

**S&P Global**

Commodity Insights

# What Winning Looks Like

US Shale: The State of the Revolution

**August 2024**

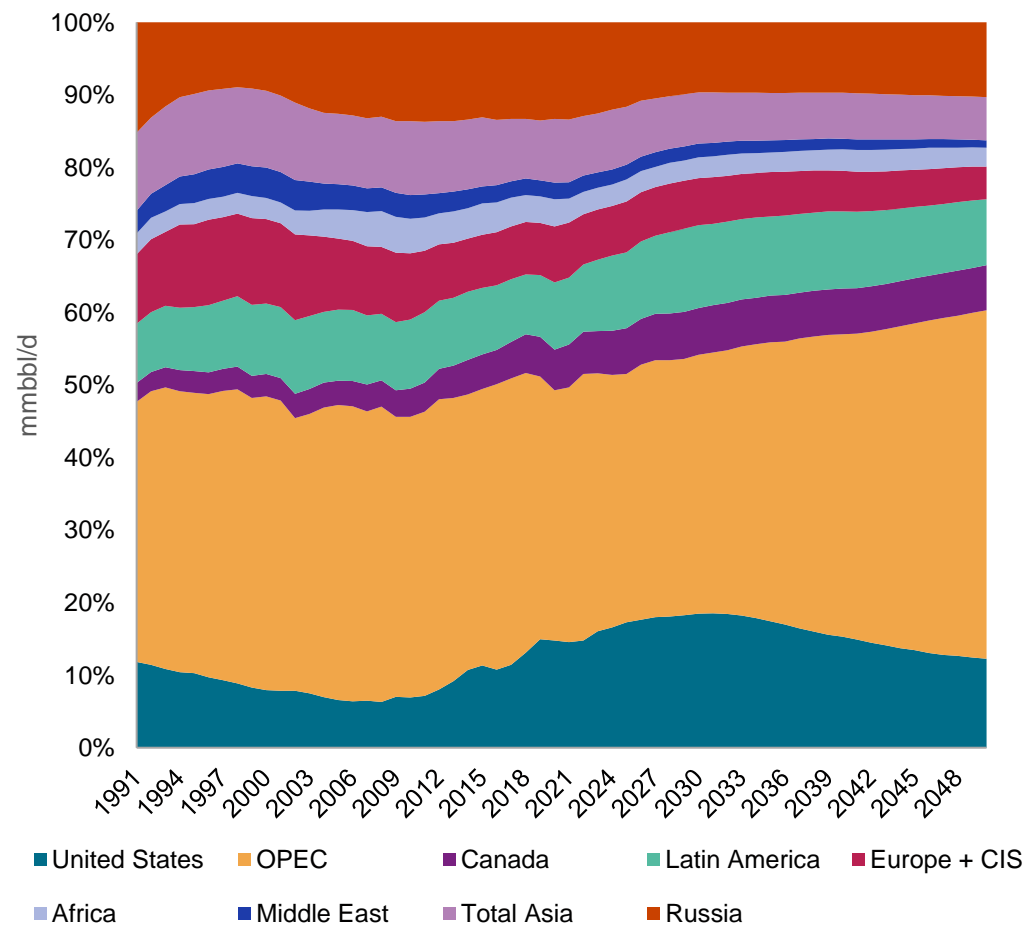
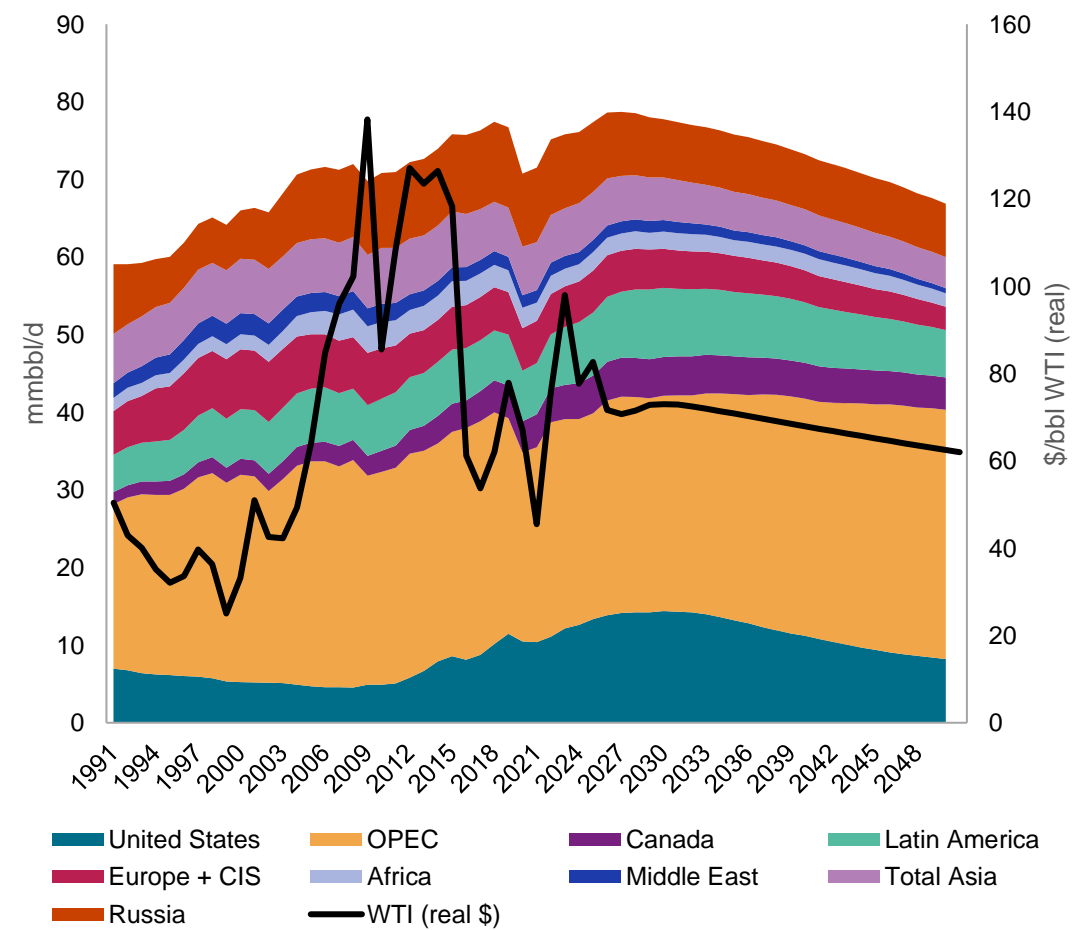
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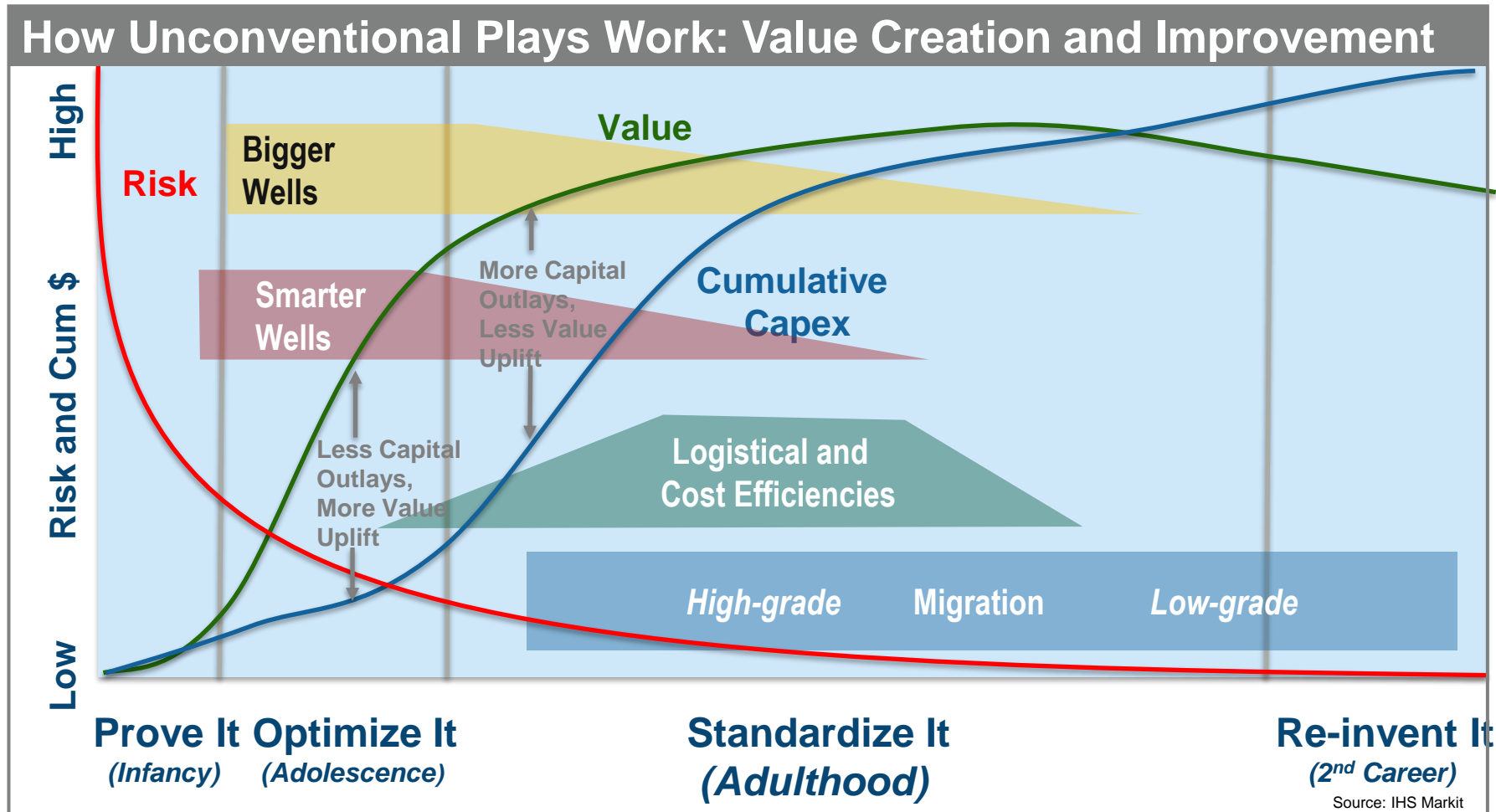
# How badly did the world need US supply growth?



# Value, Risk, and Levers in Upstream North America

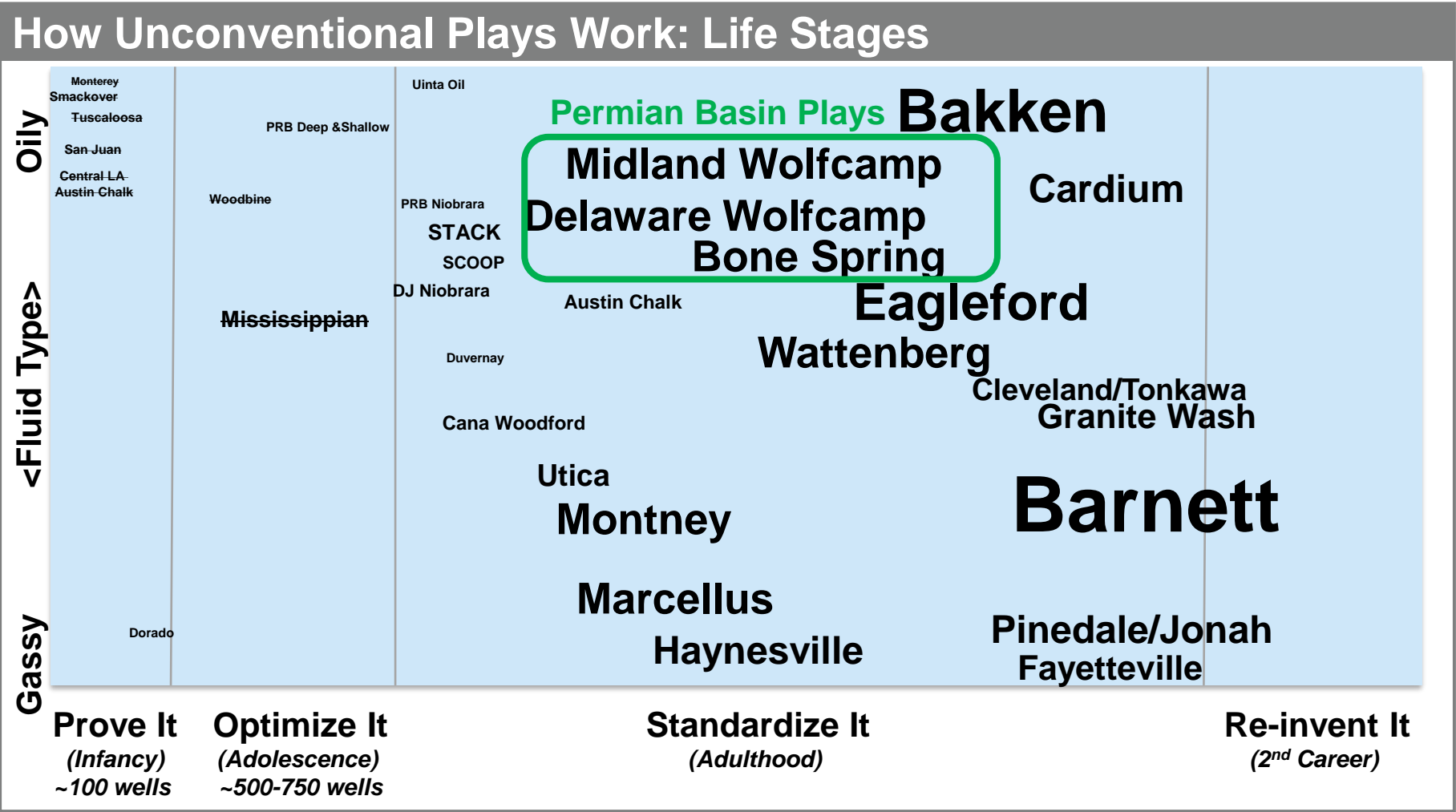
Very large value add per \$ spent comes in the initial stages, when risk is high.

Most independents have sought to monetize after optimization, before the very large capital commitments.

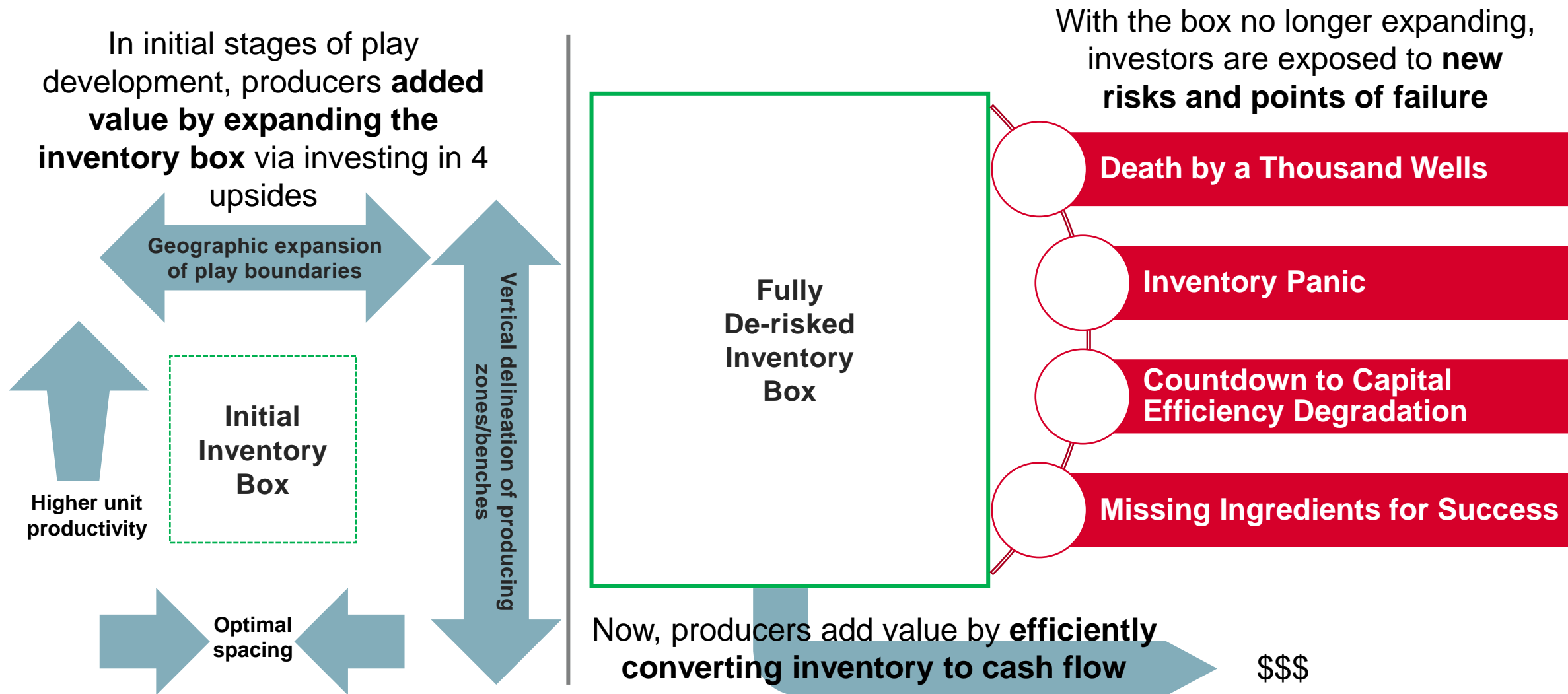


# The Cupboard Is Full

A large resource base has already been de-risked and will feed the system for several years.

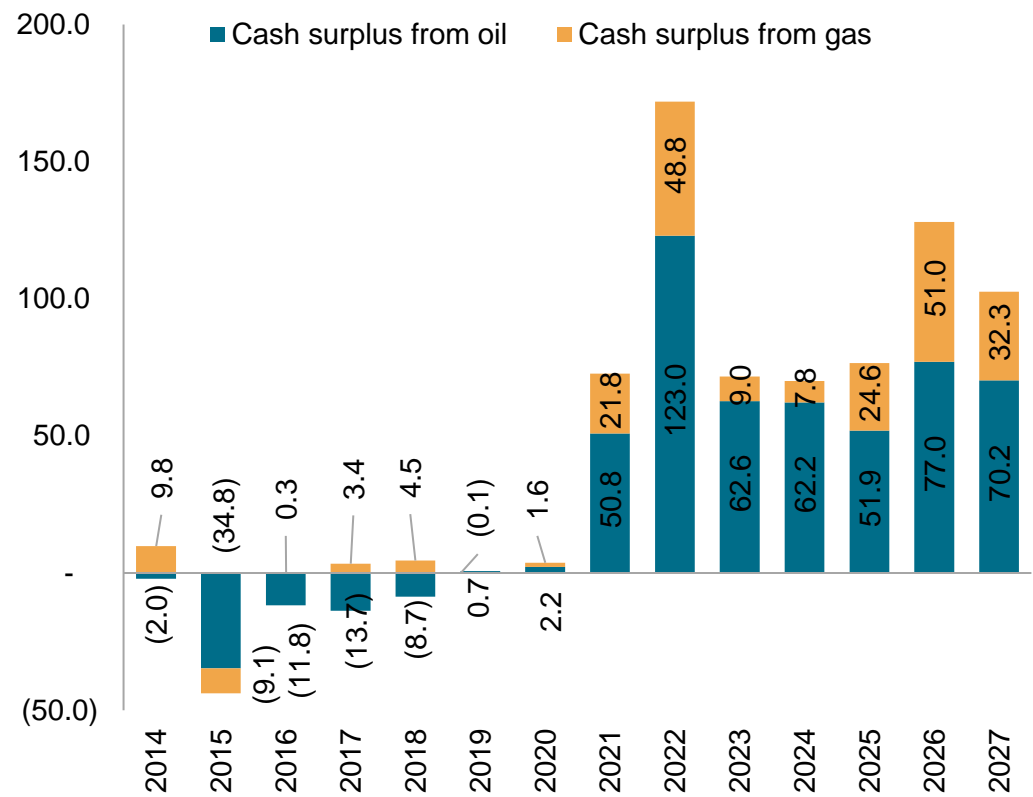


# E&P's Shrinking Box Problem

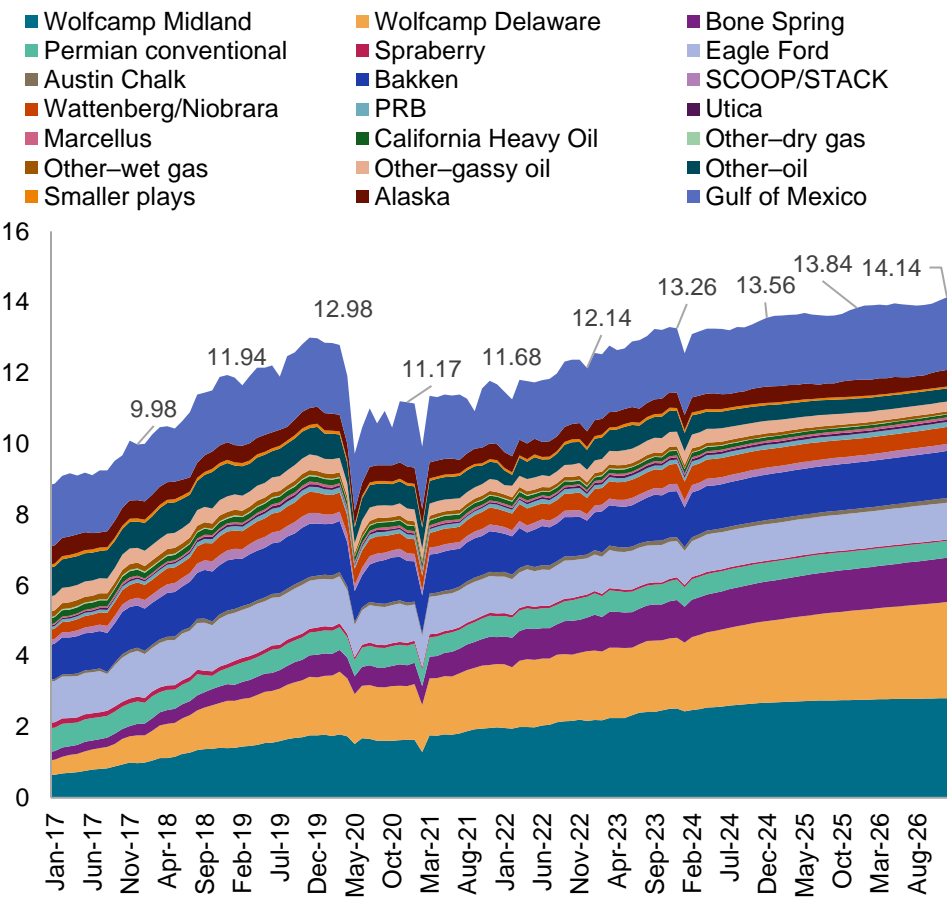


# Lowered price outlook matched by reduced spending and activity in 2025

Cash surplus by commodity (\$ billion)



US oil production in million b/d (December volumes noted)

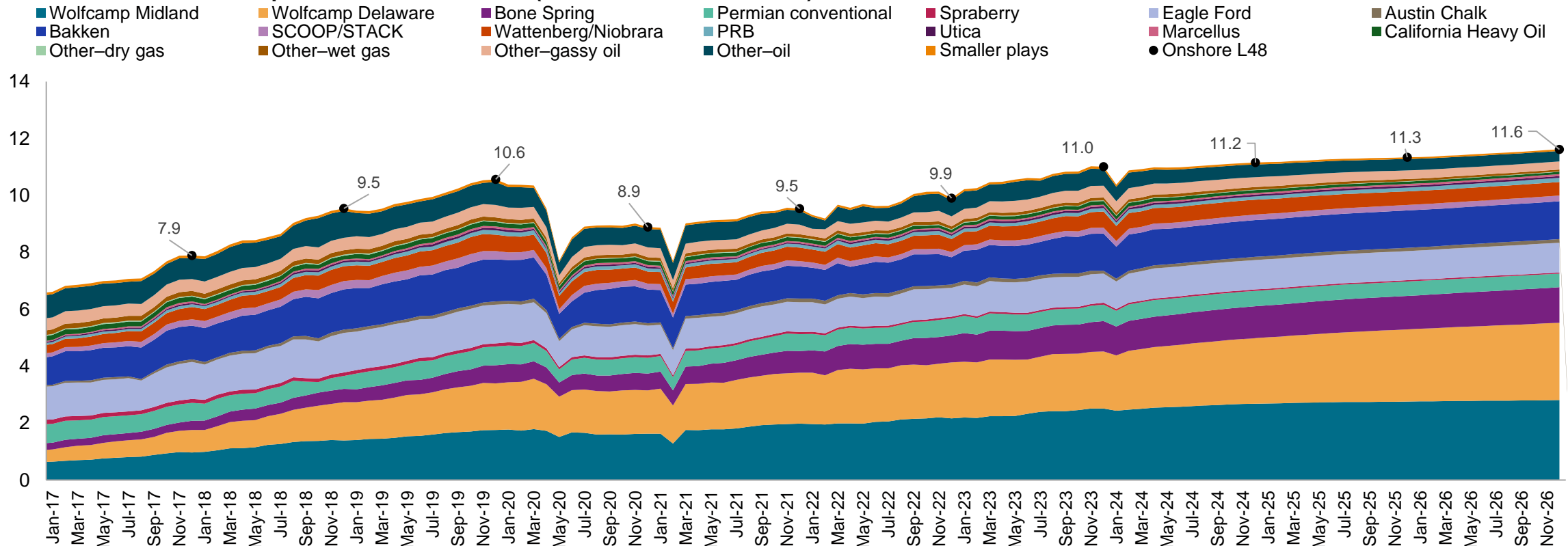


Data compiled July 22, 2024.  
Cash flow by commodity chosen by play by predominant product.  
Source: S&P Global Commodity Insights.



# Onshore growth continues to slow as oil price and free cash flows dictate what can be spent for production

**US onshore Lower 48 oil production in million b/d (December volumes noted)**

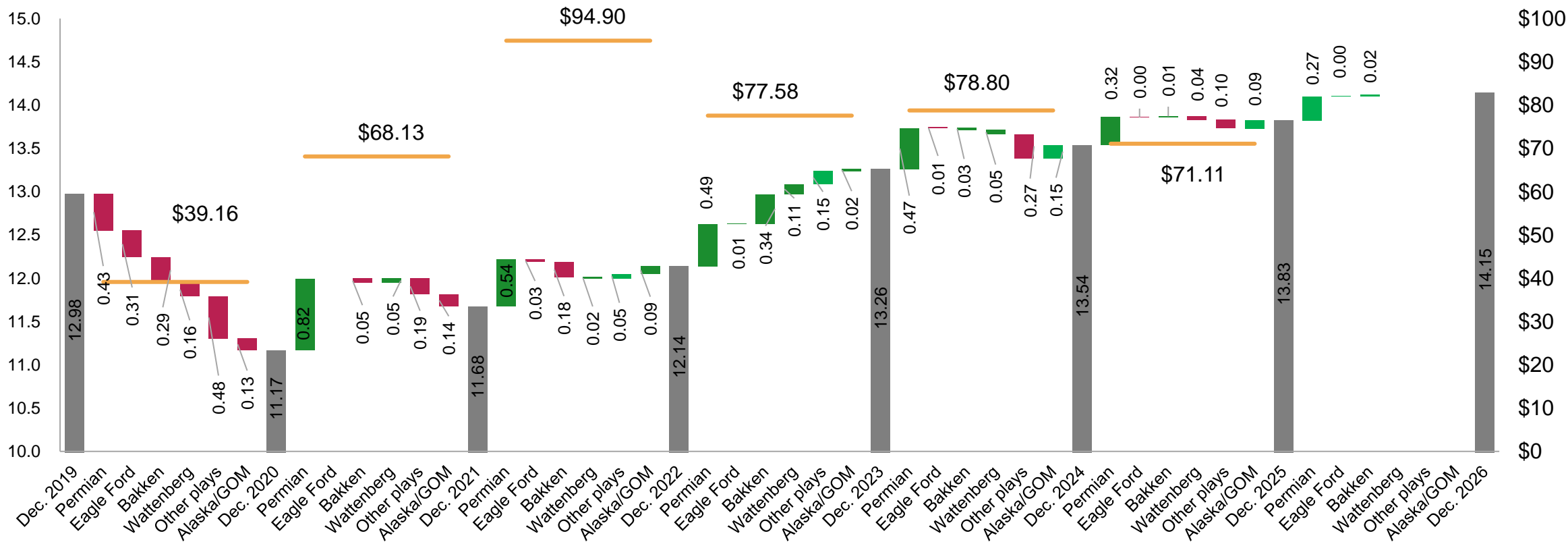


Data compiled July 15, 2024.

Source: S&P Global Commodity Insights.

# As 2025 price expectations deteriorate, so do production growth expectations; cash flows remain strong as investors find satisfaction

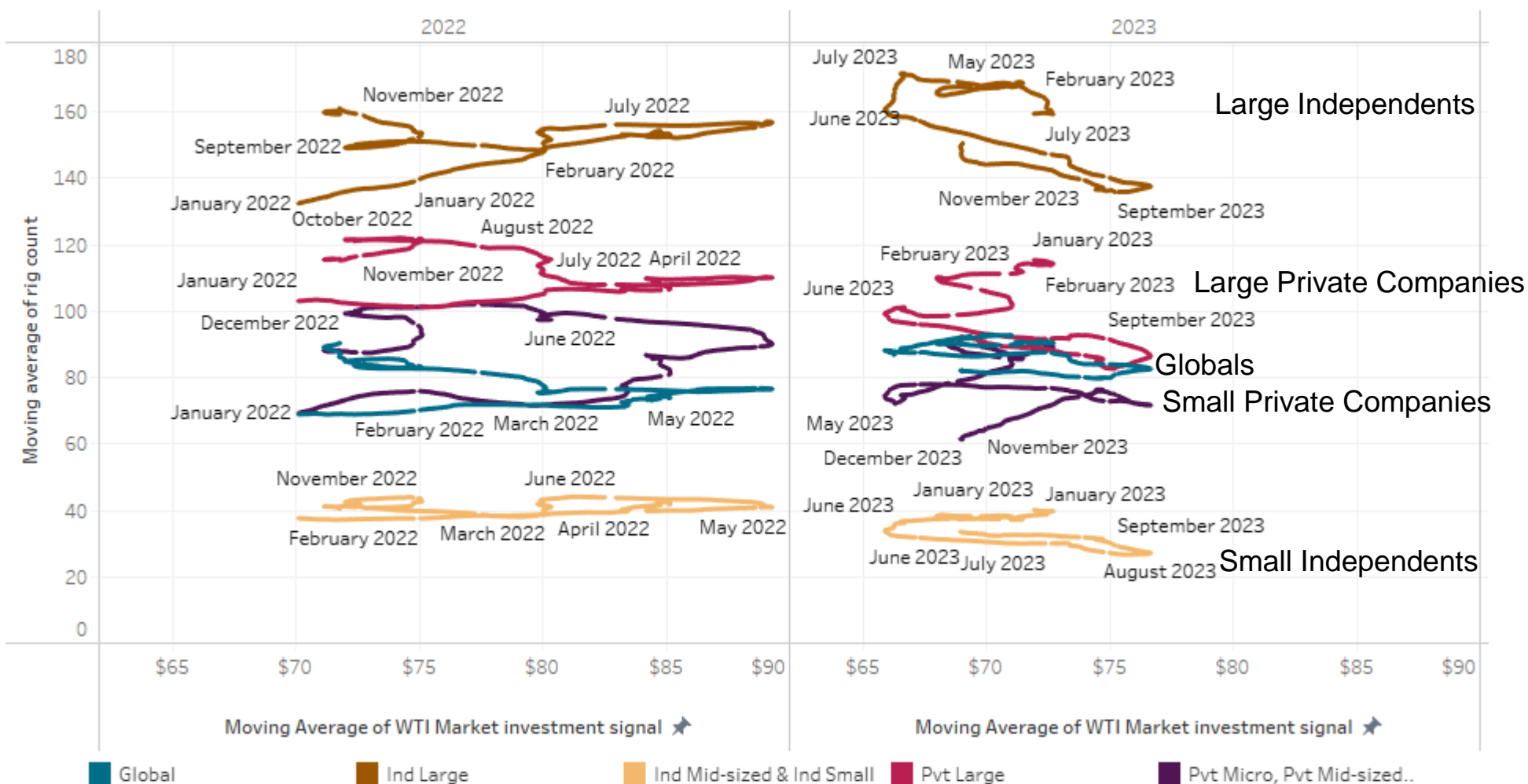
US oil production (million b/d) and WTI price (\$/b)



Data compiled July 15, 2024.  
GOM = Gulf of Mexico.  
Source: S&P Global Commodity Insights.



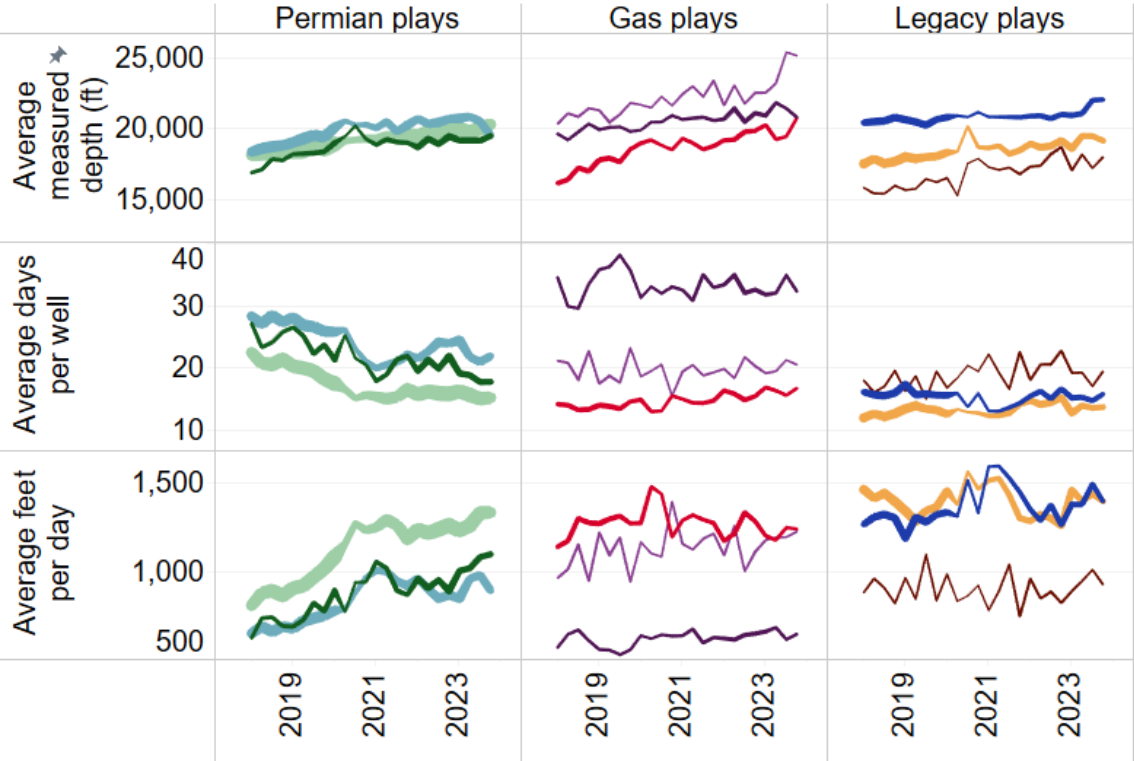
# As industry consolidates, price volatility has less impact on activity



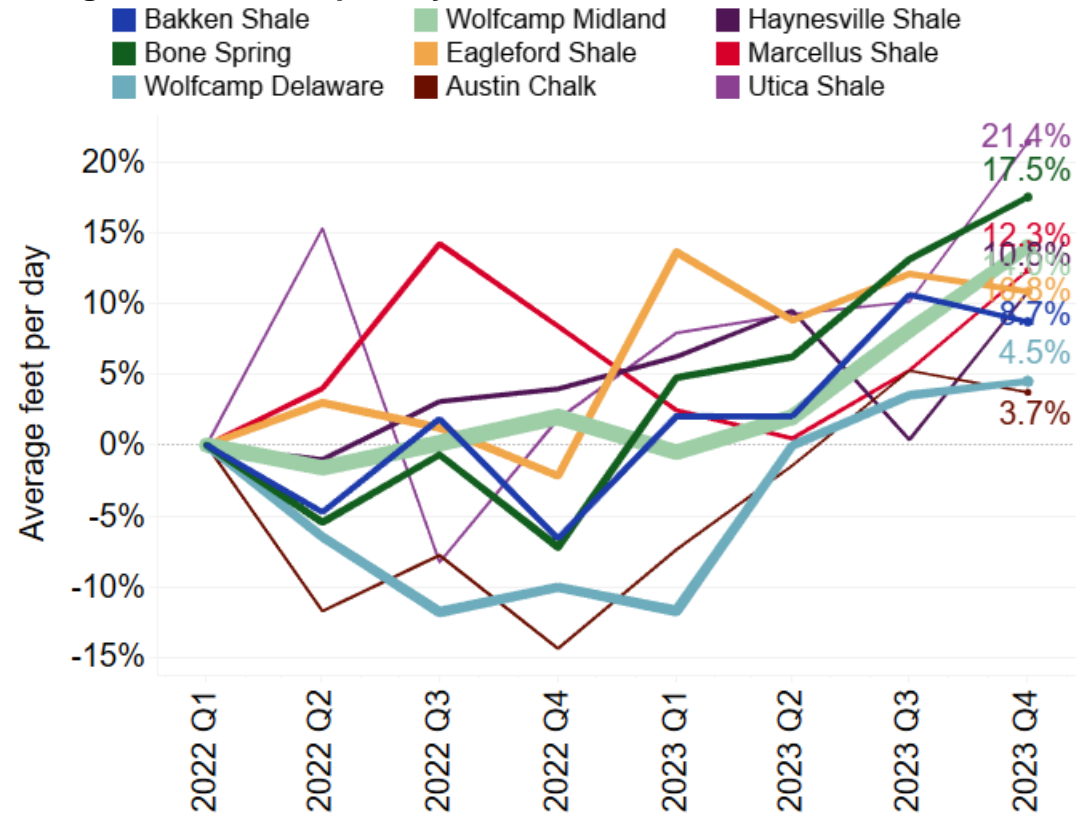
Data compiled July 23, 2024.  
Source: S&P Global Commodity Insights.

# Operators continue to reap operational gains as lateral lengths creep up and drill days drop modestly

Quarterly well drilling metrics since Q1 2022



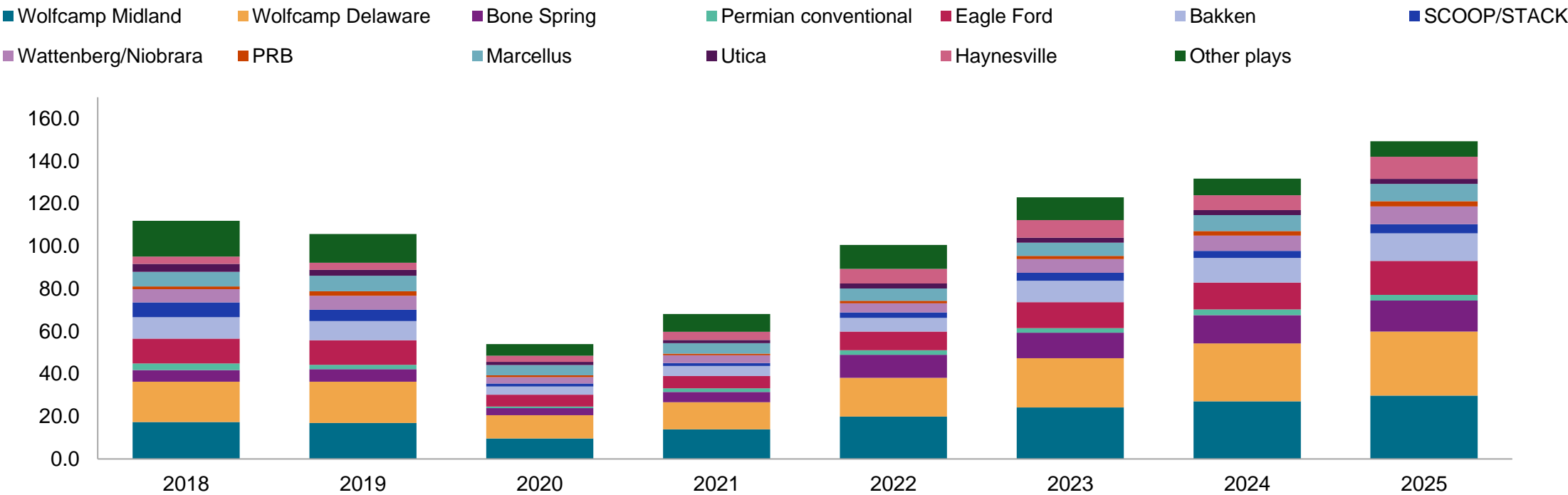
Change in feet drilled per day since 2022



Data compiled May 6, 2024.  
Source: Data taken from S&P Global Commodity Insights upstream E&P content (ADM).

# Impressive gas directed spending on the horizon

US onshore upstream capex (\$ billions)

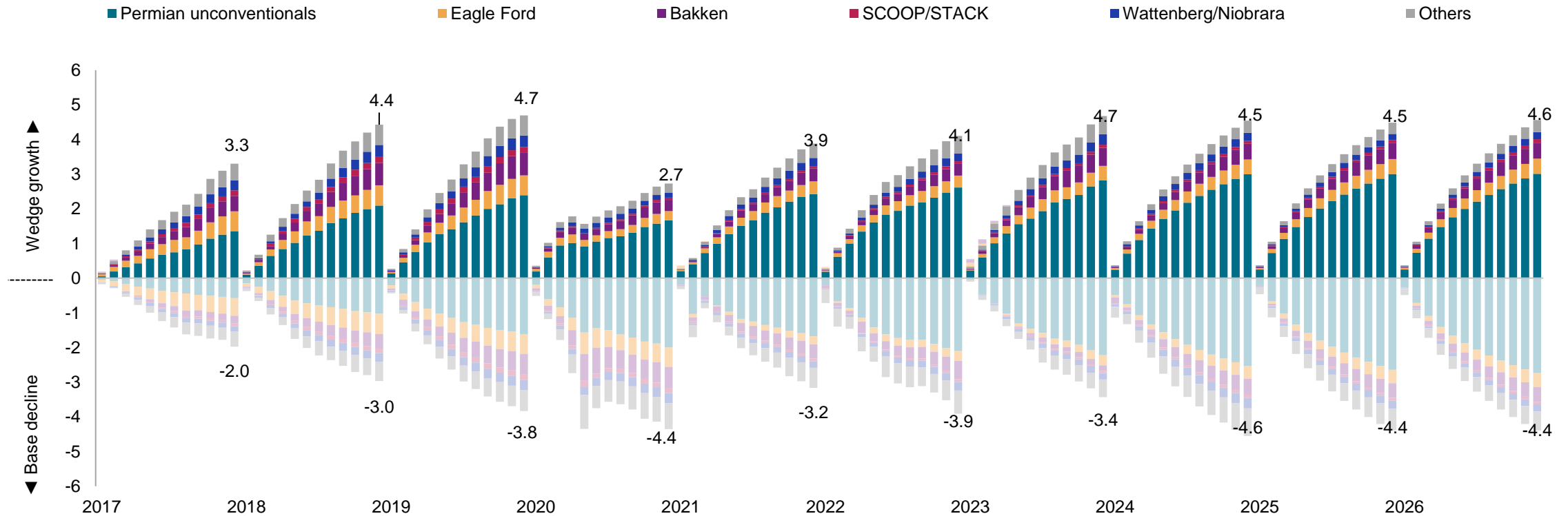


- Oil spending continues to increase in Permian – other regions generally stay flat to harvest cash for investors
- Other than Permian, gas is the story. Haynesville meets LNG – spending more than doubles in next 2 years. Smaller gas plays still needed to meet demand

Data compiled July 22, 2024.  
Source: S&P Global Commodity Insights.

# Production growth slows sharply across US onshore unconventional plays beginning in 2025, rapidly approaching near-zero levels by the end of the decade

US onshore base decline and wedge production (million b/d)



Data compiled July 24, 2024.

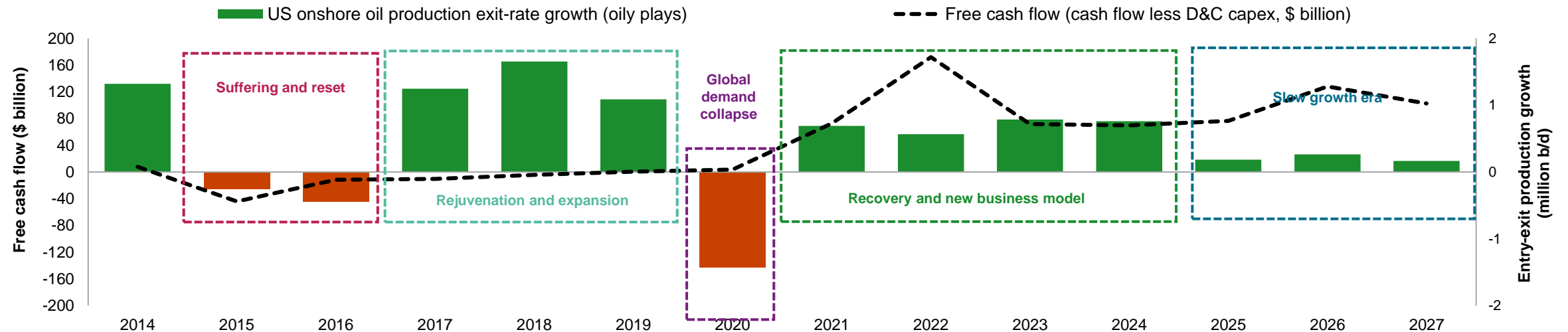
Base decline represents total production decline from existing wells over a given year. Wedge growth reflects incremental production from new wells completed each year.

Owing to unavoidable methodological reasons, base decline is underestimated, and sum of wedge and base overstates growth modestly.

Source: S&P Global Commodity Insights.

# Operators continue to prioritize maximizing free cash flow even as oil supply growth decelerates sharply

## US onshore oil production change and free cash flow



## Maintenance capital (to sustain existing production) and growth capital split vs. US onshore free cash flow by year

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Actual capex, oily plays (\$ billion)	119.9	72.7	37.3	60.2	92.3	86.3	42.6	54.5	80.9	100.3	108.9	114.2	121.9	129
Maintenance/sustaining capex, oily plays (\$ billion)	70.6	72.7	37.3	36.6	56.8	65.7	42.6	44.6	69.4	82.9	90.3	109.4	114.7	124.2
Growth capex, oily plays (\$ billion)	49.3	0	0	23.7	35.5	20.6	0	9.9	11.5	17.3	18.6	4.8	7.3	4.8
Free cash flow, total US onshore (\$ billion)	7.8	-43.9	-11.5	-10.3	-4.1	0.6	3.8	72.7	171.8	71.7	70.0	76.5	128	102.6
Free cash flow margin (%) net of interest, total US onshore	5%	-83%	-30%	-15%	-4%	1%	7%	52%	63%	37%	35%	36%	45%	39%

Data compiled July 24, 2024.

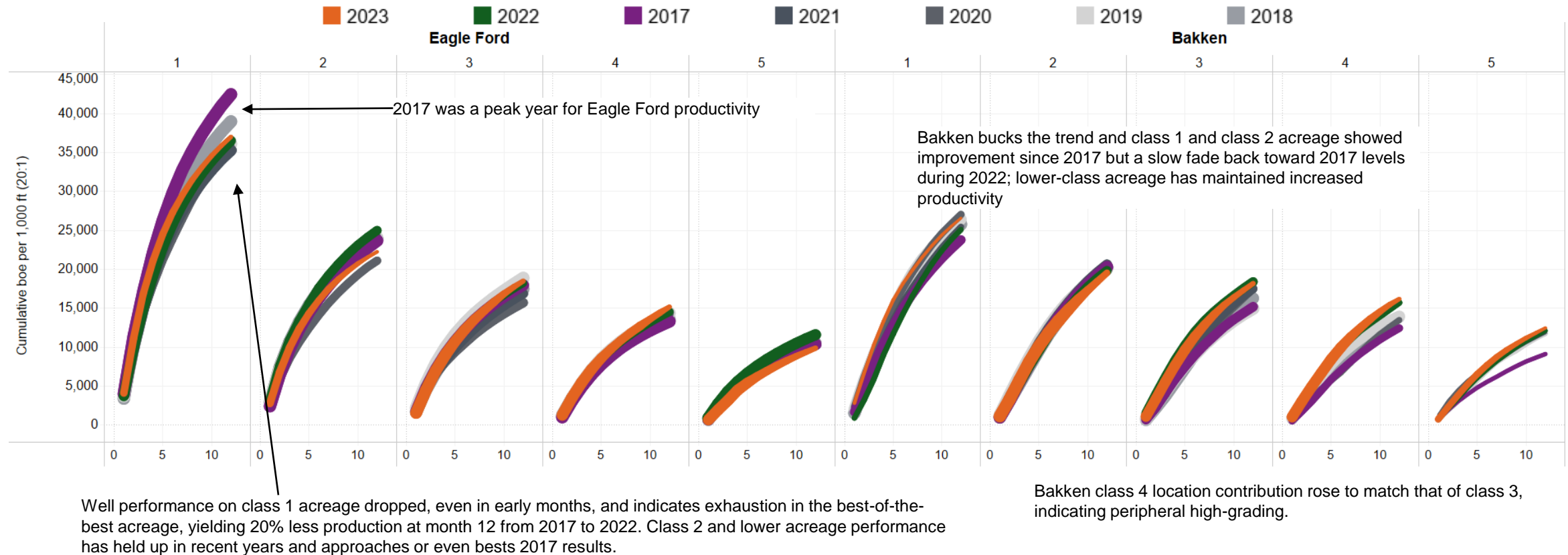
Free cash flow defined as cash flow less D&C capex and interest expense.

Note: "Oily plays" include Austin Chalk Oil, Bakken, Bone Spring, CA Heavy Oil, Eagle Ford, PRB, Niobrara, Permian Basin, SCOOP, STACK, Wattenberg, and smaller gassy oil and oil plays

Source: S&P Global Commodity Insights.

# Mature play core productivity has also fallen since 2017; recent results fading in class 1 and class 2 acreage

Mature oil play annual 1st-year cumulative production by play and acreage class



Data compiled July 16, 2024.

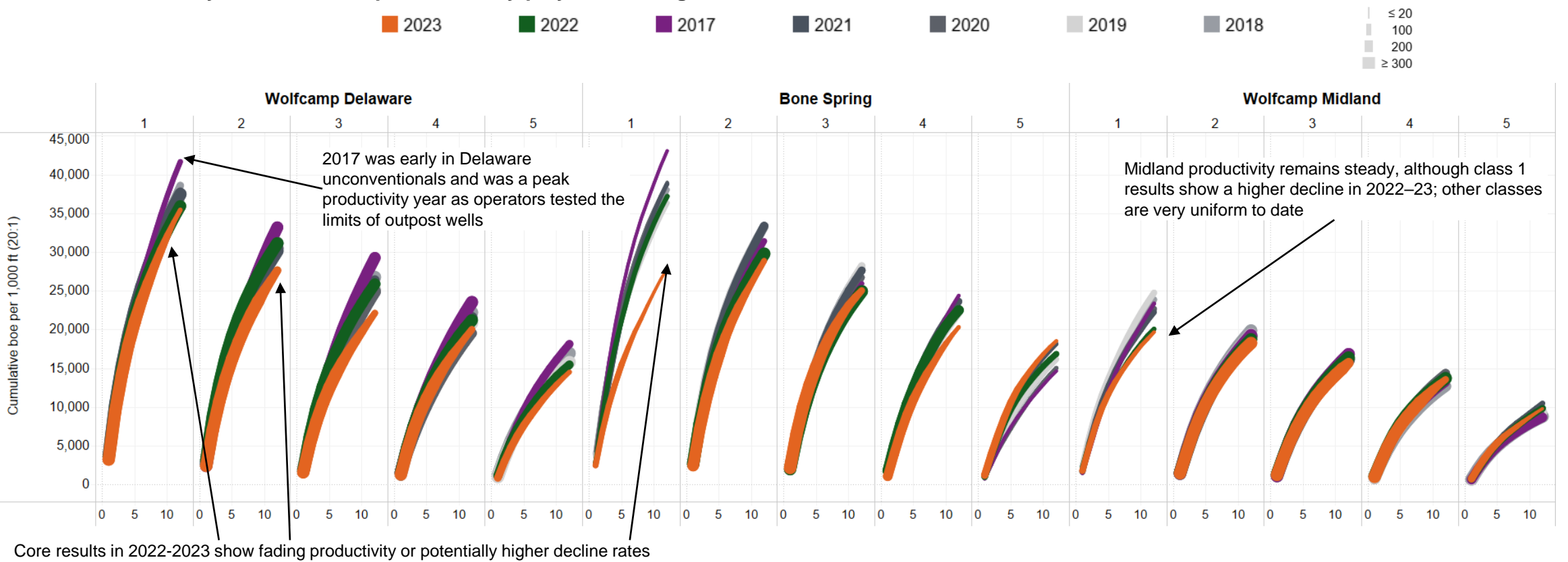
Width of lines indicates number of wells.

Source: Data taken from S&P Global Commodity Insights upstream E&P content (Energy Studio: Impact).



# Permian core productivity has fallen since 2017; recent results show a further fade in class 2 and class 3 Delaware acreage; Midland shows a fading in class 1

Permian annual 1st-year cumulative production by play and acreage class



Data compiled July 15, 2024.  
Source: Data taken from S&P Global Commodity Insights upstream E&P content (Energy Studio: Impact).

# Bakken and Eagle Ford core locations are the first to be drilled up by 2030

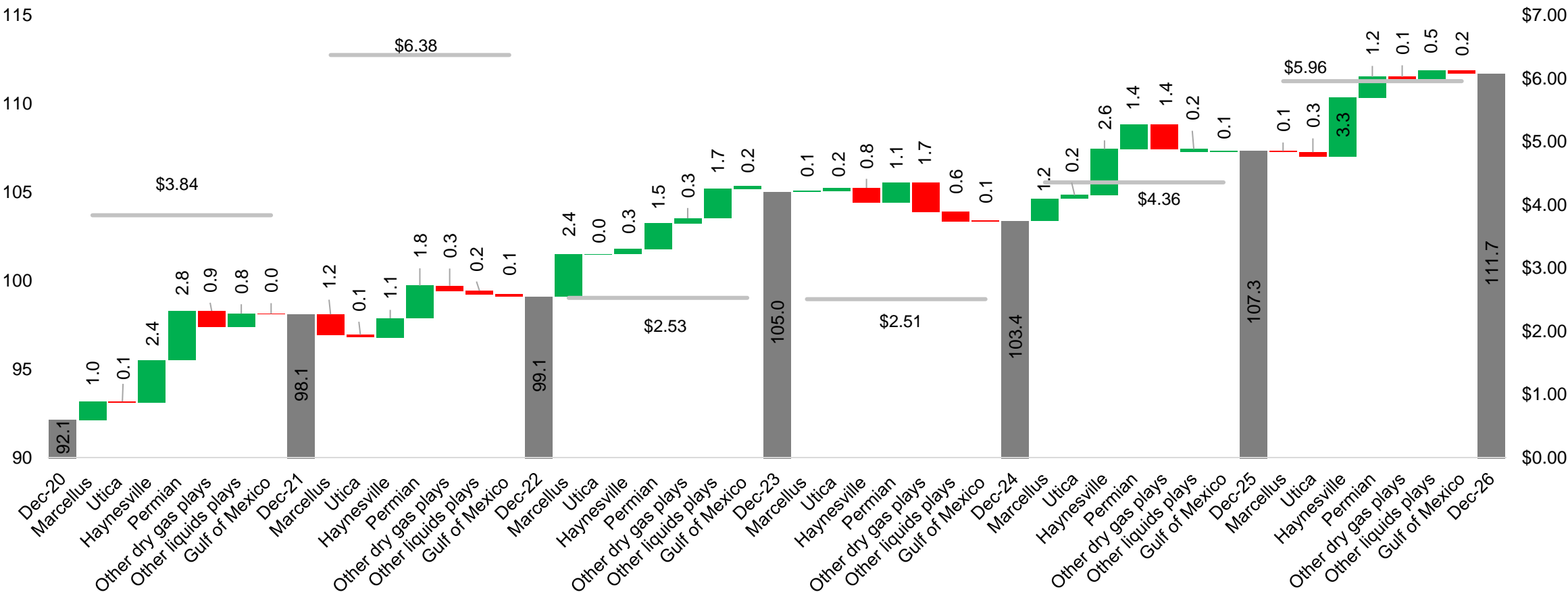
Class exhaustion by year

	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Bakken	Class-1					Class-2					Class-3			
Eagle Ford				Class-1				Class-2						
Wolfcamp Delaware								Class-1		Class-2			Class-3	
Wolfcamp Midland			Class-1/2	Class-3			Class-4						Class-5	
Wattenberg												Class-1	Class-2/3	Class-4

Data compiled May 26, 2024.  
Wolfcamp Midland inventory is under evaluation; 16 total wells per section across four benches is assumed for the current update.  
Source: S&P Global Commodity Insights.

# LNG demand in 2025/26 must be met!

US production changes by play/basin (Bcf/d) and average nominal price



Data compiled July 23, 2024.  
Source: S&P Global Commodity Insights.

