NORTHEAST GAS MIDSTREAM

PREVIEW FundamentalEdge | February 2018

learn more at drillinginfo.com

Contents

*This is a **PREVIEW** of a 15+ Page Report*

Introduction and Key Takeaways 3

Northeast Gas Midstream 4

- Production Forecast 4
- Top Producers 6
- Breakeven Economics 7
- Marcellus/Utica Contribution to US Production Growth 9
- 2018 Infrastructure Projects 10
- Pipeline Takeaway Capacity 11
- Regional Basis 12
- Recently Brought Online Projects and Throughput 13

DI's Price Forecast Update – Tax Reform 18

Introduction & Key Takeaways

- The Northeast region was traditionally a demand market for gas produced in the SE/Gulf, Midcontinent, and Canada. This changed when the Marcellus and Utica formations were found. The region contributes 35% of today's total U.S. dry gas production and became a net supply region for the gas market in 2016.

- Lack of pipeline capacity to move growing natural gas supply to market has been the main challenge for producers since 2013. This caused pricing in the region to trade at levels significantly below Henry Hub. Northeast basis has traded as low as minus $2 per MMBtu.

- Capacity additions have fallen short of production growth and basis has remained depressed. However, Drillinginfo expects pipeline capacity constraints to end in 2018 when key takeaway projects come online. Energy Transfer Rover Phase 2, Transco's Atlantic Sunrise, Nexus Gas Transmission and Columbia's Gulf Xpress projects will effectively debottleneck the region during the 3rd quarter. Basis are therefore expected to trade within variable transport costs of about $0.20-$0.30 below HH.

- **Price Forecast Update:**
  - ✓ The 2018 Tax Reform lowered the underlying Federal Income Tax rate to 21% from 35%. Drillinginfo has therefore lowered MARR to 12.5% from 15% to account and reflect the more relaxed balance sheet as well as additional capital producers will have access to.
  - ✓ This change translates into better breakevens meaning lower gas prices are now needed to bring the same production growth. Henry Hub price forecast was lowered to $2.75/MMBtu (2018-2021) from $2.85/MMBtu to sustain the supply/demand balance as breakevens decreased by lowering MARR.
  - ✓ Longer Term, Drillinginfo continues to estimate the price equilibrium at $60/Bbl WTI for crude oil and $2.65/MMBtu for natural gas starting in 2021.

Northeast Production

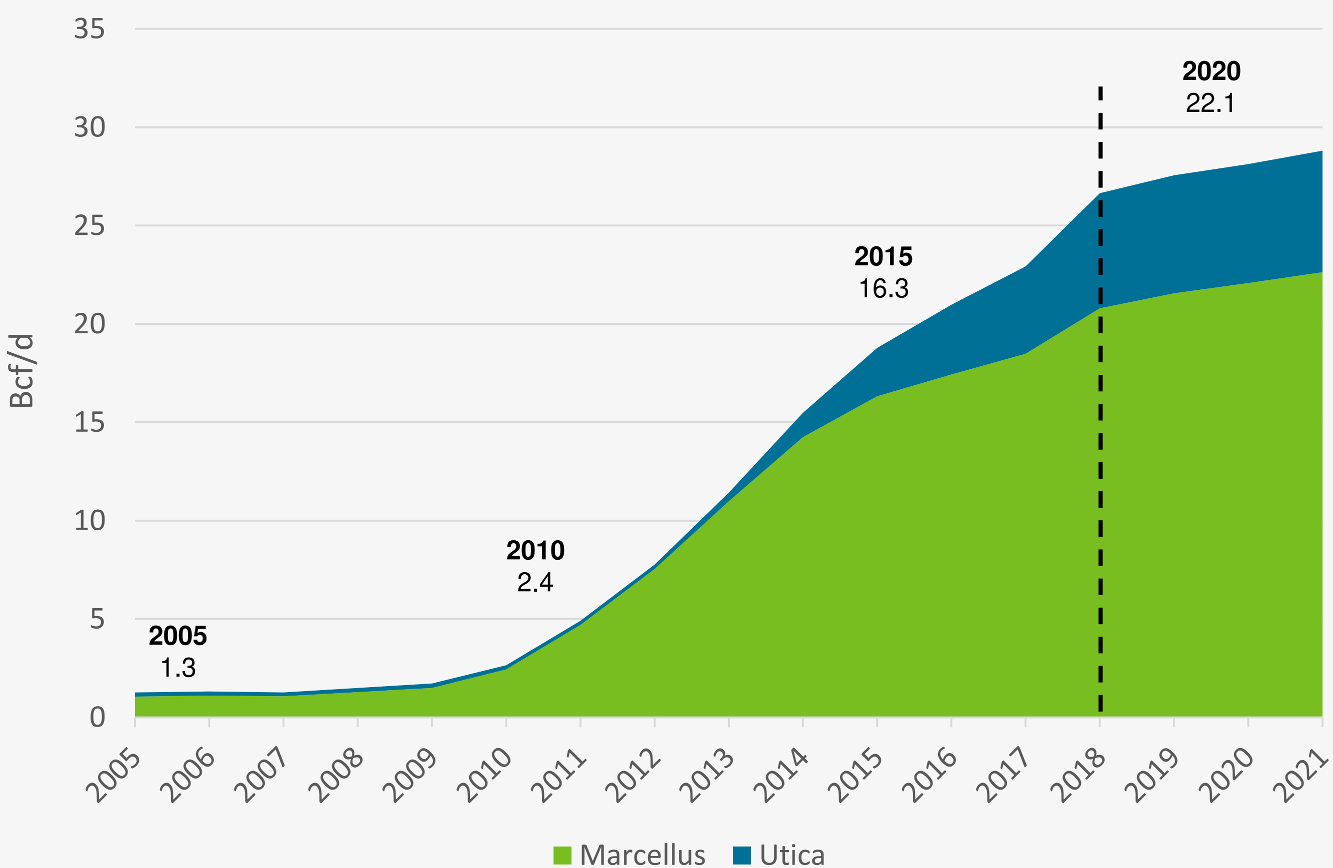
Over the past 10 years, natural gas production in the Marcellus and Utica basins has grown from about 2 Bcf/d in 2008 to over 26 Bcf/d today (Feb2018). During the same time period, other basins also experienced growth but at a significant lower rate: Eagle Ford 3.3 Bcf/d, Permian 3.2 Bcf/d and Anadarko 1.2 Bcf/d.

Due to the massive growth, producers faced many challenges, but the most significant one has been pipeline takeaway capacity. This report will focus on this takeaway capacity and implications for the future.

The Northeast was traditionally a demand market, local demand was higher than production therefore gas had to be imported from the Southeast/Gulf, Midwest (Rockies/MC Producing) and Canada. The region is today a net exporter of natural gas as it produces more gas that it can consume. Pipeline infrastructure operators had to adapt to this new dynamic by changing flow direction in existing pipelines as well as installing new (greenfield) pipeline capacity.

CHART 1

Northeast Dry Gas Production



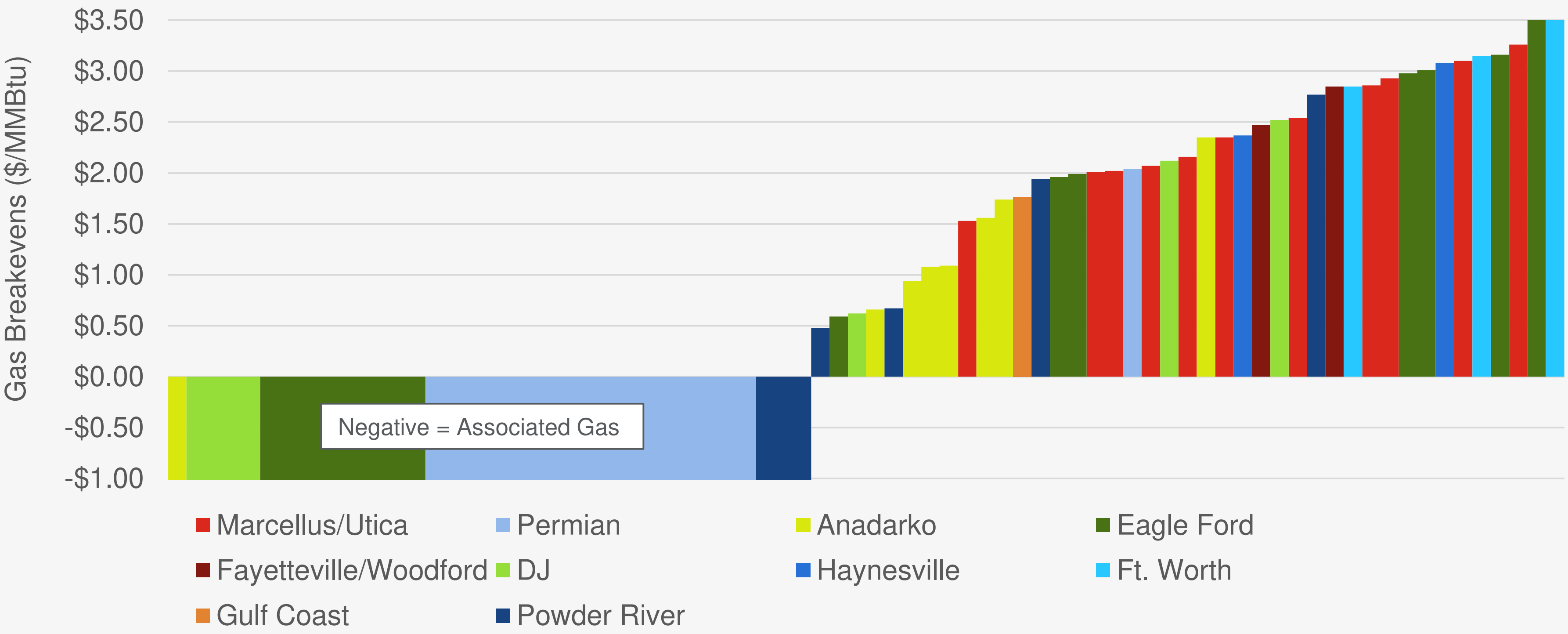
Source: DI ProdCast

Gas Breakevens – Marcellus/Utica Competitiveness

The Marcellus and Utica have some of the best production economics in the U.S. with most fields breaking even under $2.50/MMBtu (see red bars in chart below). However, the Northeast also competes with associated gas in oily areas like the Permian where most drilling is driven by the price of crude oil. This associated gas is illustrated in the chart below; at $60 WTI, the gas breakeven is below zero for many fields/tiers in the Permian , Eagle Ford, DJ, and Anadarko.

CHART 4

Henry Hub Breakevens at $60 WTI



Key Assumptions: 12.5% MARR, Current Type Curves, Current D&C Costs

Source: DI ProdCast

Northeast Basis

Lack of pipeline takeaway capacity pushed natural gas basis down in the region with basis trading as low as $2.00 per MMBtu below Henry. This behavior started in the summer of 2013, in line with significant production growth in the region.

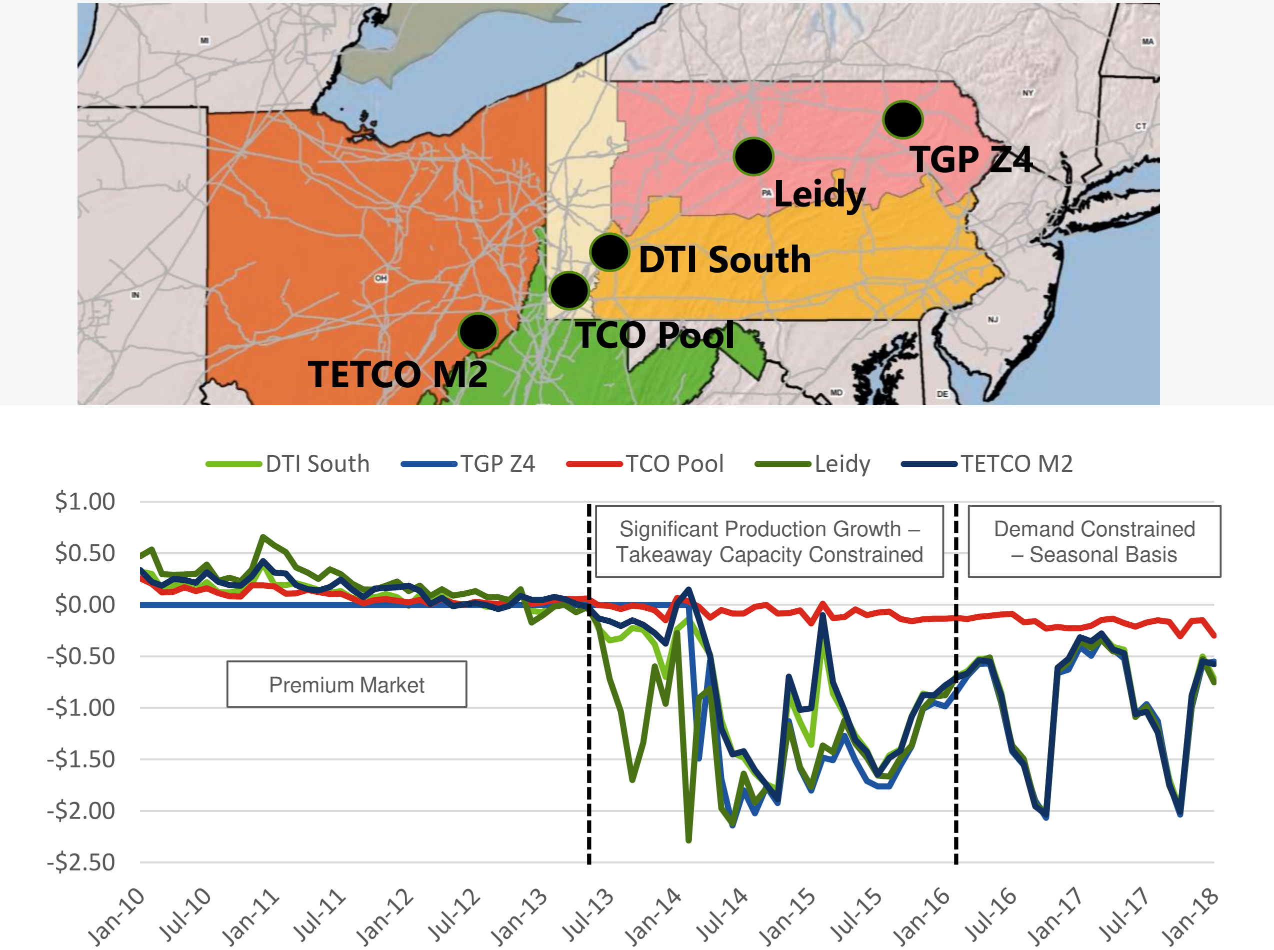
Between 2013-2016, basis remained weak and volatile averaging $1.00 per MMBtu below Henry Hub as pipeline capacity additions fell short compared to the strong production growth that materialized during this period.

Price basis have improved since, but have been very seasonal over the past two years with summer lows and stronger basis in the winter due to an increase in local demand for heating during cold months.

Drillinginfo expects Northeast basis to start trading within variable transportation costs by the end of the year, somewhere in the range of ~20-30 cents.

CHART 7

Key Northeast natural gas pricing hubs



Source: SNL basis

Texas Eastern Pipeline (TETCO)

On October 31, 2017, FERC granted Texas Eastern Transmission LP authorization to begin partial service on Access South and Adair Southwest projects. Then, both projects were brought into full-service on November 20, 2017. The two pipeline reversal projects target Marcellus and Utica shale production adding additional capacity on TETCO's system, which connects the Northeast to the Gulf Coast.

Access South provides 0.32 Bcf/d of takeaway capacity from Uniontown, PA to Kosciusko, MS. Adair Southwest picks up an additional 0.20 Bcf/d from Uniontown, PA to Adair County, KY. Rice Energy Marketing LLC subscribes to the full capacity of Access South while Range Resources - Appalachia subscribes to all of the capacity on Adair Southwest.

Southbound flows on TETCO averaged 1.62 Bcf/d in 2017 before these projects began partial service on November 1. Since then, gas flow has increased by 0.63 Bcf/d to an average of 2.25 Bcf/d through February 2018 as measured on the 30" line at the Berne Compressor Station, located in Monroe County, OH.

Since Access South began full service on November 20, 2017, flows south on TETCO at the Kosciusko, LA Compressor Station have increased from 0.97 Bcf/d before this date to 1.26 Bcf/d through February 2018. This is an increase of 0.29 Bcf/d of gas leaving the Northeast to the Gulf.

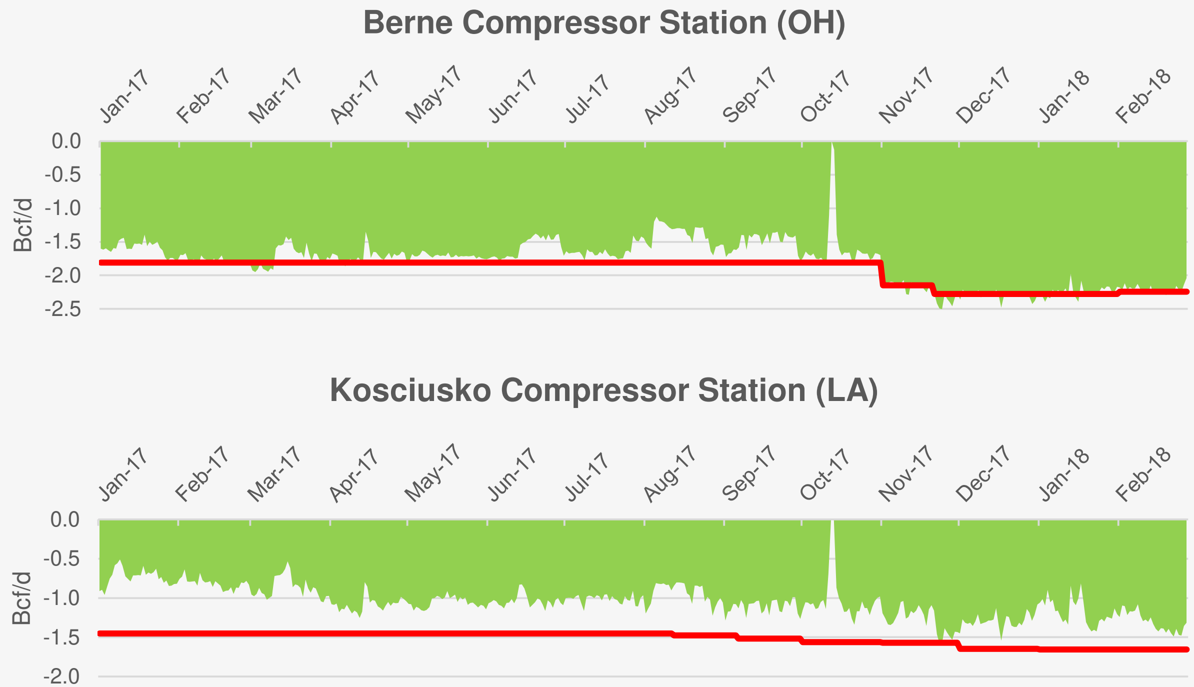
TABLE 3

TETCO Northeast Pipeline Projects

Project Name	Shipper	Capacity (Bcf/d)	In-Service	Source	Destination
Access South	Rice Energy	0.32	11/20/17	PA-West	MS
Adair Southwest	Range Resources	0.20	11/20/17	PA-West	KY

CHART 8

TETCO Gas Flow



Source: Genscape

Contact

FundamentalEdge
by drillinginfo

This is a preview of the full report.
If you're interested in learning more, please contact your MarketView account manager or businessdevelopment@drillinginfo.com,
and for immediate help: 1 (800) 282-4245 x1

Thank you!

Additional Publications