



HOULIHAN LOKEY

Oil & Gas

Industry Update | Q3 2018



Houlihan Lokey Oil & Gas Update

Dear Clients and Friends,

Houlihan Lokey is pleased to present its Oil & Gas industry update for Q3 2018.

We have included an overview of trends in the oil & 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,



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Key Quarterly Trends

- U.S. M&A&D activity surged in 3Q18 to ~\$32 billion total, the highest quarterly amount in over 4 years – led by several \$1+ billion deals, including: BP acquiring BHP's onshore assets; Encino acquiring Chesapeake's Utica assets; Diamondback's dual acquisitions of Ajax Resources and Energen
 - <\$1 billion sized transactions also continued the strong trend, aggregating to ~\$7 billion across U.S. basins
 - 2018 Global M&A&D total transaction value is well ahead of 2017, although the number of deals is relatively lower
 - A&D buyers continue to demonstrate a willingness to pay for type curve uplift from new generation completions, including results achieved by offset operators (i.e., not just the subject asset)
- Corporate-level M&A interest continues to be driven by, among other things: (i) a desire to increase production and acreage positions, while improving economies of scale and realizing cost synergies at both the wellhead and corporate (G&A) levels, (ii) private equity desire for access to public markets (i.e., reverse mergers), (iii) over-levered companies seeking to delever by merging into companies with better balance sheets, and (iv) shareholders seeking near-term cash flow returns rather than production growth
- In the Permian – excluding the M&A transactions, A&D transaction velocity has slowed (but not disappeared) quarter-over-quarter due to, among other reasons, valuation concerns driven by wider relative differentials; Permian transaction values — but not deal count — are still on pace for a record in 2018
- Activity in the Gulf of Mexico was an unexpected highlight of the third quarter, with Cox Oil's acquisition of Energy XXI followed by Kosmos Energy's acquisition of Deep Gulf Energy, plus capital markets activity from W&T Offshore and EnVen Energy Corp
 - IHS forecasts that global offshore rig demand will increase to an average of 521 rigs by 2020
- WTI crude oil prices generally rose throughout the quarter, with spot prices reaching levels last seen in November 2014
 - The increase lifted forward strip prices with average 2019 and 2020 increasing from \$65.97/bbl to \$71.51/bbl and from \$61.40/bbl to \$67.41/bbl, respectively
 - During the quarter, analyst consensus crude oil price forecasts rose less than the forward strip, indicating Wall Street estimates below the forward curve through 2020 due to concerns regarding global demand growth
- Brent spot prices finished 3Q18 at \$82.95/bbl due to impacts from Iran sanctions, trade uncertainty and Venezuelan dislocation. Russia, Saudi Arabia, and other Gulf members of OPEC have recently publicly indicated potential increases in production as a means to control global prices, which will at least keep prices volatile in the near-term
- Permian basis differentials continue to overhang prices in 3Q18, with crude oil and natural gas averaging -\$12.00/bbl and -\$1.55/MMbtu for the month of September 2018 versus NYMEX Cushing and Henry Hub, respectively
 - Permian crude oil differentials are expected to tighten as pipeline capacity comes online later next year (some debate whether that will be 3Q or 4Q 2019); Permian natural gas price differential is expected to persist longer given dry gas takeaway constraints
- The outlook from a number of oilfield services companies indicates likely difficulties in meeting longer-term future growth expectations due to the slowdown of upstream capital expenditures
- In the midstream sector, the trend of (i) joint ventures, (ii) capital deployment and (iii) MLP simplification transactions continued with several announced or completed MLP roll-ups or other MLP corporate structure transactions
- The number of permitted wells in Colorado soared this quarter as E&P companies attempt to guard against the November ballot measure, Proposition 112, which would limit new drilling locations in a significant portion of the state

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

Corporate Finance

2017 M&A Advisory Rankings All U.S. Transactions

	Advisor	Deals
1	Houlihan Lokey	174
2	Goldman Sachs & Co	173
3	JP Morgan	164
4	Morgan Stanley	132
5	Barclays	106

Source: Thomson Reuters

No. 1 U.S. M&A Advisor

Top 10 Global M&A Advisor

Leading Capital Markets Advisor

Financial Restructuring

2017 Global Distressed Debt & Bankruptcy Restructuring Rankings

	Advisor	Deals
1	Houlihan Lokey	63
2	Rothschild & Co.	48
3	Lazard	36
4	PJT Partners LP	35
5	Moelis & Co.	22

Source: Thomson Reuters

No. 1 Global Investment
Banking Restructuring Advisor

1,000+ Transactions Completed
Valued at More Than
\$2.5 Trillion Collectively

Financial Advisory

1997 to 2017 Global M&A Fairness Advisory Rankings

	Advisor	Deals
1	Houlihan Lokey	1,001
2	JP Morgan	959
3	Bank of America Merrill Lynch	699
4	Duff & Phelps	672
5	Morgan Stanley	660

Source: Thomson Reuters. Announced or completed transactions.

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

1,000+ Annual Valuation
Engagements

Global Oil & Gas Footprint – Fully Integrated Team

Houlihan Lokey's Oil & Gas Group provides global coverage via 40+ dedicated financial professionals, including specialized bankers, A&D/technical advisory, valuation, and capital markets teams

JP Hanson
Global Head, Oil & Gas

New York

Banking / Coverage

Dan Crowley
Director

Joshua Eaves
Director

Michael Haney
Sr. Vice President

Marcus Bellows
Vice President

Lucas Bartnick
Associate

Ben Kim
Financial Analyst

Ahmed Moussa
Financial Analyst

Valuation / Diligence

Andrew Sandberg
Vice President

Michael Sicari
Financial Analyst

Houston

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Michael Roberts
Managing Director,
Capital Markets

Chris Sweet
Director,
Capital Markets

Robert Teigman
Director, Oil & Gas
Committee Advisory

Mukul Hariharan
Sr. Vice President

Manny Vedi
Associate

Paul Coraci
Associate

Valuation / Diligence

Brian Zimmerman
Sr. Vice President

Thomas Thayyil
Thomas
Sr. Vice President

Technical / A&D

Kirk Tholen
Managing Director,
Head of A&D

Robert Webster
Director,
Geosciences

Jerry Eumont
Director,
Geologist

Thomas Andreen
Petroleum Engineer

Richard Villanueva
Engineering Analyst

Gregory Fagan
Engineering Associate

Alex Medler
Engineering
Technician

Melissa Higginson
Engineering Associate

Dallas

Banking / Coverage

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Managing Director

Russell Mason
Director

Justin Zammit
Sr. Vice President

Michael O'Hanlon
Associate

Jim Georgeadis
Vice President

Yoni Lipski
Financial Analyst

Michael Marsh
Financial Analyst

Morris Herman
Financial Analyst

Colton Gier
Financial Analyst

Valuation / Diligence / Dispute

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Managing Director

Drew Koecher
Managing Director

Daniel Beaulne
Director

Heather Bolner
Vice President

Sam Rogers
Vice President

Europe

Tom Seward
Director

Fredrik Sundberg
Associate

Asia / Pacific

Jeff Wilson
Managing Director

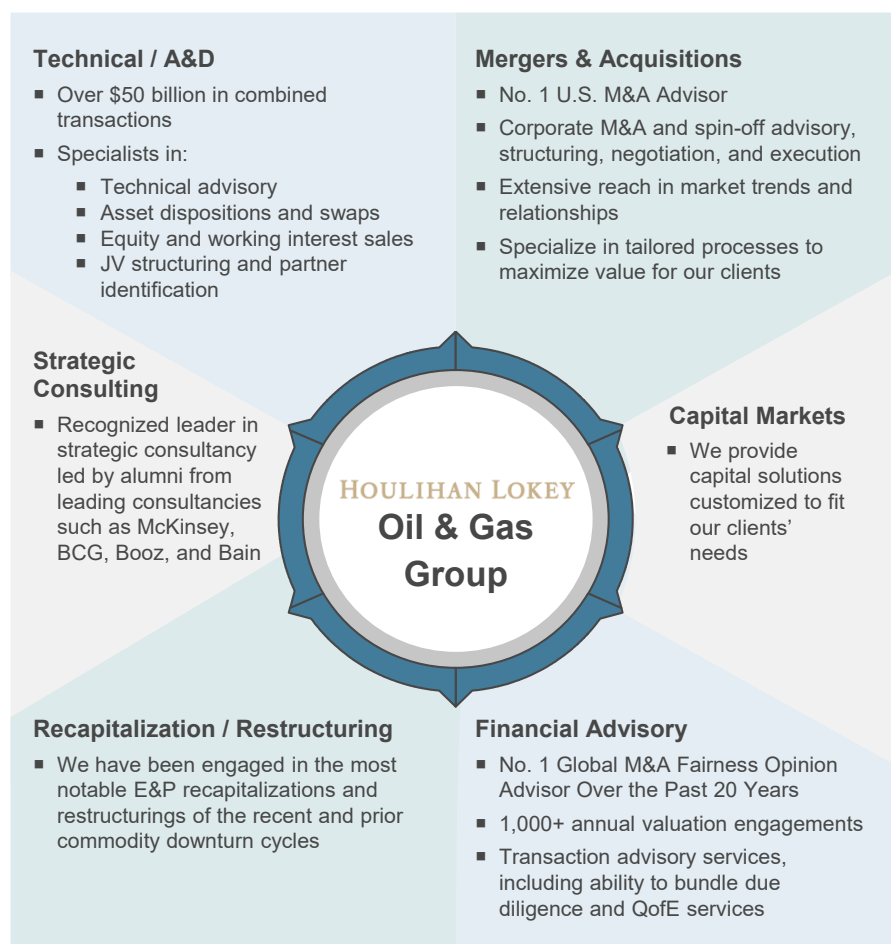
David Ho
Director

MENA

Kurt Davis
Associate

Walid Chamma
Associate

Cross-Product Industry Team



Trusted Advisor

- Currently retained on 15 oil and gas engagements
 - 12 relate to upstream / E&P companies
 - 11 relate to A&D / corporate M&A and / or associated transaction opinions

Veteran Leadership Team

- O&G investment banking team is led by 15 highly-experienced professionals
- A&D/technical team is led by an additional three technically focused industry professionals
 - Average of 25+ years of industry experience
- Specialization in petroleum engineering, geosciences, and other technical disciplines
- Special Committee Advisory / Valuation / TAS team is led by an additional nine dedicated professionals

Selected Transactions⁽¹⁾

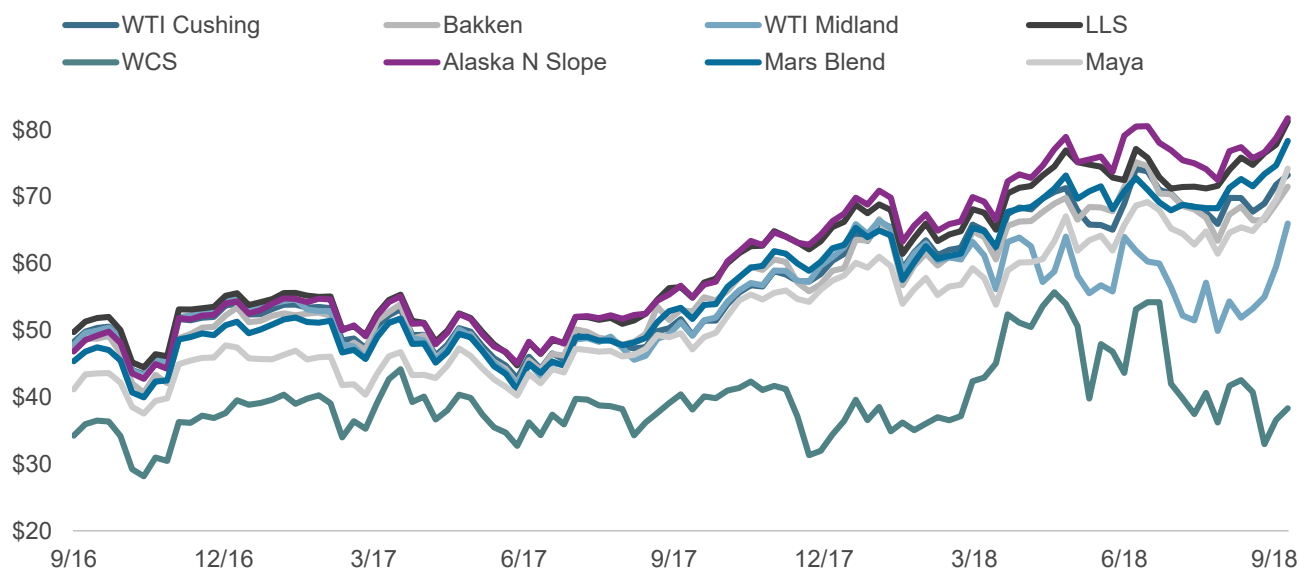
 Cox Operating LLC has acquired Company Advisor	Project Garnet is currently pursuing capital markets financing Company Advisor	Project Cascade is currently pursuing a sellside process for its California assets Sellside Advisor	Project Lion is currently pursuing joint venture capital and a sellside process for its Gulf Coast assets Capital Raise & Sellside Advisor	 has acquired certain natural gas and oil leasehold interests, fee minerals and related assets from Financial Advisor & Fairness Opinion	 has completed the sale of its East Texas and North Louisiana properties Sellside Advisor
 has been acquired by a wholly-owned subsidiary of Sellside Advisor & Fairness Opinion	 has completed a sale of substantially all of its Gulf of Mexico assets pursuant to a Chapter 11 Plan of Reorganization, restructuring \$2.8 billion of debt Company Advisor	 has been acquired by Fairness Opinion	 has acquired ~44,500 net acres in Potter and Tioga Counties, PA from Financial Advisor & Fairness Opinion	 a portfolio company of Reserve-Based Lending Facility Refinancing \$500,000,000 Exclusive Placement Agent	 has completed the divestiture of its Hugoton assets Sellside Advisor

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

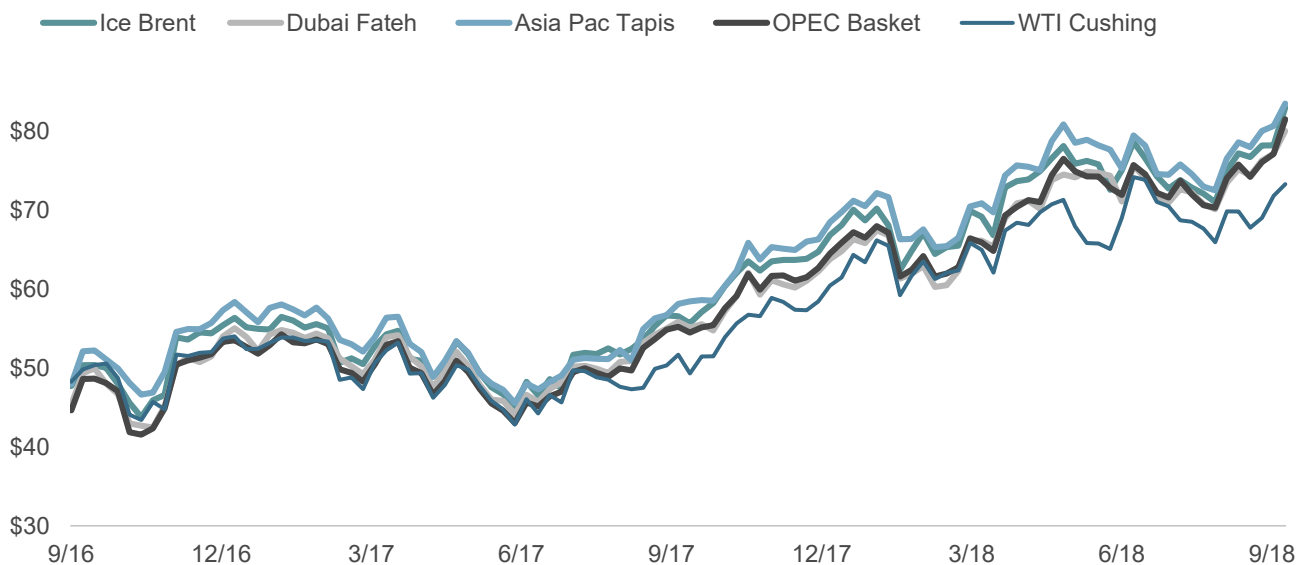
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Spot Pricing

North American Spot Prices (\$/bbl)

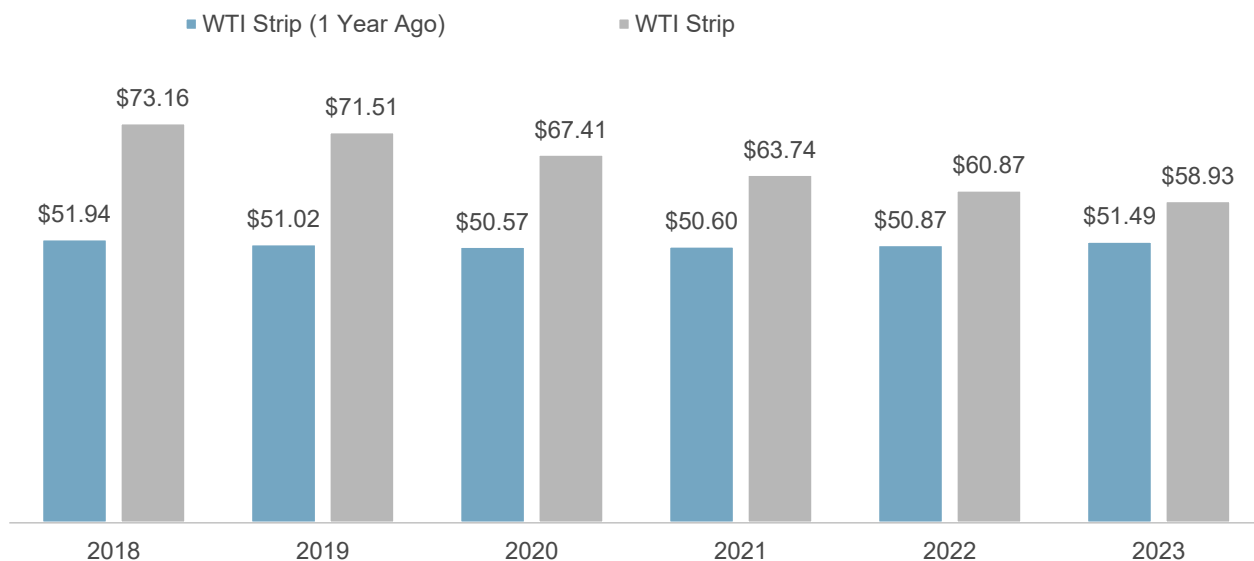


International Spot Prices (\$/bbl)

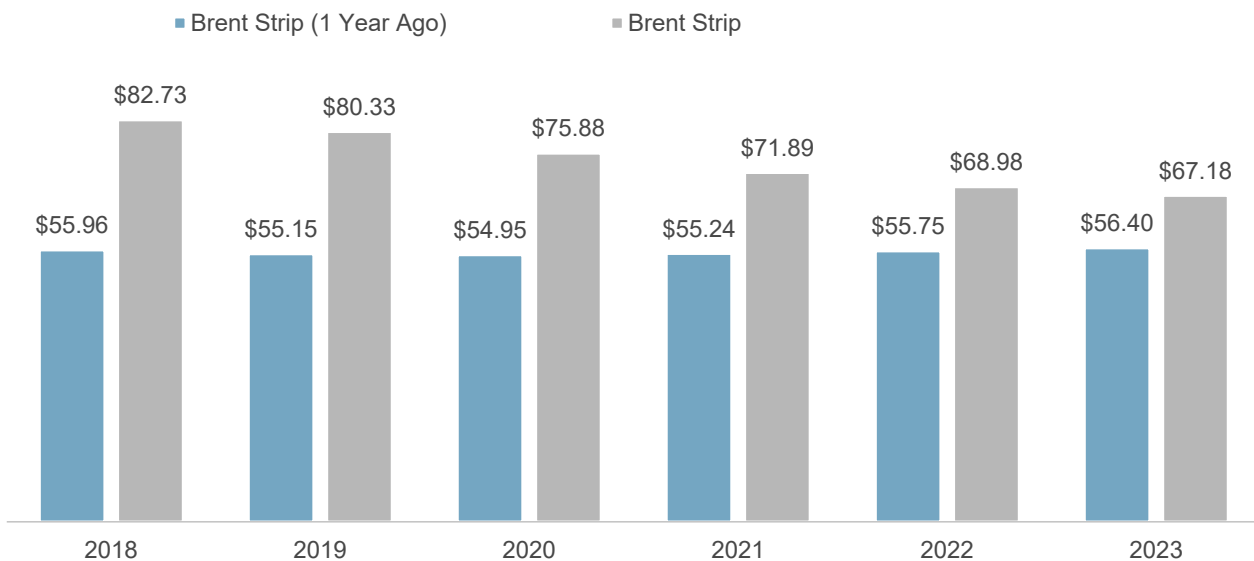


Strip Pricing

WTI Cushing Strip Pricing Comparison (\$/bbl)



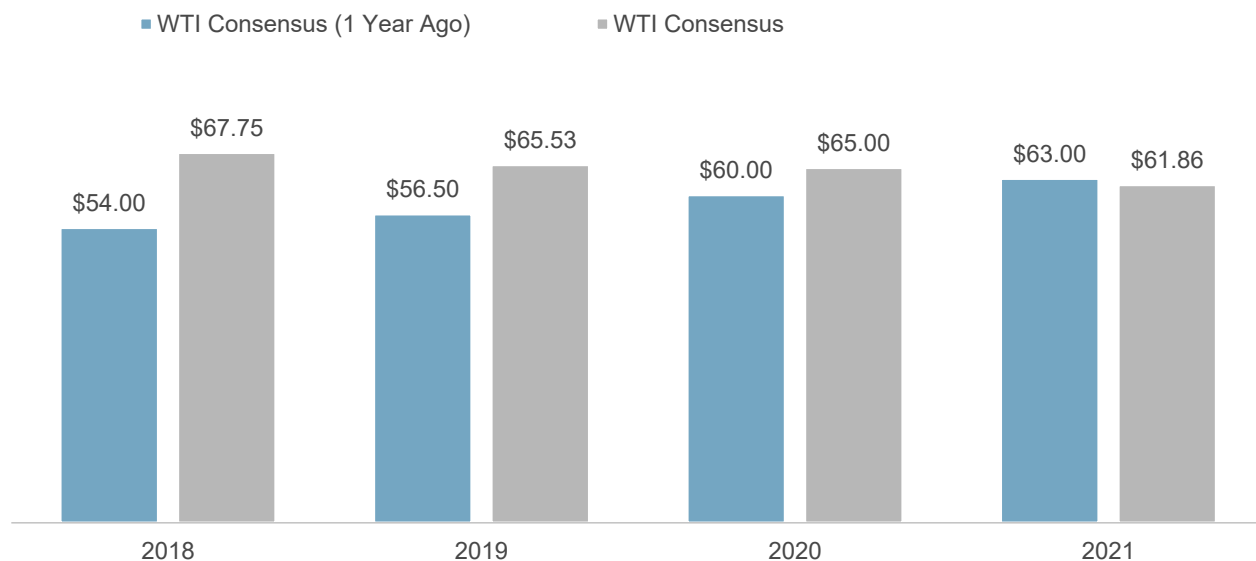
Brent Strip Pricing Comparison (\$/bbl)



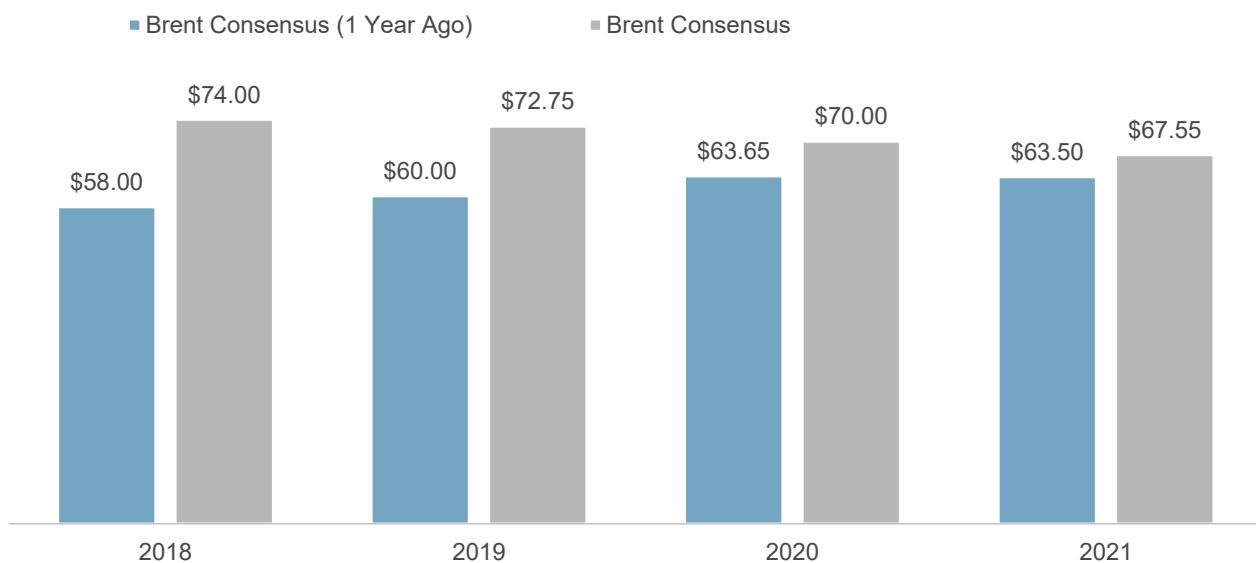
Note: All data as of September 30, 2018. Represents the average price for the remainder of 2018 and each year thereafter.
Source: Bloomberg.

Consensus Pricing

WTI Cushing Consensus Pricing Comparison (\$/bbl)



Brent Consensus Pricing Comparison (\$/bbl)



Note: All data as of September 30, 2018. Represents the average price for the remainder of 2018 and each year thereafter.

Source: Bloomberg.

Differentials

Regional Crude Oil Spot Pricing

Region	9/30/2018	9/30/2017	6/30/2018	YoY % Change	QoQ % Change
Brent	\$83.0	\$56.5	\$78.6	46.7%	5.5%
<i>Brent – WTI Cushing</i>	\$9.7	\$4.9	\$4.4		
WTI Cushing	\$73.3	\$51.7	\$74.2	41.8%	-1.2%
<i>WTI Cushing – Brent</i>	(\$9.7)	(\$4.9)	(\$4.4)		
WTI Midland	\$66.0	\$51.2	\$61.9	28.9%	6.6%
<i>WTI Cushing – WTI Midland</i>	\$7.3	\$0.5	\$12.3		
Bakken	\$71.5	\$53.1	\$75.2	34.7%	-4.9%
<i>WTI Cushing – Bakken</i>	\$1.8	(\$1.4)	(\$1.0)		
Eagle Ford Light	\$69.8	\$48.0	\$70.5	45.3%	-1.1%
<i>WTI Cushing – Eagle Ford Light</i>	\$3.5	\$3.7	\$3.7		
WTS	\$65.8	\$50.3	\$61.9	30.8%	6.2%
<i>WTI Cushing – WTS</i>	\$7.5	\$1.4	\$12.3		
WCS	\$38.4	\$40.4	\$53.2	-5.1%	-27.8%
<i>WTI Cushing – WCS</i>	\$34.9	\$11.3	\$21.0		
Maya	\$74.2	\$49.6	\$68.7	49.7%	8.1%
<i>Maya – WCS</i>	\$35.9	\$9.1	\$15.5		
Mars	\$78.4	\$53.4	\$72.8	46.8%	7.6%
<i>WTI Cushing – Mars</i>	(\$5.1)	(\$1.7)	\$1.4		
LLS	\$81.3	\$56.5	\$77.2	43.9%	5.3%
<i>LLS – Maya</i>	\$7.0	\$6.9	\$8.5		
ANS	\$81.8	\$56.7	\$80.5	44.3%	1.6%
<i>Brent – ANS</i>	\$1.2	(\$0.1)	(\$1.9)		

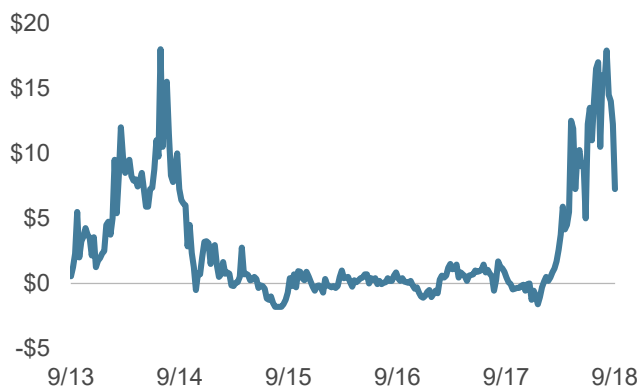
Note: All data as of September 30, 2018. Data collected on a daily basis.
Source: Bloomberg.

Differentials (\$/bbl)

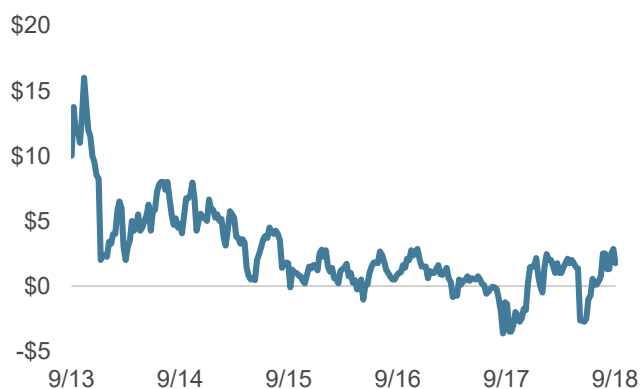
Brent – WTI Cushing



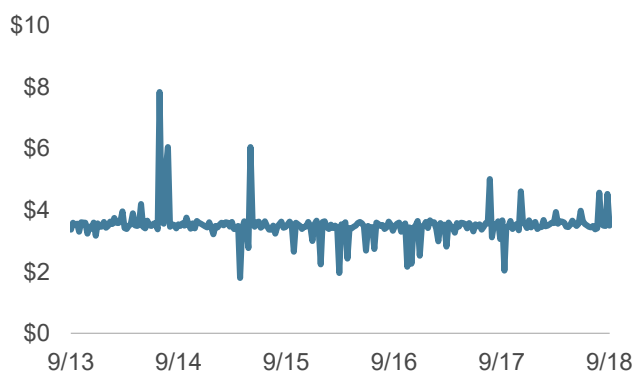
WTI Cushing – WTI Midland



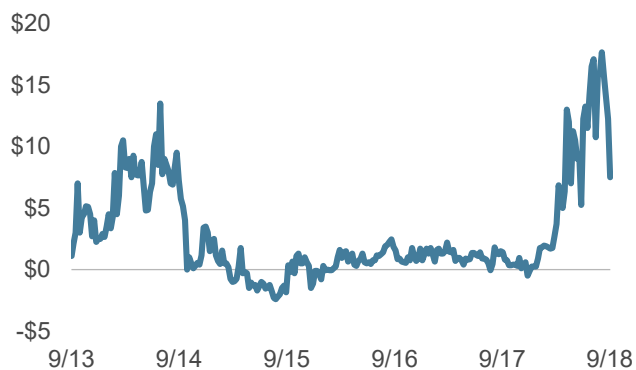
WTI Cushing – WTI Bakken Clearbrook



WTI Cushing – Eagle Ford Light



WTI Cushing – WTS

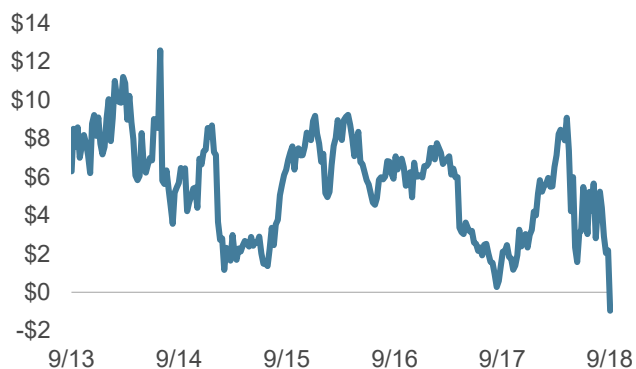


WTI Cushing – WCS

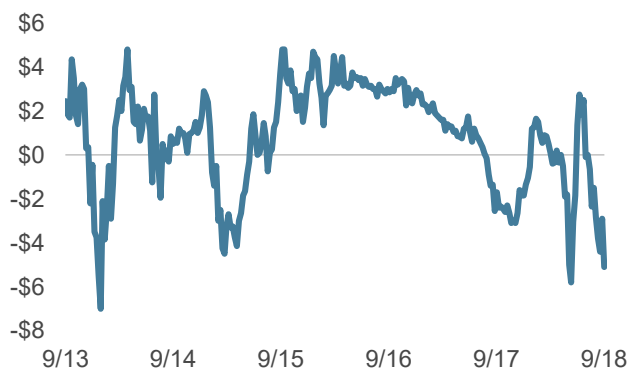


Differentials (\$/bbl) (cont.)

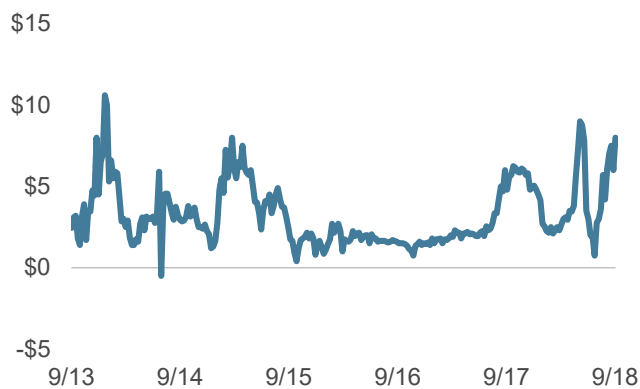
WTI Cushing – Maya



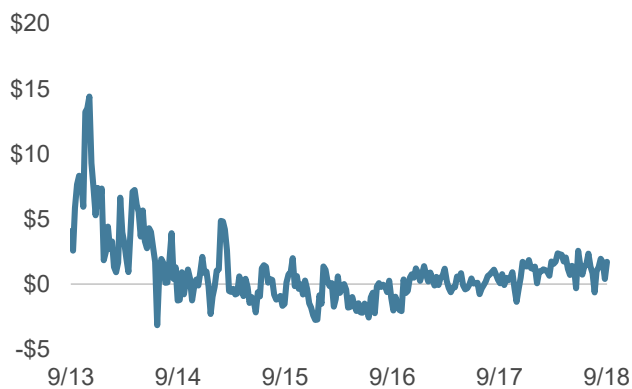
WTI Cushing – Mars



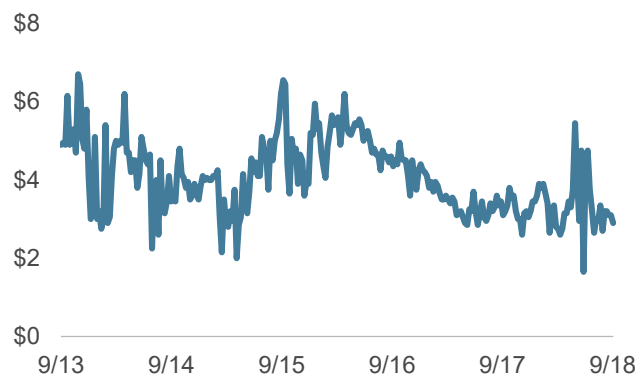
LLS – WTI Cushing



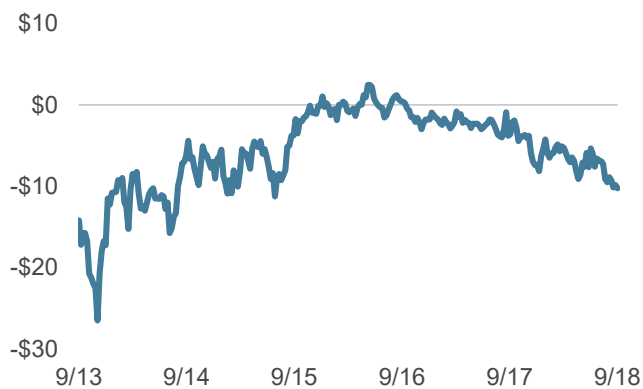
Brent – LLS



LLS – Mars

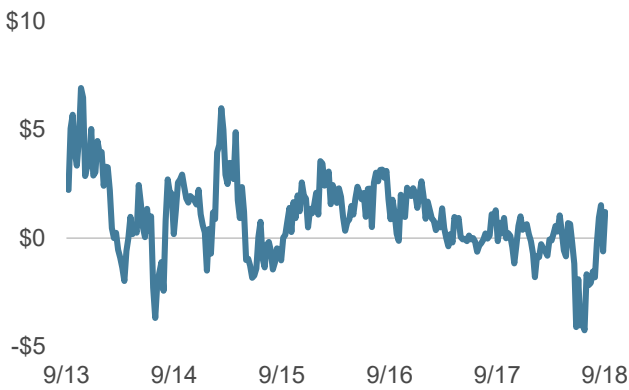


Bakken – ANS

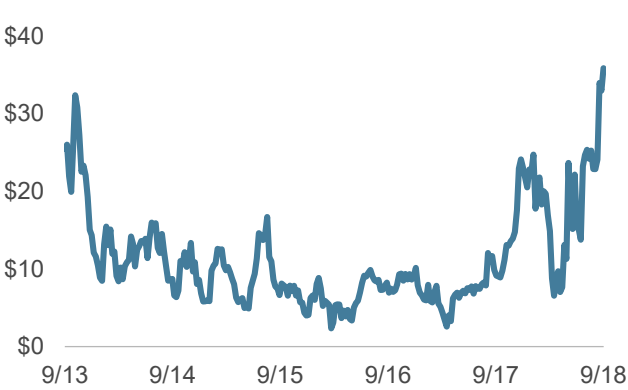


Differentials (\$/bbl) (cont.)

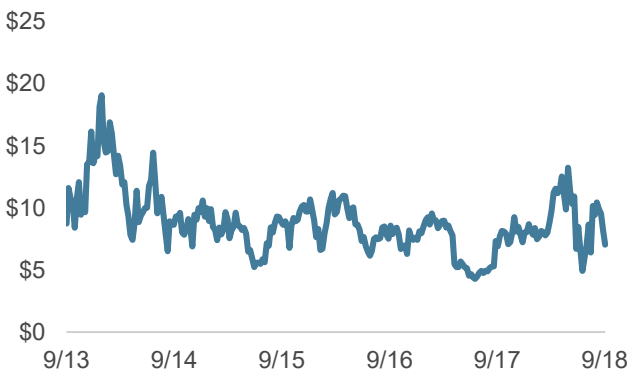
Brent – ANS



Maya – WCS



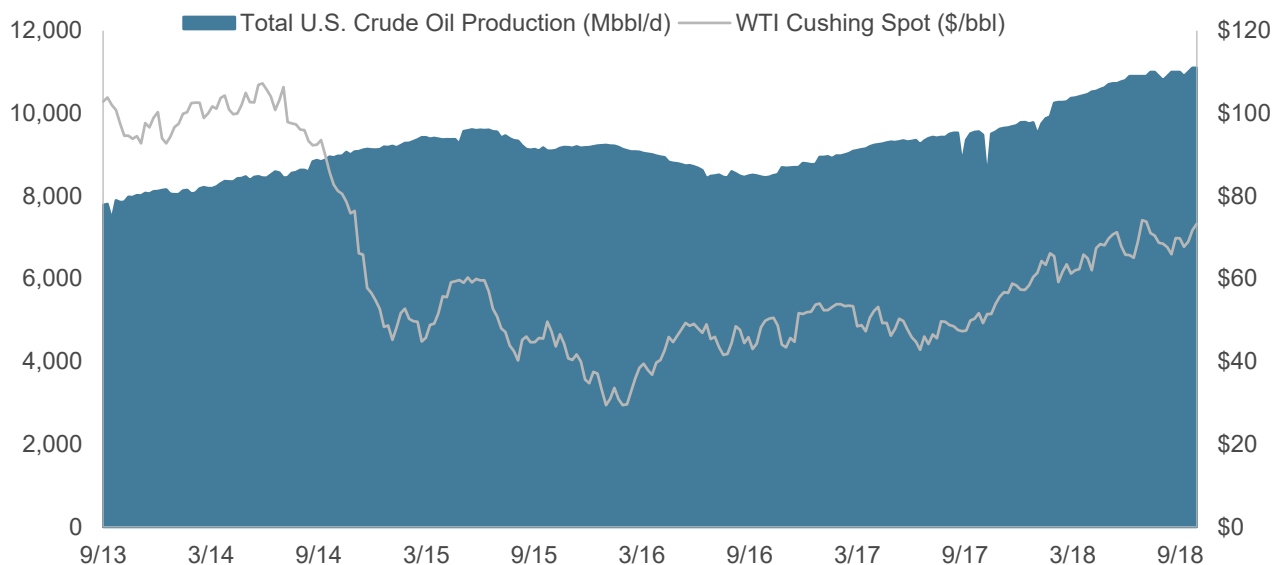
LLS – Maya



Note: All data as of September 30, 2018. Data collected on a weekly basis.
Source: Bloomberg.

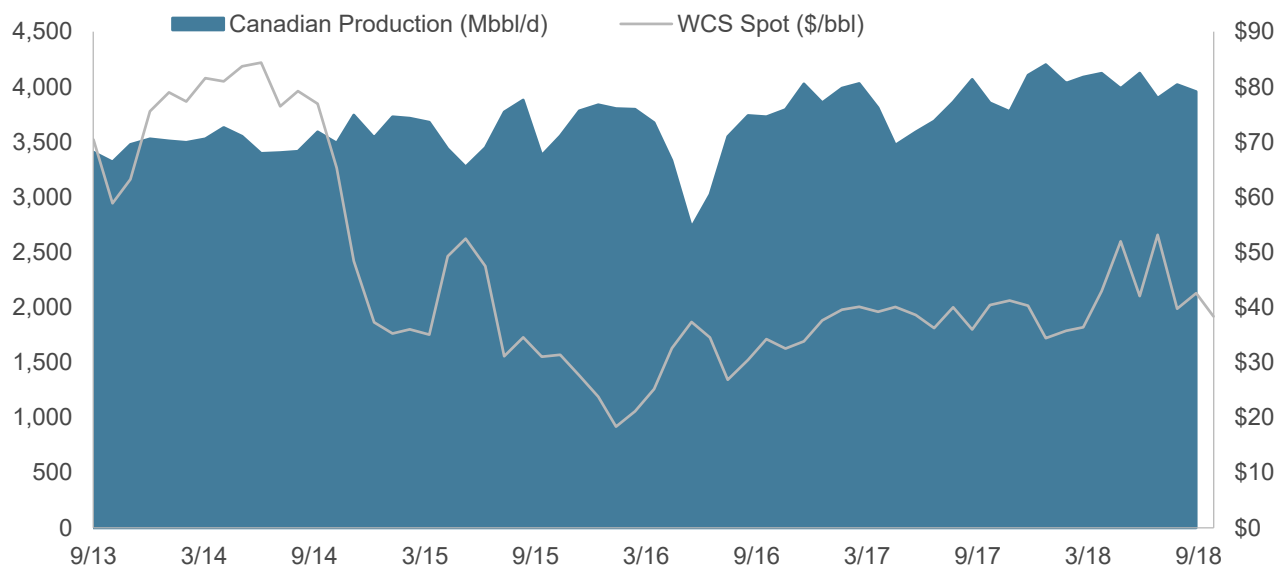
Production

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



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

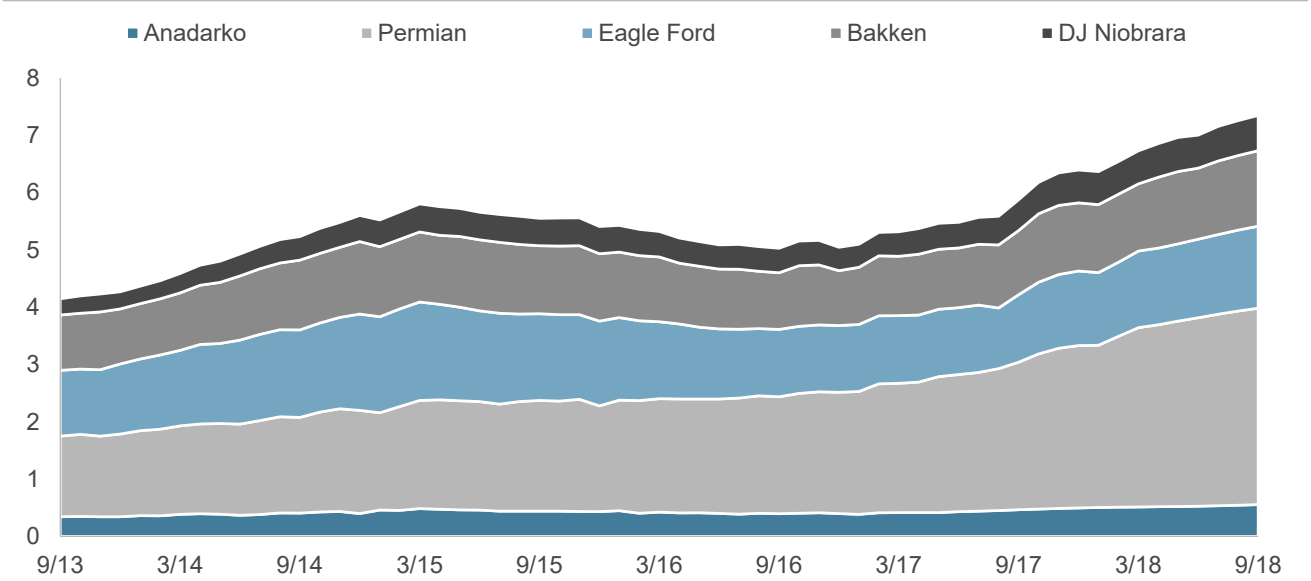
Canadian Production (Mbbbl/d) vs. WCS (\$/bbl)



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

Production (cont.)

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



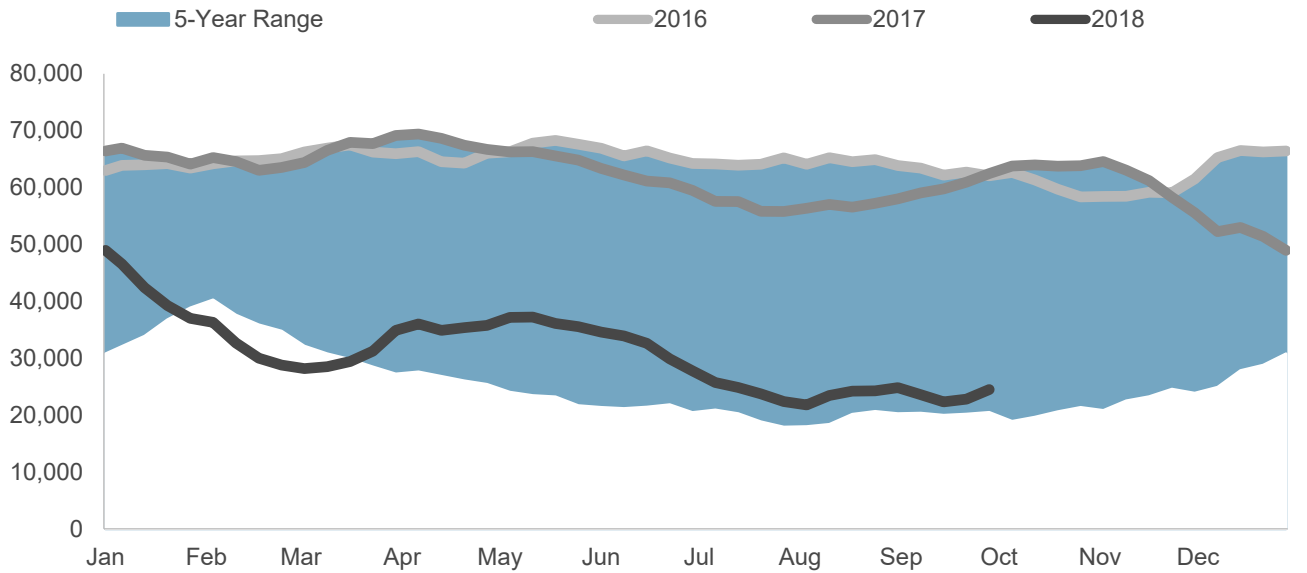
Note: All data as of September 30, 2018. Data collected on a monthly basis.

Source: Bloomberg, 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 production for key regions.

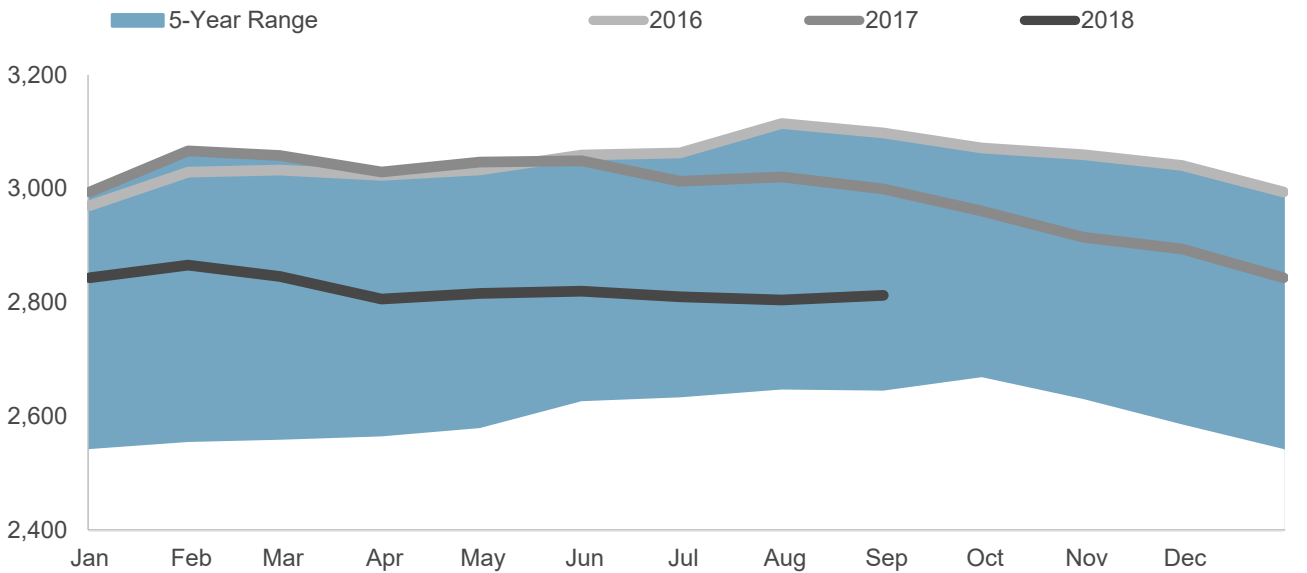
Inventory

U.S. Cushing Crude Inventory (Mbbl)



Note: Data collected on a weekly basis.

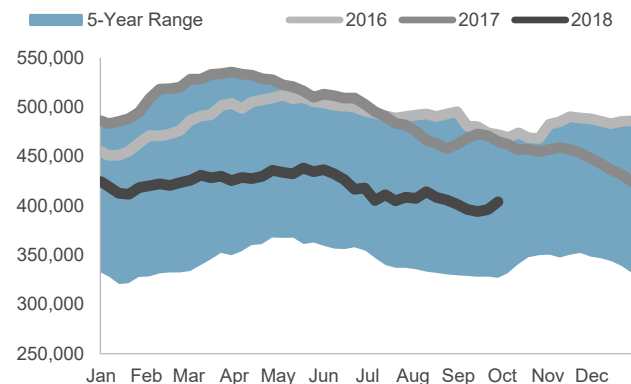
OECD Commercial Inventories (MMbbl)



Note: Data collected on a monthly basis.

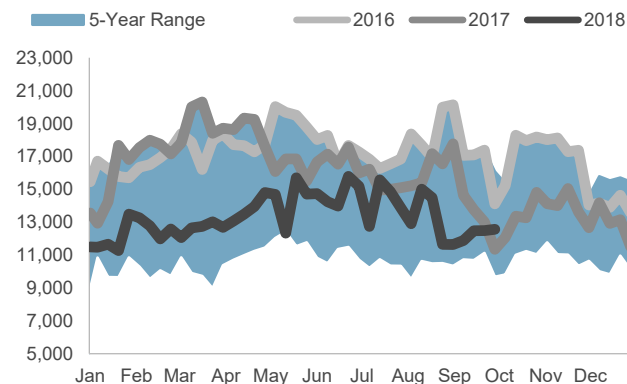
Inventory (Mbbl)

Overall U.S. Crude Inventory

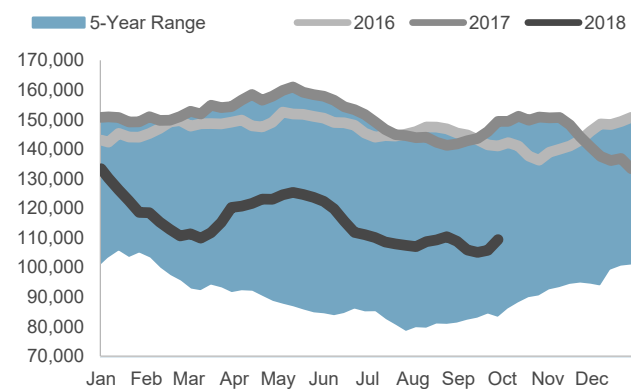


Note: Excludes strategic petroleum reserve (SPR).

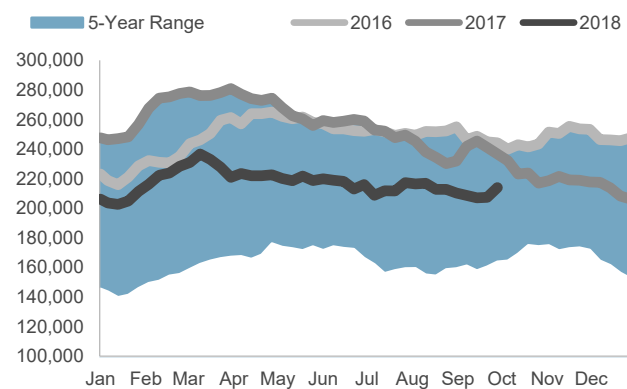
PADD I



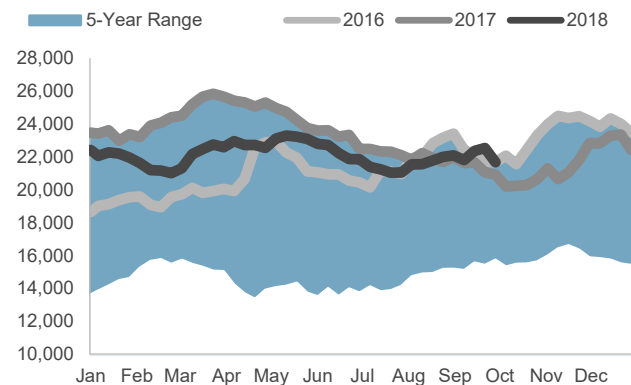
PADD II



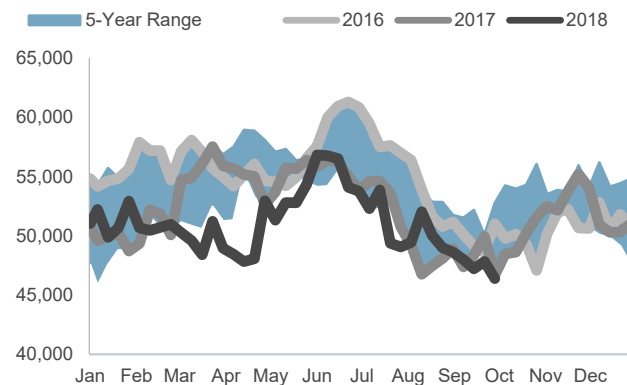
PADD III



PADD IV

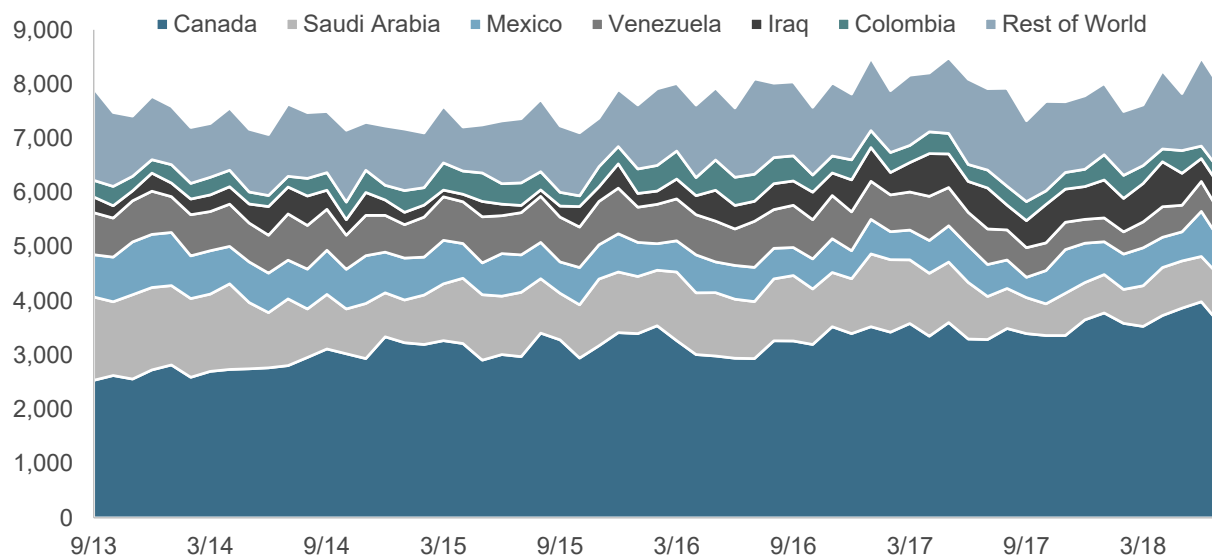


PADD V



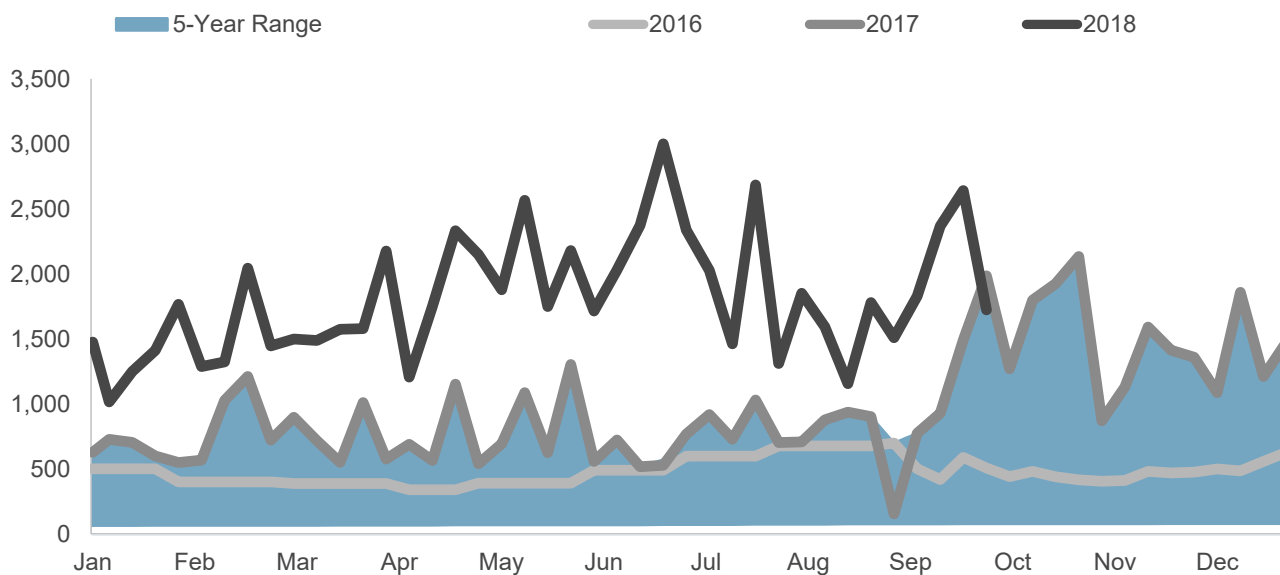
Trade

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



Note: Data collected on a monthly basis and is subject to a 2-4 month lag.

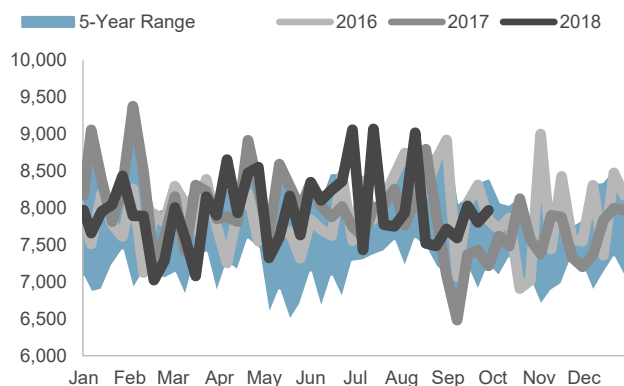
Total U.S. Crude Exports (Mbbl/d)



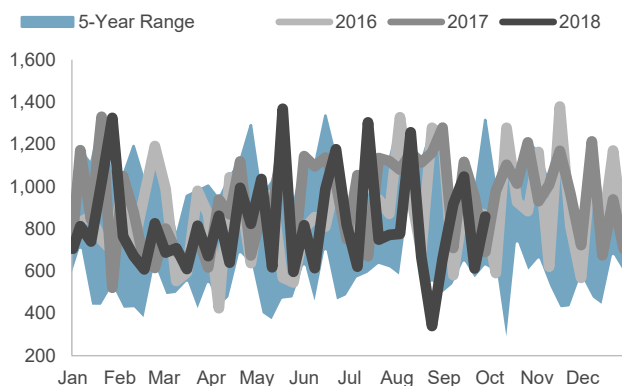
Note: Data collected on a weekly basis.

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

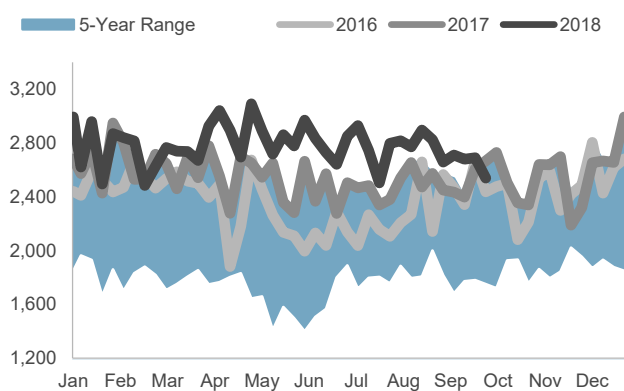
Overall U.S. Commercial Crude Imports



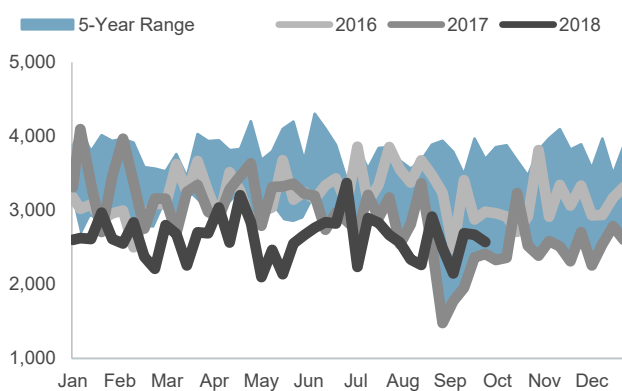
Destination – PADD I



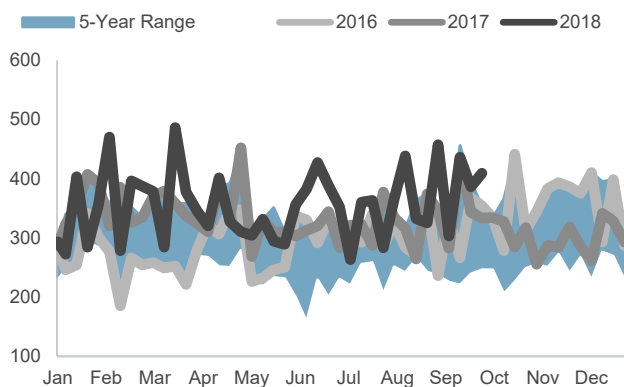
Destination – PADD II



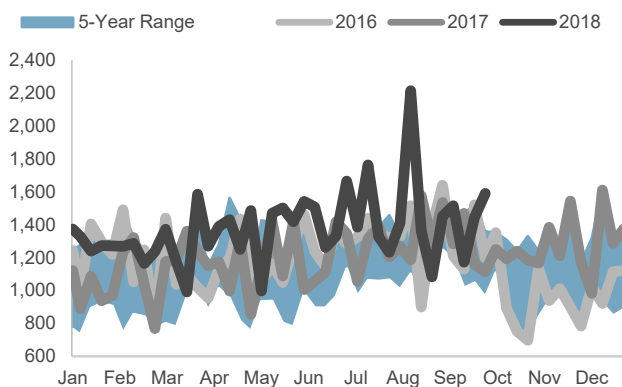
Destination – PADD III



Destination – PADD IV

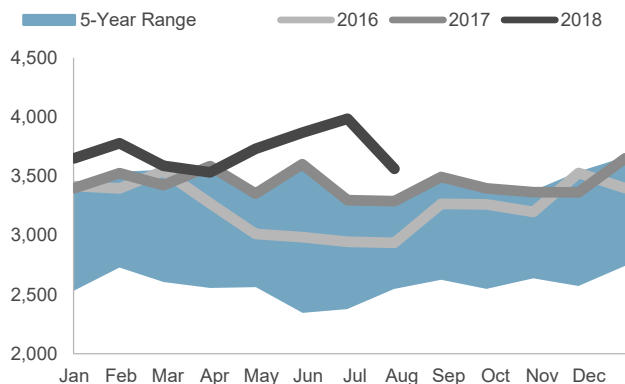


Destination – PADD V

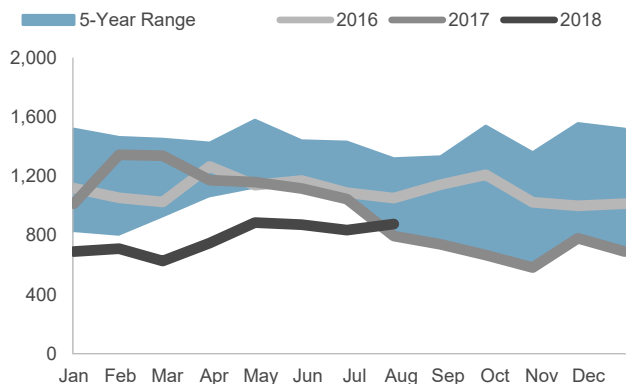


U.S. Imports by Country (Mbbbl/d)

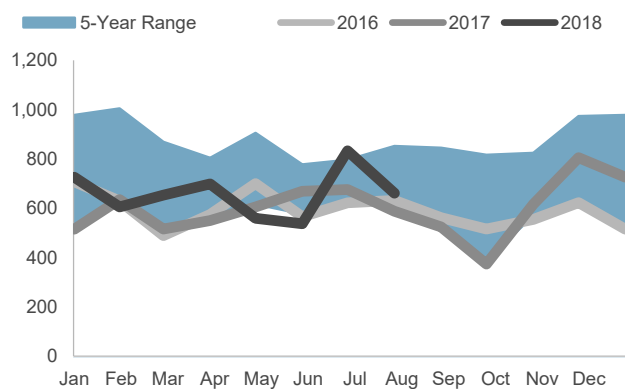
Canada



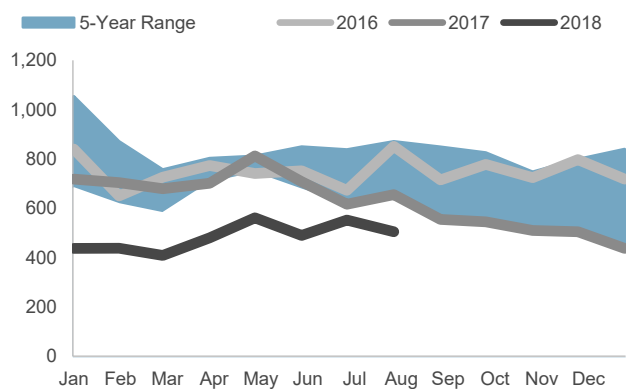
Saudi Arabia



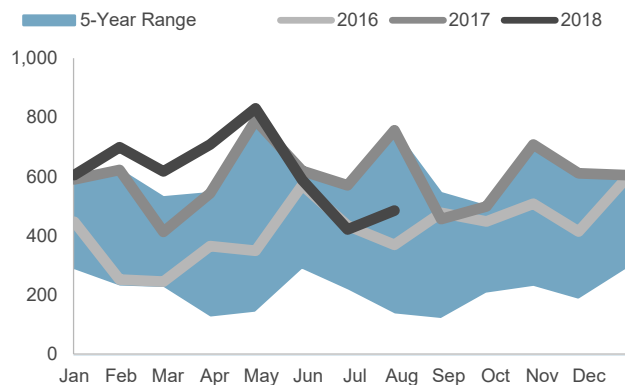
Mexico



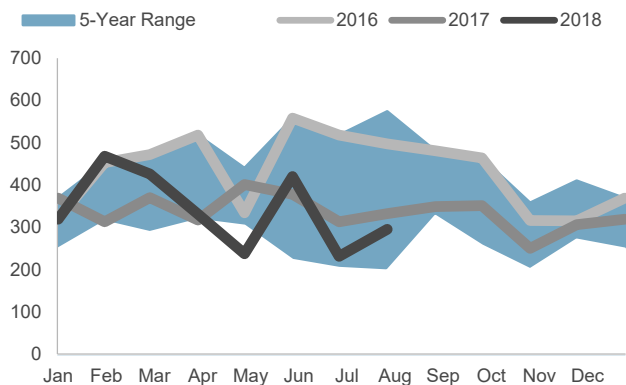
Venezuela



Iraq



Colombia

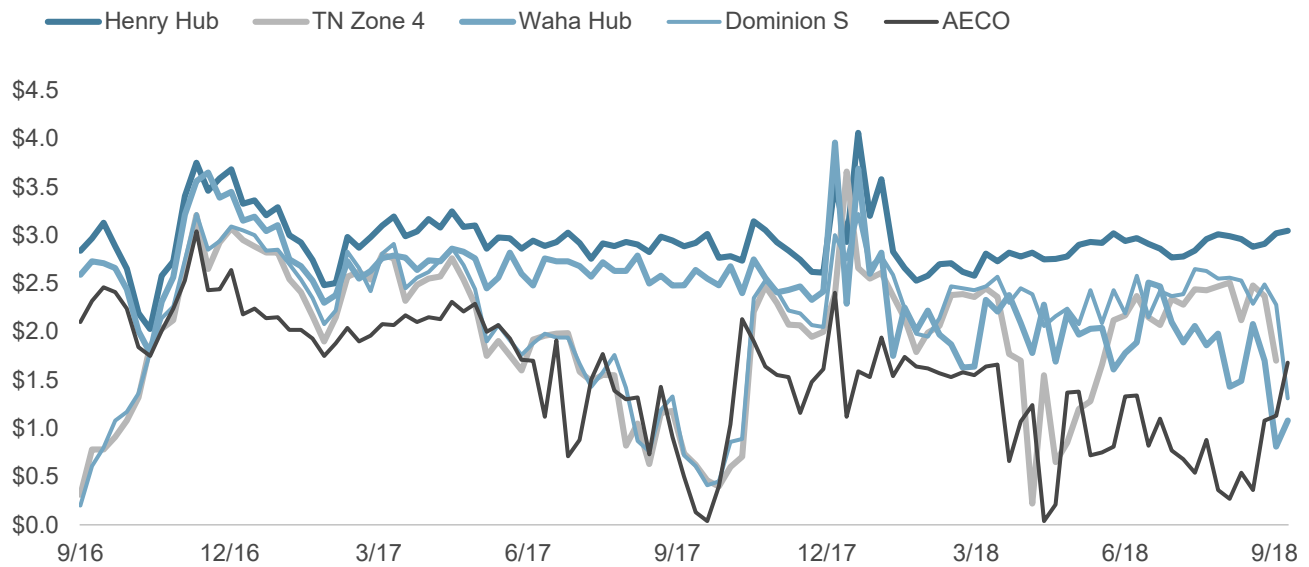


Note: All data as of September 30, 2018. Data collected on a monthly basis and is subject to a two-month lag.
Source: Bloomberg.

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Natural Gas Spot Pricing

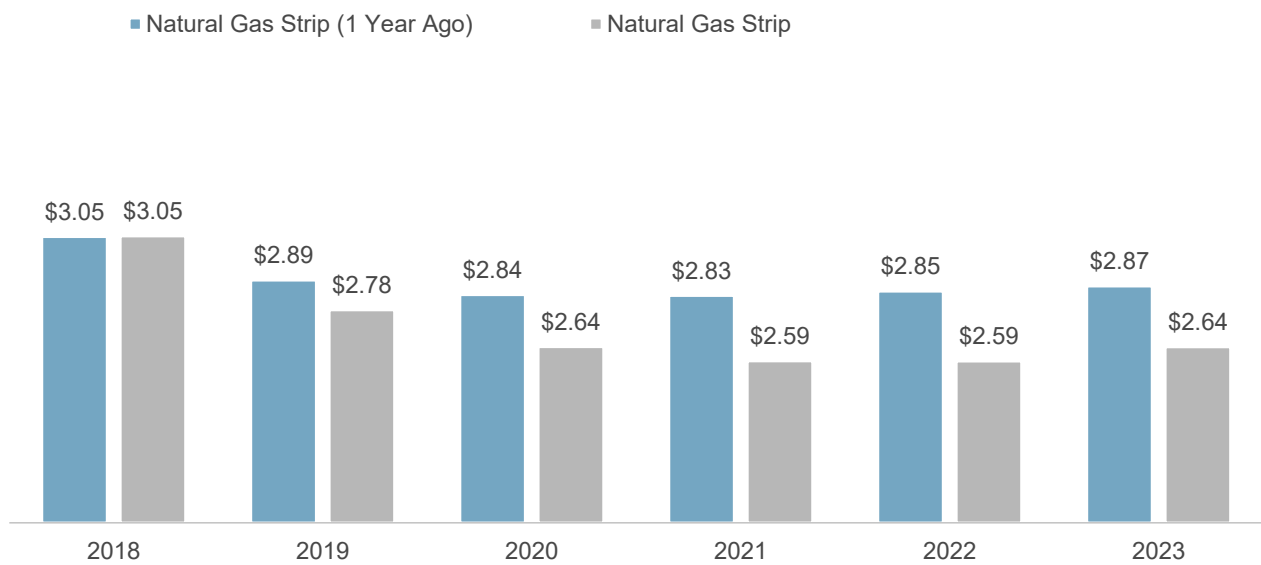
Pricing (\$/MMbtu)



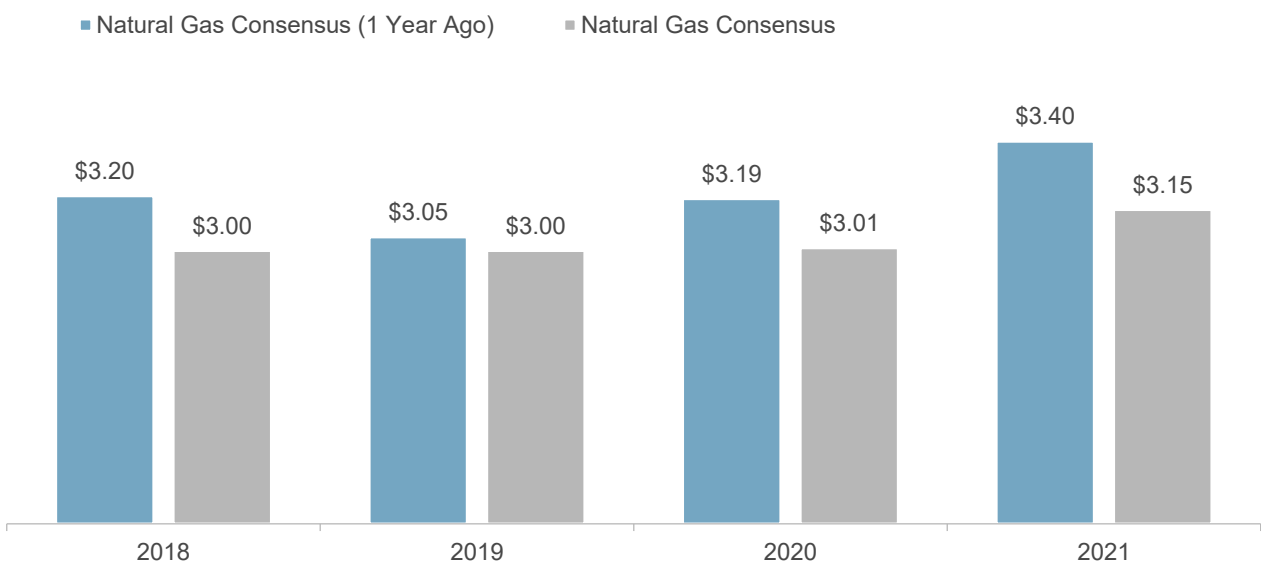
Note: All data as of September 30, 2018. Data collected on a weekly basis.
Source: Bloomberg.

Natural Gas Pricing

Strip Pricing Comparison (\$/MMbtu)



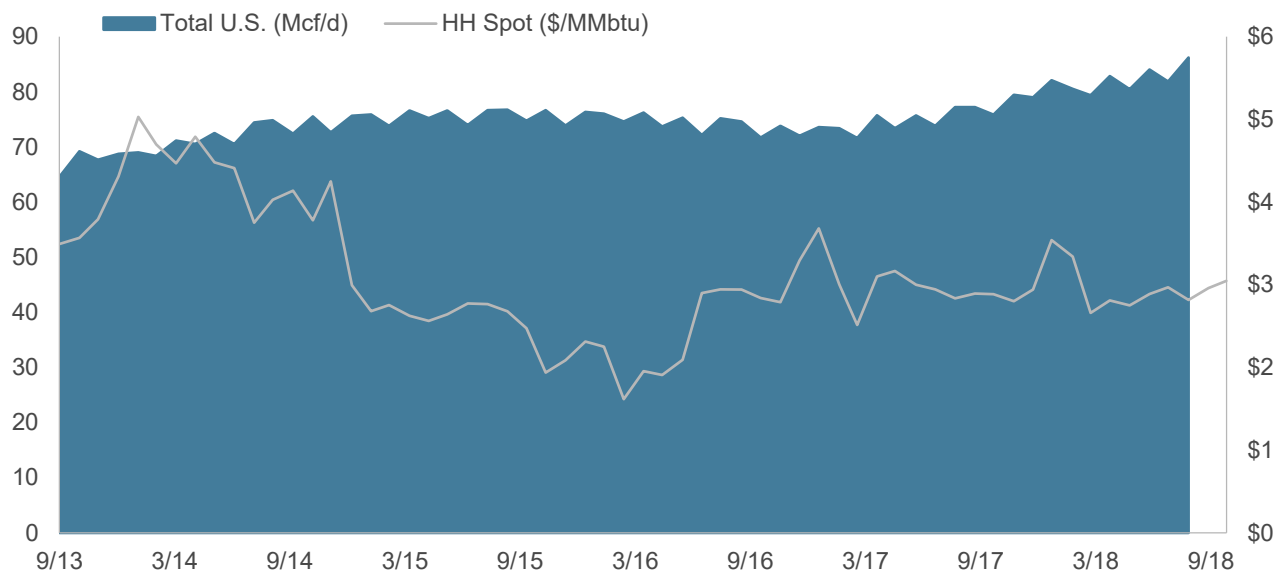
Consensus Pricing Comparison (\$/MMbtu)



Note: All data as of September 30, 2018. Represents the average price for the remainder of 2018 and each year thereafter.
Source: Bloomberg.

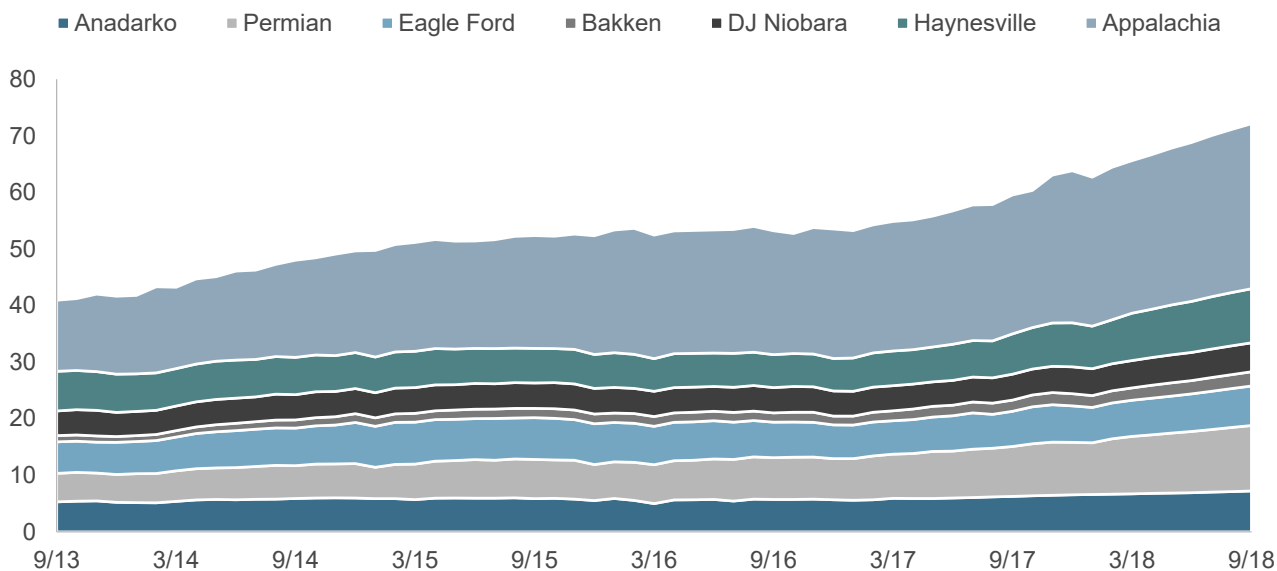
Natural Gas Production

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



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

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



Note: All data as of September 30, 2018. Data collected on a monthly basis.

Source: Bloomberg, 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 production for key regions.

Differentials

Regional Natural Gas Spot Pricing

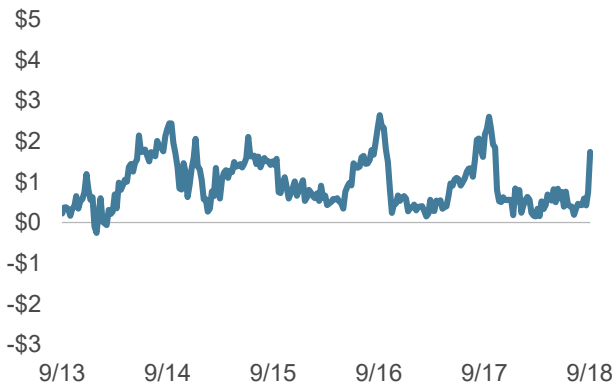
Region	9/30/2018	9/30/2017	6/30/2018	YoY % Change	QoQ % Change
Henry Hub	\$3.05	\$2.89	\$2.97	5.5%	2.6%
<i>Benchmark</i>					
Dominion South	\$1.31	\$0.72	\$2.58	81.9%	-49.2%
<i>Henry Hub – Dominion South</i>	\$1.74	\$2.17	\$0.39		
TN Zone 4	\$1.70	\$0.74	\$2.37	129.7%	-28.3%
<i>Henry Hub – TN Zone 4</i>	\$1.35	\$2.15	\$0.60		
AECO	\$1.68	\$0.50	\$1.34	236.0%	25.4%
<i>Henry Hub – AECO</i>	\$1.37	\$2.39	\$1.63		
Waha Hub	\$1.08	\$2.48	\$1.89	-56.5%	-42.9%
<i>Henry Hub – Waha</i>	\$1.97	\$0.41	\$1.08		

Note: All data as of September 30, 2018. Represents the average price for the remainder of 2018 and each year thereafter.

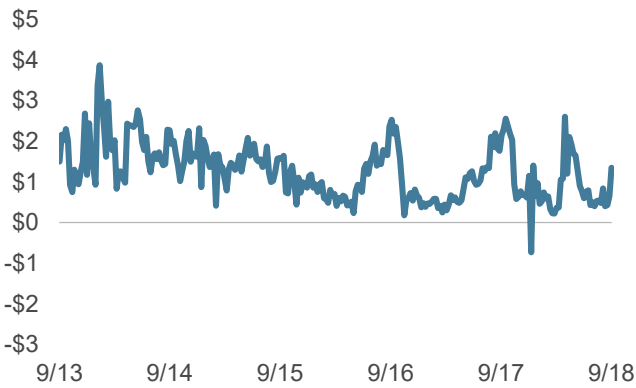
Source: Bloomberg.

Natural Gas – Differentials (\$/MMbtu)

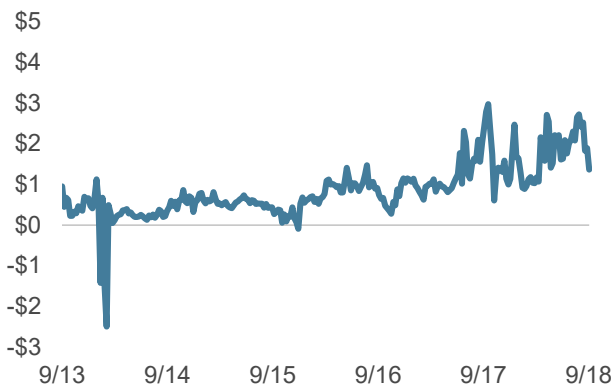
HH – Dominion South



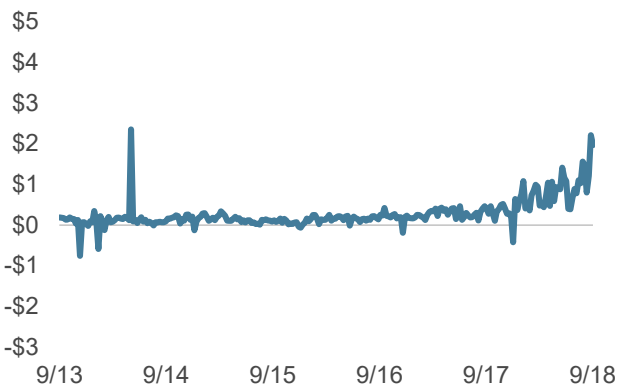
HH – TN Zone 4



HH – AECO



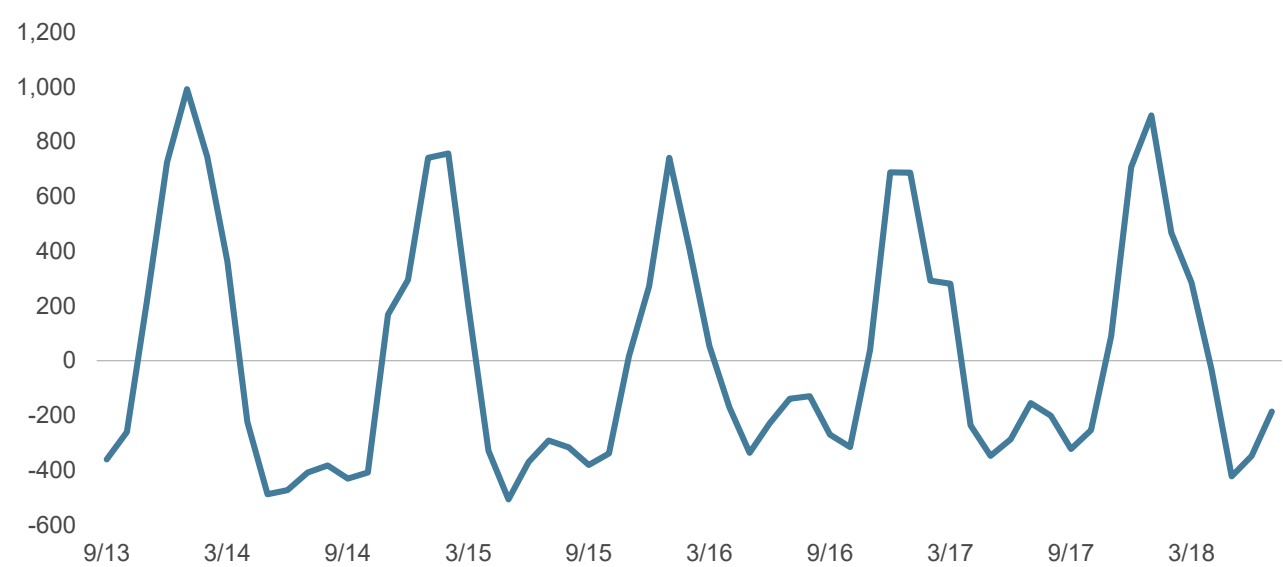
HH – Waha Hub



Note: All data as of September 30, 2018. Data collected on a weekly basis.
Source: Bloomberg.

Natural Gas

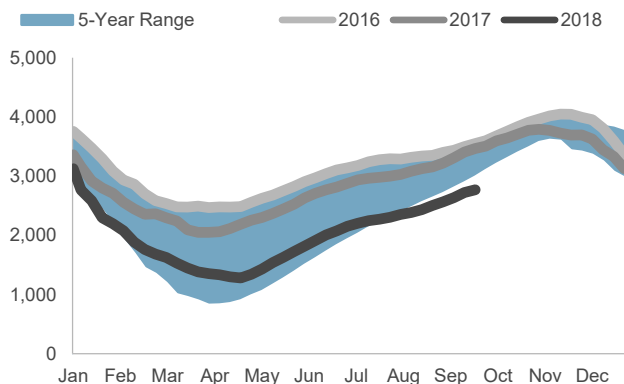
U.S. Natural Gas Withdrawal (Bcf)



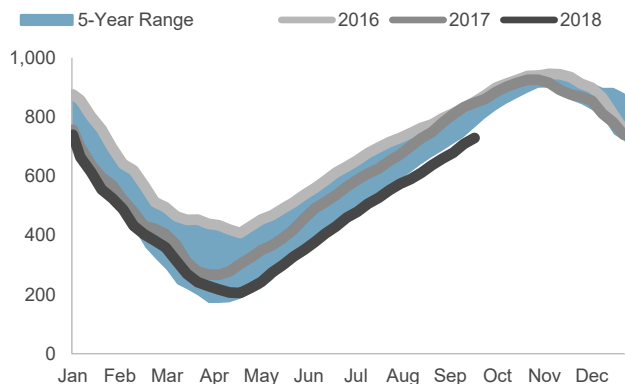
Note: Data collected on a monthly basis and is subject to irregular updates.

Natural Gas Storage (Bcf)

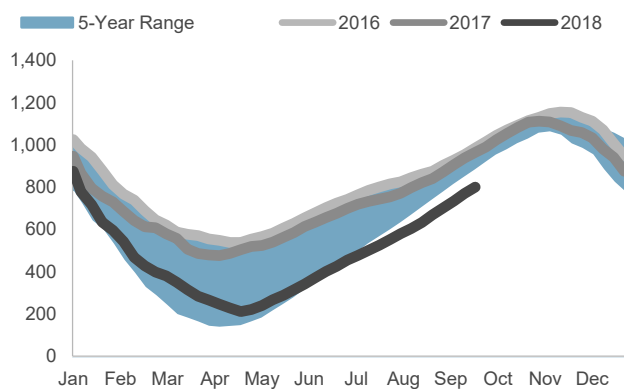
Total U.S.



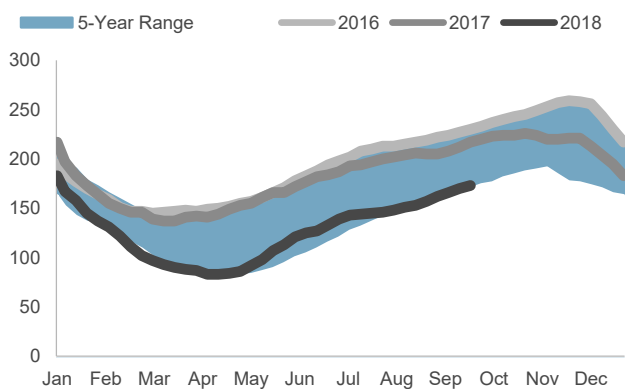
East



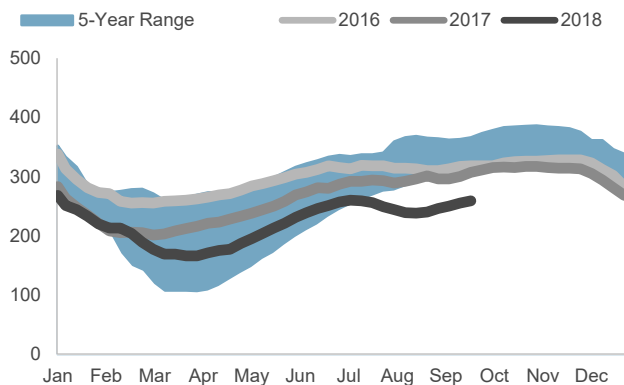
Midwest



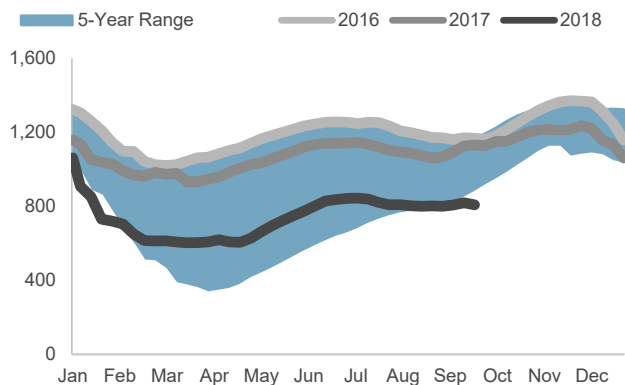
Mountain



Pacific

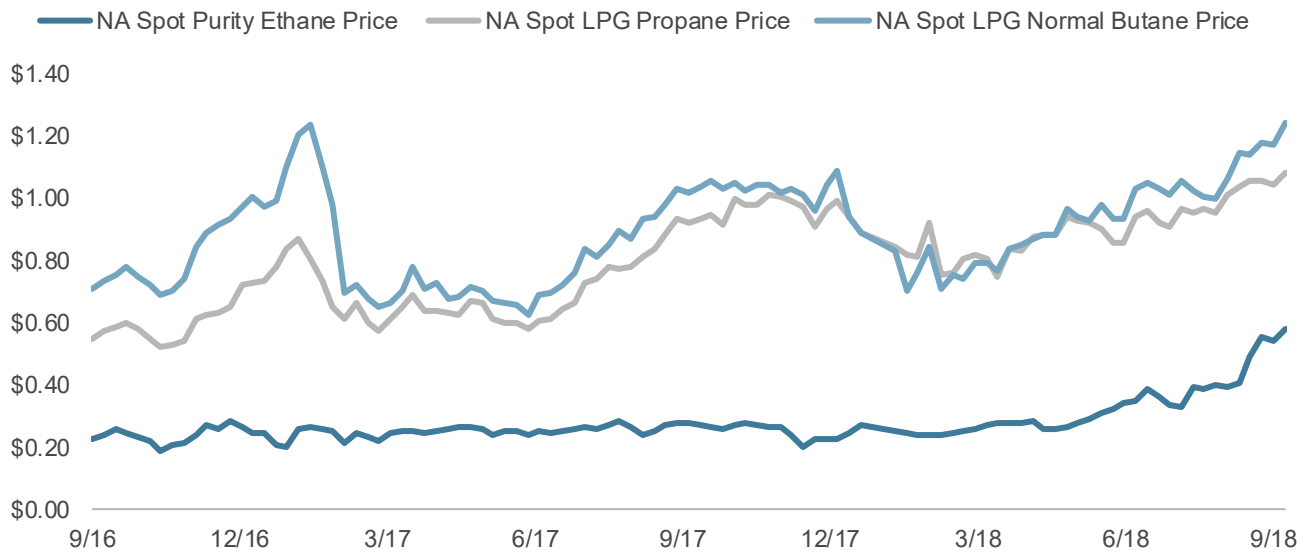


South Central



NGLs Spot Pricing

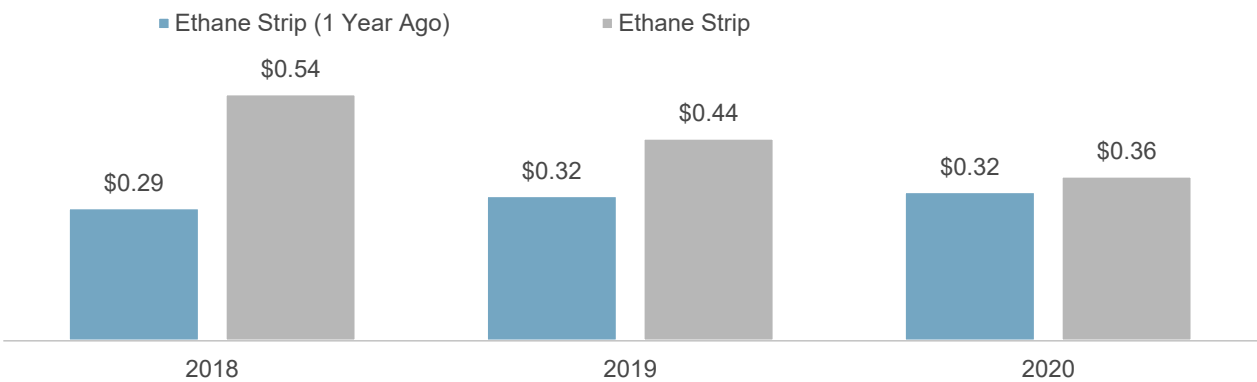
Pricing (\$/gal)



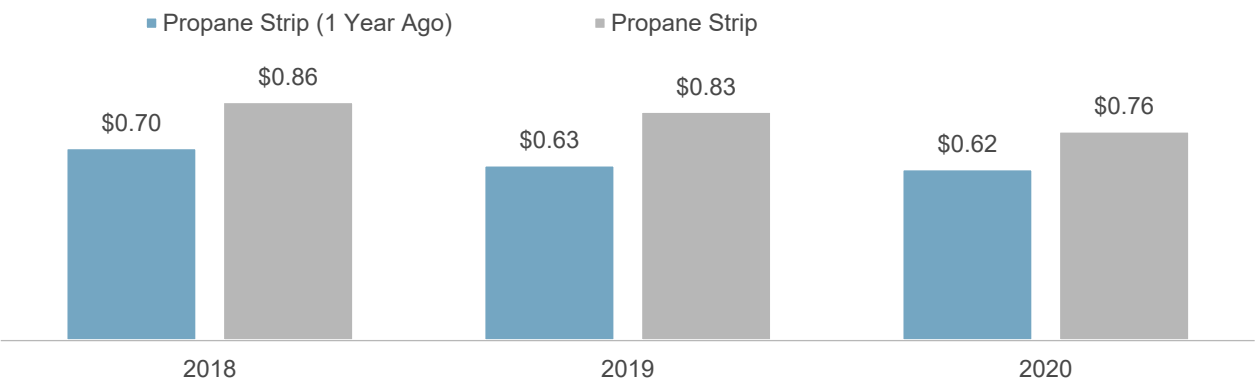
Note: All data as of September 30, 2018. Data collected on a weekly basis.
Source: Bloomberg.

NGLs Strip Pricing

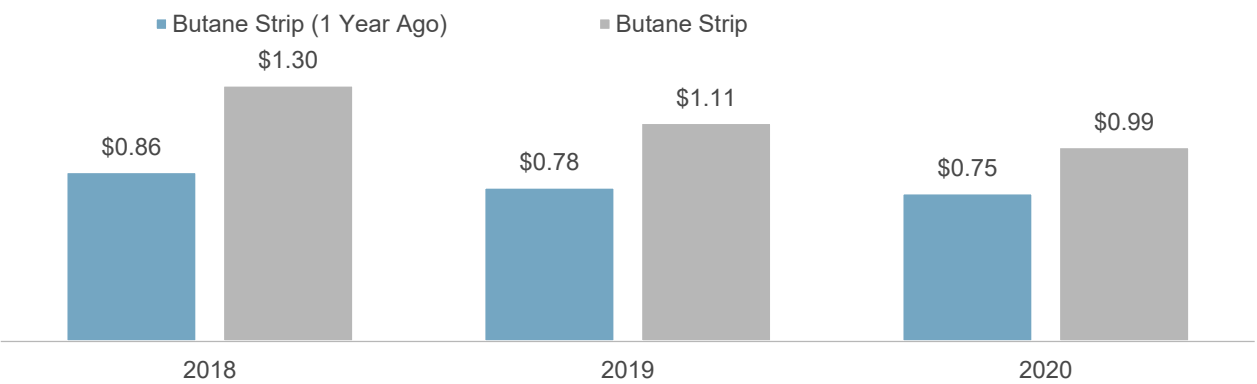
Ethane Strip Pricing Comparison (\$/gal)



Propane Strip Pricing Comparison (\$/gal)

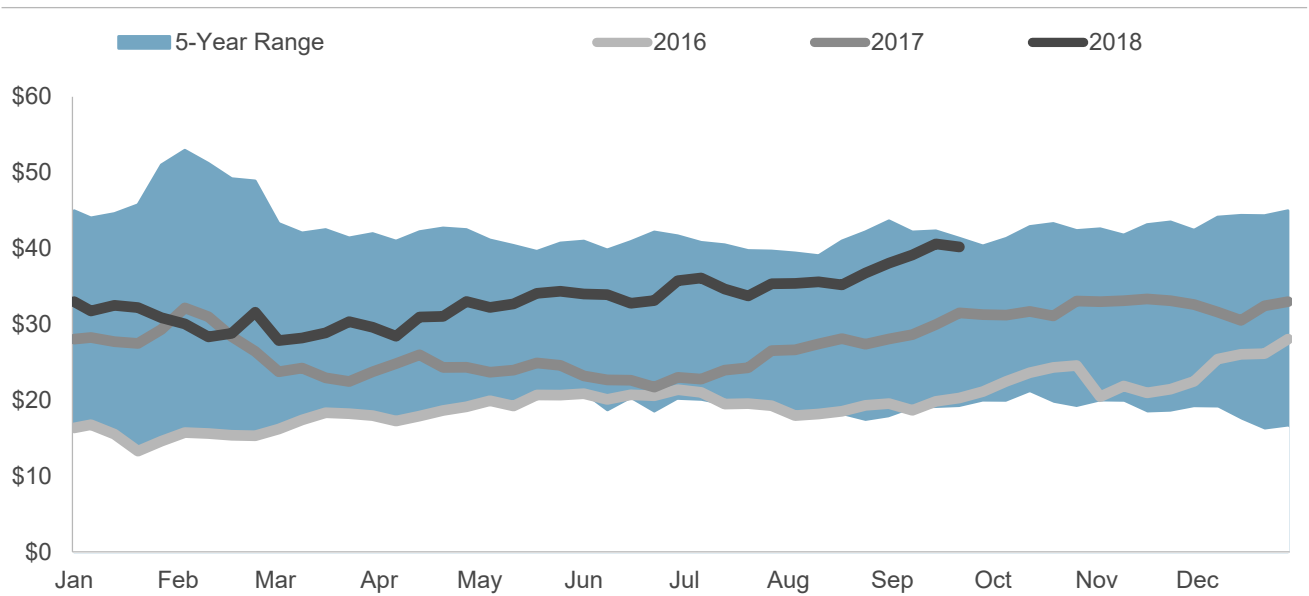


Butane Strip Pricing Comparison (\$/gal)



NGLs Frac Spreads

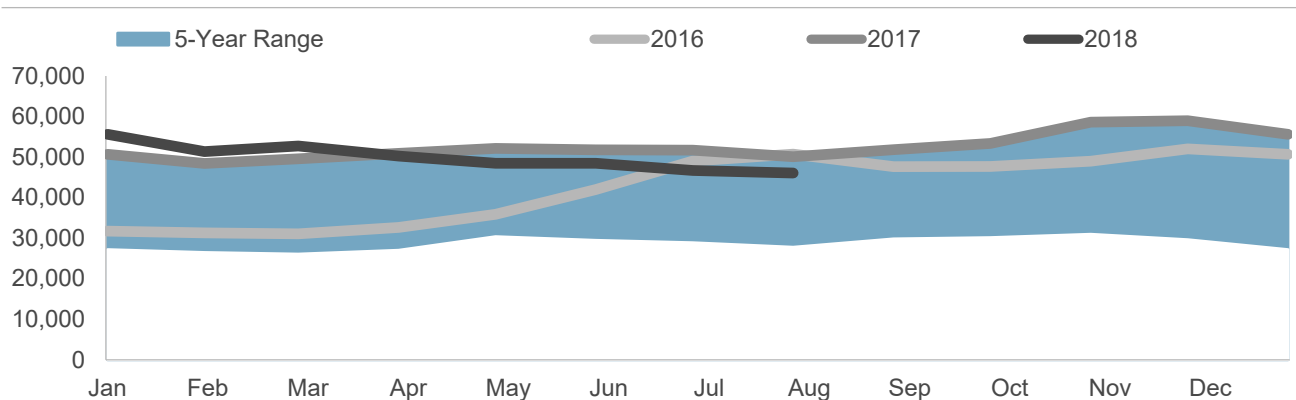
Mont Belvieu Frac Spread (\$/bbl)



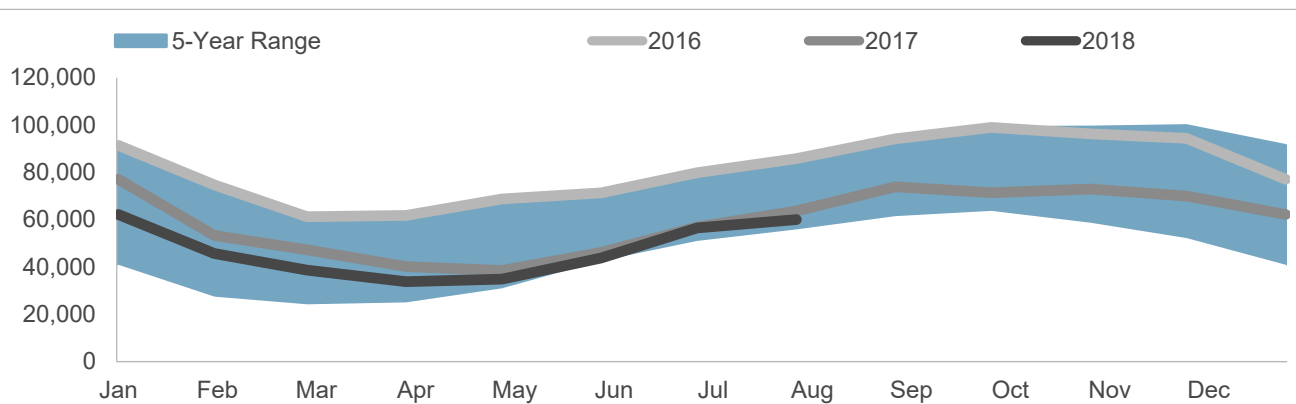
Note: All data as of September 30, 2018.
Source: Bloomberg.

NGLs Inventory

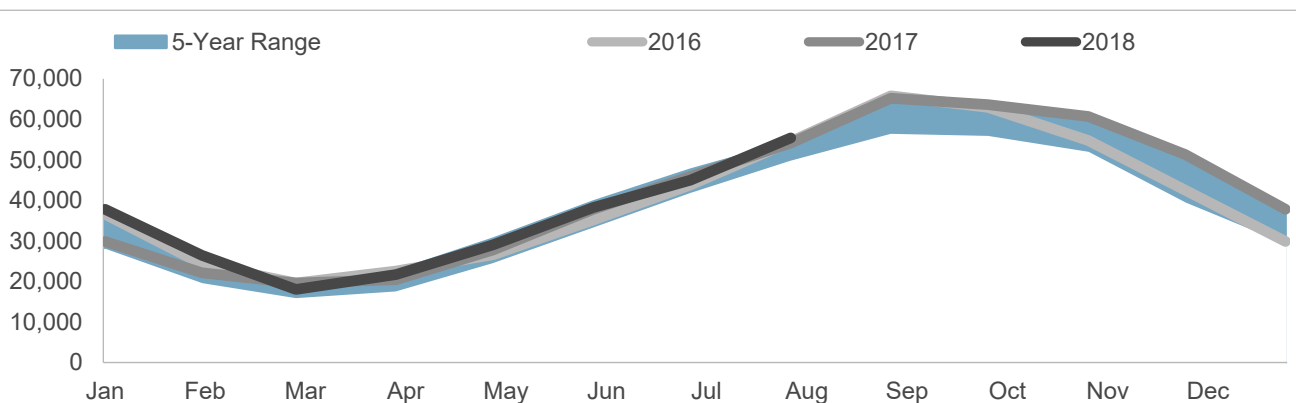
U.S. Ending Stocks Ethane (Mbbbls/d)



U.S. Ending Stocks Propane (Mbbbls/d)



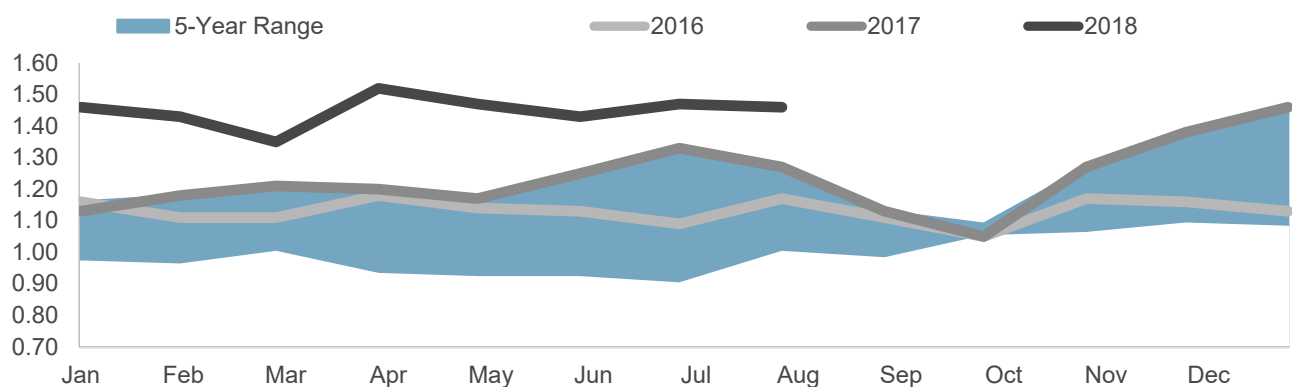
Normal Butane/Butylene (Mbbbls/d)



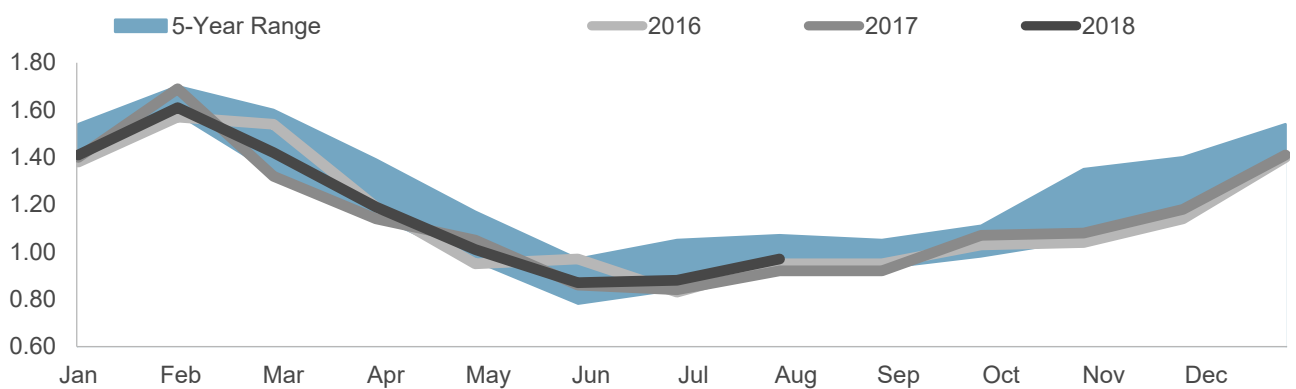
Note: All data as of September 30, 2018. Data collected on a monthly basis and is subject to a two month lag.
Source: Bloomberg.

NGLs Consumption

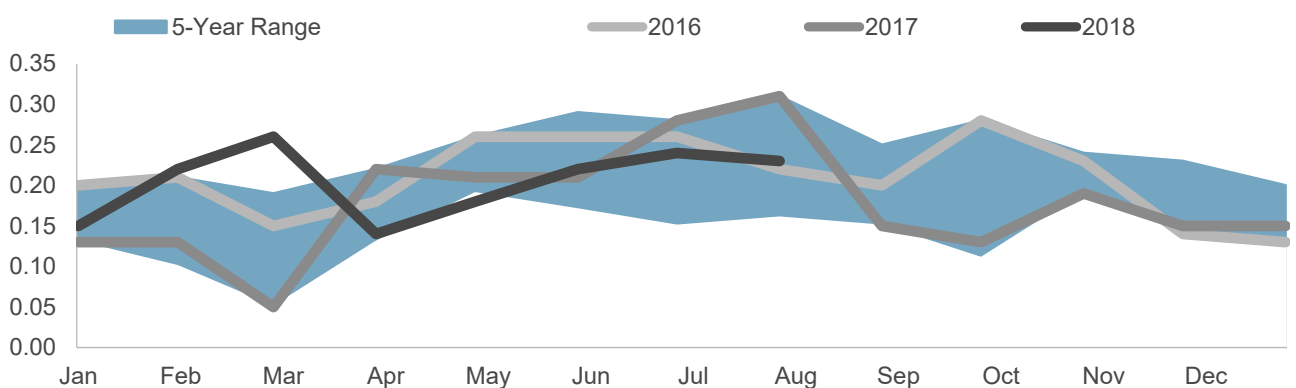
U.S. Ethane/Ethylene Consumption (MMboe/d)



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



U.S. Butanes/Butylenes Consumption (MMboe/d)

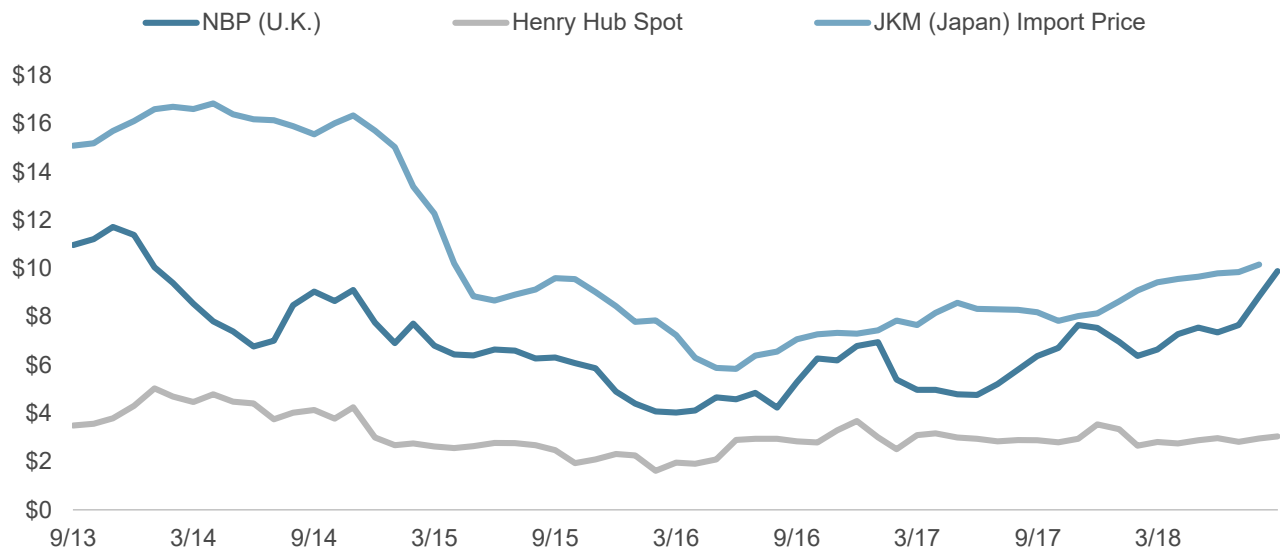


Note: All data as of September 30, 2018. Data collected on a monthly basis and is subject to a two-month lag.
Source: Bloomberg.

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Spot Pricing

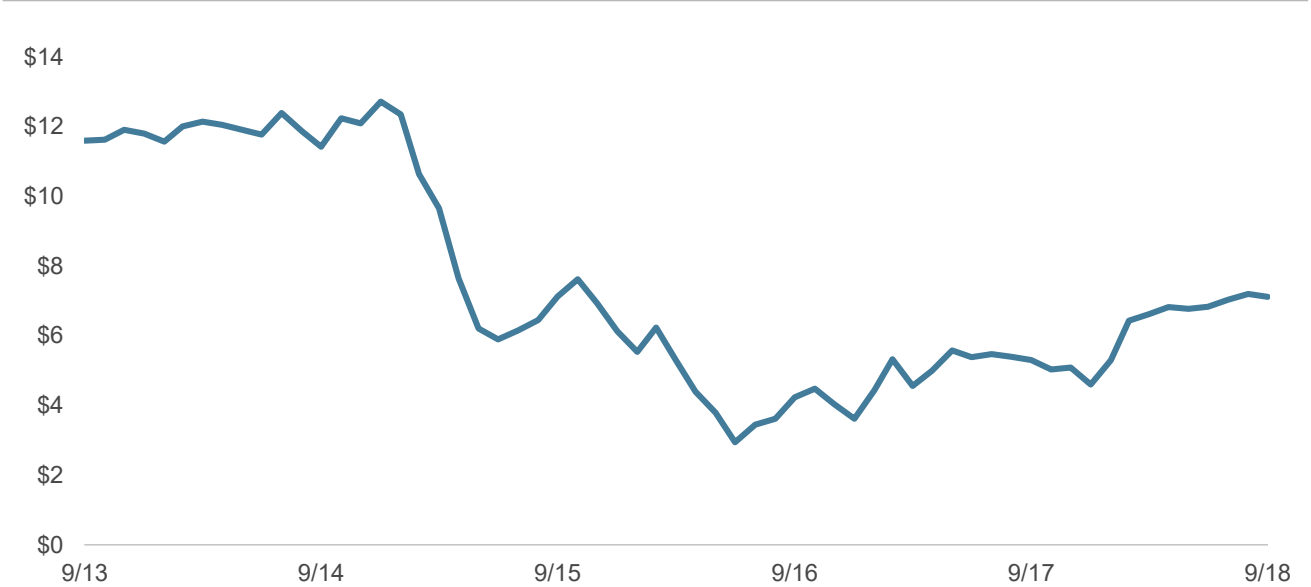
Spot Pricing (\$/MMbtu)



Note: All data as of September 30, 2018. Data collected on a monthly basis.
Note: NBP (U.K.) refers to the ICE UK Natural Gas NBP Month 1 Futures.
Source: Bloomberg.

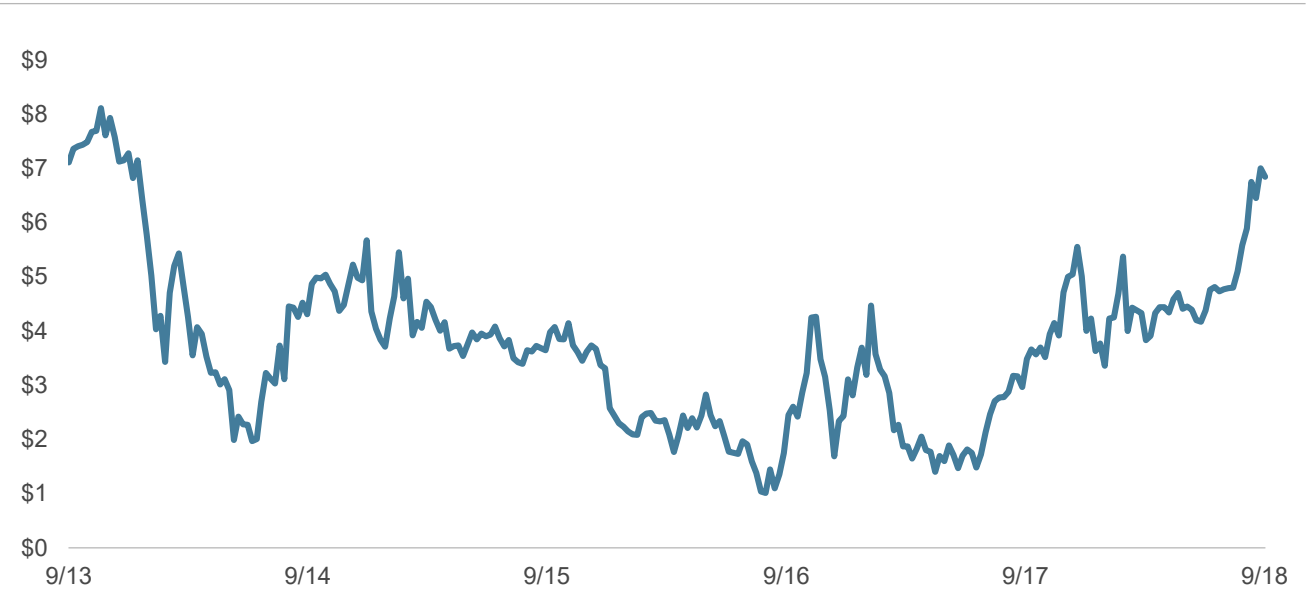
Differentials

JKM – Henry Hub (\$/MMbtu)



Note: Data collected on a monthly basis.

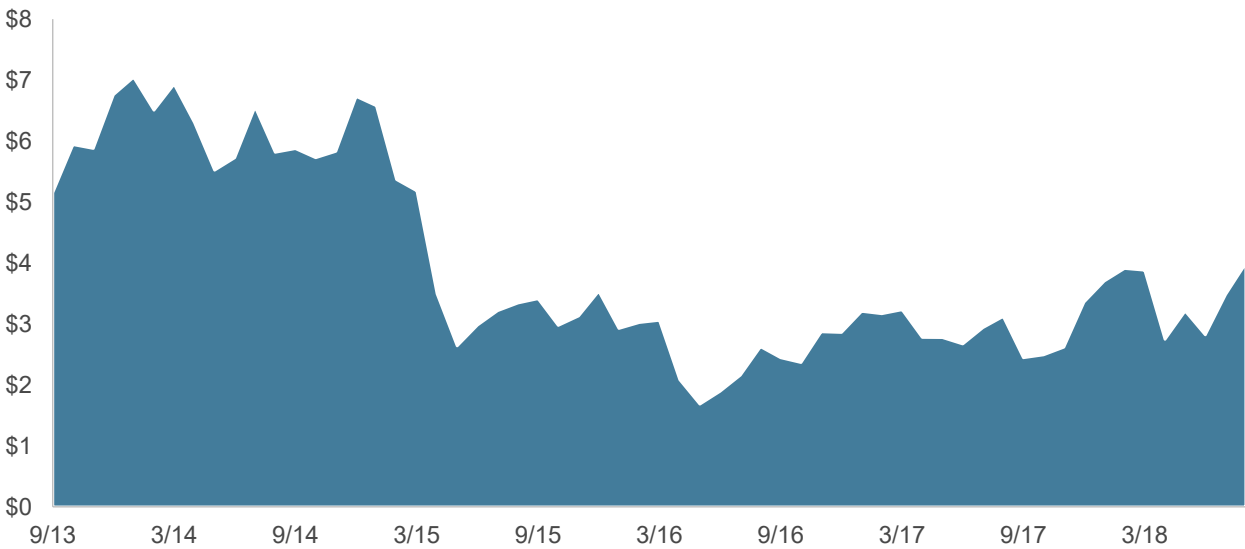
NBP – Henry Hub (\$/MMbtu)



Note: Data collected on a weekly basis.

Exports

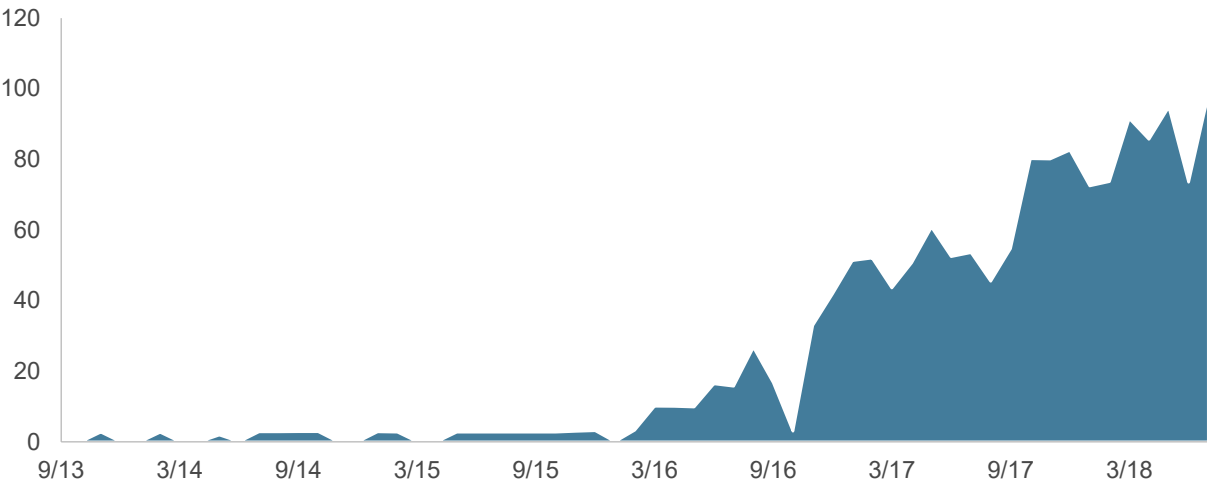
LNG Japan Import Value (US\$ in billions)



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

U.S. LNG Exports (Bcf)

■ U.S. Liquefied Natural Gas Exports (Bcf)

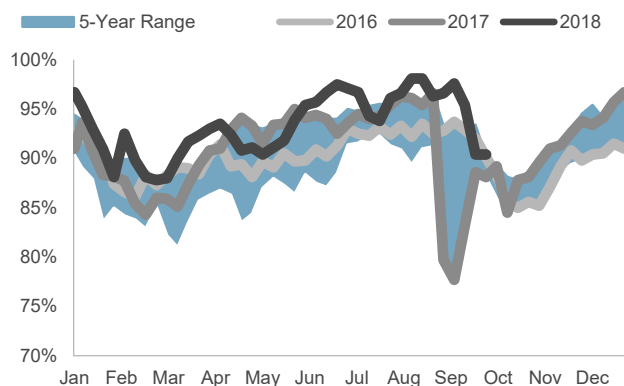


Note: Data collected on a monthly basis and is subject to a two-month lag.

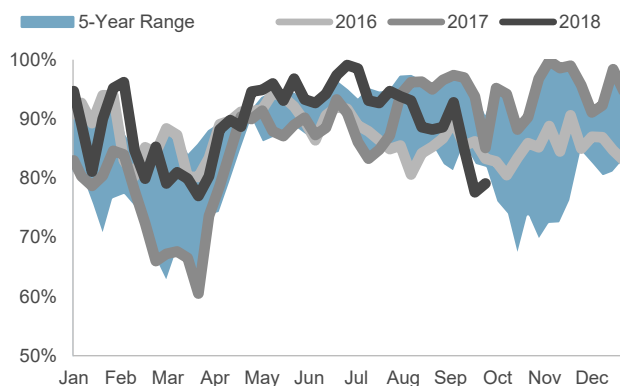
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Refining – Utilization (%)

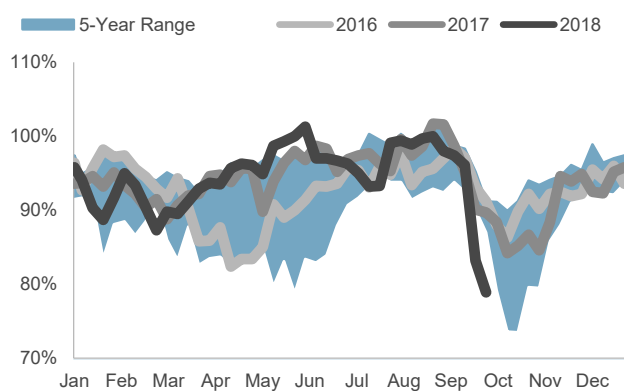
Total U.S.



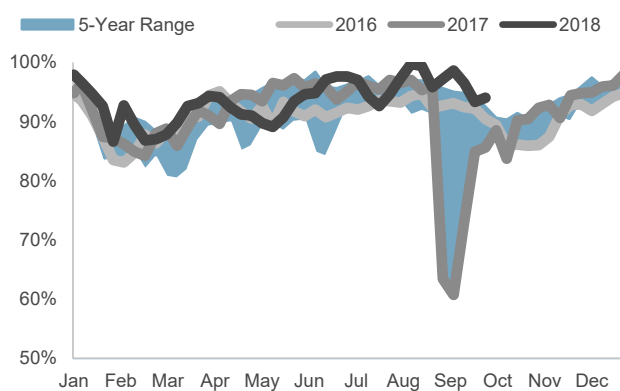
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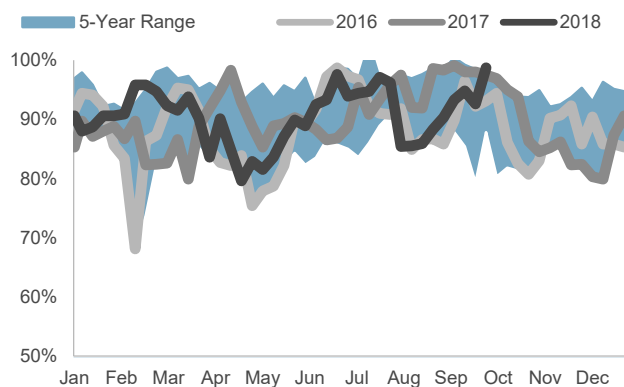
PADD II



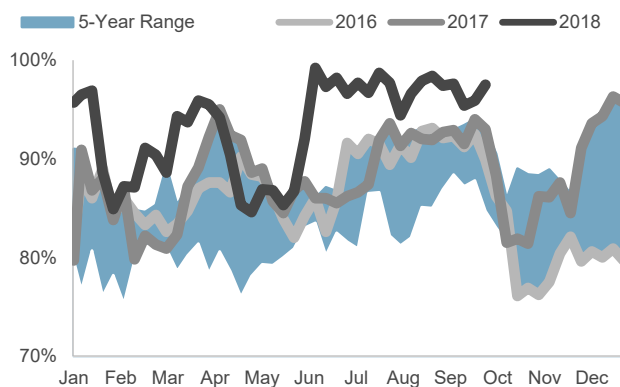
PADD III



PADD IV

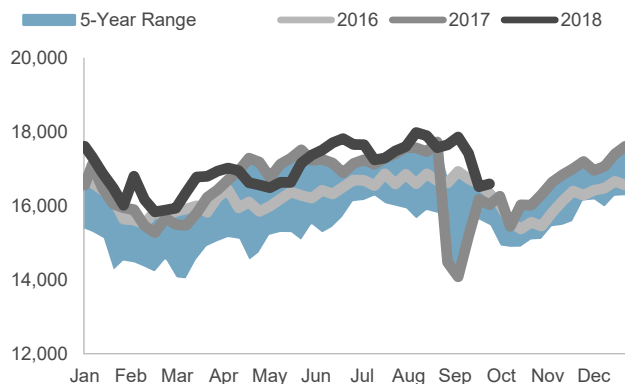


PADD V

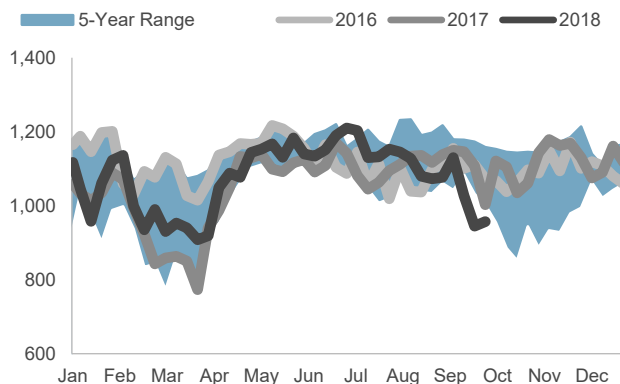


Refining – U.S. Crude Runs (Mbbbl/d)

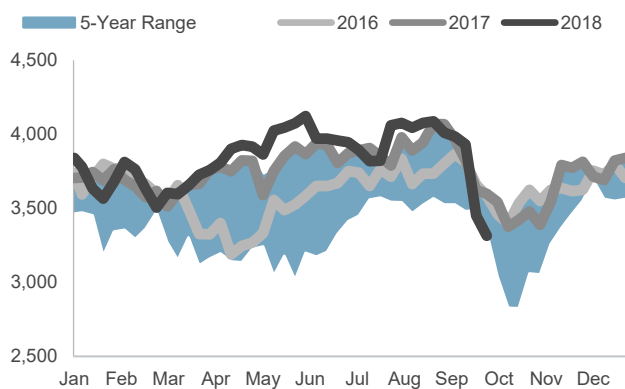
Total U.S.



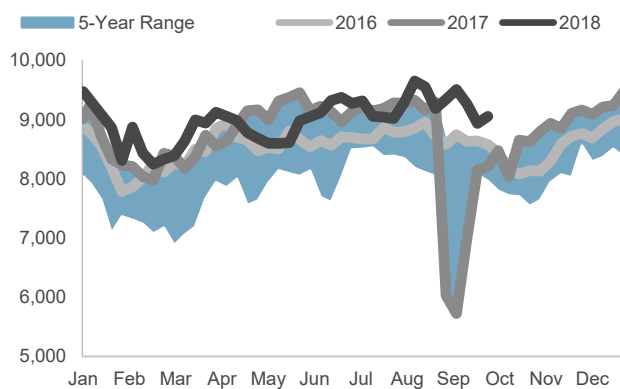
PADD I



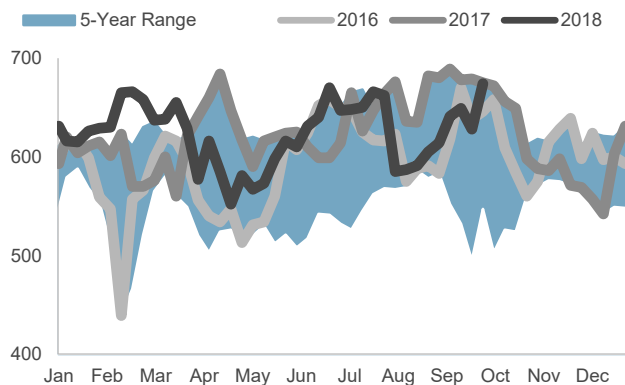
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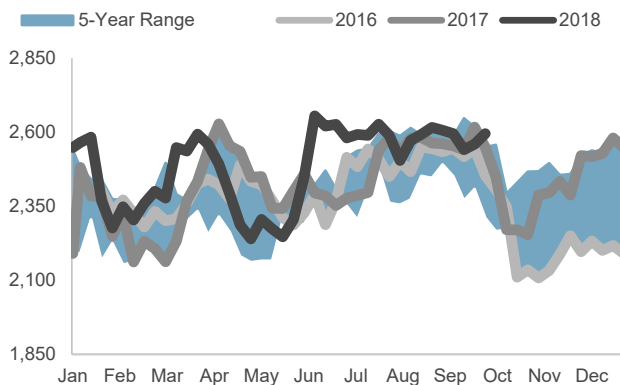
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PADD IV

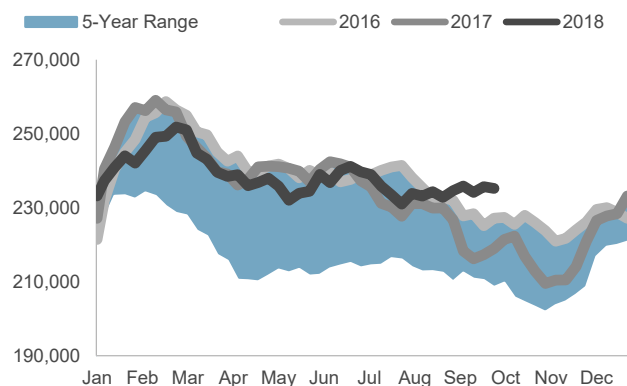


PADD V

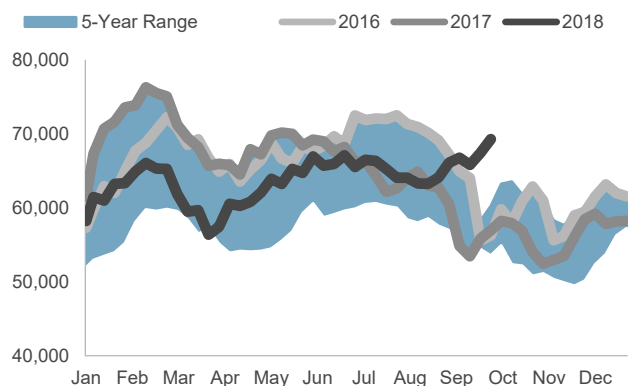


Refining – Motor Gasoline Inventory (Mbbl)

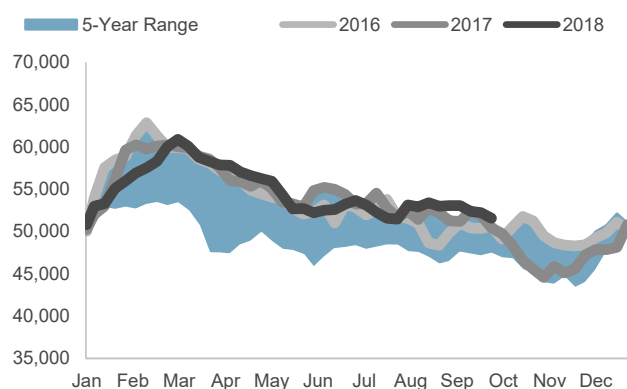
Total U.S.



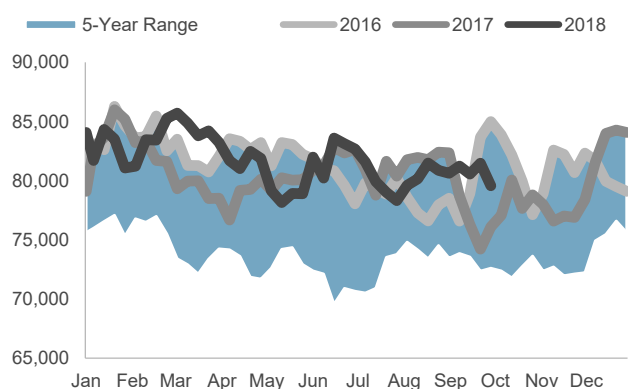
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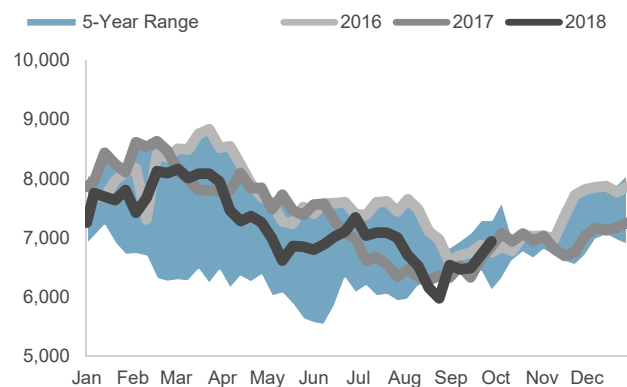
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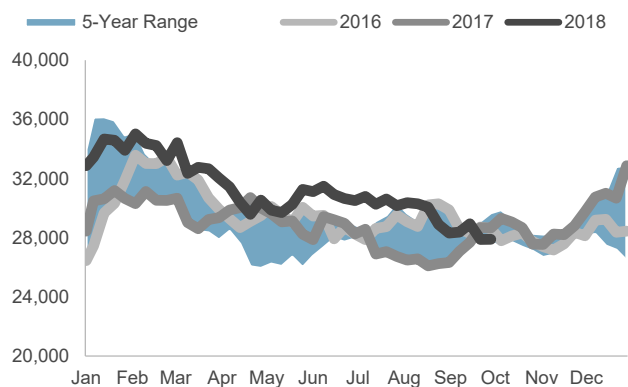
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PADD IV

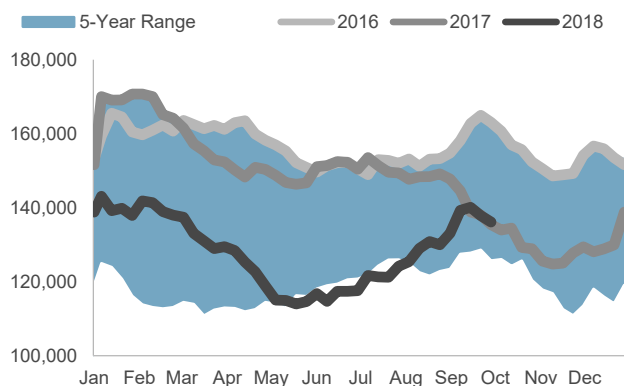


PADD V

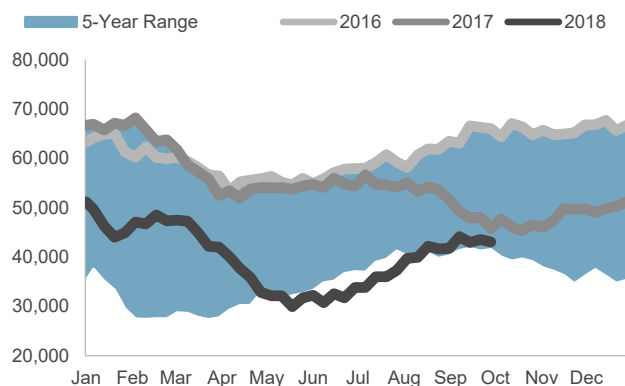


Refining – Distillate Fuel Oil Inventory (Mbbl)

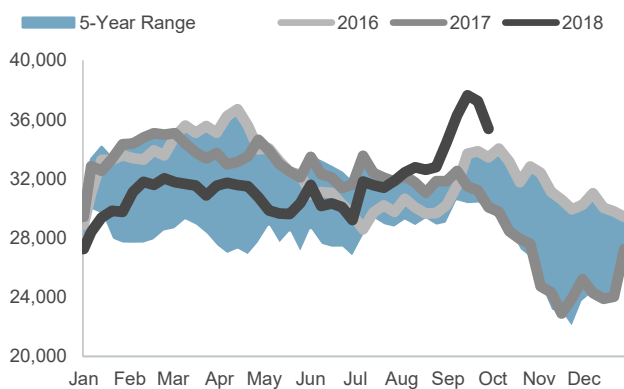
Total U.S.



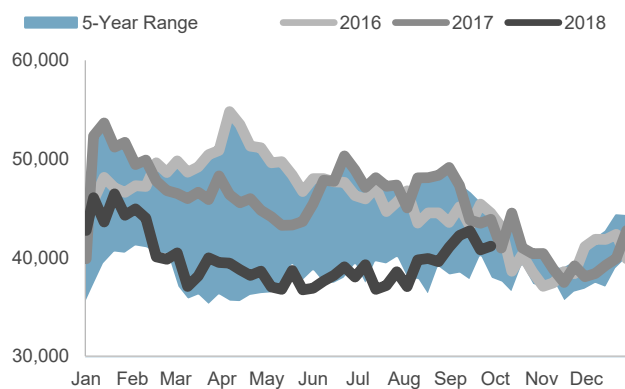
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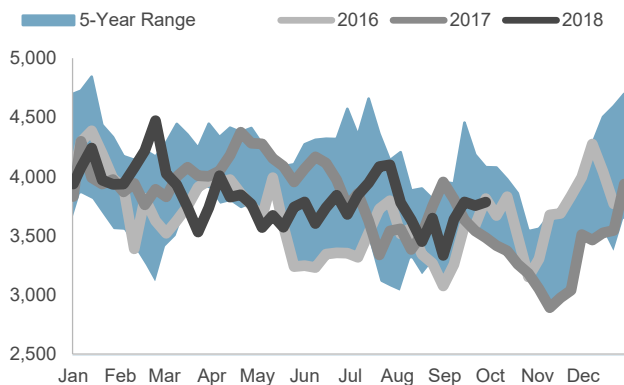
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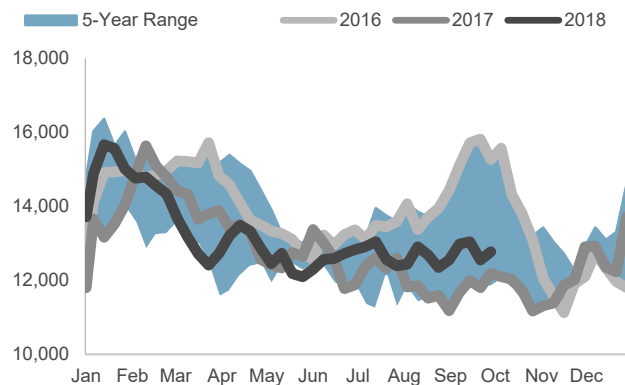
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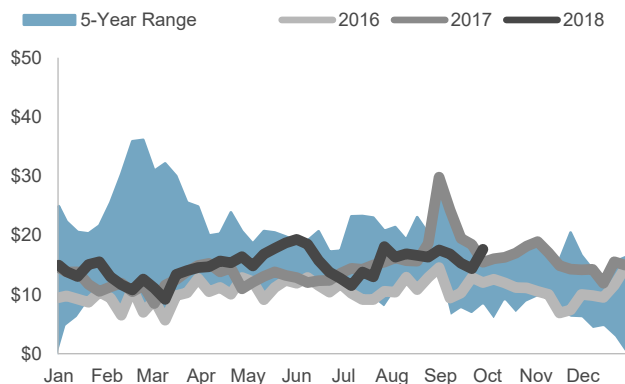


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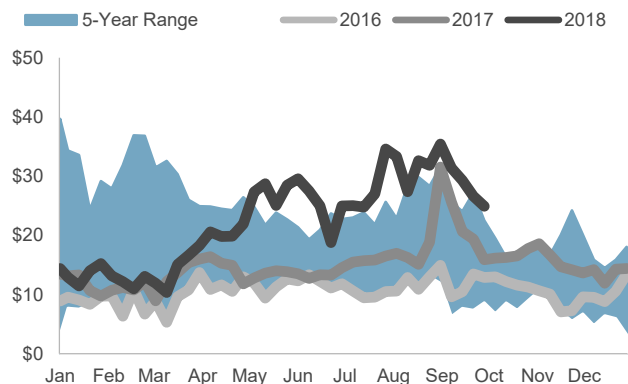


Refining – 3:2:1 Crack Spreads (\$/bbl)

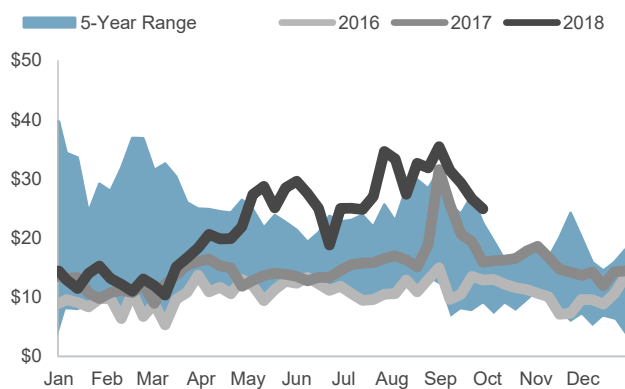
WTI Cushing (U.S. Gulf Coast)



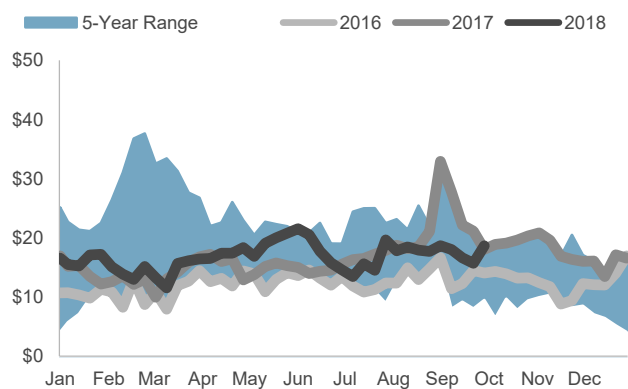
WTI Midland (U.S. Gulf Coast)



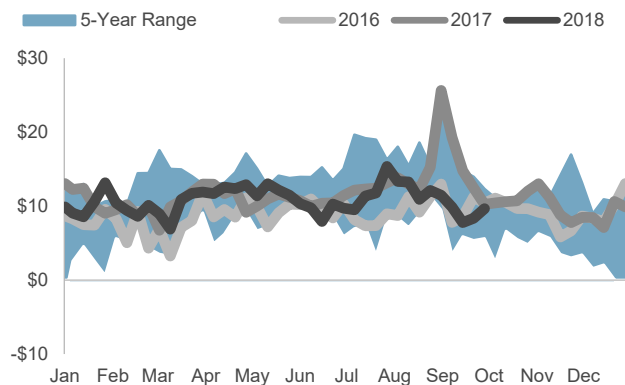
WTS Midland (U.S. Gulf Coast)



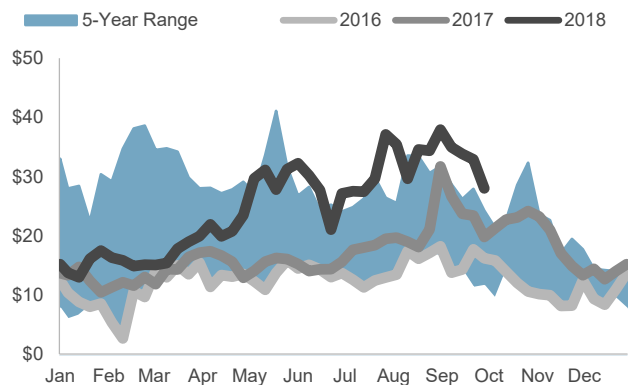
WTI Cushing ULSD (U.S. Gulf Coast)



LLS (U.S. Gulf Coast)

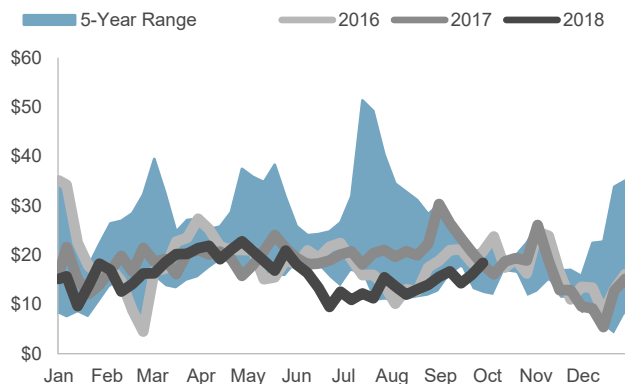


WTI Midland ULSD (U.S. Mid-Continent)

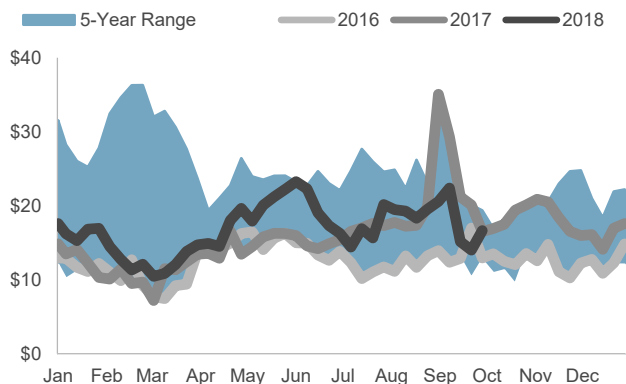


Refining – 3:2:1 Crack Spreads (\$/bbl) (cont.)

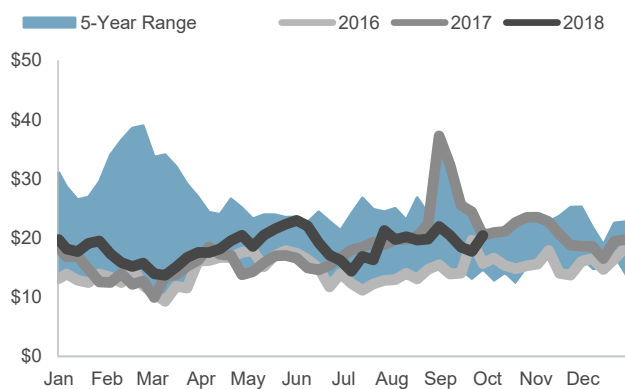
ANS (U.S. West Coast)



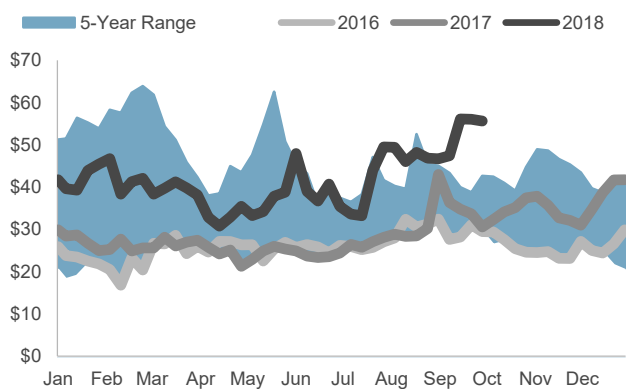
WTI Cushing (NYH RBOB gasoline)



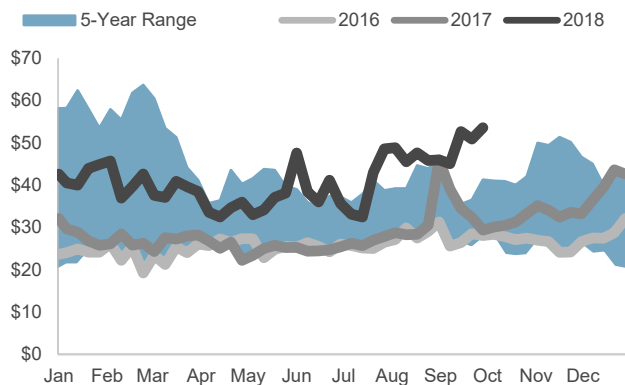
WTI Cushing ULSD (N.Y. Harbor)



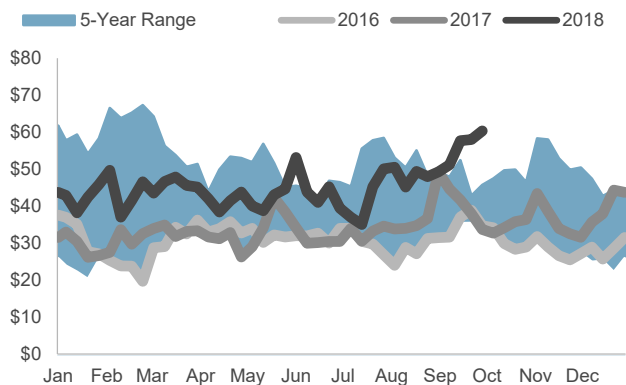
WCS (U.S. Mid-Continent)



WCS (U.S. Gulf Coast)

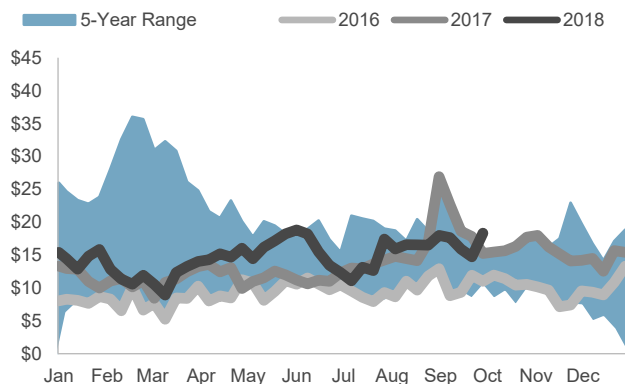


WCS (San Francisco)

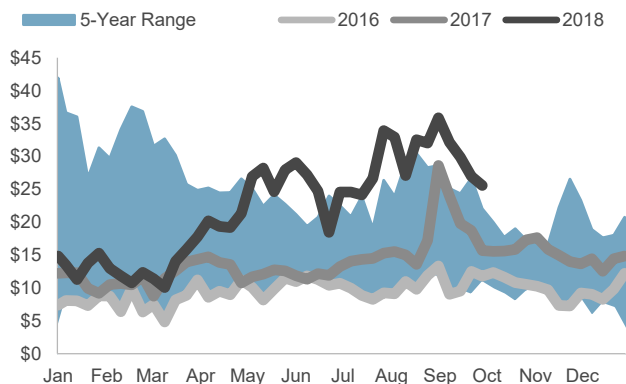


Refining – 2:1:1 Crack Spreads (\$/bbl)

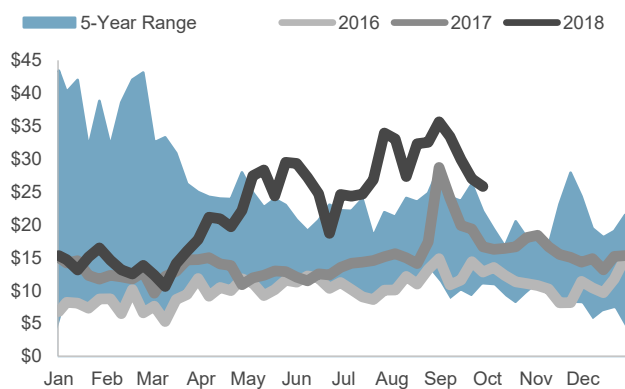
WTI Cushing (U.S. Gulf Coast)



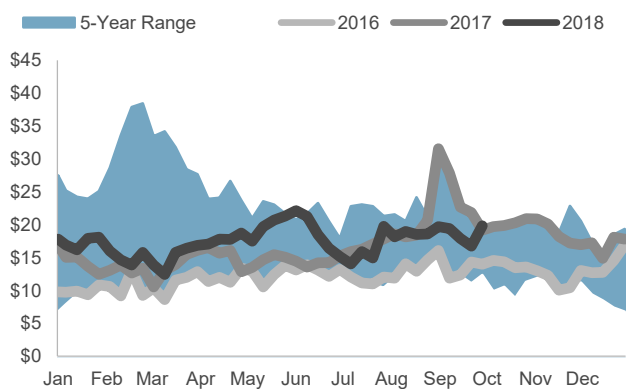
WTI Midland (U.S. Mid-Continent)



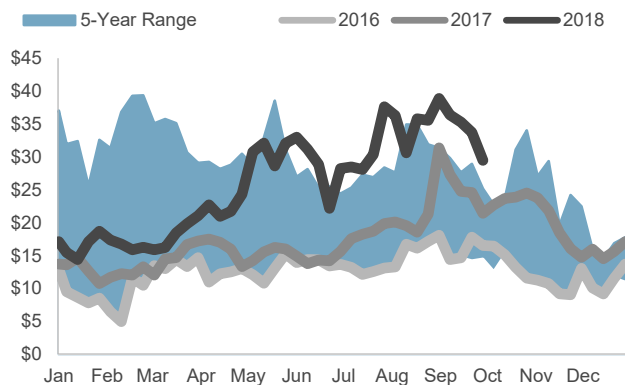
WTS Midland Crude (U.S. Gulf Coast)



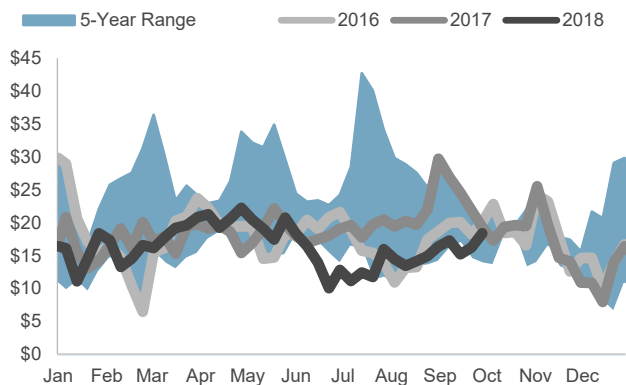
WTI Cushing ULSD (U.S. Gulf Coast)



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

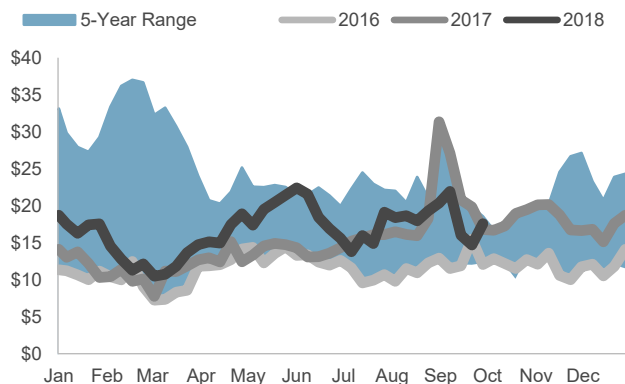


ANS (U.S. West Coast)

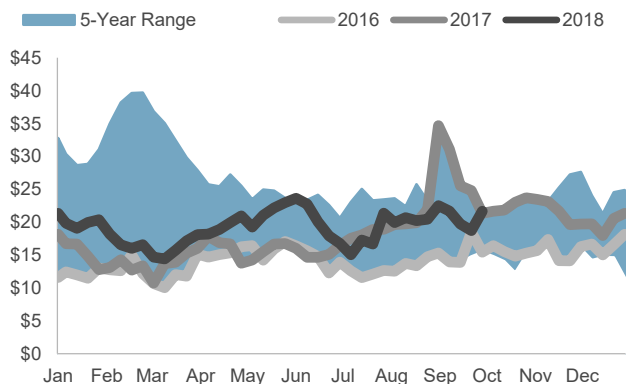


Refining – 2:1:1 Crack Spreads (\$/bbl) (cont.)

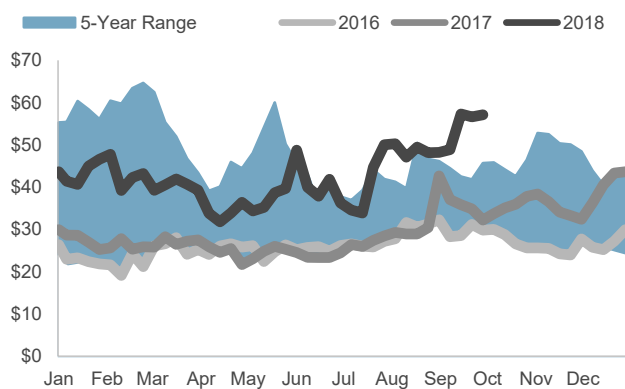
WTI Cushing (NYH RBOB Gasoline)



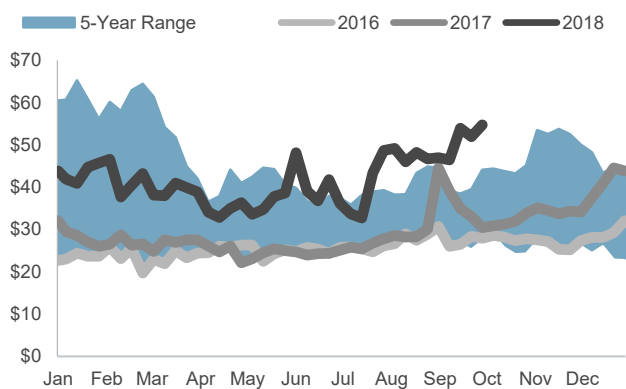
WTI Cushing ULSD (N.Y. Harbor)



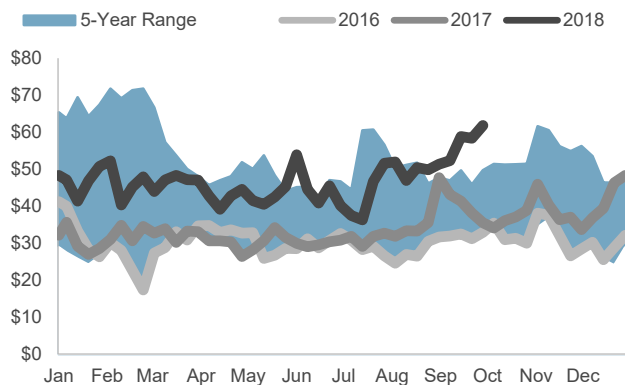
WCS (U.S. Mid-Continent)



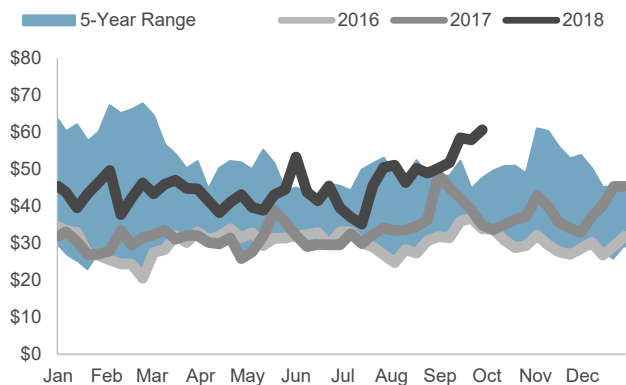
WCS (U.S. Gulf Coast)



WCS (U.S. West Coast)

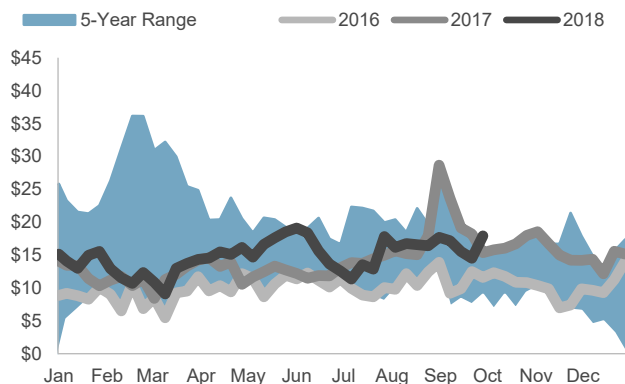


WCS (San Francisco)

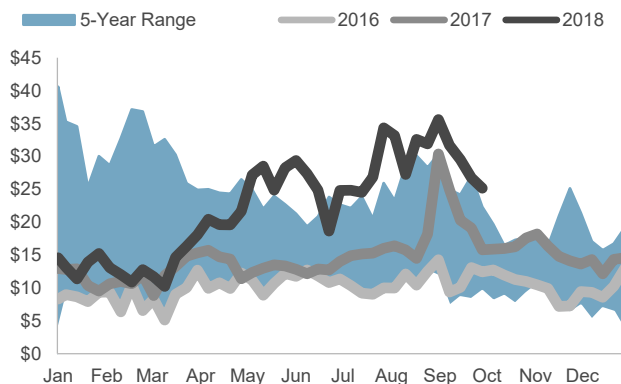


Refining – 5:3:2 Crack Spreads (\$/bbl)

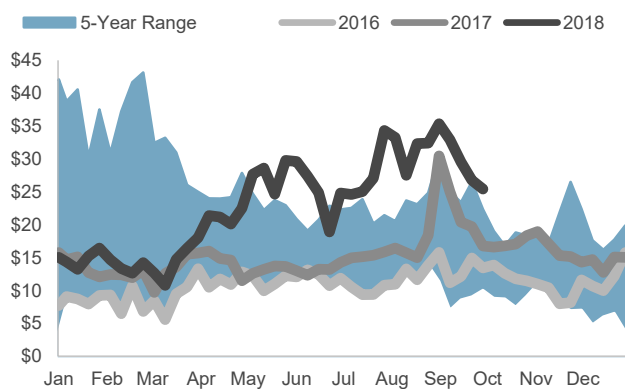
WTI Cushing (U.S. Gulf Coast)



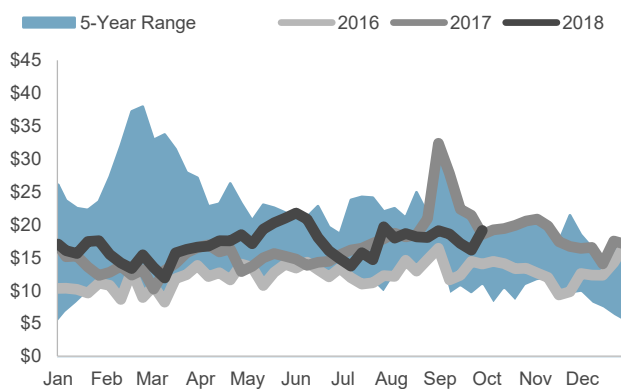
WTI Midland (U.S. Gulf Coast)



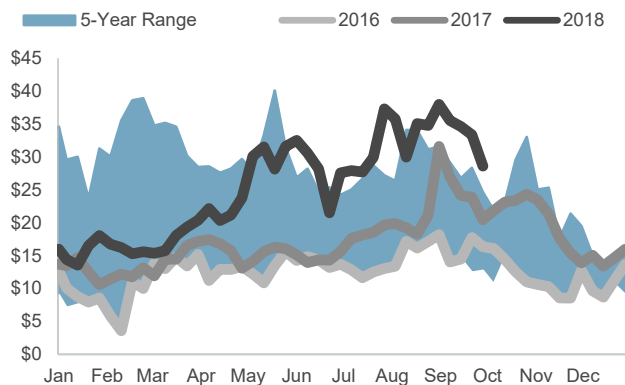
WTS (U.S. Gulf Coast)



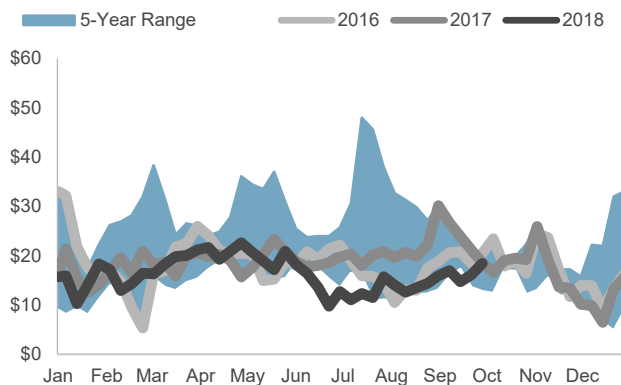
WTI Cushing ULSD (U.S. Gulf Coast)



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

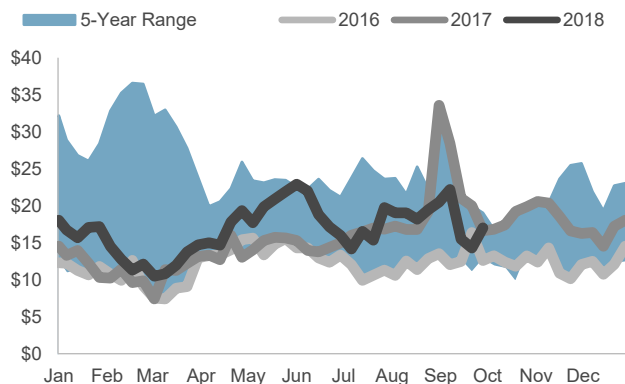


ANS (U.S. West Coast)

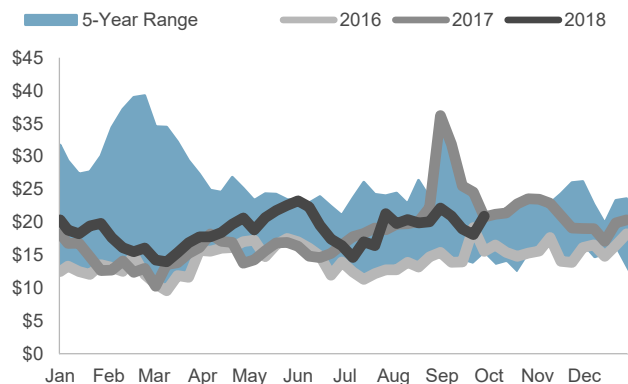


Refining – 5:3:2 Crack Spreads (\$/bbl) (cont.)

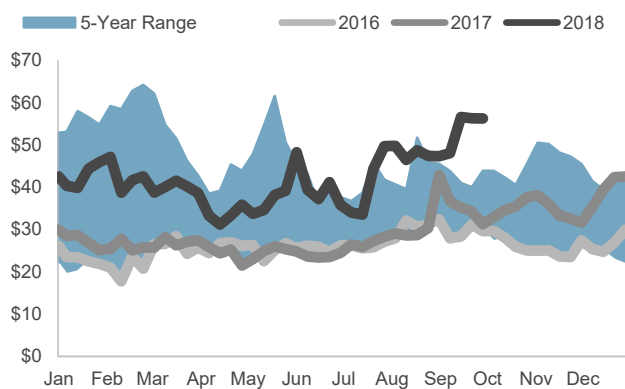
WTI Cushing (NYH RBOB Gasoline)



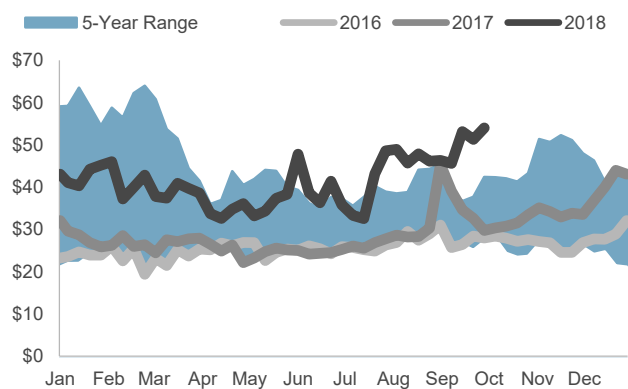
WTI Cushing ULSD (N.Y. Harbor)



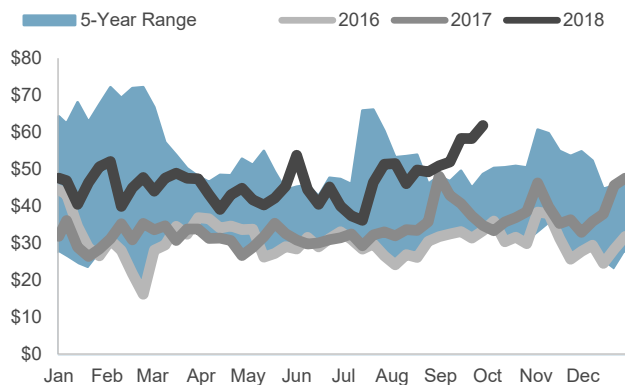
WCS (U.S. Mid-Continent)



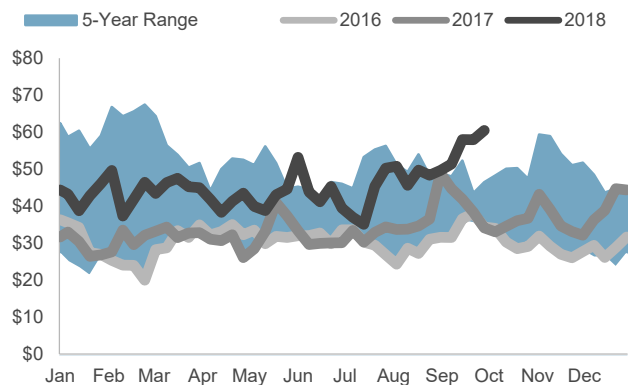
WCS (U.S. Gulf Coast)



WCS (U.S. West Coast)

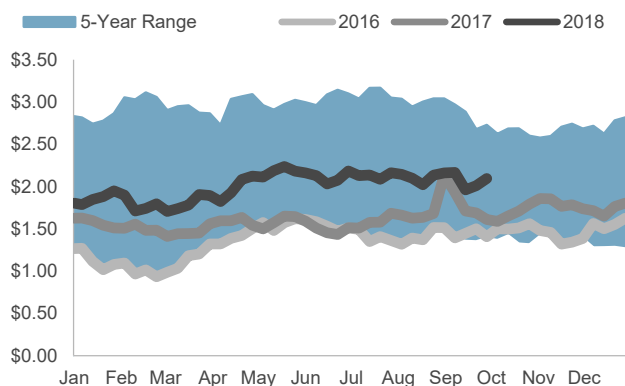


WCS (San Francisco)

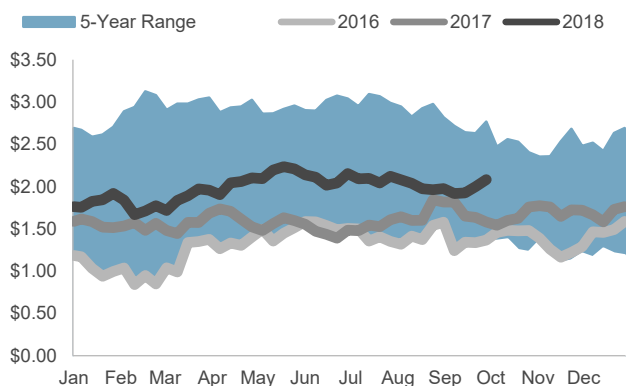


Refining – Product Prices (\$/gal)

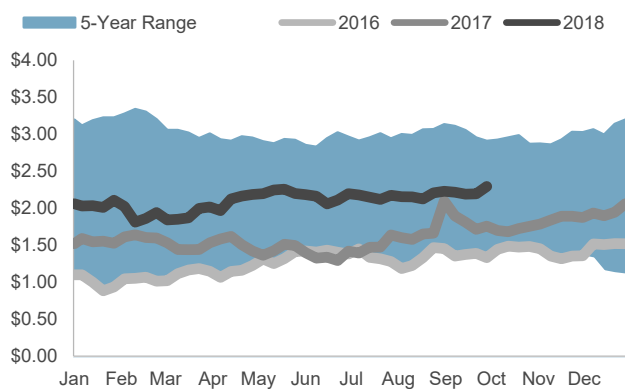
84 RBOB Gasoline (N.Y. Harbor)



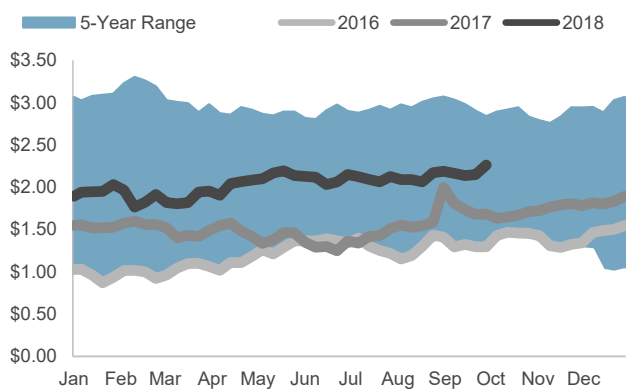
84 RBOB Gasoline (U.S. Gulf Coast)



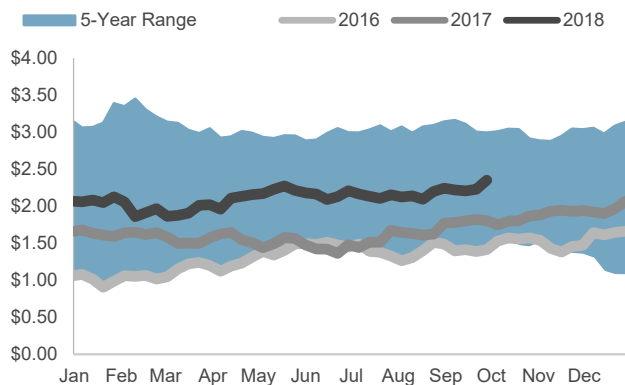
54-Grade Jet Fuel (N.Y. Harbor)



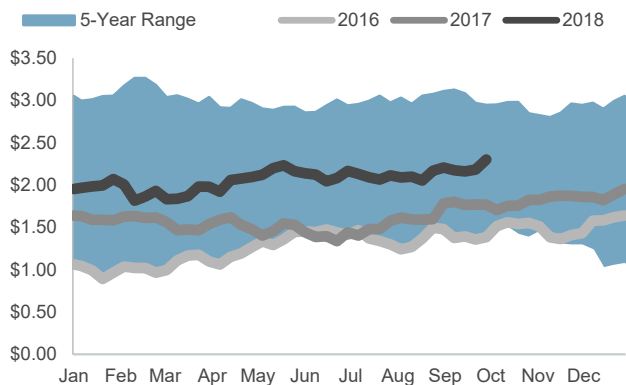
54-Grade Jet Fuel (U.S. Gulf Coast)



ULSD (N.Y. Harbor)



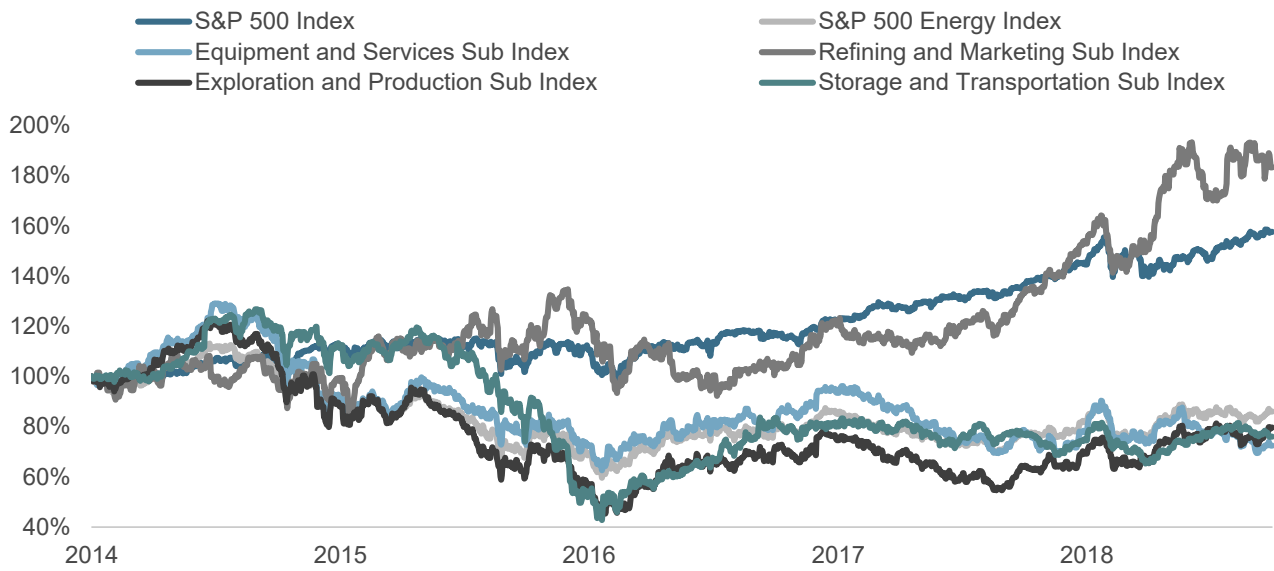
ULSD (U.S. Gulf Coast)



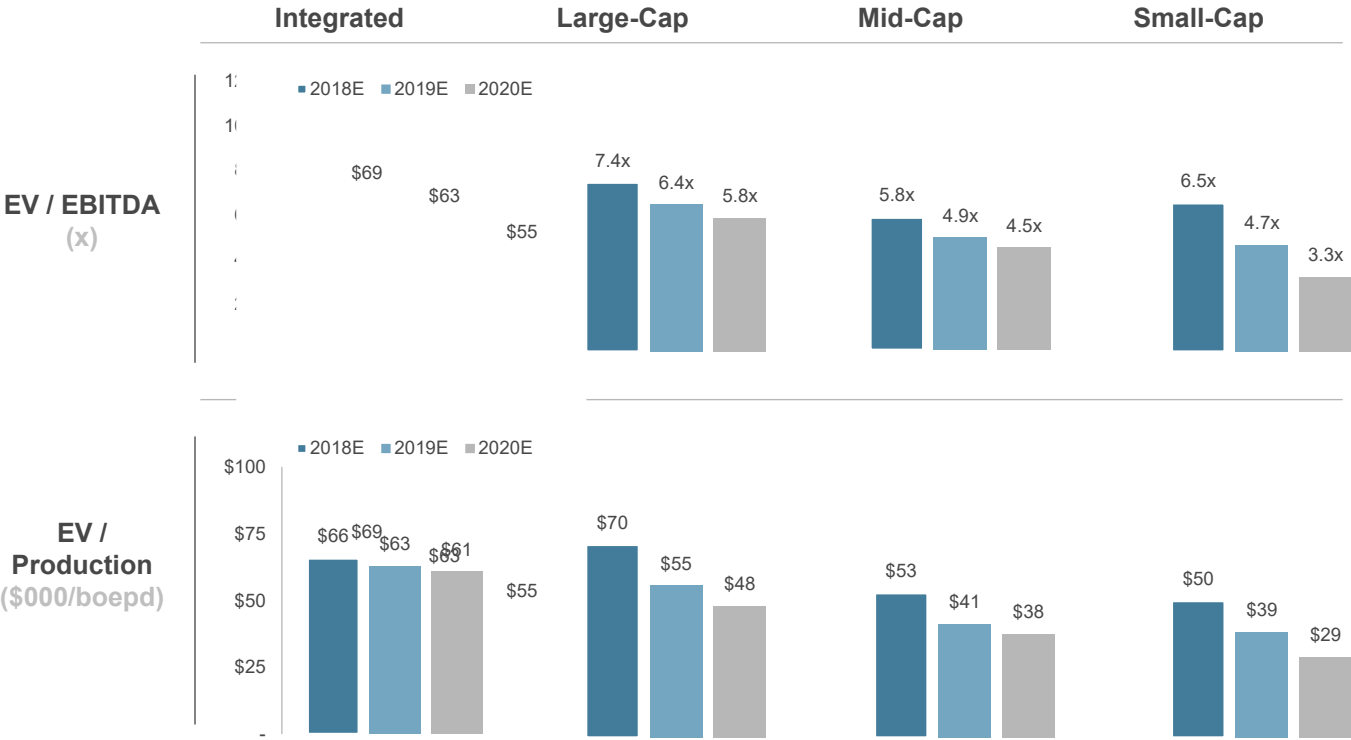
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Public Markets Overview

12 Months Indexed Stock Price Performance (Dec 01, 2014 = 100%)



Public E&P Company Trading Metrics



Note: Trading multipliers listed as at September 30, 2018, and Q as at September 30, 2018.

Source: S&P Capital IQ.

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E&P

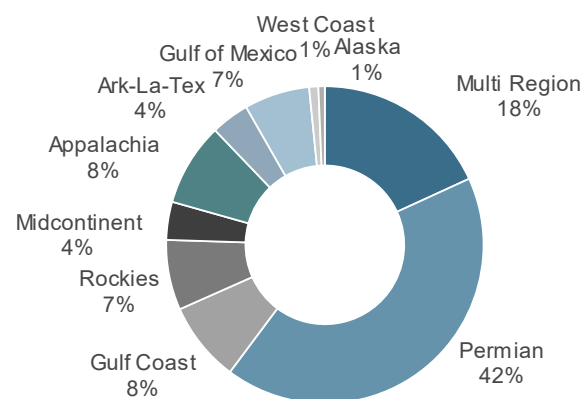
M&A (\$ in billions)

U.S. Region	2016	2017	September YTD		%Δ
			2017	2018	
Multi Region	\$2.0	\$1.1	\$0.7	\$11.5	NMF
Permian	29.6	24.6	23.1	26.6	15%
Gulf Coast	4.8	6.9	5.9	5.1	-12%
Rockies	7.4	11.9	8.1	4.5	-44%
Midcontinent	10.1	7.5	6.9	2.4	-64%
Appalachia	7.7	11.9	11.3	5.3	-53%
Ark-La-Tex	8.3	0.8	0.8	2.5	NMF
Gulf of Mexico	2.4	2.6	0.0	4.2	NMF
West Coast	0.8	0.8	0.8	0.6	-28%
Alaska	0.2	0.4	0.0	0.4	NMF
Total	\$73.2	\$68.5	\$57.6	\$63.2	10%

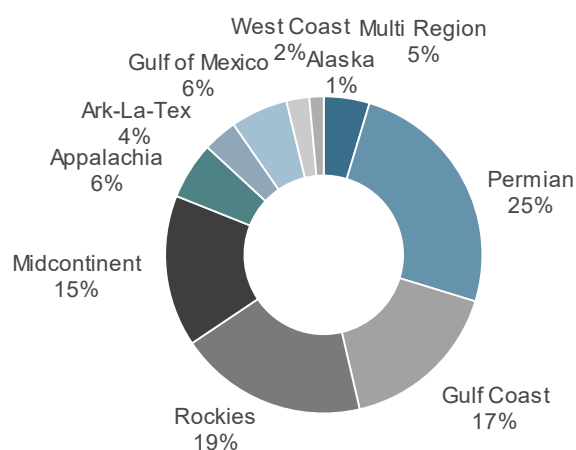
M&A (Deal Count)

U.S. Region	2016	2017	September YTD		%Δ
			2017	2018	
Multi Region	26	28	19	16	-16%
Permian	110	130	104	86	-17%
Gulf Coast	66	75	55	57	4%
Rockies	77	76	49	66	35%
Midcontinent	74	93	67	53	-21%
Appalachia	34	47	37	20	-46%
Ark-La-Tex	25	32	23	12	-48%
Gulf of Mexico	13	11	10	20	-100%
West Coast	6	11	10	8	-20%
Alaska	2	1	0	5	NMF
Total	433	504	374	343	-8%

M&A – 2018 (\$ in billions)



M&A – 2018 (Deal Count)

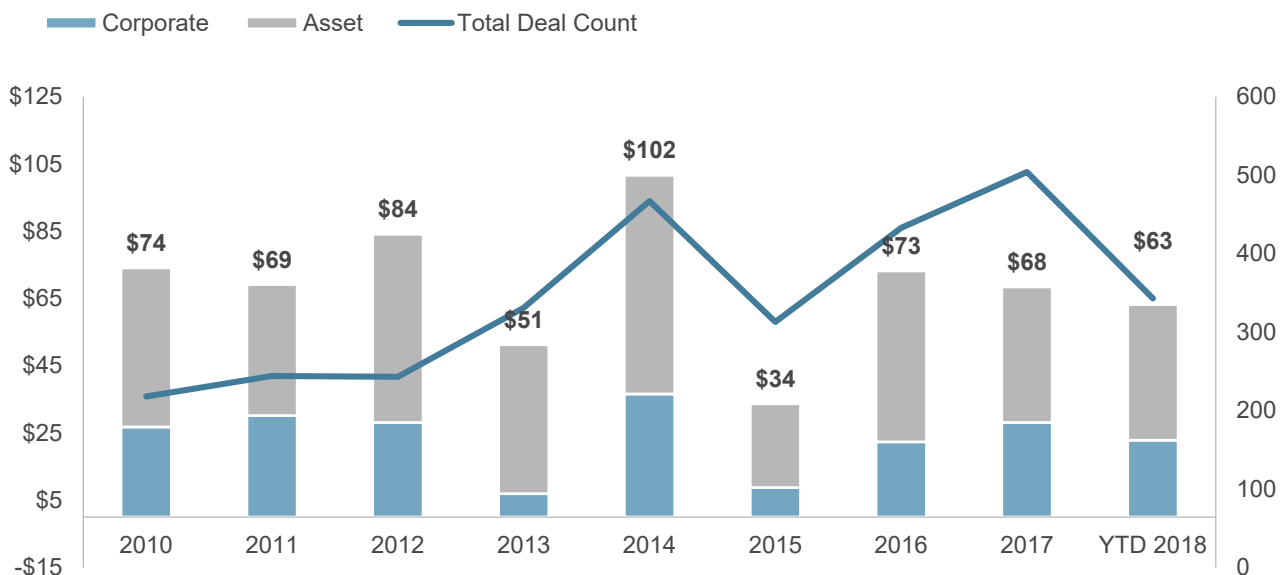


Note: All data as of September 30, 2018.

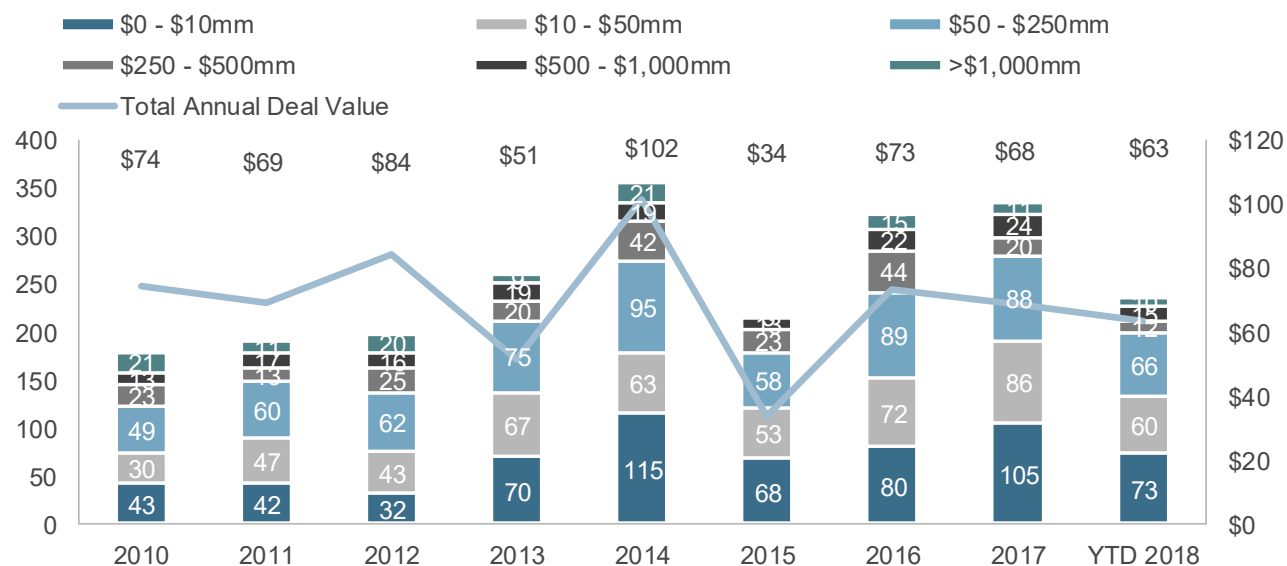
Source: PLS based on selection criteria of seller assets being located in the U.S.

Historical E&P Transaction Activity

U.S. Transactions Since 2010 (\$ in billions)



U.S. Transactions by Deal Size Since 2010⁽¹⁾ (\$ in billions)



Note: All data as of September 30, 2018.

Source: PLS based on selection criteria of seller assets being located in the U.S.

(1) Deal count excludes transactions without a publicly disclosed deal value.

OFS

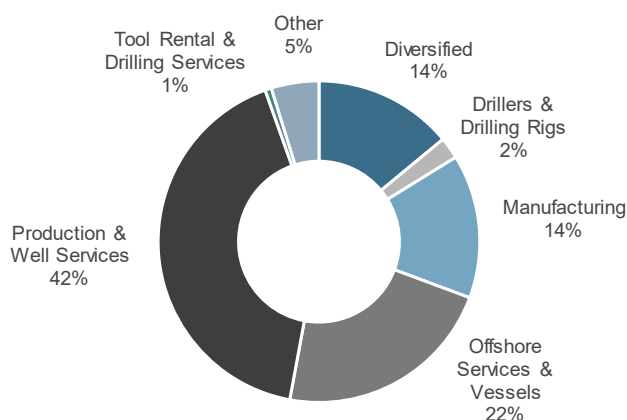
M&A (\$ in billions)

Segment	2016	2017	September YTD		%Δ
			2017	2018	
Diversified	33.1	4.6	4.1	2.2	-46%
Drillers	0.5	0.3	0.2	0.3	61%
Manufacturing	0.5	2.5	2.3	2.3	1%
Offshore Services	0.1	1.7	1.7	3.5	106%
Production & Well Services	1.2	9.8	7.6	6.6	-13%
Tool Rental & Drilling Services	0.0	1.0	1.0	0.1	-90%
Other	0.2	1.0	1.0	0.8	-25%
Total	\$35.8	\$20.9	\$17.8	\$15.8	-11%

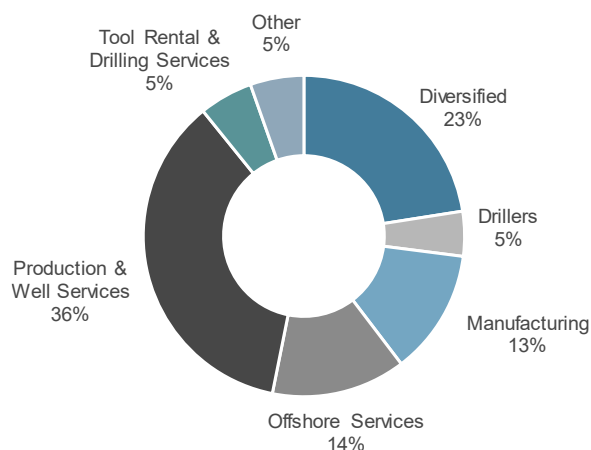
M&A (Deal Count)

Segment	2016	2017	September YTD		%Δ
			2017	2018	
Diversified	21	42	34	25	-26%
Drillers	6	7	4	5	25%
Manufacturing	27	35	30	14	-53%
Offshore Services	6	12	12	15	25%
Production & Well Services	41	67	43	40	-7%
Tool Rental & Drilling Services	9	15	12	6	-50%
Other	15	28	25	6	-76%
Total	125	206	160	111	-31%

M&A – 2018 (\$ in billions)



M&A – 2018 (Deal Count)



Note: All data as of September 30, 2018.

Source: IHS based on selection criteria of seller headquarters being located in the U.S.

Downstream

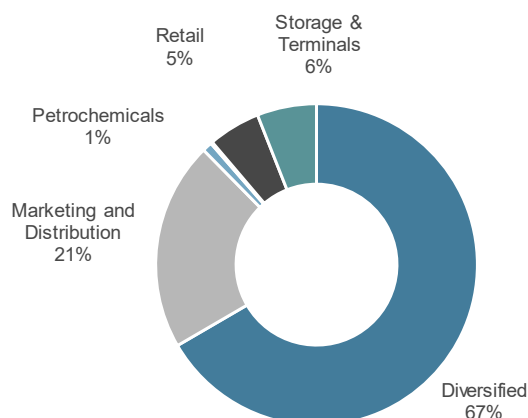
M&A (\$ in billions)

Segment	2016	2017	September YTD		%Δ
			2017	2018	
Biofuels	0.4	0.2	0.2	0.0	NMF
Diversified	6.8	10.7	9.4	33.9	260%
Marketing and Distribution	8.8	3.7	0.6	10.7	NMF
Petrochemicals	9.2	2.1	2.1	0.5	-76%
Refining	2.0	8.7	0.6	0.1	-83%
Retail	7.7	4.3	4.3	2.7	-38%
Storage & Terminals	2.1	10.3	9.4	3.0	-68%
Other	0.0	0.0	0.0	0.0	NMF
Total	\$37.0	\$39.9	\$26.6	\$51.0	92%

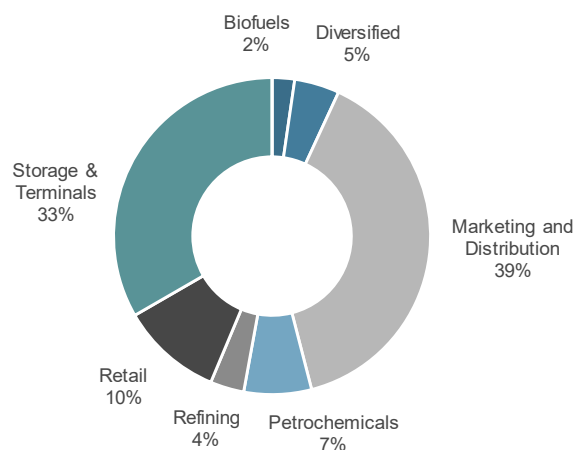
M&A (Deal Count)

Segment	2016	2017	September YTD		%Δ
			2017	2018	
Biofuels	7	2	1	2	NMF
Diversified	5	8	7	4	-43%
Marketing and Distribution	38	38	28	34	21%
Petrochemicals	12	7	7	6	-14%
Refining	17	7	4	3	-25%
Retail	24	13	10	9	-10%
Storage & Terminals	17	36	27	29	7%
Other	1	0	0	0	NMF
Total	121	111	84	87	4%

M&A – 2018 (\$ in billions)



M&A – 2018 (Deal Count)



Note: All data as of September 30, 2018.

Source: IHS based on selection criteria of seller headquarters being located in the U.S.

Midstream

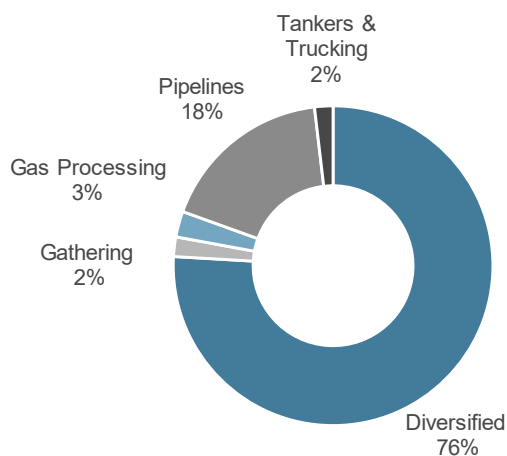
M&A (\$ in billions)

Segment	2016	2017	September YTD		%Δ
			2017	2018	
Diversified	25.5	56.8	43.6	111.0	154%
Gathering	2.9	4.2	3.2	2.9	-10%
Gas Processing	3.9	1.9	1.8	3.8	116%
Pipelines	118.4	7.9	7.1	25.8	264%
Tankers & Trucking	0.7	1.8	0.1	2.7	NMF
Total	\$151.4	\$72.6	\$55.7	\$146.2	162%

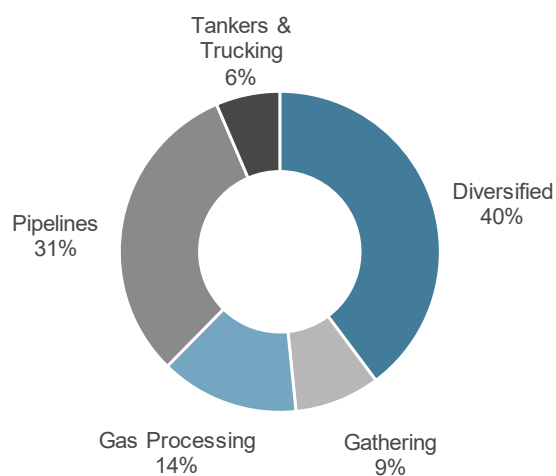
M&A (Deal Count)

Segment	2016	2017	September YTD		%Δ
			2017	2018	
Diversified	41	48	36	37	3%
Gathering	15	20	12	8	-33%
Gas Processing	13	10	9	13	44%
Pipelines	31	31	19	29	53%
Tankers & Trucking	7	6	3	6	100%
Total	107	115	79	93	18%

M&A – 2018 (\$ in billions)



M&A – 2018 (Deal Count)



Note: All data as of September 30, 2018.

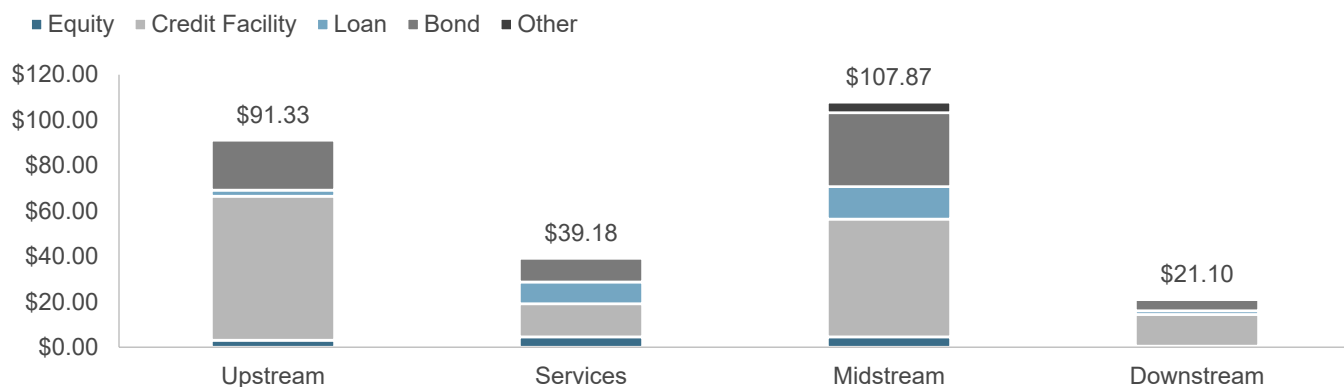
Source: IHS based on selection criteria of seller headquarters being located in the U.S.

Financing by Instrument (\$ in billions)

Financing by Instrument (\$ in billions)

Capital	2016	2017	September YTD		
			2017	2018	%Δ
Upstream					
Equity	\$31.7	\$10.9	\$8.7	\$3.1	-65%
Credit Facility	18.1	23.7	14.0	63.4	353%
Loan	7.4	4.7	4.6	2.7	-42%
Bond	41.1	34.5	28.0	22.1	-21%
Other	0.1	0.5	0.4	0.1	-80%
Total	\$98.5	\$74.2	\$55.8	\$91.3	64%
Services					
Equity	\$4.1	\$5.5	\$4.3	\$4.6	5%
Credit Facility	11.0	27.7	19.5	14.6	-25%
Loan	4.9	13.3	9.4	9.5	1%
Bond	10.5	8.5	3.6	10.5	188%
Other	0.6	0.1	0.1	0.0	-100%
Total	\$31.2	\$55.1	\$36.9	\$39.2	6%
Midstream					
Equity	\$14.2	\$17.3	\$11.8	\$4.5	-62%
Credit Facility	23.2	48.1	28.4	51.8	82%
Loan	5.5	7.1	4.3	14.3	231%
Bond	27.7	38.0	30.5	32.6	7%
Other	13.8	12.9	8.9	4.6	-48%
Total	\$84.4	\$123.3	\$84.0	\$107.9	28%
Downstream					
Equity	\$1.0	\$0.3	\$0.2	\$0.5	126%
Credit Facility	13.1	9.3	7.7	14.0	82%
Loan	5.3	2.6	2.6	1.6	-38%
Bond	8.3	3.7	2.4	5.0	108%
Other	0.9	0.0	0.0	0.1	NMF
Total	\$28.7	\$15.9	\$12.8	\$21.1	64%
Integrated					
Equity	\$2.0	\$2.3	\$2.3	\$0.0	-100%
Credit Facility	2.0	0.0	0.0	0.0	NMF
Loan	0.3	0.0	0.0	0.0	NMF
Bond	37.8	11.2	10.4	4.8	-54%
Other	0.0	0.0	0.0	0.0	NMF
Total	\$42.0	\$13.4	\$12.7	\$4.8	-62%
Grand Total	\$284.7	\$281.9	\$202.2	\$264.2	31%

Financing by Instrument – 2018 (\$ in billions)



Note: All data as of September 30, 2018.

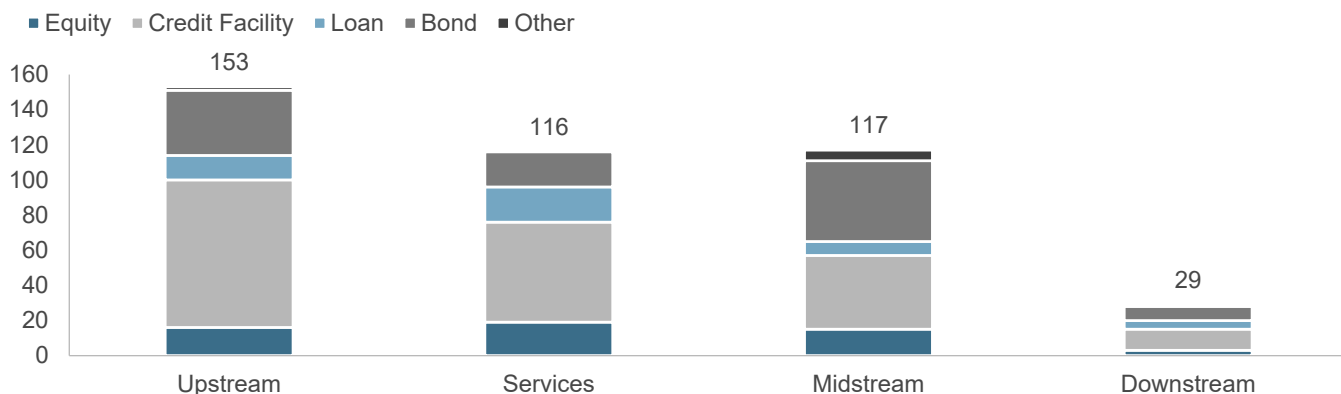
Source: PLS.

Financing by Instrument (Count)

Financing by Instrument (Count)

Capital	2016	2017	September YTD		%Δ
			2017	2018	
Upstream					
Equity	82	42	26	16	-38%
Credit Facility	39	28	18	84	367%
Loan	20	15	14	14	0%
Bond	63	55	40	37	-8%
Other	3	8	7	2	-71%
Total	207	148	105	153	46%
Services					
Equity	26	23	19	19	0%
Credit Facility	23	57	39	57	46%
Loan	20	36	27	20	-26%
Bond	20	15	10	20	100%
Other	7	2	2	0	-100%
Total	96	133	97	116	20%
Midstream					
Equity	35	44	31	15	-52%
Credit Facility	30	37	22	42	91%
Loan	17	17	11	8	-27%
Bond	45	60	45	46	2%
Other	28	25	21	6	-71%
Total	155	183	130	117	-10%
Downstream					
Equity	10	3	2	3	50%
Credit Facility	10	11	8	12	50%
Loan	17	3	3	5	67%
Bond	13	9	6	8	33%
Other	5	0	0	1	NMF
Total	55	26	19	29	53%
Integrated					
Equity	1	1	1	0	-100%
Credit Facility	4	0	0	0	NMF
Loan	1	0	0	0	NMF
Bond	32	17	16	6	-63%
Other	0	0	0	0	NMF
Total	38	18	17	6	-65%
Grand Total	551	508	368	421	14%

Financing by Instrument – 2018 (Deal Count)

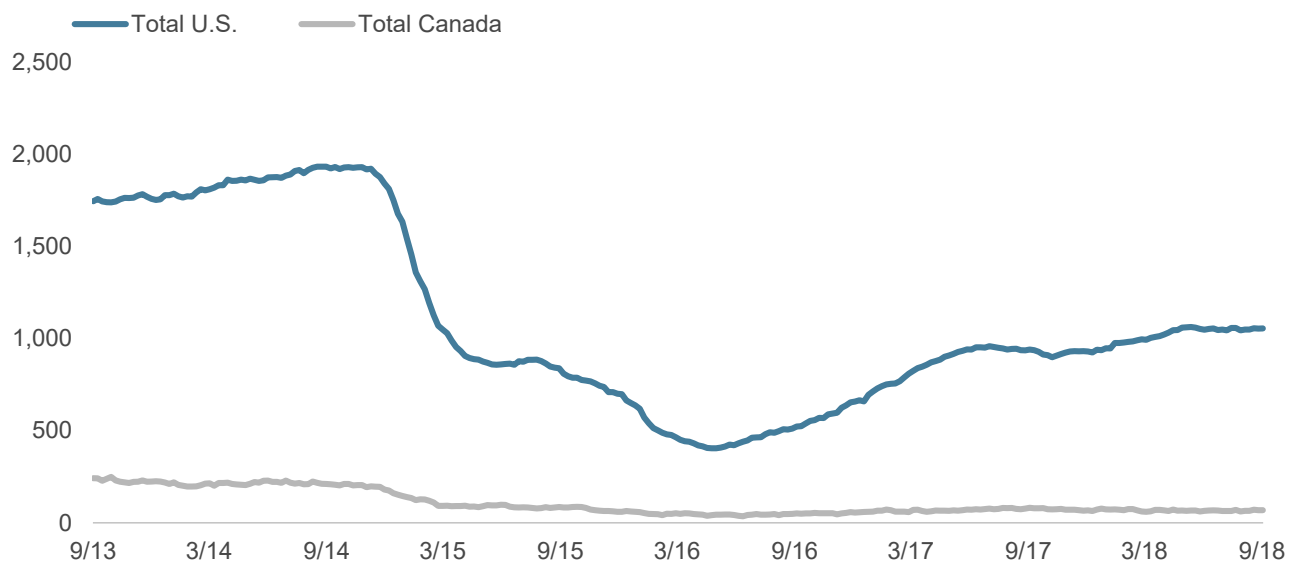


Note: All data as of September 30, 2018.
Source: PLS.

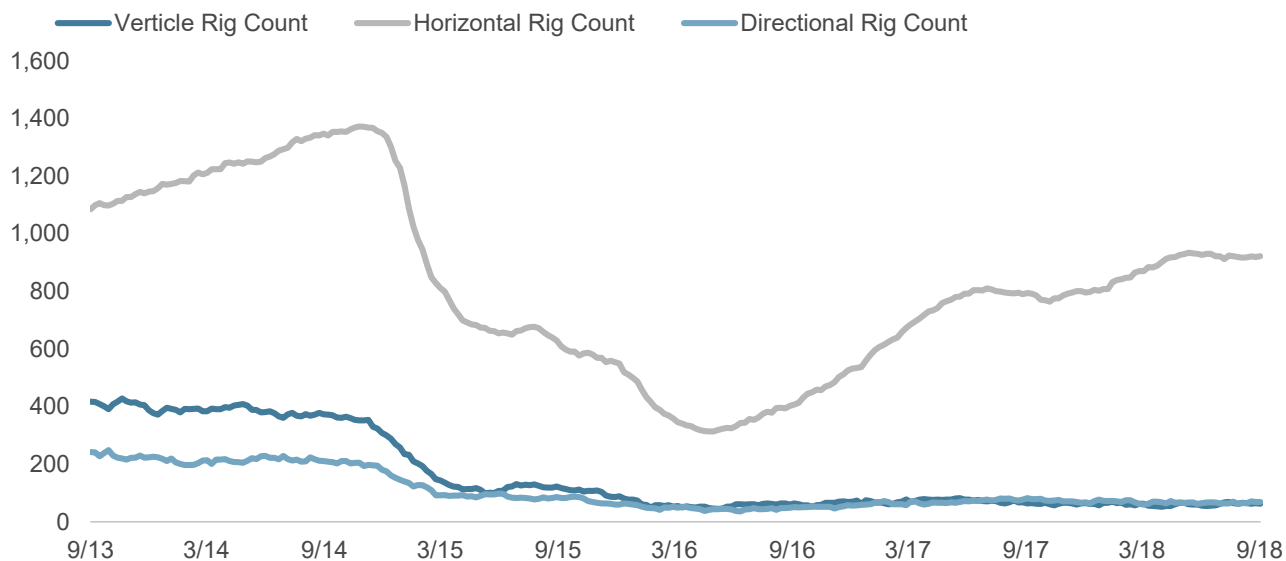
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Rigs

Total U.S. vs. Canada Rigs

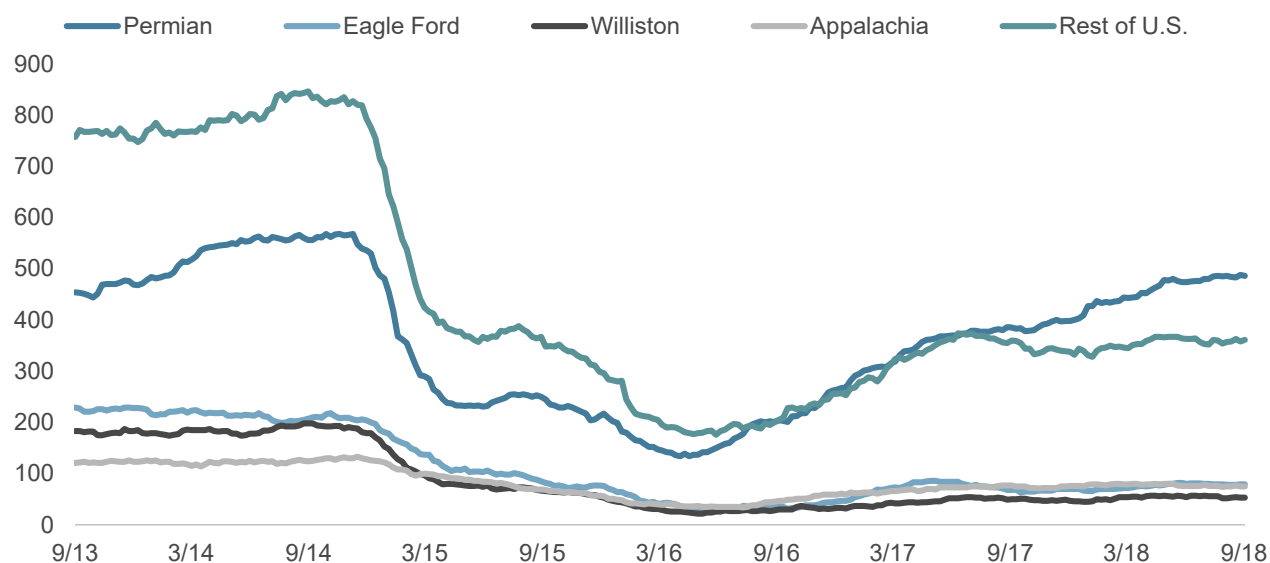


U.S. Rig Counts by Vertical, Horizontal, and Directional



Rigs (cont.)

U.S. Rigs by Regions

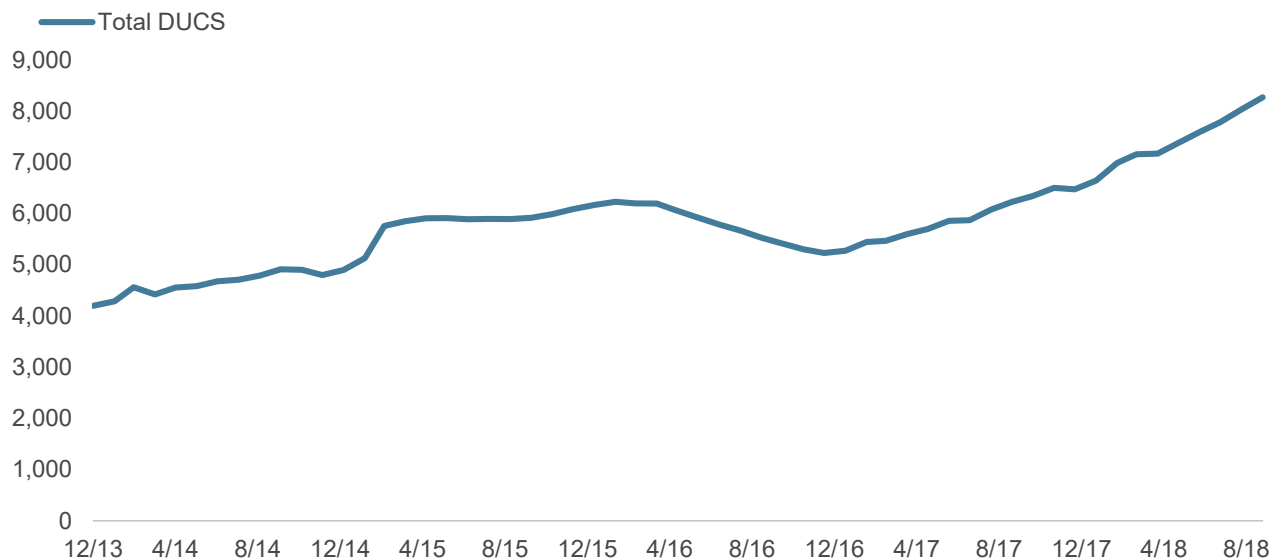


Change in Rig Counts

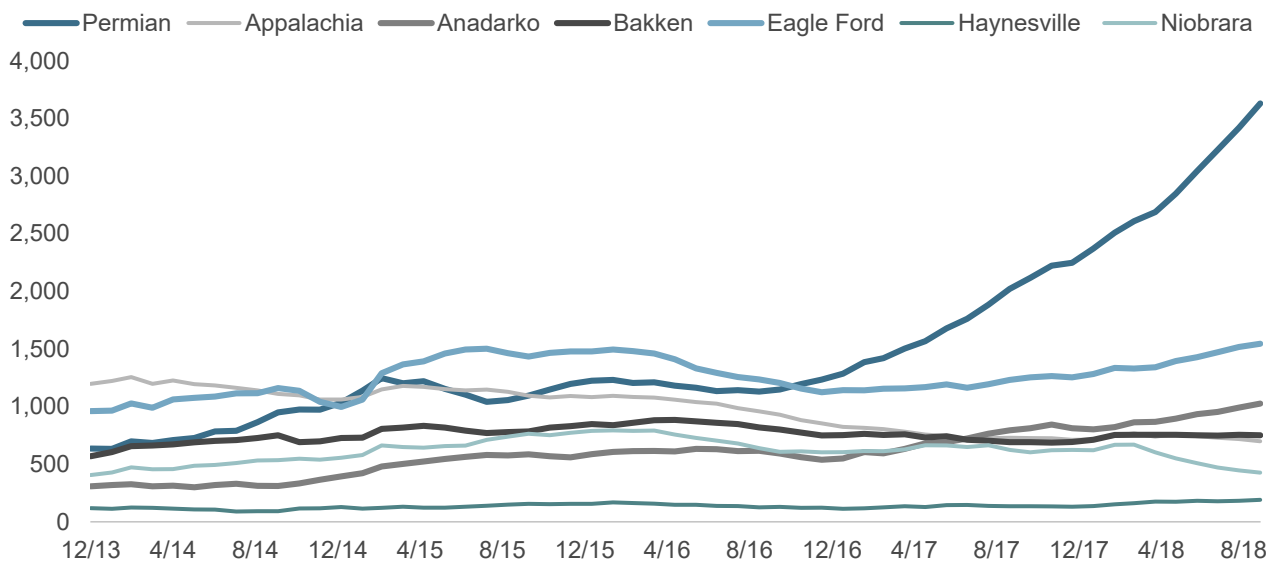
Region	9/30/2018	9/30/2017	6/30/2018	YoY % Change	QoQ % Change
Permian	486	385	474	26.2%	2.5%
Eagle Ford	79	68	80	16.2%	-1.3%
Williston	53	50	54	6.0%	-1.9%
Marcellus	55	47	53	17.0%	3.8%
Cana Woodford	67	62	74	8.1%	-9.5%
DJ Niobrara	28	25	26	12.0%	7.7%
Granite Walsh	13	13	16	0.0%	-18.8%
Haynesville	50	44	50	13.6%	0.0%
Utica	20	30	23	-33.3%	-13.0%
Rest of U.S.	203	216	197	-6.0%	3.0%
Total	1,054	940	1,047	12.1%	0.7%

Rigs (cont.)

Total U.S. DUCs



Total DUCs by Basin



Note: All data as of September 30, 2018. Data collected on a monthly basis and is subject to a one-month lag.
Source: Bloomberg.

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