PUMPING THE BRAKES

SPE Denver, CO | January 2020

ENVERUS

Introduction and Key Takeaways

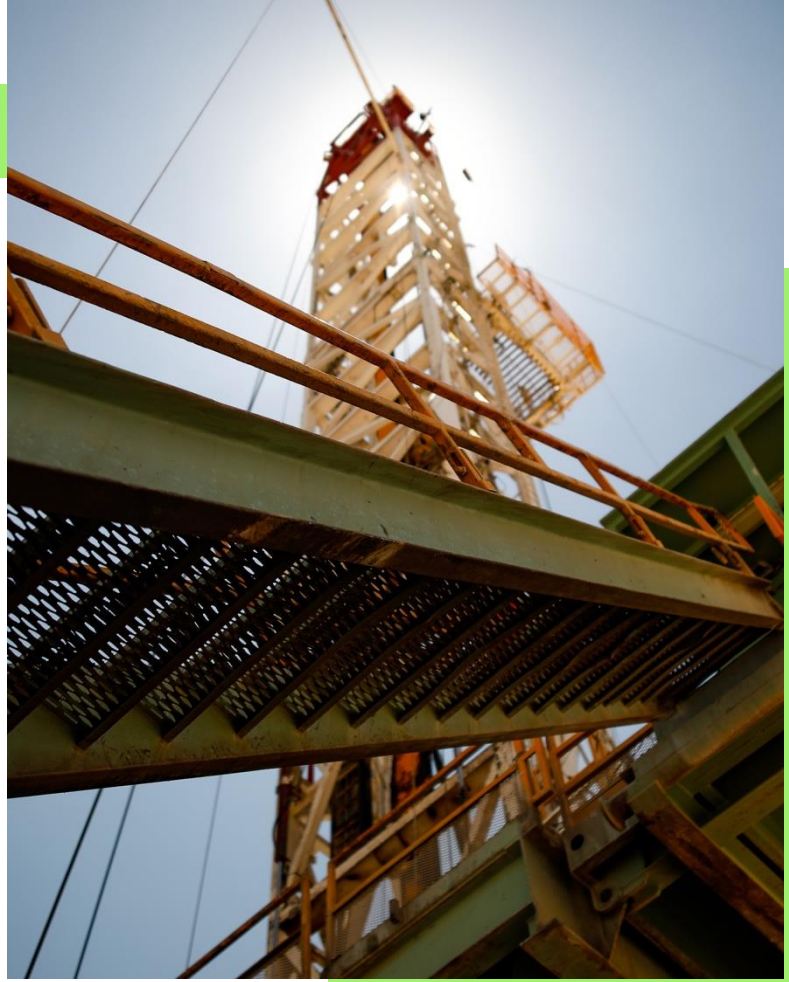
- The crude market remains oversupplied and key drivers of price are geopolitics (Iran), supply growth concerns, and global economics growth concerns (including trade wars).

- Natural gas prices are falling (currently below $2) and the market remains oversupplied. There was 5 Bcf/d of supply growth in 2019…some of which surprised the market. 2020 is not expected to grow as much, however, Enverus still expects gas prices to remain depressed throughout much of the year including sub-$2.00/MMBtu monthly settlement prices.

- Natural Gas Liquids (NGL) production continues to climb, mainly out of PADD 3, as pipeline projects have come online to move gas out of the region. The supply story here is still all about the Permian.

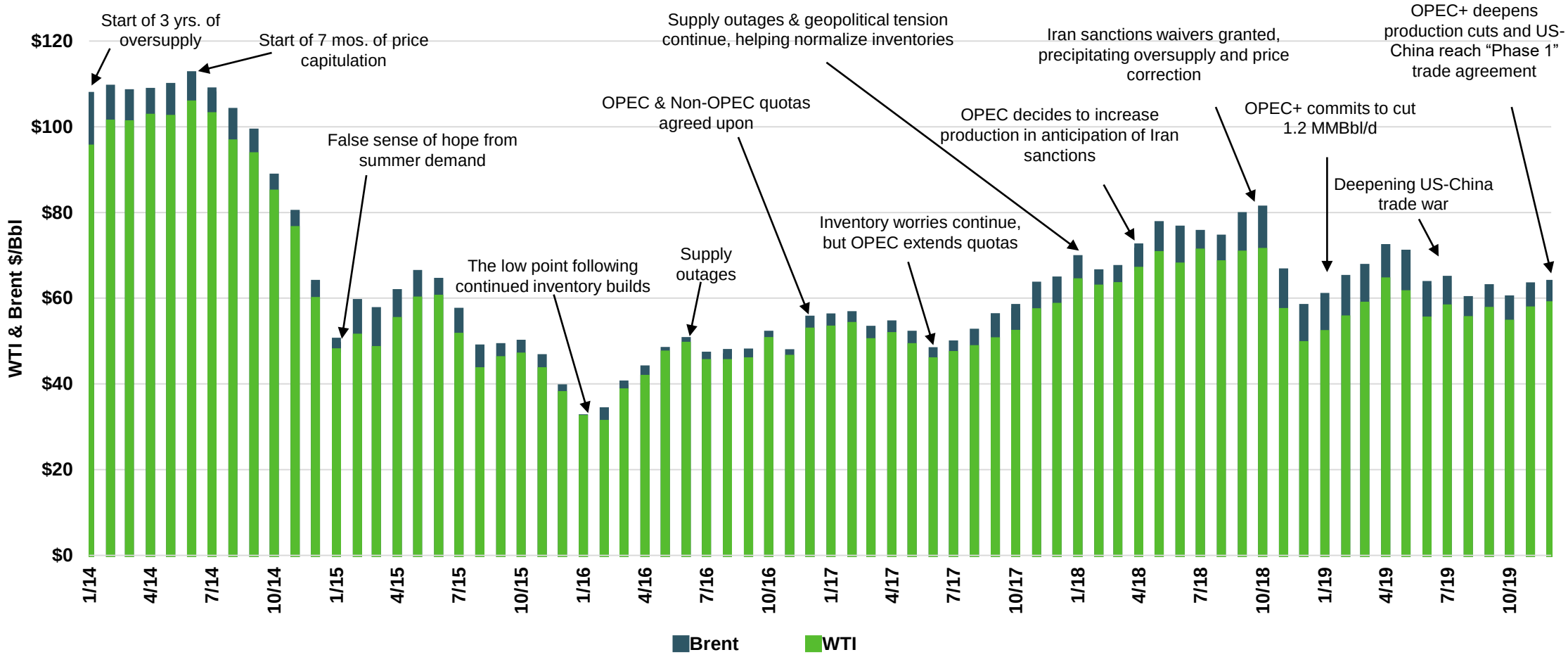
- CAPEX spend will be way down in 2020, but many are still predicting production growth. Smaller players are struggling with liquidity issues, which will contribute to offsetting continued production growth from the larger operators and majors.

CRUDE OIL



Crude Oil Prices: 2014-2019 Drivers

WTI & Brent $/Bbl Over Time



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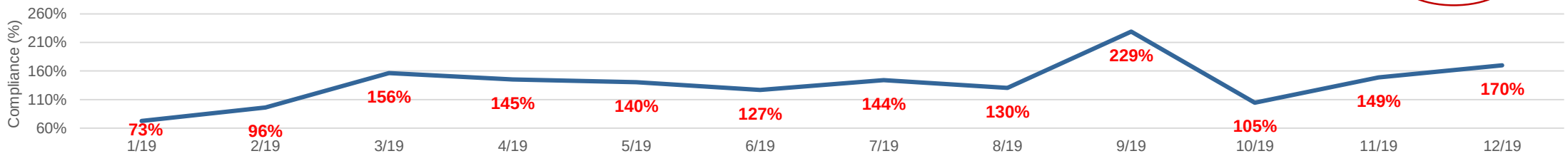
Source: Enverus Trading & Risk

OPEC Quota Compliance

OPEC Crude Oil Production Quotas: Update for December 2019

Member	Quota (MBbl/d)	December 2019 (MBbl/d)	Compliance (MBbl/d)	Sustainable Cap (MBbl/d)	Spare Cap (MBbl/d)
Saudi Arabia	10,311	9,680	+631	12,040	2,360
Iraq	4,512	4,590	-78	4,880	290
UAE	3,072	3,070	+2	3350	280
Kuwait	2,724	2,710	+14	2920	210
Nigeria	1,685	1,660	+25	1,800	140
Angola	1,481	1,410	+71	1,580	170
Algeria	1,025	1,020	+5	1,080	60
Ecuador	508	550	-42	540	-10
Congo	315	350	-35	350	0
Gabon	181	210	-29	200	-10
Eq. Guinea	123	120	+3	130	10
TOTAL	**25,937**	**25,370**	+567	28,870	**3,500**



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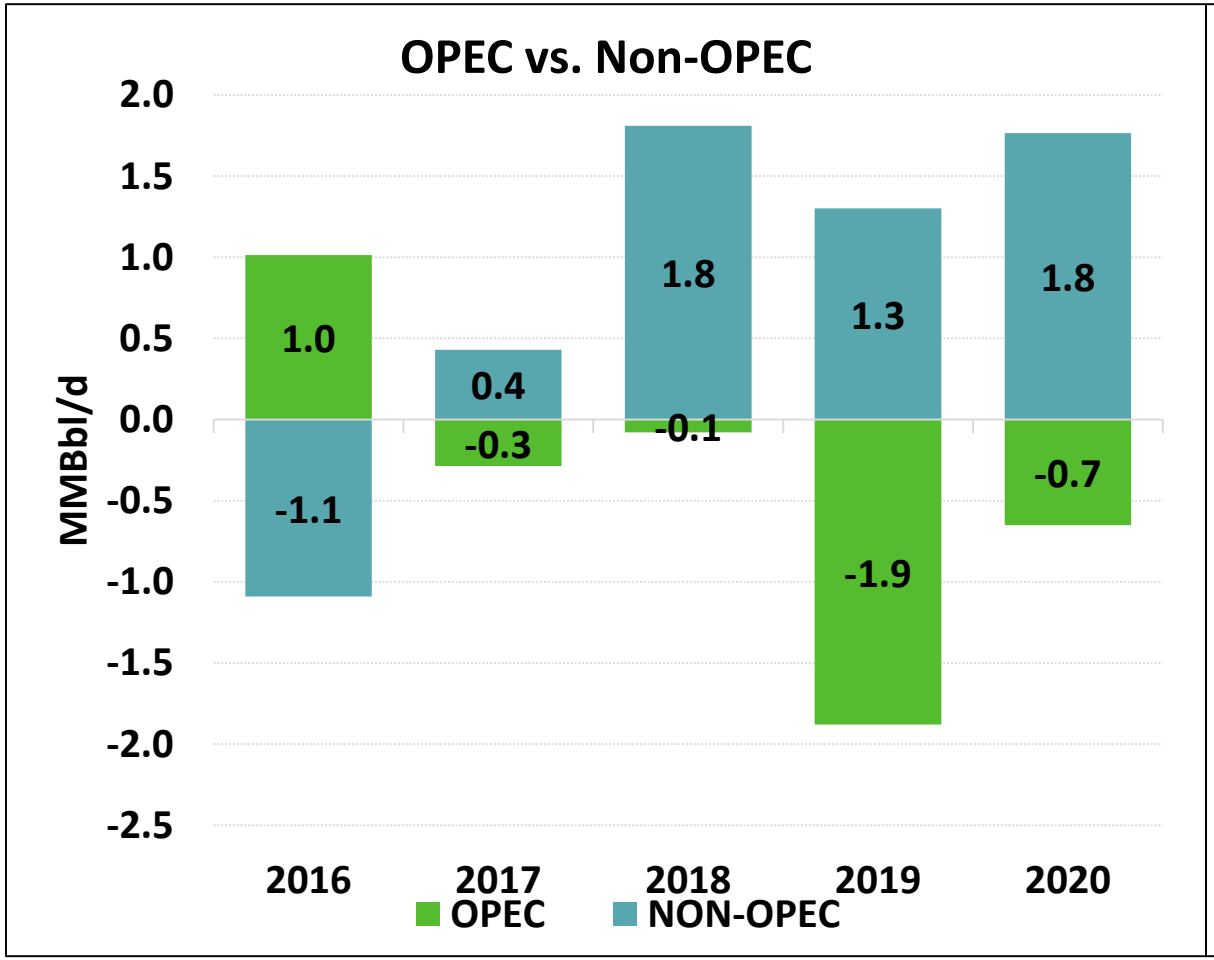
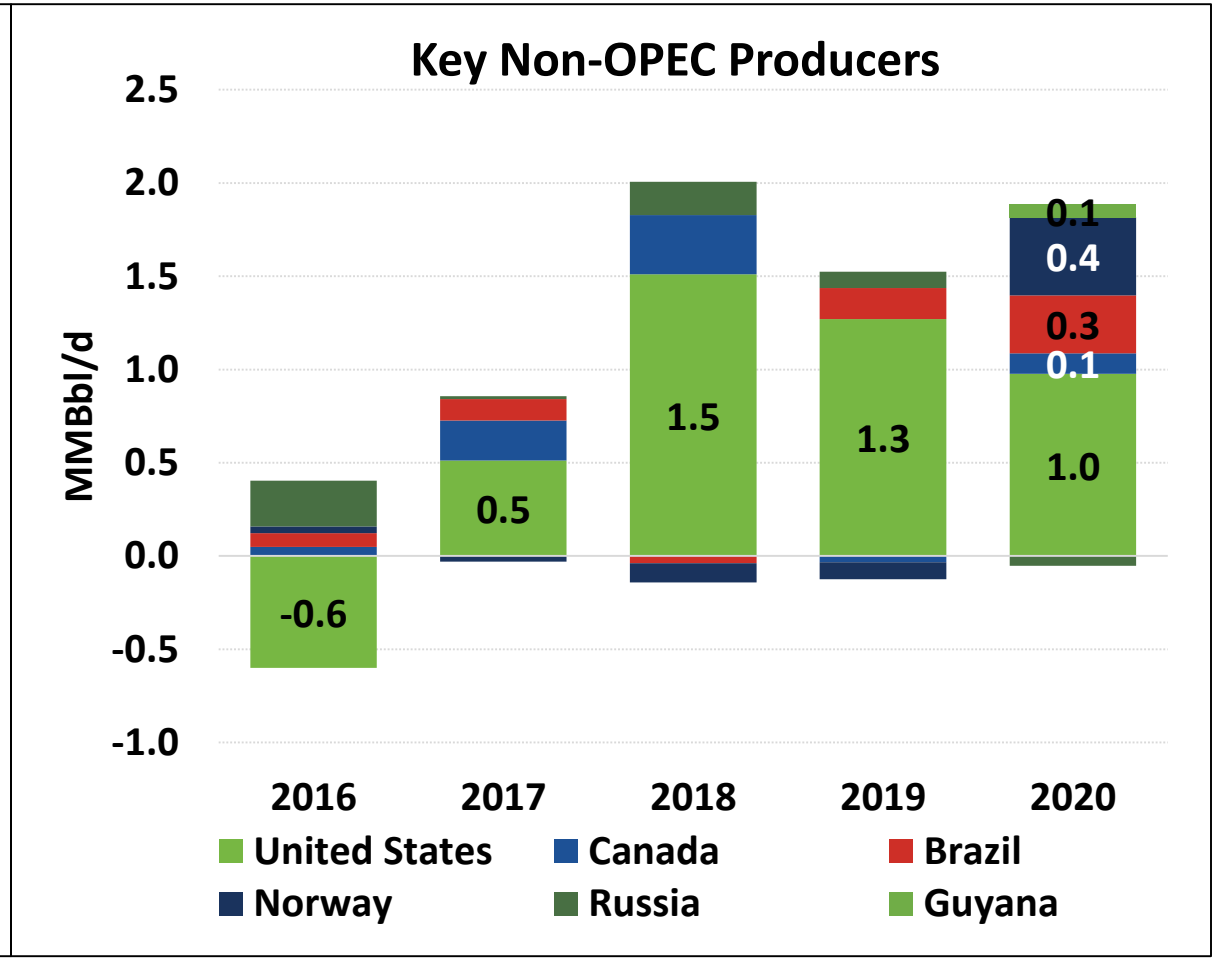
Source: IEA OMR

Global Crude & Condensate Production

Crude & Condensate Production Growth (Year-on-Year Average)





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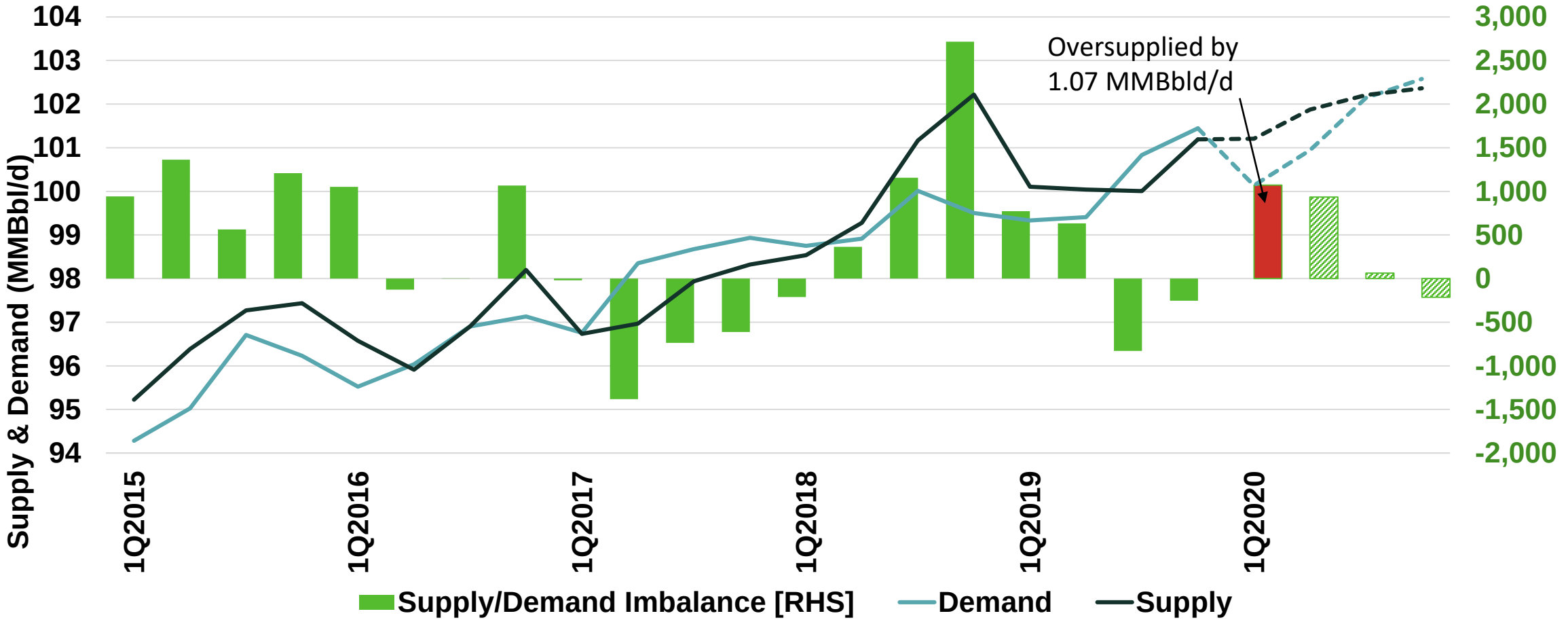
Source: Enverus ProdCast, IEA MODS

Global Supply and Demand

Global Petroleum Supply, Demand, and Implied Inventory Movements



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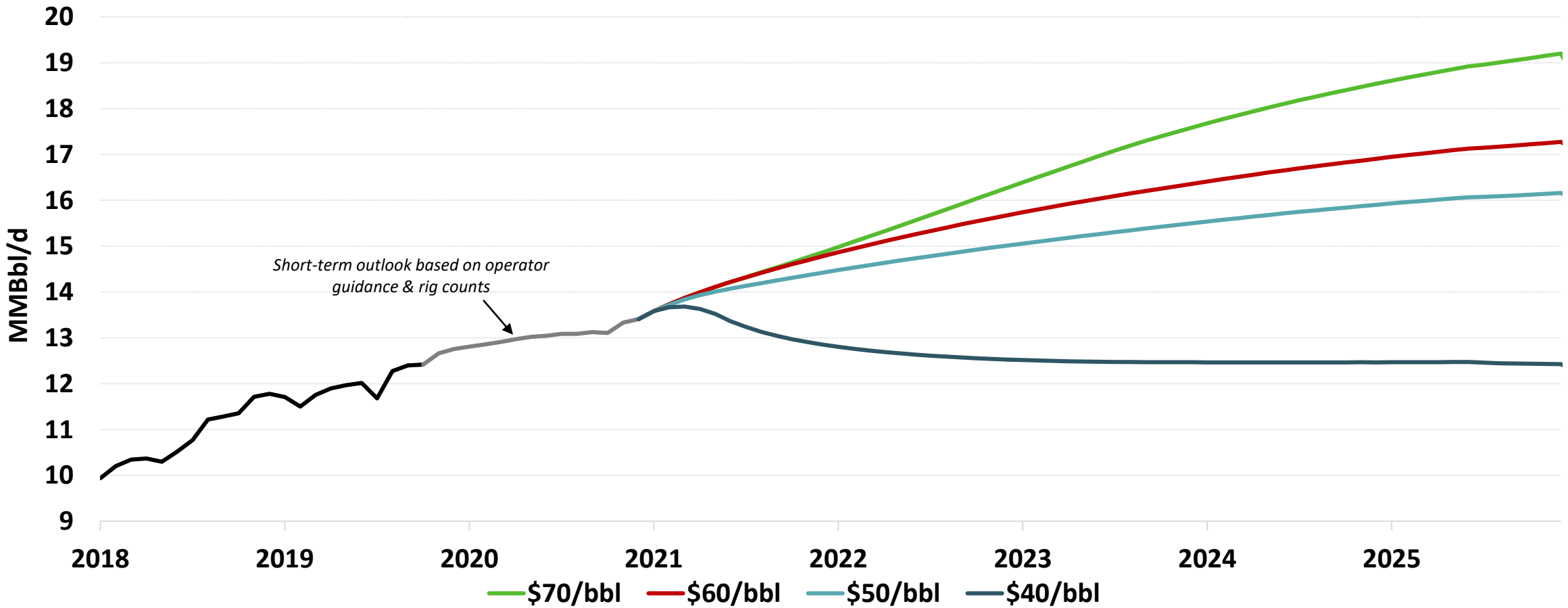
Source: Enverus ProdCast, IEA MODS

Price Sensitivity of US Crude & Condensate Production

US Crude & Condensate Production Under Different Price Scenarios



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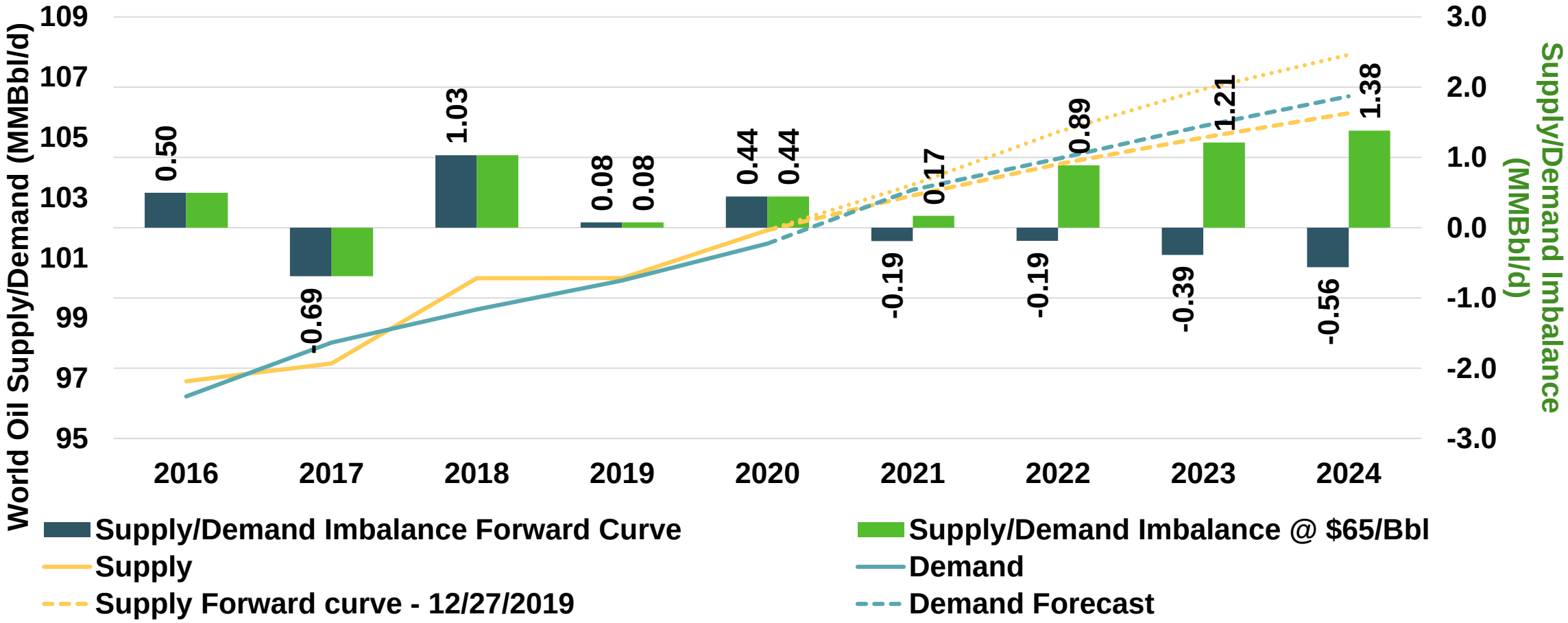
Source: Enverus ProdCast

Long-Term Outlook: OPEC's Unwinnable War

Global Petroleum Supply/Demand



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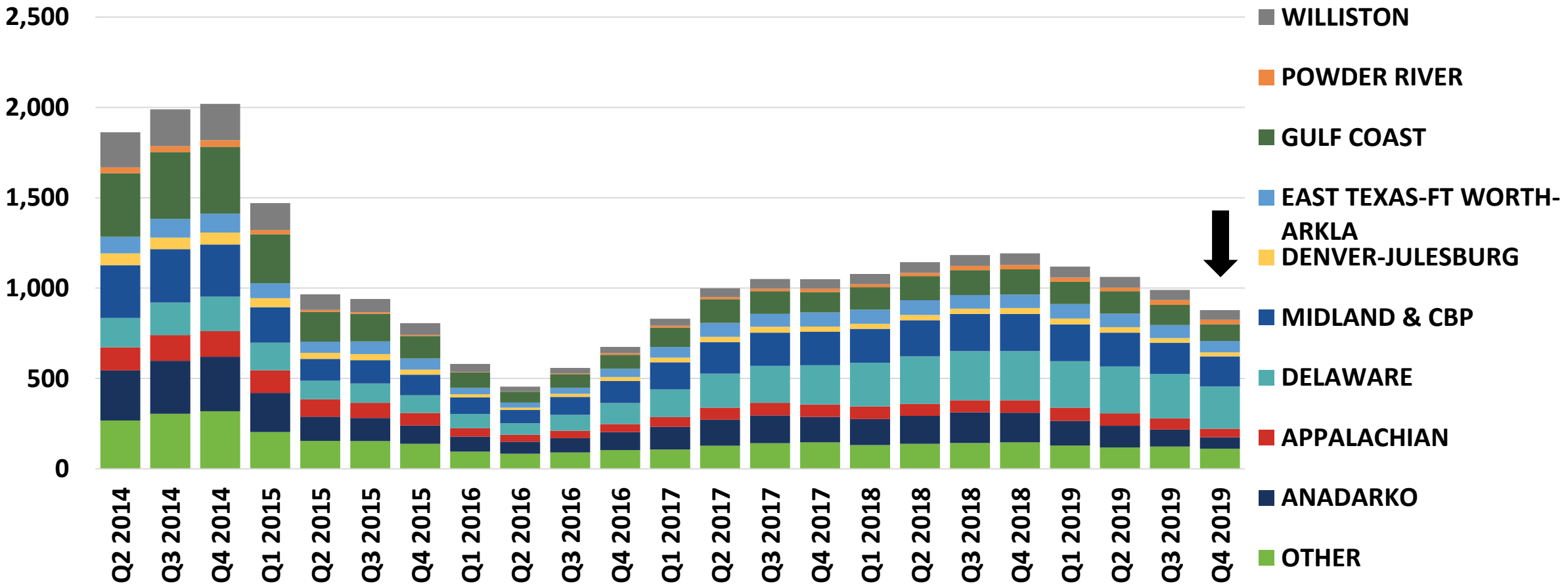
Source: ProdCast, IEA MODS, IEA OMR

US Rig Count: Steady Declines Since Late 2018

Rig Count by Basin



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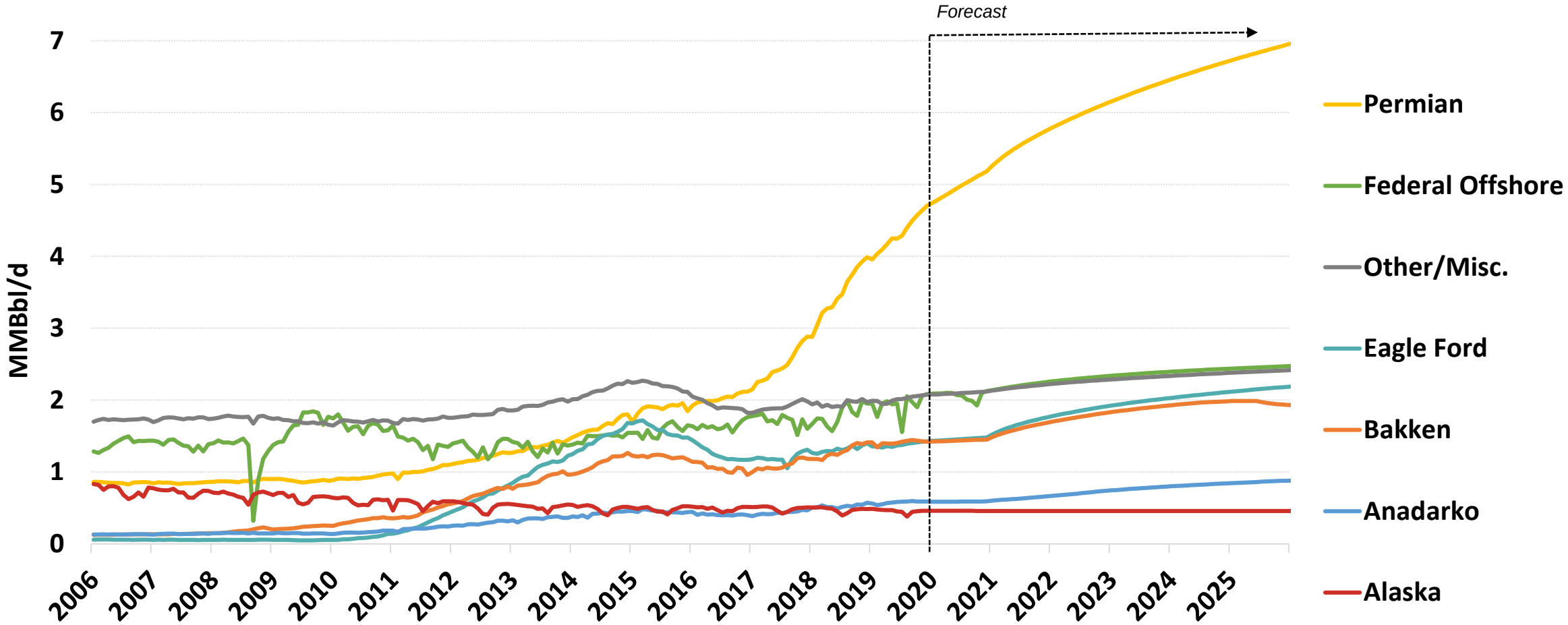
Source: Enverus Rig Analytics

US Production Growth Drivers

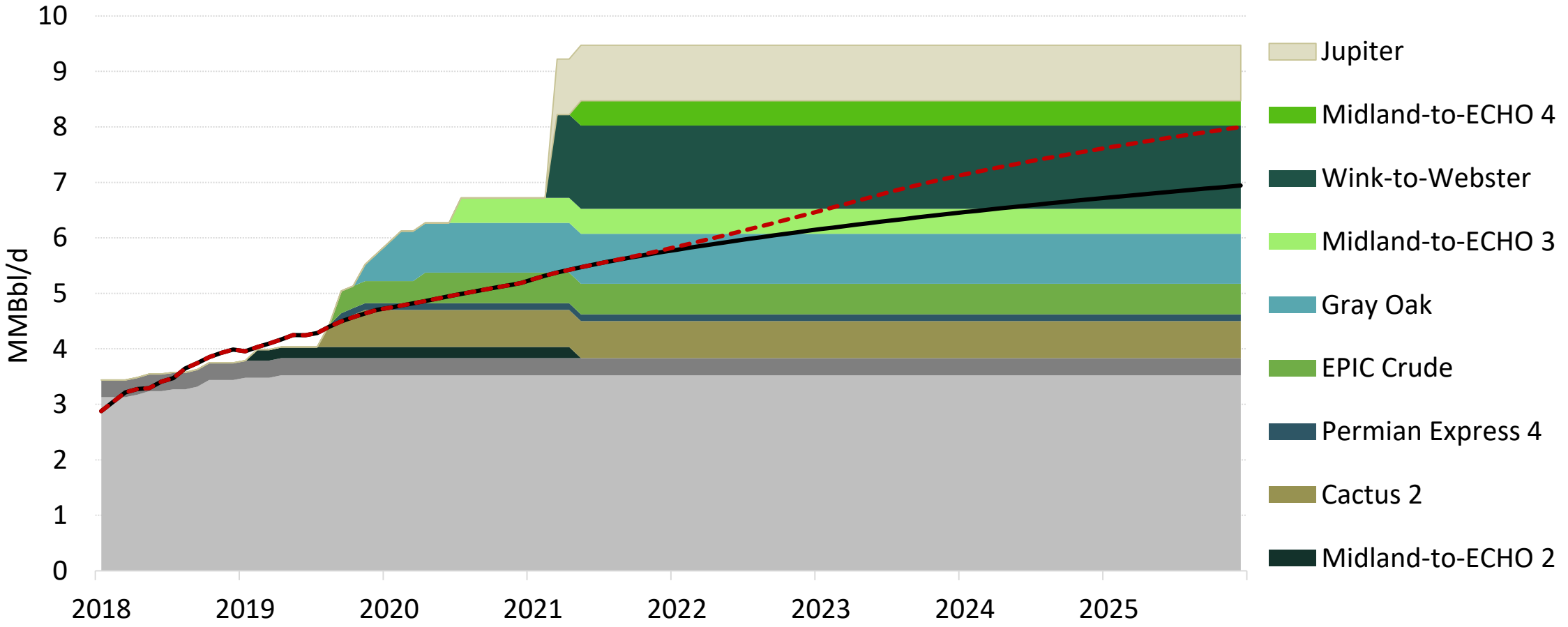
Crude and Condensate Production by Basin



Source: Enverus ProdCast

Permian Basin: Crude Flows Unconstrained

Permian Crude & Condensate Production vs. Takeaway Capacity



Note: Midland-to-ECHO 2 (formerly known as Seminole Red) will return to Y-grade service in 2H2021.

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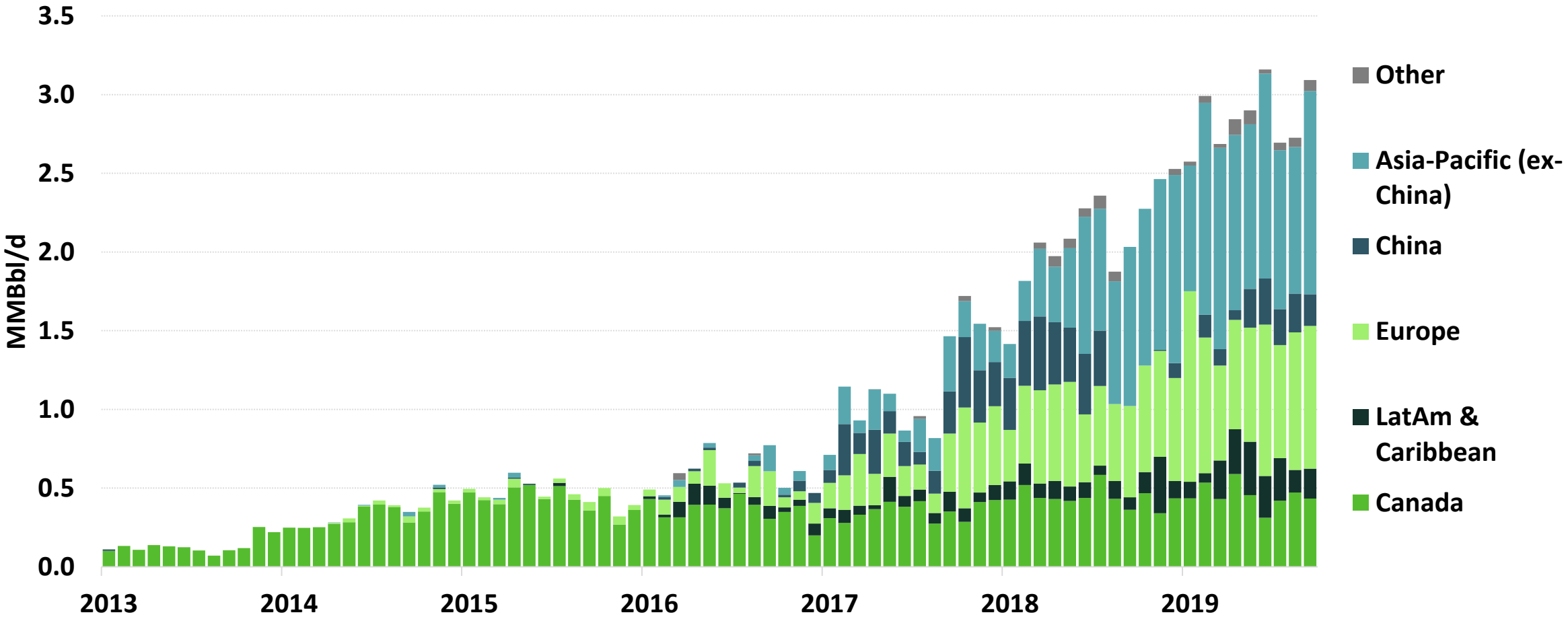
Source: Enverus ProdCast, company reports

US Exports by Destination

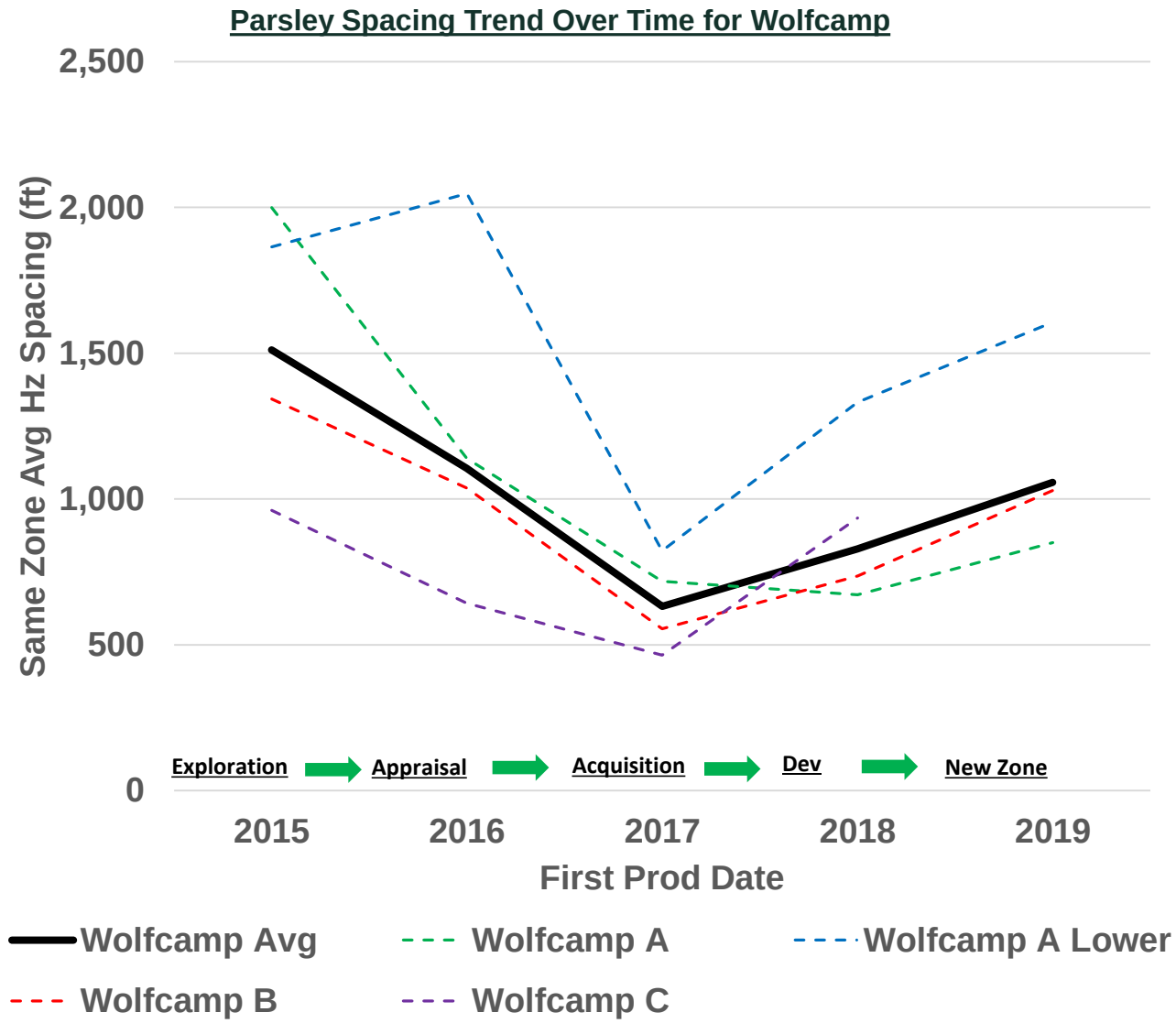
US Crude & Condensate Exports by Destination



Source: EIA

Parsley Example

- Spacing is impacted by many different variables. Understanding the reasons for spacing practices is key. The chart on the right shows spacing of Parsley's Wolfcamp wells.
- In 2015, average spacing was ~1,500 ft as exploration and delineation to hold acreage for Parsley was the main objective.
- In 2016, average spacing tightened to slightly over 1,000 ft as appraisal of acreage positions started picking up.
- In 2017, spacing tightened significantly to just over 600 ft. However, this was due to the acquisition of Double Eagle, which was spacing wells much tighter.
- In 2018, Parsley "upspaced" from 2017, but the reality is that they were taking over the Double Eagle assets and developing them at their own discretion.
- YTD 2019, the spacing got even wider. Although spacing for the more developed formations like Wolfcamp A and Wolfcamp B may come back in toward 2018 averages, the delineation of the Wolfcamp A Lower with wider spacing will continue to impact the average to the upside.



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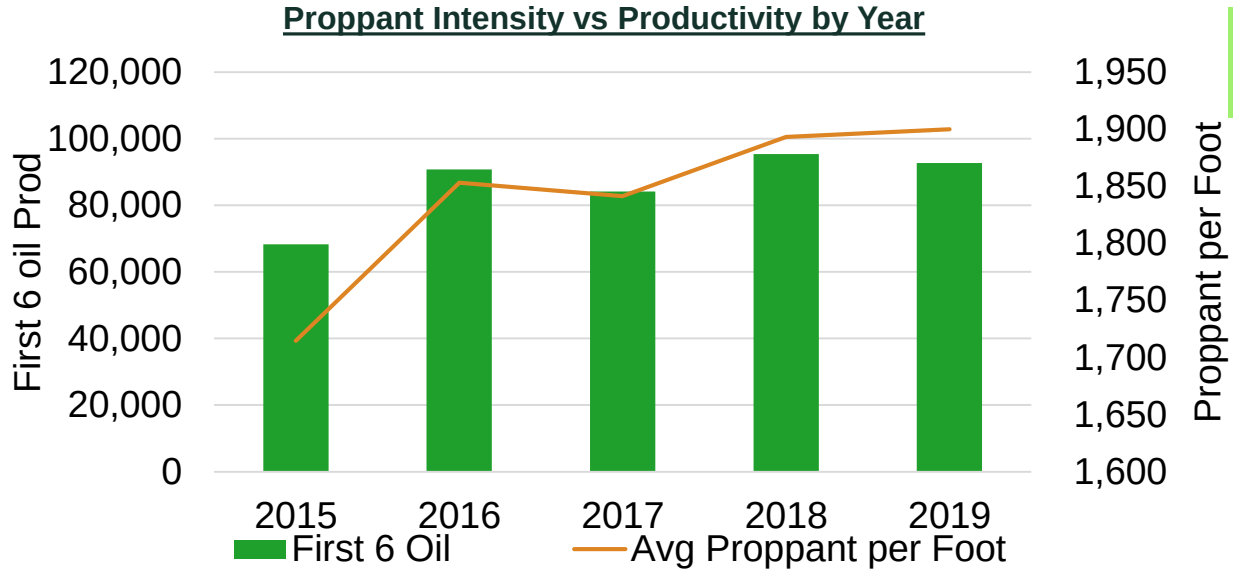
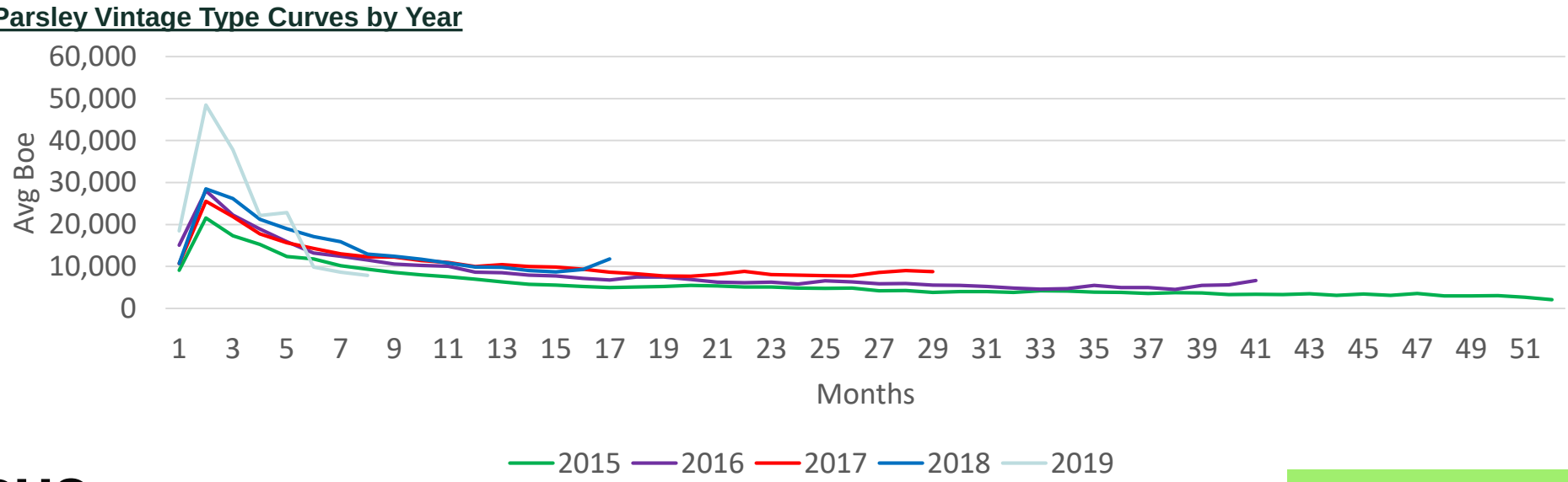
Source: Well Spacing

Parsley Example (Cont.)

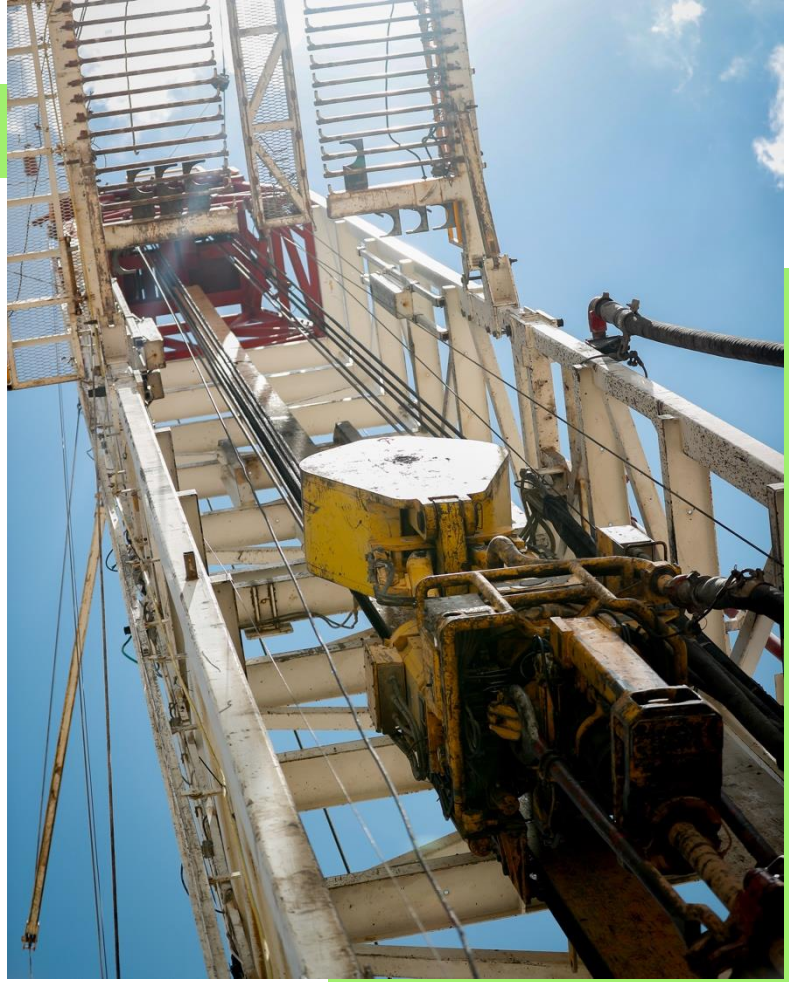
- Charts show the productivity and proppant usage and the trend over time for the same set of wells from previous slide.
- The average Boe type curve during 2017 was worse than seen in both 2016 and 2018, signaling the spacing tightening affecting the performance of the wells. Better average results are seen with upspacing in the Wolfcamp formation.
- Along with the tighter spacing in 2017 with the acquisition, proppant per foot also went down in comparison to 2016. The proppant loading has been increasing since 2017 along with upspacing, which also correlates with higher first 6 months oil production.
- The spacing data along with insights to proppant and type curves also show that Parsley was aware of the best completion practices for their development, and after finalizing the Double Eagle acquisition, they started developing the assets their way and increased productivity and have been successful.



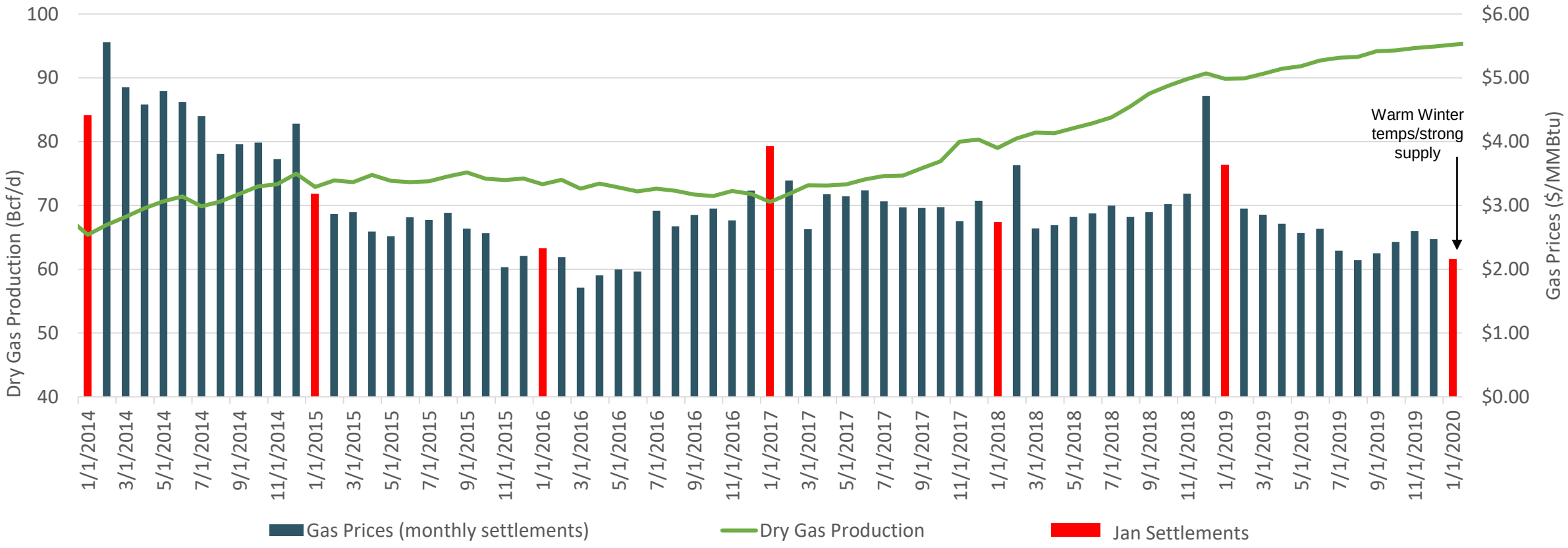


Source: Well Spacing

Natural Gas



US Dry Gas Production and Prices



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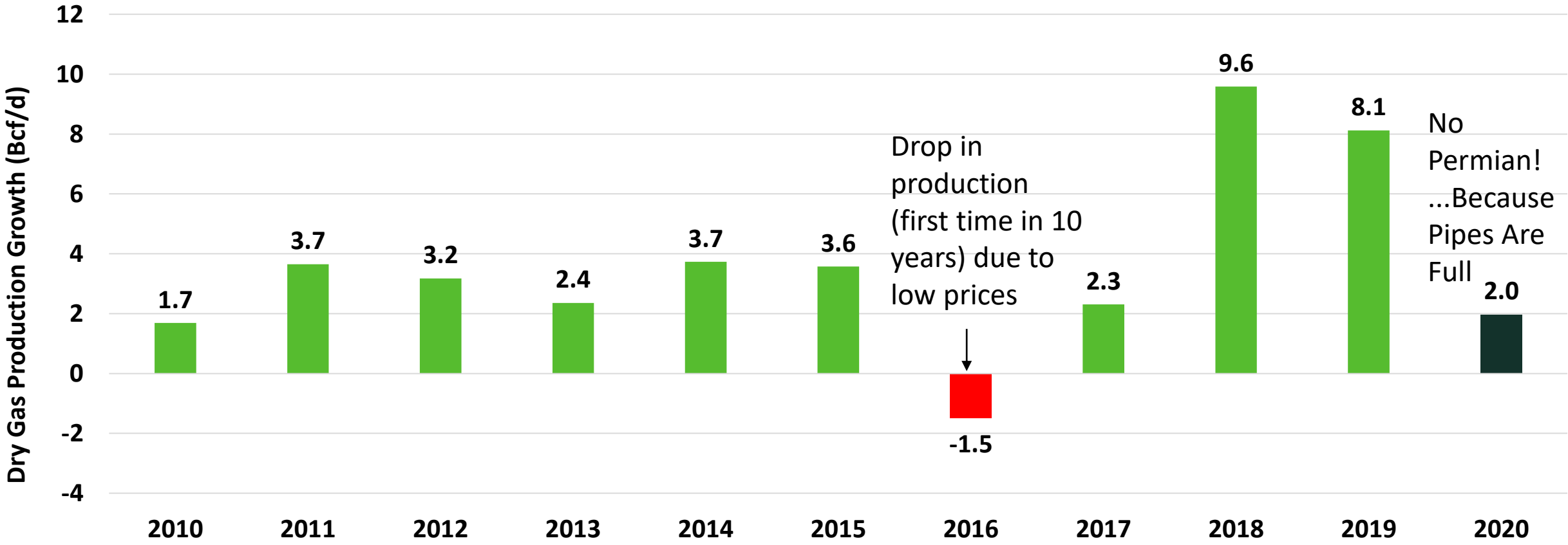
Source: Enverus ProdCast

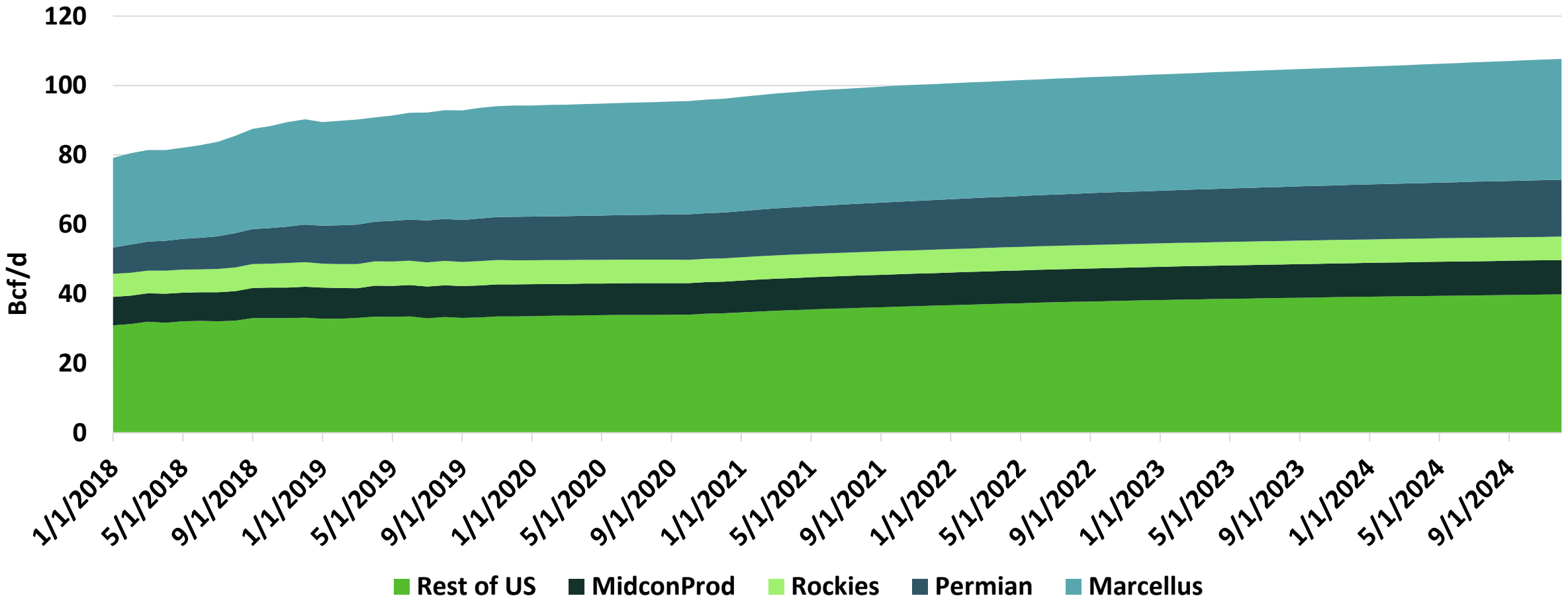
Natural Gas Production Growth to Slow in 2020

Dry Gas Production Growth per Year



Source: Enverus ProdCast

US Production 5-Year Outlook



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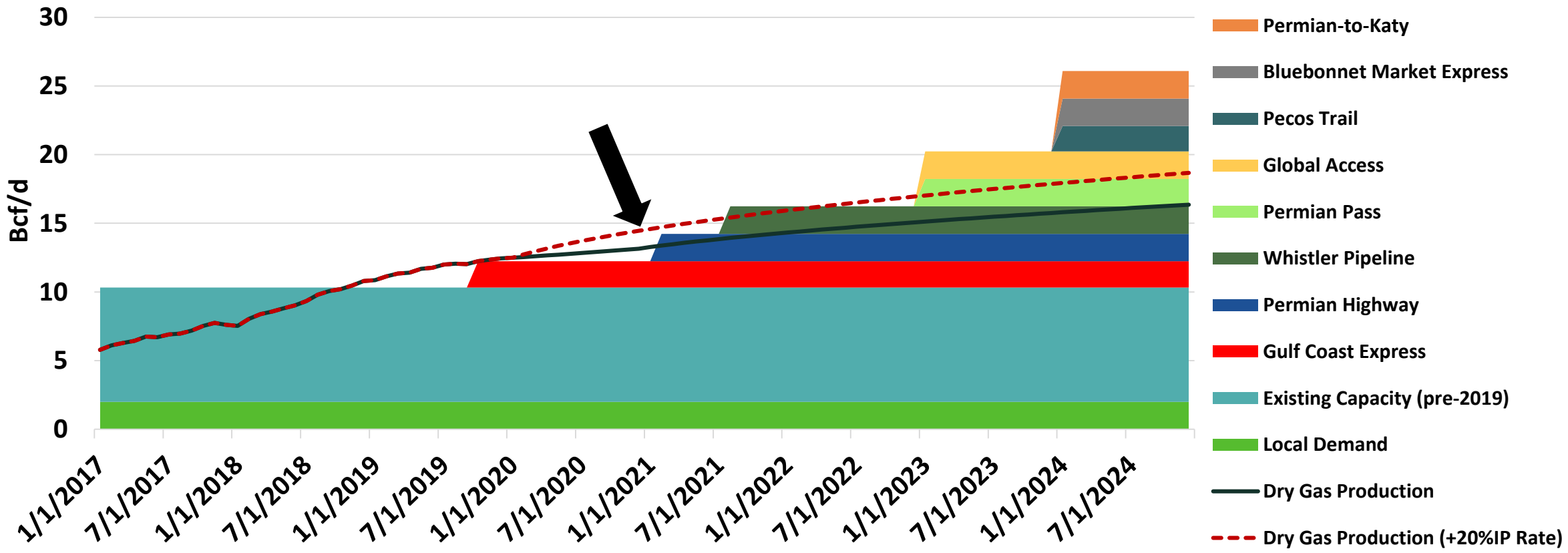
Source: Enverus ProdCast

Permian Production vs. Takeaway Capacity

Permian Production and Expected Capacity Expansions



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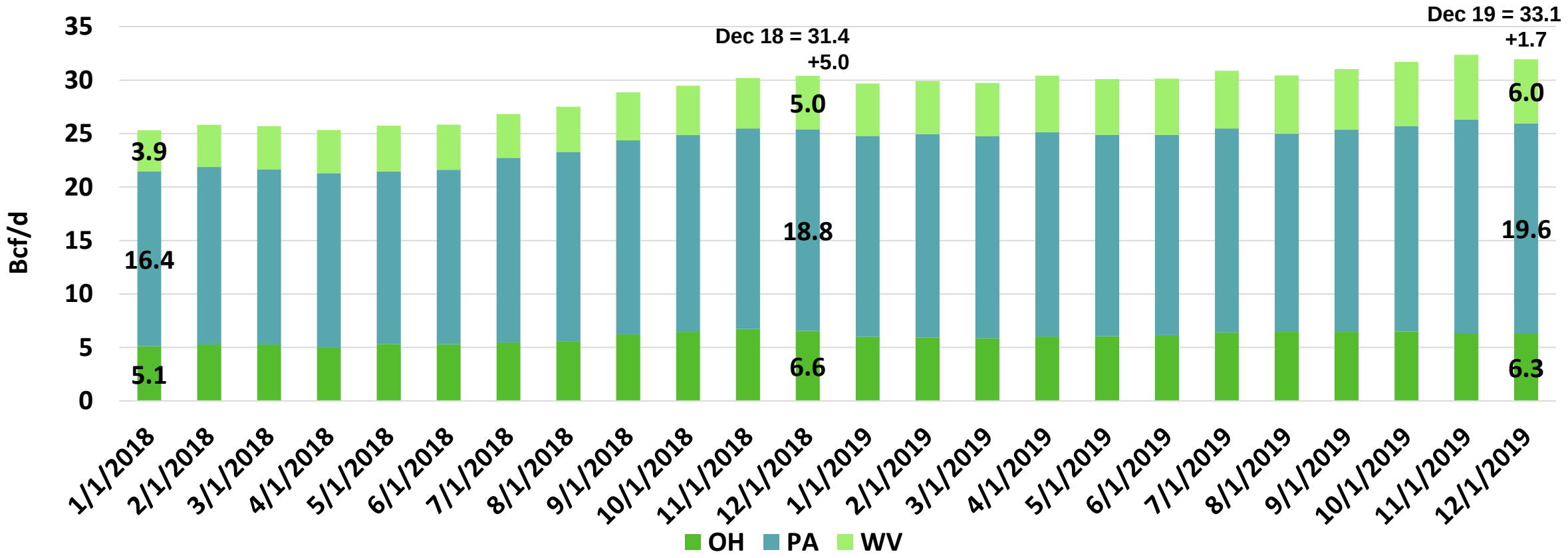
Source: Enverus ProdCast and analysis

Marcellus and Utica Gas Production

Dry Gas Production: Pipeline Sample



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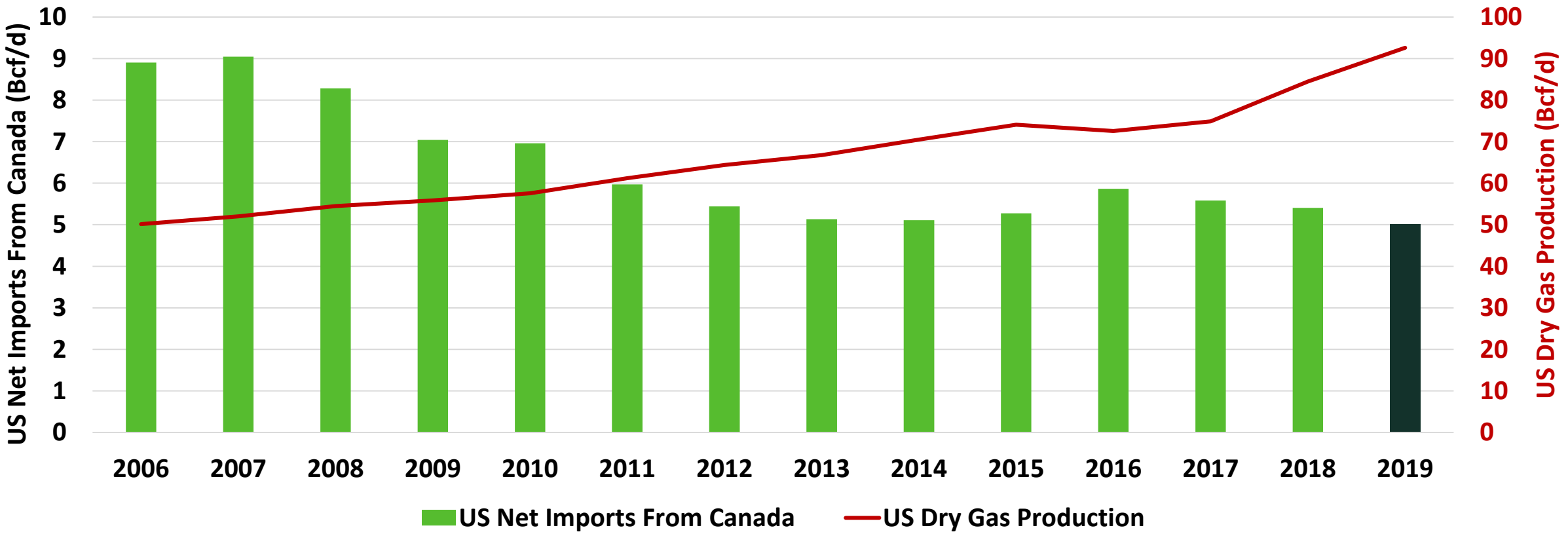
Source: Enverus OptiFlo Gas

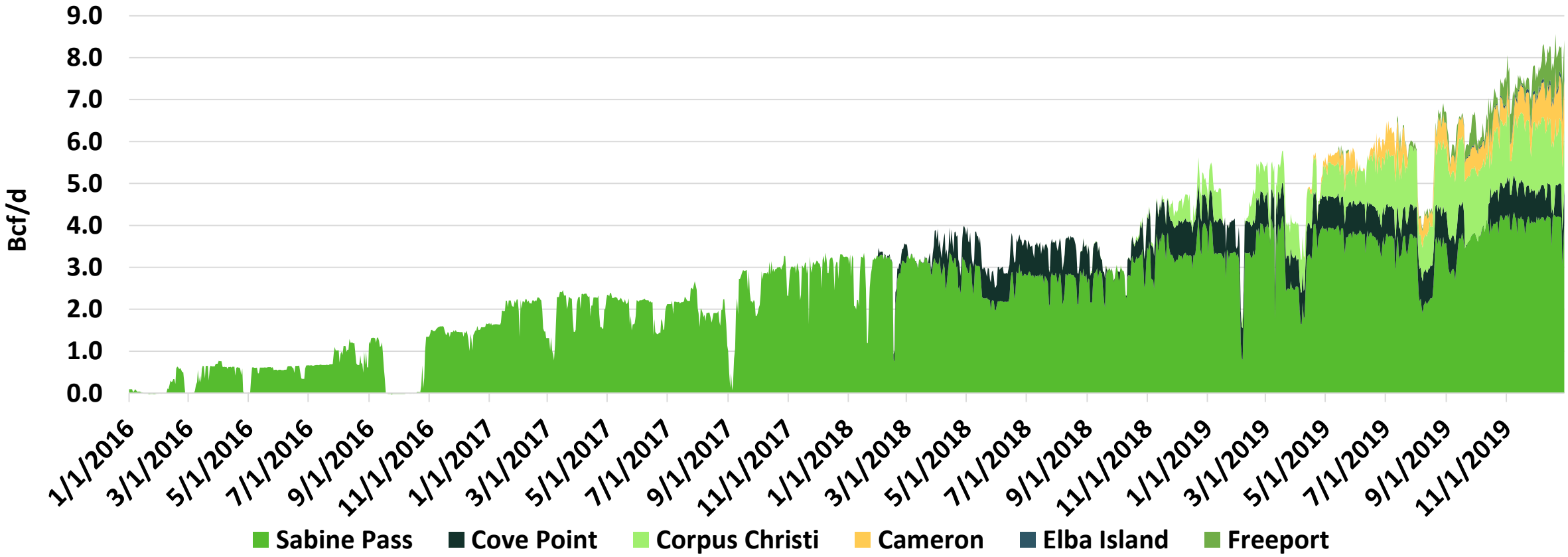
US Imports From Canada



Source: EIA, Enverus ProdCast

LNG Exports Set a Record High During Summer 2019

Natural Gas Feedstock to LNG Export Terminals



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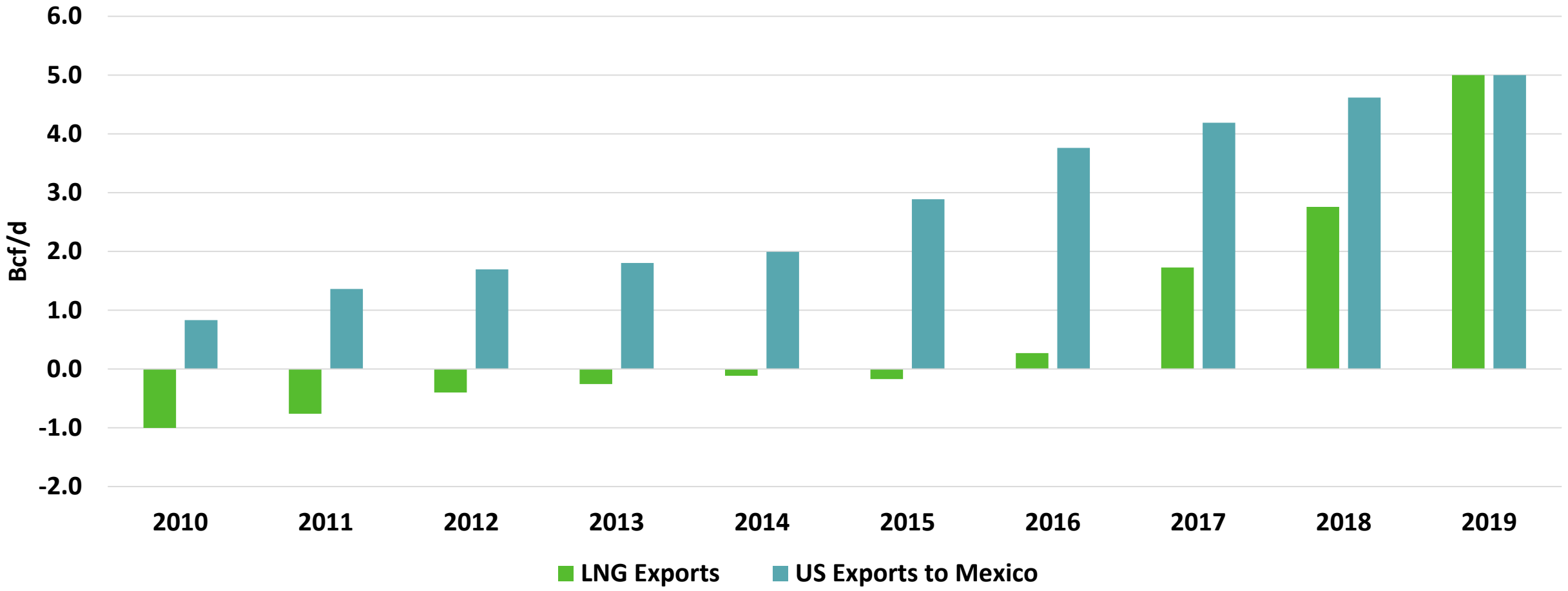
Source: Enverus OptiFlo Gas

US Exports: LNG and Mexico



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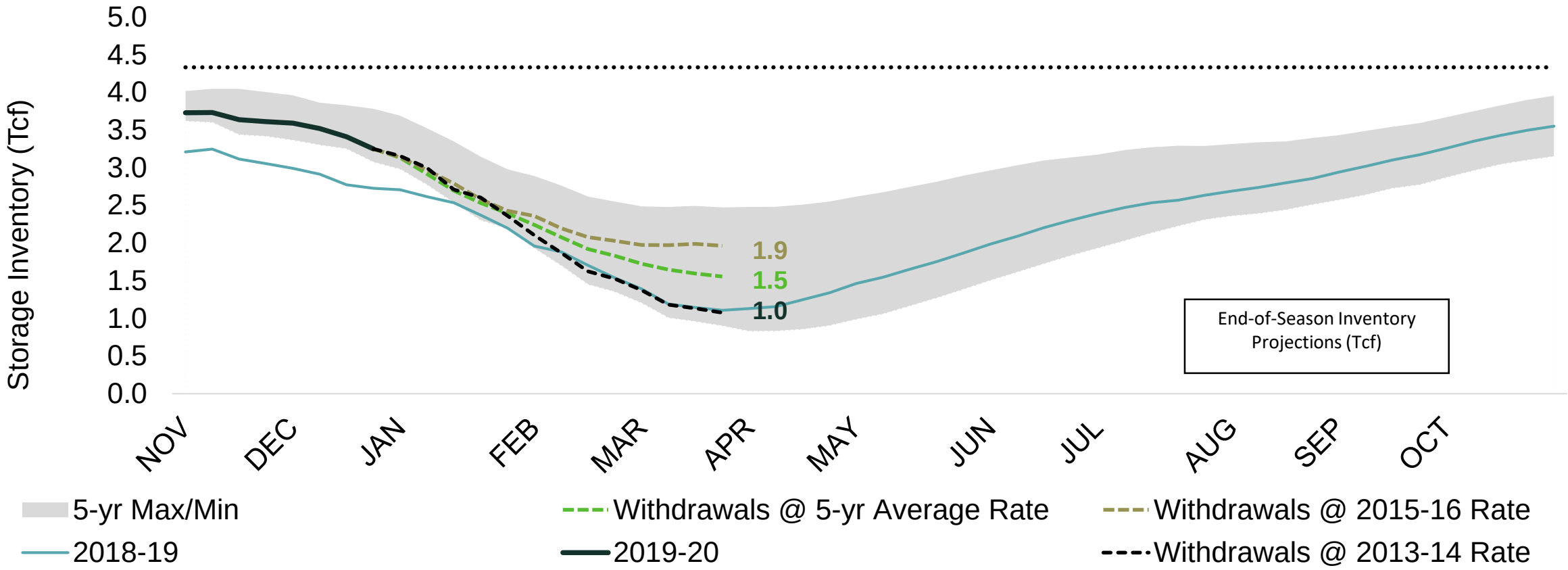
Source: EIA, 2019 Enverus estimates

Storage and Prices

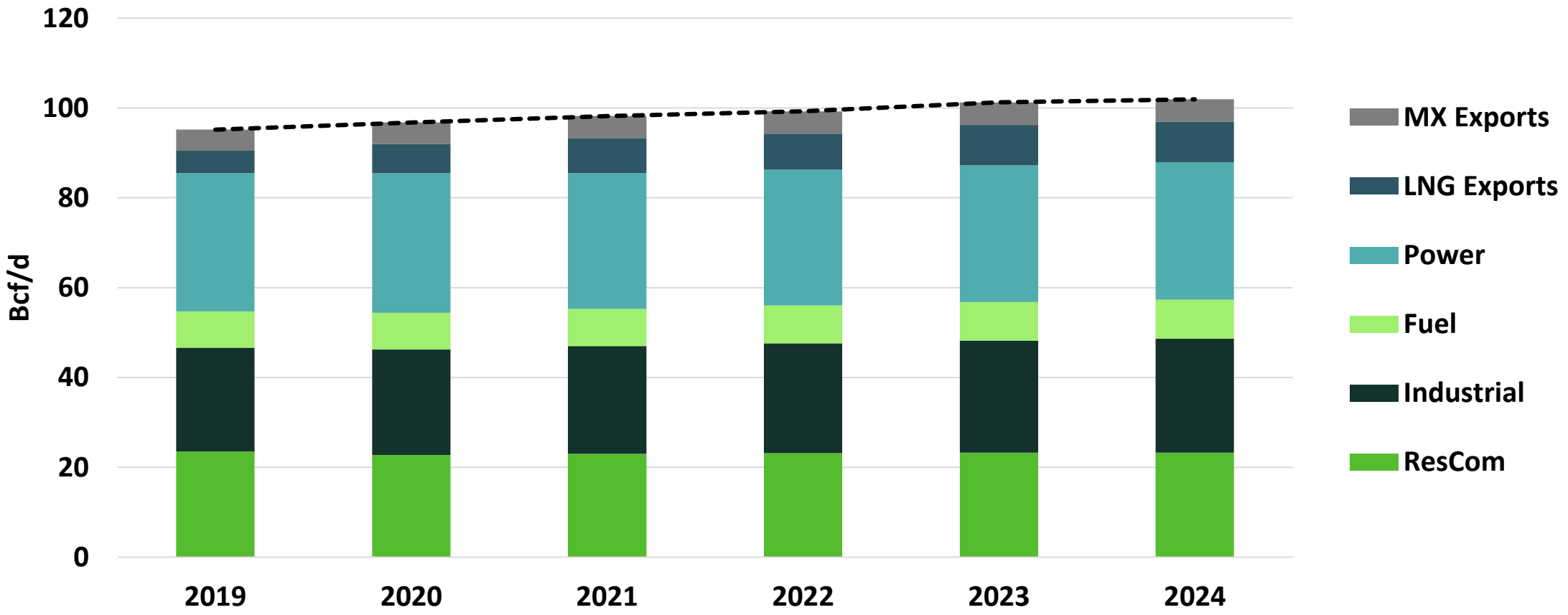
End-of-Winter Inventory Projections



Source: EIA, Enverus analysis

Supply and Demand Balance (5-Year Outlook)

Natural Gas Five-Year Outlook



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Source: Prodcast, Enverus analysis

Q3 2019 OPERATOR UPDATE

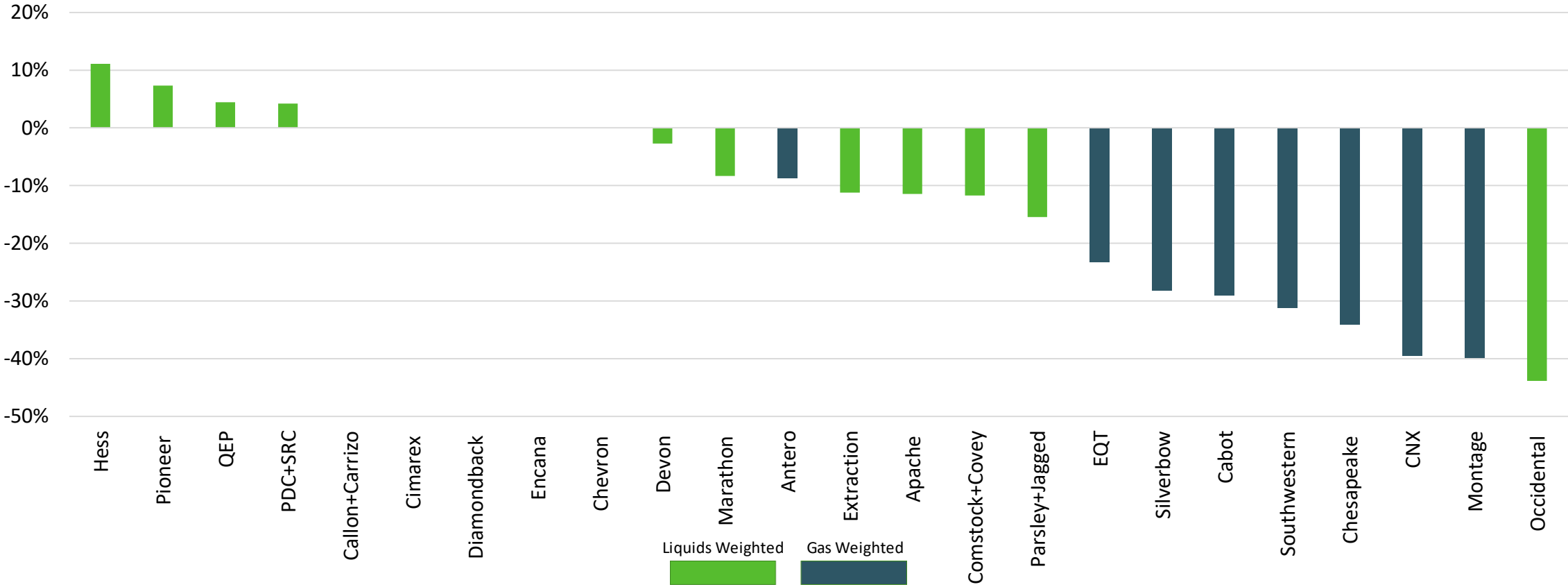
Q3 2019 Earnings Calls: Key Takeaways/Trends

Continued focus on capital discipline; 2020 plans confirm flat-to-lower spend from 2019 levels

1. **Costs Are Down** – Times are tough for OFS companies. Operators are pointing to 10%-25% in cost reductions from 2018 levels. Noble, for example, has seen a reduction of $2M per well in the DJ (25% less) and Delaware (20% less) from just three quarters ago. Most E&Ps are confident that they will not see cost inflation in 2020, either. Even companies without scale, such as Bonanza Creek point to current bids for 2020 that are 15%-20% less than 2019 levels. Based on commentary this earnings season, service companies seemed to have chased themselves to the bottom in 2019, but companies like Halliburton have already started their withdrawal of equipment to keep fleets healthy and limit attrition during this time of low margins. Given enough service supply leaving the market, costs may increase.
2. **Productivity Is Up** – Some of the cost reductions are attributable to cycle-time reductions and efficiencies, however.
3. **2019 Capex Is Down With Production Up** – Thinking back to when 2019 plans were announced, amid the low and volatile pricing environment, most operators were likely deathly afraid of outspending capex guidance. Only a small number of companies revised 2019 guidance upward this quarter; almost all narrowed or revised down. This is all attributable to a combination of falling costs and increased productivity, but also likely because of conservative estimates. Will 2020 yield even more conservative estimates?
4. **2020E Capex Is Down With 2020E Production Up** – Most preliminary plans show capex flat-to-down from 2019. Operators who have disclosed average a 13% reduction, gas weighted average a 25% reduction, and liquids weighted average a 5% reduction in 2020 activity from 2019 levels. The weighted average is an 8% reduction, with Oxy leading the way with a 2020 DJ and Delaware program that is 44% less than this year's capex ($2.5B).
5. **Liquidity Issues** – We have seen several bankruptcies in the last couple quarters, including EP Energy, Sanchez, Alta Mesa, and Halcon. Smaller operators are finishing out their 2019 plans with some barely reaching cash flow neutrality with near maximums drawn from credit facilities. This fall brought the redetermination season on borrowing base commitments, and an increase or decrease in commitments provides both positive and negative testaments to operators' abilities to pay debts when they become due. As many are backed up against a wall, they look to sell assets into the buyer's market, forcing themselves to sell assets below value. All these factors will likely lead to an even further reduction in capex for these operators if prices stay the same, which should provide a slight offset in production growth to the larger-scaled operators who are capable of achieving growth with less capital.

2020E vs. 2019E Capex

Over $5B of total capex will be shed from 2020 programs from these producers alone with more likely to come from those who have not disclosed



*Chevron, Hess, Devon, Marathon, and Encana include global spend. Marathon's 2020 capex is an Enverus estimate. Apache is Upstream assuming 75% US allocation. Assumes Cabot chooses lower of two potential programs. Recently merging operators assume pro forma and the deal closing. D&C used when disclosed. Labeled "Gas Weighted" when company discloses total production in Mcfe rather than Boe.

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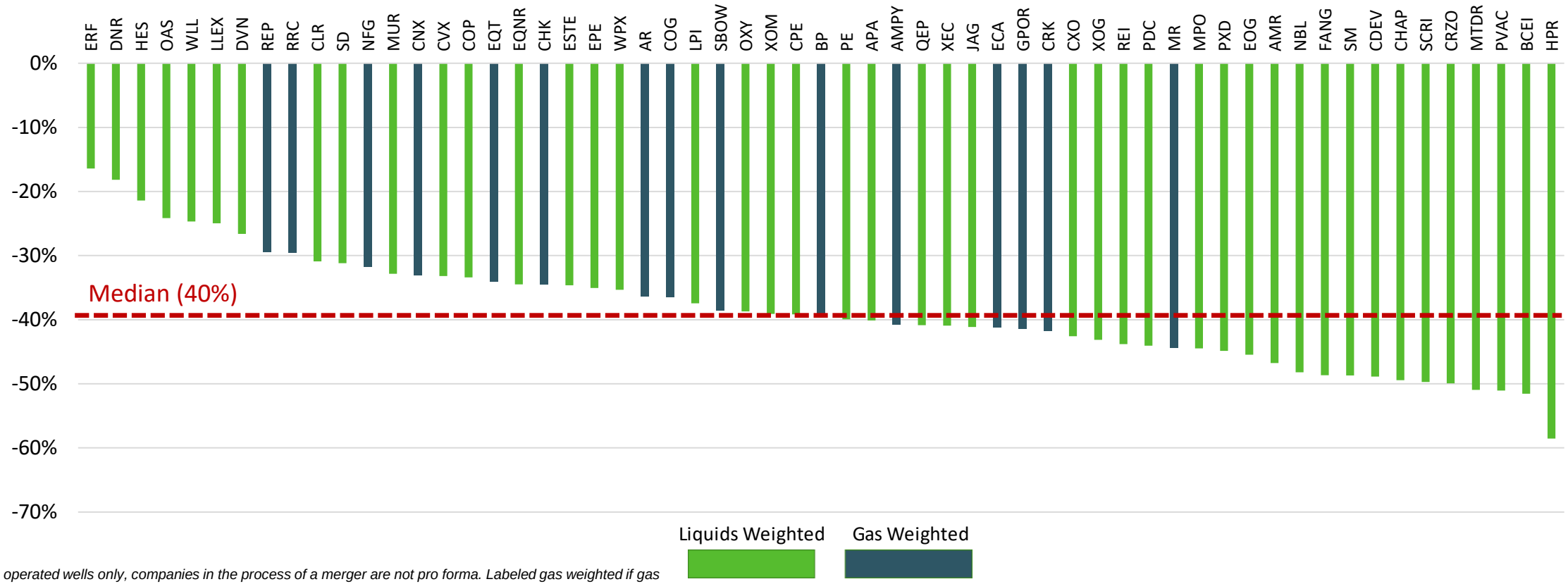
Source: Company Filings

U.S. Q3 2019 Exit to Q4 2019 Exit Decline Rates (BOE:6)

Only 10% of these producers have 5-quarter declines over 25%, and almost half will lose 40% of their gross operated September 2019 production by 2020-exit



US gross operated wells only, companies in the process of a merger are not pro forma. Labeled gas weighted if gas makes up 75% or more of gross operated well-level 2-stream production, all based on BOE:6.

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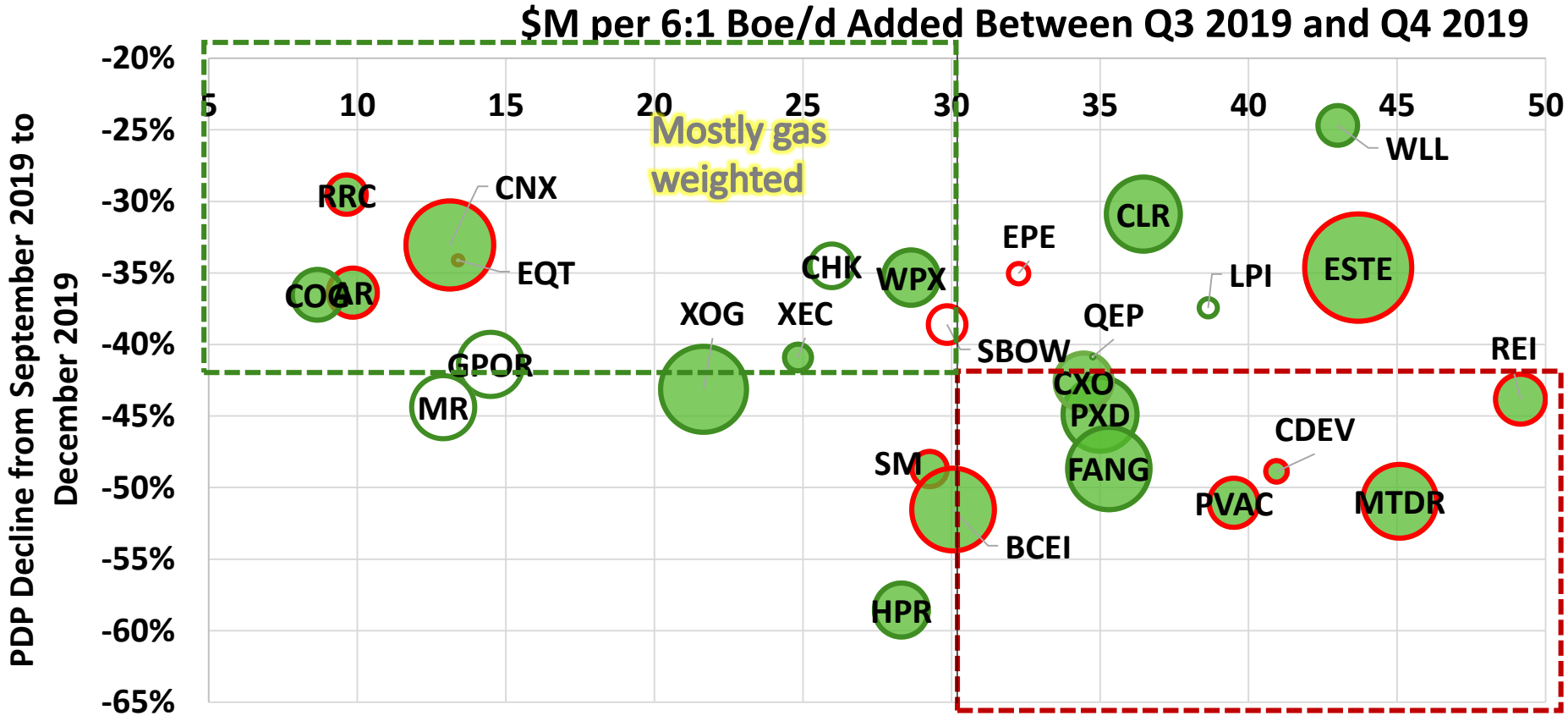
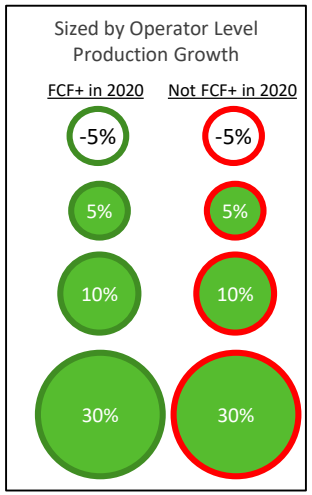
Source: Enverus Drillinginfo PDP

2020 Sustainability and Capital Efficiency

42% of these Lower 48 E&Ps are expected to be within consensus free cash flow





From Q3 2019 to Q4 2019. US operations only, excludes international, merging companies, and those without significant analyst coverage. Declines are based on Enverus' gross operated PDP forecast. Production growth and capex are based on consensus and net production with declines applied to net production. Consensus estimates compiled from Bloomberg as of November 2019.

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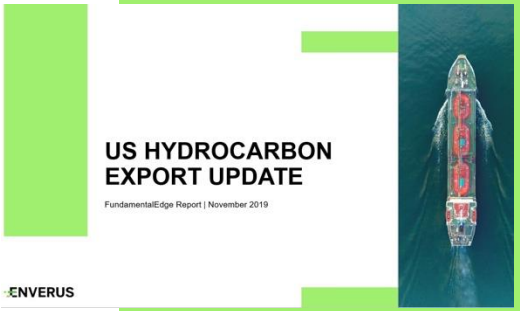
Additional Publications



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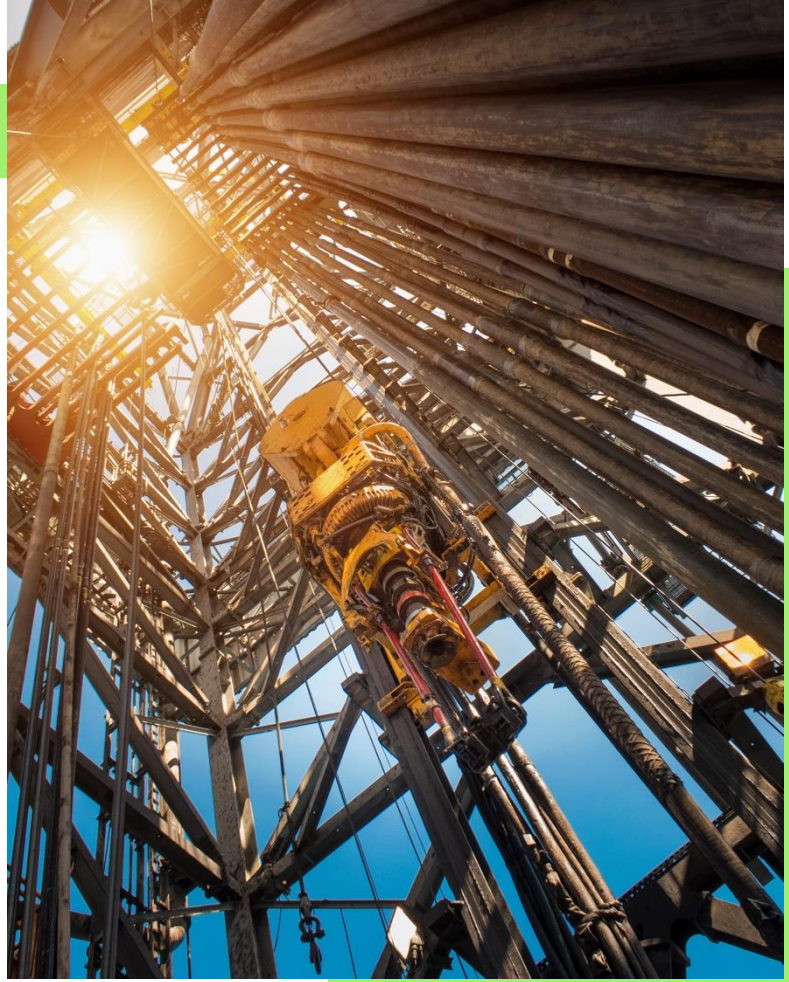
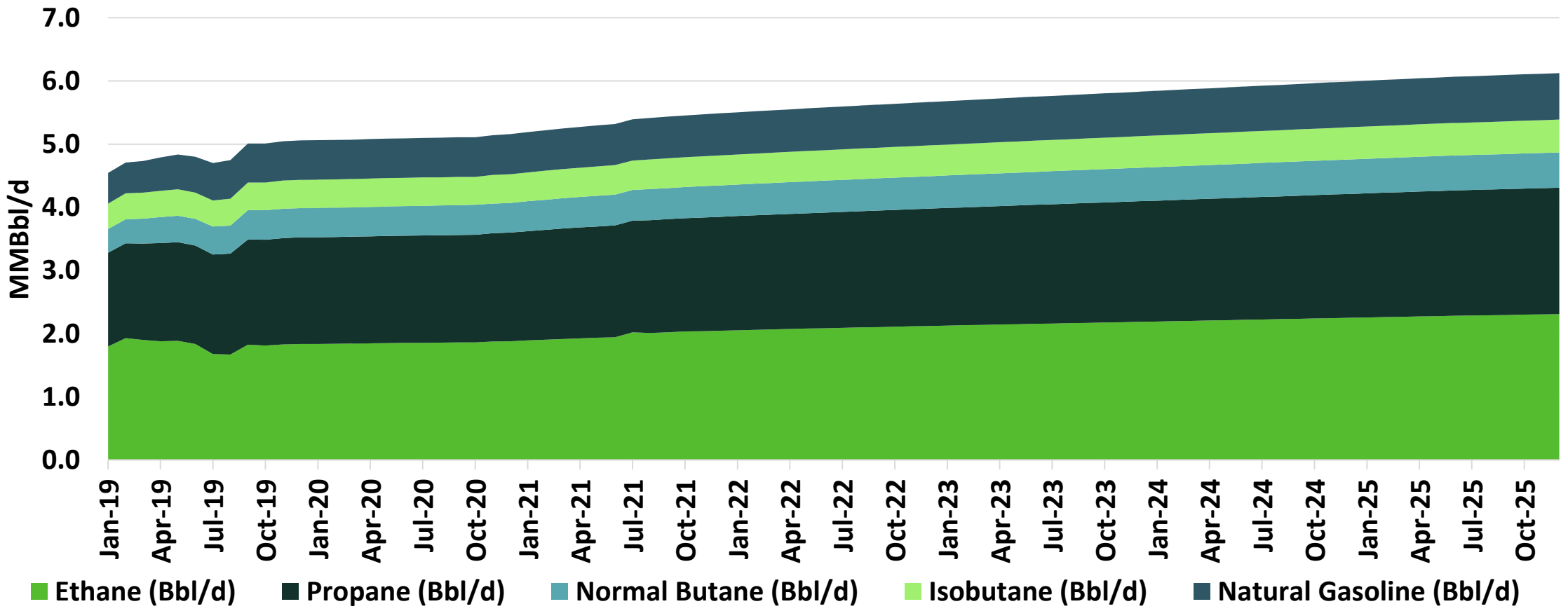
NGLs



NGL Product Production

US NGL Production by Product



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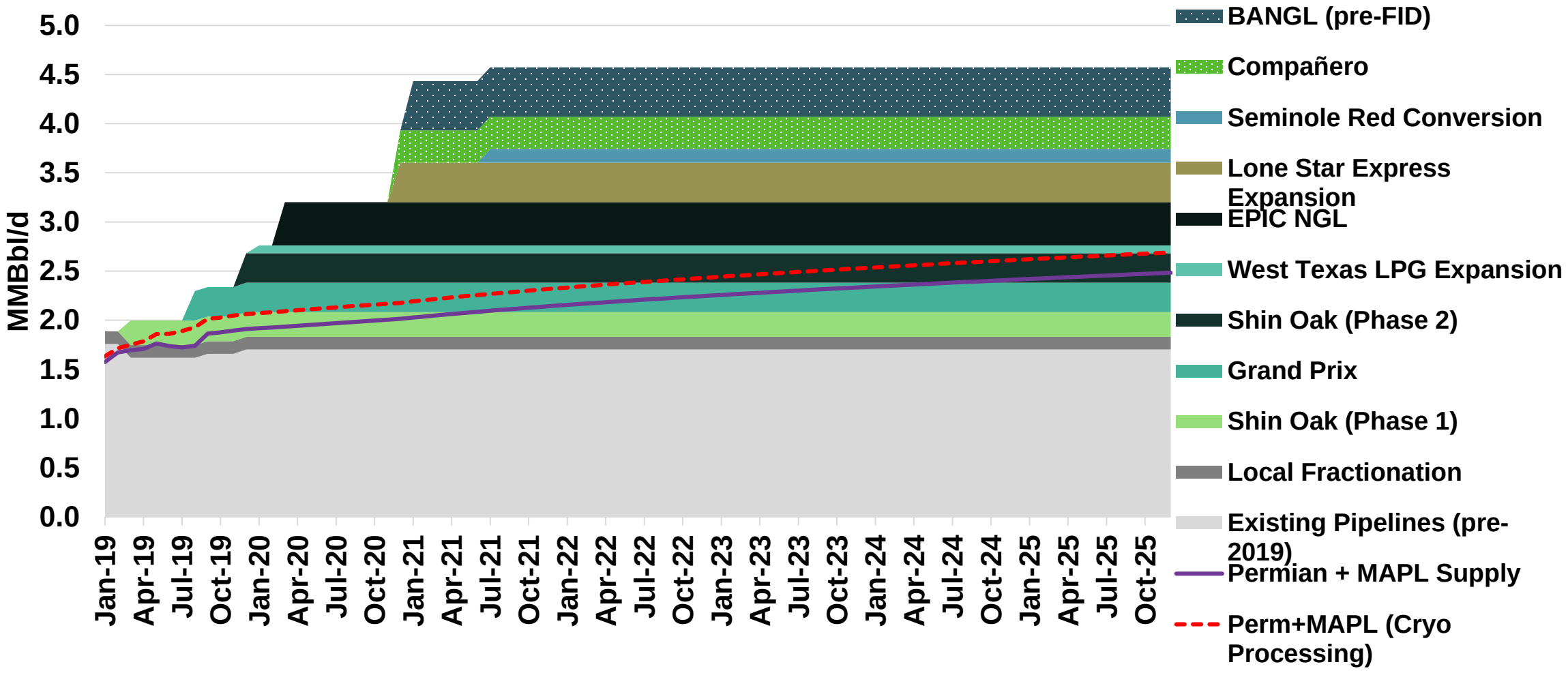
Source: Enverus ProdCast

Permian Y-Grade Takeaway

Permian Y-Grade Production vs. Takeaway Capacity



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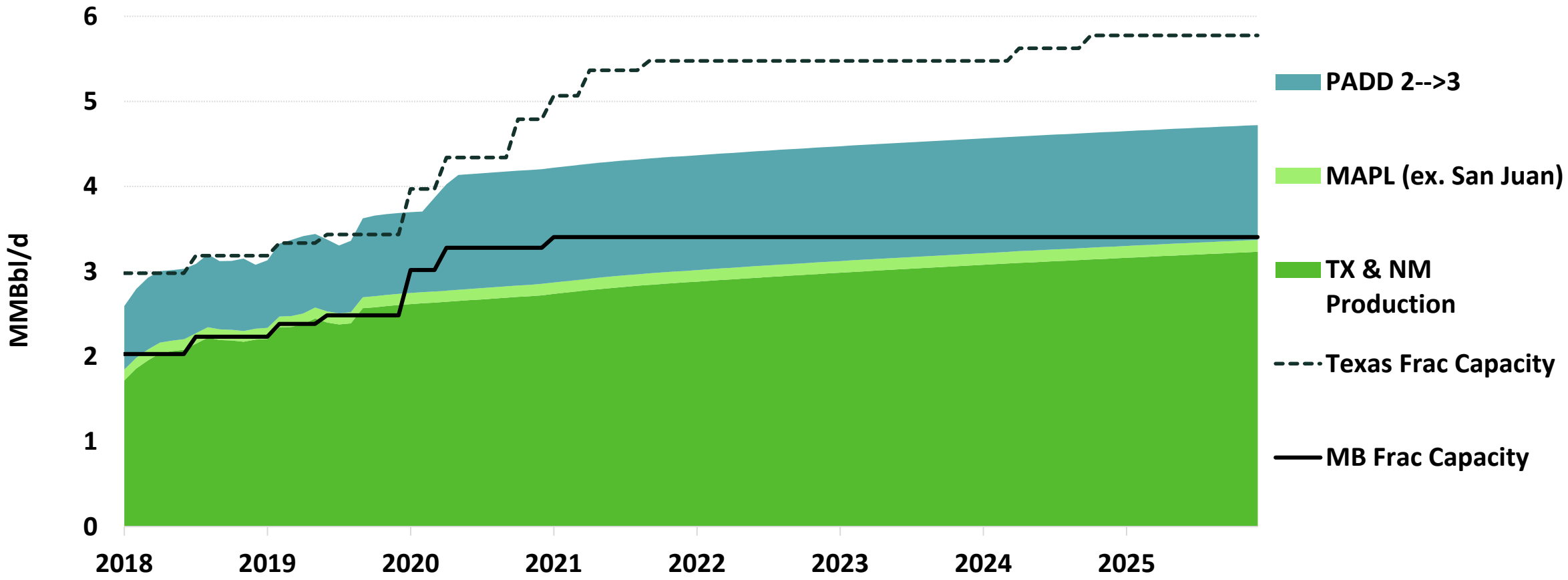
Source: ProdCast, Company Filings

Texas Fractionation Capacity

Texas Frac Capacity vs. Y-Grade Supply



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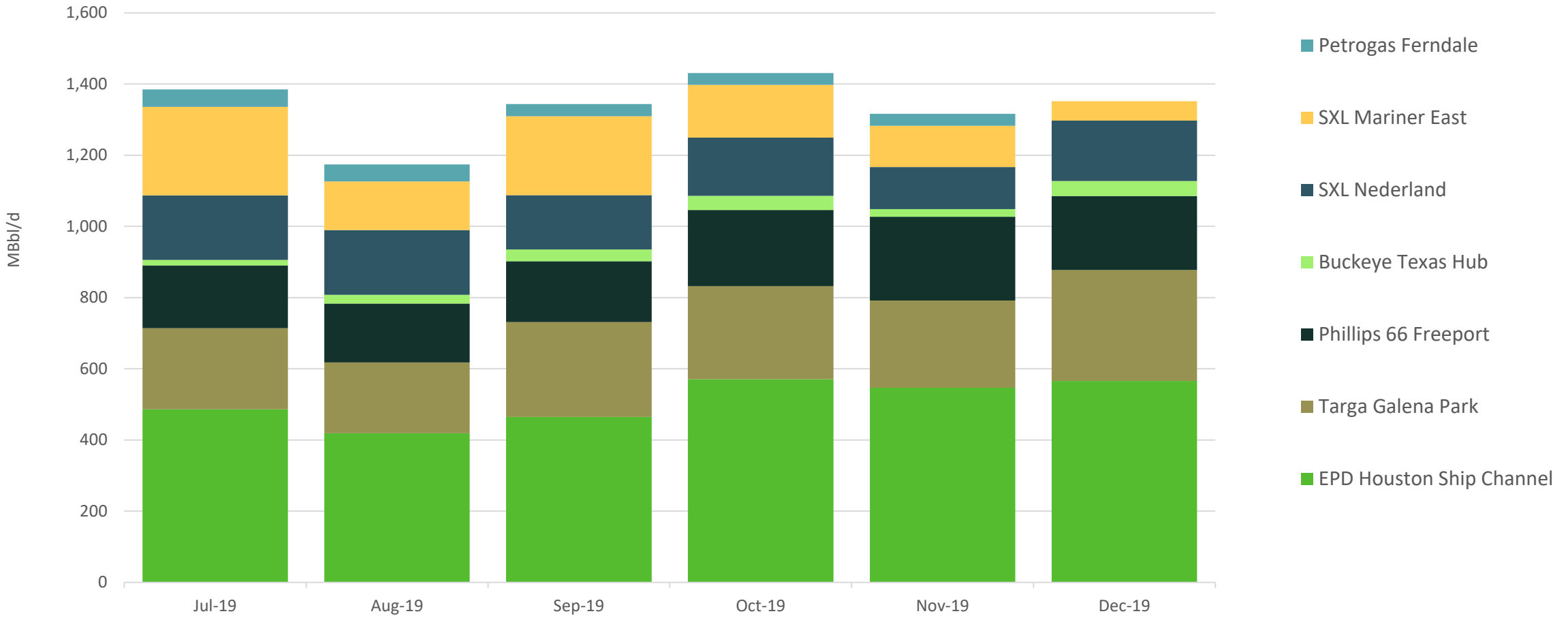
Source: Company Filings, Enverus analysis

Waterborne LPG Exports

LPG Exports by Terminal



Source: Enverus Shipping Data

Gulf Coast Ethane & LPG Export Projects

Existing Terminals and Projects

Export Terminal	Owner	Capacity (MBbl/d)	Product Type	In-Service Date
Enterprise Hydrocarbon Terminal	Enterprise	545	LPG	Online
Targa Galena Park	Targa	230	LPG	Online
Nederland	Sunoco/Energy Transfer	250	LPG	Online
P66 Freeport	P66	200	LPG	Online
Enterprise Hydrocarbon Terminal	Enterprise	175	LPG	Online
Targa Galena Park	Targa	100	LPG	Online
Enterprise Hydrocarbon Terminal	Enterprise	260	LPG	3Q2020
Targa Galena Park	Targa	170	LPG	3Q2020
Nederland	Sunoco/Energy Transfer	200	LPG	3Q2020
Total LPG		**2,130**		
Morgan's Point	Enterprise	240	Ethane	Online
Orbit Gulf Coast Terminal	Energy Transfer/Satellite	175	Ethane	4Q2020
American Ethane Terminal	American Ethane	480	Ethane	2023
Total Ethane		**895**		

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Source: EIA, Company Filings