



HOULIHAN LOKEY

Oil & Gas

Industry Update | Q1 2019



Table of Contents

	Page
1. Houlihan Lokey Snapshot	4
2. Crude Oil	8
3. Natural Gas and NGLs	23
4. LNG	36
5. Refining	40
6. Public Equity Markets Overview	52
7. M&A and Financing Activity	54
8. Rigs	62

Houlihan Lokey Oil & Gas Update

Dear Clients and Friends,

Houlihan Lokey is pleased to present its Oil & Gas Industry Update for Q1 2019.

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

Regards,



J.P. Hanson
Managing Director
Head of the Oil & Gas Group
1001 Fannin St.
Houston, TX 77002
JHanson@HL.com
832.319.5115



Robert Teigman
Director
Oil & Gas Valuation & Board Advisory
1001 Fannin St.
Houston, TX 77002
RTeigman@HL.com
832.319.5138

Additional Oil & Gas Group Contacts

Kirk Tholen
Managing Director
KTholen@HL.com
832.319.5110

Michael Roberts
Managing Director
MRoberts@HL.com
832.319.5141

Brett Lowrey
Managing Director
BLowrey@HL.com
214.220.8480

Mike Giffin
Managing Director
MGiffin@HL.com
214.220.8485

Jerry Eumont
Director, Geologist
JEumont@HL.com
832.319.5119

Daniel Crowley
Director
DCrowley@HL.com
212.497.7845

Josh Eaves
Director
JEaves@HL.com
212.497.4273

Russell Mason
Director
RMason@HL.com
214.665.8622

Robert Webster
Director, Geosciences

Mukul Hariharan
Senior Vice President
MHariharan@HL.com
832.319.5145

Richard Villanueva
Petroleum Engineer

Manny Vedi
Associate
MVedi@HL.com
832.319.5135

Key Quarterly Trends

“Global oil markets are going through a period of extraordinary change...”

– IEA Oil 2019 Analysis and Forecast to 2024

- It's hard to find a more true depiction of the ongoing disruption the oil and gas industry has been experiencing, including throughout Q1 2019.
- Commodity price volatility in late 2018 exasperated languishing public oil and gas capital markets and bolstered investors' push for upstream companies to do more with operations and development relying on internally generated cash flows; this combined to result in a lull in early 2019 M&A&D and public markets activity.
 - Public capital market conditions remain challenged, encouraging industry participants to explore private sources of capital. Private capital activity has picked up significantly in the form of new term loans, preferred equity financings, JVs/DrillCos, and other structured solutions.
 - By now widely reported, the value of U.S. oil and gas M&A&D fell to a 10-year low in Q1 2019.
 - The most publicly noted M&A termination victim in the first quarter was the doomed proposed Denbury Resources/Penn Virginia transaction.
 - On the flipside and not to preview Q2 2019's report at this stage, but obviously upstream M&A picked up dramatically in Q2, including the CVX/OXY battle over APC and MPO/AMPY merger of equals; as well as an increase in traditional A&D transactions (Shell/Delek in GOM—overturned by Equinor exercising a preference right; Pioneer selling its remaining Eagle Ford acreage and new entrant Spur acquiring in the Delaware, among others).
 - Speculation abounds regarding other potential M&A targets, including Pioneer, Concho, Noble, Cimarex, and PDC; while we at Houlihan Lokey are in the camp that M&A activity led by Majors will be sparse/highly selective and will not directly translate to SMID M&A activity, current investor and public capital market sentiment should drive mergers to occur as the upstream industry is in desperate need of consolidation to achieve cost reductions and economies of scale to maximize cash flows.
- Activism as a means to drive change, whether by encouraging (not mutually exclusive) M&A&D transaction activity and/or a reduction in LOE/OpEx, CapEx and ultimately SG&A, has continued to gain steam, including the Kimmeridge/PDC and Elliott/QEP campaigns.
- The recent commodity price environment has also sparked a new (albeit thankfully) smaller wave of potential financial restructuring needs in the upstream and midstream sectors, including Vanguard Natural Resources, Sanchez Oil & Gas, Southcross Energy Partners, L.P., among others.
- While the number of rigs operating in the U.S. declined six straight weeks to close out the first quarter, crude oil production reached a new record of 12.2 million barrels per day.
 - Rig counts have a lagging impact on production growth. Prospectively flat-to-slower-production growth, coupled with continued economic growth, may sow the seeds for the next run-up in commodity prices.
- Chevron and ExxonMobil both announced significant accelerated growth plans for the Permian Basin during the quarter. Their growth plans tend to have a longer-term focus and thus are typically less sensitive to commodity price volatility than independent E&P companies.
 - While takeaway capacity for oil has been addressed in the Permian, this quarter saw Waha Hub natural gas prices turn negative as natural gas takeaway (coupled with compression station outages) weighed on prices.
 - The rapid catch up in Permian oil takeaway capacity may put pressure on pipeline contract rates in the future.
- Speaking of midstream, while upstream activity overall stalled in Q1 2019, the midstream sector remains robustly active, as pipeline buildouts were supported by public and private capital markets in order to meet takeaway transportation demand.

	Page
1. Houlihan Lokey Snapshot	4
2. Crude Oil	8
3. Natural Gas and NGLs	23
4. LNG	36
5. Refining	40
6. Public Equity Markets Overview	52
7. M&A and Financing Activity	54
8. Rigs	62



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**

Energy & Power M&A

2018 M&A Advisory Rankings U.S. Energy & Power Transactions Under \$1 Billion		
Advisor	Deals	
1 Houlihan Lokey	24	
2* Goldman Sachs & Co	23	
2* Evercore Partners	23	
4 Jefferies LLC	17	
5 Perella Weinberg Partners LP	16	

Source: Thomson Reuters
* Denotes tie

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

William Crowley
Financial Analyst

Valuation/ Diligence

Andrew Sandberg
Vice President

Michael Sicari
Financial Analyst

Houston

Banking/ Coverage

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

Chulley Bogle
Sr. Vice President

Daniel Villarreal
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
Associate

Gregory Fagan
Engineering
Associate

Avinash Mohapatra
Engineering Associate

Melissa Higginson
Engineering
Associate

Dallas

Banking/ Coverage

Brett Lowrey
Managing Director

Russell Mason
Director

Justin Zammit
Sr. Vice President

Jim Georgeadis
Vice President

Michael O'Hanlon
Associate

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

Technical/A&D

- Over \$50 billion in combined transactions
- Specialists in:
 - Technical advisory
 - Asset dispositions and swaps
 - Equity and working interest sales
 - JV structuring and partner identification

Mergers & Acquisitions

- No. 1 U.S. M&A advisor
- Corporate M&A and spin-off advisory, structuring, negotiation, and execution
- Extensive reach in market trends and relationships
- Specialize in tailored processes to maximize value for our clients

Recapitalization/Restructuring

- We have been engaged in the most notable E&P recapitalizations and restructurings of the recent and prior commodity downturn cycles



Capital Markets

- We provide capital solutions customized to fit our clients' needs

Financial Advisory

- No. 1 global M&A fairness opinion advisor over the past 20 years
- 1,000+ annual valuation engagements
- Transaction advisory services, including ability to bundle due diligence and QofE services

Trusted Advisor

- Currently retained on 18 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⁾

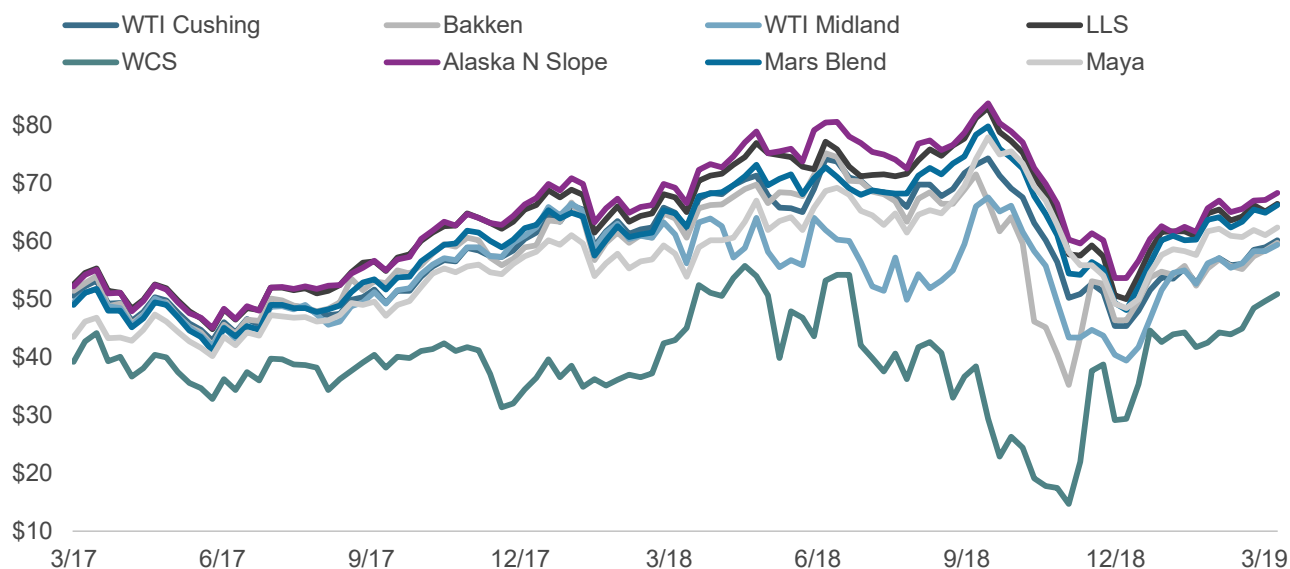
<p>has completed a refinancing of its working capital facilities with a new Term Loan B \$1,200,000,000</p> <p>Sole Placement Agent</p>	<p>Cox Operating LLC</p> <p>has acquired</p> <p>Company Advisor</p>	<p>Project Naga</p> <p>is currently exploring strategic alternatives</p> <p>Company Advisor</p>	<p>Project Renew</p> <p>is currently pursuing a potential financing transaction</p> <p>Financial Advisor</p>	<p>Project Fuji</p> <p>is currently pursuing a sales process of international downstream assets</p> <p>Sellside Advisor</p>	<p>has acquired certain natural gas and oil leasehold interests, fee minerals and related assets from</p> <p>Financial Advisor & Fairness Opinion</p>
<p>has completed the sale of its East Texas and North Louisiana properties</p> <p>Sellside Advisor</p>	<p>has been acquired by a wholly-owned subsidiary of</p> <p>Sellside Advisor & Fairness Opinion</p>	<p>Southwestern Energy</p> <p>has sold its Fayetteville Shale E&P and related midstream gathering assets to</p> <p>Flywheel Energy, LLC, a private company backed by Kayne Private Energy Income Funds</p> <p>Fairness Opinion</p>	<p>has completed the divestiture of its Hugoton assets</p> <p>Sellside Advisor</p>	<p>has acquired ~44,500 net acres in Potter and Tioga Counties, PA from</p> <p>Financial Advisor & Fairness Opinion</p>	<p>a portfolio company of</p> <p>Reserve-Based Lending Facility Refinancing</p> <p>\$500,000,000</p> <p>Exclusive Placement Agent</p>

(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.

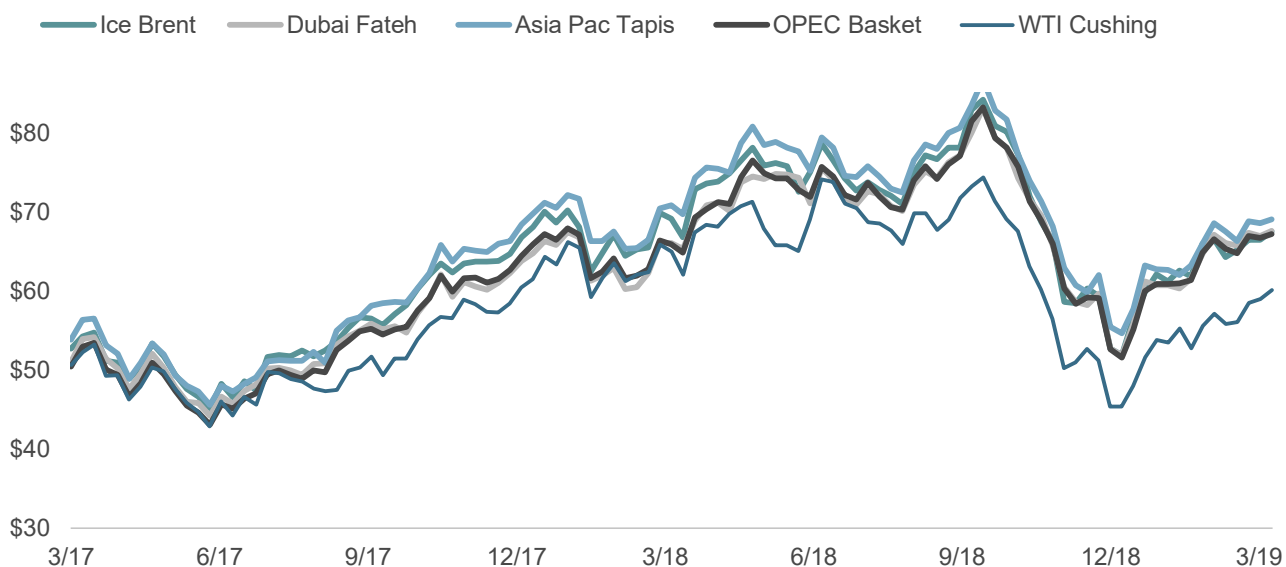
	Page
1. Houlihan Lokey Snapshot	4
2. Crude Oil	8
3. Natural Gas and NGLs	23
4. LNG	36
5. Refining	40
6. Public Equity Markets Overview	52
7. M&A and Financing Activity	54
8. Rigs	62

Spot Pricing

North American Spot Prices (\$/bbl)

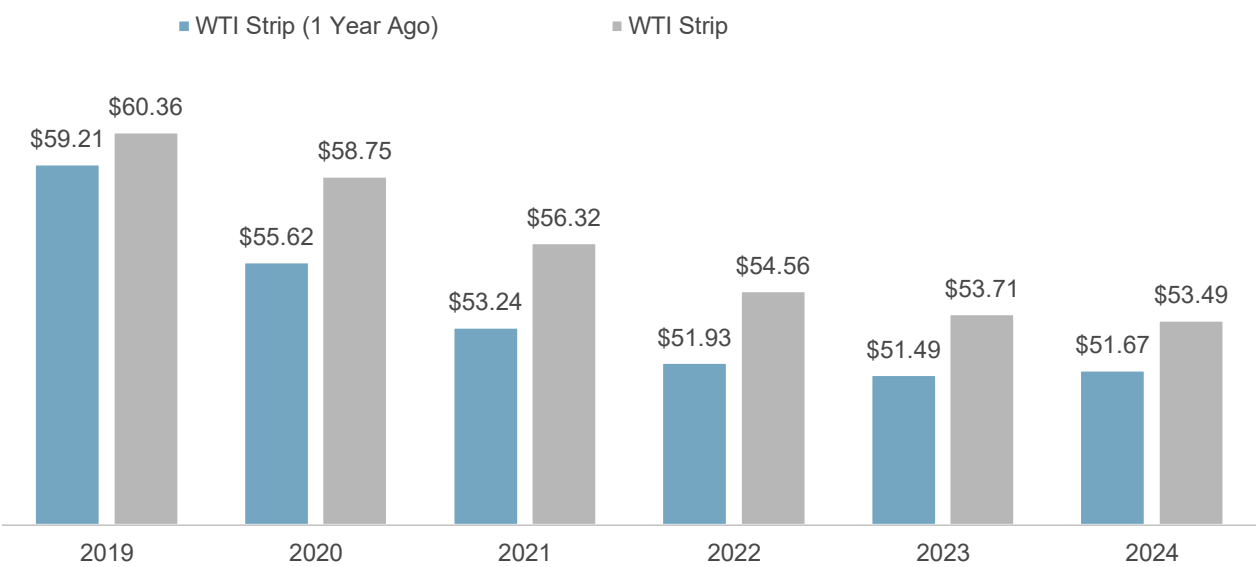


International Spot Prices (\$/bbl)

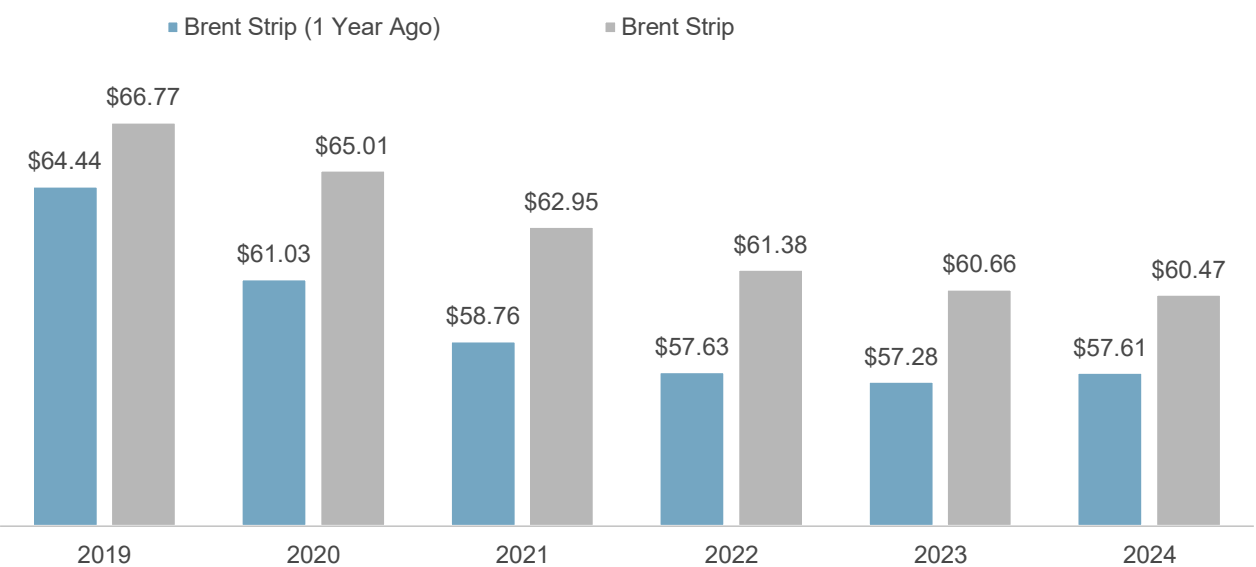


Strip Pricing

WTI Cushing Strip Pricing Comparison (\$/bbl)

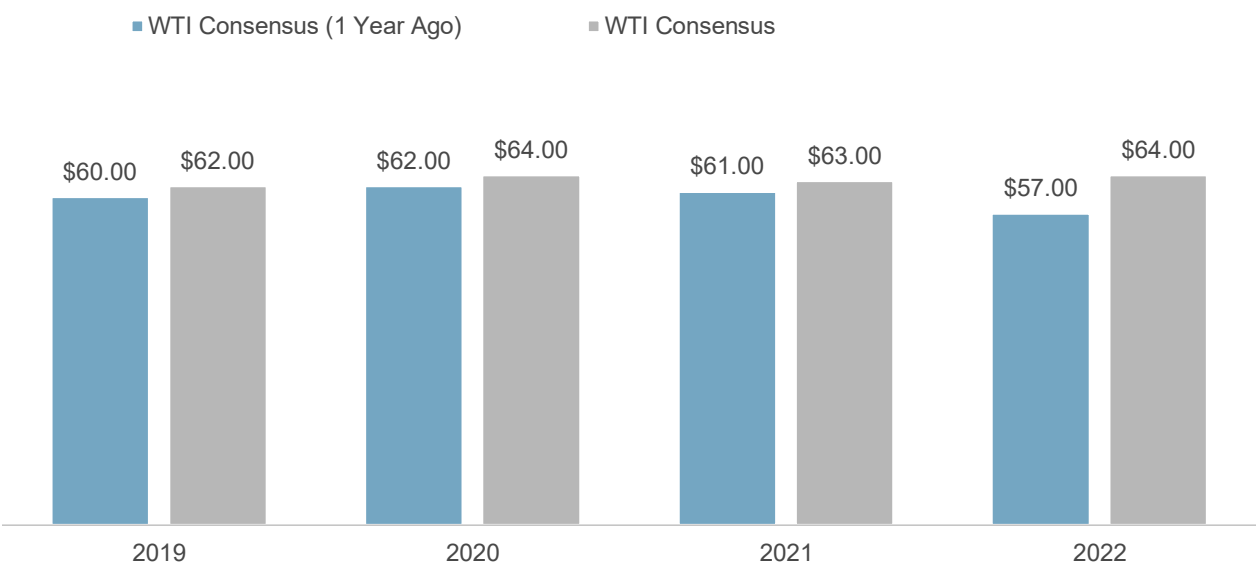


Brent Strip Pricing Comparison (\$/bbl)

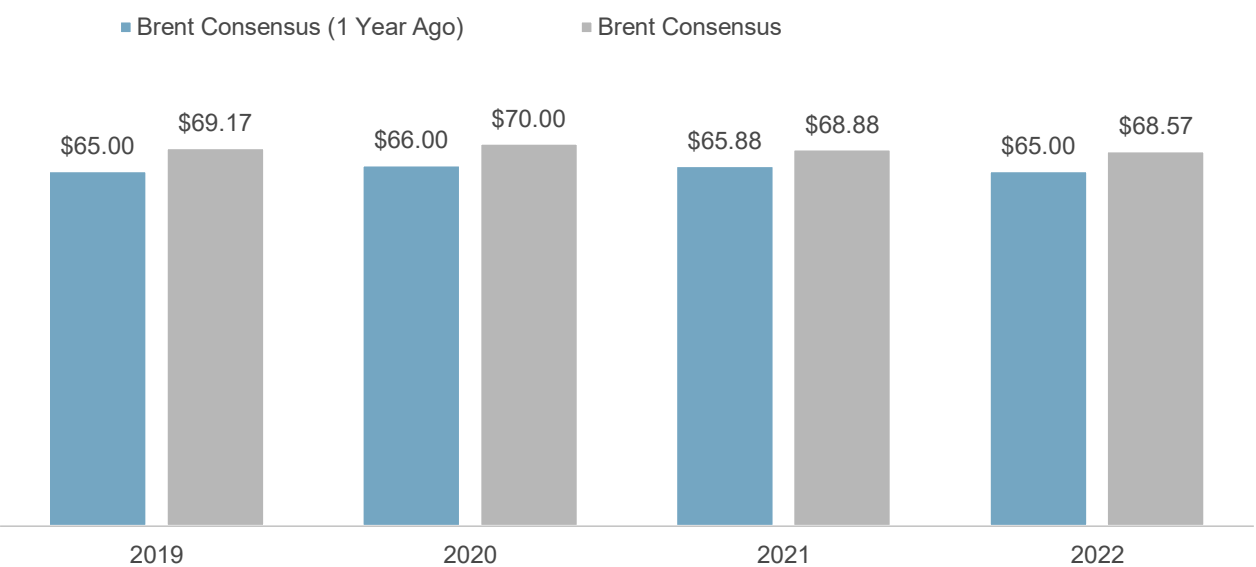


Consensus Pricing

WTI Cushing Consensus Pricing Comparison (\$/bbl)



Brent Consensus Pricing Comparison (\$/bbl)



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

Differentials

Regional Crude Oil Spot Pricing

Region	3/31/2019	3/31/2018	12/31/2018	YoY % Change	QoQ % Change
Brent	\$67.5	\$69.1	\$53.2	-2.3%	27.0%
<i>Brent – WTI Cushing</i>	<i>\$7.4</i>	<i>\$4.2</i>	<i>\$7.8</i>		
WTI Cushing	\$60.1	\$64.9	\$45.4	-7.4%	32.4%
<i>WTI Cushing – Brent</i>	<i>(\$7.4)</i>	<i>(\$4.2)</i>	<i>(\$7.8)</i>		
WTI Midland	\$59.3	\$61.2	\$40.4	-3.0%	46.8%
<i>WTI Cushing – WTI Midland</i>	<i>\$0.8</i>	<i>\$3.8</i>	<i>\$5.0</i>		
Bakken	\$59.7	\$63.9	\$46.4	-6.6%	28.7%
<i>WTI Cushing – Bakken</i>	<i>\$0.4</i>	<i>\$1.0</i>	<i>(\$1.0)</i>		
Eagle Ford Light	\$56.5	\$61.0	\$42.3	-7.4%	33.7%
<i>WTI Cushing – Eagle Ford Light</i>	<i>\$3.6</i>	<i>\$3.9</i>	<i>\$3.2</i>		
WTS	\$61.1	\$61.2	\$40.2	-0.2%	52.2%
<i>WTI Cushing – WTS</i>	<i>(\$1.0)</i>	<i>\$3.7</i>	<i>\$5.3</i>		
WCS	\$50.9	\$42.9	\$29.7	18.4%	71.5%
<i>WTI Cushing – WCS</i>	<i>\$9.3</i>	<i>\$22.0</i>	<i>\$15.8</i>		
Maya	\$62.4	\$57.8	\$48.9	7.9%	27.4%
<i>Maya – WCS</i>	<i>\$11.5</i>	<i>\$14.9</i>	<i>\$19.3</i>		
Mars	\$66.2	\$64.8	\$48.3	2.1%	37.2%
<i>WTI Cushing – Mars</i>	<i>(\$6.1)</i>	<i>\$0.1</i>	<i>(\$2.9)</i>		
LLS	\$66.4	\$67.6	\$50.6	-1.7%	31.4%
<i>LLS – Maya</i>	<i>\$4.1</i>	<i>\$9.8</i>	<i>\$1.6</i>		
ANS	\$68.4	\$69.2	\$53.4	-1.2%	28.0%
<i>Brent – ANS</i>	<i>(\$0.9)</i>	<i>(\$0.1)</i>	<i>(\$0.2)</i>		

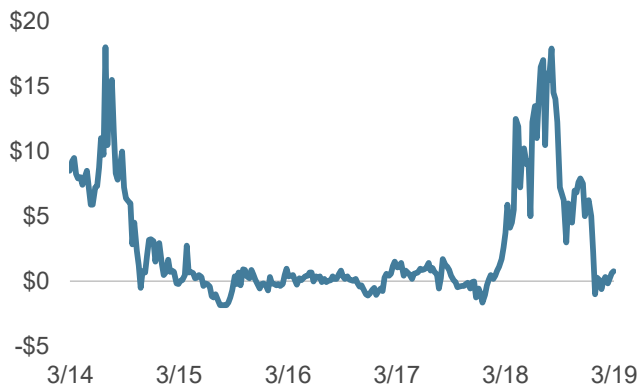
Note: All data as of March 31, 2019. Data collected on a daily basis.
Source: Bloomberg.

Differentials (\$/bbl)

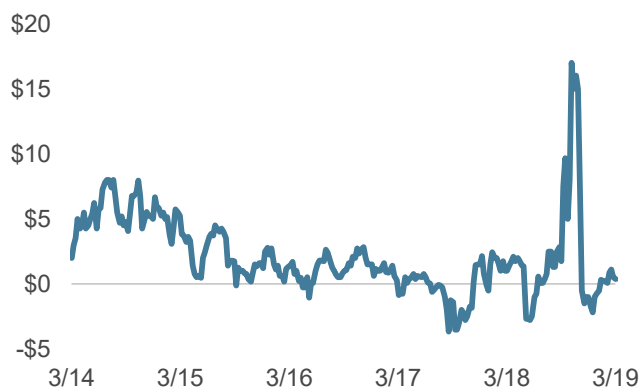
Brent – WTI Cushing



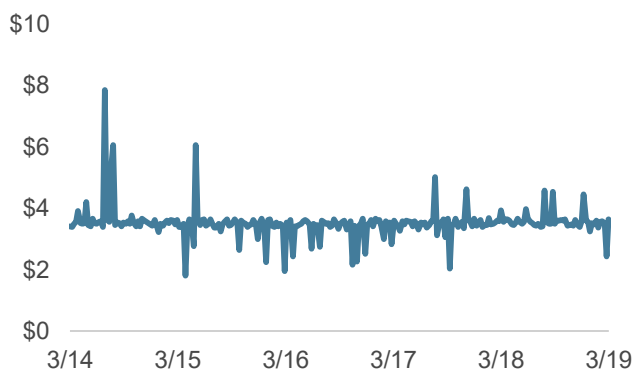
WTI Cushing – WTI Midland



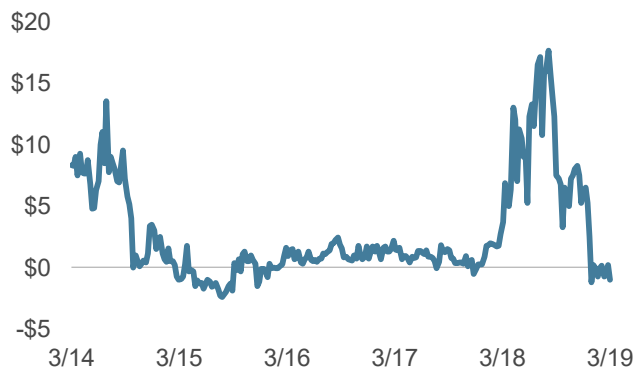
WTI Cushing – WTI Bakken Clearbrook



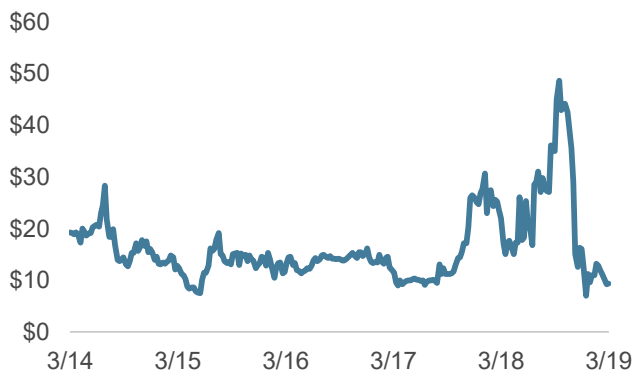
WTI Cushing – Eagle Ford Light



WTI Cushing – WTS



WTI Cushing – WCS

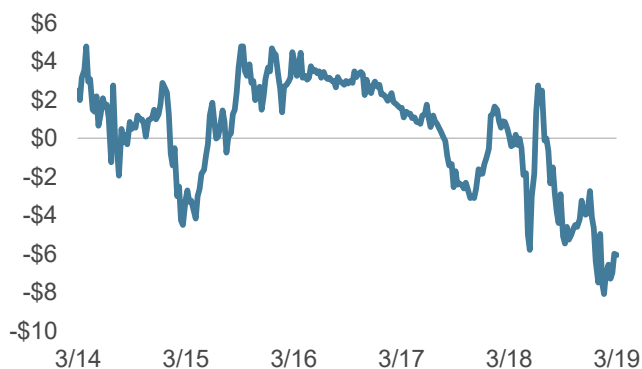


Differentials (\$/bbl) (cont.)

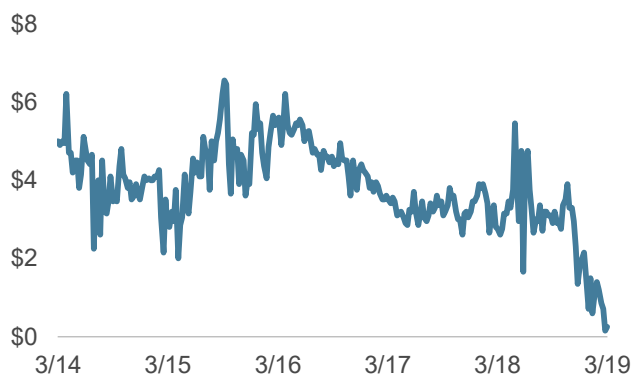
WTI Cushing – Maya



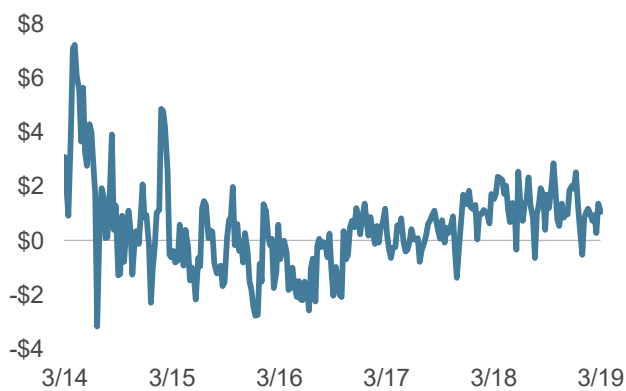
WTI Cushing – Mars



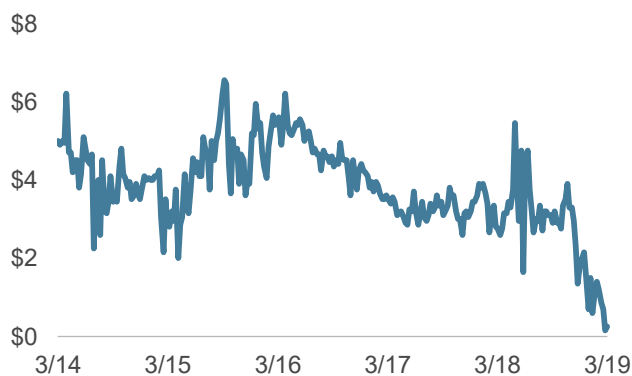
LLS – WTI Cushing



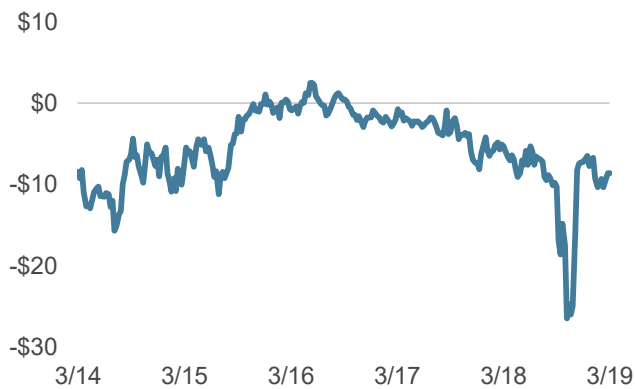
Brent – LLS



LLS – Mars

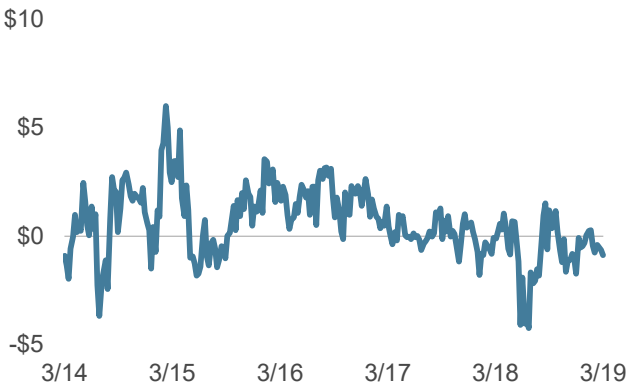


Bakken – ANS



Differentials (\$/bbl) (cont.)

Brent – ANS



Maya – WCS



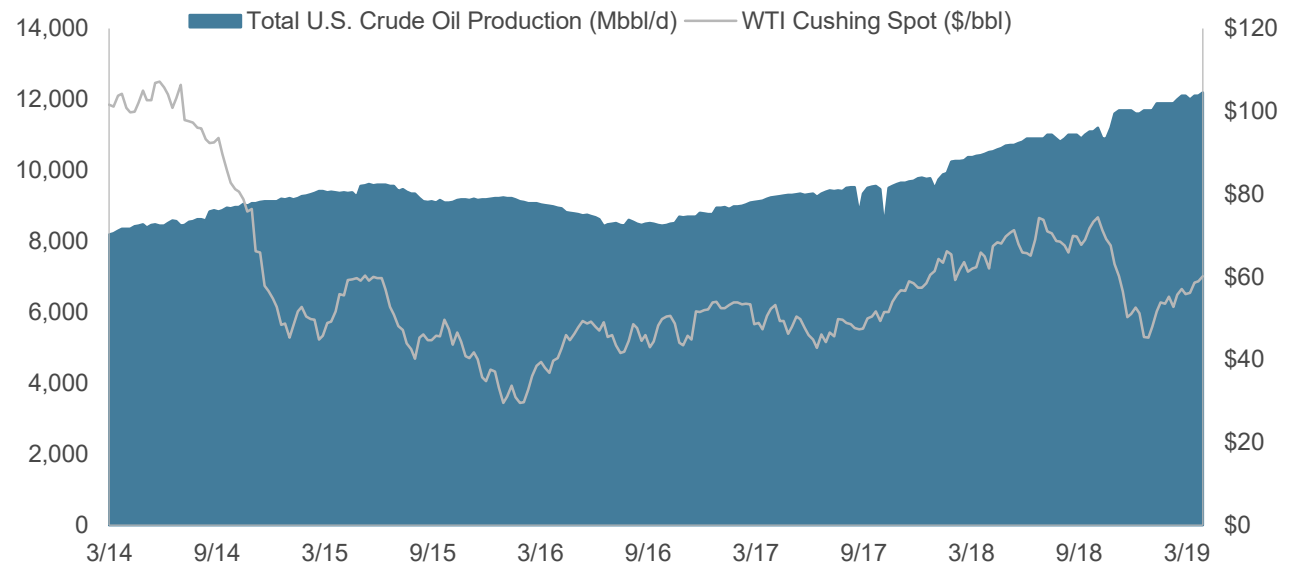
LLS – Maya



*Note: All data as of March 31, 2019. Data collected on a weekly basis.
Source: Bloomberg.*

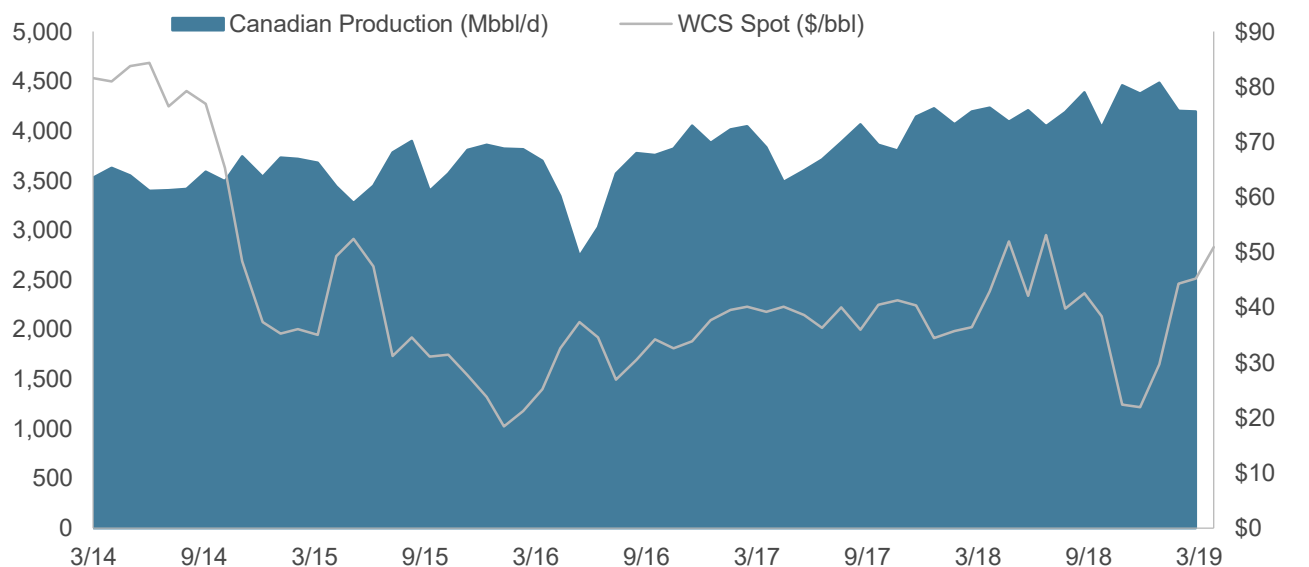
Production

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.

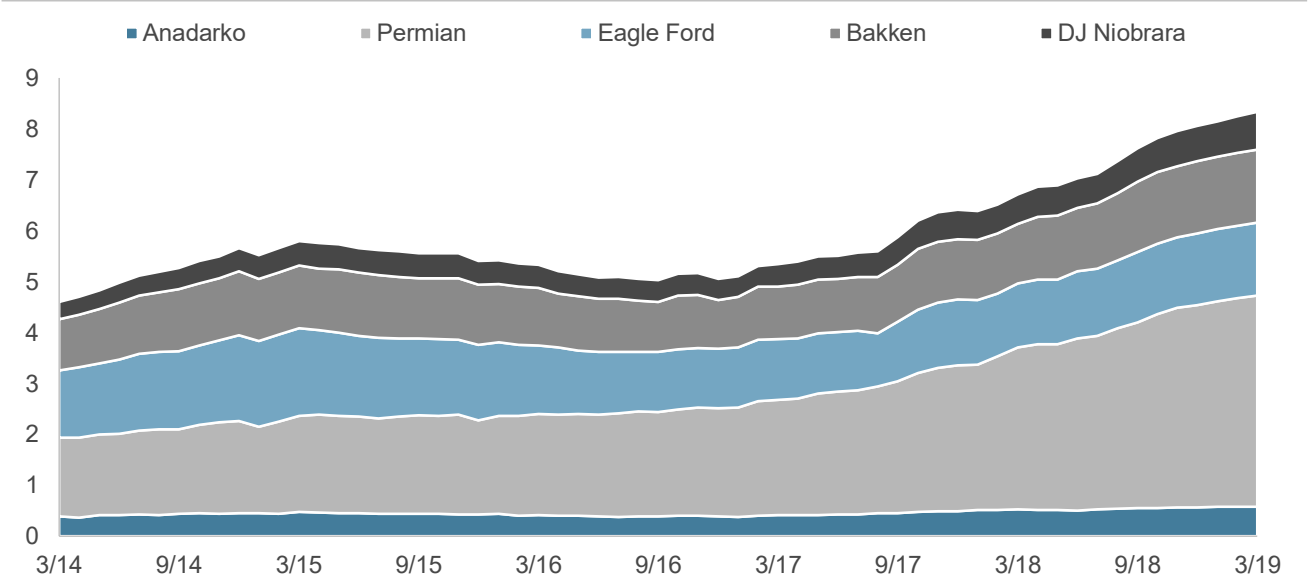
Canadian Production (Mbbbl/d) vs. WCS (\$/bbl)



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⁾



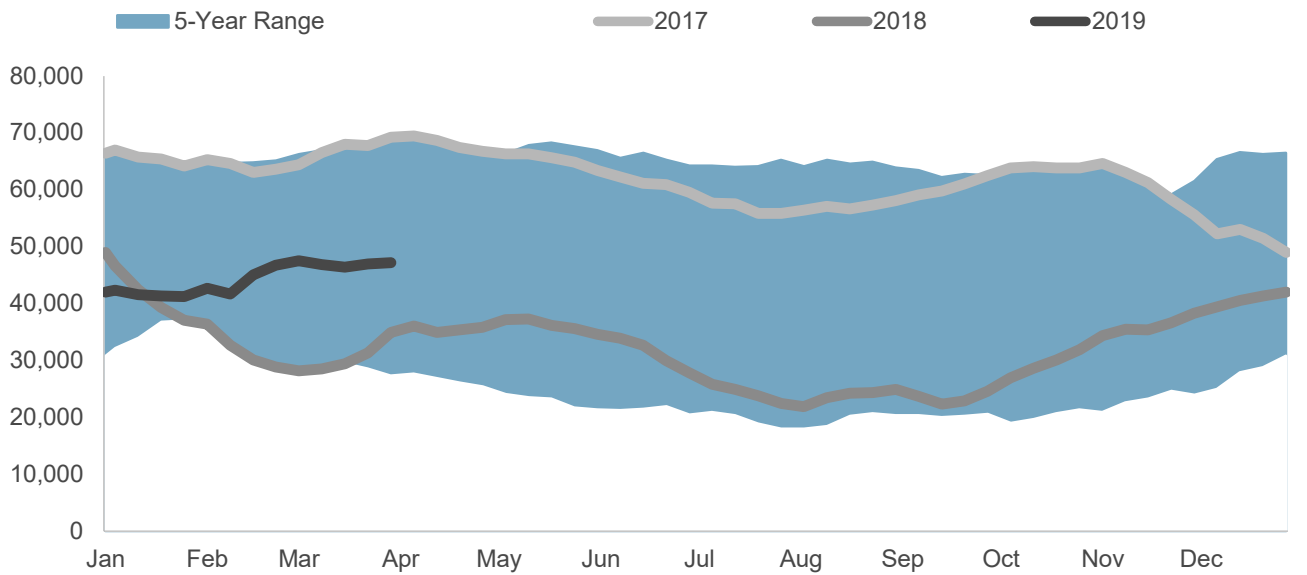
Note: All data as of March 31, 2019. Data collected on a monthly basis.

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.

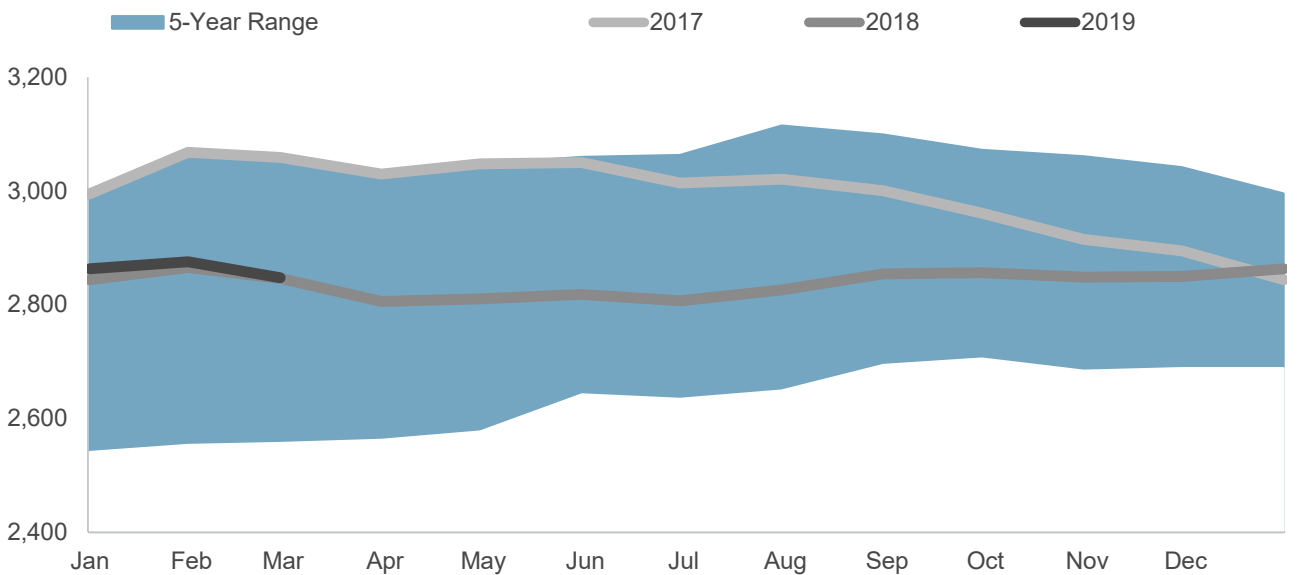
Inventory

U.S. Cushing Crude Inventory (Mbbl)



Note: Data collected on a weekly basis.

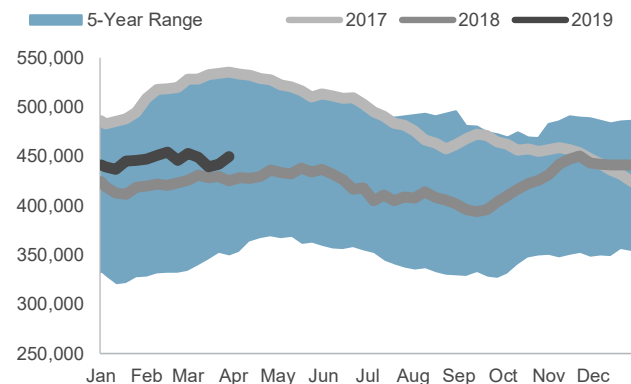
OECD Commercial Inventories (MMbbl)



Note: Data collected on a monthly basis.

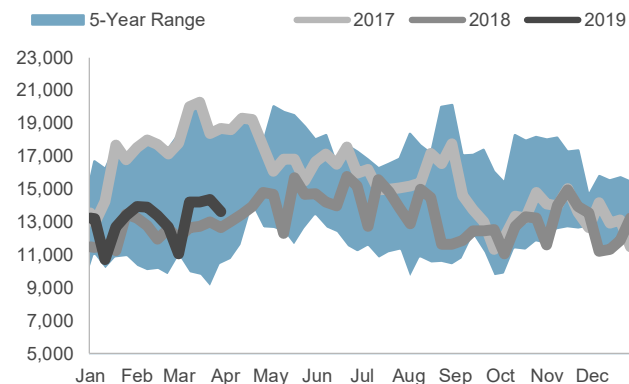
Inventory (Mbbl)

Overall U.S. Crude Inventory

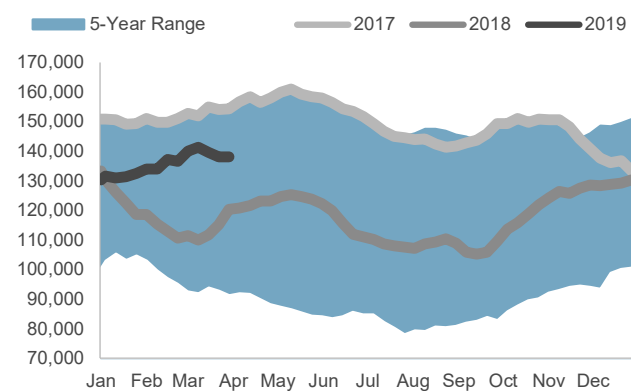


Note: Excludes strategic petroleum reserve (SPR).

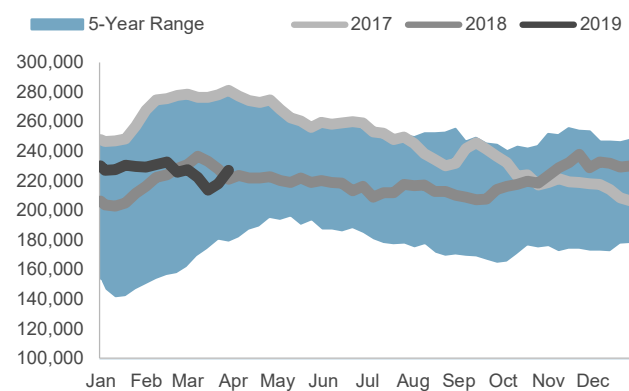
PADD I



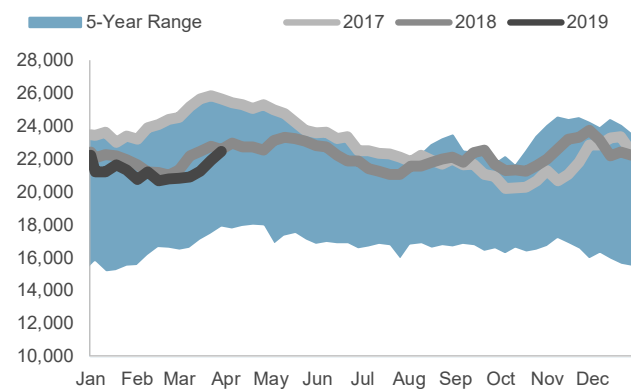
PADD II



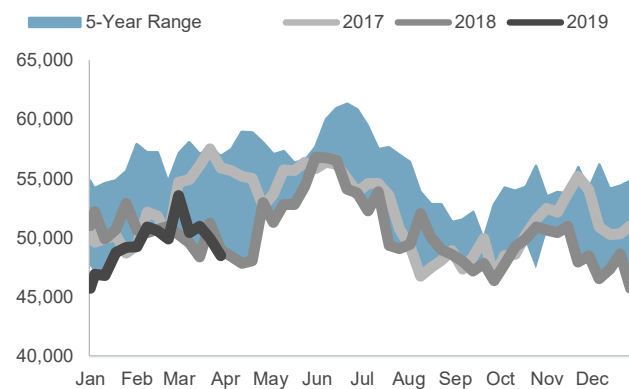
PADD III



PADD IV

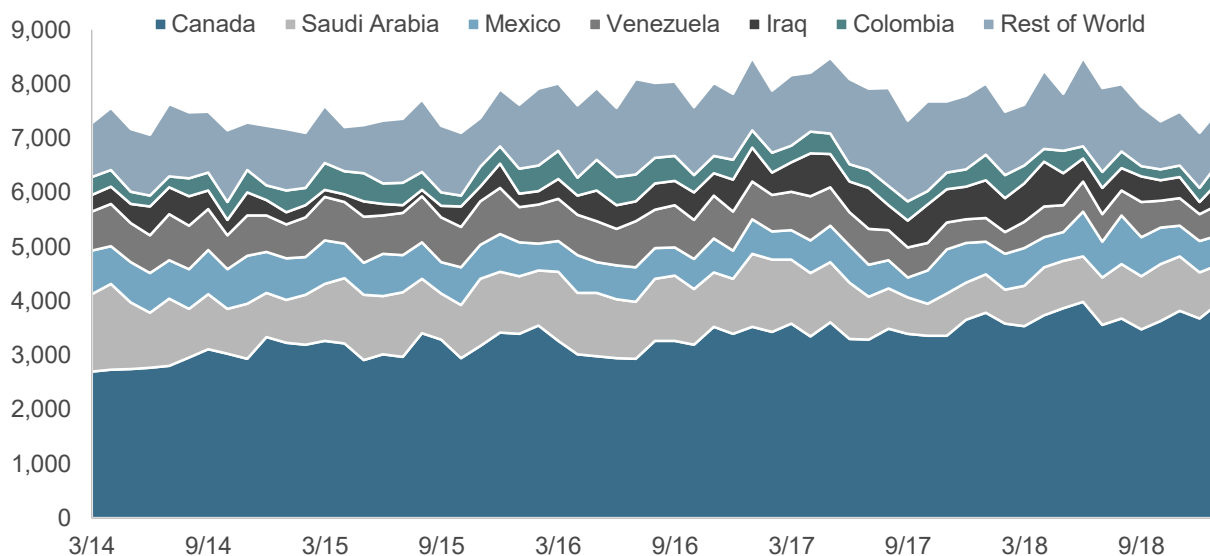


PADD V



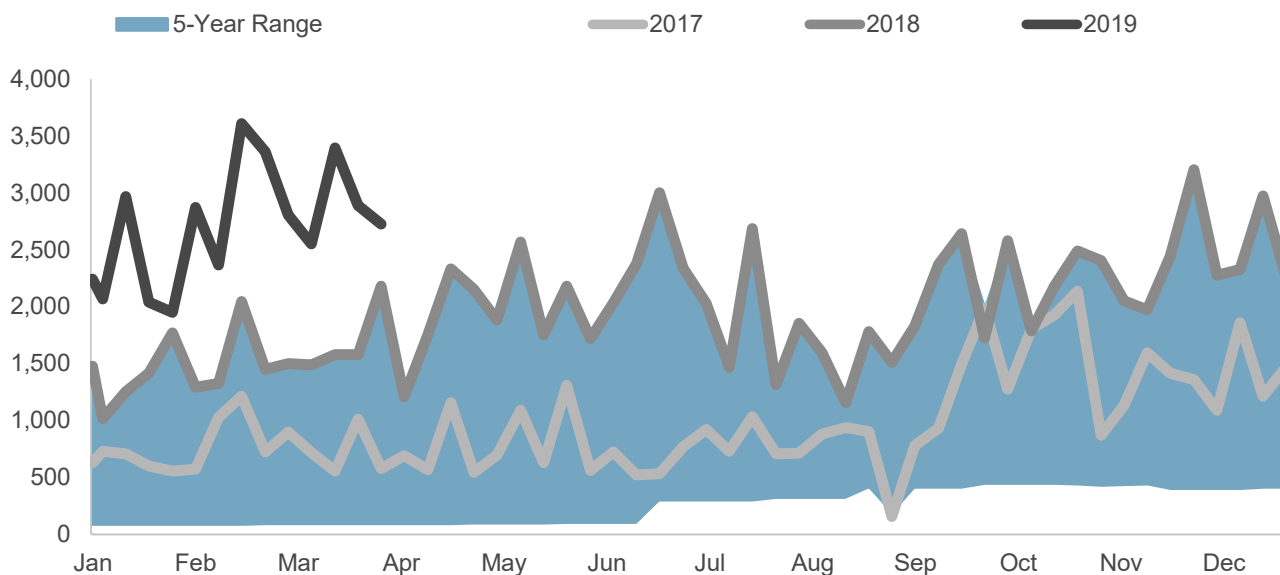
Trade

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



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

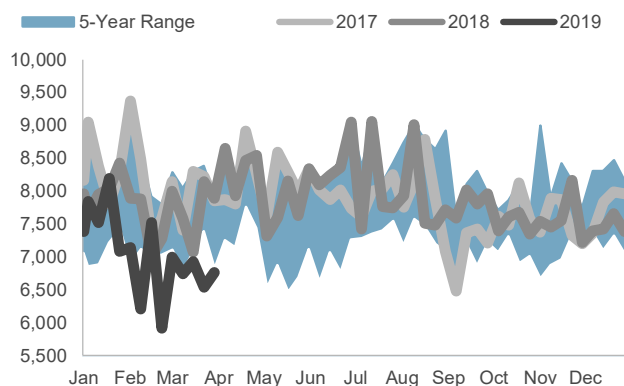
Total U.S. Crude Exports (Mbbl/d)



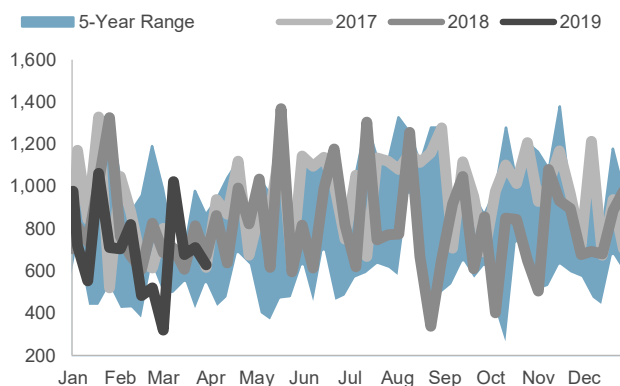
Note: Data collected on a weekly basis.

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

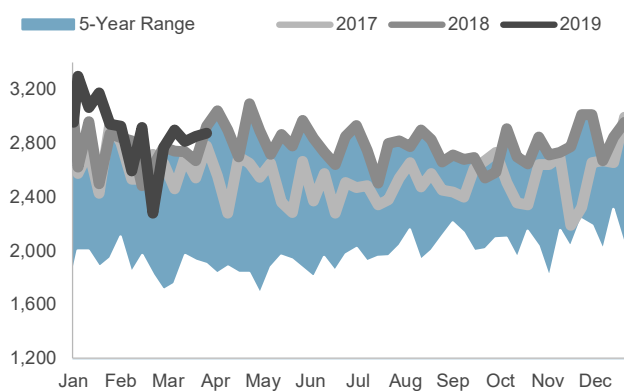
Overall U.S. Commercial Crude Imports



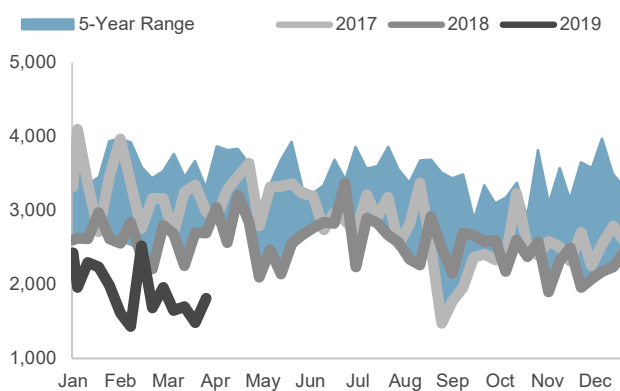
Destination – PADD I



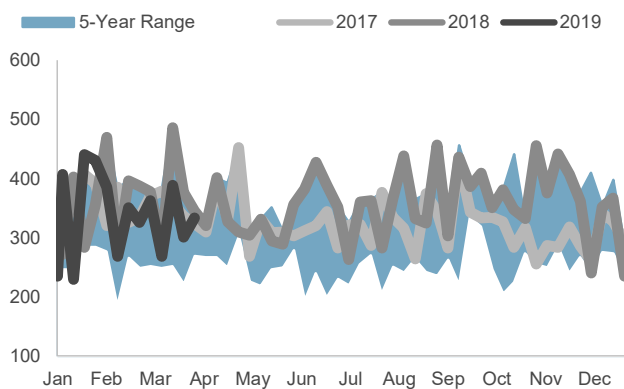
Destination – PADD II



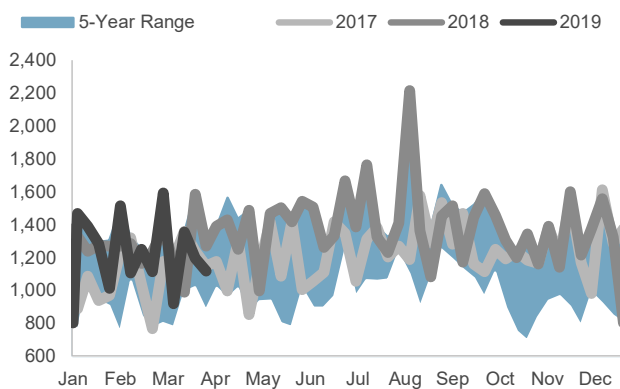
Destination – PADD III



Destination – PADD IV

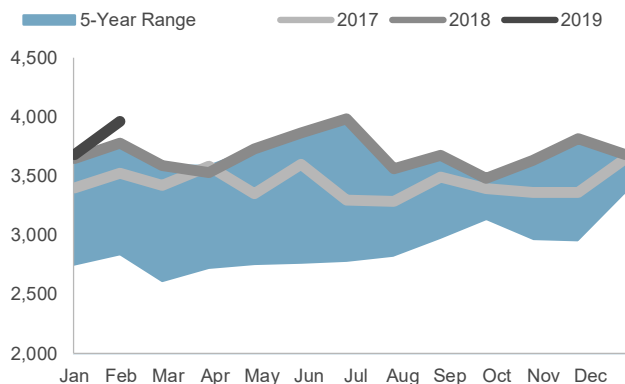


Destination – PADD V

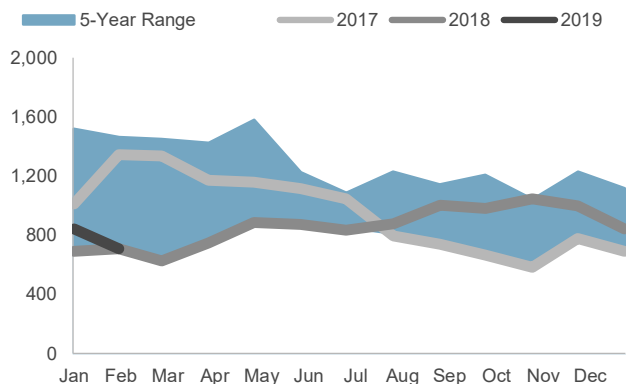


U.S. Imports by Country (Mbbbl/d)

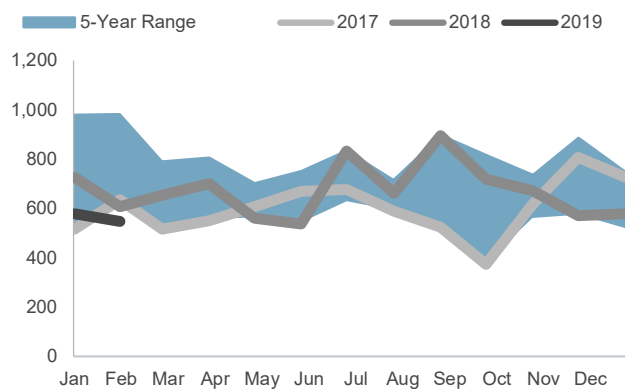
Canada



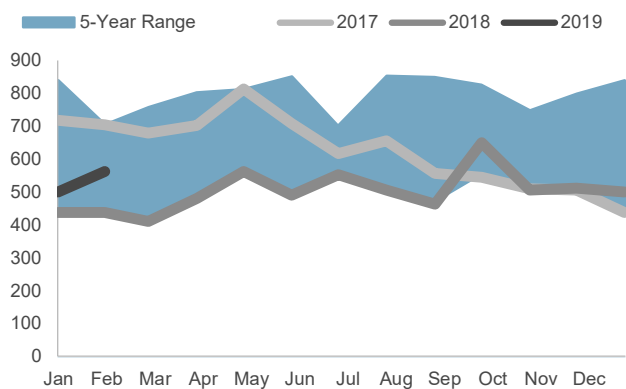
Saudi Arabia



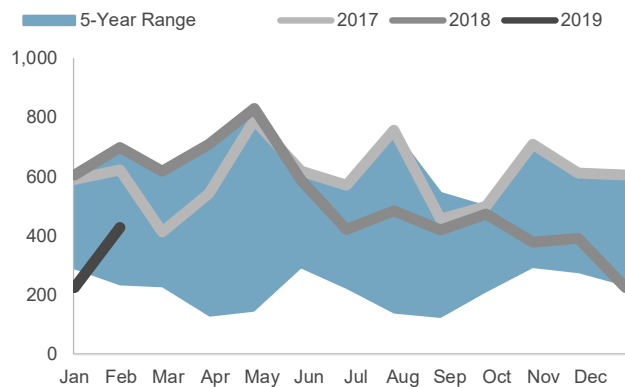
Mexico



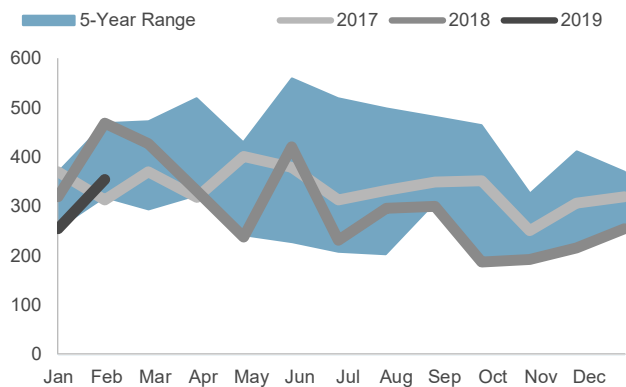
Venezuela



Iraq



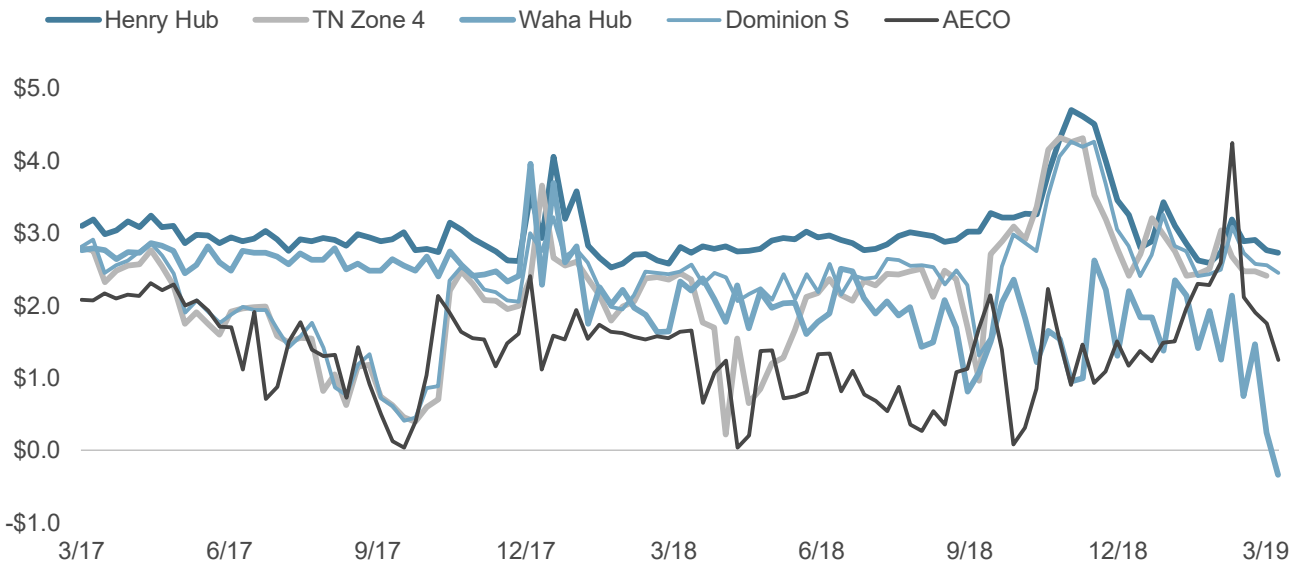
Colombia



	Page
1. Houlihan Lokey Snapshot	4
2. Crude Oil	8
3. Natural Gas and NGLs	23
4. LNG	36
5. Refining	40
6. Public Equity Markets Overview	52
7. M&A and Financing Activity	54
8. Rigs	62

Natural Gas Spot Pricing

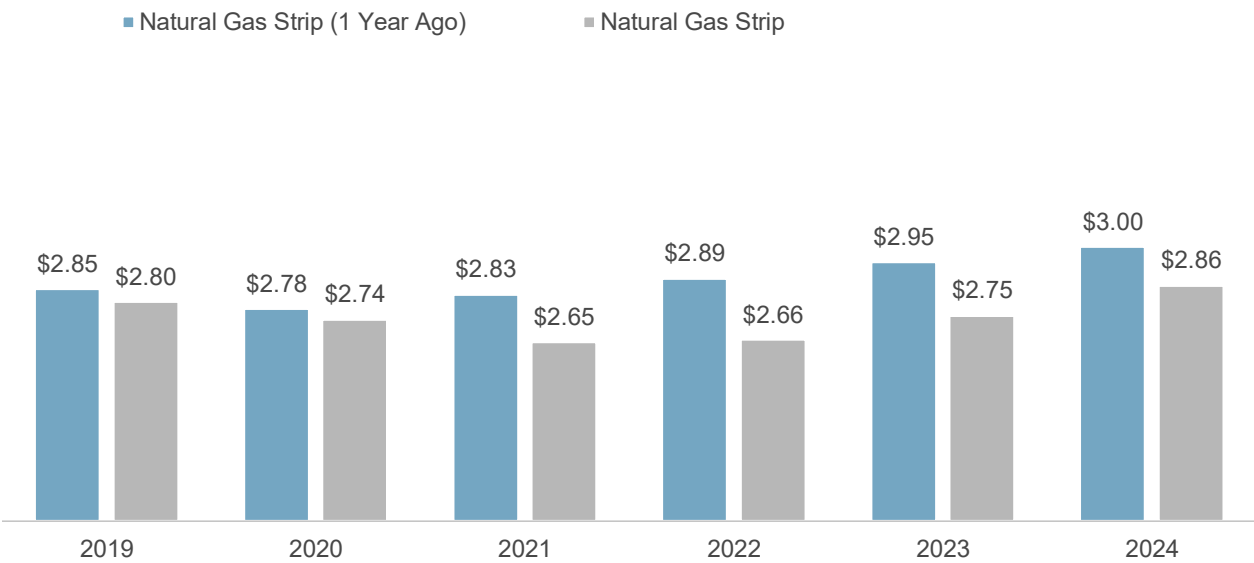
Pricing (\$/MMbtu)



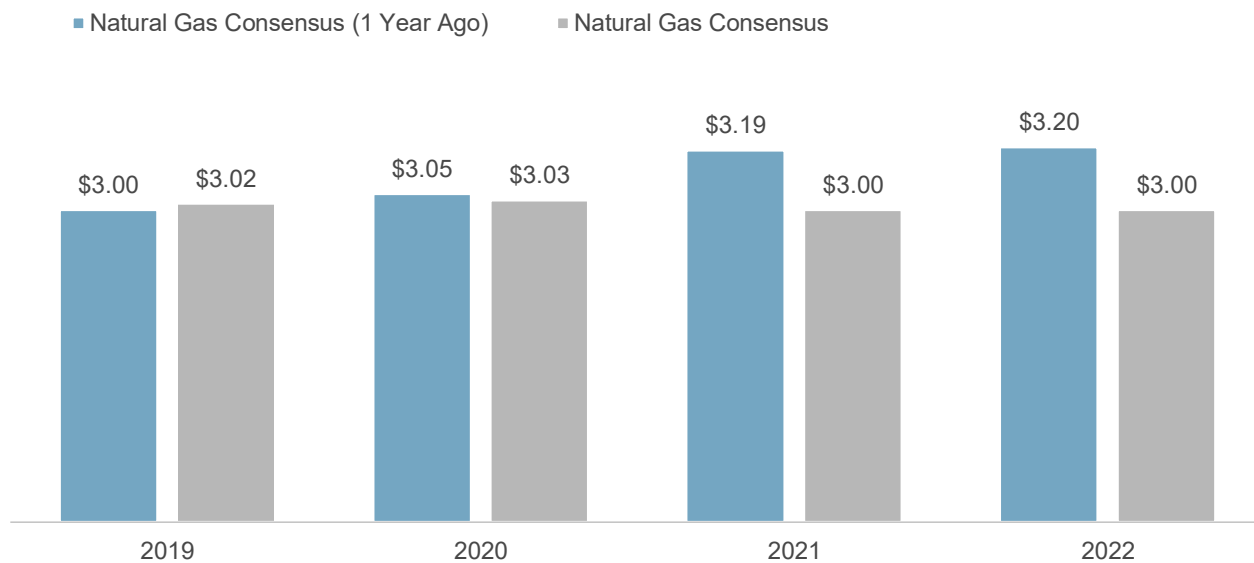
Note: All data as of March 31, 2019. Data collected on a weekly basis.
Source: Bloomberg.

Natural Gas Pricing

Strip Pricing Comparison (\$/MMbtu)

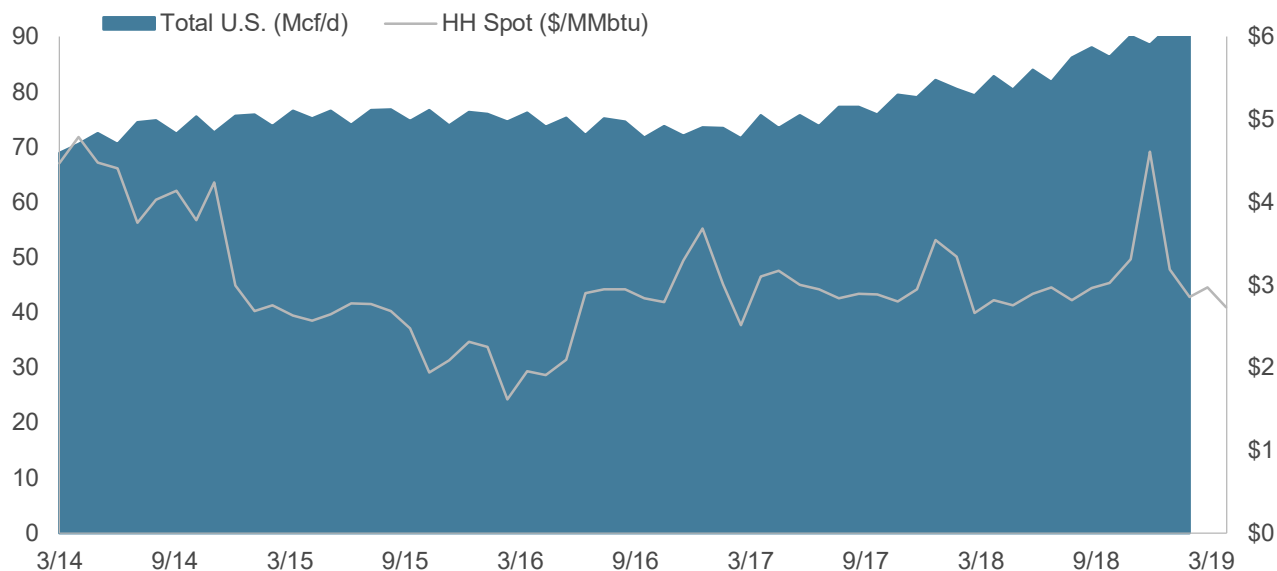


Consensus Pricing Comparison (\$/MMbtu)



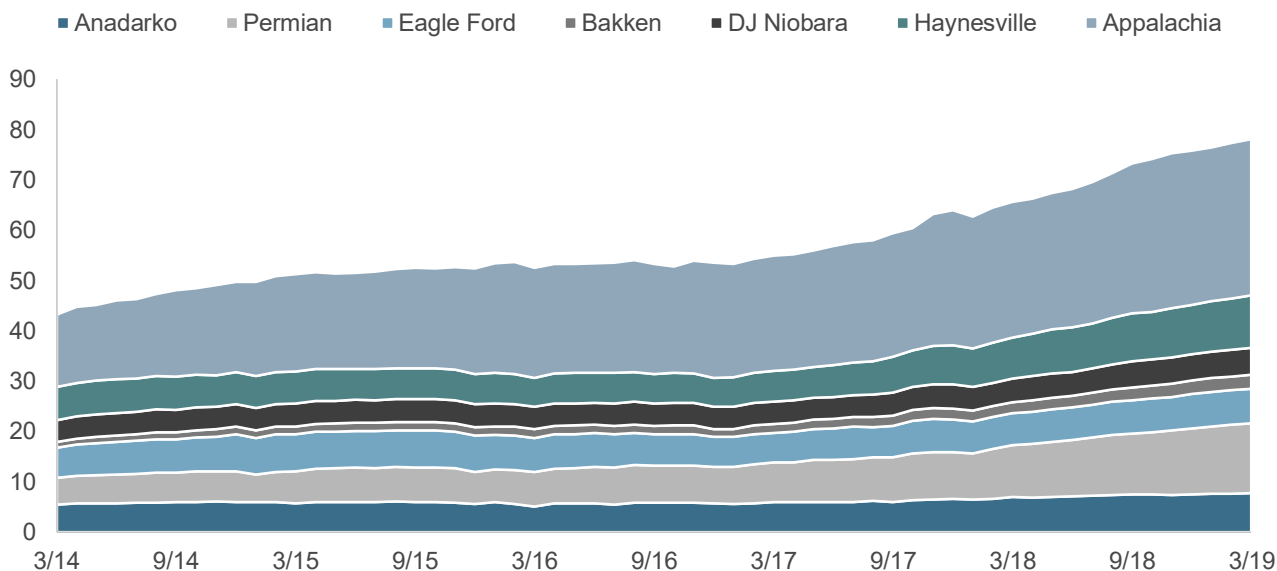
Natural Gas Production

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 March 31, 2019. 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

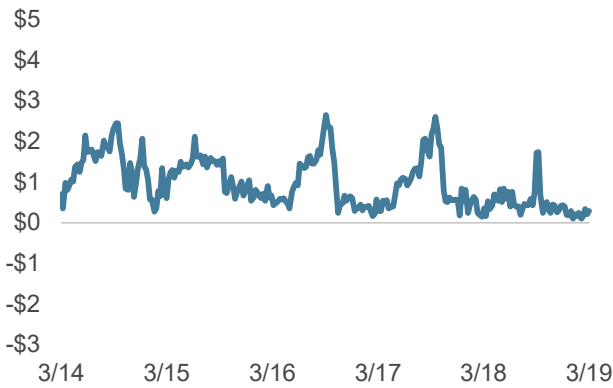
Regional Natural Gas Spot Pricing

Region	3/31/2019	3/31/2018	12/31/2018	YoY % Change	QoQ % Change
Henry Hub	\$2.73	\$2.81	\$3.19	-2.8%	-14.4%
<i>Benchmark</i>					
Dominion South	\$2.45	\$2.47	\$2.81	-0.8%	-12.7%
<i>Henry Hub – Dominion South</i>	\$0.28	\$0.34	\$0.38		
TN Zone 4	\$2.41	\$2.45	\$2.78	-1.6%	-13.3%
<i>Henry Hub – TN Zone 4</i>	\$0.32	\$0.36	\$0.41		
AECO	\$1.25	\$1.64	\$1.15	-23.8%	8.9%
<i>Henry Hub – AECO</i>	\$1.48	\$1.17	\$2.04		
Waha Hub	(\$0.34)	\$2.33	\$2.15	-114.6%	-115.8%
<i>Henry Hub – Waha</i>	\$3.07	\$0.48	\$1.04		

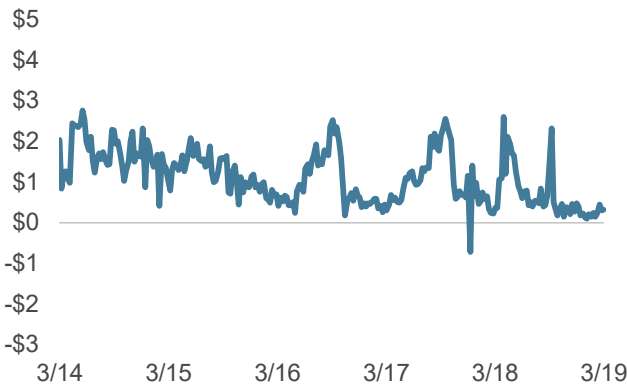
Note: All data as of March 31, 2019. Represents the average price for the remainder of 2019 and each year thereafter.
Source: Bloomberg.

Natural Gas – Differentials (\$/MMbtu)

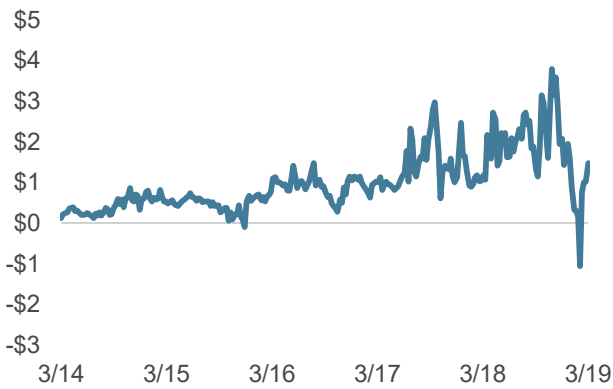
HH – Dominion South



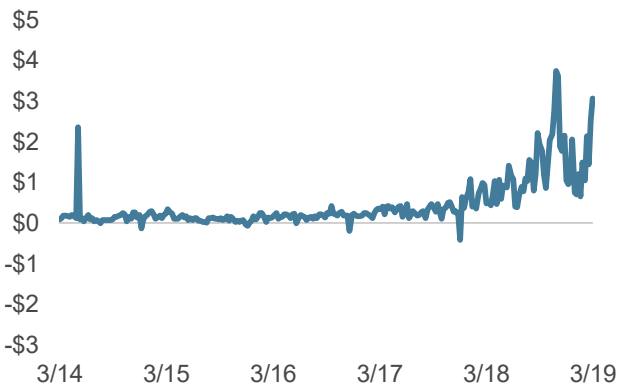
HH – TN Zone 4



HH – AECO



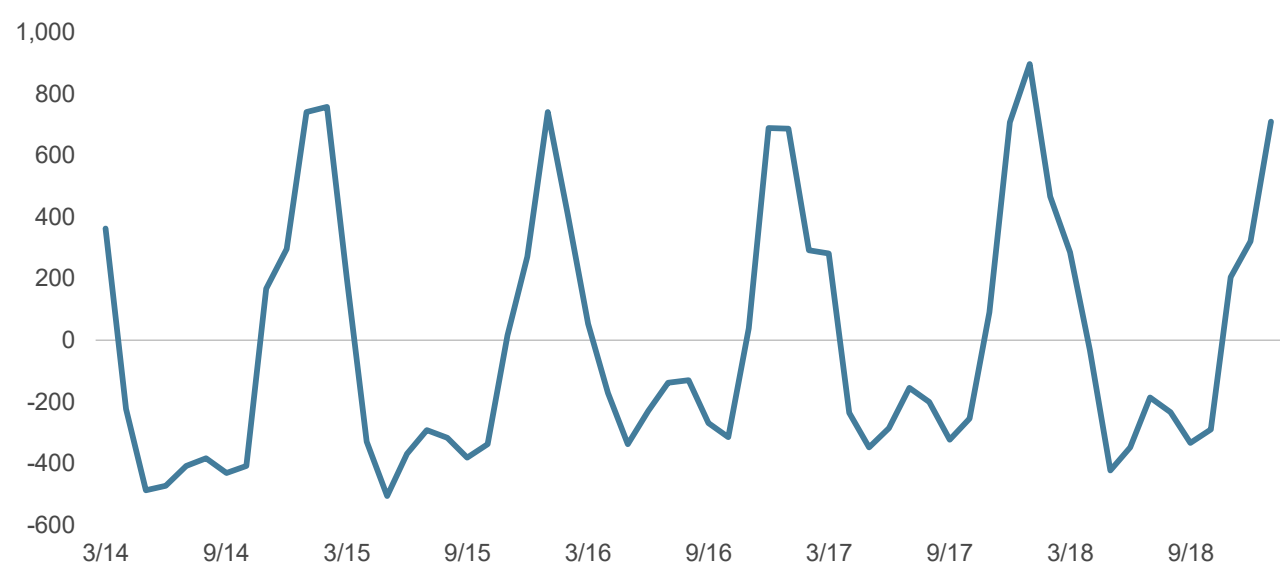
HH – Waha Hub



Note: All data as of March 31, 2019. Data collected on a weekly basis.
Source: Bloomberg.

Natural Gas

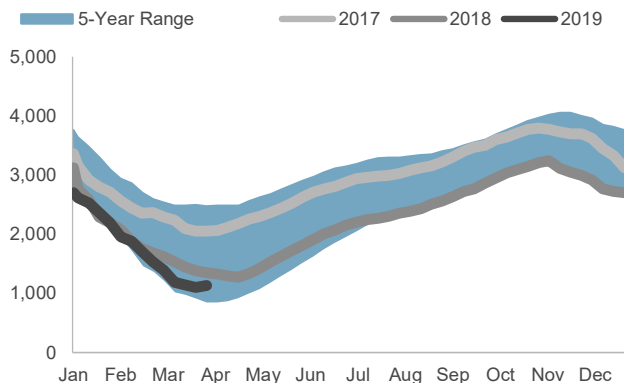
U.S. Natural Gas Withdrawal (Bcf)



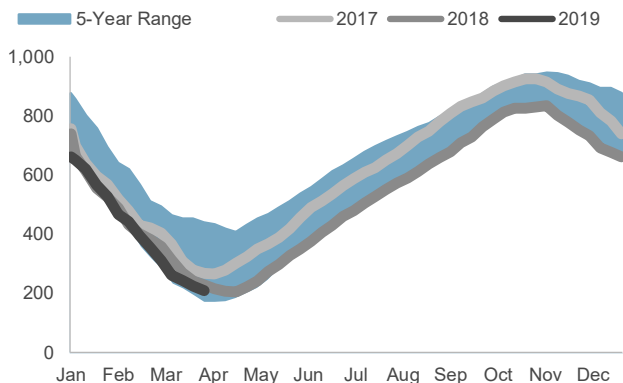
Note: Data collected on a monthly basis and is subject to irregular updates.

Natural Gas Storage (Bcf)

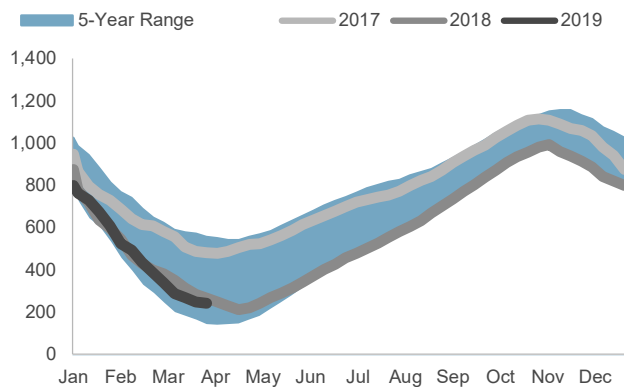
Total U.S.



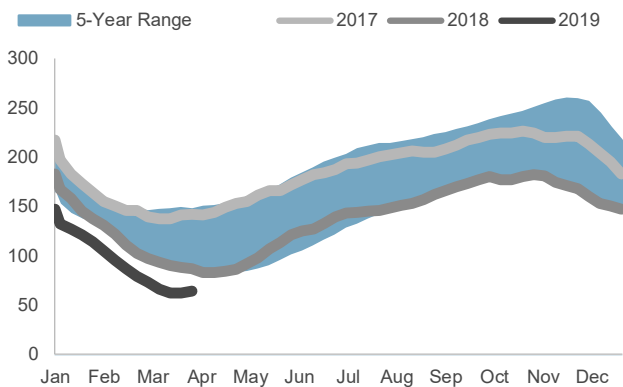
East



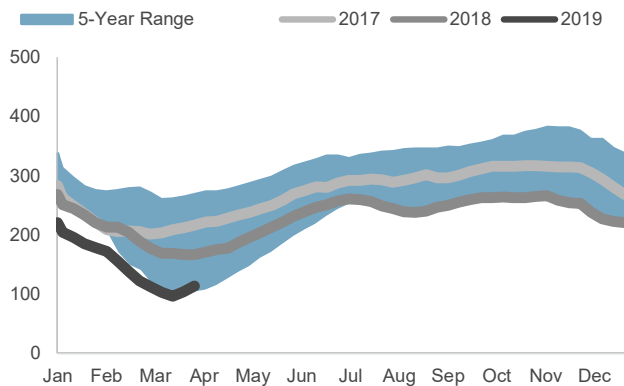
Midwest



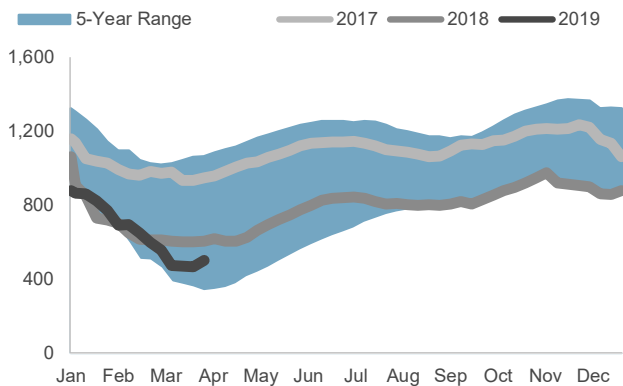
Mountain



Pacific

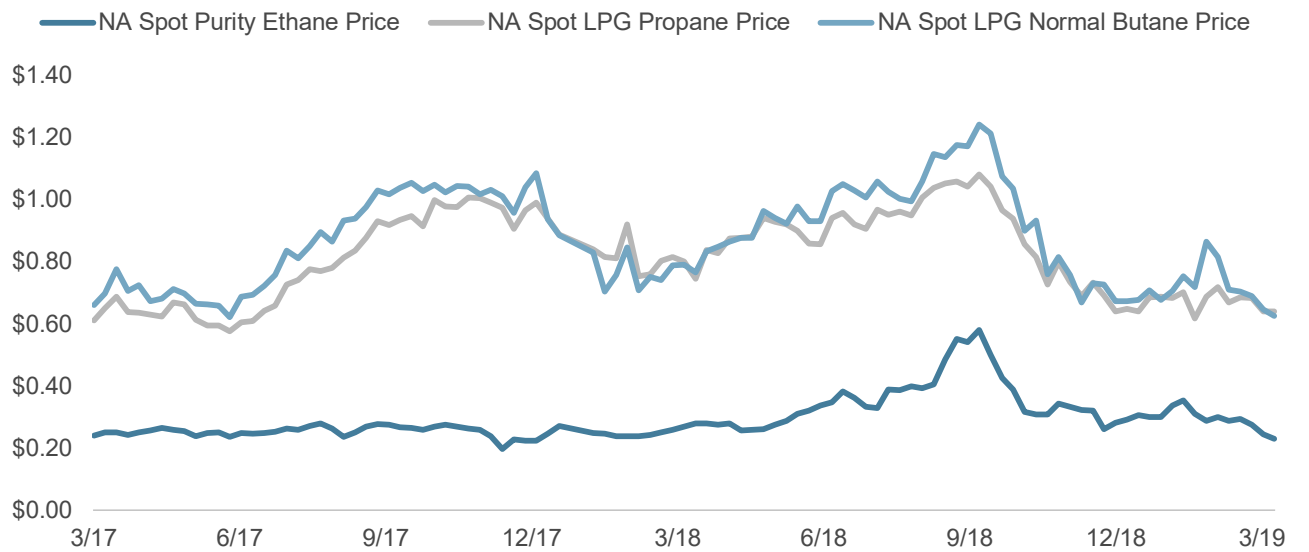


South Central



NGLs Spot Pricing

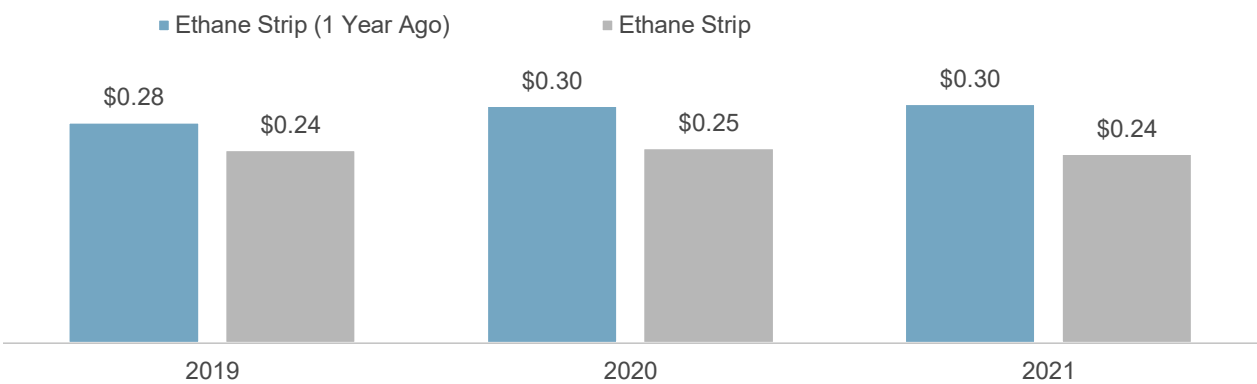
Pricing (\$/gal)



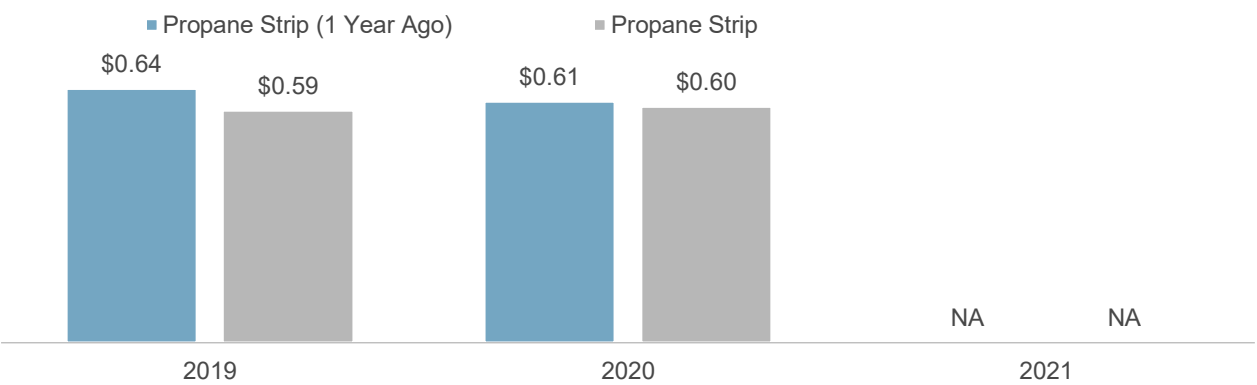
Note: All data as of March 31, 2019. Data collected on a weekly basis.
Source: Bloomberg.

NGLs Strip Pricing

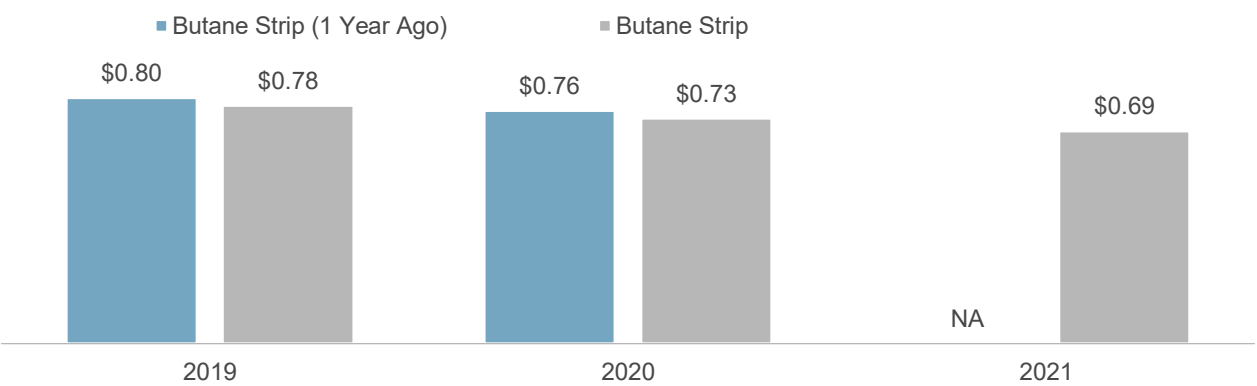
Ethane Strip Pricing Comparison (\$/gal)



Propane Strip Pricing Comparison (\$/gal)



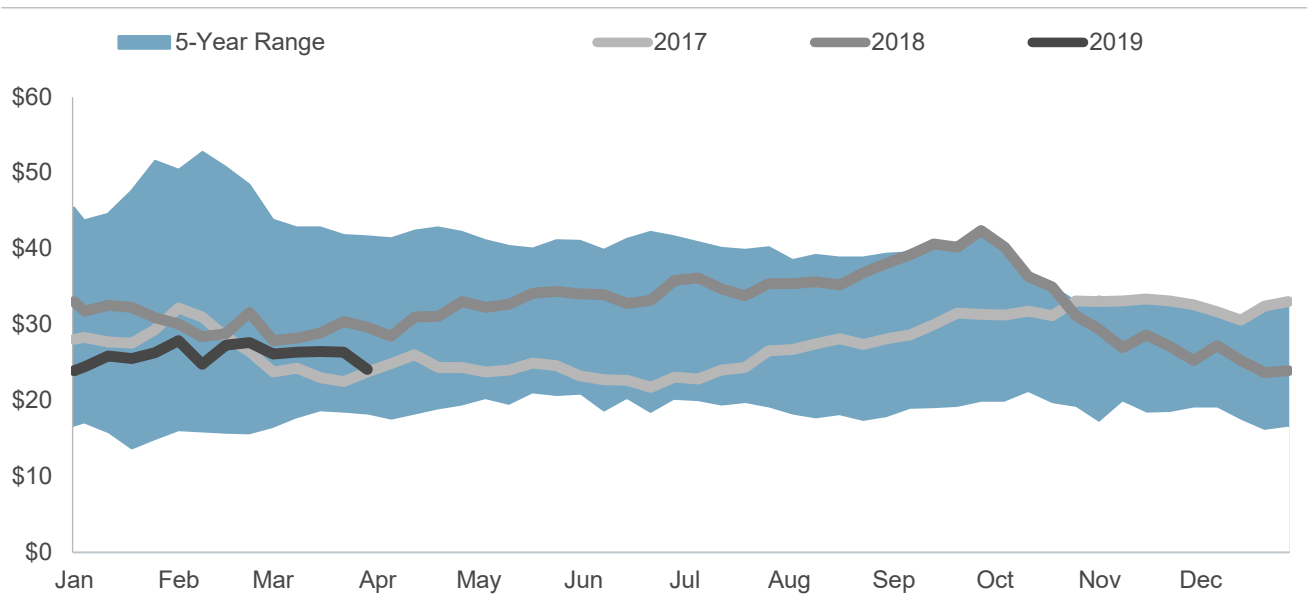
Butane Strip Pricing Comparison (\$/gal)



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

NGLs Frac Spreads

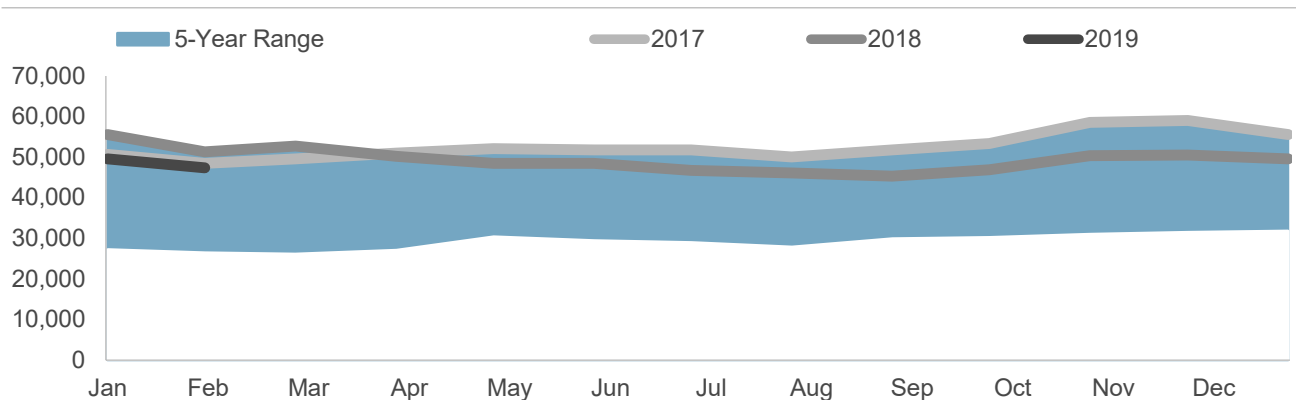
Mont Belvieu Frac Spread (\$/bbl)



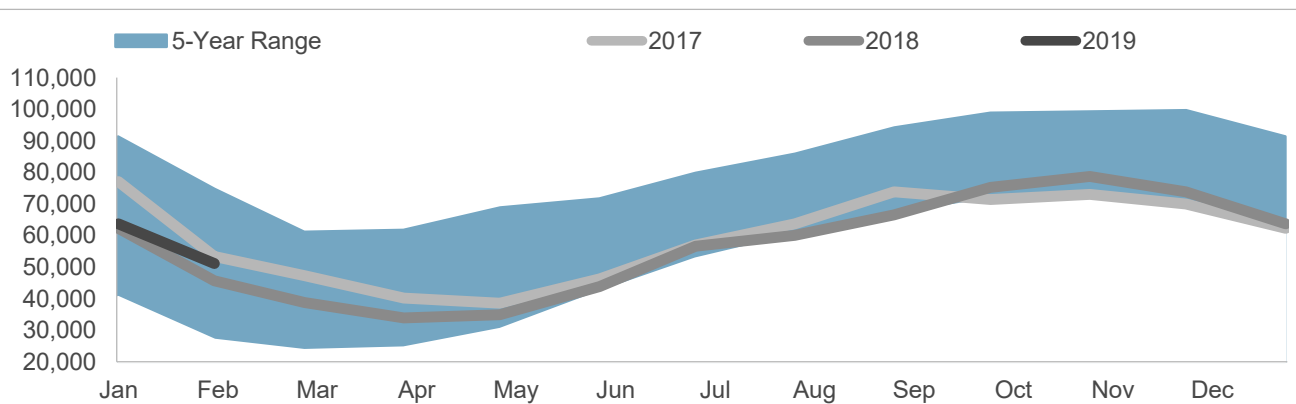
Note: All data as of March 31, 2019.
Source: Bloomberg.

NGLs Inventory

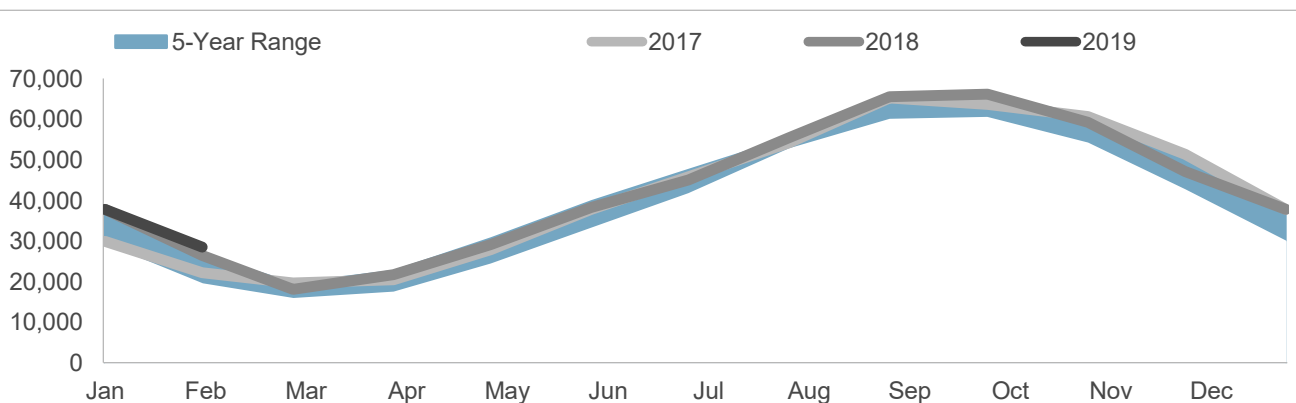
U.S. Ending Stocks Ethane (Mbbbls)



U.S. Ending Stocks Propane (Mbbbls)

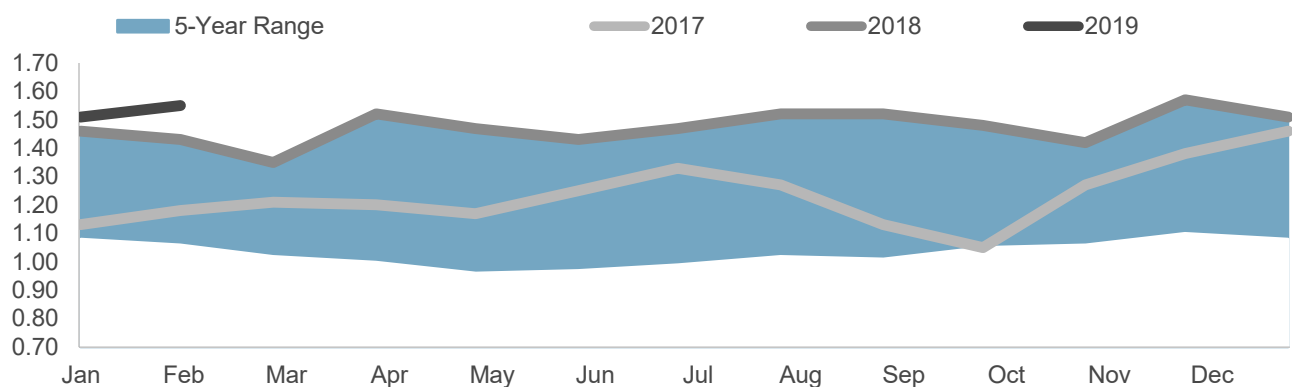


Normal Butane/Butylene (Mbbbls)

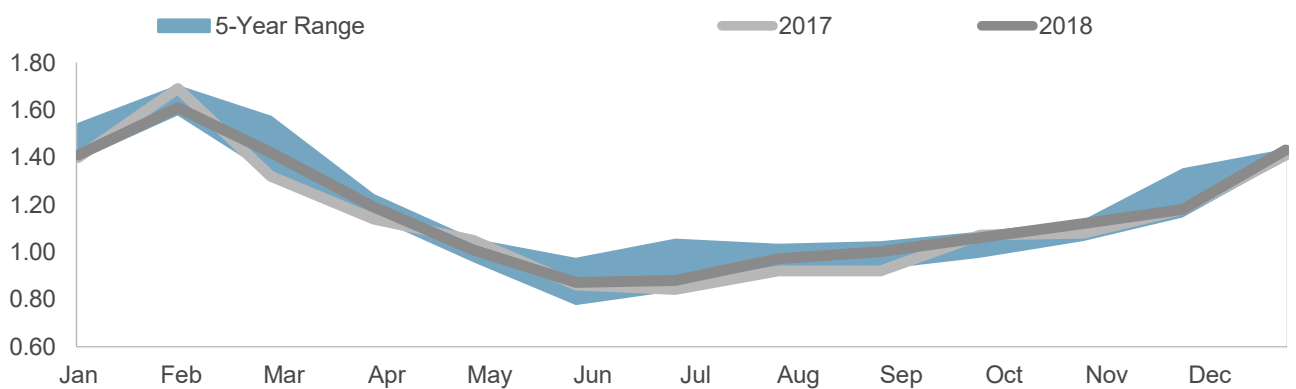


NGLs Consumption

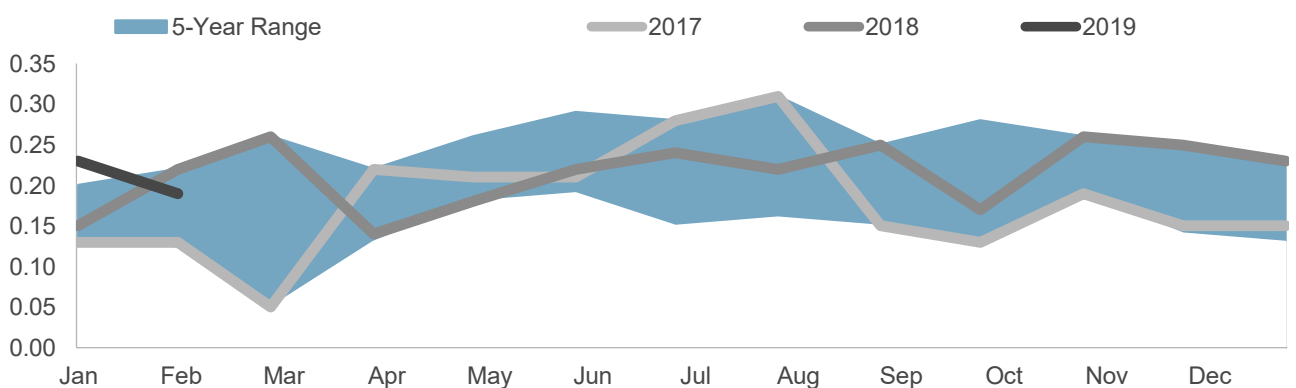
U.S. Ethane/Ethylene Consumption (MMboe/d)



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



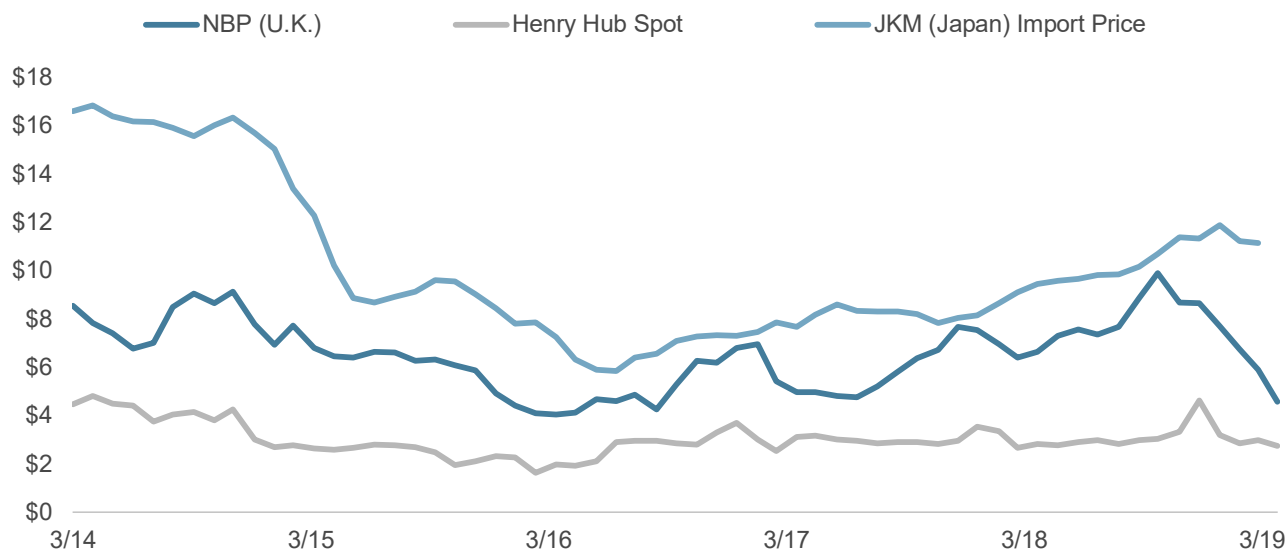
U.S. Butanes/Butylenes Consumption (MMboe/d)



	Page
1. Houlihan Lokey Snapshot	4
2. Crude Oil	8
3. Natural Gas and NGLs	23
4. LNG	36
5. Refining	40
6. Public Equity Markets Overview	52
7. M&A and Financing Activity	54
8. Rigs	62

Spot Pricing

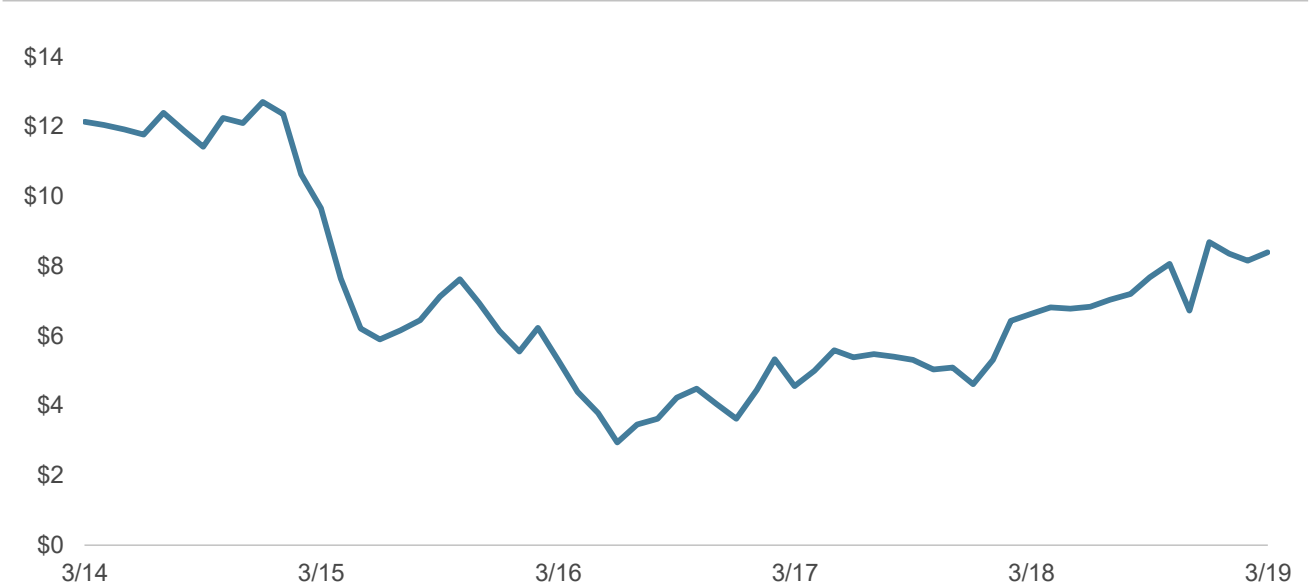
Spot Pricing (\$/MMbtu)



Note: All data as of March 31, 2019. Data collected on a monthly basis.
Note: NBP (U.K.) refers to the ICE U.K. Natural Gas NBP Month 1 Futures.
Source: Bloomberg.

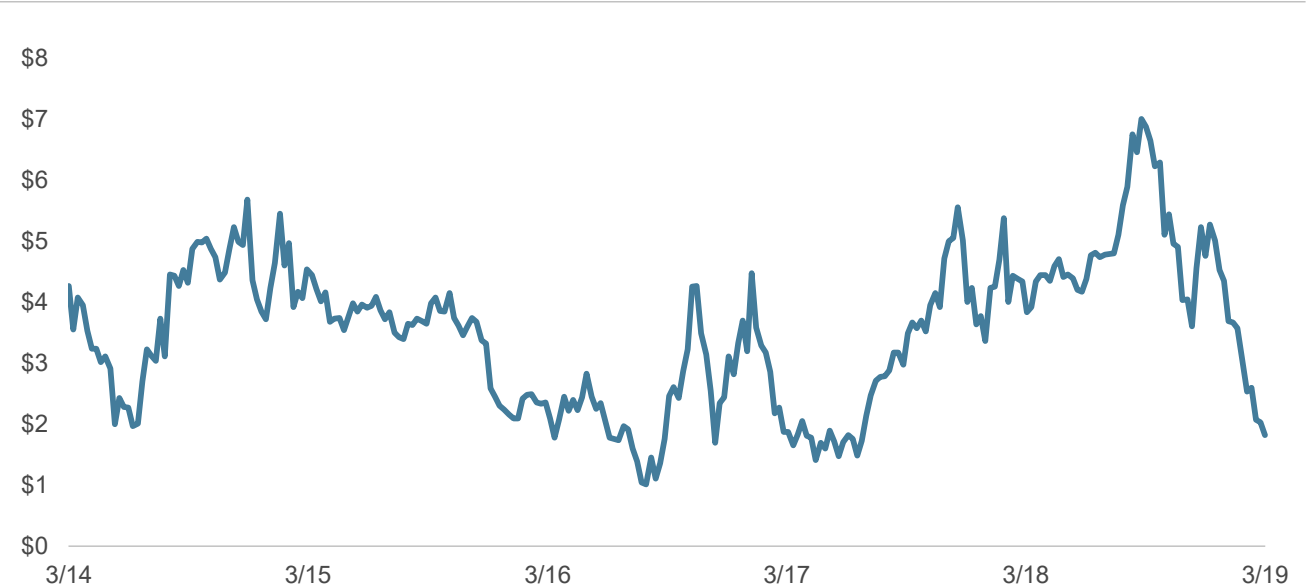
Differentials

JKM – Henry Hub (\$/MMbtu)



Note: Data collected on a monthly basis.

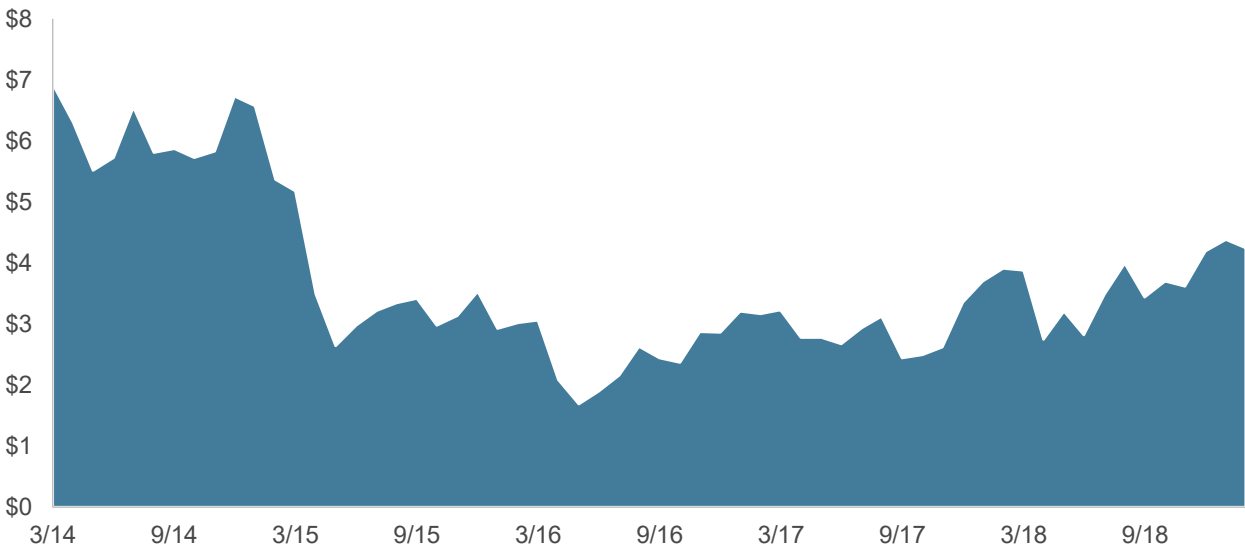
NBP – Henry Hub (\$/MMbtu)



Note: Data collected on a weekly basis.

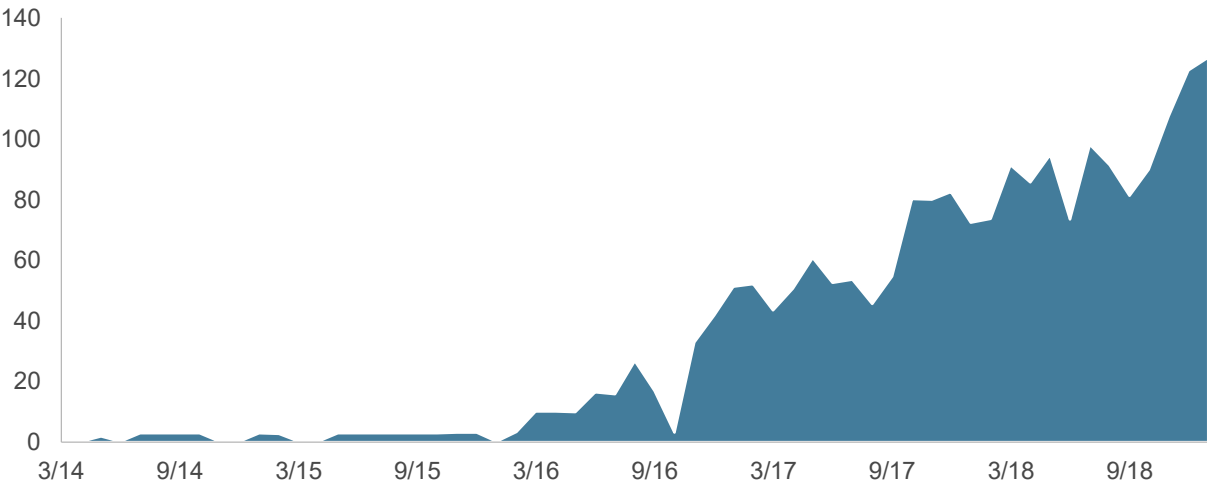
Exports

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)

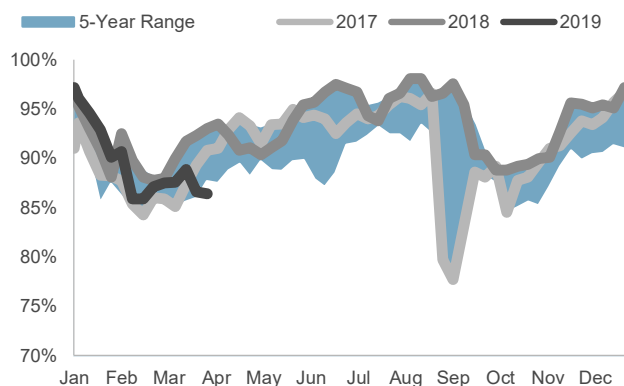


Note: Data collected on a monthly basis and is subject to a two-month lag.

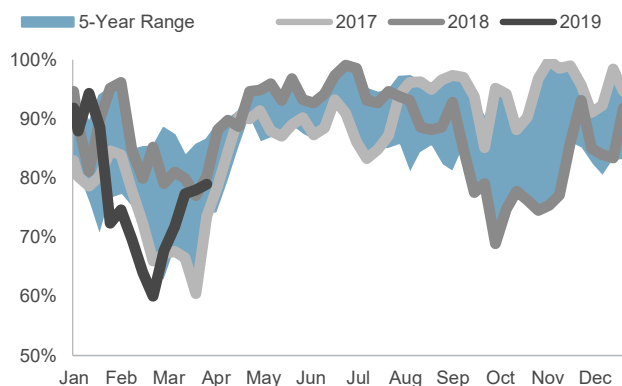
	Page
1. Houlihan Lokey Snapshot	4
2. Crude Oil	8
3. Natural Gas and NGLs	23
4. LNG	36
5. Refining	40
6. Public Equity Markets Overview	52
7. M&A and Financing Activity	54
8. Rigs	62

Refining – Utilization (%)

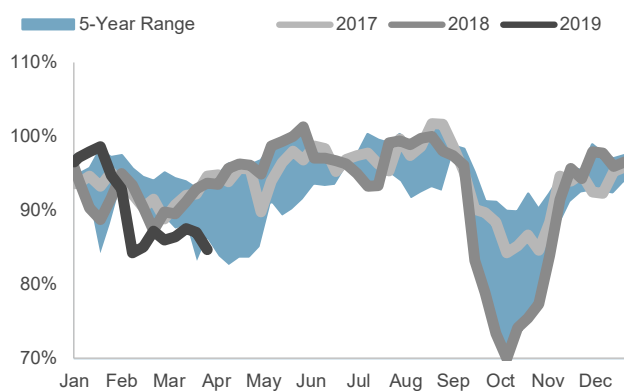
Total U.S.



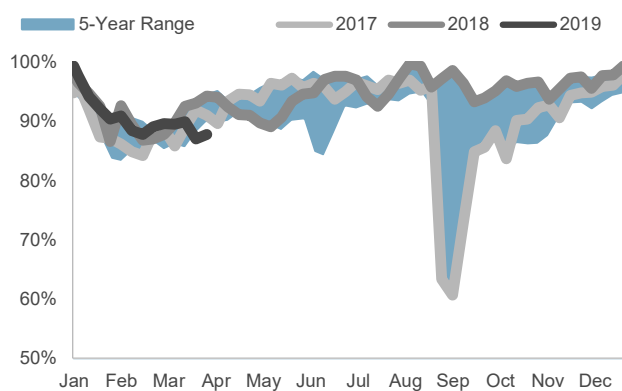
PADD I



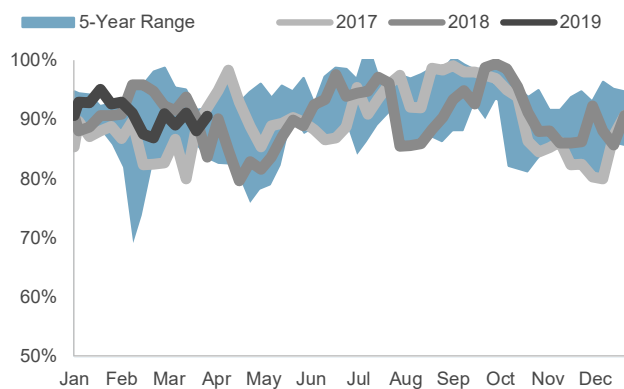
PADD II



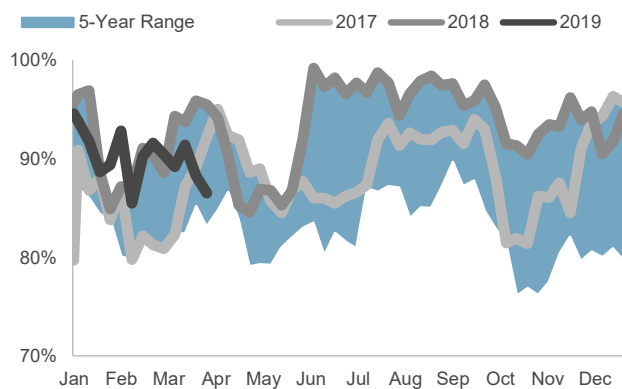
PADD III



PADD IV

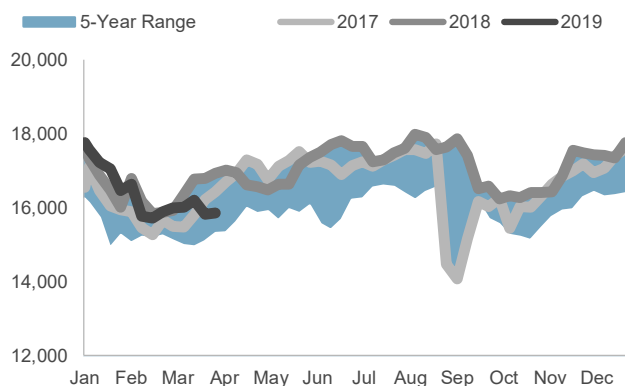


PADD V

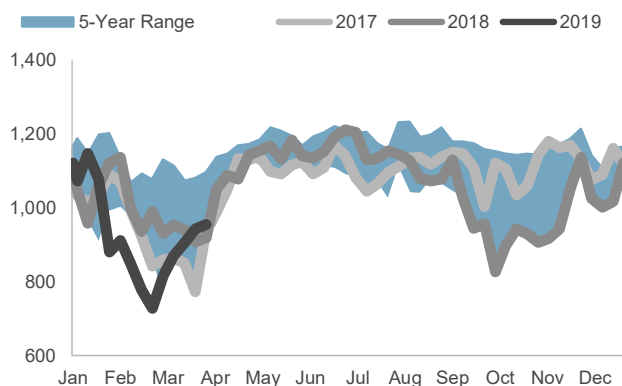


Refining – U.S. Crude Runs (Mbbbl/d)

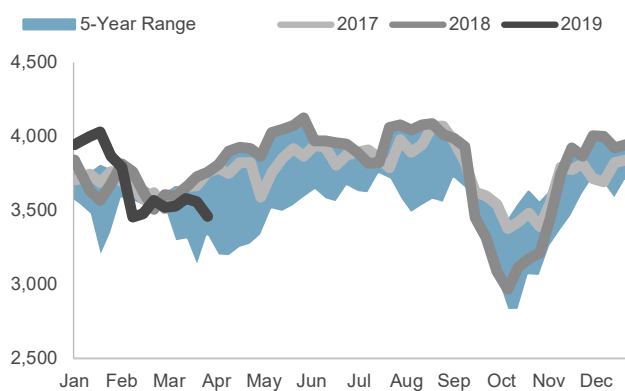
Total U.S.



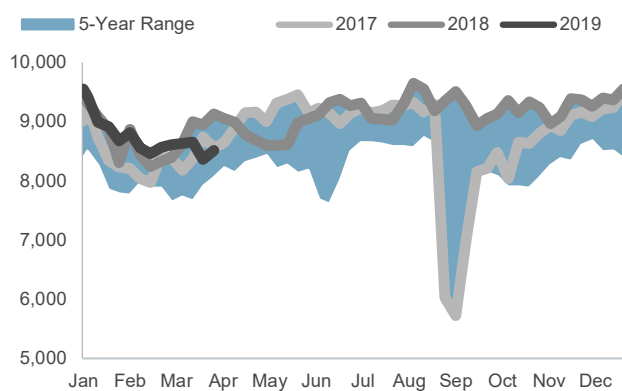
PADD I



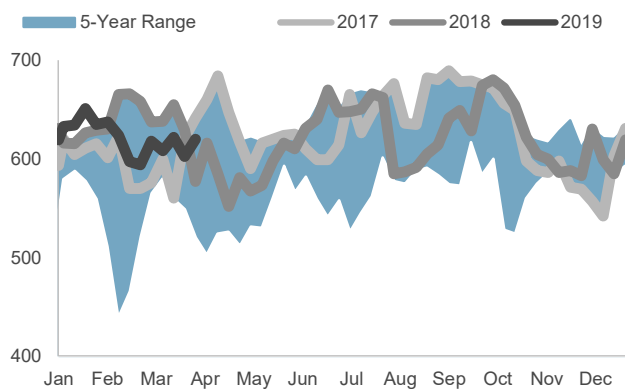
PADD II



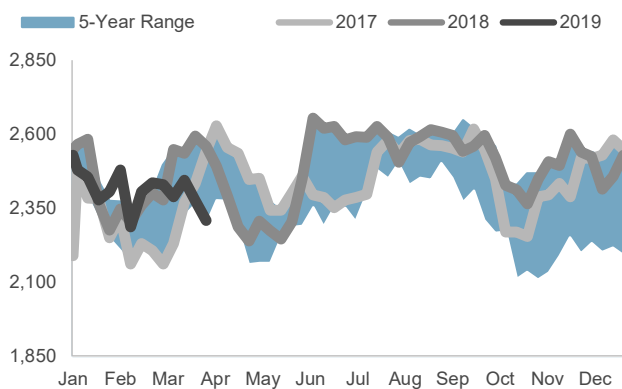
PADD III



PADD IV

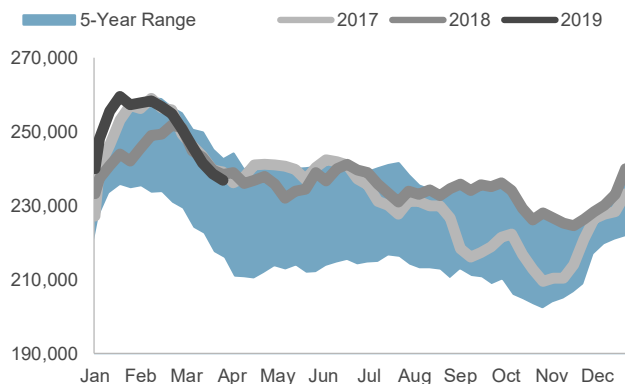


PADD V

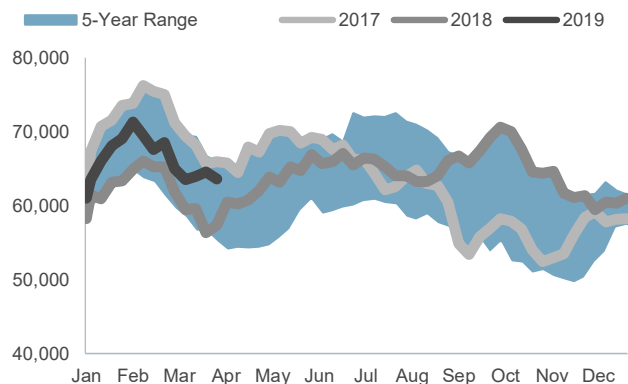


Refining – Motor Gasoline Inventory (Mbbl)

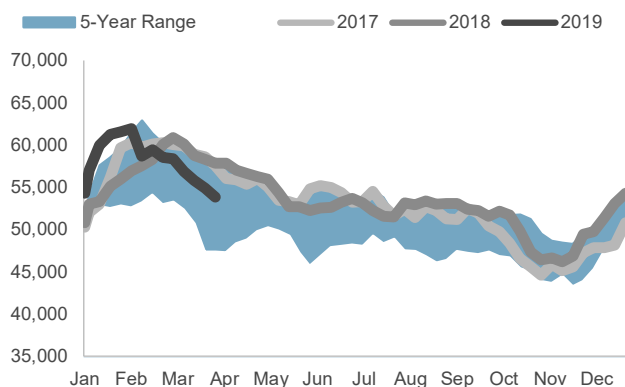
Total U.S.



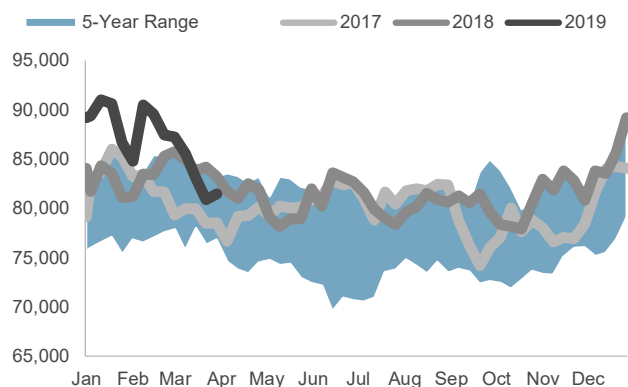
PADD I



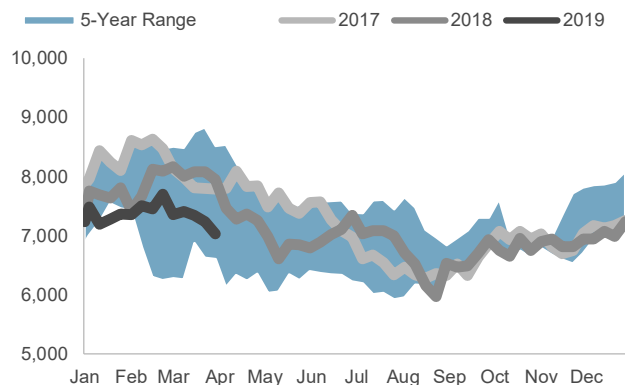
PADD II



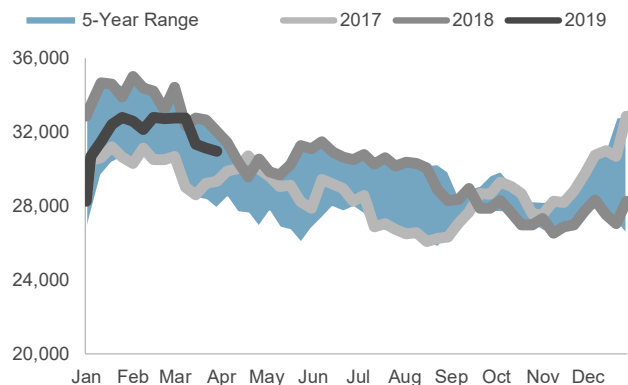
PADD III



PADD IV

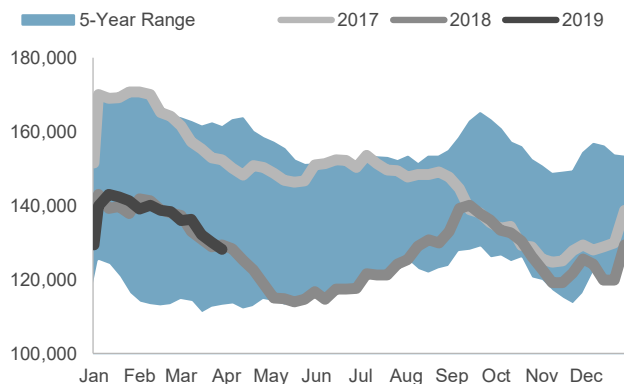


PADD V

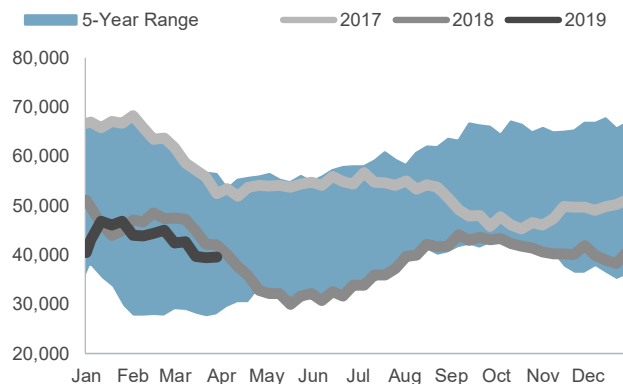


Refining – Distillate Fuel Oil Inventory (Mbbl)

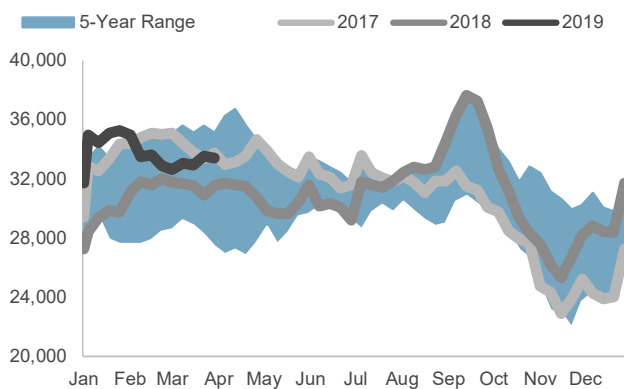
Total U.S.



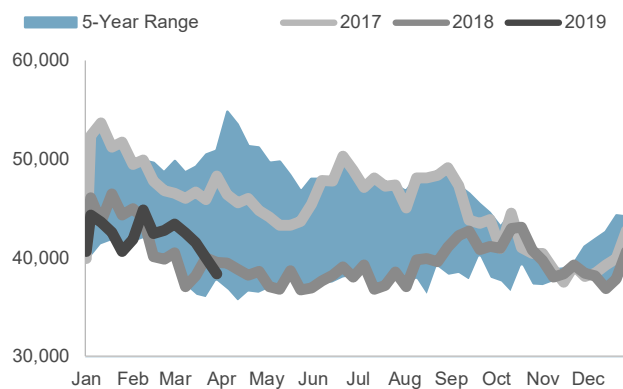
PADD I



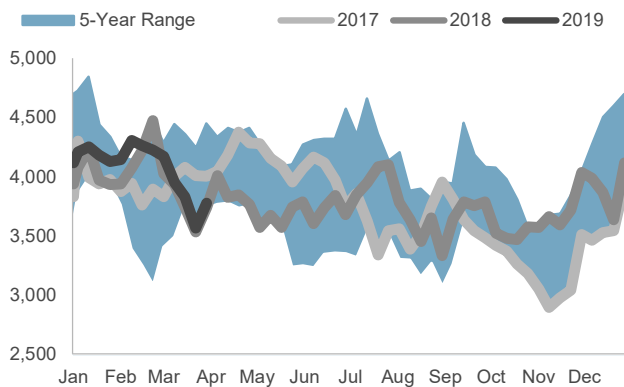
PADD II



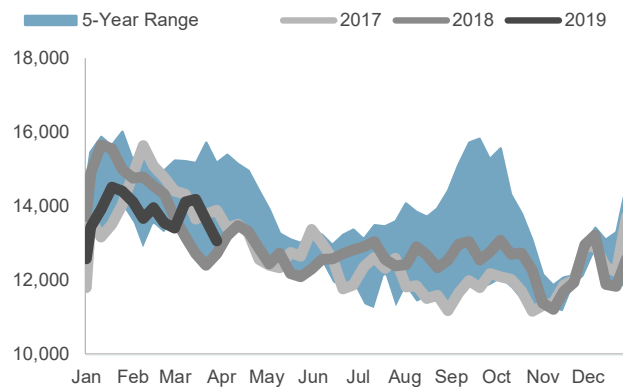
PADD III



PADD IV

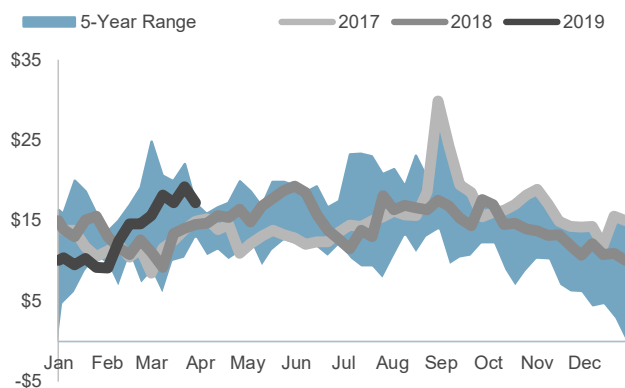


PADD V

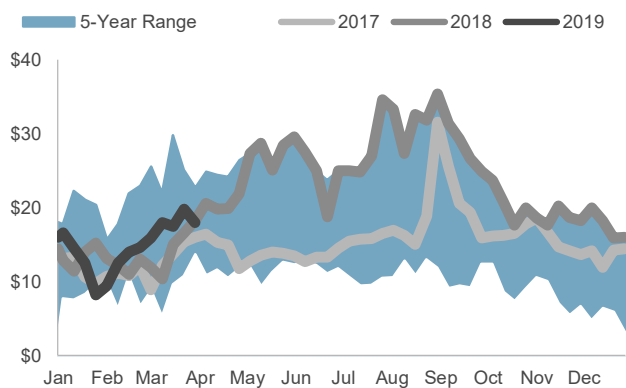


Refining – 3:2:1 Crack Spreads (\$/bbl)

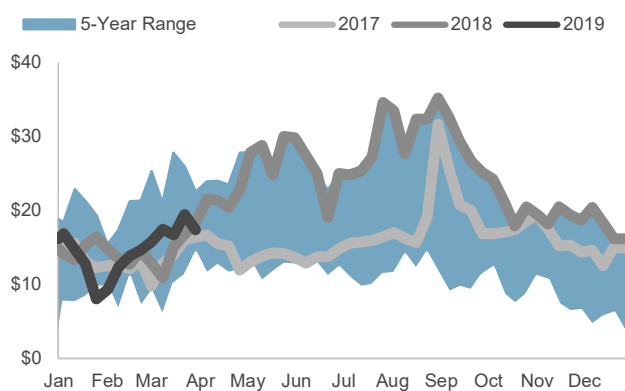
WTI Cushing (U.S. Gulf Coast)



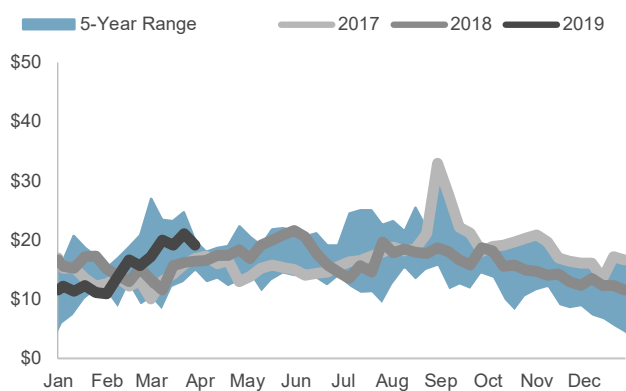
WTI Midland (U.S. Gulf Coast)



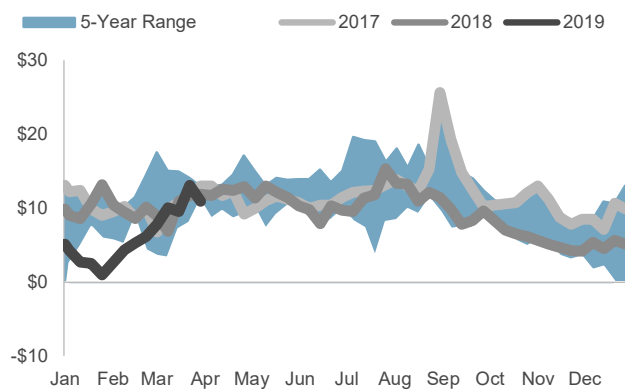
WTS Midland (U.S. Gulf Coast)



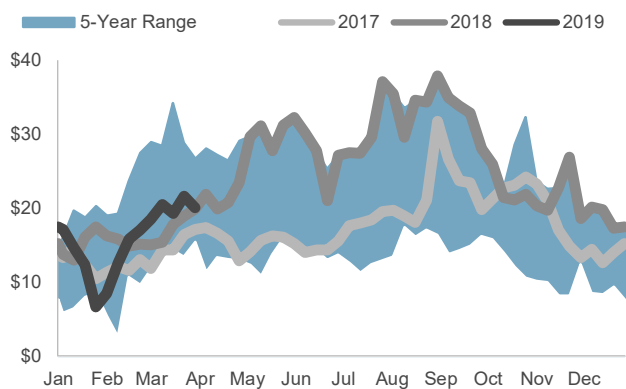
WTI Cushing ULSD (U.S. Gulf Coast)



LLS (U.S. Gulf Coast)

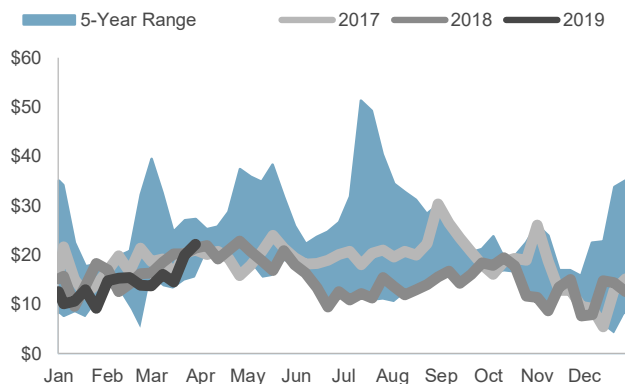


WTI Midland ULSD (U.S. Mid-Continent)

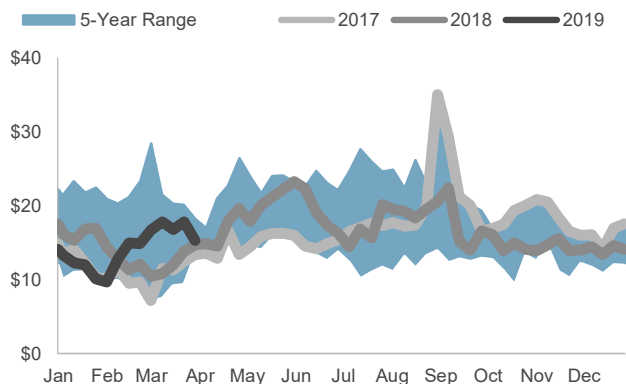


Refining – 3:2:1 Crack Spreads (\$/bbl) (cont.)

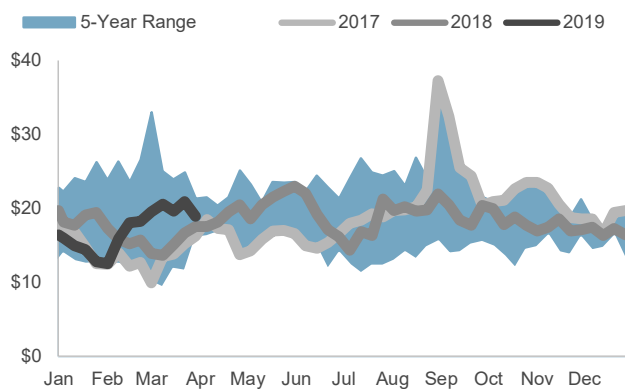
ANS (U.S. West Coast)



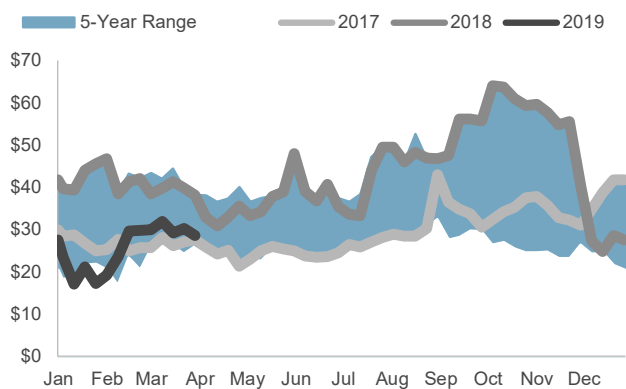
WTI Cushing (NYH RBOB gasoline)



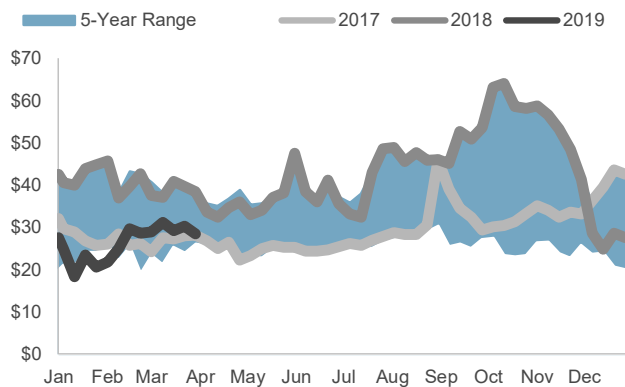
WTI Cushing ULSD (N.Y. Harbor)



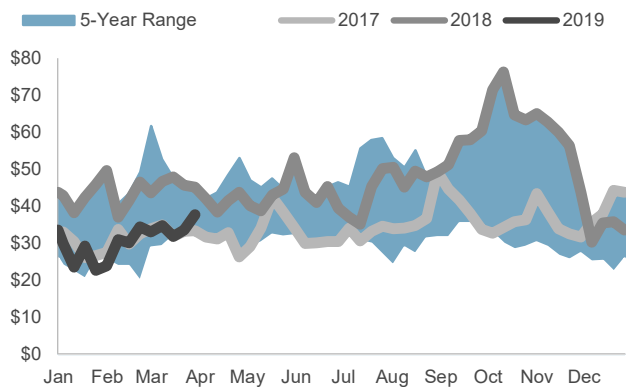
WCS (U.S. Mid-Continent)



WCS (U.S. Gulf Coast)

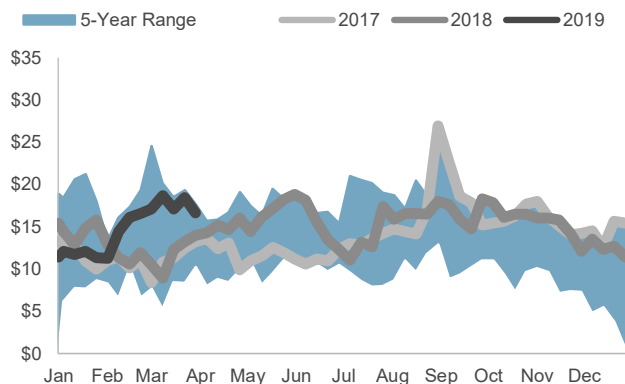


WCS (San Francisco)

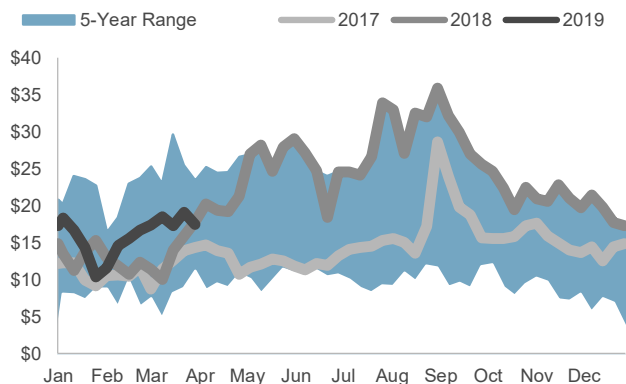


Refining – 2:1:1 Crack Spreads (\$/bbl)

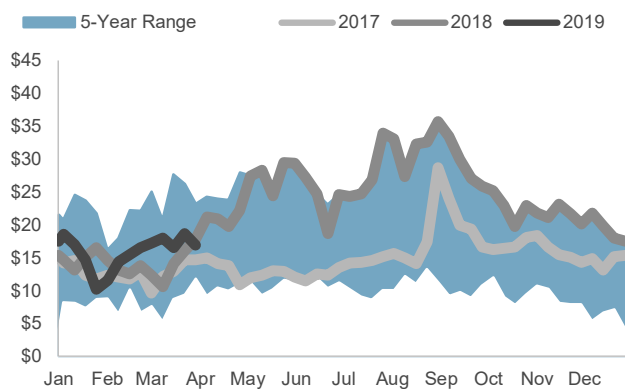
WTI Cushing (U.S. Gulf Coast)



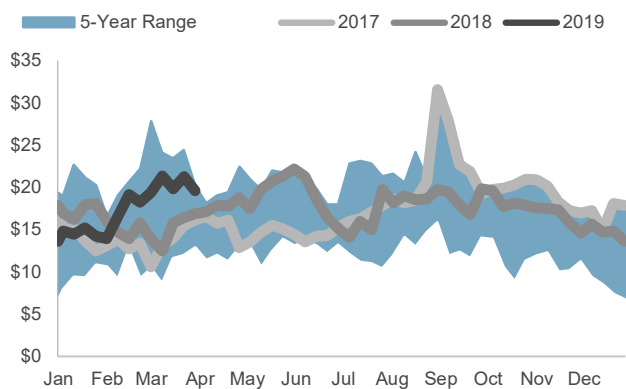
WTI Midland (U.S. Mid-Continent)



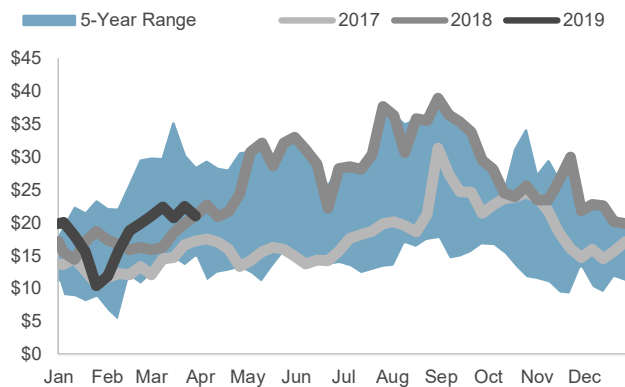
WTS Midland Crude (U.S. Gulf Coast)



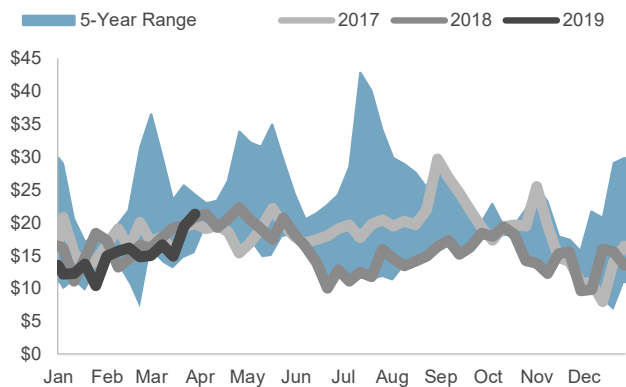
WTI Cushing ULSD (U.S. Gulf Coast)



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

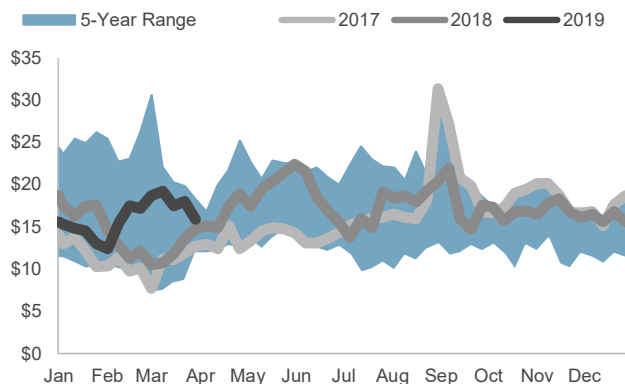


ANS (U.S. West Coast)

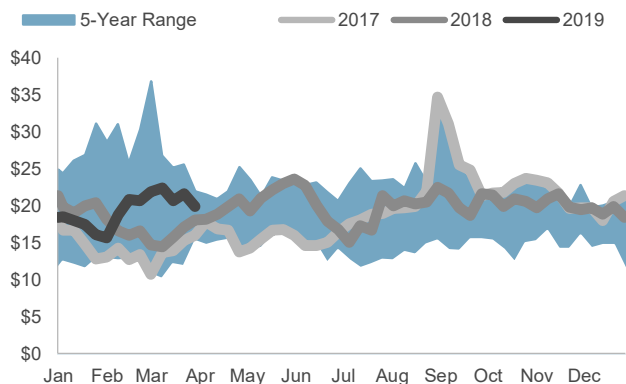


Refining – 2:1:1 Crack Spreads (\$/bbl) (cont.)

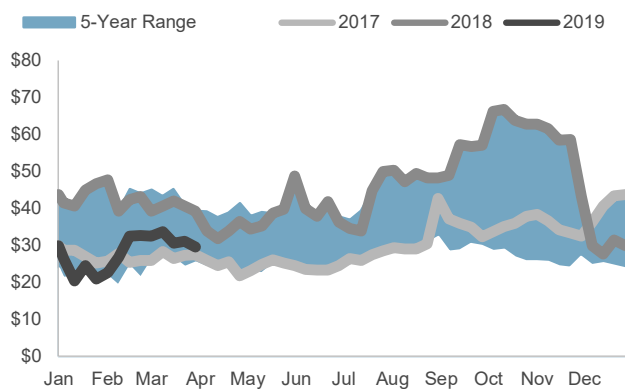
WTI Cushing (NYH RBOB Gasoline)



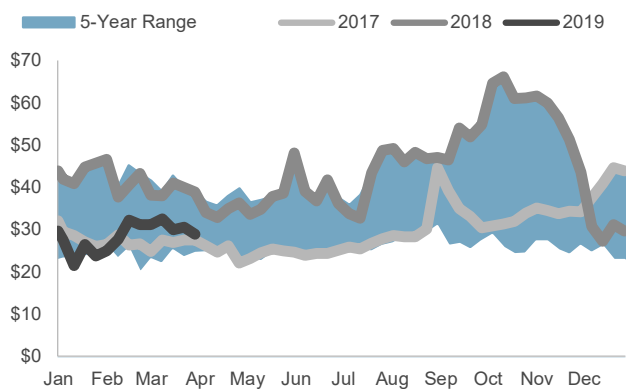
WTI Cushing ULSD (N.Y. Harbor)



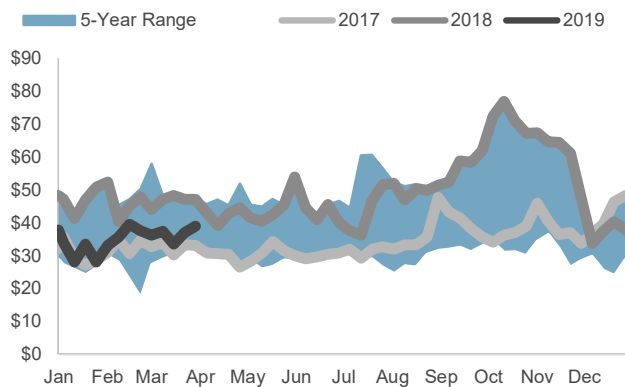
WCS (U.S. Mid-Continent)



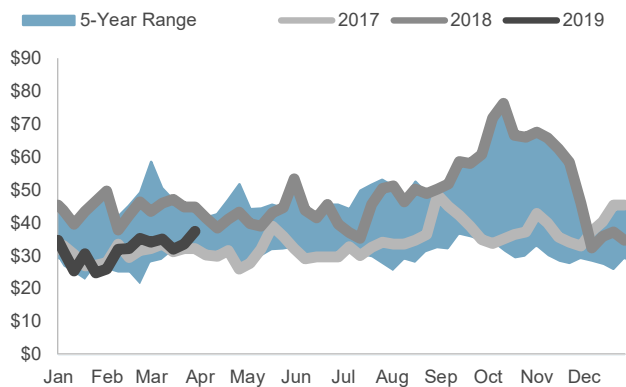
WCS (U.S. Gulf Coast)



WCS (U.S. West Coast)

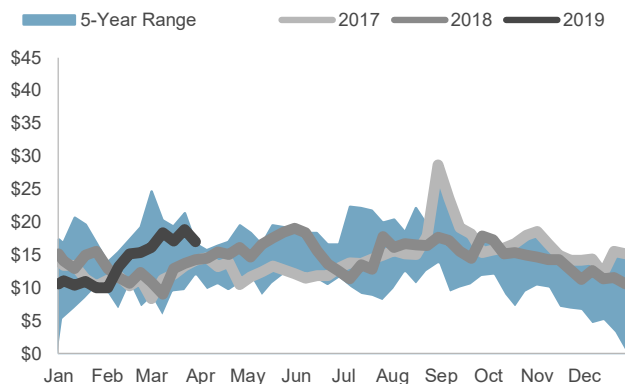


WCS (San Francisco)

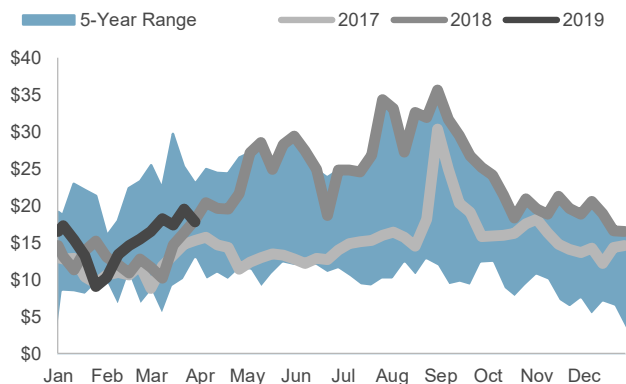


Refining – 5:3:2 Crack Spreads (\$/bbl)

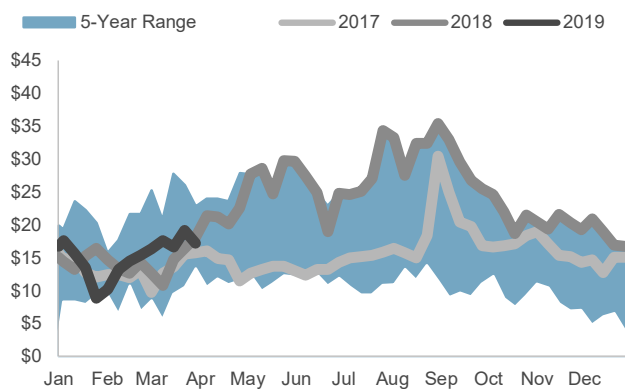
WTI Cushing (U.S. Gulf Coast)



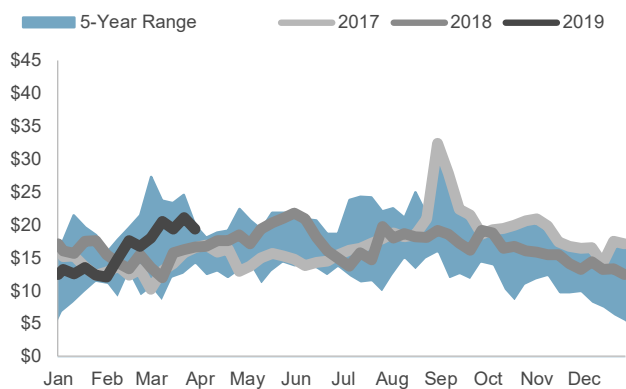
WTI Midland (U.S. Gulf Coast)



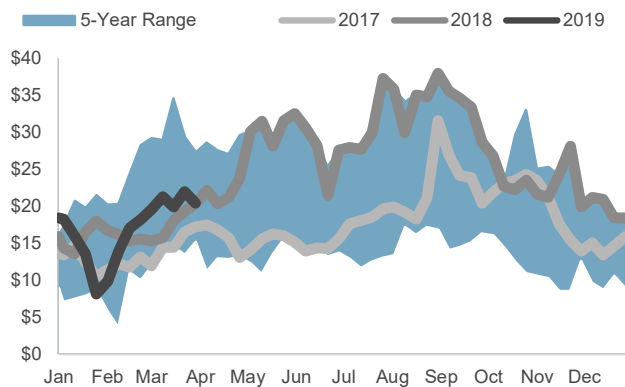
WTS (U.S. Gulf Coast)



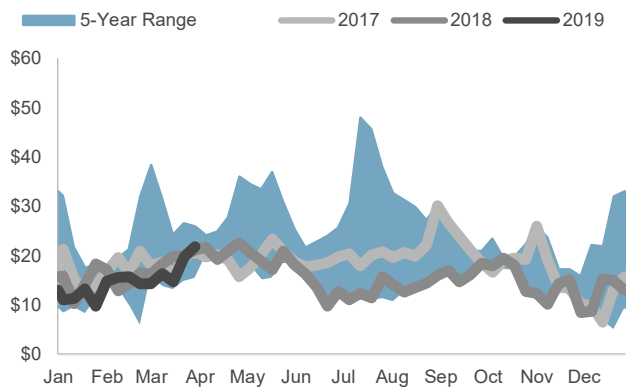
WTI Cushing ULSD (U.S. Gulf Coast)



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

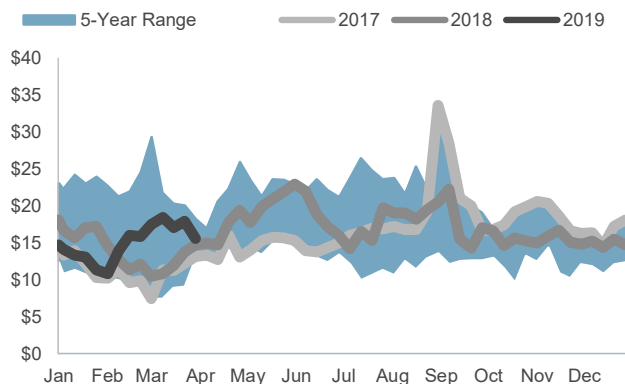


ANS (U.S. West Coast)

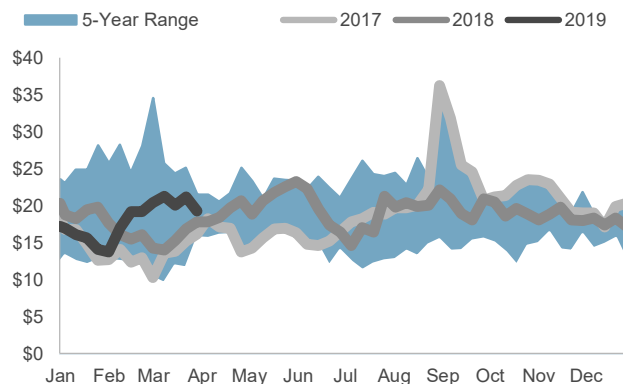


Refining – 5:3:2 Crack Spreads (\$/bbl) (cont.)

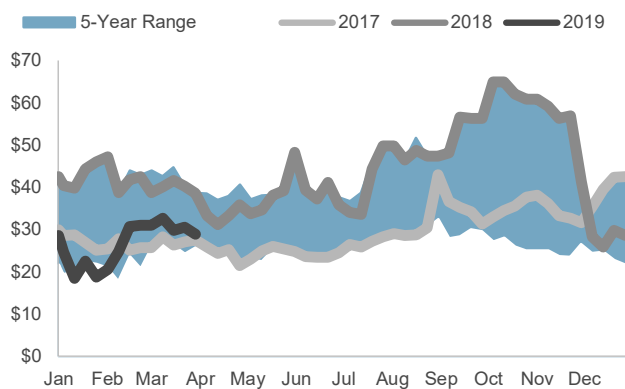
WTI Cushing (NYH RBOB Gasoline)



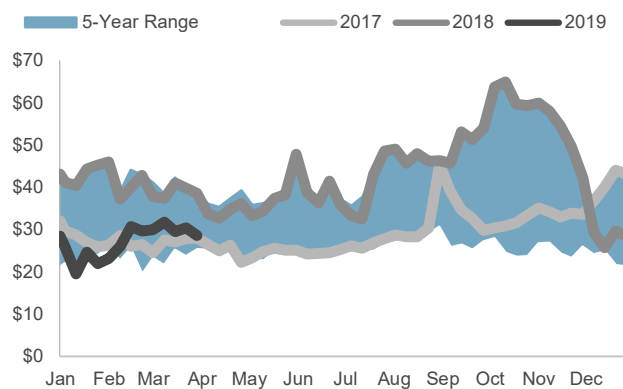
WTI Cushing ULSD (N.Y. Harbor)



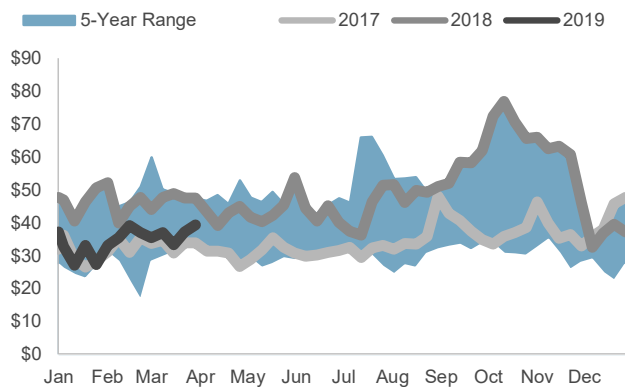
WCS (U.S. Mid-Continent)



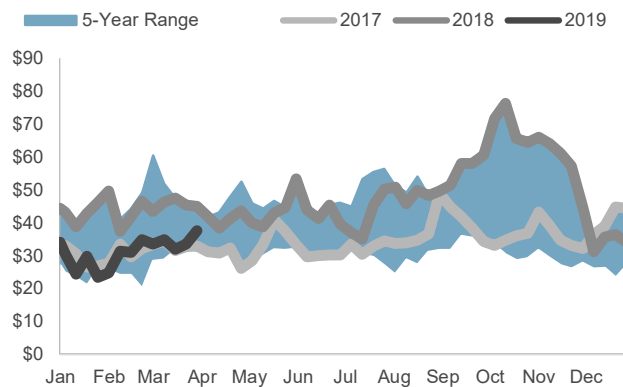
WCS (U.S. Gulf Coast)



WCS (U.S. West Coast)

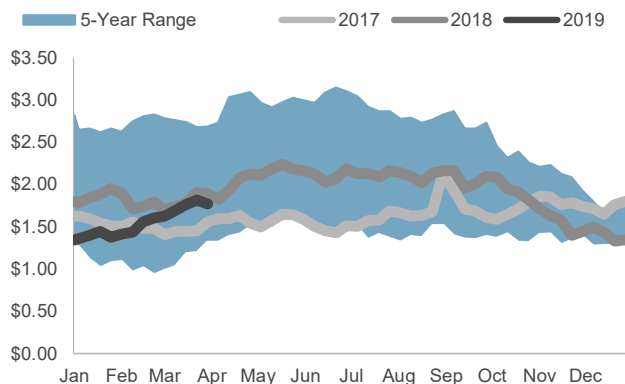


WCS (San Francisco)

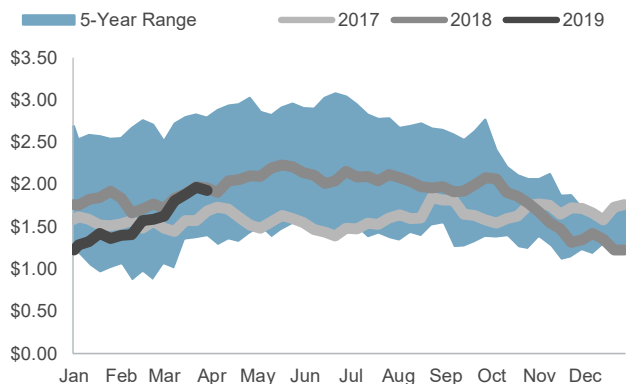


Refining – Product Prices (\$/gal)

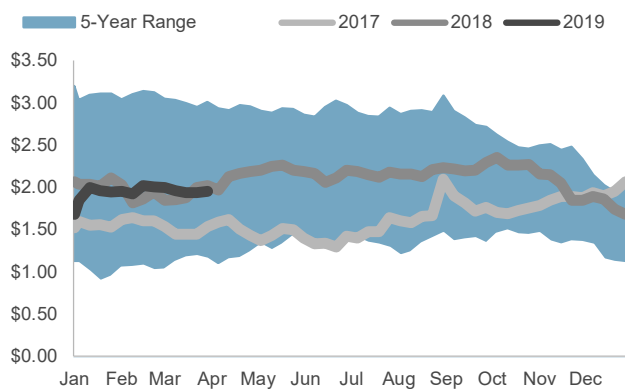
84 RBOB Gasoline (N.Y. Harbor)



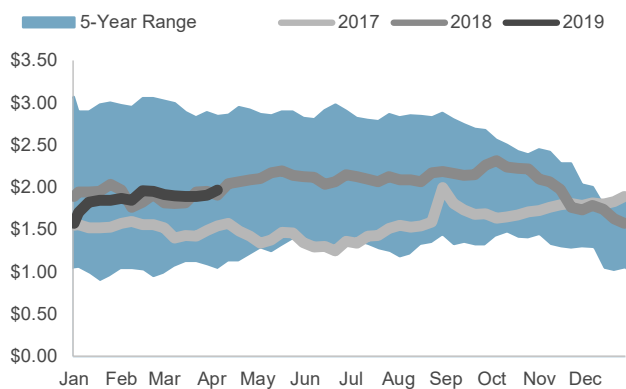
84 RBOB Gasoline (U.S. Gulf Coast)



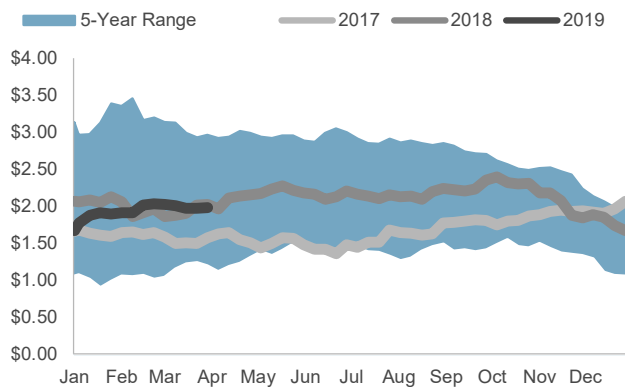
54-Grade Jet Fuel (N.Y. Harbor)



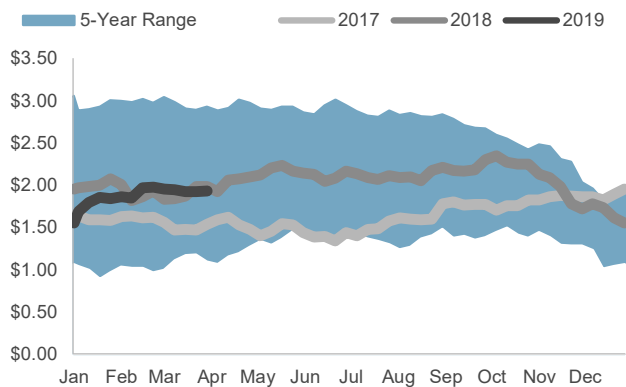
54-Grade Jet Fuel (U.S. Gulf Coast)



ULSD (N.Y. Harbor)



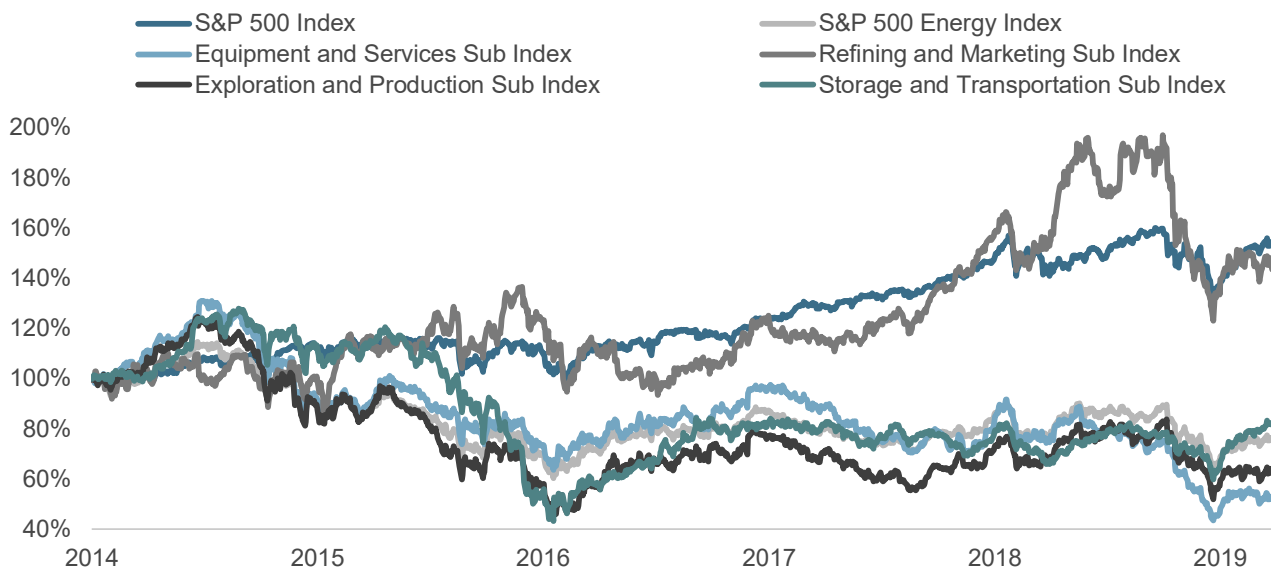
ULSD (U.S. Gulf Coast)



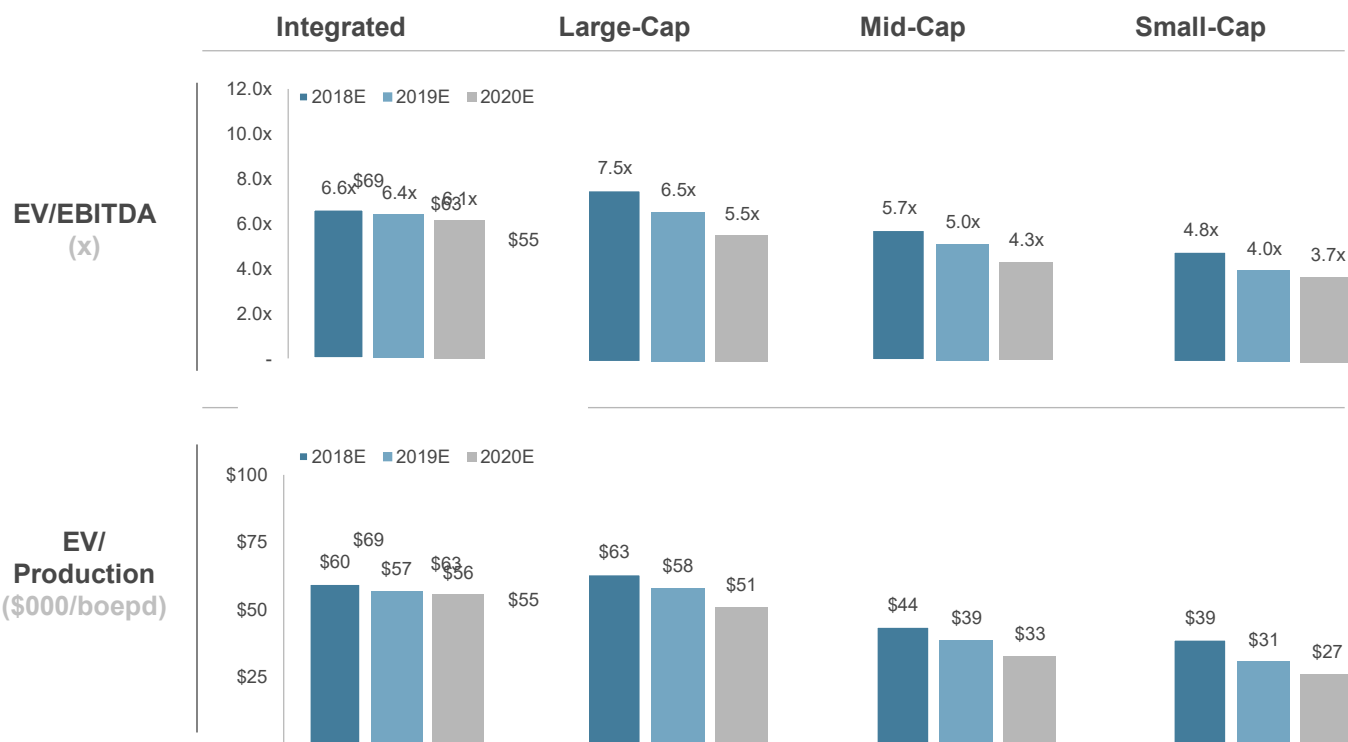
	Page
1. Houlihan Lokey Snapshot	4
2. Crude Oil	8
3. Natural Gas and NGLs	23
4. LNG	36
5. Refining	40
6. Public Equity Markets Overview	52
7. M&A and Financing Activity	54
8. Rigs	62

Public Markets Overview

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



Public E&P Company Trading Metrics



Note: Trading multipl
broker consensus fut
Source: S&P Capital IQ.

ata listed as at March 31, 2019, and
Q as at March 31, 2019.

	Page
1. Houlihan Lokey Snapshot	4
2. Crude Oil	8
3. Natural Gas and NGLs	23
4. LNG	36
5. Refining	40
6. Public Equity Markets Overview	52
7. M&A and Financing Activity	54
8. Rigs	62

E&P

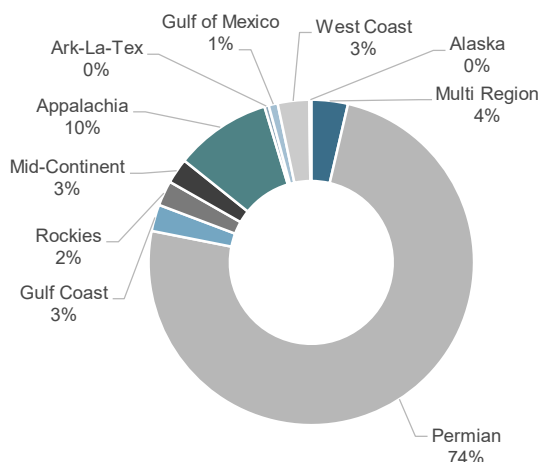
M&A (\$ in billions)

U.S. Region	2017	2018	March YTD		%Δ
			2018	2019	
Multi Region	\$1.1	\$12.2	\$0.4	\$0.2	-59%
Permian	24.6	30.5	12.9	3.1	-76%
Gulf Coast	7.0	11.1	3.6	0.1	NMF
Rockies	11.9	6.8	1.5	0.1	NMF
Mid-Continent	7.5	10.6	1.5	0.1	NMF
Appalachia	11.9	5.8	0.3	0.4	28%
Ark-La-Tex	0.8	3.5	0.2	0.0	NMF
Gulf of Mexico	2.6	5.1	1.6	0.0	NMF
West Coast	0.8	0.6	0.0	0.1	NMF
Alaska	0.4	0.5	0.4	0.0	NMF
Total	\$68.6	\$86.8	\$22.4	\$4.2	-81%

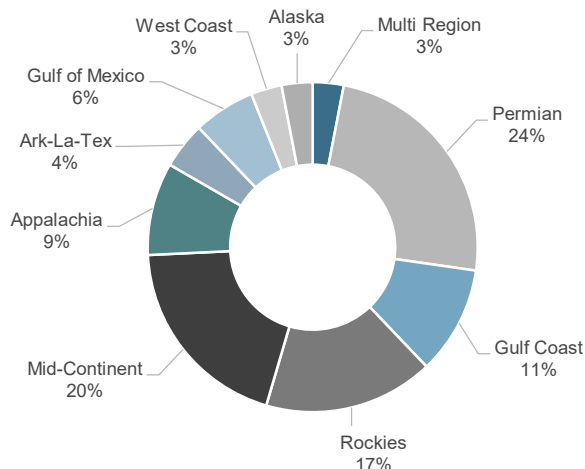
M&A (Deal Count)

U.S. Region	2017	2018	March YTD		%Δ
			2018	2019	
Multi Region	28	22	4	2	-50%
Permian	130	128	32	16	-50%
Gulf Coast	76	74	23	7	-70%
Rockies	77	88	18	11	-39%
Mid-Continent	93	69	21	13	-38%
Appalachia	47	24	8	6	-25%
Ark-La-Tex	32	19	3	3	0%
Gulf of Mexico	11	25	12	4	-67%
West Coast	11	13	0	2	NMF
Alaska	1	7	2	2	0%
Total	506	469	123	66	-46%

M&A – March YTD 2019 (\$ in billions)



M&A – March YTD 2019 (Deal Count)

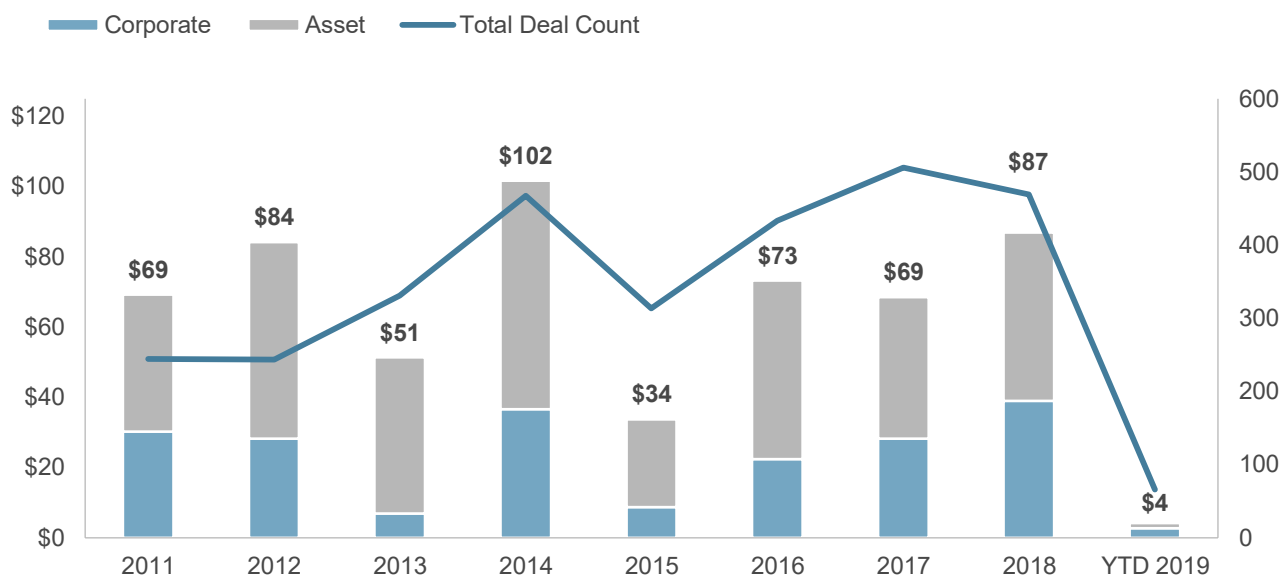


Note: All data as of March 31, 2019.

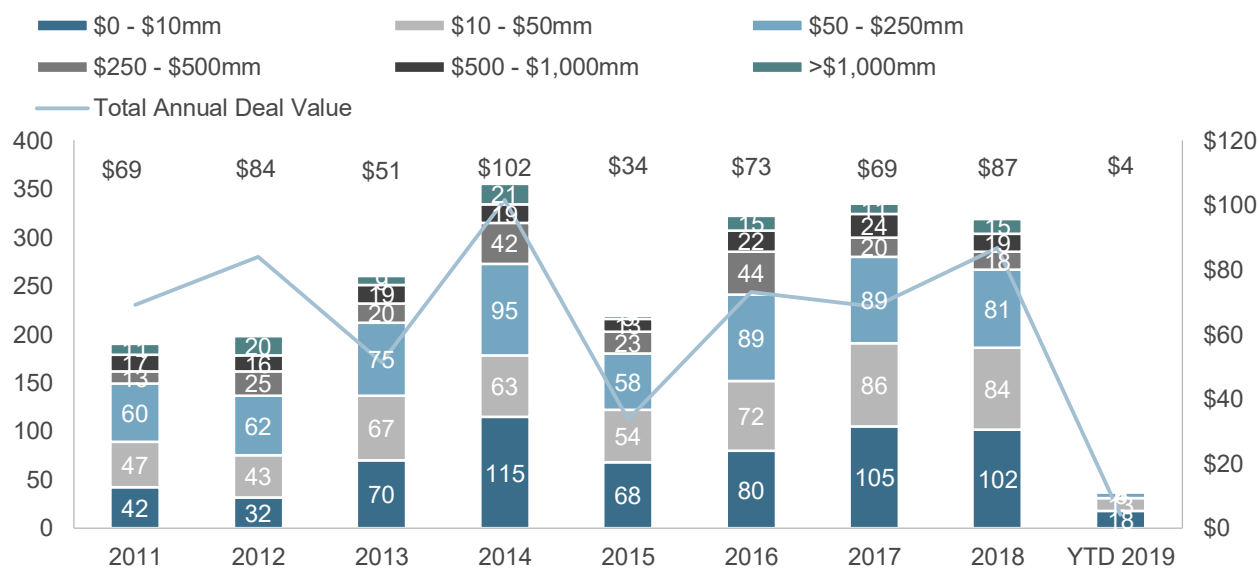
Source: PLS based on selection criteria of seller assets being located in the U.S.

Historical E&P Transaction Activity

U.S. Transactions Since 2011 (\$ in billions)



U.S. Transactions by Deal Size Since 2011⁽¹⁾ (\$ in billions)



Note: All data as of March 31, 2019.

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

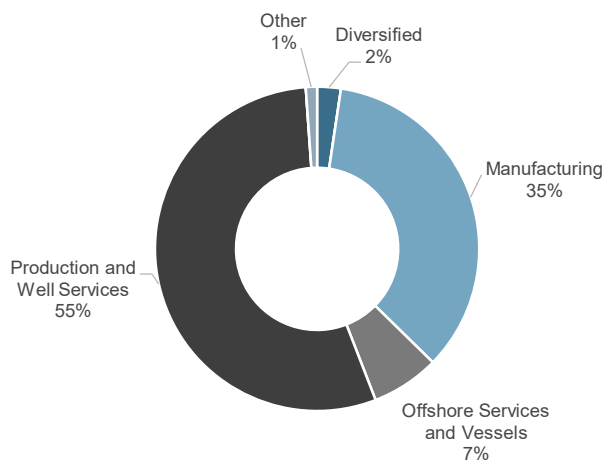
M&A (\$ in billions)

Segment	2017	2018	March YTD		%Δ
			2018	2019	
Diversified	4.6	5.8	0.3	0.1	-76%
Drillers	0.3	0.8	0.3	0.0	NMF
Manufacturing	2.5	2.3	2.2	1.3	-44%
Offshore Services	1.7	8.7	0.3	0.2	-27%
Production and Well Services	9.8	8.6	5.5	2.0	-64%
Tool Rental and Drilling Services	1.0	0.1	0.1	0.0	NMF
Other	1.0	1.0	0.0	0.0	NMF
Total	\$20.9	\$27.3	\$8.7	\$3.6	-59%

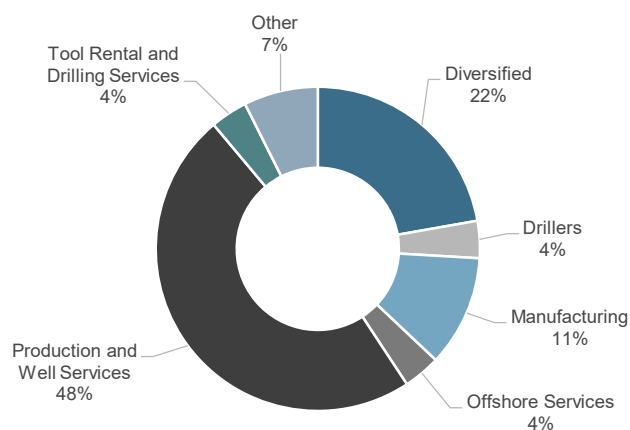
M&A (Deal Count)

Segment	2017	2018	March YTD		%Δ
			2018	2019	
Diversified	42	31	7	6	-14%
Drillers	7	9	2	1	-50%
Manufacturing	35	20	7	3	-57%
Offshore Services	12	21	6	1	-83%
Production and Well Services	67	65	18	13	-28%
Tool Rental and Drilling Services	15	11	3	1	-67%
Other	28	7	4	2	-50%
Total	206	164	47	27	-43%

M&A – March YTD 2019 (\$ in billions)



M&A – March YTD 2019 (Deal Count)



Note: All data as of March 31, 2019.

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

Downstream

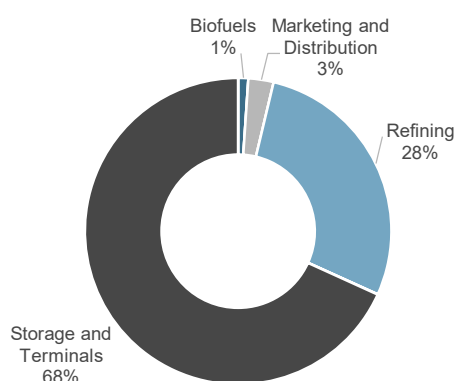
M&A (\$ in billions)

Segment	2017	2018	March YTD		%Δ
			2018	2019	
Biofuels	0.2	0.3	0.0	0.0	NMF
Diversified	10.7	33.9	0.1	0.0	NMF
Marketing and Distribution	3.7	11.0	0.6	0.1	NMF
Petrochemicals	2.1	2.4	0.5	0.0	NMF
Refining	8.7	1.7	0.0	0.5	NMF
Retail	4.3	2.9	2.2	0.0	NMF
Storage and Terminals	10.3	5.7	0.9	1.3	36%
Other	0.0	0.0	0.0	0.0	NMF
Total	\$39.9	\$58.0	\$4.3	\$1.9	-57%

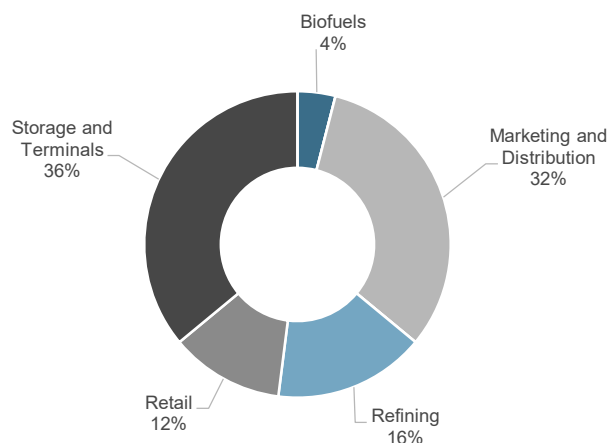
M&A (Deal Count)

Segment	2017	2018	March YTD		%Δ
			2018	2019	
Biofuels	2	3	0	1	NMF
Diversified	9	5	3	0	NMF
Marketing and Distribution	39	48	16	8	-50%
Petrochemicals	7	9	3	0	NMF
Refining	7	6	0	4	NMF
Retail	15	13	2	3	50%
Storage and Terminals	36	38	18	9	-50%
Other	0	0	0	0	NMF
Total	115	122	42	25	-40%

M&A – March YTD 2019 (\$ in billions)



M&A – March YTD 2019 (Deal Count)



Note: All data as of March 31, 2019.

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

Midstream

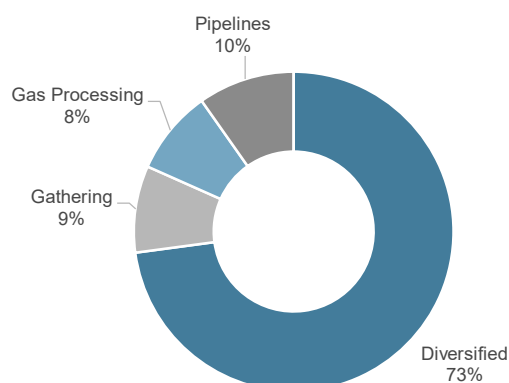
M&A (\$ in billions)

Segment	2017	2018	March YTD		%Δ
			2018	2019	
Diversified	56.8	144.9	7.4	9.0	22%
Gathering	4.2	3.8	0.3	1.1	NMF
Gas Processing	1.9	3.8	0.9	1.1	25%
Pipelines	7.9	33.5	8.2	1.2	-85%
Tankers and Trucking	1.8	2.9	0.4	0.0	NMF
Total	\$72.6	\$188.8	\$17.1	\$12.4	-28%

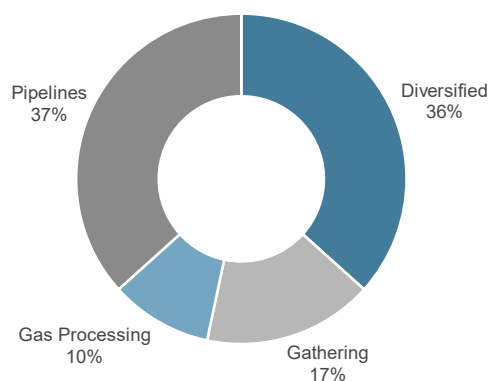
M&A (Deal Count)

Segment	2017	2018	March YTD		%Δ
			2018	2019	
Diversified	48	52	14	11	-21%
Gathering	20	12	4	5	25%
Gas Processing	10	16	5	3	-40%
Pipelines	31	38	6	11	83%
Tankers and Trucking	6	9	1	0	NMF
Total	115	127	30	30	0%

M&A – March YTD 2019 (\$ in billions)



M&A – March YTD 2019 (Deal Count)



Note: All data as of March 31, 2019.

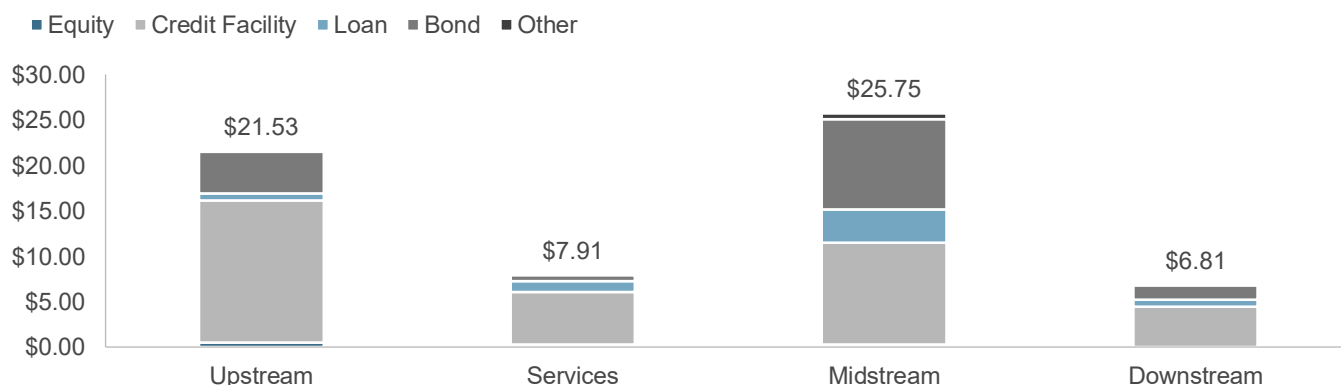
Source: IHS based on selection criteria of seller headquarters being located in the U.S.

Financing by Instrument (\$ in billions)

Financing by Instrument (\$ in billions)

Capital	2017	2018	March YTD		
			2018	2019	%Δ
Upstream					
Equity	\$10.9	\$3.1	\$0.8	\$0.5	-32%
Credit Facility	15.4	69.5	16.7	15.6	-6%
Loan	4.1	3.2	0.1	0.8	NMF
Bond	34.5	22.8	7.1	4.6	-35%
Other	0.5	0.3	0.1	0.0	NMF
Total	\$65.3	\$98.9	\$24.7	\$21.5	-13%
Services					
Equity	\$5.5	\$7.2	\$2.5	\$0.3	NMF
Credit Facility	20.7	21.7	3.6	5.8	60%
Loan	9.2	14.7	2.6	1.2	-53%
Bond	8.5	12.0	5.7	0.6	NMF
Other	0.1	0.0	0.0	0.0	NMF
Total	\$44.0	\$55.6	\$14.4	\$7.9	-45%
Midstream					
Equity	\$17.3	\$5.7	\$2.7	\$0.3	NMF
Credit Facility	38.3	69.4	7.1	11.2	58%
Loan	7.2	18.3	4.1	3.7	-10%
Bond	38.0	39.8	16.4	9.9	-40%
Other	12.9	5.1	2.0	0.7	-67%
Total	\$113.6	\$138.3	\$32.3	\$25.8	-20%
Downstream					
Equity	\$0.3	\$0.5	\$0.1	\$0.0	NMF
Credit Facility	9.3	13.6	1.6	4.4	NMF
Loan	2.6	1.6	1.2	0.8	-38%
Bond	4.0	5.0	4.2	1.6	-62%
Other	0.0	0.2	0.1	0.0	NMF
Total	\$16.2	\$20.8	\$7.3	\$6.8	-7%
Integrated					
Equity	\$2.3	\$0.0	\$0.0	\$0.0	NMF
Credit Facility	0.0	0.9	0.0	0.0	NMF
Loan	0.0	0.0	0.0	0.0	NMF
Bond	11.2	10.8	0.0	4.0	NMF
Other	0.0	0.0	0.0	0.0	NMF
Total	\$13.4	\$11.6	\$0.0	\$4.0	NMF
Grand Total	\$252.6	\$325.3	\$78.7	\$66.0	-16%

Financing by Instrument – March YTD 2019 (\$ in billions)



Note: All data as of March 31, 2019.
Source: PLS.

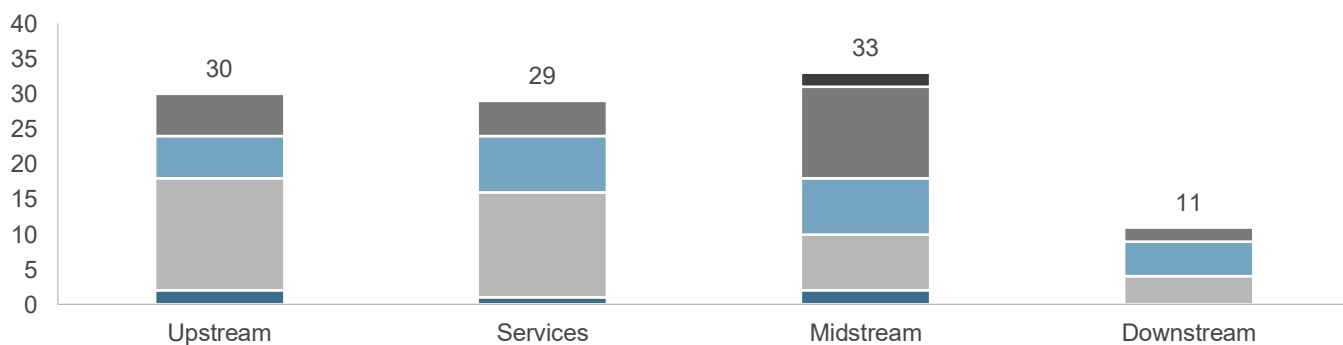
Financing by Instrument (Count)

Financing by Instrument (Count)

Capital	2017	2018	March YTD		%Δ
			2018	2019	
Upstream					
Equity	42	18	5	2	-60%
Credit Facility	22	86	15	16	7%
Loan	15	17	5	6	20%
Bond	55	39	11	6	-45%
Other	8	5	2	0	NMF
Total	142	165	38	30	-21%
Services					
Equity	23	22	12	1	NMF
Credit Facility	48	69	13	15	15%
Loan	29	29	6	8	33%
Bond	15	24	11	5	-55%
Other	2	0	0	0	NMF
Total	117	144	42	29	-31%
Midstream					
Equity	44	20	6	2	-67%
Credit Facility	29	57	6	8	33%
Loan	17	18	2	8	NMF
Bond	60	54	22	13	-41%
Other	25	7	2	2	0%
Total	175	156	38	33	-13%
Downstream					
Equity	3	4	1	0	NMF
Credit Facility	11	10	3	4	33%
Loan	3	5	3	5	67%
Bond	10	8	7	2	-71%
Other	0	2	1	0	NMF
Total	27	29	15	11	-27%
Integrated					
Equity	1	0	0	0	NMF
Credit Facility	0	2	0	0	NMF
Loan	0	0	0	0	NMF
Bond	17	12	0	4	NMF
Other	0	0	0	0	NMF
Total	18	14	0	4	NMF
Grand Total	479	508	133	107	-20%

Financing by Instrument – March YTD 2019 (Deal Count)

■ Equity ■ Credit Facility ■ Loan ■ Bond ■ Other



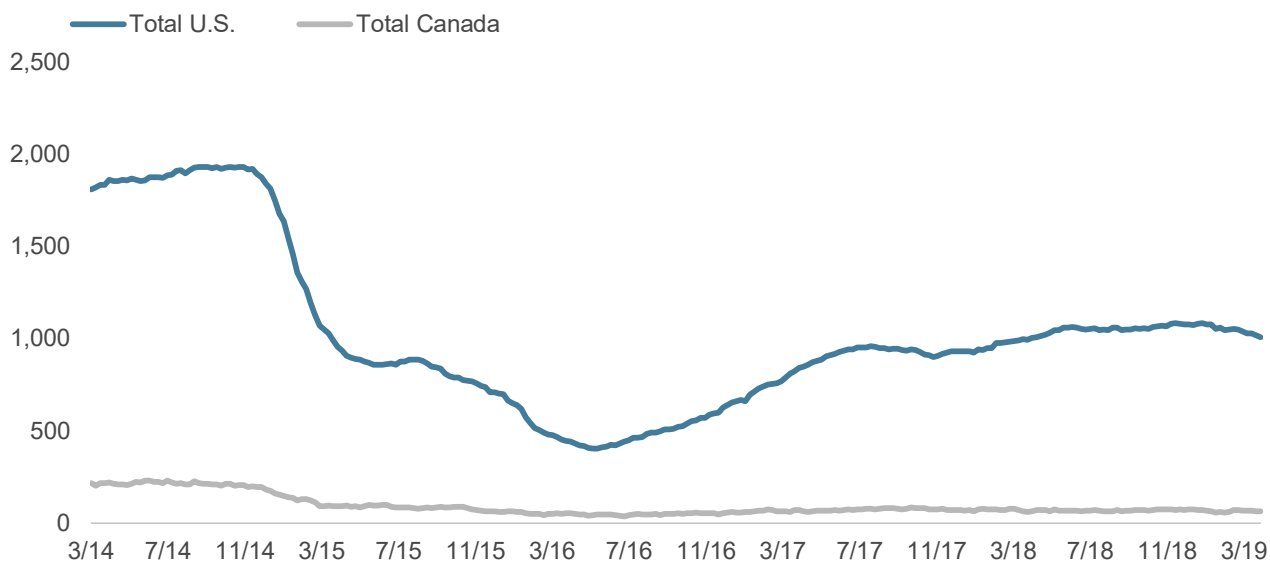
Note: All data as of March 31, 2019.

Source: PLS.

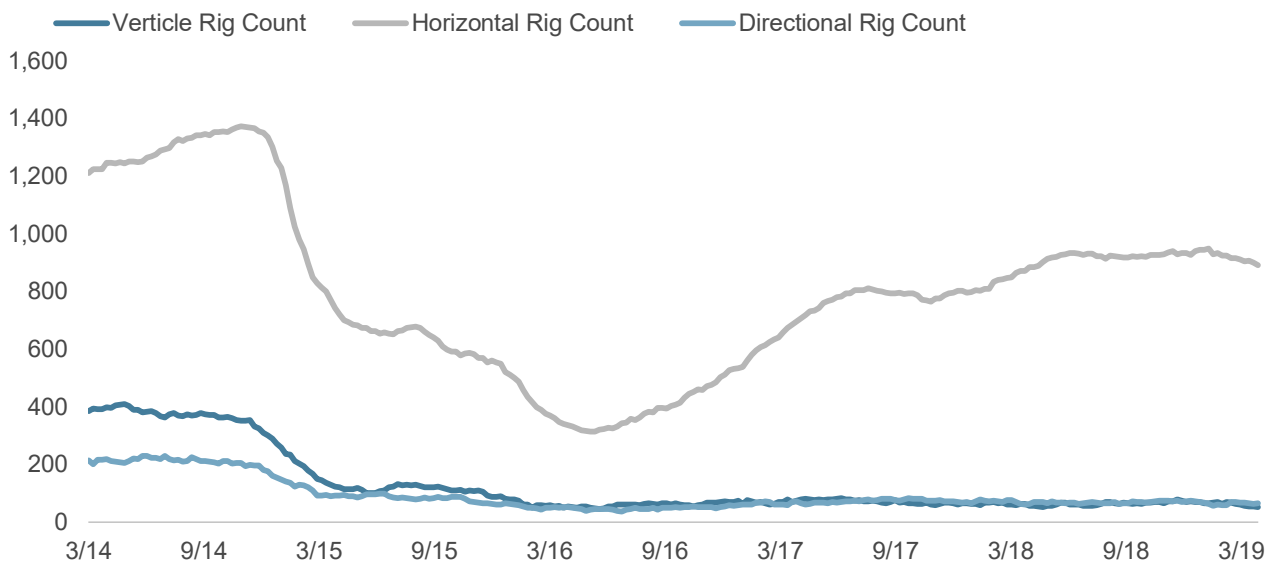
	Page
1. Houlihan Lokey Snapshot	4
2. Crude Oil	8
3. Natural Gas and NGLs	23
4. LNG	36
5. Refining	40
6. Public Equity Markets Overview	52
7. M&A and Financing Activity	54
8. Rigs	62

Rigs

Total U.S. vs. Canada Rigs

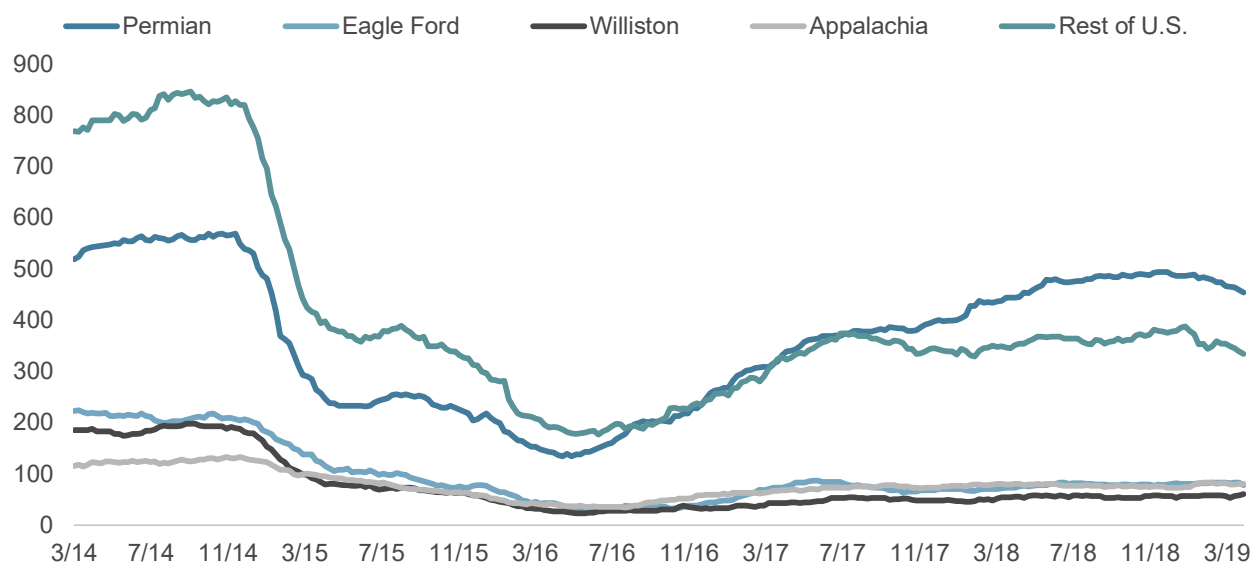


U.S. Rig Counts by Vertical, Horizontal, and Directional



Rigs (cont.)

U.S. Rigs by Regions

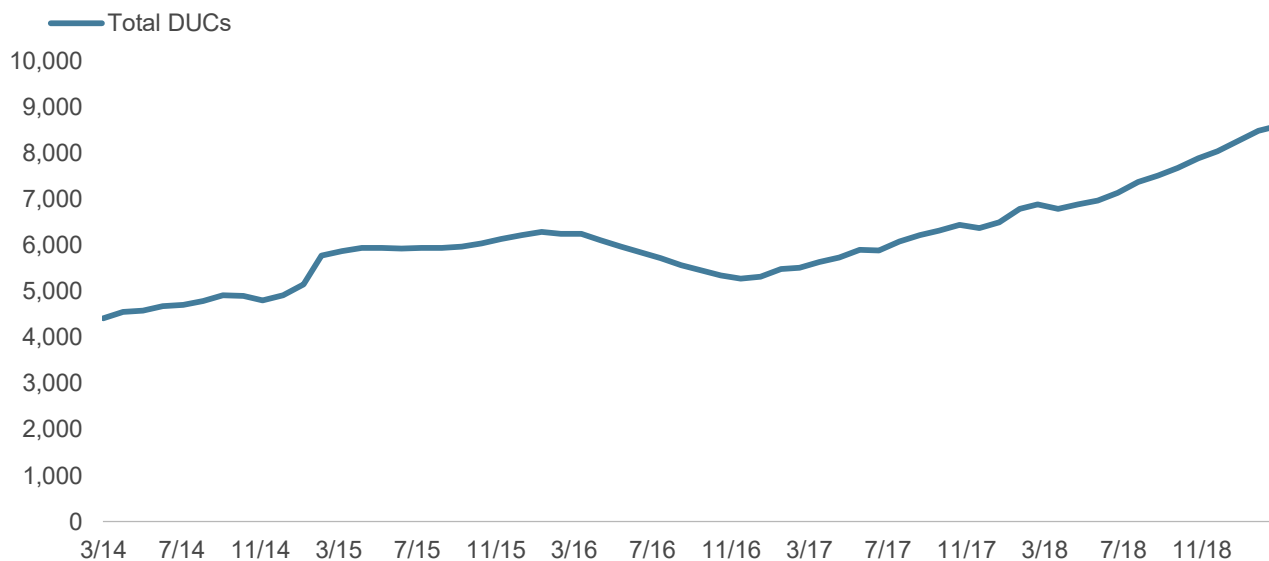


Change in Rig Counts

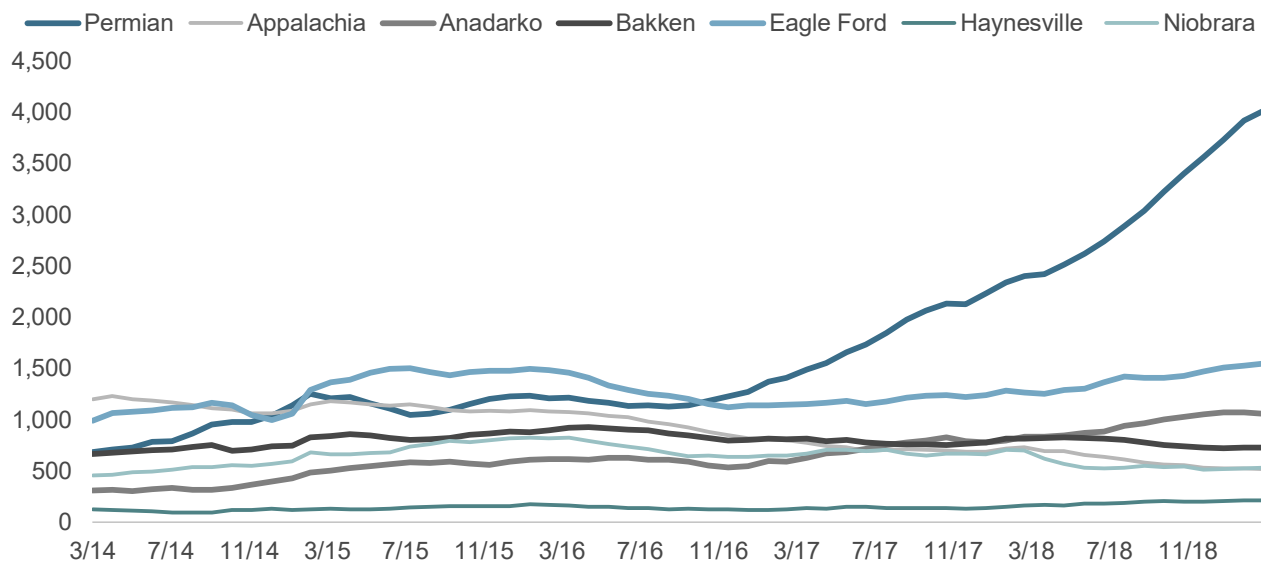
Region	03/31/2019	03/31/2018	12/31/2018	YoY % Change	QoQ % Change
Permian	454	443	486	2.5%	-6.6%
Eagle Ford	78	72	80	8.3%	-2.5%
Williston	60	54	56	11.1%	7.1%
Marcellus	65	57	57	14.0%	14.0%
Cana Woodford	49	63	59	-22.2%	-16.9%
DJ Niobrara	29	24	30	20.8%	-3.3%
Granite Walsh	8	12	11	-33.3%	-27.3%
Haynesville	57	52	52	9.6%	9.6%
Utica	15	22	17	-31.8%	-11.8%
Rest of U.S.	191	194	235	-1.5%	-18.7%
Total	1,006	993	1,083	1.3%	-7.1%

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](#), and [valuation](#). 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.

Locations



Industry Expertise

Product Expertise

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

Dedicated Industry Group

- Business Services
- Consumer, Food & Retail
- Data & Analytics
- Energy
- Financial Institutions
- Healthcare
- Industrials
- Real Estate, Lodging & Leisure
- Technology•Media•Telecom

Financial Sponsors

- Active Dialogue With a Diverse Group of 1000+ Sponsors
- Private Equity Firms
- Hedge Funds
- Capital Alliances

Disclaimer

© 2019 Houlihan Lokey. All rights reserved. This material may not be reproduced in any format by any means or redistributed without the prior written consent of Houlihan Lokey.

Houlihan Lokey is a trade name for Houlihan Lokey, Inc., and its subsidiaries and affiliates, which include those in (i) the United States: Houlihan Lokey Capital, Inc., an SEC-registered broker-dealer and member of FINRA (www.finra.org) and SIPC (www.sipc.org) (investment banking services); Houlihan Lokey Financial Advisors, Inc. (financial advisory services); HL Finance, LLC (syndicated leveraged finance platform); and Houlihan Lokey Real Estate Group, Inc. (real estate advisory services); (ii) Europe: Houlihan Lokey EMEA, LLP, and Houlihan Lokey (Corporate Finance) Limited, authorized and regulated by the U.K. Financial Conduct Authority; Houlihan Lokey GmbH; Houlihan Lokey (Netherlands) B.V.; and Houlihan Lokey (España), S.A.; (iii) the United Arab Emirates, Dubai International Financial Centre (Dubai): Houlihan Lokey (MEA Financial Advisory) Limited, regulated by the Dubai Financial Services Authority for the provision of advising on financial products, arranging deals in investments, and arranging credit and advising on credit to professional clients only; (iv) Singapore: Houlihan Lokey (Singapore) Private Limited, an “exempt corporate finance adviser” able to provide exempt corporate finance advisory services to accredited investors only; (v) Hong Kong SAR: Houlihan Lokey (China) Limited, licensed in Hong Kong by the Securities and Futures Commission to conduct Type 1, 4, and 6 regulated activities to professional investors only; (vi) China: Houlihan Lokey Howard & Zukin Investment Consulting (Beijing) Co., Limited (financial advisory services); (vii) Japan: Houlihan Lokey K.K. (financial advisory services); and (viii) Australia: Houlihan Lokey (Australia) Pty Limited (ABN 74 601 825 227), a company incorporated in Australia and licensed by the [Australian Securities and Investments Commission](#) (AFSL number 474953) in respect of financial services provided to wholesale clients only. In the European Economic Area (EEA), Dubai, Singapore, Hong Kong, and Australia, this communication is directed to intended recipients, including actual or potential professional clients (EEA and Dubai), accredited investors (Singapore), professional investors (Hong Kong), and wholesale clients (Australia), respectively. Other persons, such as retail clients, are NOT the intended recipients of our communications or services and should not act upon this communication.

Houlihan Lokey gathers its data from sources it considers reliable; however, it does not guarantee the accuracy or completeness of the information provided within this presentation. The material presented reflects information known to the authors at the time this presentation was written, and this information is subject to change. Houlihan Lokey makes no representations or warranties, expressed or implied, regarding the accuracy of this material. The views expressed in this material accurately reflect the personal views of the authors regarding the subject securities and issuers and do not necessarily coincide with those of Houlihan Lokey. Officers, directors, and partners in the Houlihan Lokey group of companies may have positions in the securities of the companies discussed. This presentation does not constitute advice or a recommendation, offer, or solicitation with respect to the securities of any company discussed herein, is not intended to provide information upon which to base an investment decision, and should not be construed as such. Houlihan Lokey or its affiliates may from time to time provide investment banking or related services to these companies. Like all Houlihan Lokey employees, the authors of this presentation receive compensation that is affected by overall firm profitability.

