



HOULIHAN LOKEY

Oil & Gas

Industry Update | Q4 2018



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Houlihan Lokey Oil & Gas Update

Dear Clients and Friends,

Houlihan Lokey is pleased to present its Oil & Gas Industry Update for Q4 2018.

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,



A handwritten signature in black ink, appearing to read 'J.P. Hanson'.

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A handwritten signature in black ink, appearing to read 'Robert Teigman'.

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Key Quarterly Trends

- Like we have witnessed so many times before, as go commodity prices, so goes regular way transaction volume...
 - For instance, with WTI spot prices above \$70/bbl and HH peaking above \$4.50, there erupted a flurry of activity—so much that total announced U.S. upstream transaction value reached a record high of \$84 billion in FY 2018 with corporate M&A transactions in Q4 2018 leading the way (~70% of all transactions).
 - Notable transactions such as the Chesapeake Energy stock acquisition of WildHorse Resources and Encana/Newfield have closed while several others, including Cimarex/Resolute and Denbury/Penn Virginia still hang in the balance and a few others have been cancelled, including the Vantage SPAC's acquisition of QEP's Williston acreage and the Earthstone/Sabalo acquisition.
- The heartening perspective is that we in this industry have been there and lived through the cycles before—if used properly, these periods of commodity price softness can encourage us to become more creative in our approach, more thoughtful about the path ahead and hopefully better prepared for whatever the future holds; decision-making through both the robust and soft cycles is just one part of what makes this industry so attractive and fascinating on so many fronts.
 - Corporate-level M&A interest continues to be driven by, among other things:
 - 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;
 - private equity desire for access to public markets (i.e., reverse mergers);
 - companies seeking to delever by merging into companies with better balance sheets; and
 - shareholders seeking near-term cash flow returns rather than production growth.
- Activism as a means for shareholders' to openly voice their views in an effort to alter operations and influence share price has continued to gain momentum, including recent activity by Elliott Capital's public bid for QEP, Fir Tree Capital shining a light on Halcon Resources' operating and management expenses and Kimmeridge encouraging PDC Energy to adjust its operating business plan.
- There are currently an estimated \$39 billion of upstream assets for sale, of which approximately half is in the Permian, including a couple of anticipated large M&A&D transactions such as Endeavor Energy Resources and the various BP packages in the San Juan, Wamsutter, and Arkoma, among other basins.
- Oil & Gas investor mindset from 2018 has continued into 2019 as cash flow becomes king again, particularly in upstream, which has resulted in paring back of capital expenditures, lessening of corporate costs and exceed cash flows as the shift towards shareholder-friendly policies continues.
 - Whether and to what extent this continues in 2019, in a lower commodity price environment, is a key question.
 - Upstream capital discipline and lower 2019 prices are unlikely to be a positive for oilfield services companies.
- All of this with the backdrop of the United States surpassing Russia and Saudi Arabia to become the world's largest crude oil producer earlier in 2018, based on estimates from the EIA.
- Brent crude oil averaged \$72/barrel in 2018, and WTI averaged \$65/barrel. Highs of \$85/barrel and \$76/barrel were reached on October 3 for Brent and WTI, respectively. However, driven in part by the strong onset of U.S. production increases, Brent and WTI ended the year at \$54/barrel and \$45/barrel, respectively.
 - That said, current price levels are not likely sustainable, particularly as production has come off in Libya, Venezuela, the province of Alberta, Canada has instituted aggregate cuts of 325,000 bpd and Saudi Arabia has curtailed production to encourage higher global prices.
 - A number of E&P companies have announced revised plans for 2019 in response to fourth quarter commodity price movements.
- All in all, times in the oil & gas industry remain in a constant state of change, which excitingly leaves us optimistically pushing towards the return of headier times.

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

Corporate Finance

2018 M&A Advisory Rankings All U.S. Transactions

Advisor	Deals
1 Houlihan Lokey	207
2 Goldman Sachs & Co	197
3 JP Morgan	154
4 Morgan Stanley	135
5 Jefferies LLC	117

Source: Thomson Reuters

Financial Restructuring

2018 Global Distressed Debt & Bankruptcy Restructuring Rankings

Advisor	Deals
1 Houlihan Lokey	63
2 PJT Partners Inc.	45
3* Moelis & Co.	36
3* Lazard	36
3* Rothschild & Co.	36

Source: Thomson Reuters
* Denotes tie

Financial Advisory

1999 to 2018 Global M&A Fairness Advisory Rankings

Advisor	Deals
1 Houlihan Lokey	1,073
2 JP Morgan	971
3 Duff & Phelps	728
4 Bank of America Merrill Lynch	660
5 Morgan Stanley	659

Source: Thomson Reuters. Announced or completed transactions.

No. 1 U.S. M&A Advisor

Top 10 Global M&A Advisor

Leading Capital Markets Advisor

No. 1 Global Investment
Banking Restructuring Advisor

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

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 50+ dedicated financial professionals, including specialized bankers, A&D/technical advisory, valuation, and capital markets teams.

J.P. 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

Ahmed Moussa
Financial Analyst

Valuation/ Diligence

Andrew Sandberg
Vice President

Michael Sicari
Financial Analyst

Houston

Banking/ Coverage

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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

Chulley Bogle
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

Brett Lowrey
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

Mike Giffin
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 17 oil and gas engagements
 - 15 relate to upstream/E&P companies
 - 13 relate to A&D/corporate M&A and/or associated transaction opinions

Veteran Leadership Team

- Oil and gas 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⁾

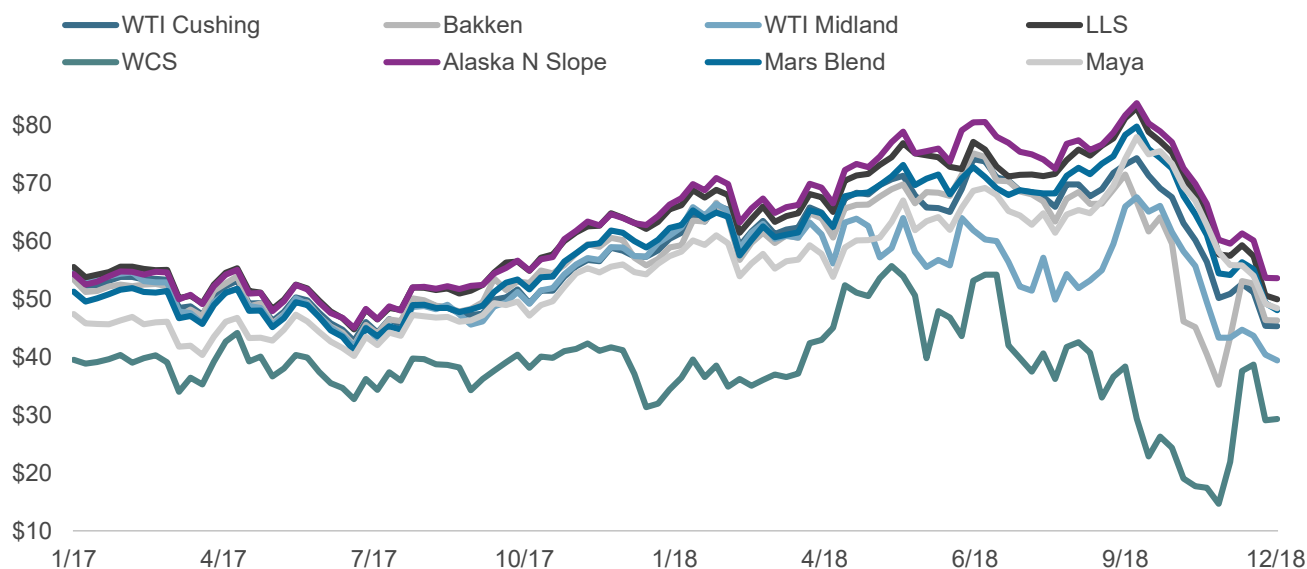
 Cox Operating LLC has acquired Company Advisor	Project Garnet is currently pursuing capital markets financing Company Advisor	Project Cascade is currently pursuing a sellside process for its California assets Sellside Advisor	Project Lion is currently pursuing joint venture capital and a sellside process 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 sold its Fayetteville Shale E&P and related midstream gathering assets to Flywheel Energy, LLC, a private company backed by Kayne Private Energy Income Funds Fairness Opinion	 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. Tombstones included herein represent transactions closed from 2016 forward.

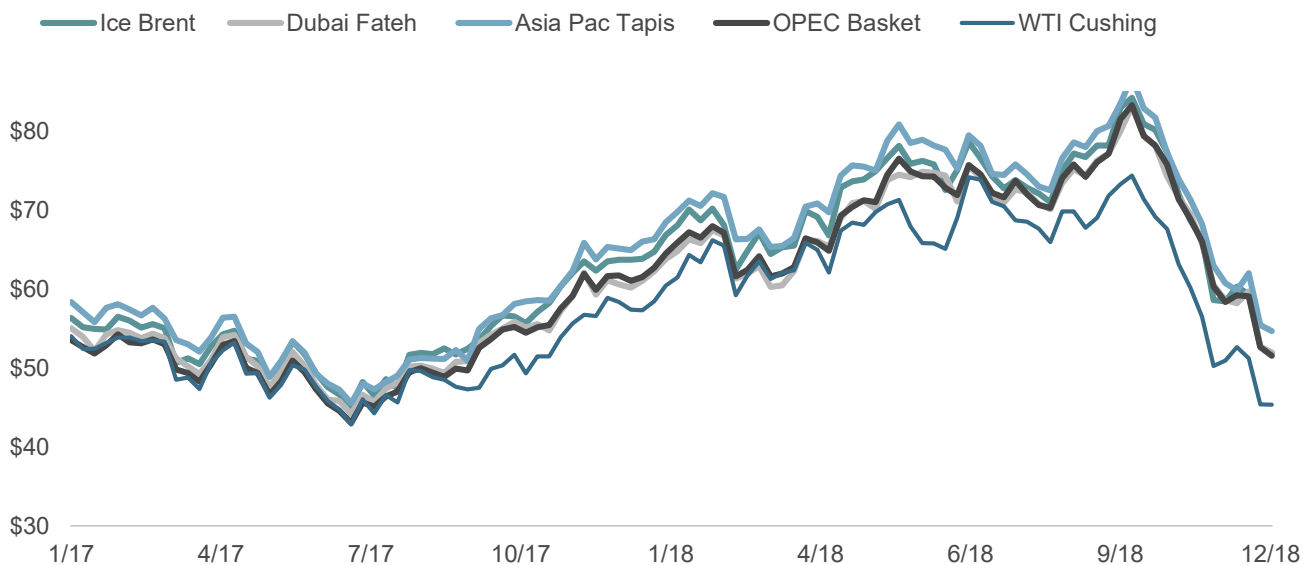
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Spot Pricing

North American Spot Prices (\$/bbl)

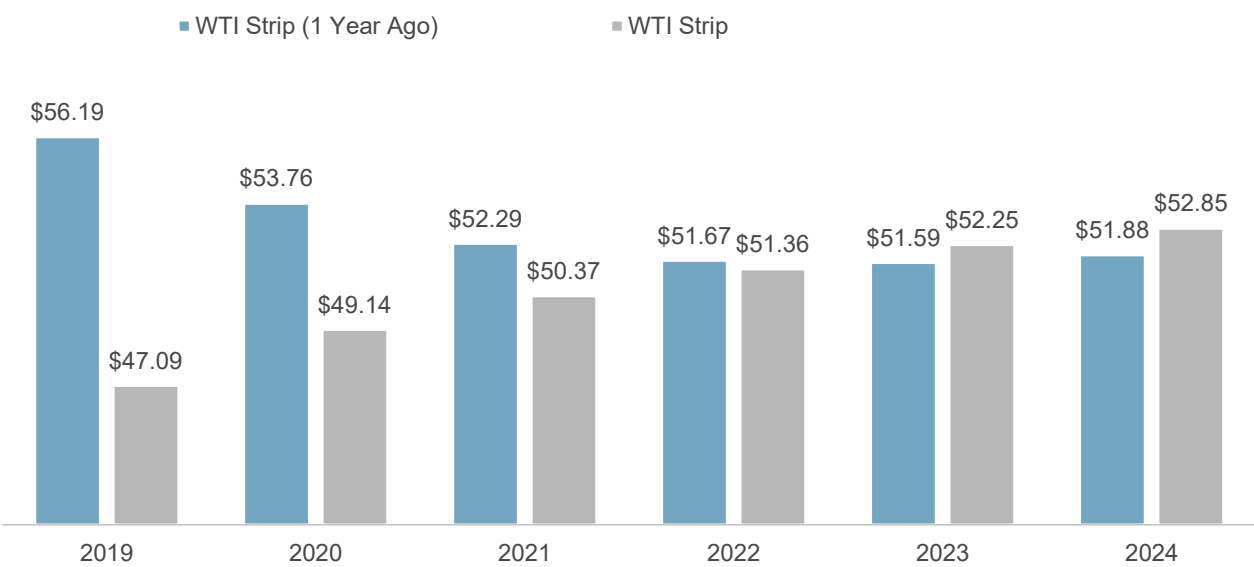


International Spot Prices (\$/bbl)

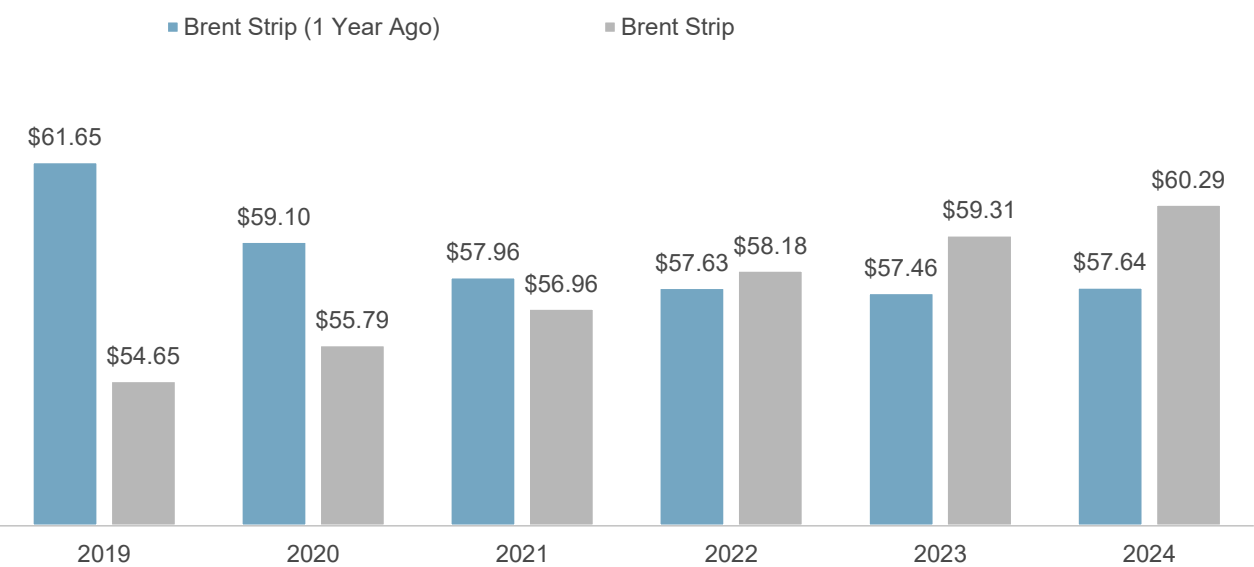


Strip Pricing

WTI Cushing Strip Pricing Comparison (\$/bbl)



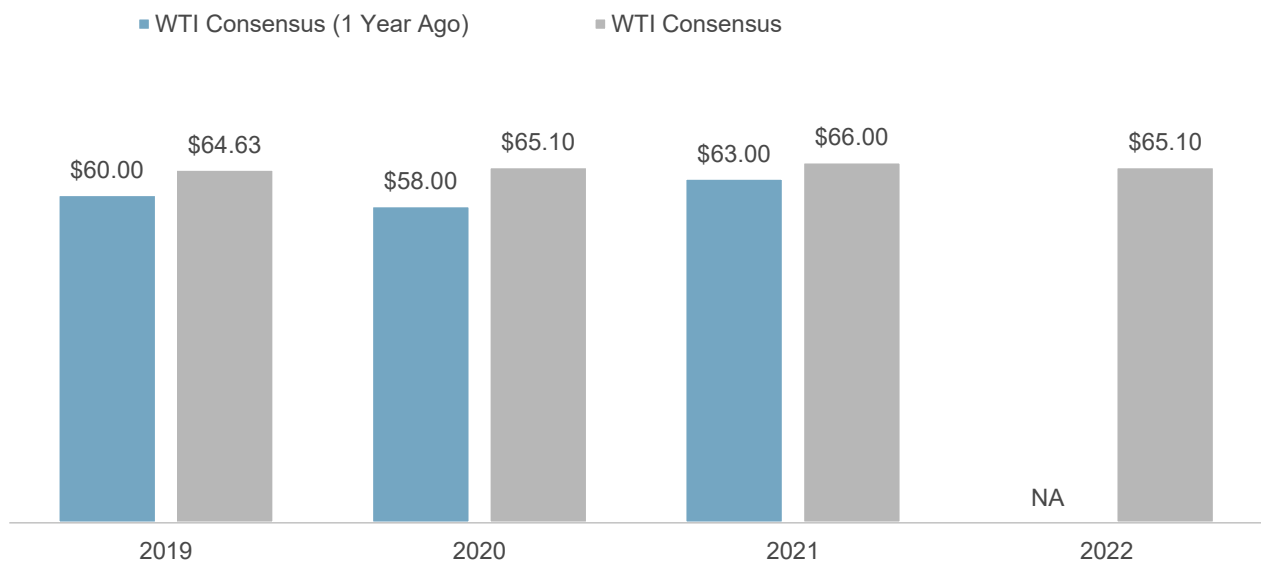
Brent Strip Pricing Comparison (\$/bbl)



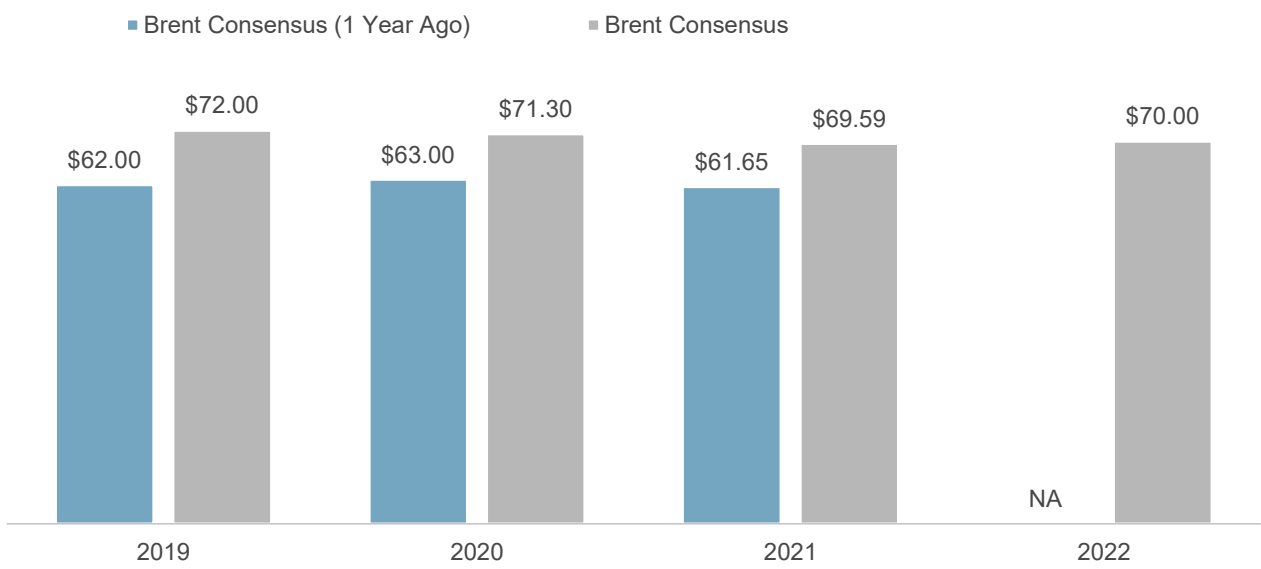
Note: All data as of December 31, 2018. Represents the average price for the remainder of 2019 and each year thereafter.
Source: Bloomberg.

Consensus Pricing

WTI Cushing Consensus Pricing Comparison (\$/bbl)



Brent Consensus Pricing Comparison (\$/bbl)



Differentials

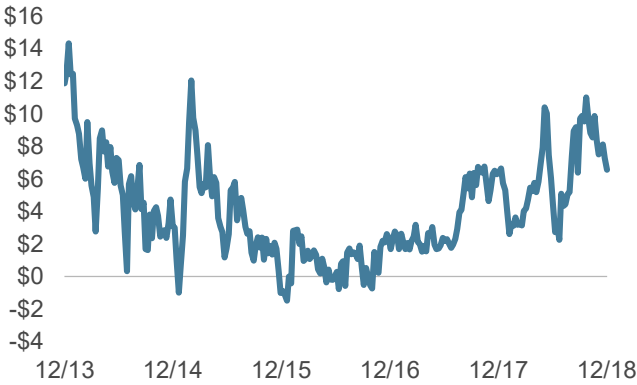
Regional Crude Oil Spot Pricing

Region	12/31/2018	12/31/2017	9/30/2018	YoY % Change	QoQ % Change
Brent	\$53.2	\$66.8	\$83.0	-20.4%	-35.9%
<i>Brent – WTI Cushing</i>	\$7.8	\$6.4	\$9.7		
WTI Cushing	\$45.4	\$60.4	\$73.3	-24.8%	-38.0%
<i>WTI Cushing – Brent</i>	(\$7.8)	(\$6.4)	(\$9.7)		
WTI Midland	\$40.4	\$61.0	\$66.0	-33.7%	-38.8%
<i>WTI Cushing – WTI Midland</i>	\$5.0	(\$0.5)	\$7.3		
Bakken	\$46.4	\$58.9	\$71.5	-21.2%	-35.1%
<i>WTI Cushing – Bakken</i>	(\$1.0)	\$1.5	\$1.8		
Eagle Ford Light	\$42.3	\$56.8	\$69.8	-25.6%	-39.4%
<i>WTI Cushing – Eagle Ford Light</i>	\$3.2	\$3.7	\$3.5		
WTS	\$40.2	\$60.5	\$65.8	-33.6%	-38.9%
<i>WTI Cushing – WTS</i>	\$5.3	(\$0.1)	\$7.5		
WCS	\$29.7	\$34.4	\$38.4	-13.8%	-22.7%
<i>WTI Cushing – WCS</i>	\$15.8	\$26.0	\$34.9		
Maya	\$48.9	\$57.4	\$74.2	-14.8%	-34.1%
<i>Maya – WCS</i>	\$19.3	\$23.0	\$35.9		
Mars	\$48.3	\$62.3	\$78.4	-22.5%	-38.4%
<i>WTI Cushing – Mars</i>	(\$2.9)	(\$1.9)	(\$5.1)		
LLS	\$50.6	\$65.5	\$81.3	-22.8%	-37.8%
<i>LLS – Maya</i>	\$1.6	\$8.0	\$7.0		
ANS	\$53.4	\$66.3	\$81.8	-19.5%	-34.7%
<i>Brent – ANS</i>	(\$0.2)	\$0.5	\$1.2		

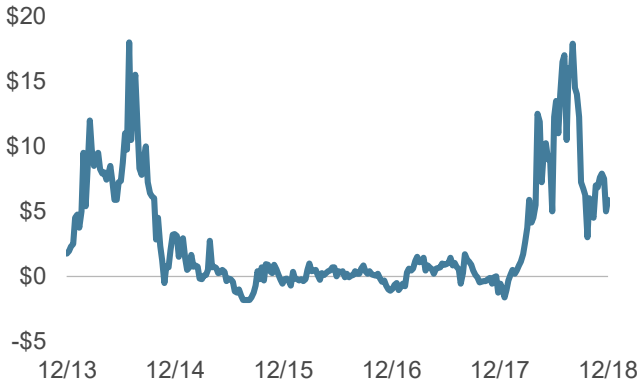
Note: All data as of December 31, 2018. Data collected on a daily basis.
Source: Bloomberg.

Differentials (\$/bbl)

Brent – WTI Cushing



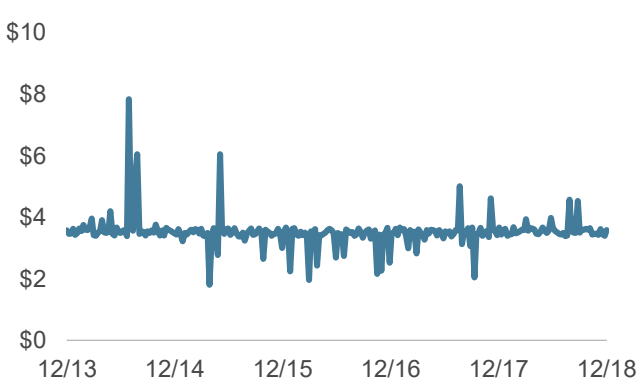
WTI Cushing – WTI Midland



WTI Cushing – WTI Bakken Clearbrook



WTI Cushing – Eagle Ford Light



WTI Cushing – WTS



WTI Cushing – WCS



*Note: All data as of December 31, 2018. Data collected on a weekly basis.
Source: Bloomberg.*

Differentials (\$/bbl) (cont.)

WTI Cushing – Maya



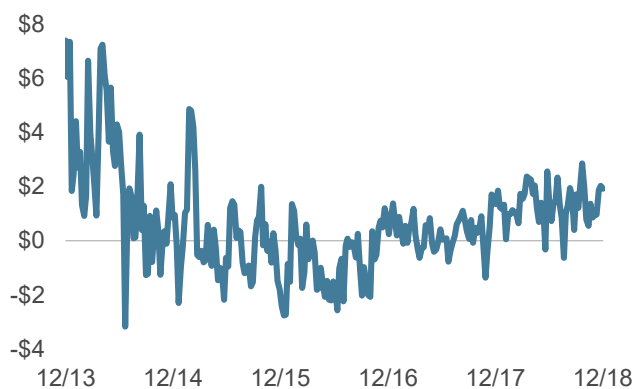
WTI Cushing – Mars



LLS – WTI Cushing



Brent – LLS



LLS – Mars



Bakken – ANS

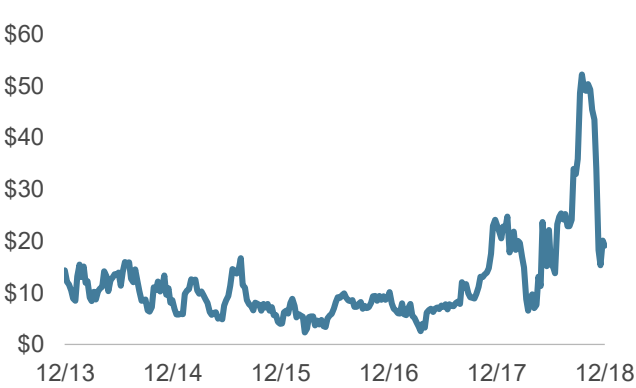


Differentials (\$/bbl) (cont.)

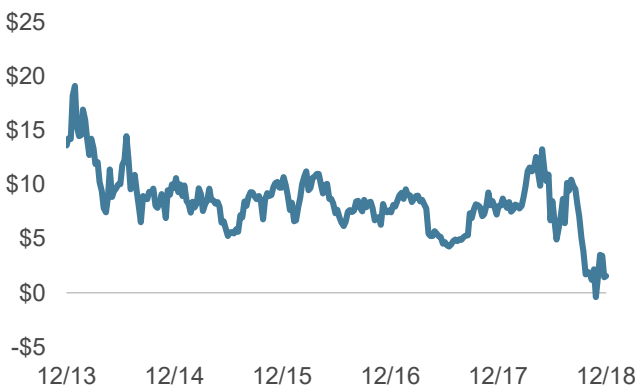
Brent – ANS



Maya – WCS



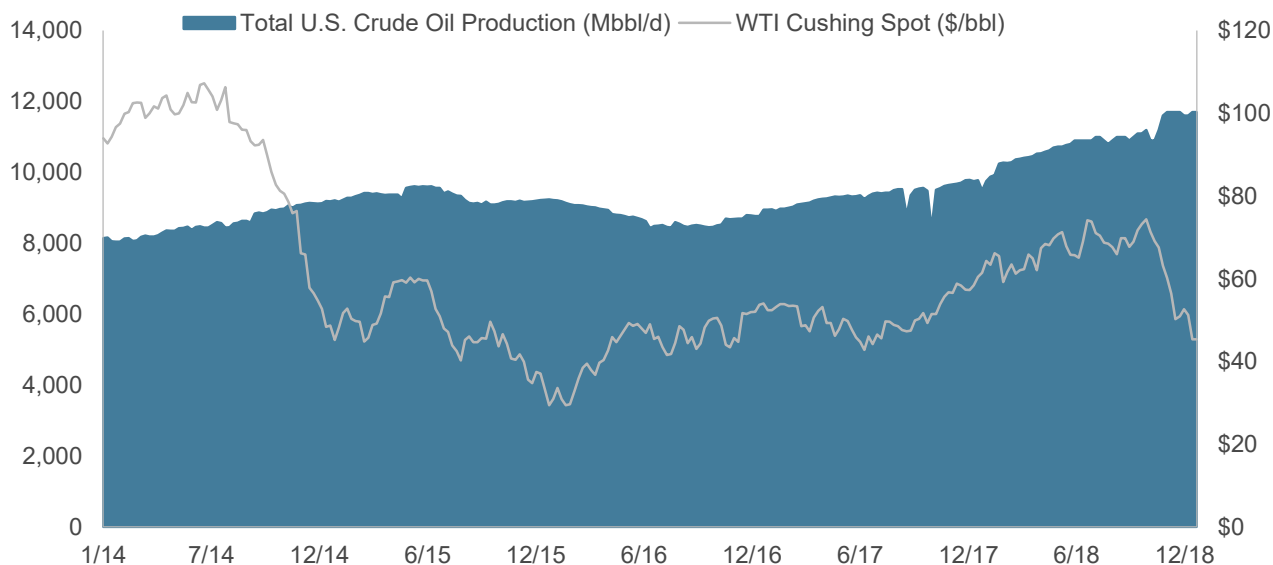
LLS – Maya



Note: All data as of December 31, 2018. Data collected on a weekly basis.
Source: Bloomberg.

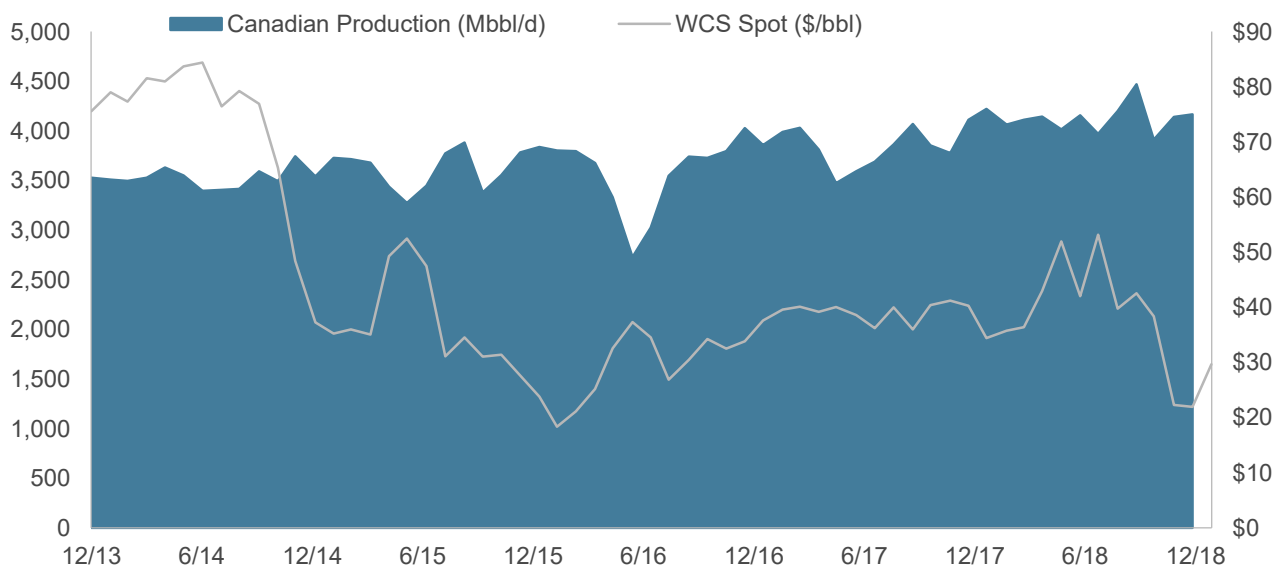
Production

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.

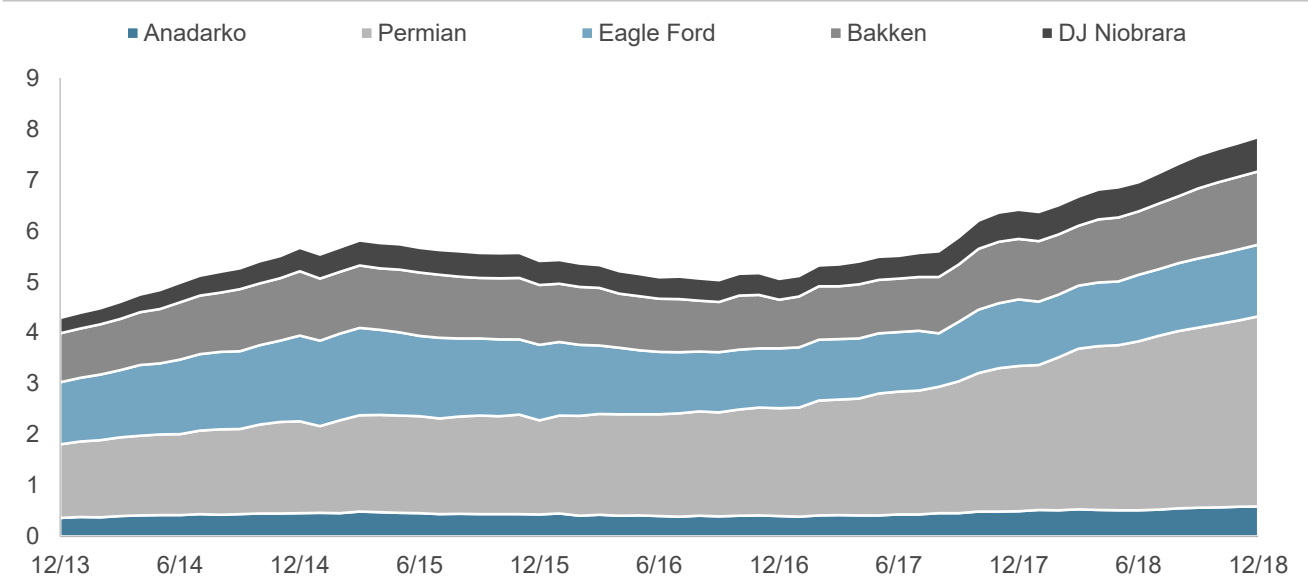
Canadian Production (Mbbbl/d) vs. WCS (\$/bbl)



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⁾



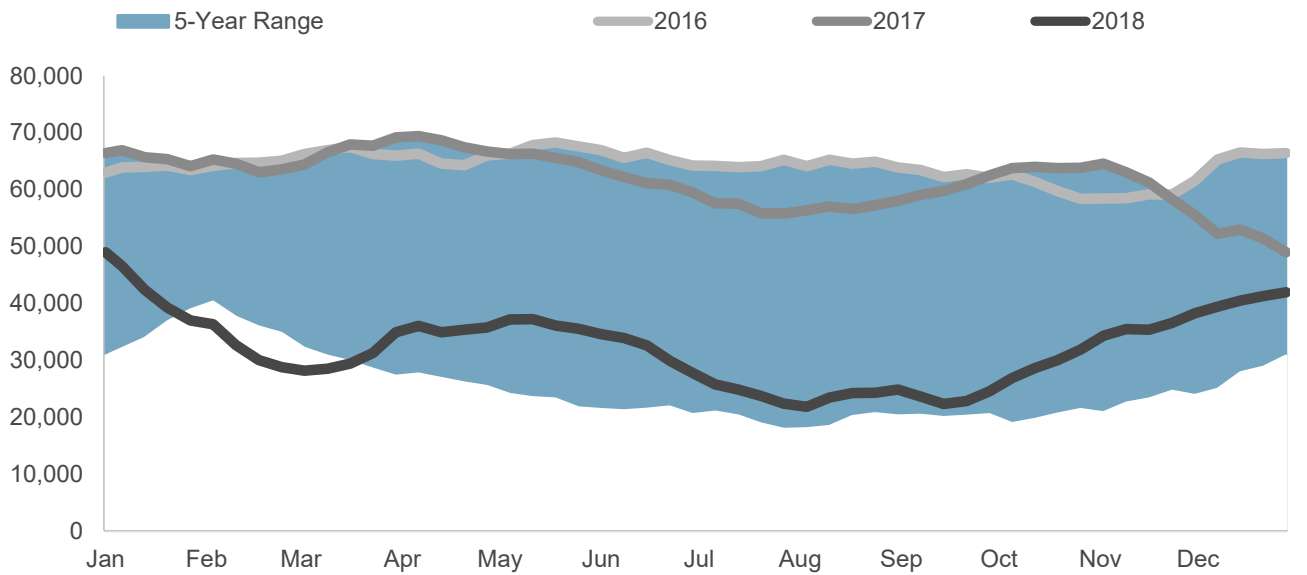
Note: All data as of December 31, 2018. Data collected on a monthly basis.

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.

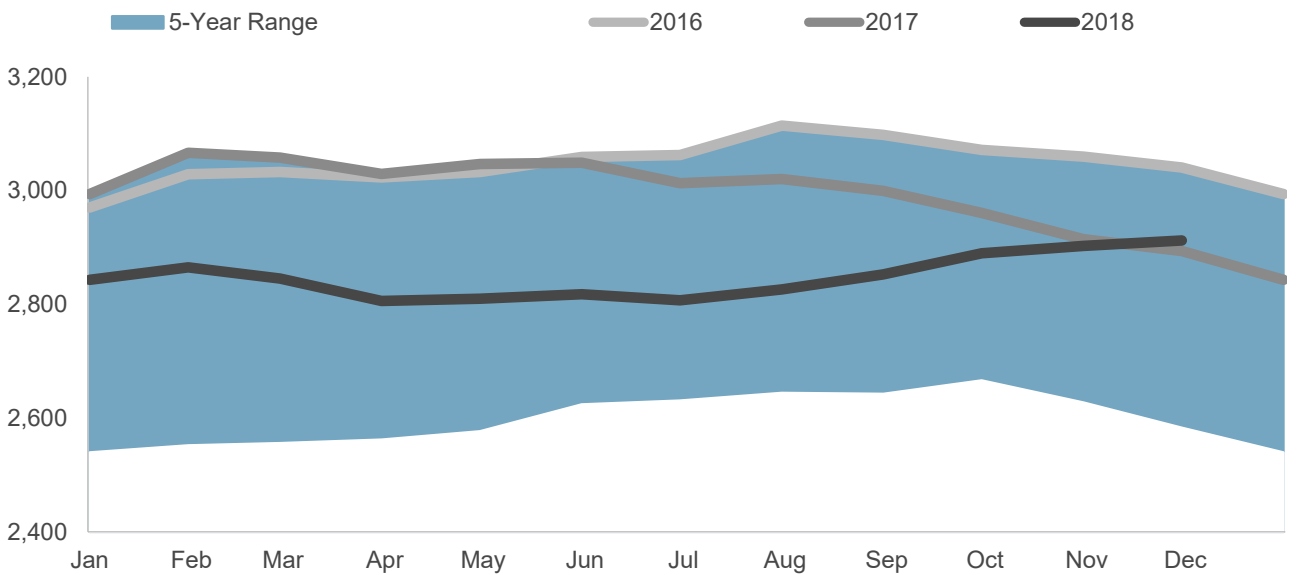
Inventory

U.S. Cushing Crude Inventory (Mbbl)



Note: Data collected on a weekly basis.

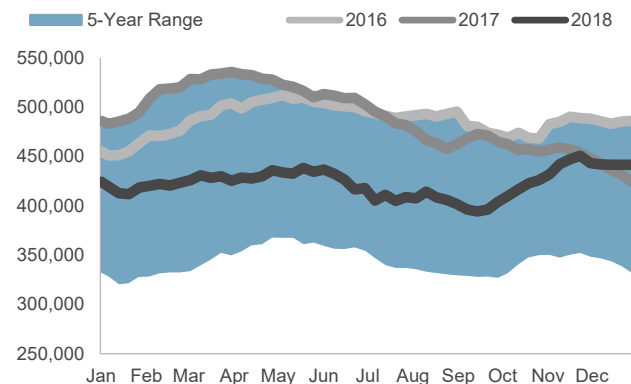
OECD Commercial Inventories (MMbbl)



Note: Data collected on a monthly basis.

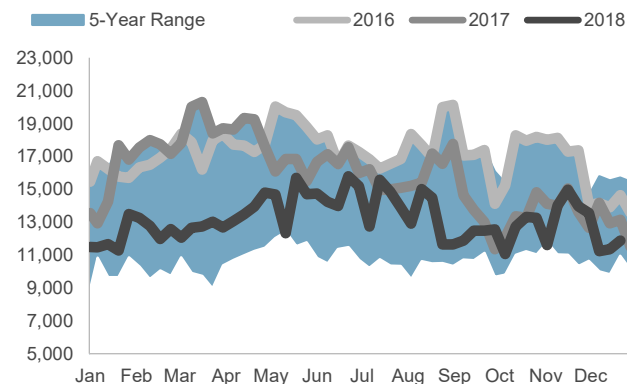
Inventory (Mbbbl)

Overall U.S. Crude Inventory

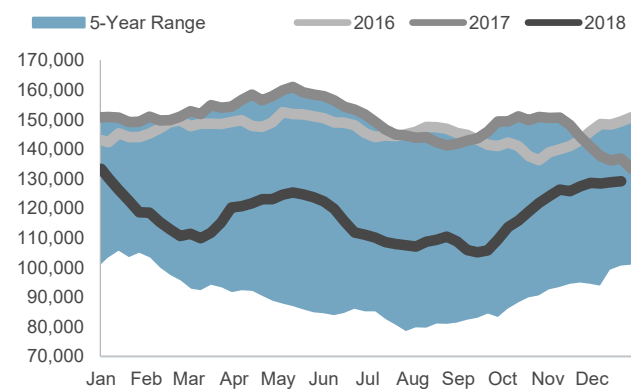


Note: Excludes strategic petroleum reserve (SPR).

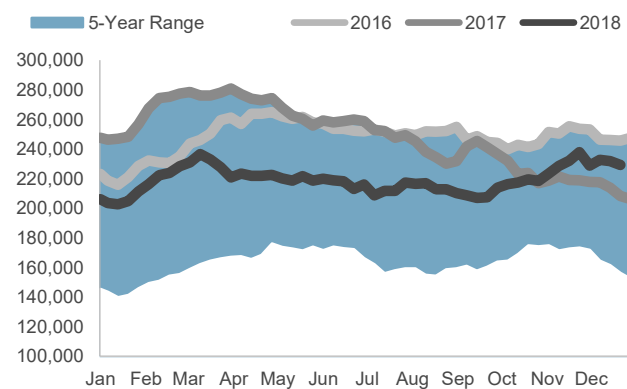
PADD I



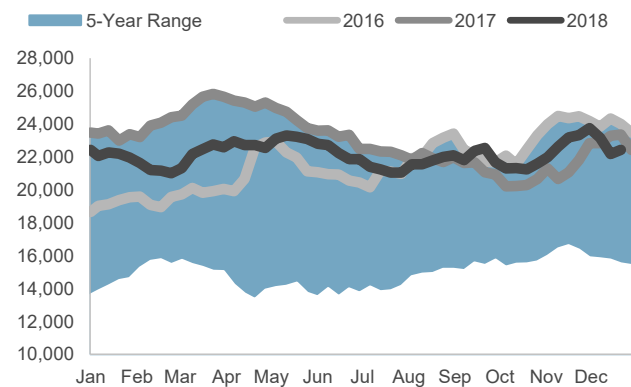
PADD II



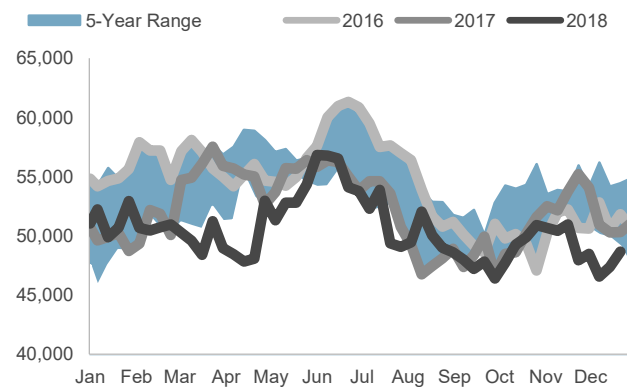
PADD III



PADD IV

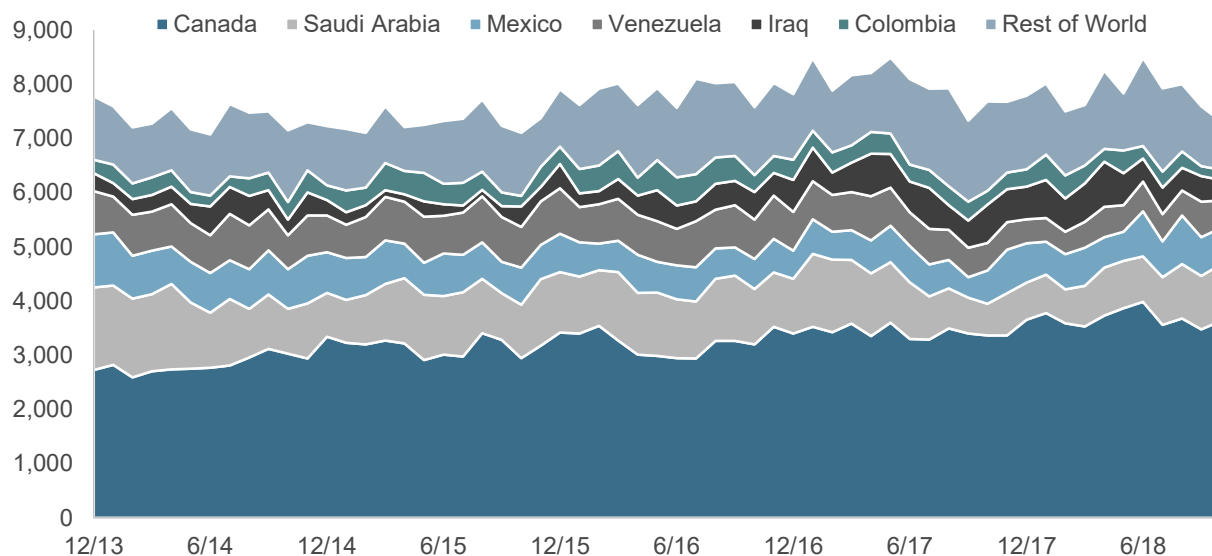


PADD V



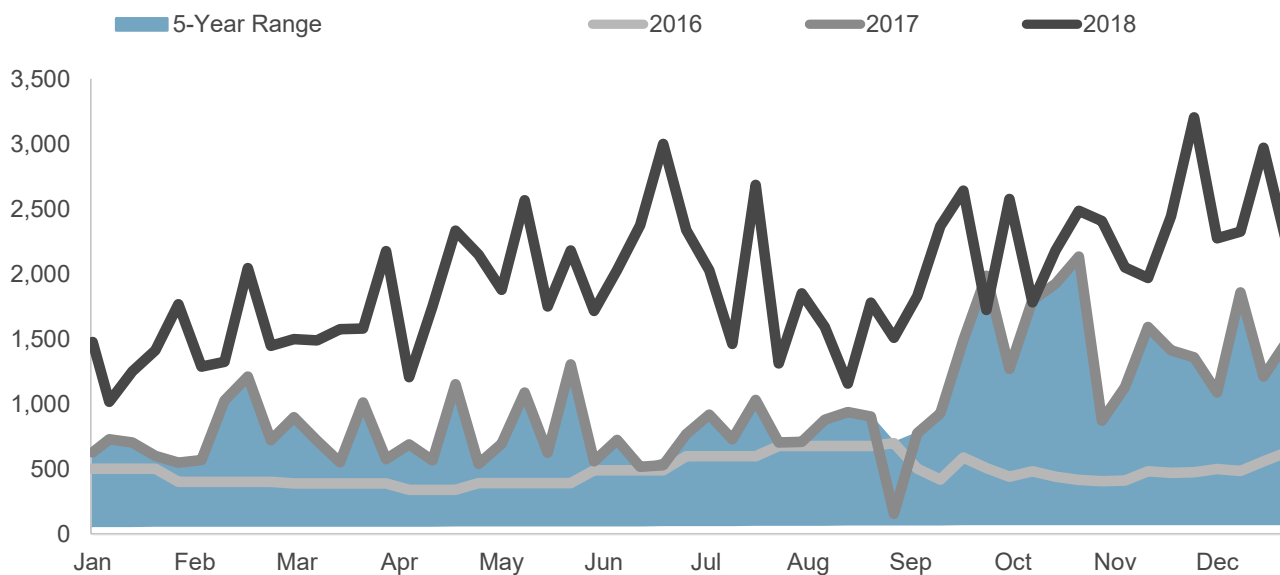
Trade

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



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

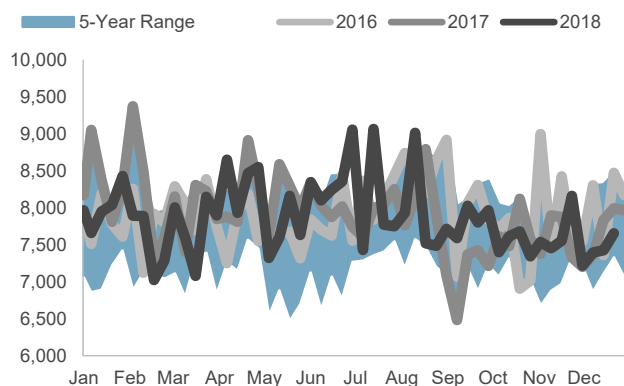
Total U.S. Crude Exports (Mbbl/d)



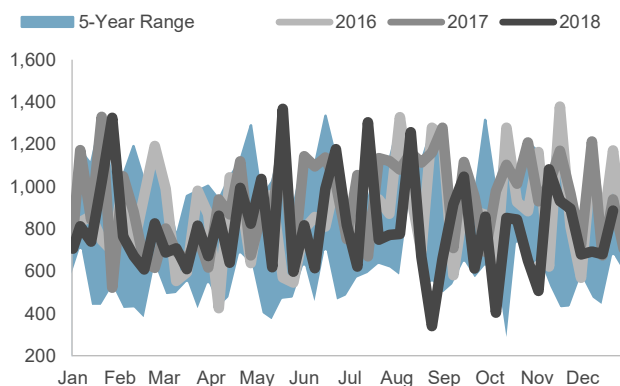
Note: Data collected on a weekly basis.

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

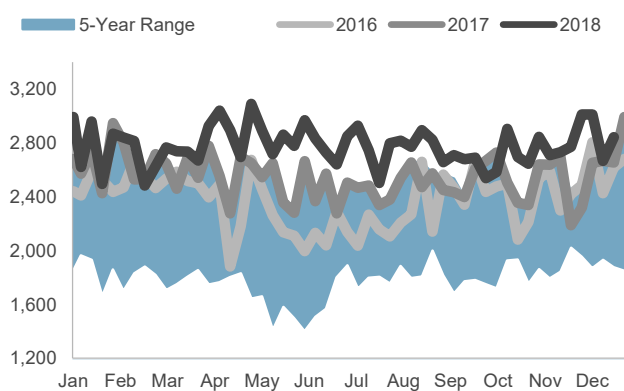
Overall U.S. Commercial Crude Imports



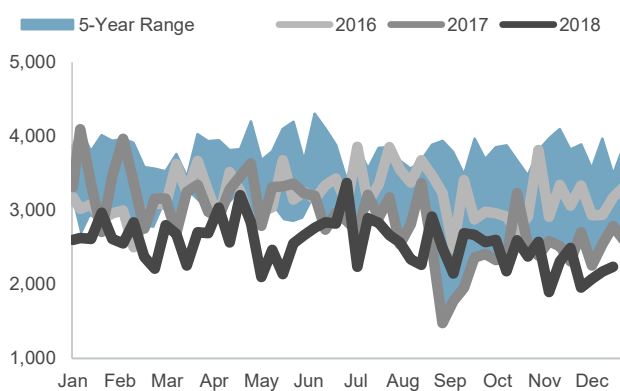
Destination – PADD I



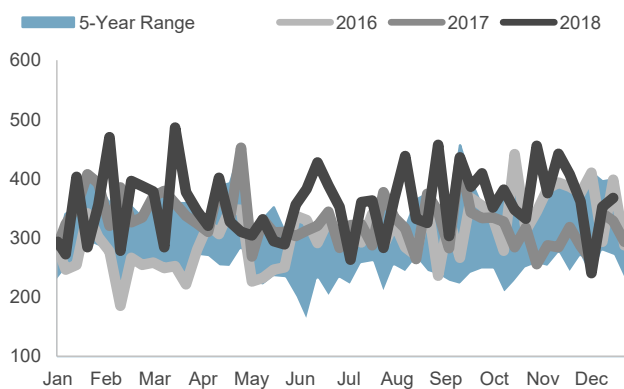
Destination – PADD II



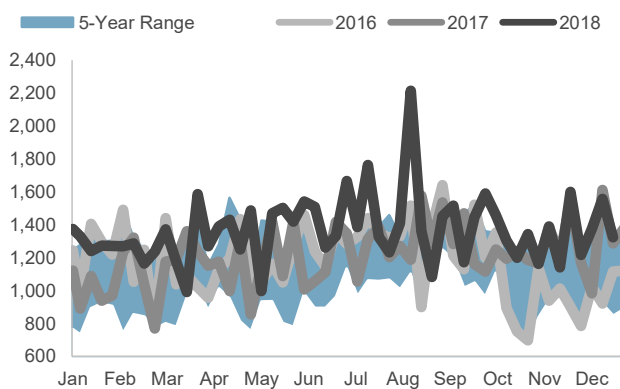
Destination – PADD III



Destination – PADD IV

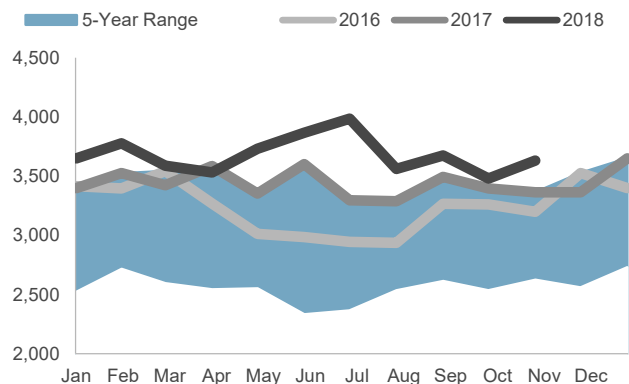


Destination – PADD V

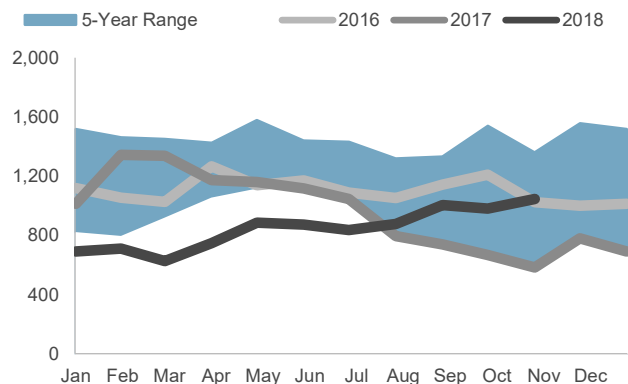


U.S. Imports by Country (Mbbbl/d)

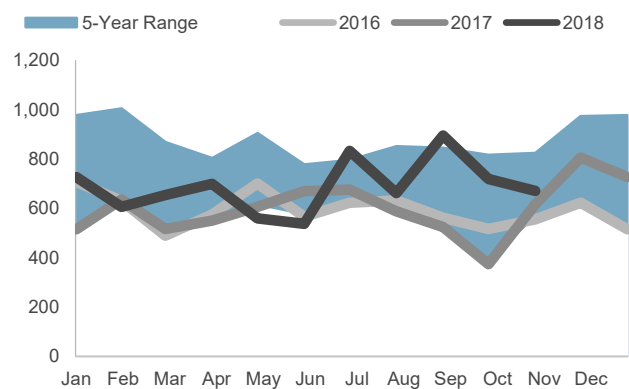
Canada



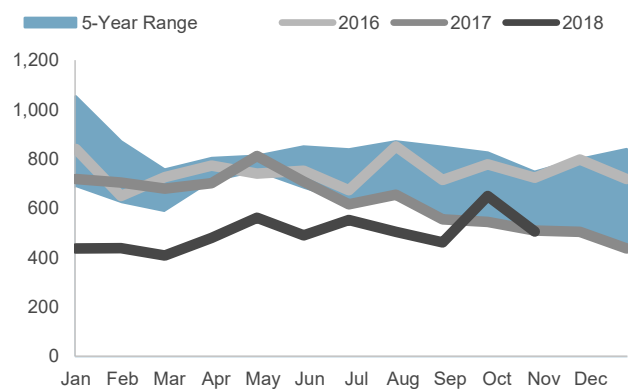
Saudi Arabia



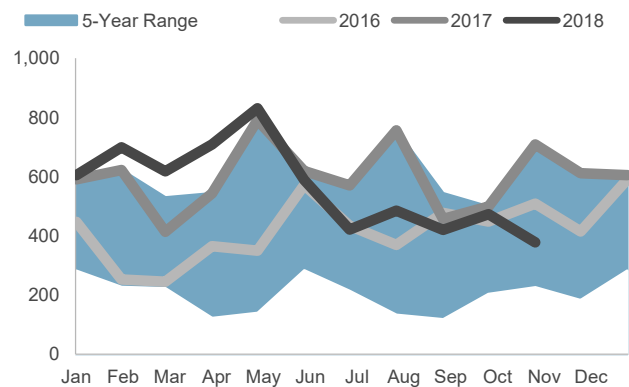
Mexico



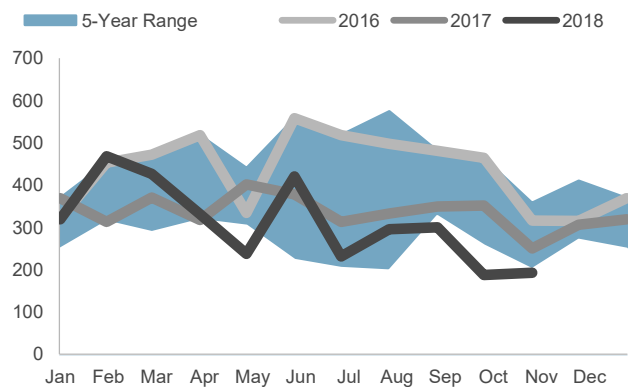
Venezuela



Iraq



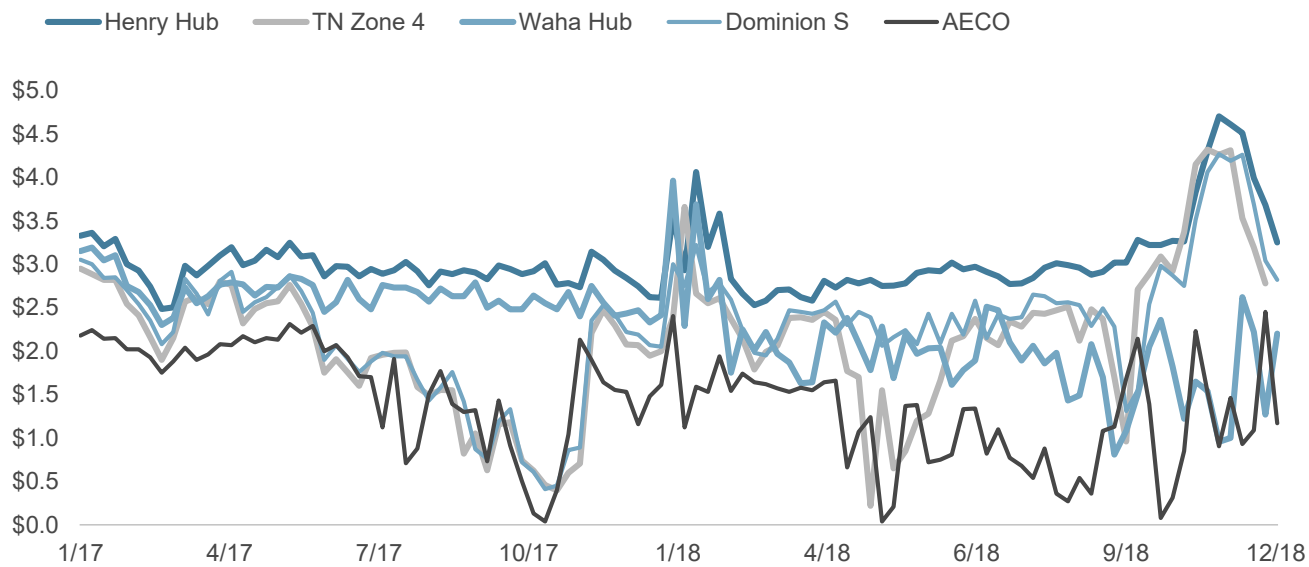
Colombia



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Natural Gas Spot Pricing

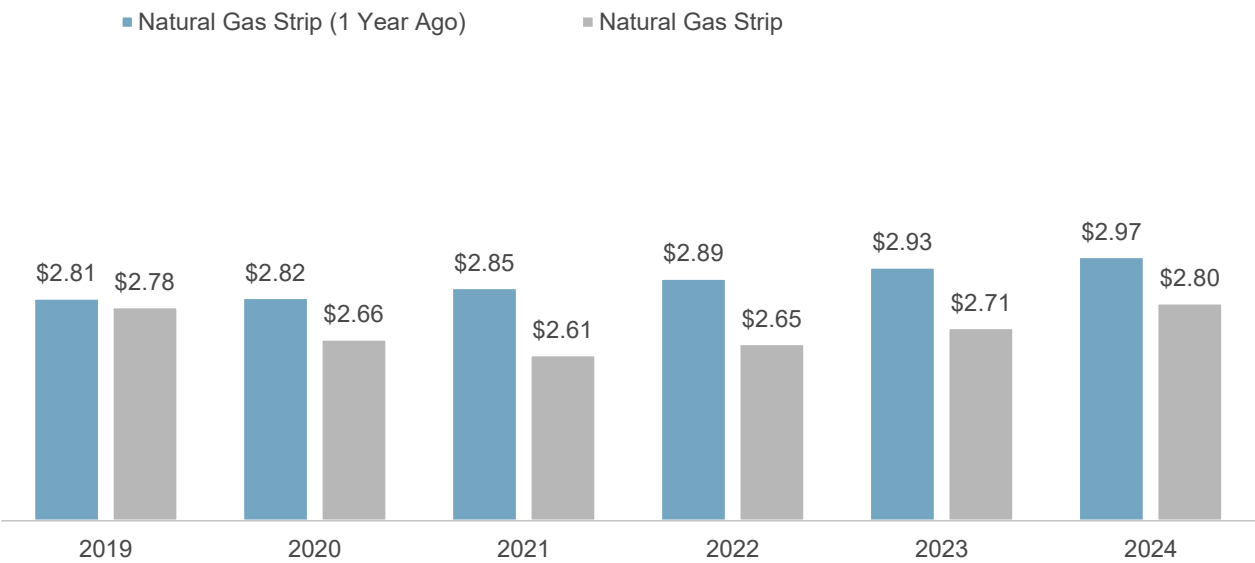
Pricing (\$/MMbtu)



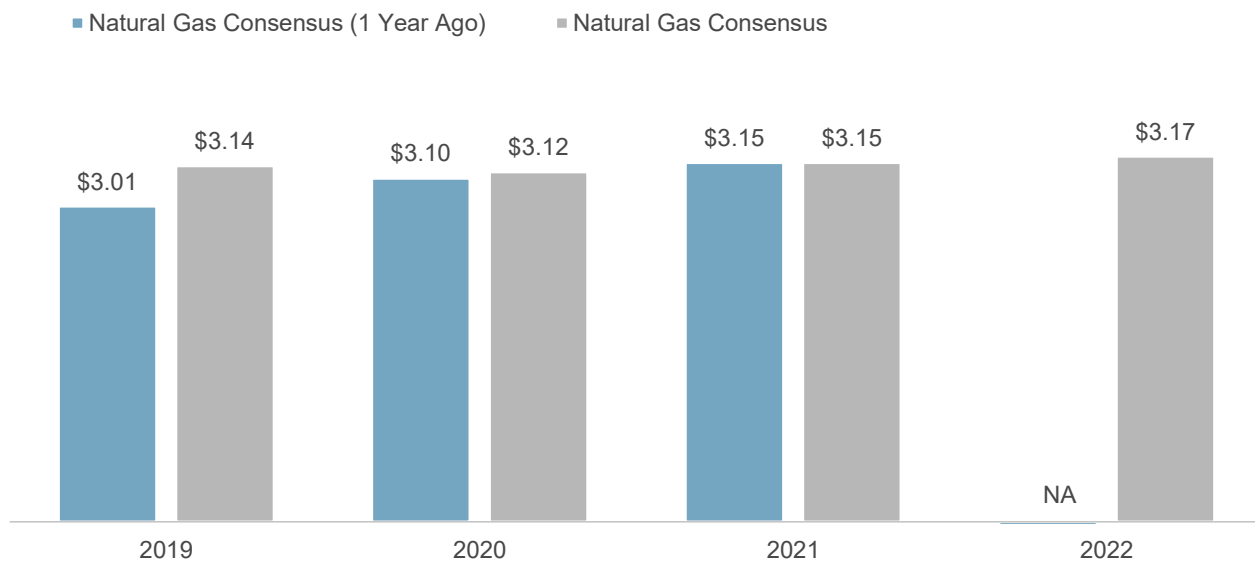
Note: All data as of December 31, 2018. Data collected on a weekly basis.
Source: Bloomberg.

Natural Gas Pricing

Strip Pricing Comparison (\$/MMbtu)



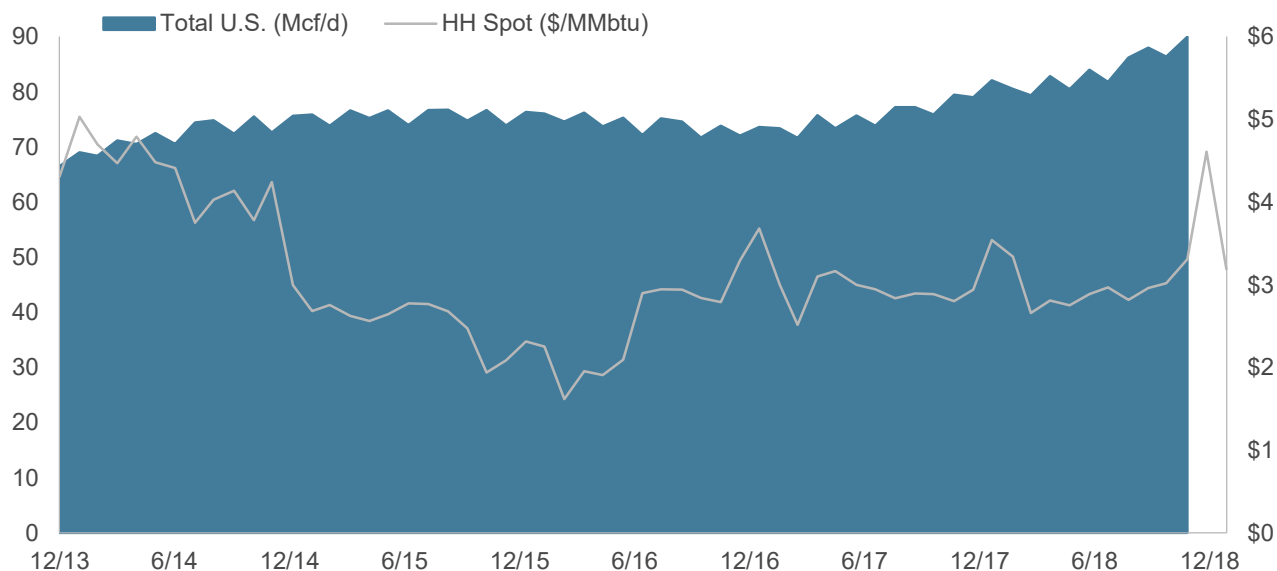
Consensus Pricing Comparison (\$/MMbtu)



*Note: All data as of December 31, 2018. Represents the average price for the remainder of 2019 and each year thereafter.
Source: Bloomberg.*

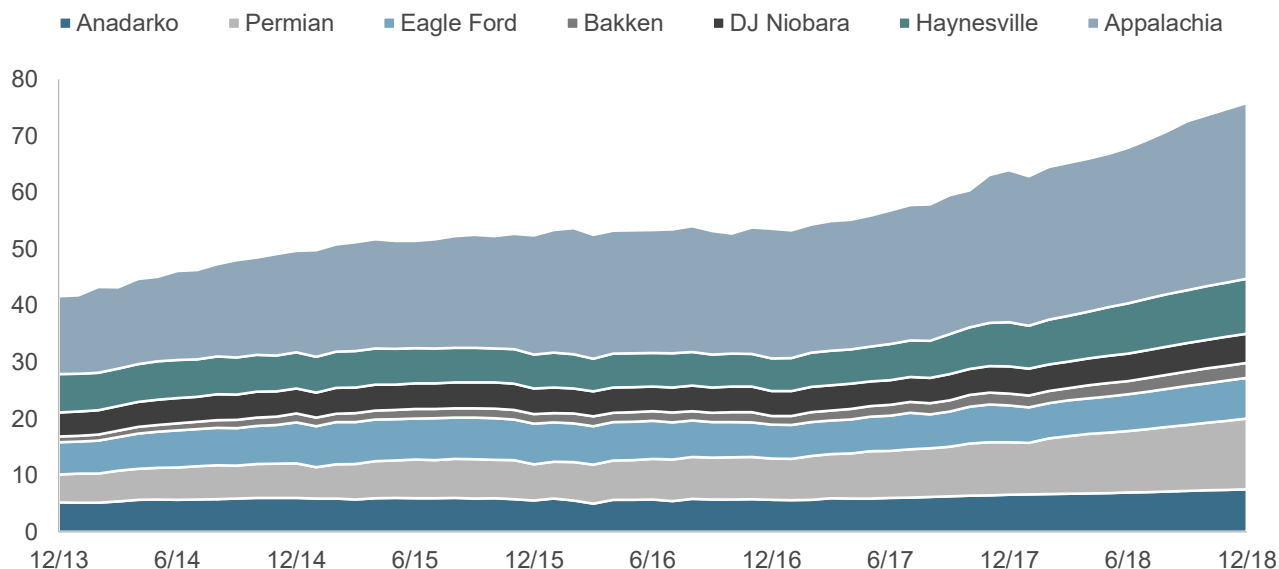
Natural Gas Production

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 December 31, 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 in production for key regions.

Differentials

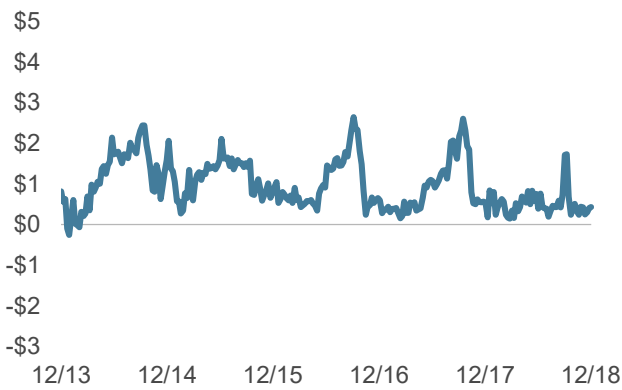
Regional Natural Gas Spot Pricing

Region	12/31/2018	12/31/2017	9/30/2018	YoY % Change	QoQ % Change
Henry Hub	\$3.19	\$3.54	\$3.02	-9.9%	5.6%
<i>Benchmark</i>					
Dominion South	\$2.81	\$3.00	\$1.31	-6.4%	114.3%
<i>Henry Hub – Dominion South</i>	\$0.38	\$0.54	\$1.71		
TN Zone 4	\$2.78	\$2.39	\$1.70	16.3%	63.5%
<i>Henry Hub – TN Zone 4</i>	\$0.41	\$1.15	\$1.32		
AECO	\$1.15	\$2.40	\$1.68	-52.3%	-31.7%
<i>Henry Hub – AECO</i>	\$2.04	\$1.14	\$1.34		
Waha Hub	\$2.15	\$3.96	\$1.08	-45.8%	98.8%
<i>Henry Hub – Waha</i>	\$1.04	(\$0.42)	\$1.94		

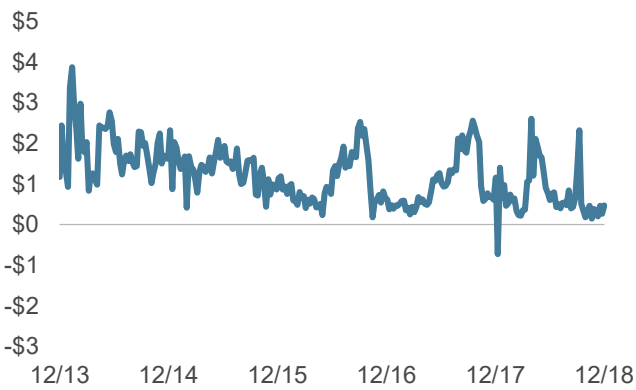
Note: All data as of December 31, 2018. Represents the average price for the remainder of 2019 and each year thereafter.
Source: Bloomberg.

Natural Gas – Differentials (\$/MMbtu)

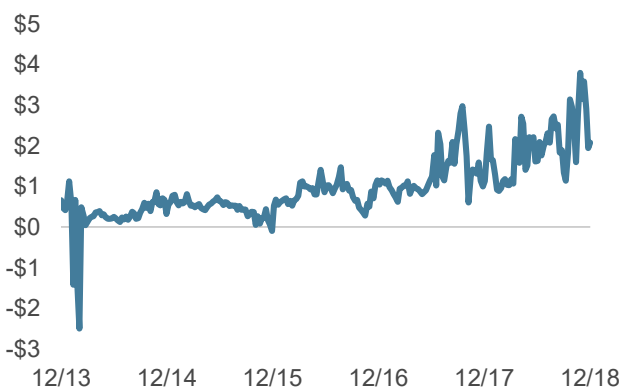
HH – Dominion South



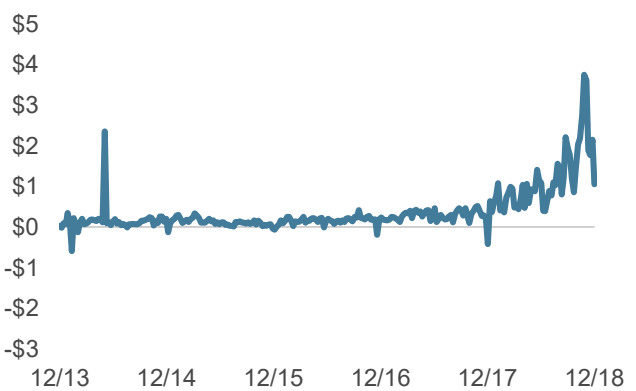
HH – TN Zone 4



HH – AECO



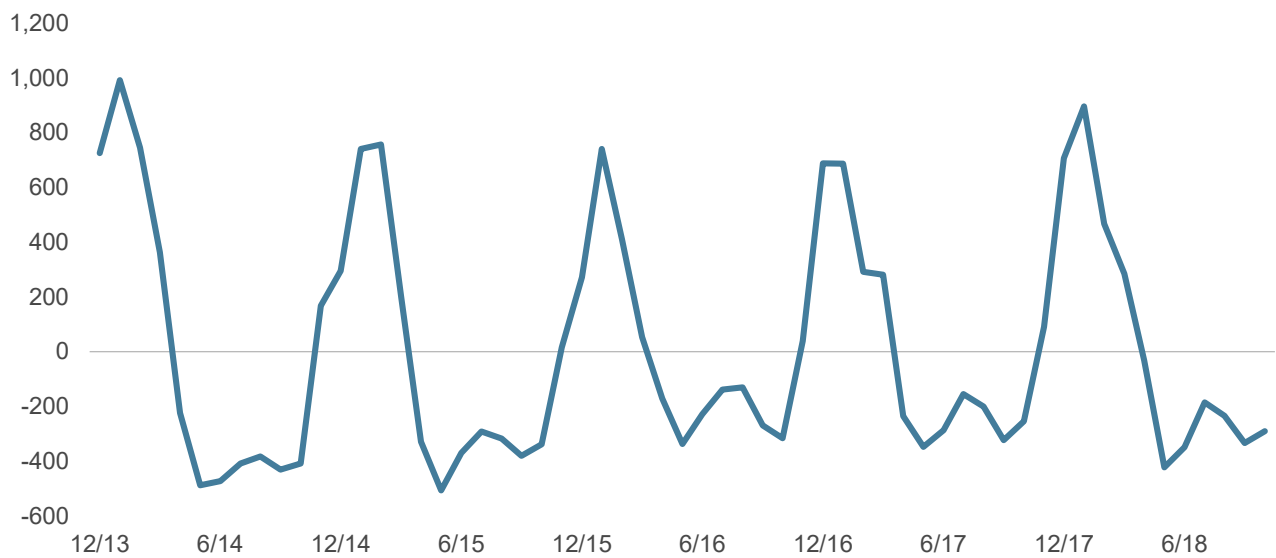
HH – Waha Hub



*Note: All data as of December 31, 2018. Data collected on a weekly basis.
Source: Bloomberg.*

Natural Gas

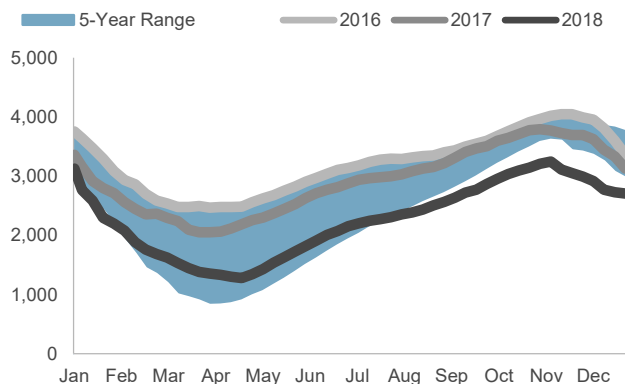
U.S. Natural Gas Withdrawal (Bcf)



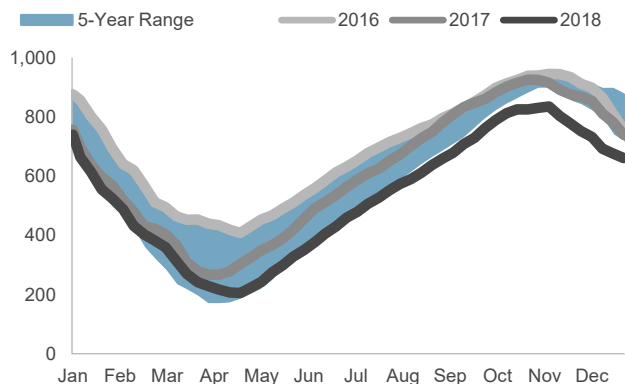
Note: Data collected on a monthly basis and is subject to irregular updates.

Natural Gas Storage (Bcf)

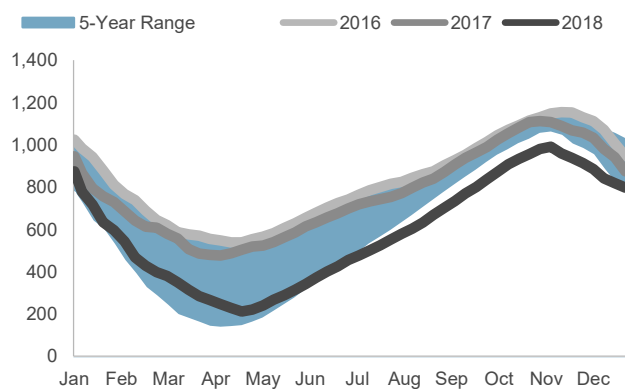
Total U.S.



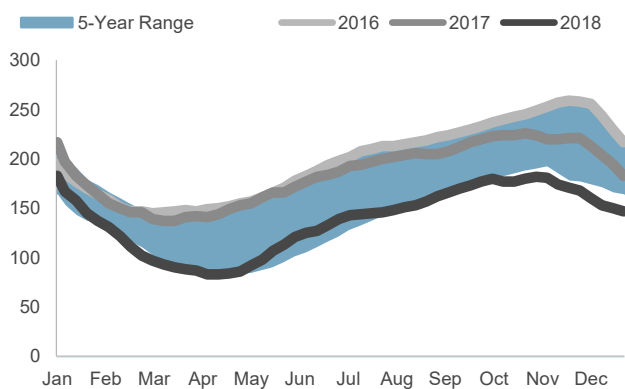
East



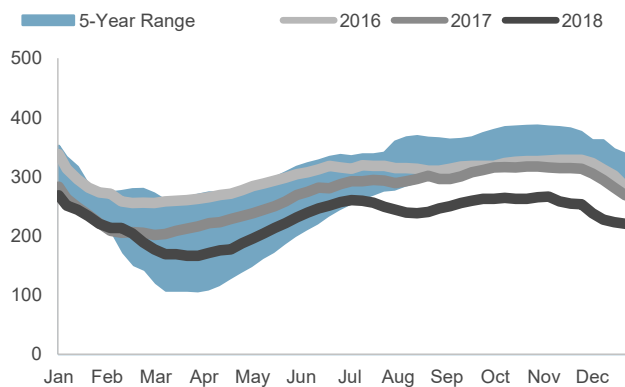
Midwest



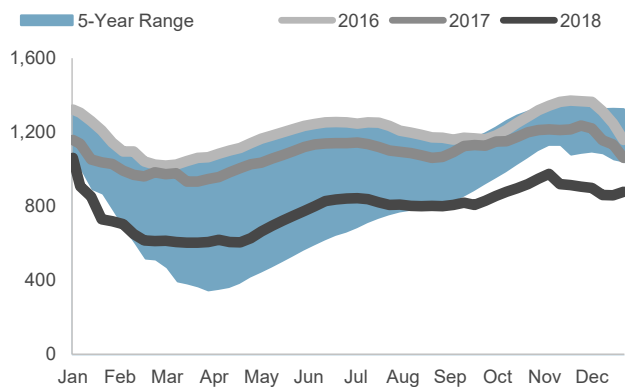
Mountain



Pacific

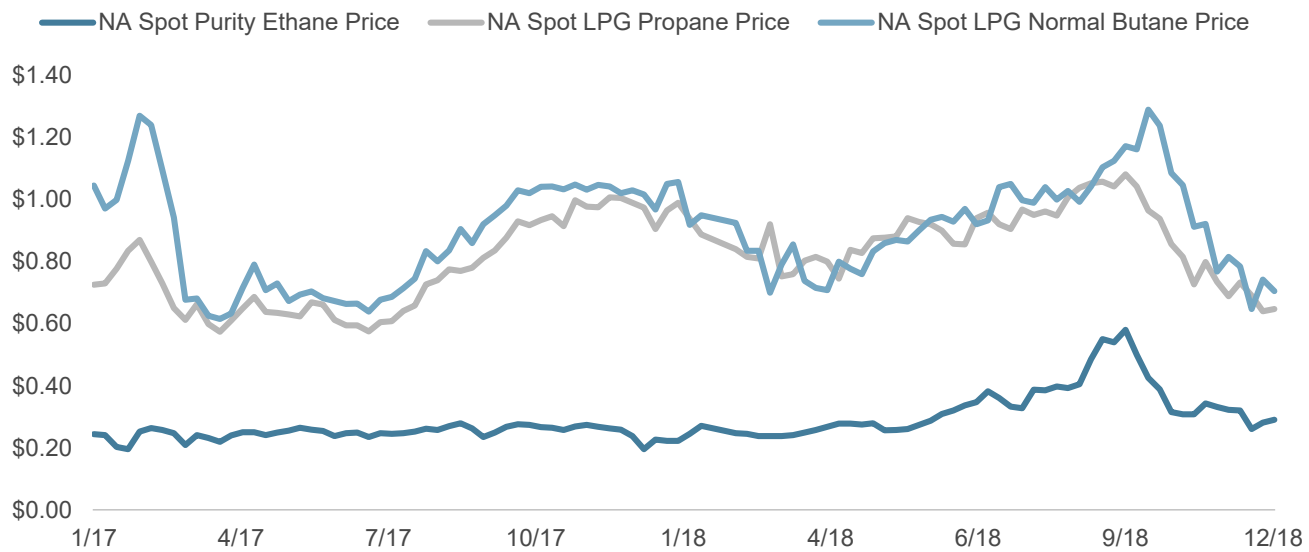


South Central



NGLs Spot Pricing

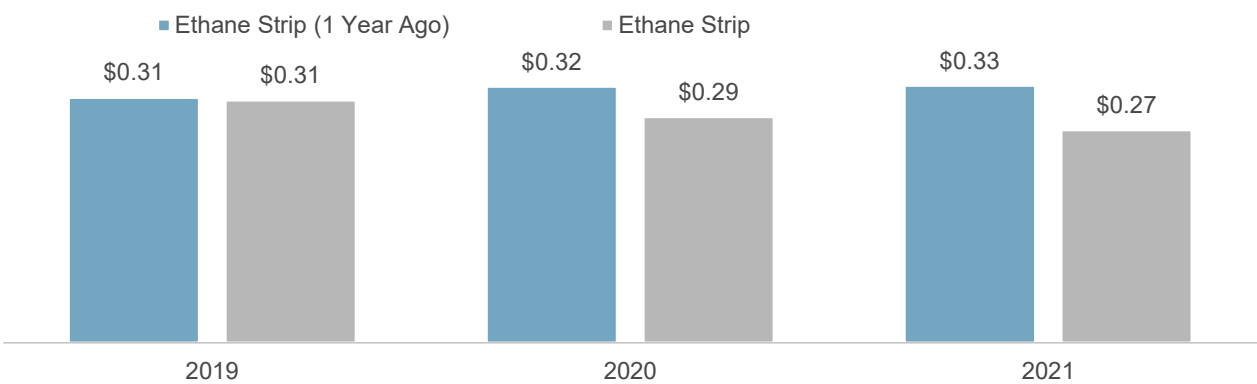
Pricing (\$/gal)



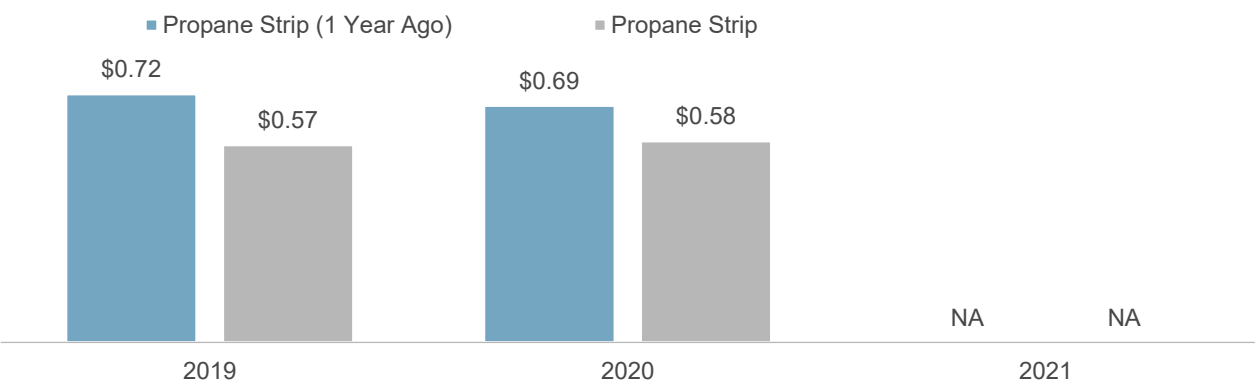
Note: All data as of December 31, 2018. Data collected on a weekly basis.
Source: Bloomberg.

NGLs Strip Pricing

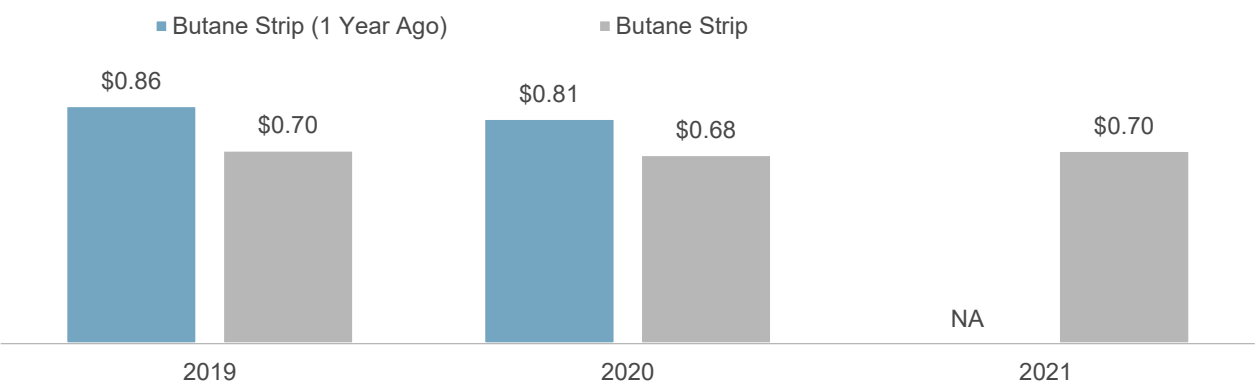
Ethane Strip Pricing Comparison (\$/gal)



Propane Strip Pricing Comparison (\$/gal)



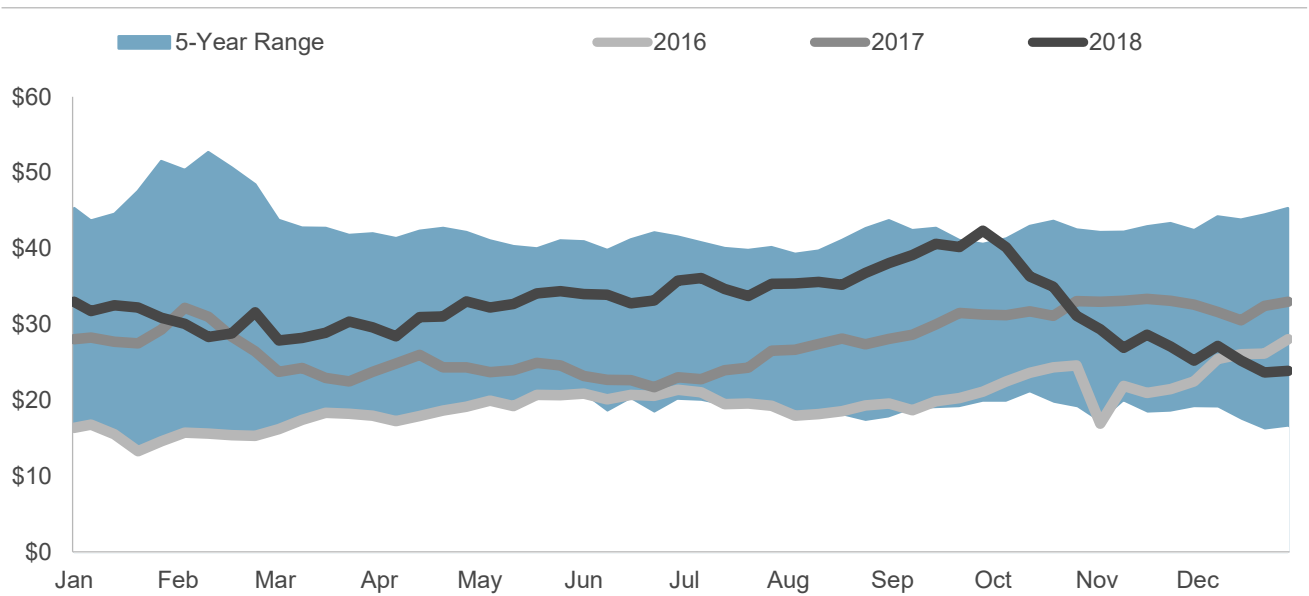
Butane Strip Pricing Comparison (\$/gal)



Note: All data as of December 31, 2018. Represents the average price for the remainder of 2019 and each year thereafter.
Source: Bloomberg.

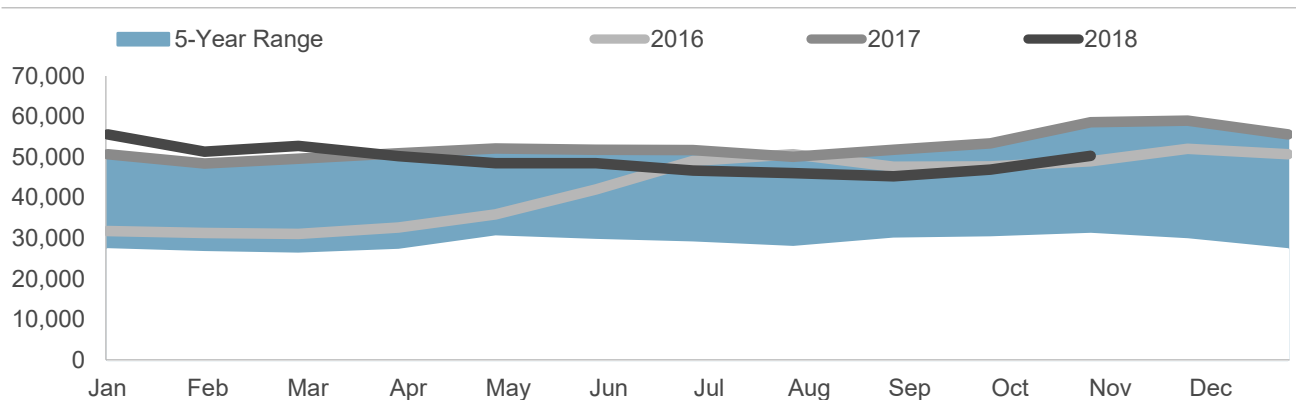
NGLs Frac Spreads

Mont Belvieu Frac Spread (\$/bbl)

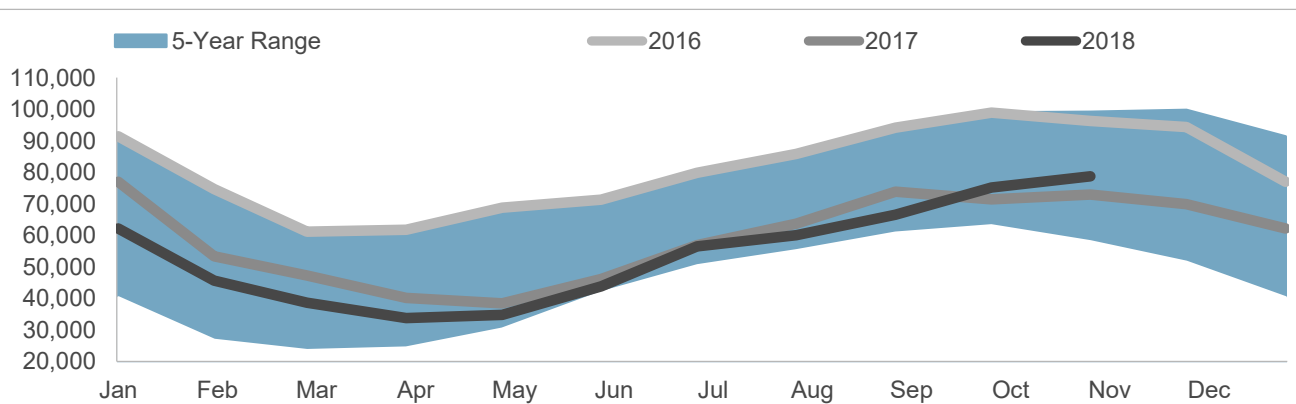


NGLs Inventory

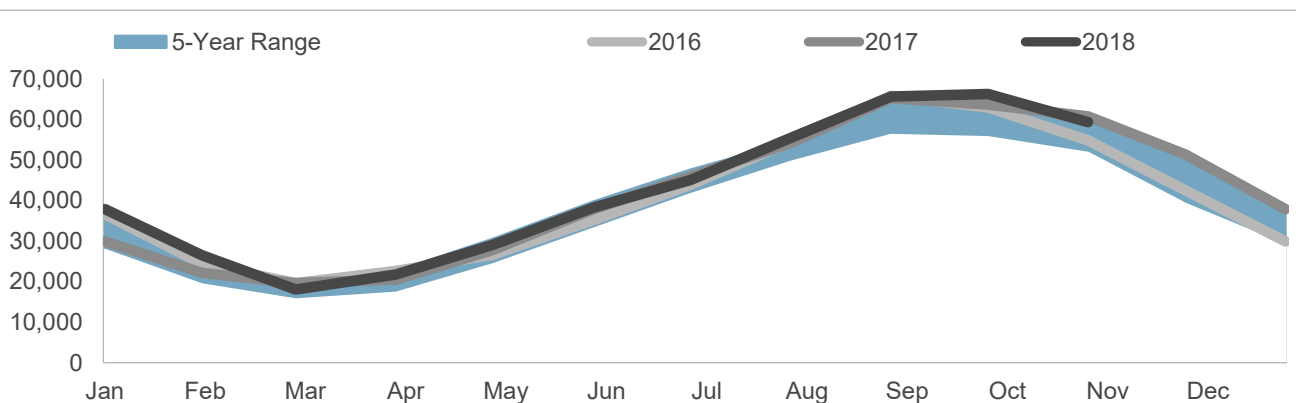
U.S. Ending Stocks Ethane (Mbbbls/d)



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

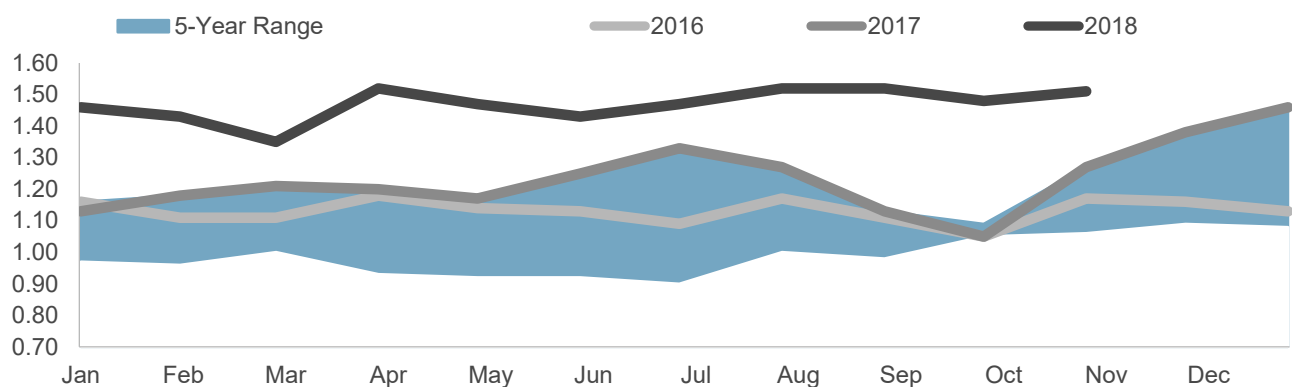


Normal Butane/Butylene (Mbbbls/d)

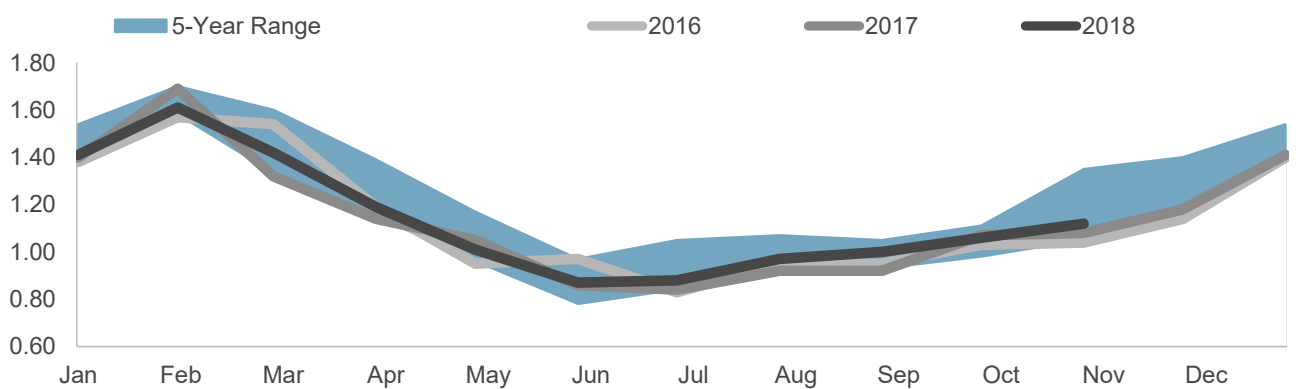


NGLs Consumption

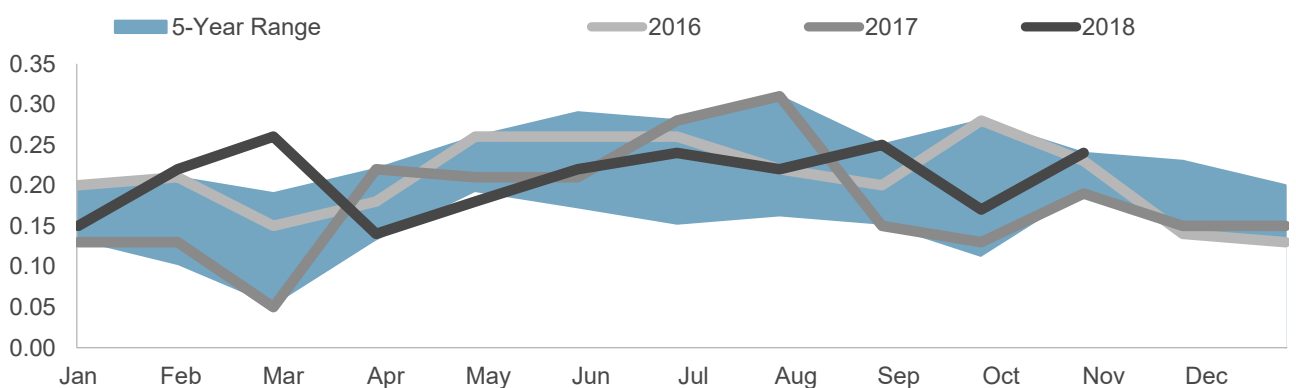
U.S. Ethane/Ethylene Consumption (MMboe/d)



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



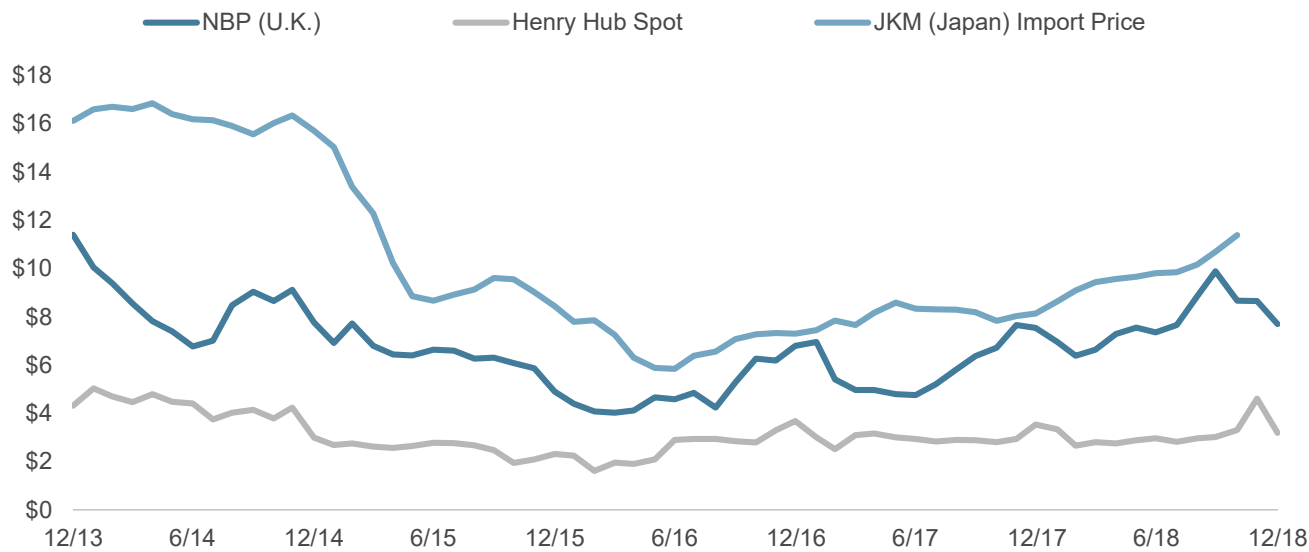
U.S. Butanes/Butylenes Consumption (MMboe/d)



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Spot Pricing

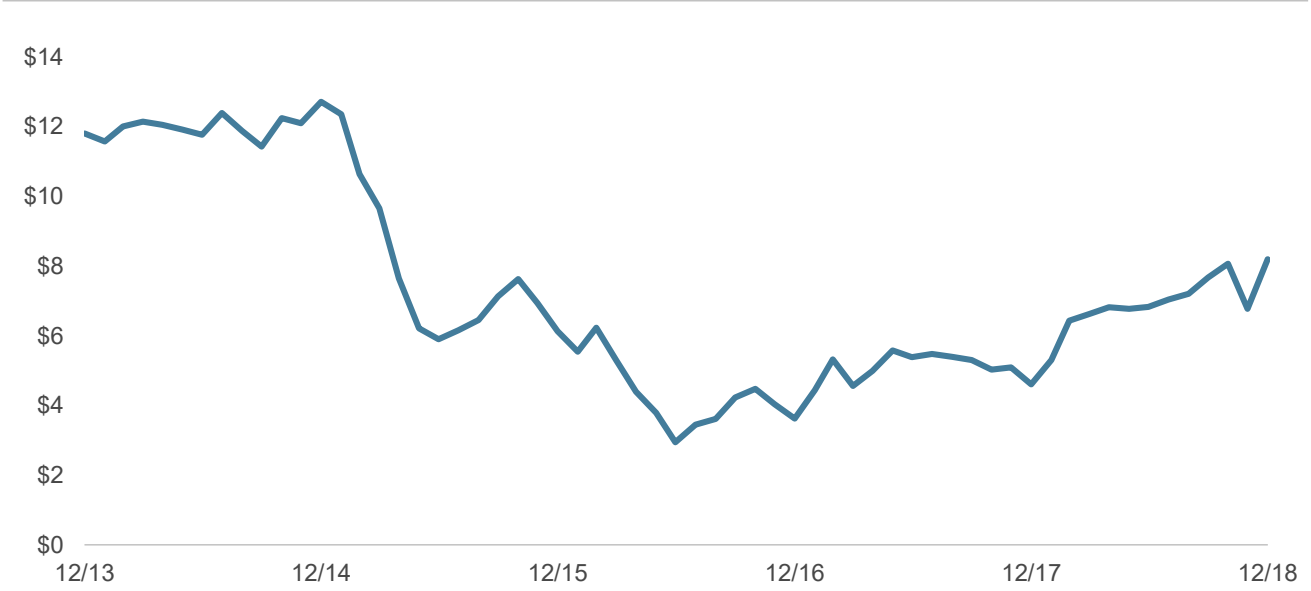
Spot Pricing (\$/MMbtu)



Note: All data as of December 31, 2018. Data collected on a monthly basis.
Note: NBP (U.K.) refers to the ICE U.K. Natural Gas NBP Month 1 Futures.
Source: Bloomberg.

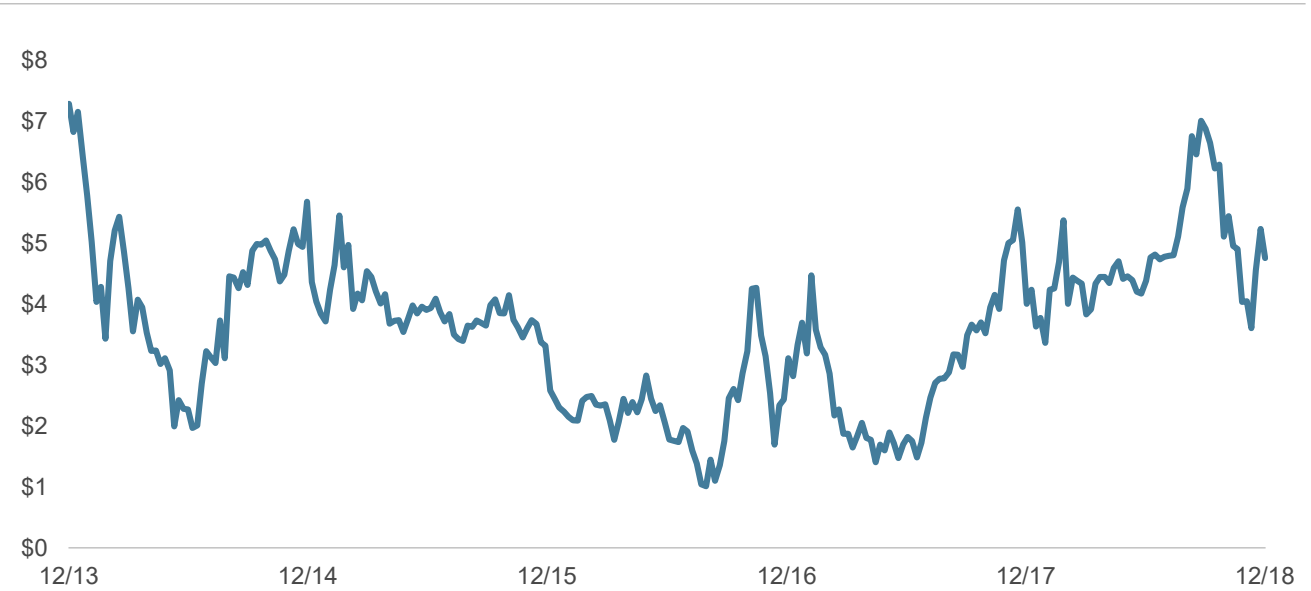
Differentials

JKM – Henry Hub (\$/MMbtu)



Note: Data collected on a monthly basis.

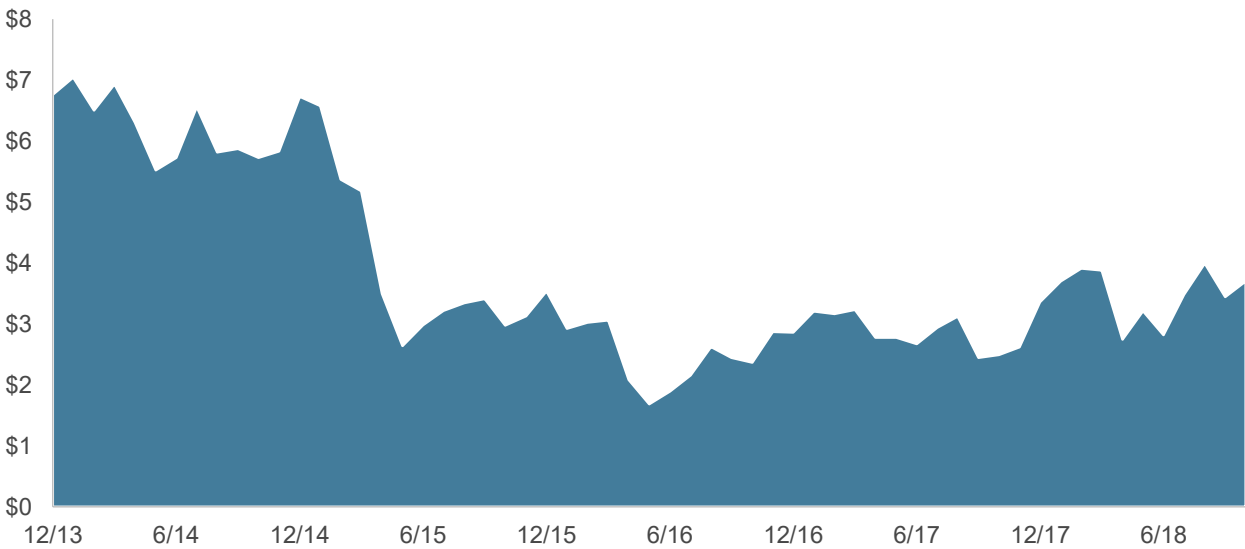
NBP – Henry Hub (\$/MMbtu)



Note: Data collected on a weekly basis.

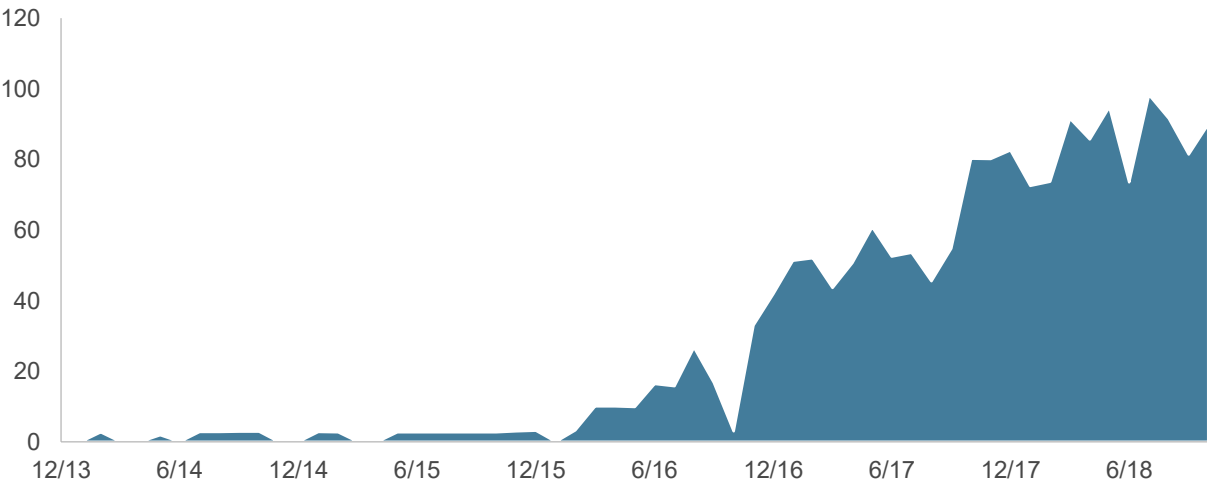
Exports

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)

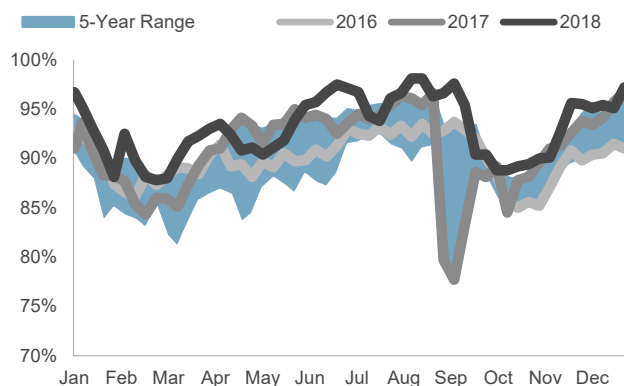


Note: Data collected on a monthly basis and is subject to a two-month lag.

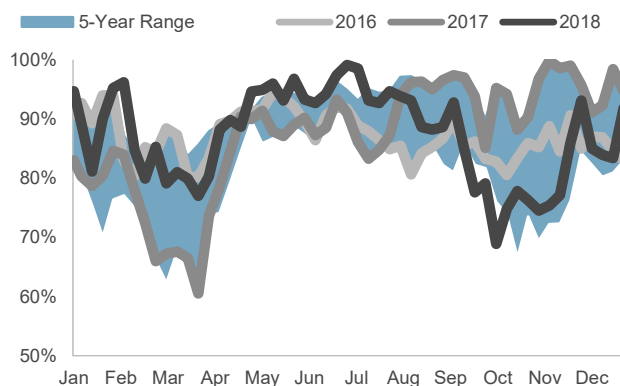
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Refining – Utilization (%)

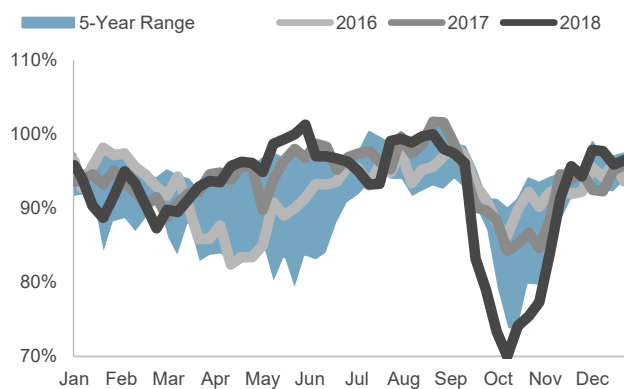
Total U.S.



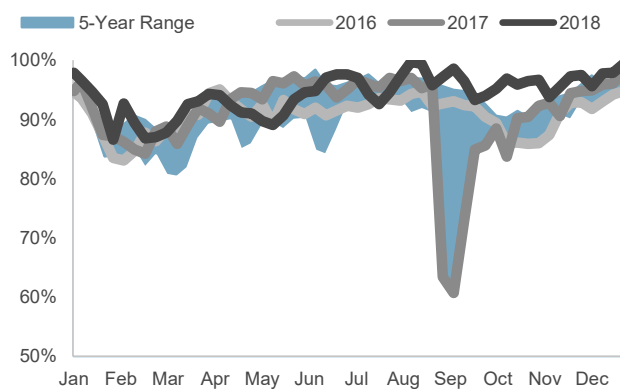
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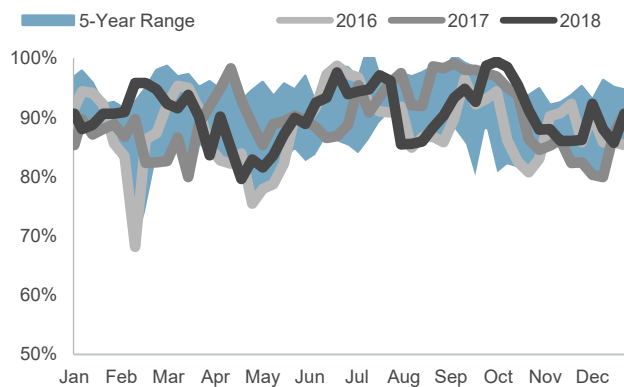
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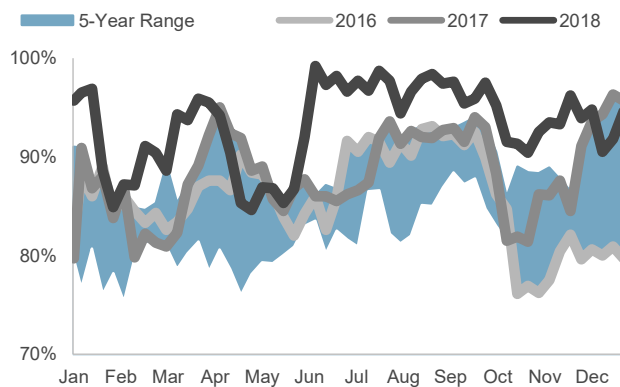
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PADD IV

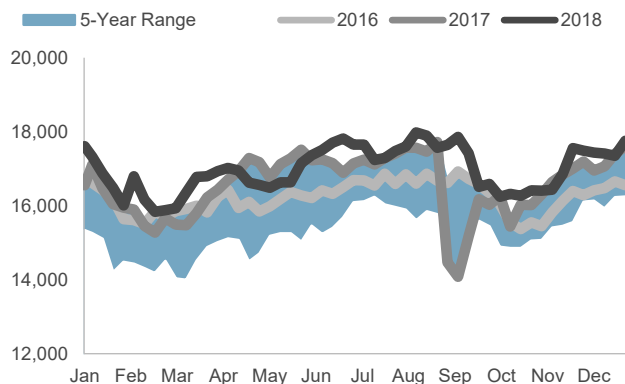


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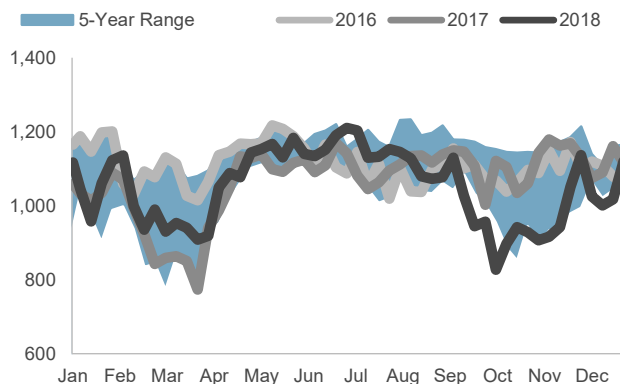


Refining – U.S. Crude Runs (Mbbbl/d)

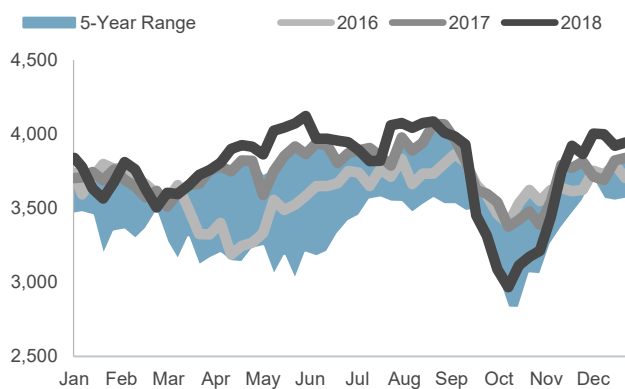
Total U.S.



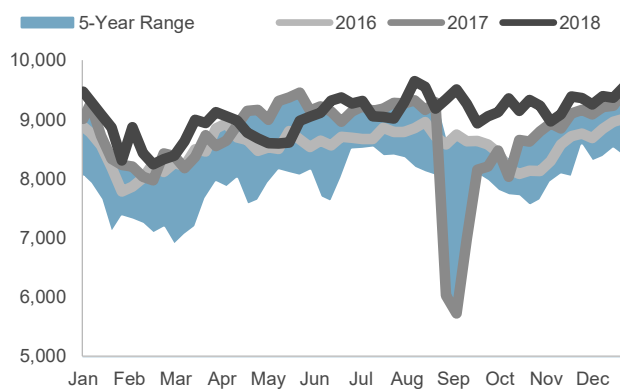
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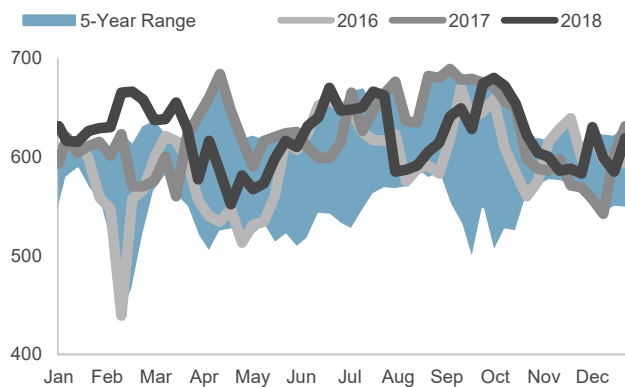
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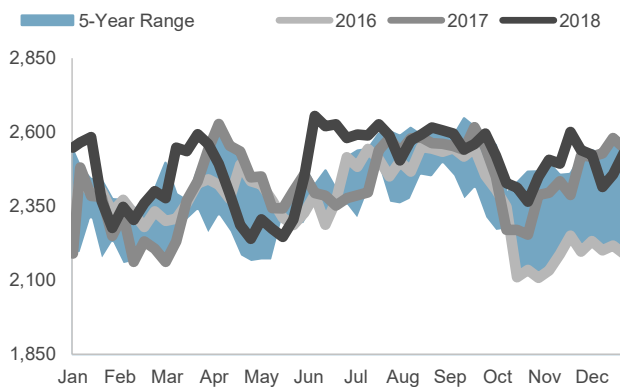
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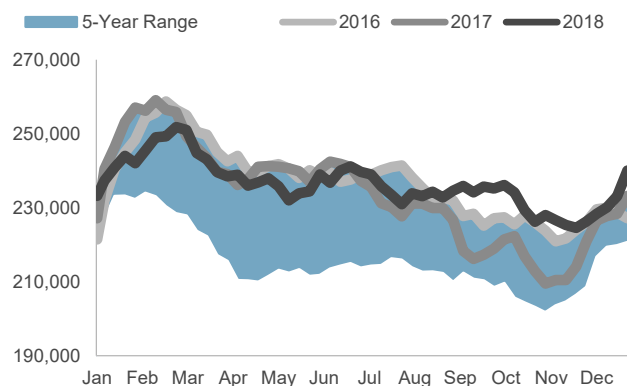
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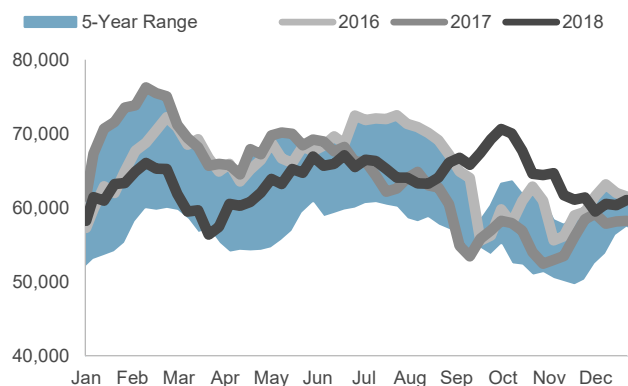
Note: All data as of December 31, 2018. Data collected on a weekly basis.
Source: Bloomberg.

Refining – Motor Gasoline Inventory (Mbbl)

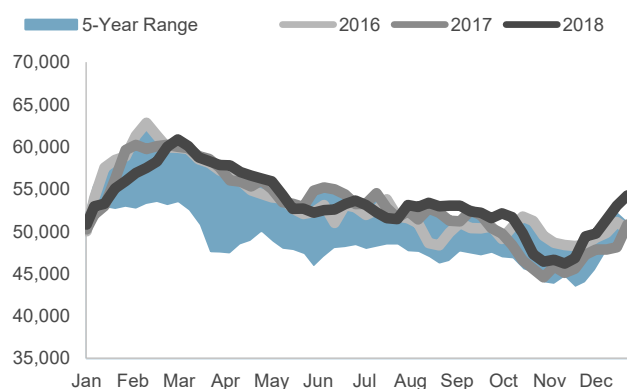
Total U.S.



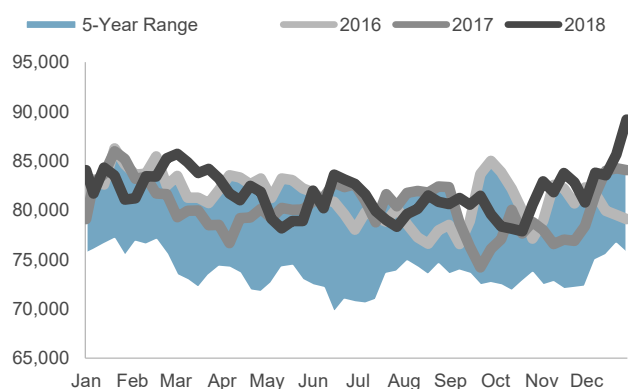
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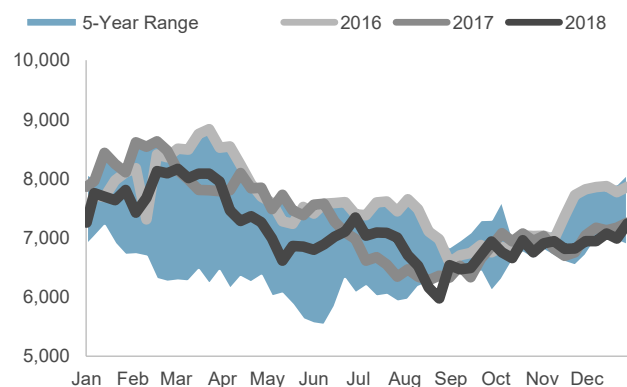
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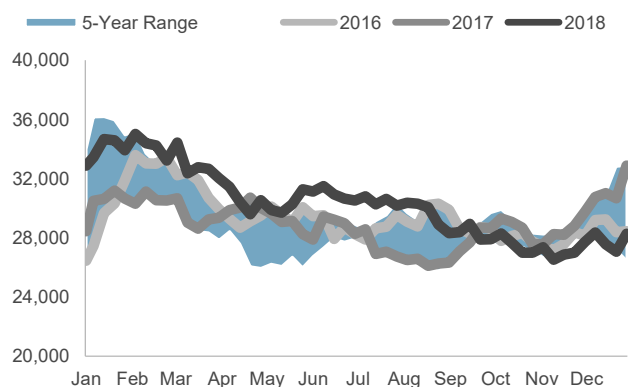
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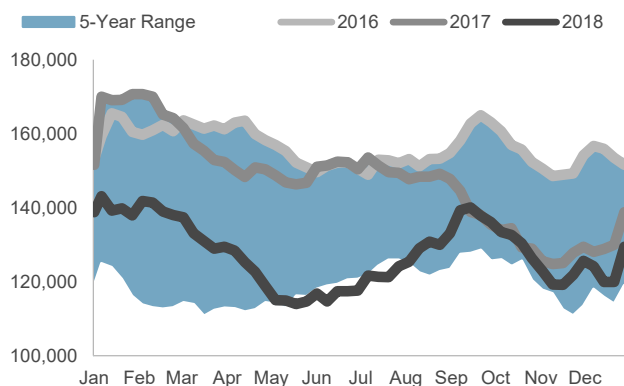


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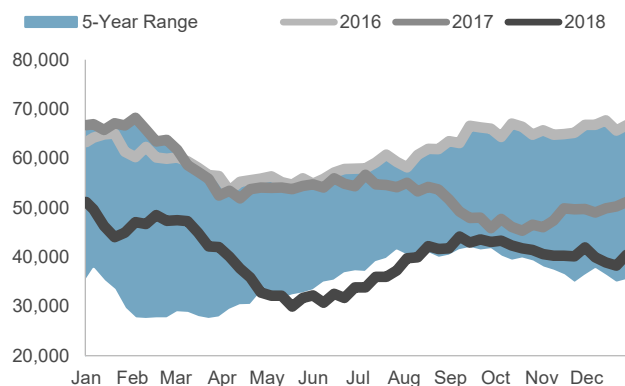


Refining – Distillate Fuel Oil Inventory (Mbbl)

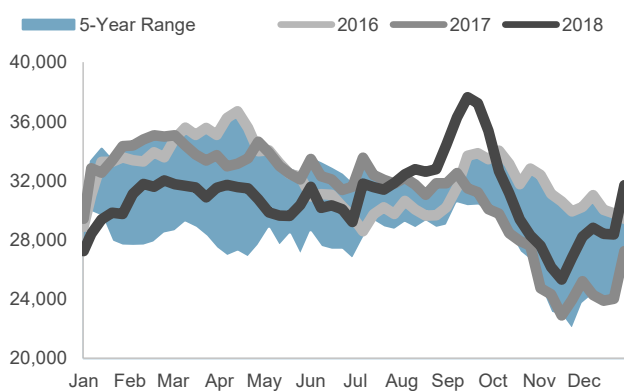
Total U.S.



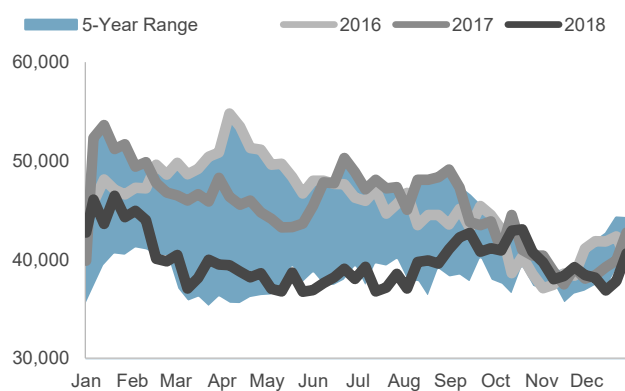
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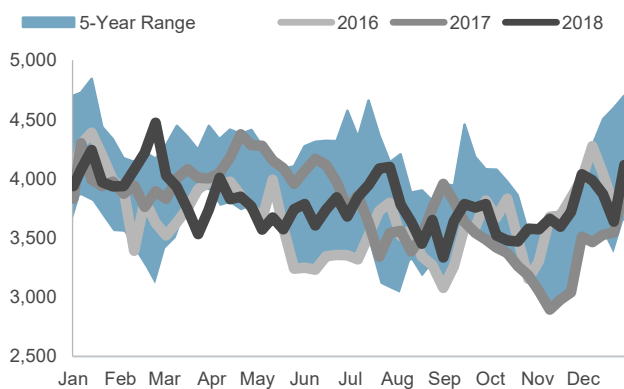
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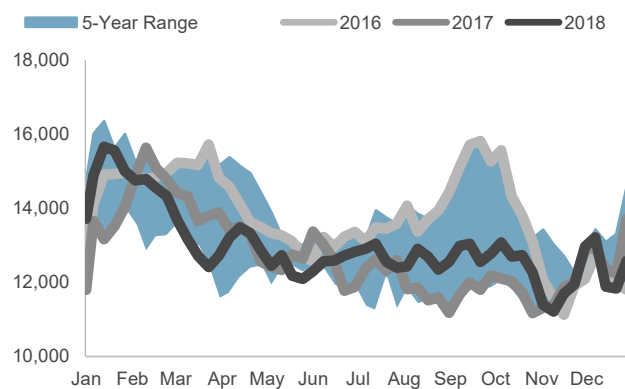
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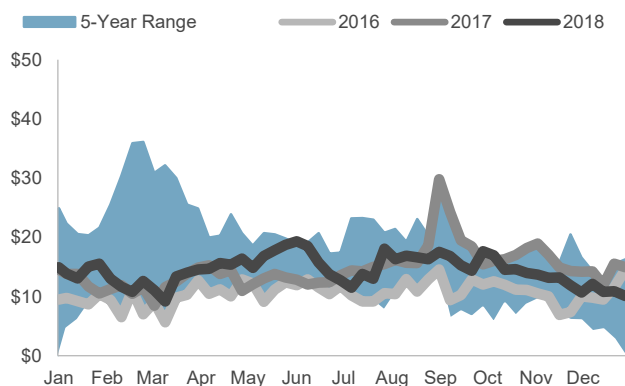


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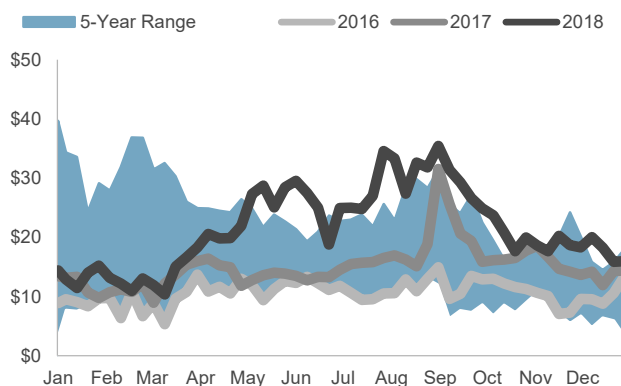


Refining – 3:2:1 Crack Spreads (\$/bbl)

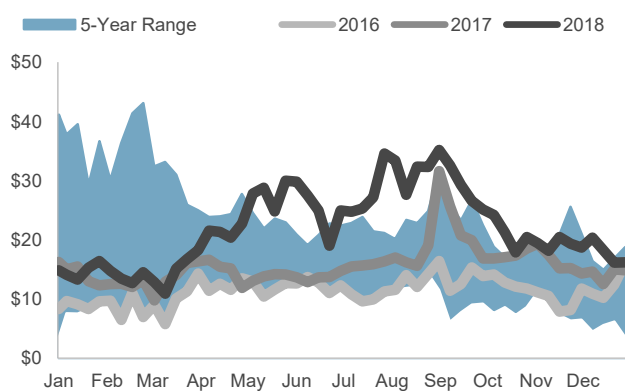
WTI Cushing (U.S. Gulf Coast)



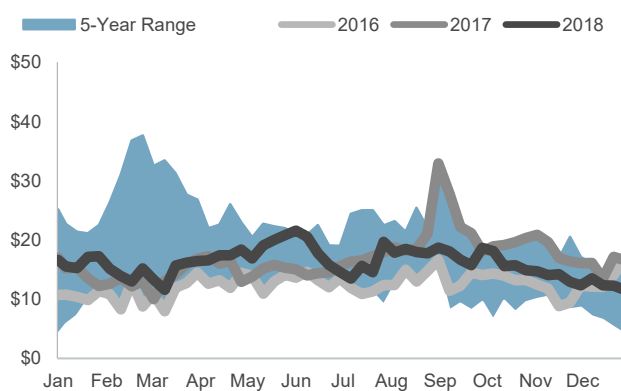
WTI Midland (U.S. Gulf Coast)



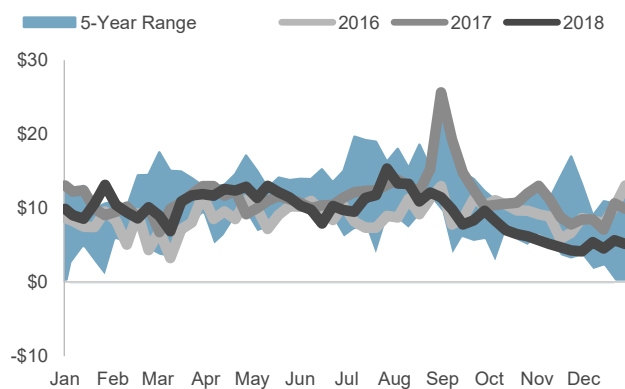
WTS Midland (U.S. Gulf Coast)



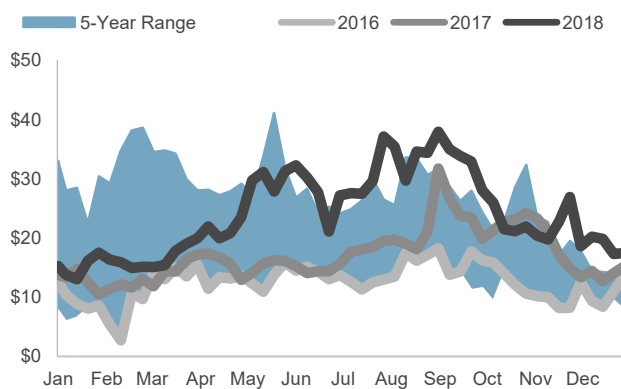
WTI Cushing ULSD (U.S. Gulf Coast)



LLS (U.S. Gulf Coast)

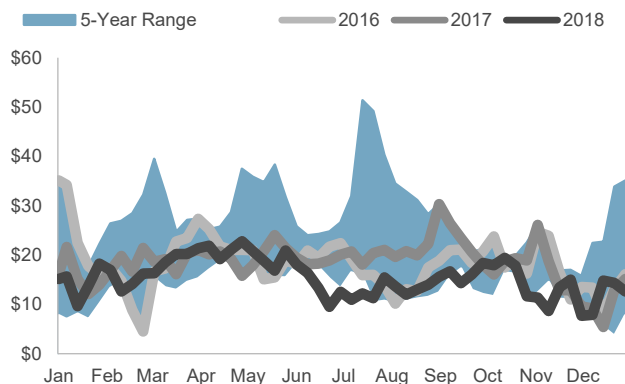


WTI Midland ULSD (U.S. Mid-Continent)

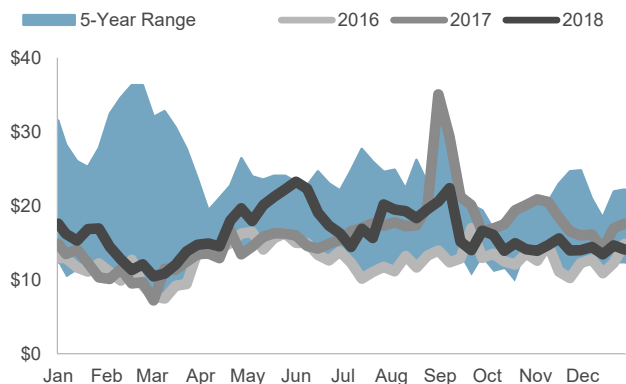


Refining – 3:2:1 Crack Spreads (\$/bbl) (cont.)

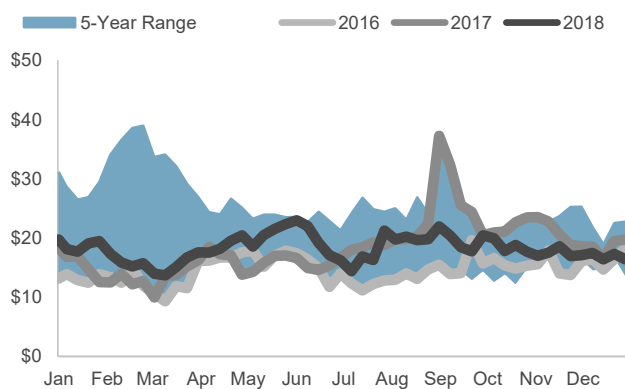
ANS (U.S. West Coast)



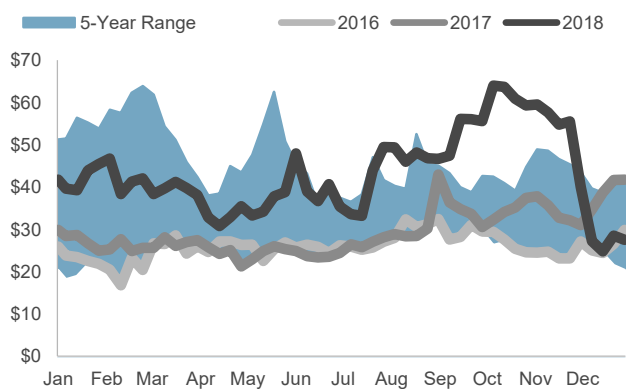
WTI Cushing (NYH RBOB gasoline)



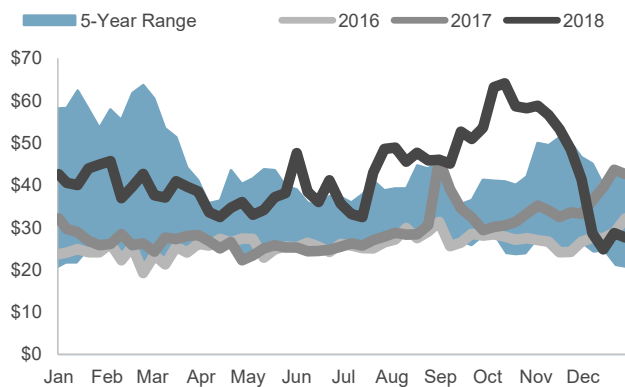
WTI Cushing ULSD (N.Y. Harbor)



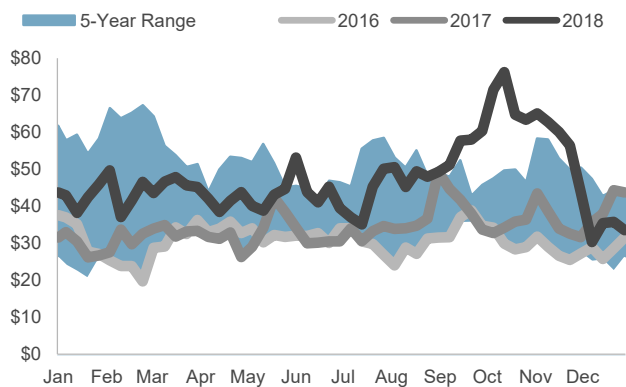
WCS (U.S. Mid-Continent)



WCS (U.S. Gulf Coast)

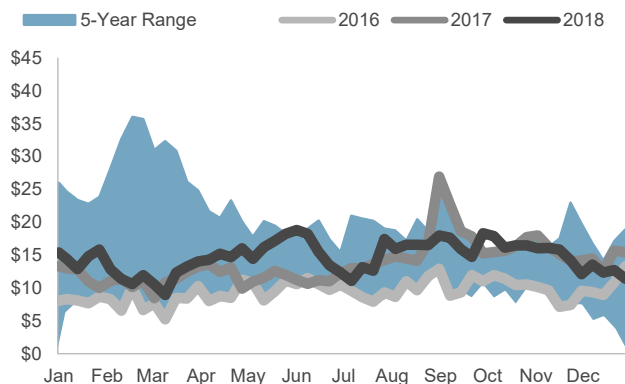


WCS (San Francisco)

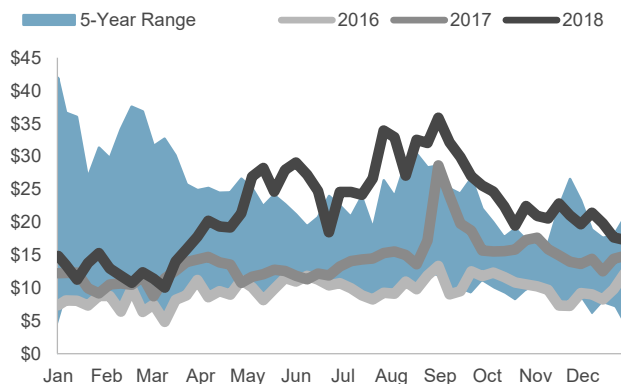


Refining – 2:1:1 Crack Spreads (\$/bbl)

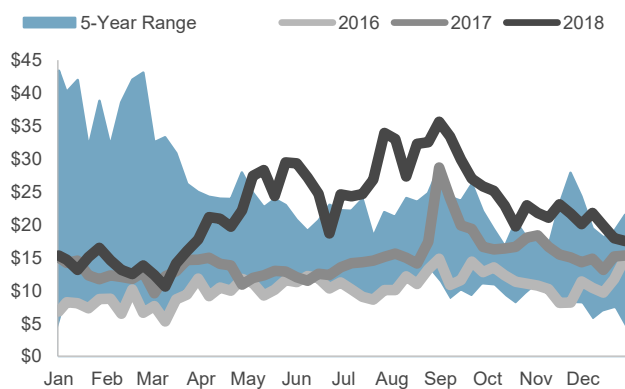
WTI Cushing (U.S. Gulf Coast)



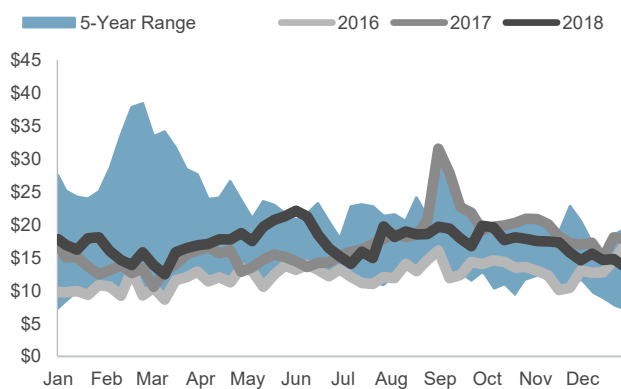
WTI Midland (U.S. Mid-Continent)



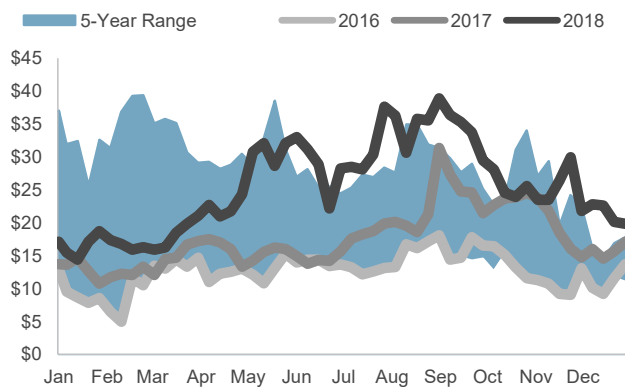
WTS Midland Crude (U.S. Gulf Coast)



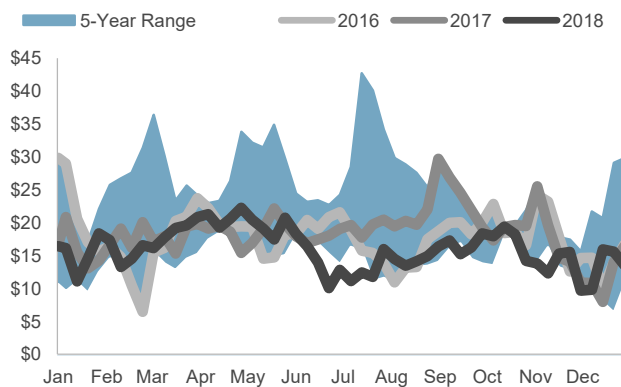
WTI Cushing ULSD (U.S. Gulf Coast)



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

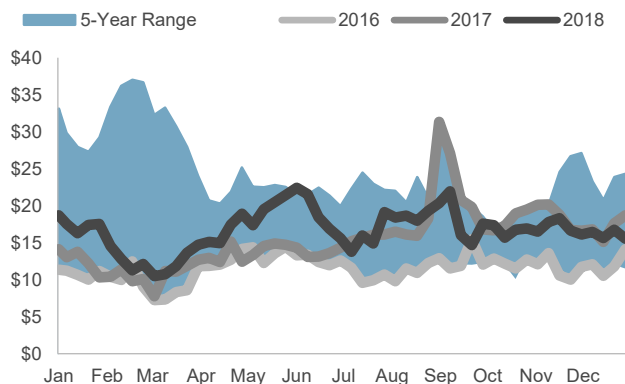


ANS (U.S. West Coast)

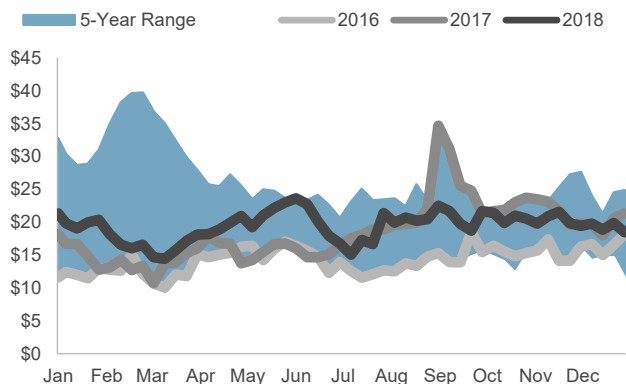


Refining – 2:1:1 Crack Spreads (\$/bbl) (cont.)

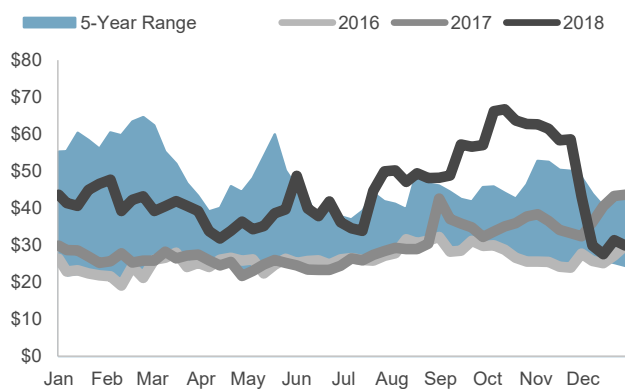
WTI Cushing (NYH RBOB Gasoline)



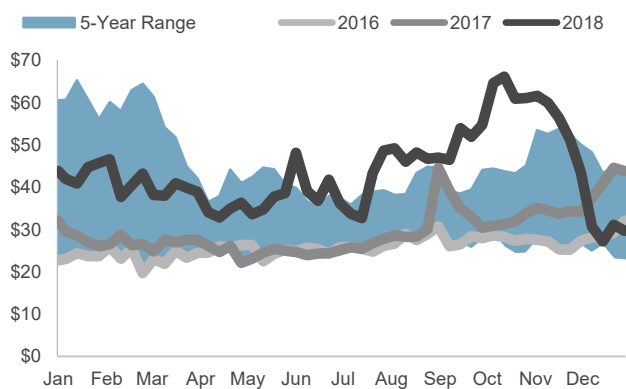
WTI Cushing ULSD (N.Y. Harbor)



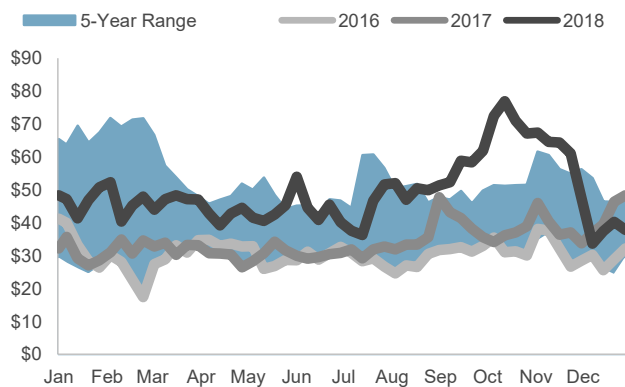
WCS (U.S. Mid-Continent)



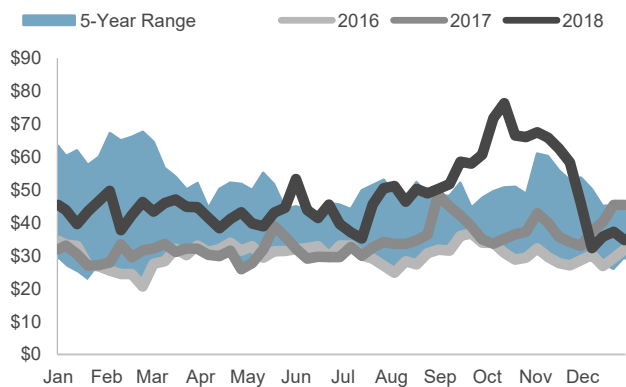
WCS (U.S. Gulf Coast)



WCS (U.S. West Coast)

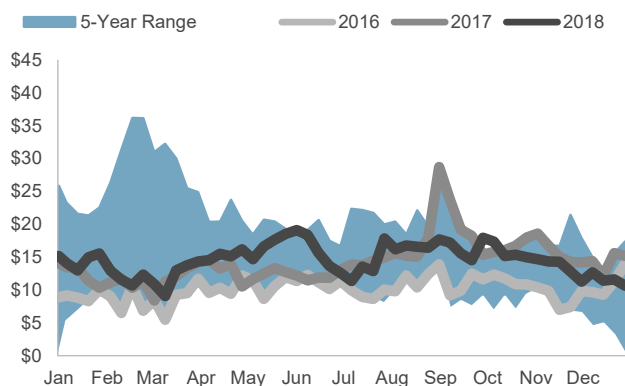


WCS (San Francisco)

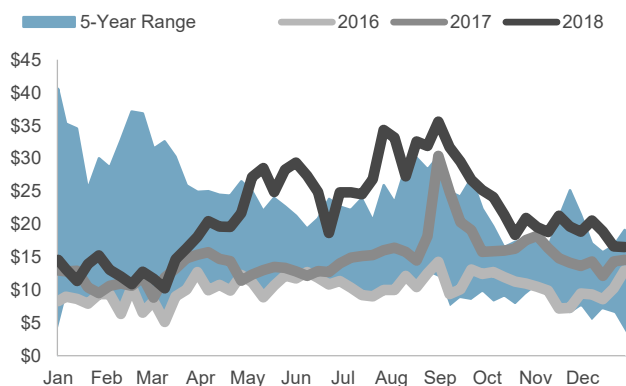


Refining – 5:3:2 Crack Spreads (\$/bbl)

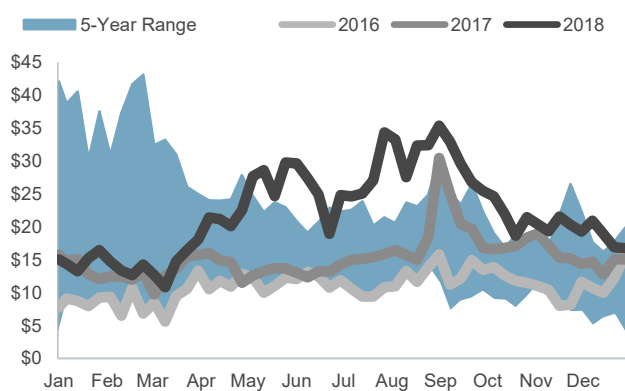
WTI Cushing (U.S. Gulf Coast)



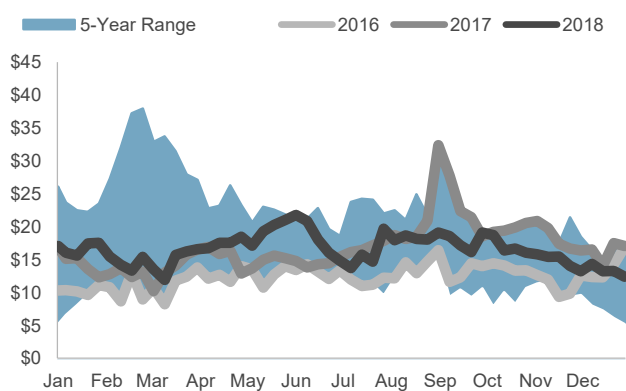
WTI Midland (U.S. Gulf Coast)



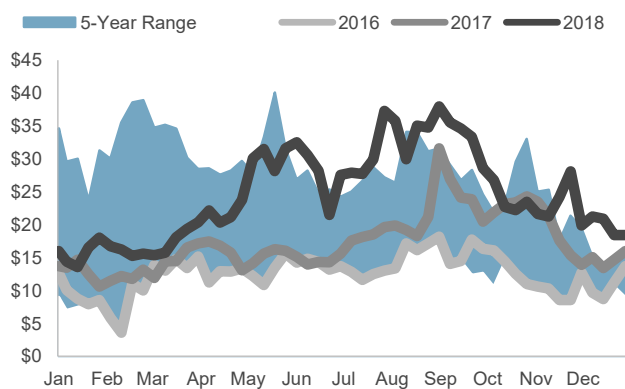
WTS (U.S. Gulf Coast)



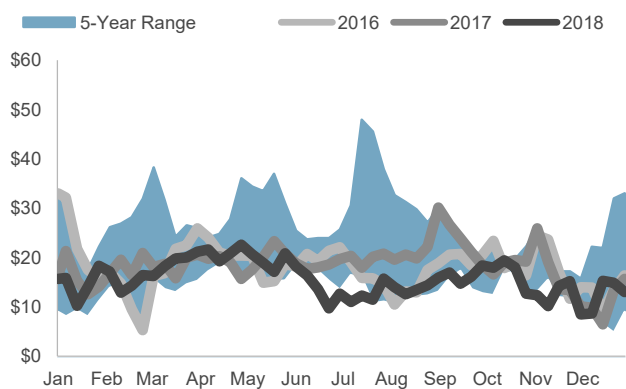
WTI Cushing ULSD (U.S. Gulf Coast)



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

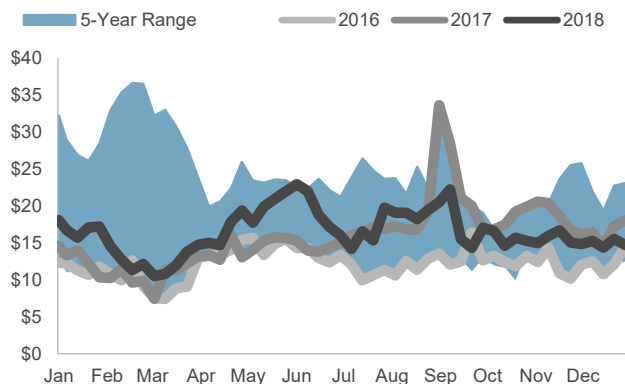


ANS (U.S. West Coast)

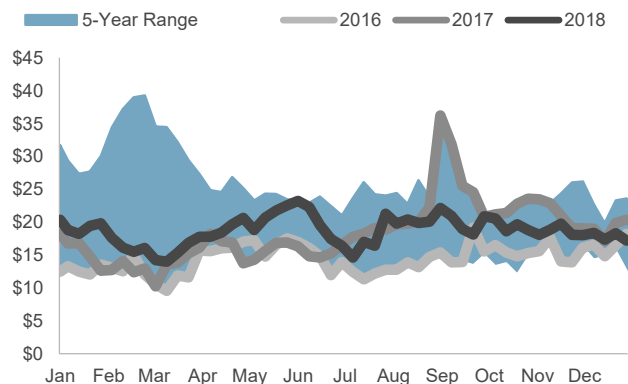


Refining – 5:3:2 Crack Spreads (\$/bbl) (cont.)

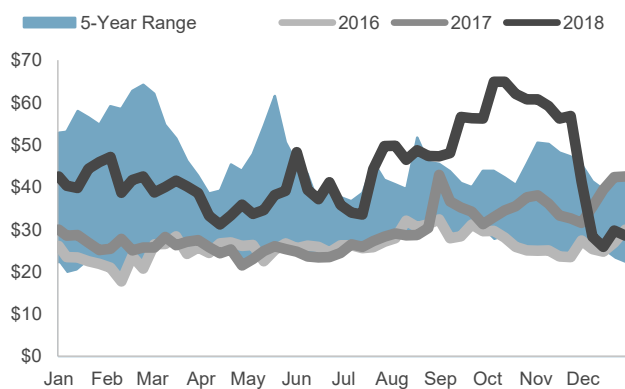
WTI Cushing (NYH RBOB Gasoline)



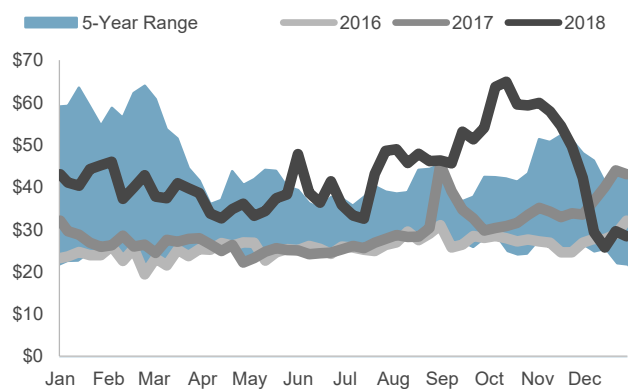
WTI Cushing ULSD (N.Y. Harbor)



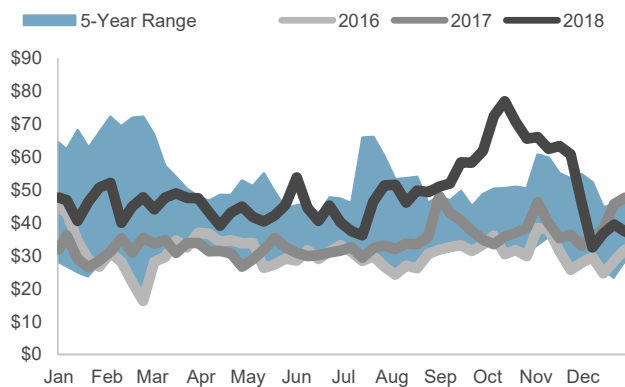
WCS (U.S. Mid-Continent)



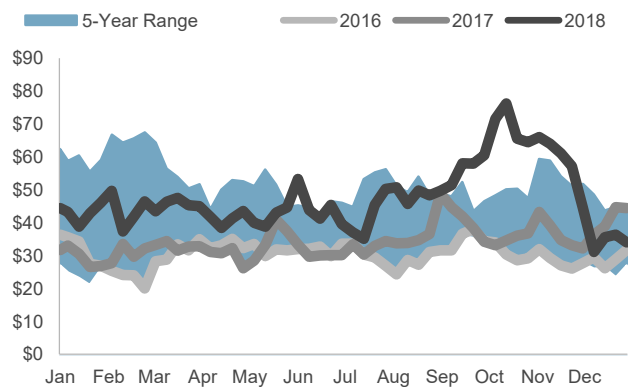
WCS (U.S. Gulf Coast)



WCS (U.S. West Coast)

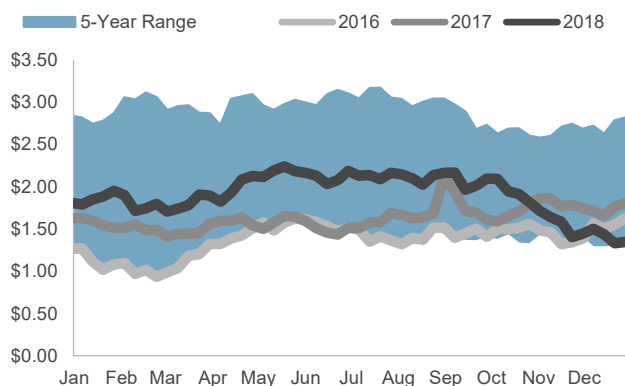


WCS (San Francisco)

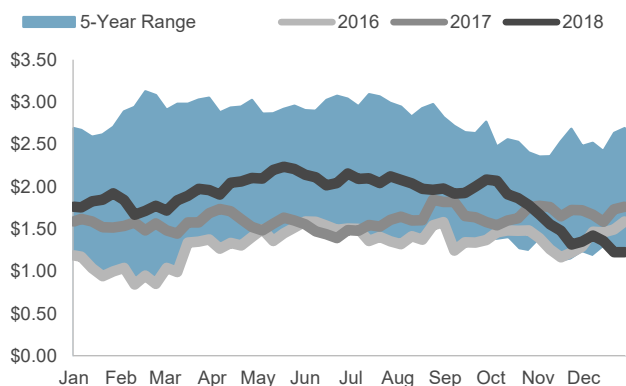


Refining – Product Prices (\$/gal)

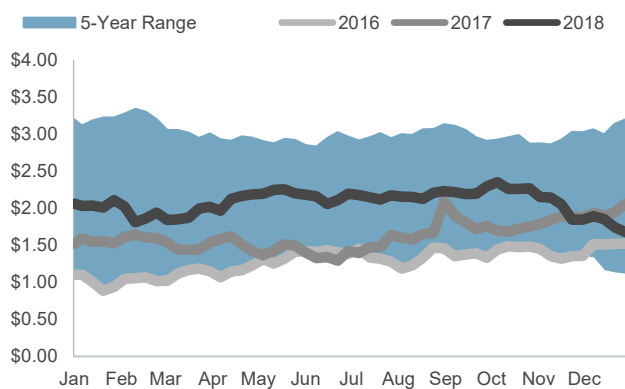
84 RBOB Gasoline (N.Y. Harbor)



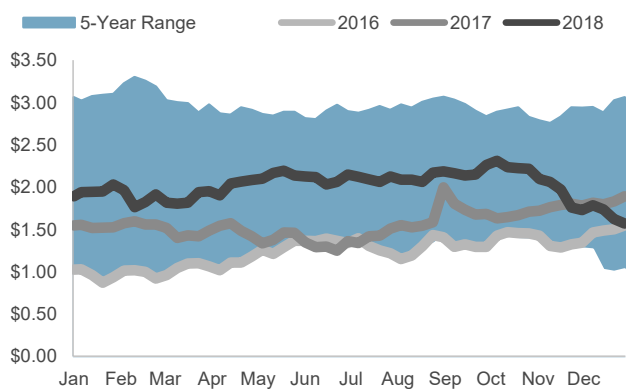
84 RBOB Gasoline (U.S. Gulf Coast)



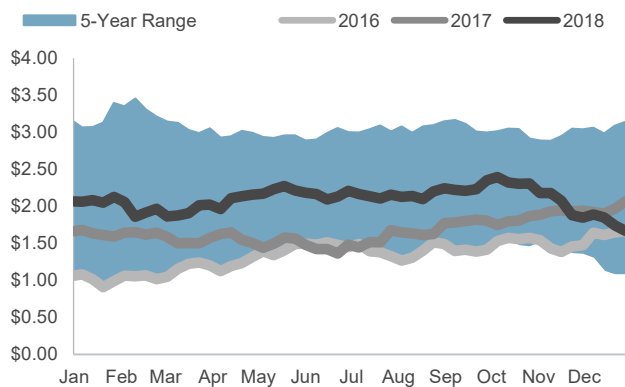
54-Grade Jet Fuel (N.Y. Harbor)



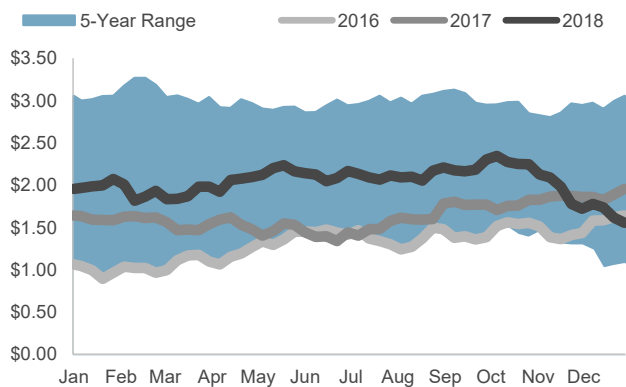
54-Grade Jet Fuel (U.S. Gulf Coast)



ULSD (N.Y. Harbor)



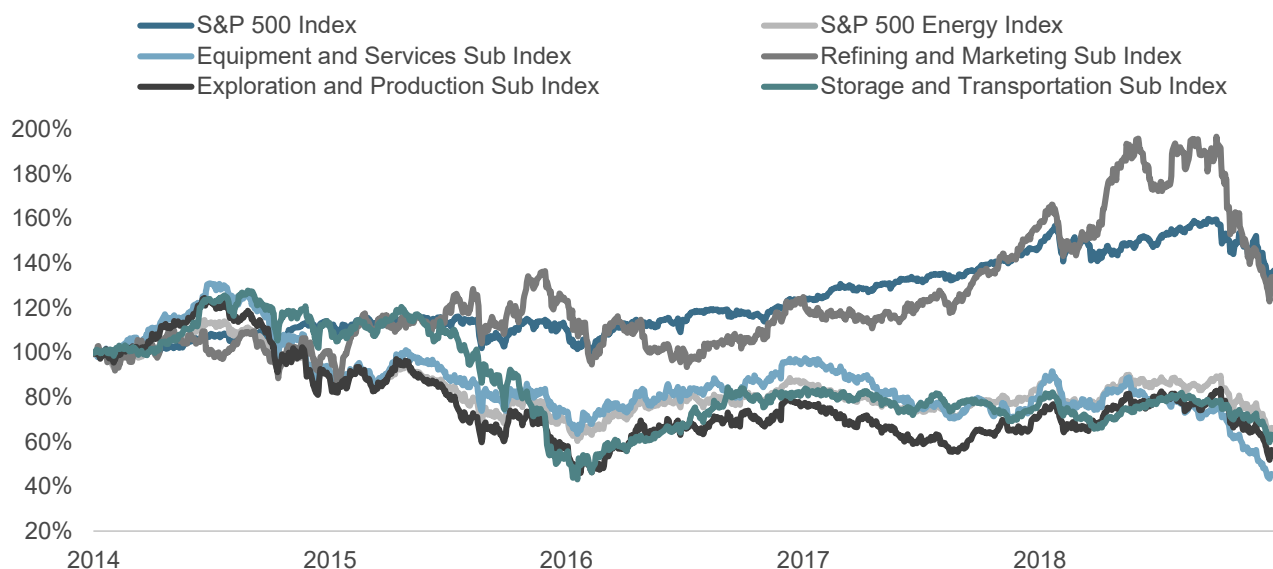
ULSD (U.S. Gulf Coast)



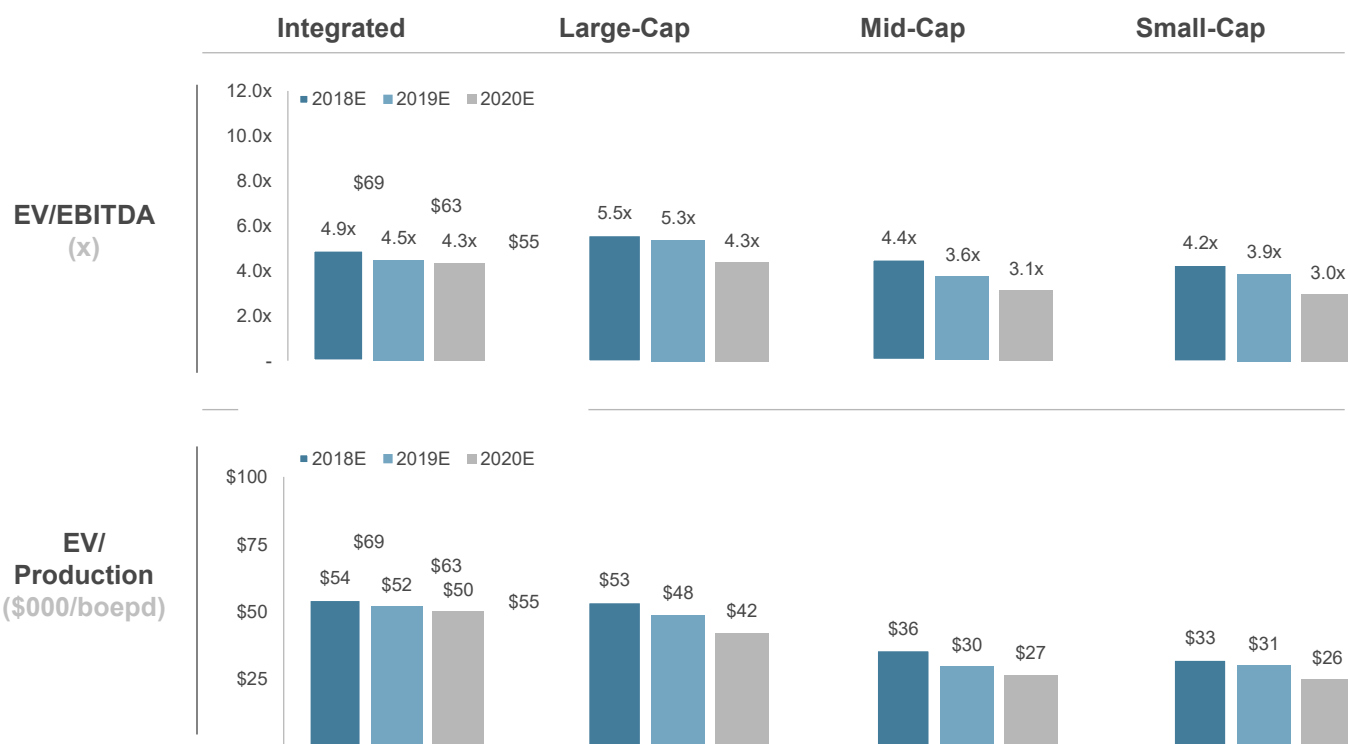
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Public Markets Overview

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



Public E&P Company Trading Metrics



Note: Trading multipliers are based on the latest available data as of December 31, 2018, and Q as at December 31, 2018.

Source: S&P Capital IQ.

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E&P

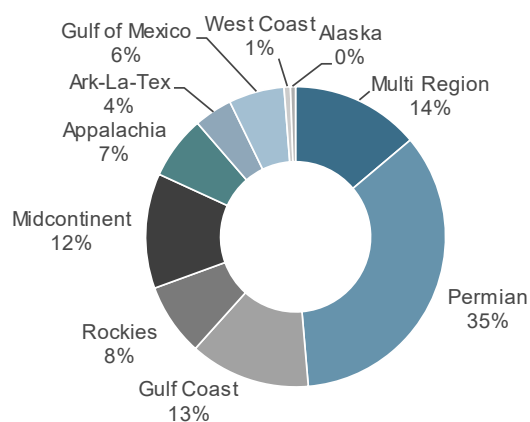
M&A (\$ in billions)

US Region	2016	2017	2018	%Δ
Multi Region	\$2.0	\$1.1	\$11.8	NMF
Permian	29.6	24.6	29.7	21%
Gulf Coast	4.8	6.9	11.1	61%
Rockies	7.4	11.9	6.7	-44%
Midcontinent	10.1	7.5	10.6	41%
Eastern	7.7	11.9	5.8	-51%
Ark-La-Tex	8.3	0.8	3.5	NMF
Gulf of Mexico	2.4	2.6	5.1	100%
West Coast	0.8	0.8	0.6	-29%
Alaska	0.2	0.4	0.5	16%
Total	\$73.2	\$68.5	\$85.5	25%

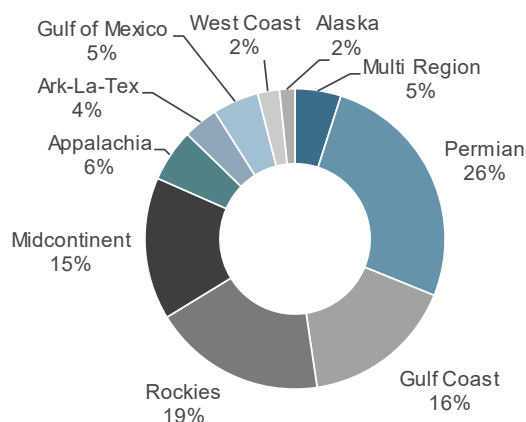
M&A (Deal Count)

US Region	2016	2017	2018	%Δ
Multi Region	26	28	21	-25%
Permian	110	130	111	-15%
Gulf Coast	66	75	70	-7%
Rockies	77	77	79	3%
Midcontinent	74	93	65	-30%
Appalachia	34	47	24	-49%
Ark-La-Tex	25	32	16	-50%
Gulf of Mexico	13	11	21	91%
West Coast	6	11	10	-9%
Alaska	2	1	7	NMF
Total	433	505	424	-16%

M&A – 2018 (\$ in billions)



M&A – 2018 (Deal Count)

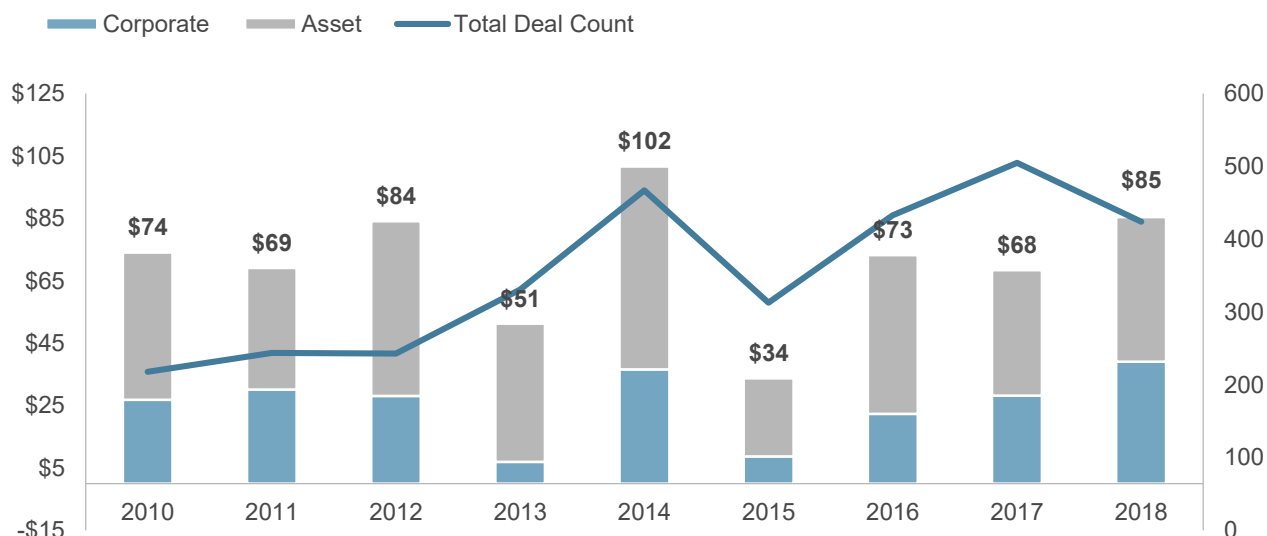


Note: All data as of December 31, 2018.

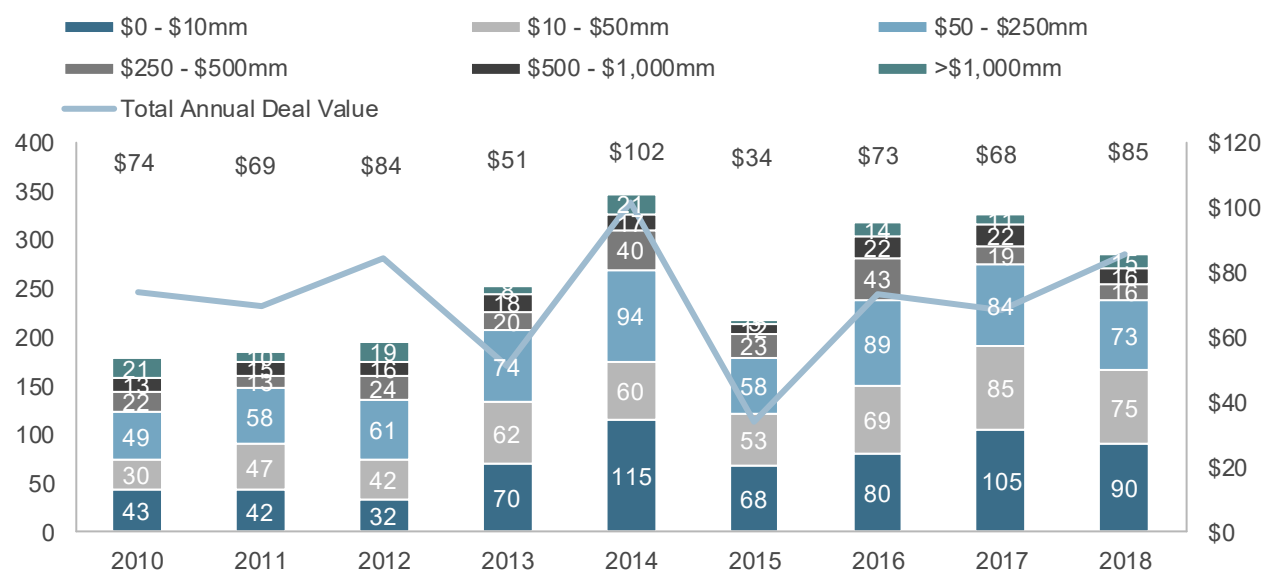
Source: PLS based on selection criteria of seller assets being located in the U.S.

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 December 31, 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

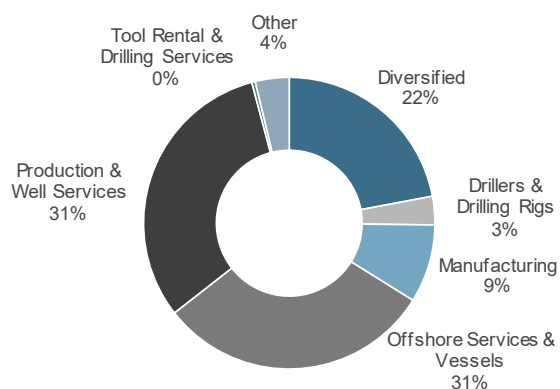
M&A (\$ in billions)

Segment	2016	2017	2018	%Δ
Diversified	33.1	4.6	5.8	27%
Drillers	0.5	0.3	0.8	NMF
Manufacturing	0.5	2.5	2.3	-9%
Offshore Services	0.1	1.7	8.1	NMF
Production & Well Services	1.2	9.8	8.3	-15%
Tool Rental & Drilling Services	0.0	1.0	0.1	NMF
Other	0.2	1.0	1.0	-2%
Total	\$35.8	\$20.9	\$26.4	26%

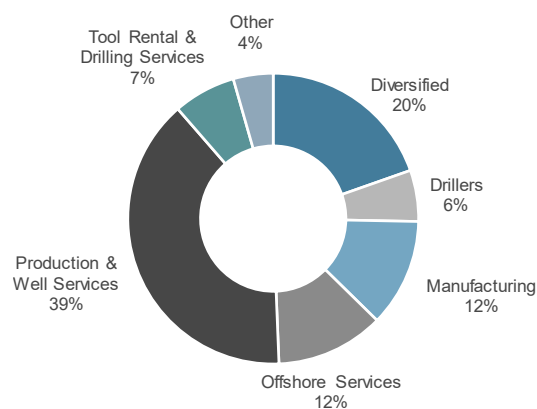
M&A (Deal Count)

Segment	2016	2017	2018	%Δ
Diversified	21	42	31	-26%
Drillers	6	7	9	29%
Manufacturing	27	35	19	-46%
Offshore Services	6	12	19	58%
Production & Well Services	41	67	62	-7%
Tool Rental & Drilling Services	9	15	11	-27%
Other	15	28	7	-75%
Total	125	206	158	-23%

M&A – 2018 (\$ in billions)



M&A – 2018 (Deal Count)



Note: All data as of December 31, 2018.

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

Downstream

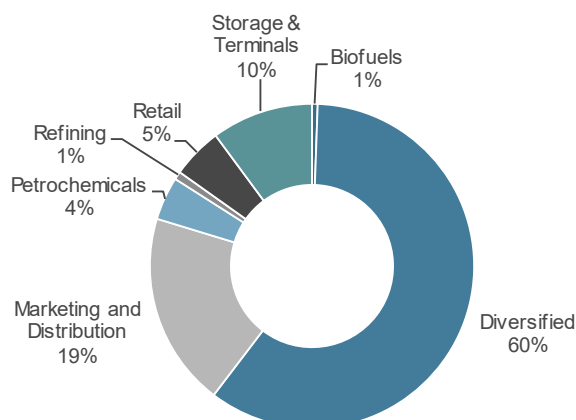
M&A (\$ in billions)

Segment	2016	2017	2018	%Δ
Biofuels	0.4	0.2	0.3	NMF
Diversified	6.8	10.7	33.9	NMF
Marketing and Distribution	8.8	3.7	11.0	NMF
Petrochemicals	9.2	2.1	2.4	16%
Refining	2.0	8.7	0.5	NMF
Retail	7.7	4.3	2.9	-34%
Storage & Terminals	2.1	10.3	5.7	-44%
Other	0.0	0.0	0.0	NMF
Total	\$37.0	\$39.9	\$56.7	42%

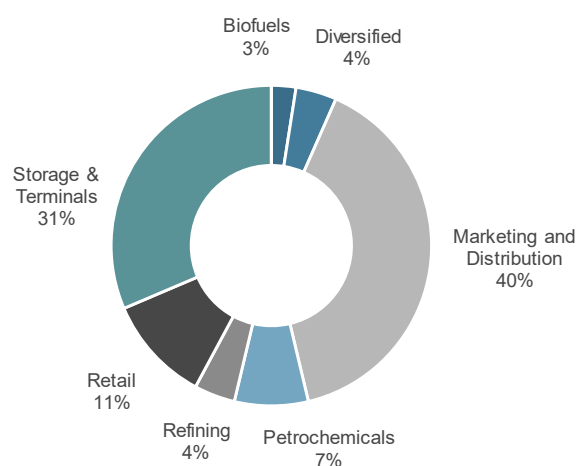
M&A (Deal Count)

Segment	2016	2017	2018	%Δ
Biofuels	7	2	3	50%
Diversified	5	8	5	-38%
Marketing and Distribution	38	39	48	23%
Petrochemicals	12	7	9	29%
Refining	17	7	5	-29%
Retail	24	15	13	-13%
Storage & Terminals	17	36	38	6%
Other	1	0	0	NMF
Total	121	114	121	6%

M&A – 2018 (\$ in billions)



M&A – 2018 (Deal Count)



Note: All data as of December 31, 2018.

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

Midstream

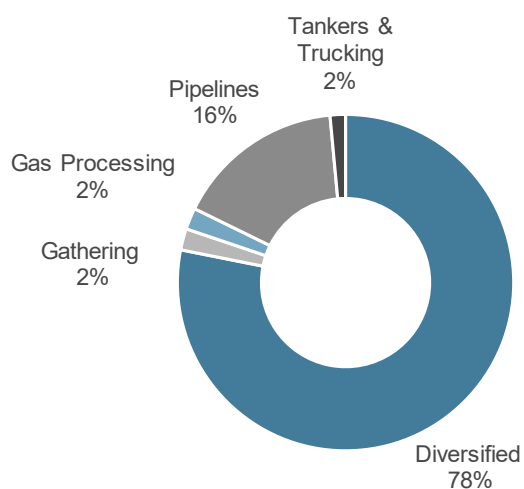
M&A (\$ in billions)

Segment	2016	2017	2018	%Δ
Diversified	25.5	56.8	144.0	153%
Gathering	2.9	4.2	3.8	-10%
Gas Processing	3.9	1.9	3.8	NMF
Pipelines	118.4	7.9	30.0	NMF
Tankers & Trucking	0.7	1.8	2.7	52%
Total	\$151.4	\$72.6	\$184.3	154%

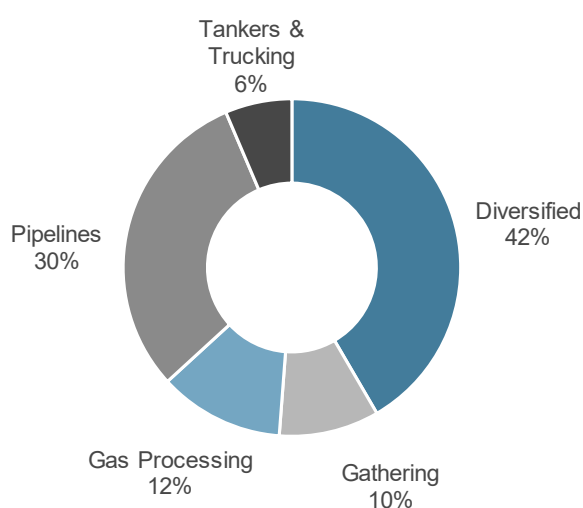
M&A (Deal Count)

Segment	2016	2017	2018	%Δ
Diversified	41	48	52	8%
Gathering	15	20	12	-40%
Gas Processing	13	10	15	50%
Pipelines	31	31	38	23%
Tankers & Trucking	7	6	8	33%
Total	107	115	125	9%

M&A – 2018 (\$ in billions)



M&A – 2018 (Deal Count)



Note: All data as of December 31, 2018.

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

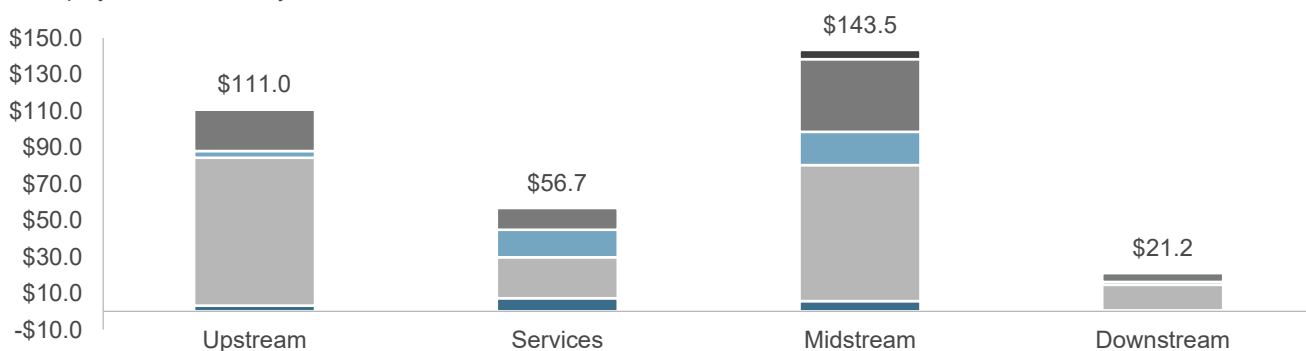
Financing by Instrument (\$ in billions)

Financing by Instrument (\$ in billions)

Capital	2016	2017	2018	%Δ
Upstream				
Equity	\$31.7	\$10.9	\$3.1	-71%
Credit Facility	17.4	15.6	81.2	421%
Loan	8.2	4.1	3.6	-11%
Bond	41.1	34.5	22.8	-34%
Other	0.1	0.5	0.3	-43%
Total	\$98.5	\$65.6	\$111.0	69%
Services				
Equity	\$4.1	\$5.5	\$7.2	31%
Credit Facility	8.8	25.4	22.4	-12%
Loan	4.9	9.7	15.0	55%
Bond	10.5	8.5	12.0	41%
Other	0.6	0.1	0.0	NMF
Total	\$29.0	\$49.2	\$56.7	15%
Midstream				
Equity	\$14.2	\$17.3	\$5.7	-67%
Credit Facility	20.5	40.0	74.5	86%
Loan	5.3	7.3	18.4	152%
Bond	27.7	38.0	39.8	5%
Other	13.8	12.9	5.1	-60%
Total	\$81.4	\$115.4	\$143.5	24%
Downstream				
Equity	\$1.0	\$0.3	\$0.5	45%
Credit Facility	13.6	9.3	14.0	51%
Loan	5.5	2.6	1.6	-38%
Bond	8.3	4.0	5.0	25%
Other	0.9	0.0	0.2	NMF
Total	\$29.4	\$16.2	\$21.2	31%
Integrated				
Equity	\$2.0	\$2.3	\$0.0	NMF
Credit Facility	1.3	0.0	0.9	NMF
Loan	0.3	0.0	0.0	NMF
Bond	37.8	11.2	10.8	-4%
Other	0.0	0.0	0.0	NMF
Total	\$41.3	\$13.4	\$11.6	-13%
Grand Total	\$279.5	\$259.8	\$344.0	32%

Financing by Instrument – 2018 (\$ in billions)

■ Equity ■ Credit Facility ■ Loan ■ Bond ■ Other



Note: All data as of December 31, 2018.

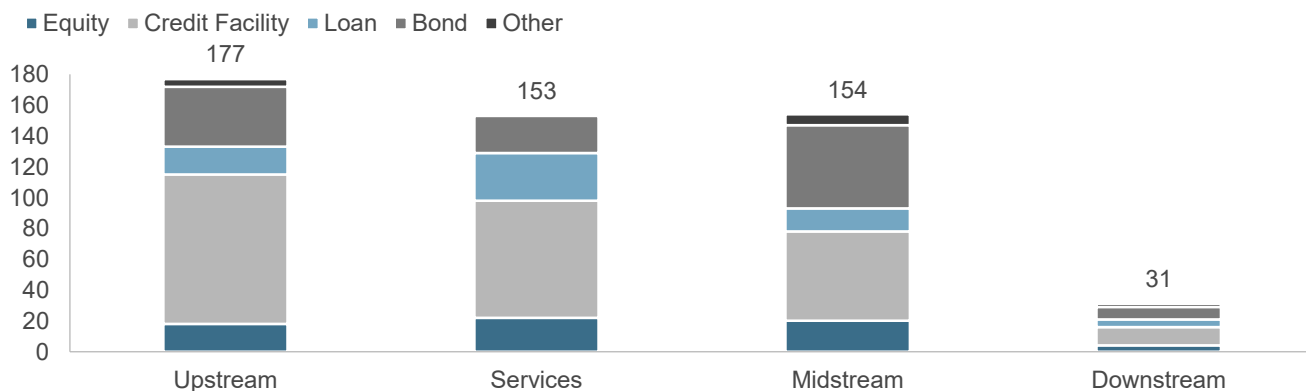
Source: PLS.

Financing by Instrument (Count)

Financing by Instrument (Count)

Capital	2016	2017	2018	%Δ
Upstream				
Equity	82	42	18	-57%
Credit Facility	38	23	97	322%
Loan	21	15	18	20%
Bond	63	55	39	-29%
Other	3	8	5	-38%
Total	207	143	177	24%
Services				
Equity	26	23	22	-4%
Credit Facility	21	52	76	46%
Loan	20	32	31	-3%
Bond	20	15	24	60%
Other	7	2	0	NMF
Total	94	124	153	23%
Midstream				
Equity	35	44	20	-55%
Credit Facility	27	32	58	81%
Loan	16	18	15	-17%
Bond	45	60	54	-10%
Other	28	25	7	-72%
Total	151	179	154	-14%
Downstream				
Equity	10	3	4	33%
Credit Facility	11	11	12	9%
Loan	18	3	5	67%
Bond	13	10	8	-20%
Other	5	0	2	NMF
Total	57	27	31	15%
Integrated				
Equity	1	1	0	NMF
Credit Facility	3	0	2	NMF
Loan	1	0	0	NMF
Bond	32	17	12	-29%
Other	0	0	0	NMF
Total	37	18	14	-22%
Grand Total	546	491	529	8%

Financing by Instrument – 2018 (Deal Count)

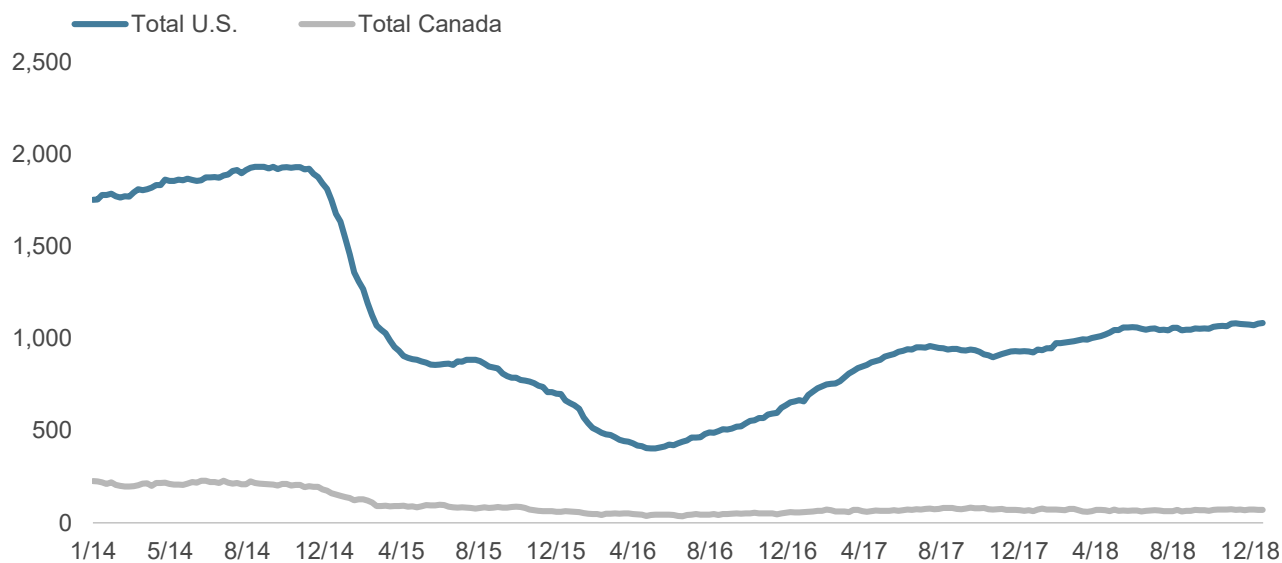


Note: All data as of December 31, 2018.
Source: PLS.

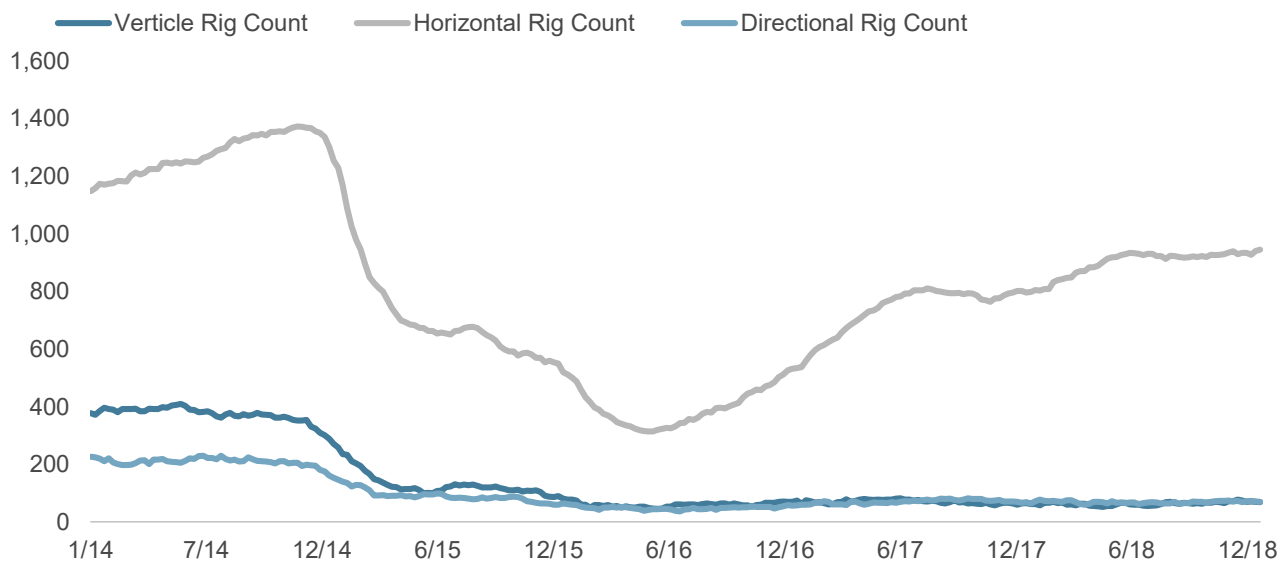
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Rigs

Total U.S. vs. Canada Rigs

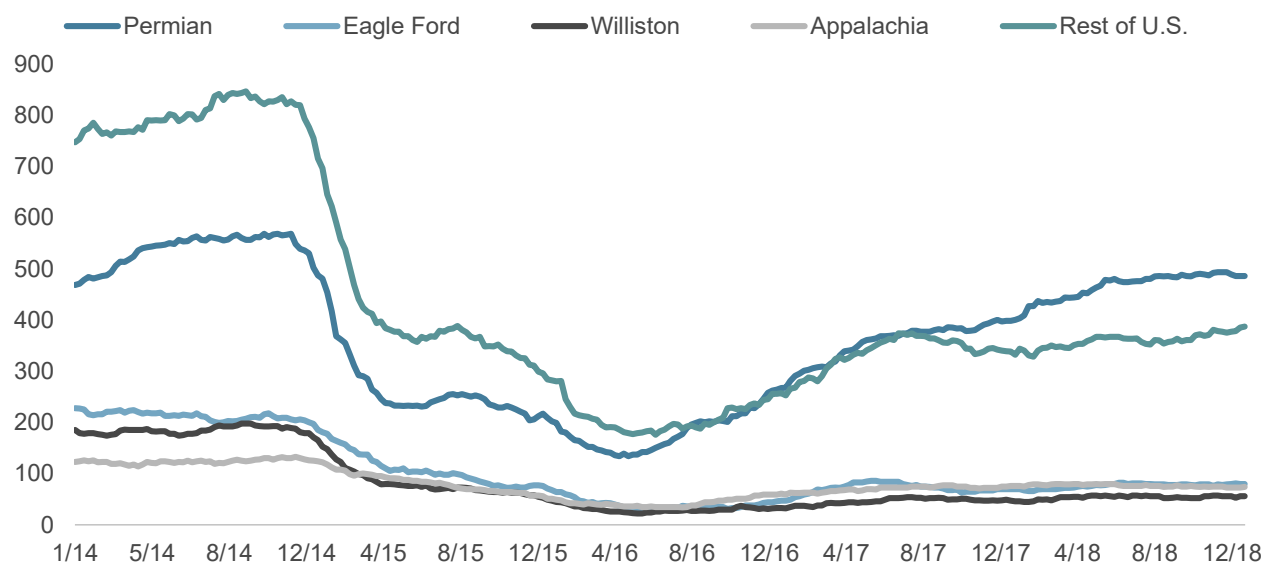


U.S. Rig Counts by Vertical, Horizontal, and Directional



Rigs (cont.)

U.S. Rigs by Regions

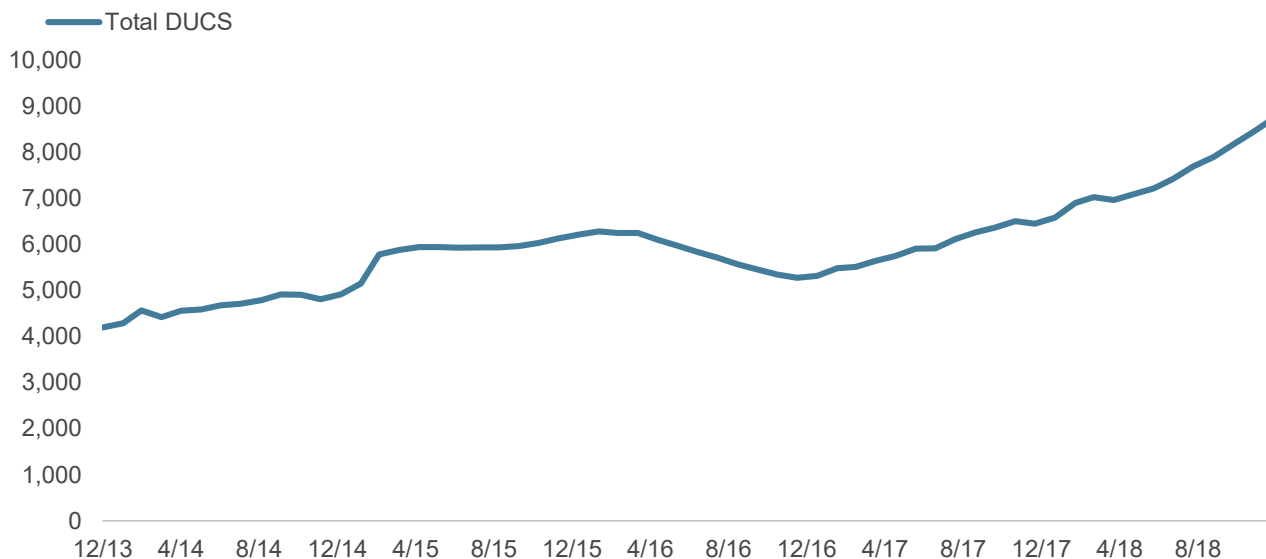


Change in Rig Counts

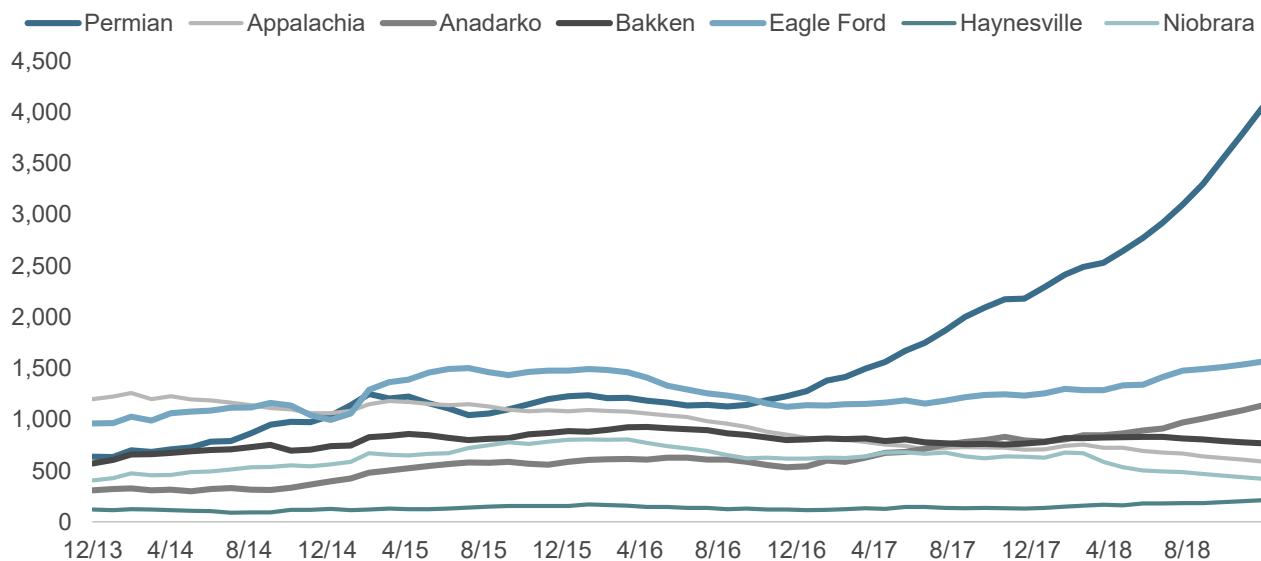
Region	12/31/2018	12/31/2017	9/30/2018	YoY % Change	QoQ % Change
Permian	486	398	486	22.1%	0.0%
Eagle Ford	80	70	79	14.3%	1.3%
Williston	56	47	53	19.1%	5.7%
Marcellus	57	48	55	18.8%	3.6%
Cana Woodford	59	73	67	-19.2%	-11.9%
DJ Niobrara	30	26	28	15.4%	7.1%
Granite Walsh	11	12	13	-8.3%	-15.4%
Haynesville	52	46	50	13.0%	4.0%
Utica	17	28	20	-39.3%	-15.0%
Rest of U.S.	235	181	203	29.8%	15.8%
Total	1,083	929	1,054	16.6%	2.8%

Rigs (cont.)

Total U.S. DUCs



Total DUCs by Basin



About Houlihan Lokey

Houlihan Lokey (NYSE:HLI) is a global investment bank with expertise in [mergers and acquisitions](#), [capital markets](#), [financial restructuring](#), [valuation](#), and [strategic consulting](#). The firm serves corporations, institutions, and governments worldwide with offices in the United States, Europe, the Middle East, and the Asia-Pacific region. Independent advice and intellectual rigor are hallmarks of the firm’s commitment to client success across its advisory services. Houlihan Lokey is [ranked](#) as the No. 1 M&A advisor for all U.S. transactions, the No. 1 global restructuring advisor, and the No. 1 global M&A fairness opinion advisor over the past 20 years, according to Thomson Reuters. For more information, please visit www.HL.com.

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Madrid

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Asia-Pacific

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Hong Kong

Singapore

Sydney

Tokyo

HLI

LISTED

NYSE

Houlihan Lokey holds an indirect minority stake in Leonardo & Co. S.p.A., an investment bank with an office in Milan.

Industry Expertise

Product Expertise

- Mergers & Acquisitions
- Capital Markets
- Financial Restructuring
- Financial Advisory
- Strategic Consulting

Dedicated Industry Group

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