THE STREET STRIKES BACK

PREVIEW | FundamentalEdge Report | October 2019

ENVERUS

Contents

*This is a **PREVIEW** of a 50+ Page Report*

ENVERUS

Introduction and Key Takeaways

- ***The Street Strikes Back*** is the 4Q2019 installment of Enverus FundamentalEdge Series. This market outlook service presents our current view of the oil, natural gas, and NGL markets and where they are headed over the next five years.
- Crude markets found a brief moment of support after news broke of the September 14th attack on key Saudi oil facilities, with front month ICE Brent contracts rallying ~15% on the first trading day after the event. Backwardation in the Brent structure also briefly strengthened to over $1.30/bbl in the prompt as it was announced that Saudi Aramco planned to fill the gap in its output by drawing down on inventories (much of which are held outside the kingdom). Markets have since shrugged off the attack’s impact on Saudi spare production capacity; prompt Brent futures are trading close to levels seen immediately before the attack, and the front spread has eased off of recent highs. Even with the steep production losses from Venezuela and Iran this year, physical markets remain well supplied. Preliminary data imply global petroleum stocks drew in the third quarter and stocks are expected to draw again in the fourth, but large supply/demand imbalances are in our outlook for early 2020 as total petroleum demand continues to soften and non-OPEC production ramps up further. Although US tight oil production growth is ostensibly slowing with WTI trading in the mid-50s, production growth in Brazil and Norway will augment US supplies and push non-OPEC crude and condensate production growth to 2 MMBbl/d next year.
- There were lots of developments in the natural gas market over the past months including the start of the first greenfield takeaway pipeline in the Permian, LNG exports set a record high during the summer, the start of a new pipeline export to Mexico and strong production growth in the Marcellus and Haynesville. In 2019, supply gains have outpaced demand, causing natural gas prices to lose over $1.00 per MMBtu, from $3.64 settlement in January to $2.43 in October. Enverus expects the price weakness to continue in 2020 with an average $2.60 per MMBtu. After 2020, prices are expected to return to $2.75 per MMBtu in order to allow natural gas production to grow at a rate that meets the expected demand growth.
- During 2019, ethane and LPG prices have been depressed, mainly due to record or near-record levels of production and inventories. A slew of fractionation capacity is set to come online in the first quarter of 2020. However, recent storms and flooding along the Texas Gulf Coast near Mont Belvieu may delay some of these projects, possibly extending fractionation tightness along the Gulf Coast as y-grade production continues to increase, particularly out of PADD 3 and the Permian.
- Operators were shown no mercy in Q2’19 earnings season. Infrastructure constraints and spacing issues caused sell-offs, while shareholder returns and free cash flow surprises continue to drive the gains. Most small to mid-sized operators are sticking to front half weighted capex programs, but lower prices did little to cause revisions to D&C plans for the remainder of the year.

ENVERUS

Crude Oil Prices: 2014-2019 Drivers

Bullish sentiment was only briefly restored on the first trading day after the September 14th attacks in Saudi Arabia. Since then, market participants have largely shrugged off the incident.

Even as market participants keep an eye on Saudi-Iran tensions, flat price has gone back to trading at levels close to where it was before the attacks.

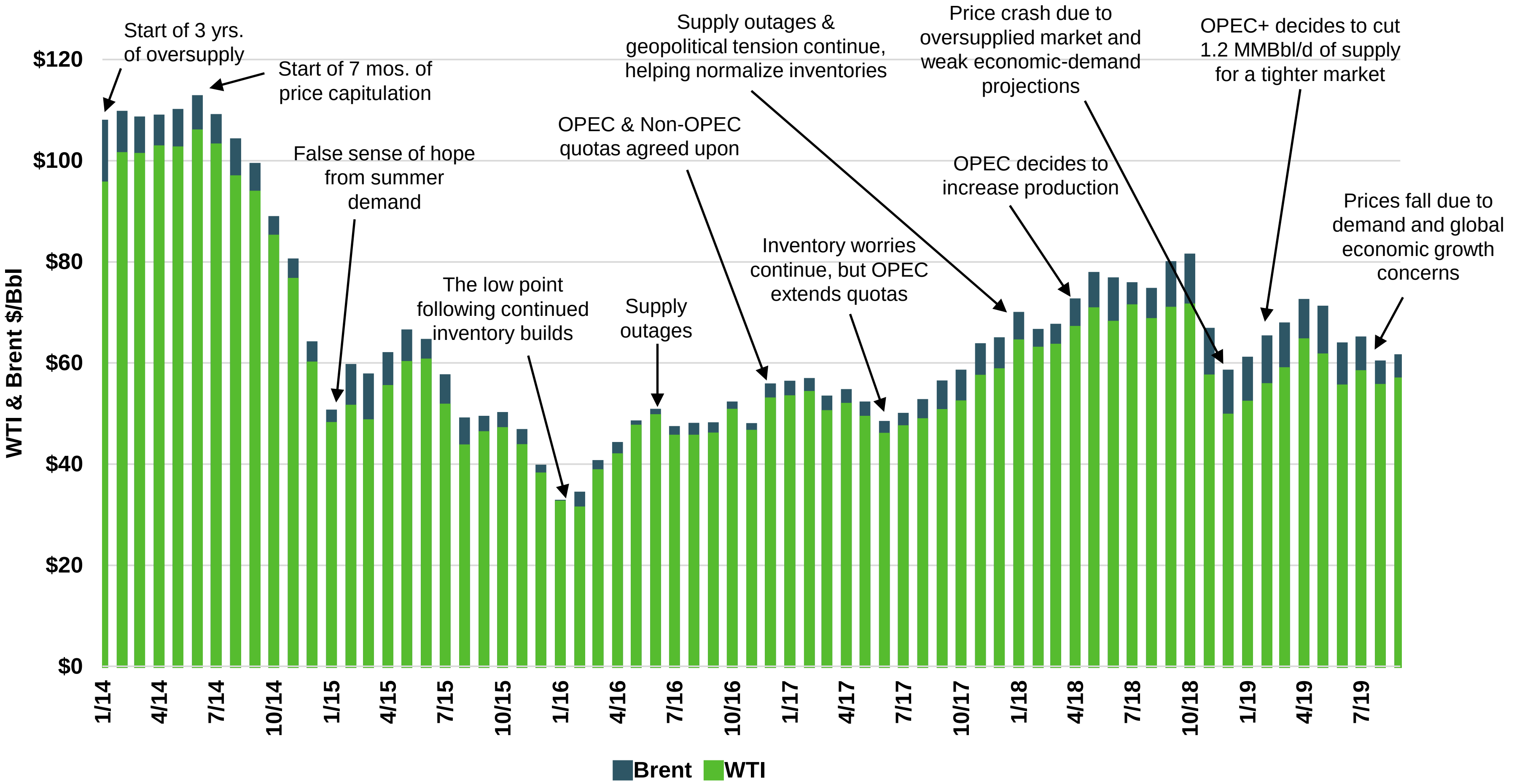
With inventories currently drawing and spare production capacity reduced, backwardation in the Brent structure briefly strengthened.

Although Saudi Aramco has promised to restore lost production quickly and is leveraging its ~180 MMBbl of inventories to fulfill term supply commitments, there is still potential for further disruptions if tensions between Saudi Arabia and Iran escalate.

Global macroeconomic concerns, namely the ongoing US-China trade war and its effect on slowing global economic growth and petroleum demand, are nevertheless still the dominant theme for markets.

Demand worries were rekindled after US President Donald Trump derided Chinese international trade practices in his speech before the UN General Assembly. Many have interpreted his comments to mean ongoing trade talks have stalled.

WTI & Brent $/Bbl Over Time



ENVERUS

Source: Enverus Trading & Risk

Iran: Impact of US Sanctions

Since the re-imposition of US sanctions, Iranian crude production has fallen by 1.6 MMBbl/d.

Iranian oil exports averaged more than 1.7 MMBb/d earlier this year and have since fallen below 425 MBbl/d as of August.

Of this amount, just over 200 MBbl/d continued to be exported to China in August. By comparison, in August of 2018, China imported 775 MBbl/d from Iran.

Recent actions by the Trump Administration to sanction five Chinese shipping companies and their chief executives aim to pressure China to reduce Iranian imports to zero.

The US campaign of maximum pressure has been amplified by the attacks on Saudi oil facilities on September 14th.

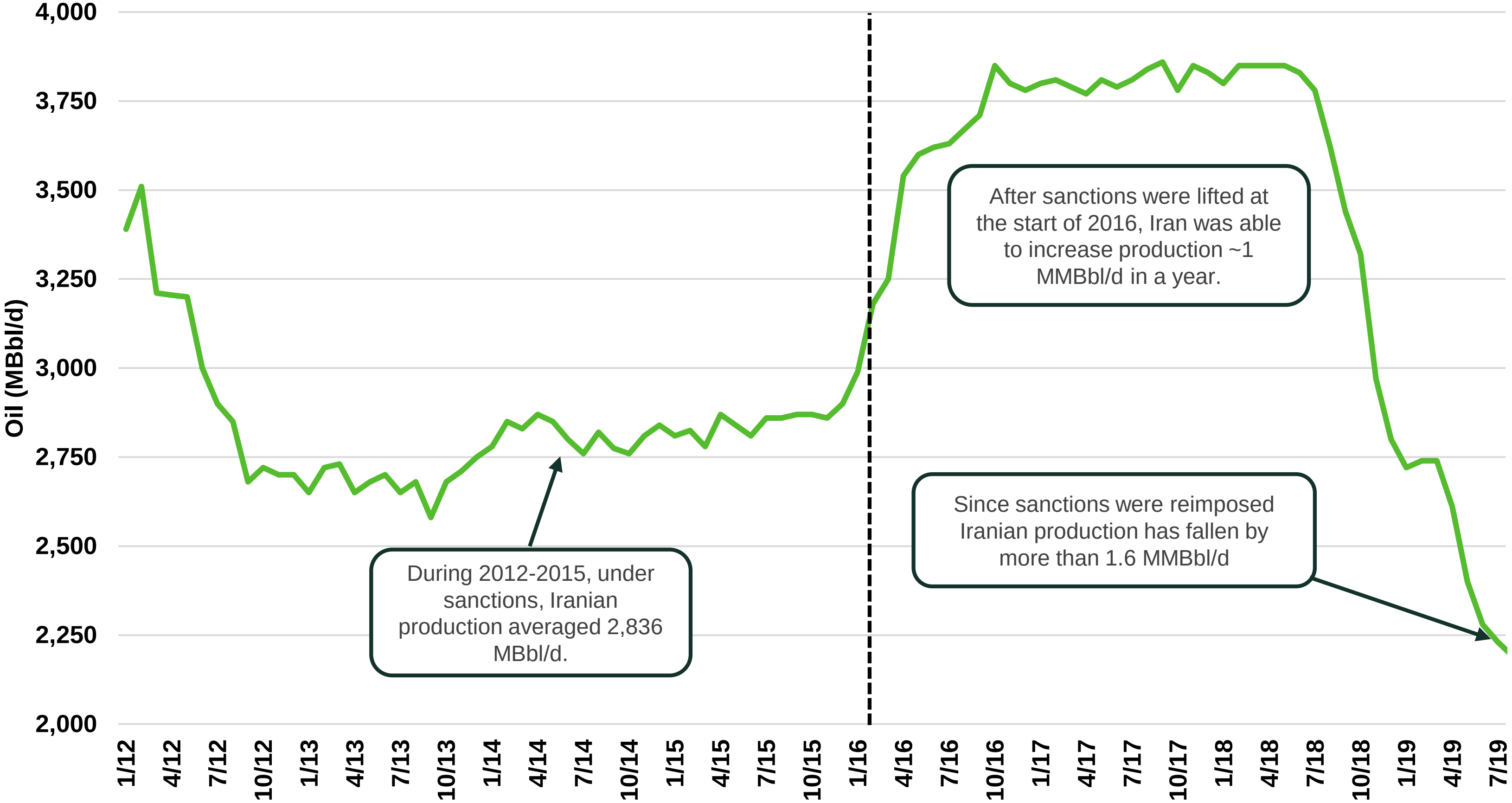
Despite Yemeni Houthi rebels (an Iranian proxy group) claiming responsibility, the United States and Saudi Arabia have put the blame squarely on Iran.

Last week, President Trump approved the deployment of a small number of US troops and military equipment to defend oil facilities in Saudi Arabia and the UAE.

In addition to the troop deployment announcement, the Treasury Department last week placed anti-terrorism sanctions on Iran's central bank.

To date, the Trump Administration has been reluctant to use military force against Iran, even to the point of calling off planned airstrikes after the downing of a US drone.

Iranian Crude Oil Production



Source: IEA MODS

US Production Growth Drivers

At the start of 2019, the Permian basin accounted for 32% of total US crude and condensate production, up from 24% at the start of 2017.

By the end of 2025, Permian production may account for over 40% of total US production.

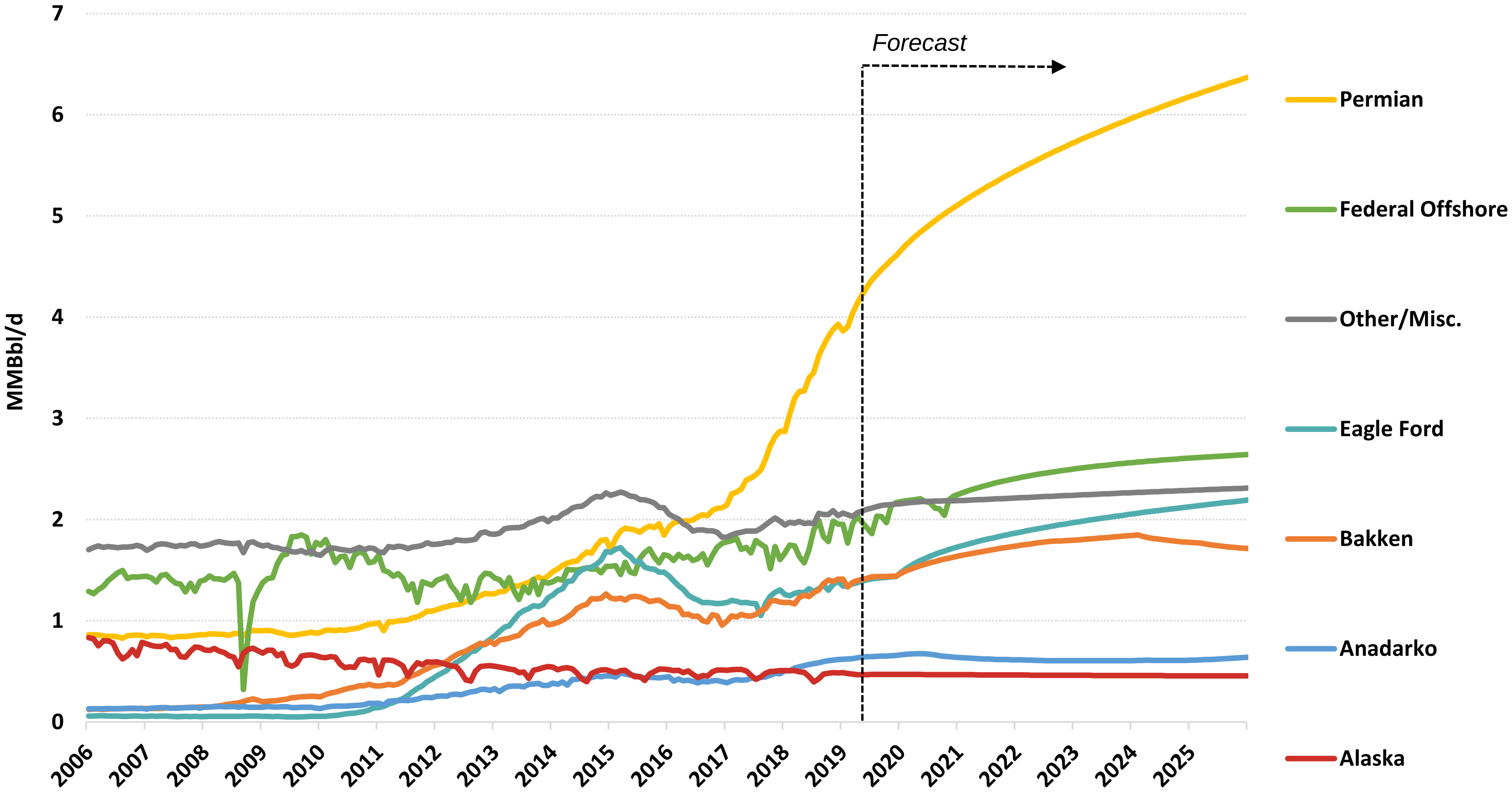
Between July 2019 and December 2025, incremental Permian production amounts to just under 2 MMBbl/d.

Other basins are forecast to continue growing production as well, but at much slower rates than the Permian.

Nevertheless, production growth from all other basins between July 2019 and December 2025 will account for another 2 MMBb/d of incremental supply.

Substantial long-haul pipeline capacity additions will be required to facilitate these volumes.

Crude and Condensate Production by Basin



ENVERUS

Source: Enverus ProdCast

Long-Term Forecast: Global Supply/Demand

Given the weaker demand projections for 2019 and 2020, even at the current forward curve where prices are near the lower $50/Bbl (WTI) levels, supply is still outpacing demand over the near term.

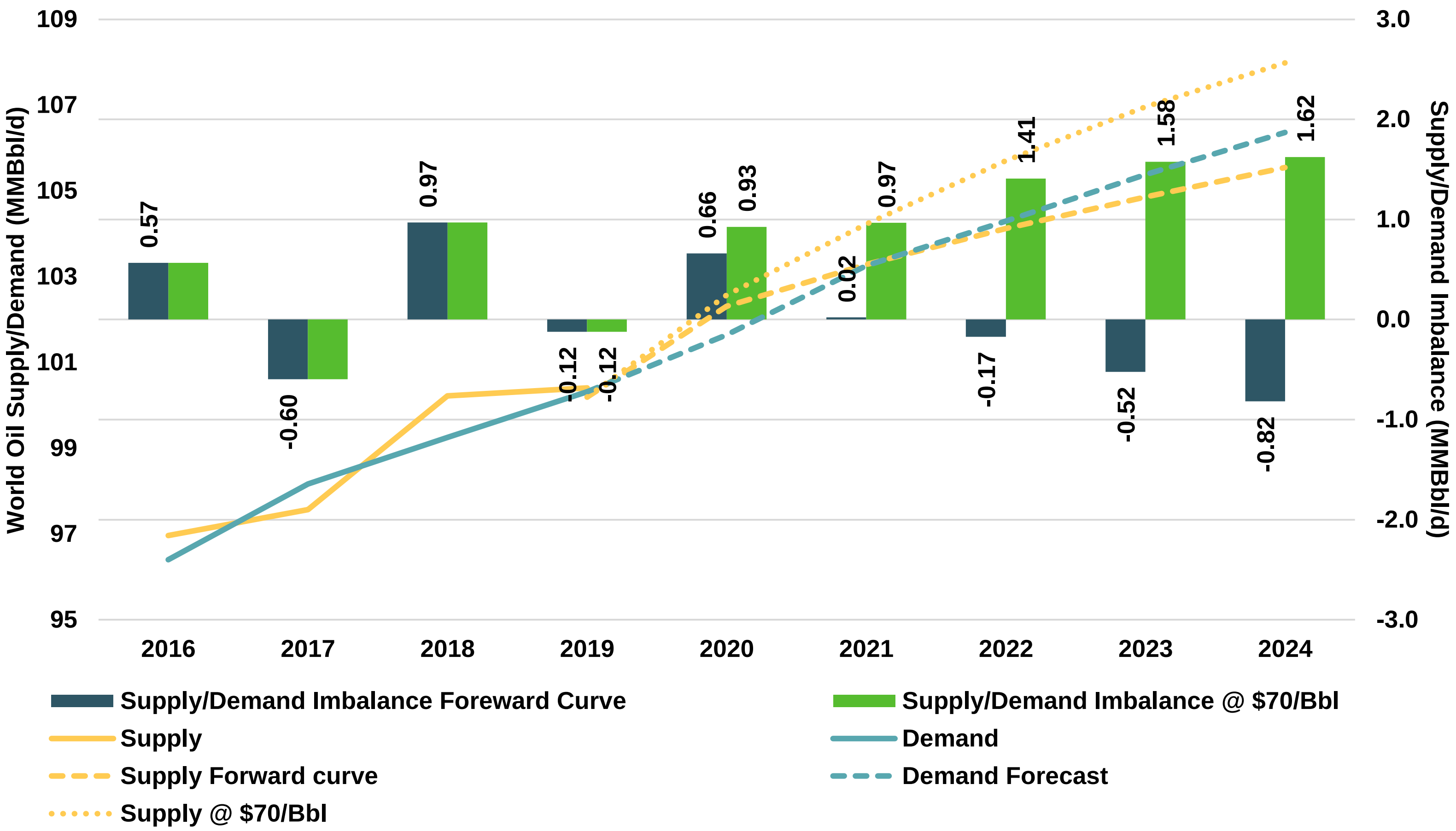
The outlook beyond 2020 becomes less clear, though. At current price levels, demand would outstrip supply, resulting in large stock draws in 2022-2024.

However, if prices were to rise to $70/Bbl (WTI), a significant supply/demand surplus would result.

Clearly, $70/bbl WTI would elicit a supply response far greater than what is needed to balance the market. But current price levels out in the forward curve are also too low.

Demand expectations are certain to change, and this is likely the key factor baked into today's forward market expectations.

Global Petroleum Supply/Demand

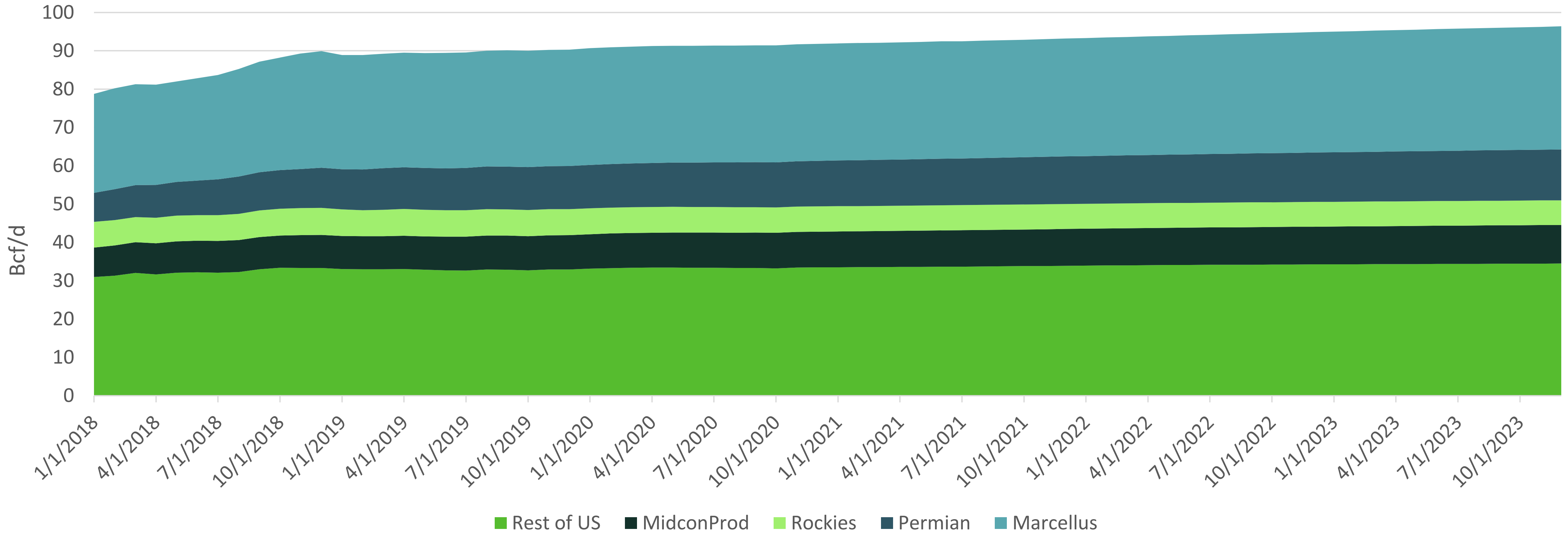


ENVERUS

Source: ProdCast, IEA MODS, IEA OMR

US Production Outlook 2020 and Beyond

Dry gas production is expected to gain an average of 1.5 Bcf/d and almost 2% per year over the next 5 years



ENVERUS

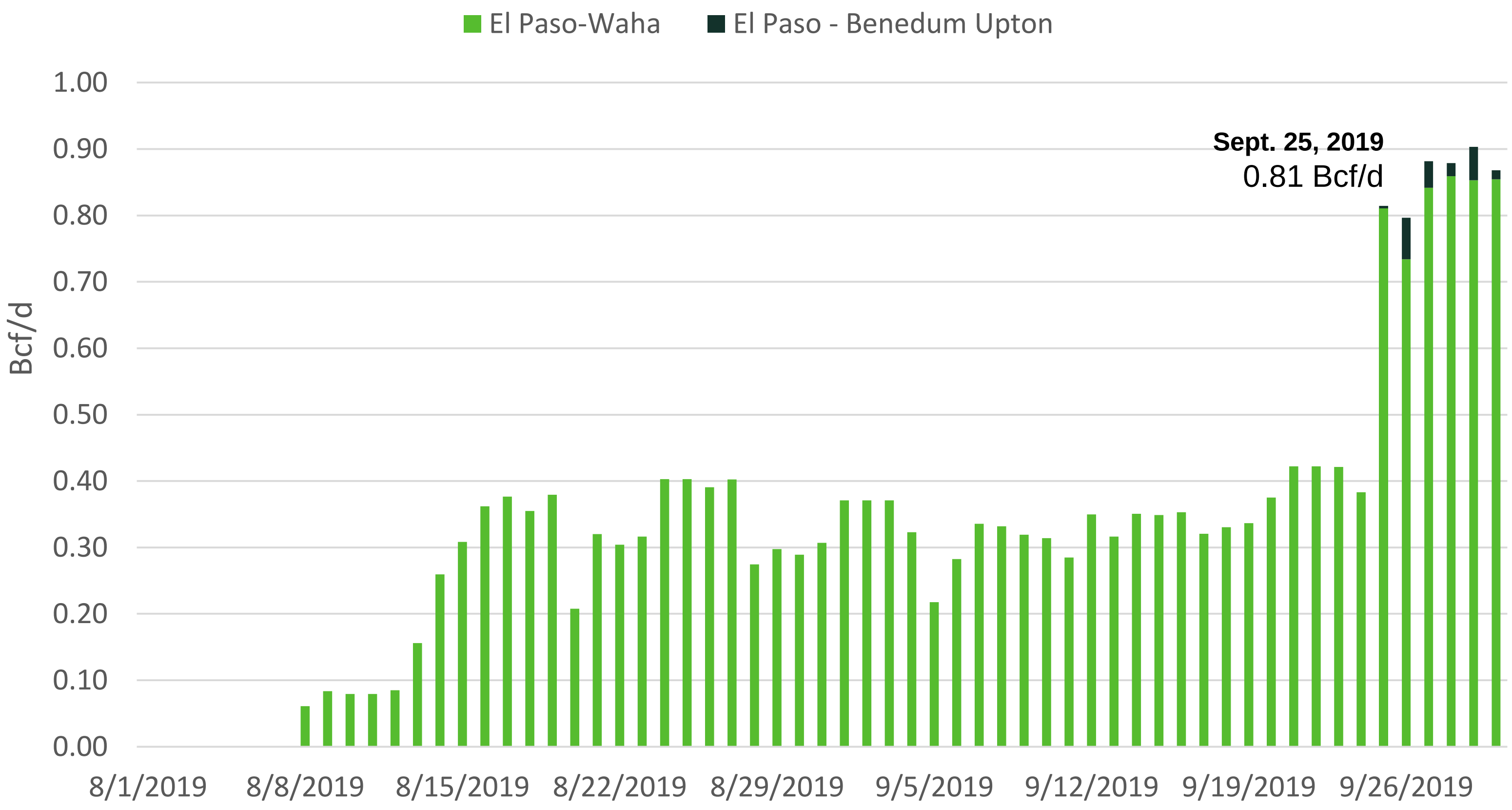
Source: ProdCast

Gulf Coast Express Pipeline (GCX)

In Service, Ahead of Schedule

- Kinder Morgan announced that the 2 Bcf/d pipeline started service on Sept. 25 transporting natural gas from the Waha area to Agua Dulce.
- The pipeline is fully subscribed by DCP Midstream, LP DCP, Apache Corporation APA, Exxon Mobil Corporation XOM, among others.
- El Paso pipeline has been delivering to GCX since early August about 0.3-0.4 Bcf/d while line packing. On Sept. 25, deliveries doubled reaching 0.8 Bcf/d. GCX is connected to multiple intrastate systems, which data is not available for daily monitoring on the public domain. Due to the takeaway bottleneck the basin has faced, GCX is expected to be running at capacity today near 2 Bcf/d.

Pipeline Sample Flows – El Paso deliveries to GCX double as pipeline starts service



Source: Enverus OptiFlo Gas

LNG Exports Set a Record High During Summer 2019

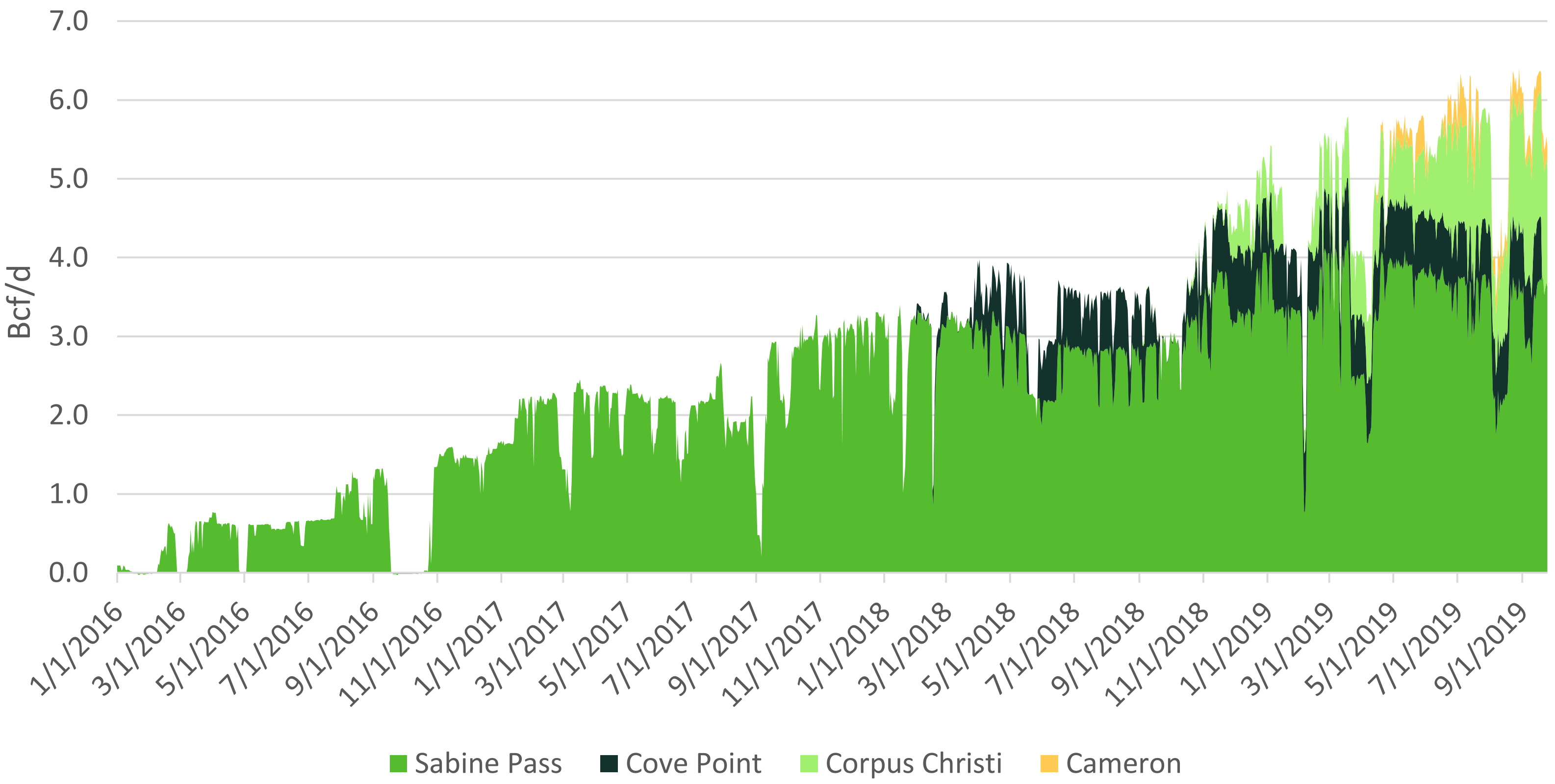
Natural gas pipeline deliveries to LNG export terminals have been increasing consistently since Sabine Pass started operations in 2016.

Currently, there are four operating terminals and volumes as high as 6.4 Bcf/d were observed on Aug. 29, 2019.

Enverus expects LNG exports to reach 9 Bcf/d by 2023.

Year	LNG Exports Forecast
2019	5.0
2020	6.5
2021	7.8
2022	8.0
2023	9.0
2024	9.0

Natural Gas Feedstock to LNG Export Terminals



ENVERUS

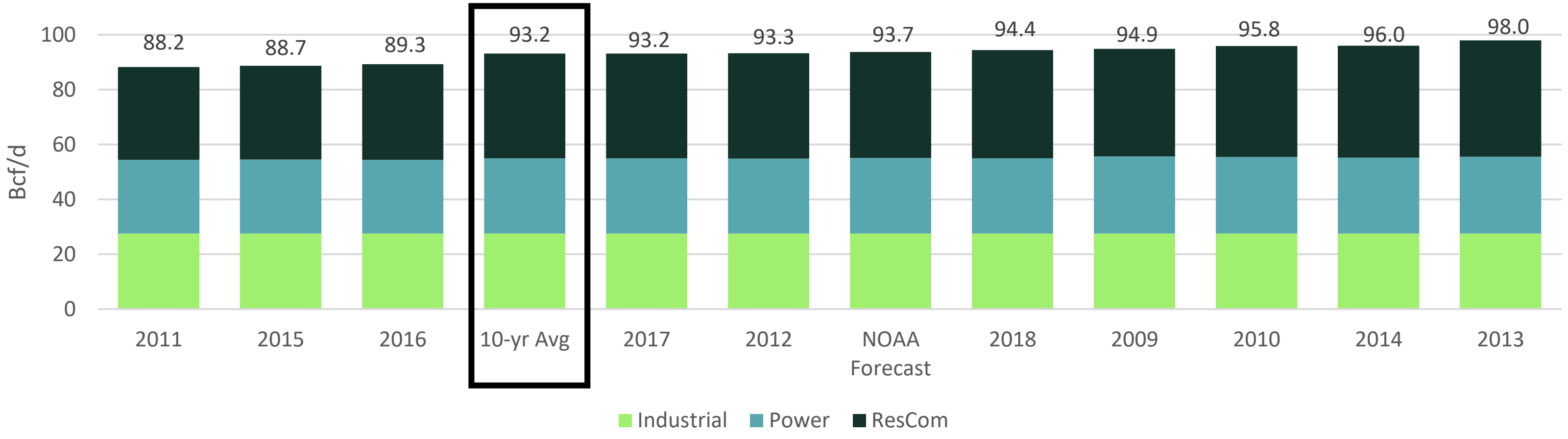
Source: Enverus OptiFlo Gas

Demand – Winter Outlook

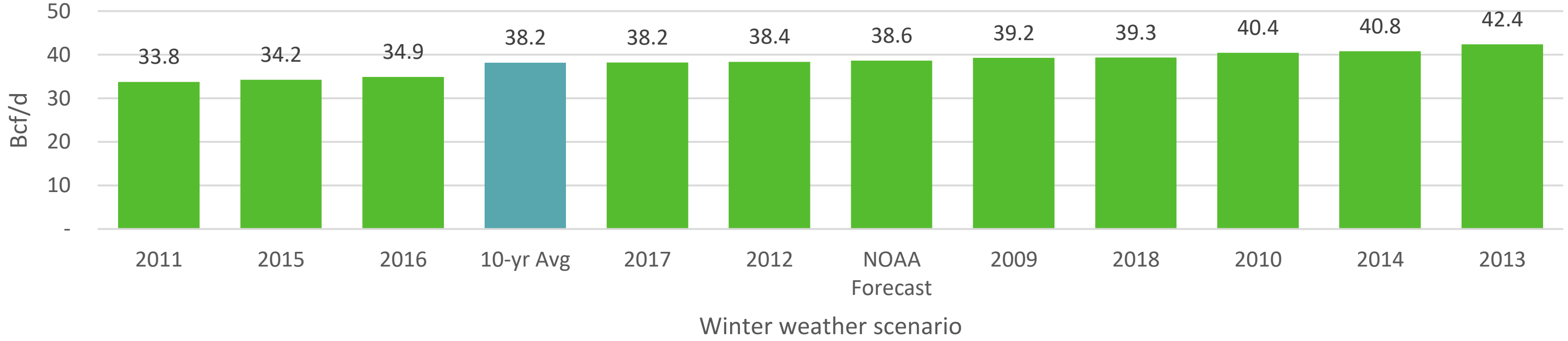
Weather Uncertainty and Gas Demand

- The charts on the right display our gas demand forecast for the coming winter with historical weather scenarios, 10-yr average weather, and a NOAA forecast released on 9/19/2019.
- With 10-year average weather, ResCom is expected to average 38.2 Bcf/d between November and March, with total domestic gas demand averaging 93.2 Bcf/d.
- The recent NOAA weather forecast is showing slightly colder weather compared to the 10-yr average. With this weather input, ResCom demand is expected to average 38.6 Bcf/d and total domestic demand 93.7 Bcf/d.
- A repeat of one of the last 10 years of winter weather could lead to ResCom demand coming in as low as 33.8 Bcf/d or as high as 42.4 Bcf/d. Total domestic gas demand could vary between 88.2 Bcf/d and 98 Bcf/d given these weather scenarios.

Winter (11/2019 – 3/2020) Gas Demand Forecast with Different Weather Scenarios



Winter (11/2019 – 3/2020) ResCom Demand Forecast with Different Weather Scenarios



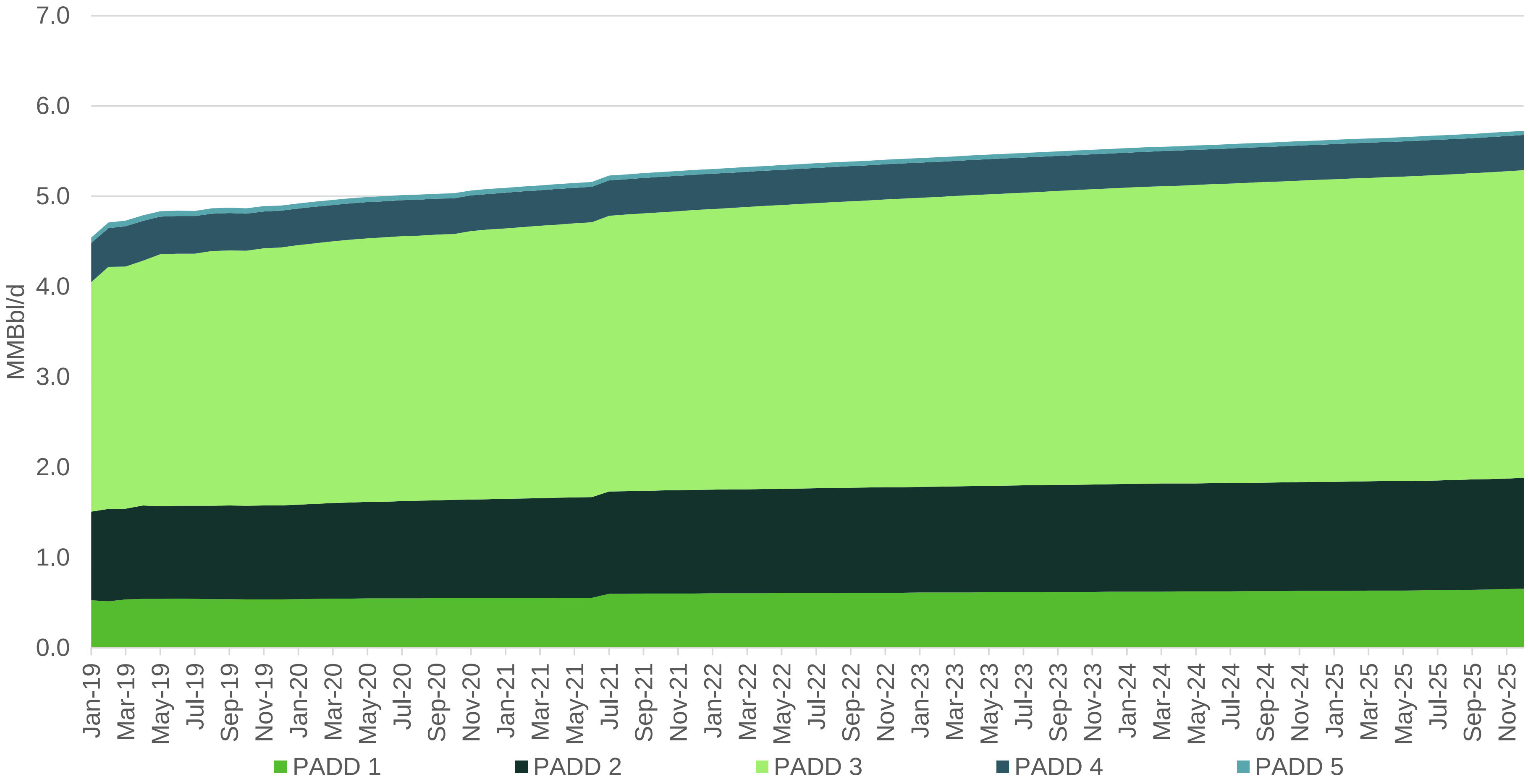
Source: Enverus analysis

PADD Production

PADD 3 continues to be the main driver of NGL production growth. PADD 3 will account for ~552 MBbl/d of the 828 MBbl/d increase from 2019 to 2025.

The Permian and the Eagle Ford will continue to drive PADD 3 production increases, accounting for increases from Dec 2019 to Dec 2025 of ~341 MBbl/d and ~196 MBbl/d, respectively.

US NGL Production by PADD



ENVERUS

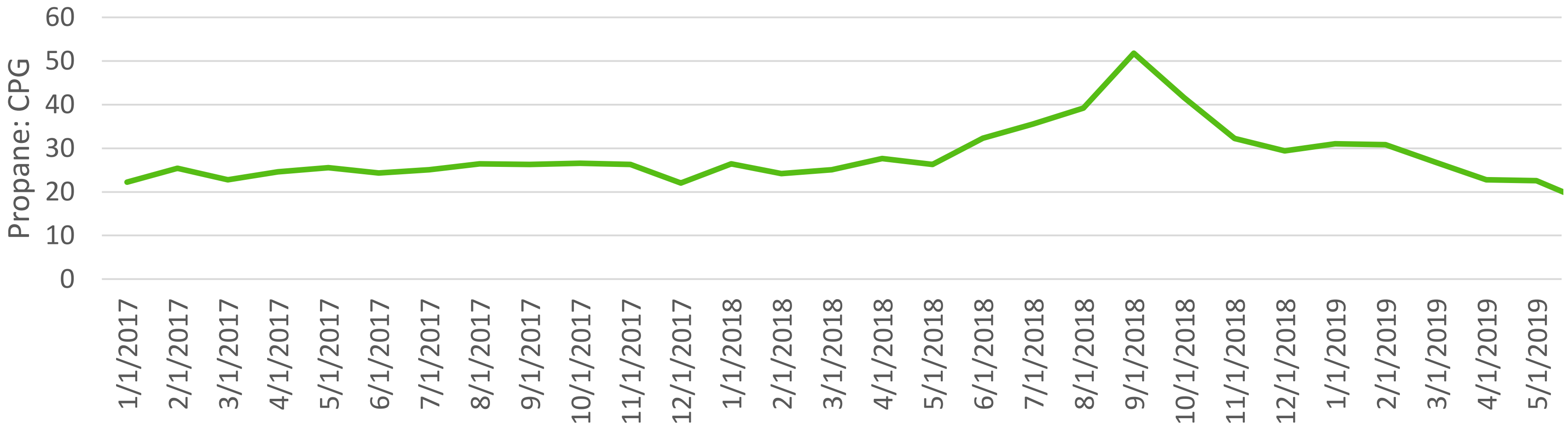
Source: Enverus ProdCast, EIA

Ethane

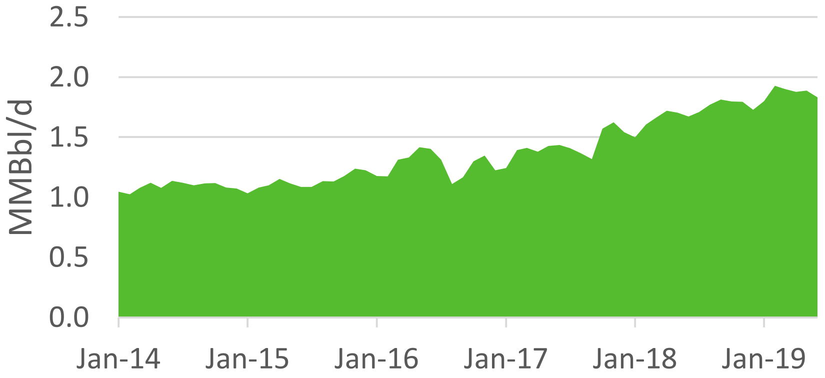
Ethane prices peaked in the third quarter of 2018 as production wasn't keeping up with demand. However, since that point in time, ethane prices have been on the downfall.

Production of ethane topped out in February 2019, and has not been able to get back since. However, as fractionation space has remained tight, ethane stocks climbed to their highest level in June 2019, currently sitting just north of 60 MMBbl.

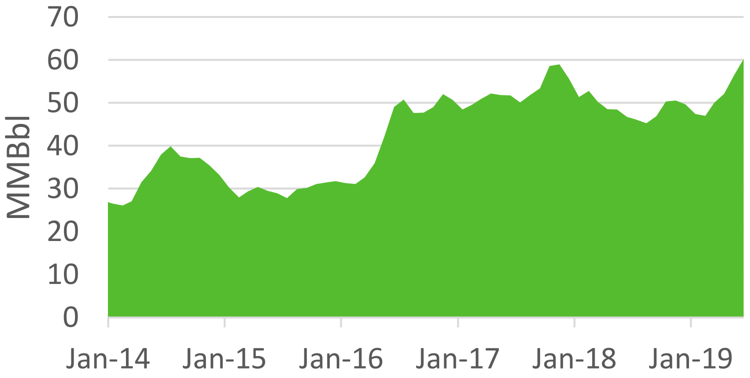
Ethane Prices



Ethane Production



Ethane Stocks



Source: EIA, Bloomberg

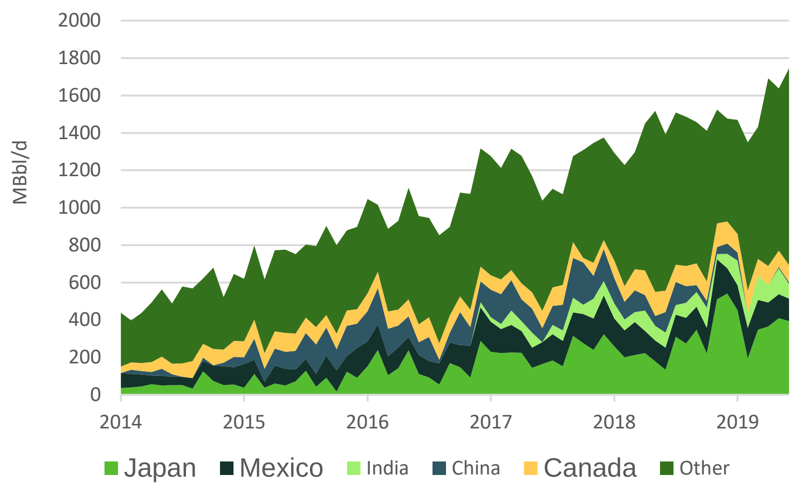
Source: EIA, Bloomberg

LPG Exports

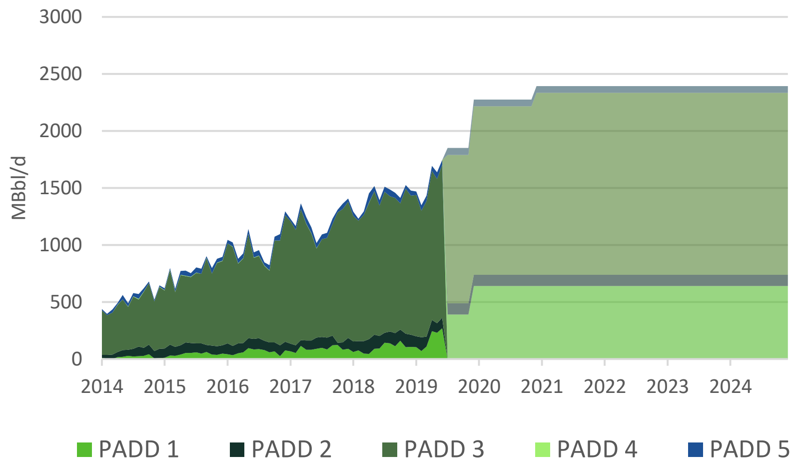
LPG exports have climbed in 2019, setting the record for LPG exports at 1.75 MMBbl/d in June of this year. Japan continues to be the largest importer of US LPGs. Since the beginning of 2018, Japan has averaged ~310 MBbl/d of LPG imports from the US.

China previously imported LPGs from the US, but the trade wars brought the exports to the country down to zero earlier this year. In May and June, exports to China did show some volume, showing 8 MBbl/d and 9 MBbl/d, respectively. Should the trade wars gain some traction on getting resolved, or ultimately do get resolved, LPG exports to China will likely increase.

LPG Exports by Destination



LPG Exports and Future Capacity



Key Export Pipelines or Facilities

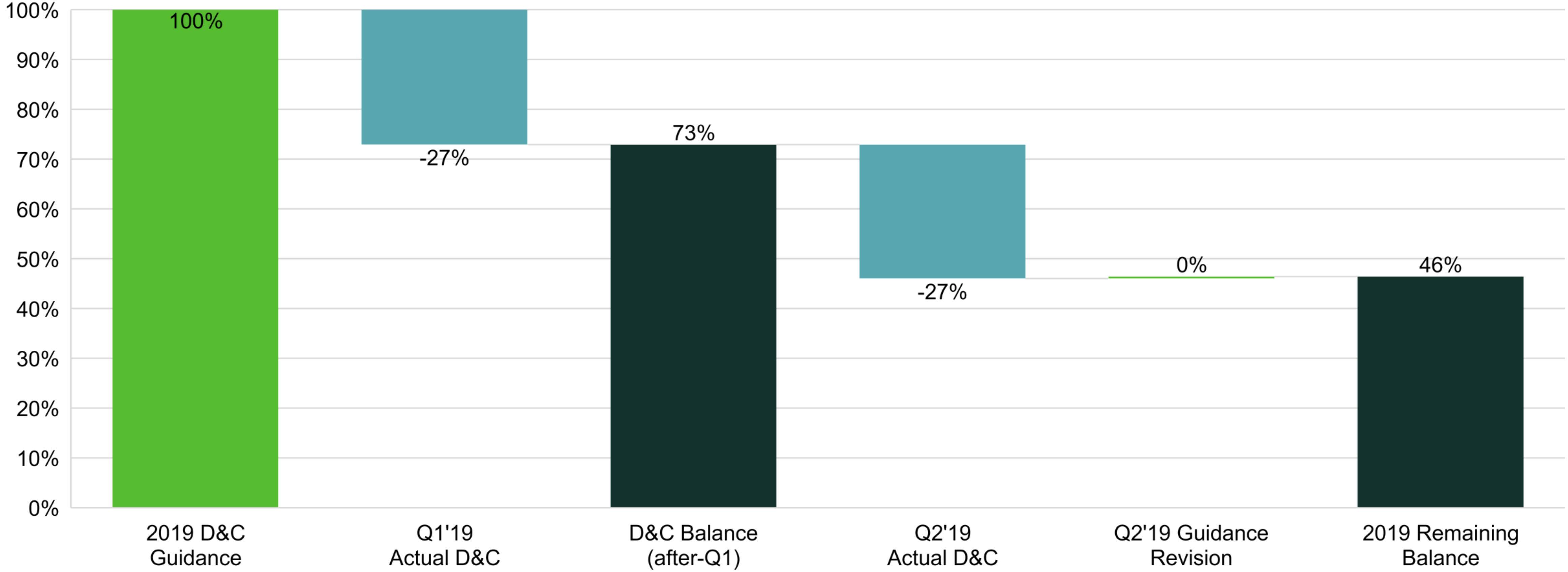
Export Infrastructure	Operator/Owner	Location	Product	Status
Marcus Hook Terminal	ET/Sunoco	Philadelphia to Europe	Ethane + LPG	In Service
Nederland Marine Terminal	Sunoco/Lonestar	Nederland, TX	LPG	In Service
Freeport Terminal	Phillips 66	Freeport, TX	LPG	In Service
Enterprise Hydrocarbons Terminal	Enterprise	Houston Ship Channel	LPG	Expanding in 2H'19
Galena Park Terminal	Targa	Galena Park	LPG	Expanding in 2019 through 2020
Price Rupert Terminal	Pembina Pipeline Corporation	Prince Rupert, BC, Canada	LPG	Mid-2020

ENVERUS

Source: EIA, Company Filings

2019 US D&C Capex Guidance Progression

Operators plan to spend 46% of original 2019 D&C guidance in H2'19. Q2'19 reports had limited aggregate revision to full year plans.



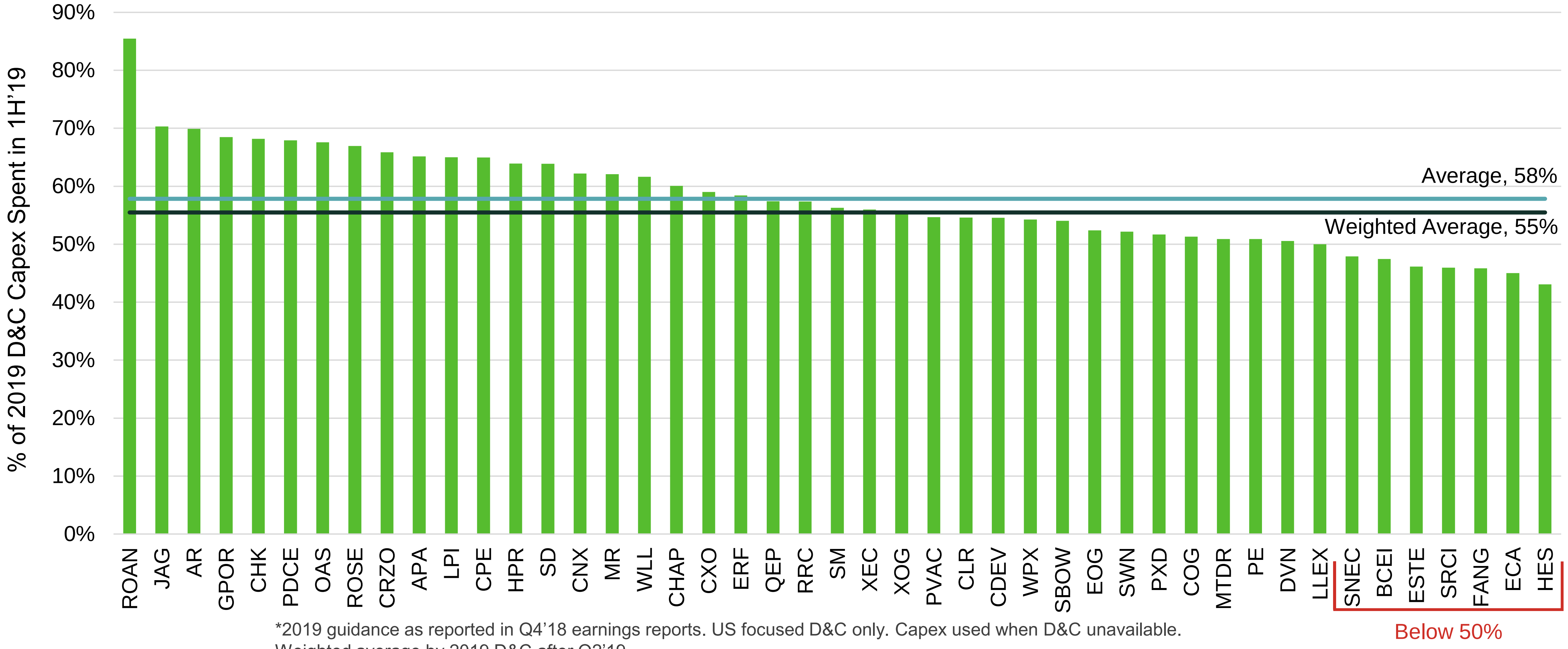
*2019 guidance as reported in Q4'18 earnings reports. US focused D&C only. Capex used when D&C unavailable. List of operators covered on next slide.

ENVERUS

Source: Company Filings, Enverus Research

2019 US D&C Capex Guidance

Many smaller operators continue to anticipate a reduction in D&C spending in H2'19



*2019 guidance as reported in Q4'18 earnings reports. US focused D&C only. Capex used when D&C unavailable.
Weighted average by 2019 D&C after Q2'19.

ENVERUS

Source: Company Filings, Enverus Research

CONTACT

FundamentalEdge

This is a preview of the full report.
If you are interested in learning more, please contact your MarketView account manager of businessdevelopment@drillinginfo.com, and for immediate help: 1 (800) 282-4245

Enverus

8000 S. Chester St., Suite 100
Centennial, CO 80112

Additional Publications