ENERGY LOGISTICS & DISTRIBUTION

Industry In-Sight™

SUMMER / FALL 2019




JORDAN KNAUFF & COMPANY

ENERGY EQUIPMENT & INFRASTRUCTURE ALLIANCE

The Voice of the Energy Supply Chain

ENERGYBUILDERS

IN THIS REPORT

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All charts in this report are updated to the latest information available at the time of publication. Due to differing reporting dates for various data used throughout the report, all charts are not updated to the same ending period.

INTRODUCTION ... About This Report

We are pleased to offer this periodic report which provides a comprehensive compilation of energy information, insights and data. It aggregates critical planning and forecasting information from a myriad of sources into one resource for energy supply chain analysts and decision-makers.

The energy supply chain is an increasingly complex network of upstream, midstream and downstream providers of construction, equipment, materials and services. As shale gas-oil and renewable energy continue to expand in the U.S., additional infrastructure is needed to connect the new sources to the current network of pipelines, storage and transmission stations. Current and new members of the supply chain will need to expand in order to build and service the additional infrastructure.

We define the Energy Logistics & Distribution Industry as any energy production, transportation and storage activities that take place from the well-head to the refinery or gas processing plant through delivery to the end user. Industry members include: producers and distributors of oil and natural gas, natural gas liquids, refined fuels and propane; energy storage and pipeline operators; oil and gas field services; producers and distributors of lubricants, oils, greases and fluids; service contractors, capital equipment manufacturers; materials suppliers; as well as logistics, transportation and maintenance providers.

Segments covered in this Industry In-Sight™ include:

- Crude oil and refined products, natural gas, liquefied natural gas (LNG), natural gas liquids including propane and heating/fuel oil, as well as drilling activity.
- Renewables, including solar, wind, hydropower and ethanol.
- Logistics, including storage and terminals, pipelines, trucking, shipping and rail.
- Economic and financial data pertinent to the Energy Logistics & Distribution Industry.

It is our intention that this publication will provide value in the following areas:

- **Aggregate Information** – The Data Center provides comprehensive statistics on the Energy Logistics & Distribution Industry including, among others: prices (domestic and international), production, consumption, inventory, imports/exports, LNG terminals, drilling activity, solar and wind capacities, energy consumption by sector and source, tank and underground storage capacities and utilization, pipeline mileage and trucking conditions. In all, the report offers more than 70 individual charts covering these topics and more. All charts in this report are updated to the latest information available at the time of publication.
- **Input to Business Decisions** – As a relevant and informative reference for use when contemplating decisions that will have a meaningful impact on your business. Accordingly, we welcome any input, feedback and suggestions to help us include meaningful and timely topical content in future publications. We especially would like to receive suggestions for ideas on Hot Topics in the Energy Logistics & Distribution Industry.
- **Identification of Opportunities** – The breadth of information provided will enable owners and operators of energy logistics businesses to track developments in energy segments outside of their day-to-day focus.
- **Public and Transaction Comparables by Segment** – This section provides the tracking of a cross-section of publicly-traded companies and transactions in various segments of the Energy Logistics & Distribution Industry. The data include operating metrics, such as revenues and EBITDA (earnings before interest, taxes, depreciation and amortization); and valuation analyses such as total enterprise value / latest twelve months revenues and total enterprise value / latest twelve months EBITDA.

Thank you for taking the time to review this Energy Logistics & Distribution Industry In-Sight™. Our goal is to provide the most comprehensive and beneficial information possible. Please forward your feedback and suggestions to any member of the Jordan Knauff & Company or Energy Equipment and Infrastructure Alliance team members listed on the last two pages of this report.

INTRODUCTION

Who is the Energy Equipment & Infrastructure Alliance (EEIA)?

EEIA ... The Voice of the Energy Supply Chain

The energy supply chain is over 120,000 companies in sixty industries, annually contributing more than $170 billion to the U.S. economy, with hundreds of thousands of workers in communities throughout every state of the union. They provide construction, well services, capital equipment, supplies, logistics, professional services and technology in support of energy operations. They build energy infrastructure including production sites, transmission infrastructure, pipelines, storage facilities, processing plants and export terminals.

The shale energy revolution is transforming prosperity, security and quality of life in America. In a few short years, it has brought rising employment, income and opportunity to workers and businesses of all sizes and in all fifty states, often to communities that until recently have known limited prospects for growth. It has given Americans a cleaner environment, lower energy costs, renewed national competitiveness and energy security.

Creating a supportive public and policymaker environment for this miracle depends on active public engagement by energy supply chain stakeholders -- the non-oil and gas companies where energy-driven jobs and opportunities are greatest.

EEIA is that voice. We mobilize and lead the North American supply chain in pursuit of government policies that support full development of our energy resources, while protecting public health, safety and the environment. We also work for widespread public support for energy development.

The Energy Equipment & Infrastructure Alliance (EEIA) is active on all fronts: federal and state legislative, regulatory, judicial and public opinion. Our strength is based upon the supply chain's enormous fifty-state contributions to jobs, economic growth and community prosperity. We conduct economic research that measures and reports the facts about the energy supply chain's tremendous contributions to the American economy.

We are an organization of leading supply chain companies, trade associations and labor organizations. We are the voices of the businesses and workers of America's energy miracle.




INTRODUCTION

Who is Jordan Knauff & Company (JKC)?

JKC was founded in 2001 to undertake a distinct mission: to assemble and maintain a staff of top-notch investment banking personnel and offer their knowledge and experience to provide the best available investment banking services to middle-market companies, the entrepreneurs that lead them and the financial entities that transact with them. JKC has been active within the Energy Logistics & Distribution Industry as operators, investors, board members and investment bankers prior to the firm's founding in 2001.

On a combined basis, over the course of their careers our employees have completed over 200 transactions as investors, owners, operators, buyers, sellers and investment bankers of middle-market businesses across a variety of industries. The majority of our firm's broad transaction experience has been with private companies owned by one shareholder, a partnership, a family or private equity investors.

Experience has taught us that the owners and executives of middle-market businesses tend to have very different needs and goals in capital transactions from those that are common to capital events related to larger companies. Our personnel apply their considerable expertise to accomplish important goals: delivery of successful outcomes for our clients. Pursuant to that, we direct and manage all aspects of the capital transaction process, assist our clients with the management of important constituents (employees, customers, vendors and lenders), act as a teammate to other important client advisors (legal counsel, accountant, tax advisor) and collaborate with transaction counsel in the negotiations with the parties on the other side of the transaction.

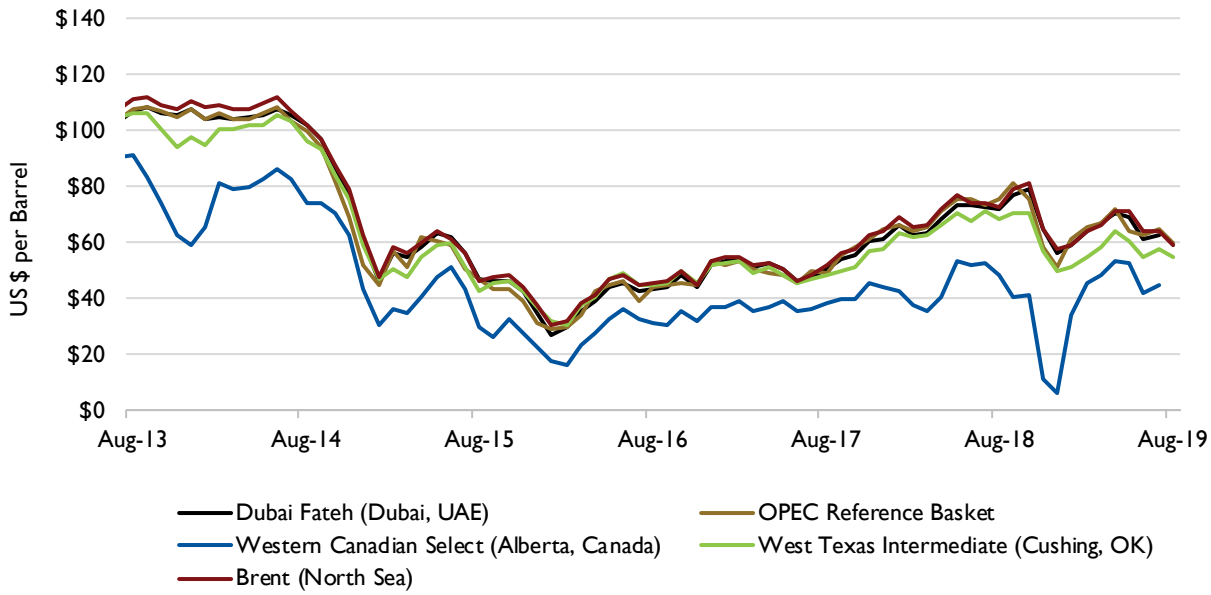
The Services We Provide

- Sell Companies: Generate a liquidity event on behalf of the owner(s) through whole, majority, or minority sale of assets, stock or units.
- Raise Capital: Representation of companies, management teams and entrepreneurs in the raising of senior debt, mezzanine debt or equity capital. Proceeds may be used for a variety of reasons, including, among others, recapitalizations, funding of growth, funding of acquisitions or liquidity for owners and investors.
- Acquisition Advisory: Assistance in sourcing and closing acquisitions -- whether it be a single transaction or a series of acquisitions as part of a consolidation strategy in an Industry Development Project™ (IDP) - a proprietary method for assisting private equity groups, companies or private investors that want to pursue multiple non-auction transactions within a single industry.
- Strategic Business Services: A suite of services for middle-market business owners and executives. Comprised of three components – Company Specific Valuation, Capital Road Map® and Strategic Industry Analysis – these services can be packaged together or used on an à la carte basis.

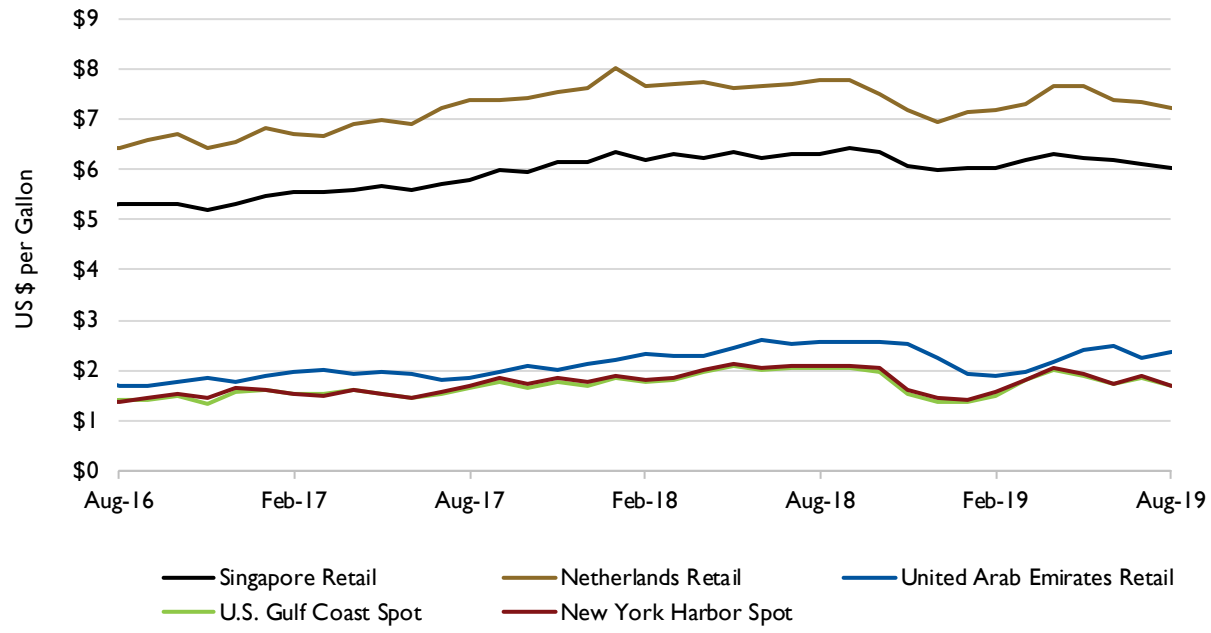
DATA CENTER

OIL

CRUDE OIL PRICES (MONTHLY AVERAGE) (1)



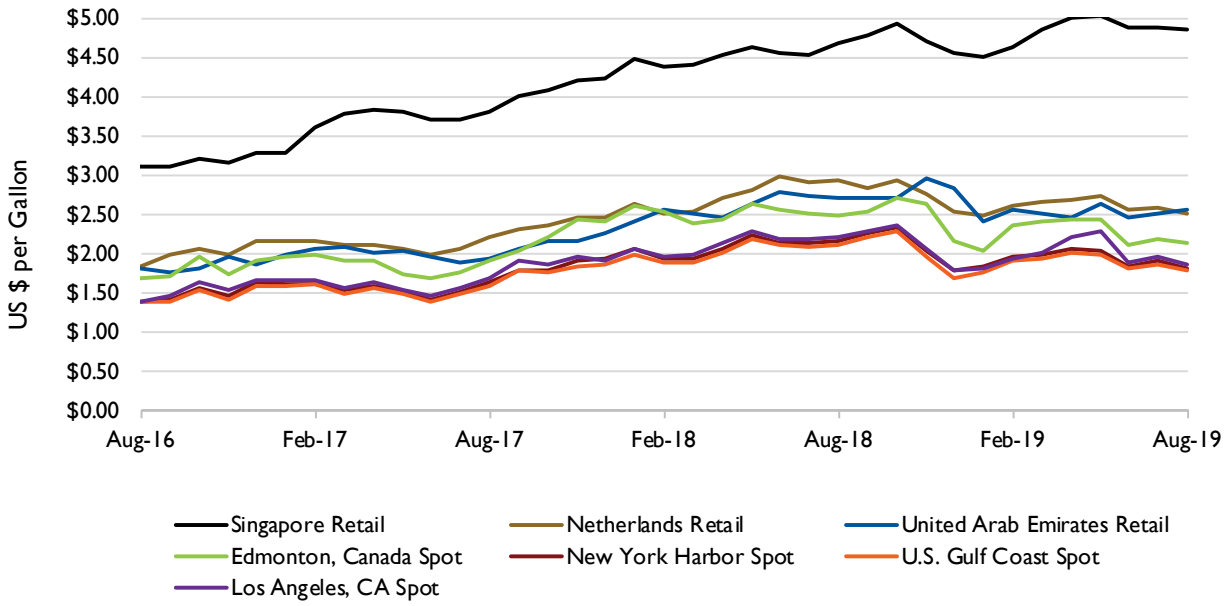
GASOLINE PRICES (MONTHLY AVERAGE) (2)



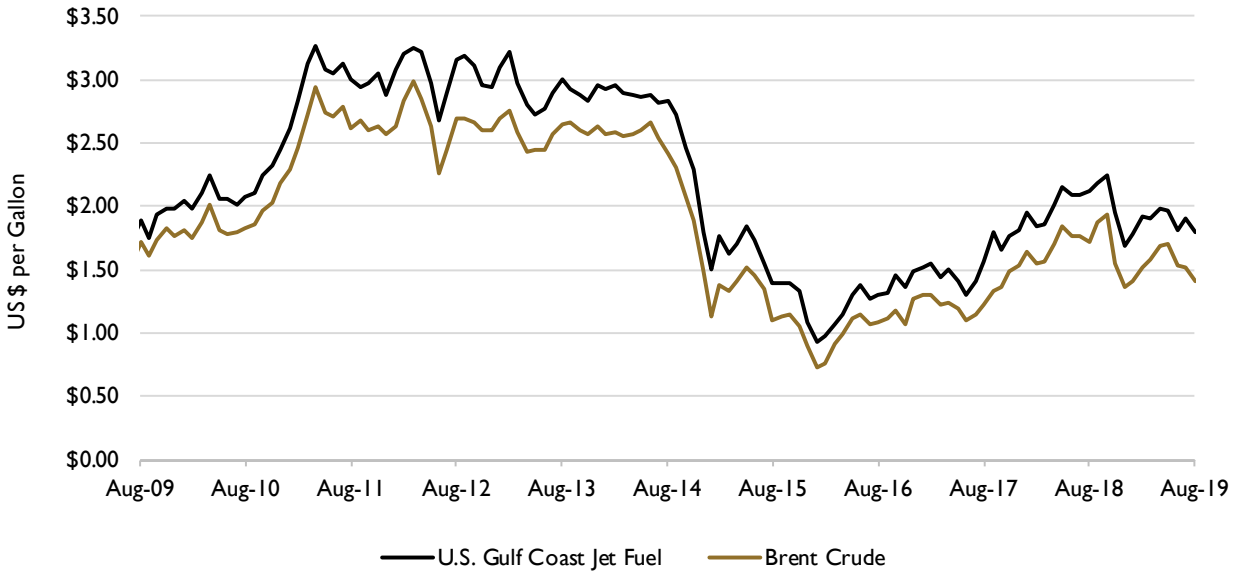
DATA CENTER

OIL

DIESEL PRICES (MONTHLY AVERAGE) (3)



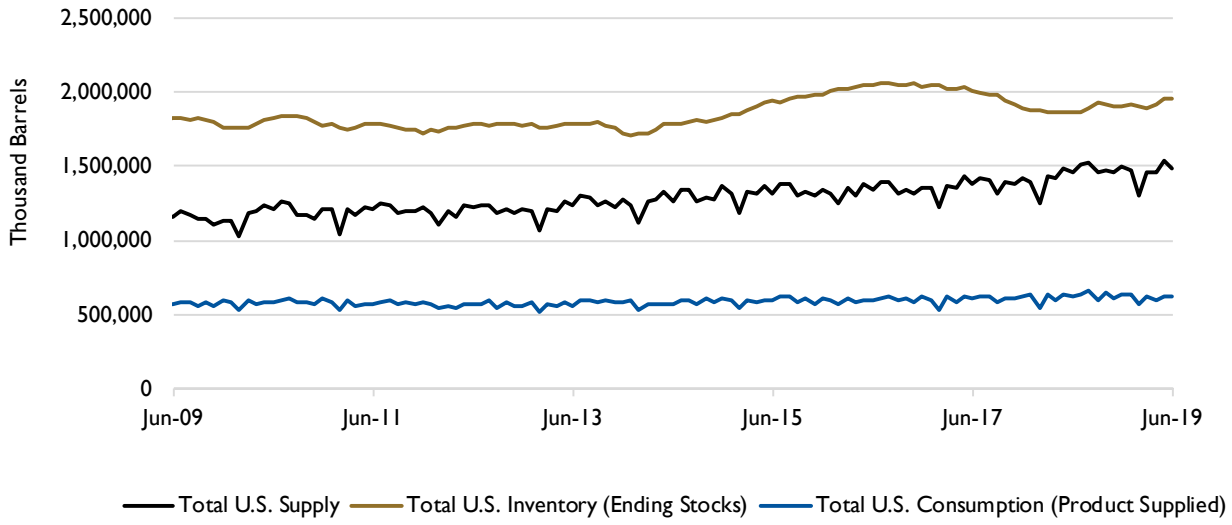
JET FUEL PRICES (MONTHLY AVERAGE) (4)



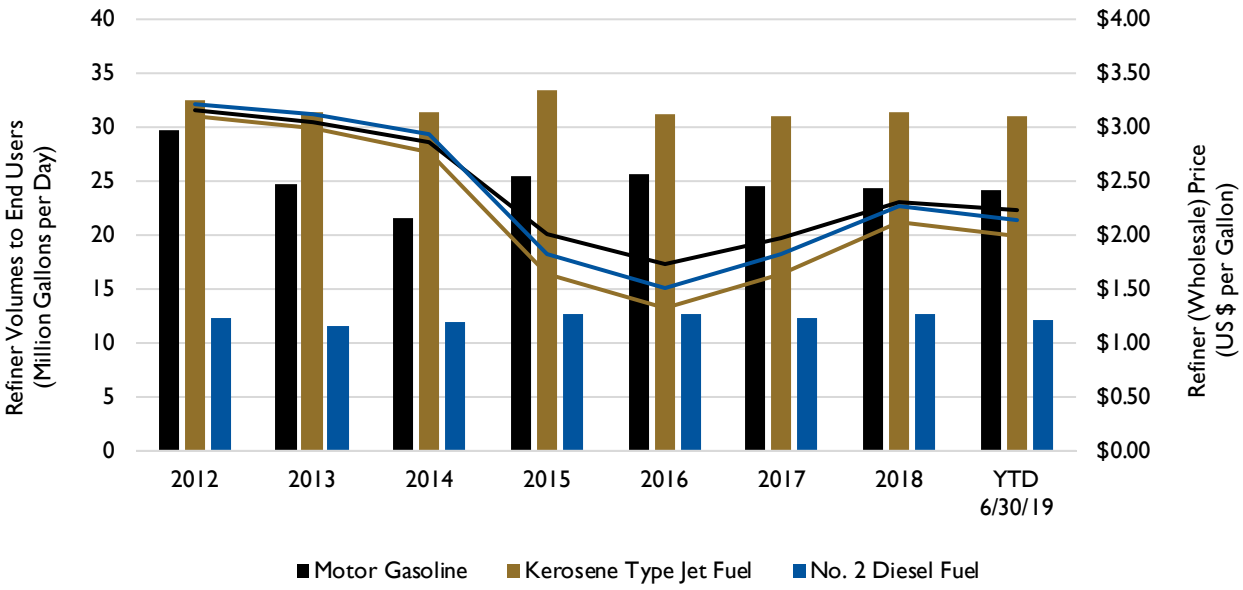
DATA CENTER

OIL

U.S. Crude Oil and Petroleum Products Supply, Inventory and Consumption (Monthly) (5)



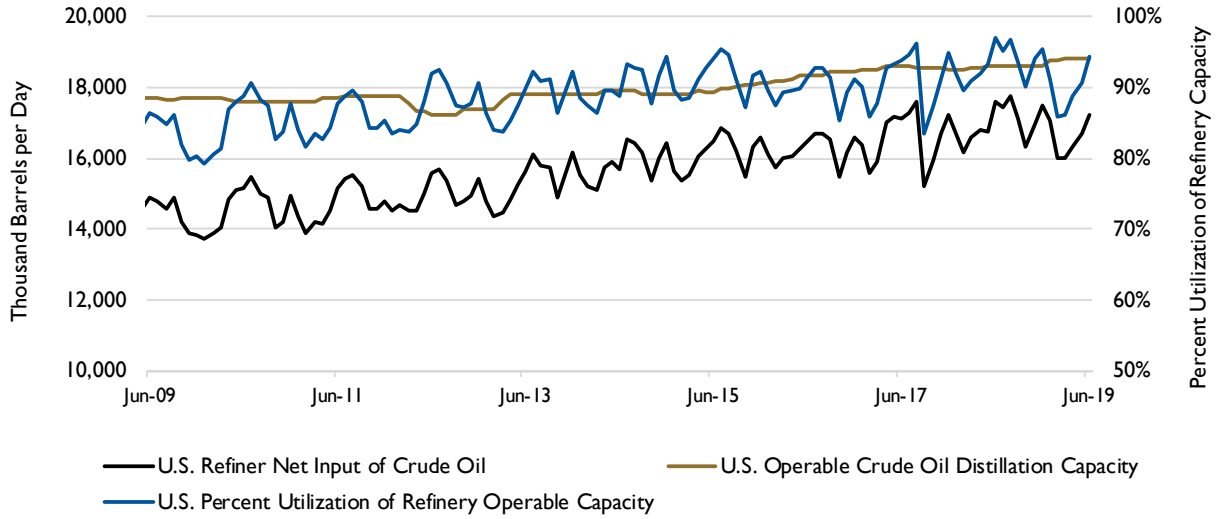
U.S. Refinery Volumes and Wholesale Prices of Petroleum Products (Annual Average) (6)



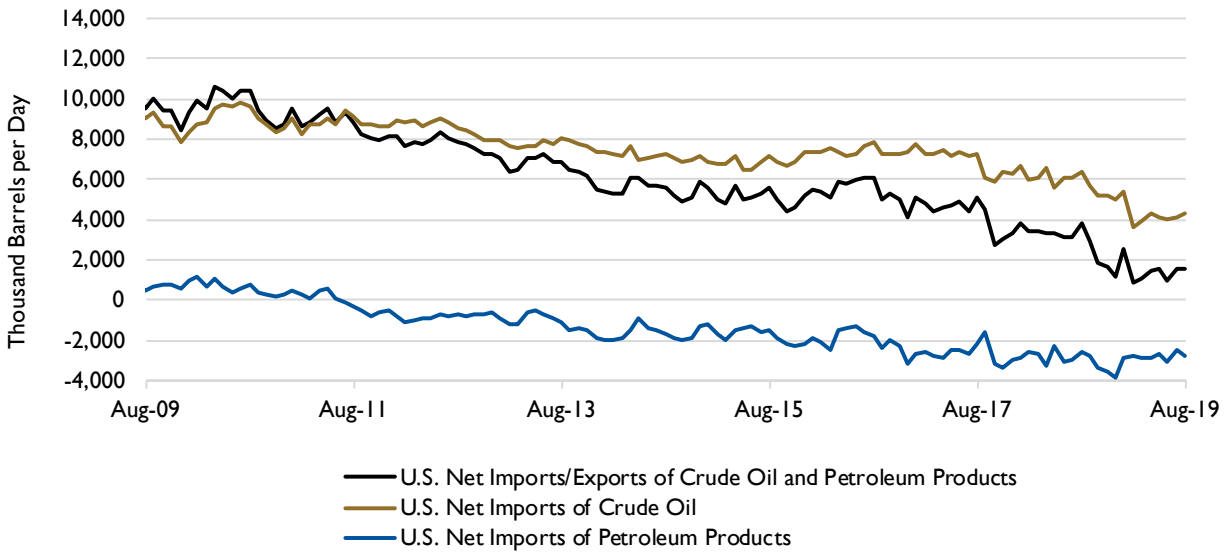
DATA CENTER

OIL

U.S. Crude Oil Refinery Input, Distillation Capacity and Refinery Utilization (Monthly Average) (7)



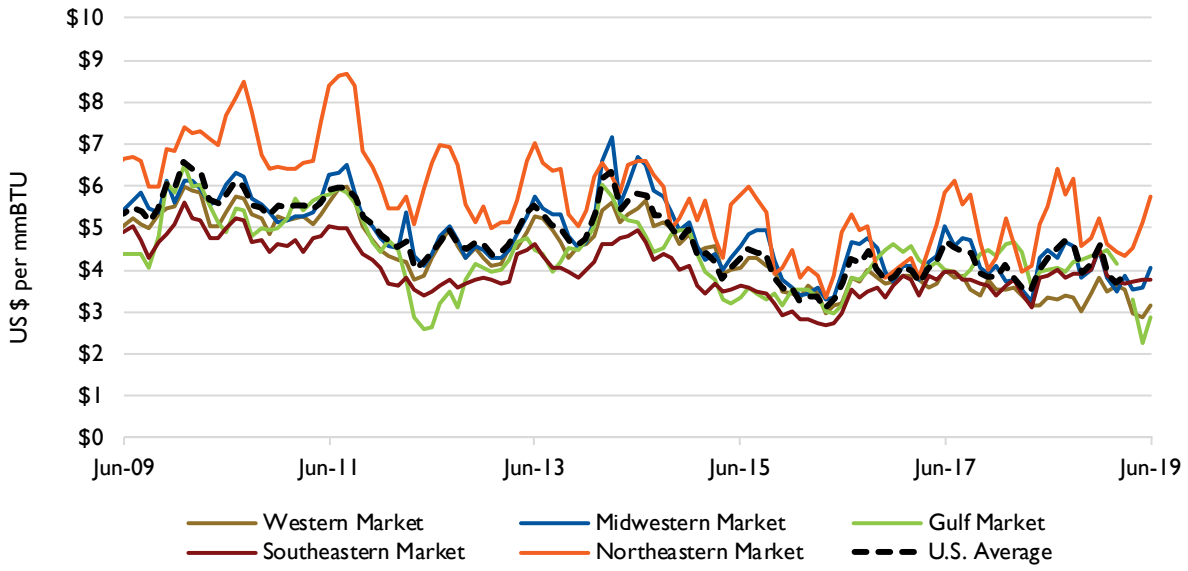
U.S. Crude Oil and Petroleum Products Imports and Exports (Monthly Average) (8)



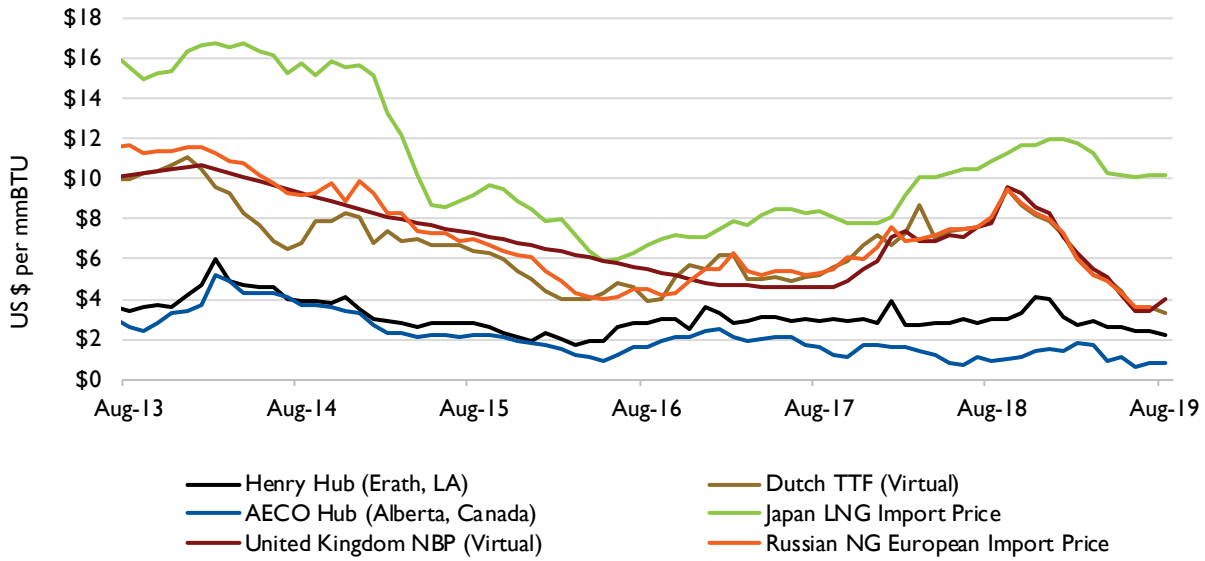
DATA CENTER

NATURAL GAS

DOMESTIC NATURAL GAS CITYGATE PRICES PER REGION (MONTHLY AVERAGE) (9)



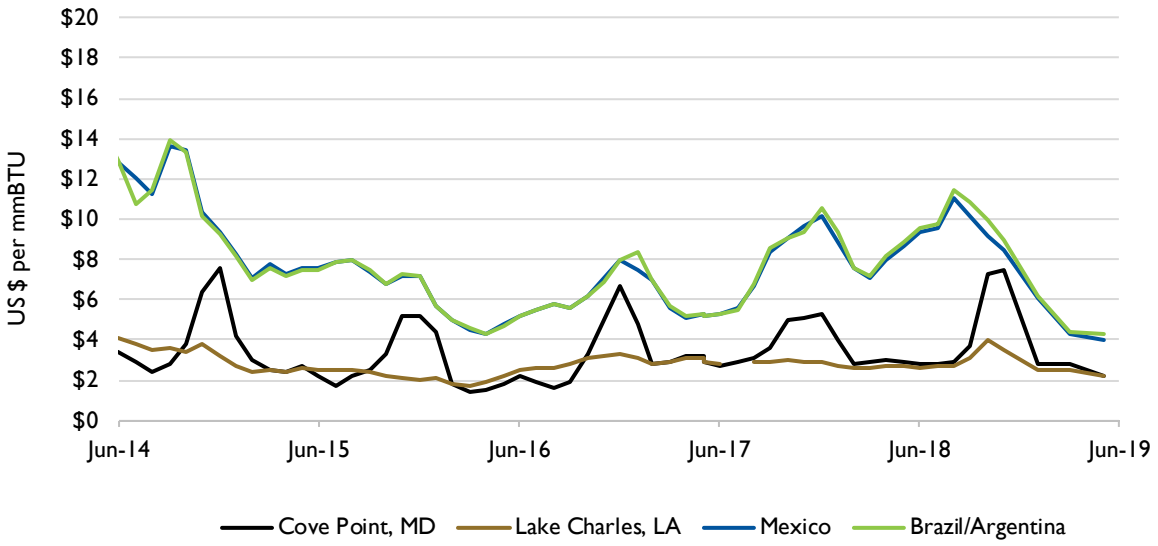
INTERNATIONAL NATURAL GAS PRICES (MONTHLY AVERAGE) (10)



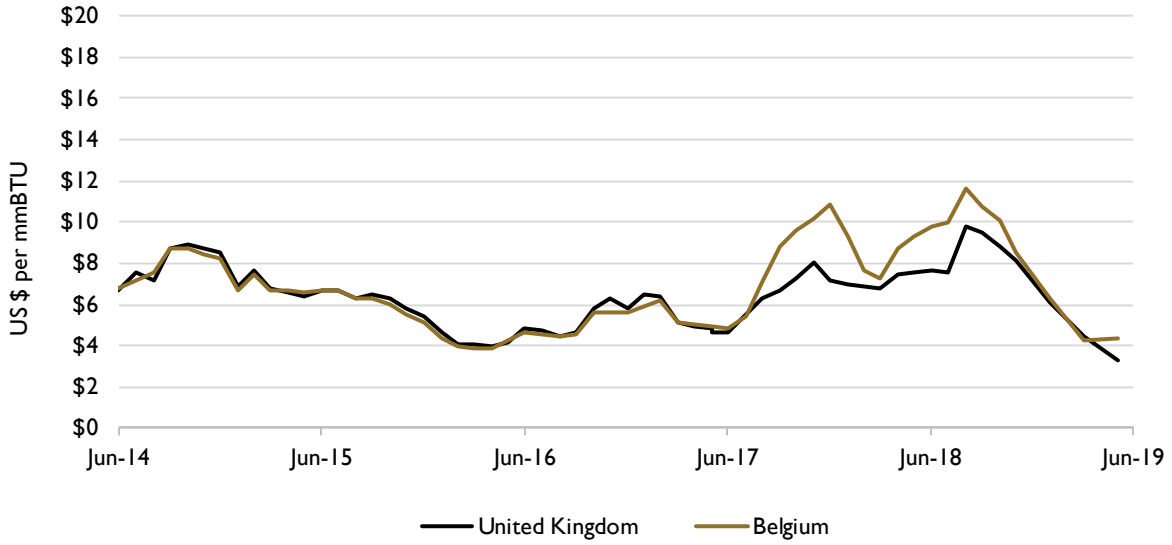
DATA CENTER

NATURAL GAS

AMERICAS LIQUEFIED NATURAL GAS PRICES (MONTHLY AVERAGE) (11)



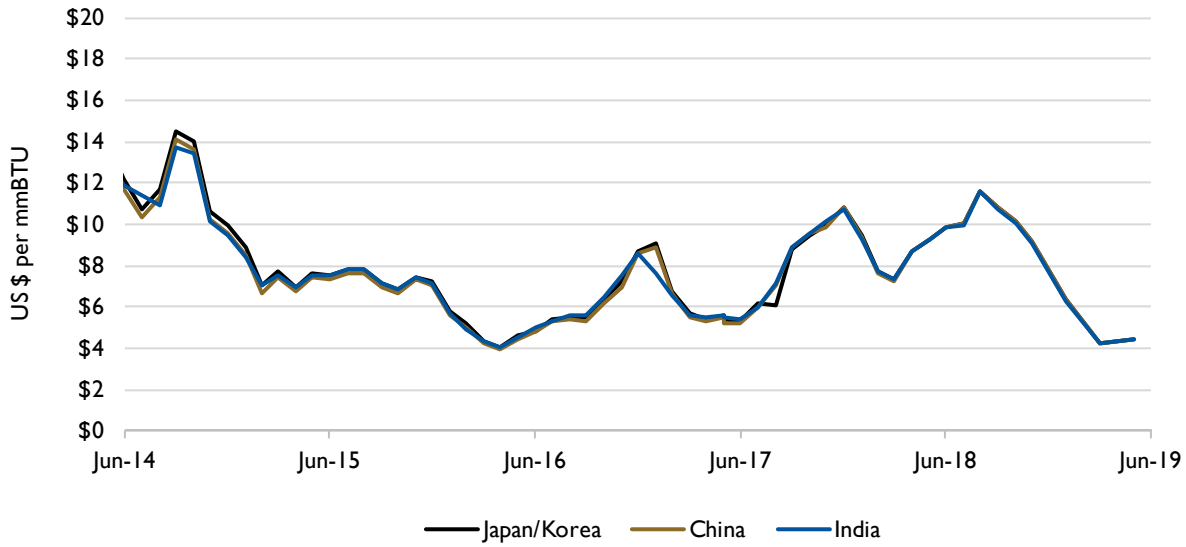
WESTERN EUROPE LIQUEFIED NATURAL GAS PRICES (MONTHLY AVERAGE) (12)



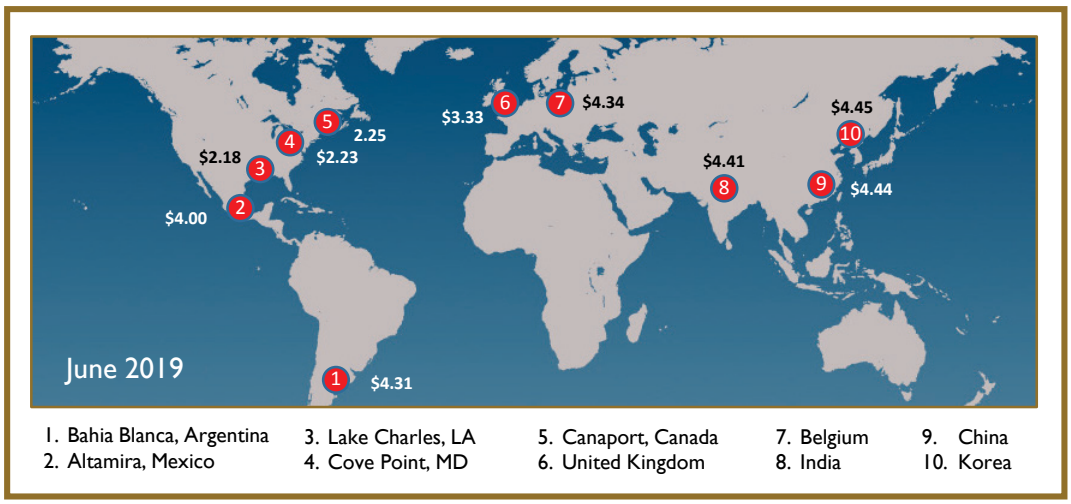
DATA CENTER

NATURAL GAS

ASIA LIQUEFIED NATURAL GAS PRICES (MONTHLY AVERAGE) (13)



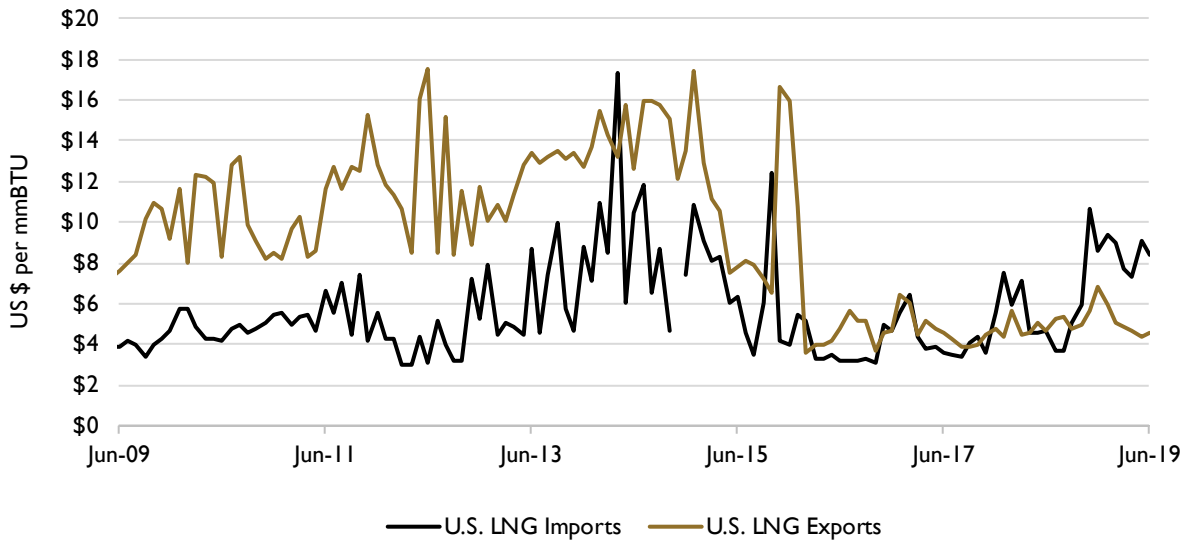
WORLD LIQUEFIED NATURAL GAS PRICES MAP (MONTHLY AVERAGE) (14)



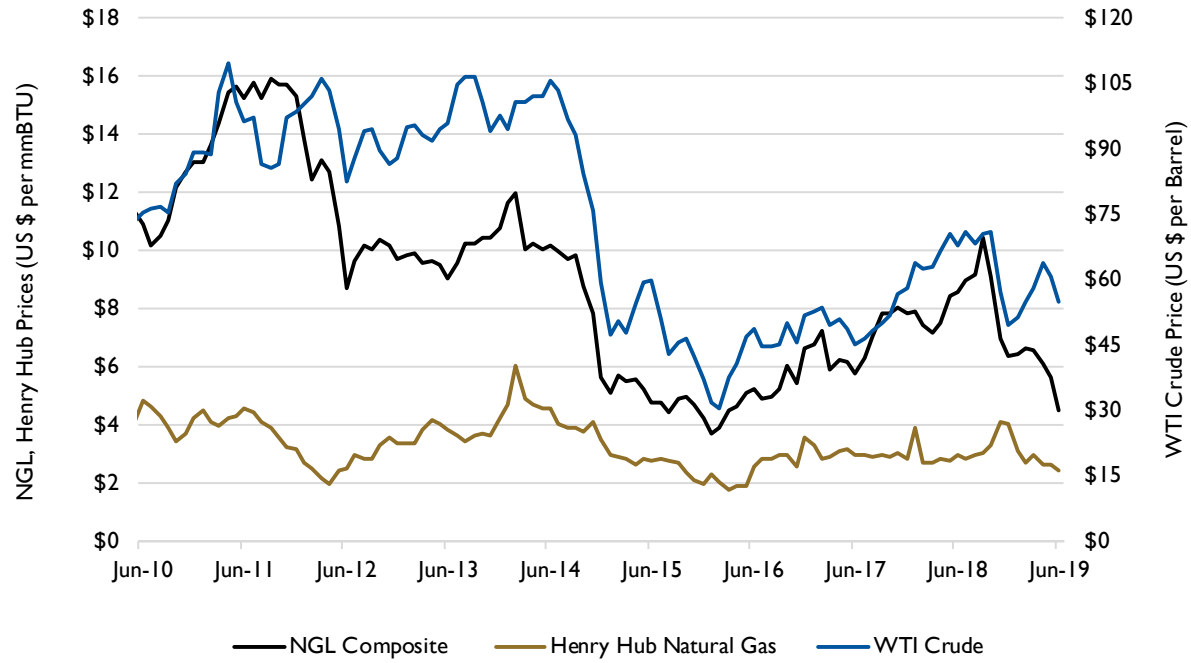
DATA CENTER

NATURAL GAS

U.S. IMPORT / EXPORT LIQUEFIED NATURAL GAS PRICES (MONTHLY AVERAGE) (15)



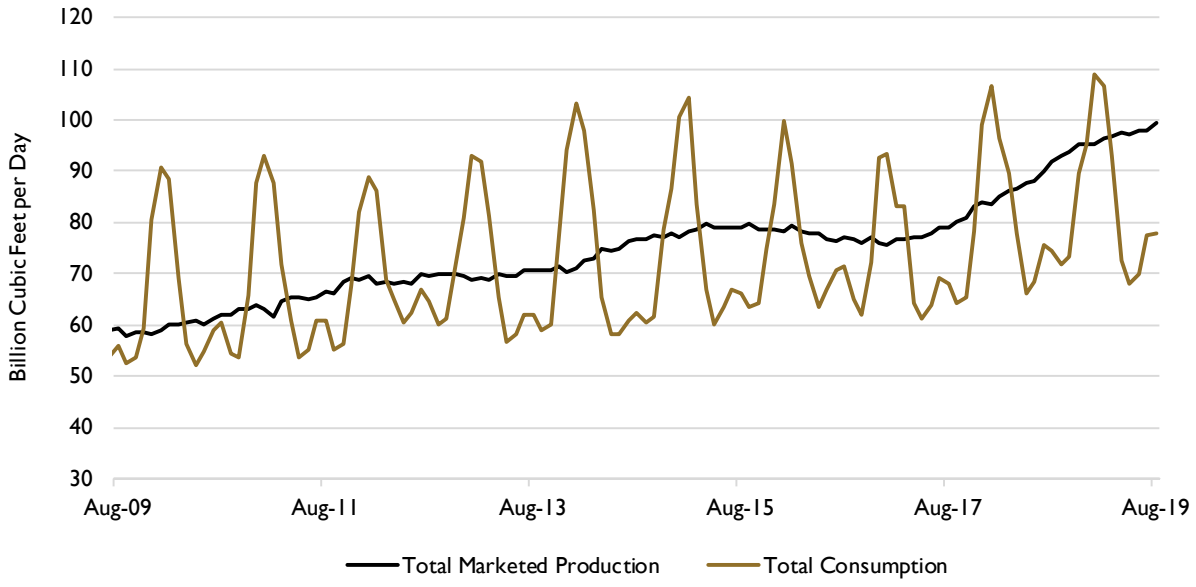
NATURAL GAS PLANT LIQUIDS PRICES (MONTHLY AVERAGE) (16)



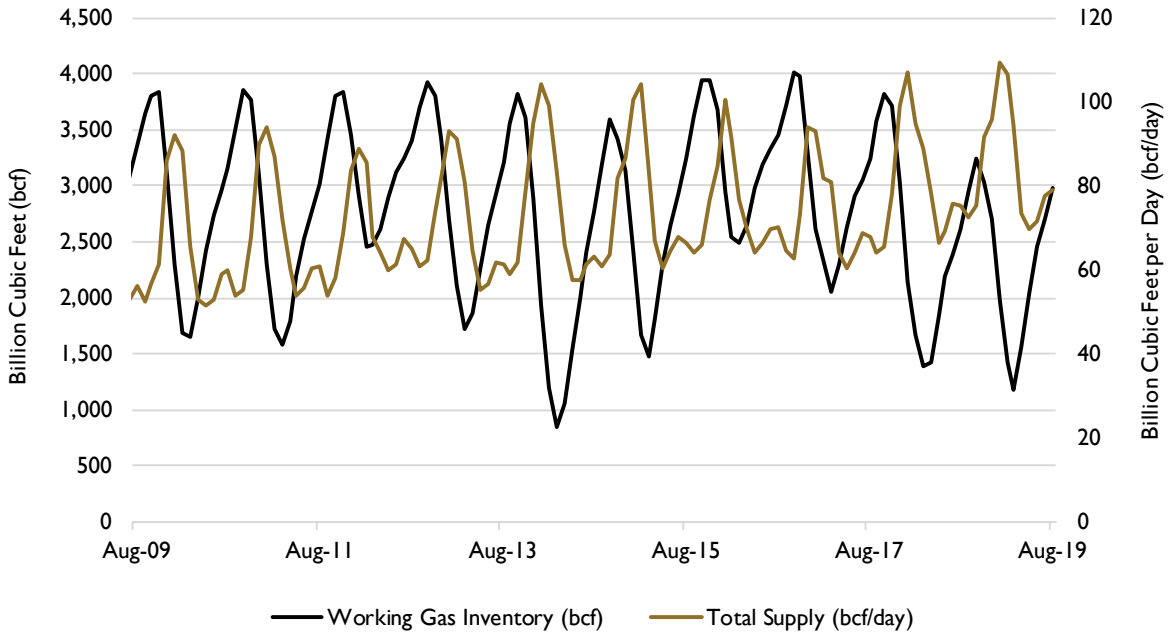
DATA CENTER

NATURAL GAS

U.S. Natural Gas Production and Consumption (Monthly) (17)



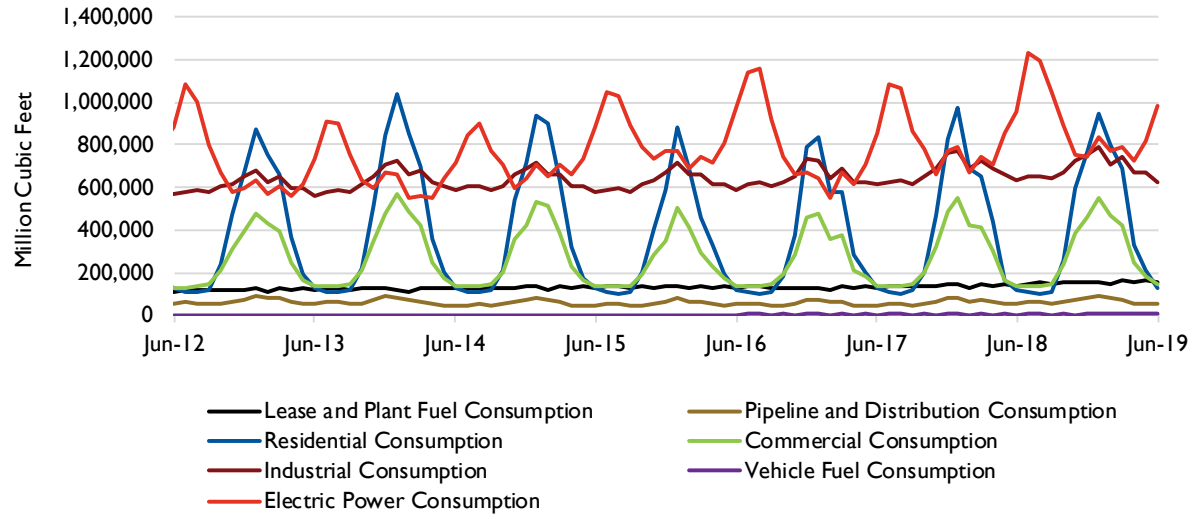
U.S. Natural Gas Supply and Inventory (Monthly) (18)



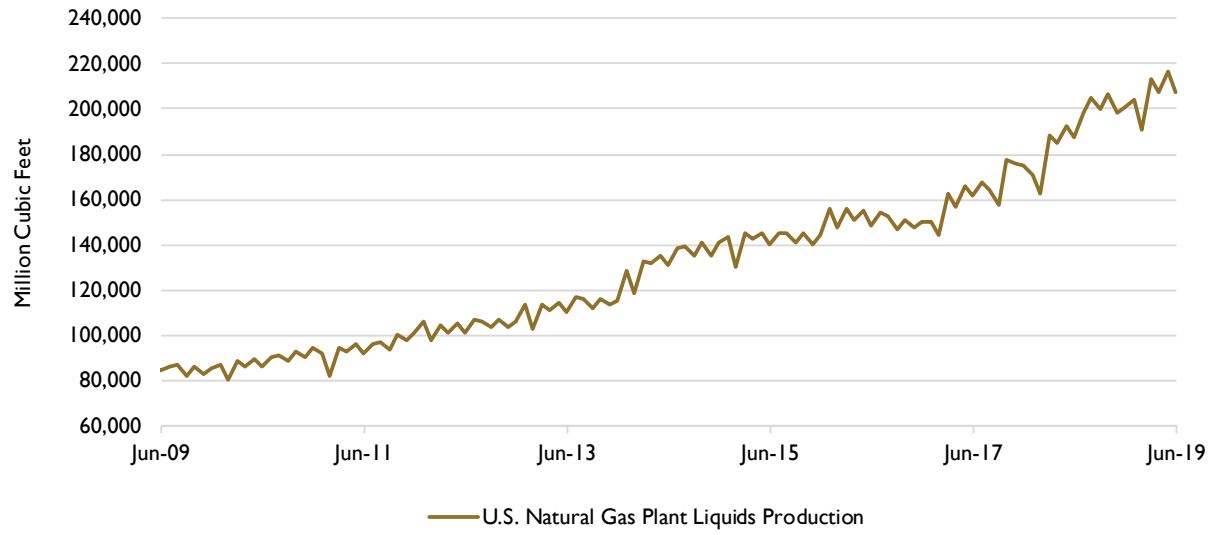
DATA CENTER

NATURAL GAS

U.S. Natural Gas Consumption by End Use (Monthly) (19)



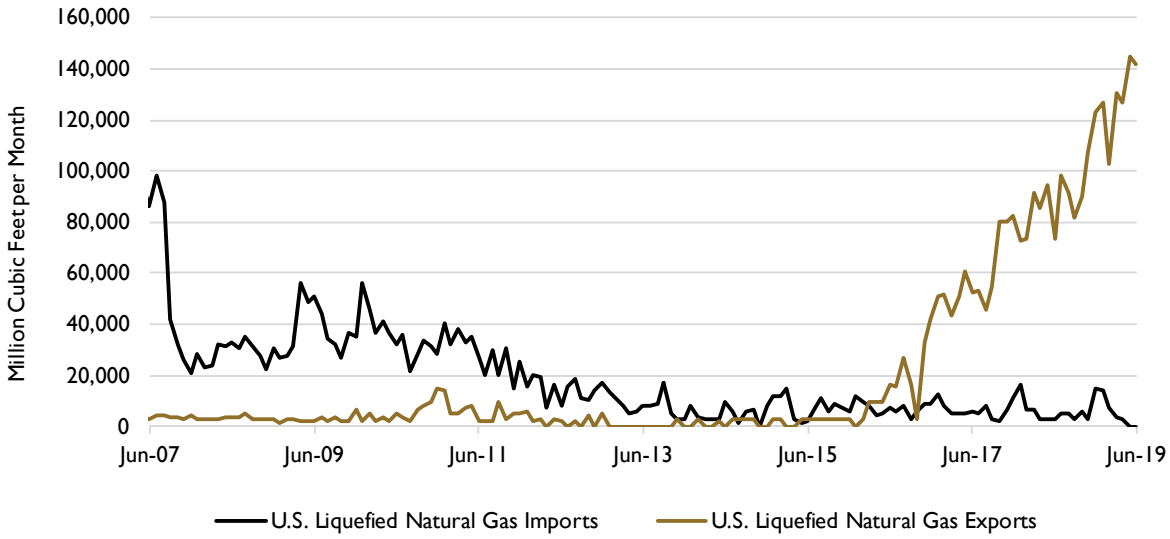
U.S. Natural Gas Plant Liquids Production (Monthly) (20)



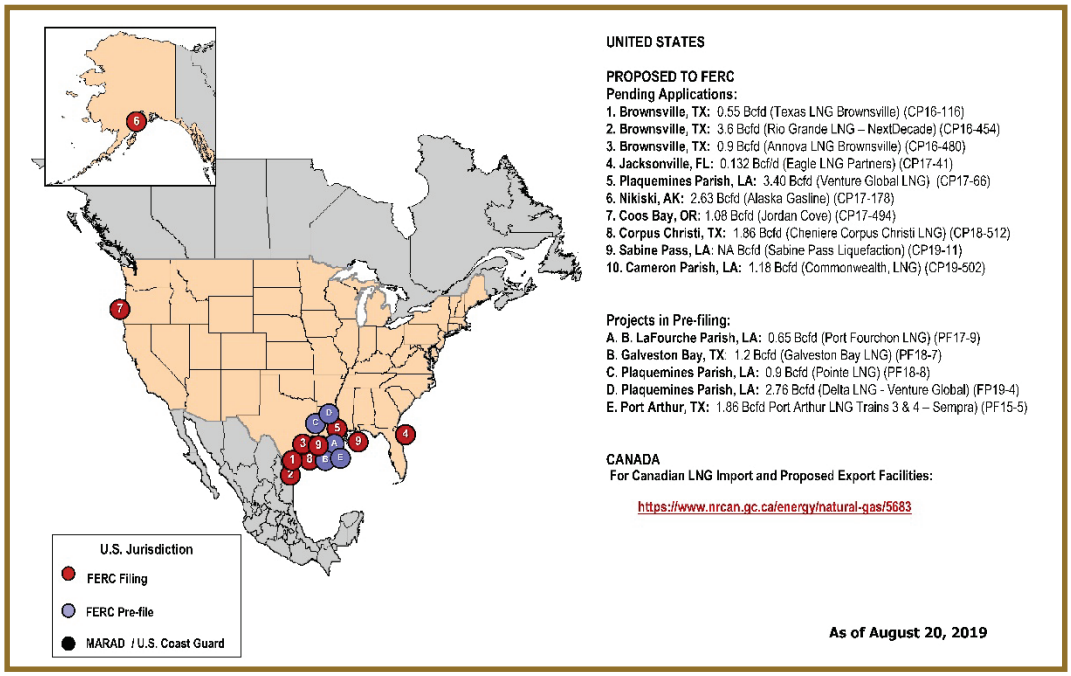
DATA CENTER

NATURAL GAS

U.S. LIQUEFIED NATURAL GAS IMPORT AND EXPORT VOLUMES (MONTHLY) (21)



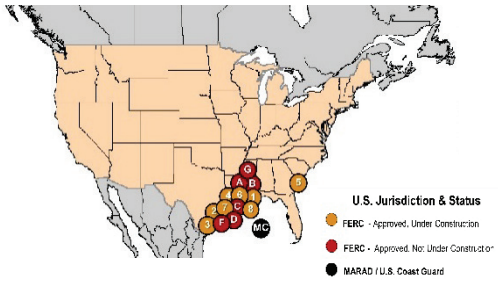
NORTH AMERICAN LNG EXPORT TERMINALS – *PROPOSED* (22)



DATA CENTER

NATURAL GAS

NORTH AMERICAN LNG IMPORT/EXPORT TERMINALS – *APPROVED* (23)



Import Terminals (Not Shown on Map)

UNITED STATES

APPROVED - UNDER CONSTRUCTION - FERC
None

APPROVED – NOT UNDER CONSTRUCTION – FERC
1. **Corpus Christi, TX:** 0.4 Bcfd (Cheniere – Corpus Christi LNG) (CP12-507)

APPROVED - NOT UNDER CONSTRUCTION - MARAD/Coast Guard
2. **Gulf of Mexico:** 1.0 Bcfd (Main Pass Energy Hub)
3. **Gulf of Mexico:** 1.4 Bcfd (TORP Technology-Blenville LNG)

CANADA
For Canadian LNG Import and Proposed Export Facilities go to:

https://www.nrcan.gc.ca/energy/natural-gas/5683

★ Trains 2 & 3

Export Terminals (Shown on Map)

UNITED STATES

APPROVED - UNDER CONSTRUCTION - FERC
1. **Hackberry, LA:** 1.43 Bcfd (Sempra–Cameron LNG, Trains 2 & 3) (CP13-25)
2. **Freeport, TX:** 2.14 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction) (CP12-509) (CP15-518)
3. **Corpus Christi, TX:** 1.4 Bcfd (Cheniere – Corpus Christi LNG Trains 2 & 3) (CP12-507)
4. **Sabine Pass, LA:** 0.7 Bcfd Train 6 (Sabine Pass Liquefaction) (CP13-552)
5. **Elba Island, GA:** 0.35 Bcfd (Southern LNG Company) (CP14-103)
6. **Cameron Parish, LA:** 1.41 Bcfd (Venture Global Calcasieu Pass) (CP15-550)
7. **Sabine Pass, TX:** 2.1 Bcfd (ExxonMobil – Golden Pass) (CP14-517)
8. **Calcasieu Parish, LA:** 4.0 Bcfd (Driftwood LNG) (CP17-117)

APPROVED – NOT UNDER CONSTRUCTION - FERC
A. **Lake Charles, LA:** 2.2 Bcfd (Southern Union – Lake Charles LNG) (CP14-120)
B. **Lake Charles, LA:** 1.08 Bcfd (Magnolia LNG) (CP14-347)
C. **Hackberry, LA:** 1.41 Bcfd (Sempra - Cameron LNG) (CP15-560)
D. **Port Arthur, TX:** 1.86 Bcfd (Port Arthur LNG Trains 1 & 2) (CP17-20)
F. **Freeport, TX:** 0.72 Bcfd (Freeport LNG Dev) (CP17-470)
G. **Pascagoula, MS:** 1.5 Bcfd (Gulf LNG Liquefaction) (CP15-521)

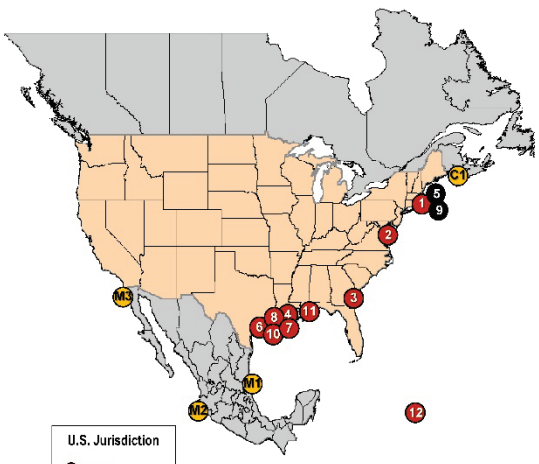
APPROVED – NOT UNDER CONSTRUCTION – MARAD/Coast Guard
MC. **Gulf of Mexico:** 1.8 Bcfd (Delfin LNG)

CANADA
For Canadian LNG Import and Proposed Export Facilities go to:

https://www.nrcan.gc.ca/energy/natural-gas/5683

As of August 8, 2019

NORTH AMERICAN LNG IMPORT/EXPORT TERMINALS – *EXISTING* (24)



As of August 7, 2019

Import Terminals (Shown on Map)

UNITED STATES
1. **Everett, MA:** 1.035 Bcfd (GDF SUEZ - DOMAC)
2. **Cove Point, MD:** 1.8 Bcfd (Dominion - Cove Point LNG)
3. **Elba Island, GA:** 1.6 Bcfd (El Paso - Southern LNG)
4. **Lake Charles, LA:** 2.1 Bcfd (Southern Union – Corpus Christi LNG) ★
5. **Offshore MA:** 0.8 Bcfd (Excelerate Energy – Northeast Gateway)
6. **Freeport, TX:** 1.5 Bcfd (Cheniere/Freeport LNG Dev.) ★
7. **Sabine, LA:** 4.0 Bcfd (Cheniere/Sabine Pass LNG) ★
8. **Hackberry, LA:** 1.8 Bcfd (Sempra - Cameron LNG)
9. **Offshore MA:** 0.4 Bcfd (GDF SUEZ – Neptune LNG)
10. **Sabine Pass, TX:** 2.0 Bcfd (ExxonMobil – Golden Pass) (Phase I & II)
11. **Pascagoula, MS:** 1.5 Bcfd (El Paso/Crest/Sonangol - Gulf LNG Energy)
12. **Peñuelas, PR:** 0.3 Bcfd (EcoElectrica)

CANADA
C1. **Saint John, NB:** 1.0 Bcfd (Repsol/Fort Reliance - Canaport LNG)

MEXICO
M1. **Altamira, Tamulipas:** 0.7 Bcfd (Shell/Total/Mitsui – Altamira LNG)
M2. **Baja California, MX:** 1.0 Bcfd (Sempra – Energia Costa Azul)
M3. **Manzanillo, MX:** 0.5 Bcfd (KMS GNL de Manzanillo)

Export Terminals (Not Shown on Map)

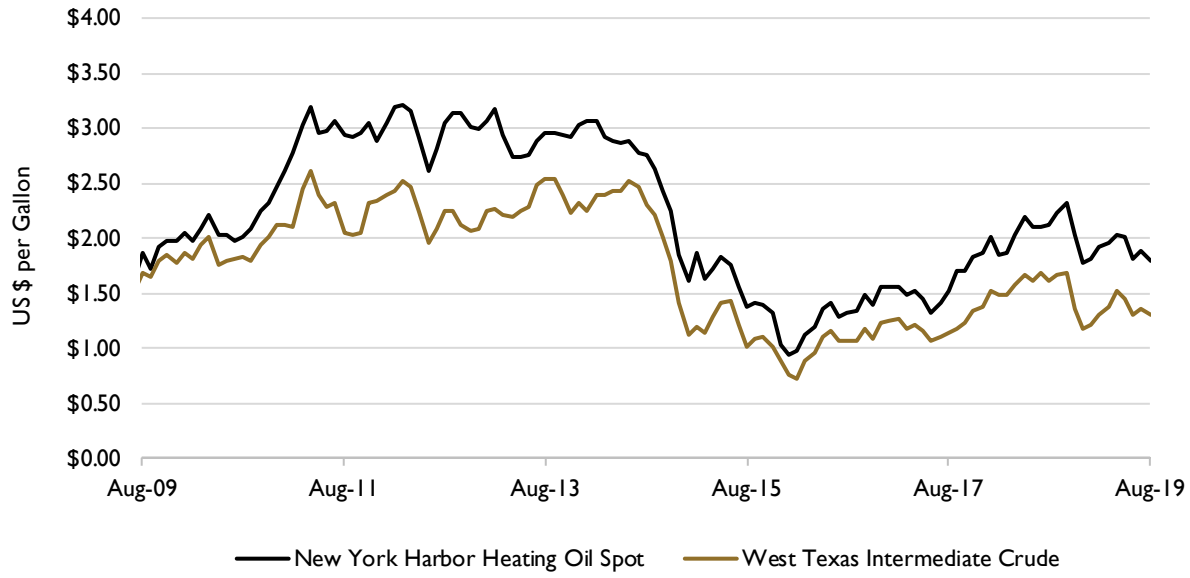
UNITED STATES

1. **Kenai, AK:** 0.2 Bcfd (Trans-Foreland)
2. **Sabine, LA:** 3.5 Bcfd (Cheniere/Sabine Pass LNG – Trains 1-5)
3. **Cove Point, MD:** 0.82 Bcfd (Dominion–Cove Point LNG)
4. **Corpus Christi, TX:** 0.71 Bcfd (Cheniere – Corpus Christi LNG Train 1)
5. **Hackberry, LA:** 0.71 Bcfd (Sempra–Cameron LNG, Train 1) (CP13-25)

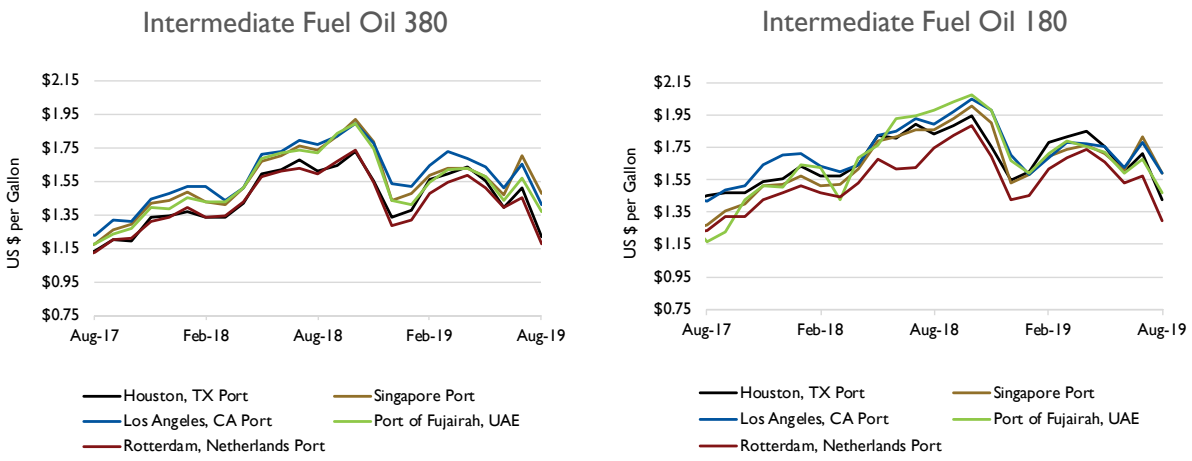
DATA CENTER

PROPANE AND HEATING/FUEL OIL

HEATING OIL PRICES (MONTHLY AVERAGE) (25)



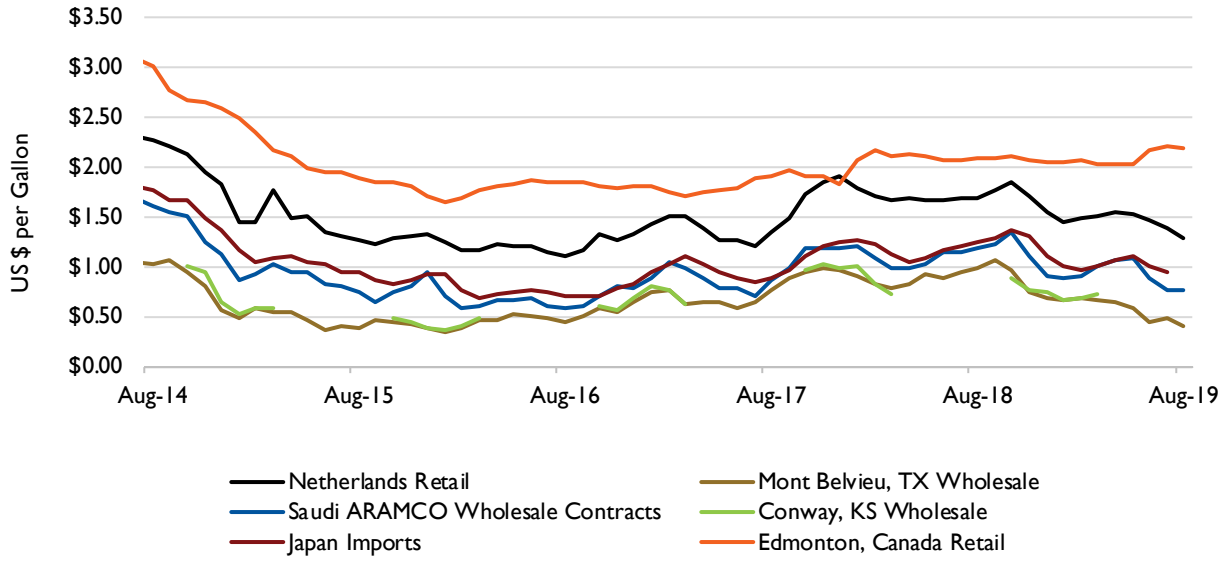
INTERMEDIATE FUEL OIL AKA "BUNKER FUEL" PRICES (MONTHLY AVERAGE) (26)



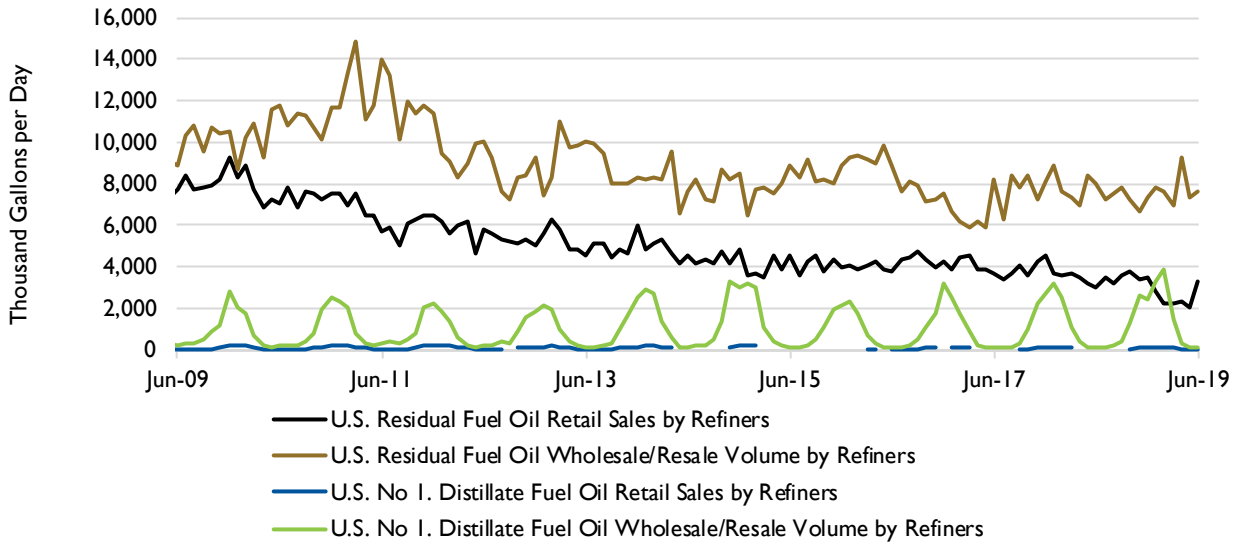
DATA CENTER

PROPANE AND HEATING/FUEL OIL

PROPANE PRICES (MONTHLY AVERAGE) (27)



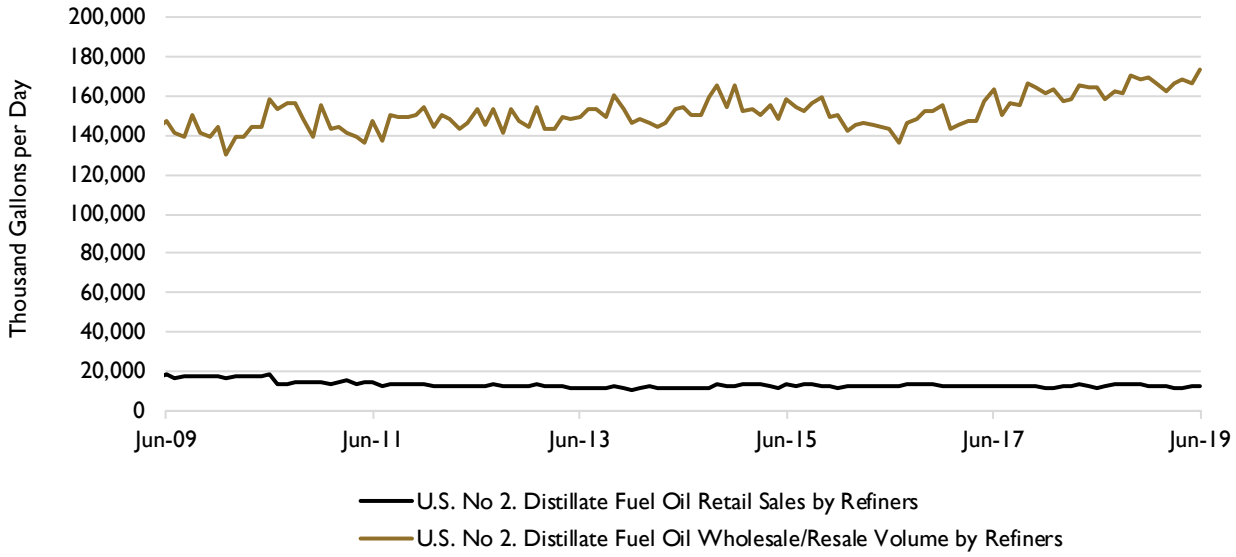
NO. 1 DISTILLATE FUEL OIL, RESIDUAL FUEL OIL WHOLESALE, RETAIL SALES VOLUME BY REFINERS (MONTHLY) (28)



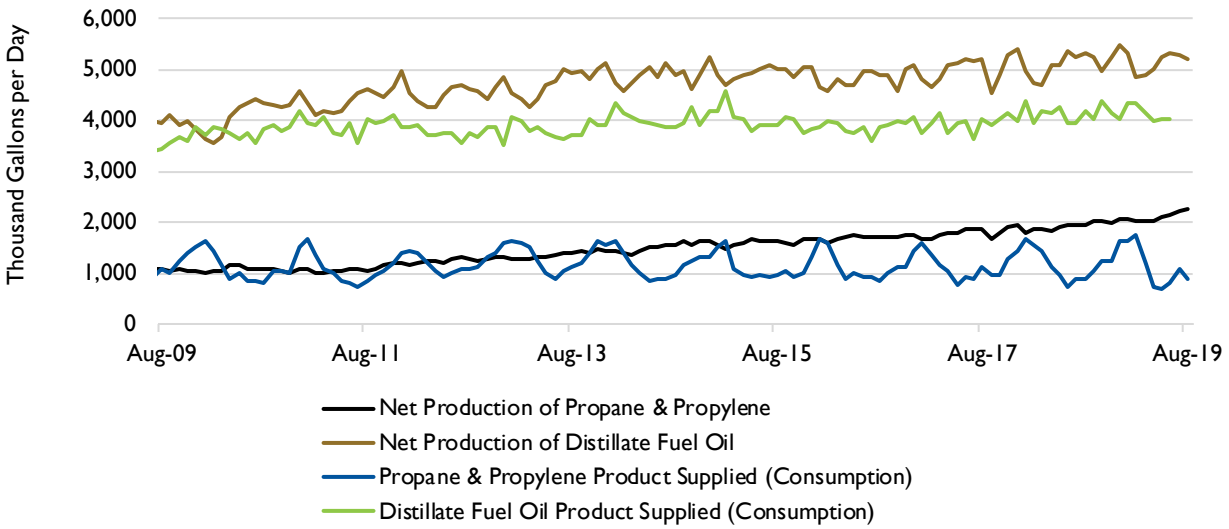
DATA CENTER

PROPANE AND HEATING/FUEL OIL

No. 2 Distillate Fuel Oil Wholesale, Retail Sales Volume by Refiners (Monthly) (29)



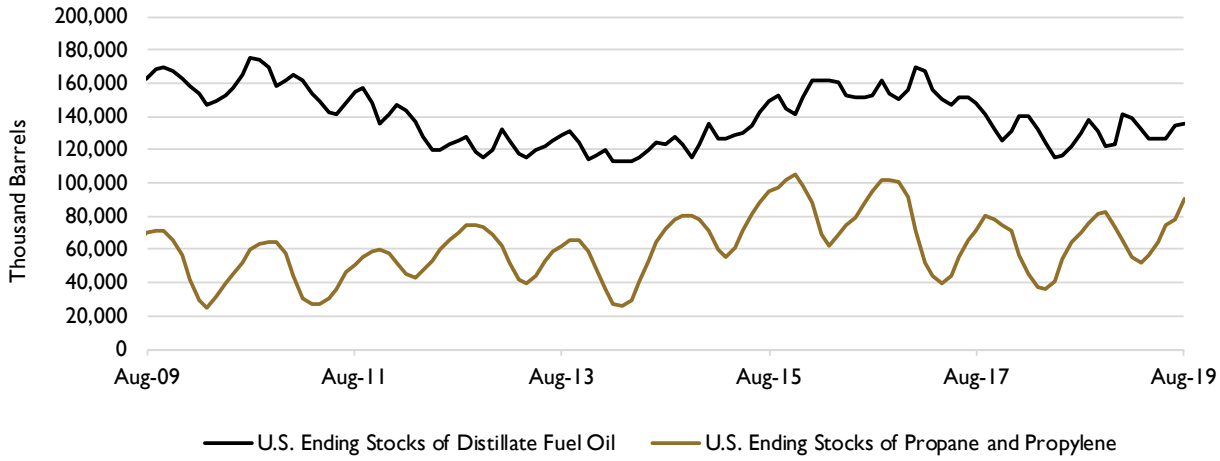
Propane & Propylene and Distillate Fuel Oil Production and Consumption (Monthly) (30)



DATA CENTER

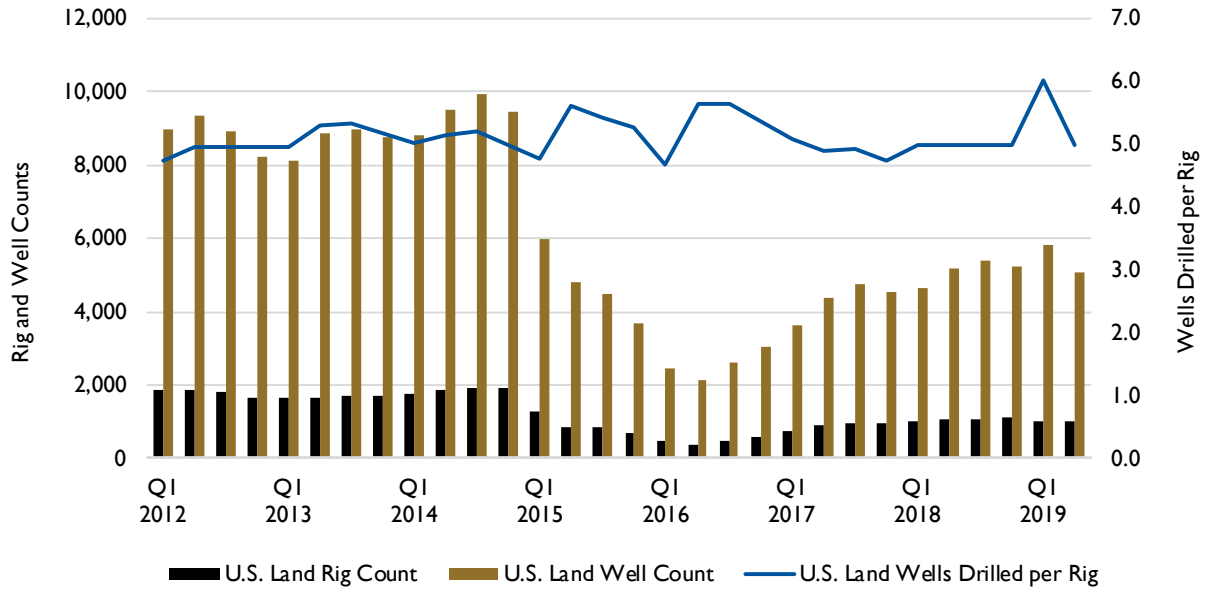
PROPANE AND HEATING/FUEL OIL

U.S. Ending Stocks of Propane & Propylene and Distillate Fuel Oil (Monthly Average) (31)



DRILLING ACTIVITY

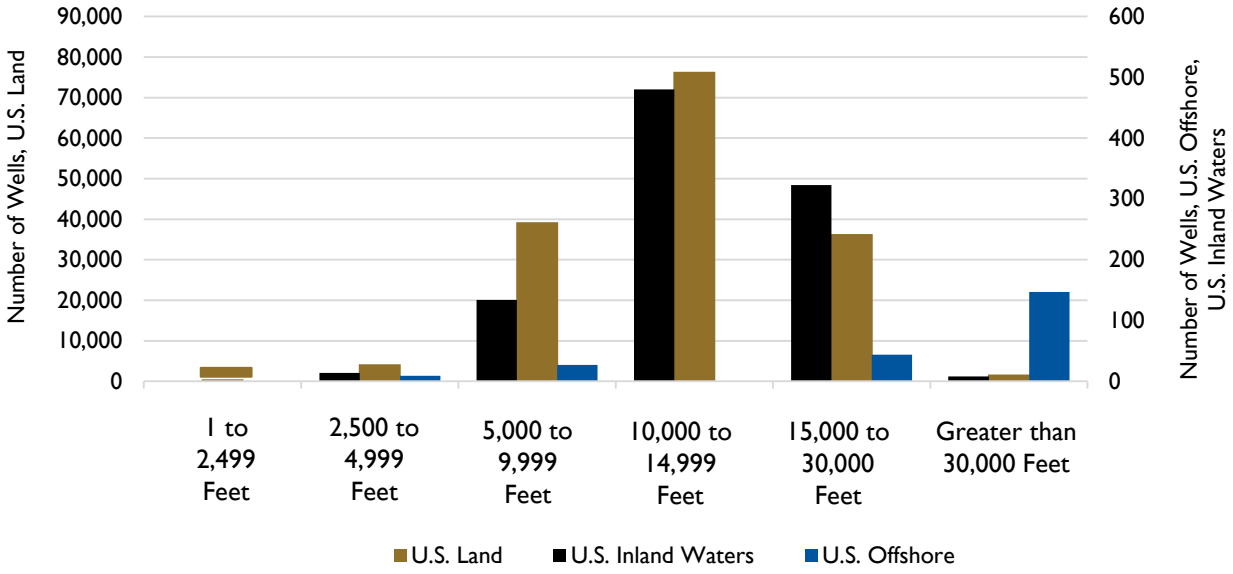
U.S. Land Well Count, Rig Count and Wells per Rig (Quarterly) (32)



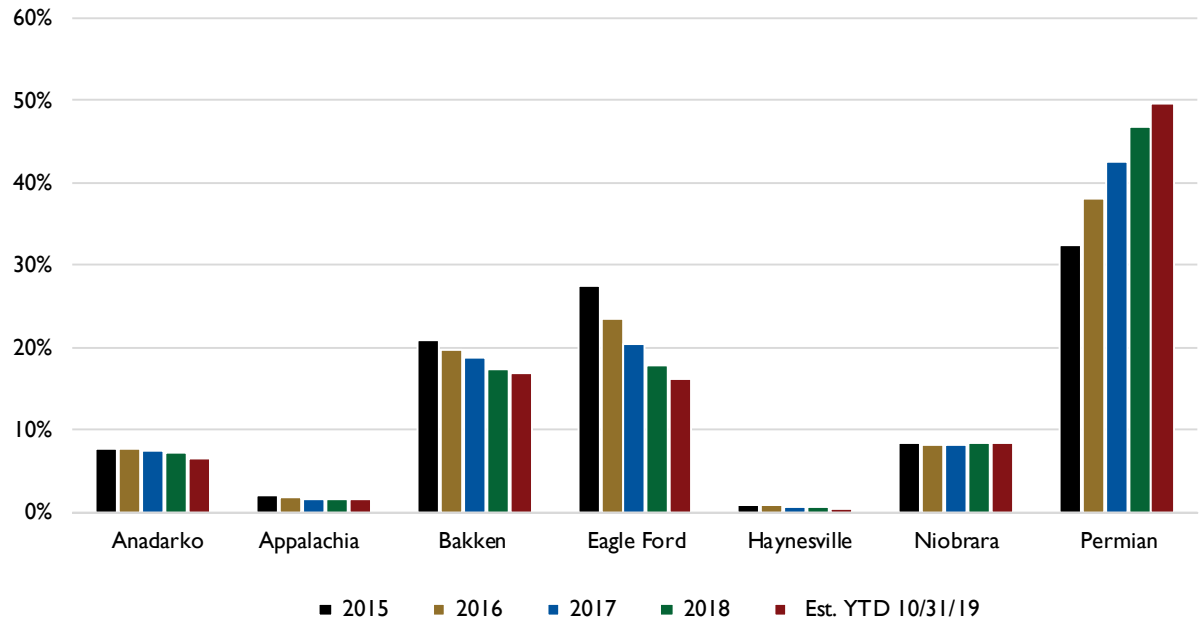
DATA CENTER

DRILLING ACTIVITY

U.S. WELL STARTS BY DEPTH (YEAR TO DATE AUGUST 31, 2019) (33)



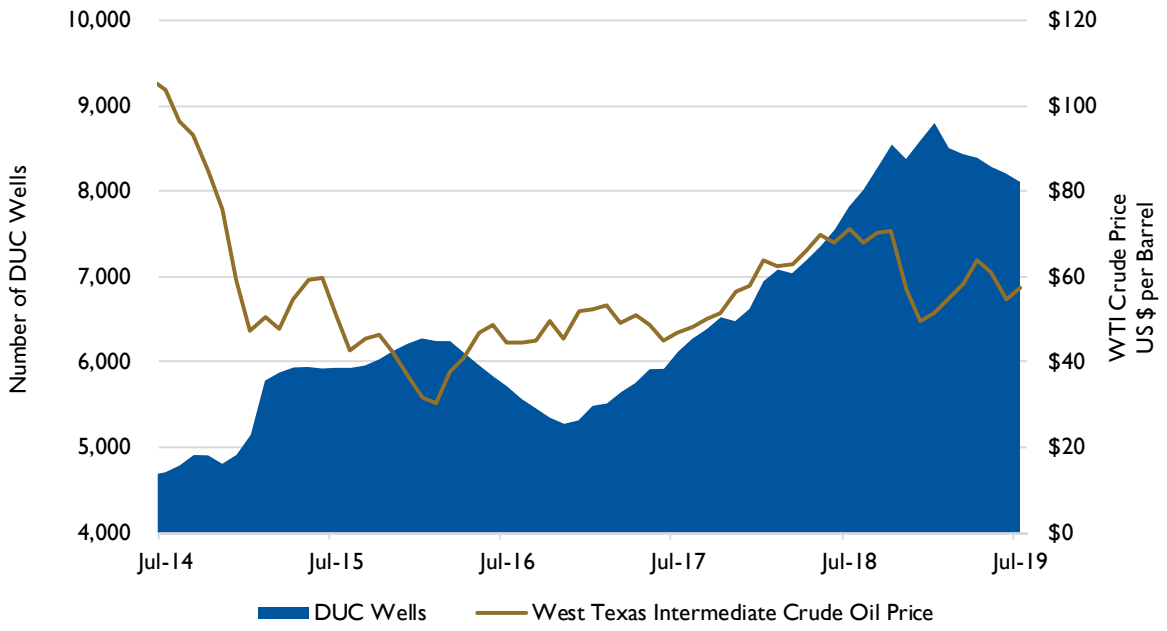
PERCENTAGE OF CRUDE OIL PRODUCTION PER SHALE REGION (MONTHLY) (34)



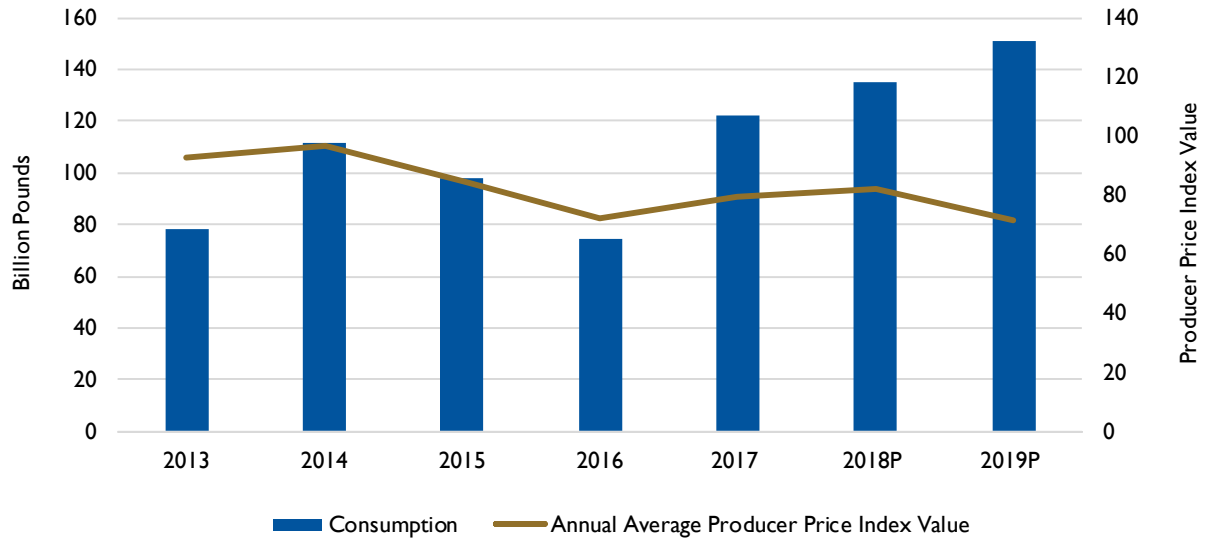
DATA CENTER

DRILLING ACTIVITY

DRILLED BUT UNCOMPLETED (DUC) WELLS VS. CRUDE OIL PRICE (MONTHLY) (35)



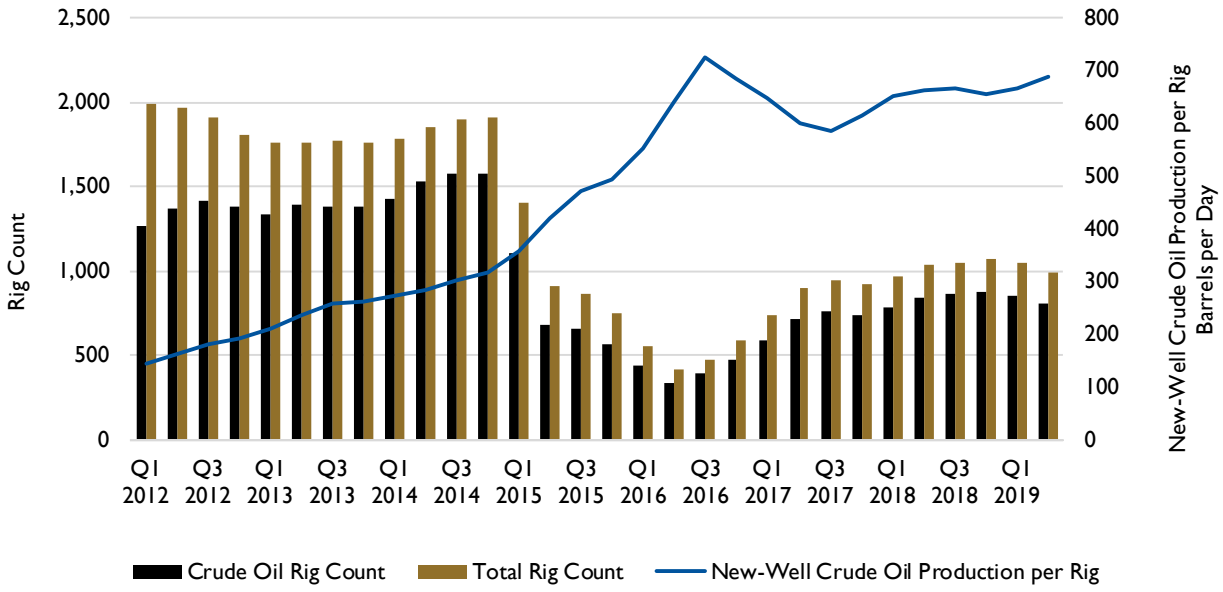
HYDRAULIC FRACTURING SAND CONSUMPTION AND PRODUCER PRICE INDEX (ANNUAL) (36)



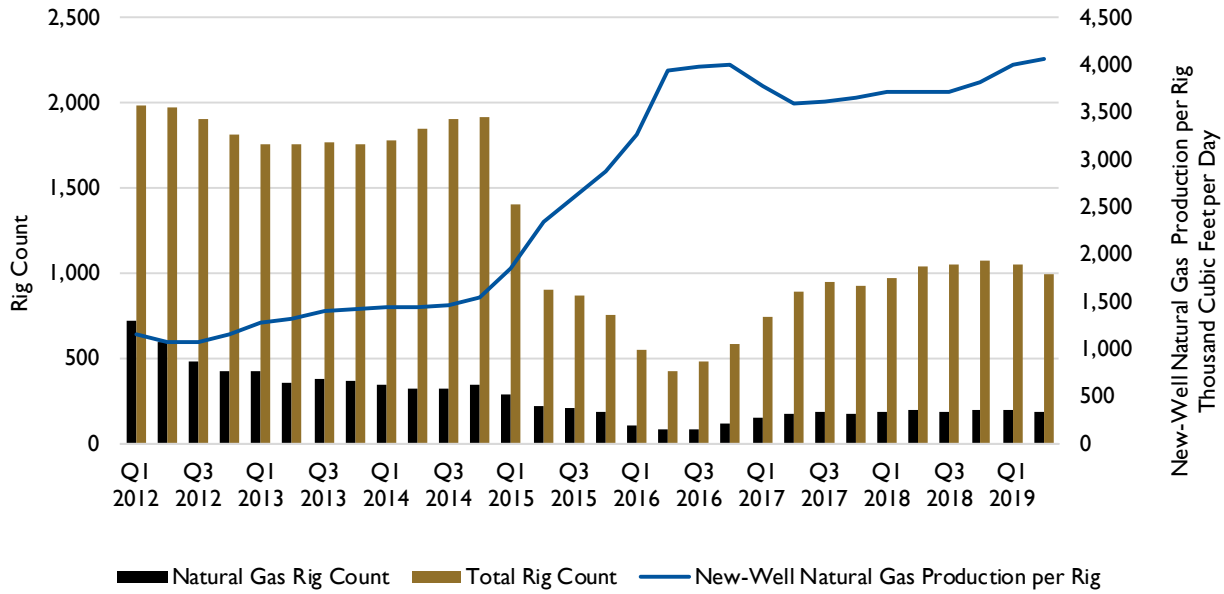
DATA CENTER

DRILLING ACTIVITY

CRUDE OIL PRODUCTION, RIG COUNT AND PRODUCTION PER RIG (QUARTERLY) (37)



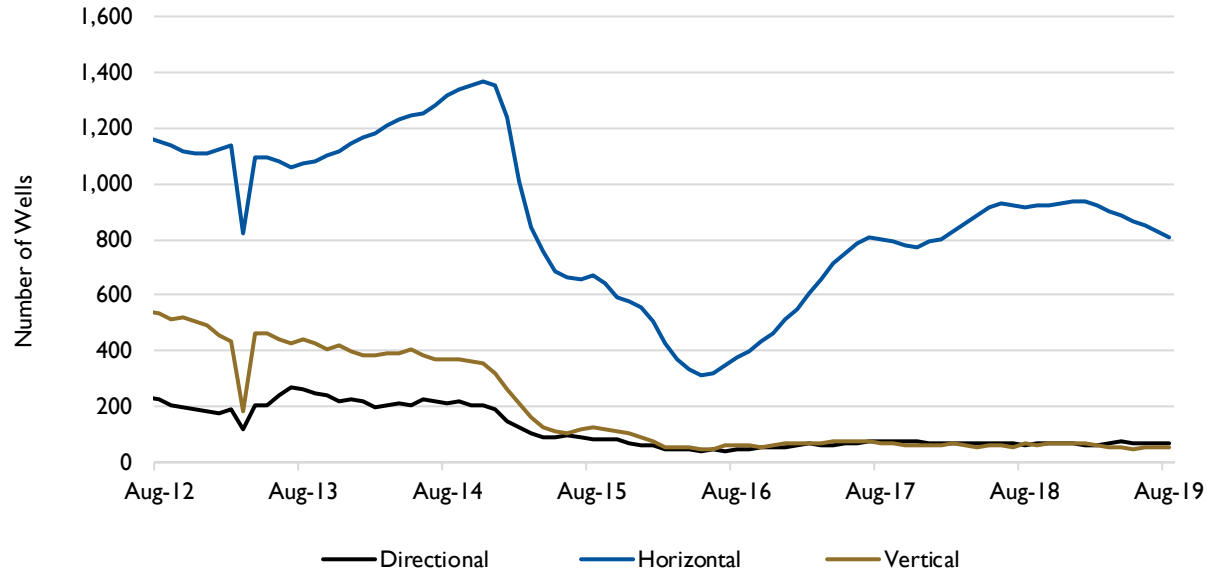
NATURAL GAS PRODUCTION, RIG COUNT AND PRODUCTION PER RIG (QUARTERLY) (38)



DATA CENTER

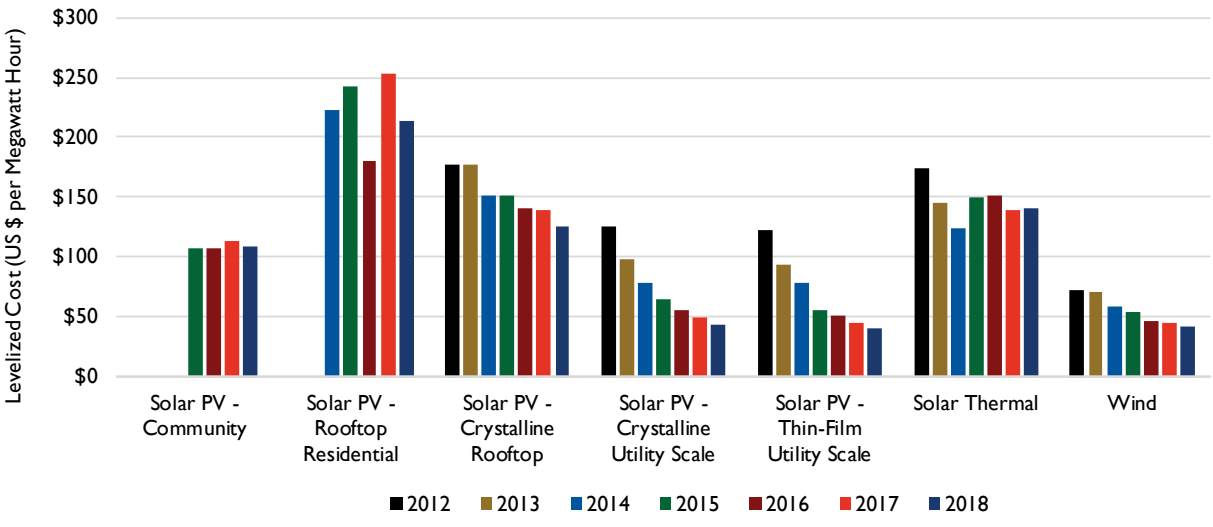
DRILLING ACTIVITY

U.S. Drilling Rigs by Type (Monthly) (39)



RENEWABLES

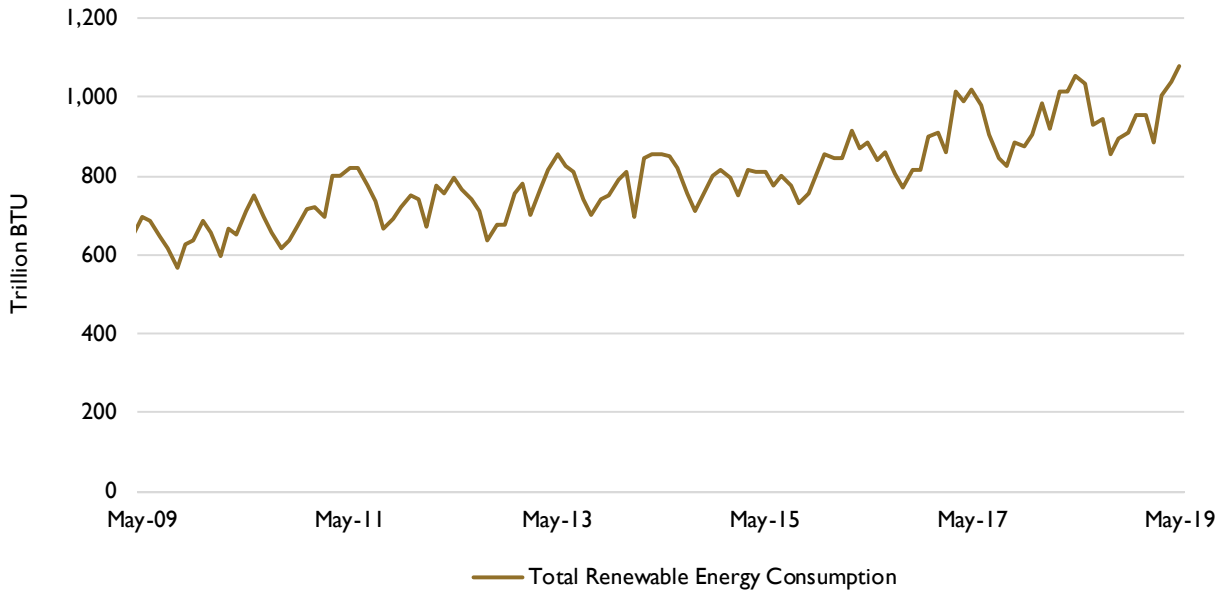
Wind and Solar Prices (Annual Average) (40)



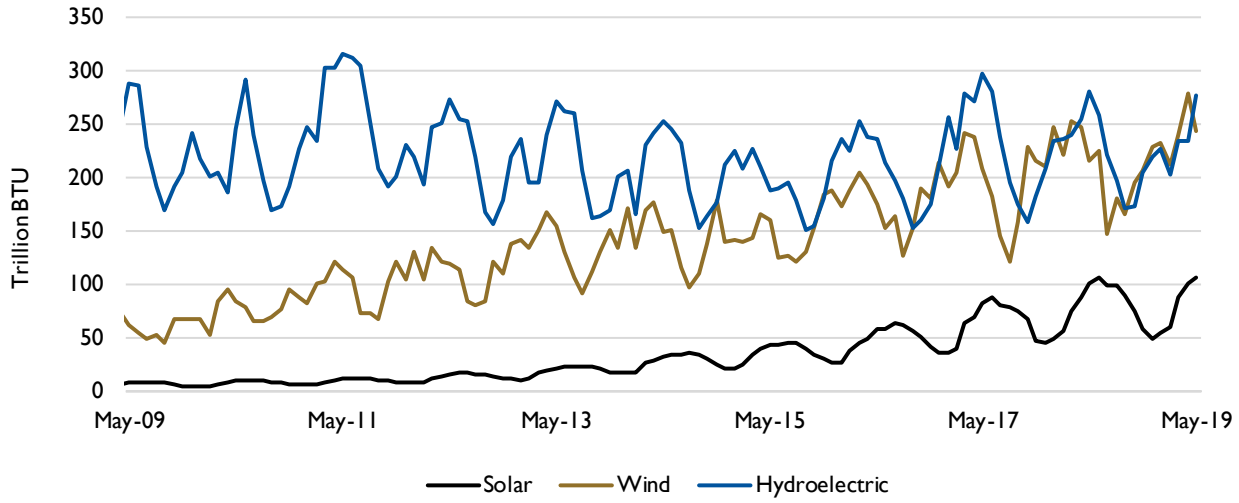
DATA CENTER

RENEWABLES

U.S. TOTAL RENEWABLE ENERGY CONSUMPTION (MONTHLY) (41)



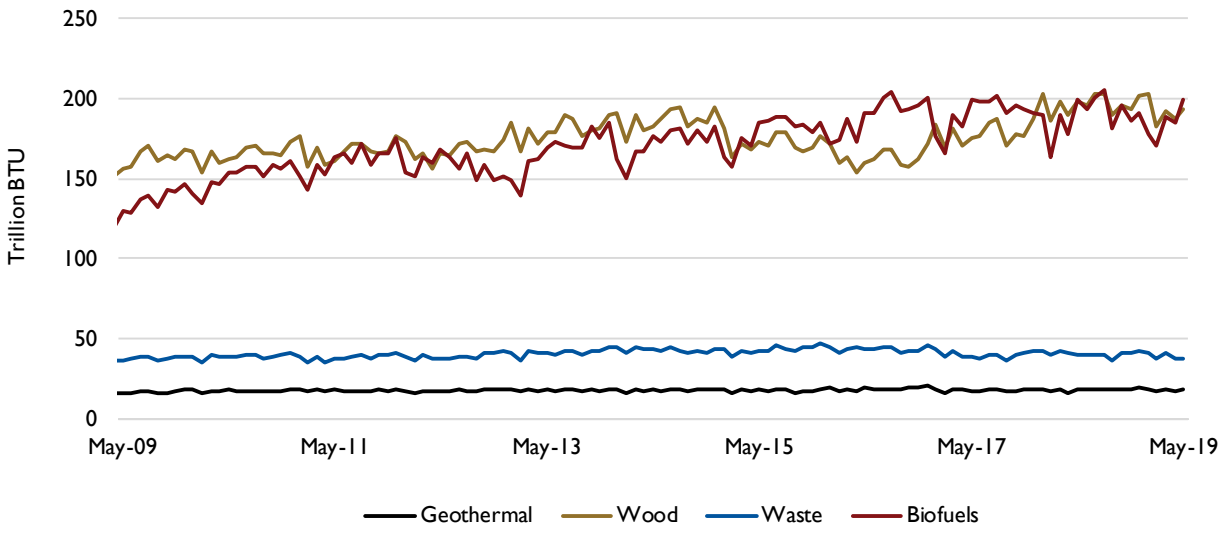
U.S. SOLAR, WIND AND HYRDOELECTRIC ENERGY CONSUMPTION (MONTHLY) (42)



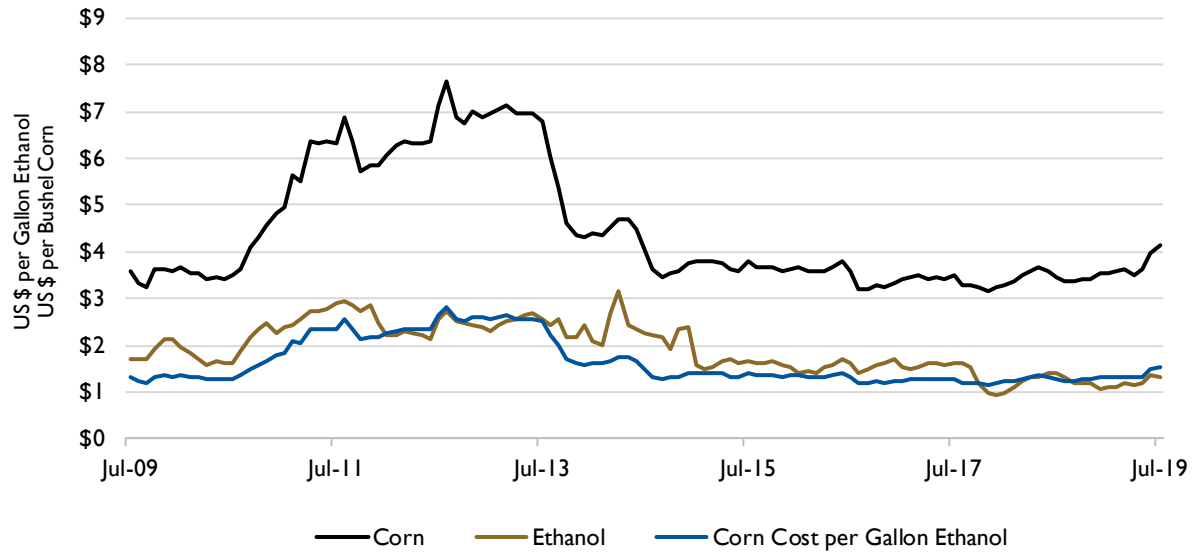
DATA CENTER

RENEWABLES

U.S. Wood, Waste, Biofuels and Geothermal Energy Consumption (Monthly) (43)



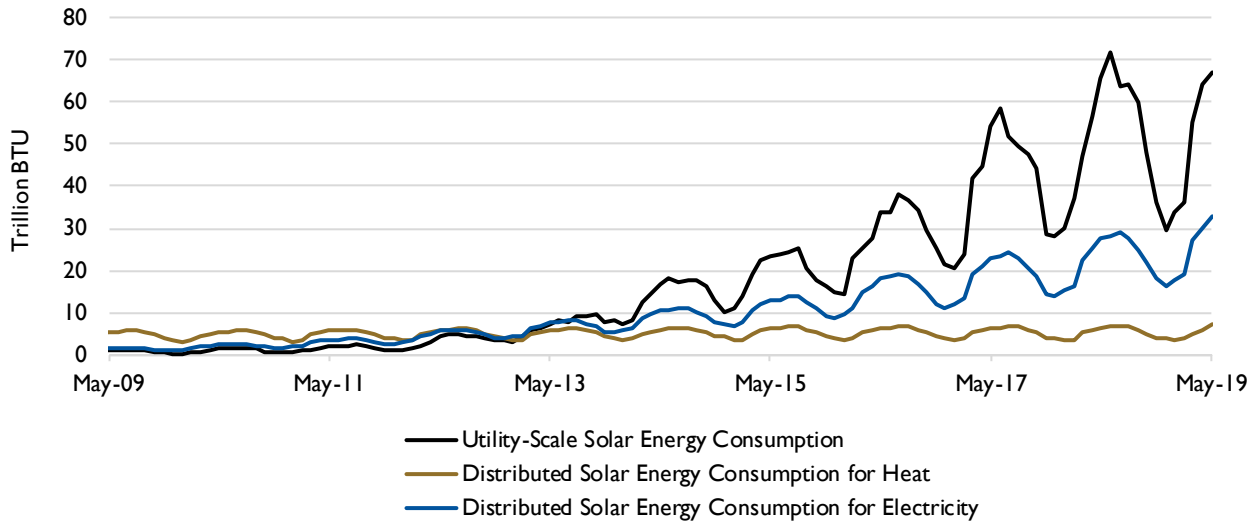
Corn and Ethanol Prices and Corn Cost per Gallon of Ethanol (Monthly Average) (44)



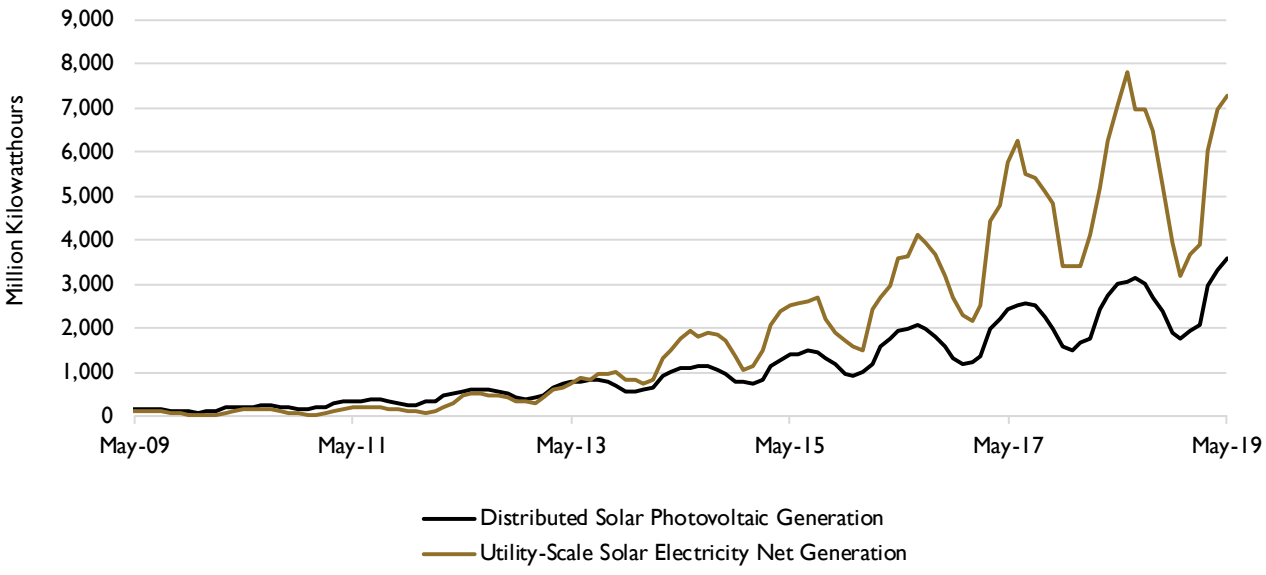
DATA CENTER

RENEWABLES

U.S. Solar Energy Consumption (Monthly) (45)



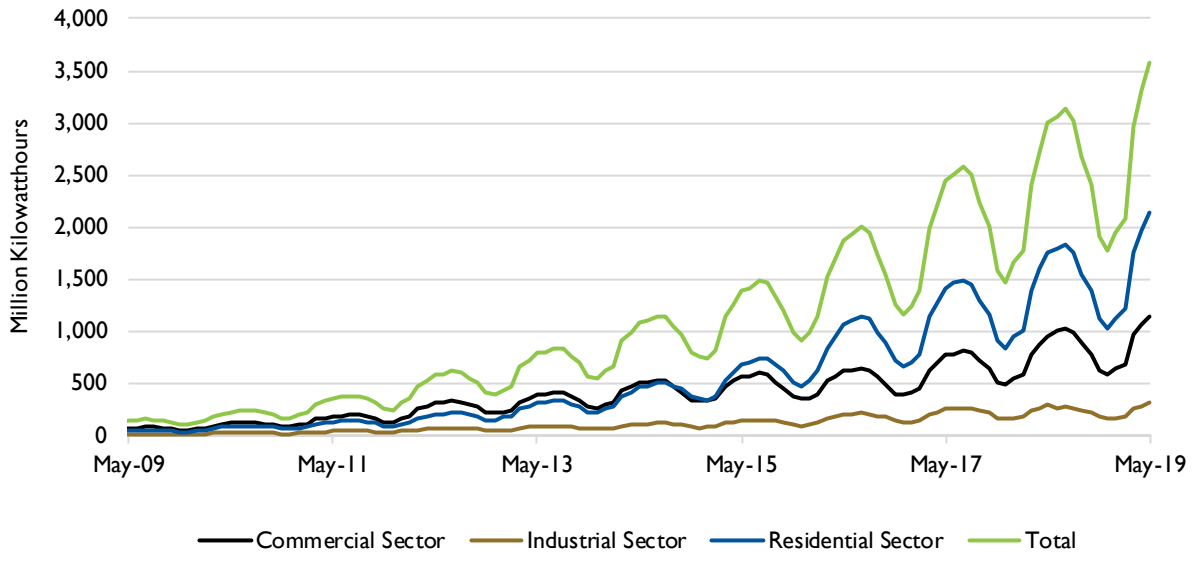
U.S. Solar Energy Net Generation (Monthly) (46)



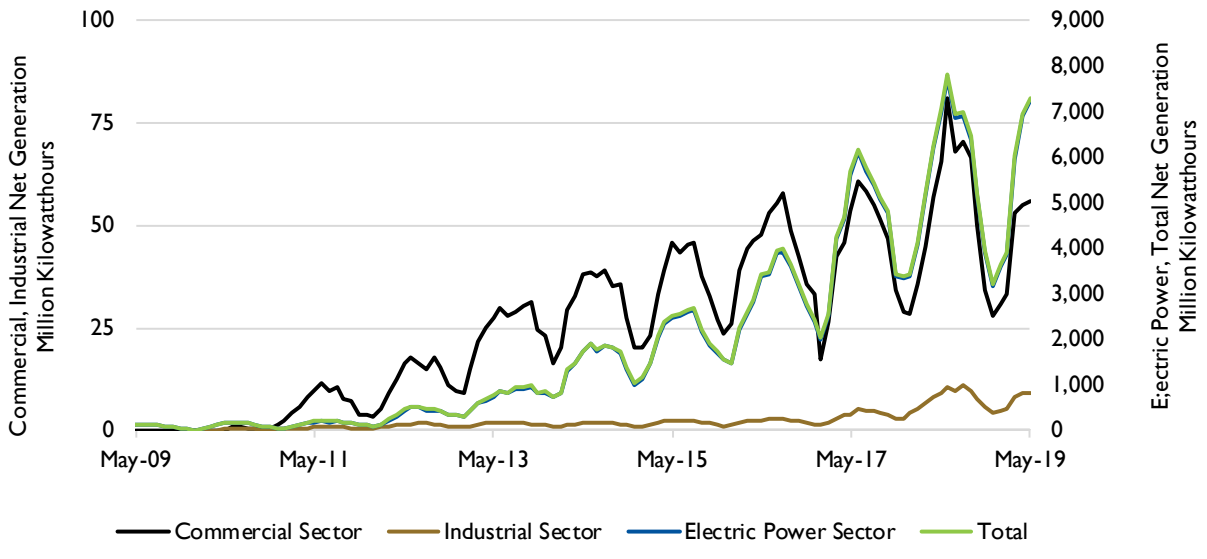
DATA CENTER

RENEWABLES

DISTRIBUTED SOLAR PHOTOVOLTAIC GENERATION BY SECTOR (MONTHLY) (47)



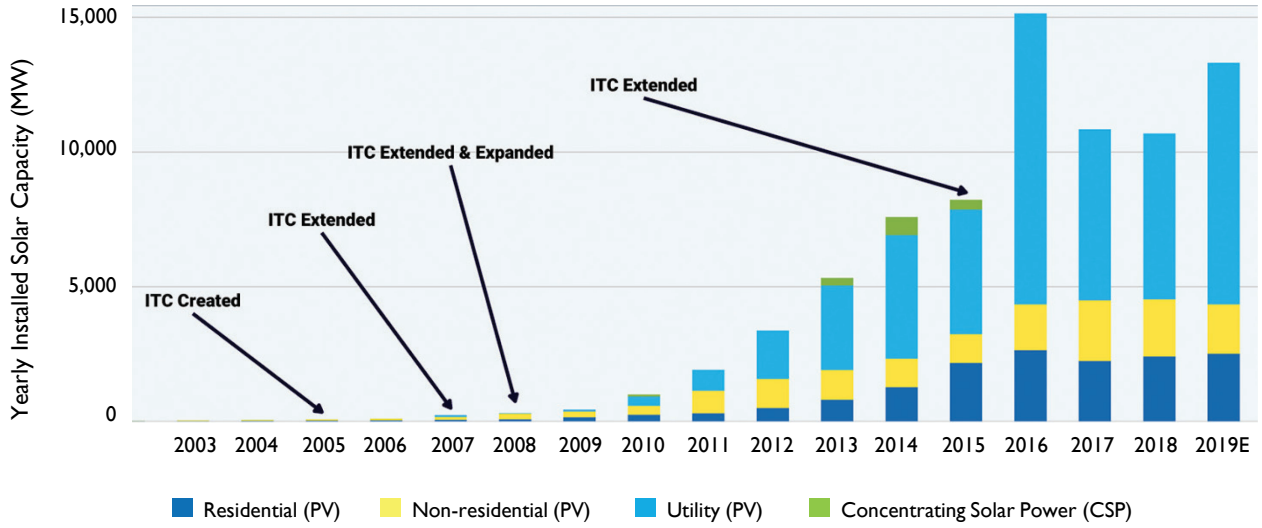
UTILITY-SCALE SOLAR ELECTRICITY NET GENERATION BY SECTOR (MONTHLY) (48)



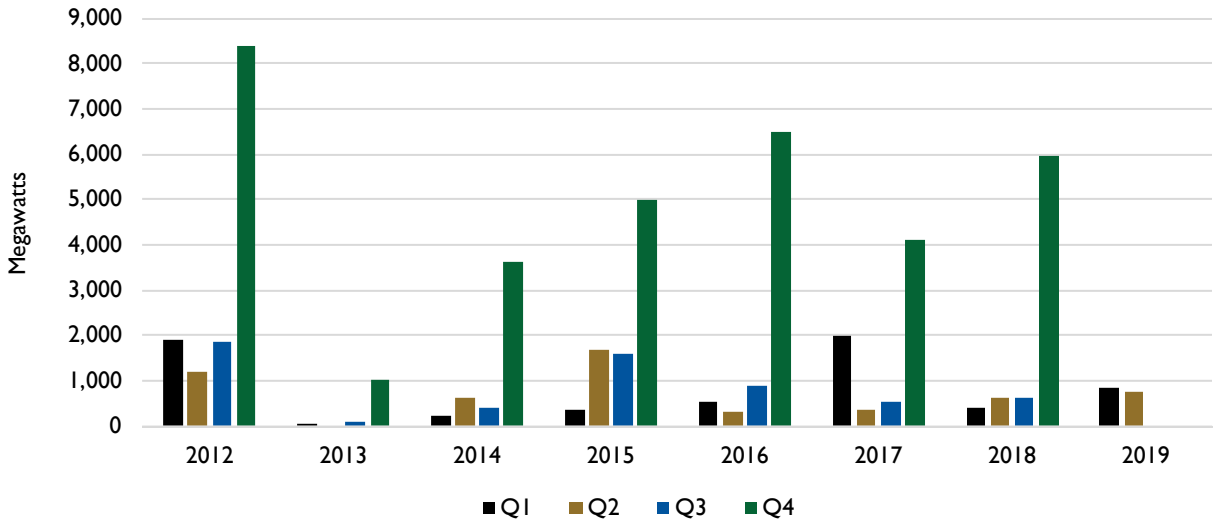
DATA CENTER

RENEWABLES

U.S. Solar Capacity Installations (Annual) (49)



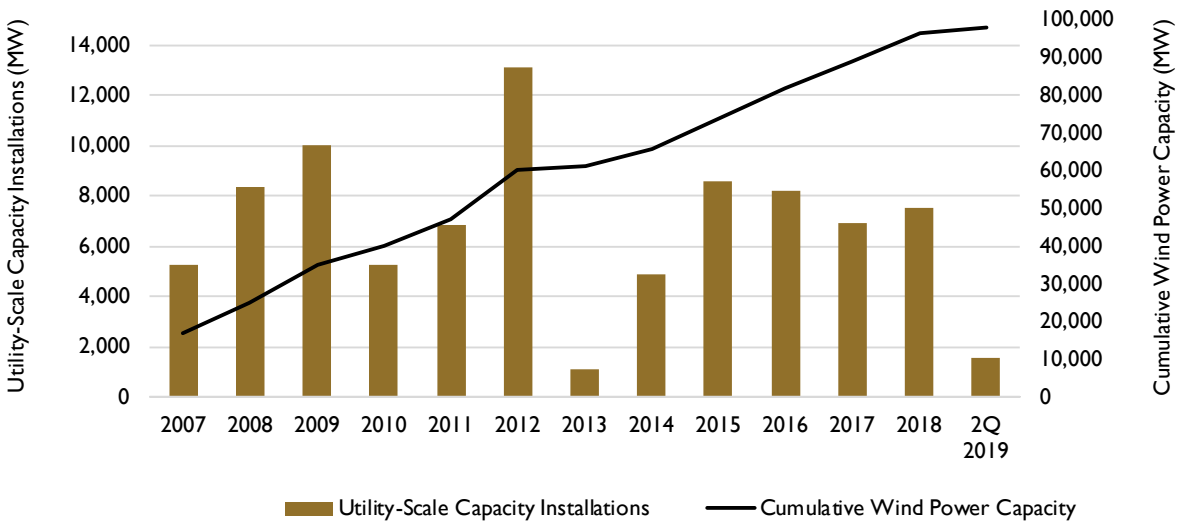
U.S. Wind Power Capacity Installations (Quarterly) (50)



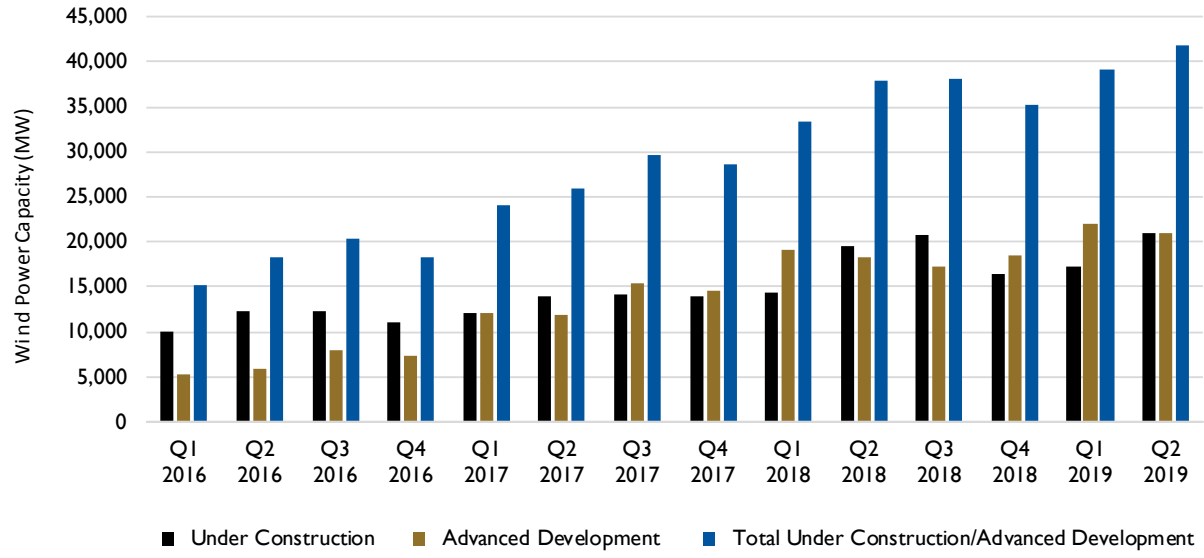
DATA CENTER

RENEWABLES

UTILITY-SCALE WIND POWER CAPACITY INSTALLATIONS (ANNUAL) (51)



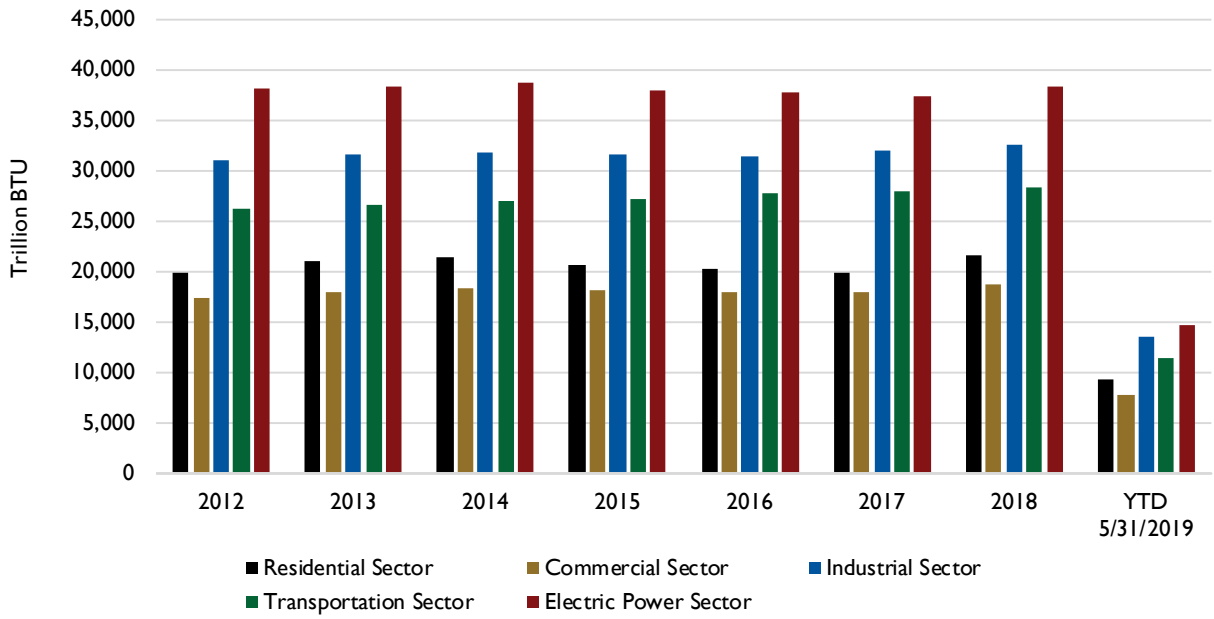
WIND POWER UNDER CONSTRUCTION OR IN ADVANCED DEVELOPMENT (QUARTERLY) (52)



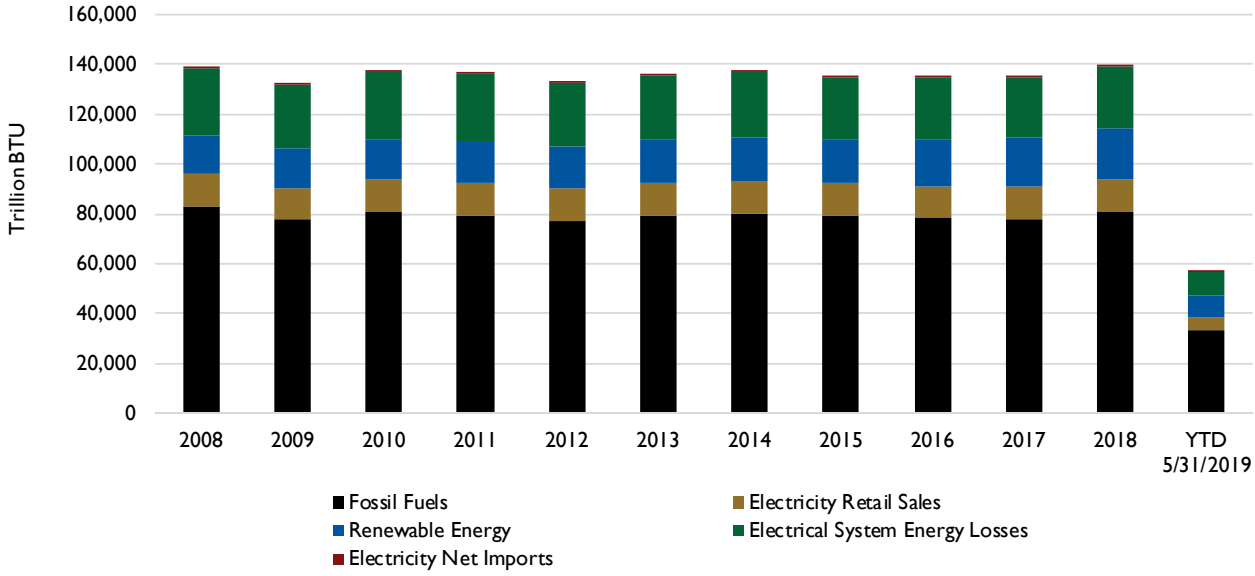
DATA CENTER

U.S. AGGREGATED ENERGY CONSUMPTION

ENERGY CONSUMPTION BY SECTOR (ANNUAL) (53)



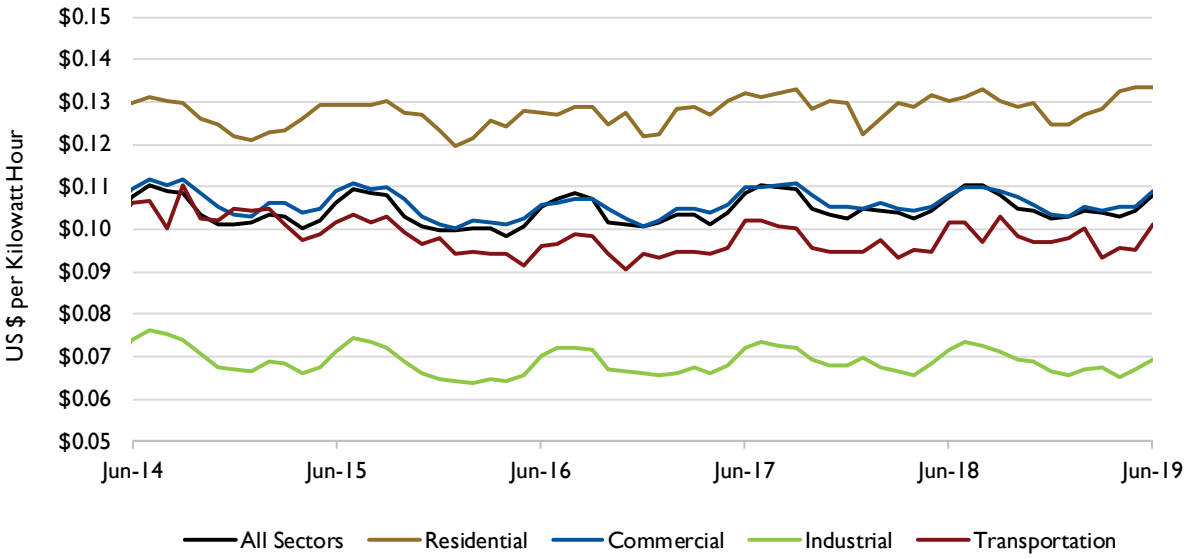
ENERGY CONSUMPTION BY SOURCE (ANNUAL) (54)



DATA CENTER

U.S. AGGREGATED ENERGY CONSUMPTION

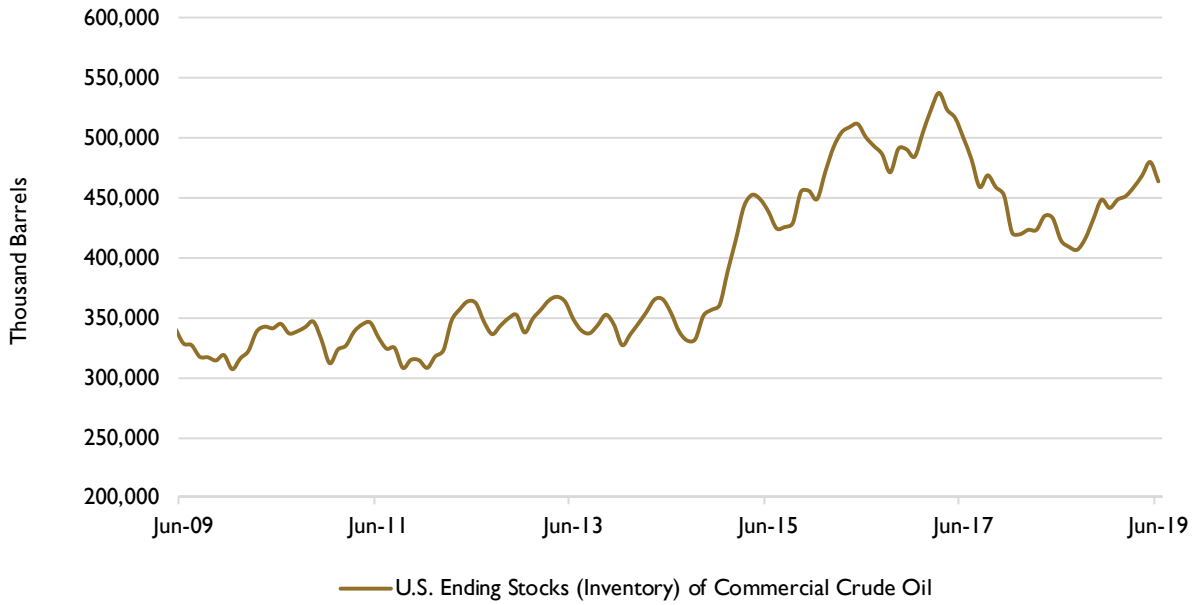
ELECTRICITY PRICES BY SECTOR (MONTHLY AVERAGE) (55)



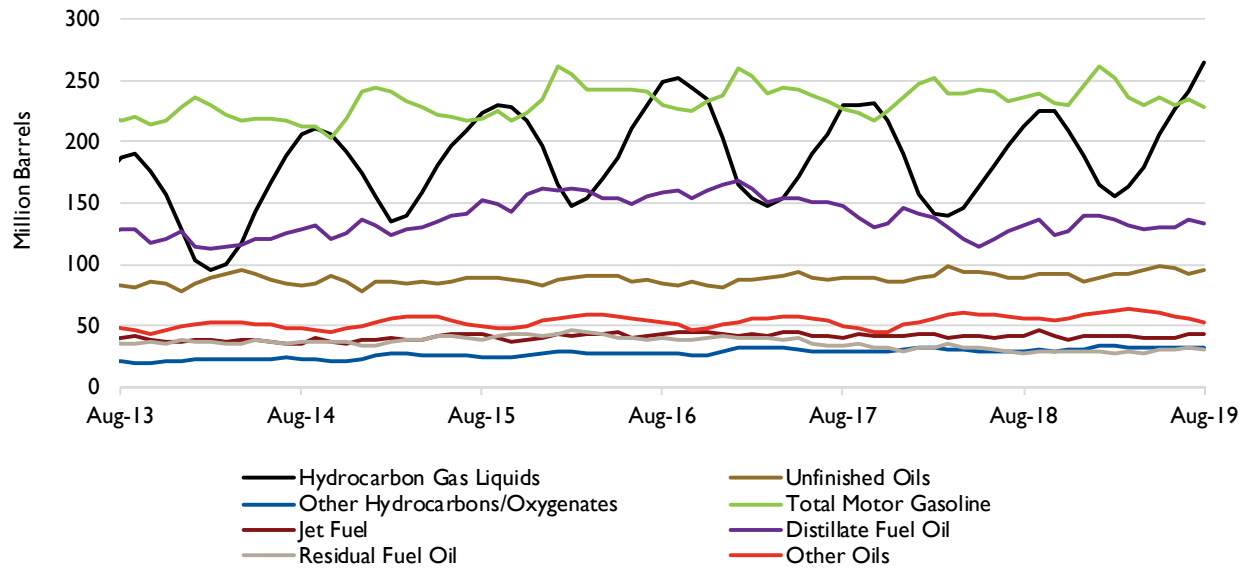
DATA CENTER

LOGISTICS - STORAGE AND TERMINALS

COMMERCIAL CRUDE OIL INVENTORY (MONTHLY) (56)



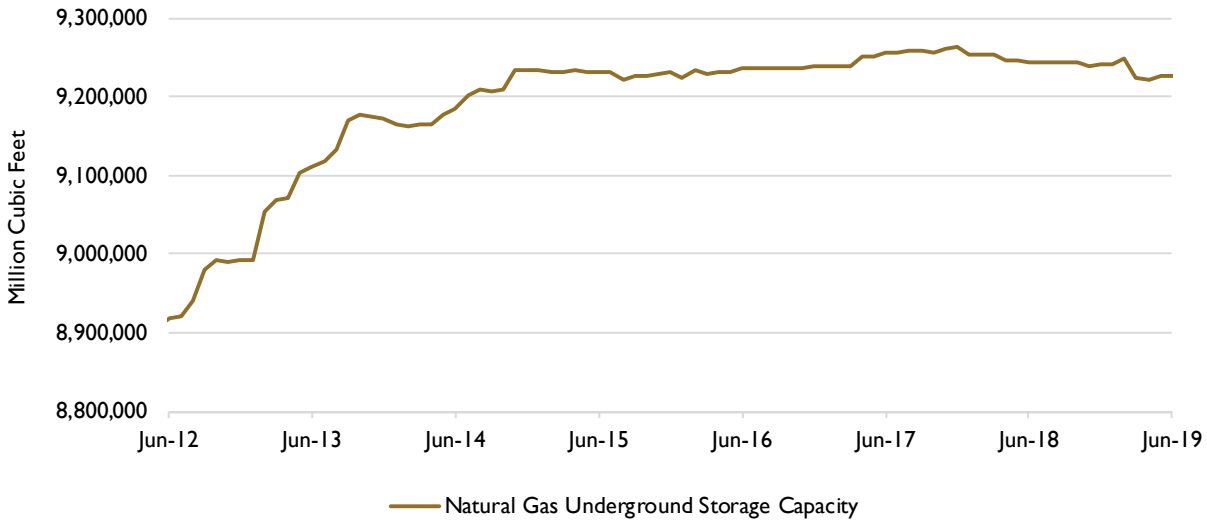
PETROLEUM AND OTHER LIQUIDS COMMERCIAL INVENTORY (MONTHLY) (57)



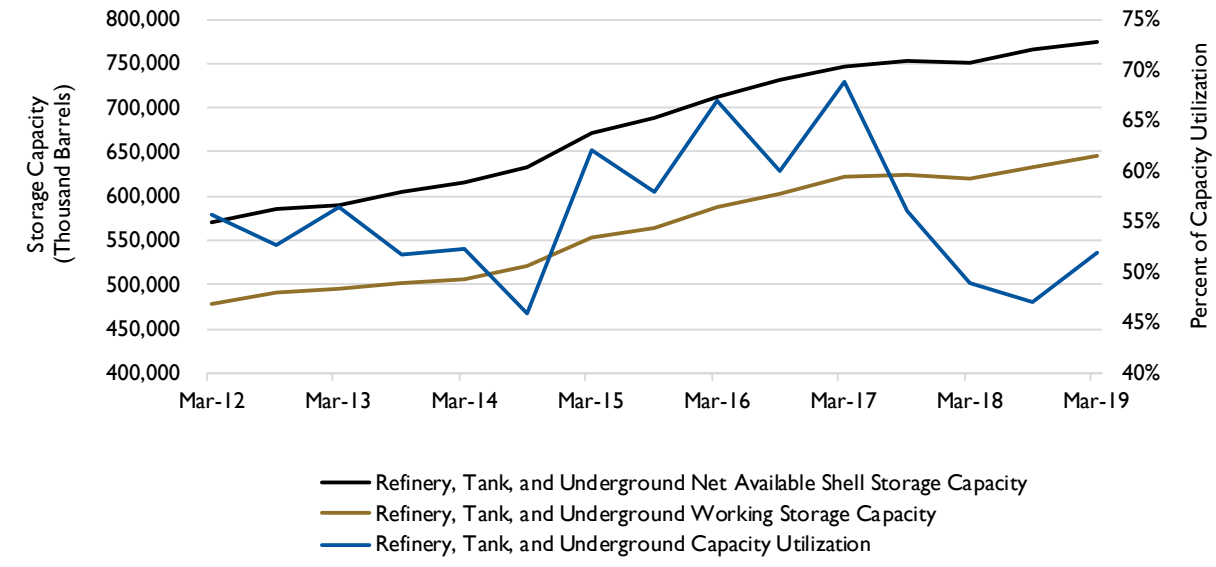
DATA CENTER

LOGISTICS - STORAGE AND TERMINALS

NATURAL GAS UNDERGROUND STORAGE CAPACITY (MONTHLY) (58)



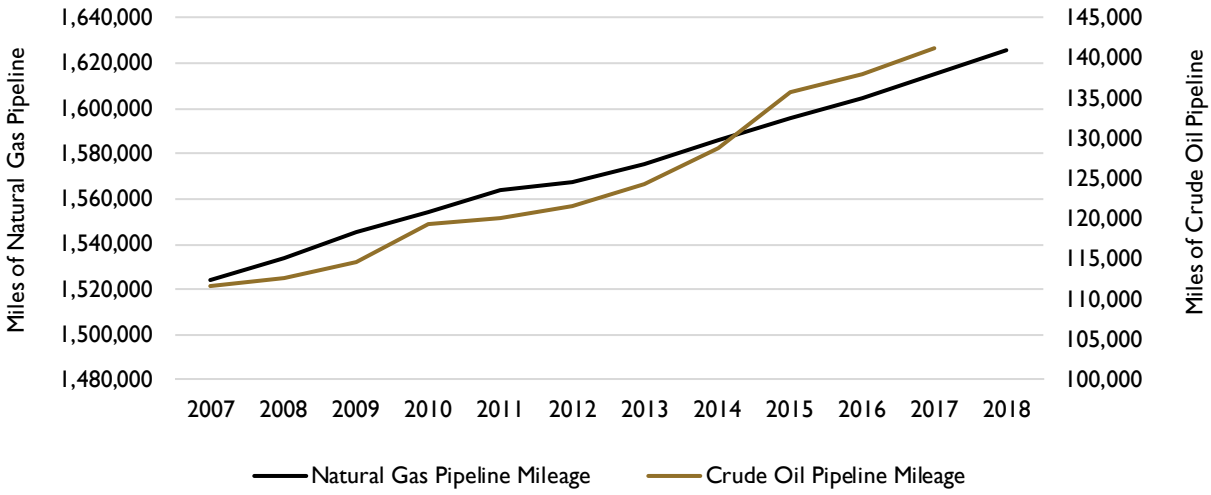
COMMERCIAL CRUDE OIL REFINERY, TANK AND UNDERGROUND STORAGE CAPACITY AND UTILIZATION (MONTHLY) (59)



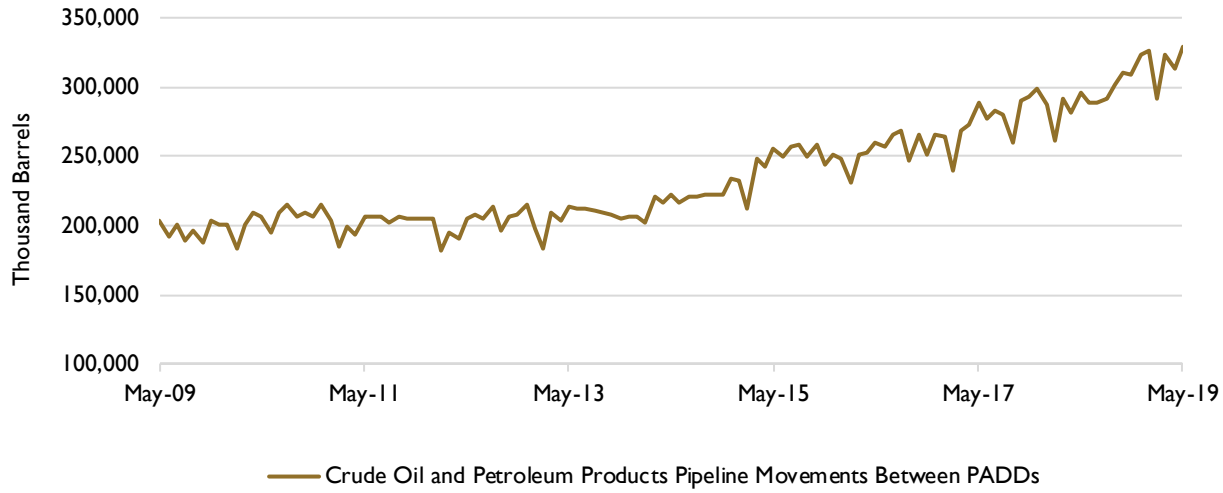
DATA CENTER

LOGISTICS - PIPELINES

CRUDE OIL AND NATURAL GAS PIPELINE MILEAGE (ANNUAL) (60)



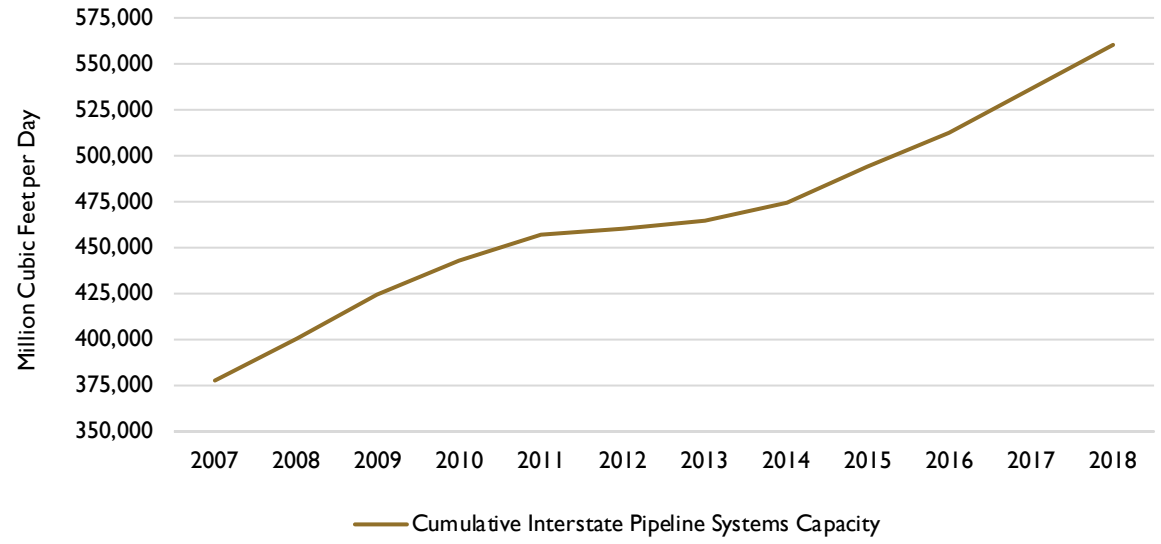
CRUDE OIL AND PETROLEUM PRODUCTS PIPELINE MOVEMENTS BETWEEN PETROLEUM ADMINISTRATION FOR DEFENSE DISTRICTS (PADDS) (MONTHLY) (61)



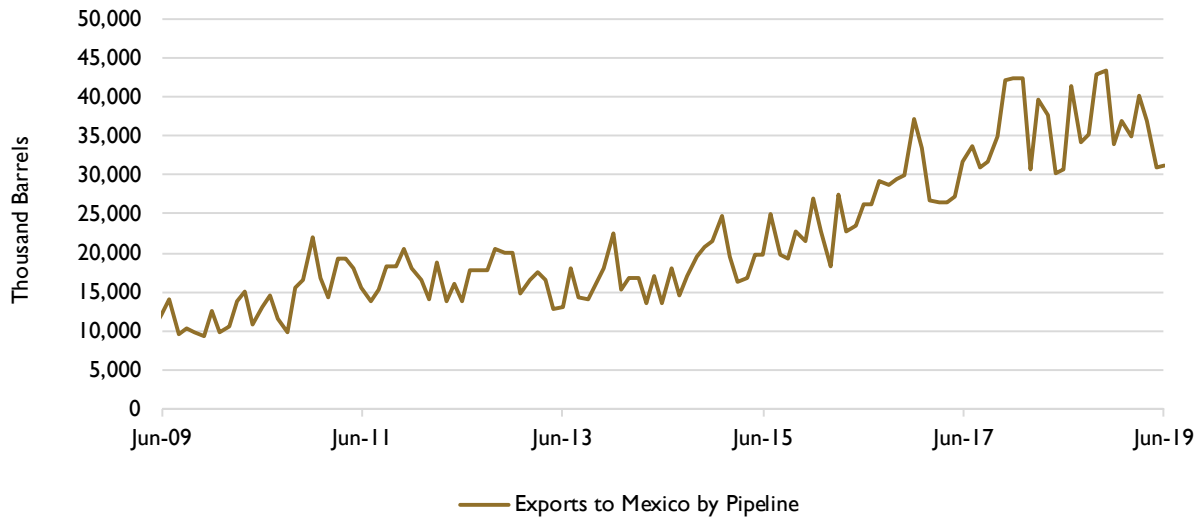
DATA CENTER

LOGISTICS - PIPELINES

NATURAL GAS CUMULATIVE INTERSTATE PIPELINE SYSTEMS CAPACITY (ANNUAL) (62)



CRUDE OIL AND PETROLEUM PRODUCTS EXPORTS TO MEXICO (MONTHLY) (63)

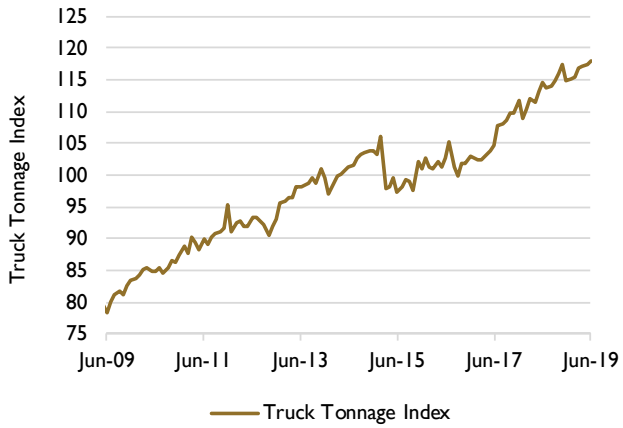


DATA CENTER

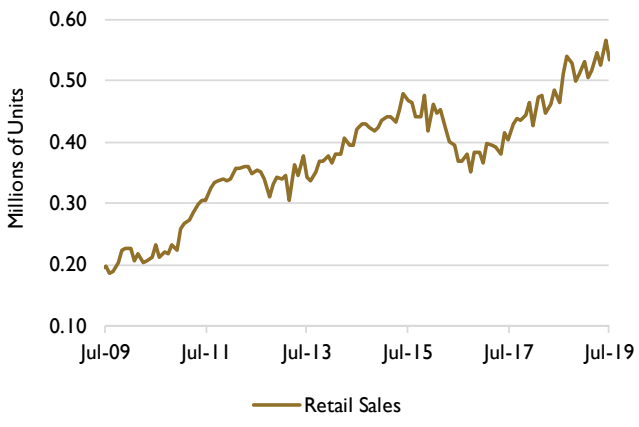
LOGISTICS - TRUCKERS

TRUCK TONNAGE INDEX (MONTHLY) (64)

MEASURES GROSS TONNAGE OF FREIGHT

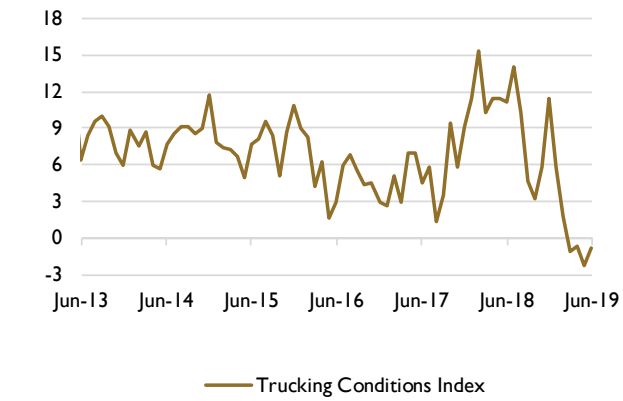


HEAVY TRUCK SALES (MONTHLY) (65)



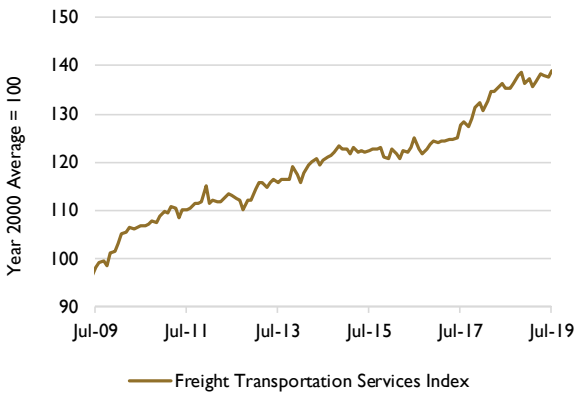
TRUCKING CONDITIONS INDEX (MONTHLY) (66)

INCLUDES FRIGHT VOLUMES, RATES, FLEET CAPACITY, BANKRUPTCIES, FUEL PRICE AND FINANCING



FREIGHT TRANSPORTATION SERVICES INDEX (MONTHLY) (67)

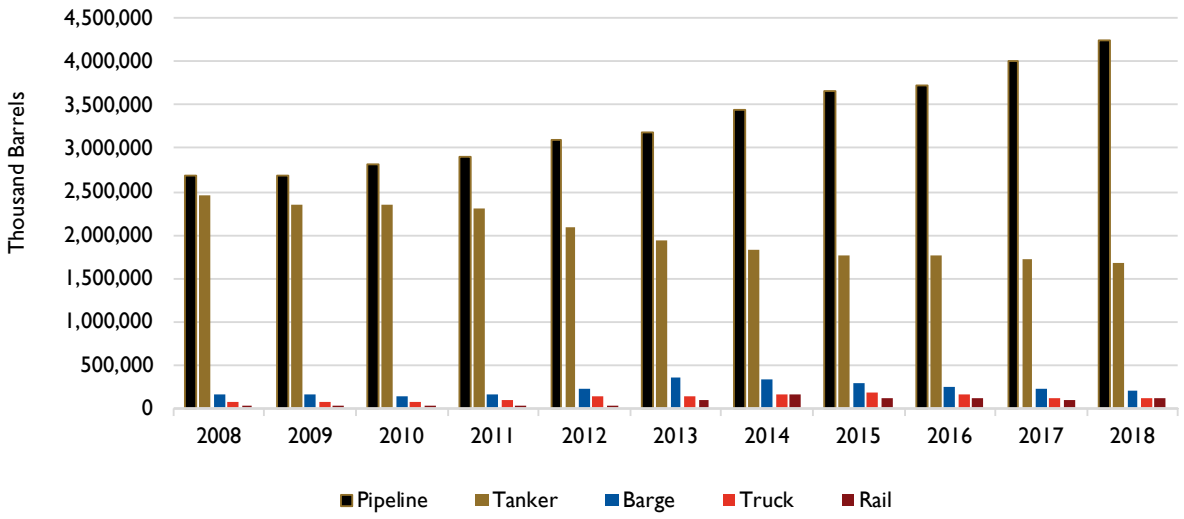
INCLUDES TRUCKING, RAIL, WATERWAYS, PIPELINES AND AIR FRIGHT



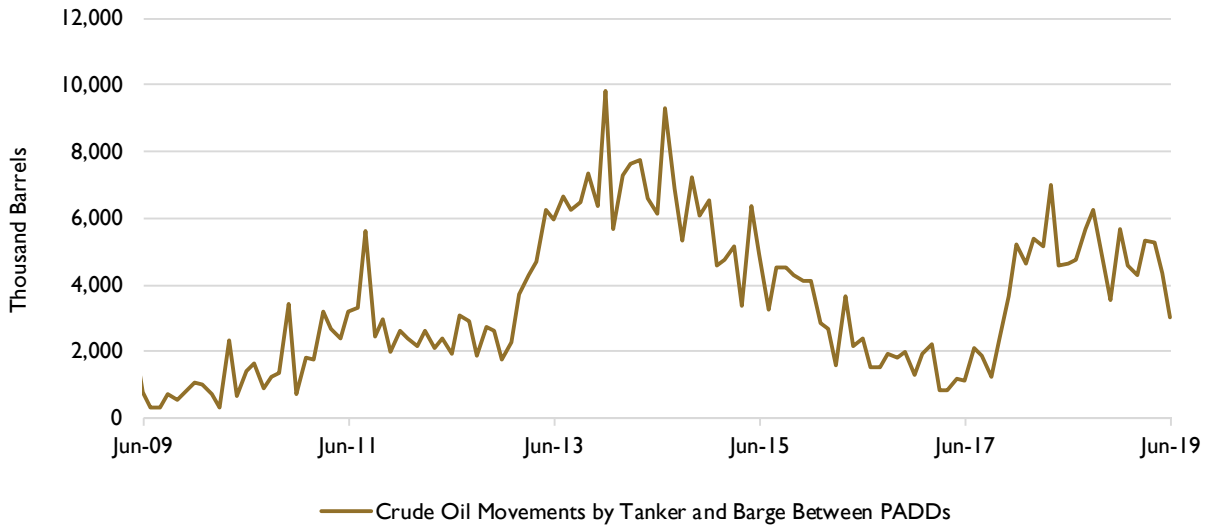
DATA CENTER

LOGISTICS - SHIPPING

Crude Oil Refinery Receipts by Transportation Method (Annual) (68)



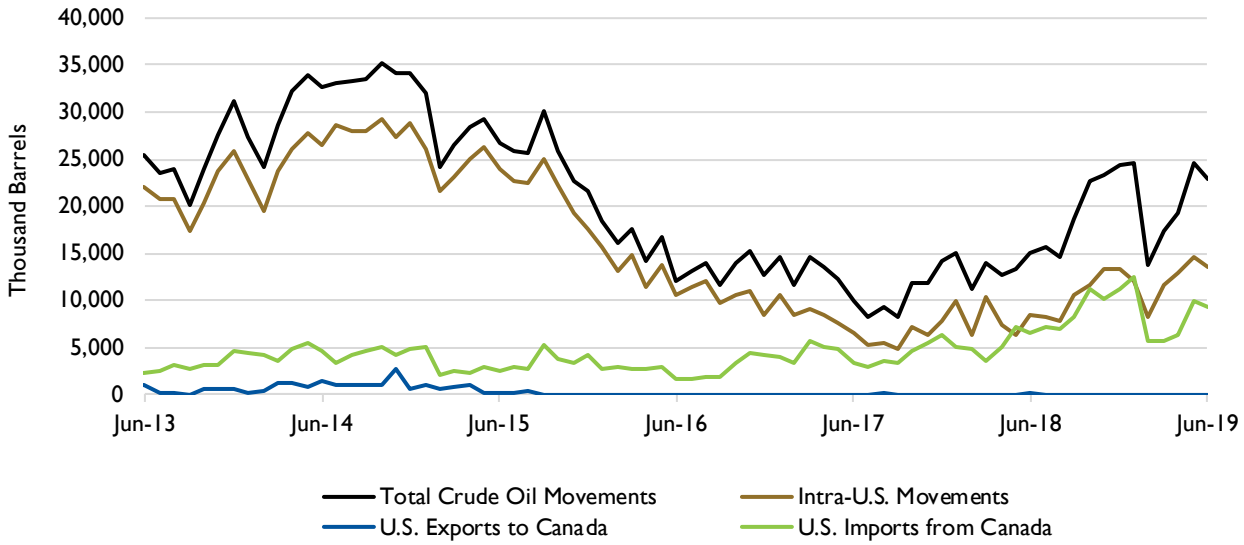
Crude Oil Movements by Tanker and Barge Between Petroleum Administration for Defense Districts (PADDs) (Monthly) (69)



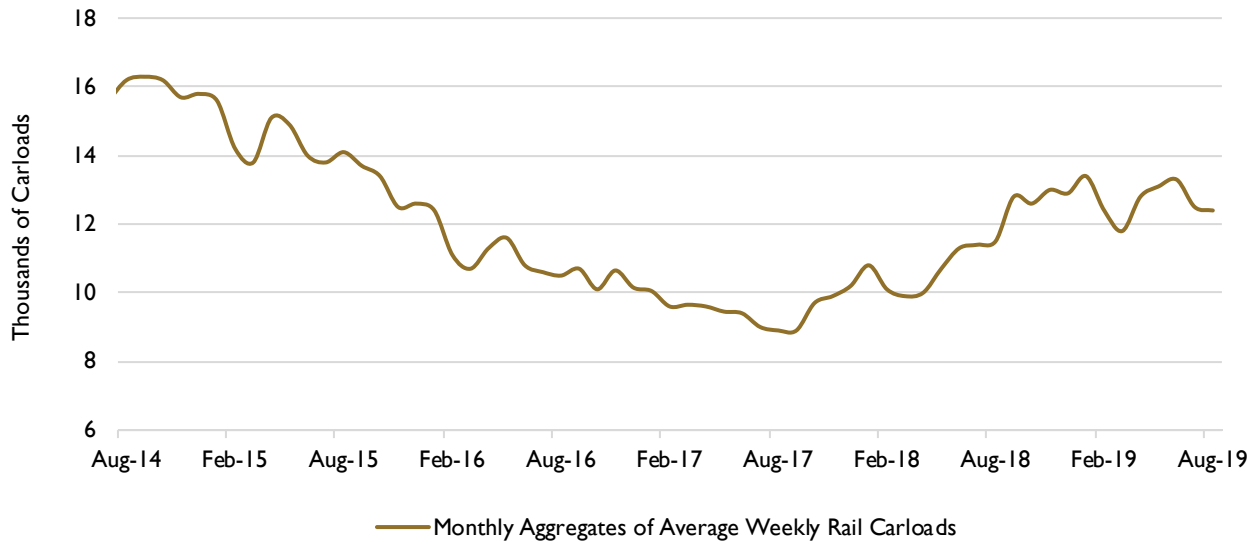
DATA CENTER

LOGISTICS - RAIL

MOVEMENTS OF CRUDE OIL BY RAIL (MONTHLY) (70)



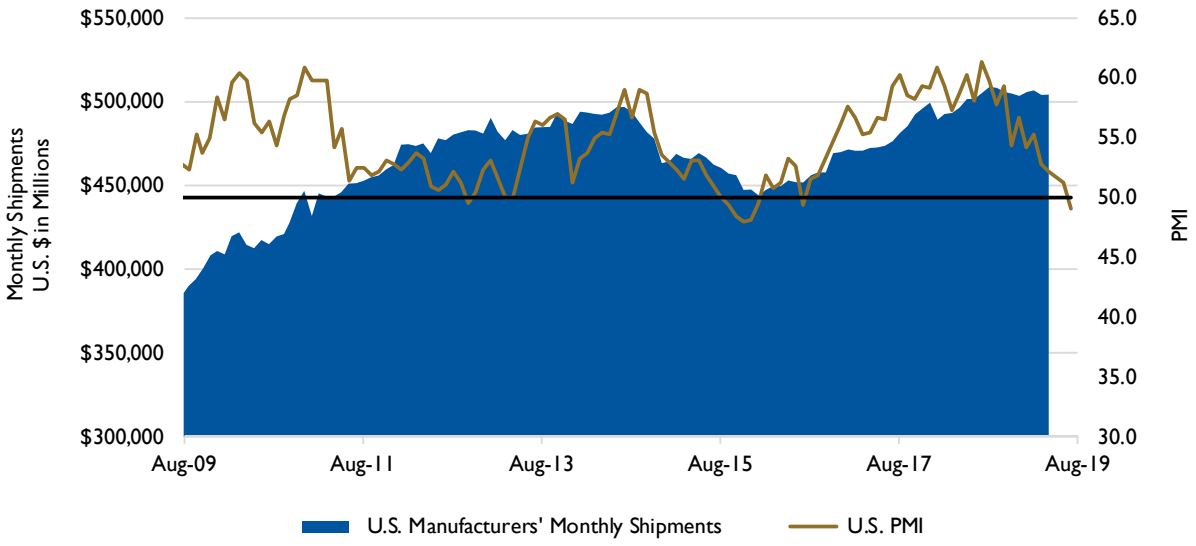
AVERAGE WEEKLY RAIL CARLOADS OF PETROLEUM AND PETROLEUM PRODUCTS (MONTHLY AGGREGATE) (71)



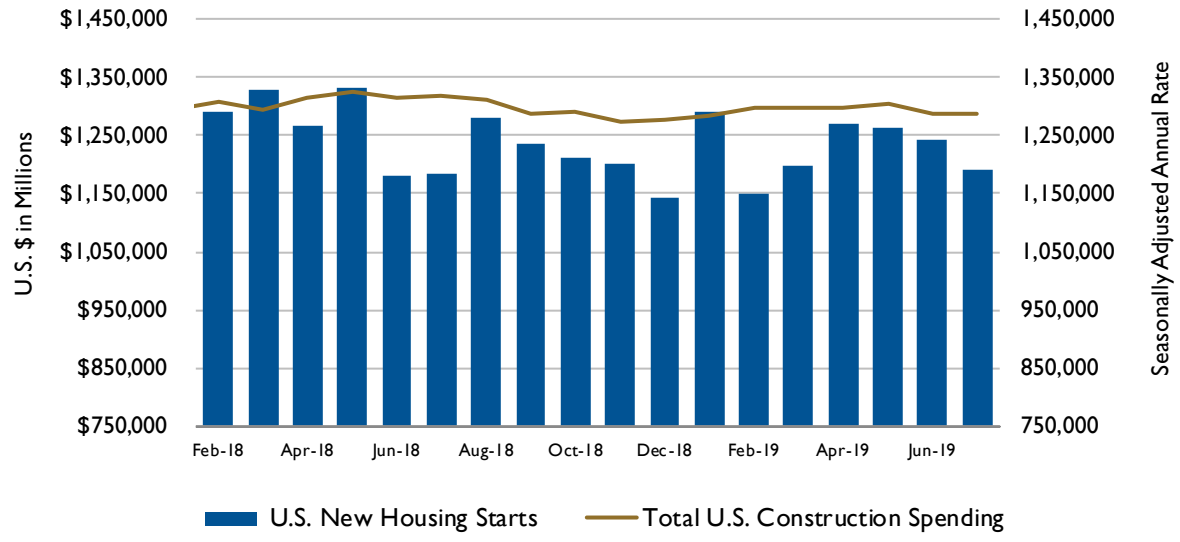
DATA CENTER

ECONOMIC / FINANCIAL

U.S. Manufacturers' Monthly Shipments and U.S. Purchasing Managers' Index (PMI) (Monthly) (72)



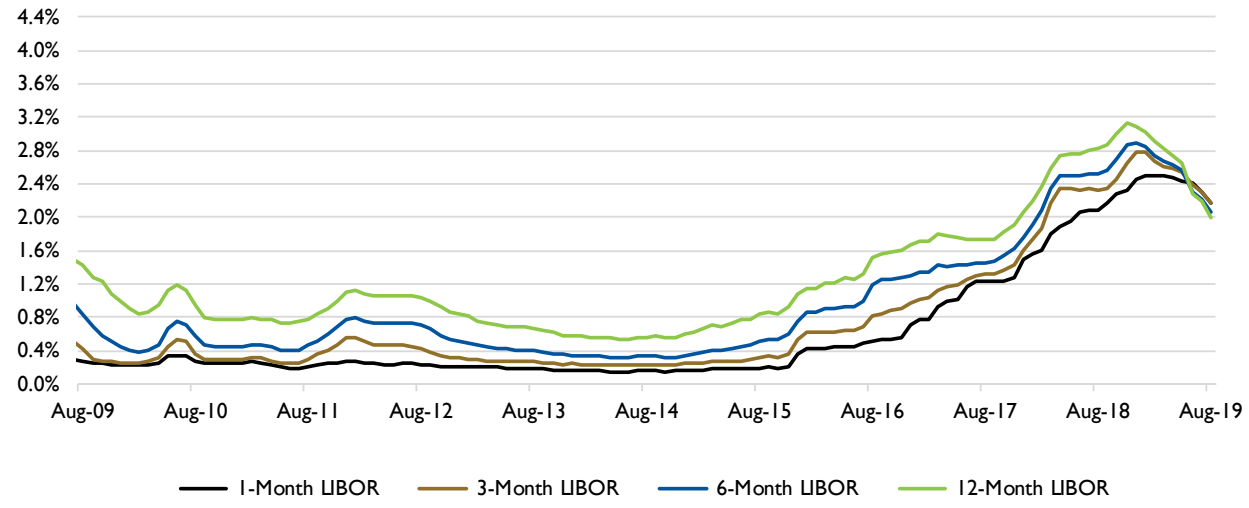
U.S. New Housing Starts and Total U.S. Construction Spending (Monthly) (73)



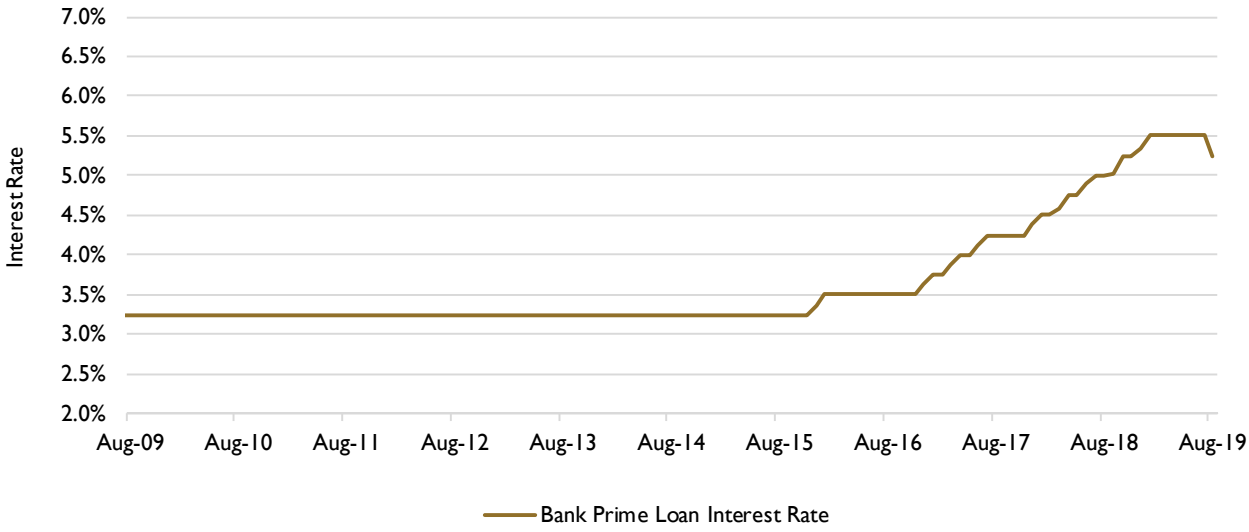
DATA CENTER

ECONOMIC / FINANCIAL

London Interbank Offered Rate (LIBOR) (Monthly Average) Based on U.S. Dollar (74)



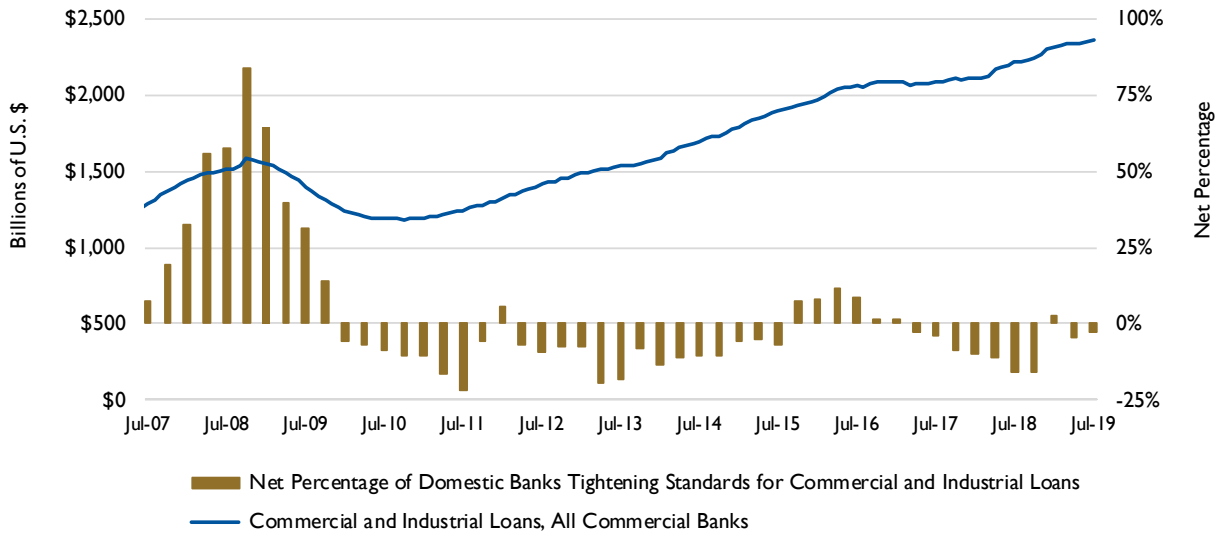
Bank Prime Loan Interest Rates (Monthly Average) (75)



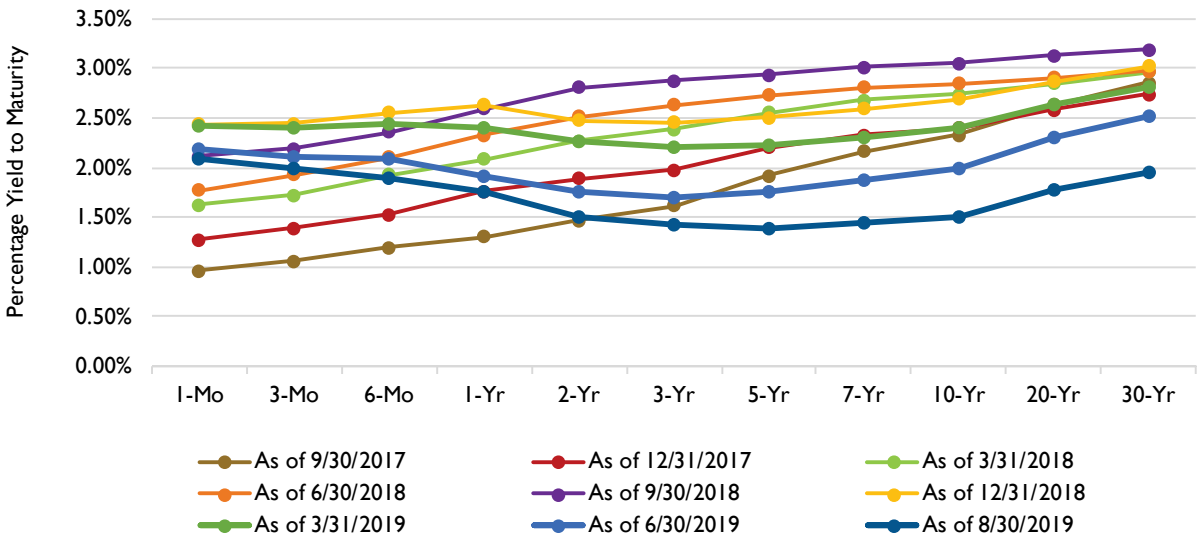
DATA CENTER

ECONOMIC / FINANCIAL

COMMERCIAL AND INDUSTRIAL LOANS VS. BANKING STANDARDS (QUARTERLY, MONTHLY) (76)



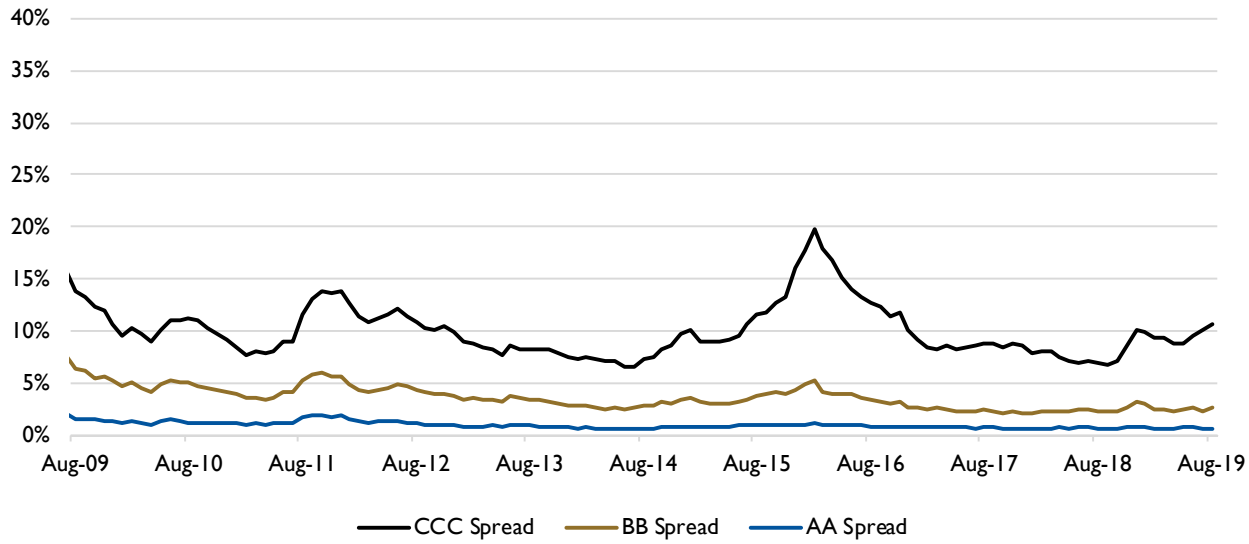
U.S. TREASURY YIELD CURVE (MONTHLY, ANNUAL) (77)



DATA CENTER

ECONOMIC / FINANCIAL

CORPORATE SPREADS TO TREASURIES BY QUALITY
(MONTHLY AVERAGE) (78)



DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

ABBREVIATIONS & ACRONYMS

AECO – Alberta Energy Company
ARAMCO – Saudi Arabian Oil Company, formerly the Arabian-American Oil Company
BCF – Billion cubic feet
BTU – British thermal unit
CIF – Costs, insurance and freight
CMT – Constant maturity treasury
DUC – Drilled but uncompleted wells
EBITDA – Earnings before interest, taxes, depreciation and amortization
IFO – Intermediate fuel oil
ITC – Investment Tax Credit
LCOE – Levelized cost of energy
LIBOR – London Interbank Offered Rate
LNG – Liquefied natural gas
LPG – Liquefied petroleum gas
mmBTU – Millions of British Thermal Units
MTBE – Methyl tertiary butyl ether
MW – Megawatt
NBP – National Balancing Point
NGPL – Natural gas plant liquids
NYMEX – New York Mercantile Exchange
OAS – Option-adjusted spread
OPEC – The Organization of Petroleum Exporting Countries
PADD – Petroleum Administration for Defense District
PG&E – Pacific Gas & Electric
PMI – U.S. Purchasing Managers Index
PV – Photovoltaic
SoCal – Southern California
SPR – Strategic Petroleum Reserve
TETCO-M3 – Texas Eastern Transmission Corporation Pipeline Zone M3
TTF – Title Transfer Facility
UAE – United Arab Emirates
WTI – West Texas Intermediate crude oil

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

DEFINITIONS

Biofuels – liquid fuels and blending components produced from biomass feedstocks, used primarily for transportation.

British Thermal Unit (BTU) – A traditional unit of heat; it is defined as the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit.

Ending Stocks – A proxy for inventory, defined as the total volume of a given commodity held in storage (leases, refineries, processing plants, pipelines, terminals, tank farms) at the end of the last day of a given month.

Distillate Fuel Oil – A general classification for a variety of petroleum fractions produced in petroleum distillation operations. Included within this classification are No. 1, No. 2 and No. 4 diesel fuels (used in on-highway and off-highway diesel engines), as well as No. 1, No. 2 and No. 4 fuel oils (used primarily for space heating and electric power generation).

Distributed Solar Energy – Refers to solar energy generated by small-scale photovoltaic generation plants. Small-scale is defined as a plant with capacity below one megawatt.

Index – A figure in a system or scale representing the average value of specified prices, shares, or other items as compared with some reference figure.

Intermediate Fuel Oil – Also known as IFO and Bunker Fuel, fuel utilized by ships and barges to facilitate international exchange of various commodities across an array of industries.

Investment Tax Credit – A federal policy tax incentive that supports the deployment of solar energy in the United States.

LIBOR – The London Interbank Offered Rate is the average interest rate at which leading banks borrow funds of a sizeable amount from other banks in the London market.

Liquefied Natural Gas – Natural gas that has been cooled to a liquid state, at about -260°Fahrenheit, for shipping and storage.

Liquefied Petroleum Gas – A group of hydrocarbon gases, primarily propane, normal butane and isobutene, derived from crude oil refining or natural gas processing.

Natural Gas Liquids – A group of hydrocarbons including ethane, propane, normal butane, isobutene and natural gasoline. Generally include natural gas plant liquids and all liquefied refinery gases except olefins.

Natural Gas Plant Liquids – Ethane, propane, butane, isobutane, pentane and pentane plus.

Petroleum Administration for Defense District (PADD) – A geographic aggregation of the 50 States and the District of Columbia into five Districts. PADD 1 is the East Coast region, PADD 2 is the Midwest region, PADD 3 is the Gulf Coast region and PADD 5 is the West Coast region.

Petroleum Products – Obtained from the processing of crude oil (including lease condensate), natural gas and other hydrocarbon compounds. Petroleum products include unfinished oils, liquefied petroleum gases, pentanes plus, aviation gasoline, motor gasoline, naphtha-type jet fuel, kerosene-type jet fuel, kerosene, distillate fuel oil, residual fuel oil, petrochemical feedstocks, special naphthas, lubricants, waxes, petroleum coke, asphalt, road oil, still gas and miscellaneous products.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

DEFINITIONS

Product Supplied – A widely utilized proxy for consumption of petroleum products, measuring the disappearance of said products from primary sources. Primary sources include, among others, refineries, processing plants, blending plants, pipelines and bulk terminals.

Propylene – Petrochemical feedstock that is recovered from refinery or petrochemical processes. It is an olefinic hydrocarbon that is gaseous at standard temperature and pressure.

Residual Fuel Oil – The general classification for heavy oils that remain after lighter oils are distilled away in the process of petroleum refining.

Spot vs. Wholesale Price – "Spot" prices are defined by the U.S. Energy Information Administration as, "the price for a one-time open market transaction for immediate delivery of a specific quantity of a product at a specific location where the commodity is purchased 'on the spot' at current market rates."

In this report, certain charts contain both "spot" and "wholesale" prices for given commodities alongside each other within the same chart. In these instances, the wholesale prices shown are, in fact, wholesale market "spot" prices. Thus, the terms are interchangeable in charts where both terms are present in describing respective price series.

Strategic Petroleum Reserve (SPR) – An emergency fuel storage of crude oil maintained by the United States Department of Energy for use during periods of major supply interruption.

Virtual Trading Point – Commodity trading center created to service a specific geographic region but does not have a physical location.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

DESCRIPTIONS

General Conversion Information

- International pricing data for various commodities were converted by JKC from the units utilized by the original data source (in the form of currency value per unit of energy content or volume) to appropriate domestic units (in the form of U.S. dollars per common domestic unit of energy content or volume) in order to allow for convenient, informative comparison of international and domestic commodity price series through displaying them on a singular chart in consistent units. Appropriate domestic units for a given commodity are determined by whatever units are most commonly utilized in the United States to denote prices of that commodity, per the U.S. Energy Information Administration.
- International currency units were converted to U.S. dollars using historical exchange rates published by x-rates.com.
- Energy content and volume conversion factors differ by commodity. International energy content or volume units were converted using the various sources listed below:
  - Google.com In-Browser Unit Converter
    - Alberta Energy Co. Hub Natural Gas – gigajoules to mmBTU
    - Dutch TTF Hub Natural Gas – megawatt hours to mmBTU
    - Houston; Los Angeles; Rotterdam; Singapore; Port of Fujairah, UAE IFO 380, IFO 180 Bunker Fuel – liters/kilogram to gallons per metric ton
  - Iowa State University Liquid Fuel Measurements and Conversions
    - Netherlands Retail LPG – liters to metric tons, metric tons to barrels
    - Saudi ARAMCO Propane – metric tons to barrels
    - Japan Propane Imports – metric tons to barrels
    - Holland Retail Gasoline – liters to gallons
    - Singapore Retail Gasoline – liters to gallons
    - UAE Gasoline – liters to gallons
    - Edmonton Diesel Fuel – liters to gallons
    - Singapore Retail Diesel – liters to gallons
    - Holland Retail Diesel – liters to gallons
    - UAE Diesel – liters to gallons
  - Official Nebraska Government Website
    - Netherlands Retail LPG – barrels to gallons
    - Saudi ARAMCO Propane – barrels to gallons
    - Japan Propane Imports – barrels to gallons
  - Lanka IOC Oil Company
    - Houston; Los Angeles; Rotterdam; Singapore; Port of Fujairah, UAE IFO 380, IFO 180 Bunker Fuel – density, in liters per kilogram

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

CHART NOTES

All charts in this report are updated to the latest information available at the time of publication. Due to differing reporting dates for various data used throughout the report, all charts are not updated to the same ending period.

(1) Crude Oil Prices

- Sources: U.S. Energy Information Administration (Brent, West Texas Intermediate), IndexMundi via WorldBank (Dubai Fateh), Alberta.ca Economic Dashboard (Western Canadian Select), OPEC.org and Quandl.com (OPEC Reference Basket).
- The Organization of Petroleum Exporting Countries (OPEC) reference basket is a composite of the following blends of crude oil: Saharan Blend (Algeria), Girassol (Angola), Oriente (Ecuador), Zafiro (Equatorial Guinea), Rabi Light (Gabon), Iran Heavy (Islamic Republic of Iran), Basra Light (Iraq), Kuwait Export (Kuwait), Es Sider (Libya), Bonny Light (Nigeria), Qatar Marine (Qatar), Arab Light (Saudi Arabia), Murban (United Arab Emirates), Merey (Venezuela).
- All prices are spot or wholesale.

(2) Gasoline Prices

- Sources: U.S. Energy Information Administration (New York Harbor, U.S. Gulf Coast), Trading Economics (Singapore, Netherlands Retail), United Arab Emirates Ministry of Energy (UAE Retail).
- New York Harbor Spot, U.S. Gulf Coast Spot, Netherlands Retail and Singapore Retail all represent the price history of conventional gasoline in their respective locations. United Arab Emirates Retail represents an aggregate of unleaded 95, unleaded 98 and unleaded 91 prices in the United Arab Emirates.

(3) Diesel Prices

- Sources: U.S. Energy Information Administration (U.S. Gulf Coast, New York Harbor, Los Angeles, CA), Ec.euopa.eu European Commission (Netherlands Retail), Knoema.com (Singapore Retail), United Arab Emirates (UAE Retail).
- New York Harbor, U.S. Gulf Coast and Los Angeles, CA prices represent ultra-low sulfur No. 2 diesel.
- Edmonton, Canada price represents low-sulfur diesel.
- Singapore Retail, United Arab Emirates Retail and Netherlands Retail prices represent conventional gasoil found at the pump. Gasoil is an alternative term for diesel commonly used throughout Europe.
- Netherlands Retail prices exclude taxes, Singapore Retail prices include taxes.

(4) Jet Fuel Prices

- Source: U.S. Energy Information Administration.
- All prices are spot or wholesale prices.

(5) U.S. Crude Oil and Petroleum Products Supply, Inventory and Consumption

- Source: U.S. Energy Information Administration.
- Crude Oil and Petroleum Products consist of natural gas plant liquids (ethane, propane, butane, isobutane, pentane), other liquids (hydrogen, oxygenates and renewable fuels like fuel ethanol, motor and aviation gasoline blending components, unfinished oils) and finished petroleum products (motor gasoline, aviation gasoline, kerosene-type jet fuel, kerosene, distillate fuel oil, residual fuel oil, petrochemical feedstocks, napthas, lubricants, waxes, petroleum cokes, asphalt and road oil, still gas, miscellaneous products).
- Supply is comprised of field production, renewable fuels and oxygenate plant net production, refinery and blender net production, imports and net Petroleum Administration for Defense District (PADD) receipts. Net PADD receipts represent the net volume of product movement into and out of each PADD by tanker, barge and pipeline.
- Ending Stocks is a proxy for inventory and is defined as primary stocks held in storage as of midnight on the last day of the month. Primary stocks include products held in storage at, or in, leases, refineries, natural gas processing plants, pipelines, tank farms and bulk terminals with the capacity to store at least 50,000 barrels or that can receive product by tanker, barge or pipeline. Ending Stocks include volumes in the Strategic Petroleum Reserve (SPR) maintained by the Federal Government for use during periods of major supply interruption.
- Product Supplied is a proxy for consumption as it measures the disappearance of said product from primary sources, including refineries, processing plants, blending plants, pipelines and bulk terminals.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

(6) U.S. Refinery Volumes and Wholesale Prices of Petroleum Products

- Source: U.S. Energy Information Administration Petroleum Marketing Monthly.

(7) U.S. Crude Oil Refinery Input, Distillation Capacity and Refinery Utilization

- Source: U.S. Energy Information Administration Petroleum Supply Weekly.
- Net Input is defined as gross inputs less gross production. Crude Oil Refinery Net Input values are monthly aggregates of weekly net input averages, measured in thousands of barrels per day. The resulting values are represented as monthly average refinery inputs, measured in thousands of barrels per day.
- Refinery Capacity refers to the maximum amount of crude oil designed to flow into the distillation (or crude) unit of the refinery. Operable Capacity is equal to the sum of operating and idle capacity. Idle Capacity is capacity that is not in operation, not under active repair, and can be placed in operation within 30 days.

(8) U.S. Crude Oil and Petroleum Products Imports and Exports

- Source: U.S. Energy Information Administration Petroleum Supply Monthly.
- U.S. Net Imports of Petroleum Products data fall below zero at which point the U.S. becomes a net exporter.

(9) Domestic Natural Gas Citygate Prices per Region

- Source: U.S. Energy Information Administration.
- The prices shown are "Citygate" prices. A Citygate is defined as "a point or measuring station at which a distributing gas utility receives gas from a natural gas pipeline company or transmission system." The Citygate price represents the benchmark price for a given region, accounting for all costs of acquisition, storage, and transportation of gas as well as other charges associated with local distribution companies obtaining the gas for sale to end-users.
- The Western market contains Oregon, Washington, California, Nevada, Arizona, New Mexico, Utah, Wyoming, Colorado, Montana, and Idaho.
- The Midwestern market contains North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Minnesota, Iowa, Missouri, Arkansas, Wisconsin, Michigan, Illinois, and Indiana.
- The Gulf market contains Texas and Louisiana; the Southeastern market contains Florida, Mississippi, Alabama, Georgia, Tennessee, North Carolina, and South Carolina.
- The Northeastern market contains Kentucky, Virginia, West Virginia, Ohio, Pennsylvania, New York, Vermont, New Hampshire, Maine, Massachusetts, Rhode Island, Connecticut, Delaware, New Jersey, and Maryland.

(10) International Natural Gas Prices

- Sources: U.S. Energy Information Administration (Henry Hub), NGX Clearinghouse (AECO Hub), BP Statistical Review of World Energy 2017 (United Kingdom NBP), World Bank via Index Mundi (Russian NG European Import Price), Knoema via World Bank (Japan LNG Import), my.Elexys.be Market Information (Dutch TTF).
- Henry Hub serves as the primary global pricing benchmark.
- Alberta Energy Company (AECO) Hub serves North America.
- United Kingdom National Balancing Point (NBP) serves the British Isles.
- Dutch Title Transfer Facility (TTF) serves continental Europe.
- Virtual Trading Point (Virtual) does not have a physical location and was created to serve a specific region.
- Japan LNG Import Price represents aggregate import prices of liquefied natural gas in Japan and is a price benchmark serving the Asia-Pacific region. The price includes costs, insurance and freight (CIF).
- All price benchmarks above represent gaseous state natural gas transported by pipeline, with the exception of Japan LNG Import Price, which represents liquid state natural gas transported by ship.
- All prices are spot or wholesale.

(11), (12), (13) and (14) Liquefied Natural Gas Prices

- Sources: Federal Energy Regulatory Commission (U.S., Mexico, Belgium, India), World Bank via Bluegold Research (Brazil/Argentina, Japan/Korea, China, United Kingdom).
- All prices are "landed" prices. Landed price is the price received at the regasification terminal and is based on a netback calculation that removes the costs of pipeline transportation, regasification, waterborne shipping and liquefaction, so as to best represent the effective price to the producer or seller at a specific location or defined point.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

(15) U.S. Import / Export Liquefied Natural Gas Prices
- Source: U.S. Energy Information Administration.
- All prices are spot or wholesale.

(16) Natural Gas Plant Liquids Prices
- Source: U.S. Energy Information Administration.
- Natural gas liquids spot prices at Mont Belvieu, TX.
- Natural Gas Plant Liquids (NGPL) Composite price includes ethane, propane, butane, isobutane and natural gasoline. Daily closing spot prices for each component are averaged into a monthly series, then weighted according to the portion of a representative natural gas plant liquids barrel that they occupy. The NGPL Composite price excludes natural gas liquids produced at crude oil refineries.

(17) U.S. Natural Gas Production and Consumption
- Source: U.S. Energy Information Administration.
- Marketed Production is equal to gross withdrawals of natural gas from production reservoirs, less gas used for reservoir re-pressuring, nonhydrocarbon gases removed in treating and processing operations, and quantities vented and flared (gas that is disposed of by release into the atmosphere).

(18) U.S. Natural Gas Supply and Inventory
- Source: U.S. Energy Information Administration.
- Working Gas is defined as the total amount of natural gas in storage less the amount of base gas. Base gas is the amount of gas intended as permanent inventory.

(19) U.S. Natural Gas Consumption by End Use
- Source: U.S. Energy Information Administration.

(20) U.S. Natural Gas Plant Liquids Production
- Source: U.S. Energy Information Administration.
- Natural Gas Plant Liquids Production refers to the sum of all production of ethane, propane, butane, isobutane, pentane and pentane plus.

(21) U.S. Liquefied Natural Gas Import and Export Volumes
- Source: U.S. Energy Information Administration.

(22), (23) and (24) North American LNG Import / Export Terminals – Proposed, Approved and Existing
- Source: Federal Energy Regulatory Commission.

(25) Heating Oil Prices
- Source: U.S. Energy Information Administration.
- Spot prices of No 2. heating oil at New York Harbor, alongside the spot prices of West Texas Intermediate crude oil for comparison purposes.

(26) Intermediate Fuel Oil aka "Bunker Fuel" Prices
- Source: Ship & Bunker.
- Intermediate Fuel Oil, also known as IFO and Bunker Fuel, is fuel utilized by ships and barges to facilitate international exchange of various commodities across an array of industries, including energy. It is classified in the maritime field by its viscosity, measured in centistokes. IFO 380 has a maximum viscosity of 380 centistokes, while IFO 180 has a maximum viscosity of 180 centistokes. IFO 380 is comprised of 98% residual fuel oil and 2% distillate fuel oil. IFO 180 is comprised of 88% residual fuel oil and 12% distillate fuel oil.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

(27) Propane Prices

- Sources: U.S. Energy Information Administration (Conway, KS and Mont Belvieu, TX spot prices), Government of Canada National Energy Board (Edmonton, Canada trading hub prices), Ec.euopa.eu European Commission (Netherlands Retail prices), LPG Australia and news articles (Saudi ARAMCO contract prices), Knoema.com and Petroleum Association of Japan (Japan Imports prices).
- Conway, KS and Mont Belvieu, TX retail prices are propane prices, while Saudi ARAMCO Contracts and Japan Imports are liquefied petroleum gas (LPG) prices. Netherlands Retail and Edmonton, Canada retail prices are auto propane and exclude taxes.
- Propane and LPG prices are represented on the same chart due to the fact that propane is dealt in international marketplaces as LPG, and is referred to as LPG in many European and Asian countries. LPG is comprised of a mixture of propane and butane.
- Conway, KS wholesale prices are typically available only for the winter months (October through March), during which propane demand is driven by cold weather, therefore, the data series displayed is intermittent.

(28) No. 1 Distillate Fuel Oil, Residual Fuel Oil Wholesale, Retail Sales Volume by Refiners

- Source: U.S. Energy Information Administration.
- No. 1 Distillate Fuel Oil consists of No. 1 diesel fuel and No. 1 fuel oil. The former is used in high-speed diesel engines, including those used by metropolitan buses and smaller automobiles. No. 1 fuel oil is utilized primarily as fuel for portable outdoor stoves and heaters.
- Residual Fuel Oil is the general classification for heavy oils that remain after lighter oils are distilled away in the process of petroleum refining. Residual Fuel Oil includes No. 5 and No. 6 fuel oils. The former is used in steam-powered vessels, and the latter is used for electric power generation, space heating, vessel bunkering and industrial processes.
- All wholesale and retail sales volumes refer to those sold by refiners only.

(29) No. 2 Distillate Fuel Oil Wholesale, Retail Sales Volume by Refiners

- Source: U.S. Energy Information Administration.
- No. 2 Distillate Fuel Oil consists of No. 2 diesel fuel and No. 2 fuel oil (heating oil). No. 2 diesel fuel is utilized in on-and-off highway diesel engines, including those used by railroad locomotives, trucks, automobiles and agricultural machinery. No. 2 fuel oil (heating oil) is used for space heating and moderate capacity industrial/commercial burner units.
- All wholesale and retail sales volumes refer to those sold by refiners only.

(30) Propane & Propylene and Distillate Fuel Oil Production and Consumption

- Source: U.S. Energy Information Administration.
- Distillate Fuel Oil is a general classification for a variety of petroleum fractions produced in petroleum distillation operations. Included within this classification are No. 1, No. 2 and No. 4 diesel fuels (used in on-highway and off-highway diesel engines), as well as No. 1, No. 2 and No. 4 fuel oils (used primarily for space heating and electric power generation).
- Propylene is an important petrochemical feedstock that is recovered from refinery or petrochemical processes. It is an olefinic hydrocarbon that is gaseous at standard temperature and pressure.
- Product Supplied is a proxy for consumption as it measures the disappearance of said product from primary sources, including refineries, processing plants, blending plants, pipelines and bulk terminals.

(31) U.S. Ending Stocks of Propane & Propylene and Distillate Fuel Oil

- Source: U.S. Energy Information Administration.
- Distillate Fuel Oil is a general classification for a variety of petroleum fractions produced in petroleum distillation operations. Included within this classification are No. 1, No. 2 and No. 4 diesel fuels (used in on-highway and off-highway diesel engines), as well as No. 1, No. 2 and No. 4 fuel oils (used primarily for space heating and electric power generation).
- Propylene is an important petrochemical feedstock that is recovered from refinery or petrochemical processes. It is an olefinic hydrocarbon that is gaseous at standard temperature and pressure.
- Ending Stocks are defined as the total volume of a propane and propylene/distillate fuel oil held in storage as of the last day of the period. Ending Stocks are monthly averages of Ending Stocks reported at the end of each week during that month, not the amount of Ending Stocks reported at the end of the month. The resulting values are represented as monthly average inventory levels.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

(32) U.S. Land Well Count, Rig Count and Wells per Rig

- Source: Platts S&P Global Quarterly Well Count Report.
- Well and rig count data include only those on United States land. Thus, no offshore data is included.
- Platts RigData U.S. Land Rig Count methodology states that a rig is added to the count every time a new oil platform, or rig, is set up on a given site, or every time an existing rig moves to a new location and drills on that site.
- Platts RigData derives U.S. Land Well Count data through tracking new drilling permits and drilling activity only. Thus, the wells comprising the U.S. Land Well Count do not necessarily have to be completed or produce oil or gas in order to be included. For this reason, the well count represented overstates the amount of completed and producing wells that exist on U.S. land.

(33) U.S. Well Starts by Depth

- Source: Platts RigData.
- Total number of well starts by depth on U.S. Land, U.S. Inland Waters and U.S. Offshore, respectively.

(34) Percentage of Oil Production per Shale Region

- Source: U.S. Energy Information Administration Drilling Productivity Report.
- Percentage of total U.S. crude oil production from each of the shale regions.

(35) Drilled but Uncompleted Wells vs. Crude Oil Price

- Source: U.S. Energy Information Administration Drilling Productivity Report.
- Drilled but Uncompleted (DUC) Wells are oil and gas wells that have been drilled but haven't gone through the process of completion (the process of installing well casing, tubing and other equipment that prepares a well for production). The number of DUC wells has significant implications on the domestic supply response to crude oil price changes. If crude oil prices decrease, it is theoretically likely that the amount of DUC wells will increase, and vice versa in an increasing crude oil price scenario. Therefore, the West Texas Intermediate Crude price is tracked for comparative purposes.

(36) Hydraulic Fracturing Sand Consumption and Producer Price Index

- Sources: IHS Markit (consumption), U.S. Bureau of Labor Statistics (producer price index).
- Hydraulic Fracturing Sand is sand utilized as a proppant in the process of hydraulic fracturing to help facilitate the extraction of oil and gas from subsurface rock formations.
- Total 2017 Hydraulic Fracturing Sand Consumption contains actual data for January through April 2017, while May through December 2017 consumption data is projected based on IHS Markit's ProppantIQ research.
- The Producer Price Index for Hydraulic Fracturing Sand measures the weighted average period-to-period change in the selling prices received by domestic producers of hydraulic fracturing sand.
- 2017 Producer Price Index shows annual average as of 9/29/2017.
- Hydraulic Fracturing Sand Producer Price Index Base = 100 at December 2012.

(37) and (38) Crude Oil and Natural Gas Production, Rig Count and Production per Rig

- Sources: U.S. Energy Information Administration Drilling Productivity Report (new-well crude oil and natural gas production per rig), Baker Hughes Inc. (rig count).
- New-Well Crude Oil or Natural Gas Production per Rig in each quarter represents the average of each month's value. New-well production per rig is estimated by dividing several trailing months of data on total production from new wells in each region by that region's monthly rig count, lagged by two months. New-well production per rig is intended to indicate an average rig's contribution to total crude oil production from new wells.
- The determination between a crude oil rig and a natural gas rig is made by the operating company at the time of issuance of the rig permit by the relevant state's permitting authority. The classification of a given rig as an oil or gas rig is based solely upon the operator's judgment after drilling an appraisal well and determining its specific hydrocarbon content. For example, if a well's production comes 50% from gas, 20% from Natural Gas Liquids and 30% from oil, it could either be listed as a gas rig, because gas comprises the largest share of hydrocarbons, or an oil rig because oil drives the well's economics. This determination is at the judgment of the operator.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

(39) U.S. Drilling Rigs by Type

- Source: Baker Hughes North America Rotary Rig Count.
- A vertical well is a well that penetrates the earth vertically below the surface-mounted drilling platform, or the surface location of the well.
- A directional well is classified as one in which the surface location of the well is not vertically above the target reservoir. Thus, the well deviates horizontally from its surface location in order to reach the target reservoir, at a specific azimuth and incline. Azimuth measures the cardinal direction of the well's path relative to the surface location, and incline measures degrees of deviation from vertical.
- Per Baker Hughes methodology, a horizontal well is a type of directional well that deviates from vertical by greater than 80 degrees, or one in which the lower part of the wellbore is parallel to the "pay zone." The pay zone is the section of a reservoir that contains hydrocarbons that can be produced economically.

(40) Wind and Solar Prices

- Source: Lazard's Levelized Cost of Energy Analysis 2012-2016.
- The Levelized Cost of Energy (LCOE) is the net present value of the per-megawatt hour cost of building and operating a generating plant over an assumed financial life and duty cycle. It is utilized as a means of comparing the cost-competitiveness of various energy-generating technologies of unequal life spans, project sizes, capital profiles and capacities.
- The respective levelized costs of each generation technology for each year are a simple average of the high and low values of the cost range associated with that generating technology during that year.
- Solar PV refers to solar photovoltaic.
- Solar PV – Community refers to a solar power plant whose electricity is shared by more than one household.
- Solar PV – Rooftop Residential refers to a Solar PV system that has its solar panels mounted on the rooftop of a residential structure.
- Solar PV – Crystalline Rooftop refers to crystalline solar panels mounted on rooftops. Crystalline panels are a type of solar panel that achieves the photoelectric effect, the chemical process that converts solar (light) energy to electricity, through use of crystalline silicone solar cells.
- Solar PV – Crystalline Utility-Scale refers to a solar power plant that uses crystalline panels to generate power that is fed into the grid, supplying a utility with energy.
- Solar PV – Thin Film Utility-Scale refers to a solar power plant that uses thin-film solar panels to generate power that is fed into the grid, supplying a utility with energy. Thin-film panels differ from crystalline panels in that the photoemissive materials, those which produce an electric current when contacted by sufficient solar energy, are not cut from crystals.
- Solar Thermal refers to solar technology that generates thermal energy to heat water or other fluids, rather than generating electricity.

(41) U.S. Total Renewable Energy Consumption

- Source: U.S. Energy Information Administration Monthly Energy Review.
- Total Renewable Energy Consumption is comprised of hydroelectric, geothermal, solar, wind, wood, waste and biofuels.
- Waste refers to biomass waste and is organic non-fossil material of biological origin that is a byproduct or a discarded product. Biomass waste includes municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural crop byproducts, straw and other biomass solids, liquids and gases.
- Biofuels are liquid fuels and blending components produced from biomass feedstocks, used primarily for transportation. Biomass is organic, non-fossil material comprised of decayed biological matter.

(42) U.S. Solar, Wind and Hydroelectric Energy Consumption

- Source: U.S. Energy Information Administration Monthly Energy Review.

(43) U.S. Wood, Waste, Biofuels and Geothermal Energy Consumption

- Source: U.S. Energy Information Administration Monthly Energy Review.
- Biofuels are liquid fuels and blending components produced from biomass feedstocks, used primarily for transportation. Biomass is organic, non-fossil material comprised of decayed biological matter.

(44) Corn and Ethanol Prices and Corn Cost per Gallon of Ethanol

- Source: U.S. Department of Agriculture Economic Research Service (corn and ethanol price).

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

(45) U.S. Solar Energy Consumption

- Source: U.S. Energy Information Administration Monthly Energy Review.
- Utility-scale solar energy refers to solar energy generated by plants with a capacity of at least one megawatt that is transmitted via the transmission grid to a high volume of consumers. Thus, Utility-Scale Solar Energy Consumption represents consumption of solar energy generated at plants with capacity of at least one megawatt.
- Distributed solar energy refers to solar energy generated by small-scale generating plants with capacity below one megawatt that is distributed over a specific locality with a small volume of consumers relative to utility-scale energy consumers. Thus, Distributed Solar Energy Consumption represents consumption of solar energy generated at small-scale generating plants.

(46) U.S. Solar Energy Net Generation

- Source: U.S. Energy Information Administration Monthly Energy Review.
- Distributed Solar Photovoltaic Generation refers to energy generated by small-scale photovoltaic generation plants. Small-scale is defined as a plant with capacity below one megawatt. Photovoltaic generation refers to solar energy generated by photovoltaic solar panels.
- Utility-Scale Solar Electricity Net Generation refers to generation of solar energy by plants with capacity equal to or above one megawatt. Net generation is defined as the amount of gross generation less electrical energy consumed by the generating plant for service or auxiliaries.

(47) Distributed Solar Photovoltaic Generation by Sector

- Source: U.S. Energy Information Administration Monthly Energy Review.
- Distributed Solar Photovoltaic Generation refers to energy generated by small-scale photovoltaic generation plants. Small-scale is defined as a plant with capacity below one megawatt. Photovoltaic generation refers to solar energy generated by photovoltaic solar panels.

(48) Utility-Scale Solar Electricity Net Generation by Sector

- Source: U.S. Energy Information Administration Monthly Energy Review.
- Utility-Scale Solar Electricity Net Generation refers to generation of solar energy by plants with capacity equal to or above one megawatt. Net generation is defined as the amount of gross generation less electrical energy consumed by the generating plant for service or auxiliaries.
- Gaps in the data represent periods for which there was no data reported, or the data value was trivially small and thus deemed unnecessary to report.

(49) U.S. Solar Capacity Installations

- Source: Solar Energy Industries Association Q1 2017 Solar Market Insight Report.
- The Investment Tax Credit (ITC) is a federal policy tax incentive that supports the deployment of solar energy in the United States. The ITC allows those who install a solar system to claim up to 30% of the price paid to install the system as a tax credit when filing Federal taxes, thereby significantly discounting the cost associated with transitioning to solar energy.

(50) U.S. Wind Power Capacity Installations

- Source: American Wind Energy Association U.S. Wind Energy Quarterly Market Report.
- Wind Power Generation Capacity Installations refers to non-utility-scale wind power capacity additions. Utility-scale is defined as installations of wind turbines larger than 100 kilowatts.

(51) Utility-Scale Wind Power Capacity Installations

- Source: American Wind Energy Association U.S. Wind Energy Quarterly Market Report.
- Utility-Scale Wind Capacity includes installations of wind turbines larger than 100 kilowatts. Capacity installations may not always equate to an equal increase in cumulative wind power capacity due to decommissioned, uprated and repowered wind turbines.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

(52) Wind Power Under Construction or in Advanced Development

- Source: American Wind Energy Association (AWEA) U.S. Wind Energy Quarterly Market Report.
- AWEA defines projects as being "in advanced development" if it has not yet begun construction, but has either signed a power purchase agreement, announced a firm turbine order, or been announced to proceed under utility ownership.

(53) U.S. Aggregated Energy Consumption by Sector

- Source: U.S. Energy Information Administration.
- Energy consumed by the electric power sector is primary energy only. Primary energy is energy in its original form, before any transformation to secondary or tertiary forms of energy. For example, coal can be converted to synthetic gas and then to electricity. Under these circumstances, coal is primary energy, synthetic gas is secondary energy and electricity is tertiary energy.

(54) U.S. Aggregated Energy Consumption by Source

- Source: U.S. Energy Information Administration.
- Total consumption of each category of energy is as accurate as possible. However, some data is unavailable or unreported and, thus, some total consumption values may be understated.
- Fossil Fuels includes coal, petroleum-based products, natural gas and natural gas-based products.
- Renewable Energy includes conventional hydroelectric, solar, biomass, nuclear, geothermal and wind.
- Biomass is a renewable energy source derived from organic matter such as wood, crop waste, or garbage, with wood being the largest contributor.
- Fossil Fuels and Renewable Energy consumption represent consumption of primary energy, which is energy in its original form, before transformation to secondary or tertiary forms of energy. Thus, to arrive at total energy consumption, Electricity Retail Sales (representing consumption of secondary and tertiary forms of energy) is added alongside consumption of Fossil Fuels and Renewable Energy.
- Electrical System Energy Losses are a deduction from total energy consumption, and are incorrectly represented as positively contributing to total energy consumption. Thus, total energy consumption figures in each year are overstated by the amount of electrical system energy losses.

(55) Electricity Prices by Sector

- Source: U.S. Energy Information Administration.

(56) Commercial Crude Oil Inventory

- Source: U.S. Energy Information Administration.
- U.S. Ending Stocks of Commercial Crude Oil represents stocks (inventory) of crude oil held in storage for commercial use. This figure excludes both lease stock and volumes in the Strategic Petroleum Reserve (SPR). Lease stock is crude oil stored in tanks at sites where producers are drilling on leased land. They're excluded from total commercial crude oil inventory because they aren't yet available for commercial use. The SPR is petroleum maintained by the Federal Government for use during periods of major supply interruption.
- Ending stocks (inventory) are primary stocks of crude oil held in storage as of midnight on the last day of the month. Primary stocks include crude oil held in storage at, or in, leases, refineries, natural gas processing plants, pipelines, tank farms and bulk terminals with the capacity to store a minimum of 50,000 barrels of petroleum products or that can receive petroleum products by tanker, barge or pipeline.

(57) Petroleum and Other Liquids Commercial Inventory

- Source: U.S. Energy Information Administration.
- Hydrocarbon Gas Liquids (HGLs) are molecules of carbon and hydrogen in various combinations. HGLs include alkanes, or paraffins (ethane, propane, butane, isobutene, natural gasoline) and alkenes, or olefins (ethylene, propylene, butylene, isobutylene).
- Unfinished Oils are all oils that require further processing and are produced by partial refining of crude oil. Unfinished Oils include napthas and lighter oils, kerosene and light gas oils, heavy gas oils and residuum.
- Other Hydrocarbons/Oxygenates are substances that increase the amount of oxygen in various gasoline blends when added to them. This category includes fuel ethanol, methanol and methyl tertiary butyl ether (MTBE).
- Total Motor Gasoline includes finished motor gasoline and motor gasoline blending components.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

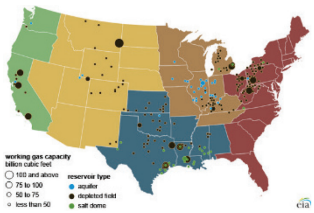
(57) Petroleum and Other Liquids Commercial Inventory (continued)

- Distillate Fuel Oil is a general classification for a variety of petroleum fractions produced in petroleum distillation operations. Included within this classification are No. 1, No. 2 and No. 4 diesel fuels (used in on-highway and off-highway diesel engines), as well as No. 1, No. 2 and No. 4 fuel oils (used primarily for space heating and electric power generation).
- Residual Fuel Oil is the general classification for heavy oils that remain after lighter oils are distilled away in the process of petroleum refining. Residual Fuel Oil includes No. 5 and No. 6 fuel oils. The former is used in steam-powered vessels, and the latter is used for electric power generation, space heating, vessel bunkering and industrial processes.
- Other Oils include aviation gasoline blending components, finished aviation gasoline, kerosene, petrochemical feedstocks, special napthas, lubricants, waxes, petroleum coke, asphalt and road oil, still gas and miscellaneous products.

(58) Natural Gas Underground Storage Capacity

- Source: U.S. Energy Information Administration.
- Underground Storage Capacity refers to total natural gas storage capacity in underground storage facilities called "salt domes," which are caverns hollowed out in subsurface salt formations. Salt domes are the primary means of natural gas storage in the United States.

U.S. Underground Natural Gas Storage Facilities by Type (July 2015)



(59) Commercial Crude Oil Refinery, Tank and Underground Storage Capacity and Utilization

- Source: U.S. Energy Information Administration.
- Commercial Crude Oil Storage Capacity refers to working storage capacity. Working capacity is the volume difference between a crude oil storage tank's maximum safe fill capacity and the volume below which pump suction is ineffective, called tank bottoms.
- Crude Oil Shell Storage Capacity is the design capacity of a petroleum storage tank. It includes tank bottoms, working storage capacity and contingency space. Contingency space is defined as available storage space above the defined maximum operating inventory level that remains empty during normal operations. Shell Storage Capacity is always greater than or equal to working storage capacity.
- Crude Oil Storage Capacity data is released only twice per year for the months of March and September. Thus, the data series excludes inventory levels for all months other than March and September of each year.

(60) Crude Oil and Natural Gas Pipeline Mileage

- Source: Pipeline and Hazardous Materials Safety Administration.
- The chart includes information from only Federal Energy Regulatory Commission-regulated pipeline companies.
- Crude Oil Pipeline Mileage represents total mileage of pipelines dedicated to the transport of crude oil and those dedicated to the transport of petroleum products. Pipeline Mileage for crude oil includes trunk lines only.
- Pipeline Mileage for natural gas includes both trunk and gathering lines.
- Trunk lines are synonymous with transmission lines, which are large, cross-country pipelines that move oil or gas from producing areas to refineries. Gathering lines are pipelines that transport oil or gas from the area in which it was produced to a storage facility which acts as an intermediate stop before transportation by truck, railcar, or trunk line.

(61) Crude Oil and Petroleum Products Pipeline Movements Between Petroleum Administration for Defense Districts (PADDs)

- Source: Federal Reserve Bank of St. Louis, with data provided by the U.S. Energy Information Administration.
- Crude Oil and Petroleum Products Pipeline Movements Between PADDs represents the total volume of crude oil and petroleum products transported between each PADD. The data does not include movements within each PADD.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

(62) Natural Gas Cumulative Interstate Pipeline Systems Capacity

- Source: U.S. Energy Information Administration.
- Cumulative Interstate Capacity refers to capacity of natural gas pipelines crossing between states. Thus, capacity of intrastate pipelines is not included and the data should not be interpreted as representing total capacity of natural gas pipelines.

(63) Crude Oil and Petroleum Products Exports to Mexico

- Source: U.S. Energy Information Administration.
- Petroleum Products include pentanes plus, liquefied petroleum gases, unfinished oils, finished motor gasoline, motor gasoline blending components, oxygenates, fuel ethanol, distillate fuel oil, kerosene, kerosene-type jet fuel, special napthas, residual fuel oil, waxes, petroleum coke, asphalt and road oil, lubricants and miscellaneous products.

(64) Truck Tonnage Index

- Source: U.S. Department of Transportation, Bureau of Transportation Statistics.
- The Truck Tonnage Index measures the gross tonnage of freight that is transported by motor carriers for a given month. The Index serves as an indicator of shipping activity in the United States.
- Created by the U.S. Department of Transportation, Bureau of Transportation Statistics via information published in the American Trucking Association (ATA) Monthly Truck Tonnage Report.
- In January 2018, ATA revised the seasonally adjusted index back five years as part of its annual revision. In addition, ATA re-indexed the seasonally adjusted and not seasonally adjusted tonnage indexes to 2015 = 100 back to 1973.

(65) Heavy Truck Sales

- Source: Federal Reserve Bank of St. Louis.
- Heavy Trucks are trucks with more than 14,000 pounds gross vehicle weight.

(66) Trucking Conditions Index

- Source: FTR Transportation Intelligence.
- The Trucking Conditions Index summarizes the status of the trucking industry through tracking changes in six major conditions including freight volumes, freight rates, fleet capacity, fleet bankruptcies, fuel price and financing.
- An index value greater than zero represents a positive environment in the truck market, and an index value below zero represents a negative environment. An index value above 10 is a sign that volumes, prices and margin are in a solidly favorable range.

(67) Freight Transportation Services Index

- Source: Federal Reserve Bank of St. Louis.
- The Freight Transportation Services Index measures the output of the for-hire freight transportation industry and consists of data from for-hire trucking, rail, inland waterways, pipelines and air freight.

(68) Crude Oil Refinery Receipts by Transportation Method

- Source: U.S. Energy Information Administration.
- Refinery Receipts by Pipeline, Tanker, Barge, Truck and Rail refer to total volumes of crude oil of domestic and international origin that are in transit to, or received by, domestic refineries. Volumes of crude oil in transit via pipeline are excluded from receipts. Foreign crude oil is included in receipts only after entry through customs.
- Refinery inputs track volumes of crude oil that are entered into refining processes (e.g., distillation units, cokers, etc.).
- The volume difference between refinery receipts and refinery inputs is that which is in transit but not yet received by refineries plus that which has been received and is held in bonded storage, awaiting entry into refining processes.

(69) Crude Oil Movements by Tanker and Barge Movements Between Petroleum Administration for Defense Districts (PADDs)

- Source: U.S. Energy Information Administration.
- The data series shown on the chart is an aggregate of all crude oil movements between Petroleum Administration for Defense Districts (PADDs). This includes crude oil movement from PADD 1 to PADD 2 and PADD 3; PADD 2 to PADD 1 and PADD 3; and PADD 3 to PADD 1, PADD 2 and PADD 5.
- PADD 1 is the East Coast region, PADD 2 is the Midwest region, PADD 3 is the Gulf Coast region and PADD 5 is the West Coast region.

DATA CENTER: ABBREVIATIONS & ACRONYMS, DEFINITIONS, DESCRIPTIONS AND CHART NOTES

(70) Movements of Crude Oil by Rail
- Source: U.S. Energy Information Administration.

(71) Average Weekly Rail Carloads of Petroleum and Petroleum Products
- Source: Association of American Railroads.
- Monthly aggregates of the average weekly number of rail carloads transporting petroleum and petroleum products in the United States.
- Excludes the U.S. operations of Canadian railroads.

(72) U.S. Manufacturers' Monthly Shipments and U.S. Purchasing Managers' Index (PMI)
- Sources: For Manufacturers' Monthly Shipments - U.S. Census Bureau Manufacturers' Shipments, Inventories and Orders Survey; and for U.S. Purchasing Managers' Index (PMI) – Institute for Supply Management Manufacturing Report on Business®.
- A PMI above 50 represents expansion within the manufacturing sector compared with the prior month.

(73) U.S. New Housing Starts and Total U.S. Construction Spending
- Source: U.S. Census Bureau.

(74) London Interbank Offered Rate (LIBOR), Based on U.S. Dollar
- Source: ICE Benchmark Administration Limited via the Federal Reserve Bank of St. Louis.
- The London Interbank Offered Rate is the average interest rate at which leading banks borrow funds of a sizeable amount from other banks in the London market. LIBOR is the most widely used benchmark or reference rate for short term interest rates. The chart values are monthly percent averages of daily figures and are not seasonally adjusted.

(75) Bank Prime Loan Interest Rates
- Source: Federal Reserve Bank of St. Louis.
- The Bank Prime Loan Interest Rate is that posted by a majority of top 25 (by assets in domestic offices) insured, U.S.-chartered commercial banks. Prime is one of several base rates used by banks to price short-term business loans.
- The chart values are monthly percent averages of daily figures and are not seasonally adjusted.

(76) Commercial and Industrial Loans vs. Banking Standards
- Source: Federal Reserve Bank of St. Louis.
- Net Percentage of Domestic Banks Tightening Standards for Commercial and Industrial Loans to large and middle-market firms. Quarterly, not seasonally adjusted.
- Commercial and Industrial Loans, All Commercial Banks. Monthly, seasonally adjusted.

(77) U.S. Treasury Yield Curve
- Source: U.S. Treasury.
- U.S. Treasury Yield Curve rates are commonly referred to as Constant Maturity Treasury (CMT) rates. Yields are interpolated by the U.S. Treasury from the daily yield curve.
- The curve, which relates the yield on a security to its time to maturity, is based on the closing market bid yields on actively traded U.S. Treasury securities in the over-the-counter market.

(78) Corporate Spreads to Treasuries by Quality
- Source: Federal Reserve Bank of St. Louis.
- Corporate Spreads to Treasuries represent the spread, or difference, between the yield curve of an index of corporate bonds of a given rating category and the spot rate U.S. Treasury curve. The spot rate U.S. Treasury curve is a yield curve that uses U.S. Treasury spot rates rather than yields, and represents the rate for a zero-coupon U.S. Treasury bond.
- The corporate bond yield indexes are Bank of America Merrill Lynch Option-Adjusted Spread (OAS) Indexes for all bonds with a given investment rating of AA, BB or CCC or below that are publically issued in the U.S. domestic market. Each respective OAS index is calculated using each constituent bond's OAS, weighted by market capitalization. A bond's OAS is the bond's yield spread relative to the risk-free rate of return, typically the U.S. Treasury securities yield, adjusted to account for an embedded option.

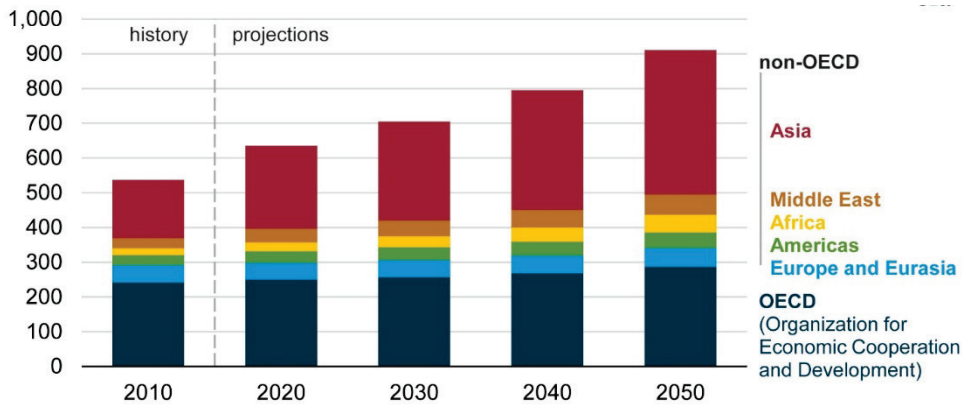
HOT TOPICS

NATURAL GAS: THE VIABLE PATH TO LOWER CARBON

Natural gas is by far the greatest contributor to lower carbon emissions in the U.S. It will be an even more important part of the solution globally, where much bigger climate problems loom. Countries like India, China and those on the African continent have two billion people with very limited or no access to electricity. Their leaders are driving to make energy available one way or another to their poorest people. Without access to enough natural gas they will resort to fuels that emit far more greenhouse gasses and other pollutants.

To put it in global context, the U.S. Energy Information Administration (EIA) in a September 24, 2019 release projected that global energy consumption will grow by 50% between now and 2050, with nearly all of that growth occurring in Asia, Africa, Latin America and the Middle East. These regions' consumption (which includes China, India and Africa) will grow by 215% and account for 68% of global energy consumption, while the developed (OECD) countries' consumption will grow by only 17%.

Global Primary Energy Consumption by Region 2010-2050
(quadrillion British thermal units)



Source: U.S. Energy Information Association.

Even though natural gas is the only currently realistically available path to lower emissions and greater integration of renewables over the next few decades, it's critical role as a clean source of power is discounted and targeted for elimination by those who ignore the realities of what life would be like without it, here in the U.S. but especially for the world's poorest.

According to EIA, natural gas now fuels 35% of U.S. electric generating capacity, and its share is growing. As a direct result, U.S. carbon emissions have declined to levels not seen since the early 1990s. The reason is that the incredible new and growing abundance of shale gas (now 70% of all U.S. natural gas production), together with the infrastructure to move it, makes it a far more economical fuel for electricity generation. Gas provides reliable power when wind or solar aren't producing – which can be up to 75% of the time.

HOT TOPICS

NATURAL GAS: THE VIABLE PATH TO LOWER CARBON (CONTINUED)

Even more important to the climate, U.S. natural gas is being produced in such abundance and at very low cost that it can be exported in large volumes to countries around the world with little access to locally-sourced gas, but which would like to switch to lower-emitting fuels if they could. With U.S. liquefied natural gas (LNG), now they can. But if they do not or cannot, by 2040 just China and India alone will account for 42% of global CO2 emissions, compared to the U.S.'s 12%.

So why is natural gas being opposed, rather than embraced and promoted, by many climate change activists? Why are they trying to shut down the only viable path to the lower carbon future we all want? Why are they trying to block the critical infrastructure needed to produce, consume and export this clean fuel?

We suggest three primary reasons: money, political power and ignoring the facts.

Environmental non-government organizations (NGOs), the groups financing both grass-roots political activism and endless court challenges, cannot raise money from either their small or major donor bases with a complex message that essentially says, "we hate coal and oil but we love natural gas." This is way too nuanced, especially when natural gas often comes out of the same hole in the ground with crude oil. Easier to say, "stop fossil fuels now!" And you can't attack the major producers as the great climate villains if you support natural gas as a transitional fuel and they are the world's largest producers of it.

The same principle holds true for political power. The simplest messages are the ones that resonate. With observable events such as destructive wildfires and storms, ice melting and sea-level rise, it's easier to rally voters around a simple message calling for an immediate end to combustion of fossil fuels than to chart a complex path to lower carbon globally. It's harder to rally the American voter around the simple truth that even if we force a too-rapid transition to renewables and tank our grid, our economy, and our standard of living in the process, it would not move the global climate needle because what happens not in America but in Asia and Africa will determine the outcome.

The dominant messages on the anti-fossil fuel side are consistent. "If elected I will ban fracking, stop pipelines, end oil and gas production offshore and on federal lands, raise taxes on business, hold the oil and gas producers financially liable for storm and fire damage and the cost of coastal erosion and seawalls, and more."

Too-seldom heard are real solutions such as funding research and development into carbon capture, utilization and storage (CCUS), encouraging other countries to switch to natural gas and providing them with LNG, incentivizing investments in new technologies to reduce methane release, and streamlining the permitting of pipelines to supply LNG exports and relieve midstream capacity bottlenecks to reduce flaring.

We remain optimistic that a majority of voters will respond positively to these intelligent solutions because they are key to the promise of a lower carbon environment, a stable and benign climate, and an enviable standard of living enabled by abundant, affordable, reliable and clean energy.

HOT TOPICS

ARE THE PROPOSED BANS ON FRACKING REALISTIC?

Three of the leading contenders for the Democratic presidential nomination want to ban fracking in the United States. Senators Bernie Sanders, Elizabeth Warren and Kamala Harris have come out against fracking for oil and natural gas, promising to end the practice once in the White House. In addition, a group of political activists sent a letter to the United Nations asking the General Assembly to endorse a global ban on fracking. Environmentalists hope a ban on fracking would reduce U.S. reliance on fossil fuels, while other opponents of fracking have concerns about the potential for chemicals used in the process to seep into the ground and water supplies.

Fracking relies on two technologies: hydraulic fracturing, which involves pumping a mixture of water, sand and chemical into rock formations deep below the earth's surface to release reserves of oil and gas; and horizontal drilling, which allows for the efficient recovery of that released oil and gas.

Fracking has led to a resurgence of American oil production, as shale oil (fracking) companies now produce more than 8 million barrels of crude oil a day, or about 10% of global supply. In total, the U.S. now produces more than 12 million barrels of oil per day when other sources of production are included, compared to 5 million barrels per day in 2008.(1)

Are these proposals to ban fracking realistic? Does the President have the authority to implement a ban and what are the market implications of such a move?

According to a CNN fact check report, without an act of Congress, the President could not issue an outright ban on fracking across the United States. However, there are a number of regulatory and executive actions an administration could take to prevent or shrink the use of fracking technology, particularly on federal land. The problem is that most fracking takes place on private land, and any attempts to limit it would likely face many obstacles.

To prevent fracking on U.S. private land, an administration would have to work through regulatory powers which would face a myriad of legal challenges from states, businesses and local governments. If the administration worked with Congress to pass new laws on fracking, these laws could be undone by a future administration.(2)

Senator Warren's campaign said it would try to enact a bill through Congress, as well as use rules and regulations (like the Clean Air Act and the Safe Water Act) to work toward eliminating fracking. Senator Sanders' campaign plans to take similar actions. The Obama administration attempted to increase regulations on fracking and was mostly prevented by the courts.

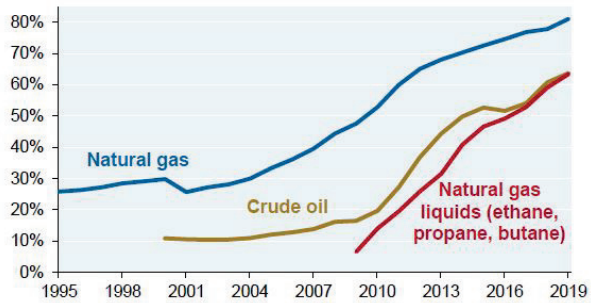
Now for the market implications of a ban on fracking. Due to its share in the markets, energy experts say cutting off a significant portion of U.S. shale oil (fracking) supply could have profound, detrimental economic effects in the United States.

Fracking now accounts for 60% to 80% of U.S. oil, natural gas and natural gas liquids (NGL) production. In addition, domestically produced oil and gas derived from fracking accounts for 40% of total U.S. primary energy consumption.(3)

HOT TOPICS

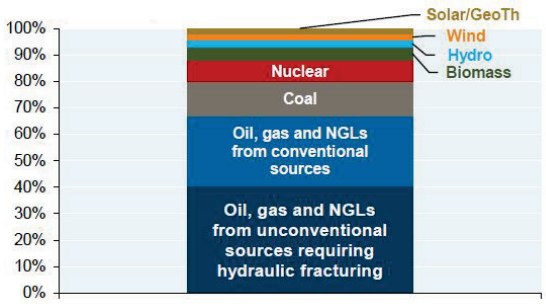
ARE THE PROPOSED BANS ON FRACKING REALISTIC? (CONTINUED)

Percentage of U.S. Oil and Gas Production Derived from Fracking



Source: U.S. Energy Information Association, U.S. Department of Energy, J.P. Morgan.

Sources of U.S. Primary Energy Consumption



Source: U.S. Energy Information Association, BP, Society of Petroleum Engineers, S&P Platts, J.P. Morgan.

According to Baker Hughes, nearly 90% of all new oil and gas wells drilled today are horizontal, fracked wells.[4] An immediate ban on fracking would result in an immediate decline in U.S. oil and gas production. Net oil imports, which have been trending down for years and are currently less than 1 million barrels per day, would immediately increase and our dependence on foreign oil would begin to grow. The chart below shows how net imports of oil, natural gas and coal together have decreased significantly since 2005.[3]

U.S. Net Imports of Oil, Natural Gas and Coal (million tons of oil equivalency)

Source: U.S. Energy Information Association,, J.P. Morgan.

HOT TOPICS

ARE THE PROPOSED BANS ON FRACKING REALISTIC? (CONTINUED)

Since it is produced as a byproduct of fracking for oil, we are in the midst of a natural gas boom. With this resurgence of natural gas production, the U.S. has become the top natural gas producer in the world and has started exporting LNG to other countries. With a fracking ban, natural gas exports would move back into natural gas imports.

Liquefying and transporting natural gas abroad has become a growing business for the U.S. America's LNG export capacity is expected to reach over 10 billion cubic feet per day in 2020, which is almost double the capacity in 2018.[5]

Fracking produces natural gas and when we use more natural gas we decrease our use of coal to produce electricity. The natural gas produced through fracking has become abundant, cheap and a more environmentally friendly replacement for coal in the generation of electricity. In 2016, more than 31% of the electricity in the U.S. was produced with coal. The global community is even more dependent on coal with more than 38% of total electricity generation in 2016 produced with coal.[5] Our natural gas is a growing alternative to nations like China and India which burn a lot of coal.

Fracking provides the U.S. with comparatively cheap gasoline, makes electricity affordable, shuts down coal-fired power plants, makes OPEC less powerful and gives Europe a choice for natural gas. Before fracking Russia had significant control in the natural gas energy sector. America's new dominance has created options for global consumers. Oil prices spiked this month following the attacks that disrupted about half of Saudi Arabia's oil capacity, which accounts for about 5% of the daily global oil supply.[2] The market reaction would have been much greater were it not for the substantial increase in U.S. crude oil production over the past decade made possible by fracking. A ban on fracking would reverse these things and send energy prices higher.

Although U.S. renewable power generation is growing, the pace is not fast enough to abandon fractured natural gas and oil given U.S. goals of decommissioning aging coal and nuclear power plants and reducing its reliance on foreign oil.[3] Wind and solar are part time energy sources and the technology for large-scale energy storage is yet to be developed. As a result, wind and solar together account for only 7% of U.S. electricity production and even less globally.[6]

Despite what candidates are saying, the reality is that proposals to ban fracking are not at all practical from a political or market perspective. A combination of natural gas, wind and solar will be vital to the country's energy requirements in the future. All three will be important and should be working together.

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1) The Wall Street Journal, "Fracking Ban, Embraced by Some Democratic Hopefuls, Could Hit Economy," September 22, 2019.
2) CNN, "Fact Check: Some Democratic Presidential Candidates Want to Ban Fracking. Could They?" September 16, 2019.
3) J.P. Morgan, "Eye on the Market," September 13, 2019.
4) Forbes, "Why a Ban on Fracking Will Never Happen," September 7, 2019.
5) The Hill, "Fracking Ban Could Have Unintended Consequence of Boosting Coal," September 22, 2019.
6) Lehigh Valley Live, "Ban Fracking? Some Democratic Candidates Ignoring the Facts," September 12, 2019.

PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

PETROLEUM PRODUCTS

EQUITY COMPARABLES (1)

Petroleum Products (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
Calumet Specialty Products Partners, L.P.	$3,550	$261	7.4%	$4.19	52.7%	$325	$1,975	0.6x	7.6x	5.9x
Chevron Corporation	152,955	33,243	21.7	124.44	96.8	237,047	266,581	1.7x	8.0x	0.8x
CVR Energy, Inc.	6,846	910	13.3	49.99	99.2	5,026	6,120	0.9x	6.7x	0.8x
EnLink Midstream, LLC	7,633	1,085	14.2	10.09	56.1	4,916	11,111	1.5x	10.2x	4.3x
Gibson Energy Inc.	5,444	333	6.1	17.85	96.6	2,593	3,548	0.7x	10.6x	3.1x
Exxon Mobil Corporation	271,577	36,183	13.3	76.63	87.7	324,229	370,924	1.4x	10.3x	1.3x
HollyFrontier Corporation	17,795	1,972	11.1	46.28	60.4	7,846	10,783	0.6x	5.5x	1.0x
Keyera Corp.	3,135	637	20.3	25.76	86.6	5,501	7,555	2.4x	11.9x	3.4x
Marathon Petroleum Corporation	117,327	8,712	7.4	55.88	63.2	37,027	76,942	0.7x	8.8x	3.4x
Parkland Fuel Corporation	12,527	851	6.8	31.76	87.6	4,669	7,762	0.6x	9.1x	3.0x
Phillips 66	109,836	6,151	5.6	93.54	75.5	42,425	56,331	0.5x	9.2x	1.8x
NuStar Energy L.P.	1,916	657	34.3	27.14	93.2	2,925	7,708	4.0x	11.7x	5.4x
Valero Energy Corporation	107,343	5,917	5.5	85.61	69.9	35,720	44,789	0.4x	7.6x	1.5x
Median			**11.1%**		**86.6%**			**0.7x**	**9.1x**	**3.0x**
Mean			**12.9%**		**78.9%**			**1.2x**	**9.0x**	**2.7x**

SELECTED TRANSACTIONS

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
4/24/2019	Anadarko Petroleum Corporation (NYSE:APC)	Occidental Petroleum Corporation (NYSE:OXY)	$57,809.2	4.4x	7.6x
10/22/2018	EnLink Midstream Partners, LP (NYSE:ENLK)	EnLink Midstream, LLC (NYSE:ENLC)	$12,923.5	1.7x	12.2x
8/27/2018	Blue Ridge Mountain Resources, Inc. (OTCPK:BRMR)	Eclipse Resources Corporation (NYSE:ECR)	$348.0	3.6x	12.8x
8/1/2018	Energy Transfer Operating, LP	Energy Transfer, LP (NYSE:ET)	$69,430.8	2.1x	10.9x
5/17/2018	Enbridge Energy Partners, LP (NYSE:EEP)	Enbridge Inc. (TSX:ENB)	$15,925.8	6.6x	10.1x
4/30/2018	Andeavor (NYSE:ANDV)	Marathon Petroleum Corporation (NYSE:MPC)	$35,103.0	0.9x	12.7x
11/8/2017	Alon USA Partners, LP	Delek US Holdings, Inc. (NYSE:DK)	$1,050.4	0.5x	5.9x
4/5/2017	Houghton International Inc.	Quaker Chemical Corporation (NYSE:KWR)	$1,415.4	-	11.8x
2/2/2017	ONEOK Partners, LP	ONEOK, Inc. (NYSE:OKE)	$23,722.4	2.7x	12.9x

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(2) LTM is defined as last twelve months.
(3) Total Enterprise Value is defined as market capitalization plus total debt less cash and cash equivalents.
(4) Net Debt is defined as total debt less cash and cash equivalents.

PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

NATURAL GAS

EQUITY COMPARABLES (1)

Natural Gas (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
Alliant Energy Corporation	$3,580	$1,238	34.6%	$49.08	97.8%	$11,651	$17,993	5.0x	14.5x	5.2x
AltaGas Ltd.	4,465	890	19.9	15.14	69.6	4,183	11,830	2.6x	13.3x	7.1x
Atmos Energy Corporation	2,903	1,135	39.1	105.56	97.3	12,349	15,895	5.5x	14.0x	3.2x
Avista Corporation	1,366	437	32.0	44.60	84.3	2,932	5,051	3.7x	11.6x	5.0x
Baytex Energy Corp.	1,063	739	69.5	1.55	42.9	864	2,487	2.3x	3.4x	2.0x
Calumet Specialty Products Partners, L.P.	3,550	261	7.4	4.19	52.7	325	1,975	0.6x	7.6x	5.9x
Cenovus Energy Inc.	16,061	2,919	18.2	8.83	77.8	10,849	18,193	1.1x	6.2x	2.3x
Chesapeake Utilities Corporation	700	158	22.5	95.02	99.0	1,558	2,196	3.1x	13.9x	4.2x
Corning Natural Gas Holding Corporation	36	9	24.5	21.50	91.5	65	122	3.4x	13.9x	5.8x
Crestwood Equity Partners LP	3,217	326	10.1	35.77	88.2	2,570	5,208	1.6x	16.0x	6.8x
Dominion Energy, Inc.	14,640	6,756	46.1	77.32	97.3	62,039	105,461	7.2x	15.6x	6.2x
EnLink Midstream, LLC	7,633	1,085	14.2	10.09	56.1	4,916	11,111	1.5x	10.2x	4.3x
Enbridge Inc.	37,480	8,945	23.9	36.16	92.3	73,181	132,712	3.5x	14.8x	5.7x
Enterprise Products Partners L.P.	35,588	7,859	22.1	28.87	96.1	63,184	90,662	2.5x	11.5x	3.4x
Epsilon Energy Ltd.	30	18	58.3	4.17	88.3	102	86	2.8x	4.8x	(0.9)x
Eversource Energy	8,607	2,638	30.7	75.76	97.3	24,051	39,412	4.6x	14.9x	5.8x
Genesis Energy, L.P.	2,689	601	22.4	21.90	85.8	2,684	7,087	2.6x	11.8x	6.0x
National Fuel Gas Company	1,689	719	42.5	52.75	85.5	4,553	6,585	3.9x	9.2x	2.8x
New Jersey Resources Corporation	2,760	240	8.7	49.77	96.0	4,441	5,708	2.1x	23.8x	5.9x
Northwest Natural Holding Company	727	256	35.3	69.50	96.8	2,114	3,021	4.2x	11.8x	3.4x
MDU Resources Group, Inc.	4,885	658	13.5	25.80	87.1	5,111	7,436	1.5x	11.3x	3.8x
OGE Energy Corp.	2,214	765	34.6	42.56	95.8	8,519	11,832	5.3x	15.5x	4.5x
ONE Gas, Inc.	1,654	454	27.4	90.30	97.5	4,758	6,355	3.8x	14.0x	3.5x
ONEOK, Inc.	11,768	2,354	20.0	68.81	95.6	28,402	38,880	3.3x	16.5x	4.7x
RGC Resources, Inc.	68	19	28.6	30.52	97.4	246	330	4.8x	17.0x	4.6x
South Jersey Industries, Inc.	1,796	306	17.1	33.73	91.9	3,109	5,918	3.3x	19.3x	9.7x
Southwest Gas Holdings, Inc.	3,001	632	21.1	89.62	97.7	4,785	7,102	2.4x	11.2x	3.8x
Summit Midstream Partners, LP	492	242	49.2	7.44	42.0	615	2,144	4.4x	8.9x	5.7x
Targa Resources Corp.	9,879	1,325	13.4	39.26	66.3	9,127	18,324	1.9x	13.8x	5.1x
TC Energy Corporation	10,641	6,606	62.1	49.63	97.0	46,096	88,633	8.3x	13.4x	5.7x
Valener Inc	66	0	0.0	19.74	98.4	777	911	13.8x	NM	NM
Median			**23.9%**		**92.3%**			**3.3x**	**13.6x**	**4.9x**
Mean			**28.0%**		**85.8%**			**3.8x**	**12.8x**	**4.7x**

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

NATURAL GAS

SELECTED TRANSACTIONS (1)

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
4/24/2019	Anadarko Petroleum Corporation (NYSE:APC)	Occidental Petroleum Corporation (NYSE:OXY)	$57,809.2	4.4x	7.6x
11/8/2018	Western Gas Partners, LP (NYSE:WES)	Western Gas Equity Partners, LP (NYSE:WGP)	$13,427.9	6.5x	12.0x
10/22/2018	EnLink Midstream Partners, LP (NYSE:ENLK)	EnLink Midstream, LLC (NYSE:ENLC)	$12,923.5	1.7x	12.2x
10/9/2018	Antero Midstream Partners LP (NYSE:AM)	Antero Midstream GP LP (NYSE:AMGP)	$7,359.7	7.7x	11.5x
9/28/2018	American Midstream Partners, LP (NYSE:AMID)	ArcLight Capital Partners, LLC	$1,595.1	2.0x	14.2x
8/27/2018	Blue Ridge Mountain Resources, Inc. (OTCPK:BRMR)	Eclipse Resources Corporation (NYSE:ECR)	$348.0	3.6x	12.8x
8/1/2018	Energy Transfer Operating, LP	Energy Transfer, LP (NYSE:ET)	$69,430.8	2.1x	10.9x
5/17/2018	Williams Partners LP (NYSE:WPZ)	The Williams Companies, Inc. (NYSE:WMB)	$57,052.1	7.0x	14.1x
4/25/2018	Rice Midstream Partners LP (NYSE:RMP)	EQM Midstream Partners, LP (NYSE:EQM)	$2,443.1	7.7x	9.9x
11/1/2017	Southcross Energy Partners, LP (NYSE:SXE)	American Midstream Partners, LP (NYSE:AMID)	$624.1	1.0x	14.8x
7/19/2017	Avista Corporation (NYSE:AVA)	Hydro One Limited (TSX:H)	$5,332.4	3.7x	11.3x
5/15/2017	Ceiba Energy Services Inc. (TSXV:CEB)	Secure Energy Services Inc. (TSX:SES)	$28.2	4.3x	30.3x
4/3/2017	Rockies Express Pipeline LLC	Tallgrass Energy Partners, LP (NYSE:TEP)	$4,043.9	-	7.3x
2/21/2017	Delta Natural Gas Company, Inc. (NasdaqGS:DGAS)	PNG Companies LLC	$260.2	3.7x	13.7x
2/1/2017	ONEOK Partners, LP	ONEOK, Inc. (NYSE:OKE)	$23,721.4	2.3x	12.9x
1/25/2017	WGL Holdings, Inc. (NYSE:WGL)	AltaGas Ltd. (TSX:ALA)	$6,634.5	2.7x	15.3x

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

PROPANE AND HEATING/FUEL OIL

EQUITY COMPARABLES (1)

Propane and Heating/Fuel Oil (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
Ferrellgas Partners, L.P.	$1,753	$198	11.3%	$0.95	26.5%	$93	$2,117	1.2x	10.7x	10.6x
NGL Energy Partners LP	24,810	425	1.7	14.77	97.4	1,861	4,363	0.2x	10.3x	7.2x
Spire Inc.	1,966	495	25.2	83.92	96.3	4,259	7,016	3.6x	14.2x	5.3x
Star Group, L.P.	1,748	65	3.7	9.99	97.5	500	695	0.4x	10.7x	2.4x
Suburban Propane Partners, L.P.	1,289	268	20.8	24.29	98.6	1,498	2,748	2.1x	10.3x	4.6x
UGI Corporation	7,443	1,218	16.4	53.41	90.1	9,303	13,917	1.9x	11.4x	3.4x
Median			**13.8%**		**96.9%**			**1.5x**	**10.7x**	**5.0x**
Mean			**13.2%**		**84.4%**			**1.6x**	**11.2x**	**5.6x**

SELECTED TRANSACTIONS

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
5/9/2019	Sheldon Gas Company/Sheldon Oil Company	Superior Plus Corp. (TSX:SPB)	$15.9	-	-
4/2/2019	AmeriGas Partners, LP (NYSE:APU)	UGI Corporation (NYSE:UGI)	$6,149.2	2.2x	10.5x
3/26/2019	Substantially all of the Propane Distribution Assets of Phelps Sungas, Inc. and BMK of Geneva, Inc.	Superior Plus Corp. (TSX:SPB)	$19.5	-	-
2/7/2019	Propane Assets and Operations of Propane Retailer in West Coast	Suburban Propane, LP	$12.0	-	-
1/30/2019	Wholesale Propane Business of Gas Supply Resources LLC	NGL Energy Partners LP (NYSE:NGL)	$90.0	-	-
10/18/2018	Propane Distribution Assets of Musco Fuel & Propane LLP	Superior Plus Corp. (TSX:SPB)	$14.5	-	-
10/11/2018	Salathe Gas Company, LLC/North Star Exchange, Inc.	Ferrellgas Partners, LP (NYSE:FGP)	-	-	-
9/18/2018	Propane Distribution and Other Assets of Porco Energy Corp	Superior Plus Corp. (TSX:SPB)	$15.5	-	-
9/14/2018	United Liquid Gas Company	Superior Plus Corp. (TSX:SPB)	-	-	-
7/12/2018	Diamond Propane, Inc.	Ferrellgas Partners, LP (NYSE:FGP)	-	-	-
5/30/2018	NGL Propane, LLC	Superior Plus Energy Services, Inc.	$900.0	-	10.6x
5/8/2018	Propane Distribution Assets of Blue Flame Gas Inc.	Superior Plus Corp. (TSX:SPB)	$8.0	-	-

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

DRILLING

EQUITY COMPARABLES (1)

Drilling (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
AKITA Drilling Ltd.	$126	$15	11.7%	$1.91	41.6%	$77	$147	1.2x	9.9x	3.9x
Baker Hughes, a GE company	23,538	2,847	12.1	24.63	69.3	12,698	35,244	1.5x	12.4x	1.7x
CES Energy Solutions Corp.	1,019	110	10.8	1.85	47.2	493	858	0.8x	7.8x	3.1x
Diamond Offshore Drilling, Inc.	941	136	14.5	8.87	41.5	1,221	2,966	3.2x	21.8x	13.4x
Ensign Energy Services Inc.	1,114	272	24.4	3.28	59.6	520	1,832	1.6x	6.7x	4.6x
Halliburton Company	23,775	3,877	16.3	22.74	48.4	19,874	29,985	1.3x	7.7x	2.6x
Helmerich & Payne, Inc.	2,853	798	28.0	50.62	68.6	5,539	5,760	2.0x	7.2x	0.1x
Independence Contract Drilling, Inc.	204	53	25.9	1.58	31.3	120	242	1.2x	4.6x	2.3x
National Oilwell Varco, Inc.	8,624	431	5.0	22.23	45.3	8,579	10,710	1.2x	24.8x	5.0x
Precision Drilling Corporation	1,225	296	24.1	1.88	46.2	552	1,792	1.5x	6.1x	3.9x
Secure Energy Services Inc.	2,366	130	5.5	5.46	75.6	869	1,206	0.5x	9.3x	2.8x
Trinidad Drilling Ltd.	461	111	24.2	1.28	79.6	351	734	1.6x	6.6x	3.4x
Unit Corporation	790	353	44.7	8.89	30.6	493	1,392	1.8x	3.9x	2.2x
Valaris plc	1,820	167	9.2	8.53	22.4	1,685	6,219	3.4x	37.3x	36.7x
Median			**15.4%**		**46.7%**			**1.5x**	**7.8x**	**3.2x**
Mean			**18.3%**		**50.5%**			**1.6x**	**11.9x**	**6.1x**

SELECTED TRANSACTIONS

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
10/8/2018	Rowan Companies plc (NYSE:RDC)	Ensco plc (NYSE:ESV) / Valaris plc (NYSE:VAL)	$3,139.1	3.8x	43.9x
10/1/2018	Sidewinder Drilling LLC	Independence Contract Drilling Inc. (NYSE:ICD)	$291.8	2.6x	45.1x
8/27/2018	Blue Ridge Mountain Resources, Inc. (OTCPK:BRMR)	Eclipse Resources Corporation (NYSE:ECR)	$347.9	3.6x	12.8x
8/13/2018	Trinidad Drilling Ltd. (TSX:TDG)	Ensign Energy Services Inc. (TSX:ESI)	$714.0	1.5x	5.1x
6/5/2018	Xtreme Drilling Corp.	AKITA Drilling Ltd. (TSX:AKT.A)	$155.0	2.8x	162.4x
2/15/2018	Layne Christensen Company (NasdaqGS:LAYN)	Granite Construction Incorporated (NYSE:GVA)	$491.9	1.0x	16.5x
5/30/2017	Atwood Oceanics, Inc. (NYSE:ATW)	Ensco plc (NYSE:ESV)	$1,759.6	2.2x	4.7x
5/19/2017	Savanna Energy Services Corp.	Total Energy Services Inc. (TSX:TOT)	$458.2	1.4x	16.6x

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

LUBRICANTS AND GREASES

EQUITY COMPARABLES (1)

Lubricants and Greases (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
Albemarle Corporation	$3,417	$933	27.3%	$70.41	64.8%	$7,460	$9,138	2.7x	9.8x	1.7x
Ashland Global Holdings Inc.	3,705	633	17.1	79.97	92.3	5,016	7,388	2.0x	11.7x	3.9x
Clean Harbors, Inc.	3,351	501	14.9	71.10	92.1	3,972	5,516	1.6x	11.0x	3.0x
CSW Industrials, Inc.	363	79	21.6	68.15	90.1	1,024	1,029	2.8x	13.1x	0.4x
FMC Corporation	4,864	1,319	27.1	82.95	89.4	10,921	14,196	2.9x	10.8x	2.6x
Ingevity Corporation	1,219	350	28.7	105.17	87.3	4,401	5,843	4.8x	16.7x	4.0x
Kraton Corporation	1,923	321	16.7	31.07	61.9	995	2,590	1.3x	8.1x	4.8x
NewMarket Corporation	2,202	427	19.4	400.94	88.6	4,486	5,258	2.4x	12.3x	1.6x
Ocean Bio-Chem, Inc.	42	5	12.2	3.29	68.8	31	36	0.8x	6.9x	0.9x
Quaker Chemical Corporation	851	118	13.9	202.88	90.5	2,705	2,672	3.1x	22.6x	(0.4)x
Stepan Company	1,937	219	11.3	91.91	96.4	2,078	2,122	1.1x	9.7x	(0.0)x
Synalloy Corporation	314	21	6.8	15.62	63.0	140	267	0.8x	12.5x	5.7x
Trecora Resources	283	23	8.2	9.57	61.3	236	349	1.2x	15.1x	4.7x
Valvoline Inc.	2,355	434	18.4	19.53	84.3	3,675	4,909	2.1x	11.3x	2.8x
Median			**16.9%**		**88.0%**			**2.0x**	**11.5x**	**2.7x**
Mean			**17.4%**		**80.8%**			**2.1x**	**12.3x**	**2.5x**

SELECTED TRANSACTIONS

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
7/12/2019	Milacron Holdings Corp. (NYSE:MCRN)	Hillenbrand, Inc. (NYSE:HI)	$2,051.1	1.7x	12.9x
4/23/2019	Synalloy Corporation (NasdaqGM:SYNL)	Privet Fund Management, LLC	$308.8	1.0x	10.9x
9/13/2018	MPM Holdings Inc. (OTCPK:MPMQ)	KCC Corporation (KOSE:A002380); SJL Partners; Wonik QnC Corporation (KOSDAQ:A074600)	$2,664.9	1.0x	7.4x
8/15/2018	KMG Chemicals, Inc.	Cabot Microelectronics Corporation (NasdaqGS:CCMP)	$1,606.5	3.5x	13.5x
4/5/2017	Houghton International Inc.	Quaker Chemical Corporation (NYSE:KWR)	$1,415.4	1.8x	11.8x
1/31/2017	Sealweld Corporation	KMG Electronic Chemicals Luxembourg Holdings Sarl; KMG Industrial Lubricants Canada, Inc.	$17.3	1.4x	6.6x

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

SOLAR

EQUITY COMPARABLES (1)

Solar (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
Boralex Inc.	$402	$248	61.6%	$15.05	92.7%	$1,343	$3,950	9.8x	15.9x	10.4x
Capital Power Corporation	1,040	520	50.0	23.05	92.9	2,469	4,942	4.8x	9.5x	4.9x
NextEra Energy Partners, LP	731	457	62.5	48.25	95.3	2,709	9,805	13.4x	21.5x	9.8x
NRG Energy, Inc.	9,582	1,539	16.1	35.12	80.4	9,382	15,619	1.6x	10.1x	4.0x
TerraForm Power, Inc.	940	607	64.6	14.30	98.0	2,991	9,392	10.0x	15.5x	9.3x
Vivint Solar, Inc.	301	(83)	(27.4)	7.30	93.1	880	2,215	7.3x	NM	NM
Median			**55.8%**		**93.0%**			**8.6x**	**15.5x**	**9.3x**
Mean			**37.9%**		**92.1%**			**7.8x**	**14.5x**	**7.7x**

SELECTED TRANSACTIONS

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
2/5/2018	8point3 Energy Partners LP (NasdaqGS:CAFD)	Capital Dynamics, Inc.	$1,671.3	23.8x	17.0x
5/4/2017	Up to 20 Megawatts of Solar Energy Power Generation Assets	Kontrol Energy Corp. (CNSX:KNR)	$22.6	-	4.1x
3/7/2017	TerraForm Global, Inc. (NasdaqGS:GLBL)	Orion US Holdings 1 LP	$1,651.8	6.6x	17.2x
1/20/2016	Capstone Infrastructure Corporation	Irving Infrastructure Corp.	$1,435.1	-	12.7x
12/3/2014	Hawaiian Electric Industries, Inc. (NYSE:HE)	NextEra Energy, Inc. (NYSE:NEE)	$4,398.8	1.3x	8.5x

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

WIND

EQUITY COMPARABLES (1)

Wind (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
Algonquin Power & Utilities Corp.	$1,608	$643	40.0%	$12.13	95.6%	$5,980	$10,763	6.7x	16.7x	5.9x
Avangrid, Inc.	6,453	1,845	28.6	50.50	93.2	15,605	22,667	3.5x	12.3x	3.9x
Boralex Inc.	402	248	61.6	15.05	92.7	1,343	3,950	9.8x	15.9x	10.4x
Brookfield Renewable Partners L.P.	3,066	1,945	63.4	34.63	98.4	10,776	30,964	10.1x	15.9x	5.2x
Innergex Renewable Energy Inc.	475	318	67.0	10.66	94.5	1,423	5,287	11.1x	16.6x	11.0x
NextEra Energy Partners, LP	731	457	62.5	48.25	95.3	2,709	9,805	13.4x	21.5x	9.8x
Northland Power Inc.	1,203	886	73.7	19.49	97.3	3,513	9,638	8.0x	10.9x	6.5x
Pattern Energy Group Inc.	496	317	63.9	23.09	96.7	2,274	5,757	11.6x	18.2x	7.8x
TerraForm Power, Inc.	940	607	64.6	14.30	98.0	2,991	9,392	10.0x	15.5x	9.3x
TransAlta Renewables Inc.	349	212	60.6	10.59	97.7	2,799	3,514	10.1x	16.6x	3.3x
Median			**63.0%**		**96.1%**			**10.0x**	**16.3x**	**7.1x**
Mean			**58.6%**		**95.9%**			**9.4x**	**16.0x**	**7.3x**

SELECTED TRANSACTIONS

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
10/30/2017	Alterra Power Corp. (TSX:AXY)	Innergex Renewable Energy Inc. (TSX:INE)	$745.0	10.6x	31.0x
7/28/2017	Boralex Inc. (TSX:BLX)	Caisse de dépôt et placement du Québec	$3,437.5	12.5x	20.3x
6/19/2017	Pattern Energy Group Inc. (NasdaqGS:PEGI)	Public Sector Pension Investment Board	$4,313.7	12.2x	18.6x
3/7/2017	TerraForm Global, Inc. (NasdaqGS:GLBL)	Orion US Holdings 1 LP	$1,651.8	6.6x	17.2x
1/20/2016	Capstone Infrastructure Corp.	Irving Infrastructure Corp.	$1,435.1	-	12.7x

(1) Matching public companies to middle-market companies is an imperfect comparable analysis due to the variables of size, equipment, markets, etc. Nonetheless JKC's research has yielded this list as the closest available.
(2) LTM is defined as last twelve months.
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(4) Net Debt is defined as total debt less cash and cash equivalents.

PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

OIL AND GAS FIELD SERVICES

EQUITY COMPARABLES (1)

Oil and Gas Field Services (United States & Canada)

Company	LTM(2) Revenues	LTM(2) EBITDA	LTM(2) Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value(3)	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt(4)/ EBITDA
Archrock, Inc.	$940	$365	38.8%	$10.60	77.1%	$1,382	$2,979	3.2x	8.2x	4.5x
Baker Hughes, a GE company	23,538	2,847	12.1	24.63	69.3	12,698	35,244	1.5x	12.4x	1.7x
Blueknight Energy Partners, L.P.	444	56	12.6	1.16	33.1	47	(67)	(0.2)x	(1.2)x	4.9x
CARBO Ceramics Inc.	194	(32)	(16.3)	1.35	12.7	40	120	0.6x	NM	NM
Cathedral Energy Services Ltd.	119	(1)	(0.8)	0.33	32.8	16	35	0.3x	NM	NM
CES Energy Solutions Corp.	1,019	110	10.8	1.85	47.2	493	858	0.8x	7.8x	3.1x
Cypress Energy Partners, L.P.	375	26	6.9	7.28	86.7	88	190	0.5x	7.3x	3.1x
Dawson Geophysical Company	143	(4)	(2.6)	2.50	30.2	58	43	0.3x	NM	NM
Eco-Stim Energy Solutions, Inc.	41	(23)	(55.3)	0.02	0.5	0	4	0.1x	NM	NM
ENGlobal Corporation	53	(2)	(3.5)	0.90	63.4	25	19	0.4x	NM	NM
Enservco Corporation	52	5	9.9	0.38	29.6	20	64	1.2x	12.4x	7.5x
Ensign Energy Services Inc.	1,114	272	24.4	3.28	59.6	520	1,832	1.6x	6.7x	4.6x
Enterprise Group, Inc.	16	2	12.1	0.13	35.0	7	14	0.9x	7.5x	2.9x
Essential Energy Services Ltd.	127	13	9.9	0.24	52.5	34	56	0.4x	4.5x	1.5x
High Arctic Energy Services Inc	150	24	15.8	2.54	76.5	127	117	0.8x	4.9x	(0.1)x
Hyduke Energy Services Inc.	8	(6)	(76.0)	0.01	8.0	1	5	0.6x	NM	NM
Innospec Inc.	1,509	206	13.7	91.24	99.7	2,234	2,358	1.6x	11.4x	0.4x
Keane Group, Inc.	1,895	330	17.4	6.72	46.2	705	1,028	0.5x	3.1x	0.9x
Matrix Service Company	1,417	56	4.0	20.26	78.7	543	496	0.3x	8.8x	(1.5)x
McDermott International, Inc.	8,710	282	3.2	9.66	46.8	1,755	5,673	0.7x	20.1x	13.6x
Mullen Group Ltd.	1,003	150	15.0	7.26	56.1	761	1,181	1.2x	7.9x	2.7x
Newpark Resources, Inc.	911	89	9.8	7.42	66.0	672	827	0.9x	9.3x	1.6x
North American Construction Group Ltd.	443	96	21.6	10.80	79.3	271	575	1.3x	6.0x	3.2x
Parkland Fuel Corporation	12,527	851	6.8	31.76	87.6	4,669	7,762	0.6x	9.1x	3.0x
Pioneer Energy Services Corp.	590	84	14.3	0.25	4.2	20	468	0.8x	5.5x	5.3x
Precision Drilling Corporation	1,225	296	24.1	1.88	46.2	552	1,792	1.5x	6.1x	3.9x
Profire Energy, Inc.	43	8	18.0	1.51	39.1	71	56	1.3x	7.3x	(1.9)x
ProPetro Holding Corp.	1,935	473	24.4	20.70	81.6	2,079	2,164	1.1x	4.6x	0.3x
Secure Energy Services Inc.	2,366	130	5.5	5.46	75.6	869	1,206	0.5x	9.3x	2.8x
Select Energy Services, Inc.	1,446	210	14.5	11.61	73.2	929	1,307	0.9x	6.2x	0.3x
Shawcor Ltd.	1,121	87	7.8	14.01	63.4	982	1,087	1.0x	12.5x	3.8x
Smart Sand, Inc.	235	74	31.6	2.44	39.4	100	185	0.8x	2.5x	1.1x
STEP Energy Services Ltd.	591	71	12.1	1.44	16.9	96	300	0.5x	4.2x	2.9x
USA Compression Partners, LP	685	397	57.9	17.77	96.4	1,716	4,007	5.8x	10.1x	4.6x
Median			**12.1%**		**54.3%**			**0.8x**	**7.4x**	**2.9x**
Mean			**8.8%**		**53.3%**			**1.0x**	**7.7x**	**2.9x**

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

EQUIPMENT AND PHYSICAL TECHNOLOGY

EQUITY COMPARABLES (1)

Equipment and Physical Technology (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
AKITA Drilling Ltd.	$126	$15	11.7%	$1.91	41.6%	$77	$147	1.2x	9.9x	3.9x
CSI Compressco LP	493	106	21.6	3.54	56.3	167	817	1.7x	7.7x	6.2x
Enerflex Ltd.	1,483	193	13.0	13.03	83.7	1,167	1,228	0.8x	6.3x	0.7x
Exterran Corporation	1,409	205	14.5	14.22	48.5	517	967	0.7x	4.7x	2.3x
Forum Energy Technologies, Inc.	1,057	44	4.2	3.42	25.5	375	903	0.9x	20.4x	11.5x
Gardner Denver Holdings, Inc.	2,652	605	22.8	34.60	95.5	6,988	8,426	3.2x	13.9x	2.3x
Geospace Technologies Corporation	87	10	11.1	15.11	89.3	206	192	2.2x	19.9x	(1.6)x
Gulf Island Fabrication, Inc.	258	(19)	(7.5)	7.10	67.9	108	43	0.2x	NM	NM
Halliburton Company	23,775	3,877	16.3	22.74	48.4	19,874	29,985	1.3x	7.7x	2.6x
Hanwei Energy Services Corp.	9	(0)	(0.8)	0.01	37.5	2	6	0.7x	NM	NM
Helix Energy Solutions Group, Inc.	739	154	20.8	8.63	79.2	1,284	1,739	2.4x	11.3x	2.6x
ION Geophysical Corporation	201	58	28.8	8.05	30.0	113	252	1.3x	4.4x	2.4x
Key Energy Services, Inc.	474	8	1.8	2.25	12.7	46	257	0.5x	30.9x	26.3x
McCoy Global Inc.	41	3	6.2	0.50	44.8	14	13	0.3x	4.9x	(0.4)x
Mitcham Industries, Inc.	46	(6)	(12.4)	3.95	89.9	48	62	1.3x	NM	NM
Nabors Industries Ltd.	3,133	799	25.5	2.90	42.3	1,053	4,765	1.5x	6.0x	4.0x
National Oilwell Varco, Inc.	8,624	431	5.0	22.23	45.3	8,579	10,710	1.2x	24.8x	5.0x
Natural Gas Services Group, Inc.	70	23	32.8	16.50	67.3	218	179	2.5x	7.8x	(1.3)x
Parker Drilling Company	566	114	20.1	20.28	84.2	305	406	0.7x	3.6x	0.8x
PHX Energy Services Corp.	269	31	11.5	2.21	82.6	125	177	0.7x	5.7x	1.5x
RigNet, Inc.	243	27	10.9	10.08	41.9	196	260	1.1x	9.8x	4.0x
RPC, Inc.	1,510	247	16.3	7.21	41.8	1,533	1,466	1.0x	5.9x	(0.0)x
Schlumberger Limited	32,833	6,623	20.2	39.74	57.1	55,045	69,859	2.1x	10.5x	2.2x
SEACOR Holdings Inc.	841	146	17.4	47.51	82.0	880	1,362	1.6x	9.3x	2.0x
Solaris Oilfield Infrastructure, Inc.	233	139	59.4	14.98	77.6	468	605	2.6x	4.4x	(0.2)x
Strad Inc.	93	22	23.8	1.28	95.4	72	89	1.0x	4.0x	0.7x
Superior Drilling Products, Inc.	18	3	14.4	1.01	20.0	25	31	1.8x	12.2x	2.6x
TechnipFMC plc	12,814	1,506	11.8	25.94	77.2	11,584	11,737	0.9x	7.8x	0.1x
TerraVest Industries Inc.	233	39	16.5	10.18	98.6	176	260	1.1x	6.7x	2.1x
TETRA Technologies, Inc.	1,072	165	15.4	1.63	31.9	205	1,228	1.1x	7.5x	5.5x
Weatherford International plc	5,528	493	8.9	0.05	1.4	50	8,011	1.4x	16.2x	16.2x
ZCL Composites Inc.	129	16	12.4	7.64	81.0	234	233	1.8x	14.5x	(0.1)x
Median			**14.5%**		**56.7%**			**1.2x**	**7.8x**	**2.3x**
Mean			**14.8%**		**58.7%**			**1.3x**	**10.3x**	**3.6x**

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

OIL AND GAS FIELD SERVICES AND EQUIPMENT AND PHYSICAL TECHNOLOGY

SELECTED TRANSACTIONS (1)

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
6/17/2019	C&J Energy Services, Inc. (NYSE:CJ)	Keane Group, Inc. (NYSE:FRAC)	$699.2	0.3x	2.9x
3/20/2019	Red Bone Services LLC/Tecton Energy Services Ltd.	KLX Energy Services Holdings, Inc. (NasdaqGS:KLXE)	$82.5	-	4.8x
1/20/2019	ZCL Composites Inc. (TSX:ZCL)	Shawcor Ltd. (TSX:SCL)	$233.7	1.7x	12.5x
10/29/2018	Adler Hot Oil Service, LLC.	Enservco Corporation (AMEX:ENSV)	$12.5	0.7x	4.3x
6/5/2018	Xtreme Drilling Corp.	AKITA Drilling Ltd. (TSX:AKT.A)	$155.0	2.8x	162.4x
5/1/2018	KLX Inc. (NasdaqGS:KLXI)	Aviall Inc.	$4,482.9	-	15.7x
4/16/2018	Aveda Transportation and Energy Services Inc. (TSXV:AVE)	Daseke Companies, Inc.	$2,139.8	0.7x	4.8x
1/16/2018	USA Compression Partners, LP (NYSE:USAC)	Energy Transfer Partners, LP (NYSE:ETP); Energy Transfer Equity, LP (NYSE:ETE)	$2,033.4	7.3x	14.3x
1/2/2018	Archrock Partners, LP	Archrock, Inc. (NYSE:AROC)	$2,405.5	4.3x	10.5x
12/11/2017	Pure Technologies Ltd.	Xylem Inc. (NYSE:XYL)	$395.2	4.0x	26.5x
5/19/2017	Savanna Energy Services Corp.	Total Energy Services Inc. (TSX:TOT)	$458.2	1.8x	16.6x
5/15/2017	Ceiba Energy Services Inc.	Secure Energy Services Inc. (TSX:SES)	$27.2	4.5x	29.2x
4/24/2017	Flowchem Ltd.	KMG Chemicals, Inc. (NYSE:KMG)	$495.0	N/A	11.5x
3/13/2017	Amec Foster Wheeler plc (LSE:AMFW)	John Wood Group PLC (LSE:WG.)	$4,032.4	0.6x	10.6x
12/12/2016	Seventy Seven Energy Inc.	Patterson-UTI Energy, Inc. (NasdaqGS:PTEN)	$1,878.9	3.1x	18.8x
10/13/2016	Critical Flow Solutions Inc.	CIRCOR International, Inc. (NYSE:CIR)	$214.0	1.8x	8.6x

(1) Total Enterprise Value is defined as market capitalization plus total debt less cash and cash equivalents.

PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

STORAGE AND TERMINALS

EQUITY COMPARABLES (1)

Storage and Terminals (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
Alliant Energy Corporation	$3,580	$1,238	34.6%	$49.08	97.8%	$11,651	$17,993	5.0x	14.5x	5.2x
AltaGas Ltd.	4,465	890	19.9	15.14	69.6	4,183	11,830	2.6x	13.3x	7.1x
Blueknight Energy Partners, L.P.	444	56	12.6	1.16	33.1	47	(67)	(0.2)x	(1.2)x	4.9x
Buckeye Partners, L.P.	3,805	835	21.9	41.05	96.2	6,318	10,300	2.7x	12.3x	4.8x
Chart Industries, Inc.	1,161	167	14.4	76.88	80.4	2,751	3,250	2.8x	19.4x	1.1x
EnLink Midstream, LLC	7,633	1,085	14.2	10.09	56.1	4,916	11,111	1.5x	10.2x	4.3x
EQM Midstream Partners, LP	1,545	1,269	82.1	44.68	77.0	8,956	13,507	8.7x	10.6x	3.8x
Gibson Energy Inc.	5,444	333	6.1	17.85	96.6	2,593	3,548	0.7x	10.6x	3.1x
Green Plains Partners LP	91	61	67.3	14.00	80.0	324	502	5.5x	8.2x	2.9x
Magellan Midstream Partners, L.P.	2,834	1,307	46.1	64.00	87.8	14,618	19,060	6.7x	14.6x	3.5x
MPLX LP	6,430	3,234	50.3	32.19	82.5	25,570	41,058	6.4x	12.7x	4.5x
NuStar Energy L.P.	1,916	657	34.3	27.14	93.2	2,925	7,708	4.0x	11.7x	5.4x
Median			**28.1%**		**81.4%**			**3.4x**	**12.0x**	**4.4x**
Mean			**33.7%**		**79.2%**			**3.9x**	**11.4x**	**4.2x**

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

STORAGE AND TERMINALS

SELECTED TRANSACTIONS (1)

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
9/16/2019	SemGroup Corporation (NYSE:SEMG)	Energy Transfer LP (NYSE:ET)	$4,991.7	2.1x	13.5x
8/27/2019	Tallgrass Energy, LP (NYSE:TGE)	The Blackstone Group Inc. (NYSE:BX)	$9,337.3	8.9x	11.2x
8/21/2019	Kinder Morgan Canada Limited (TSX:KML)	Pembina Pipeline Corporation (TSX:PPL)	$2,294.7	4.4x	16.3x
5/10/2019	Buckeye Partners, LP (NYSE:BPL)	IFM Global Infrastructure Fund	$10,500.3	2.7x	18.6x
11/8/2018	Western Gas Partners, LP (NYSE:WES)	Western Gas Equity Partners, LP (NYSE:WGP)	$13,427.9	6.5x	12.0x
10/22/2018	EnLink Midstream Partners, LP (NYSE:ENLK)	EnLink Midstream, LLC (NYSE:ENLC)	$12,923.5	1.7x	12.2x
10/18/2018	Valero Energy Partners LP	Valero Energy Corporation (NYSE:VLO)	$4,069.8	7.6x	10.5x
9/19/2018	Dominion Energy Midstream Partners, LP (NYSE:DM)	Dominion Energy, Inc. (NYSE:D)	$10,405.4	13.6x	19.7x
8/1/2018	Energy Transfer Partners, LP (NYSE:ETP)	Energy Transfer Equity, LP (NYSE:ETE)	$69,412.3	2.1x	10.8x
7/30/2018	Four Corners Area Assets	Harvest Midstream Company	$1,125.0	-	13.2x
7/10/2018	Transmontaigne Partners LP (NYSE:TLP)	TLP Acquisition Holdings LLC	$1,254.3	6.1x	11.5x
6/29/2018	Boardwalk Pipeline Partners, LP	Boardwalk GP LP	$6,792.1	5.3x	8.3x
5/17/2018	Enbridge Energy Partners, LP (NYSE:EEP)	Enbridge Inc. (TSX:ENB)	$15,925.8	6.6x	10.1x
4/30/2018	Andeavor (NYSE:ANDV)	Marathon Petroleum Corporation (NYSE:MPC)	$35,101.9	0.9x	12.7x
4/26/2018	Rice Midstream Partners LP (NYSE:RMP)	EQM Midstream Partners, LP (NYSE:EQM)	$2,443.1	7.7x	9.9x
3/26/2018	Tallgrass Energy Partners, LP (NYSE:TEP)	Tallgrass Equity, LLC	$4,176.5	6.4x	6.9x
8/29/2017	Arc Logistics Partners LP (NYSE:ARCX)	Zenith Energy U.S. Logistics Holdings, LLC	$658.0	6.2x	10.4x
8/14/2017	Western Refining Logistics, LP (NYSE:WNRL)	Andeavor Logistics LP (NYSE:ANDX)	$1,842.8	0.8x	14.4x
6/19/2017	Rice Energy Inc. (NYSE:RICE)	EQT Corporation (NYSE:EQT)	$10,239.2	9.9x	34.1x
6/2/2017	AMTROL Inc.	Worthington Steel of Michigan, Inc.	$283.0	1.1x	7.4x
5/18/2017	PennTex Midstream Partners, LP	Energy Transfer Partners, LP (NYSE:ETP)	$562.6	7.3x	18.9x

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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

PIPELINES

EQUITY COMPARABLES (1)

Oil and Gas Pipelines (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
Antero Midstream Corporation	$463	$0	0.0%	$11.46	57.8%	$5,808	$8,196	17.7x	NM	NM
ATCO Ltd.	3,602	1,506	41.8	33.74	93.9	3,857	14,627	4.1x	9.7x	4.7x
Blueknight Energy Partners, L.P.	444	56	12.6	1.16	33.1	47	(67)	(0.2)x	(1.2)x	4.9x
Buckeye Partners, L.P.	3,805	835	21.9	41.05	96.2	6,318	10,300	2.7x	12.3x	4.8x
Crestwood Equity Partners LP	3,217	326	10.1	35.77	88.2	2,570	5,208	1.6x	16.0x	6.8x
Enable Midstream Partners, LP	3,408	1,142	33.5	13.71	71.1	5,965	10,755	3.2x	9.4x	3.9x
Enbridge Inc.	37,480	8,945	23.9	36.16	92.3	73,181	132,712	3.5x	14.8x	5.7x
Energy Transfer LP	55,085	10,408	18.9	14.08	73.4	36,885	94,677	1.7x	9.1x	4.5x
Enterprise Products Partners L.P.	35,588	7,859	22.1	28.87	96.1	63,184	90,662	2.5x	11.5x	3.4x
Equitrans Midstream Corporation	1,545	1,258	81.4	19.71	84.0	5,026	13,481	8.7x	10.7x	4.3x
EQM Midstream Partners, LP	1,545	1,269	82.1	44.68	77.0	8,956	13,507	8.7x	10.6x	3.8x
Genesis Energy, L.P.	2,689	601	22.4	21.90	85.8	2,684	7,087	2.6x	11.8x	6.0x
Gibson Energy Inc.	5,444	333	6.1	17.85	96.6	2,593	3,548	0.7x	10.6x	3.1x
Inter Pipeline Ltd.	2,000	902	45.1	15.57	79.4	6,400	11,009	5.5x	12.2x	5.3x
Kinder Morgan Canada Limited	311	143	45.9	8.92	22.2	312	1,301	4.2x	9.1x	2.7x
Kinder Morgan, Inc.	13,941	6,378	45.7	20.88	97.1	47,267	85,154	6.1x	13.4x	5.7x
ONEOK, Inc.	11,768	2,354	20.0	68.81	95.6	28,402	38,880	3.3x	16.5x	4.7x
Plains All American Pipeline, L.P.	34,205	3,495	10.2	24.35	87.9	17,698	29,367	0.9x	8.4x	2.8x
Sanchez Midstream Partners LP	87	46	53.5	2.25	18.5	40	560	6.5x	12.1x	3.7x
SemGroup Corporation	2,488	313	12.6	12.00	44.8	955	4,569	1.8x	14.6x	7.6x
Southcross Energy Partners, L.P.	545	22	4.0	0.04	2.4	3	502	0.9x	22.9x	29.4x
Summit Midstream Partners, LP	492	242	49.2	7.44	42.0	615	2,144	4.4x	8.9x	5.7x
Targa Resources Corp.	9,879	1,325	13.4	39.26	66.3	9,127	18,324	1.9x	13.8x	5.1x
TC PipeLines, LP	691	589	85.2	37.62	98.2	2,683	4,829	7.0x	8.2x	3.3x
The Williams Companies, Inc.	8,602	3,846	44.7	28.04	87.0	33,978	58,790	6.8x	15.3x	5.6x
TC Energy Corporation	10,641	6,606	62.1	49.63	97.0	46,096	88,633	8.3x	13.4x	5.7x
Western Midstream Partners, LP	2,328	1,230	52.8	30.77	81.6	13,939	21,255	9.1x	17.3x	6.1x
Median			**23.9%**		**84.0%**			**3.5x**	**11.9x**	**4.8x**
Mean			**34.1%**		**72.8%**			**4.6x**	**12.0x**	**5.7x**

(1) Matching public companies to middle-market companies is an imperfect comparable analysis due to the variables of size, equipment, markets, etc. Nonetheless JKC's research has yielded this list as the closest available.
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(4) Net Debt is defined as total debt less cash and cash equivalents.

PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

PIPELINES

SELECTED TRANSACTIONS (1)

Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
9/16/2019	SemGroup Corporation (NYSE:SEMG)	Energy Transfer LP (NYSE:ET)	$4,991.7	2.1x	13.5x
8/27/2019	Tallgrass Energy, LP (NYSE:TGE)	The Blackstone Group Inc. (NYSE:BX)	$9,337.3	8.9x	11.2x
8/21/2019	Kinder Morgan Canada Limited (TSX:KML)	Pembina Pipeline Corporation (TSX:PPL)	$2,294.7	4.4x	16.3x
5/10/2019	Buckeye Partners, LP (NYSE:BPL)	IFM Global Infrastructure Fund	$10,500.3	2.7x	18.6x
11/8/2018	Western Gas Partners, LP (NYSE:WES)	Western Gas Equity Partners, LP (NYSE:WGP)	$13,427.9	6.5x	12.0x
10/18/2018	Valero Energy Partners LP	Valero Energy Corporation (NYSE:VLO)	$4,069.8	7.6x	10.5x
10/9/2018	Antero Midstream Partners LP (NYSE:AM)	Antero Midstream GP LP (NYSE:AMGP)	$7,359.7	7.7x	11.5x
9/28/2018	American Midstream Partners, LP (NYSE:AMID)	ArcLight Capital Partners, LLC	$1,595.1	2.0x	14.2x
7/10/2018	Transmontaigne Partners LP (NYSE:TLP)	TLP Acquisition Holdings LLC	$1,254.3	6.1x	11.5x
5/17/2018	Williams Partners LP	The Williams Companies, Inc. (NYSE:WMB)	$57,090.5	7.0x	14.1x
5/17/2018	Enbridge Energy Partners, LP (NYSE:EEP)	Enbridge Inc. (TSX:ENB)	$15,925.8	6.6x	10.1x
5/10/2018	Amberjack Pipeline Company LLC	Shell Midstream Partners, LP (NYSE:SHLX)	$1,928.7	8.2x	9.4x
3/26/2018	Tallgrass Energy Partners, LP (NYSE:TEP)	Tallgrass Equity, LLC	$4,176.5	6.4x	6.9x
8/15/2017	Western Refining Logistics, LP (NYSE:WNRL)	Andeavor Logistics LP (NYSE:ANDX)	$1,843.8	0.8x	14.4x
12/20/2016	Howard Midstream Partners, LP	Alberta Investment Management Corporation	$1,394.7	4.3x	14.4x
11/21/2016	Sunoco Logistics Partners LP	Energy Transfer Partners, LP (NYSE:ETP)	$15,527.3	1.5x	13.7x
10/24/2016	JP Energy Partners LP	American Midstream Partners, LP (NYSE:AMID)	$465.0	-	11.3x
5/31/2016	Rose Rock Midstream, LP	SemGroup Corporation (NYSE:SEMG)	$1,649.9	-	10.4x
2/1/2016	Dominion Energy Questar Corporation	Dominion Energy, Inc. (NYSE:D)	$6,092.9	-	9.7x

(1) Total Enterprise Value is defined as market capitalization plus total debt less cash and cash equivalents.

PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

TRUCKERS

EQUITY COMPARABLES (1)

Truckers (United States & Canada)

Company	LTM[2] Revenues	LTM[2] EBITDA	LTM[2] Margin	Stock Price 06/30/19	% of 52-Week High	Market Cap	Total Enterprise Value[3]	TEV / LTM Revenues	TEV / LTM EBITDA	Net Debt[4]/ EBITDA
Adams Resources & Energy, Inc.	$1,840	$13	0.7%	$34.28	73.2%	$145	$29	0.0x	2.2x	(8.3)x
ArcBest Corporation	3,084	222	7.2	28.11	54.6	717	811	0.3x	3.7x	0.3x
Covenant Transportation Group, Inc.	954	134	14.0	14.71	42.8	270	548	0.6x	4.1x	2.2x
Daseke, Inc.	1,792	164	9.1	3.60	35.6	232	1,029	0.6x	6.3x	4.5x
Heartland Express, Inc.	580	172	29.7	18.07	83.4	1,481	1,305	2.3x	7.6x	(1.2)x
Hess Corporation	6,500	2,897	44.6	63.57	85.0	19,289	25,851	4.0x	8.9x	1.8x
J.B. Hunt Transport Services, Inc.	8,879	1,145	12.9	91.41	70.3	9,940	11,289	1.3x	9.9x	1.3x
Knight-Swift Transportation Holdings Inc.	5,188	1,002	19.3	32.84	83.6	5,685	6,608	1.3x	6.6x	1.1x
Landstar System, Inc.	4,467	378	8.5	107.99	83.9	4,337	4,191	0.9x	11.1x	(0.4)x
Marten Transport, Ltd.	815	160	19.7	18.15	73.9	991	907	1.1x	5.7x	(0.5)x
Old Dominion Freight Line, Inc.	4,137	1,106	26.7	149.26	87.7	12,082	11,915	2.9x	10.8x	(0.1)x
P.A.M. Transportation Services, Inc.	540	101	18.8	62.00	88.6	369	554	1.0x	5.5x	2.0x
Patriot Transportation Holding, Inc.	111	9	8.0	16.97	76.4	57	38	0.3x	4.2x	(2.3)x
Parkland Fuel Corporation	12,527	851	6.8	31.76	87.6	4,669	7,762	0.6x	9.1x	3.0x
Roadrunner Transportation Systems, Inc.	2,076	(8)	(0.4)	9.55	11.0	359	719	0.3x	NM	NM
Ryder System, Inc.	8,840	2,167	24.5	58.30	72.9	3,107	10,395	1.2x	4.8x	3.6x
Saia, Inc.	1,707	262	15.3	64.67	77.2	1,659	1,883	1.1x	7.2x	1.0x
Schneider National, Inc.	5,009	650	13.0	18.24	64.1	3,230	3,240	0.6x	5.0x	0.1x
TFI International Inc.	3,958	555	14.0	30.30	80.9	2,553	4,209	1.1x	7.6x	3.1x
Titanium Transportation Group Inc.	129	13	10.2	1.02	55.4	37	104	0.8x	7.9x	4.7x
Universal Logistics Holdings, Inc.	1,521	171	11.3	22.47	59.6	648	1,085	0.7x	6.3x	2.5x
USA Truck, Inc.	541	51	9.4	10.11	40.7	84	265	0.5x	5.2x	3.8x
Werner Enterprises, Inc.	2,500	476	19.1	31.08	72.6	2,172	2,241	0.9x	4.7x	0.7x
YRC Worldwide Inc.	5,006	204	4.1	4.03	36.5	139	1,234	0.2x	6.1x	5.4x
Median			**12.9%**		**73.1%**			**0.9x**	**6.3x**	**1.3x**
Mean			**14.4%**		**66.6%**			**1.0x**	**6.5x**	**1.2x**

(1) Matching public companies to middle-market companies is an imperfect comparable analysis due to the variables of size, equipment, markets, etc. Nonetheless JKC's research has yielded this list as the closest available.
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PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

TRUCKERS

SELECTED TRANSACTIONS (1)

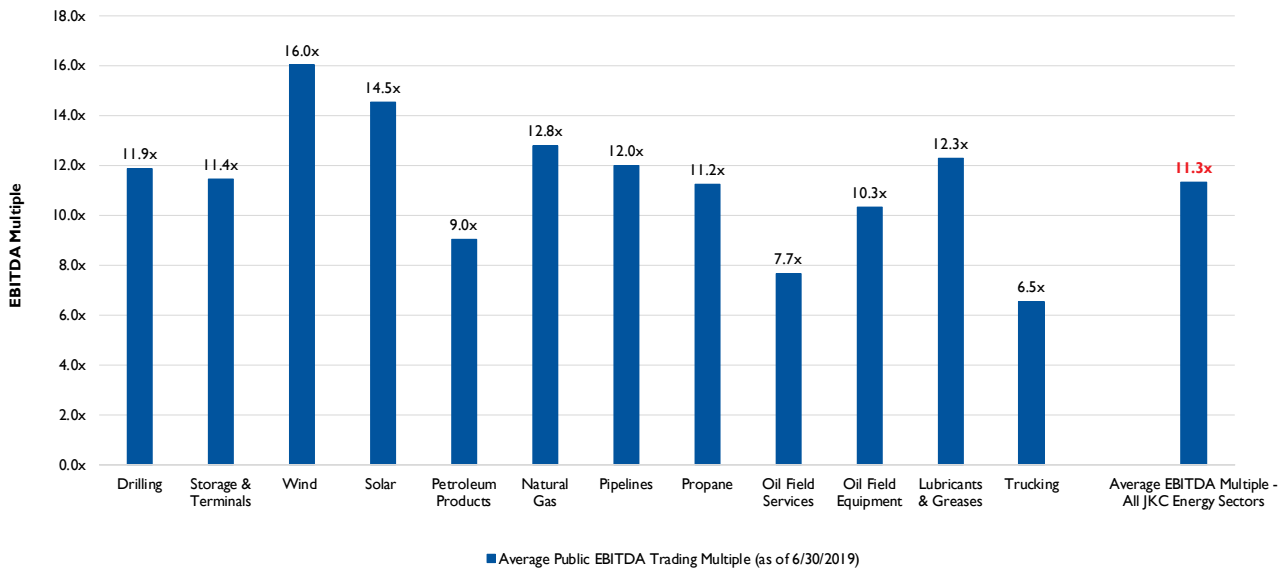
Announced / Closed Date	Target(s)	Acquirer	Total Enterprise Value (TEV)	TEV / Revenues	TEV / EBITDA
11/5/2018	CaseStack, Inc.	Hub Group, Inc. (NasdaqGS:HUBG)	$255.0	1.1x	11.6x
8/31/2018	Mode Transportation, LLC	York Capital Management	$238.5	-	10.0x
12/7/2017	Keen Transport, Inc.	Wallenius Wilhelmsen ASA (OB:WALWIL)	$64.0	0.8x	6.4x
7/19/2016	Span-Alaska Transportation, Inc.	Matson Logistics, Inc.	$197.6	-	9.4x
5/2/2016	Trimac Transportation Ltd.	Trimac Corporation	$215.9	-	5.9x
9/9/2015	Con-way Inc.	XPO Logistics, Inc. (NYSE:XPO)	$3,057.0	-	6.2x
8/17/2015	Liberty International Inc.	Janel Corporation (OTCPK:JANL)	$2.3	-	26.6x
7/28/2015	Stagecoach Cartage and Distribution, LLC	Roadrunner Transportation Systems, Inc. (NYSE:RRTS)	$40.0	-	5.7x
5/25/2015	Hodges Trucking Company, LLC	Rodan Transport (U.S.A.) Ltd.	$42.0	-	3.0x
5/6/2015	Quality Distribution Inc.	Apax Partners LLP	$823.3	-	12.0x
5/4/2015	Bridge Terminal Transport Inc.	XPO Logistics, Inc. (NYSE:XPO)	$100.0	-	8.1x
4/21/2015	Command Transportation, LLC	Echo Global Logistics, Inc. (NasdaqGS:ECHO)	$391.0	-	10.6x
1/20/2015	Wheels Group Inc.	Radiant Global Logistics Ltd.	$80.1	-	13.5x

(1) Total Enterprise Value is defined as market capitalization plus total debt less cash and cash equivalents.

PUBLIC AND TRANSACTION COMPARABLES BY SEGMENT

AVERAGE PUBLIC EBITDA TRADING MULTIPLES

ALL JKC ENERGY SECTORS (AS OF 6/30/2019)



FACTOIDS: LITTLE-KNOWN FACTS AND STATS

Petroleum Products (1)

- U.S. imports of crude oil from members of OPEC in March 2019 totaled 1.5 million barrels per day, their lowest level since March 1986. In each of the past four years, Canada alone has supplied more crude oil to the United States than all OPEC members combined.
- U.S. crude oil production doubled between 2010 and 2018, with about 70% of that growth coming from the Gulf Coast region.

Natural Gas (1)

- Despite an increase in natural gas production in the Northeast, regional demand for natural gas -- driven both by population growth and switching from heating oil -- has grown even faster, causing concern about the ability to serve this demand.
- As of March 31, 2019, the usual end of the natural gas withdrawal season, working natural gas inventories were 30% lower than the previous five-year average for that time of year. This end-of-season level was the lowest since 2014.

Propane and Heating/Fuel Oil (2)

- Refueling a propane powered school bus takes a similar amount of time as refueling with gasoline or diesel.
- Propane powered school buses can achieve a range of more than 400 miles on a single refueling.

(1) U.S. Energy Information Administration.
(2) Propane Education & Research Council.

FACTOIDS: LITTLE-KNOWN FACTS AND STATS

Lubricants and Greases (1)

- Synthetic lubricants are made from pure chemicals rather than refined from crude oil. They can be used in both high and low temperatures.
- The market for synthetic lubricants is expected to reach over $5 billion by 2023 with estimated growth of over 4% from 2016 to 2023.

Solar (2)

- On average, utility-scale solar photovoltaic (PV) power plants in the United States operated at about 25% of their electricity generating capacity, based on an average of annual values from 2014 through 2017. Arizona's utility-scale solar PV plants performed better than those in any other state, achieving a 29.1% capacity factor from 2014 through 2017.
- U.S. solar generation has increased from 2 million MWh in 2008 to 96 million MWh in 2018. Solar generation accounted for 2.3% of electricity generation in 2018.

Wind (2)

- In the United States, producers generated 275 million megawatt hours (MWh) of electricity from wind power in 2018. Of that, more than half came from just four states: Texas, Oklahoma, Iowa and Kansas. Texas has accounted for over 25% of U.S. wind electricity generation in each of the past three years.
- U.S. wind capacity additions in 2019 are expected to total 12.7 gigawatts (GW), exceeding annual capacity additions for the previous six years but falling short of the record 13.3 GW of wind capacity added in 2012.

(1) Global Market Insight.
(2) U.S. Energy Information Administration.

FACTOIDS: LITTLE-KNOWN FACTS AND STATS

OIL AND GAS FIELD SERVICES (1)

- In 2004, horizontally drilled wells accounted for about 15% of U.S. crude oil production in tight oil formations. By the end of 2018, that percentage had increased to 96%.
- About 88,000 vertical wells in tight oil and shale gas plays in the United States still produced crude oil or natural gas at the end of 2018, but the volume produced by these wells was minor compared with the volume produced by horizontal wells.

EQUIPMENT AND PHYSICAL TECHNOLOGY (2)

- Robotic drilling systems (RDSs) offer robotic technology for a fully unmanned drill floor for both land and offshore operations. RDSs are capable of handling pipes and tools and replacing casing crews and tongs, and they can handle machines with spinning operations. In addition, state-of-the-art drilling technology also offers self-movable automated drill rigs that can be moved around an oil field from one well location to the next.
- Drones are now fairly commonly used to inspect tanks, pipelines and refineries. Drones are often operated from a ground control station and require robust flight control techniques, inertial navigation, data fusion and tracking control. These traits make drones effective for the exploration of oil and gas reservoirs located in extreme environments unsuitable for human exploration.

STORAGE AND TERMINALS (3)

- Wholesalers, businesses, retailers and governments started placing underground storage tanks below ground in the 1920's because above-ground tanks were more susceptible to car accidents, robberies and tampering. They also took up space that could be used for other businesses and services.
- Fixed (cone, dome or umbrella) roof tanks are the most common and identifiable bulk storage vessels in the oil and gas industry. They usually have a wrap around staircase. The storage tanks vary in sizes up to 30 meters tall by 100 meters wide and hold liquids with very high flash points such as fuel oil, heavy oil, kerosene, diesel oil, water and bitumen.

(1) U.S. Energy Information Administration.
(2) PreScouter.
(3) Castagra.

FACTOIDS: LITTLE-KNOWN FACTS AND STATS

PIPELINES

- New pipelines and reversals of existing pipelines originating in the Midwest are increasingly moving crude oil south from the Bakken region in Montana and North Dakota, as well as from Canada, to the Gulf Coast. As a result, the Gulf Coast transitioned from being a net shipper to a net recipient of crude oil from elsewhere in the country in 2015. (1)
- There are approximately 42,700 miles of pipeline that are currently in the replacement, reversal, planning or construction stages in the U.S. (2)

TRUCKERS (3)

- The trucking industry consumes roughly 50 billion gallons of gasoline every year, which is nearly 13% of the country's total fuel consumption.
- There are roughly 15.7 million trucks operating in the U.S. today.

(1) U.S. Energy Information Administration.
(2) FrackTracker Alliance.
(3) HNI Risk Advisors.

JORDAN KNAUFF & COMPANY
ENERGY LOGISTICS & DISTRIBUTION TEAM

G. COOK JORDAN, JR.
Managing Principal
Office (312) 254-5901
cj@jordanknauff.com

DAVID A. KAKAREKA
Vice President of Transaction Management
Office (312) 254-5907
dkakareka@jordanknauff.com

LORI A. CALLAWAY
Vice President of Research and Publications
Office (312) 254-5914
lcallaway@jordanknauff.com

C. HUTCH GREAVES
Analyst
Office (312) 254-5906
hgreaves@jordanknauff.com

ABOUT JORDAN KNAUFF & COMPANY

Jordan Knauff & Company was founded in 2001 to undertake a distinct mission: to assemble and maintain a staff of top-notch investment banking personnel and offer their knowledge and experience to provide the best available investment banking services to middle-market companies, the entrepreneurs who lead them and the financial entities that transact with them. On a combined basis, over the course of their careers our employees have completed over 200 transactions as investors, owners, operators, buyers, sellers and investment bankers of middle-market businesses across a variety of industries. The majority of our firm's broad transaction experience has been with private companies owned by one shareholder, a partnership, a family or private equity investors.

JKC JORDAN KNAUFF & COMPANY

200 West Madison Street, Suite 980
Chicago, Illinois 60606-3414
tel: (312) 254-5900 ▪ *fax*: (312) 254-5999
web: www.jordanknauff.com

ENERGY EQUIPMENT & INFRASTRUCTURE ALLIANCE

TOBY MACK
President and Chief Executive Officer
(202) 870-7715
tmack@eeia.org

MARTI DE GRAAF
Executive Vice President and Chief Operating Officer
(312) 806-0664
mdegraaf@eeia.org

ABOUT THE ENERGY EQUIPMENT & INFRASTRUCTURE ALLIANCE

EEIA is a Washington, D.C.-based trade association representing the North American natural gas and petroleum production, transportation and processing infrastructure supply chain. That supply chain is comprised of 60 industries that provide construction, equipment, materials, services and supplies to energy infrastructure and operations. EEIA advocates for sound legislative and regulatory policies at the federal and state levels. Our members include companies, trade associations and labor organizations operating in the energy sector. We advocate for our industries both directly with policymakers, and through mobilization of business leaders and workers to act and speak for the value and benefits of full and responsible development of our energy resources in their communities and with their political leaders.

ENERGY EQUIPMENT & INFRASTRUCTURE ALLIANCE

The Voice of the Energy Supply Chain

ENERGYBUILDERS

601 Pennsylvania Avenue NW
Suite 900
Washington, DC 20004
(202) 870-7715
info@eeia.org ▪ www.eeia.org