Pipeline & Gas Journal

2018 Industry Outlook

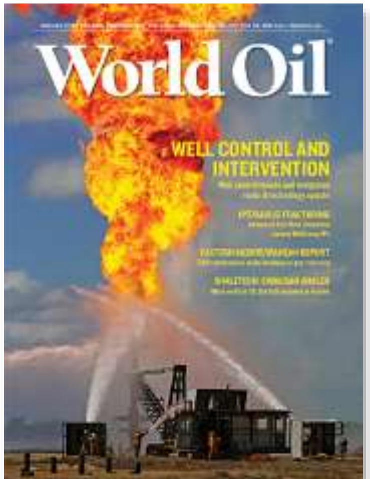
Pipeliners Association of Houston

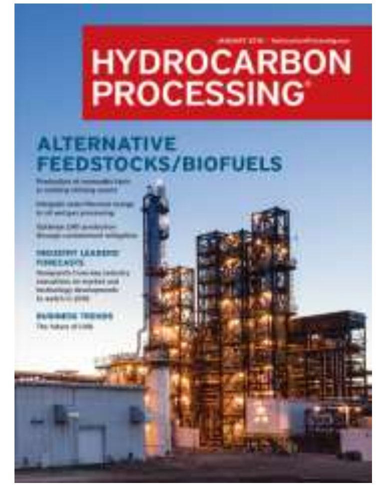
Jeff Awalt

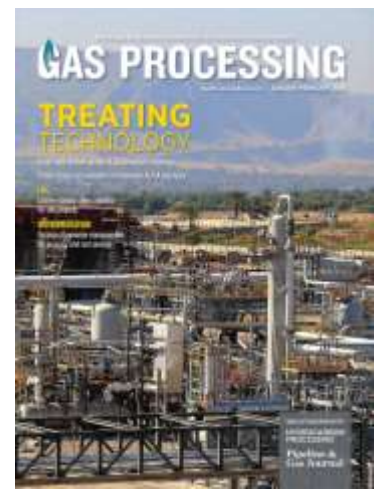
Executive Editor
Pipeline & Gas Journal

Pipeline &
Gas Journal

GULF
PUBLISHING COMPANY







Pipeline & Gas Journal

Pipeline Construction Outlook

Key Indicators

Positive Trends

- Regulation
- Drilling economics
- Oil prices
- Economy/Demand
- Exports
- Infrastructure

Potential Challenges

- Project financing
- Competition
- State regulators
- Legal/Environmental

Regulatory Tailwinds

Complete:

- ✓ FERC quorum
- ✓ Energy-friendly tax bill
- ✓ EPA cancelled requirement for operators to report methane emissions
- ✓ Approved Dakota Access and Keystone XL pipelines
- ✓ Prohibited funding third-party projects through federal lawsuit settlements
- ✓ Repealed a ban on offshore drilling in Atlantic and Arctic oceans

Pipeline & Gas Journal

Regulatory Tailwinds

Pending:

- EPA to rescind a rule pertaining to tributaries and wetlands under the Clean Water Act
- NOAA is reviewing 12 protected marine areas to expand offshore drilling
- BLM to rescind water pollution regulations for fracking on federal and Native American lands
- EPA is reviewing a rule limiting methane emissions at new O&G drilling sites
- Interior has proposed the largest 5-year plan ever for offshore leasing

Major Projects: Marcellus & Utica

Slowly they turn, state by state

Mountain Valley Pipeline

- Approved Dec. 2017 in split decision, two years after application
- VA judge paused land acquisition
- 303-mile, 2MMDth/d natural gas pipeline
- Up to 42” diameter
- Start in WV, interconnect Transco in VA for delivery to Mid and South Atlantic markets

Mountaineer Xpress/Gulf Xpress

- Related projects by units of Columbia Gas Transmission to move gas westerly from WV
- FERC approved final EIS
- 170.5 miles of 36” and 24” pipe
- 10 compressor stations and various short-distance piping jobs between VA and MS.

Mountain Valley Pipeline

Major Projects: Marcellus & Utica

Slowly they turn, state by state

Atlantic Coast Pipeline

- $5 billion, 600-mile, 42” gas pipeline
- FERC authorized 2017
- NC and WV approve water-related permits
- VA agrees to $58 million environmental impact payment (+$10 million for other)

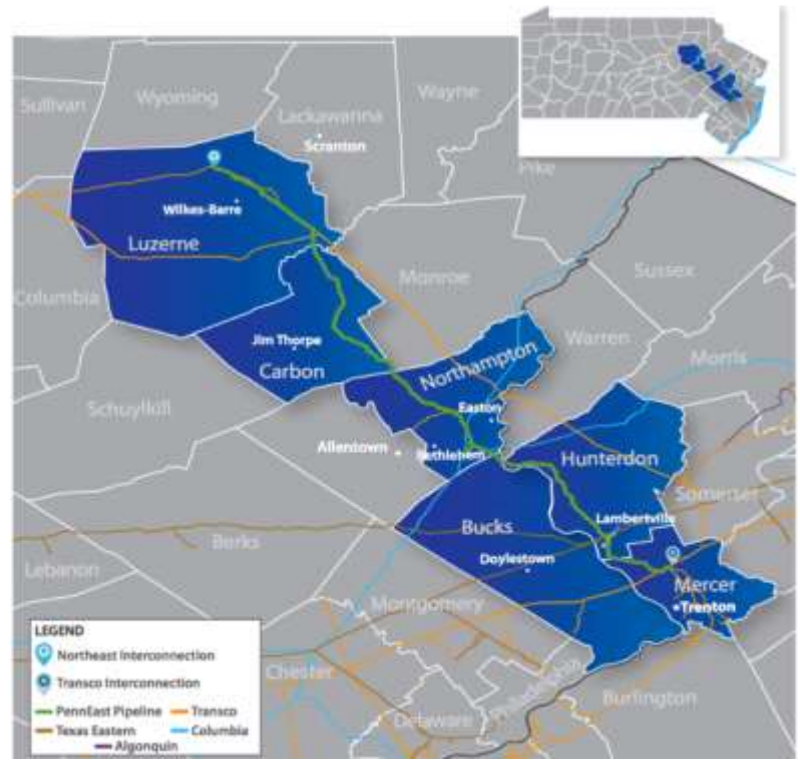
Atlantic Coast Pipeline

Major Projects: Marcellus & Utica

Slowly they turn, state by state

PennEast Pipeline

- FERC approved Jan. 2018 after 3 years
- NJ regulators rejected application pending more environmental impact details (Feb. 5)
- 1.1 Bcf/d natural gas pipeline
- 120 miles, mostly 36” from northeastern PA to Transco interconnection at Pennington, NJ
- Gas will supply nearly 5 million homes in PA, NJ and NY

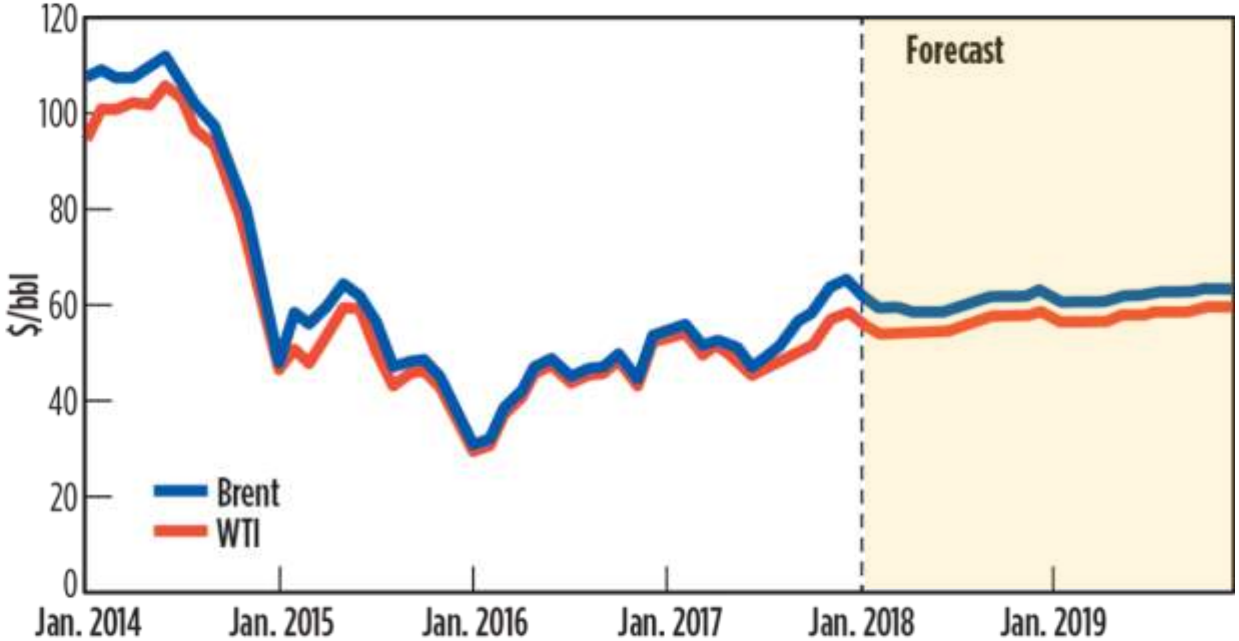


PennEast Pipeline

Pipeline & Gas Journal

Forecast: Oil Price

Crude Oil Price Forecast



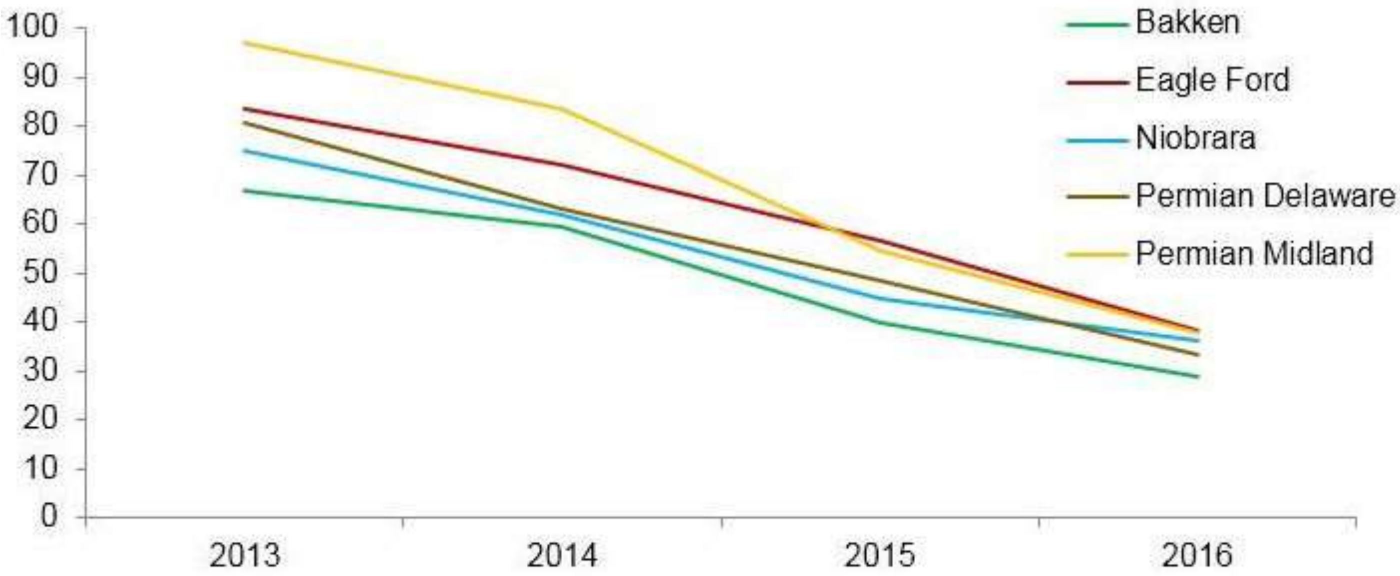
BRENT
$59.74

WTI
$55.33

Source: *EIA*

Improving Shale Economics

Breakeven Prices for Key Shale Plays

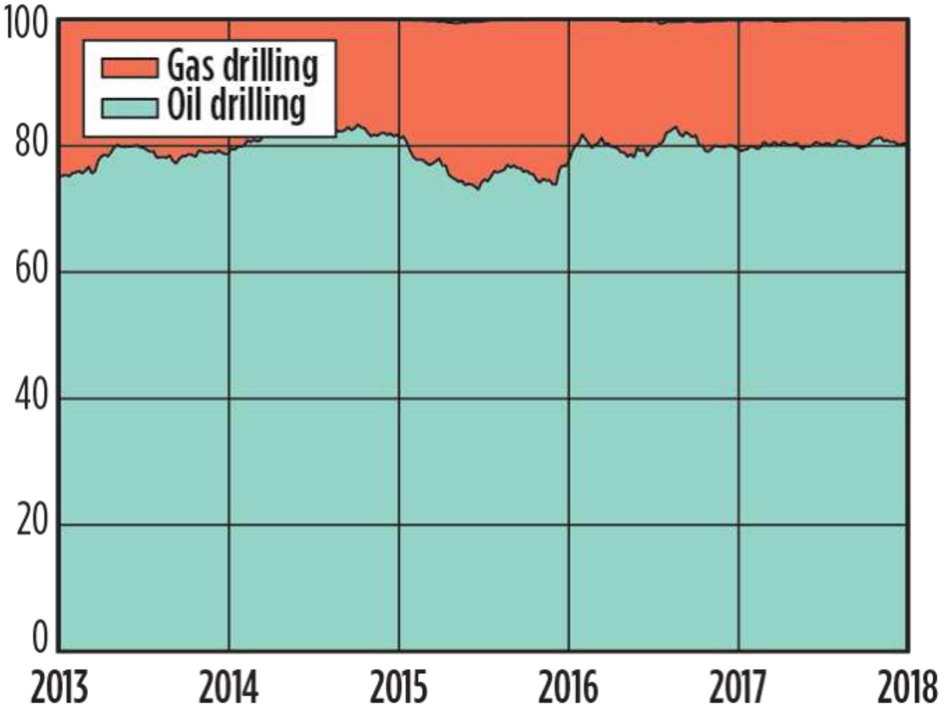


Source: *Rystad Energy*

Forecast: U.S. Drilling

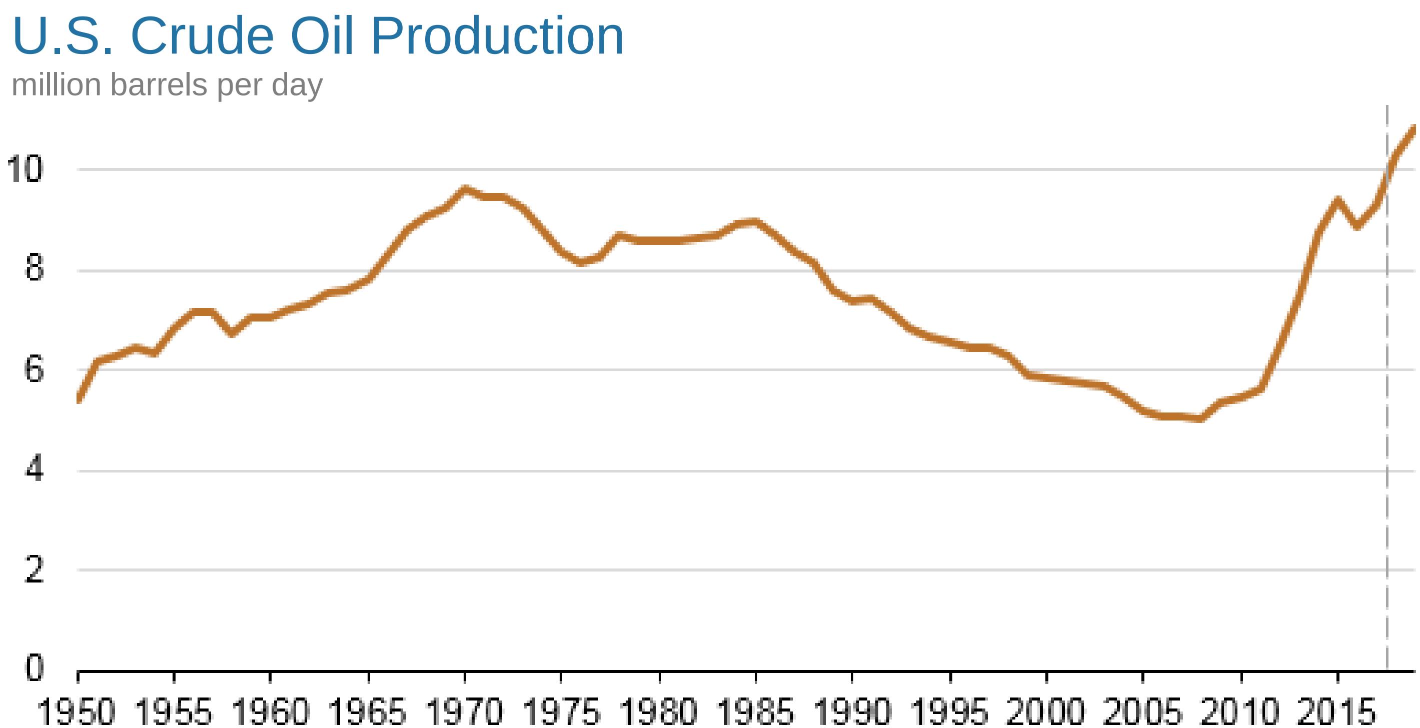
80/20 Drilling Split

- Economics favor oil drilling in gas-rich Delaware
- Associated gas growth, regardless of price



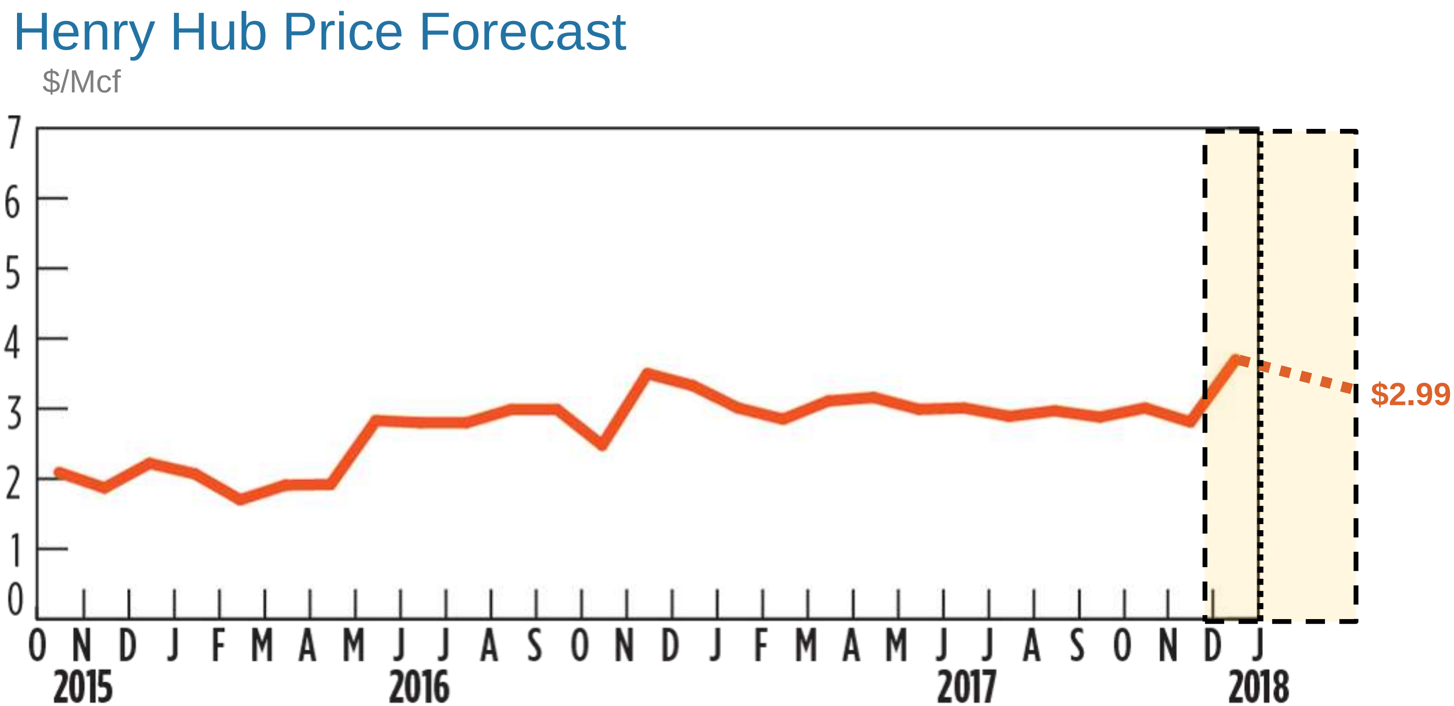
Source: *World Oil*

Forecast: Record Oil Production



Source: *EIA*

Forecast: Natural Gas Price

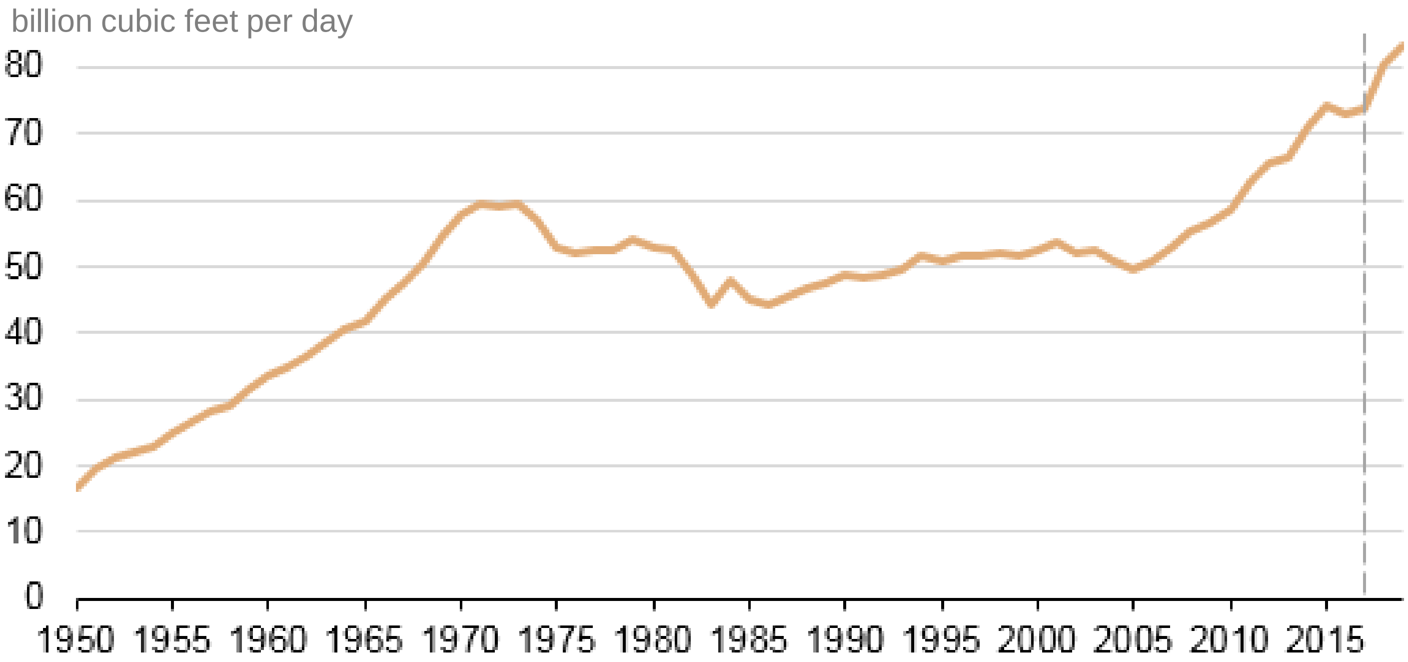


Source: *EIA*

Pipeline & Gas Journal

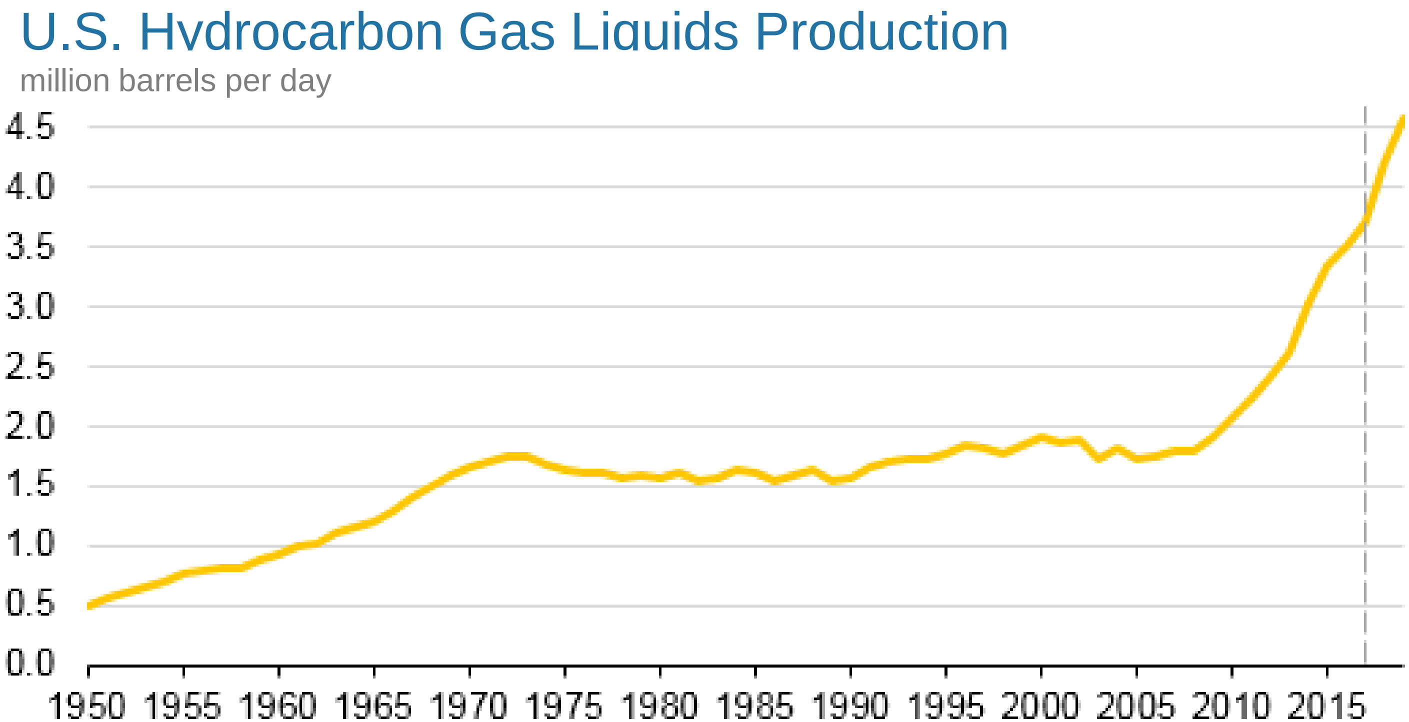
Forecast: Record Natural Gas Production

U.S. Dry Natural Gas Production



Source: *EIA*

Forecast: Record NGL Production

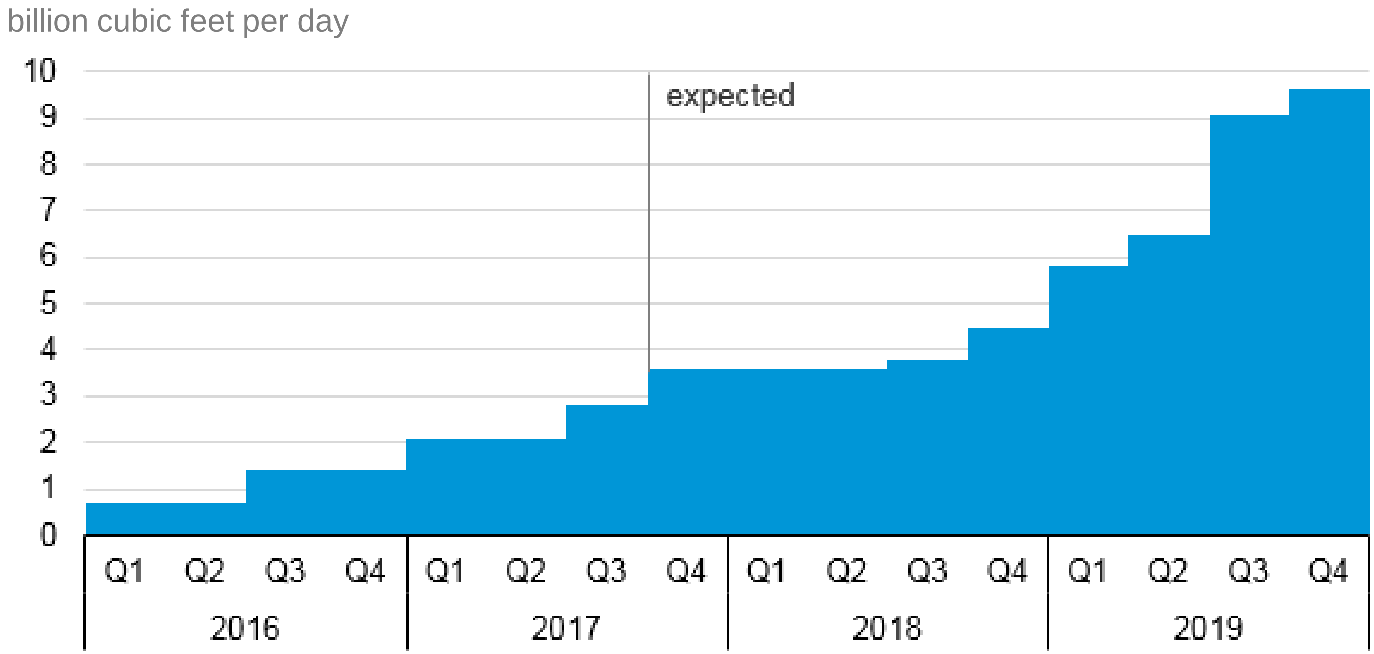


Source: *EIA January 2018 Short-Term Energy Outlook*

Pipeline & Gas Journal

Forecast: Growing LNG Export Capacity

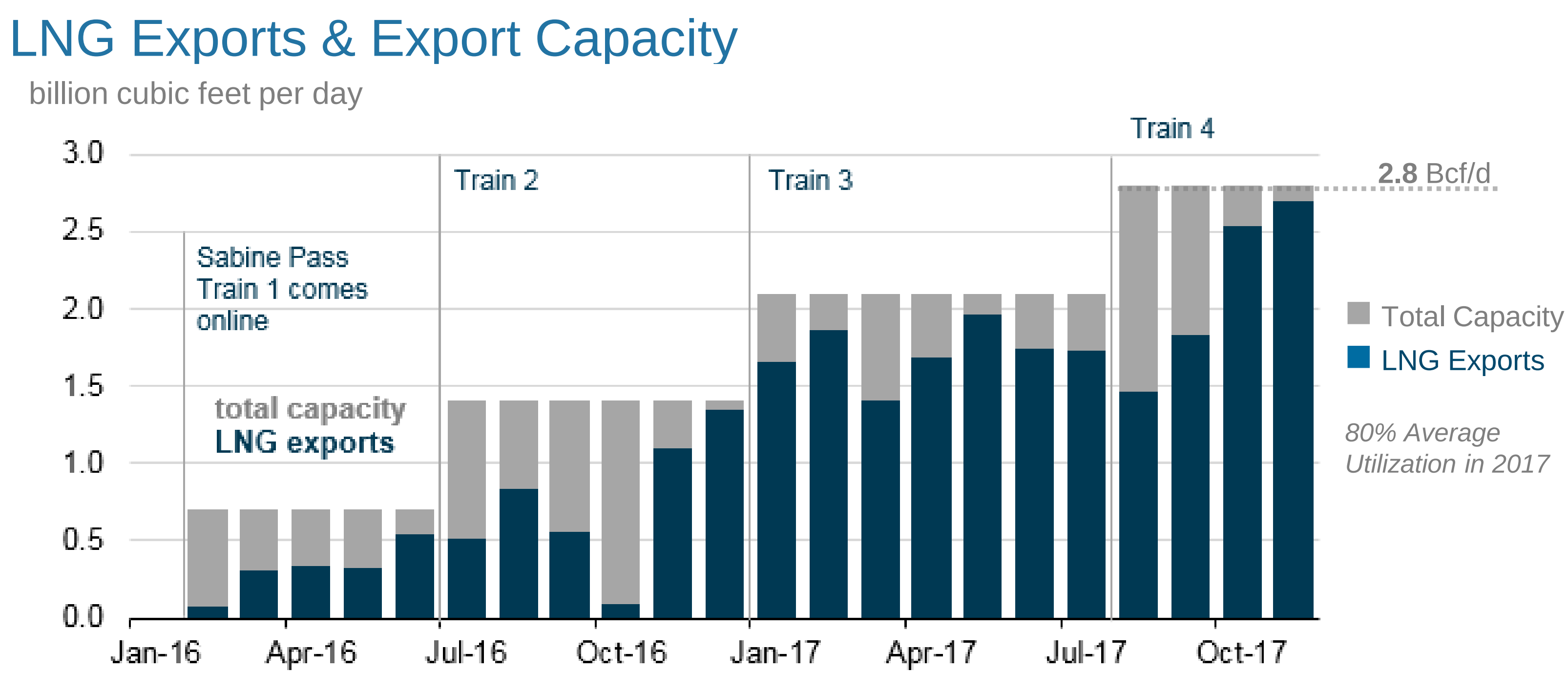
U.S. LNG Export Capacity 2016-2019



Source: *EIA*

Pipeline & Gas Journal

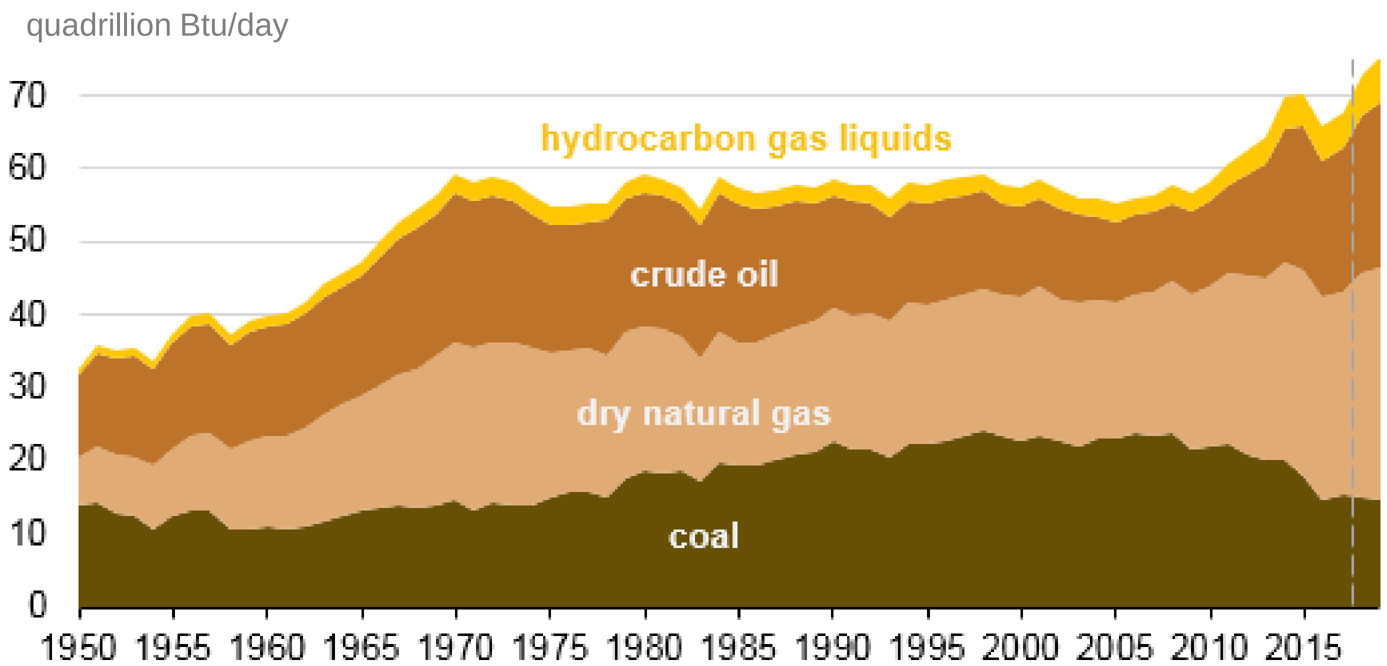
Gulf Coast Capacity Growth



Source: *EIA*

Forecast: Record Fossil Fuel Production

Natural Gas, Oil Offset Declining Coal

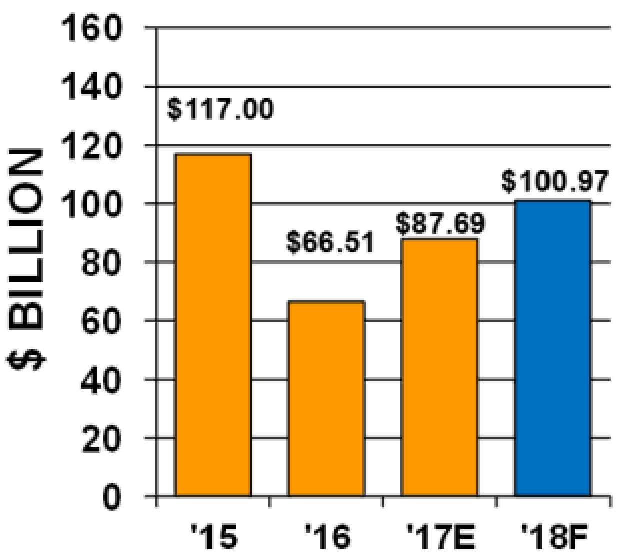


Source: *EIA*

2018 Outlook

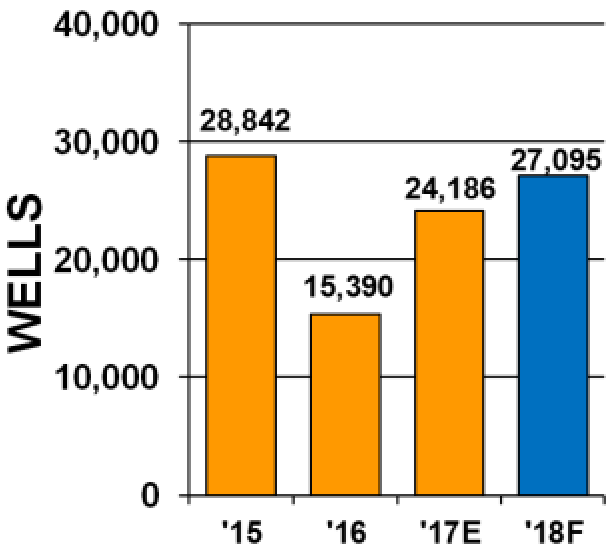
Key Indicators: Sector confidence

U.S. E&P Spending



Source: *Evercore ISI*

U.S. Wells Forecast



Source: *World Oil*

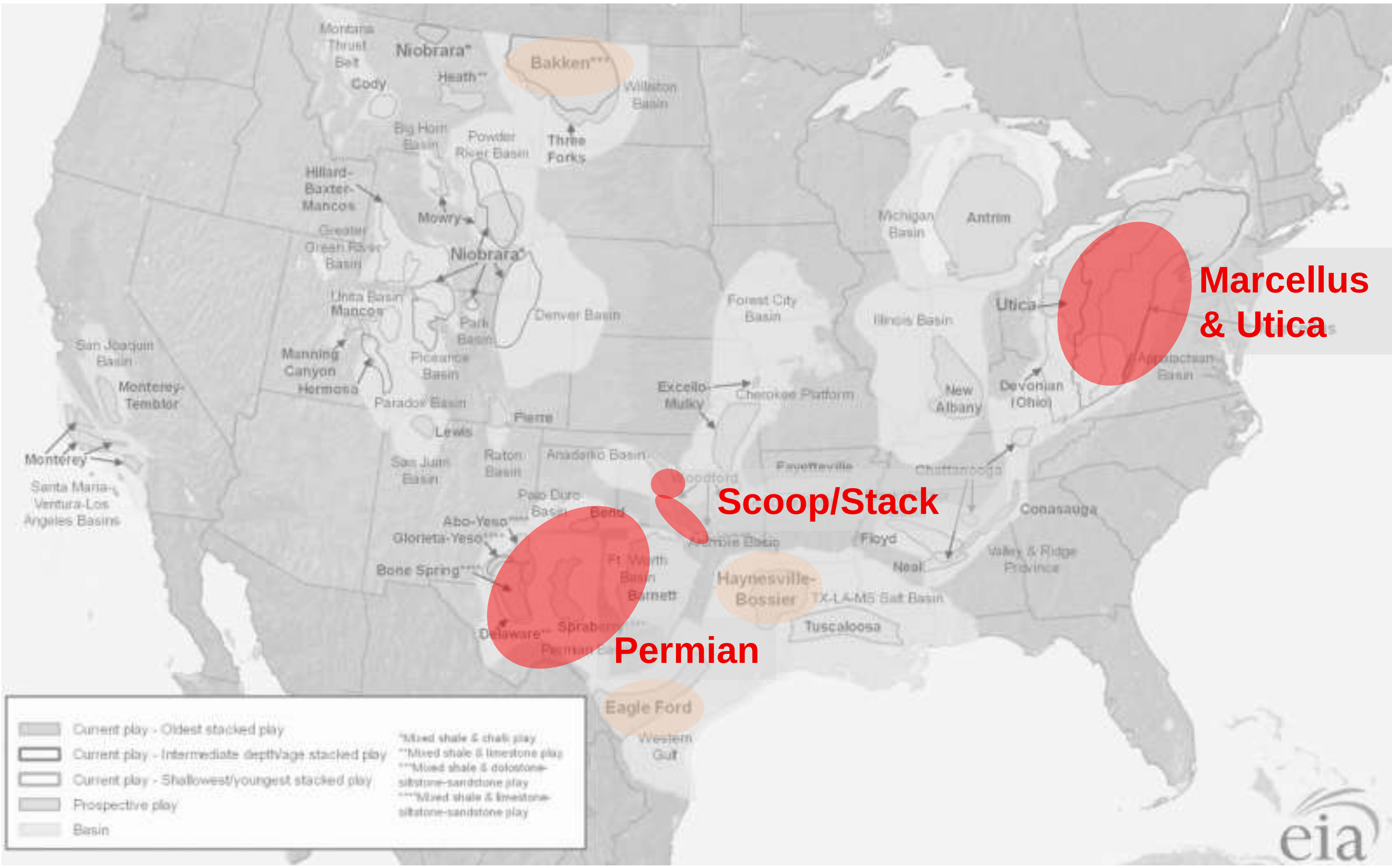
Pipeline & Gas Journal

"PIPELINE DEVELOPMENT continues to grow due to expanding oil and gas production in key areas, including the **Marcellus** and **Utica**, **Permian Basin** and the **Scoop/Stack** plays in Oklahoma."

Paul Moran
Associate Director
Navigant Consulting

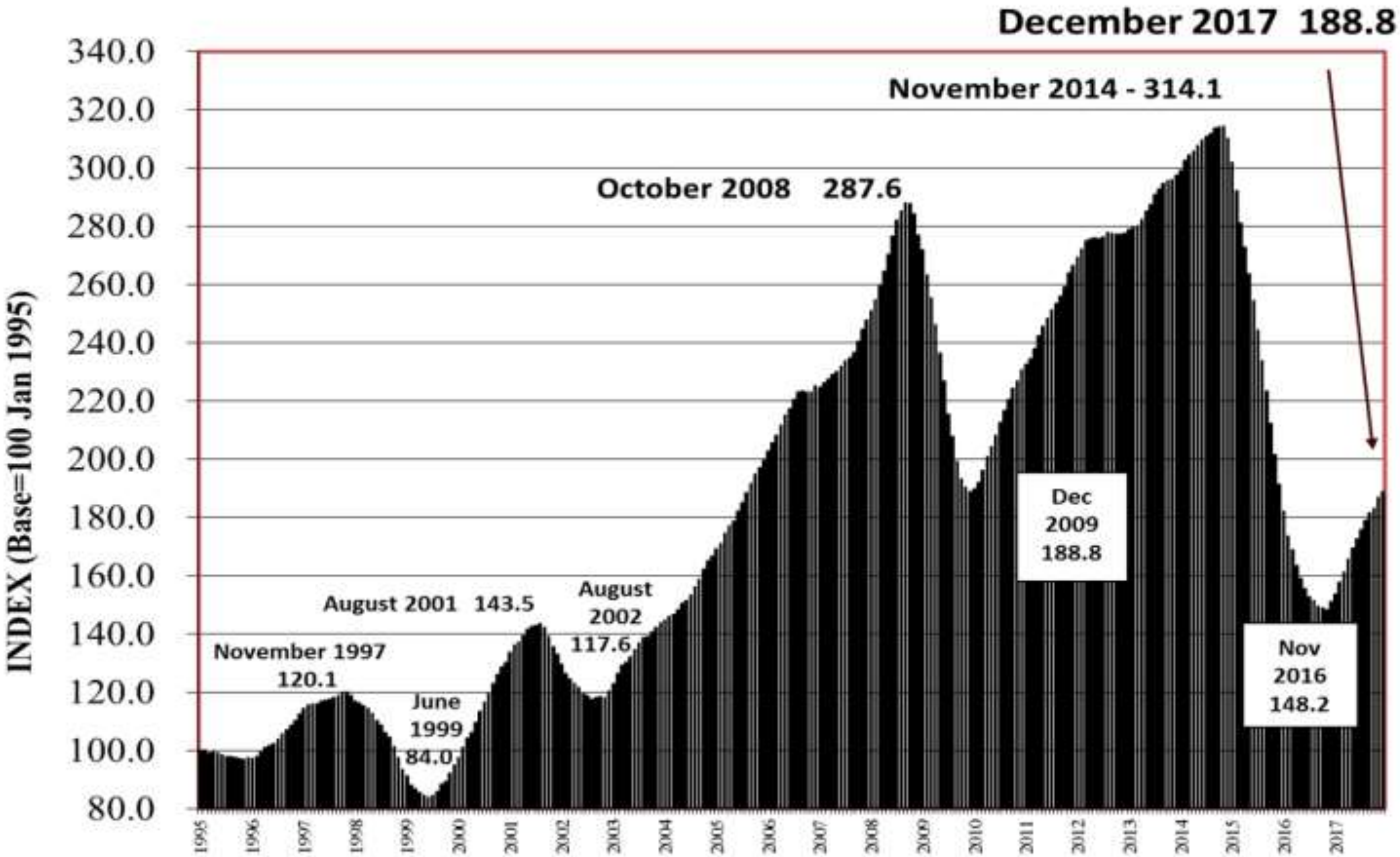
Production Adds Pipeline Demand

Lower 48 Shale Plays



Pipeline &
Gas Journal

Texas Petro Index



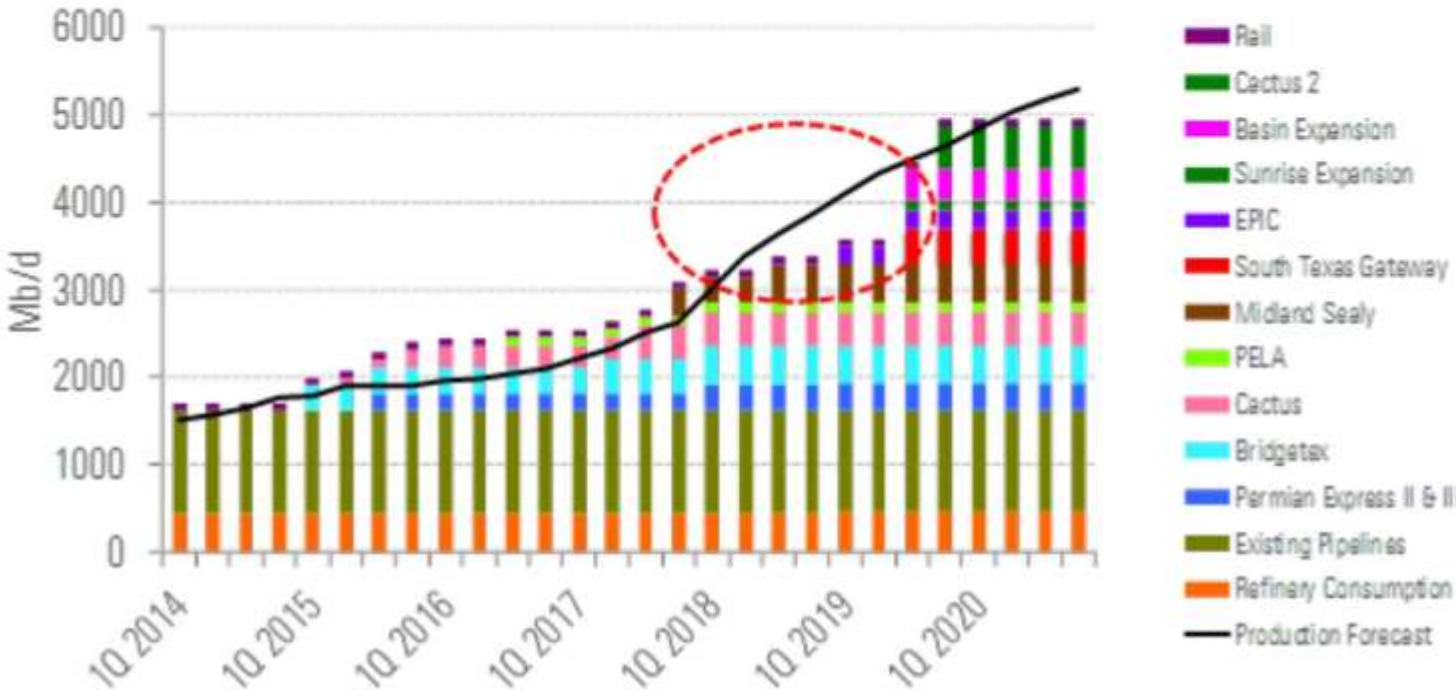
Source: *Texas Alliance of Energy Producers*

“PERMIAN CRUDE PRICES are likely to be heavily discounted during 2018 and 2019 as new **pipeline capacity lags production**.”

Sandy Fielden
Director, Oil & Products Research
Morningstar

Permian Production Outruns Capacity

Producers scramble for pipeline space



Source: *Morningstar Commodity Research*

Pipeline & Gas Journal

Permian Pipeline Tariffs

New Enterprise pipeline at 25% premium

Pipeline	Owner	From	To	Route	Tariff
Midland to Sealy	Enterprise	Midland	ECHO (Houston)	via Sealy	**$6.74**
Longhorn	Magellan	Midland	East Houston	Direct	**$4.15**
BridgeTex	Magellan/Plains	Colorado City	East Houston	Direct	**$3.78**
Basin/Seaway	Plains/Enbridge/ Enterprise	Midland	ECHO	via Cushing, OK	**$2.39**
Cactus	Plains	Midland	Corpus Christi	via Gardendale, TX	**$4.24**

Source: *Morningstar Commodity Research*

Pipeline & Gas Journal

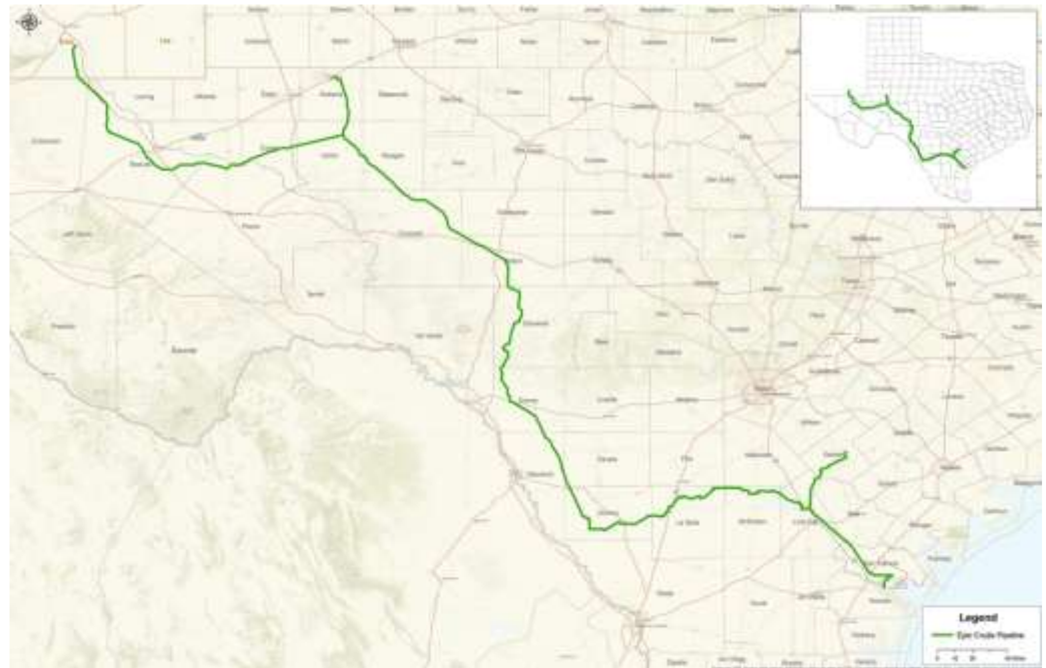
Permian Pipeline Expansion

1.6 Mmb/d More Capacity Planned by 2020

EPIC Crude Pipeline

- 730 miles
- 590,000 b/d
- Permian and Eagle Ford to Corpus Christi
- Includes terminals in Orla, Pecos, Crane, Wink, Midland, Helena and Gardendale
- Follows route of EPIC NGL Pipeline (under construction)

Status: Projected in-service 2019



Source: *EPIC*

Permian Pipeline Expansion

1.6 Mmb/d More Capacity Planned by 2020

South Texas Gateway Pipeline

- Up to 600,000 b/d crude and condensate
- Buckeye Partners
- 30-in pipeline
- Originating from Wink, Midland and Crane, TX, and delivering to Buckeye's recently expanded facilities in Corpus Christi
- Export market

Status: Open season started late December 2017.

Source: *Buckeye*

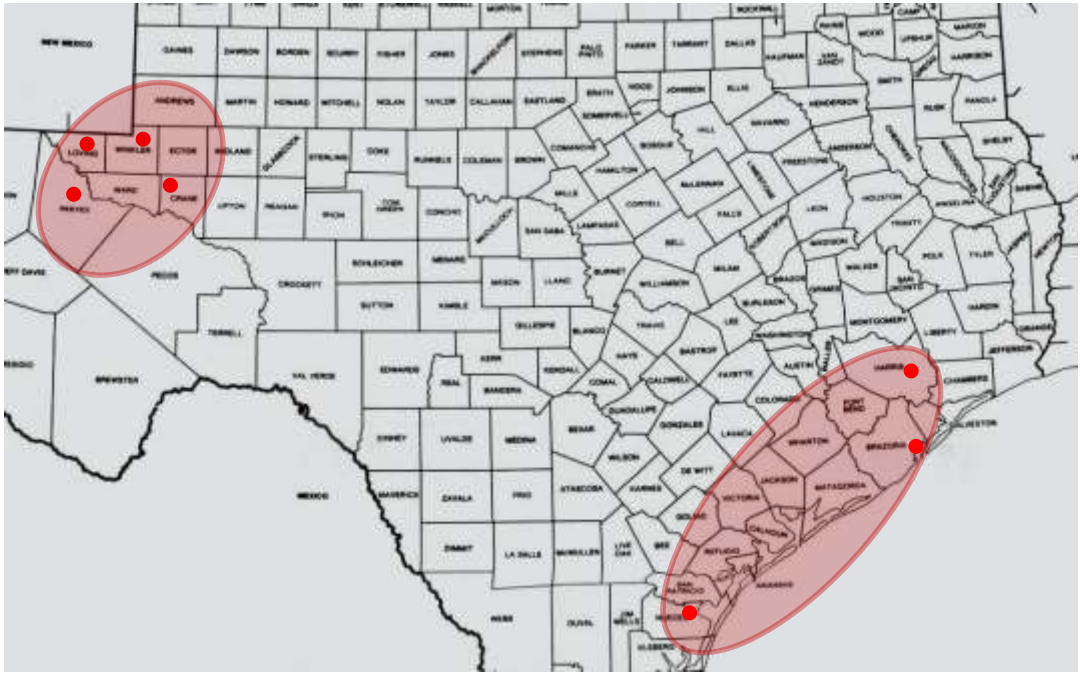
Pipeline & Gas Journal

Permian Pipeline Expansion

1.6 Mmb/d More Capacity Planned by 2020

Gray Oak Pipeline

- Phillips 66/Enbridge
- 385,000 b/d (initial)
- From Reeves, Loving, Winkler and Crane counties
- To Corpus Christi, Freeport and Houston
- Projected service 2H 2019



Status:

Open season announced Dec. 2018

Pipeline & Gas Journal

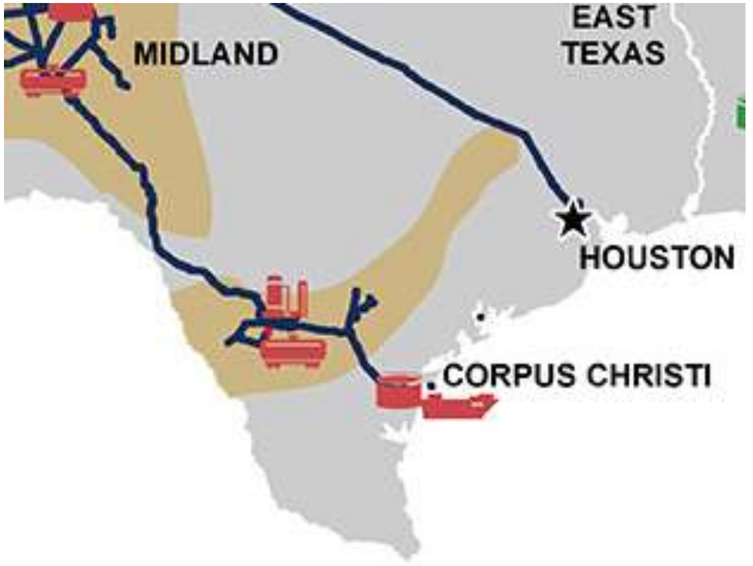
Permian Pipeline Expansion

1.6 Mmb/d More Capacity Planned by 2020

Plains Cactus II

- Up to 585,000 b/d via combination of existing pipelines and two new pipelines
- First new pipeline to extend from Wink South to McCamey
- Second pipeline will extend from McCamey to the Corpus Christi/Ingleside
- Scheduled to begin operations in Q3 2019

Status: Permitting, ROW and procurement underway (Initial open season ended Jan. 22)



Source: *Plains All American Pipeline*

Permian Pipeline Expansion

1.6 Mmb/d More Capacity Planned by 2020

- **Plains Sunrise Pipeline expansion**
  - Early- to mid-2019
  - 120,000 Bbl/d
  - Delaware Basin & Midland to Cushing
  - 180 miles of new 24-in pipe from Colorado City to Wichita Falls
- **Plains Delaware Basin system expansion**
  - Early to mid-2019
  - 200,000 bbl/d
- **Magellan Midstream Permian-Gulf Coast**
  - 350,000 bbl/d, 375-mile, 24-inch diameter pipeline from Crane to Three Rivers, TX
  - Three Rivers to Houston (new 200-mile pipeline) or Corpus Christi (new 70-mile pipeline)
  - Potential to expand up to 600,000 bpd for each destination
  - Initial open season ended Feb. 2

Permian Pipeline Expansion

Gas & LNG Pipeline Projects

Epic NGL Pipeline

- 650-mile, initial capacity 220,000 b/d
- Multiple 100,000 bbl/d fractionators in Corpus Christi area
- Initial phase planned in service early 2018, fully complete 2019

Gulf Coast Express Pipeline

- Kinder Morgan – FID December 2017
- 1.9 Bcf/d
- Planned in-service Q3 2019

Pecos Trail Pipeline

- Namerico Energy
  468-mile, 42", 1.9 Bcf/d

Permian-Katy

- Boardwalk and Sempra
- 1.5-2.0 Bcf/d

Tellurian Permian Global Access Pipeline

- 625 miles, 42", 2.0 Bcf/d

Pipeline & Gas Journal

P&GJ Pipeline Opportunities Conference

strategic pipeline industry insight

April 3, 2018

Westin Galleria, Houston