Natural Gas

Platts Analytics

NATURAL GAS MARKET UPDATE:

SUPPY and DEMAND, EXPORTS and ECONOMICS

Rick Allen, Director, Consulting Services

CoBank Energy and Water Executive Forum

September 1, 2016

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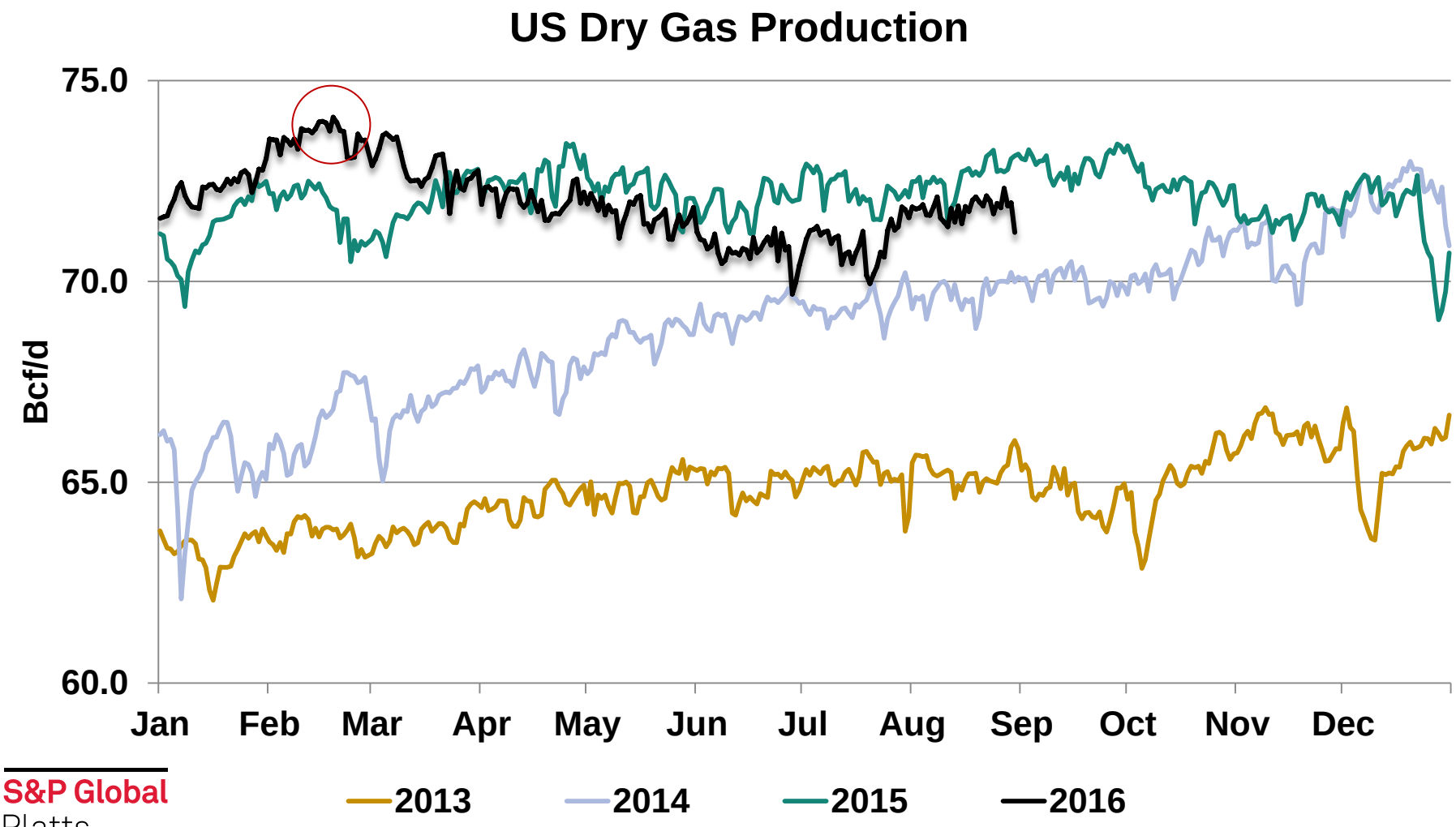
Key Takeaways

- Forecasted U.S. production growth is highly dependent on global export markets; more exports than organic demand in the forecast
- Northeast U.S. production gains reversed flow patterns and filled the outbound pipeline infrastructure; risk of delayed pipeline development is risk to production growth
- Any Northeast pipeline development risk is mitigated by upside potential for other gas producing regions

U.S. Production Flatlines Waiting for Demand



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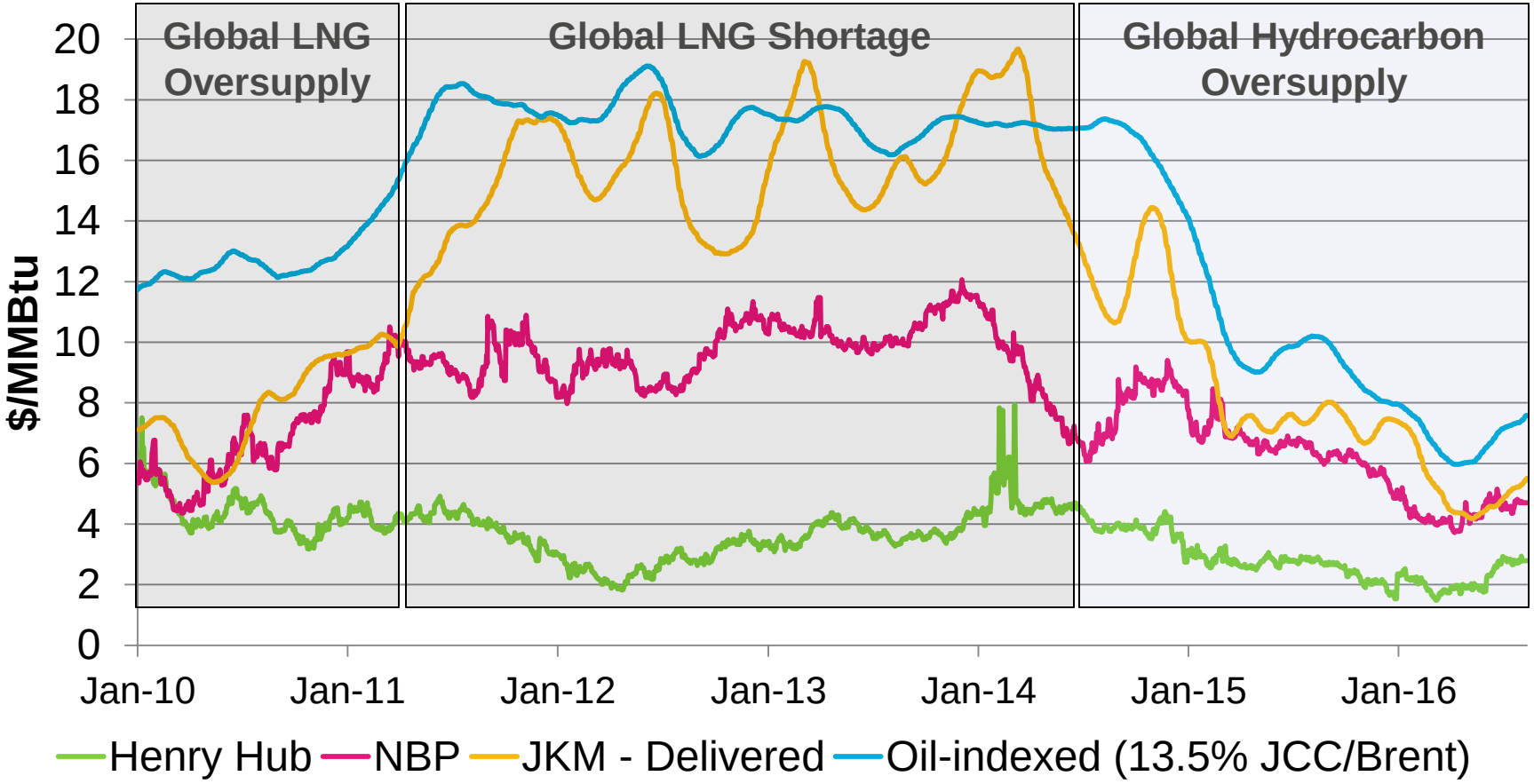
Source: Platts Bentek

LNG: Global S/D and Exports from U.S.

LNG Commodity Cycle: Oversupply Again

High Prices Drove Investments in Liquefaction; Market Length to Persist



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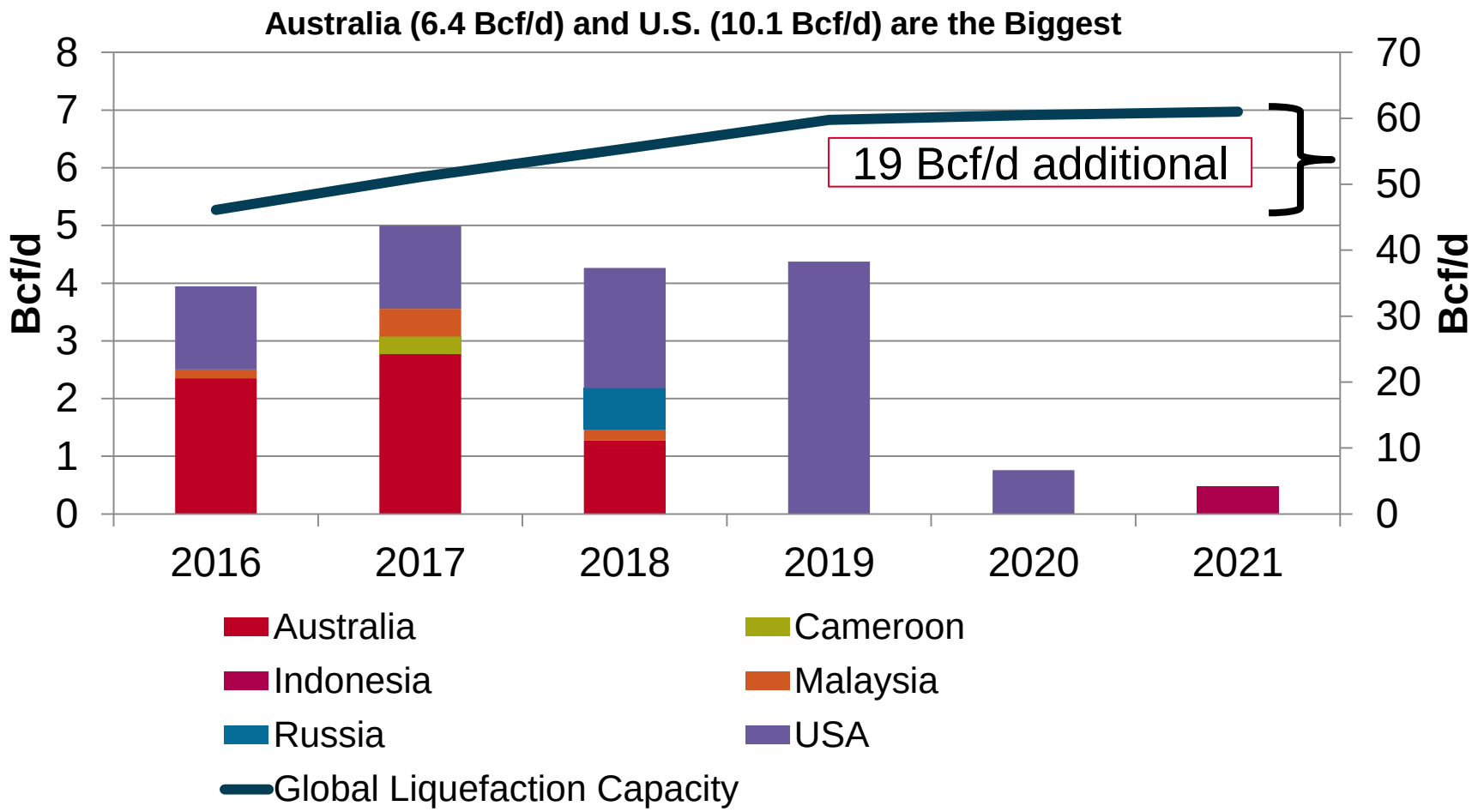
Source: Platts Bentek

Global Liquefaction Capacity up 45% 2016 v. 2021



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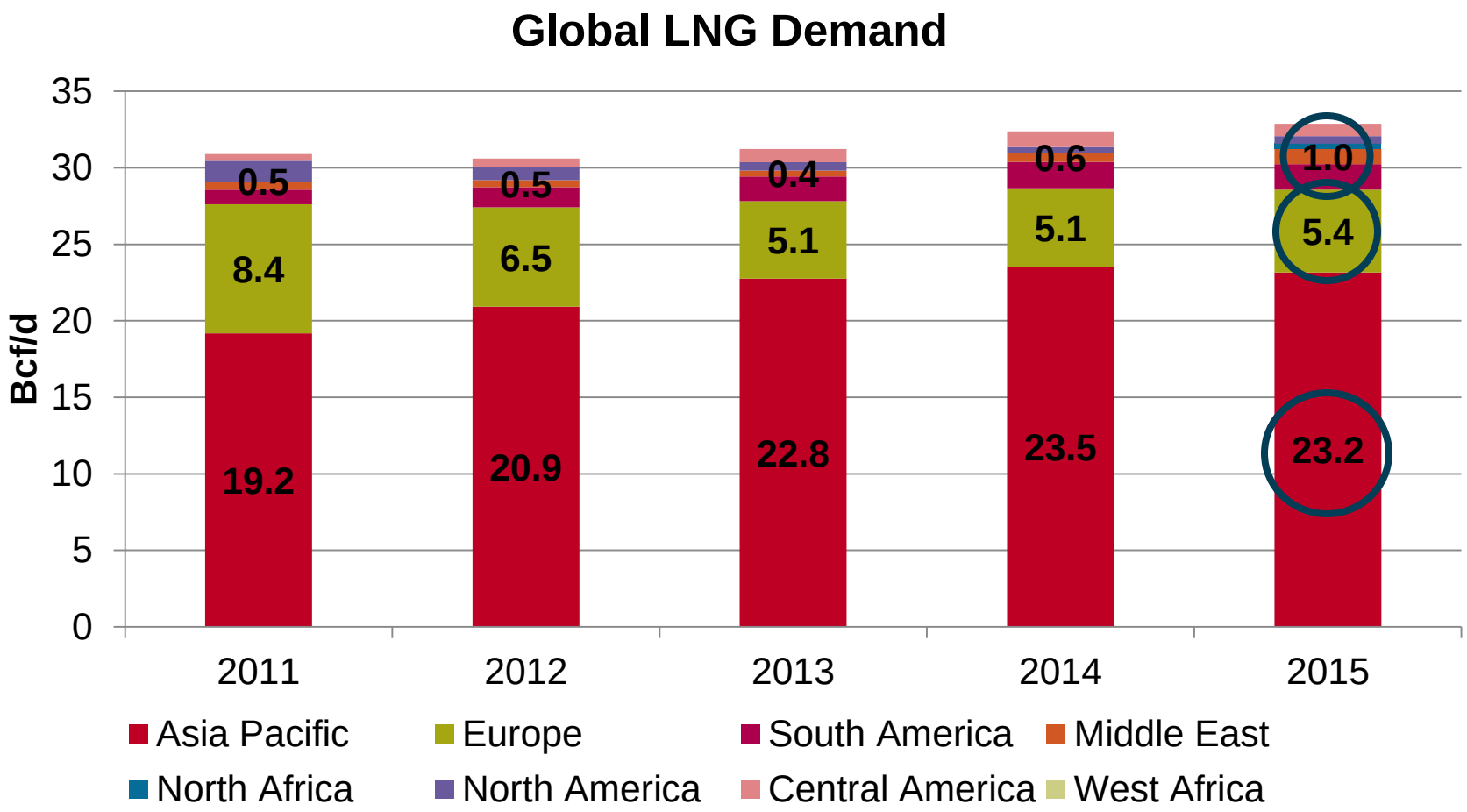
Asia Pacific Demand Growth Stalled



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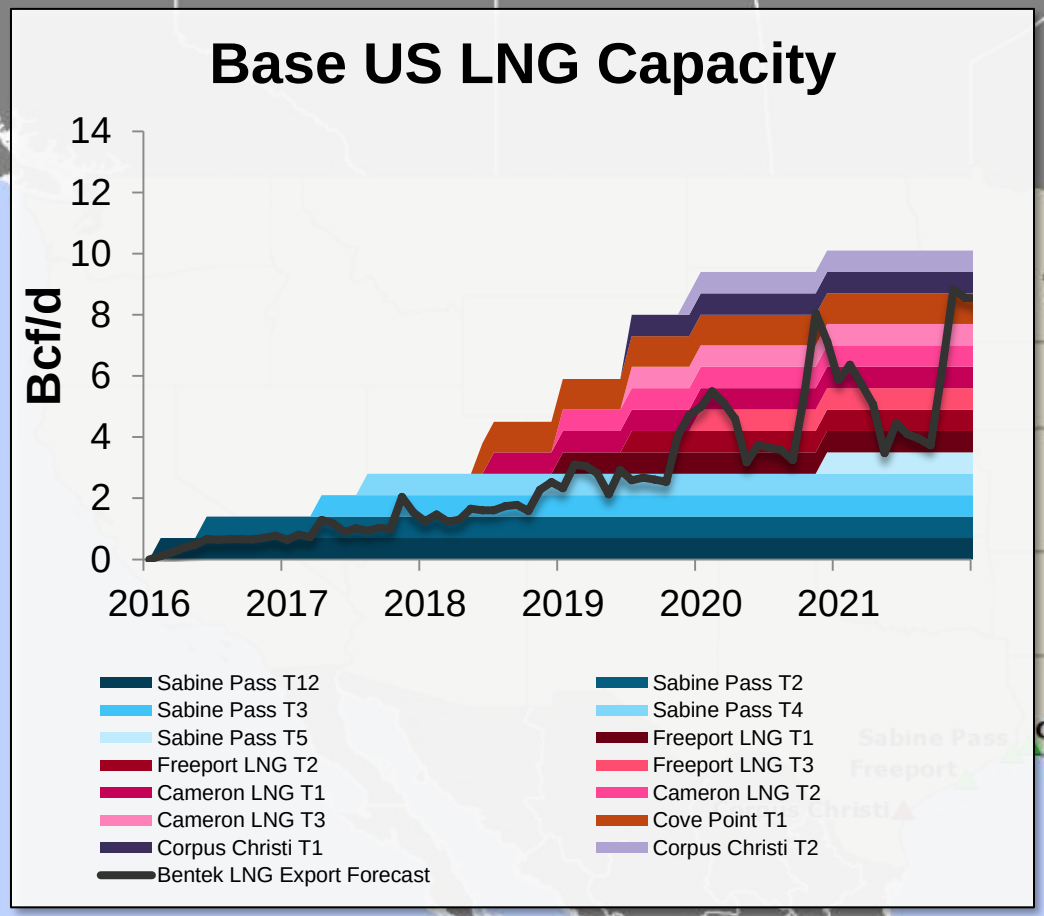
Source: Platts Eclipse Energy

LNG Exports Pump Demand; Underutilization



- Forecast 10.1 Bcf/d of LNG Liquefaction In-service in 2021
- LNG Exports reach 5.8 Bcf/d annually in 2021; peak month 9 Bcf/d

East Coast Export Terminals:
Cove Point – 1 Bcf/d

Gulf Coast Liquefaction Capacity:
Sabine Pass T1-5 3.5– Bcf/d
Freeport LNG T1-3 – 2.1 Bcf/d
Cameron T1-3 – 2.1 Bcf/d
Corpus Christi T1-2 – 1.4 Bcf/d

Source: Platts Bentek

LNG Terminals
Greenfield Export
Import Conversion to Export

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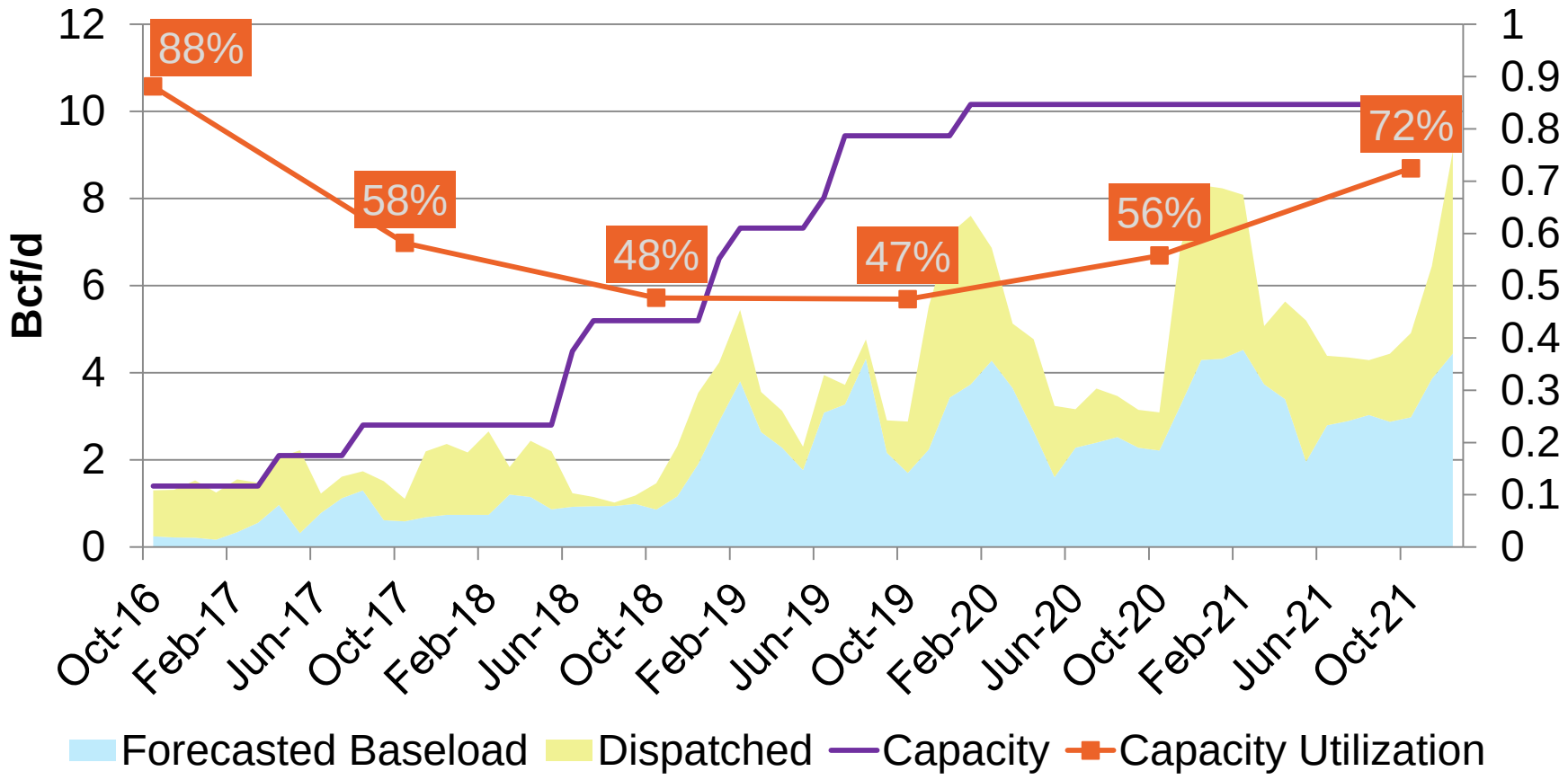
U.S. LNG Capacity Greater than Demand



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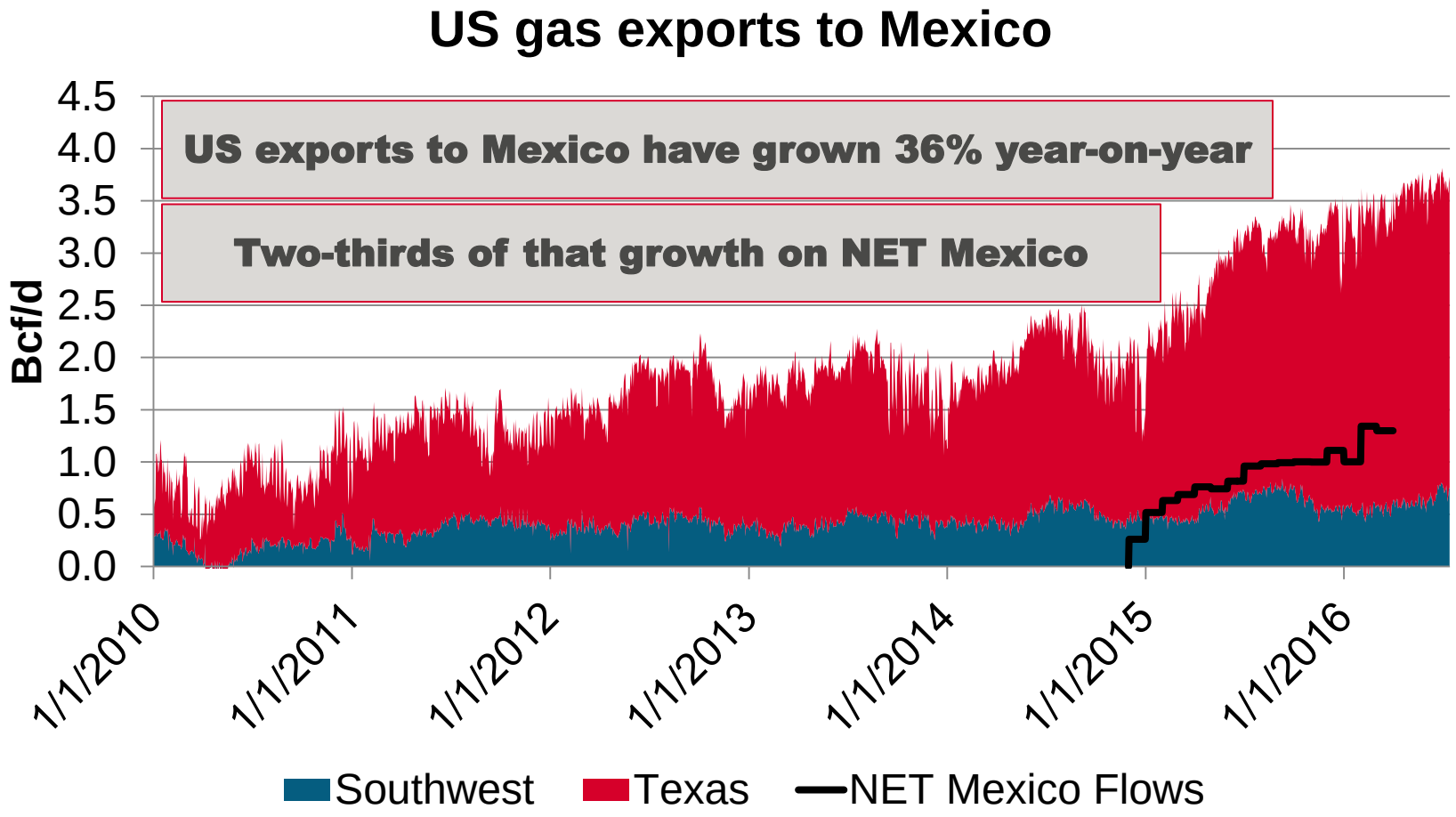
Mexico: Demand Growth and Imports

U.S. Exports to Mexico Surging to All-Time Highs



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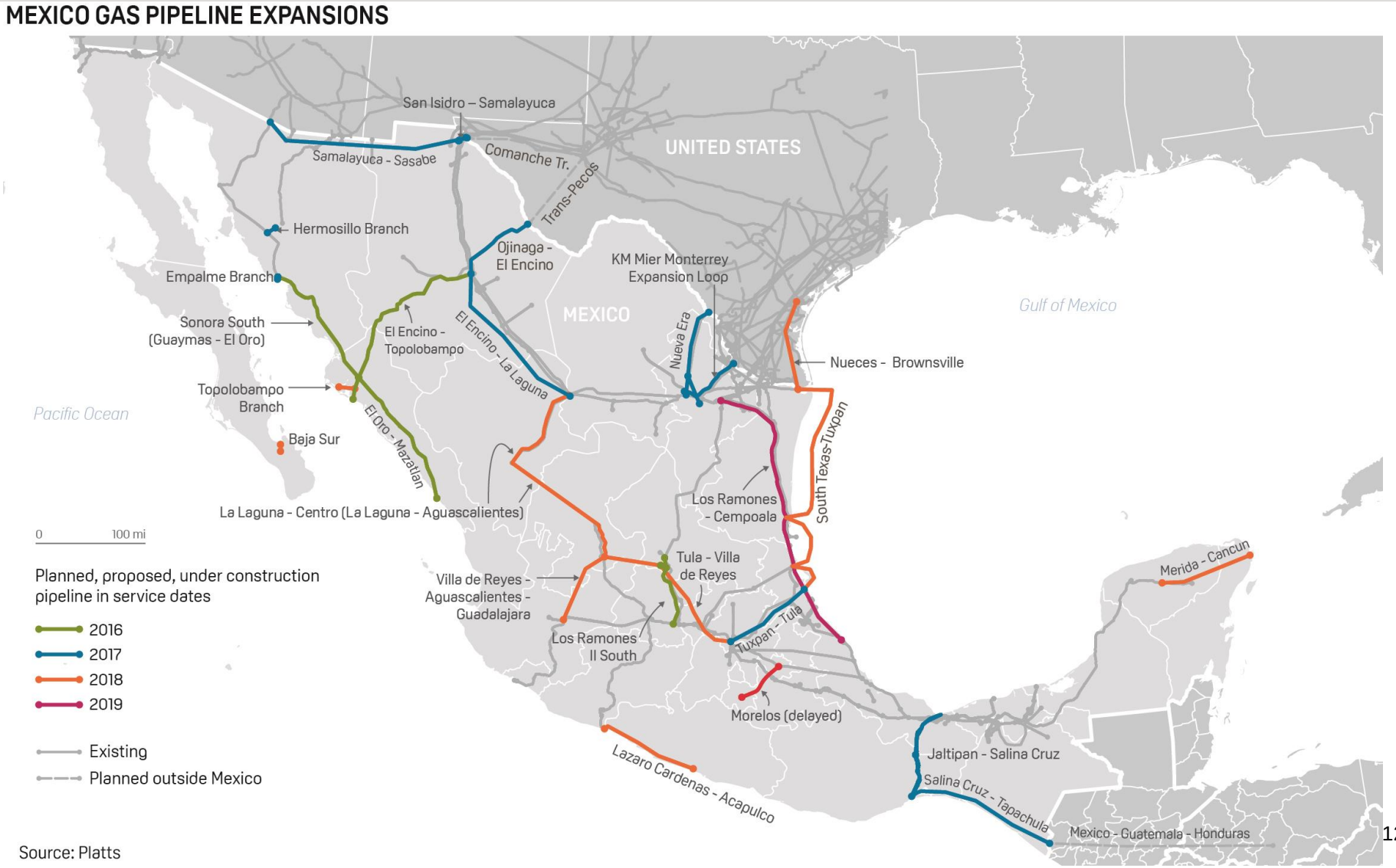
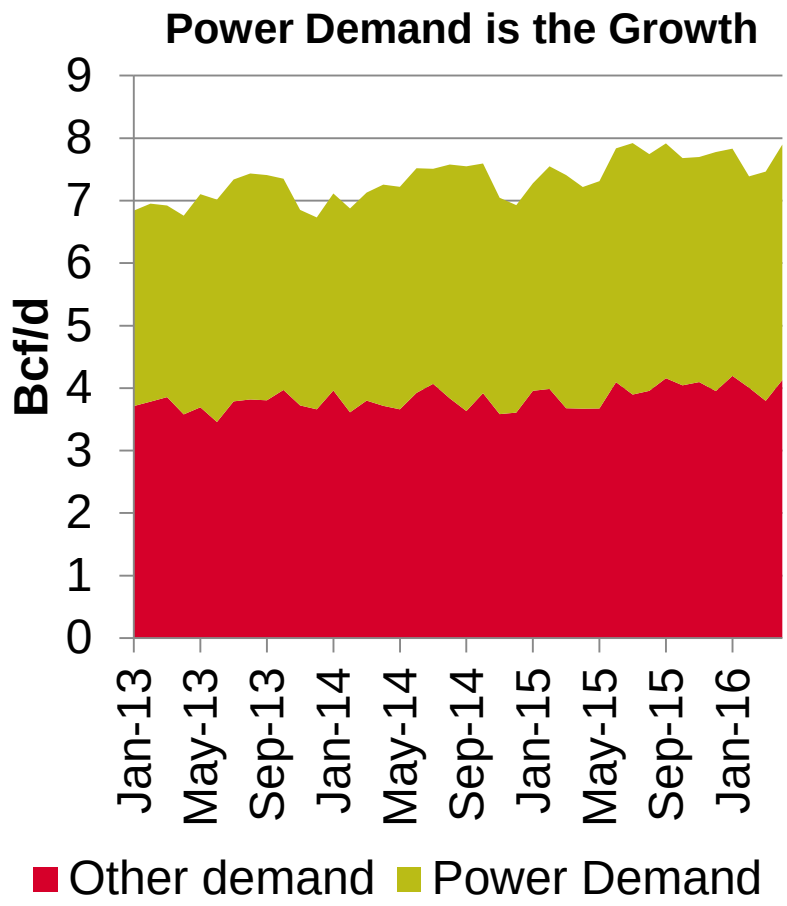
Source: Platts Bentek

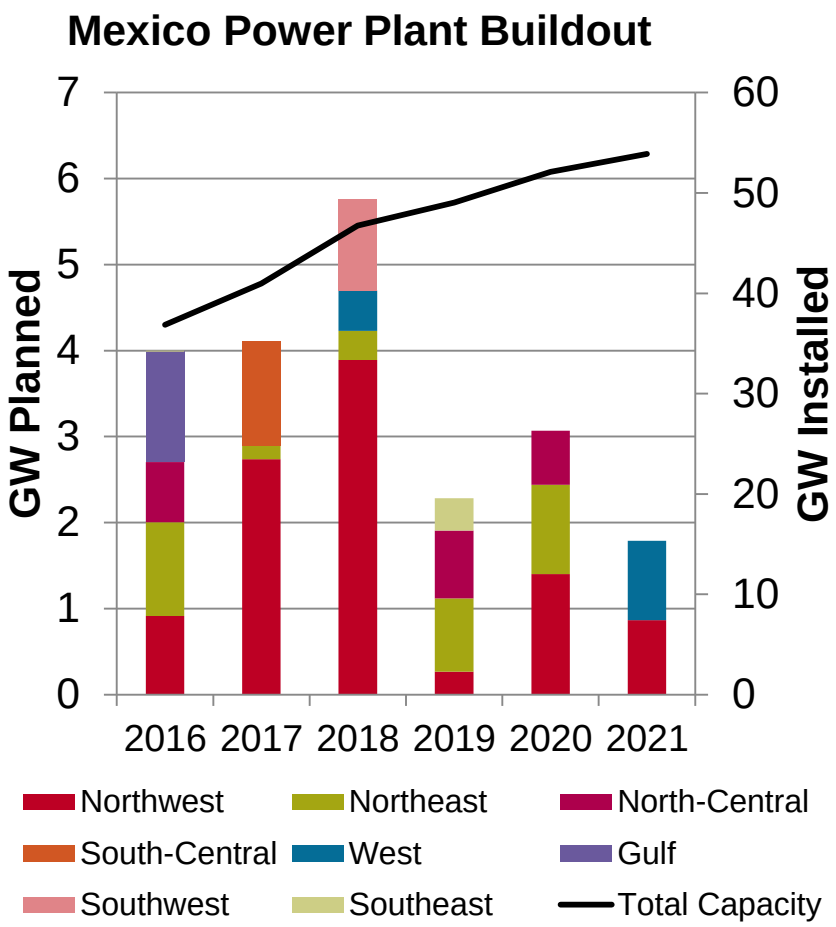
$16 Billion in Mexico Natural Gas Infrastructure



Source: Platts

Mexican Demand Growing; 16% Since 2012





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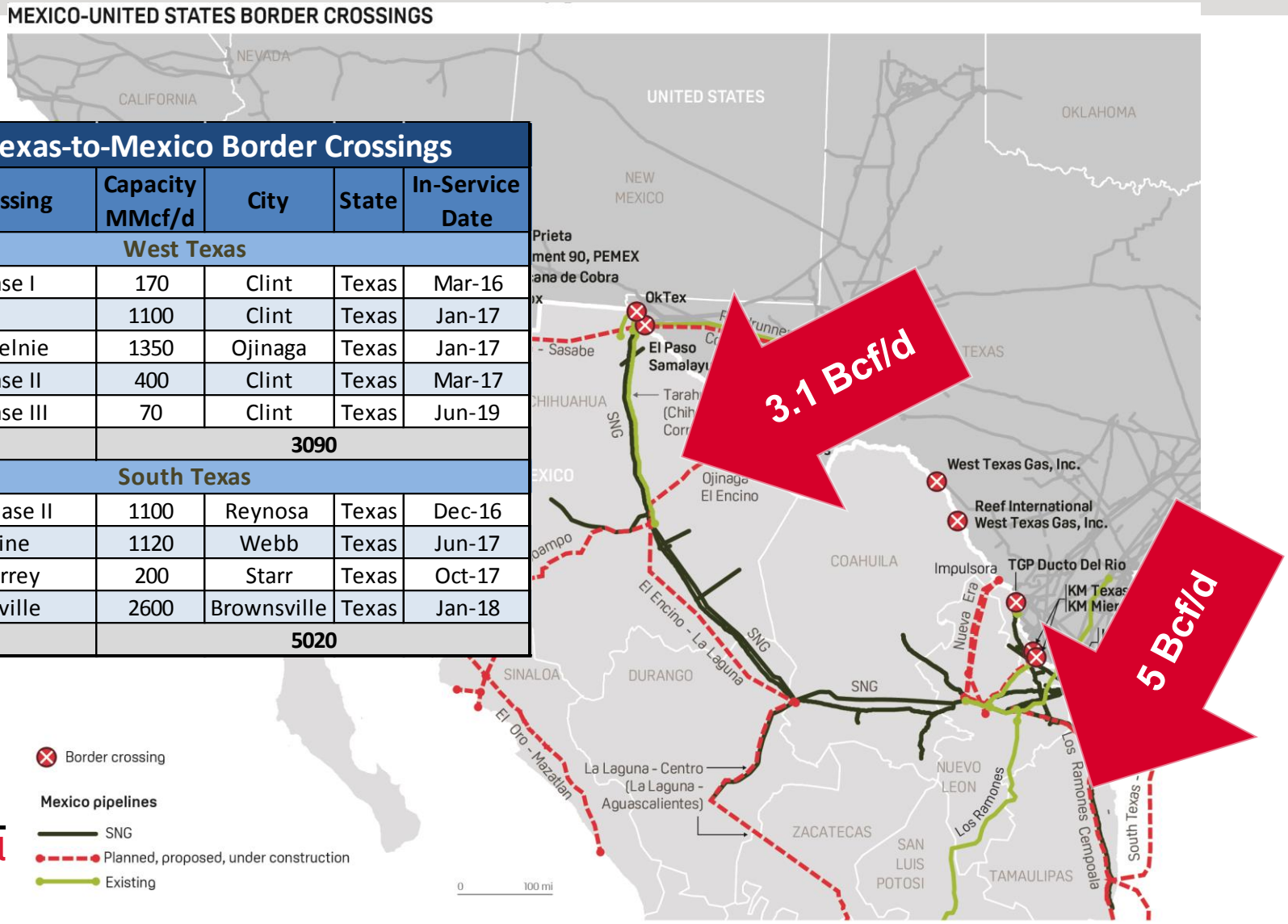
Source: Platts Bentek North America Power Plant Databank

Two Texas-to-Mexico Corridors add ~8 Bcf/d

New Texas-to-Mexico Border Crossings				
Border Crossing	**Capacity MMcf/d**	**City**	**State**	**In-Service Date**
West Texas				
Roadrunner Phase I	170	Clint	Texas	Mar-16
Comanche Trail	1100	Clint	Texas	Jan-17
Trans-pecos Pipelnie	1350	Ojinaga	Texas	Jan-17
Roadrunner Phase II	400	Clint	Texas	Mar-17
Roadrunner Phase III	70	Clint	Texas	Jun-19
Total	**3090**			
South Texas				
Los Ramones Phase II	1100	Reynosa	Texas	Dec-16
Nueva Era Pipeline	1120	Webb	Texas	Jun-17
KM Mier-Monterrey	200	Starr	Texas	Oct-17
Neuces-Brownsville	2600	Brownsville	Texas	Jan-18
Total	**5020**			



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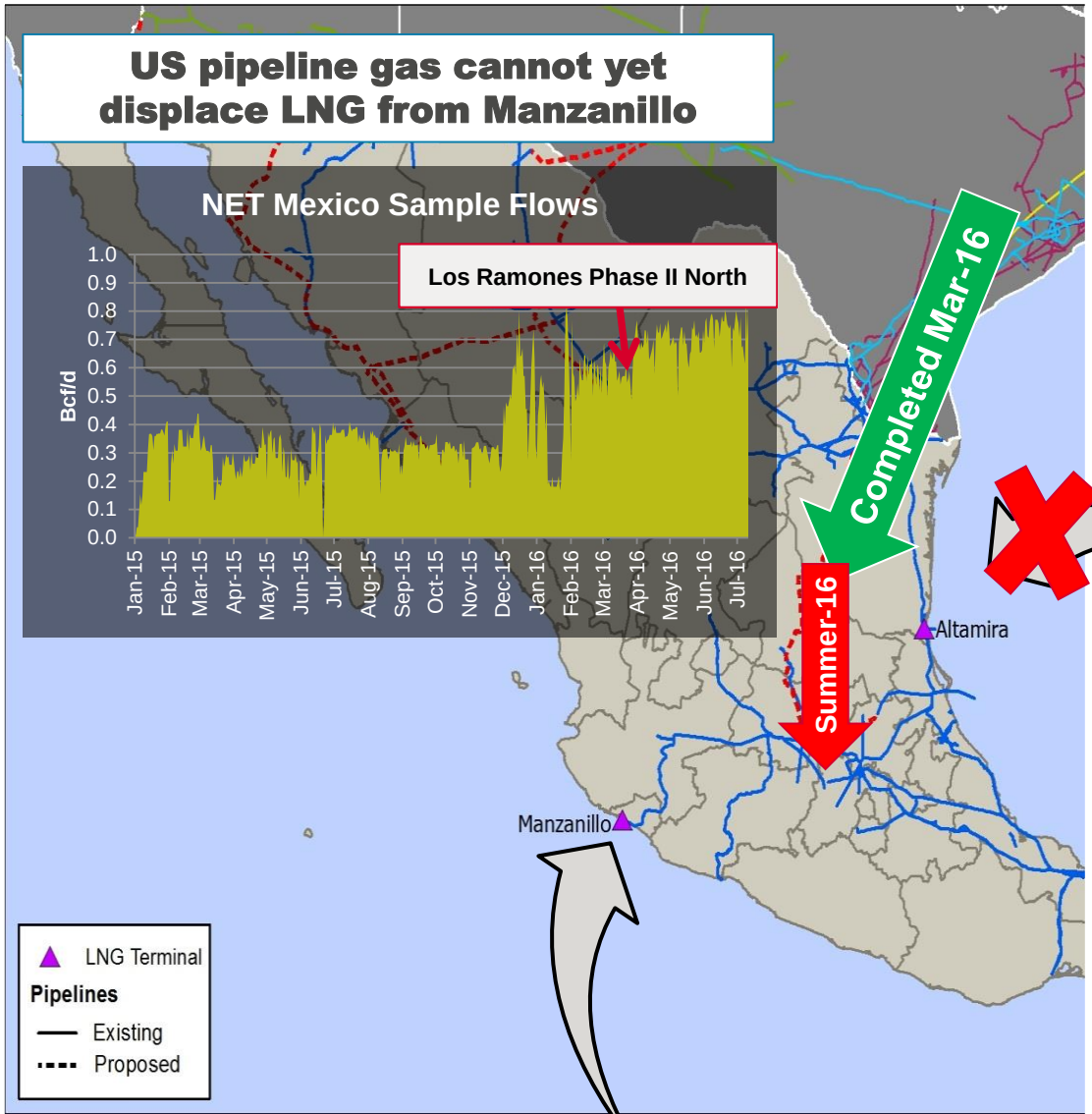
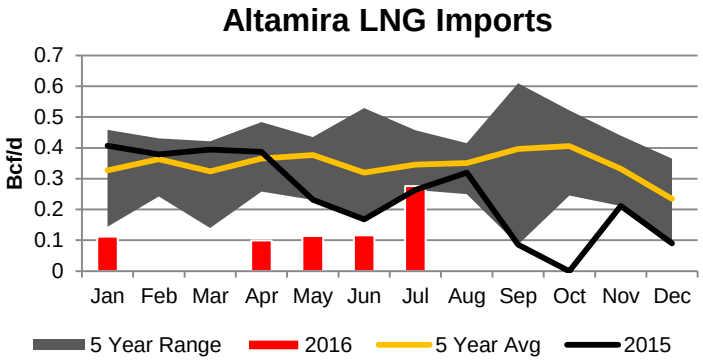
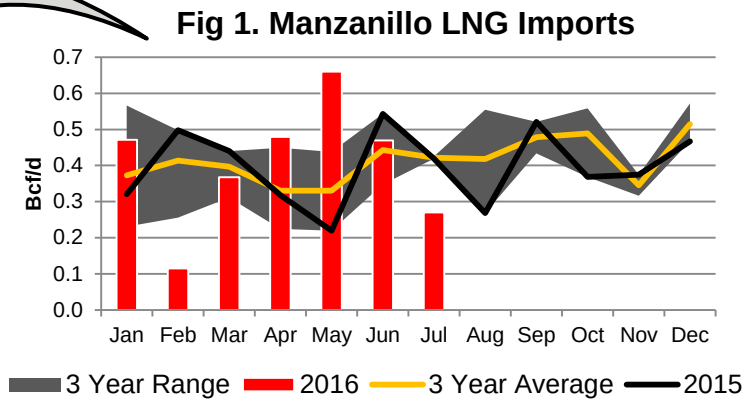
Source: Platts

Mexican LNG Imports Down 20%



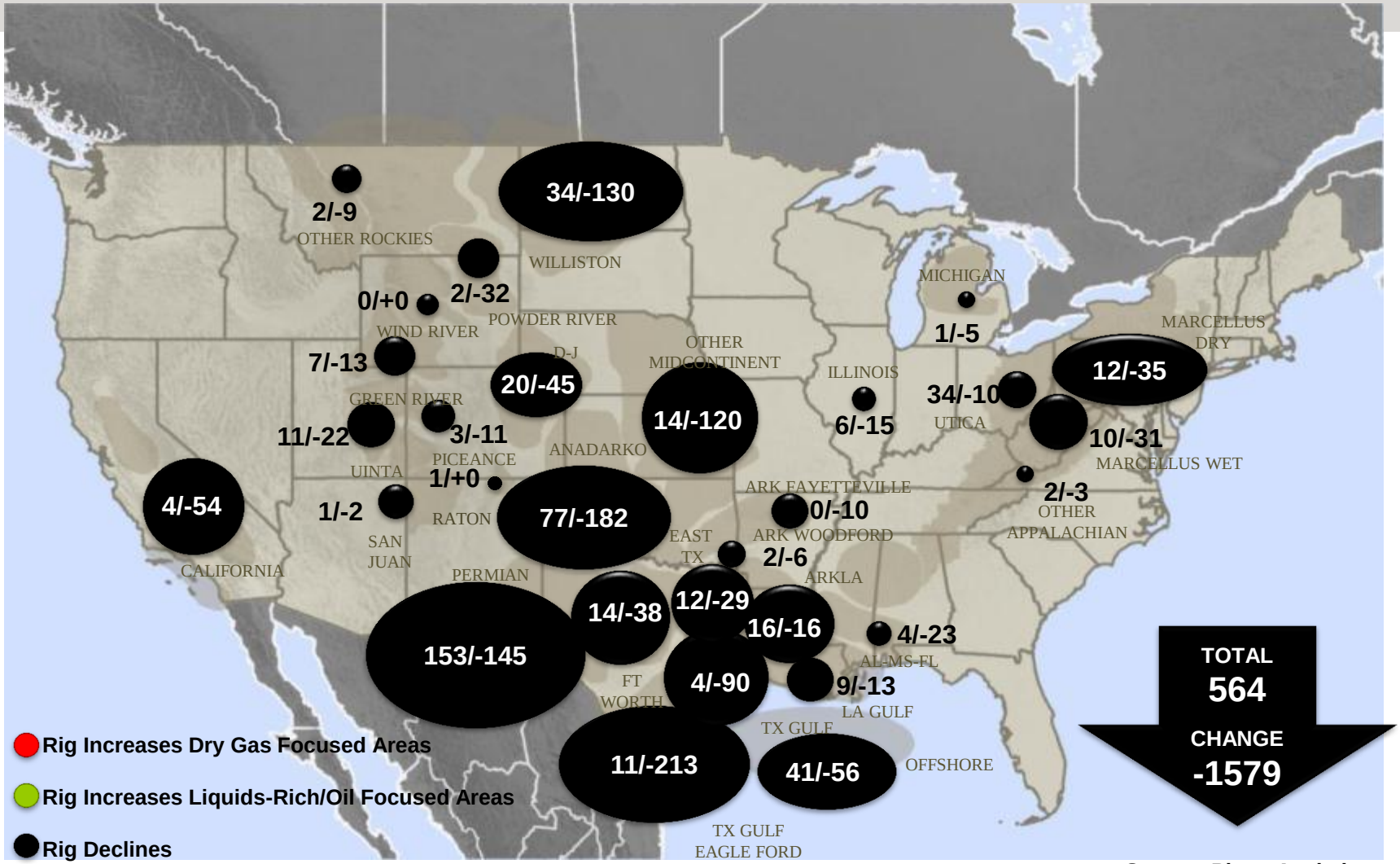




Source: Platts Analytics

Historical Recap: Where We Are Now

U.S. Rigs: Change From Peak Rig Count



Source: Platts Analytics

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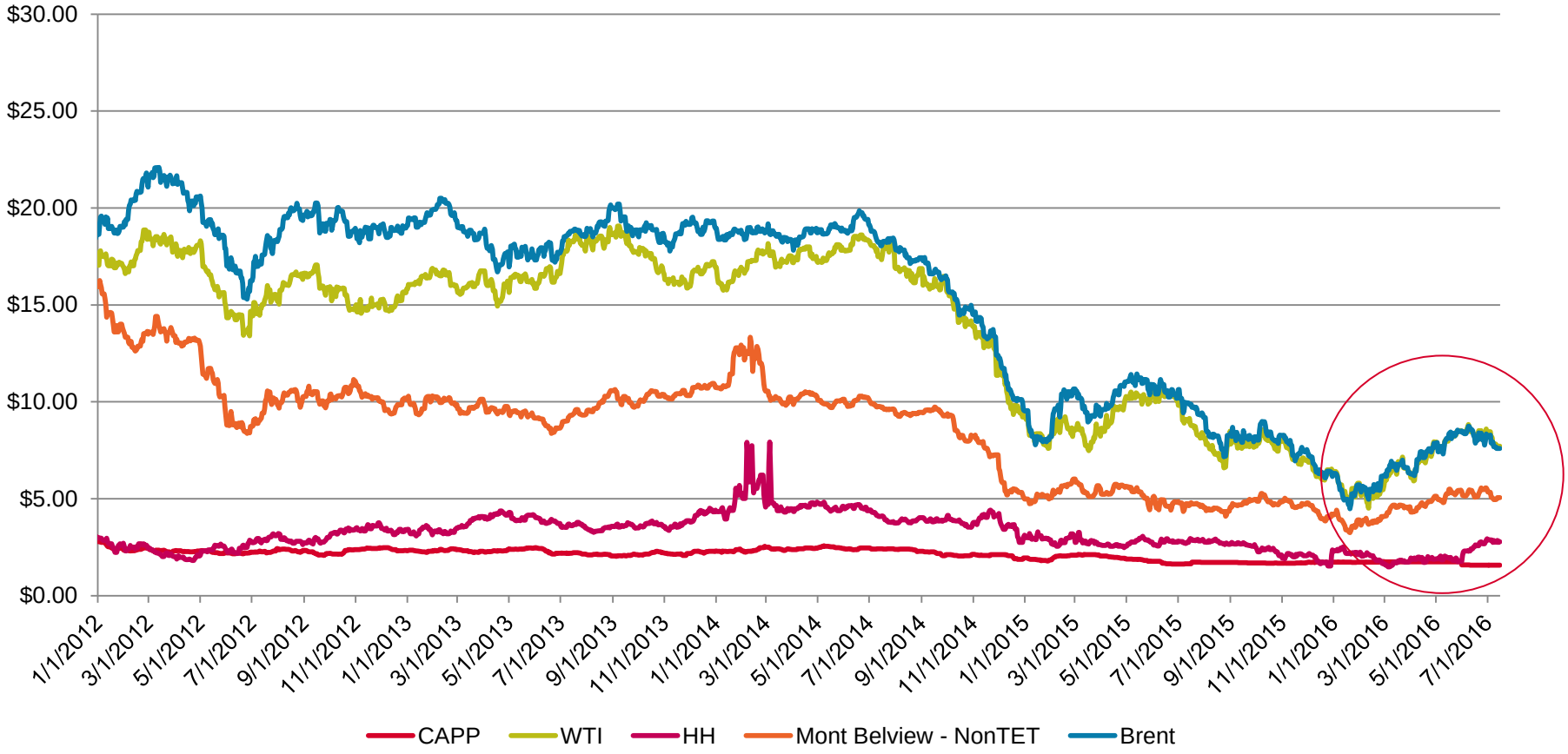
Active rig count: August 5, 2016 / Change in rig count from Oct 24, 2014

Spread Between Gas and Liquids Below 2012 Levels



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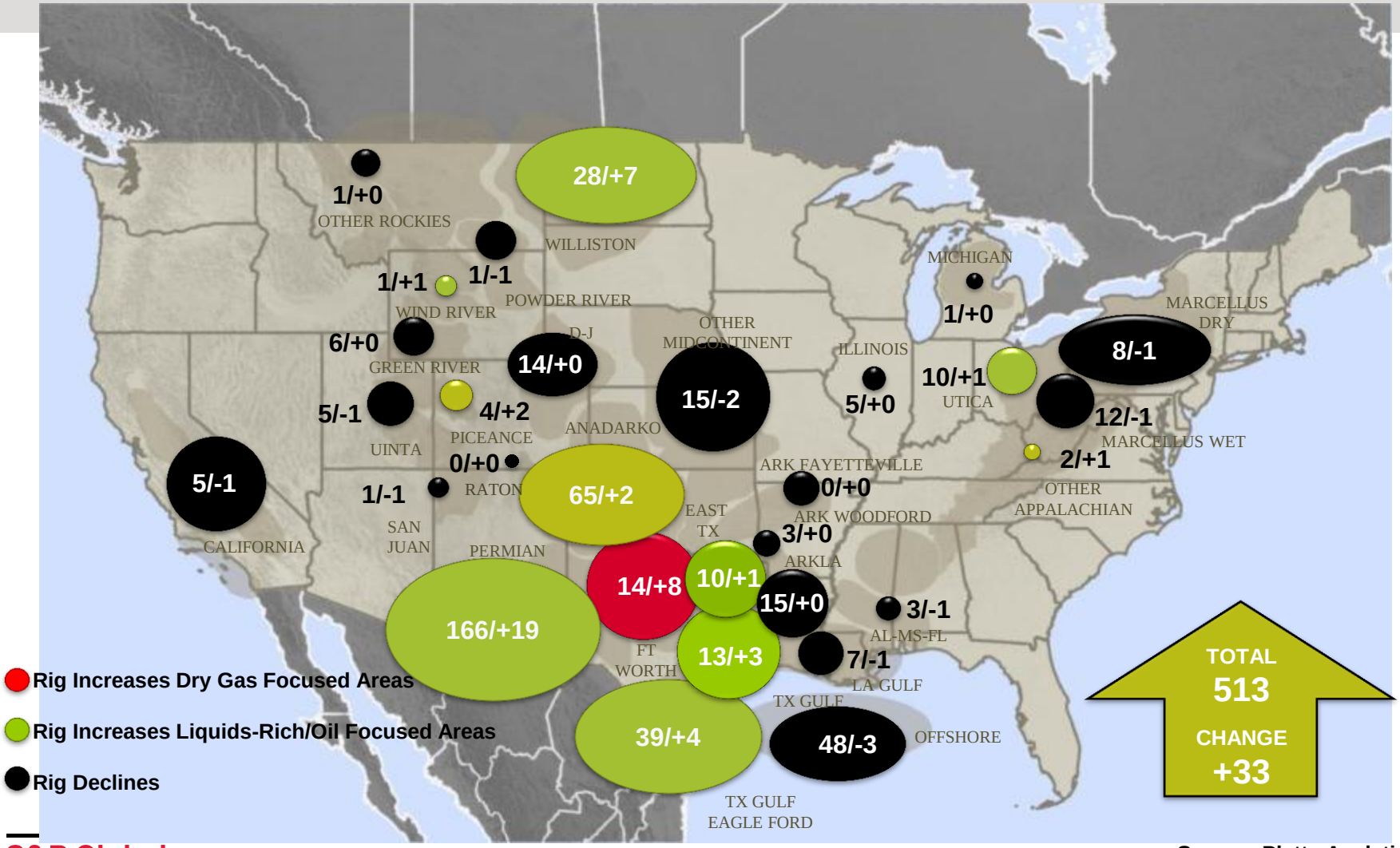
Source: NYMEX, ICE

U.S. Rig Counts: Rigs Up in June



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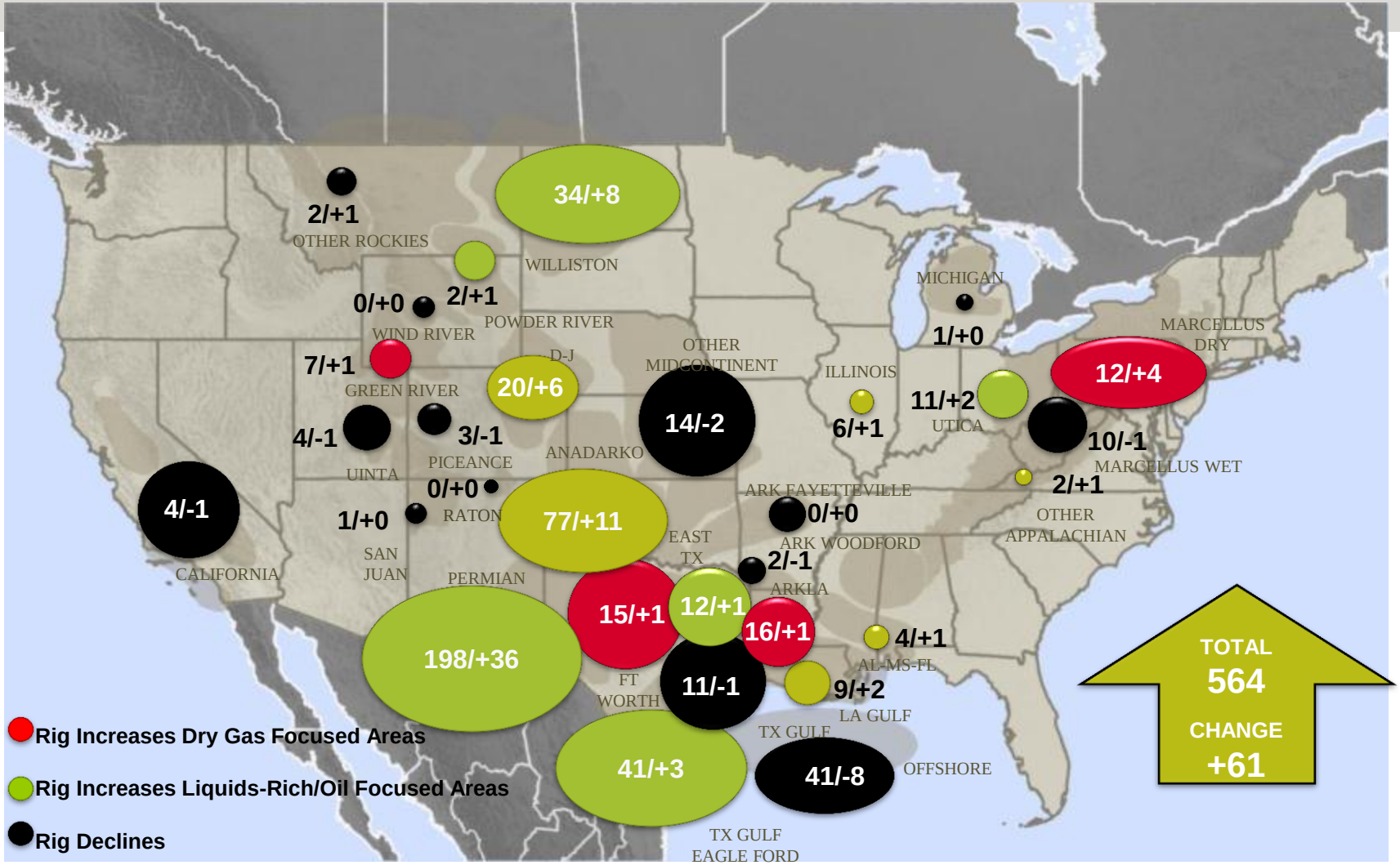
Source: Platts Analytics

Active rig count: July 1, 2016 / Change in rig count from June 3, 2016

U.S. Rig Counts: July Up Again



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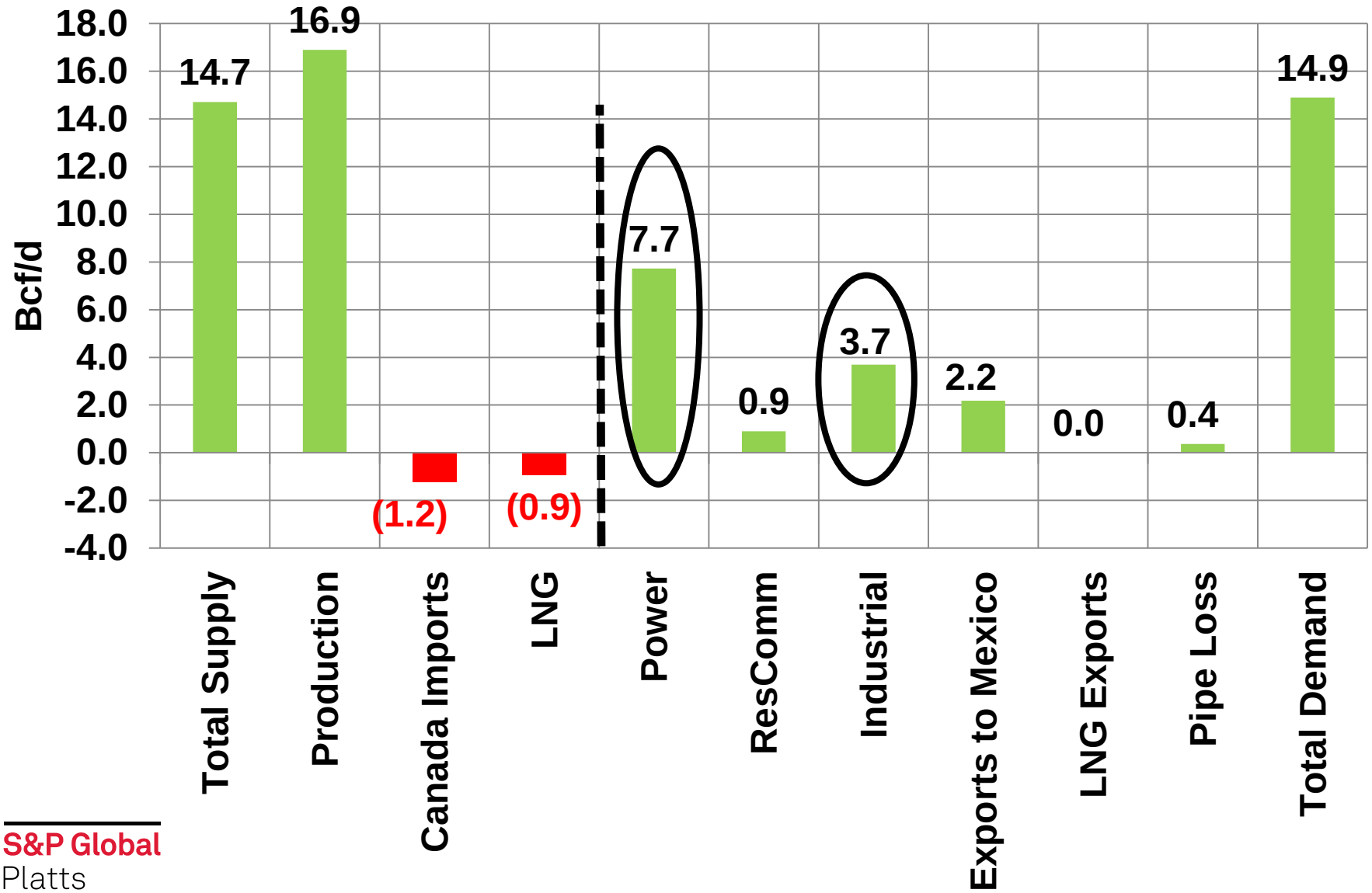
Source: Platts Analytics

Active rig count: August 5, 2016 / Change in rig count from July 1, 2016

Incremental Change in Gas S/D: 2009 to 2015



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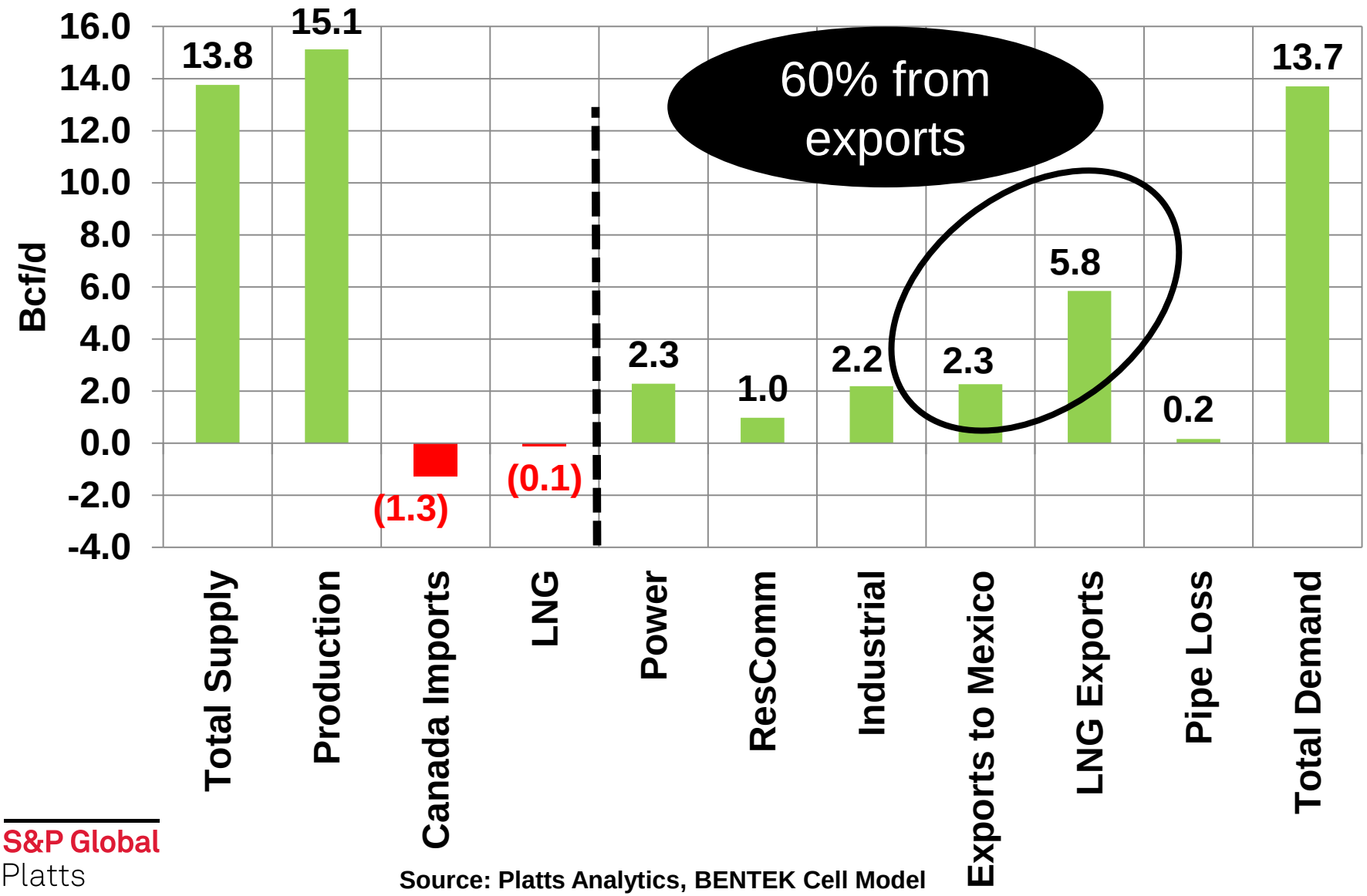
Source: Platts Analytics, BENTEK Cell Model

Incremental Change in Gas S/D: 2015 to 2021



Source: Platts Analytics, BENTEK Cell Model

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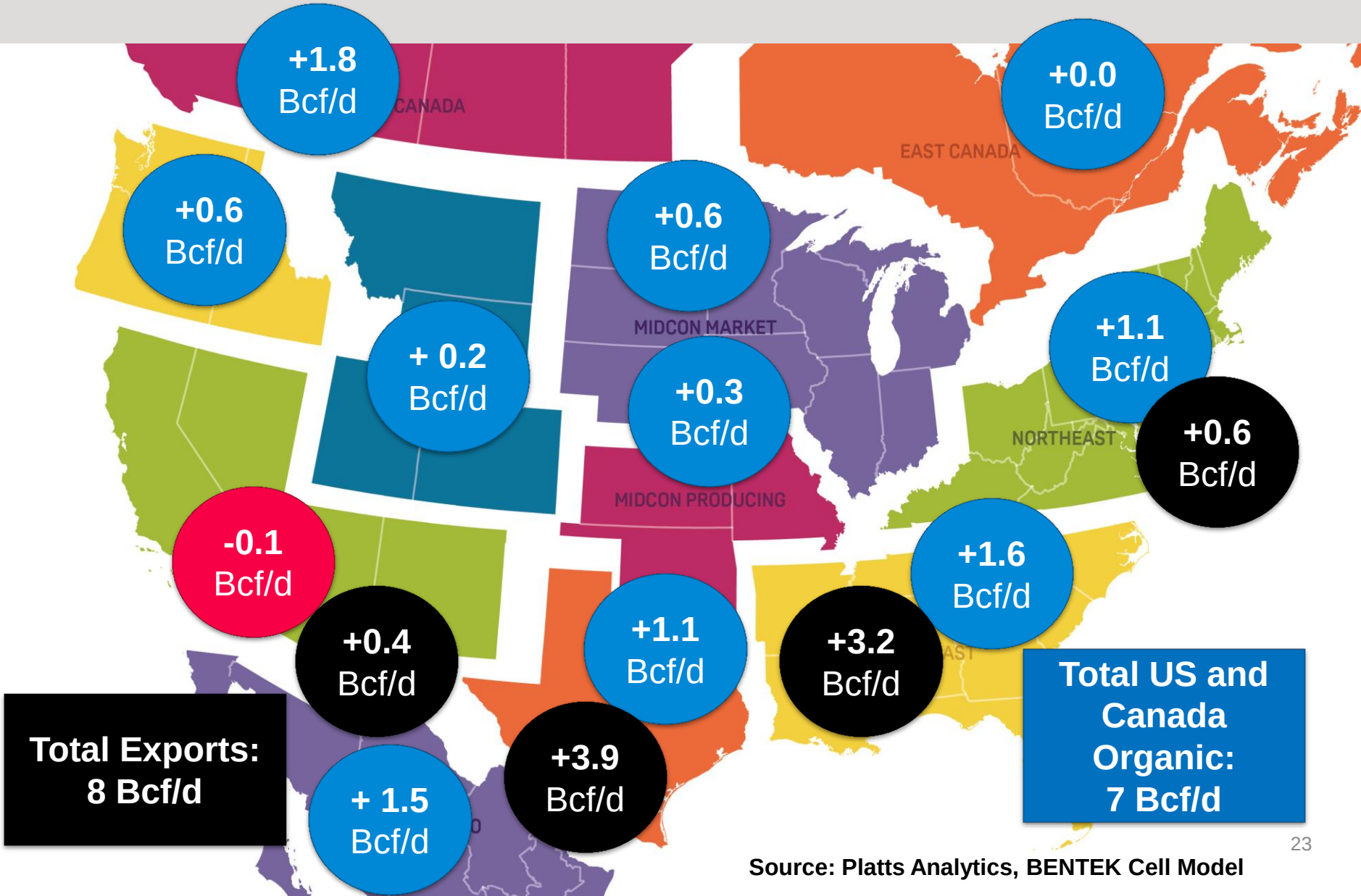
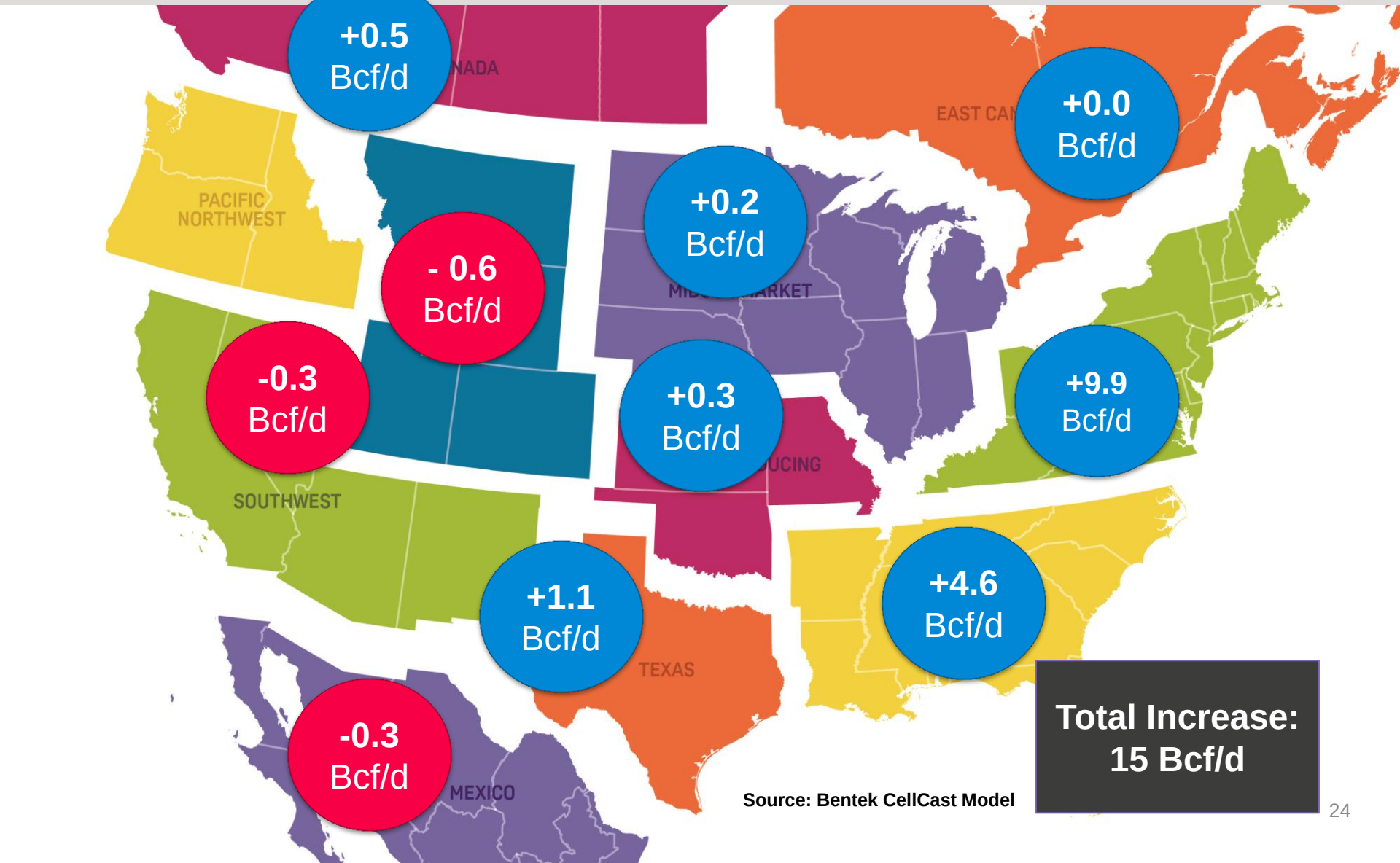
North American Demand 2015 vs 2021



Source: Platts Analytics, BENTEK Cell Model

North American Production 2015 vs 2021



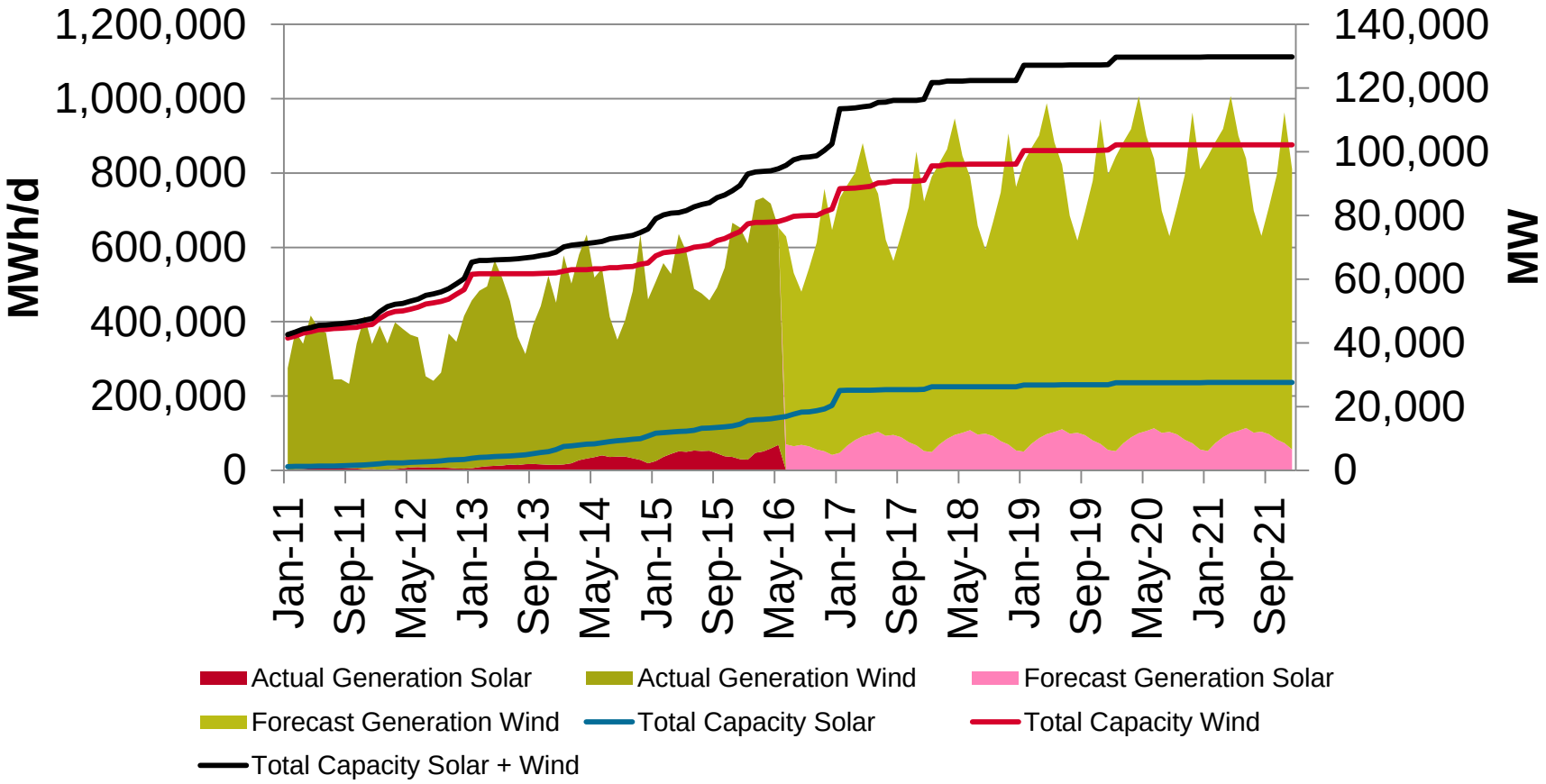
Total Increase: 15 Bcf/d

Source: Bentek CellCast Model

Power Trends

U.S. Renewable Energy Growth Forecast

Wind and Solar Currently Less Than 10% of Total Fuel Mix for Power



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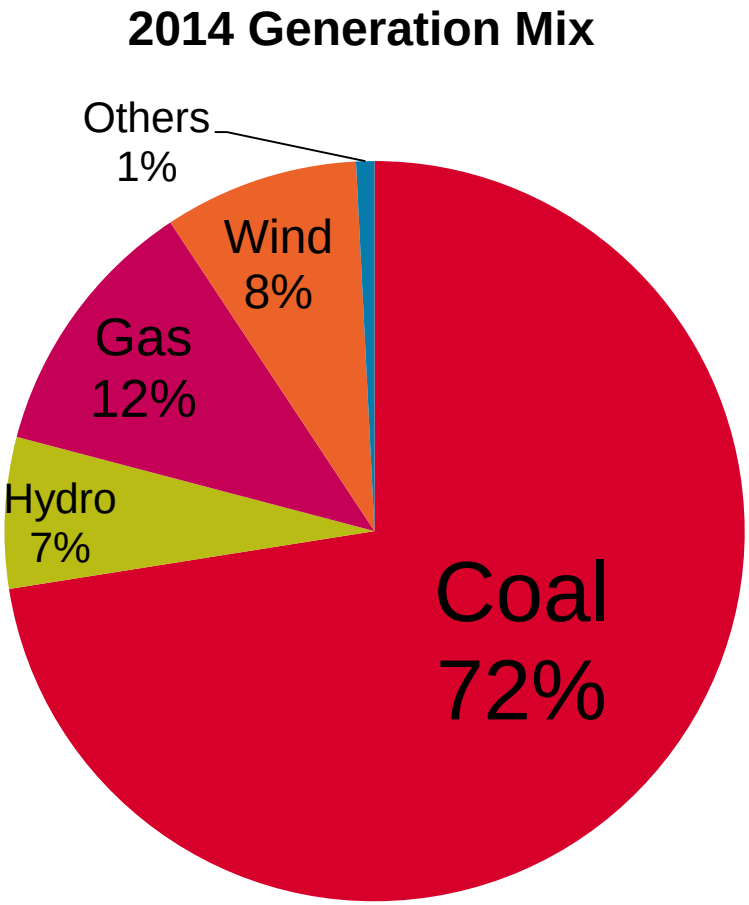
Source: EIA, Platts Analytics

CellCast Rocky Mountain Region

ROCKIES

Source: Platts Analytics

Coal Dominates the Rockies Power Mix



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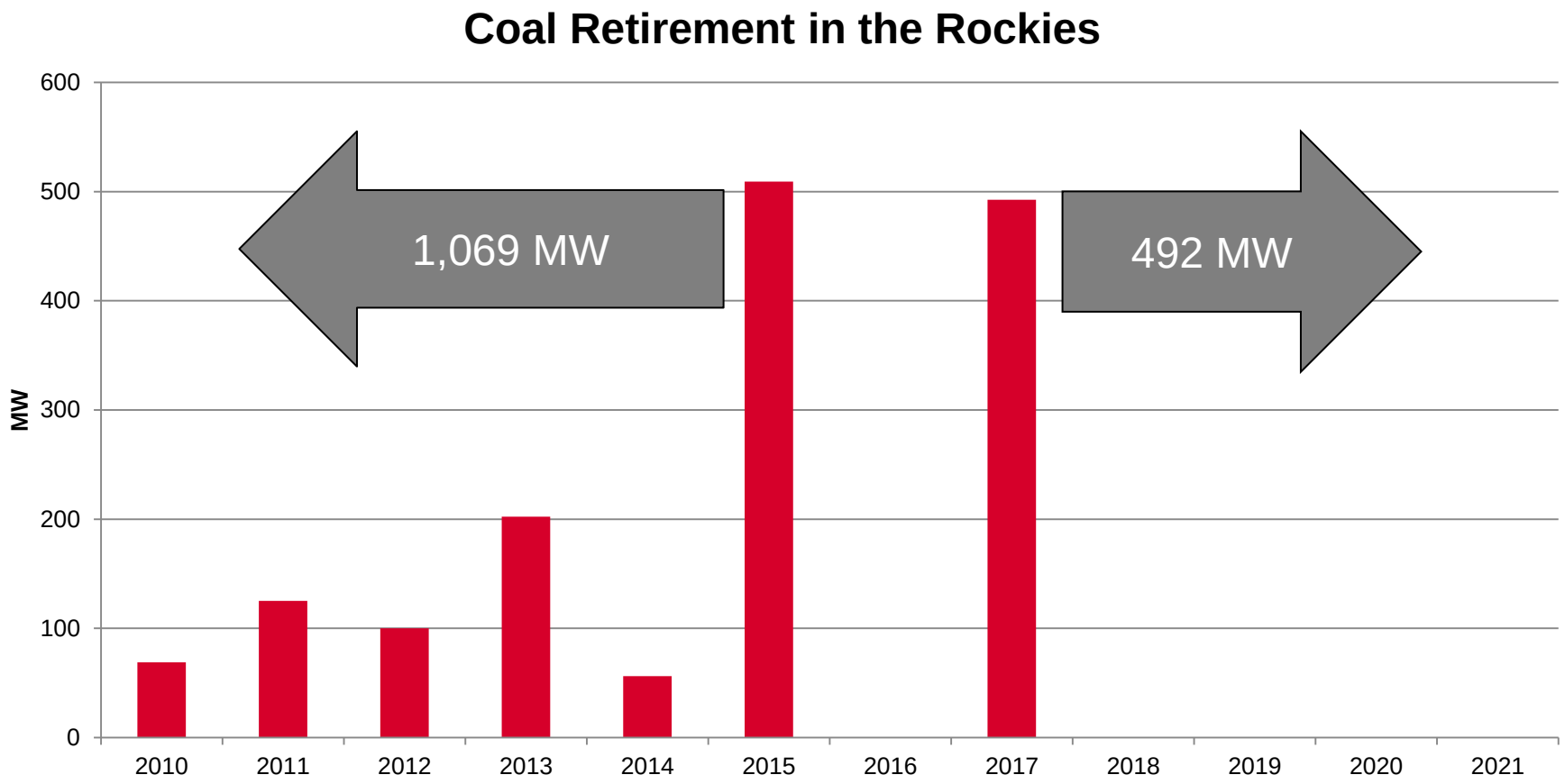
Source: EIA

Rockies Retirements Almost Exhausted



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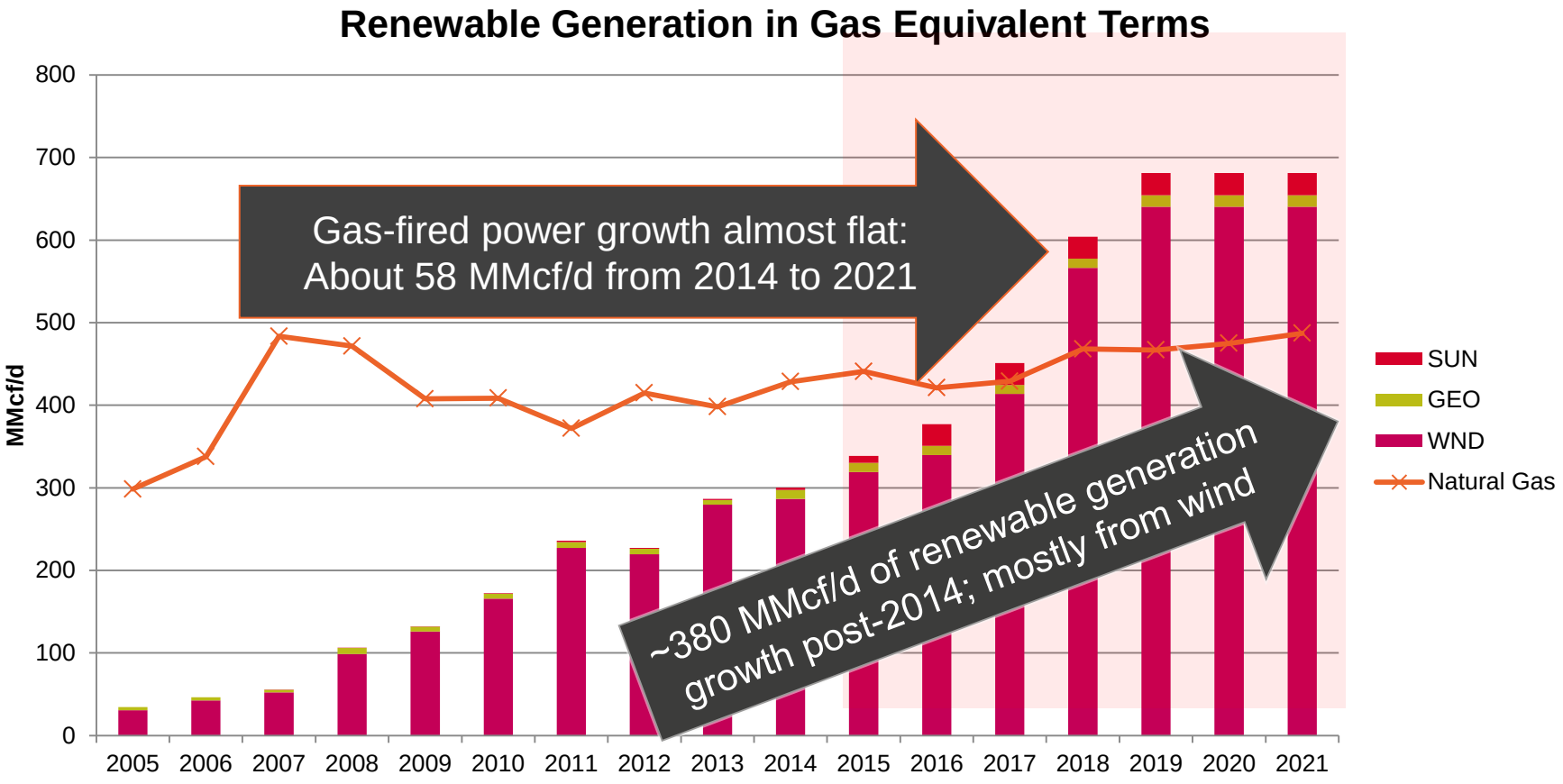
Source: Platts Analytics

Rockies Renewables Generation Doubling



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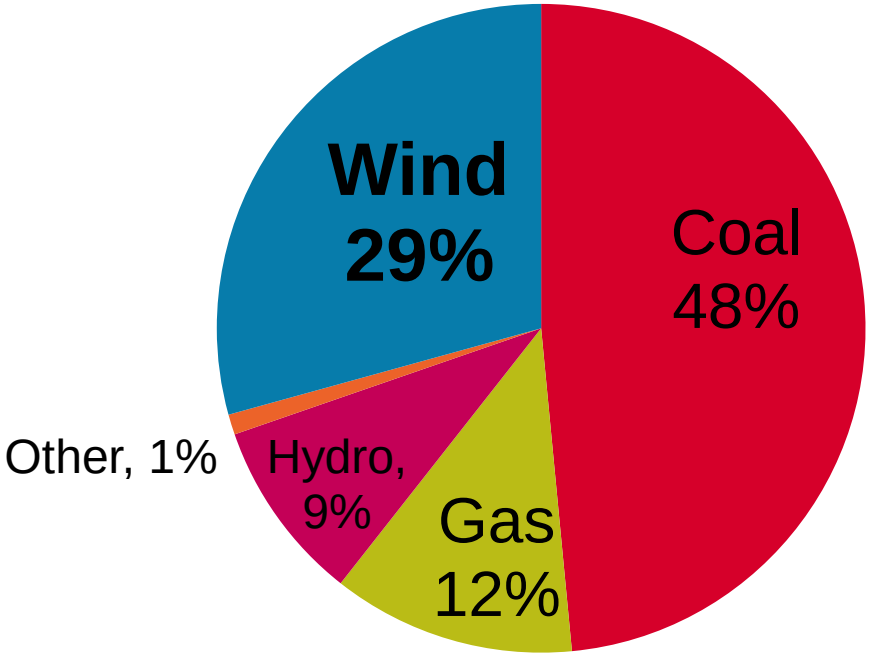
Source: EIA, Platts Analytics

Wind Potential to Displace Coal in Rockies

2021 Generation Forecast



Assumes 1% p.a. Generation Growth and Continuing Trend for Renewables

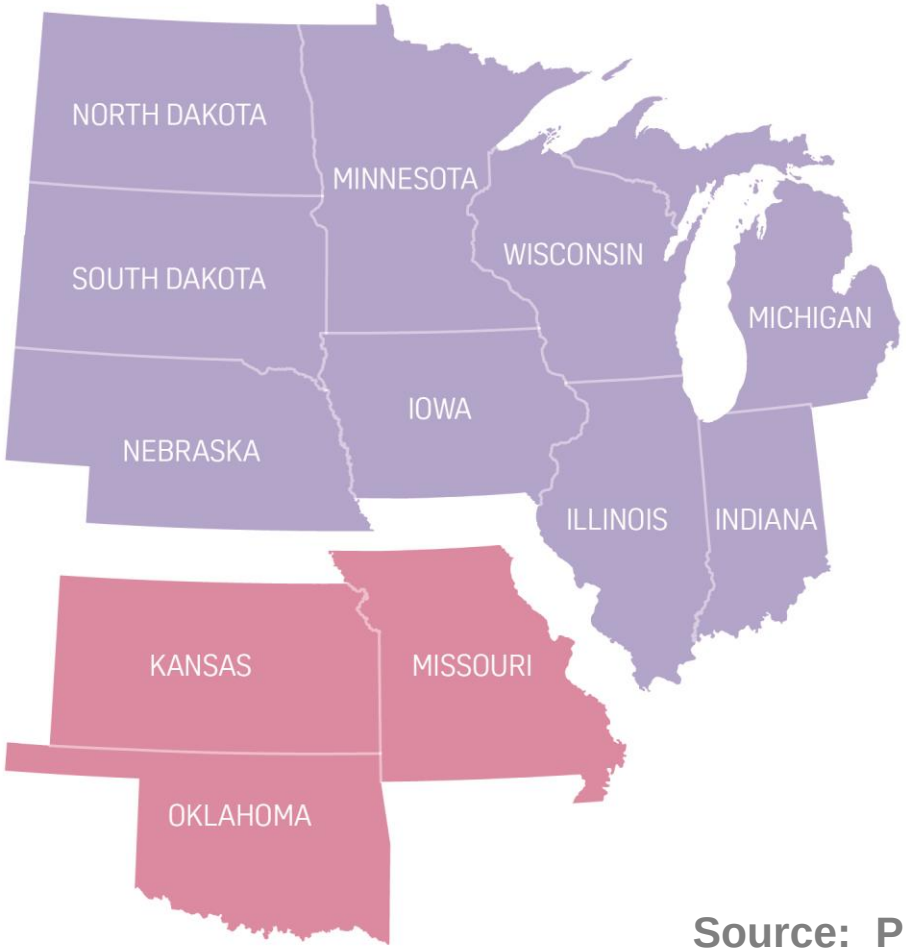
S&P Global
Platts

Source: EIA, Platts Analytics

CellCast “Midcontinent” Region

MIDCON MARKET

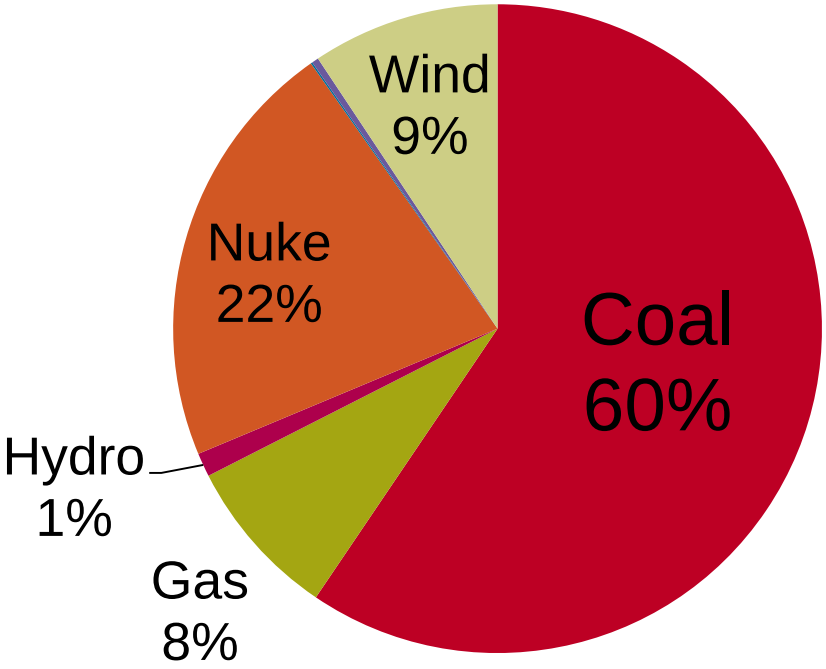
MIDCON PRODUCING



Source: Platts Analytics

Coal and Nukes in the Midcontinent

2014 Midcontinent Generation Mix



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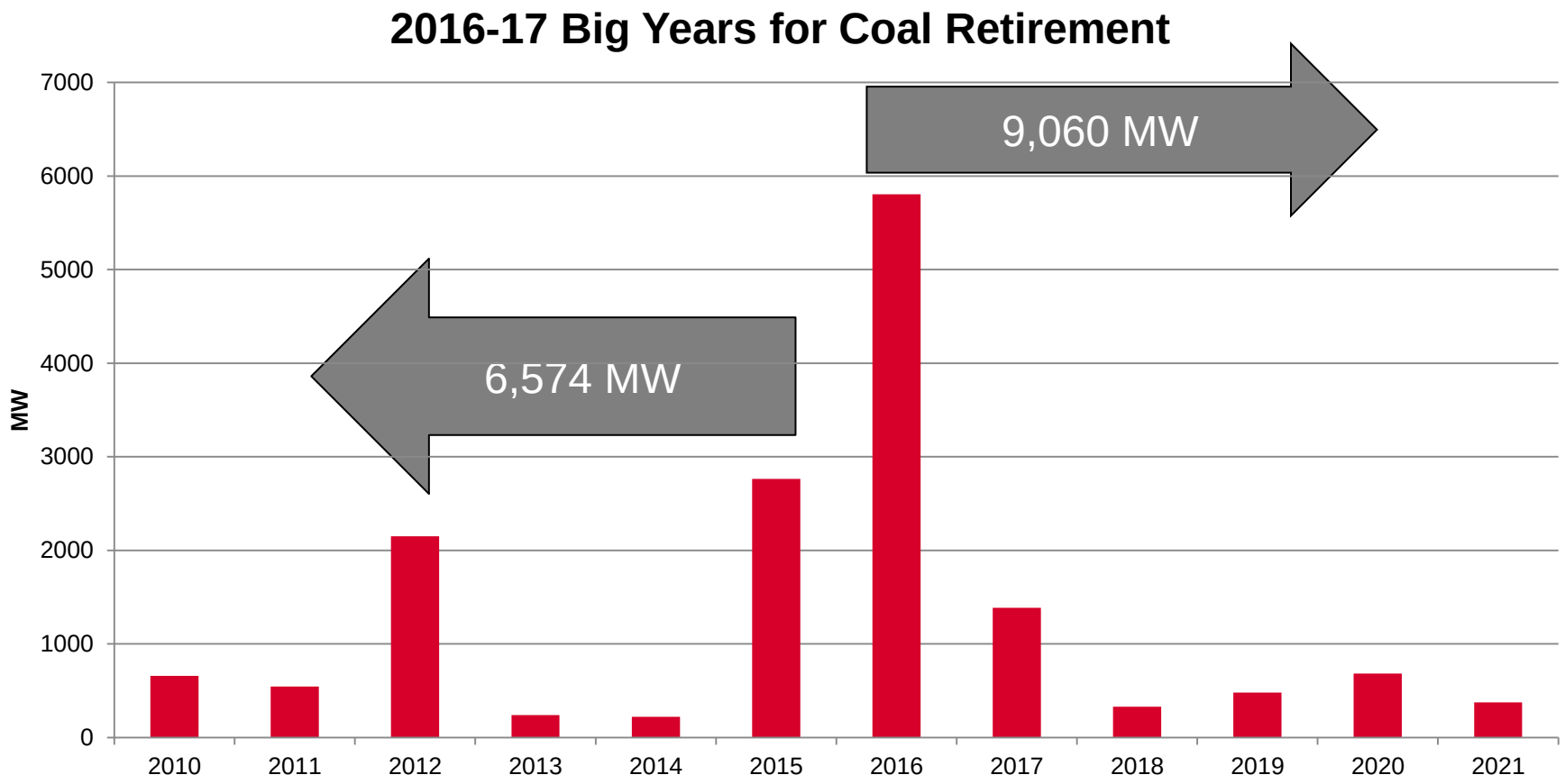
Source: EIA, Platts Analytics

Midcontinent Coal Retirements Ramping Up



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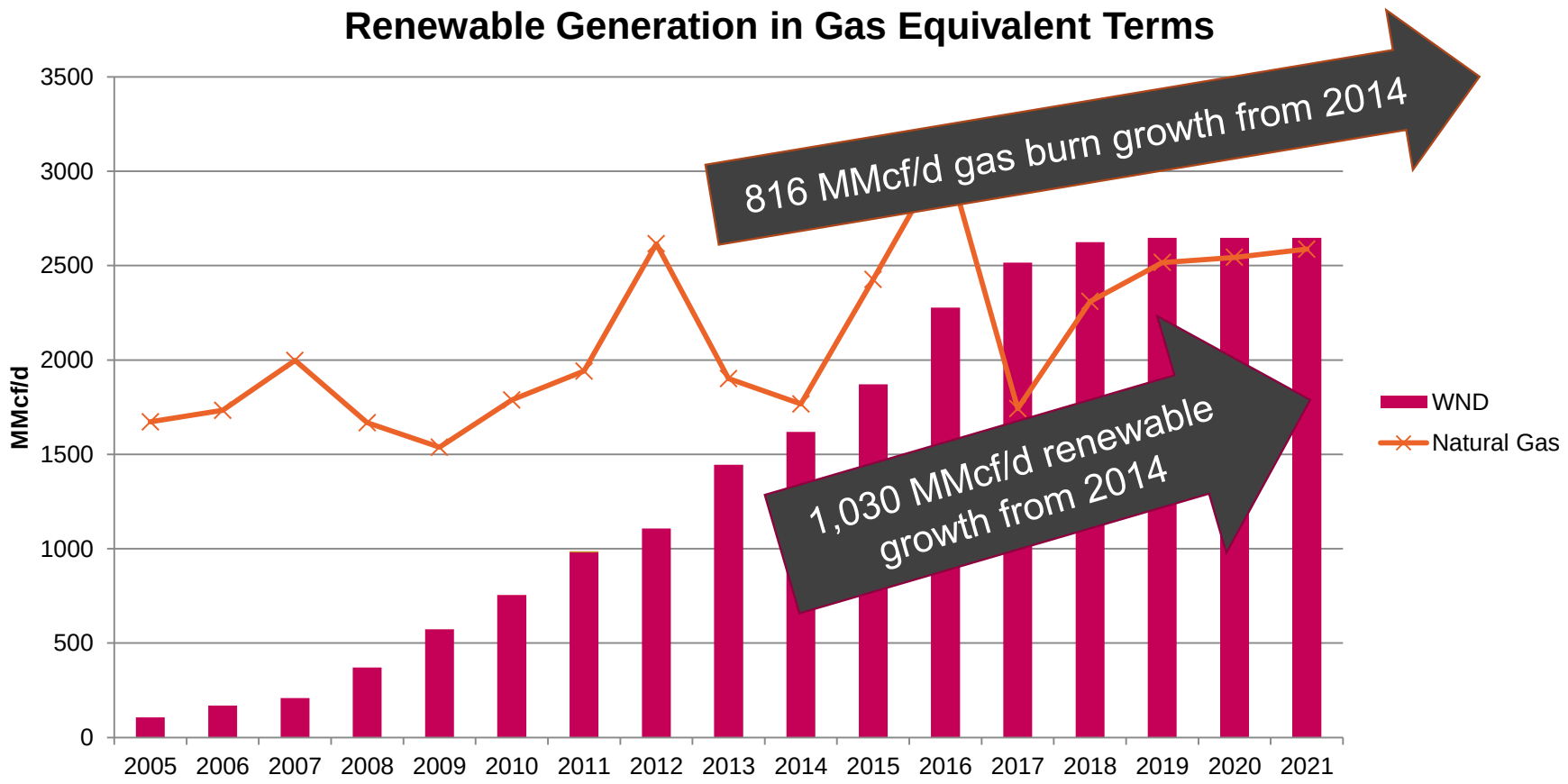
Source: Platts Analytics

Midcontinent Renewables Grow Faster than Gas



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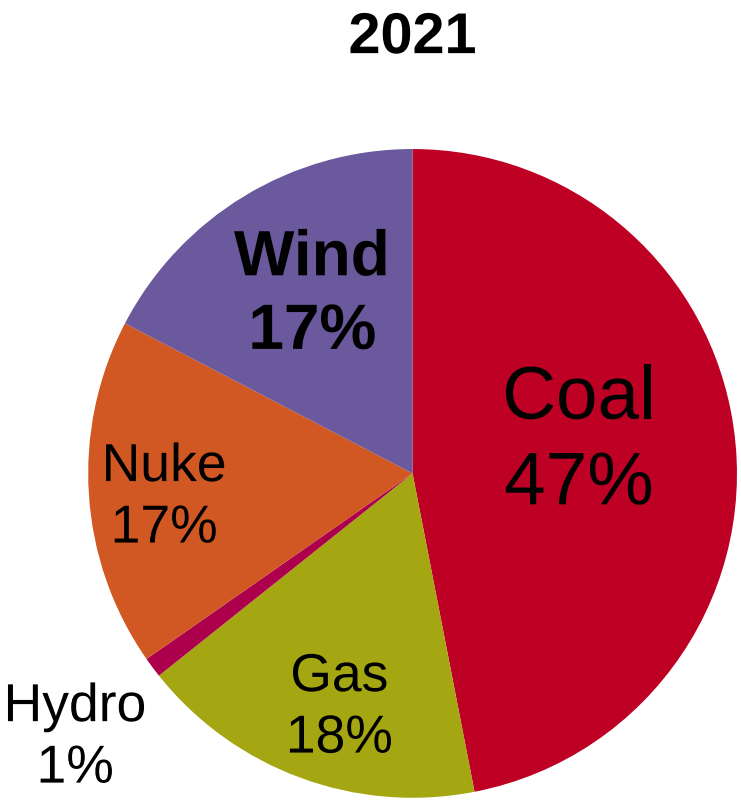
Source: EIA, Platts Analytics

Wind Could Catch Gas, Nukes in Midcontinent



Assumes 1% Generation Growth; Continuing Trend for Renewable Development

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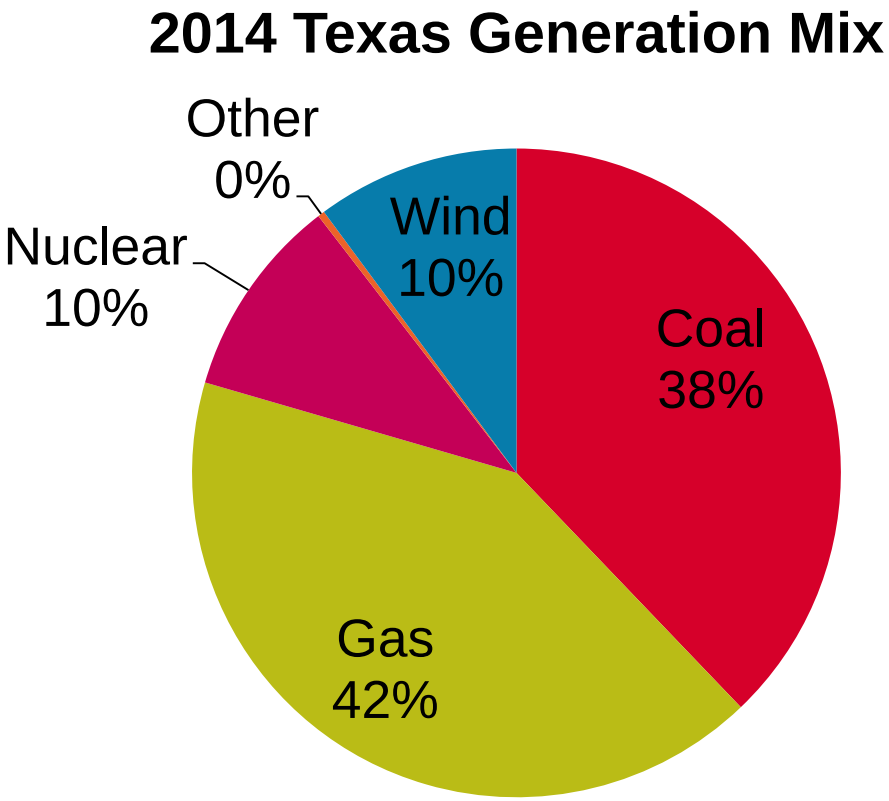
Source: Platts Analytics

CellCast Texas Region

Source: Platts Analytics

Natural Gas Dominates Power Mix in Texas



S&P Global
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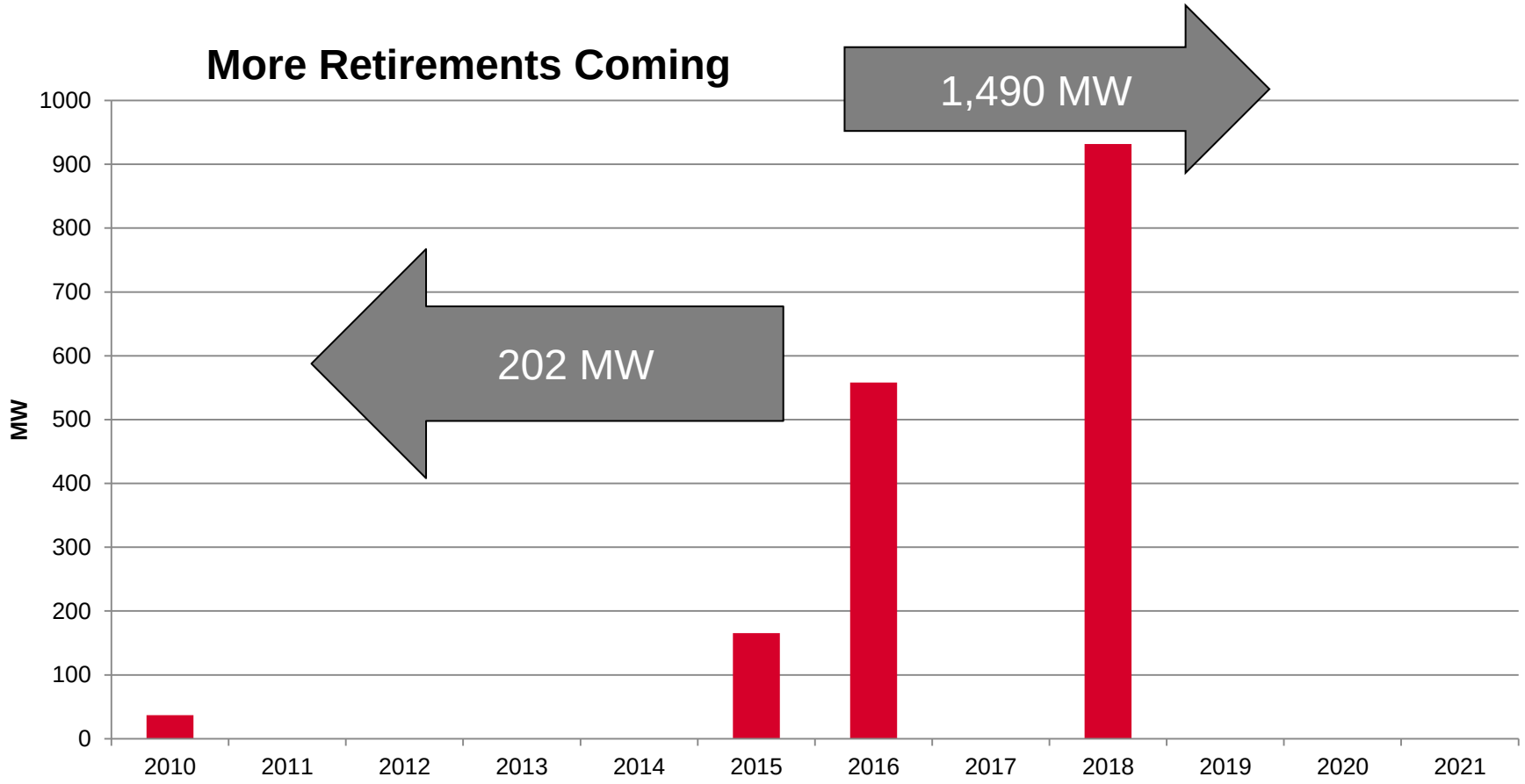
Source: Platts Analytics

Texas Coal Retirements are Modest



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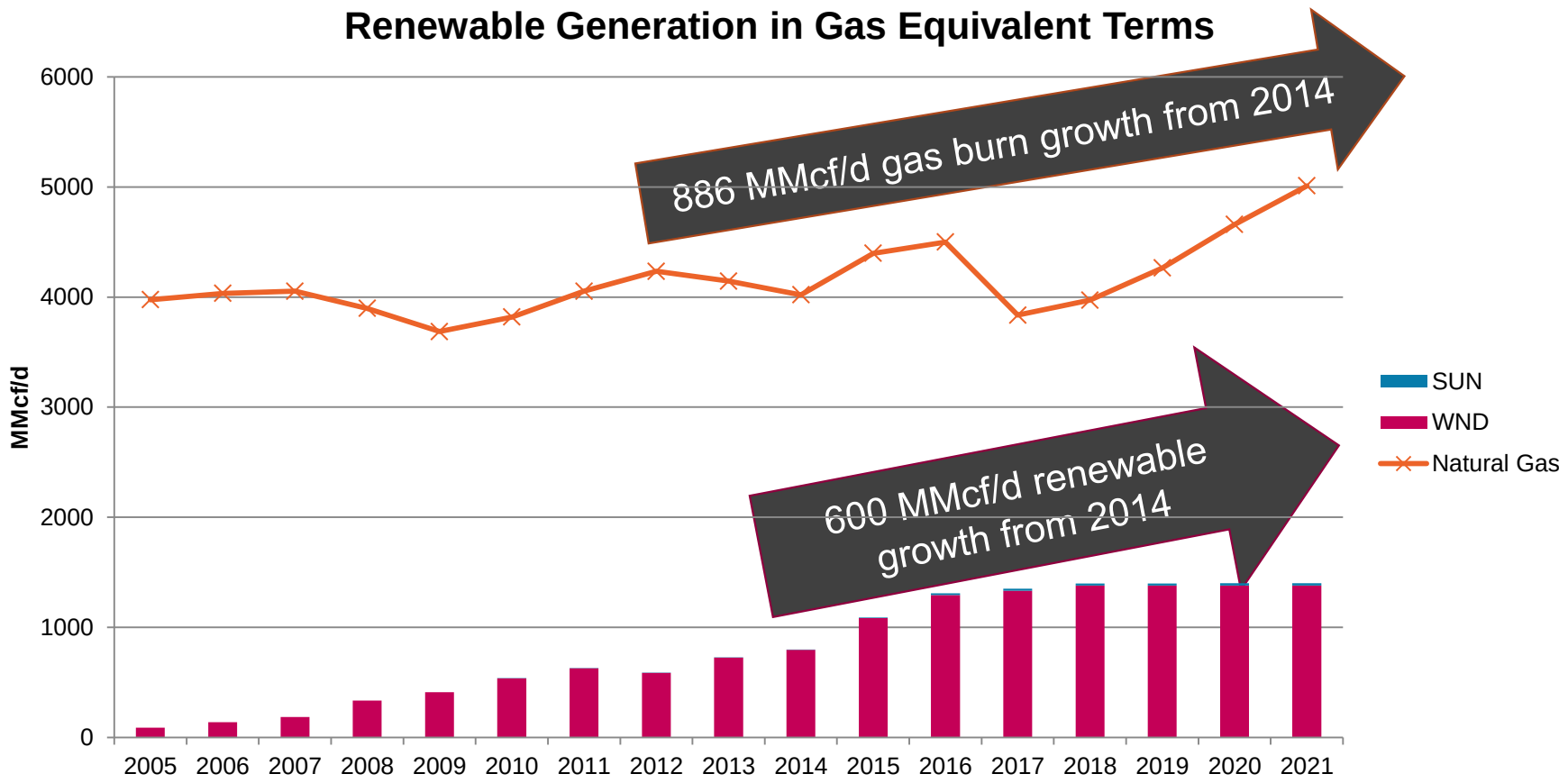
Source: Platts Analytics

Texas Gas Burn Still Outpaces Renewables



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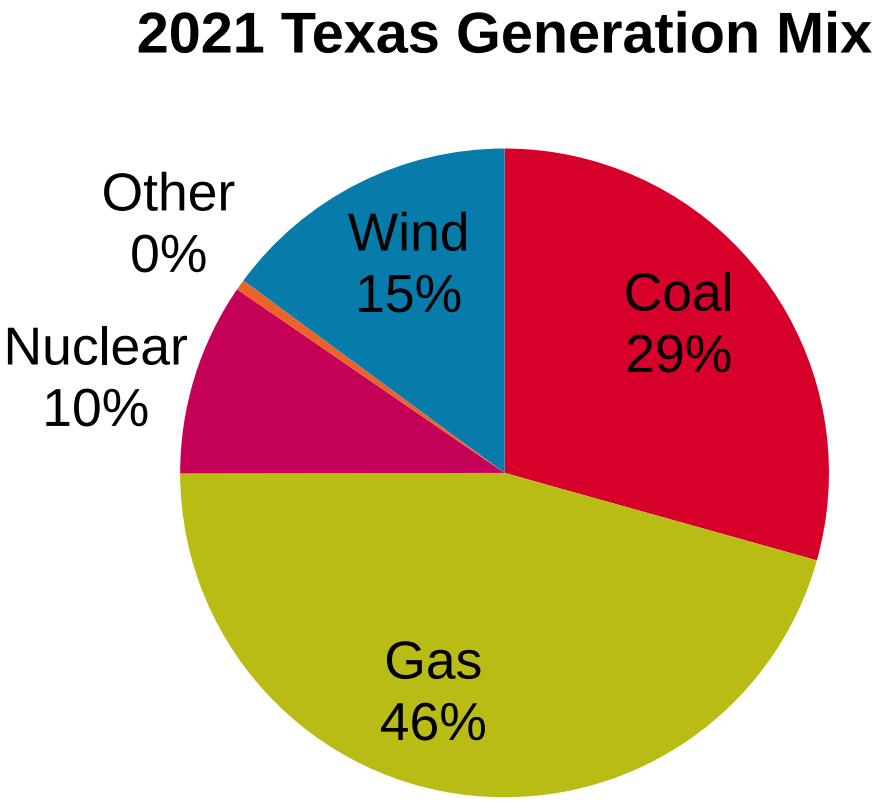
Source: EIA, Platts Analytics

Natural Gas Adds Market Share in Texas



Assumes 1% p.a. Generation Growth and Continuing Trend for Renewables

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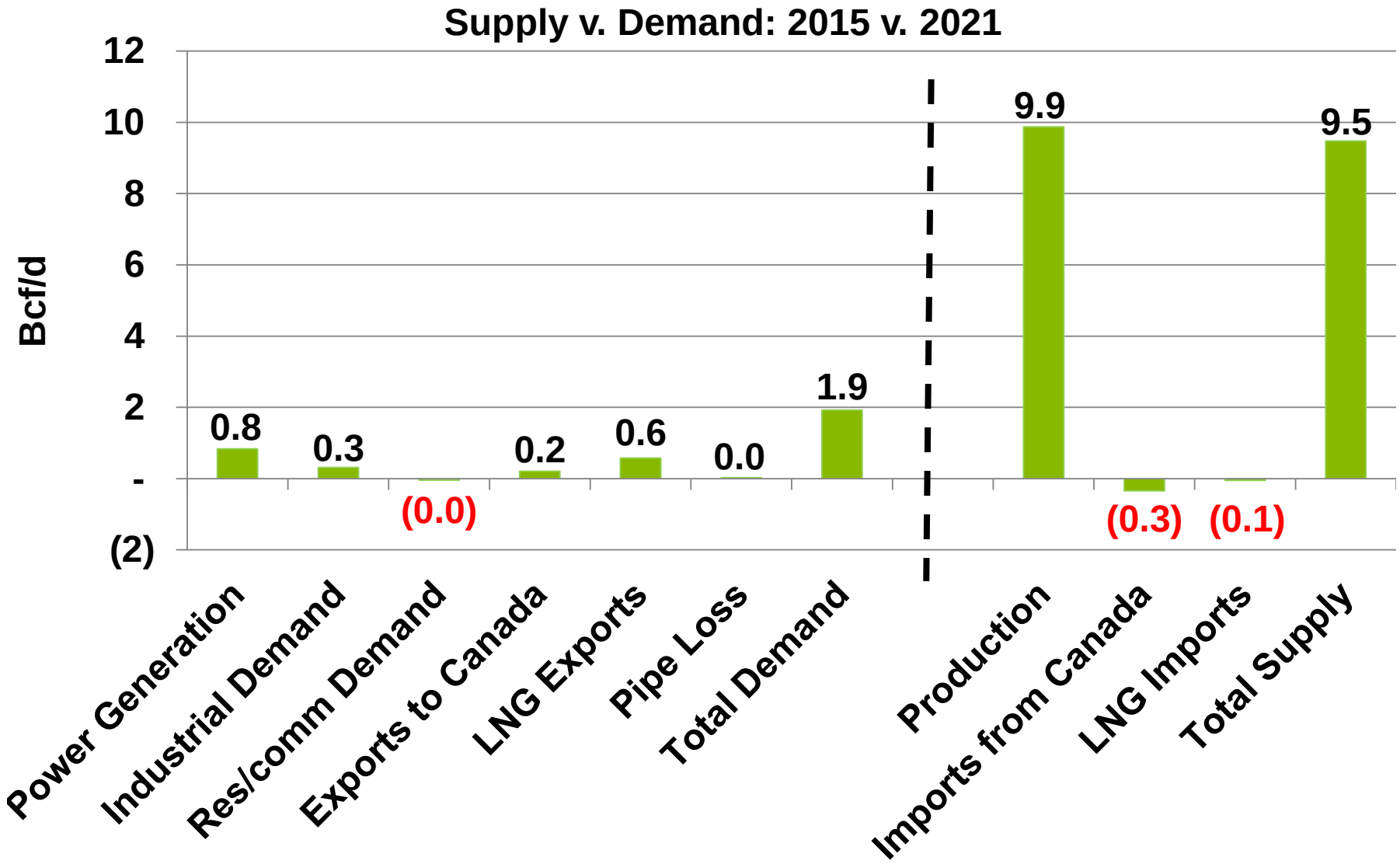
Source: Platts Analytics

North to South: Risks to Forecast

CellCast Northeast Region

Source: Platts Analytics

Northeast Gets Even Longer: Needs Outlets



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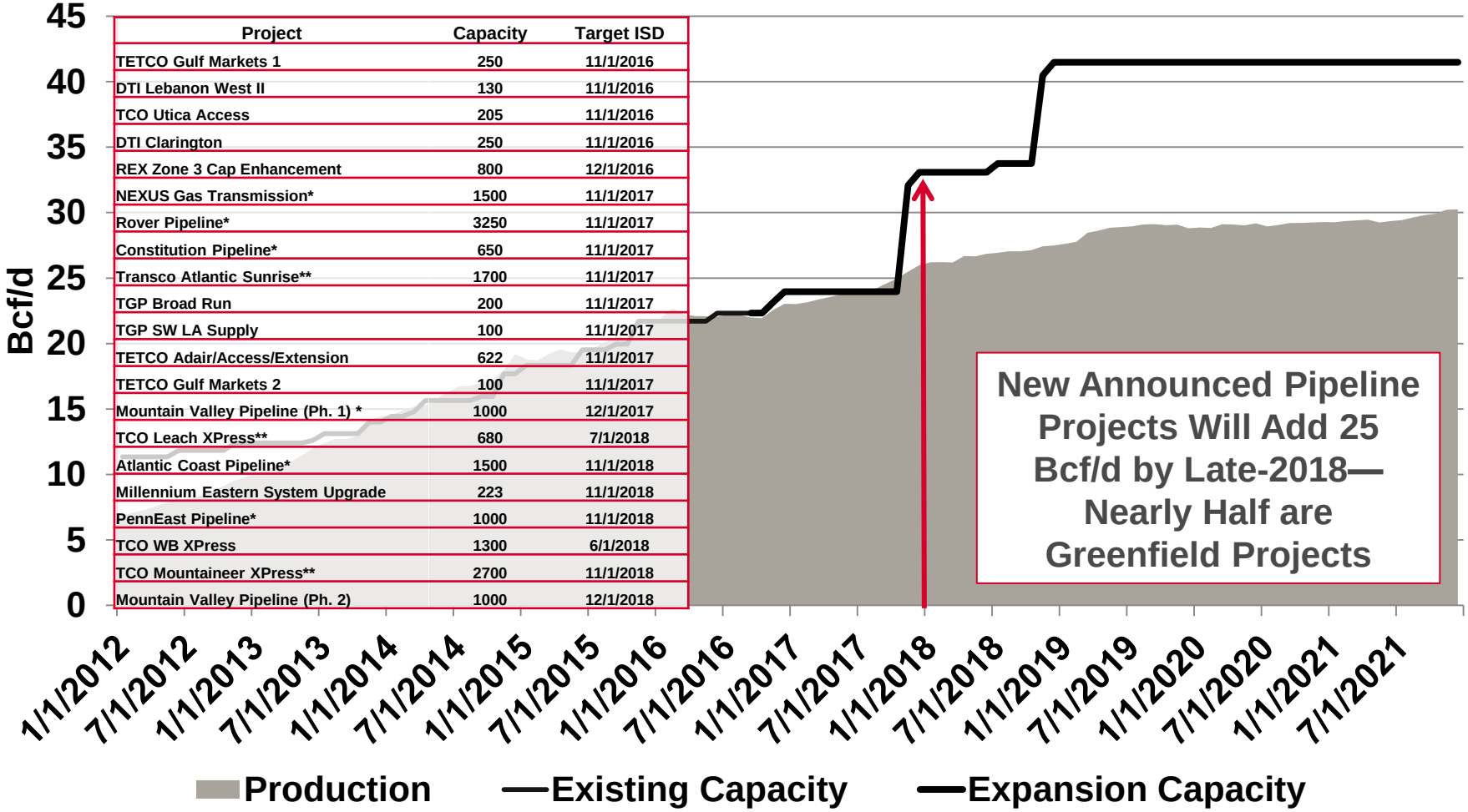
Production Risk From Capacity Development

Base Case Production Forecast v. Announced Projects

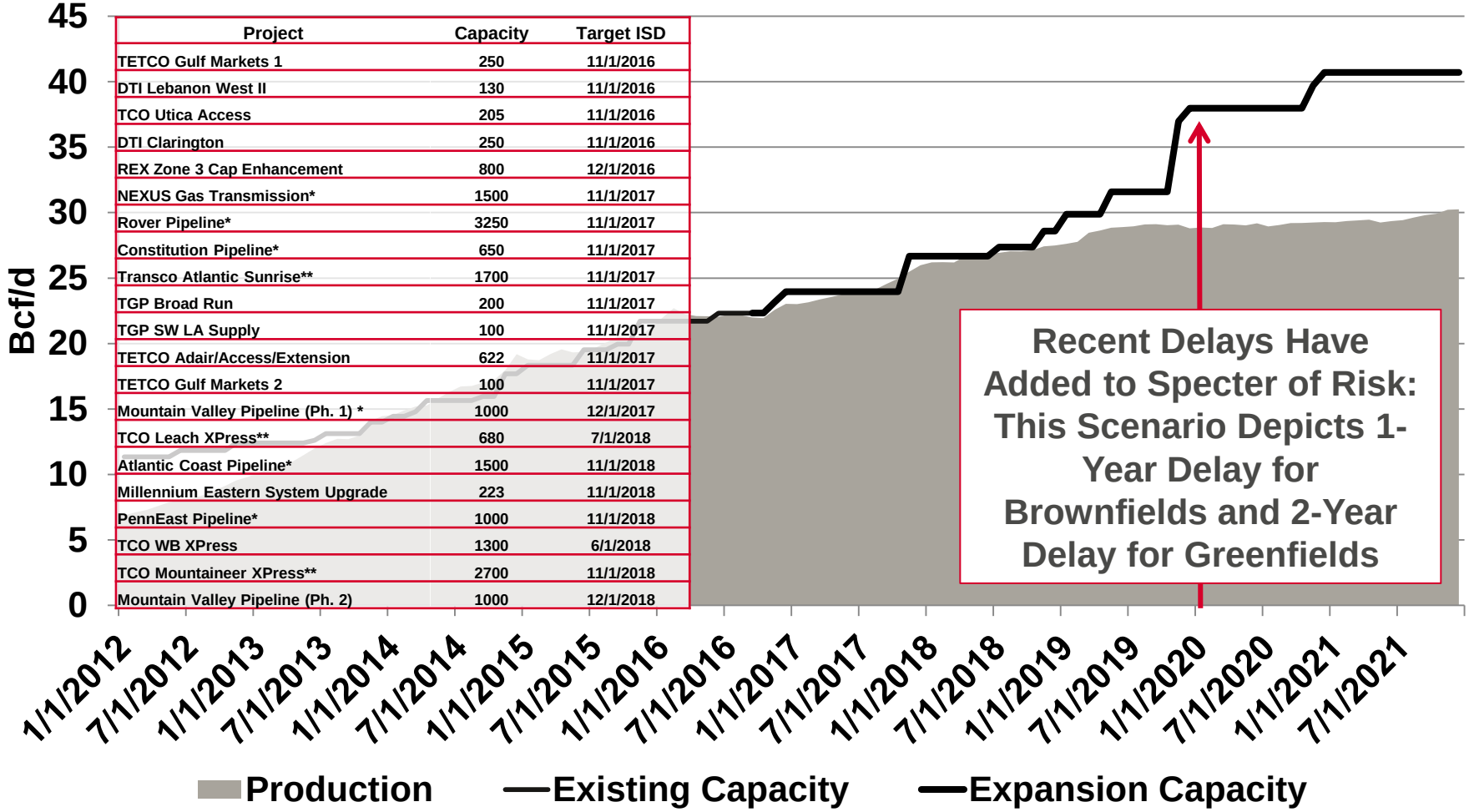


Project	Capacity	Target ISD
TETCO Gulf Markets 1	250	11/1/2016
DTI Lebanon West II	130	11/1/2016
TCO Utica Access	205	11/1/2016
DTI Clarington	250	11/1/2016
REX Zone 3 Cap Enhancement	800	12/1/2016
NEXUS Gas Transmission*	1500	11/1/2017
Rover Pipeline*	3250	11/1/2017
Constitution Pipeline*	650	11/1/2017
Transco Atlantic Sunrise**	1700	11/1/2017
TGP Broad Run	200	11/1/2017
TGP SW LA Supply	100	11/1/2017
TETCO Adair/Access/Extension	622	11/1/2017
TETCO Gulf Markets 2	100	11/1/2017
Mountain Valley Pipeline (Ph. 1) *	1000	12/1/2017
TCO Leach XPress**	680	7/1/2018
Atlantic Coast Pipeline*	1500	11/1/2018
Millennium Eastern System Upgrade	223	11/1/2018
PennEast Pipeline*	1000	11/1/2018
TCO WB XPress	1300	6/1/2018
TCO Mountaineer XPress**	2700	11/1/2018
Mountain Valley Pipeline (Ph. 2)	1000	12/1/2018

*greenfield project **brownfield with >100 miles new ROW

Production Risk From Capacity Development

Base Case Production Forecast v. Delayed Projects



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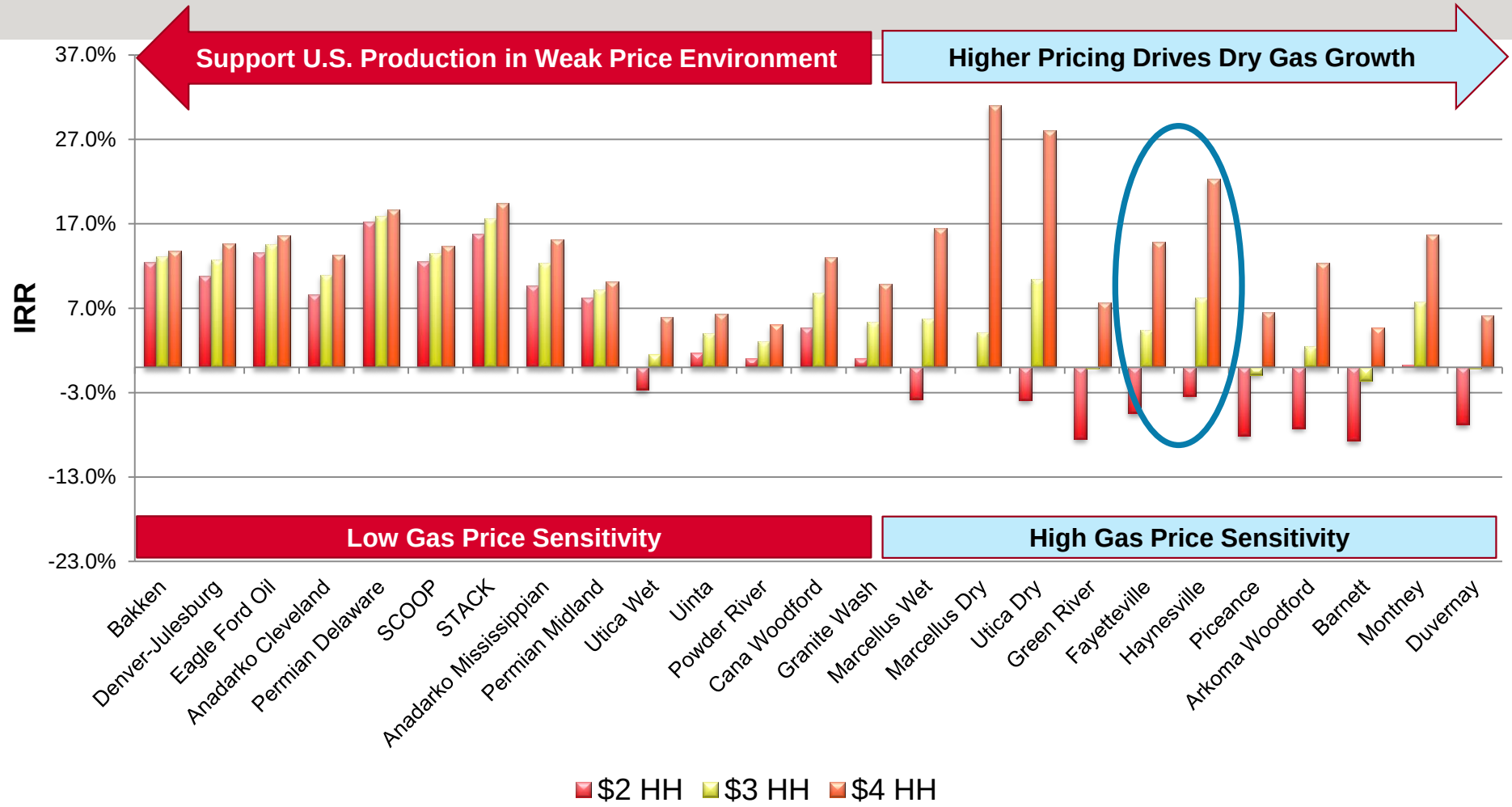
*greenfield project **brownfield with >100 miles new ROW

IRR SENSITIVITY TO HENRY HUB
(PRICE ASSUMED AT THE WELL HEAD WITH BASIS DIFFERENTIAL)



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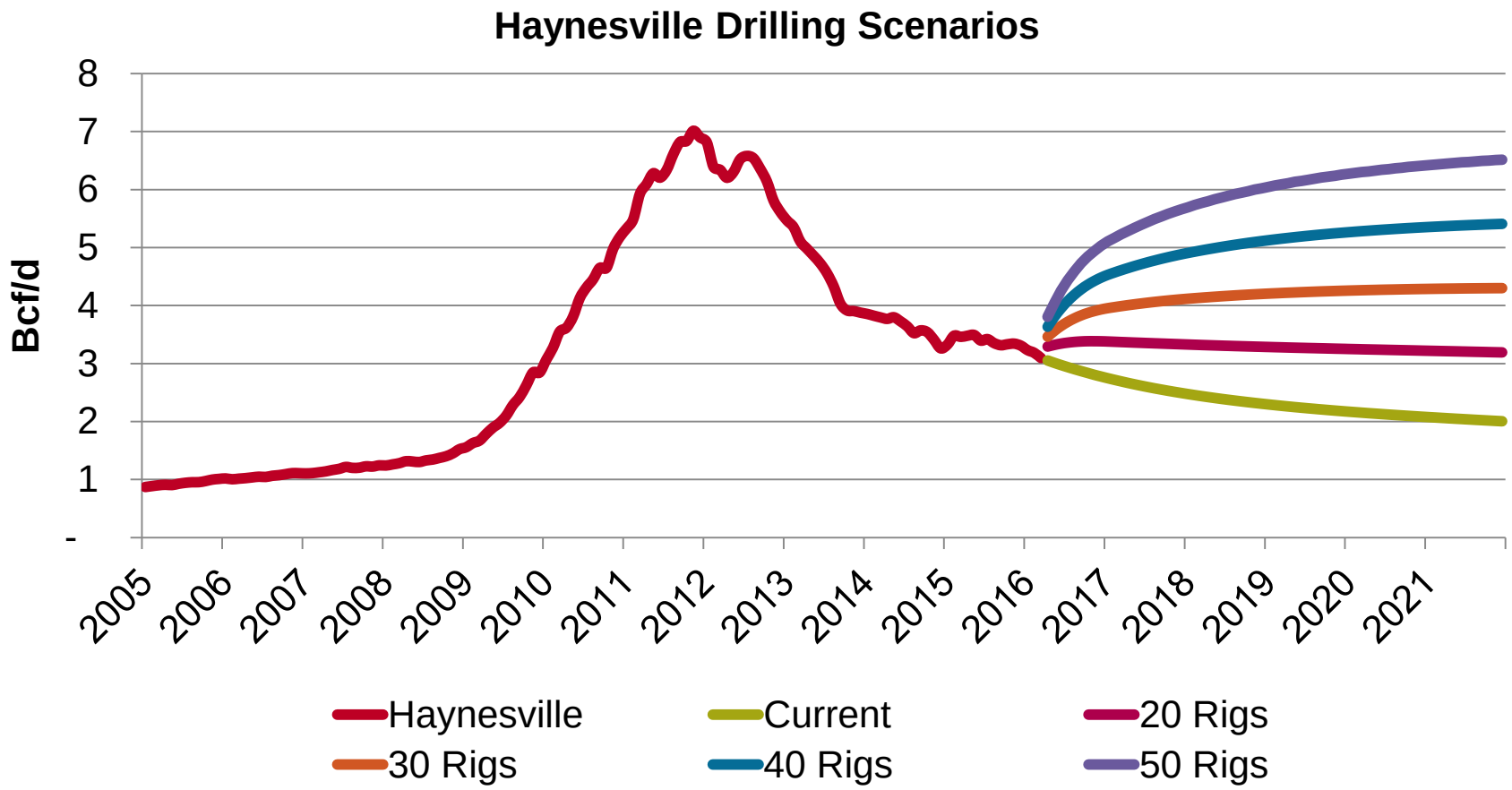
Henry Hub Sensitivity: *Natural gas is based on Henry Hub at various prices +/- current regional differentials*
Oil ($45) and NGL ($20) prices remains at current 12-month forward curve prices for their respective regions

Efficiency Gains = Increased Production with Fewer Rigs



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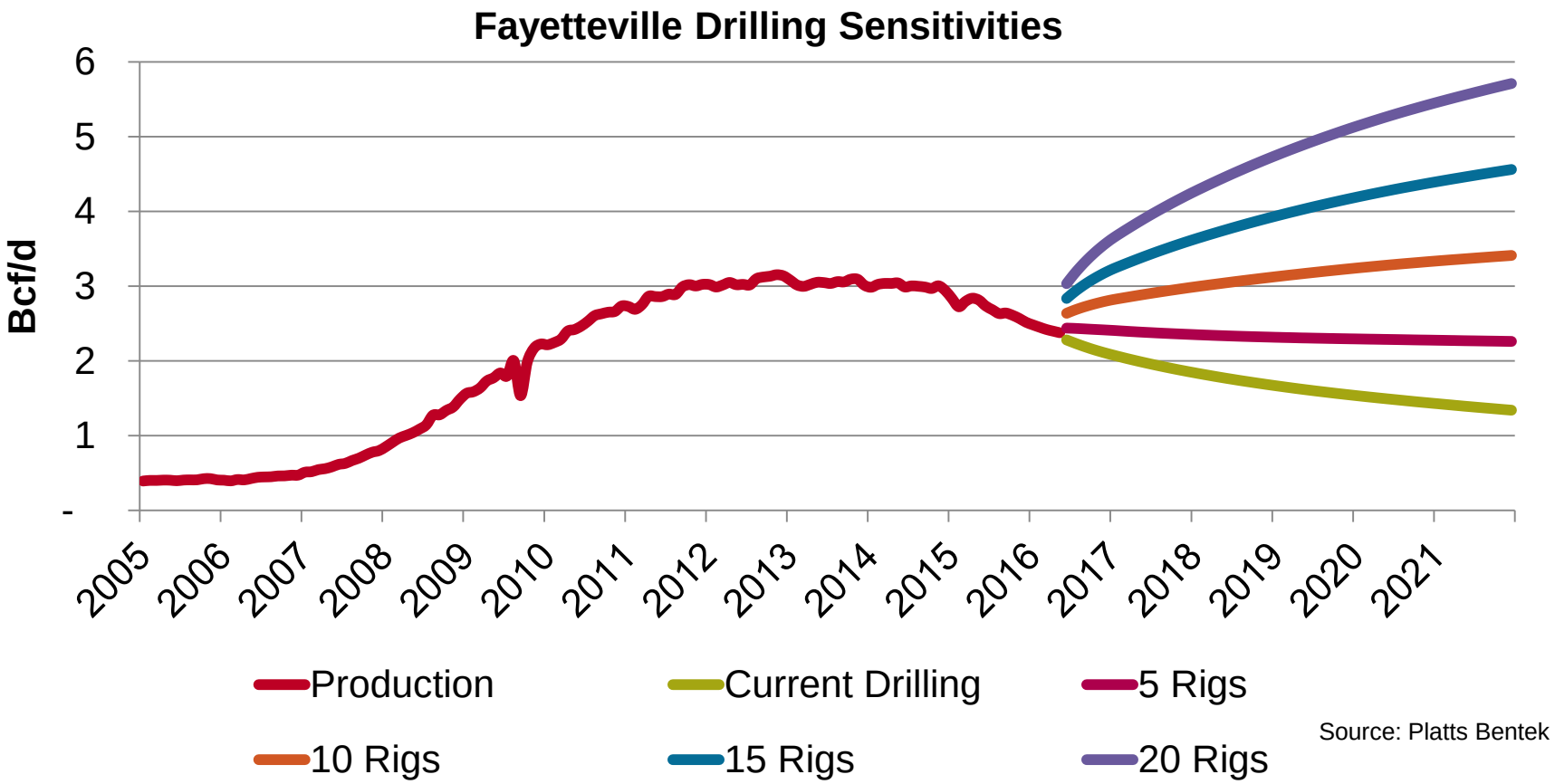
Source: Platts Bentek

Fayetteville Drilling Sensitivities



Source: Platts Bentek

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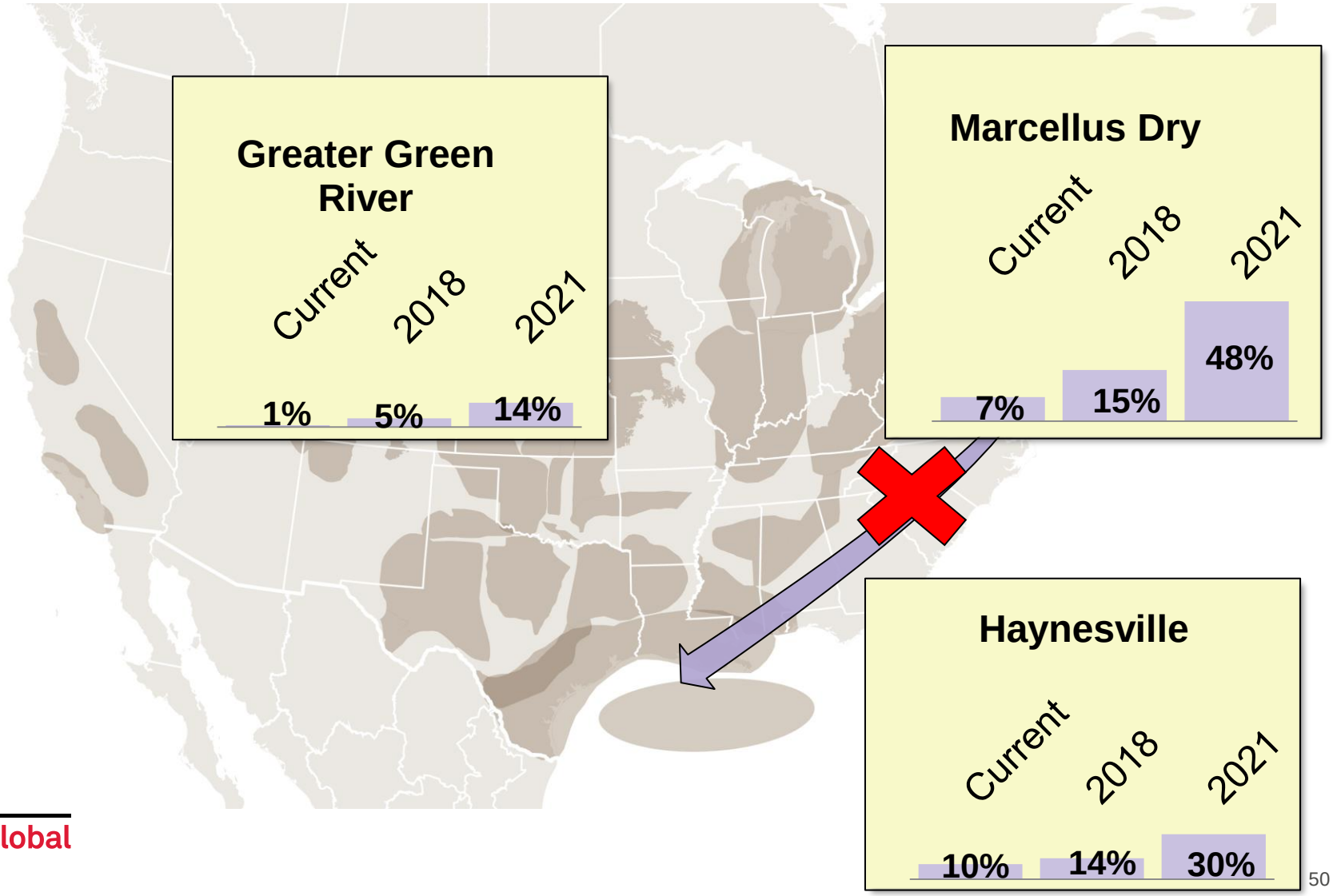
What if Northeast Production is Pipeline Constrained?



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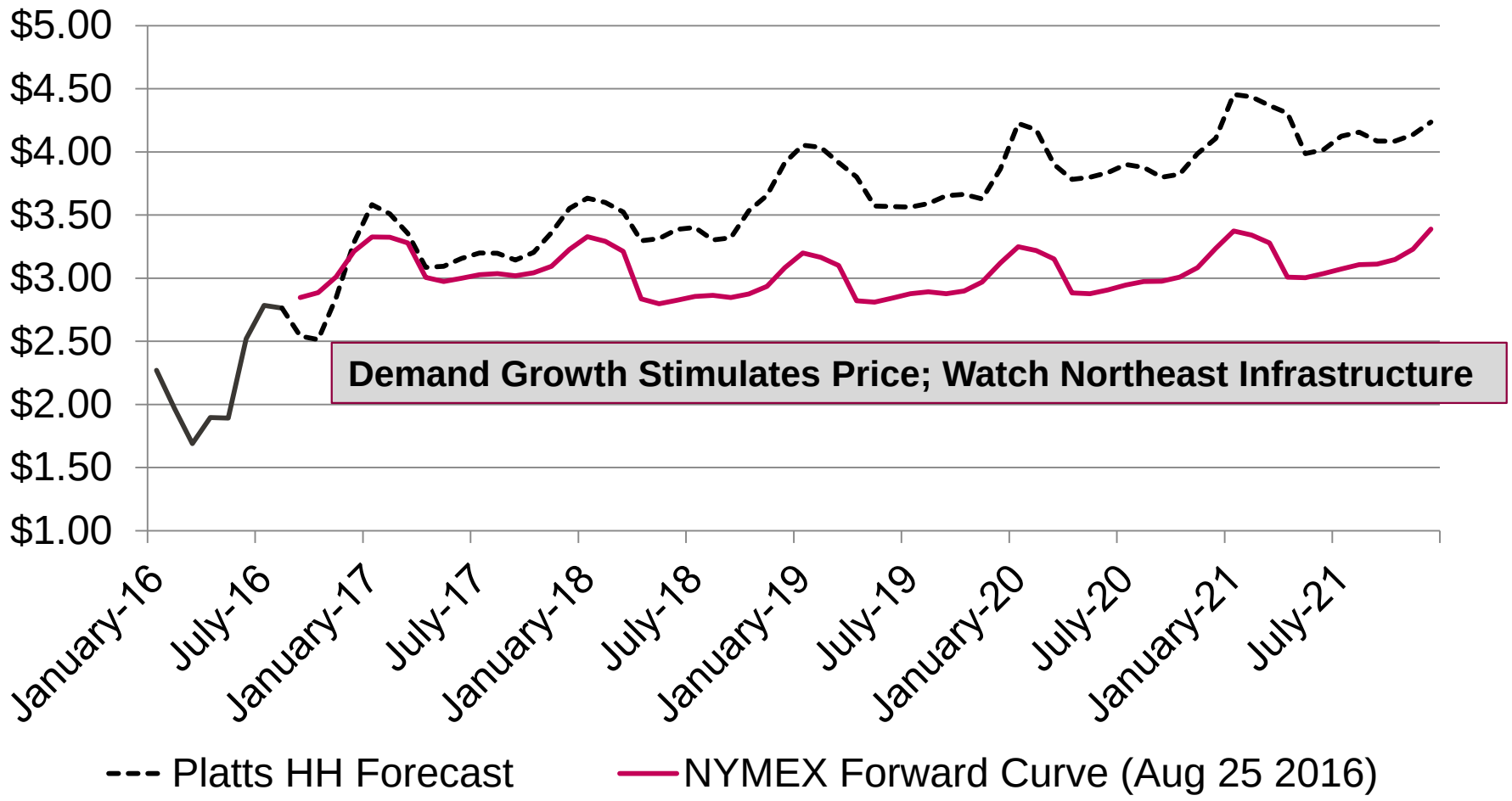
Source: Platts Bentek

Henry Hub: S&P Global Platts Forecast



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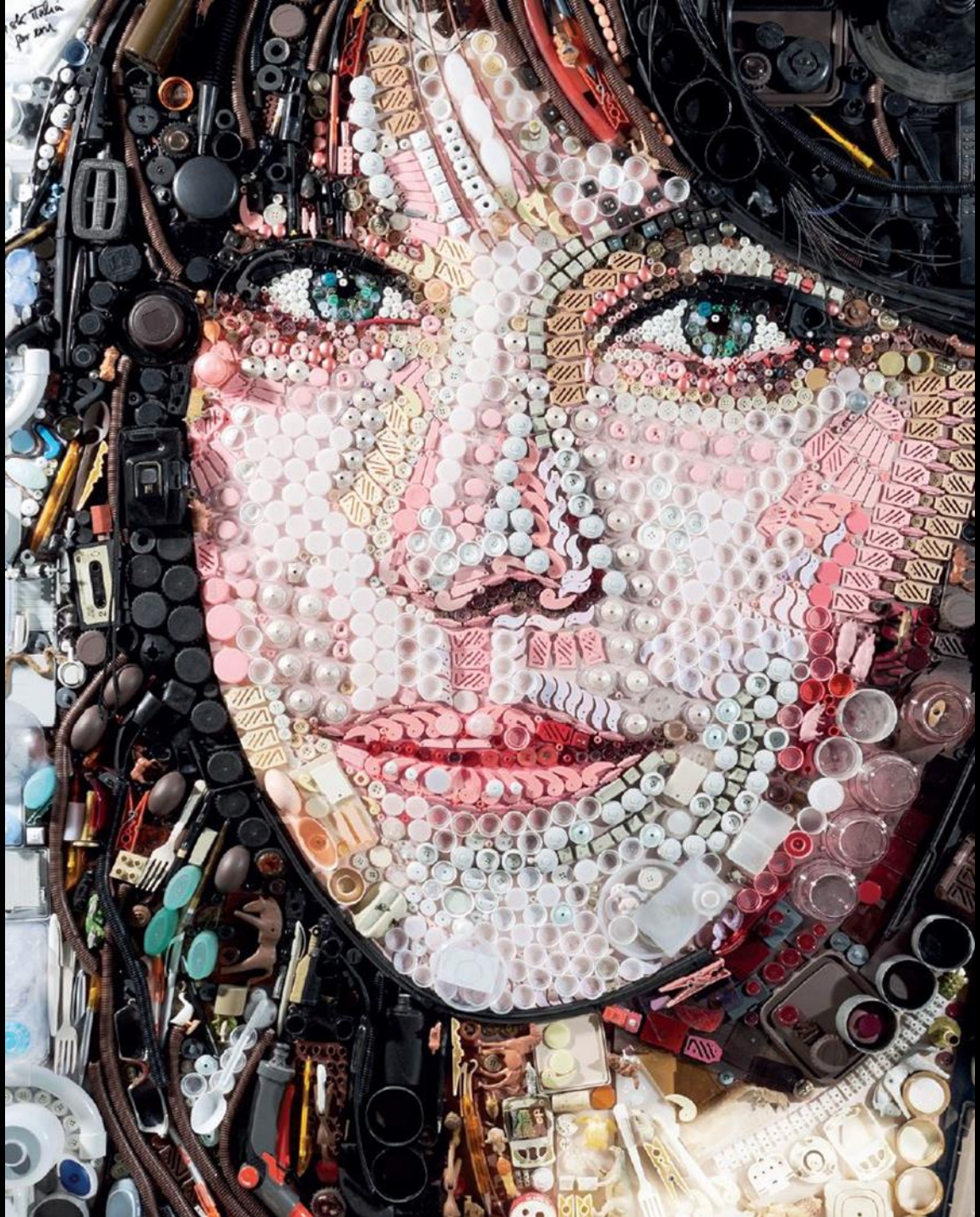
Source: Platts, NYMEX

Life After Fossil Fuels?



Thank You

Rick Allen, Director, Consulting Services

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