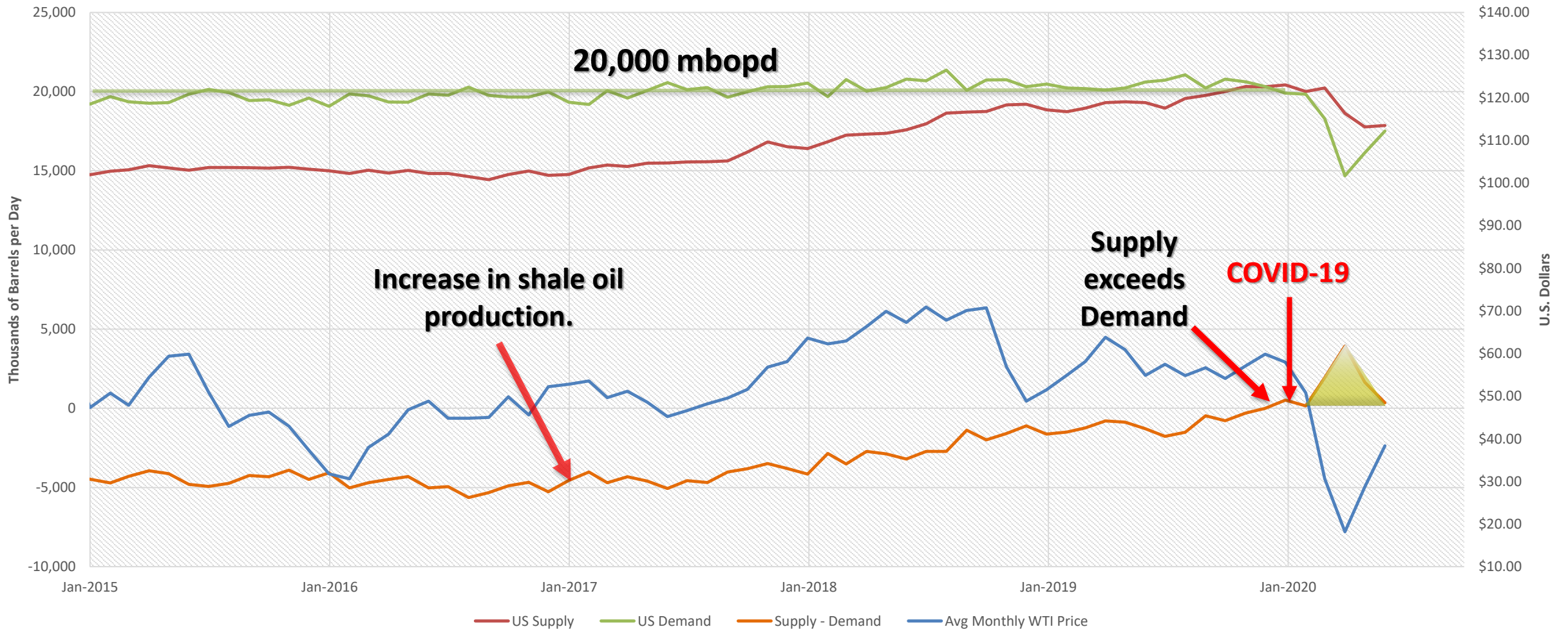


1. April 21<sup>st</sup> was the expiration date of contracts to take physical delivery of May crude.
2. Futures traders could see that crude held in Cushing was rapidly increasing and there was no where else to put it.
3. Excludes the crude heading to Cushing in the pipelines.

# BACK TO U.S. SUPPLY & DEMAND



WTI Price vs US Supply/Demand

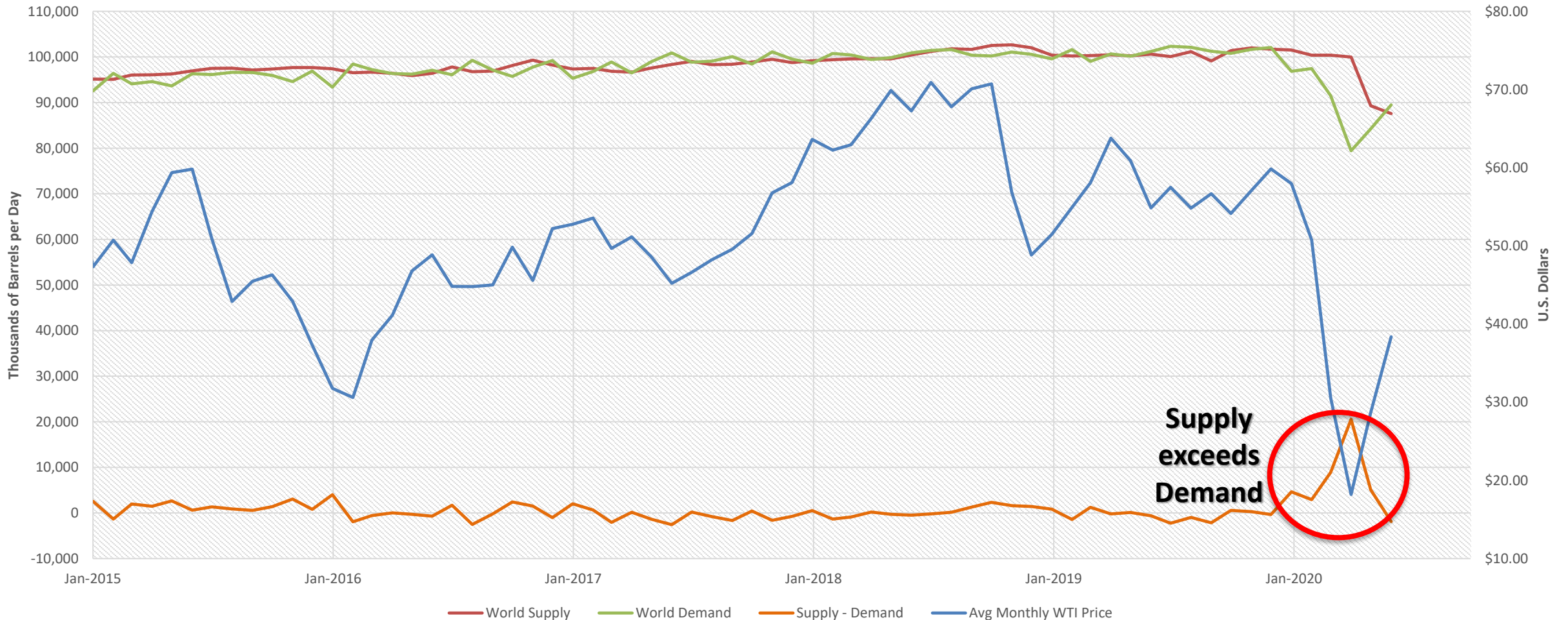


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# WORLDWIDE SUPPLY & DEMAND



### WTI Price vs Worldwide Supply/Demand

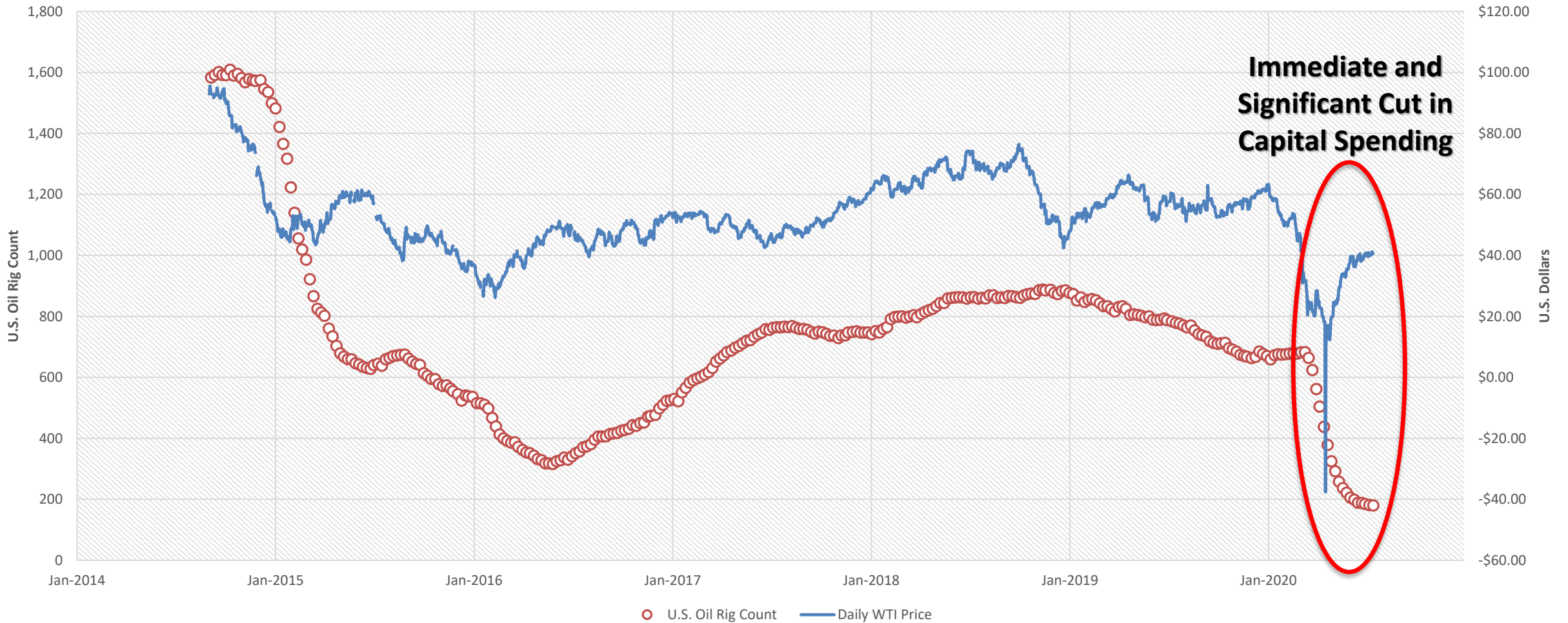


**Supply exceeds Demand**

# REACTION OF INDUSTRY



### WTI Price vs US Oil Rig Count

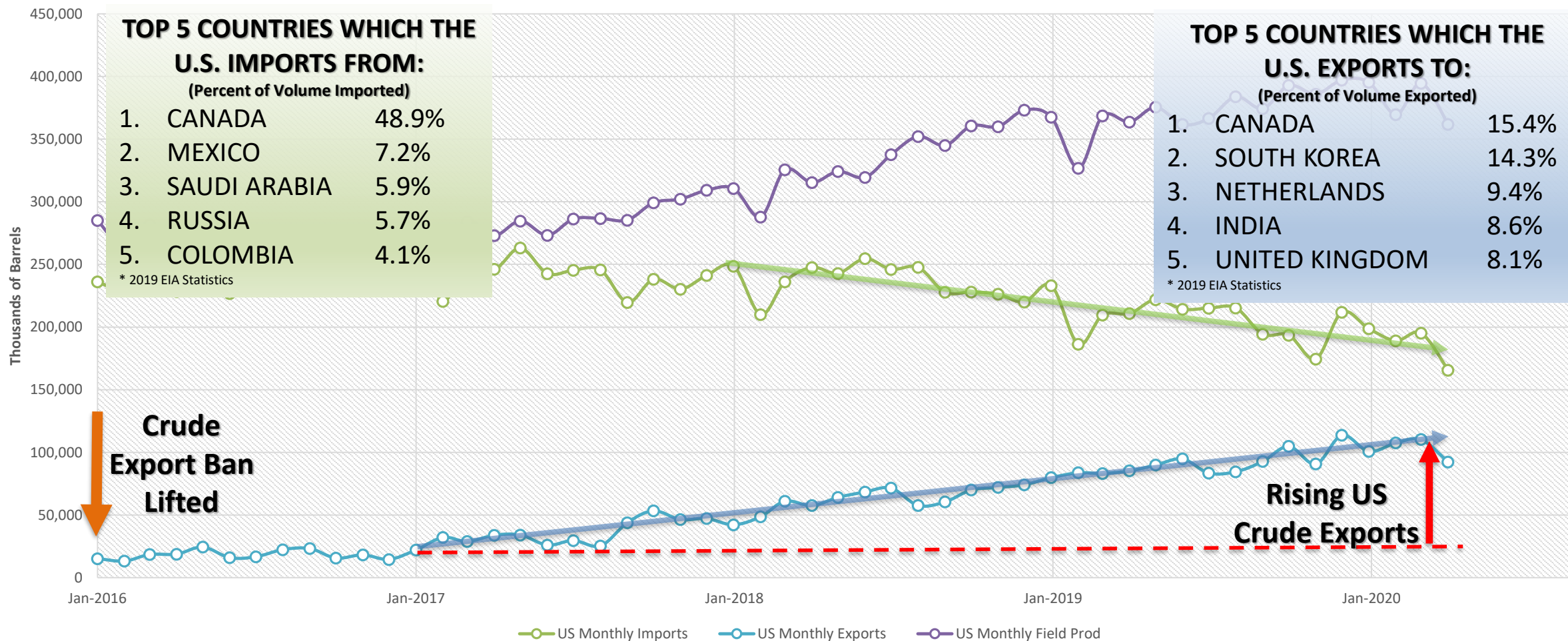


\* Rig Data from Baker Hughes' North America Rotary Rig Count

# EFFECT ON U.S. CRUDE OIL IMPORTS/EXPORTS



## US Crude Oil Field Production and Imports/Exports



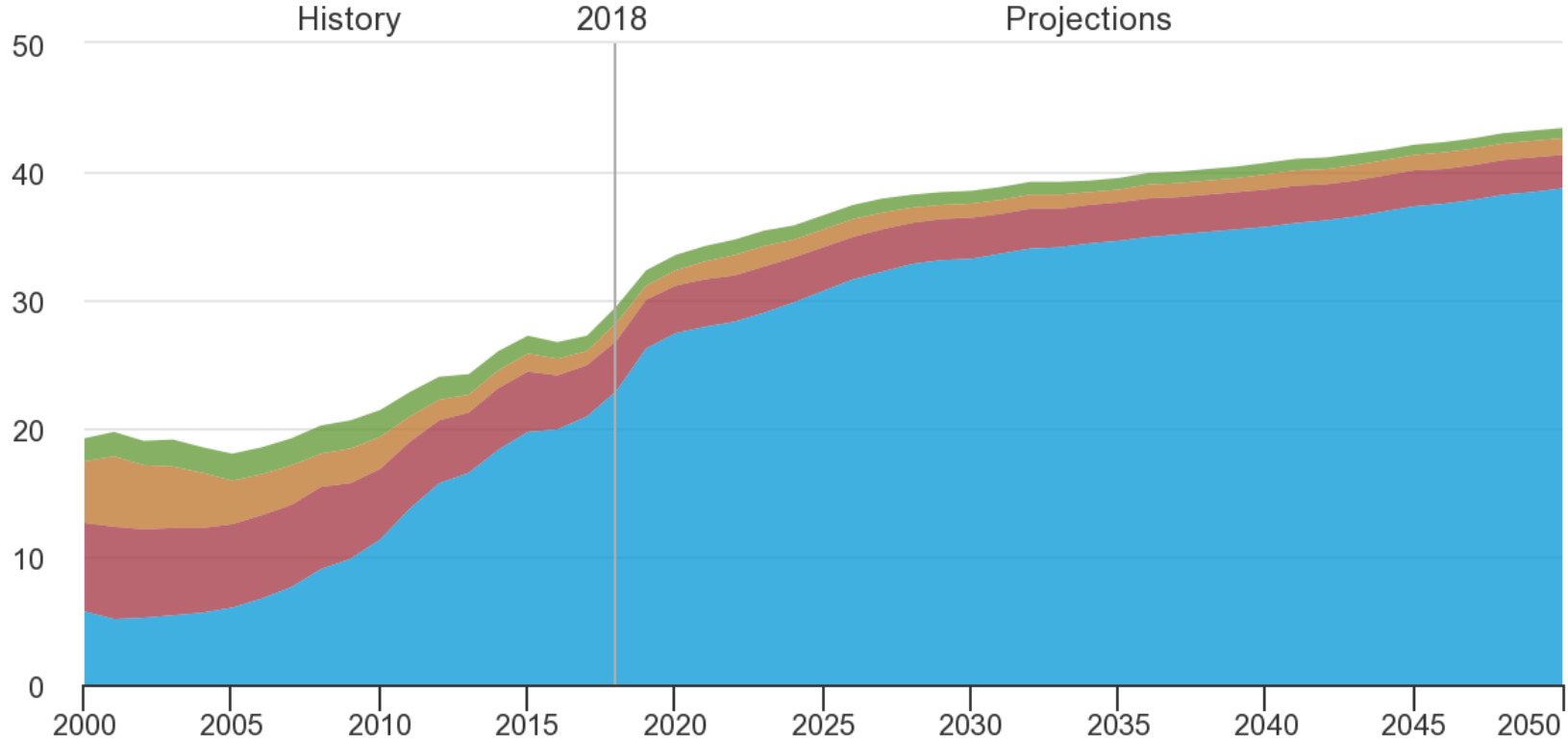
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# HENRY HUB PRICE VS SUPPLY/DEMAND



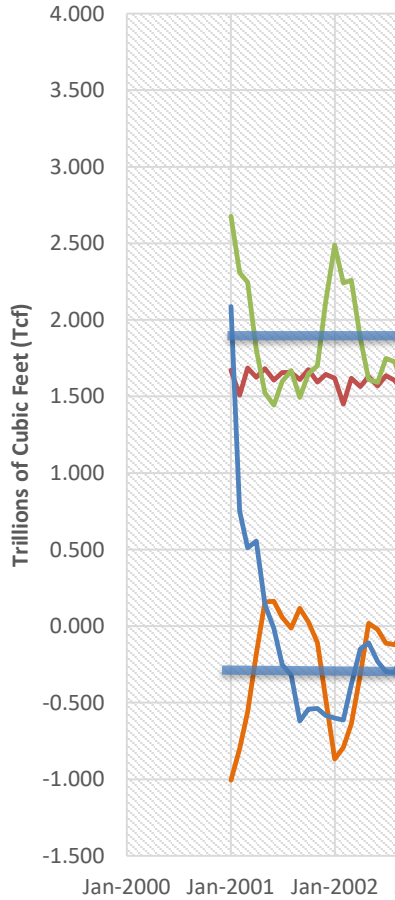
## U.S. dry natural gas production by type, 2000-2050

trillion cubic feet

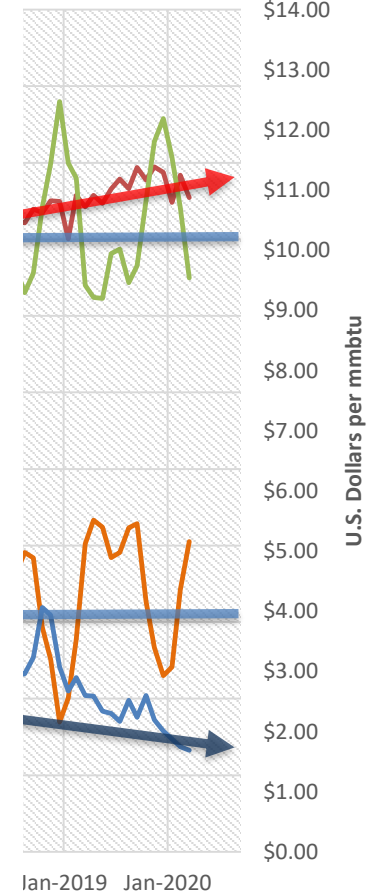


- other
- Lower 48 offshore
- other Lower 48 onshore
- tight/shale gas

Source: U.S. Energy Information Administration, *Annual Energy Outlook 2019 Reference*, January 2019



## Price Demand



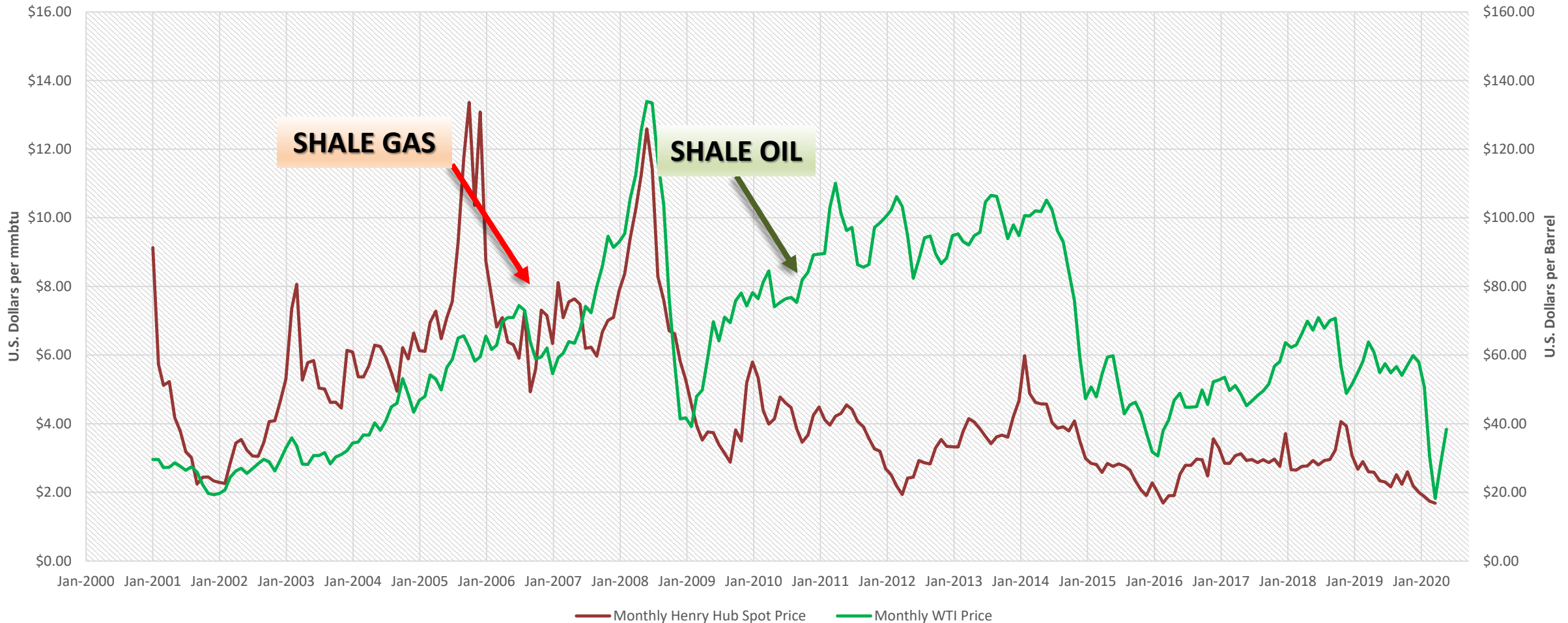
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# HENRY HUB PRICE VS WTI PRICE



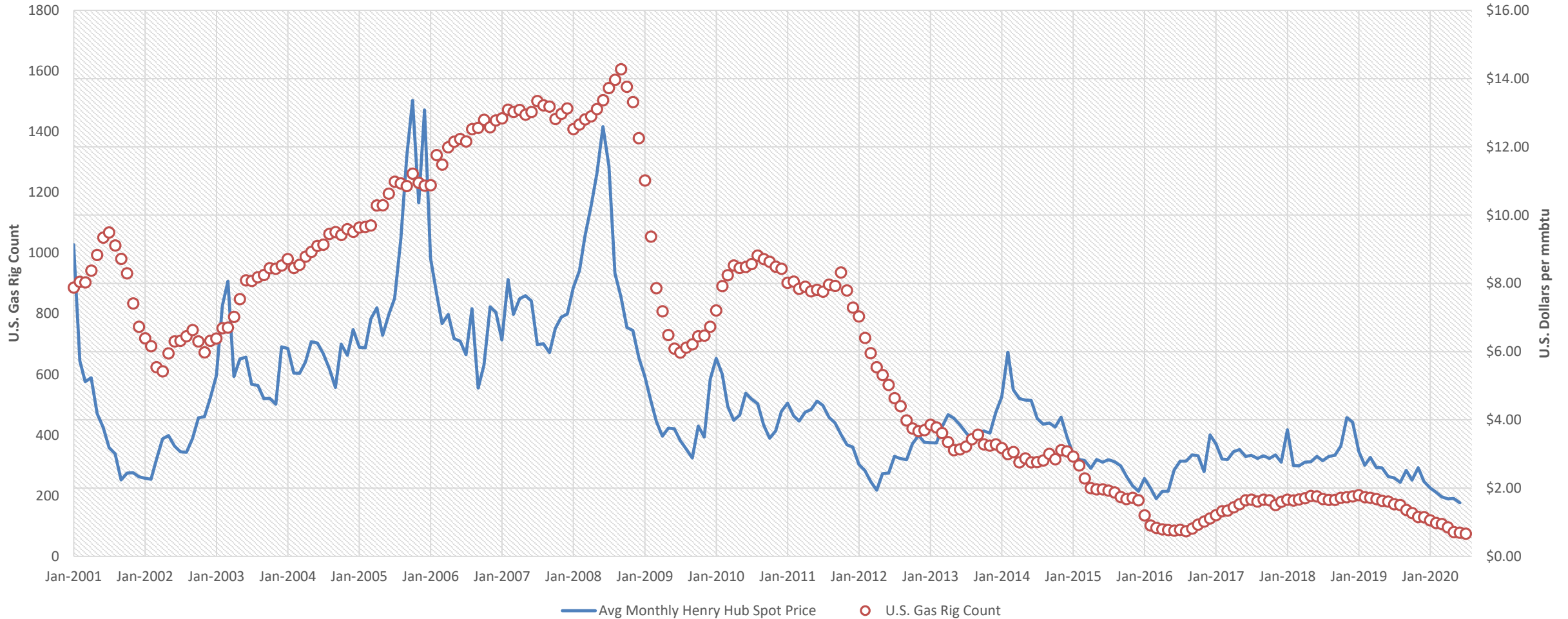
Henry Hub Price vs WTI Price



# REACTION OF INDUSTRY



### Henry Hub Price vs US Gas Rig Count

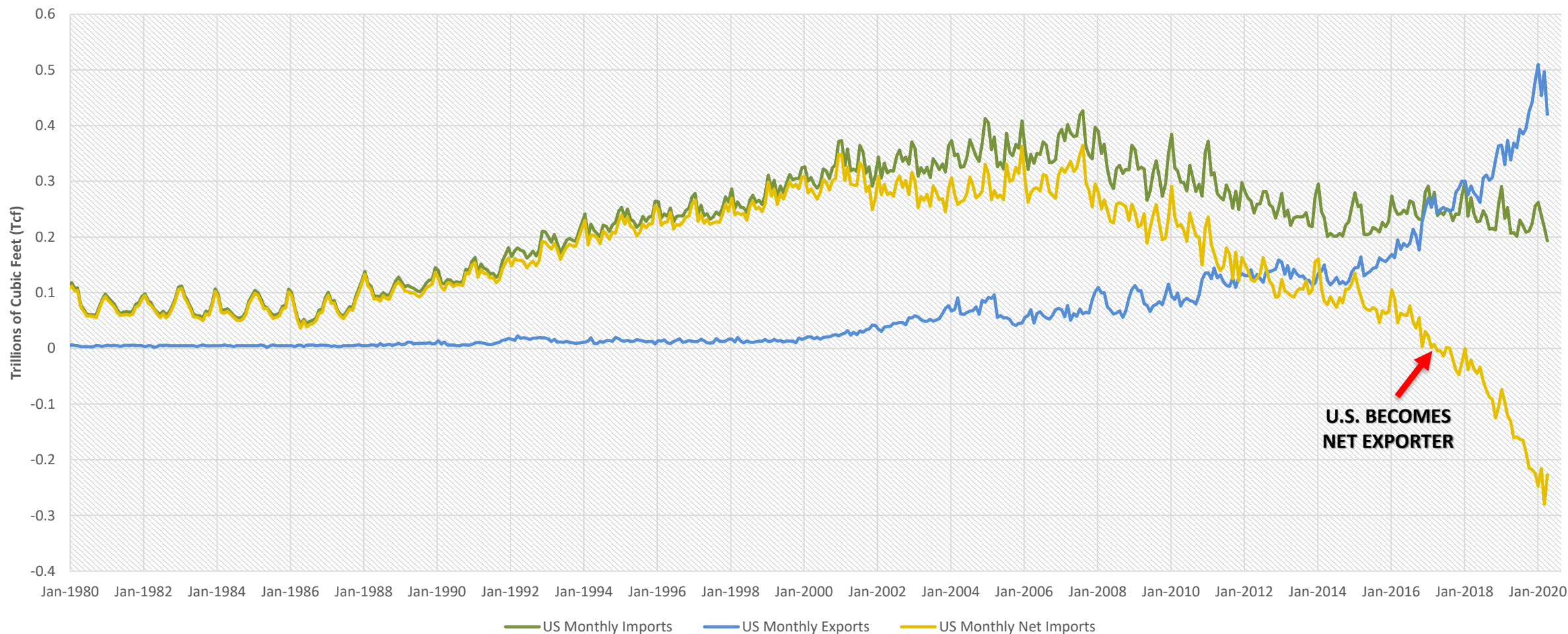


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# EFFECT ON U.S. NATURAL GAS IMPORTS/EXPORTS



## US Dry Natural Gas Imports/Exports



# CONCLUSIONS

- As long as supply exceeds demand, there is a limited margin of error. Any event in the world-wide system will drastically swing oil prices, such as limited storage, shut-downs due to further outbreaks, or price wars.
- The market is efficient. US operators have drastically cut capital expenditures as evident in both the Cushing storage utilization and the oil rig count in the aftermath of the dramatic price drop.

# FURTHER THOUGHTS



- Will investment return to the shale plays?
- Will public companies receive the funds necessary for capital development?
- How will the current bankruptcies of both operators and vendors affect the expertise and capabilities of the oil industry? Are we going to have another generation experience gap in the industry?
- Due to the pandemic, how much of the demand will return?
- Will a minimum ability to take physical delivery at Cushing be a new requirement for the futures market?

# LEHI WOODROME



## Vice President


Lehi has over 19-years of experience in the oil and gas industry. Prior to his 14 years with Ryder Scott Company, he worked for ExxonMobil Development Company on projects located in West Africa and the Middle East. Lehi is experienced in traditional and modern reservoir engineering analysis and methods. His main areas of study have been both the shelf and deep water Gulf of Mexico, onshore California, Louisiana and Texas, offshore China and onshore Nigeria and more recently in the Permian and Eagle Ford basins.

Lehi received his B.S. degree in Chemical Engineering from Texas A&M University. He is a member of the Society of Petroleum Engineers and registered professional engineer in the state of Texas.

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