

# Natural Gas and LNG in the “Perfect Storm”

*ADI Weekly Webinar Series*

April 30, 2020



**ADI Analytics**  
OIL & GAS • ENERGY • CHEMICALS  
CELEBRATING 10 YEARS

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# ADI Analytics is a consulting firm serving oil and gas, energy, and chemical companies with passion, expertise, and rigor



# Fortune 500 and mid-sized companies, start-ups, investors, and governments have hired us to shape decisions globally



# How are we helping clients navigate the oil price crash and COVID-19 impacts?



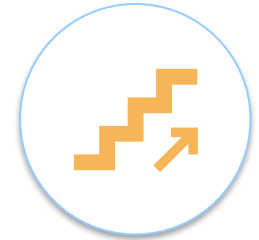
Target the right customers and market segments



Reorient offerings and value props for recovery phase



Benchmark and quickly cut costs to cope with the crisis



Support M&A strategy and due diligence



Reshape go-to-market plans with voice-of-customer research



Refine pricing and sales strategies via market-backed insights



Revisit customer and channel engagement models for recovery



Revisit R&D, innovation, and product devt. portfolios

# Our recent experience in natural gas and LNG markets

1

## E&P Independent

Forecasted outlook for gas and NGL production in various scenarios

2

## Oilfield Service Major

Assessed potential for gas-fueled frac fleets and drilling in key U.S. shale plays

3

## Australian Operator

Developed strategy to supplement gas production for LNG exports

4

## OEM Industrial

Sized 20+ equipment and service market segments in gas and LNG markets for energy strategy

5

## Large PE Investor

Led due diligence on an LNG export project in North America

# Our research and data in natural gas and LNG markets

1

## North American Small-Scale LNG Report

Annual in-depth study and quarterly research service produced since 2013

2

## Global Small-Scale LNG Report

Annual in-depth study and quarterly research service launched in 2020

3

## Global LNG Project Benchmarking Tool

Annual study with on-demand analytics to rank LNG projects produced since 2011

ADI also maintains a number of databases across the natural gas and LNG markets covering global assets, pricing, costs, economics, and contractual structures

# Oil & gas in a “perfect storm” from price crash and COVID-19

## Oil & Gas in the Perfect Storm

### Oil & Gas in the Perfect Storm



March 2020

We could have borrowed from Gabriel Garcia Marquez's *Love in the Time of Cholera* to title this piece, "Oil & Gas in the Time of Coronavirus" – but that would only recognize the coronavirus disease of 2019 (COVID-19) and its impact on oil demand and ignore the black swan in the concurrent supply shock posed by Russia's refusal to typenate itself with OPEC again in cutting oil production. Broader uncertainties from an election year in the U.S. and growing investor clamor for shale profitability and energy transition initiatives add further, even if now less urgent, uncertainties.

We at ADI instead see the "perfect storm" as a better metaphor for the collective impact from the Russian-Saudi spat and COVID-19. Metaphors and clever writing aside, how should we think about this perfect storm? We try to address this here with our firm's research and consulting work.

#### Why are we here?

The oil markets – led by Saudi and OPEC through the majors and the shale operators to the traders and analysts – were blindsided by Russia's refusal to cut oil production with OPEC in an year when oil demand growth was expected to decline independent of the coronavirus.

Saudi announced plans to raise production from 9.7 million bpd in March to 12.3 million bpd starting April 2020.

Russia made some noise about OPEC cheating on its commitments but abandoned its three-year alliance with OPEC primarily to harm U.S. shale supply, which has been, as such, constrained by rising investor disenchantment. Larger geopolitical reasons such as U.S. sanctions on Rosneft and Nord Stream 2 also motivated Russia which is today in a stronger economic position relative to the 2014 oil price crash.

#### Surveying the damage

Unwilling to lose market share and also force Russia to return to negotiations, Saudi announced plans to raise production from 9.7

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## Locking Both the World and Oil Down

### Oil & Gas in the Perfect Storm: Part 2 – Locking Both the World and Oil Down



April 2020

Read our first "perfect storm" article to see how oil prices evolve going forward.

A third of the world's population is today living in countries that have enforced moderate to severe lockdowns on virtually all human activity to mitigate the spread of COVID-19. In all, 27 countries have imposed lockdowns with nearly all of them opting for severe measures. Only three countries – Israel, Ireland, and the Czech Republic – have chosen to impose moderate lockdowns. In addition, there are a handful of countries where lockdowns have not been mandated but citizens are being cautious and have voluntarily imposed limits on their activities.

#### How much oil demand is impacted?

These lockdowns are collectively impacting oil demand in an unprecedented fashion. ADI estimates that the 27 countries that are under moderate to severe lockdown measures consume ~61 million barrels of oil daily. Including other countries such as Brazil where gangs are enforcing lockdowns, almost two-thirds of global oil demand – ~66 million bpd – is under threat of significant impact from COVID-19 (see Exhibit 1).

ADI estimates that the countries under lockdown consume almost two-thirds of global oil demand

Exhibit 1. Global oil demand impacted by COVID-19, million bpd.



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## Riches to Rags: Downstream O&G in Perfect Storm

### Riches to Rags: Refining in the Oil & Gas "Perfect Storm"



April 2020

Read our first "perfect storm" article to see how oil prices evolve going forward.

The refining panel session at the 2020 ADI Forum – our consulting firm's annual oil & gas conference – in January this year was brimming with justified optimism. After several years of questioning and cross-questioning, IMO 2020 – the International Maritime Organization's rule limiting sulfur in marine fuel oil – was finally here and refiners were getting ready for a strong year with robust diesel margins.

Production planners at many refineries had advanced maintenance into 2019 so they could operate throughout 2020 and take full advantage of the higher margins they were anticipating. Forecasting higher demand for low-sulfur diesel as blendstock for marine fuels, many refiners in the U.S. had also started tweaking their product mix to favor diesel over gasoline.

Coronavirus has interrupted this party in a brutal manner. Forget higher margins, refiners today are struggling to maintain operations, find storage for growing inventories, and service debt as refinery margins have plummeted.

#### Global fuel demand collapse

As illustrated in a prior note from ADI's on-going research on the oil & gas "perfect storm", nearly two-thirds of oil demand is in countries that are under lockdowns collapsing demand for refined products. In the U.S., the most recent weekly demand for gasoline was ~45% lower than normal demand of ~6.2 million bpd averaged over 2019.

Read our second "perfect storm" article to learn how much oil demand will coronavirus destroy?

Inventories of fuels and oil, therefore, are now building quickly across the world to the point that in some places storage capacity is running out. India's Bharat Petroleum has disclosed storage capacity constraints as fuel demand has fallen dramatically in a lockdown that was recently extended again. Along with crude oil, fuel inventories in the U.S. too jumped and the market is finding creative solutions. Enterprise Products reported that it is storing gasoline and diesel in NGL wells and operating the Seaway pipeline in bidirectional model. Someone has also proposed using pipelines as short-term storage vessels.

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# ADI is offering a new research service to help clients navigate the “perfect storm” from the oil price crash and COVID-19

ADI “Perfect Storm” Research Service				Service Deliverables	
1	Oil & gas price updates and outlook	7	Deep dive into fuels and refining	Weekly markets review	
2	COVID-19-related oil demand impact / recovery	8	Deep dive into natural gas and LNG markets	In-depth segment reports	
3	Deep dive into upstream incl. shale, conv., offshore	9	Deep dive into petrochemicals	Market data spreadsheets	
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6	Deep dive into midstream and NGLs	12	Investor implications and opportunities	<p>Contact us at                      +1 (832) 768-8806 or  <a href="mailto:info@adi-analytics.com">info@adi-analytics.com</a>                      to learn more</p>	





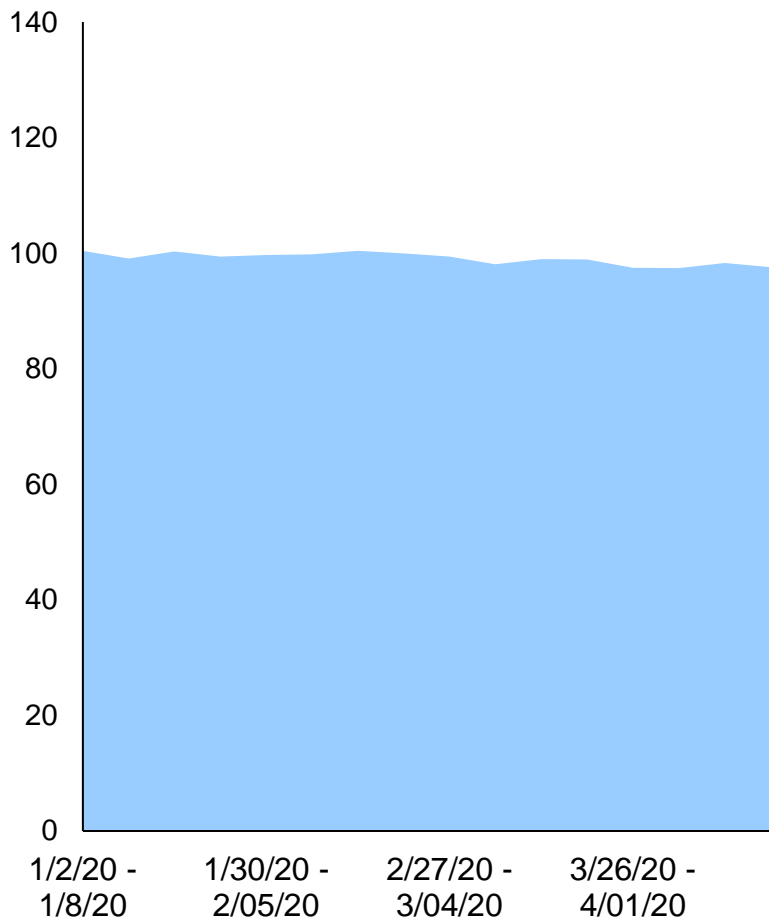
**Uday Turaga**  
ADI Analytics  
CEO



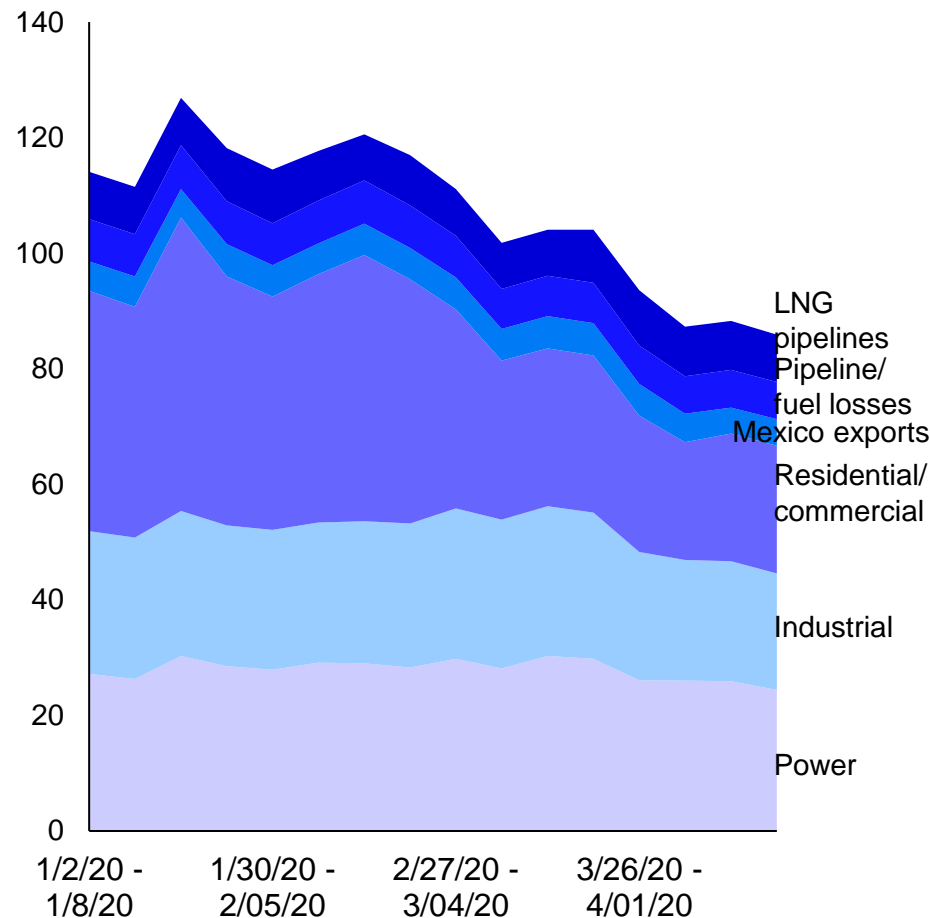
**Panuswee Dwivedi**  
ADI Analytics  
Analyst

# Natural gas supply is holding up but demand is declining driven by cuts in commercial and residential markets

**U.S. Natural Gas Supply  
(Bcf/d)**

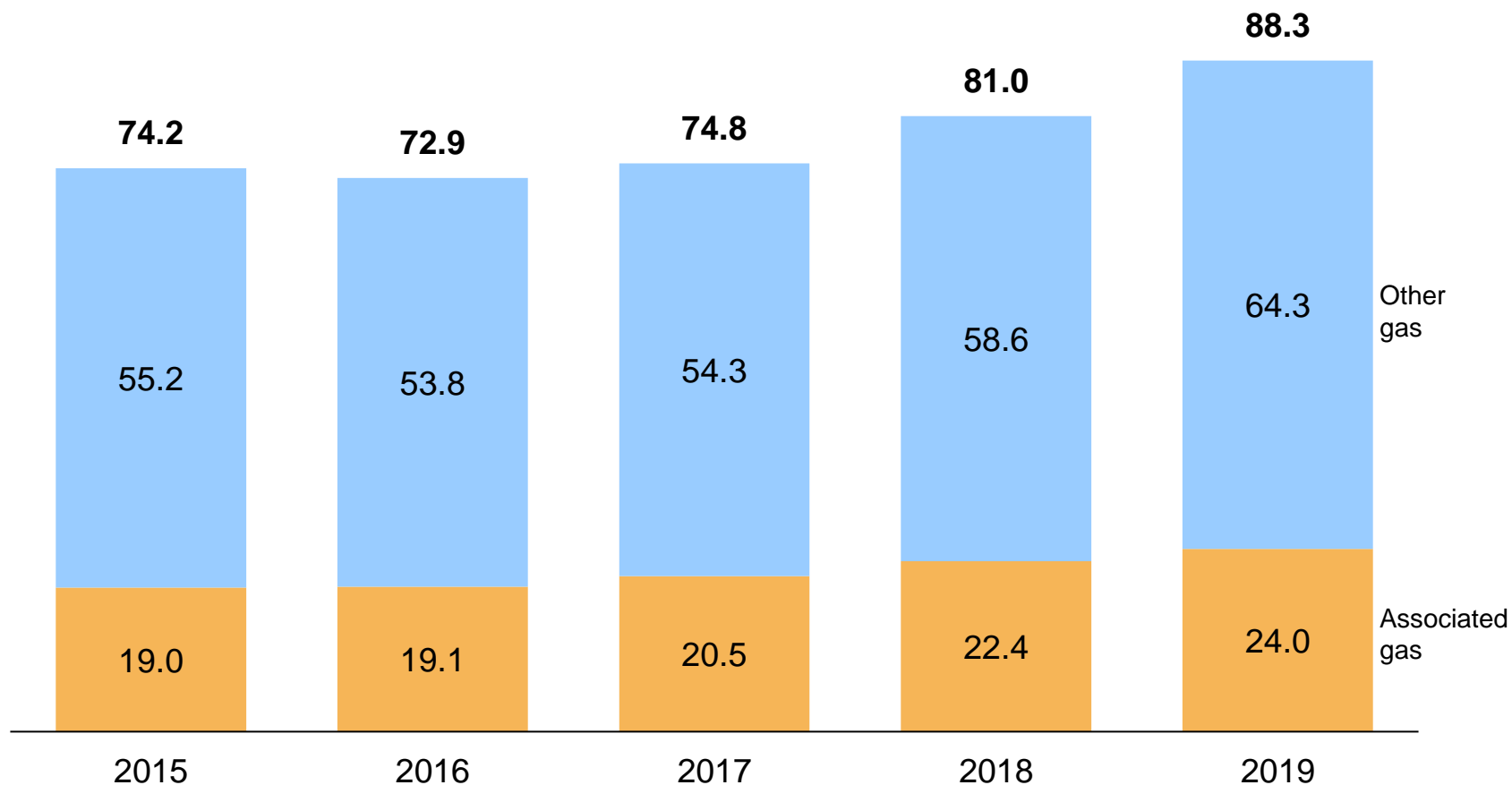


**U.S. Natural Gas Demand  
(Bcf/d)**



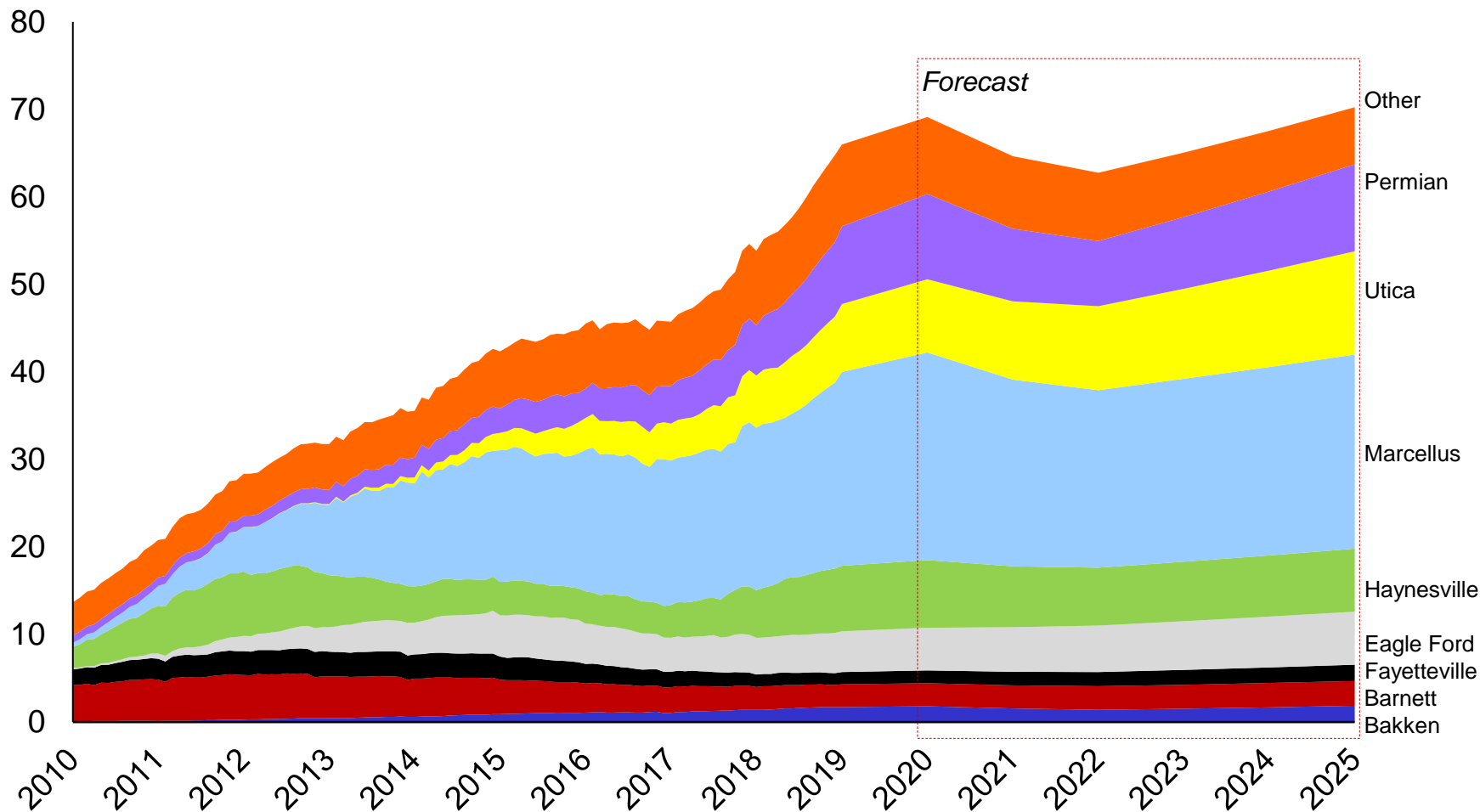
# A significant fraction of natural gas production growth has come from associated gas but will fall significantly now

U.S. Total Gas Production  
(Billion Cubic Feet Per Day)



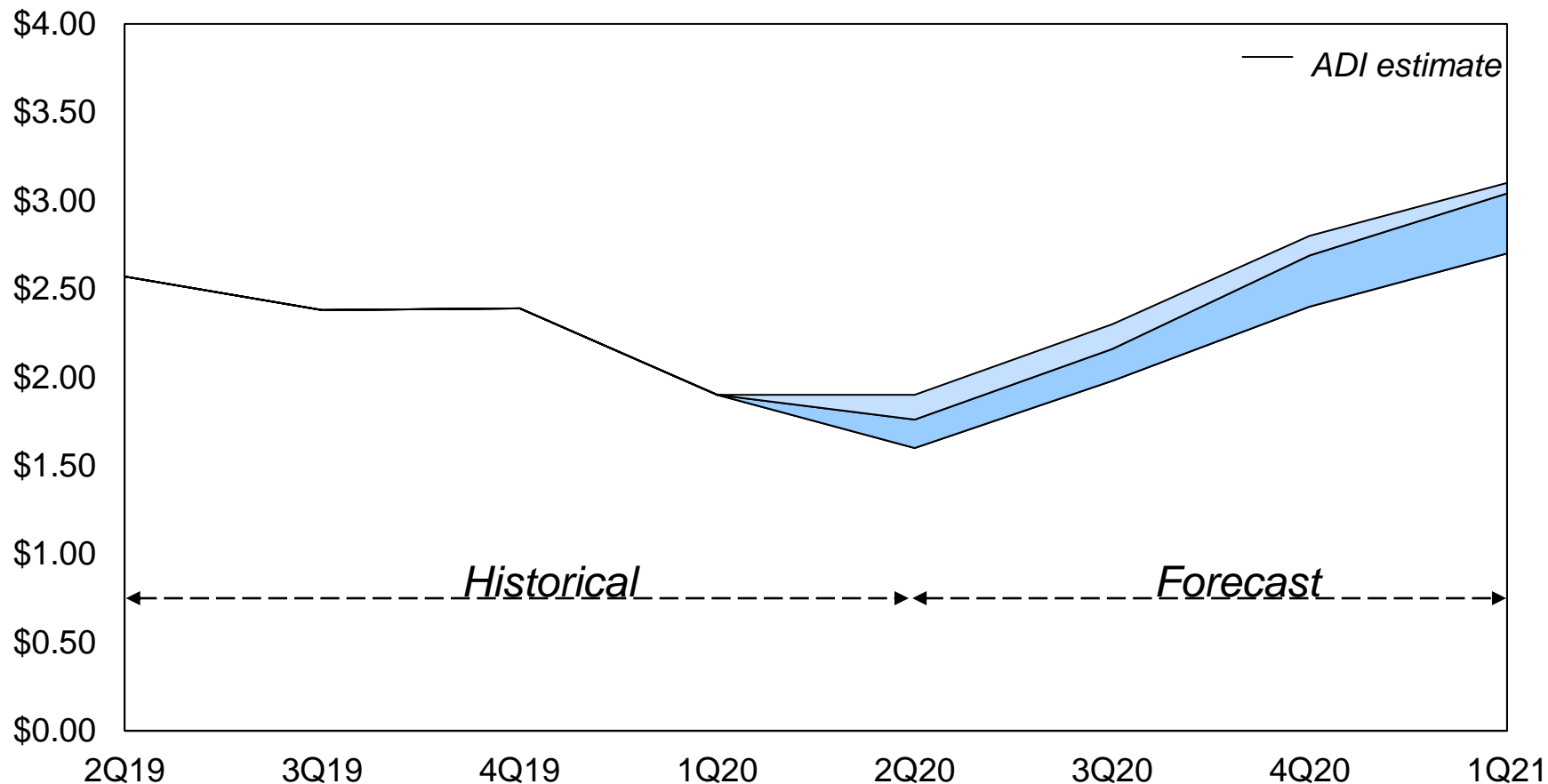
# Going forward, we see a significant dip in shale gas production in the U.S. with gains starting in 2024-25

U.S. Dry Shale Production by Basin  
(Billion Cubic Feet Per Day)



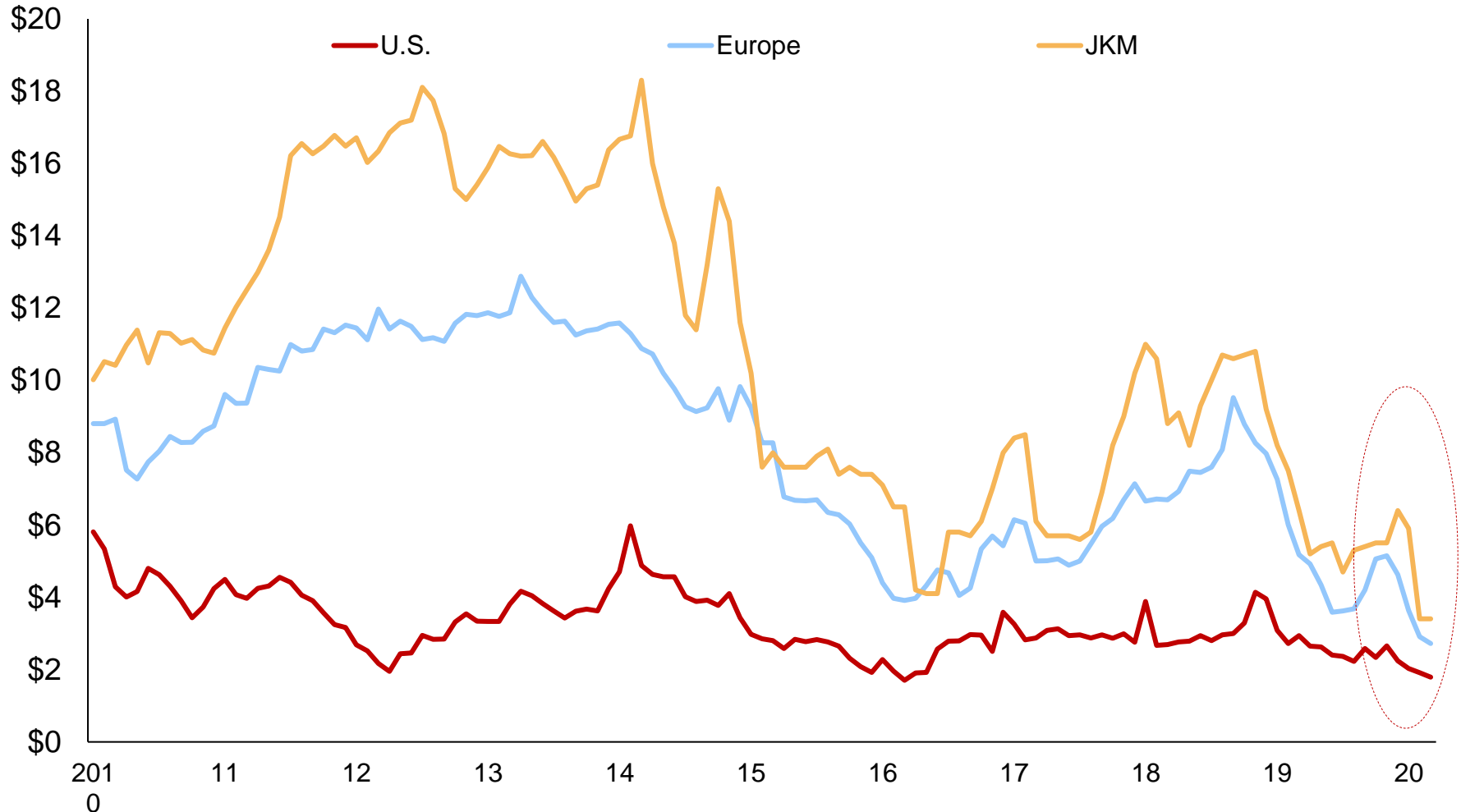
# Reduced capital spending and drilling activity will result in lower natural gas production in 2020

Henry Hub Spot & Forecast Prices  
(USD Per Million Btu)



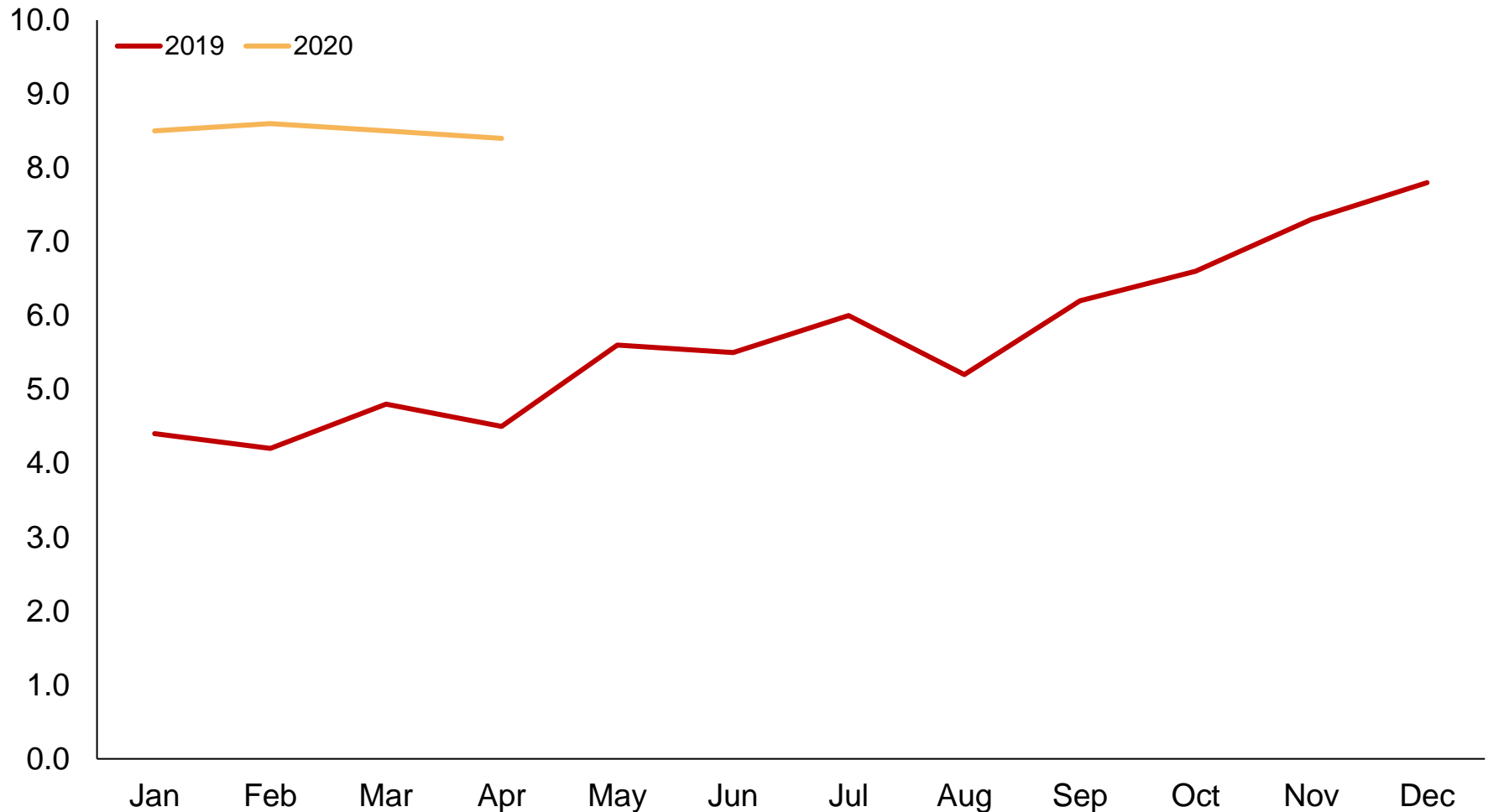
# LNG pricing is commoditizing driving in some part by the emergence of lower-cost U.S. supply

Natural gas and LNG Prices  
(USD Per Million Btu)



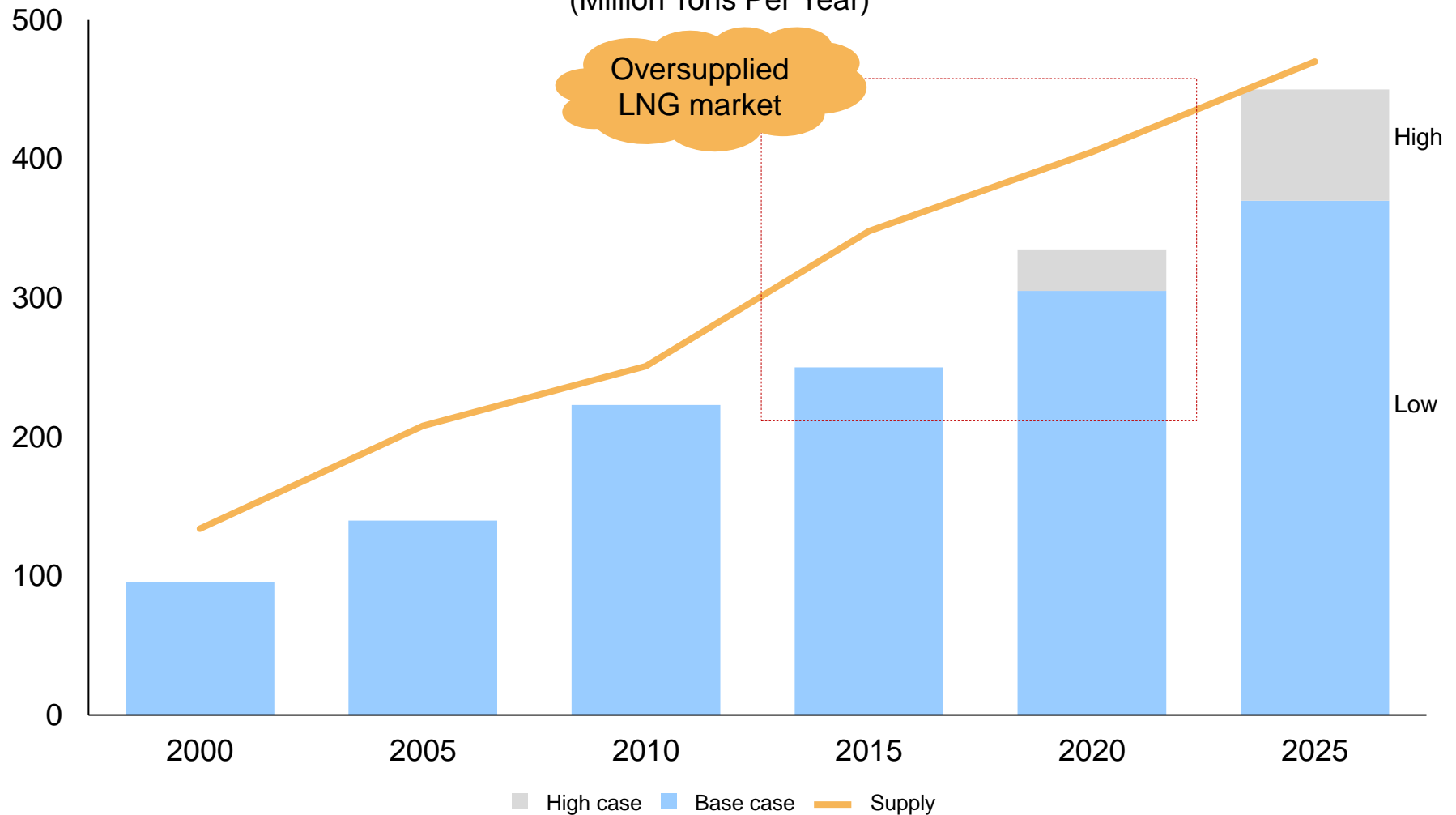
# LNG exports have accounted for a significant volume of growth in U.S. gas demand

Feed Gas Flows to U.S. LNG Terminals Y/Y  
(Bcf/d)



# LNG market is oversupplied as demand growth has slowed but new supply has grown dramatically

Worldwide LNG Demand and Supply  
(Million Tons Per Year)



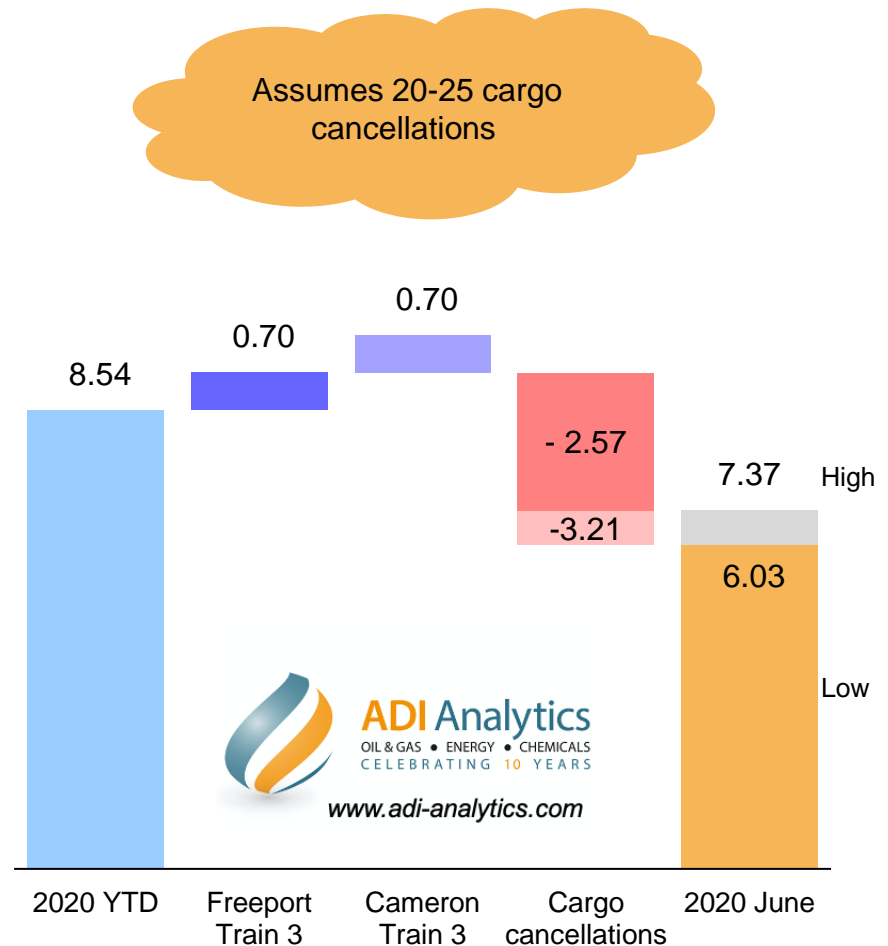


# Cargo cancellations from Asian and European firms will negatively impact U.S. LNG exports

## Discussion

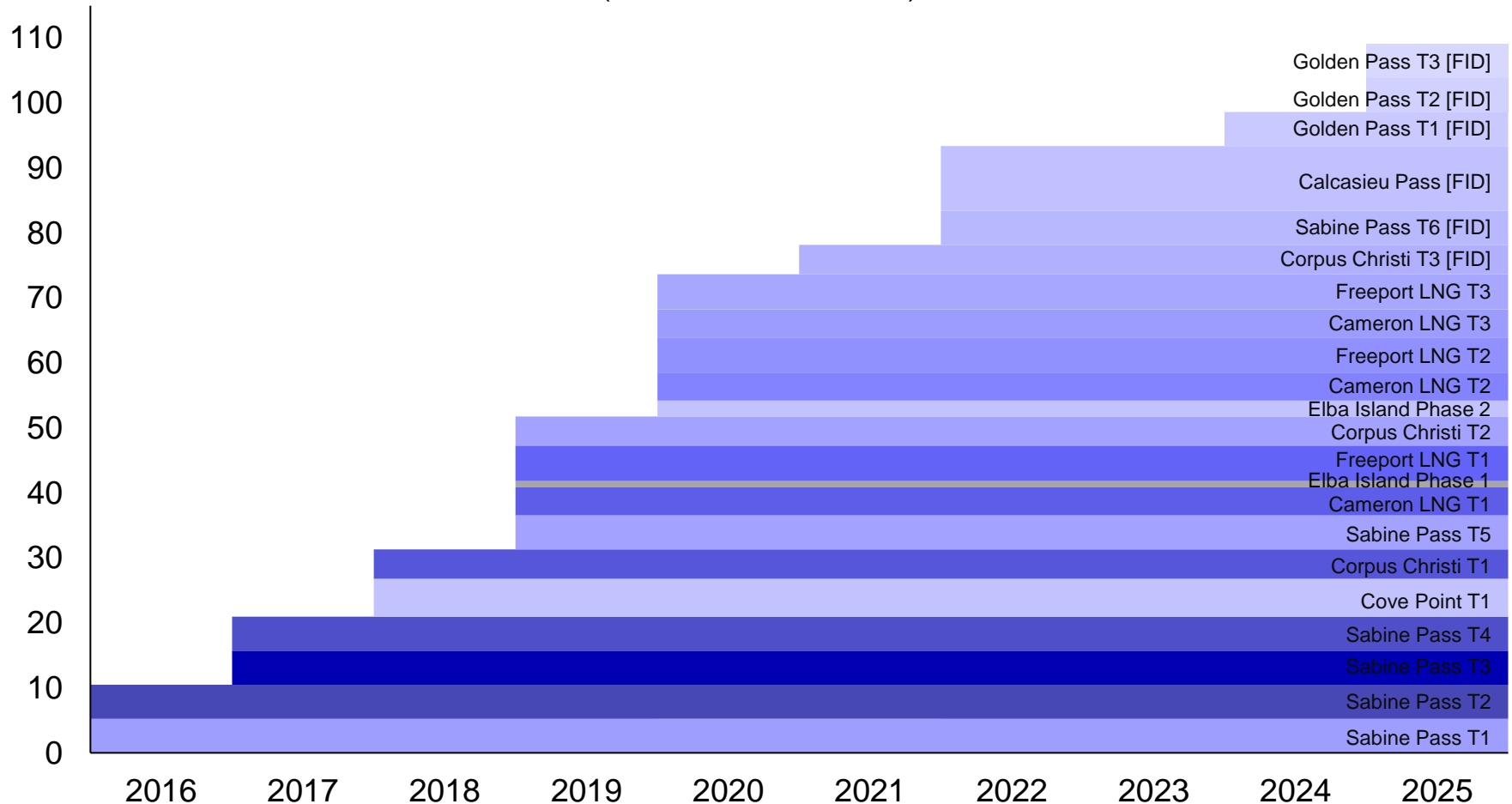
- Many firms in Europe and Asia have started cancelling U.S. LNG cargoes...
- ...as export markets are at a low premium or even at a discount to Henry Hub prices
- Almost 10 Asian and European firms are likely to have cancelled 16 cargoes from Cheniere's Sabine Pass and Corpus Christi terminals
- Another four cargoes cancelled from Freeport
- As the price spread between European gas hubs and northeast Asia spot prices narrows, LNG deliveries to Europe will be more economical than to northeast Asia
- However, the demand in Europe has fallen due to weak demand in the industrial and power sector because of the Covid-19 outbreak

## Likely U.S. LNG Exports in June 2020 (Billion Cubic Feet Per Day)



# U.S. LNG supply is expected to grow significantly with additional trains scheduled to come online in 2020

**U.S. LNG Supply**  
(Million Tons Per Year)









# First wave of projects in hindsight had multiple advantages that are less likely for the second wave ...

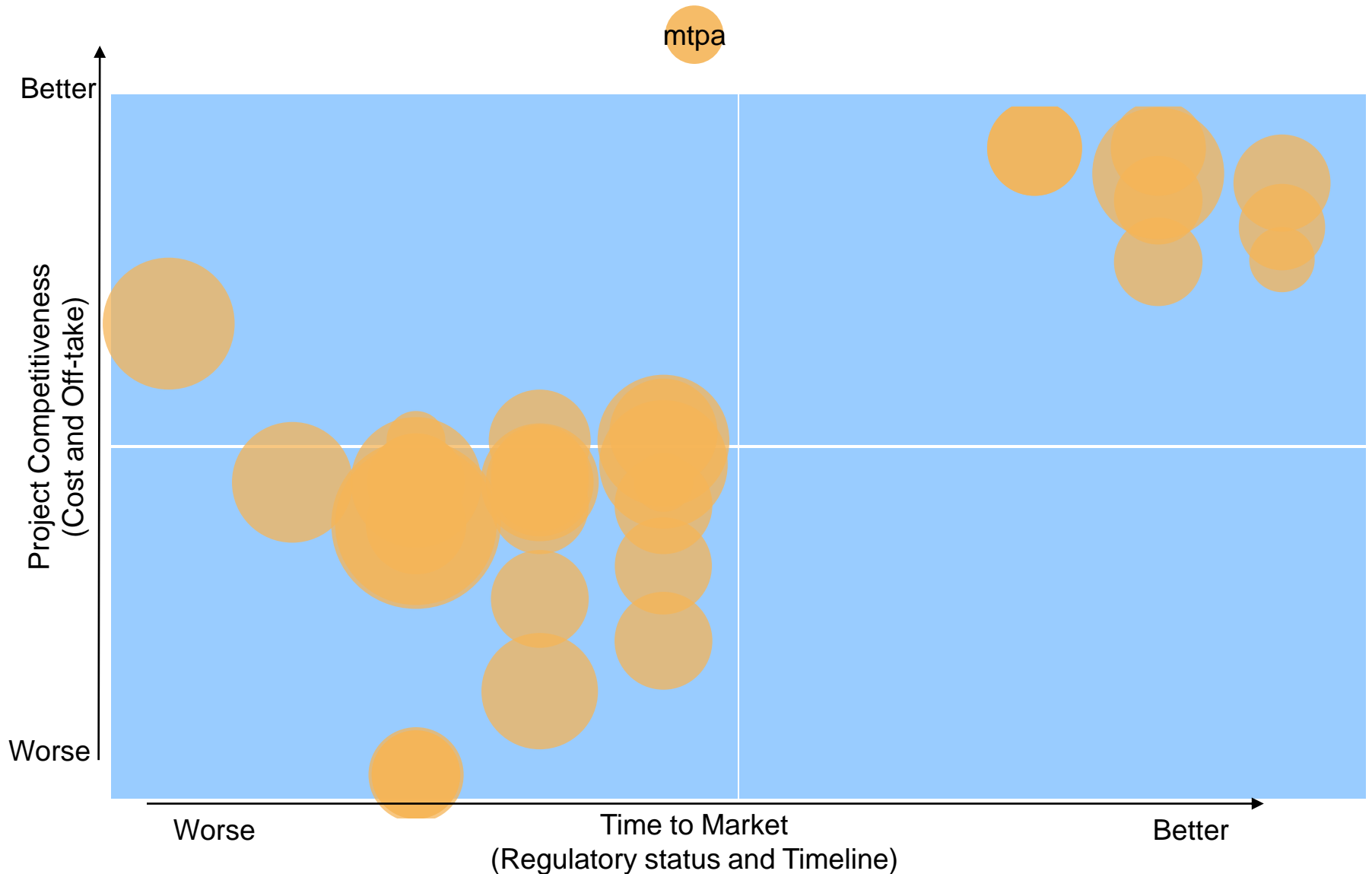
Tolling model limited several risks for first wave of projects

Financing model was friendlier to lenders

First-to-market advantages for the first wave of LNG projects

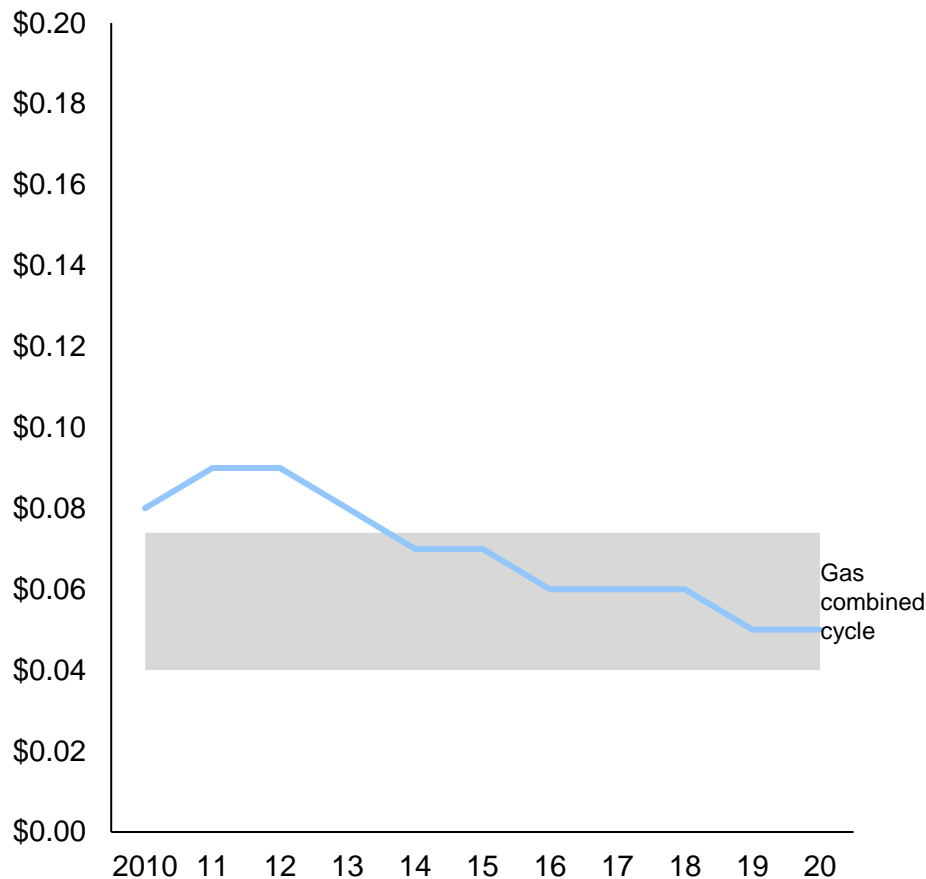
		Risks in LNG Projects	
		SPA	Tolling
1	LNG pricing risk		
2	Feed gas supply risk		
3	Project execution risk		

# We still see advantaged LNG projects in the second wave going forward

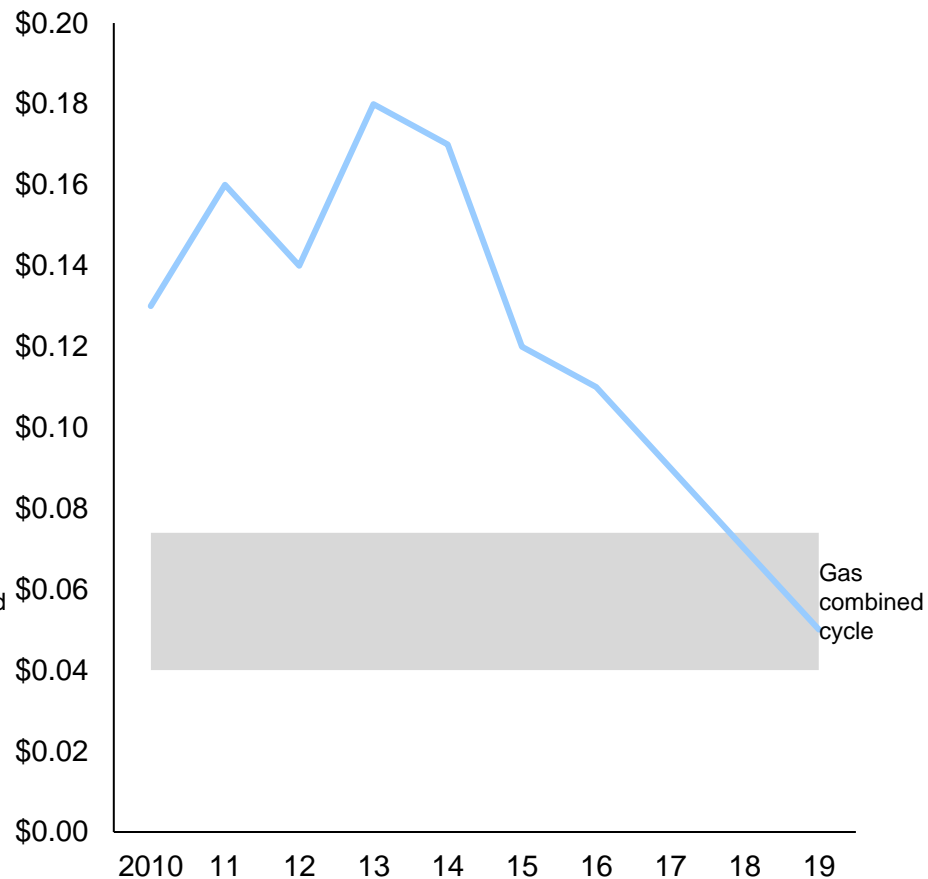


# Renewable power project auctions have witnessed prices that are at par or better than gas-fired power generation

## Onshore Wind Auction Prices (USD/kWh)



## Solar PV Auction Prices (USD/kWh)



# Q&A session



**Uday Turaga**  
ADI Analytics  
CEO



**Panuswee Dwivedi**  
ADI Analytics  
Analyst

Please type your questions or  
comments in the chat box

# Key questions in natural gas and LNG markets

1

How are LNG projects planned globally impacted by the current situation?

2

What does the oil/gas price correlation look like today?

3

Are other gas conversion projects still favorable in the current scenario?

4

What will U.S. gas and LNG look like in the long term?

5

How will gas-focused midstream fare in this market?

# ADI webinar series on oil & gas in the “perfect storm”

April 17	Midstream (pipelines, gas processing, NGLs)	May 21	Industrials & OEMs - How to prepare for the downturn?
April 23	Downstream (refining and fuels)	May 28	Capital projects and engineering, procurement, and construction (EPC) in the oil & gas downturn
April 30	Natural gas and LNG	June 04	What will the new "normal" look like in oil and gas?
May 7	Petrochemicals and plastics	June 11	Renewable and low-carbon power markets in a post-COVID world
May 14	Power and utilities	June 18	Oilfield services: Survival outlook in the oil & gas downturn

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