Houlihan Lokey

Oil and Gas

INDUSTRY UPDATE | Q3 2023



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Houlihan Lokey Oil and Gas Update

Dear Clients and Friends,

Houlihan Lokey is pleased to present its Oil and Gas Industry Update for Q3 2023.

We have included an overview of trends in the oil and gas industry, commodity pricing, public capital markets, M&A, A&D, and financing activity, along with key data to help you stay ahead in our dynamic and constantly evolving industry. We hope you find this quarterly update to be informative and that it serves as a valuable resource to you in staying abreast of the market. If there is additional content you would find useful for future updates, please don't hesitate to call or email us with your suggestions. We look forward to staying in touch with you.

Regards,



J.P. Hanson
Managing Director
Global Head of Oil & Gas
1001 Fannin Street, Suite 4650
Houston, TX 77002
JHanson@HL.com
+1 832.319.5115



Robert Teigman
Managing Director
Co-Head of FVA Energy and Infrastructure
1001 Fannin Street, Suite 4650
Houston, TX 77002
RTeigman@HL.com
+1 832.319.5138

Additional Oil & Gas Group Contacts

Javier Artola
Managing Director
Midstream Banking/Coverage
JArtola@HL.com
+1 832.319.5110

Tom Carlson
Managing Director
Banking/Coverage
TCarlson@HL.com
+1 832.319.5183

Daniel Crowley
Managing Director
Banking/Coverage
DCrowley@HL.com
+1 917.757.6639

Shane Sealy
Managing Director
Banking/Coverage
SSealy@HL.com
+1 832.319.5133

Josh Eaves
Managing Director
Banking/Coverage
JEaves@HL.com
+1 212.497.4273

Russell Mason
Managing Director
Banking/Coverage
RMason@HL.com
+1 214.665.8622

Michael Roberts
Managing Director
Capital Markets
MRoberts@HL.com
+1 832.319.5141

Daniel East
Managing Director
Capital Markets
Daniel.East@HL.com
+1 832.319.5159

Brett Lowrey
Managing Director
Sponsor Coverage
BLowrey@HL.com
+1 214.220.8480

Rouzbeh Fazlinejad
Managing Director
MENA Banking/Coverage
Rouzbeh.Fazlinejad@HL.com
+971.45.263.714

Jeremy Low
Managing Director
Europe Banking/Coverage
JLow@HL.com
+44 (0) 20 7907 4241

Briklynd Briggs
Director
Head of Technical/A&D
Briklynd.Briggs@HL.com
+1 832.319.5191

Manny Vedi
Senior Vice President
Committee Advisory
MVedi@HL.com
+1 832.247.8003

Nicola Matteo Nigro
Senior Vice President
MENA Banking/Coverage
Nicola.Nigro@HL.com
+971.56.454.7271

Patrick Yang
Vice President
Asia-Pacific/Coverage
PYang@HL.com
+852 3551 2316

Key Quarterly Trends

Oil Supply/Demand Dynamics

- Daily WTI and Brent benchmark prices remain volatile, but overall both increased throughout Q3 '23 to $90+/bbl driven by supply/demand factors, including on the supply side: (i) OPEC+ extending voluntary production cuts and (ii) relatively tight global supply both in the immediate and longer terms as a result of continued underinvestment in exploration and development; versus on the demand side (i) continued increase in global demand, notwithstanding uncertainty within the Chinese economy (the largest market demand participant) and (ii) the uncertain possibility (and depth) of a potential global recession and resulting potential demand stalling/erosion as well as impacts on capital availability to support various projects and transactions.
  - On September 5, Saudia Arabia and Russia announced plans to extend their voluntary export cuts until the end of 2023, which, if suppliers are compliant and all else remains equal, implies a potential global deficit of 3.3 MMbbls/d in Q4 '23.[(1)]
    - This will continue the July 3, 2023, cuts, when Saudi Arabia and Russia announced voluntary cuts of 1 MMBbl/d and 0.5 MMBbl/d, respectively.
      - These actions were in addition to a previous surprise cut of ~1.2 MMBbl/d, announced by Saudi Arabia in April 2023.
  - In August 2023, China's total crude imports were the second highest on record, notwithstanding economic uncertainties; Russian imports were at ~2.4 MMbbls/d (+~60% YoY; 30%+ higher than Saudi Arabia).
    - China appears to have been both aggressively filling its crude oil storage reserves as well as increasing its refined production.
    - China's export of refined products nearly doubled to ~1.0 MMbbls/d in September compared to March 2023.[(2)]
  - Underinvestment in exploration and development globally has derived from (i) relatively depressed oil prices during the last down cycle, which deterred investment, and (ii) ESG pressure in the short term despite continued hydrocarbon demand combined with (iii) the upstream sector's ongoing focus on returning capital to shareholders.
    - As a result of the tight supply and long-term view that demand will outpace supply, the majority of commodity analysts are currently bullish on future oil prices, including certain analysts forecasting YE 2023 +/- $100/bbl WTI.
- Russian crude oil and refined product supply limitations continue to have a material effect on global crude prices.
  - On September 21, 2023, Russia banned the export of diesel for an unspecified period.
    - Shortly after the ban, global diesel futures increased ~4%, as Russia accounts for ~15% of the global supply of seaborne diesel and global inventories were already relatively tight.[(3)]
    - Even prior to the ban, global diesel prices had gradually increased in response to crude oil production cuts from Saudi Arabia and Russia.

(1) Wall Street Journal.
(2) The Wall Street Research.
(3) Trading Economics.

Key Quarterly Trends

Oil Supply/Demand Dynamics (cont.)

- In terms of Ural crude, by September 28, 2023, the differential between Urals and Brent decreased to ~$10.18/bbl from ~$27/bbl as of January 31, 2023, as Urals traded above the economic-sanctions-imposed cap of $60/bbl.[3]
  - Narrowing Brent: Ural differentials suggest Russia has found at least some success in shifting crude oil trade flows, both in terms of offtake and assembling an alternative network of transportation to avoid sanctions.
  - Russian crude flows have generally shifted to those countries that have not imposed financial sanctions, including China, India, and Turkey, which have emerged as key destinations for Russian crude.

Natural Gas Supply/Demand Dynamics

- Title Transfer Facility (TTF) spot price has remained volatile through Q3 '23, declining ~88.0%[4] from a peak of $90 experienced on August 26, 2022, due largely to (i) a relatively warm winter, (ii) the ramp-up of LNG import to replace Russian pipeline gas, which has been constrained by limited LNG import capacity across the European continent, and (iii) alternative power generation fuel sources (coal, wood, nuclear, renewables), which combined to result in a rebuilding of natural gas inventories close to full capacity.
  - As of the end of Q3 '23 EU natural gas inventories were ~96.0% of capacity, which is ~8% higher than the five-year average.[5]
- Across the pond, despite a prolonged heat wave in the southern U.S. driving strong regional demand for natural gas during the summer, Henry Hub (HH) gas prices have declined significantly (~22.0%) since the start of the year, due to broader imbalance in supply/demand demonstrated by rising U.S. storage inventories resulting from a combination of (i) a relatively mild winter and (ii) temporary partial closure of the Freeport LNG terminal.
  - Per the EIA, as of September 22, 2023, U.S. gas inventories stood at 3.3 Tcf, which was ~6% greater than the five-year seasonal average.
  - On March 8, 2023, Freeport LNG received Federal Energy Regulatory Commission (FERC) and Pipeline and Hazardous Materials Safety Administration (PHMSA) approval to resume the third of three LNG trains at its ~2 bcf/d liquefaction facility.

(3) Trading Economics.
(4) S&P Capital IQ, as of September 29, 2023.
(5) GIE Aggregated Gas Storage Inventory as of October 1, 2023.

Key Quarterly Trends (cont.)

Natural Gas Supply/Demand Dynamics (cont.)

- In the forward-looking longer term, continued global demand and massive U.S. natural gas reserves have incentivized LNG producers to expand capacity via the construction of new export terminals.
  - On September 18, 2023, EQT entered into a Heads of Agreement (HOA) for liquefaction services from Commonwealth LNG's facility in Cameron, LA to produce 1 million tons per annum (mtpa) of LNG under a 15-year tolling agreement.
    - Commonwealth anticipates a final investment decision (FID) on the project in the first quarter of 2024, with the first cargo deliveries expected in 2027.
    - Previously, Commonwealth LNG entered into a nonbinding 20-year supply deal with Switzerland-based MET Group for 1 mtpa of LNG and closed an investment of development capital from Kimmeridge Energy Management.[6]
  - As per Reuters, approximately a dozen developers hope to make FIDs this year.
  - The most recently commissioned U.S. LNG export facility, Calcasieu Pass LNG, placed all of its liquefaction trains (~1.3 bcf/d) in service in August 2022.
  - In addition to Golden Pass LNG, which started construction in 2019, two other projects (Plaquemines LNG and Corpus Christi Stage III) on the U.S. Gulf Coast have recently begun construction.
    - Once completed, these three export projects will expand U.S. LNG export capacity by a combined ~5.7 bcf/d by 2025.[7]

(6) LNG Prime.
(7) EIA.

Key Quarterly Trends (cont.)

M&A&D Markets

- As demonstrated by what we are directly experiencing across Houlihan Lokey O&G deal volume, M&A&D buyers and sellers remain highly interested in transacting, previously stalled deal processes have revived, and activity has dramatically resumed.
  - ~$14.1 billion of reported transaction value in Q3 '23.
  - Notable transactions included Vital Energy/Tall City, Henry, and Maple (aggregate $1.2 billion), Permian Resources/Earthstone ($4.5 billion), and Exxon/Denbury ($4.9 billion).
- Significant deal backlog would suggest a rebound in M&A&D activity is likely in the near term as both (i) commodity prices and (ii) the macroeconomic environment stabilize.
  - As we enter Q4 '23, we are experiencing the M&A&D window opening, particularly among public-to-public M&A and public-to-private A&D.
    - In the Q3 '23 period to the date of publication, this appears to be the case for both total transaction value and transaction volume, including a couple of mega deals (Exxon Mobil acquiring Pioneer Natural Resources and Chevron acquiring Hess).
    - Today's consolidation wave may drive a future wave of noncore asset divestitures, creating substantial buying opportunities for SMID-caps, private equity, and family offices.
- Cash-flow multiples are becoming more reflective of an "output of" value rather than an "input to" or limit on value.
  - Public natural gas producer NTM(8) EBITDA multiples have increased, which implies that investors are valuing those companies both (i) at a gas price reflective of the forward price strip being in contango, and (ii) gas-weighted assets are gaining relative favor in this environment as demand remains consistent, drilling activity moderates, and existing full-capacity U.S. LNG export has resumed.
- Oil-and-gas-related continuation funds and other industry-dedicated secondary transaction activity show increasing signs of picking up; concurrently there are discussions with interested parties (particularly family offices) regarding the possible formation of dedicated, energy-focused secondary investment vehicles.

(8) Refers to next 12 months.

Key Quarterly Trends (cont.)

Debt Capital Markets

- While generally high yield was relatively muted during Q3 '23 due to macroeconomic uncertainty, energy issuances have led to recent activity, indicating increasing institutional appetite/green shoots for E&P issuers.
  - Energy High Yield index OAS spreads have remained significantly tighter compared to the broader High Yield index.
    - As of September 30, 2023, the Energy High Yield index spread was 312 bps compared to the broader High Yield index spread of 426 bps.
- Following the collapses of Silicon Valley Bank, Signature Bank, and First Republic and the resultant deposit drain witnessed at regional banks, RBL banks have voiced concerns over the macroeconomic impact on capital ratios/capital availability and therefore continue to remain highly selective.
  - Conservative commodity price decks are generally being utilized for RBLs, which has resulted in lower relative advance rates compared to strip-based PDP values.
- Private credit providers remain highly active across numerous products.
  - The oil and gas securitization market continues to mature, especially with respect to improving time to completion and hedging requirements.
  - VPPs are emerging as an attractive alternative to securitizations in many similar circumstances, thereby accessing a differentiated and broader capital provider universe.
  - Drilling capital is available, and an expanding universe of interest has expanded the range of available alternatives.

Equity Capital Markets

- A growing portion of the broader LP universe is bullish E&P given the attractive cash returns and is therefore once again seeking to deploy more capital into the industry.
  - While capital formation remains selective, the upstream sector's attractive cash-on-cash returns are reinvigorating the LP universe.
  - Certain sponsors with top-tier track records are continuing to raise funds with success, although the latest funds are generally smaller than previous vintages and take longer to close.
  - Sponsors are concentrating capital into a smaller number of teams/assets, "re-upping" with proven and historically successful players.
- Energy's contribution to the S&P 500 on a market cap basis has been increasing (~4.7%) but remains materially below energy's contribution on a levered cash-flow basis.
  - This may indicate an attraction for generalist capital to rotate back into E&P equities and for E&P valuation metrics to improve as a result.

Key Quarterly Trends (cont.)

Other Trends

- The wave of public company-led consolidation is driven by (i) public equity investor focus on shareholder returns and capital discipline and (ii) tier 1 inventory scarcity.
- Tier 1 inventory scarcity has resulted in increased discussions regarding new technologies/strategies to enhance recovery factors, such as refracs, data analytics, etc.

Cross-Product Industry Team

Technical/A&D
- More than $50 billion in combined transactions.
- Specialists in:
  - Technical advisory.
  - Asset dispositions/swaps.
  - Equity/working interest sales.
  - JV structuring/partner identification.

Mergers and Acquisitions
- No. 1 global M&A advisor under $1 billion.*
- Corporate M&A/spinoff advisory, structuring, negotiation, and execution.
- Extensive reach in market trends and relationships.
- Specialize in tailored processes to maximize value for our clients.



Recapitalization/ Restructuring
- No. 1 global recapitalization/ restructuring advisor.
- We have been engaged in the most notable energy recapitalizations/ restructurings of the recent and prior commodity downturn cycles.

Capital Markets
- ~$25 billion of capital raised and $12 billion advised on over the past two years.
- Market leader in custom/bespoke structure.
- Deep expertise in driving optimal positioning, structure/terms, and syndication.

Financial Advisory
- No. 1 global M&A fairness opinion advisor over the past 25 years.**
- 1,000+ annual valuation engagements.
- Transaction advisory services, including the ability to bundle due diligence and quality of earnings services.

Source: Refinitiv.
**Excludes accounting firms and brokers.*
***Announced or completed transactions.*

Trusted Advisor

- During the past several years, Houlihan Lokey's fully integrated, cross-product Oil & Gas Group has advised on numerous capital-raise, M&A, corporate finance, and recapitalization assignments in the E&P industry.

Veteran Leadership Team

- The Oil & Gas investment banking team is a cross-product, global, industry-dedicated team of more than 70 highly experienced professionals.
- They come from a diverse set of backgrounds, including E&P companies, midstream companies, other investment banks, investment funds, and research/brokerage shops.
- The A&D/technical group is led by a team of technically focused professionals from the industry, with an average of more than 25 years of industry experience.

Featured Transactions(1)

Transaction Pending
Vital Energy
has signed definitive agreements to acquire substantially all the assets of
HENRY + City Energy + Maple Energy
for 9.57mm shares, 4.98mm convertible preferred shares, and $300mm of cash
Buyside Advisor

Northwoods Energy
a portfolio company of
APOLLO
has been acquired by OneRock Energy Holdings, LLC, an investment vehicle of
PAN CAPITAL MANAGEMENT LP
Sellside Advisor

Vital Energy
has acquired 70% of the assets of
Forge energy II
Buyside Advisor

NOG
has acquired 30% of the assets of
Forge energy II
Buyside Advisor

QUARTER NORTH ENERGY
has sold its P&A business
Sellside Advisor

Clear Fork, Inc.
EAGLE PERMIAN PARTNERS
has sold Eastern Shelf assets to
PEAK 10 ENERGY
Sellside Advisor

ApexEnergy LLC
has been acquired by an
Undisclosed Buyer
Sellside Advisor

ROCKDALE
has sold substantially all its assets, pursuant to Section 363 of the U.S. Bankruptcy code, to
REPSOL
Company Advisor

Falcon Minerals
has combined in an all-stock merger with
DESERTPEAK MINERALS
Financial Advisor

Vine ENERGY
has been acquired by
CHESAPEAKE ENERGY
Financial Advisor & Fairness Opinion

LAREDO PETROLEUM
has sold a 37.5% wellbore interest in certain Legacy PDP assets to
SIXTH STREET
Sellside Advisor

LAREDO PETROLEUM
has acquired the assets of
SABALO
Buyside Advisor

(1) Please reach out to Manny Vedi at +1 832.319.5135 or MVedi@HL.com for additional Oil & Gas Group qualifications.

01 HOULIHAN LOKEY SNAPSHOT



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Houlihan Lokey is the trusted advisor to more top decision-makers than any other independent global investment bank.

Energy and Power M&A

2020–2022 M&A Advisory Rankings
All U.S. Energy & Power Transactions

	Advisor	Deals
1	**Houlihan Lokey**	**70**
2	Jefferies	59
3	Evercore Partners	57
4	Citi	56
5	JP Morgan	55

Source: Refinitiv.

No. 1 M&A Advisor for All U.S. Energy and Power Transactions Over the Past Three Years

Corporate Finance

2022 M&A Advisory Rankings
Global Transactions Under $1 Billion

	Advisor	Deals
1	**Houlihan Lokey**	**381**
2	Rothschild	369
3	JP Morgan	217
4	Lazard	206
5	Goldman Sachs	203

Source: Refinitiv. Excludes accounting firms and brokers.

No. 1 Global M&A Advisor Under $1 Billion
Leading Capital Markets Advisor

Financial and Valuation Advisory

1998 to 2022 Global M&A Fairness Advisory Rankings

	Advisor	Deals
1	**Houlihan Lokey**	**1,232**
2	JP Morgan	1,030
3	Duff & Phelps, A Kroll Business	938
4	Morgan Stanley	725
5	BofA Securities	710

Source: Refinitiv. Announced or completed transactions.

No. 1 Global M&A Fairness Opinion Advisor Over the Past 25 Years

1,000+ Annual Valuation Engagements

Financial Restructuring

2022 Global Distressed Debt & Bankruptcy Restructuring Rankings

	Advisor	Deals
1	**Houlihan Lokey**	**58**
2	PJT Partners	30
3	Lazard	29
4	Rothschild	25
5	Moelis	21

Source: Refinitiv.

No. 1 Global Investment Banking Restructuring Advisor

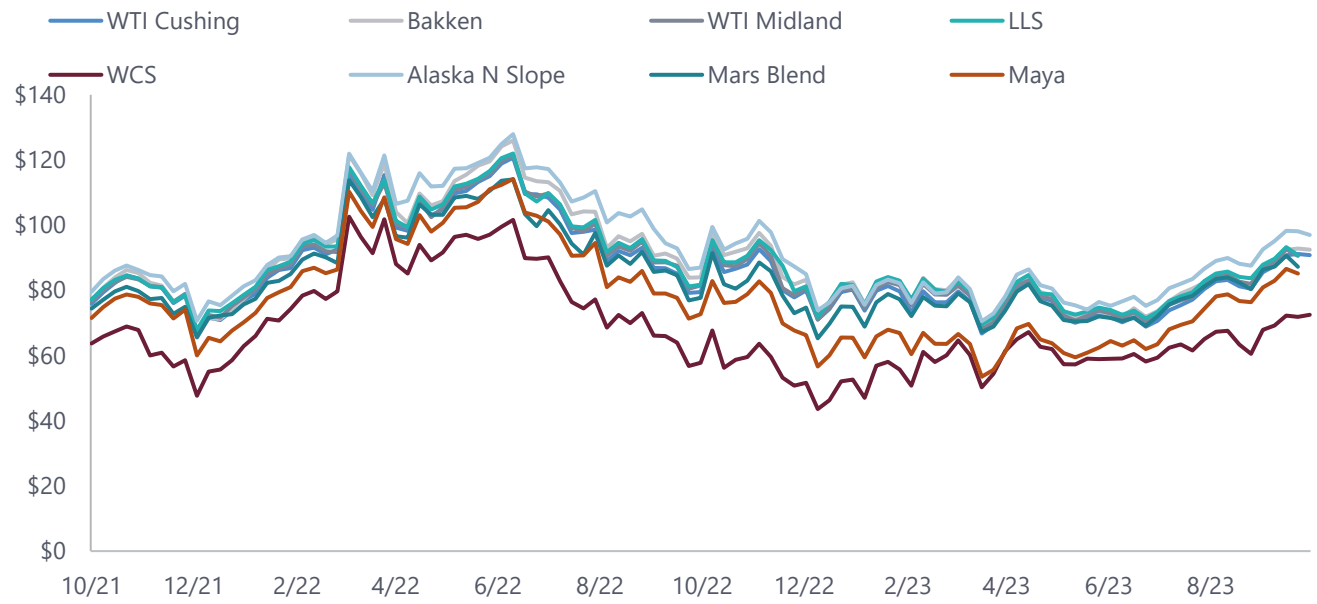
1,500+ Transactions Completed, Valued at More Than $3.0 Trillion Collectively

02 CRUDE OIL

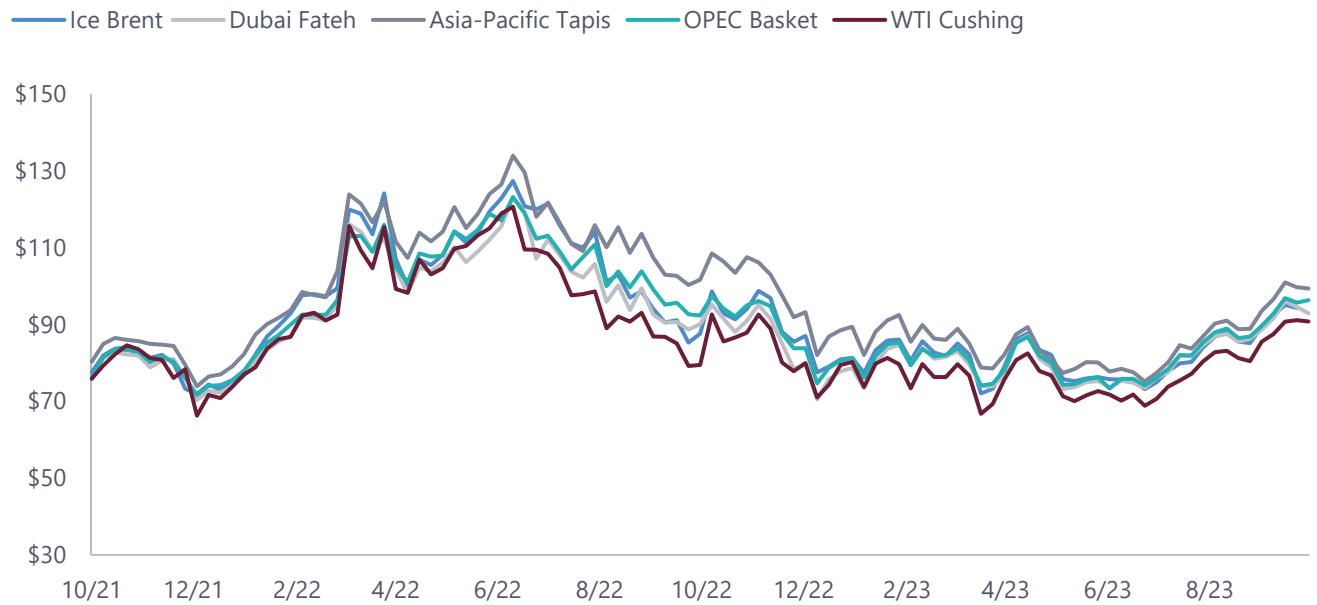
Houlihan Lokey

Spot Pricing

North American Spot Prices ($/bbl)



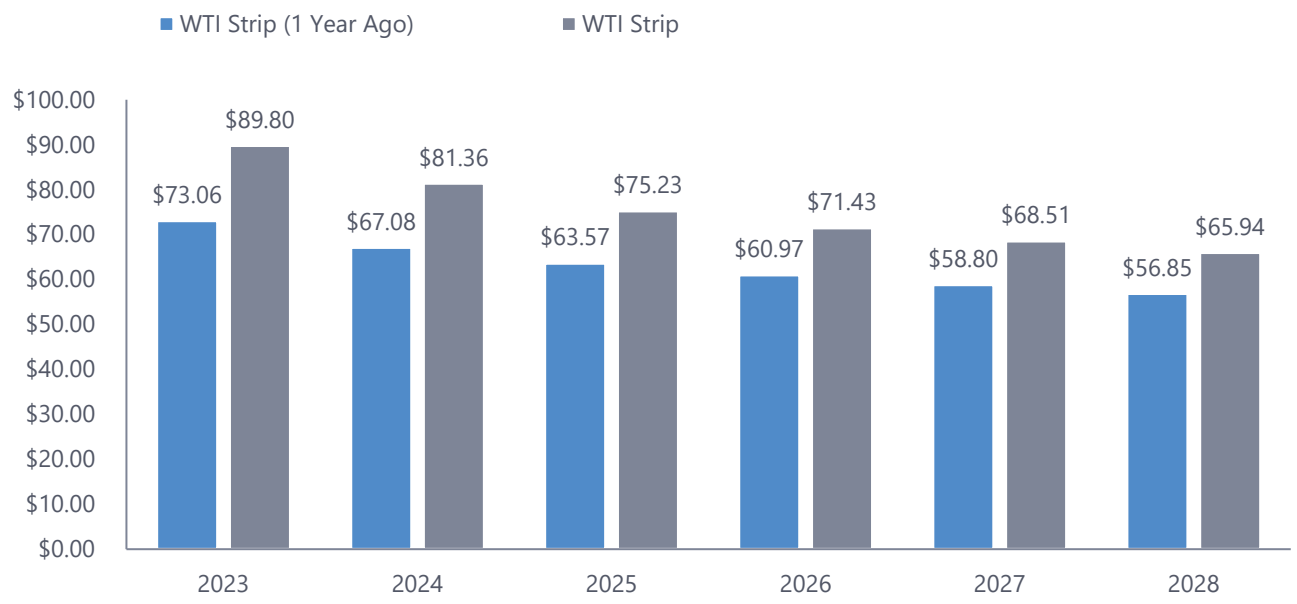
International Spot Prices ($/bbl)



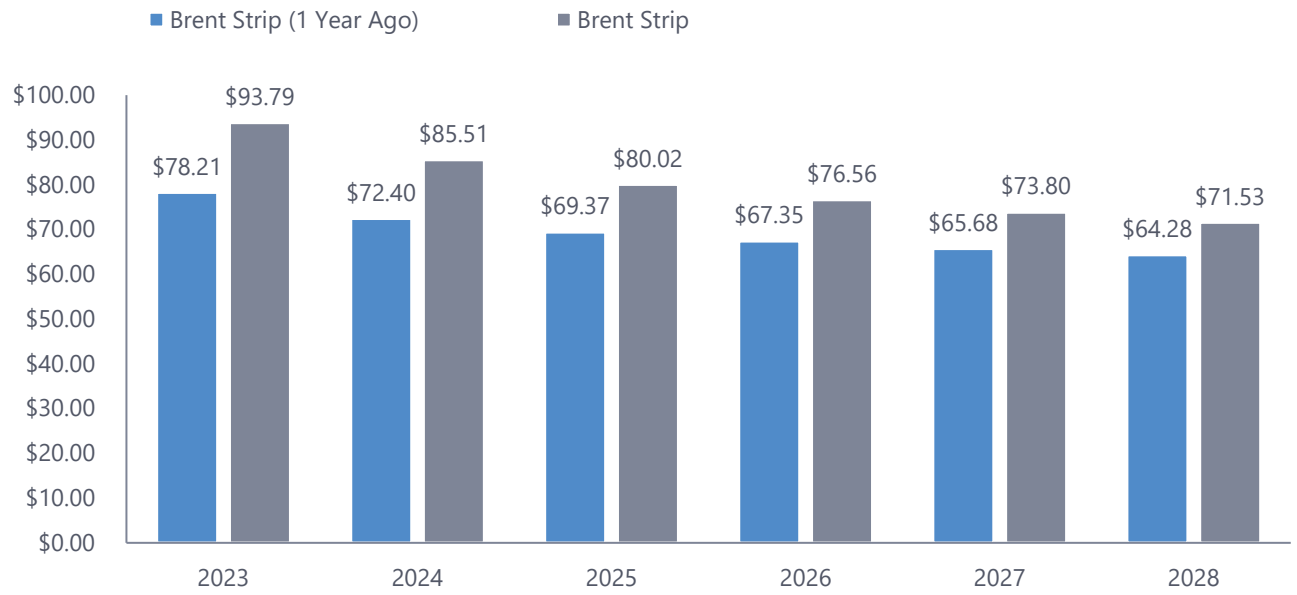
Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

Strip Pricing

WTI Cushing Strip Pricing Comparison ($/bbl)



Brent Strip Pricing Comparison ($/bbl)



Notes: All data as of September 29, 2023. Represents the average price for each year.
Source: S&P Capital IQ.

Differentials

Region	9/30/2023	9/30/2022	6/30/2023	YoY % Change	QoQ % Change
Brent	$96.3	$86.2	$75.0	11.7%	28.5%
Brent—WTI Cushing	*$5.5*	*$6.7*	*$4.3*		
WTI Cushing	$90.8	$79.5	$70.6	14.2%	28.5%
WTI Cushing – Brent	*($5.5)*	*($6.7)*	*($4.3)*		
Bakken	$92.5	$84.0	$73.6	10.1%	25.6%
WTI Cushing—Bakken	*($1.7)*	*($4.5)*	*($3.0)*		
Eagle Ford Light	$87.3	$76.0	$67.1	14.9%	30.0%
WTI Cushing—Eagle Ford Light	*$3.5*	*$3.5*	*$3.5*		
WCS	$72.5	$57.8	$59.3	25.5%	22.2%
WTI Cushing—WCS	*$18.3*	*$21.7*	*$11.3*		

Notes: All data as of September 30, 2023. Data collected on a daily basis.
Source: Bloomberg.

Differentials ($/bbl)

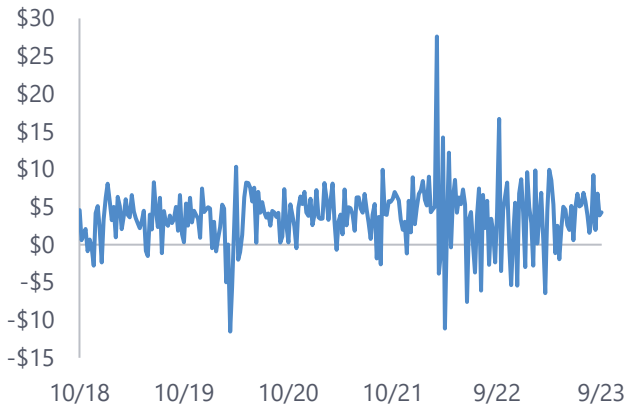
Brent—WTI Cushing



WTI Cushing—WTI Bakken Clearbrook



WTI Cushing—Eagle Ford Light



WTI Cushing—WCS



LLS—Mars



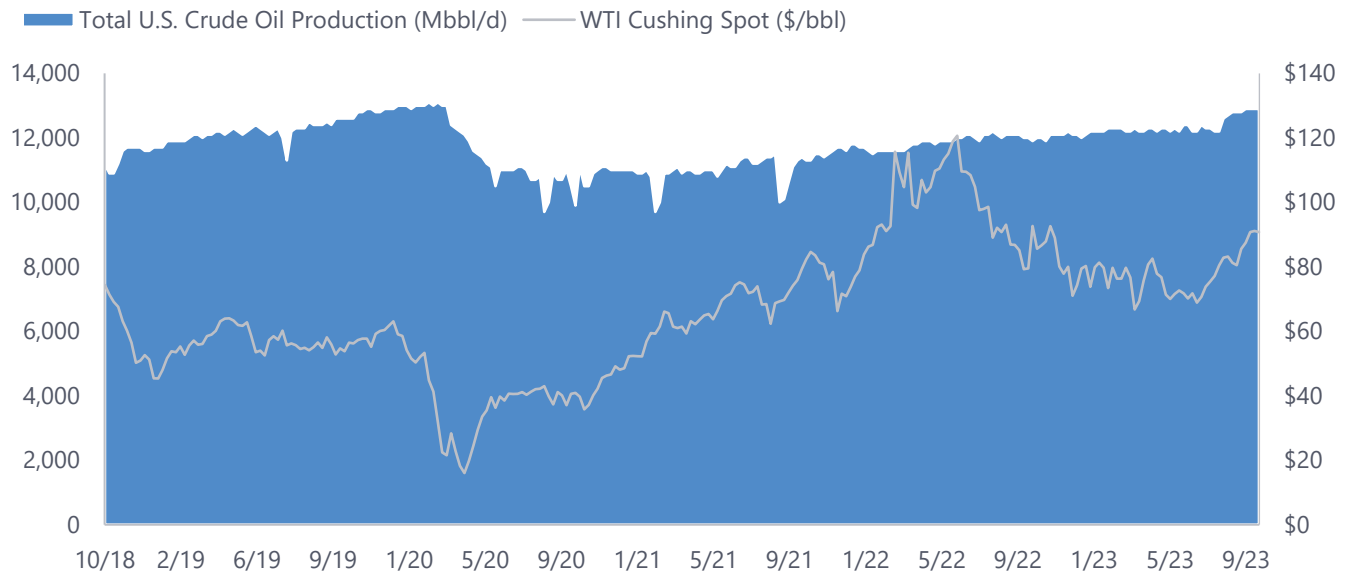
Bakken—ANS



Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Sources: Bloomberg and S&P Capital IQ.

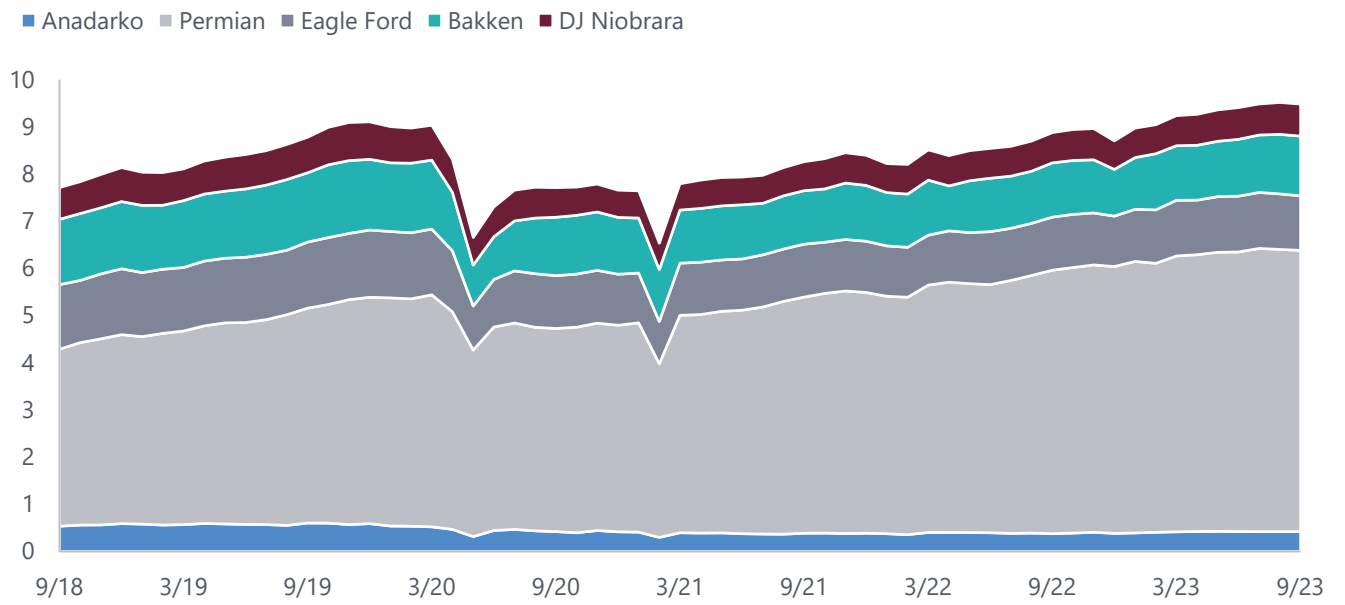
Production

U.S. Production (Mbbl/d) vs. WTI ($/bbl)



Note: Data collected on a weekly basis and subject to a one-week lag for production.

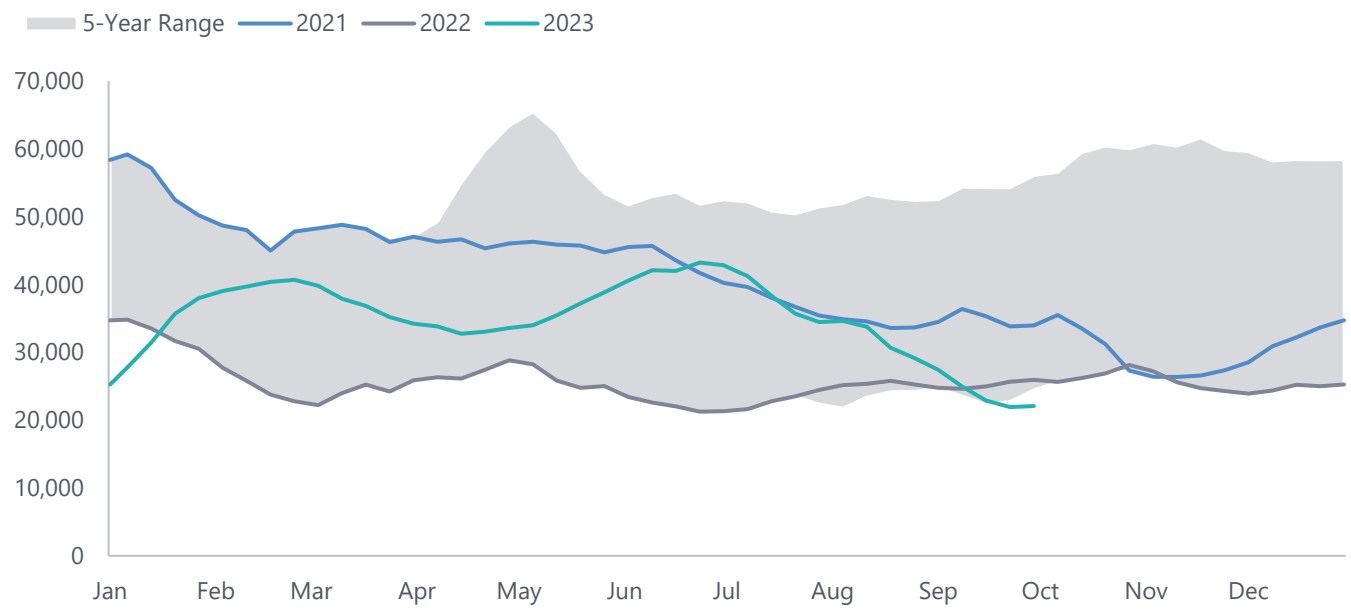
Production in Select Regions (MMbbl/d)(1)



Notes: All data as of September 30, 2023. Data collected on a monthly basis.
Sources: Bloomberg and EIA.
(1) EIA's drilling productivity report uses recent data on the total number of drilling rigs in operation, along with estimates of drilling productivity and estimated changes in production from existing wells, to provide estimated changes in production for key regions.

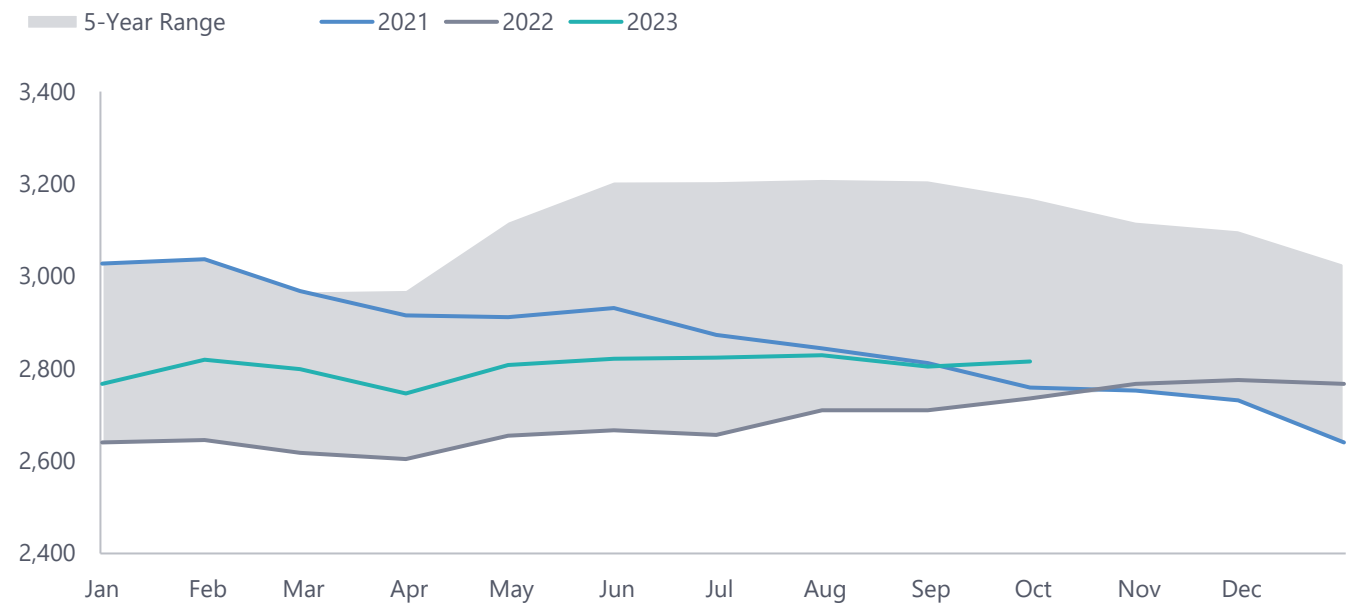
Inventory

U.S. Cushing Crude Inventory (Mbbl)



Note: Data collected on a weekly basis.

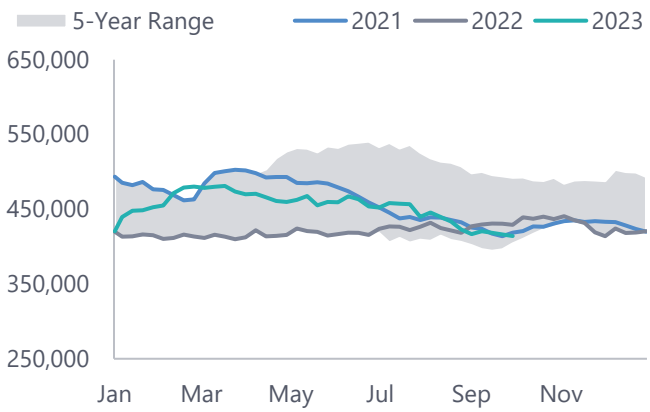
OECD Commercial Inventories (MMbbl)



Note: All data as of September 30, 2023.
Source: Bloomberg.

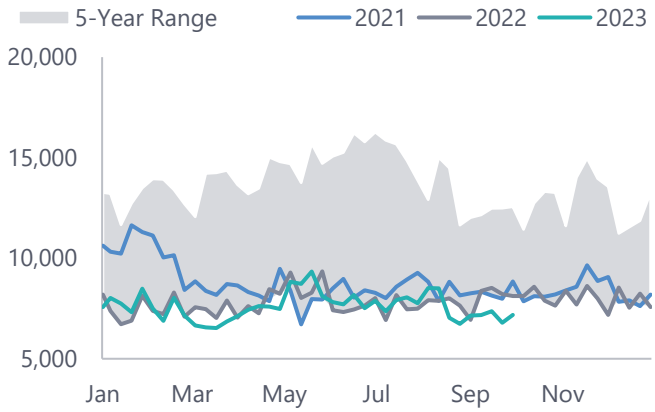
Inventory (Mbbl)

Overall U.S. Crude Inventory

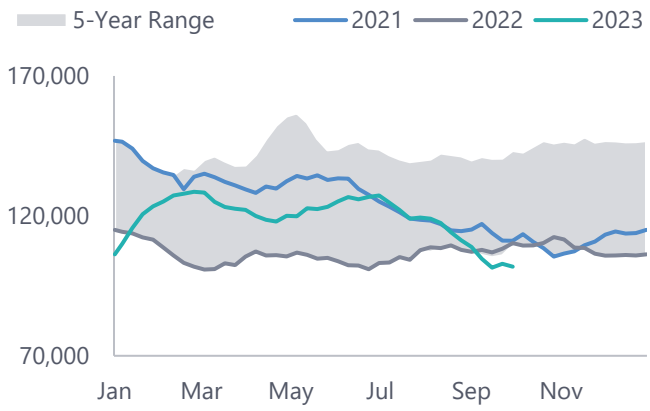


Note: Excludes strategic petroleum reserve (SPR).

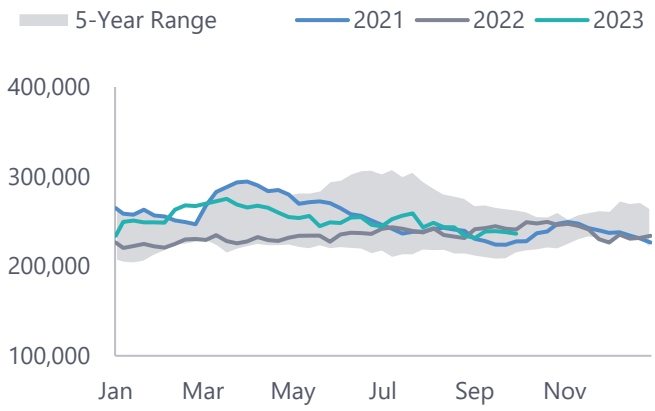
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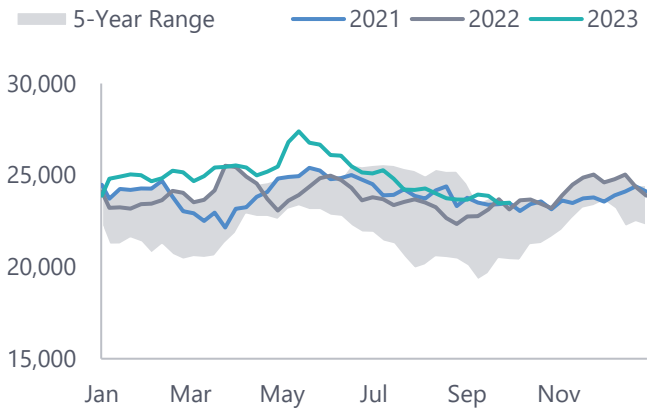
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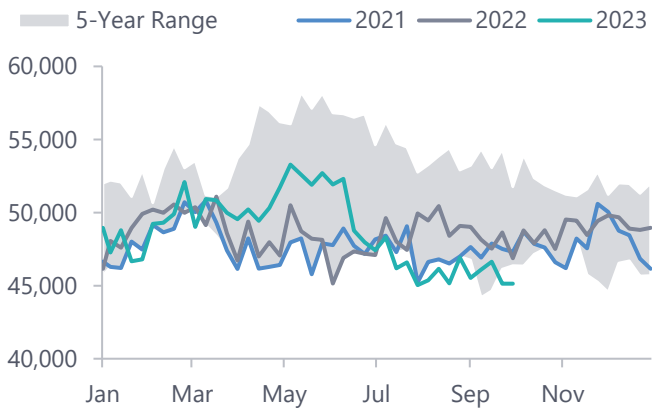
PADD III



PADD IV



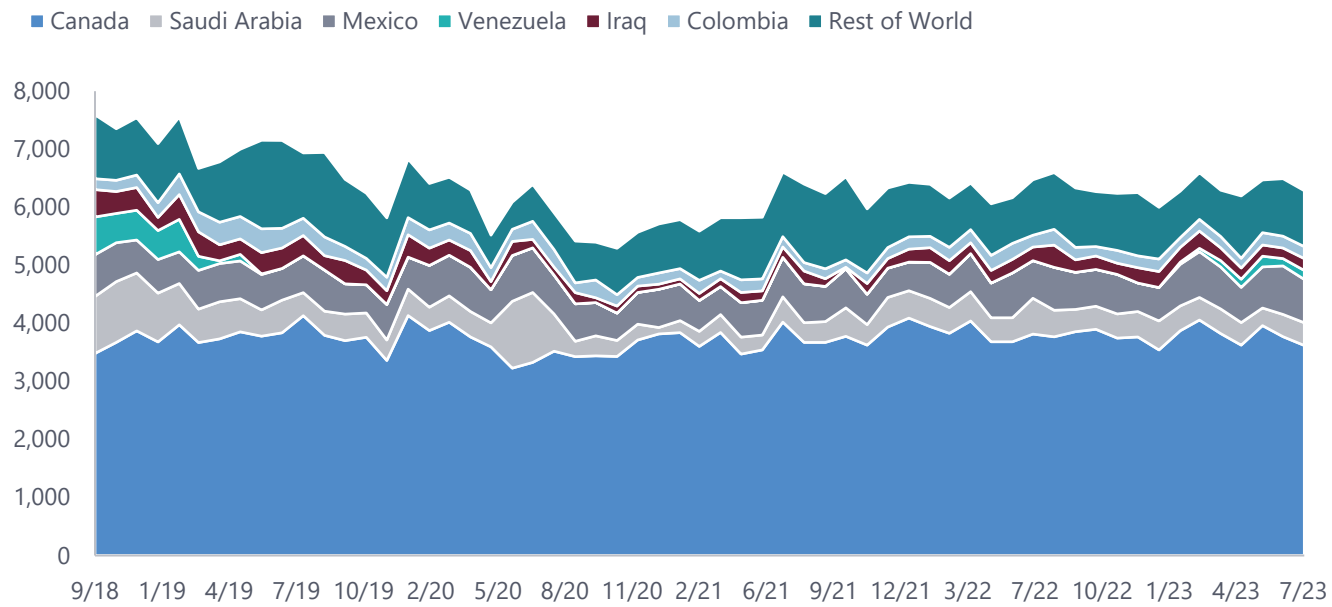
PADD V



Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

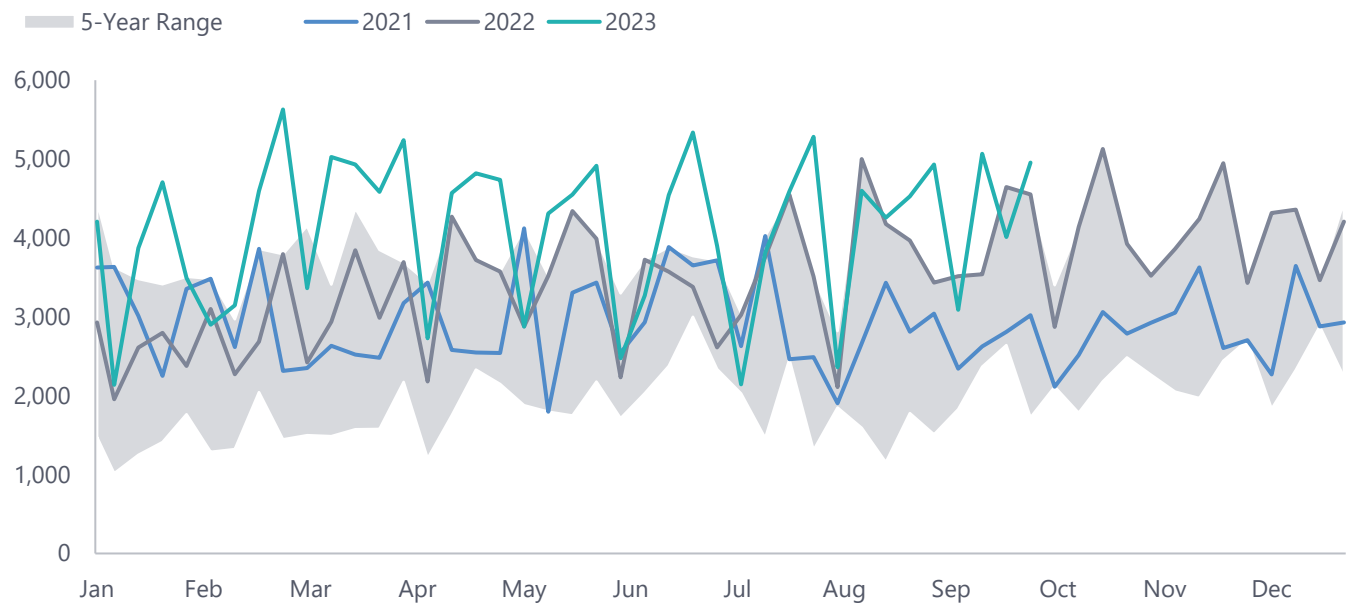
Trade

U.S. Crude Imports by Country (Mbbl)



Note: Data collected on a monthly basis and subject to a two- to four-month lag.

Total U.S. Crude Exports (Mbbl/d)

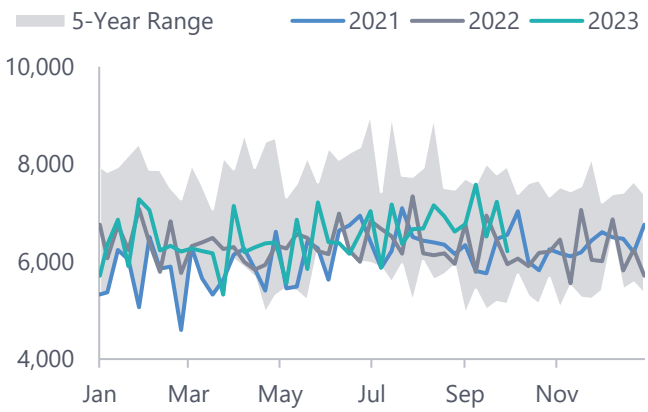


Note: Data collected on a weekly basis.

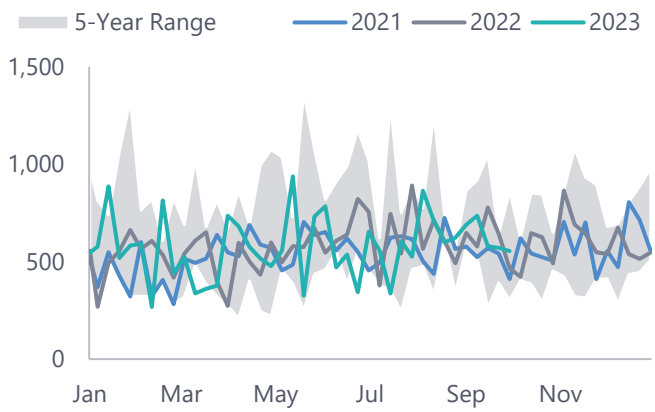
Note: All data as of September 30, 2023.
Source: Bloomberg.

U.S. Commercial Crude Imports by Destination (Mbbl/d)

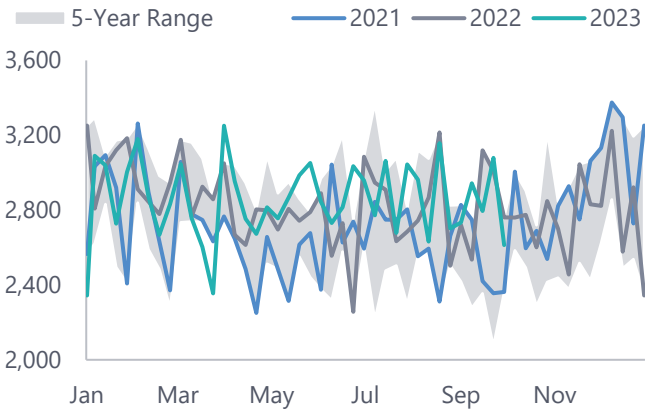
Overall U.S. Commercial Crude Imports



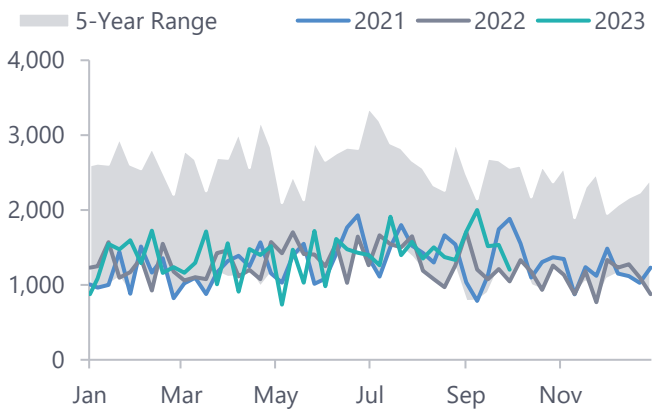
Destination—PADD I



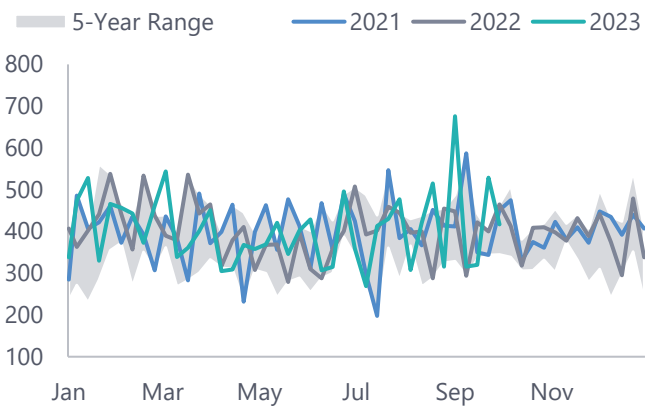
Destination—PADD II



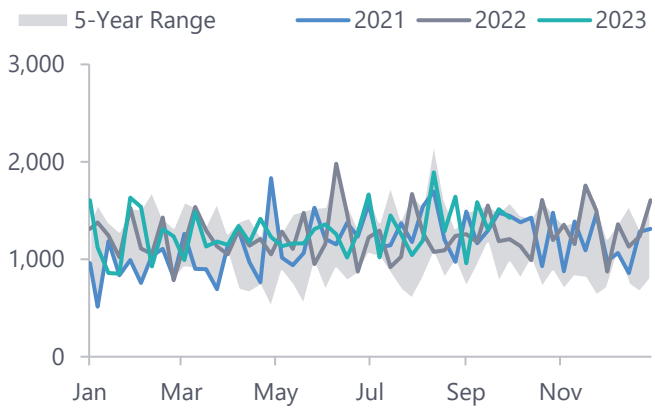
Destination—PADD III



Destination—PADD IV



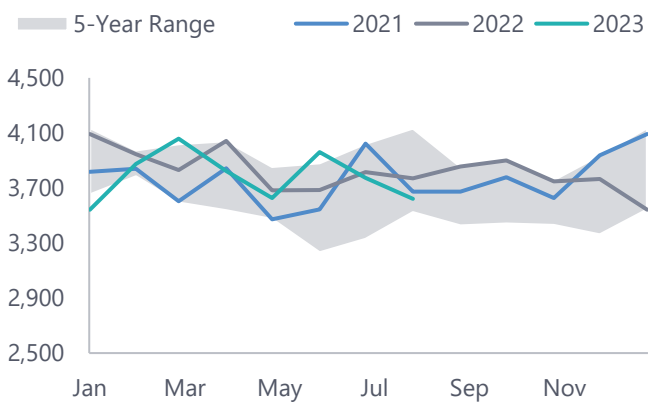
Destination—PADD V



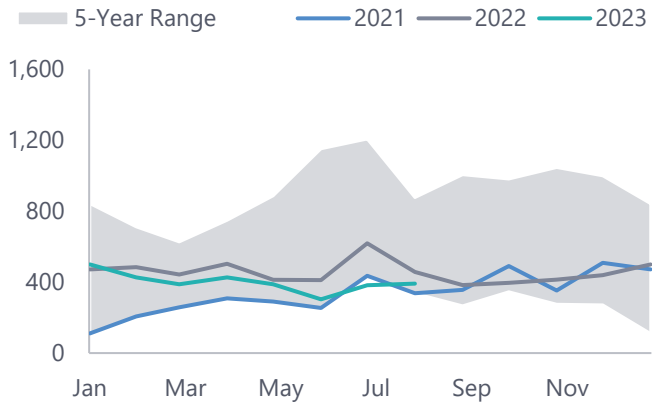
Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

U.S. Imports by Country (Mbbl/d)

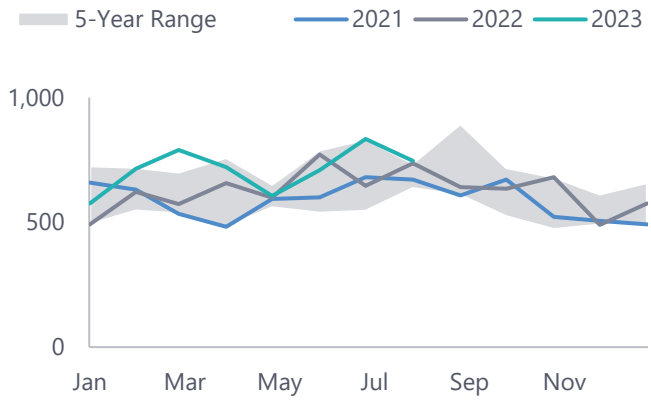
Canada



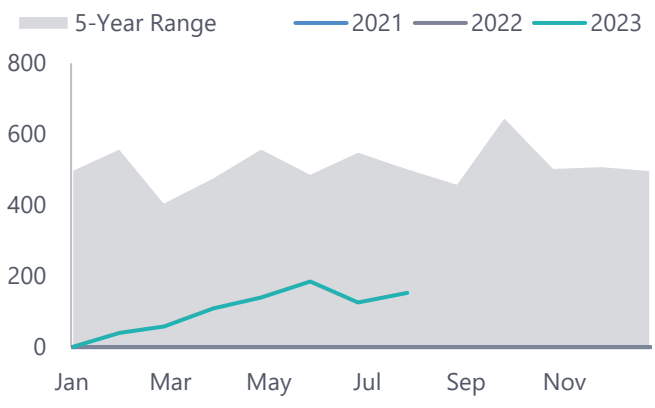
Saudi Arabia



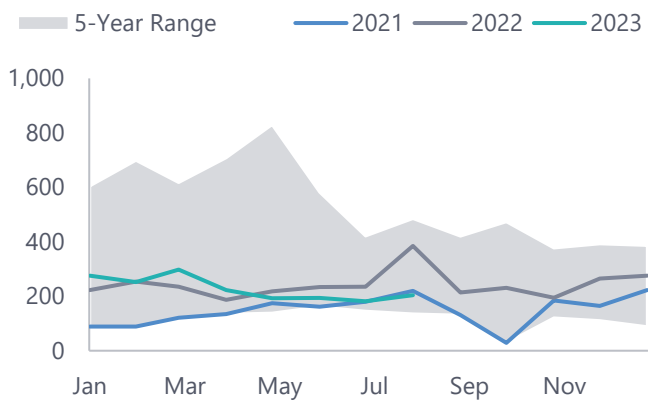
Mexico



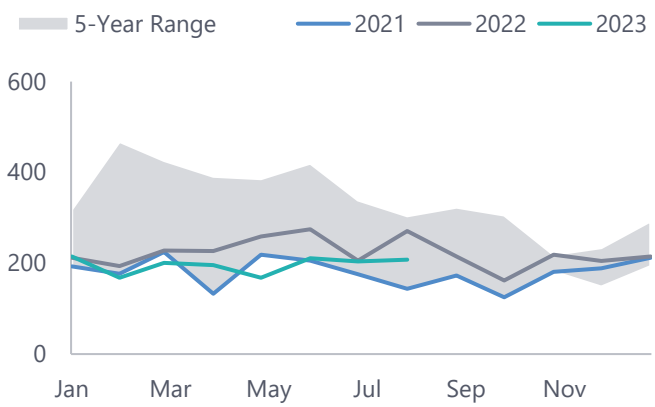
Venezuela



Iraq



Colombia



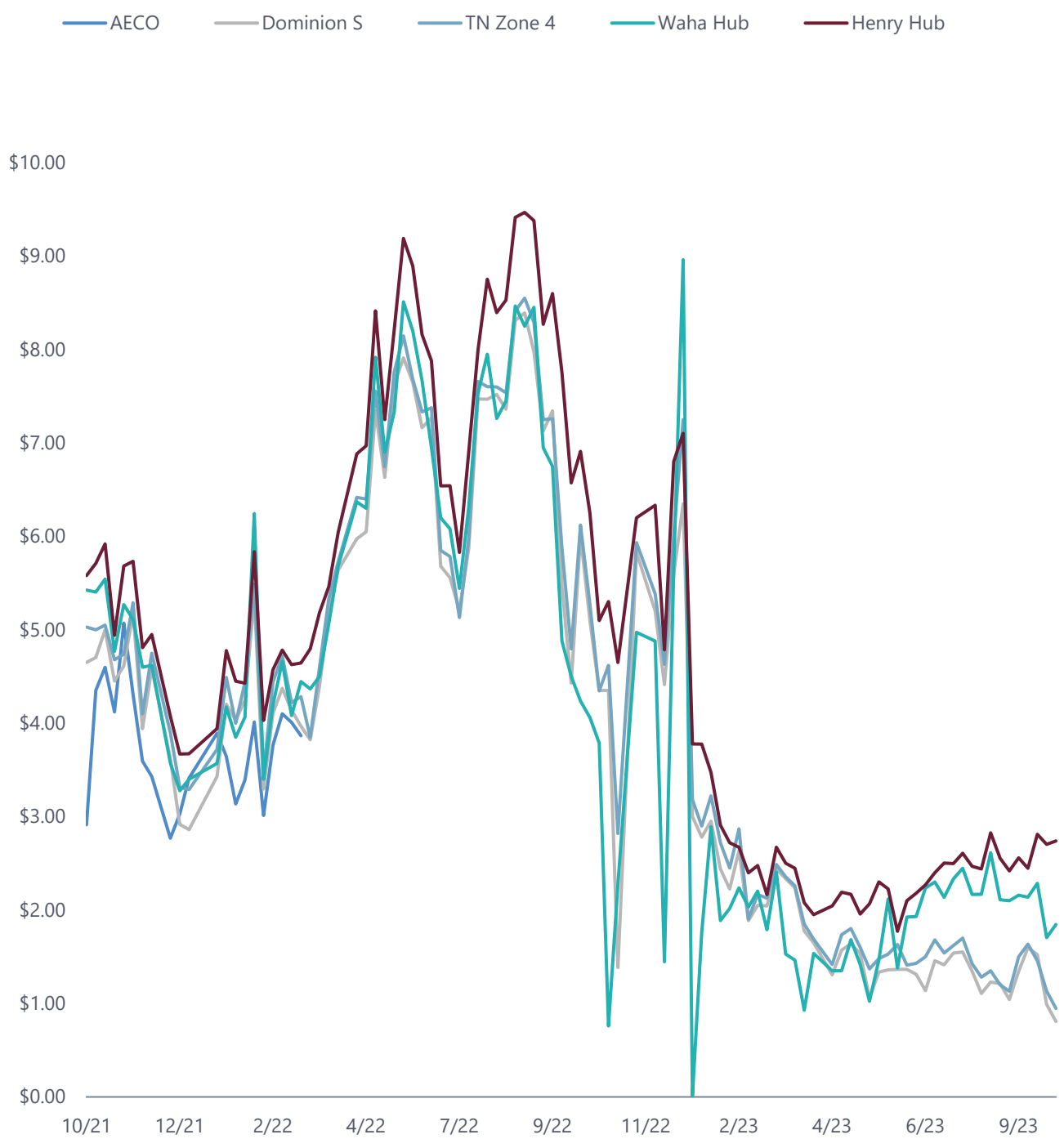
Notes: All data as of September 30, 2023. Data collected on a monthly basis and subject to a two-month lag.
Source: Bloomberg.

03 NATURAL GAS AND NGLS

Houlihan Lokey

Natural Gas Spot Pricing

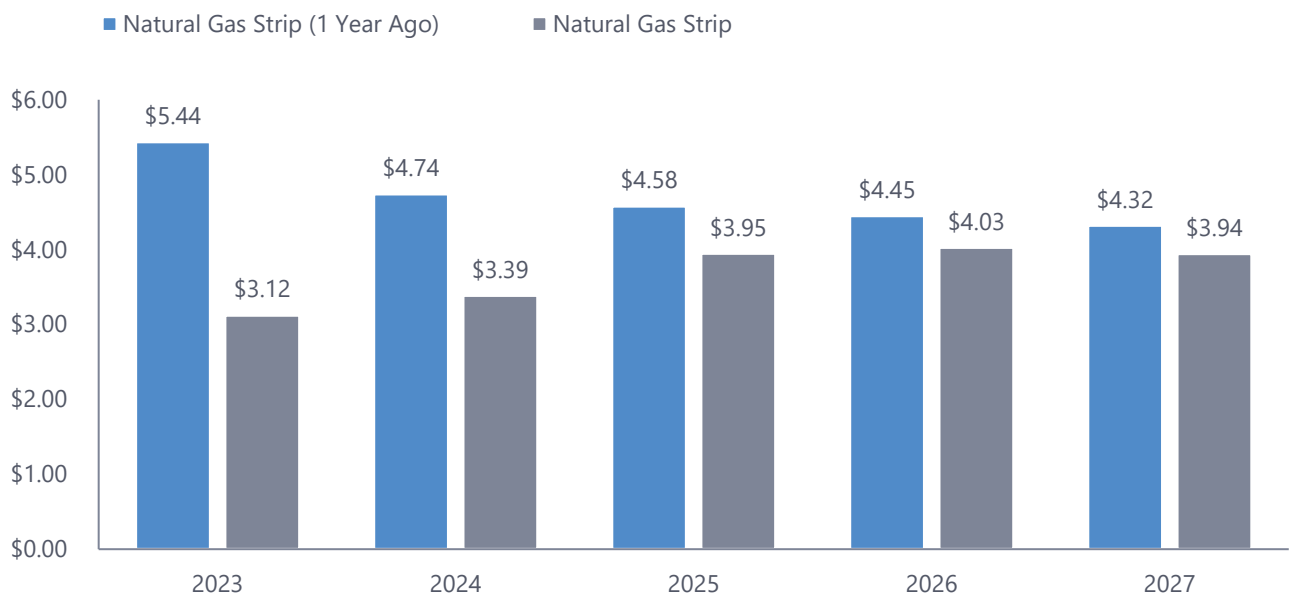
Pricing ($/MMbtu)



Notes: All data as of September 29, 2023. Data collected on a monthly basis.
Source: S&P Capital IQ.

Natural Gas Pricing

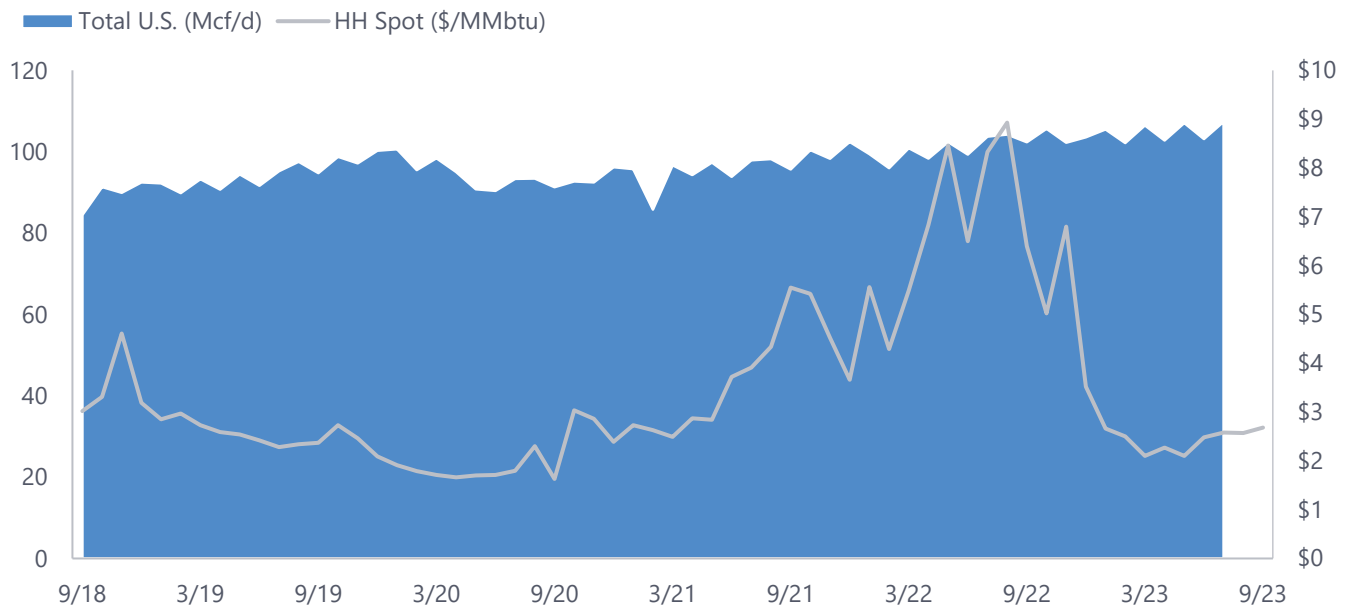
Strip Pricing Comparison ($/MMbtu)



Notes: All data as of September 29, 2023. Represents the average price for each year.
Source: S&P Capital IQ.

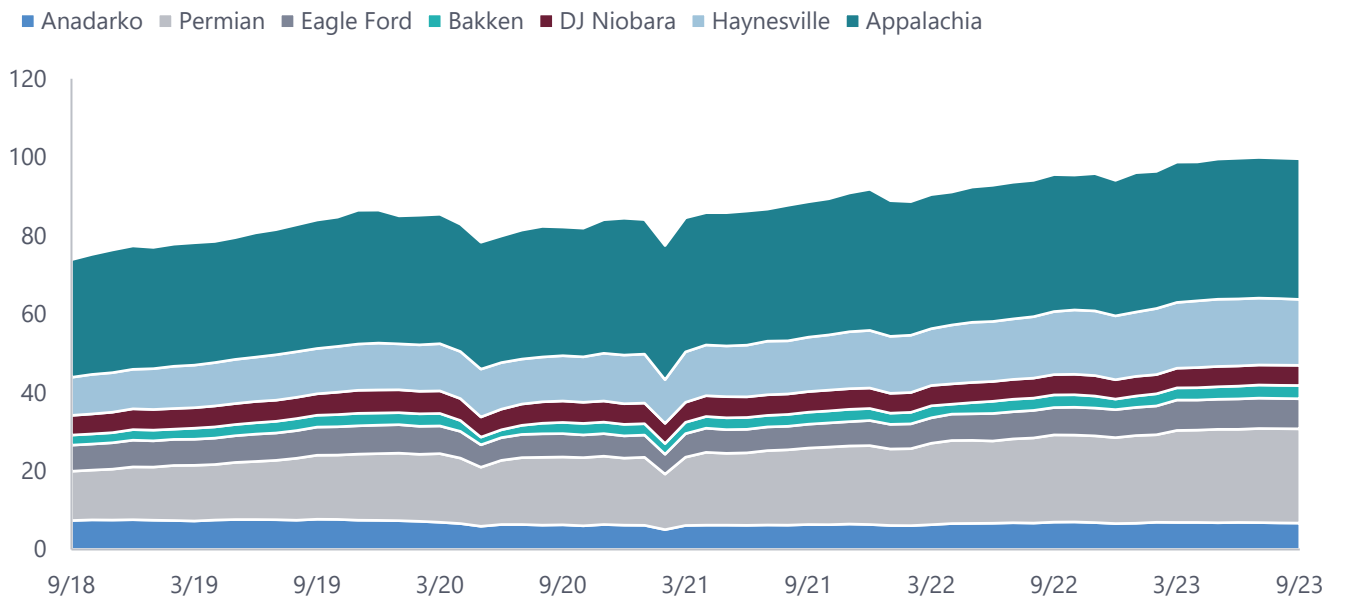
Natural Gas Production

Total U.S. Dry Natural Gas Production (Bcf/d)



Note: Data collected on a monthly basis and subject to a two-month lag for production.

Select Dry Natural Gas Production by Regions (Bcf/d)(1)



Notes: All data as of September 30, 2023. Data collected on a monthly basis.
Sources: Bloomberg and EIA.
(1) EIA's drilling productivity report uses recent data on the total number of drilling rigs in operation, along with estimates of drilling productivity and estimated changes in production from existing wells, to provide estimated changes in production for key regions.

Differentials

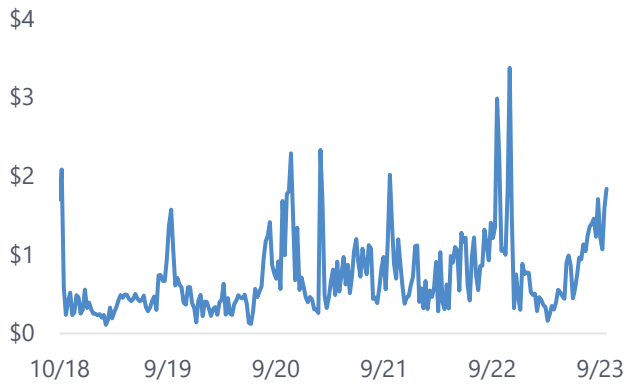
Regional Natural Gas Spot Pricing ($/MMbtu)

Region	9/30/2023	9/30/2022	6/30/2023	YoY % Change	QoQ % Change
Henry Hub	$2.68	$6.40	$2.40	-58.1%	11.7%
Benchmark					
Dominion South	$0.91	$3.94	$1.46	-76.9%	-37.7%
Henry Hub—Dominion South	*$1.77*	*$2.46*	*$0.94*		
TN Zone 4	$0.86	$3.90	$1.68	-77.9%	-48.8%
Henry Hub—TN Zone 4	*$1.82*	*$2.50*	*$0.72*		
AECO	$1.79	$3.18	$2.00	-43.7%	-10.5%
Henry Hub—AECO	*$0.89*	*$3.22*	*$0.40*		
Waha Hub	$1.58	$3.38	$2.30	-53.3%	-31.3%
Henry Hub—Waha	*$1.10*	*$3.02*	*$0.10*		

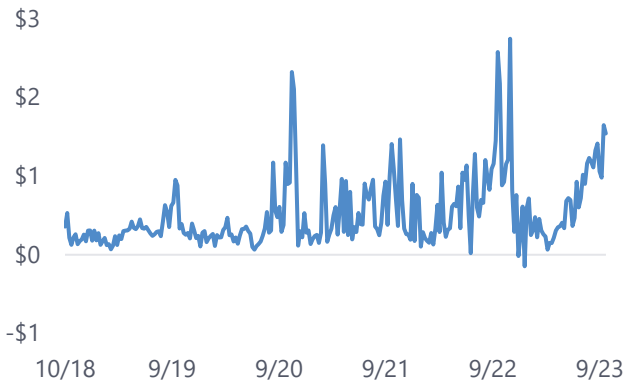
Notes: All data as of September 29, 2023.
Source: S&P Capital IQ.

Natural Gas—Differentials ($/MMbtu)

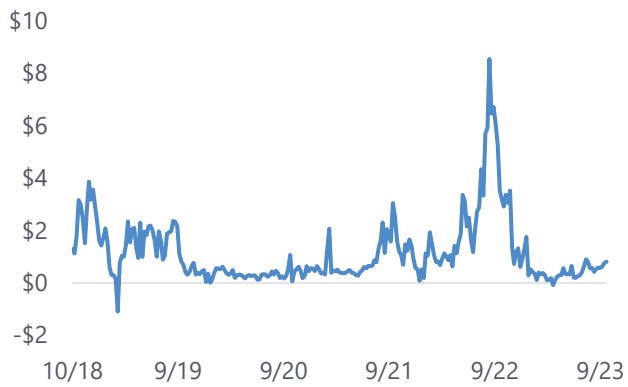
HH—Dominion South



HH—TN Zone 4



HH—AECO



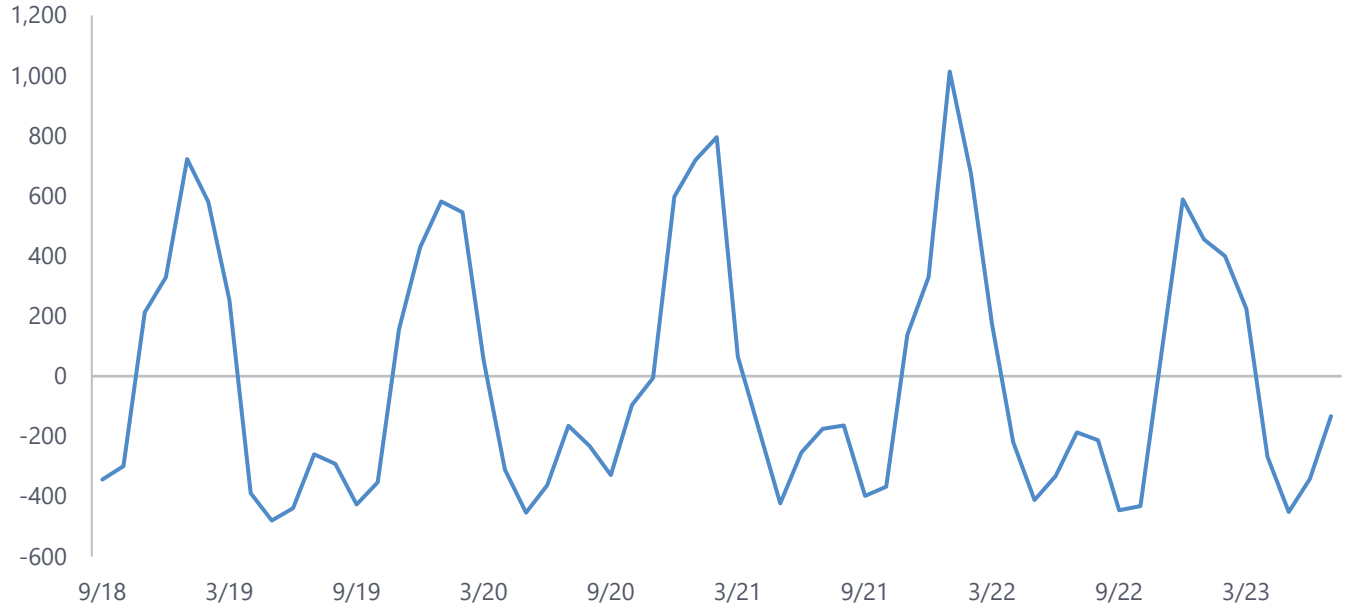
HH—Waha Hub



Notes: All data as of September 29, 2023. Data collected on a monthly basis.
Source: S&P Capital IQ.

Natural Gas

U.S. Natural Gas Withdrawal (Bcf)

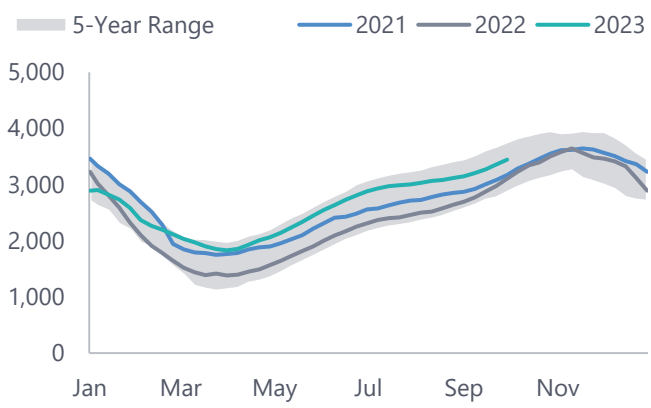


Note: Data collected on a monthly basis and subject to irregular updates.

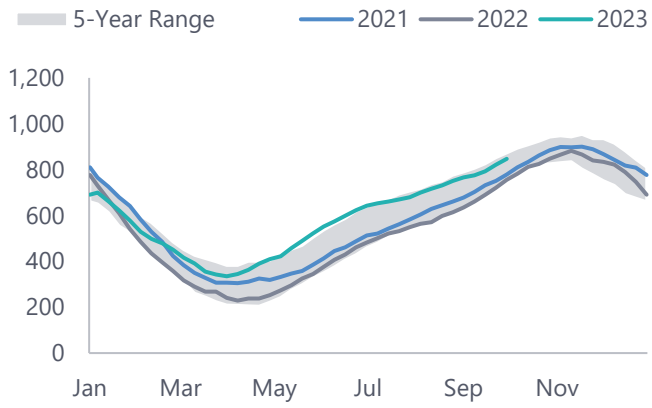
Note: All data as of September 30, 2023.
Source: Bloomberg.

Natural Gas Storage (Bcf)

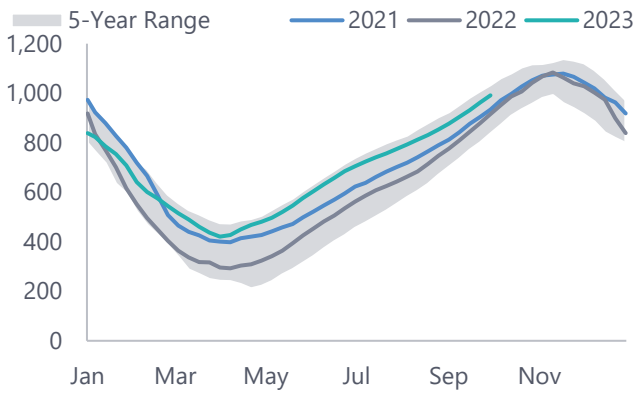
Total U.S.



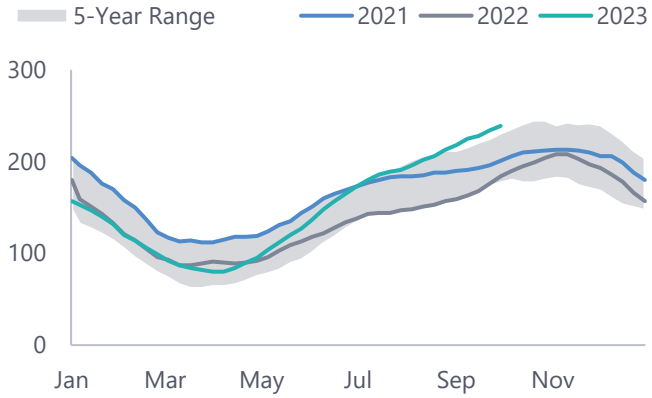
East



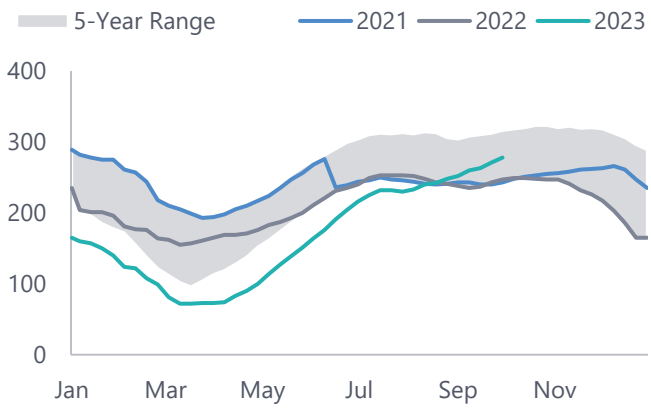
Midwest



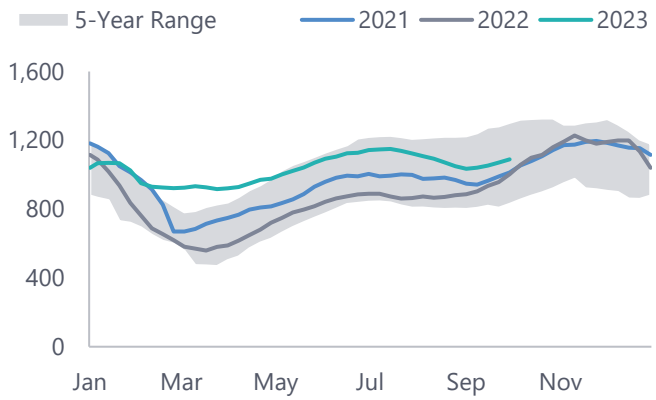
Mountain



Pacific



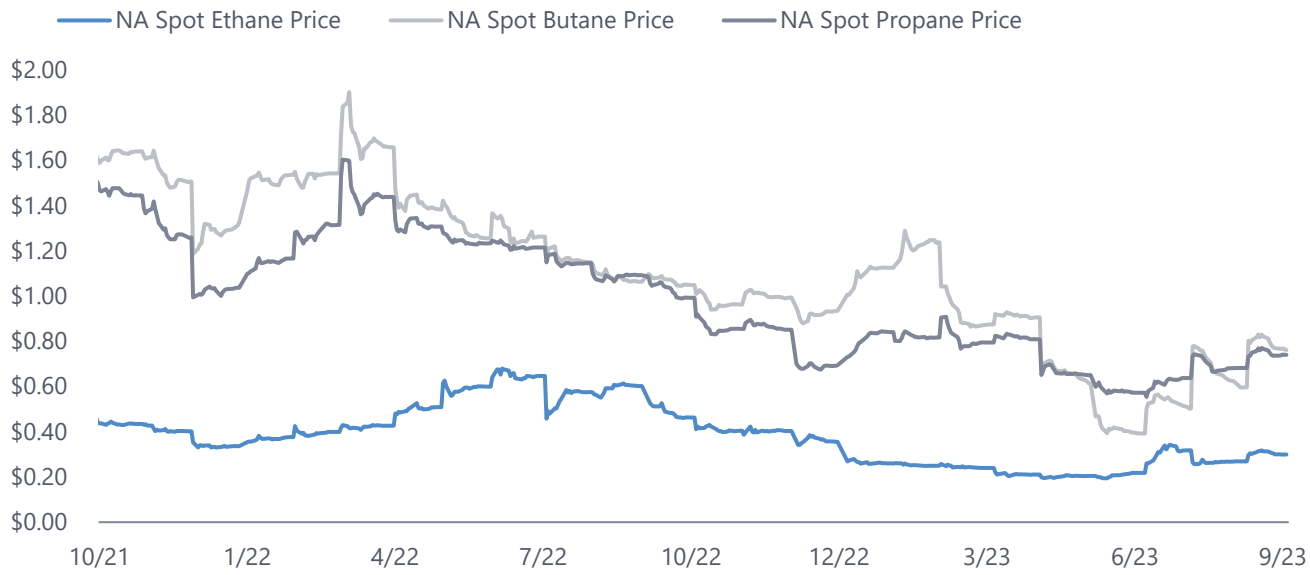
South Central



Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

NGLs Spot Pricing

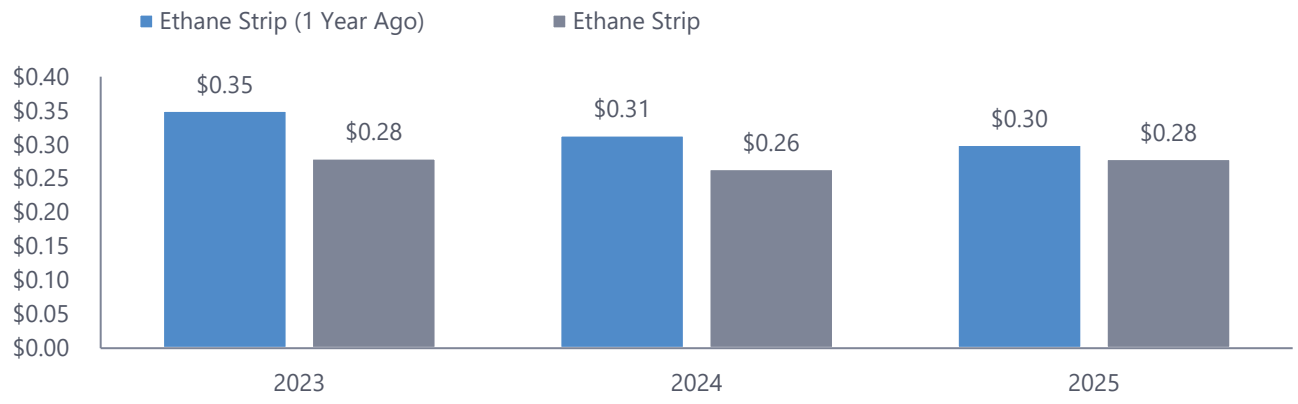
Pricing ($/gal)



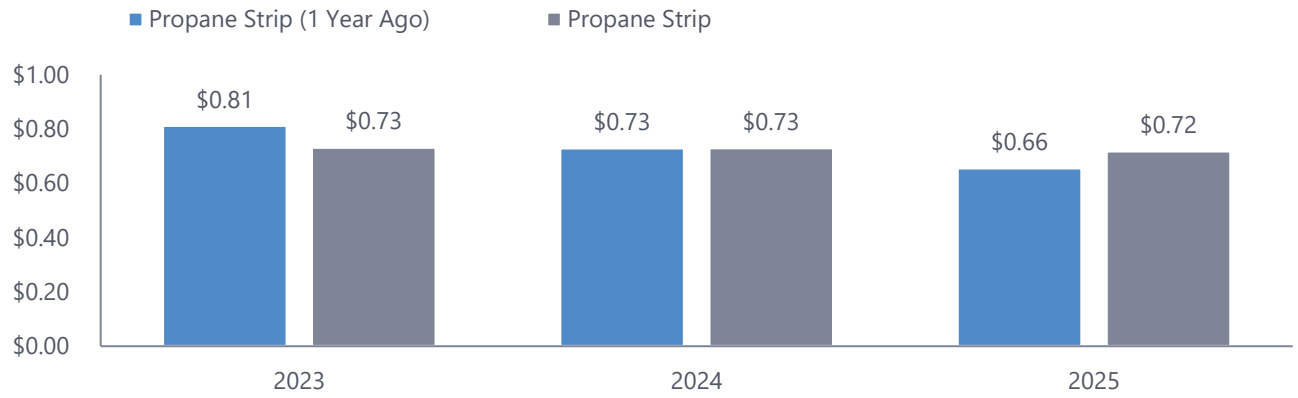
Notes: All data as of September 29, 2023. Data collected on a daily basis.
Source: S&P Capital IQ.

NGLs Strip Pricing

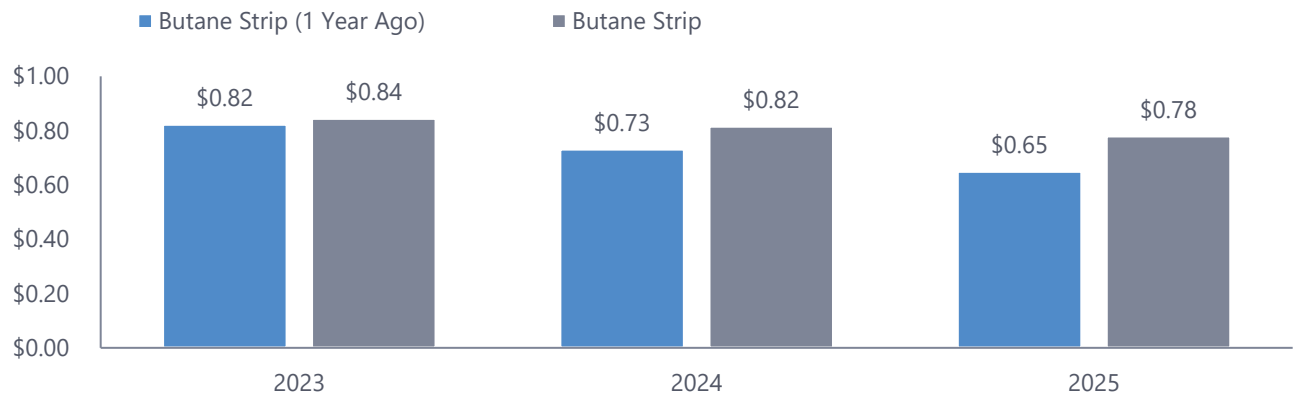
Ethane Strip Pricing Comparison ($/gal)



Propane Strip Pricing Comparison ($/gal)



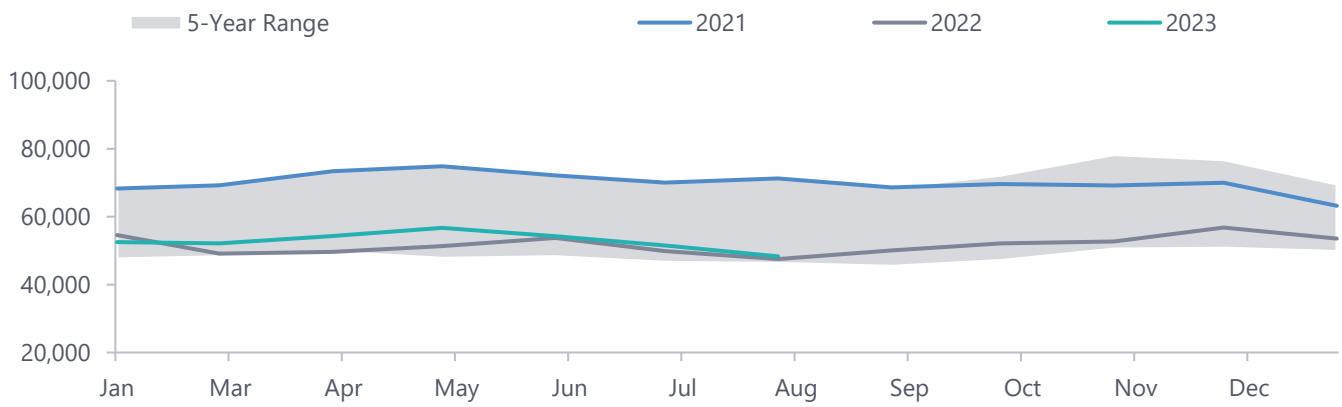
Butane Strip Pricing Comparison ($/gal)



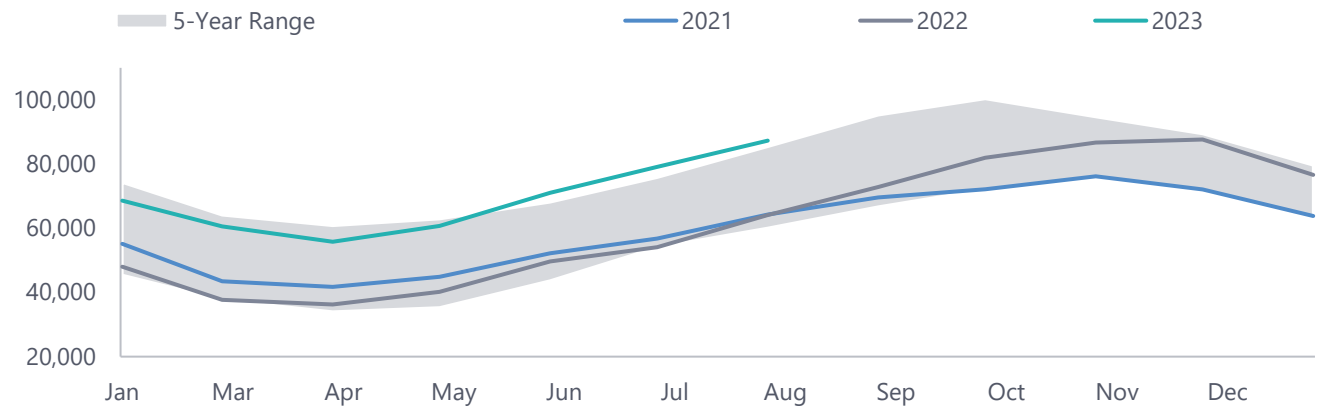
Notes: All data as of September 29, 2023. Represents the average price for each year.
Source: S&P Capital IQ.

NGLs Inventory

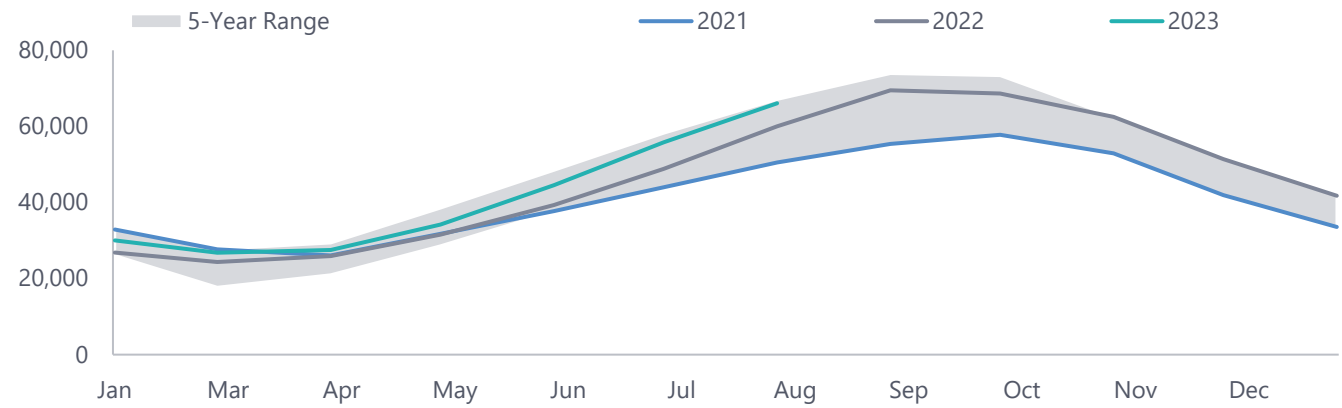
U.S. Ending Stocks Ethane (Mbbls)



U.S. Ending Stocks Propane (Mbbls)



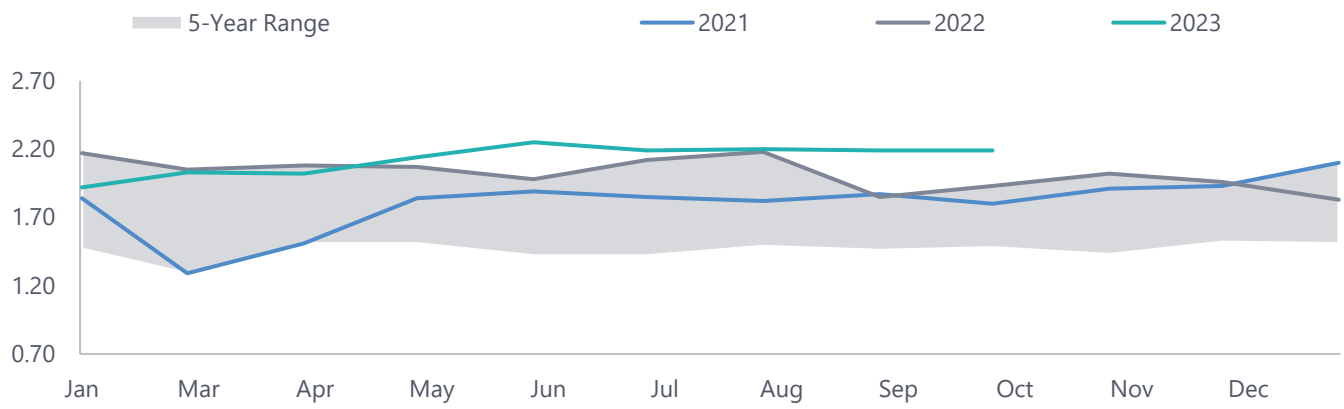
Normal Butane/Butylene (Mbbls)



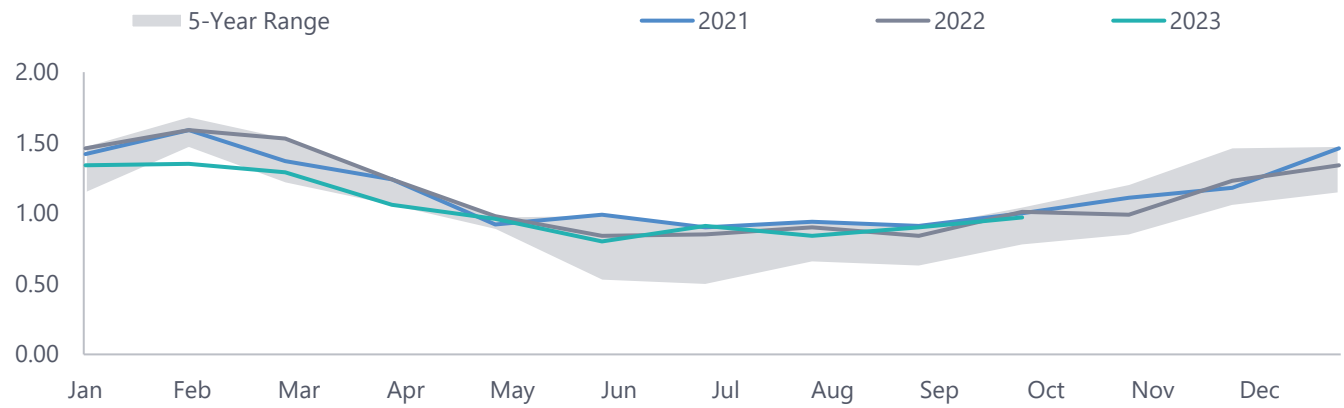
Notes: All data as of September 30, 2023. Data collected on a monthly basis and subject to a two-month lag.
Source: Bloomberg.

NGLs Consumption

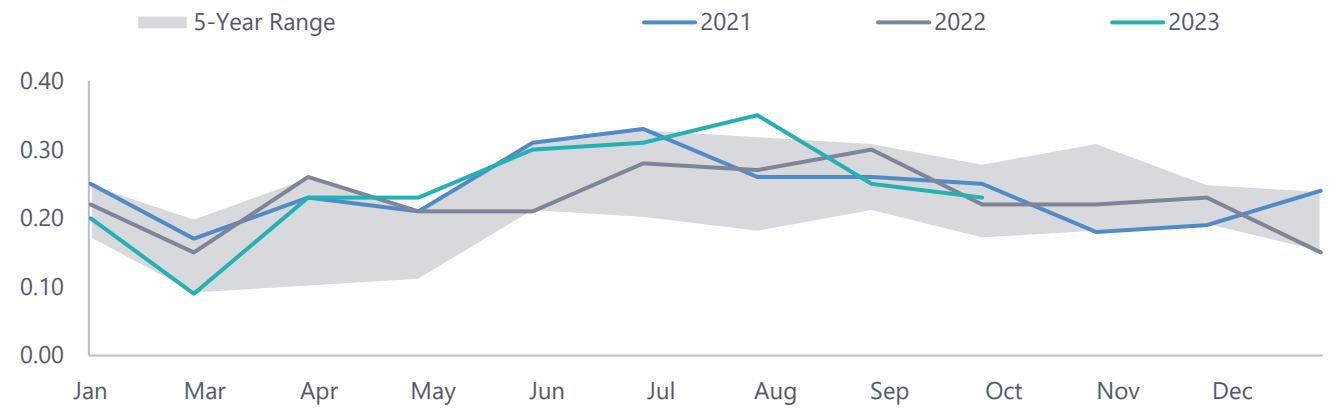
U.S. Ethane/Ethylene Consumption (MMboe/d)



U.S. Propane/Propylene Consumption (MMboe/d)



U.S. Butane/Butylene Consumption (MMboe/d)



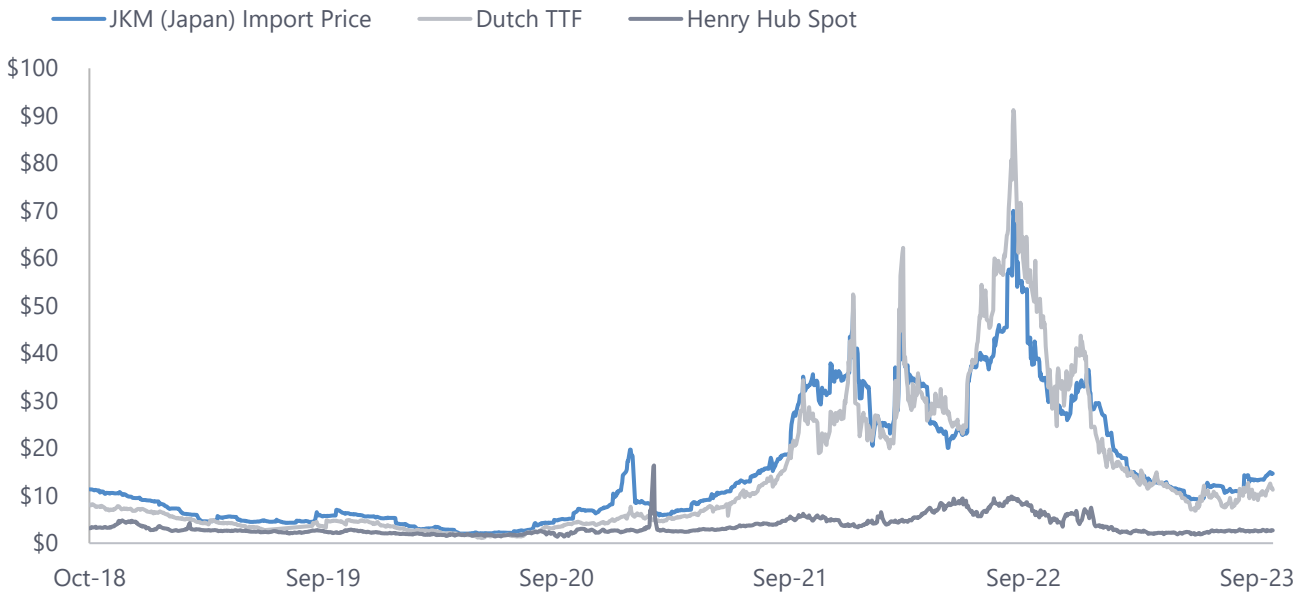
Notes: All data as of September 30, 2023. Data collected on a monthly basis and subject to a two-month lag.
Source: Bloomberg.

04 LNG

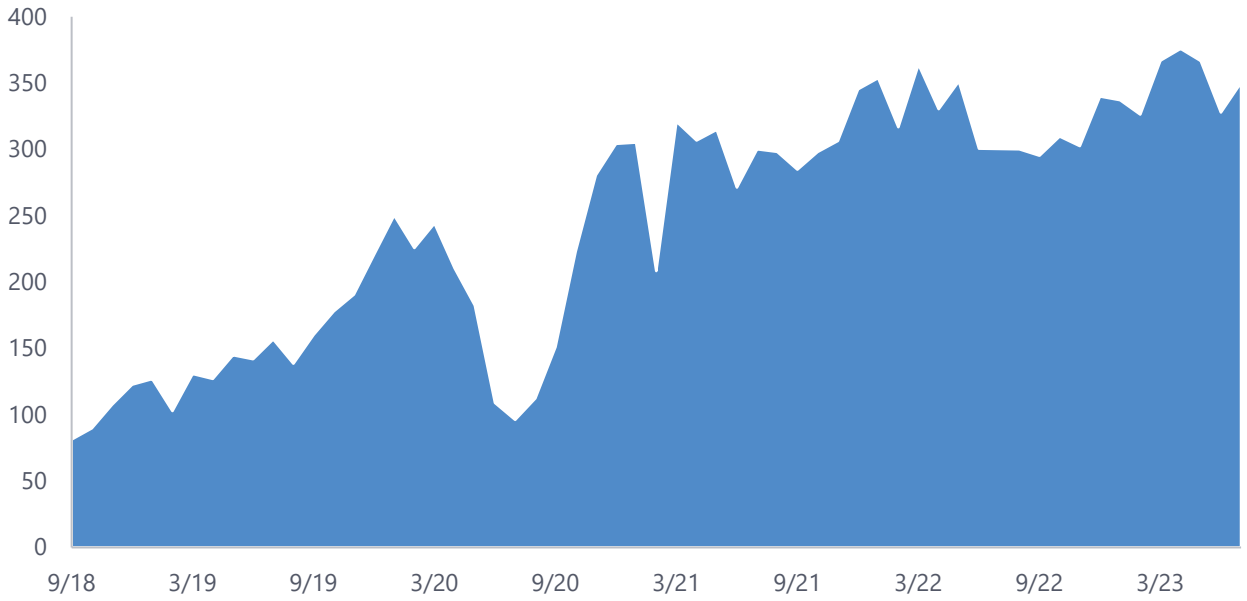
Houlihan Lokey

LNG

Spot Pricing ($/MMbtu)



U.S. LNG Exports (Bcf/month)



Note: Data collected on a monthly basis and subject to a two-month lag.

Notes: All data as of September 30, 2023. Spot pricing data collected daily. Exports data collected on a monthly basis. JKM refers to Japan Korea Marker. Dutch TTF refers to Dutch Title Transfer Facility.
Source: Bloomberg.

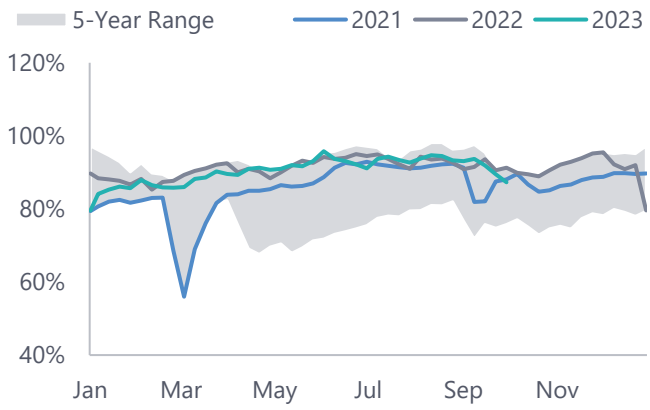
05 REFINING



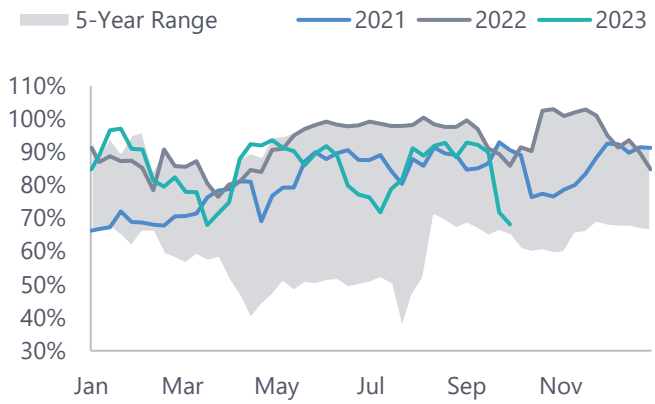
Houlihan Lokey

Refining—Utilization (%)

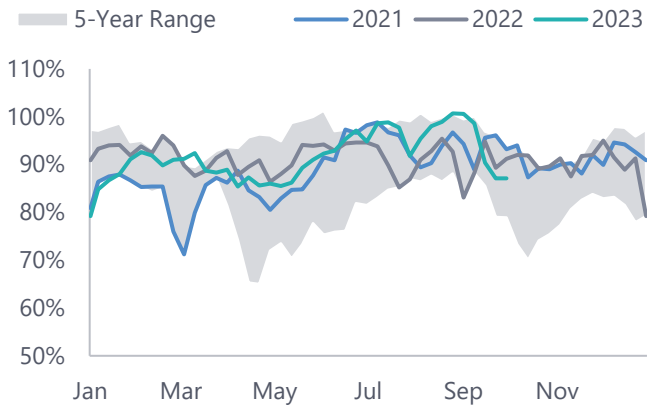
Total U.S.



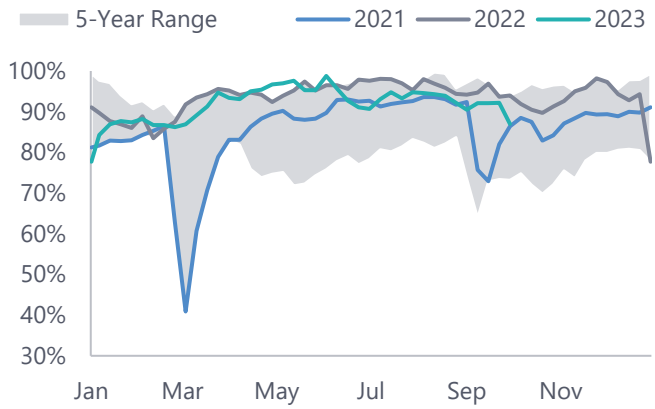
PADD I



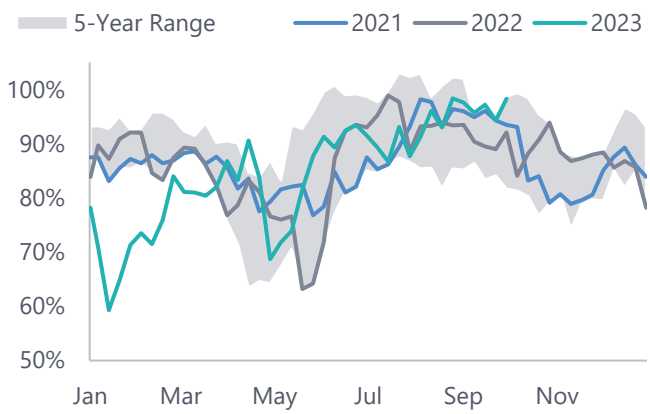
PADD II



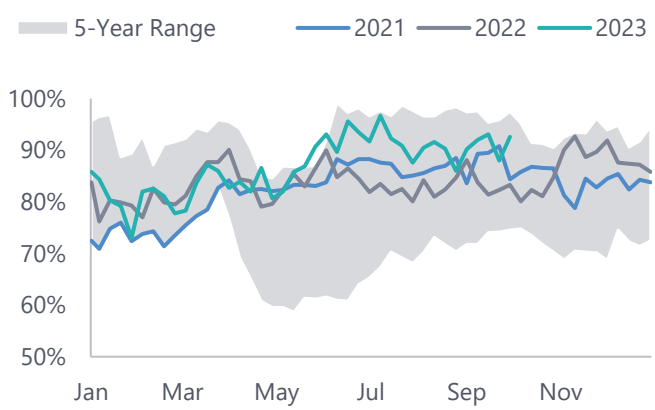
PADD III



PADD IV



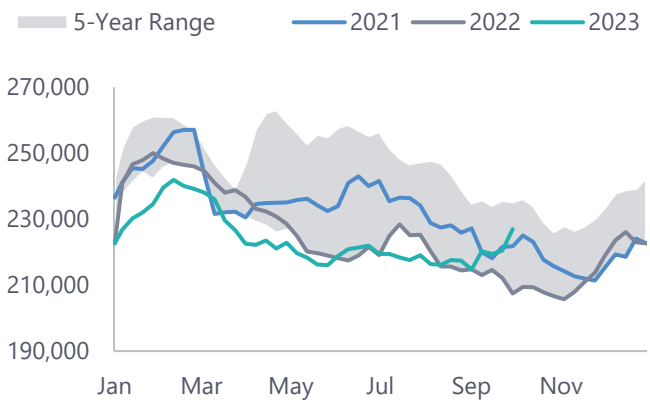
PADD V



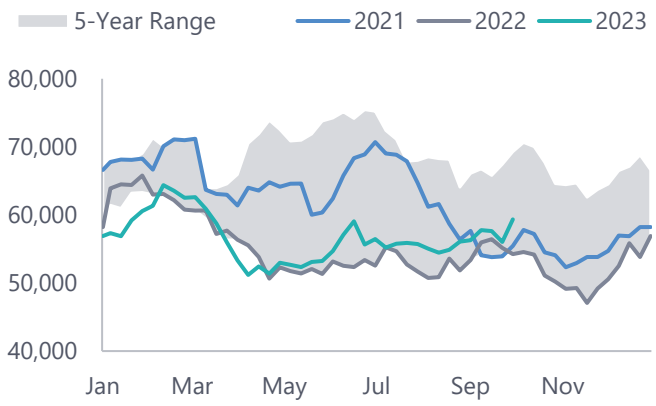
Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

Refining—Motor Gasoline Inventory (Mbbl)

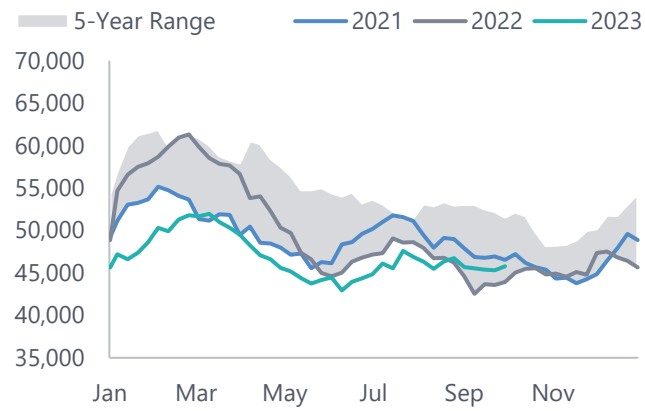
Total U.S.



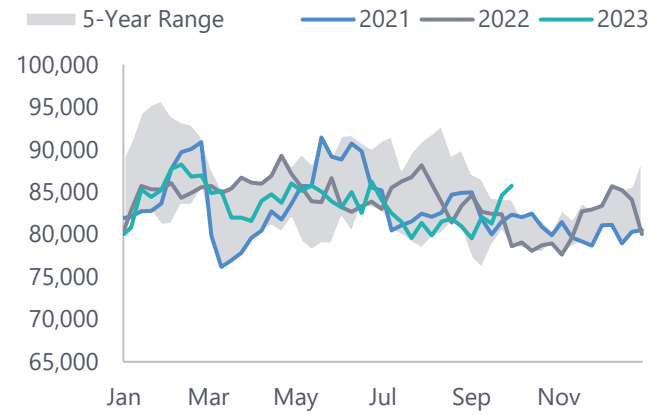
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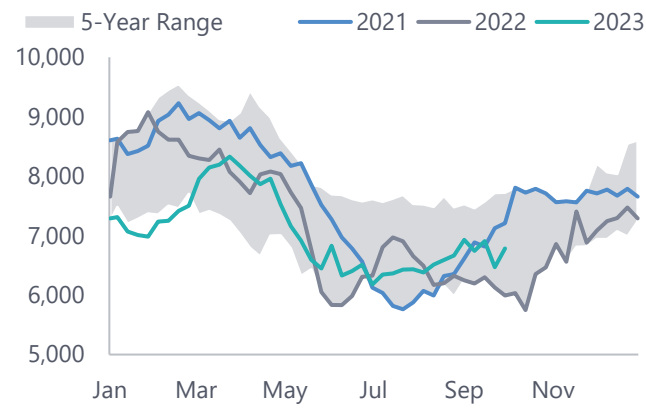
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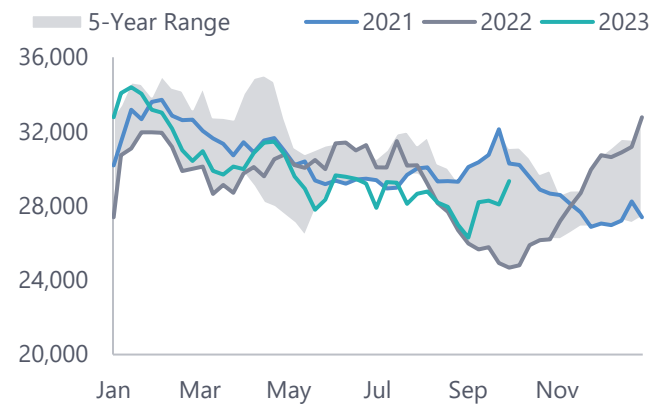
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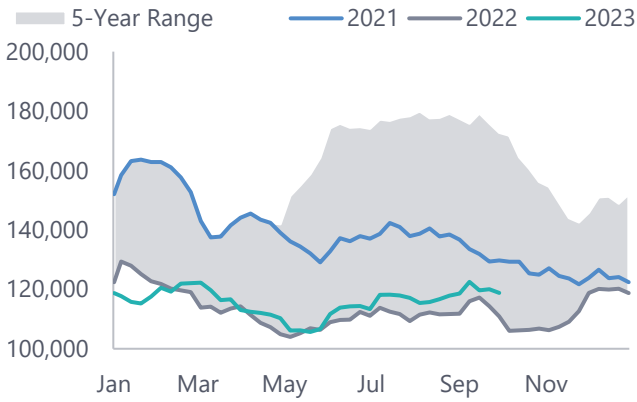
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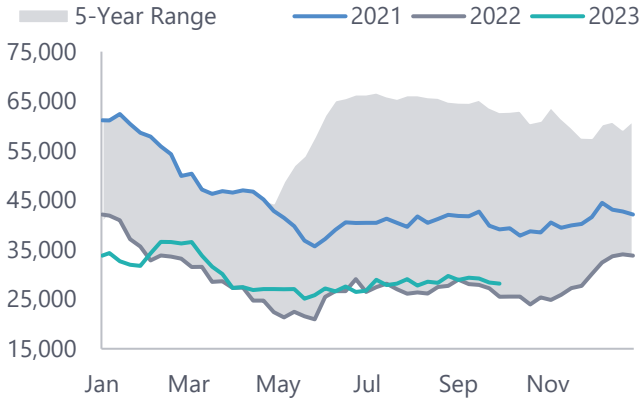
Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

Refining—Distillate Fuel Oil Inventory (Mbbl)

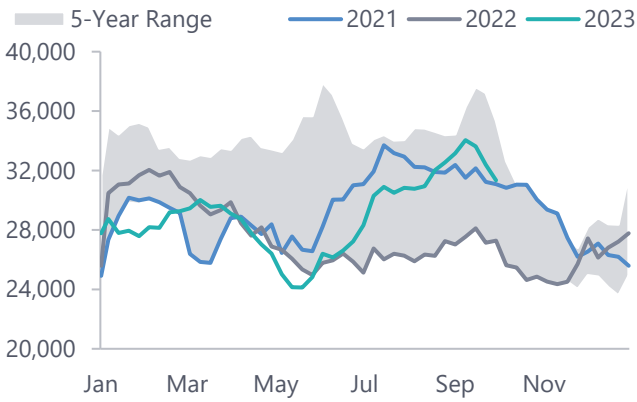
Total U.S.



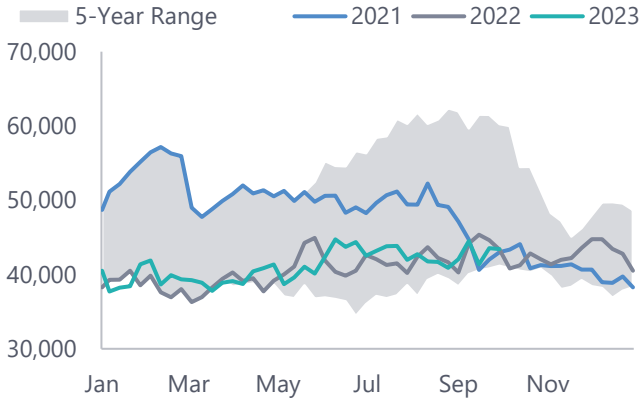
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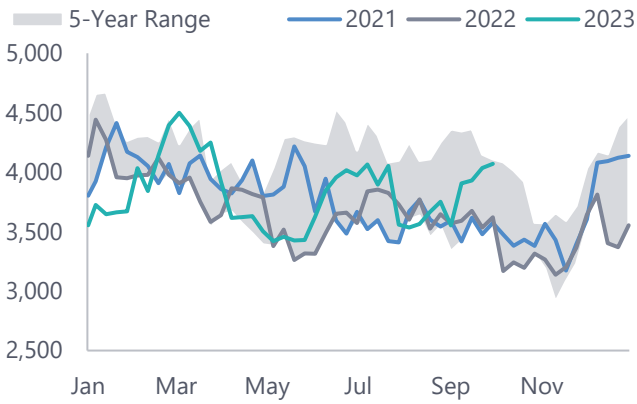
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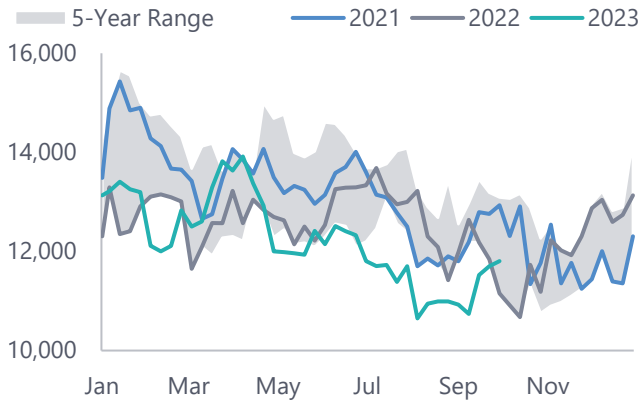
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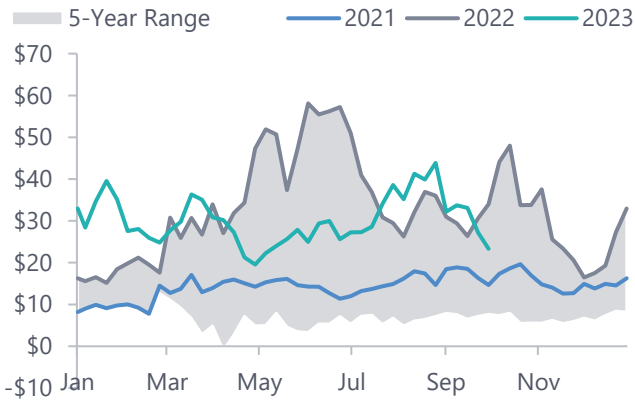
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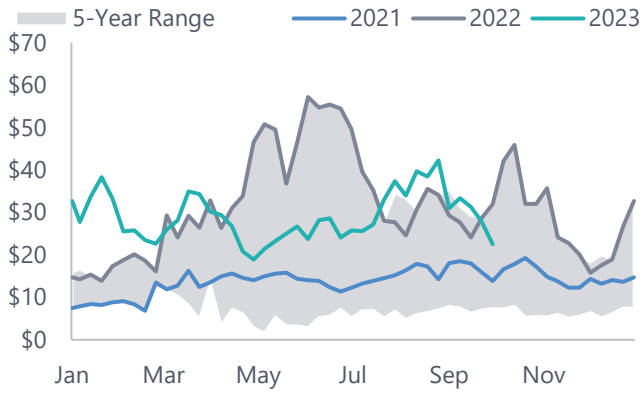
Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

Refining—3:2:1 Crack Spreads ($/bbl)

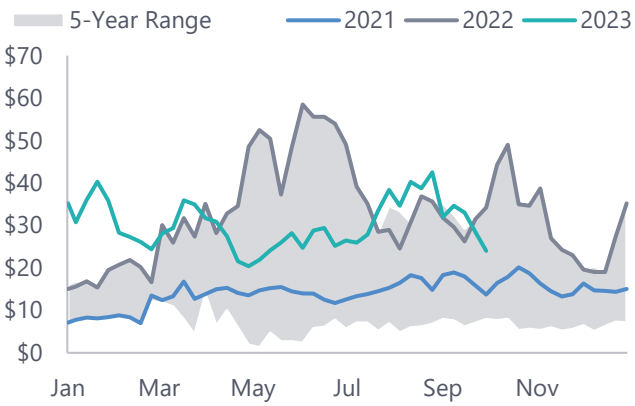
WTI Cushing (U.S. Gulf Coast)



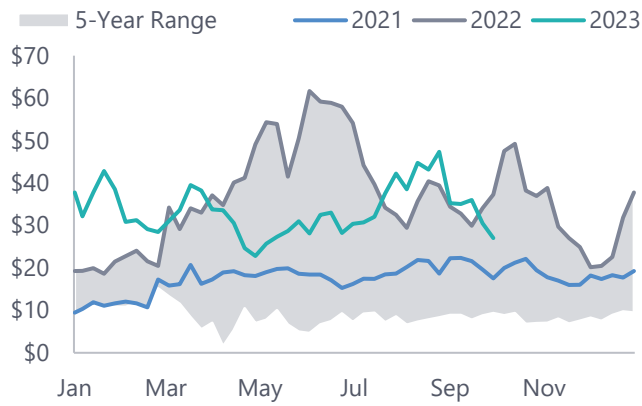
WTI Midland (U.S. Gulf Coast)



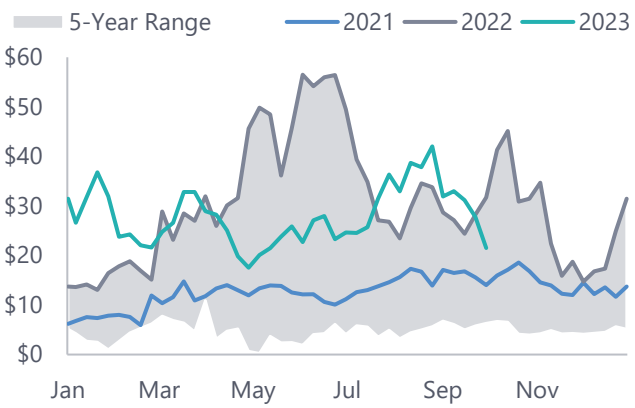
WTS Midland (U.S. Gulf Coast)



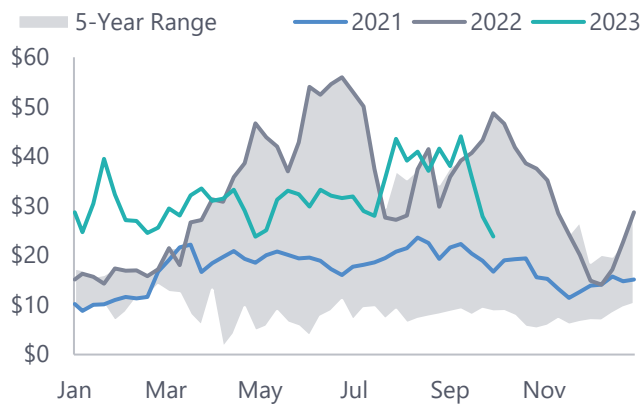
WTI Cushing ULSD (U.S. Gulf Coast)



LLS (U.S. Gulf Coast)



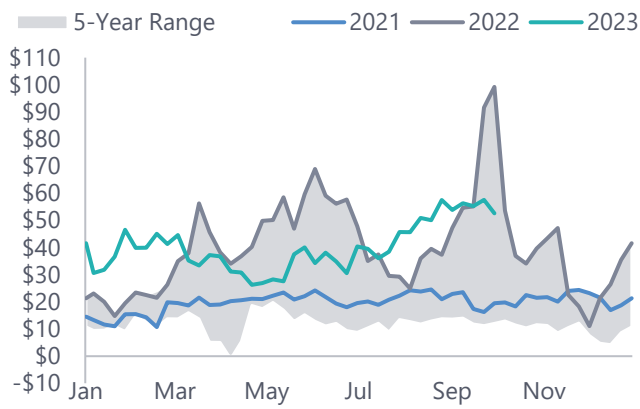
WTI Midland ULSD (U.S. Mid-Continent)



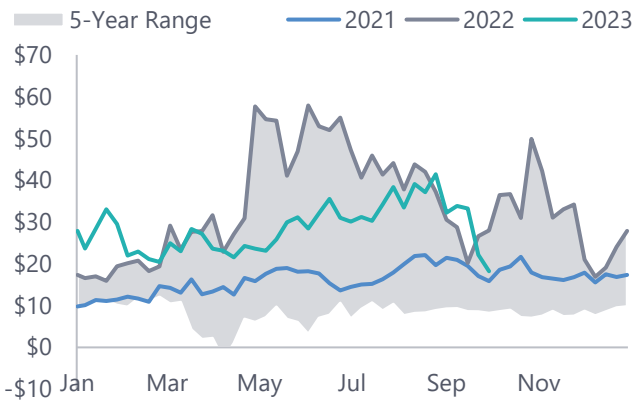
Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

Refining—3:2:1 Crack Spreads ($/bbl) (cont.)

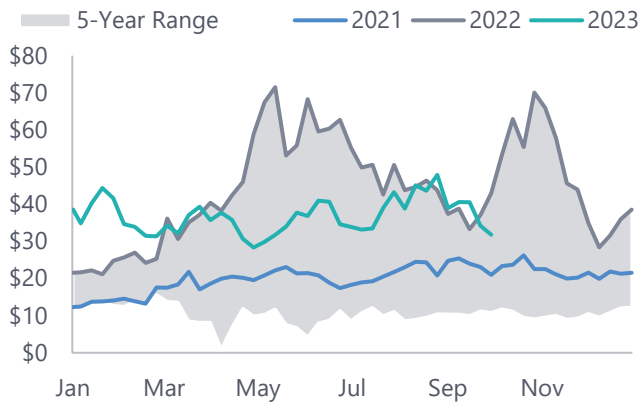
ANS (U.S. West Coast)



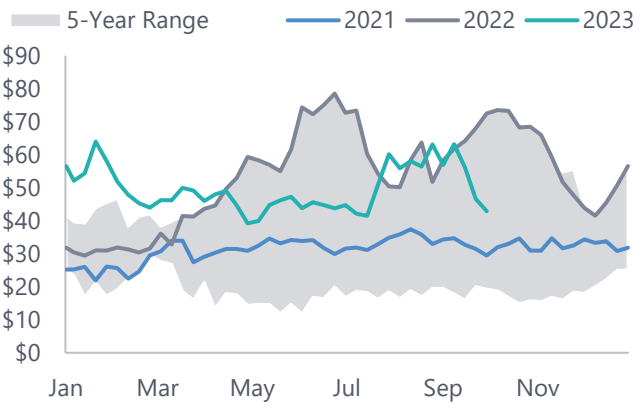
WTI Cushing (NYH RBOB Gasoline)



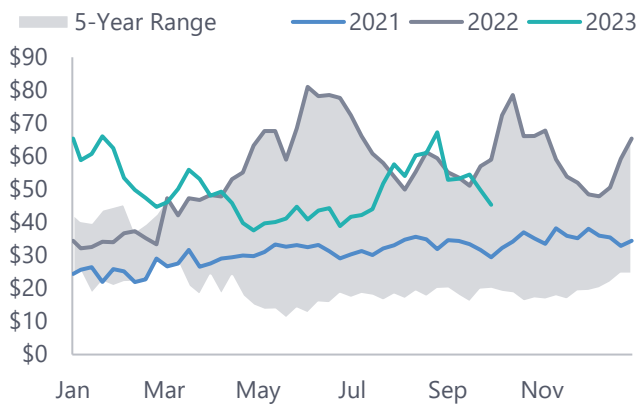
WTI Cushing ULSD (NY Harbor)



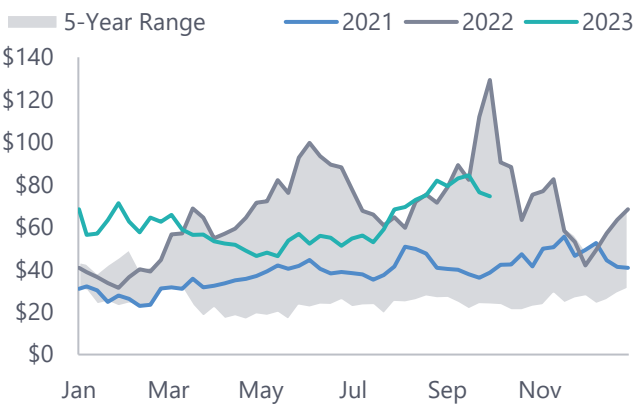
WCS (U.S. Mid-Continent)



WCS (U.S. Gulf Coast)



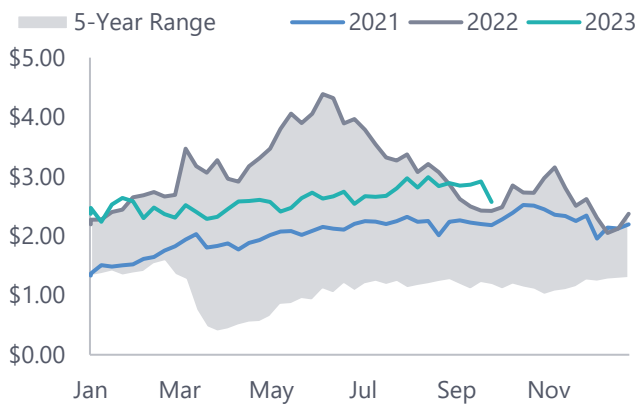
WCS (San Francisco)



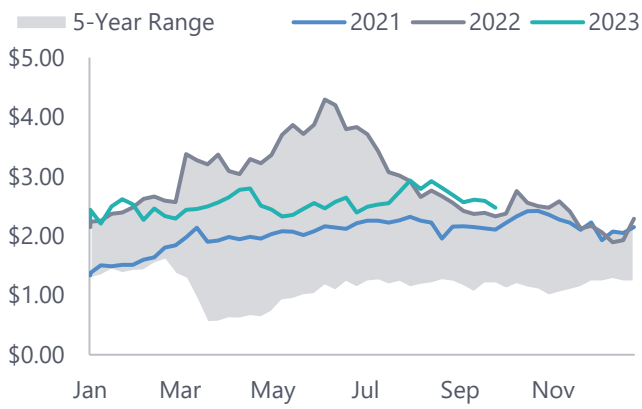
Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

Refining—Product Prices ($/gal)

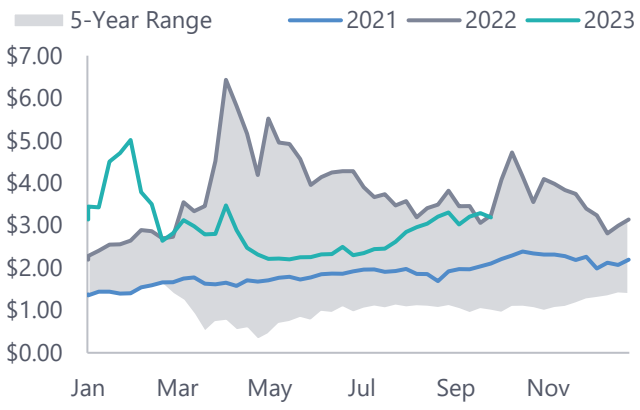
84 RBOB Gasoline (NY Harbor)



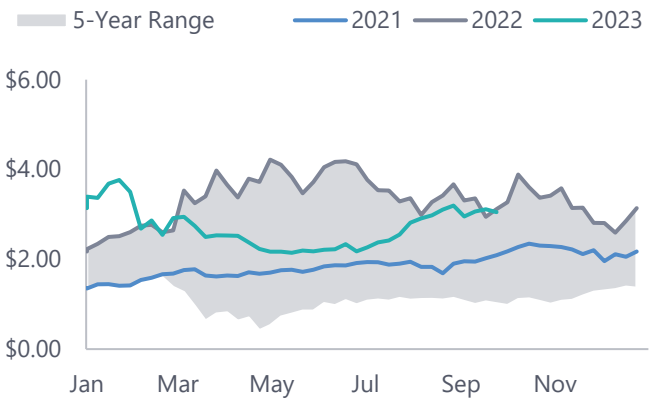
84 RBOB Gasoline (U.S. Gulf Coast)



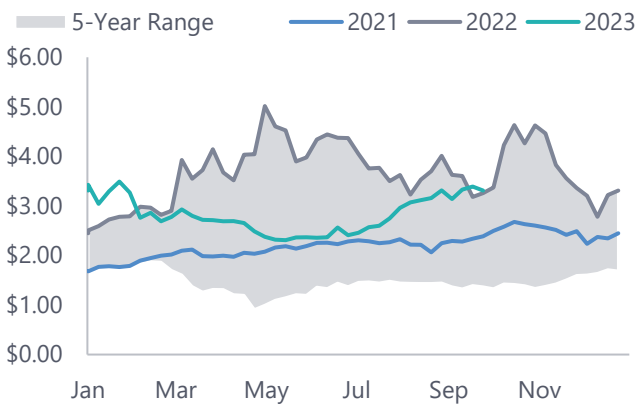
54-Grade Jet Fuel (NY Harbor)



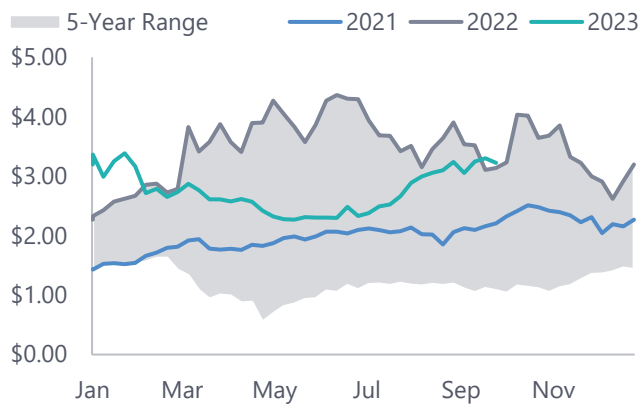
54-Grade Jet Fuel (U.S. Gulf Coast)



ULSD (NY Harbor)



ULSD (U.S. Gulf Coast)

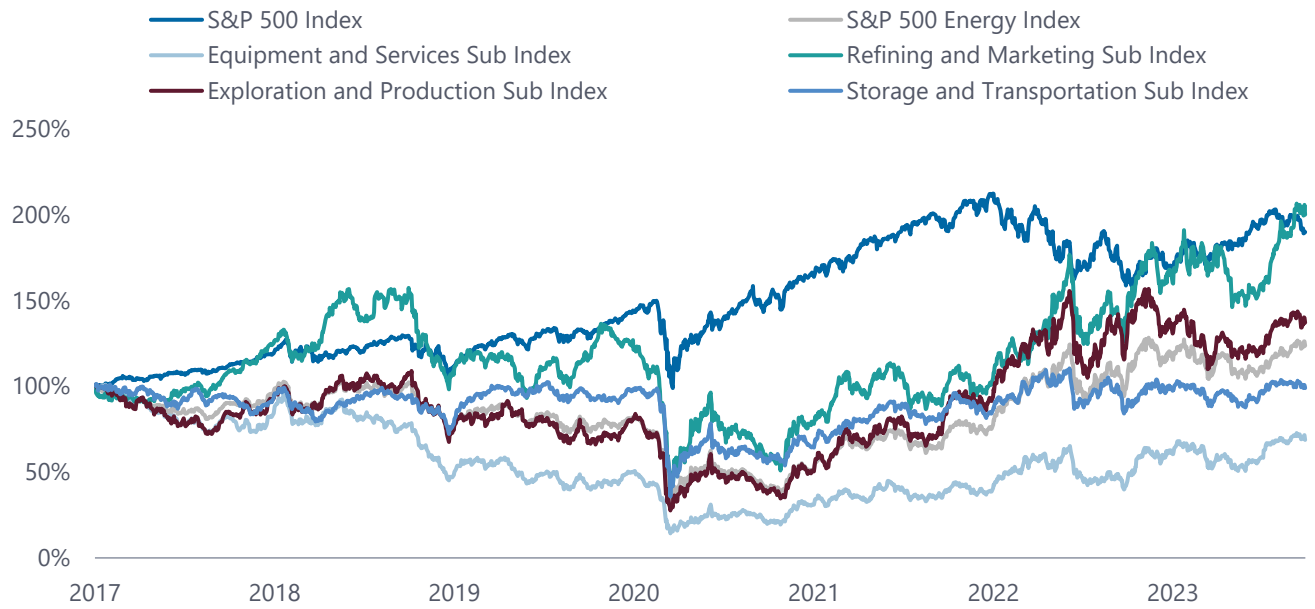


Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Source: Bloomberg.

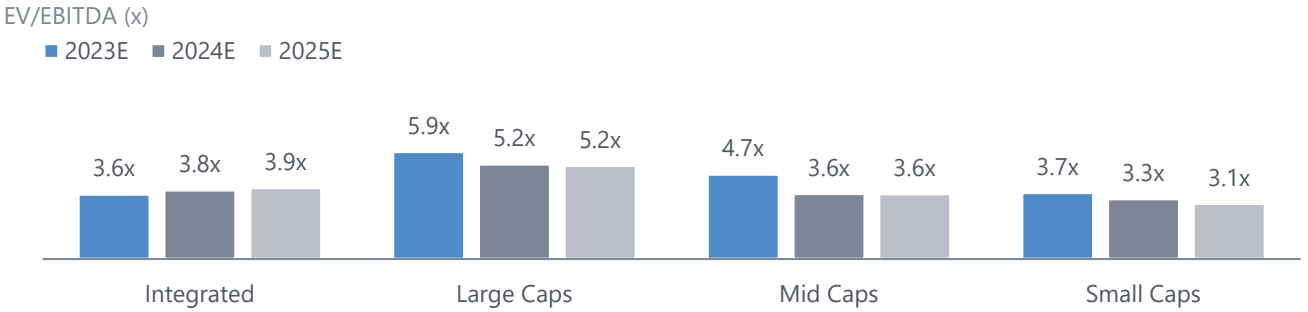
06 PUBLIC EQUITY MARKETS OVERVIEW

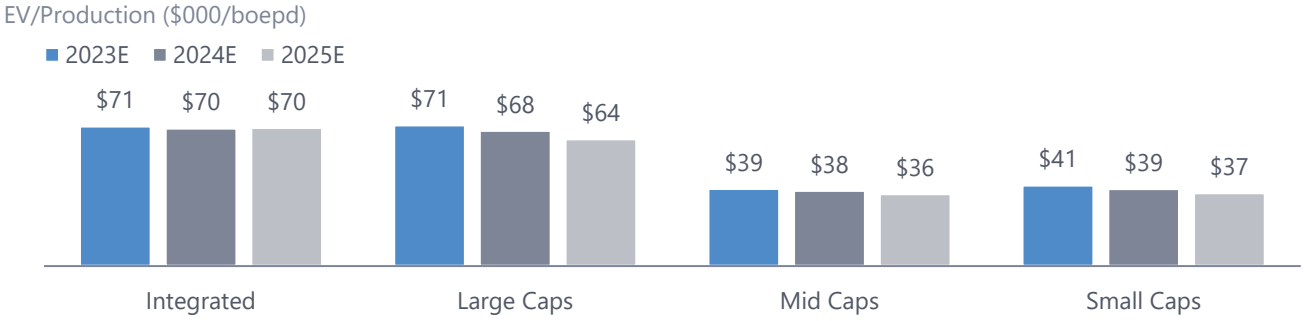
Public Equity Markets Overview

Indexed Stock Price Performance (January 1, 2017 = 100%)



Public E&P Company Trading Metrics





Note: Trading multiples are based on share price and market data listed as of September 30, 2023, and broker consensus future earnings estimates from S&P Capital IQ as of September 29, 2023.
Source: S&P Capital IQ.

07 M&A AND FINANCING ACTIVITY



Houlihan Lokey

E&P

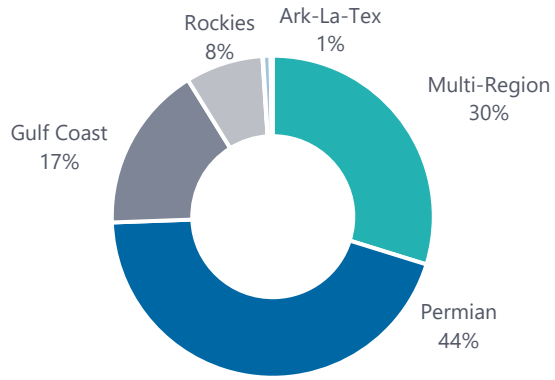
M&A ($ in Billions)

			YTD September		
U.S. Region	**2021**	**2022**	**2022**	**2023**	**%Δ vs. 2022**
Multi-Region	$15.8	$11.1	$5.8	$14.0	142%
Permian	26.5	14.6	10.2	21.0	105%
Gulf Coast	2.4	5.7	2.6	7.9	205%
Rockies	7.7	8.8	8.7	3.7	-58%
Mid-Continent	1.1	1.0	1.0	0.0	-97%
Appalachia	4.0	8.3	8.3	0.0	-100%
Ark-La-Tex	8.1	0.3	0.3	0.4	41%
Gulf of Mexico	1.2	1.3	1.3	0.0	-97%
West Coast	0.2	4.8	4.2	0.1	-98%
Alaska	0.0	0.0	0.0	0.0	NMF
Total	**$66.9**	**$55.8**	**$42.3**	**$47.0**	**11%**

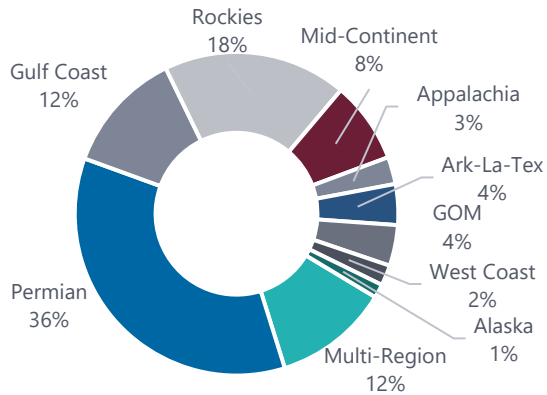
M&A (Deal Count)

			YTD September		
U.S. Region	**2021**	**2022**	**2022**	**2023**	**%Δ vs. 2022**
Multi-Region	43	23	19	17	-11%
Permian	141	66	46	52	13%
Gulf Coast	52	42	33	18	-45%
Rockies	67	50	41	27	-34%
Mid-Continent	102	56	42	12	-71%
Appalachia	28	14	9	4	-56%
Ark-La-Tex	32	17	14	6	-57%
Gulf of Mexico	10	14	12	6	-50%
West Coast	6	7	6	3	-50%
Alaska	5	2	0	2	NMF
Total	**486**	**291**	**222**	**147**	**-34%**

M&A—2023 ($ in Billions)



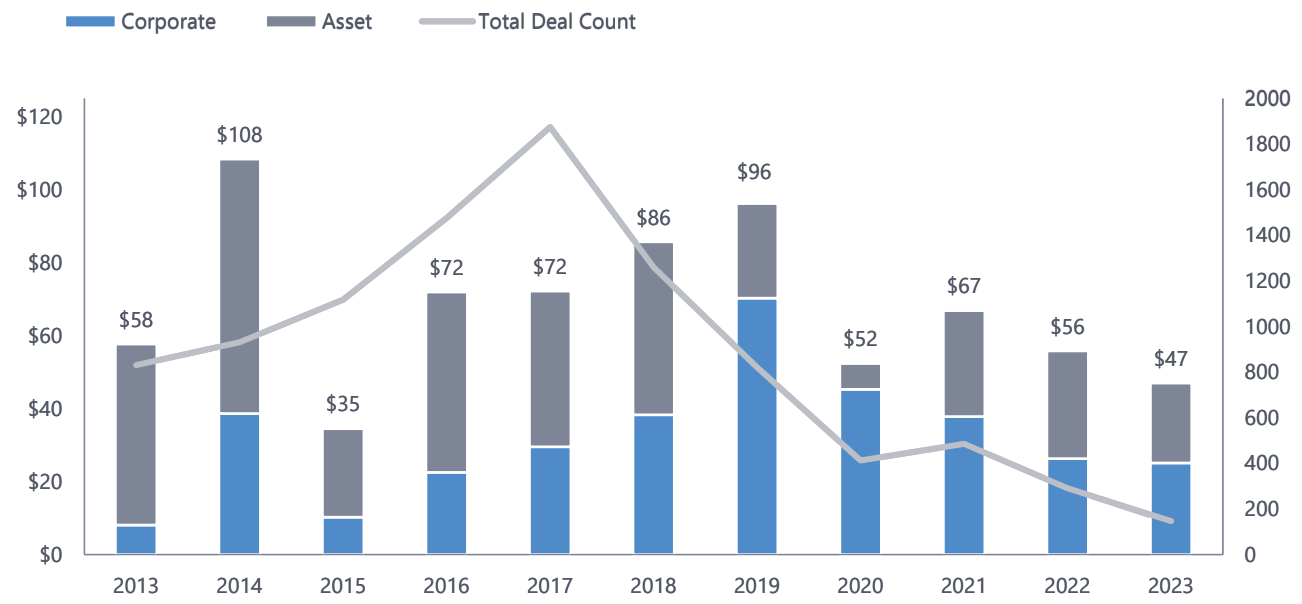
M&A—2023 (Deal Count)



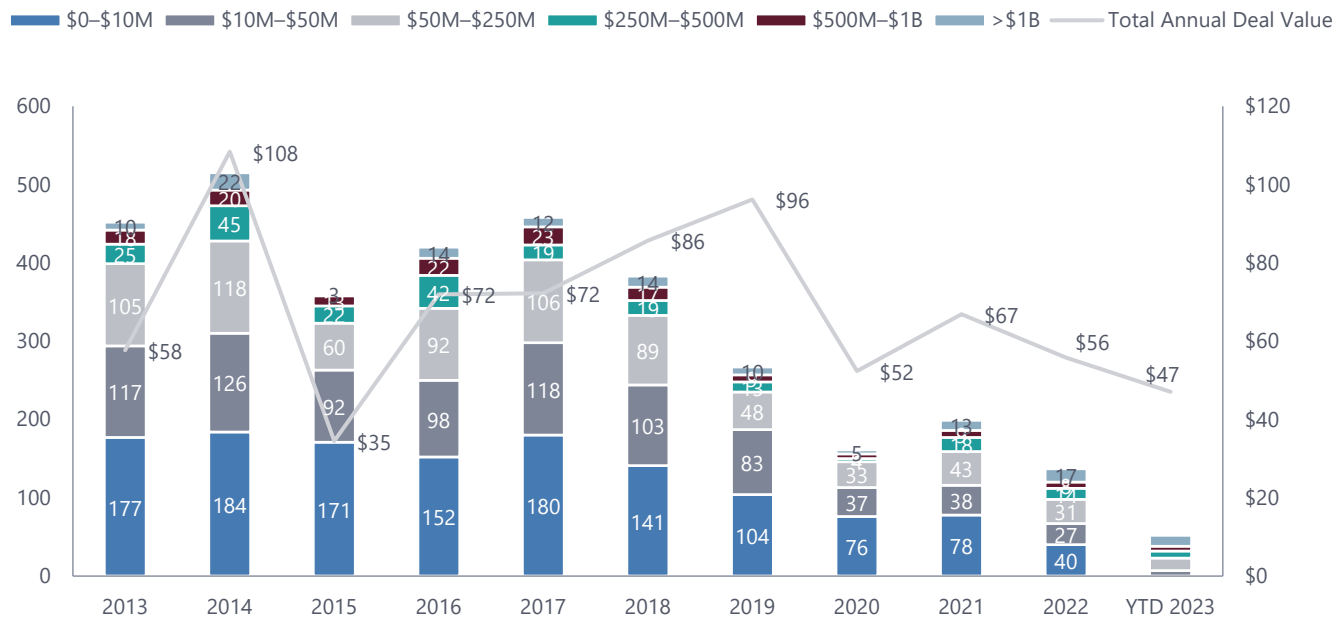
Notes: All data as of September 30, 2023. GOM refers to Gulf of Mexico. Current year may not include values for all announced transactions or findings. Historical amounts may be adjusted as additional information is available.
Source: Enverus, based on selection criteria of seller assets being located in the U.S.

Historical E&P Transaction Activity

U.S. Transactions Since 2013 ($ in Billions)



U.S. Transactions by Deal Size Since 2013[(1)] ($ in Billions)



Notes: All data as of September 30, 2023. YTD refers to year-to-date.
(1) Deal count excludes transactions without a publicly disclosed deal value.
Source: Enverus, based on selection criteria of seller assets being located in the U.S.

OFS

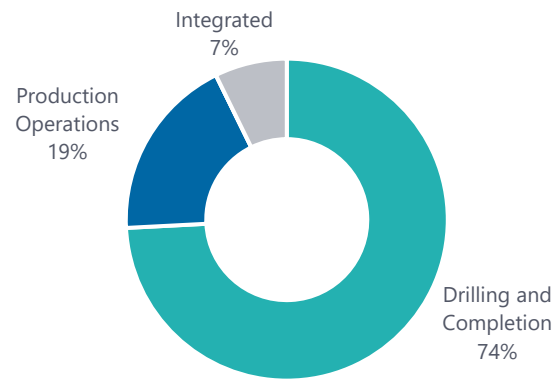
M&A ($ in Billions)

			YTD September		
Segment	**2021**	**2022**	**2022**	**2023**	**%Δ vs. 2022**
Drilling and Completion	$0.8	$1.0	$0.2	$3.3	NMF
Production Operations	0.7	0.5	0.3	0.8	173%
Information Services	0.0	3.1	0.0	0.0	NMF
Integrated	0.8	0.2	0.2	0.3	96%
Total	**$2.3**	**$4.8**	**$0.7**	**$4.4**	**529%**

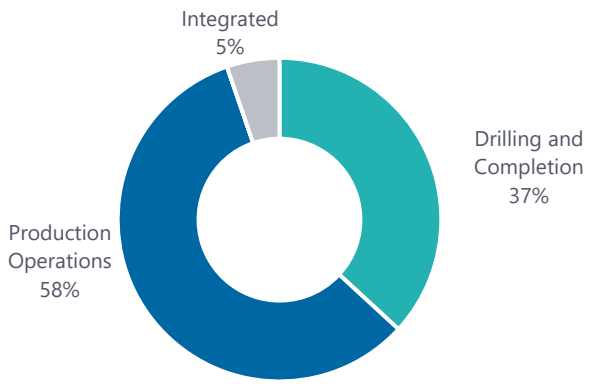
M&A (Deal Count)

			YTD September		
Segment	**2021**	**2022**	**2022**	**2023**	**%Δ vs. 2022**
Drilling and Completion	13	20	14	7	-50%
Production Operations	34	31	23	11	-52%
Information Services	13	8	7	0	-100%
Integrated	9	8	6	1	-83%
Total	**69**	**67**	**50**	**19**	**-62%**

M&A—2023 ($ in Billions)



M&A—2023 (Deal Count)



Note: All data as of September 30, 2023.
Source: Enverus, based on selection criteria of seller headquarters being located in the U.S.

Downstream

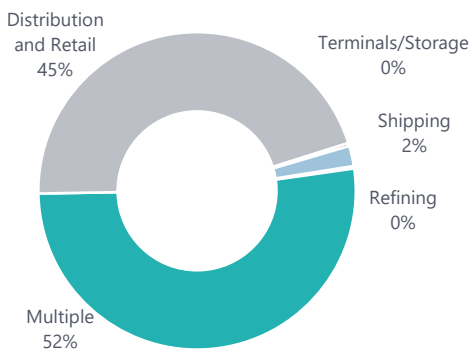
M&A ($ in Billions)

			YTD September		
Segment	**2021**	**2022**	**2022**	**2023**	**%Δ vs. 2022**
Refining	$0.1	$0.2	$0.2	$0.1	-64%
Multiple	4.4	1.4	1.1	18.8	NMF
Distribution and Retail	6.2	3.8	3.5	16.4	368%
Terminals/Storage	1.5	0.4	0.4	0.1	-69%
Shipping	0.1	0.8	0.8	0.7	-9%
Total	**$12.2**	**$6.6**	**$6.0**	**$36.2**	**504%**

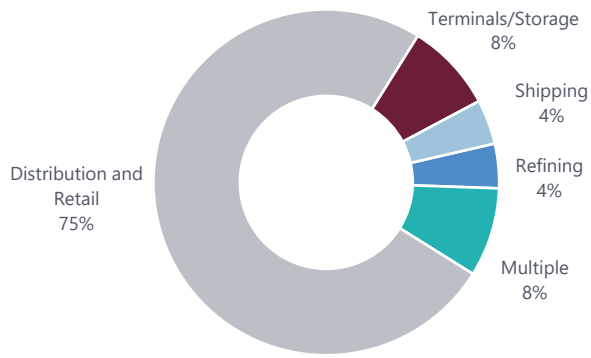
M&A (Deal Count)

			YTD September		
Segment	**2021**	**2022**	**2022**	**2023**	**%Δ vs. 2022**
Refining	1	2	1	1	0
Multiple	8	3	2	2	0%
Distribution and Retail	75	55	43	18	-58%
Terminals/Storage	12	6	4	2	-50%
Shipping	4	8	8	1	-88%
Total	**100**	**74**	**58**	**24**	**-59%**

M&A—2023 ($ in Billions)



M&A—2023 (Deal Count)



Note: All data as of September 30, 2023.
Source: Enverus, based on selection criteria of seller headquarters being located in the U.S.

Midstream

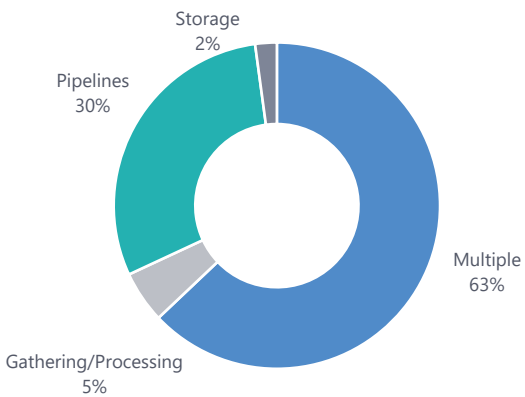
M&A ($ in Billions)

			YTD September		
Segment	**2021**	**2022**	**2022**	**2023**	**%Δ vs. 2022**
Multiple	$30.8	$11.7	$10.0	$10.8	9%
Gathering/Processing	2.9	11.6	11.2	0.9	-92%
Pipelines	1.6	2.4	1.8	5.1	181%
Oil Tankers	1.0	0.1	0.1	0.0	-100%
Storage	0.9	0.0	0.0	0.4	NMF
Total	**$37.2**	**$25.8**	**$23.1**	**$17.2**	**-26%**

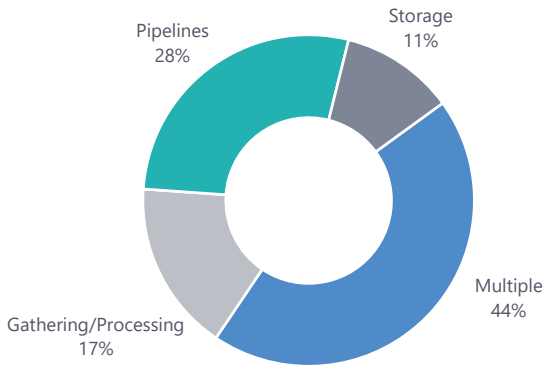
M&A (Deal Count)

			YTD September		
Segment	**2021**	**2022**	**2022**	**2023**	**%Δ vs. 2022**
Multiple	16	12	9	8	-11%
Gathering/Processing	17	23	20	3	-85%
Pipelines	11	9	6	5	-17%
Oil Tankers	2	1	1	0	-100%
Storage	2	0	0	2	NMF
Total	**48**	**45**	**36**	**18**	**-50%**

M&A—2023 ($ in Billions)



M&A—2023 (Deal Count)



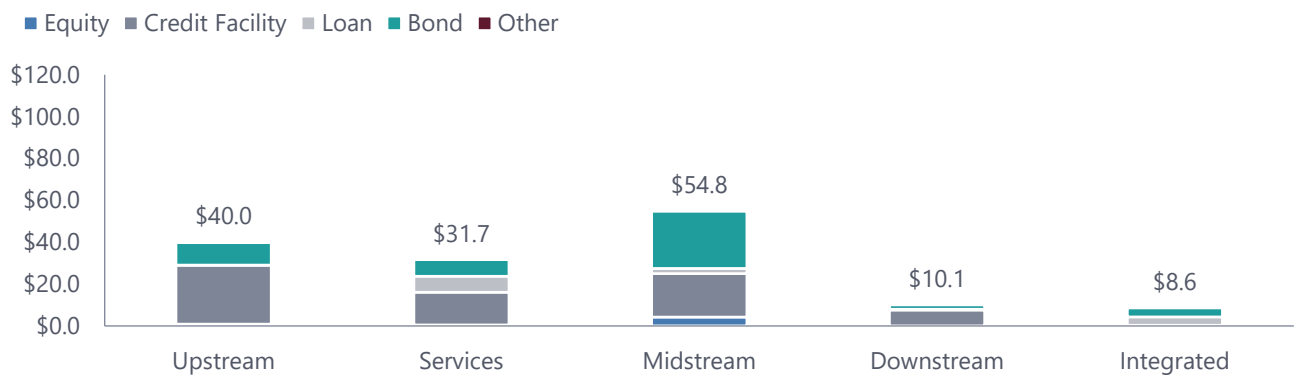
Note: All data as September 30, 2023.
Source: Enverus, based on selection criteria of seller headquarters being located in the U.S.

Financing by Instrument

Financing by Instrument ($ in Billions)

			YTD September		
Capital	2021	2022	2022	2023	%Δ vs. 2022
Upstream					
Equity	$1.4	$0.1	$0.0	$0.8	NMF
Credit Facility	45.0	59.9	41.1	28.3	-31%
Loan	2.5	1.5	0.5	0.0	NMF
Bond	30.3	9.0	6.8	10.7	58%
Other	0.5	0.1	0.1	0.2	NMF
Total	$79.6	$70.6	$48.5	$40.0	-18%
Services					
Equity	$0.5	$0.5	$0.4	$0.5	NMF
Credit Facility	7.5	19.2	15.7	15.6	-1%
Loan	6.4	6.0	4.2	7.6	79%
Bond	7.3	0.3	0.2	8.0	NMF
Other	0.6	0.0	0.0	0.0	NMF
Total	$22.3	$26.0	$20.6	$31.7	53%
Midstream					
Equity	$1.2	$0.0	$0.0	$4.2	NMF
Credit Facility	41.0	53.5	44.1	20.8	-53%
Loan	2.4	9.1	8.8	2.5	-72%
Bond	29.4	23.5	18.8	27.3	45%
Other	1.7	1.0	1.0	0.0	-100%
Total	$75.7	$87.1	$72.8	$54.8	-25%
Downstream					
Equity	$0.1	$0.0	$0.0	$0.0	NMF
Credit Facility	4.7	28.8	21.3	7.6	-64%
Loan	0.9	1.1	0.2	0.4	NMF
Bond	6.4	1.0	1.0	2.1	NMF
Other	0.0	0.0	0.0	0.0	NMF
Total	$12.1	$30.9	$22.5	$10.1	-55%
Integrated					
Equity	$0.8	$0.6	$0.6	$0.0	NMF
Credit Facility	1.9	7.7	2.8	0.4	-87%
Loan	1.4	0.0	0.0	4.0	NMF
Bond	13.7	6.1	5.3	4.3	-18%
Other	0.2	0.0	0.0	0.0	NMF
Total	$18.0	$14.3	$8.6	$8.6	0%
Grand Total	$207.9	$228.9	$173.0	$145.1	-16%

Financing by Instrument—2023 ($ in Billions)



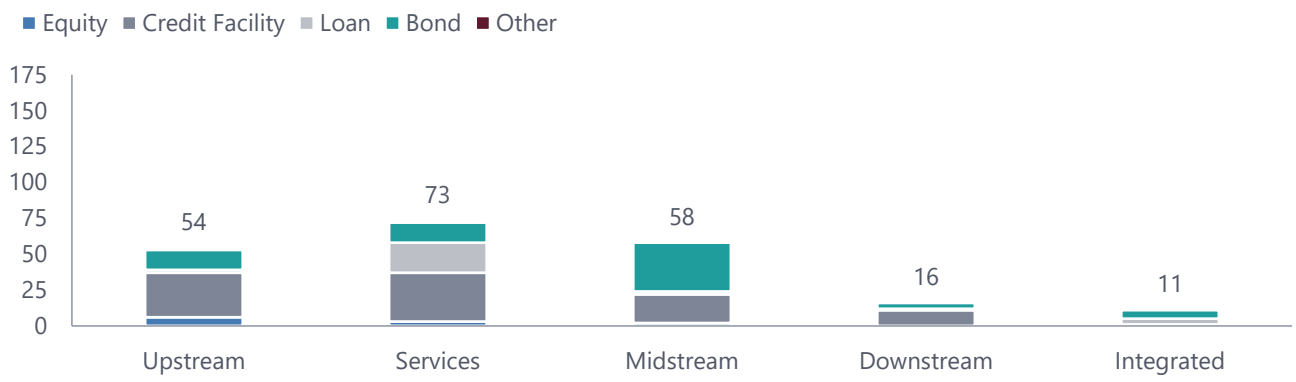
Notes: All data as of September 30, 2023. Current year may not include values for all announced transactions or findings. Historical amounts may be adjusted as additional information is available.
Source: Enverus.

Financing by Instrument (cont.)

Financing by Instrument (Deal Count)

			YTD June		
Capital	2021	2022	2022	2023	%Δ vs. 2022
Upstream					
Equity	14	1	0	6	NMF
Credit Facility	48	68	46	31	-33%
Loan	9	4	2	2	NMF
Bond	49	13	10	14	40%
Other	7	1	1	1	NMF
Total	127	87	59	54	-8%
Services					
Equity	9	6	5	3	-40%
Credit Facility	40	55	39	34	-13%
Loan	23	18	15	21	40%
Bond	16	6	3	14	NMF
Other	10	2	2	1	NMF
Total	98	87	64	73	14%
Midstream					
Equity	5	0	0	2	NMF
Credit Facility	38	39	31	20	-35%
Loan	6	8	7	2	-71%
Bond	41	37	29	34	17%
Other	10	1	1	0	NMF
Total	100	85	68	58	-15%
Downstream					
Equity	1	0	0	0	NMF
Credit Facility	9	19	14	11	-21%
Loan	6	2	1	1	NMF
Bond	9	2	2	4	NMF
Other	0	0	0	0	NMF
Total	25	23	17	16	-6%
Integrated					
Equity	1	2	2	0	NMF
Credit Facility	3	8	6	1	-83%
Loan	3	0	0	4	NMF
Bond	18	8	7	6	-14%
Other	1	0	0	0	NMF
Total	26	18	15	11	-27%
Grand Total	376	300	223	212	-5%

Financing by Instrument—2023 (Deal Count)



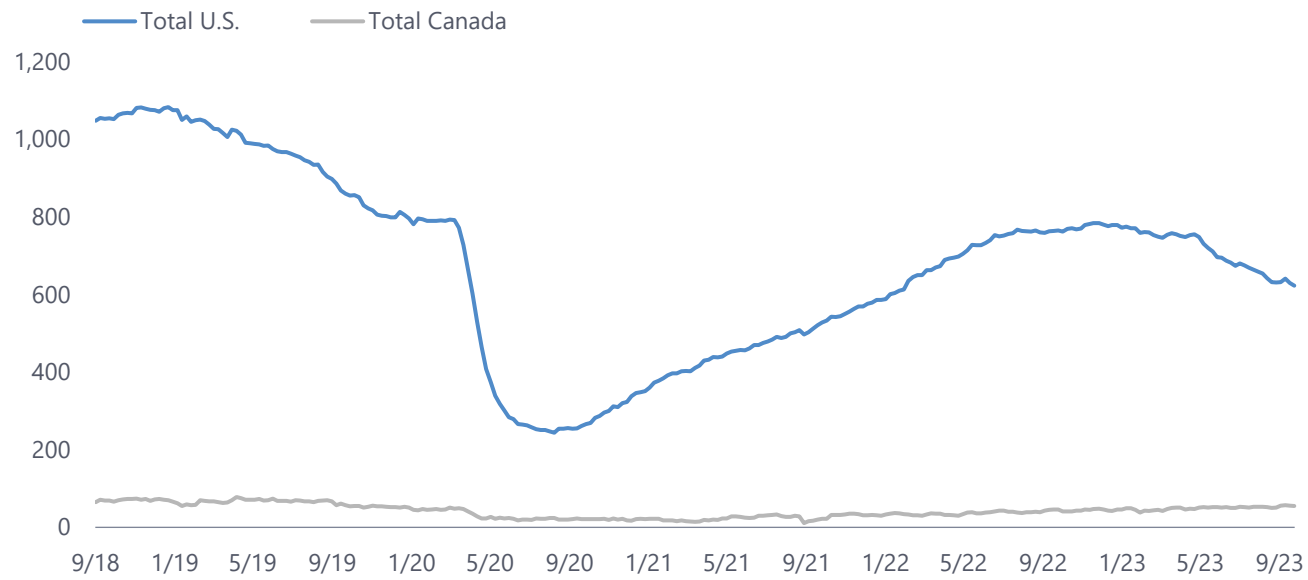
Notes: All data as of September 30, 2023. Current year may not include values for all announced transactions or findings. Historical amounts may be adjusted as additional information is available.
Source: Enverus.

08 RIGS

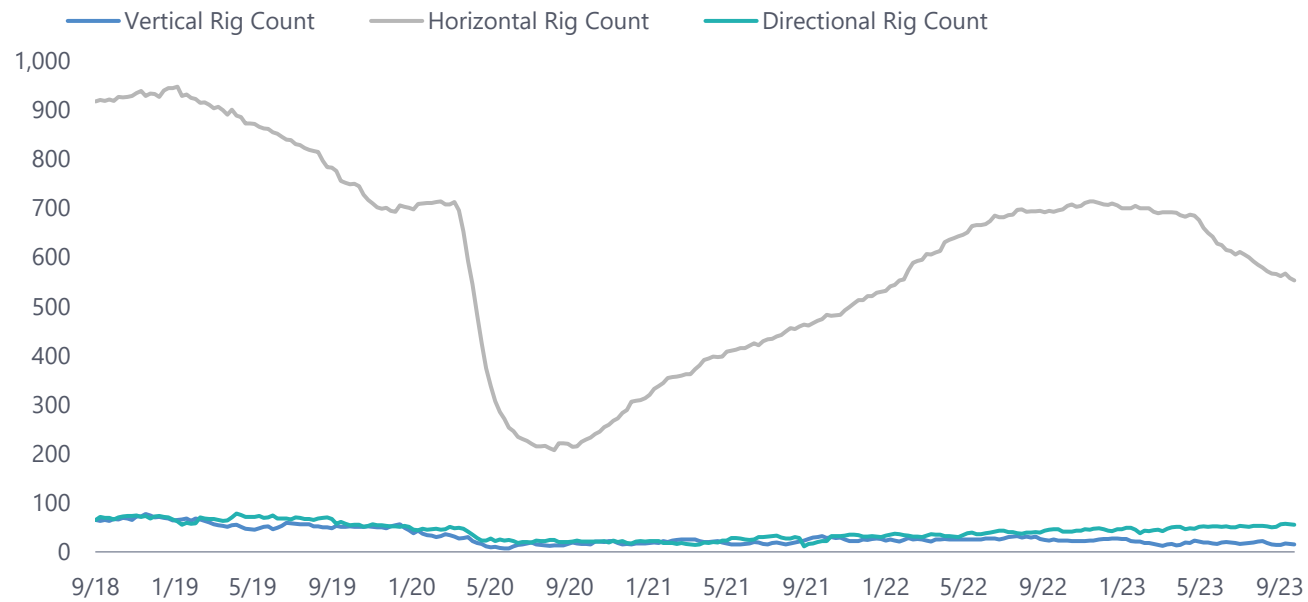
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Rigs

Total U.S. vs. Canada Rigs



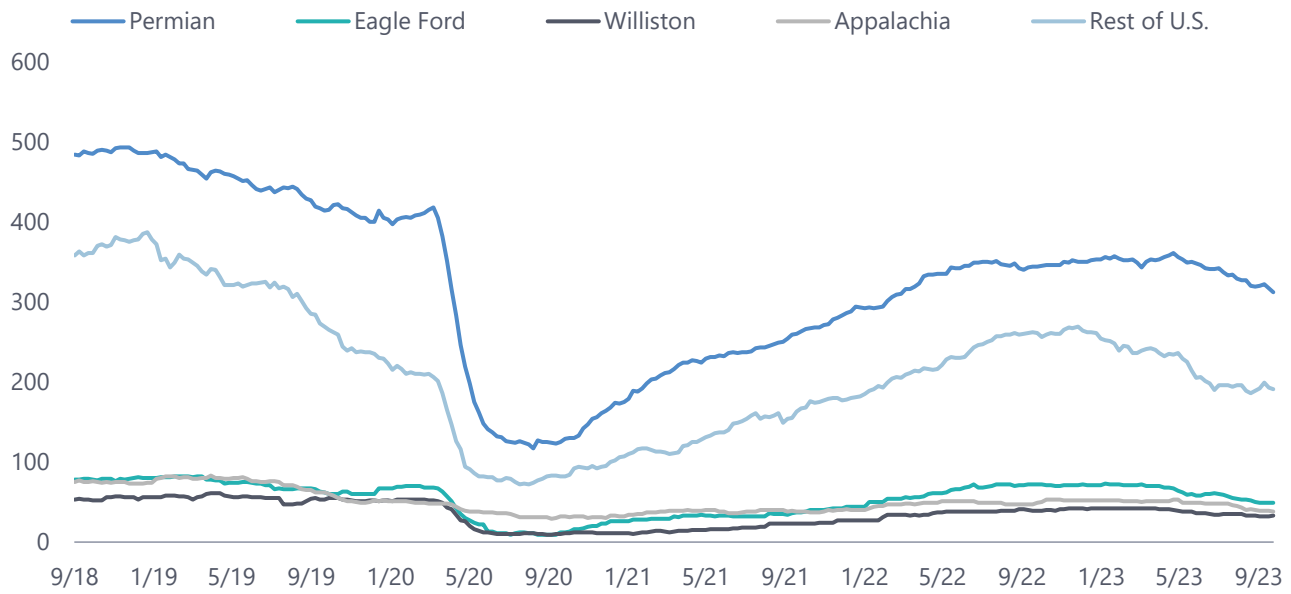
U.S. Rig Counts by Vertical, Horizontal, and Directional



Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Sources: Bloomberg and Baker Hughes.

Rigs (cont.)

U.S. Rigs by Regions



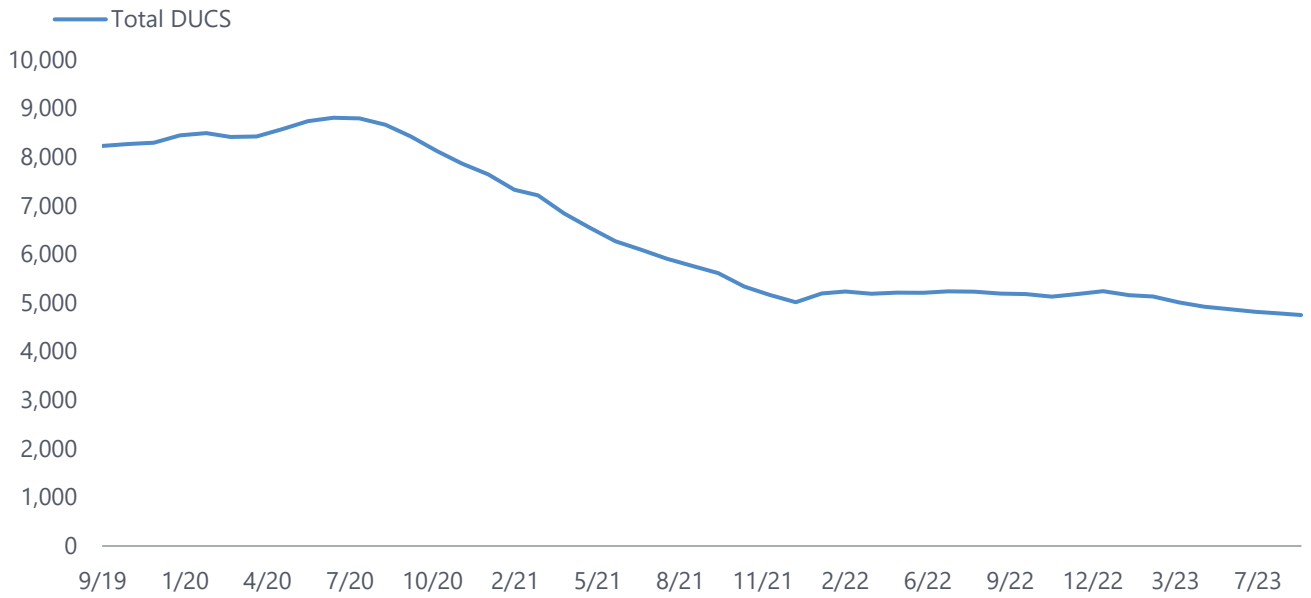
Change in Rig Counts

Region	9/30/2023	9/30/2022	6/30/2023	YoY % Change	QoQ % Change
Permian	312	344	341	(9.3%)	(8.5%)
Eagle Ford	49	72	61	(31.9%)	(19.7%)
Williston	33	39	34	(15.4%)	(2.9%)
Marcellus	28	39	35	(28.2%)	(20.0%)
Cana Woodford	16	26	23	(38.5%)	(30.4%)
DJ Niobara	14	17	14	(17.6%)	0.0%
Granite Walsh	4	6	3	(33.3%)	33.3%
Haynesville	39	71	44	(45.1%)	(11.4%)
Utica	10	10	13	0.0%	(23.1%)
Rest of U.S.	118	141	106	(16.3%)	11.3%
Total	**623**	**765**	**674**	**(18.6%)**	**(7.6%)**

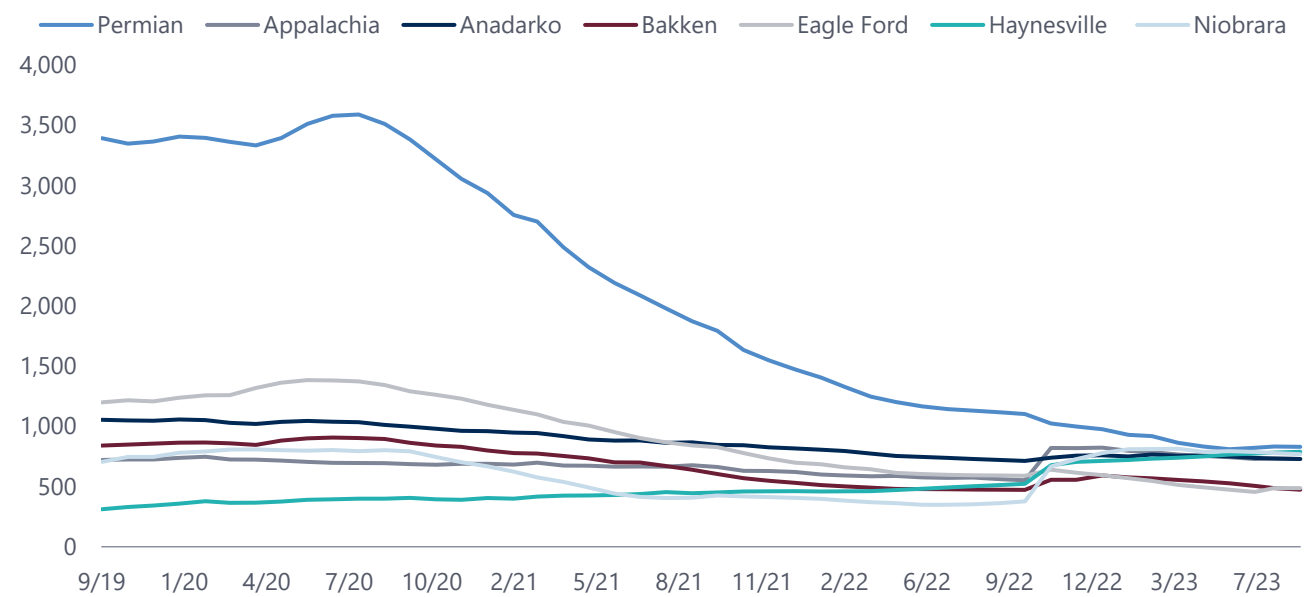
Notes: All data as of September 30, 2023. Data collected on a weekly basis.
Sources: Bloomberg and Baker Hughes.

Rigs (cont.)

Total U.S. DUCs



Total DUCs by Basin



Notes: All data as of September 30, 2023. Data collected on a monthly basis and subject to a one-month lag.
Sources: Bloomberg and Baker Hughes.

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