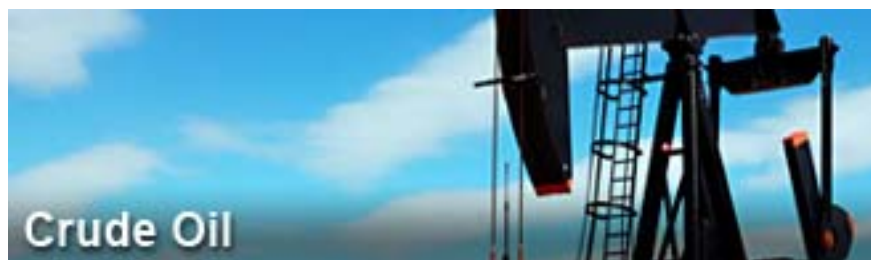


Panorama energético global, realidad y perspectivas. Impacto de Norteamérica en los mercados globales.

Javier Díaz, Manager, Energy Analysis and Consulting
8º Congreso Bolivia Gas y Energía 2015

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Bentek Energy is a leader in energy market fundamentals



5% Government, associations, consultants

Talking Points

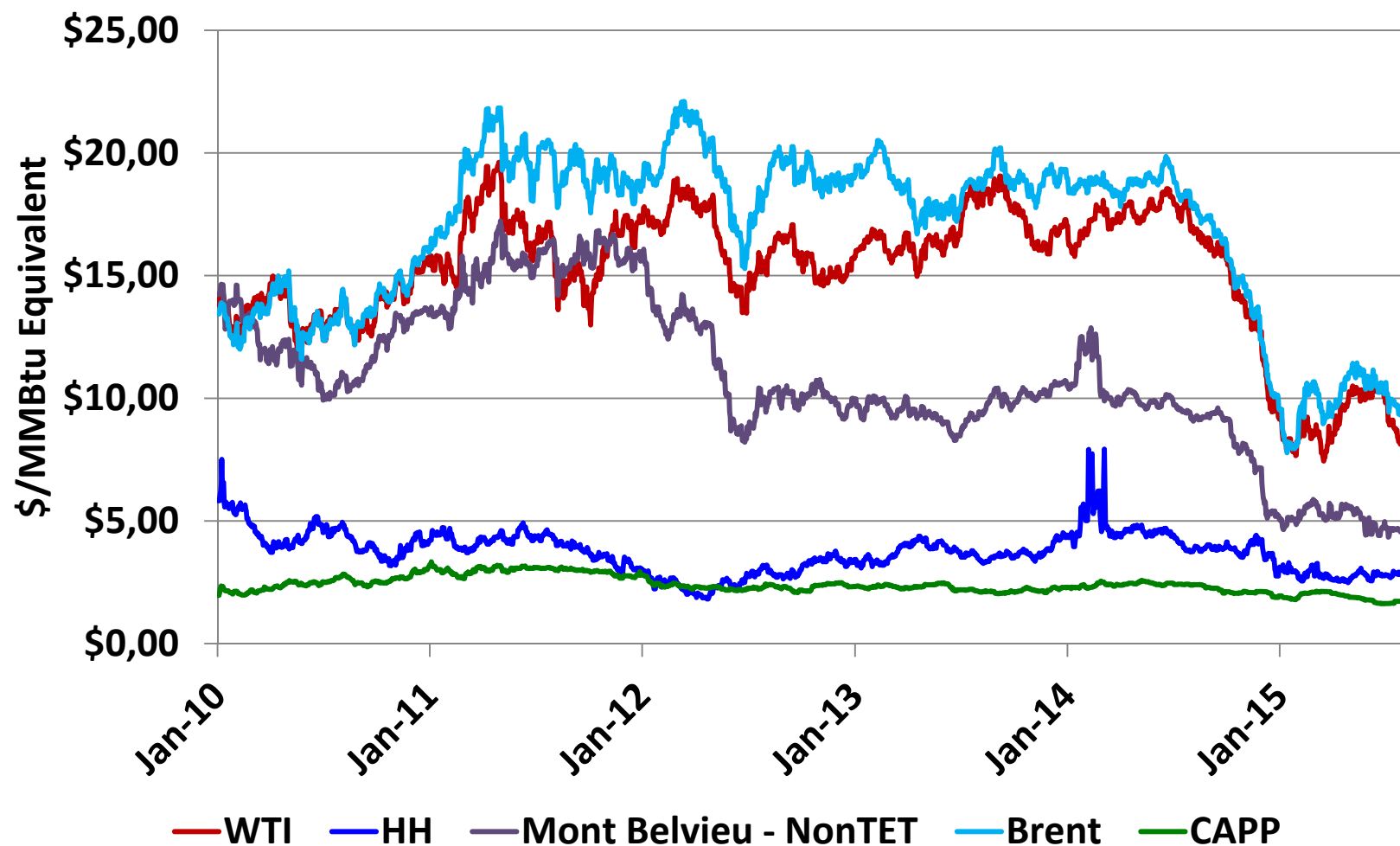
- The US producer can continue to produce even at reduced prices due to increased efficiencies, high-grading, and falling drilling costs
- US production growth of all BTUs displaces BOE back into a currently oversupplied global market
- As US producers continue to prove resilient, the US becomes a potential price setter rather than marginal supplier
- Anticipate lower prices for longer - incremental demand must appear globally – the technology & geology that the US has brought to the market has changed the playing field



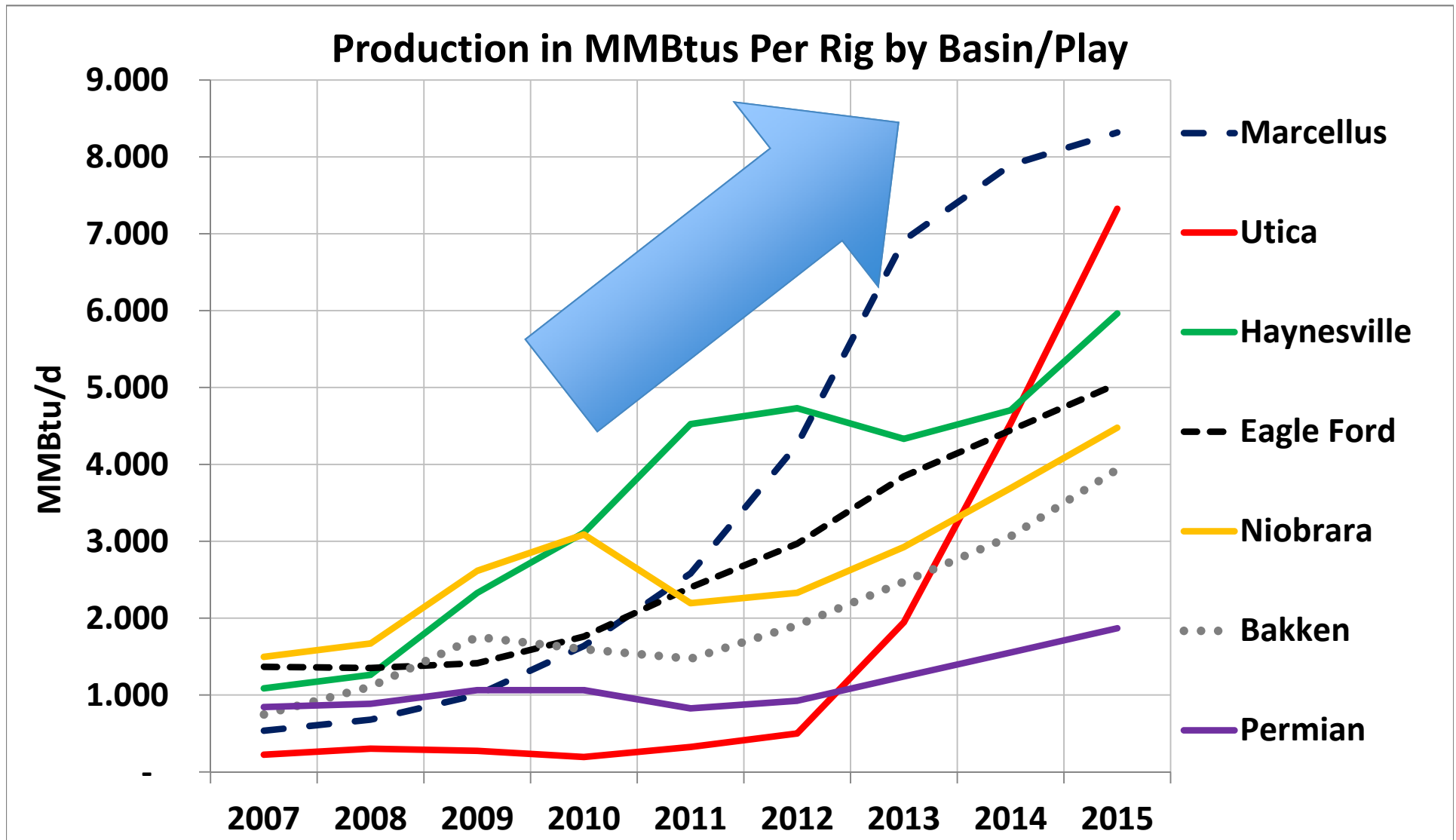
It took more time for the shale revolution to hit oil, but now its here



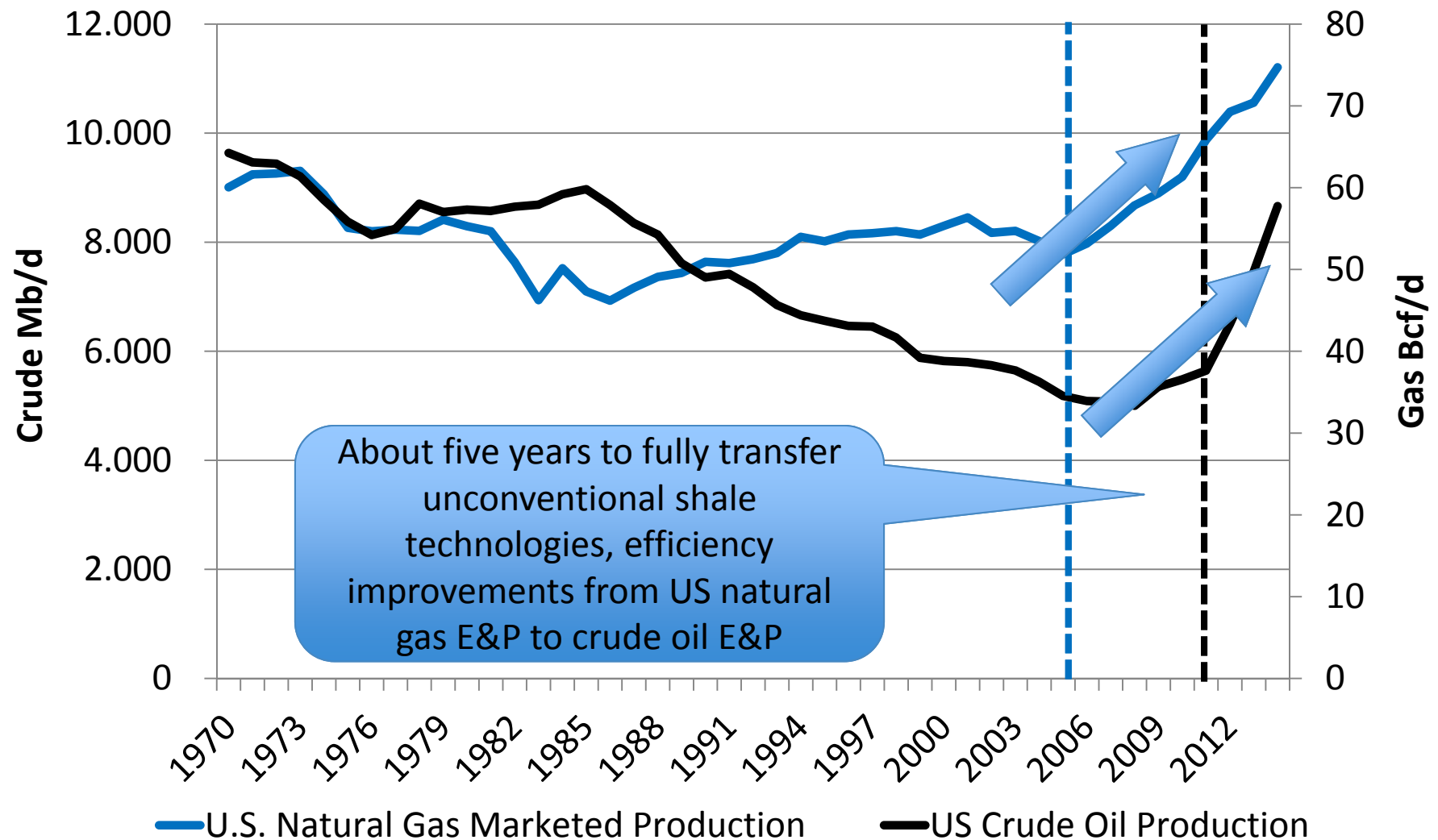
Gas, Oil and NGL Price Comparison: MMBTU Equivalent



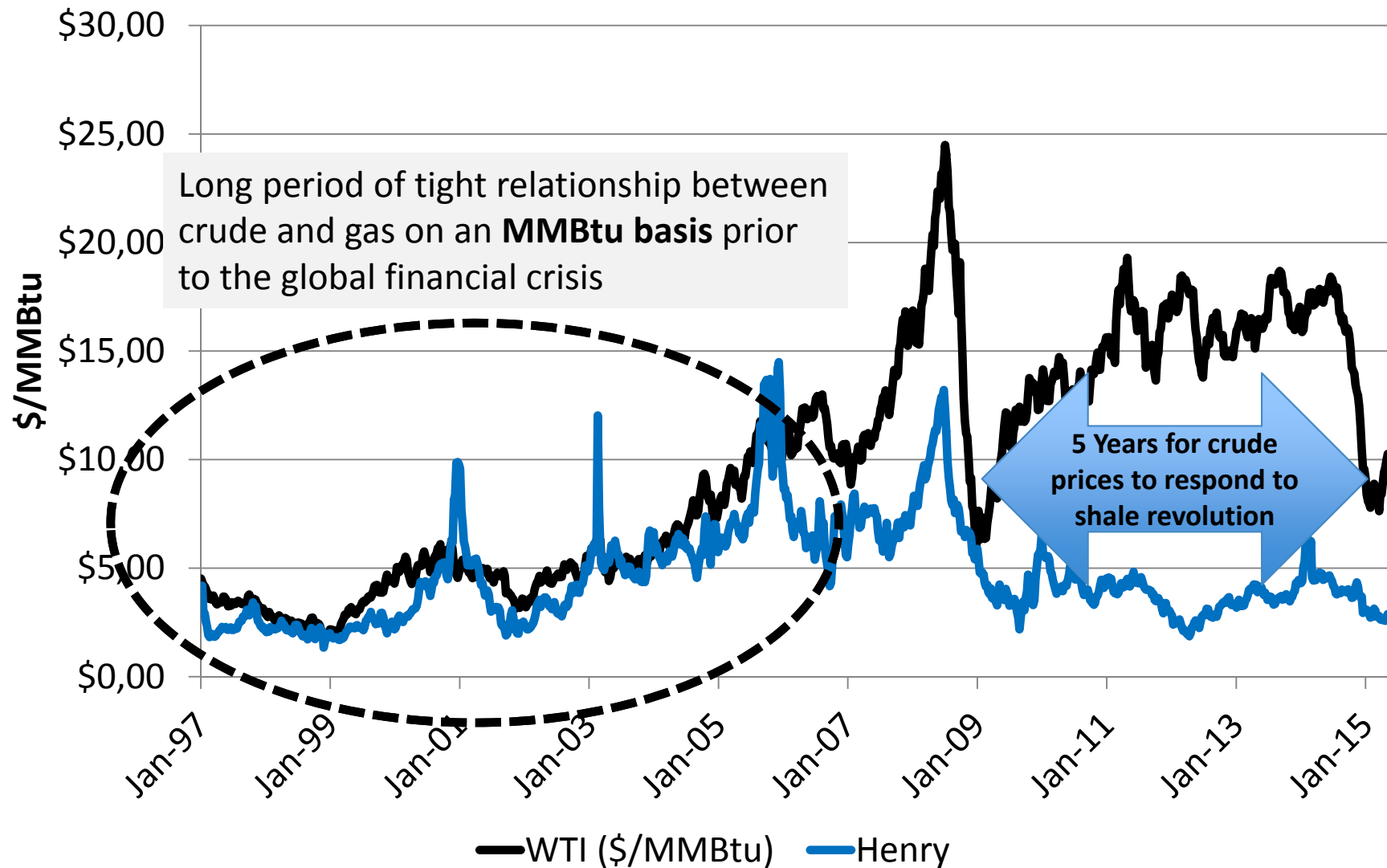
The main cause: upstream technology and efficiency



Unconventional Production Growth Drives Price Convergence at Lows



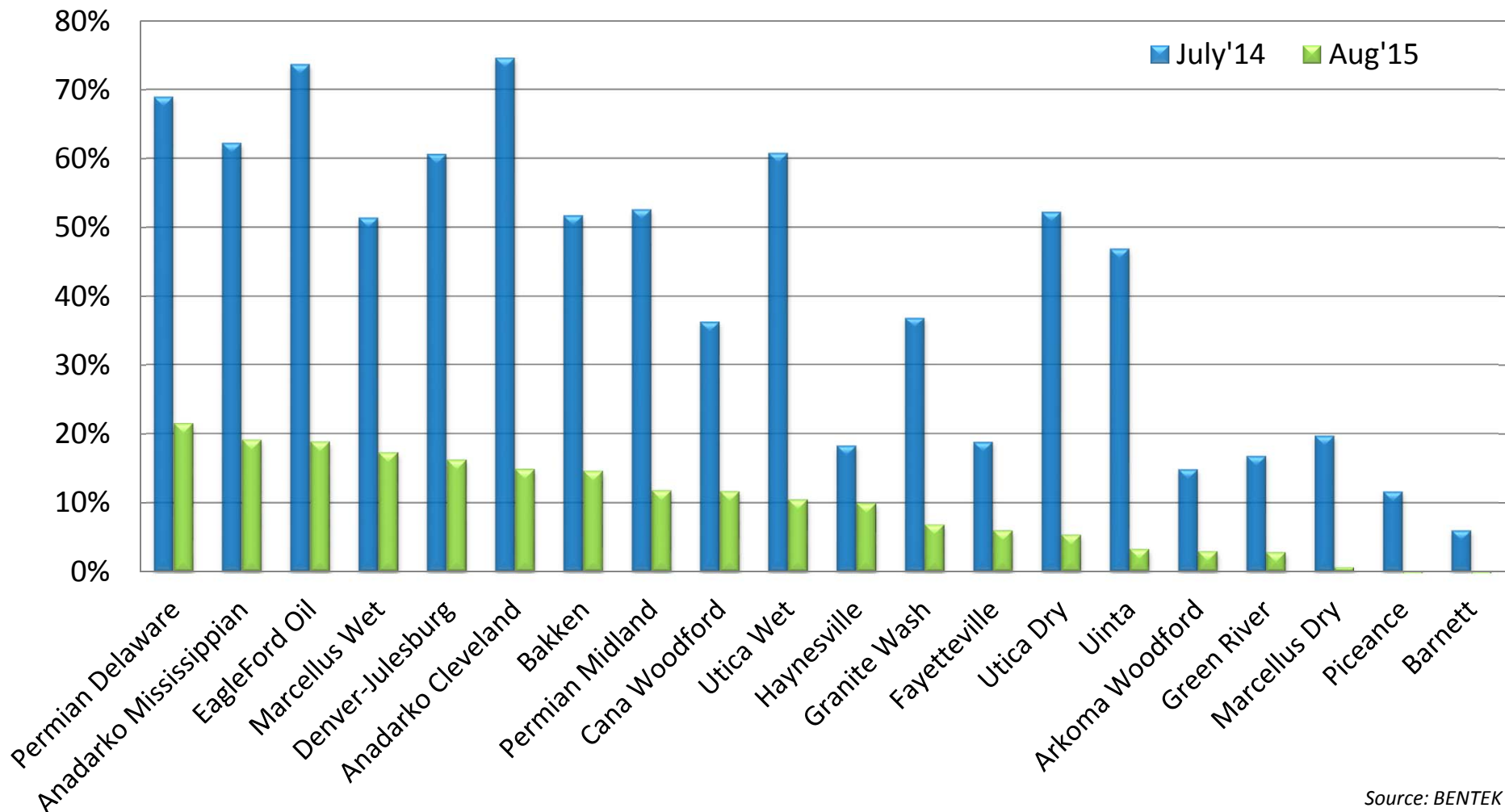
Crude and gas back together again?



YoY IRR comparison – result of commodity markets collapse



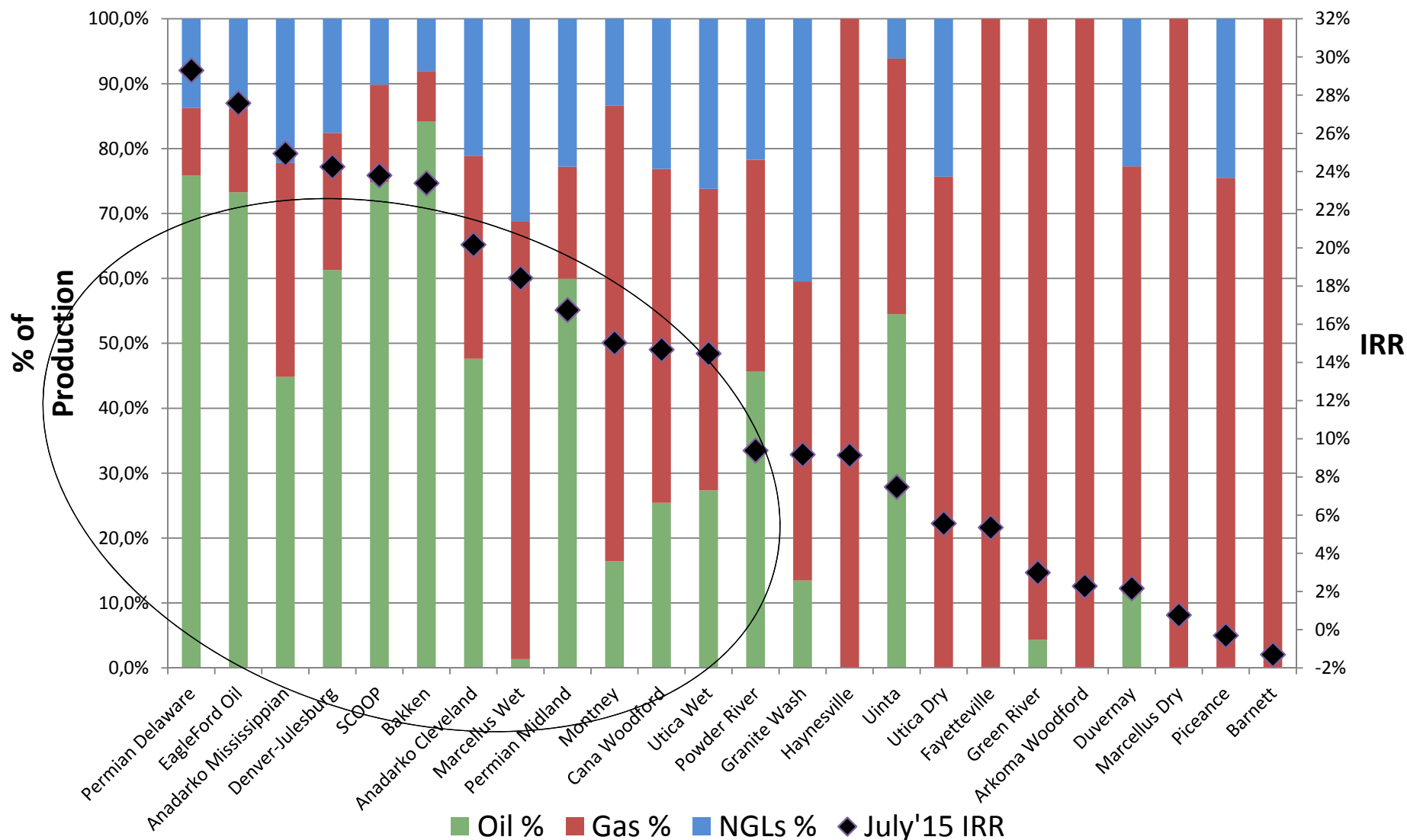
IRRs: July 2014 vs. Aug 2015



Source: BENTEK

August 2015 Price Assumptions: Gas = 12 month forward average curve for each regional pricing point (range \$1.85 - \$3.07/Mcf)
 Oil = 12 month forward average WTI +/- differential (range \$36.98-\$53.19/barrel)
 NGLs = weighted average \$/barrel, 12-mo forward average Mt. Belvieu prices (range \$17.88-\$23.38/barrel)

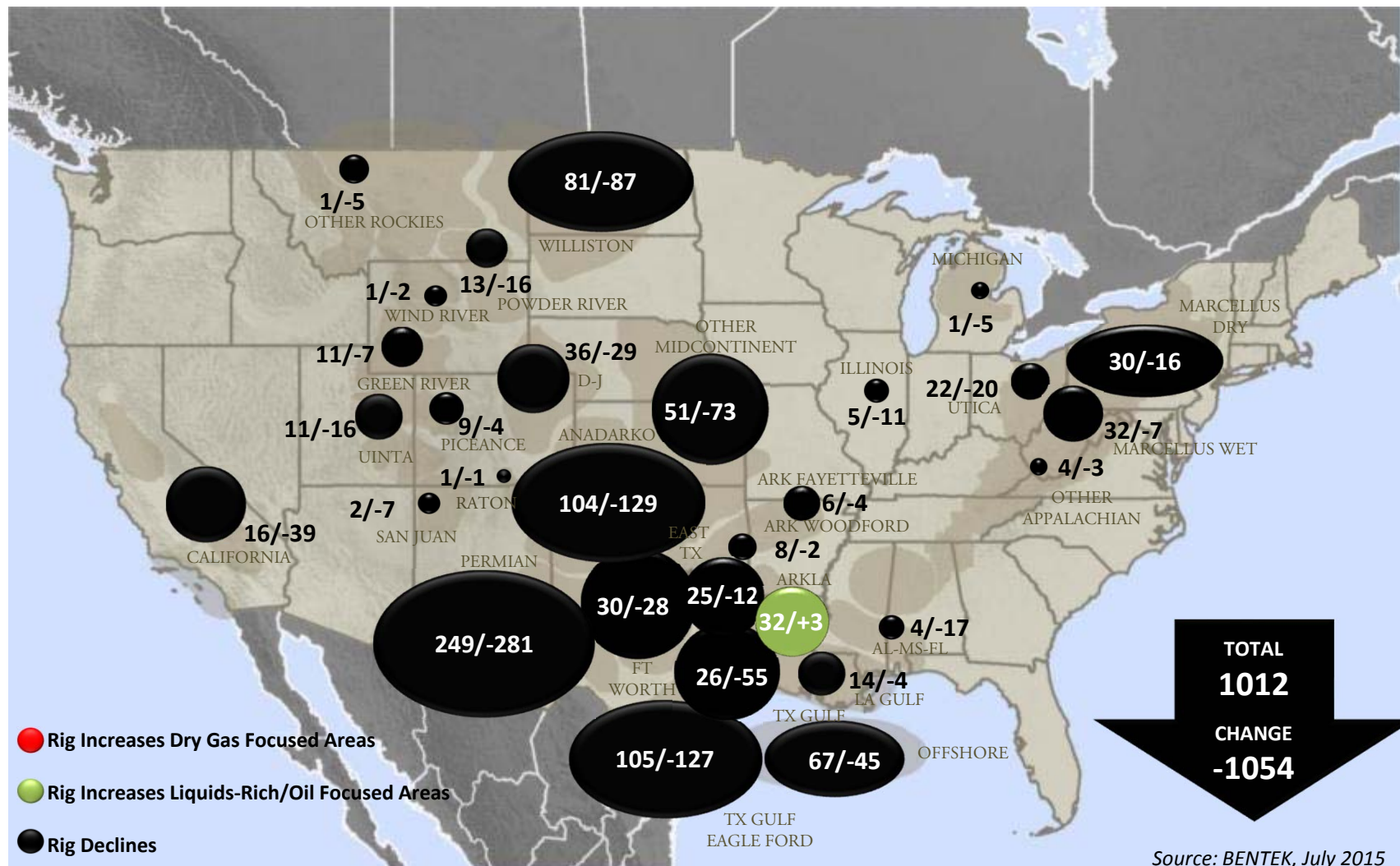
Oil-Weighted Production, Tops the Stack



July 2015 Price Assumptions: Gas = 12 month forward average curve for each regional pricing point (range \$1.86 - \$3.00/Mcf)
 Oil = 12 month forward average WTI +/- differential (range \$44.78-\$61.38/barrel)
 average \$/barrel, 12-mo forward average Mt. Belvieu prices (range \$19.22-\$25.64/barrel)

NGLs = weighted BENTEK

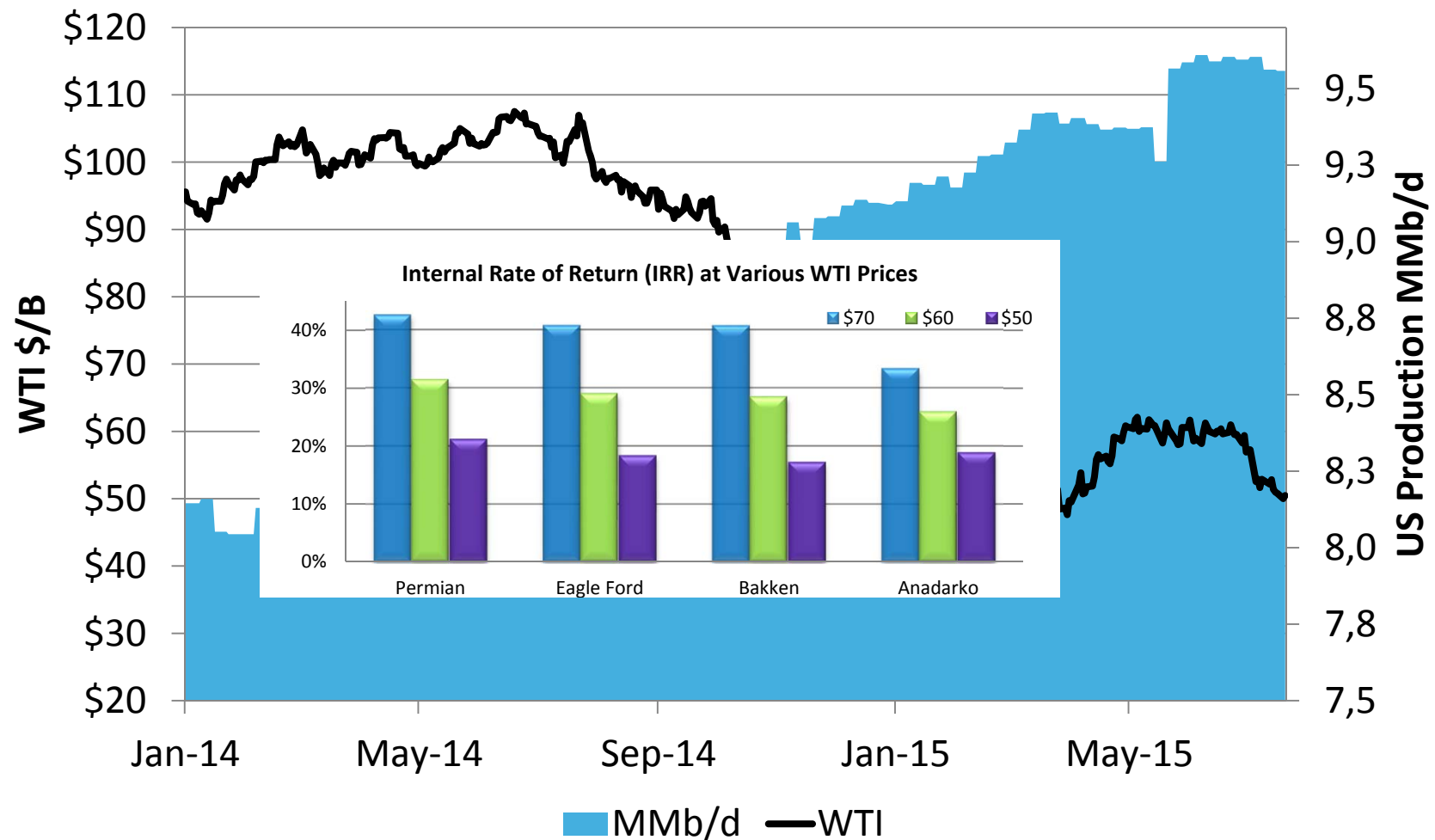
US Rig Count Halved in Response to Declining Oil Prices



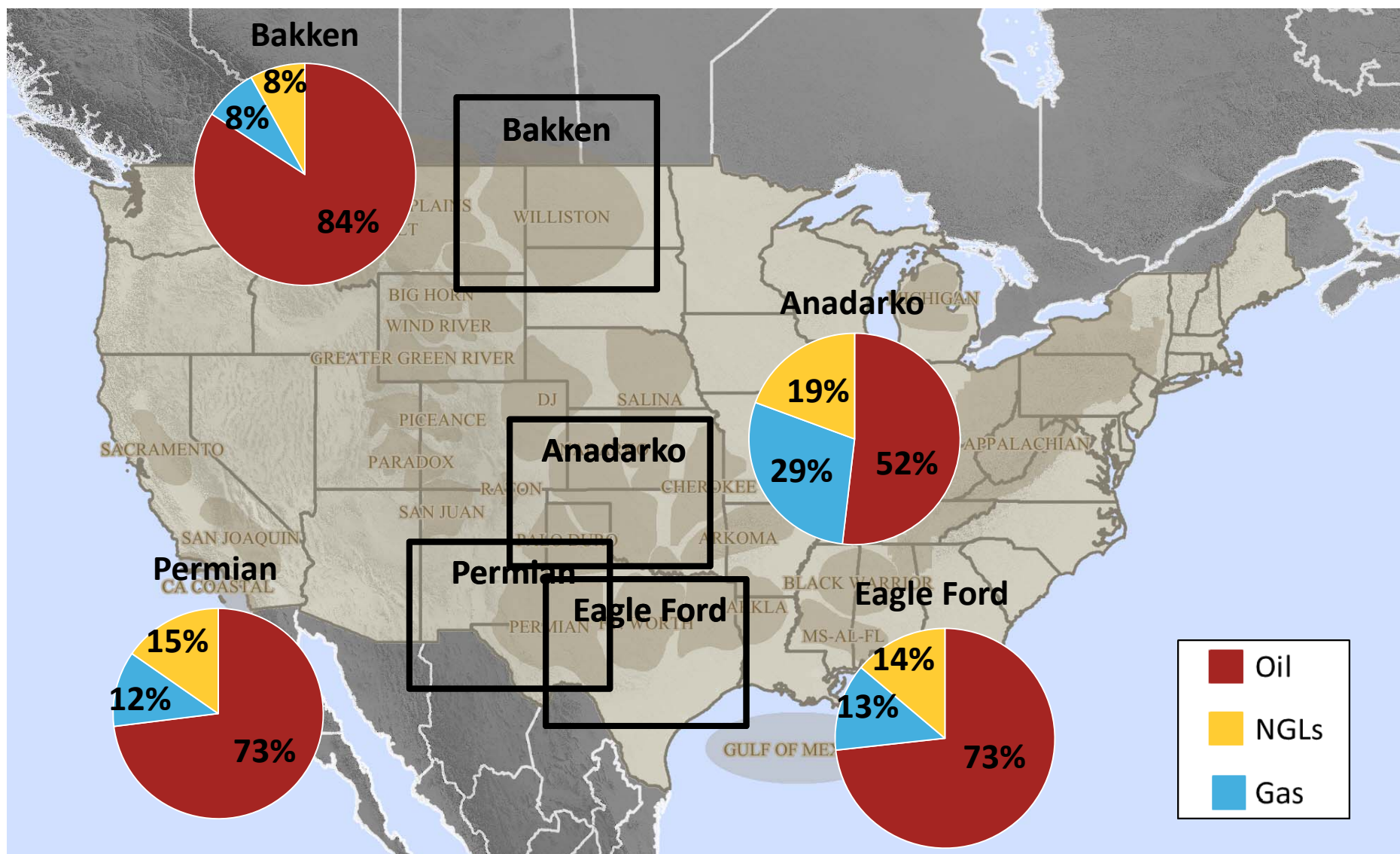
Source: Rig Data/HPDI

Active rig count: July 3, 2015 / Change in rig count from July 4, 2014

Despite Falling Prices Production Grows as Producer Continue to Innovate

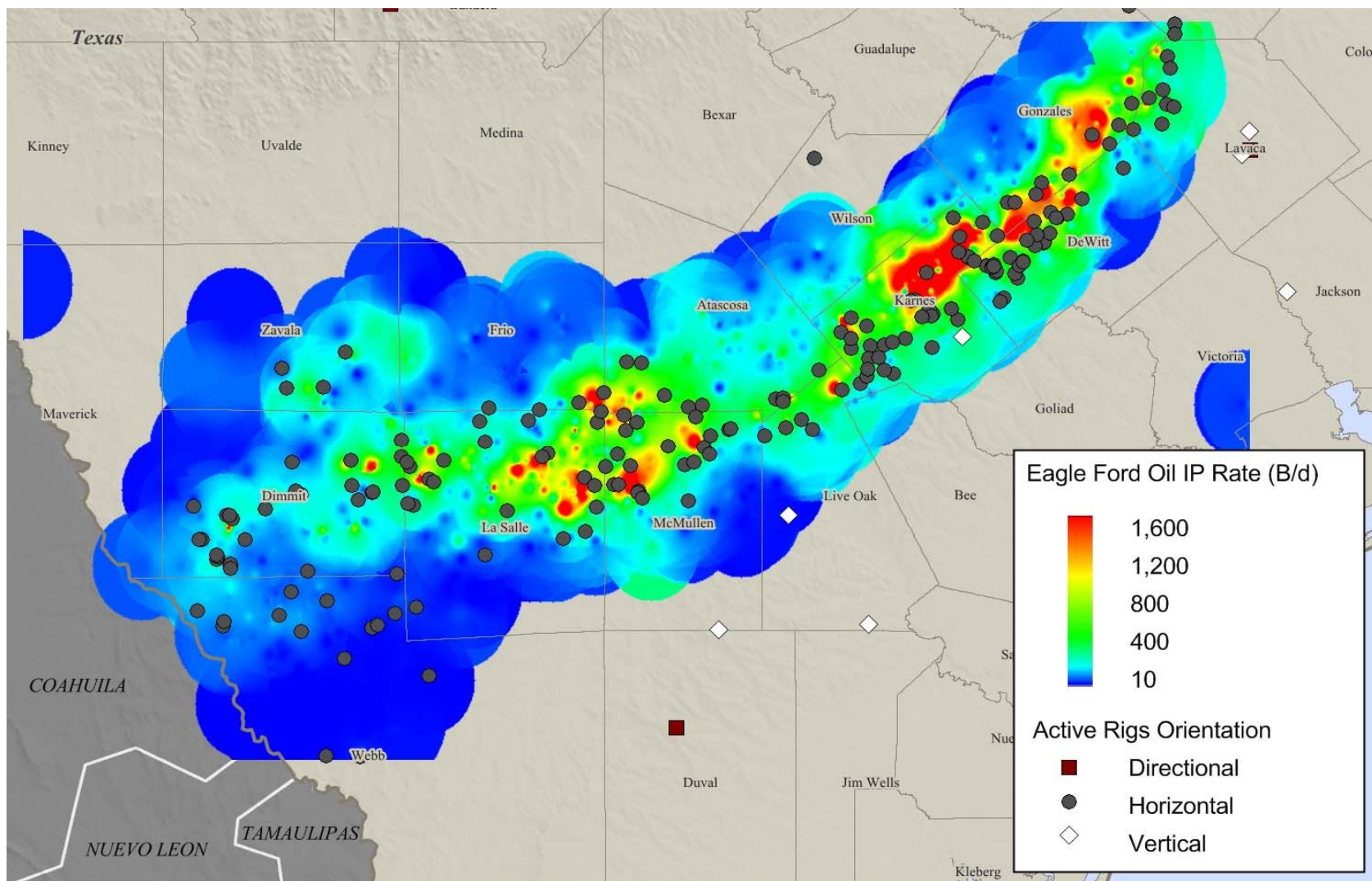


US Producers Target Most Prolific Plays With Highest Liquids Content



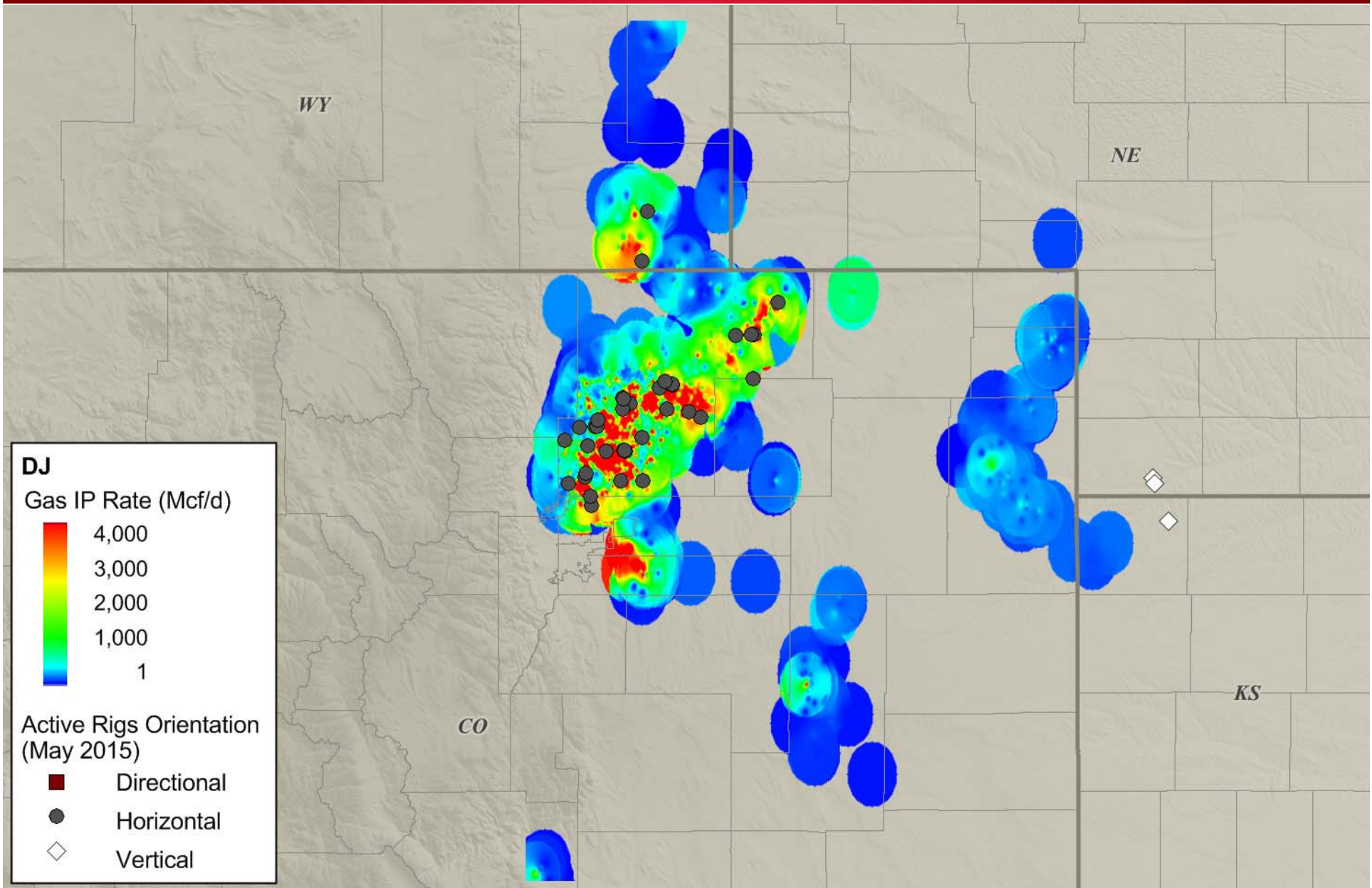
Source: Bentek, data as of May 2015

Remaining Rigs Concentrated Atop Best Acreage – Eagle Ford Oil IP with Rigs



Source: Rig Data/ HPDI

Remaining Rigs Concentrated Atop Best Acreage –DJ Gas IP with Rigs



The Switch from Conventional to Unconventional Plays

Old Way of Drilling

Jelly Donut

Conventional Drilling
Basic Vertical Penetration
Limited Formation Contact

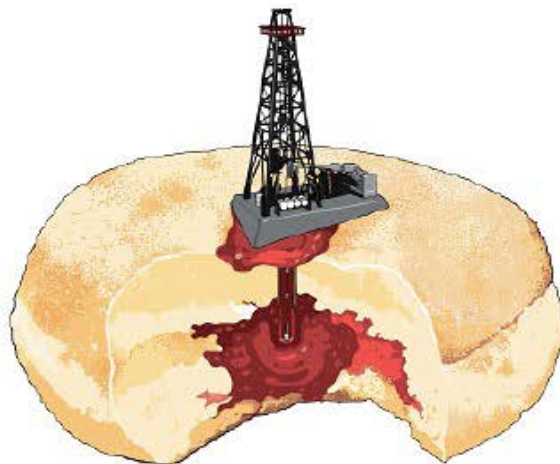


Illustration © James Scherrer 2014

New Way of Drilling

Tiramisu

Unconventional Drilling
More Sophisticated Horizontal Penetration
Extensive Formation Contact

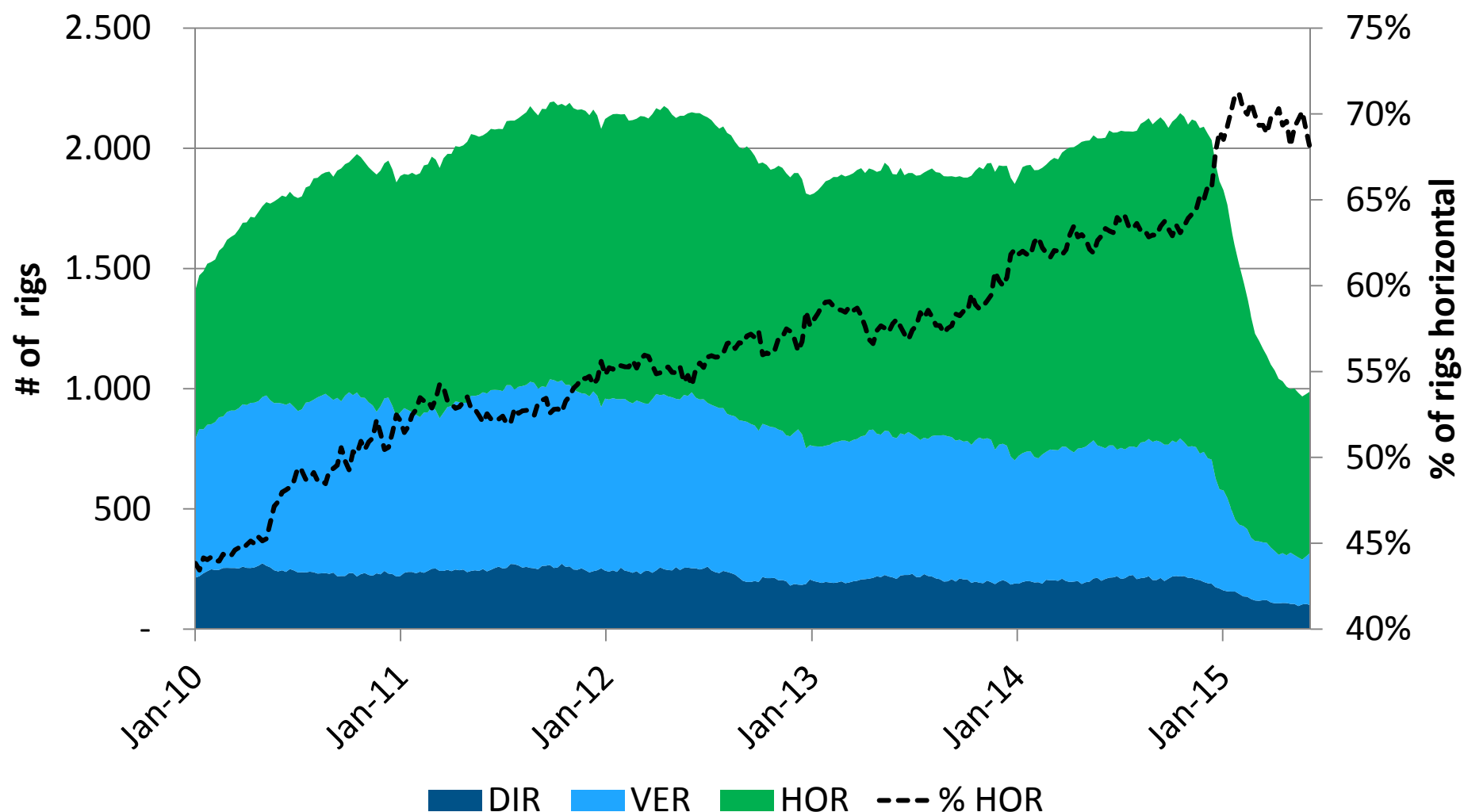


Illustration © James Scherrer 2014

Horizontal Rigs Now Account For 70% of Total Drilling Activity

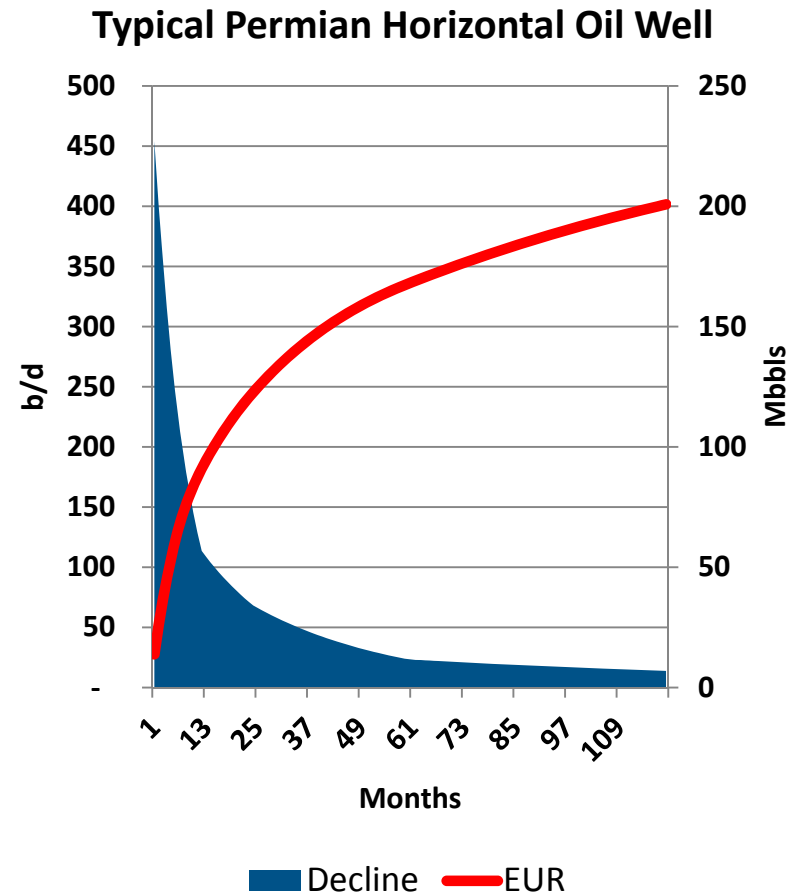
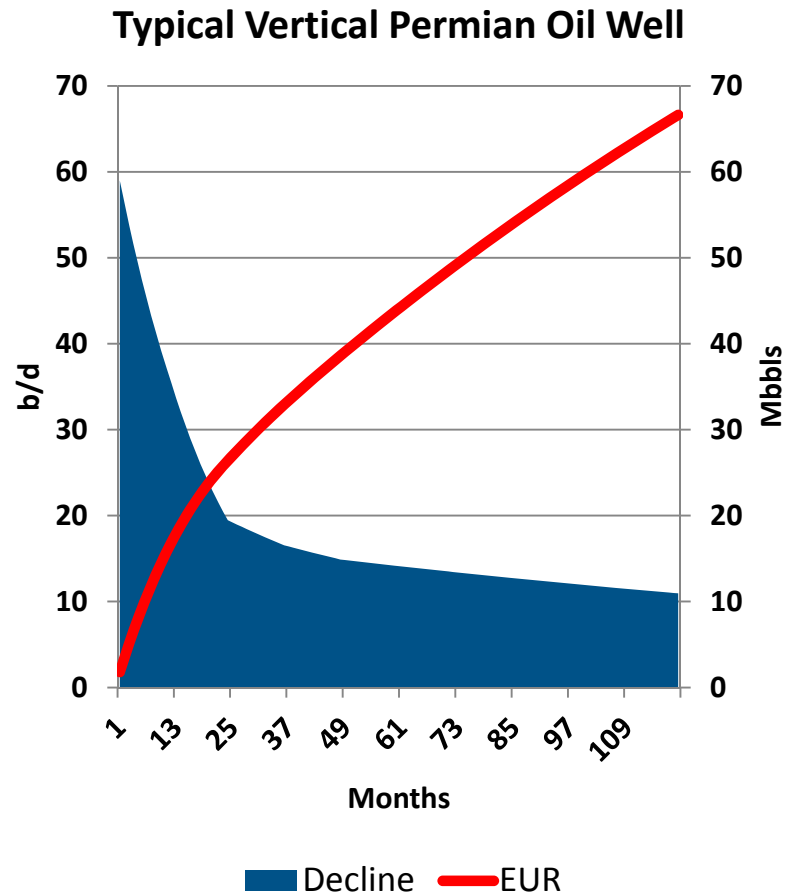


US Rig Counts



Source: BENTEK, RigData, data as of July 10, 2015

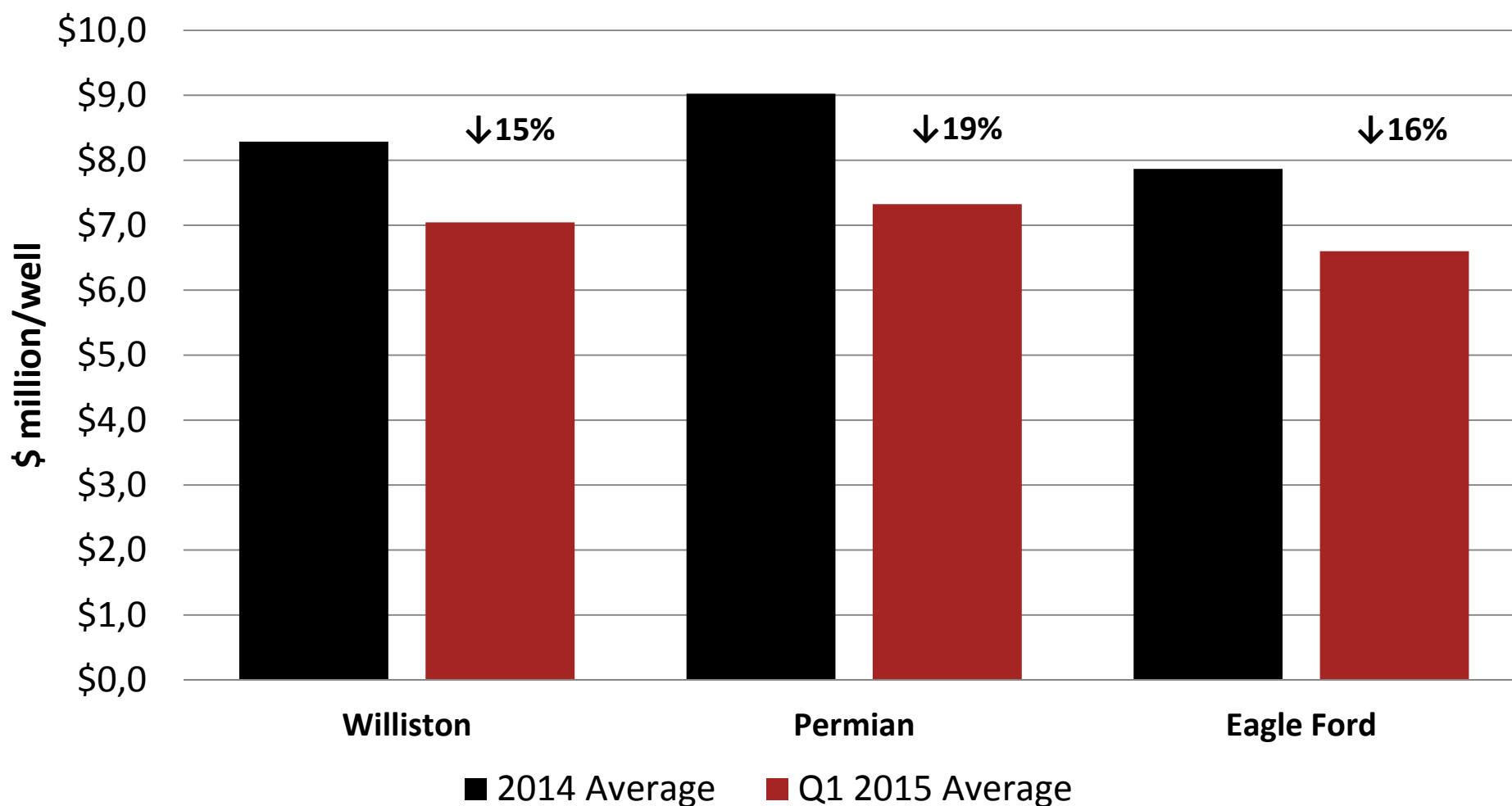
Typical Permian Horizontal Well Produces 5X The Volume of Vertical Well In 1st 24 Months



Producers Realizing an Average of 15% Reduction in Drilling Costs



Average Well Cost by Basin (2014 v. 2015)



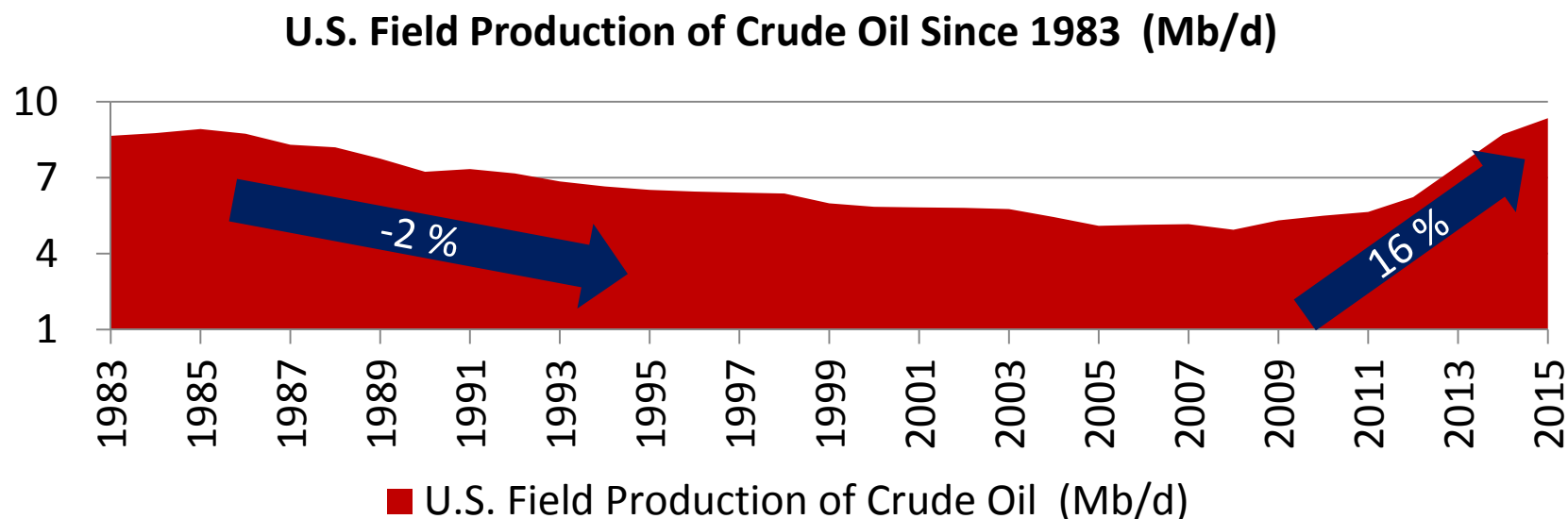
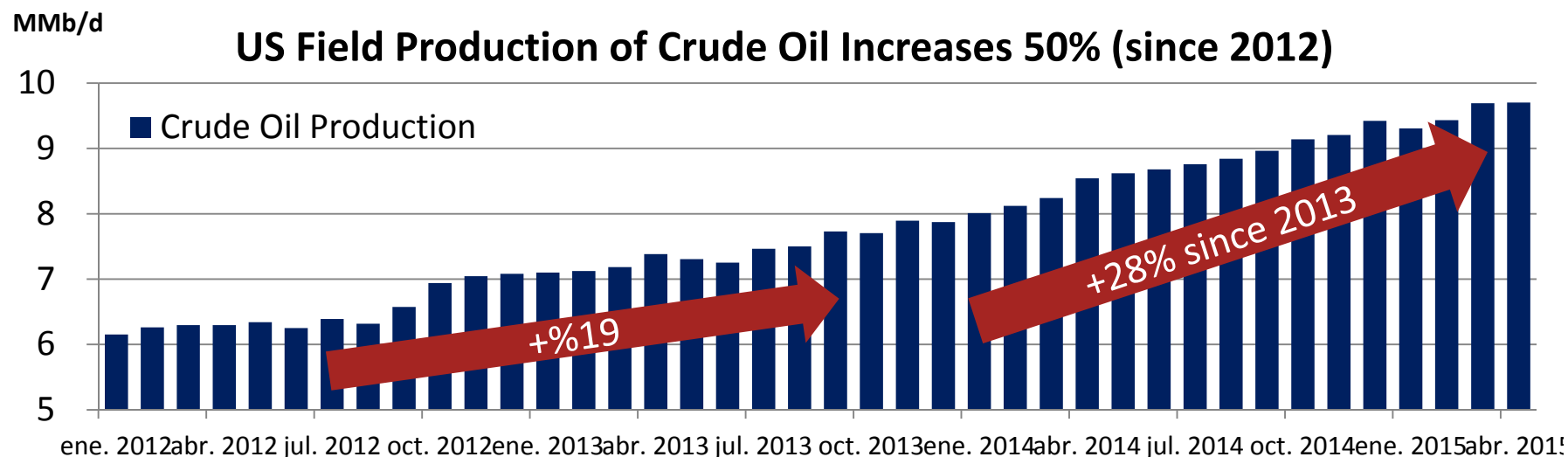
*Data sample comprised of 20+ Producers

Source: Bentek, producer presentations

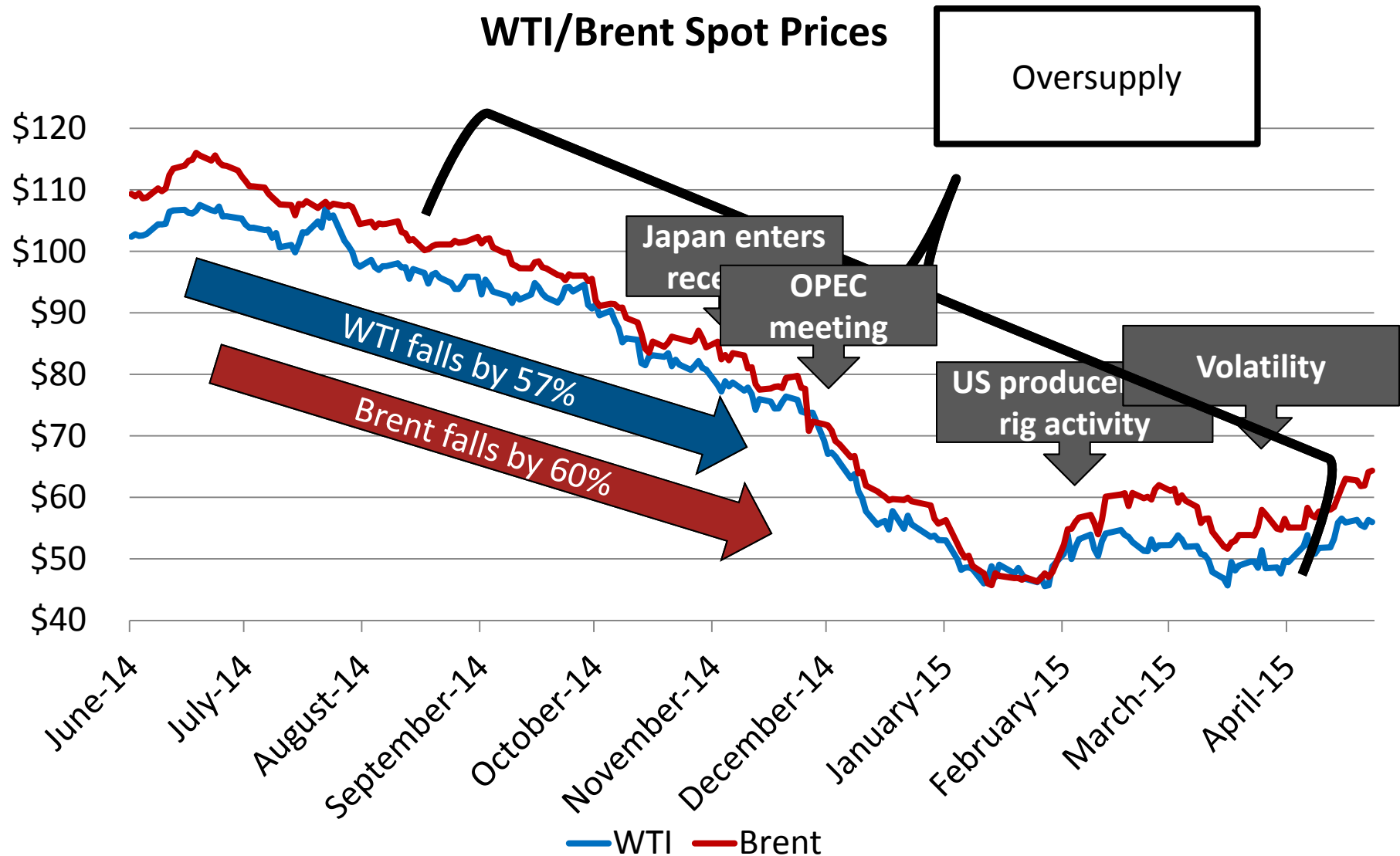
US Oversupply Impacts Global Oil Markets



The US Production Story

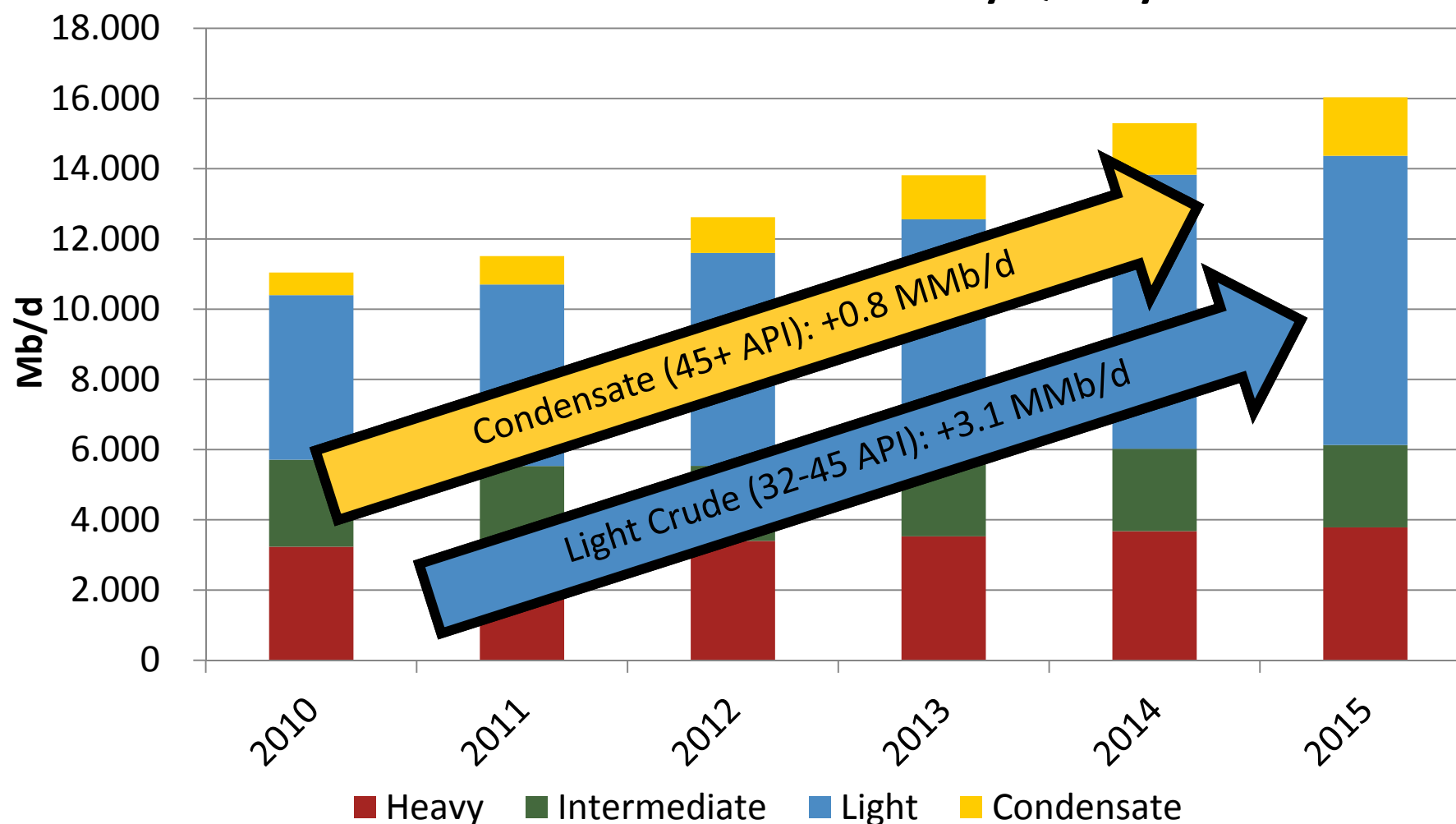


Accelerated US production contributed to global price collapse



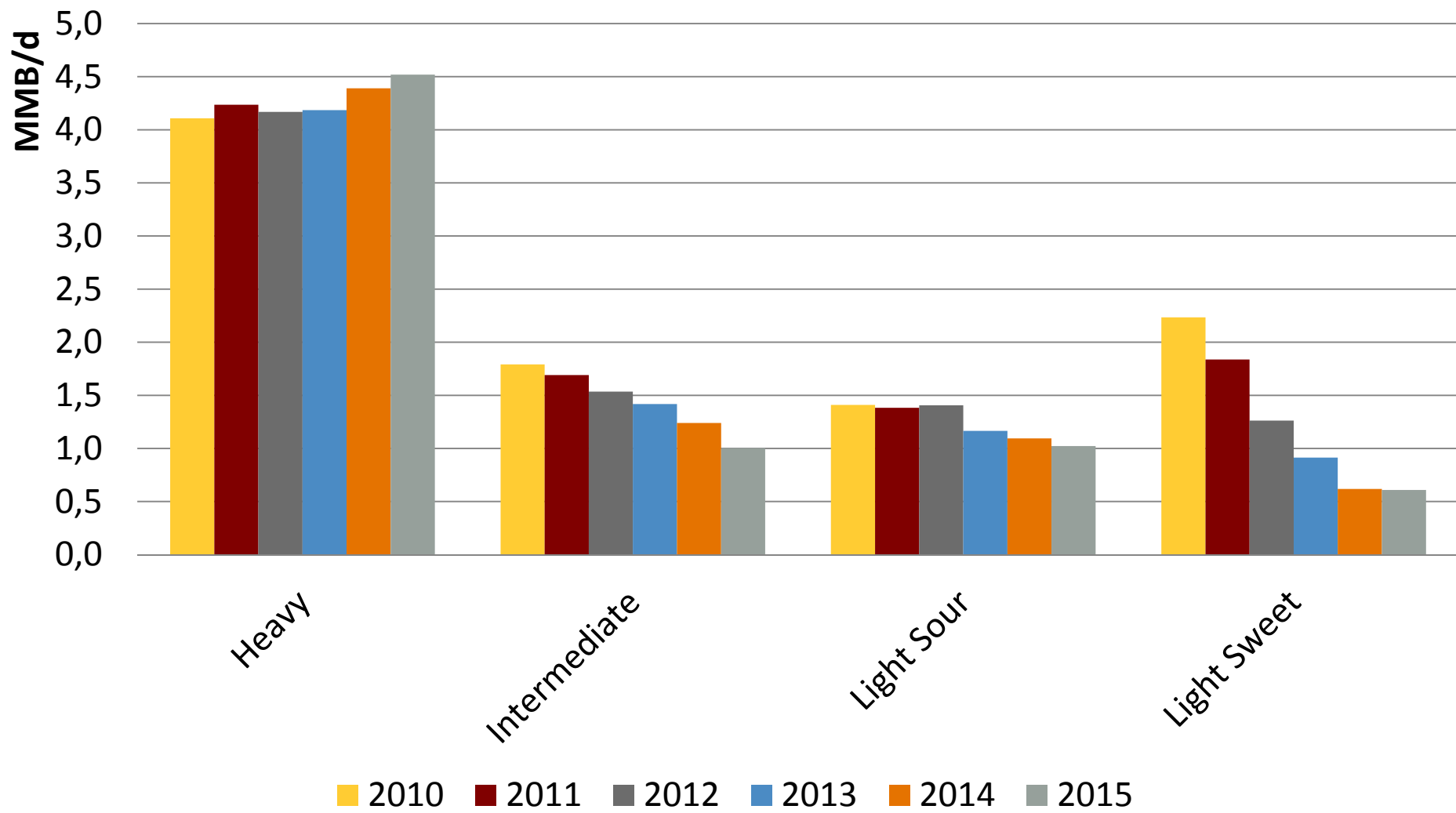
Producers Flood US Refiners With Light & Ultra Light Crude

North America Oil Production by Quality



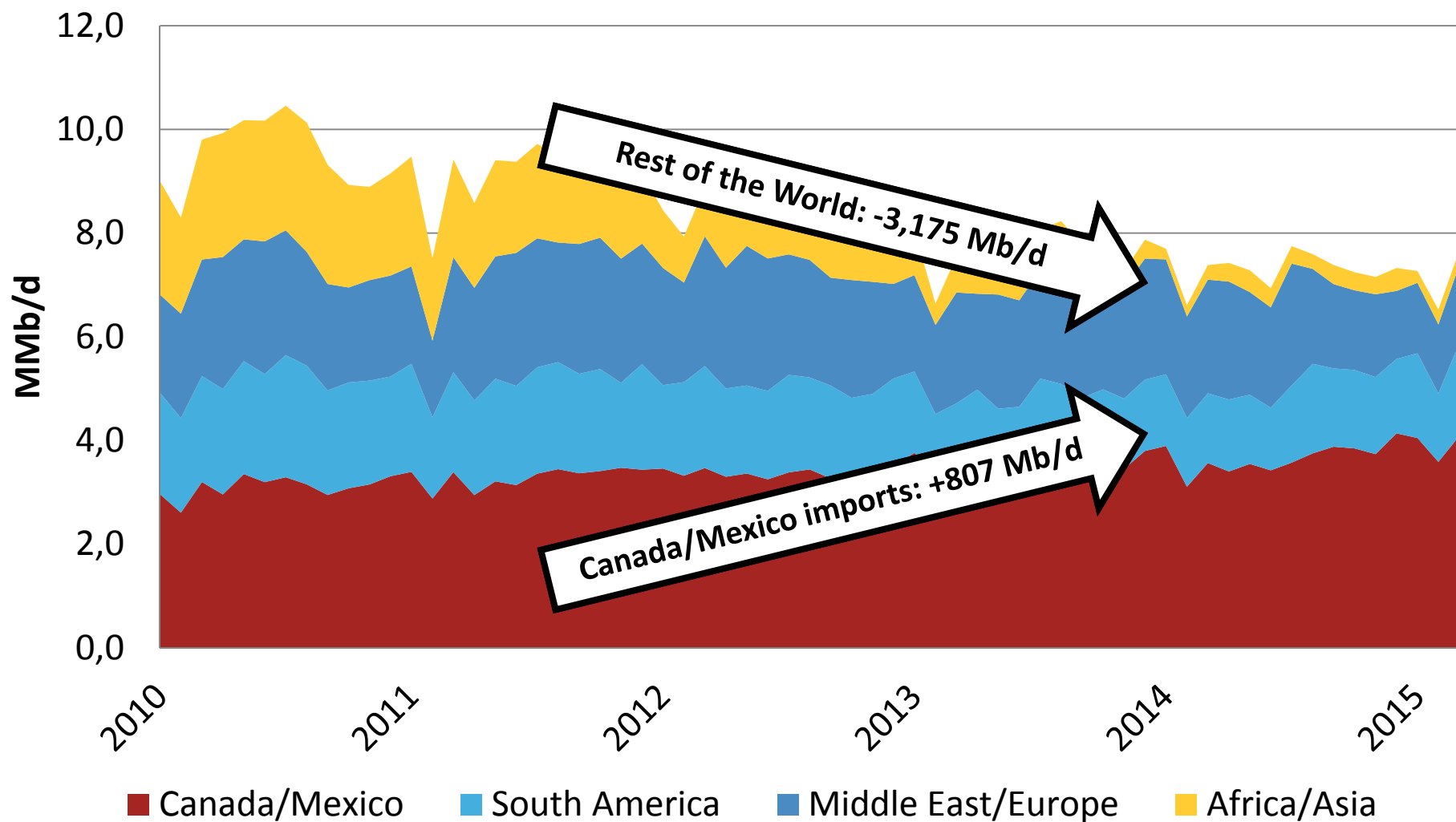
Waterborne Light Sweet Imports Displaced First Followed by Mid-Grade Barrels

US Crude Imports by Quality



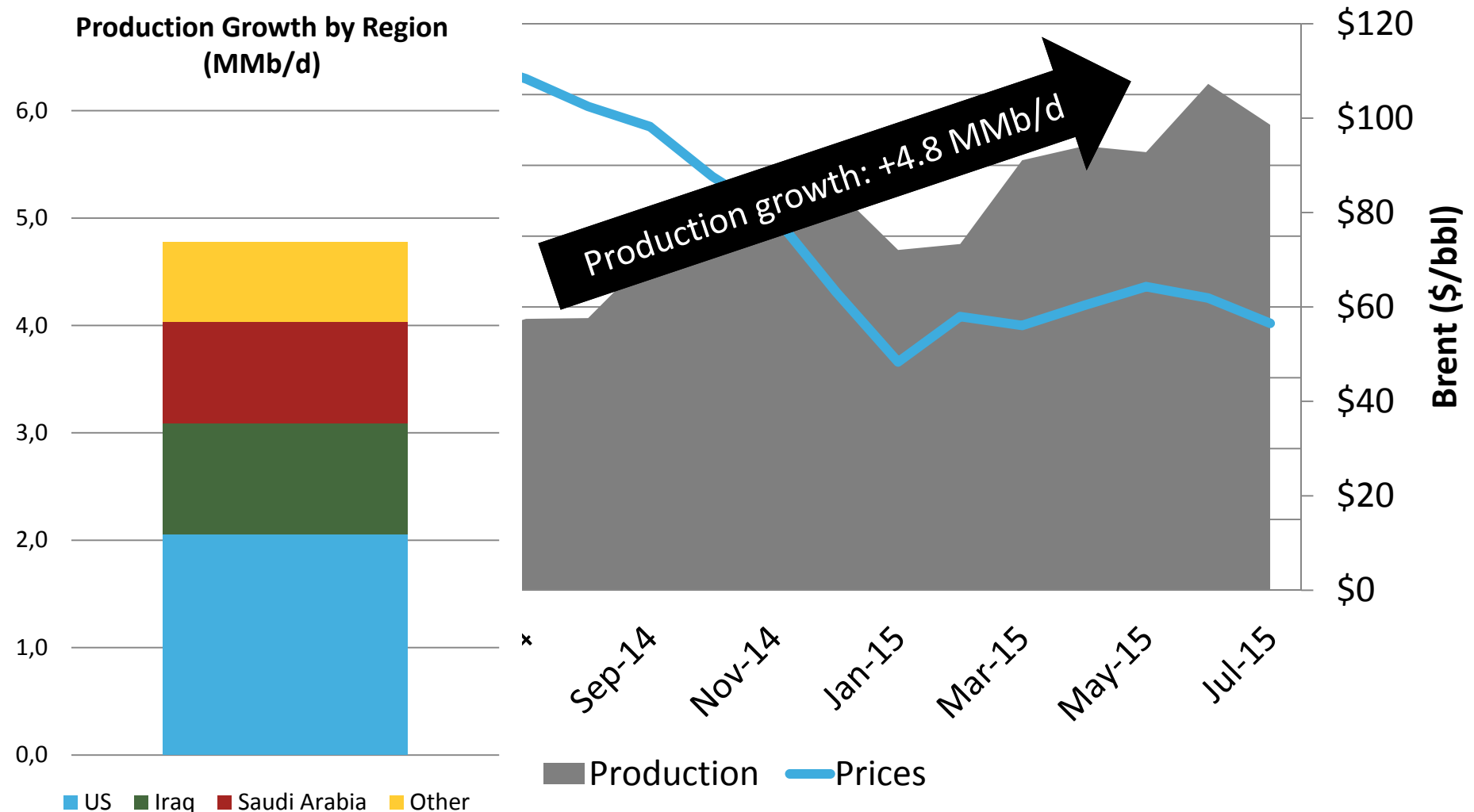
US Displaces Global Imports – Pushes Incremental Supply Onto Global Market

US Crude Imports by Region



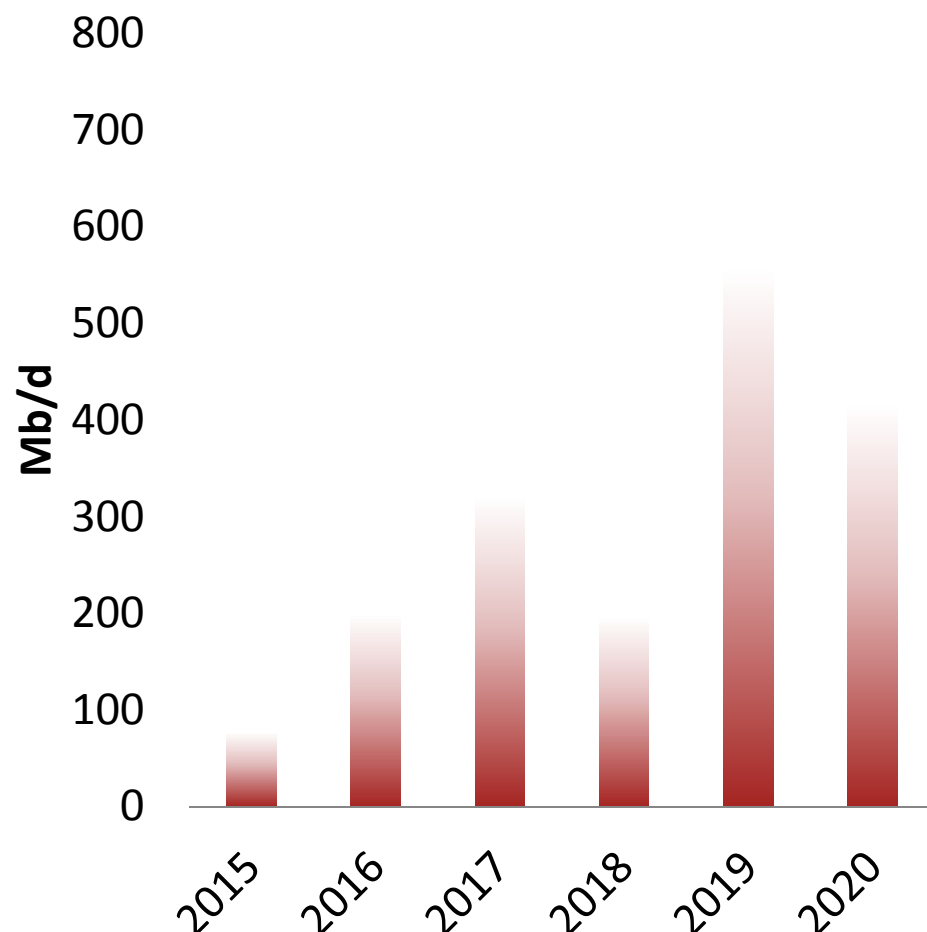
Global oil production grows despite low global prices

Global Oil Production v Brent Prices



Current Projections Implies Need for Further Capital and Drilling Reduction

Potential North American Crude Oversupply



Options to Balance the Market

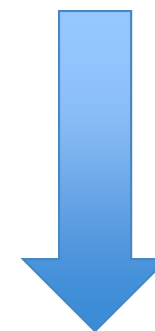
Increase Demand

- Allow exports
- Increase refinery runs
- Displace more imports
- Refinery expansions



Decrease Supply

- Sustained prices low enough to drive out marginal producers and decrease drilling activity



Possibility of Unrestricted Crude Oil Exports From the US Still Uncertain



The Energy Policy and Conservation Act of 1975

A license is required for the export of crude oil to all destinations

Crude oil: A mixture of hydrocarbons that existed in liquid phase in underground reservoirs and remains liquid at atmospheric pressure after passing through surface separating facilities and which has not been processed through a crude oil distillation tower. 15 CFR 754.2(a)

Processing plant

API ≈ 81

Natural Gasoline

Export

APPROVED

Wellhead

API ≥ 45

Condensate

Export

BANNED!

Refinery

API ≈ 58 to 63

Naphtha

Export

APPROVED

Condensate Stabilizer

Condensate

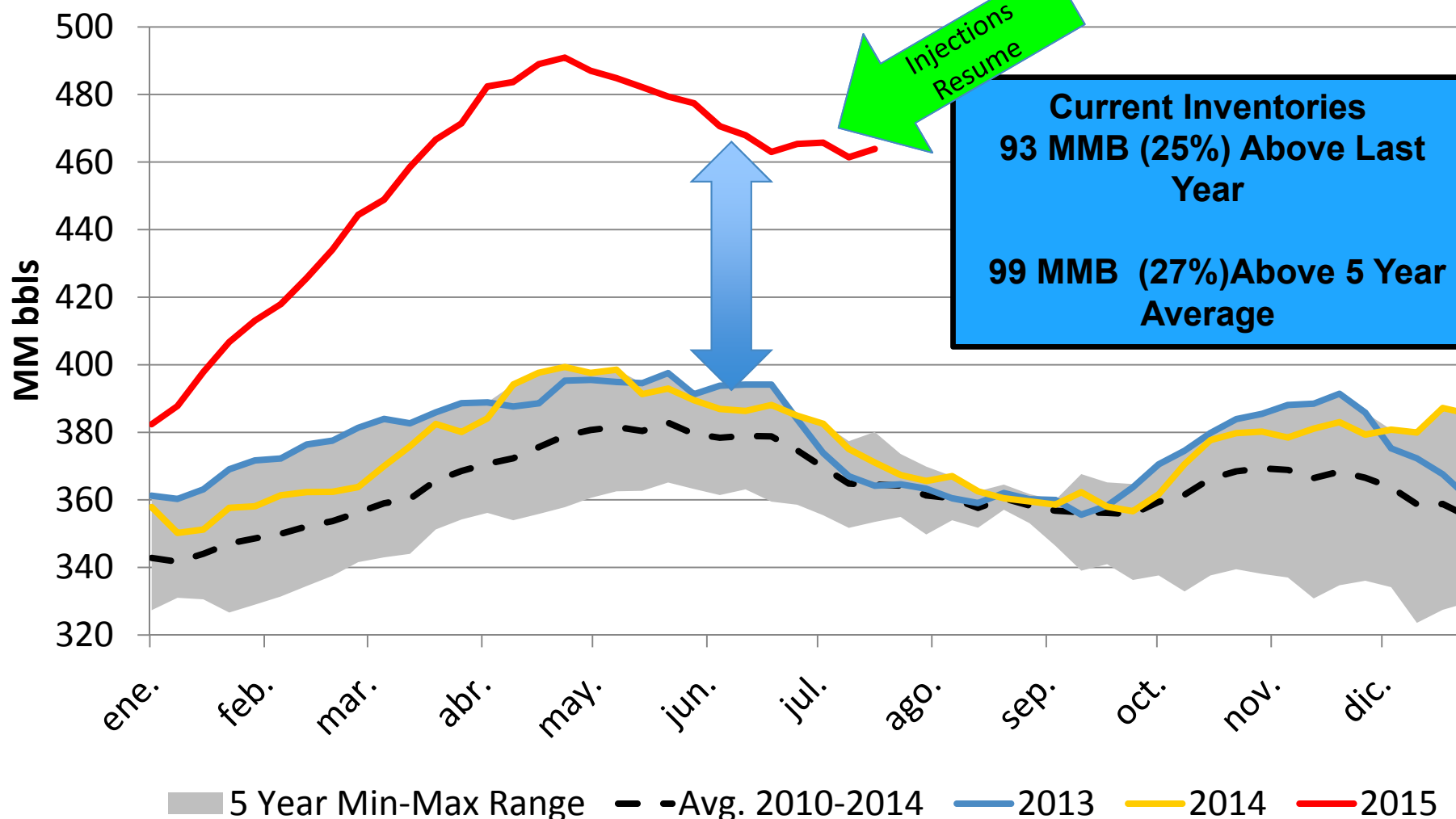
Processed through distillation tower

Export

APPROVED

Oversupply Manifested as Growing Storage Inventory

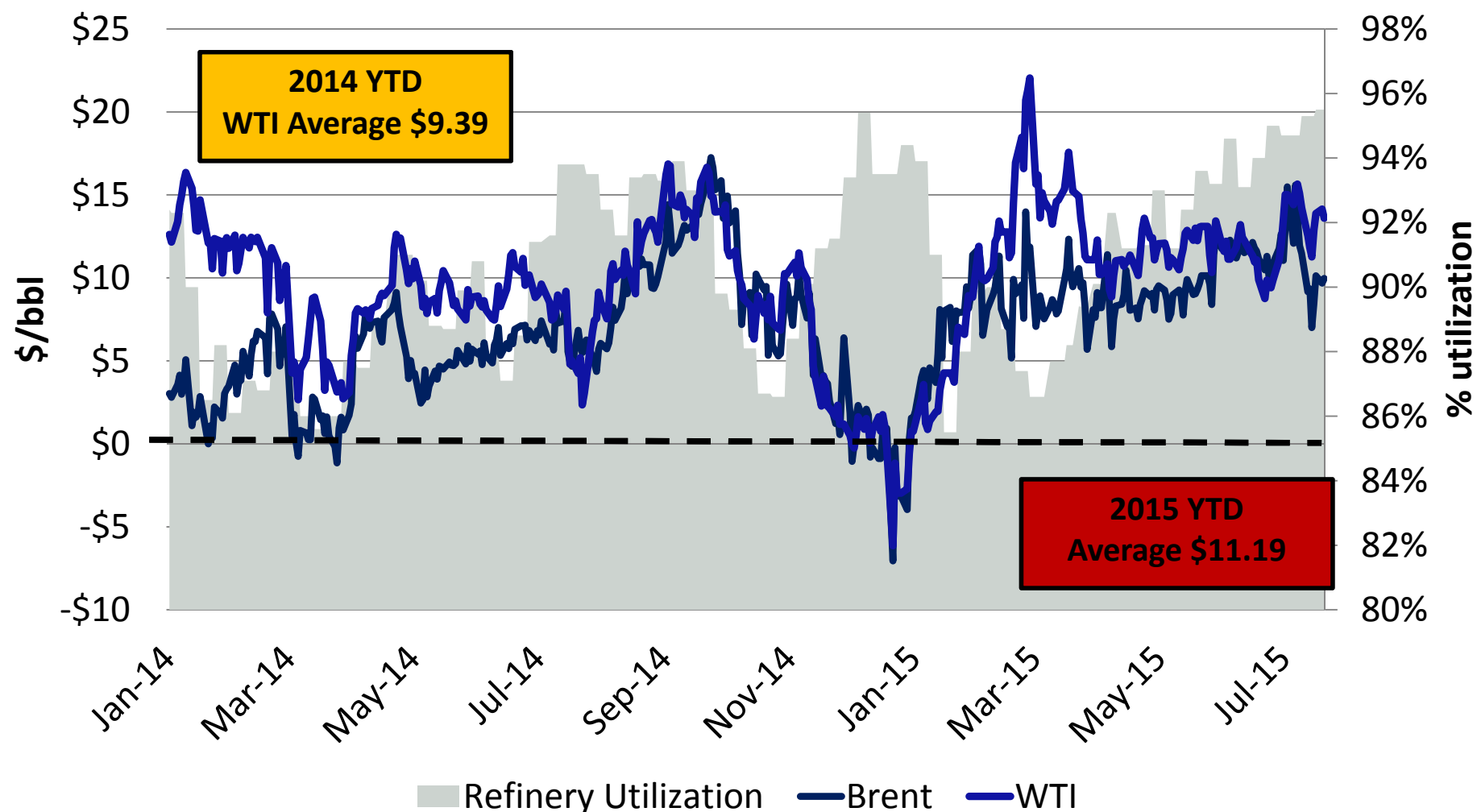
US Crude Stocks (excl. SPR)



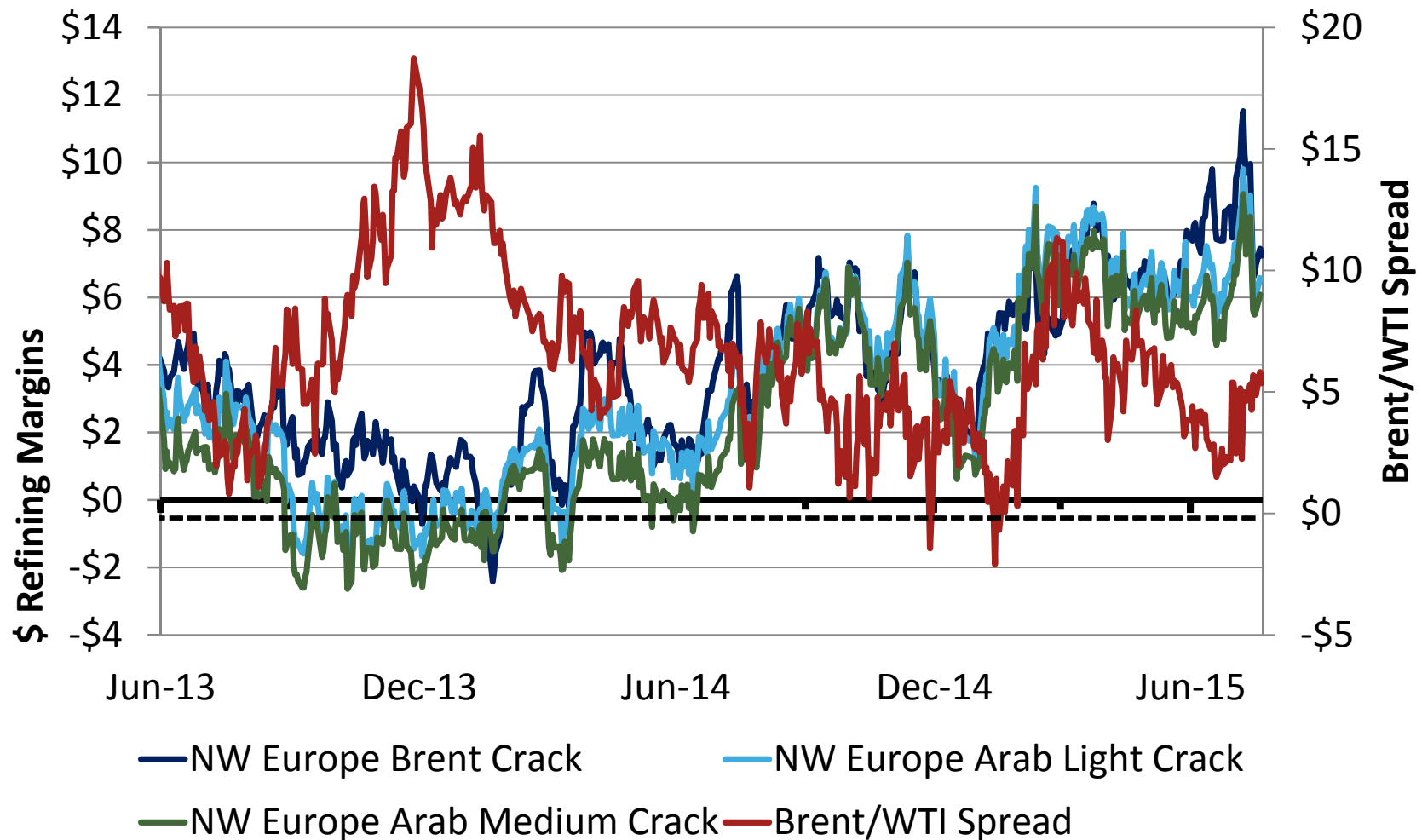
Refiners Balance Runs Against Margins – Enjoy Benefit of Low Cost Feedstock



Refining Margins in the US Gulf Coast v Refinery Utilization



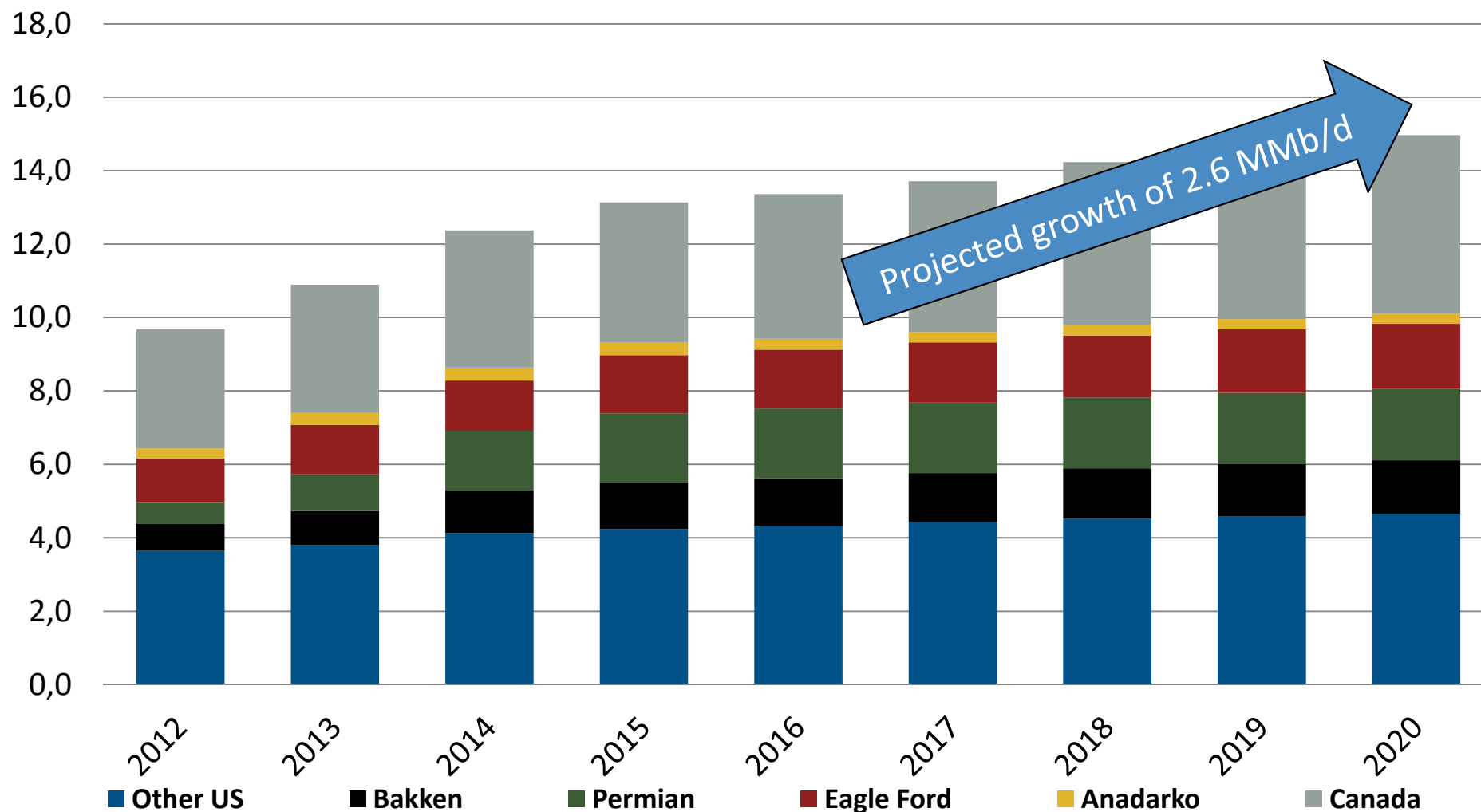
European Refiners Enjoy Advantage of Falling Feedstock Prices and Competitive Brent/ WTI Spread



Source: Platts

North American Crude to Grow 20% From 12.4
MMb/d in 2014 to 15 MMb/d in 2020

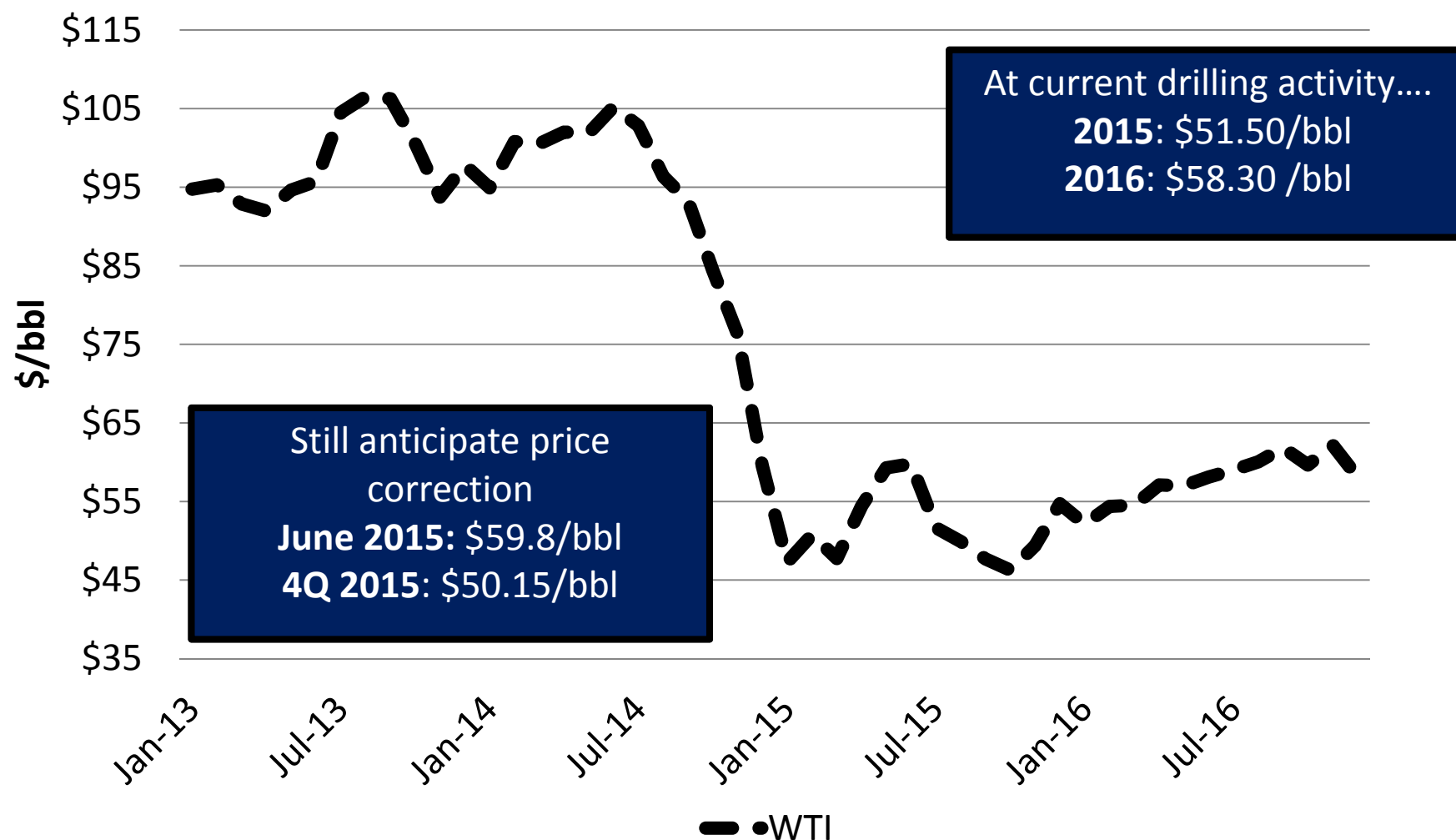
US Crude Oil Production Projection



Current Forecast Implies Need for Further Capex and Drilling Reduction



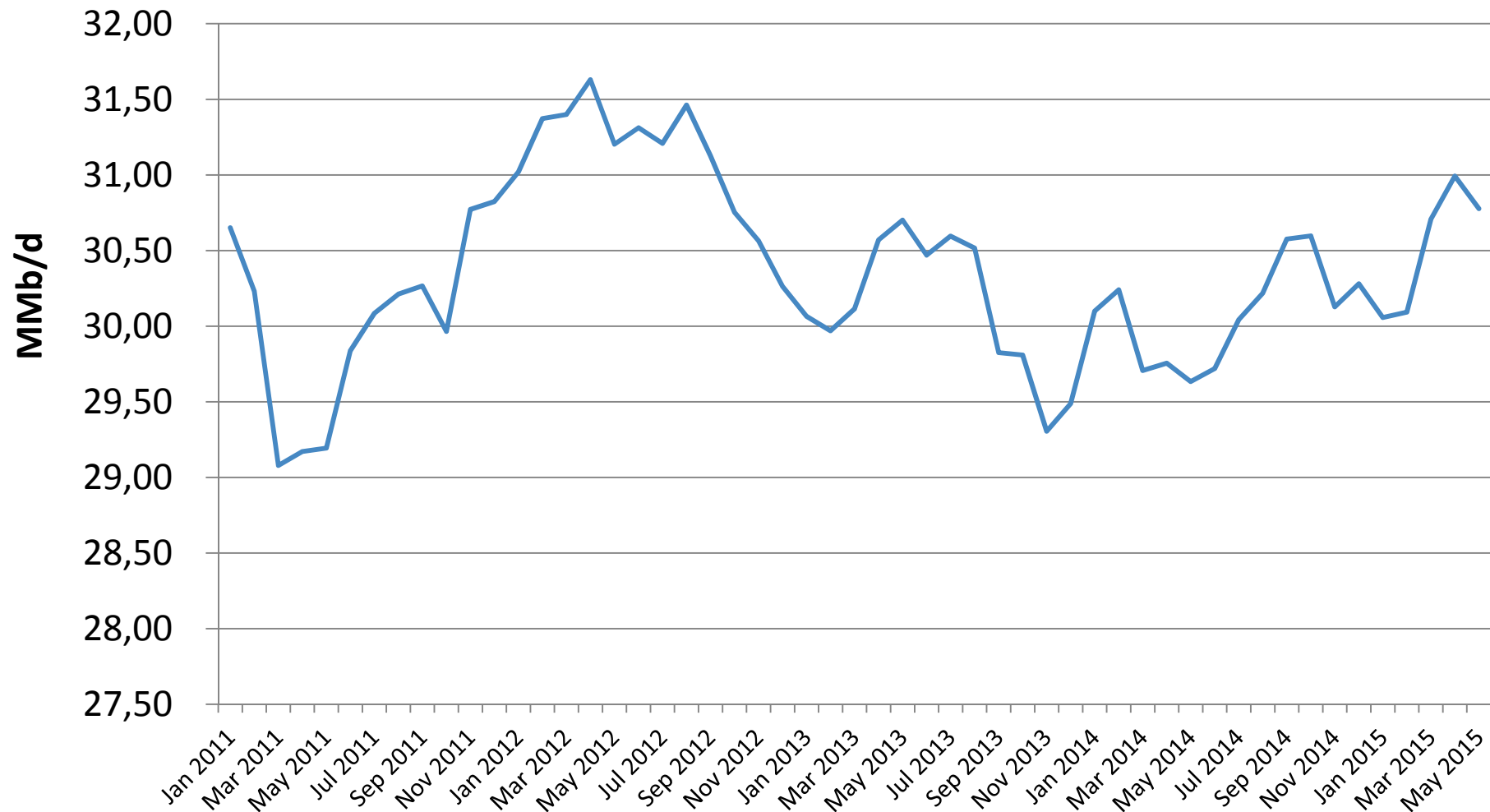
Bentek's WTI Price Forecast



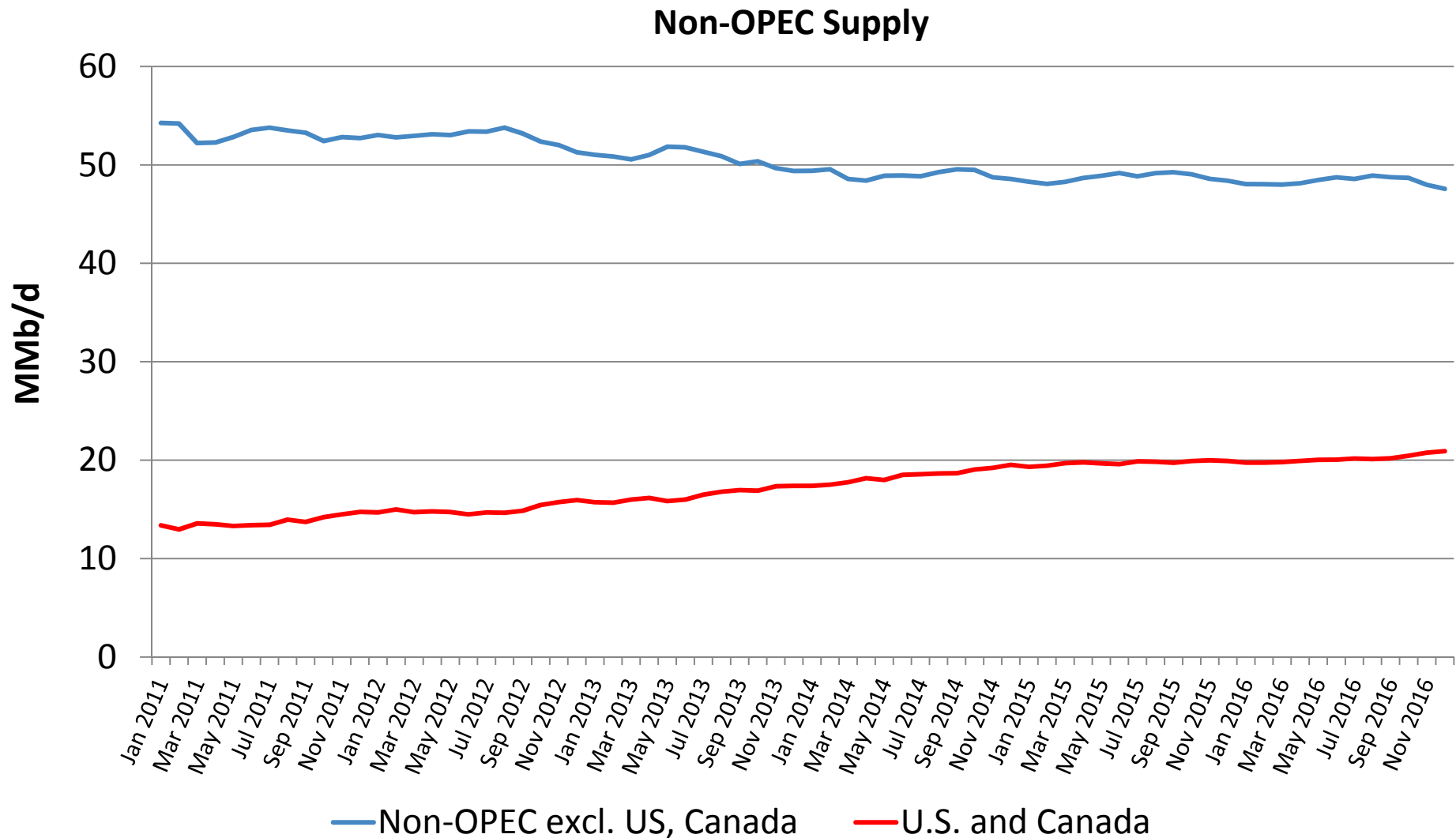
OPEC production has added at least 1MMb/d of production YTD



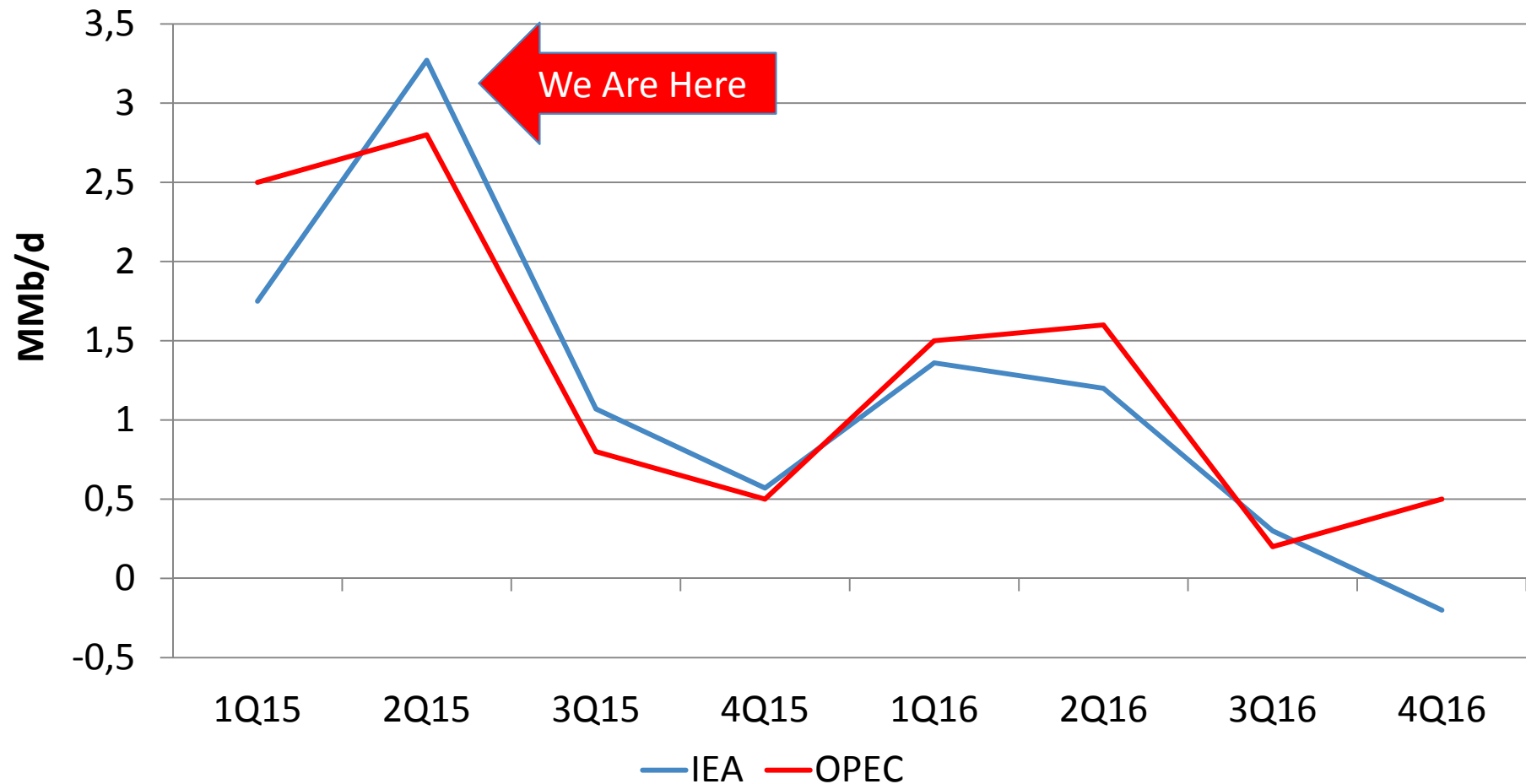
OPEC Crude Oil Production



Non-OPEC production will help balance the market



Global Supply/Demand Balance



Source: IEA, OPEC

Note: Assumed OPEC production of 31MMb/d for IEA and OPEC balances

Global concerns

Demand

Supply

China

Risks curtailing
expected 300 Mb/d
demand growth

Greece

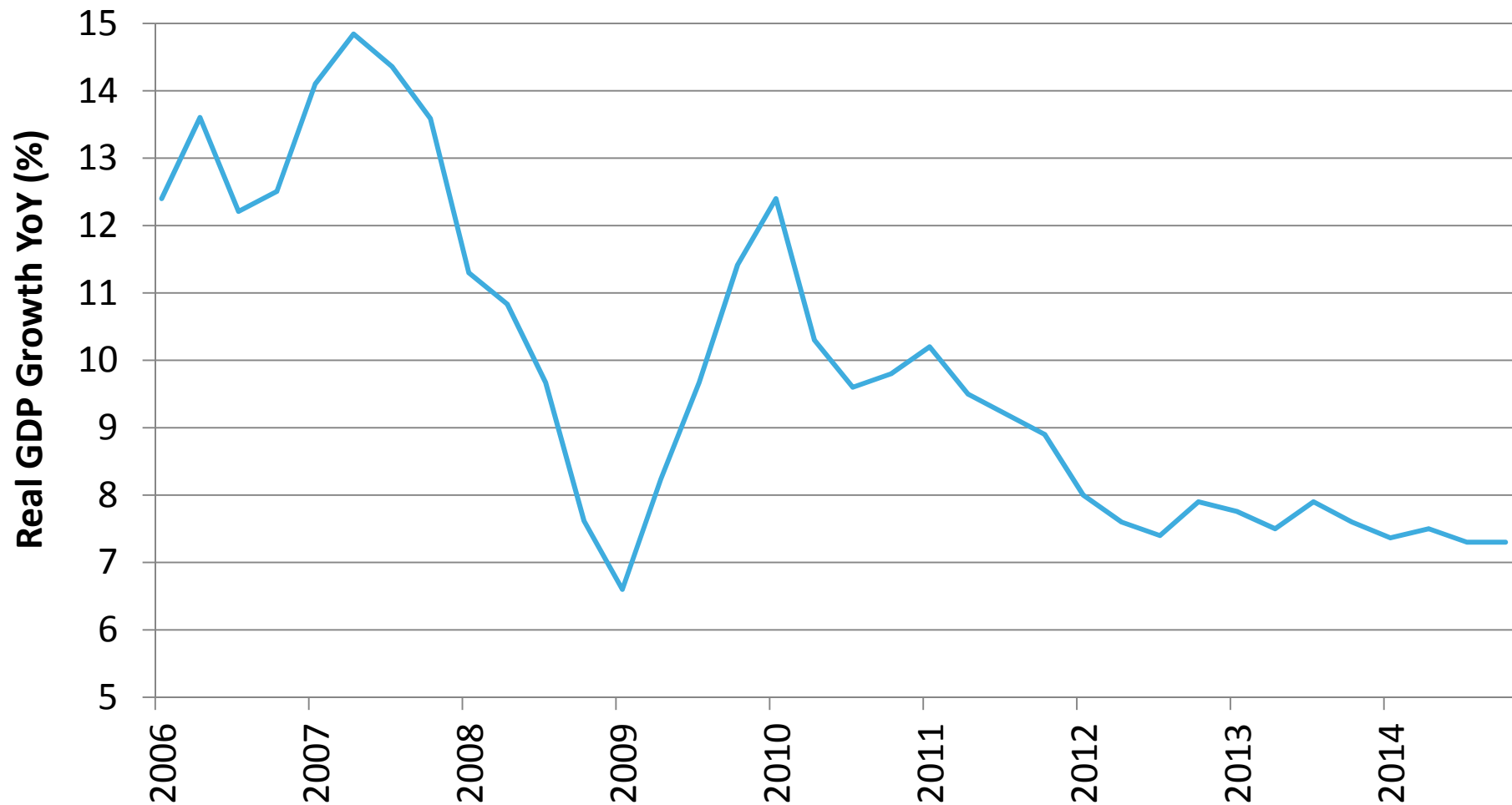
Risk of EU contagion in
2016 without debt
haircuts

Iran

Potential ~500 Mb/d
to 1MMb/d by H2
2016

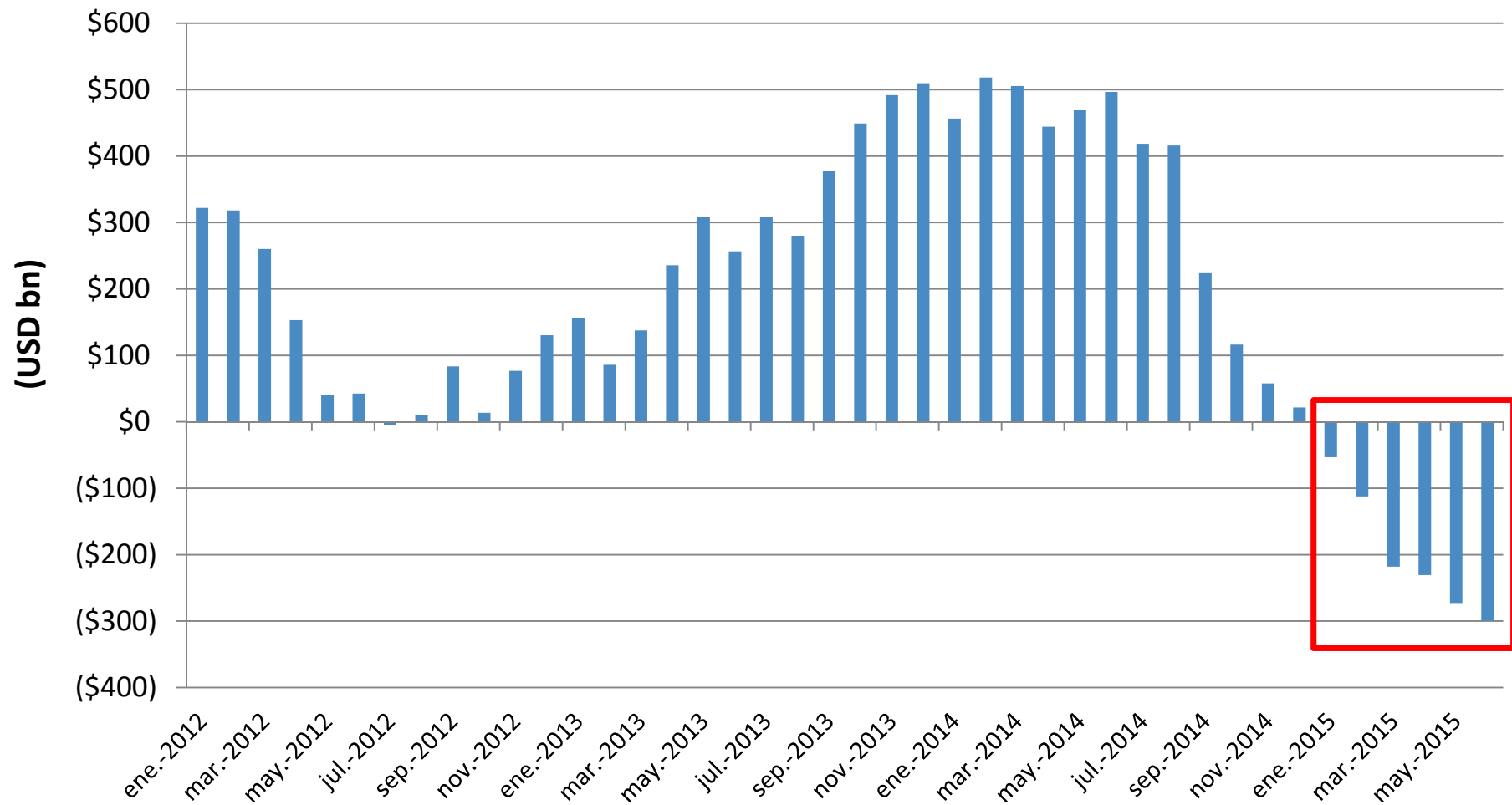
Chinese GDP growth has stalled

Chinese GDP Growth



Capital is leaving the country

Changes in Chinese Foreign Currency Reserves



Iran Situation

- Sanctions will roll off H1 2016
- Targets \$185bn of foreign oil investment – will foreigners come?
- Has capability to ramp up production **500Mb/d to 1MMb/d by H2 2016**
- Has 30 – 40MMb of floating storage at Asoluyeh and Kharg Island
 - Of which 20MMb is corrosive, high-sulfur condensate

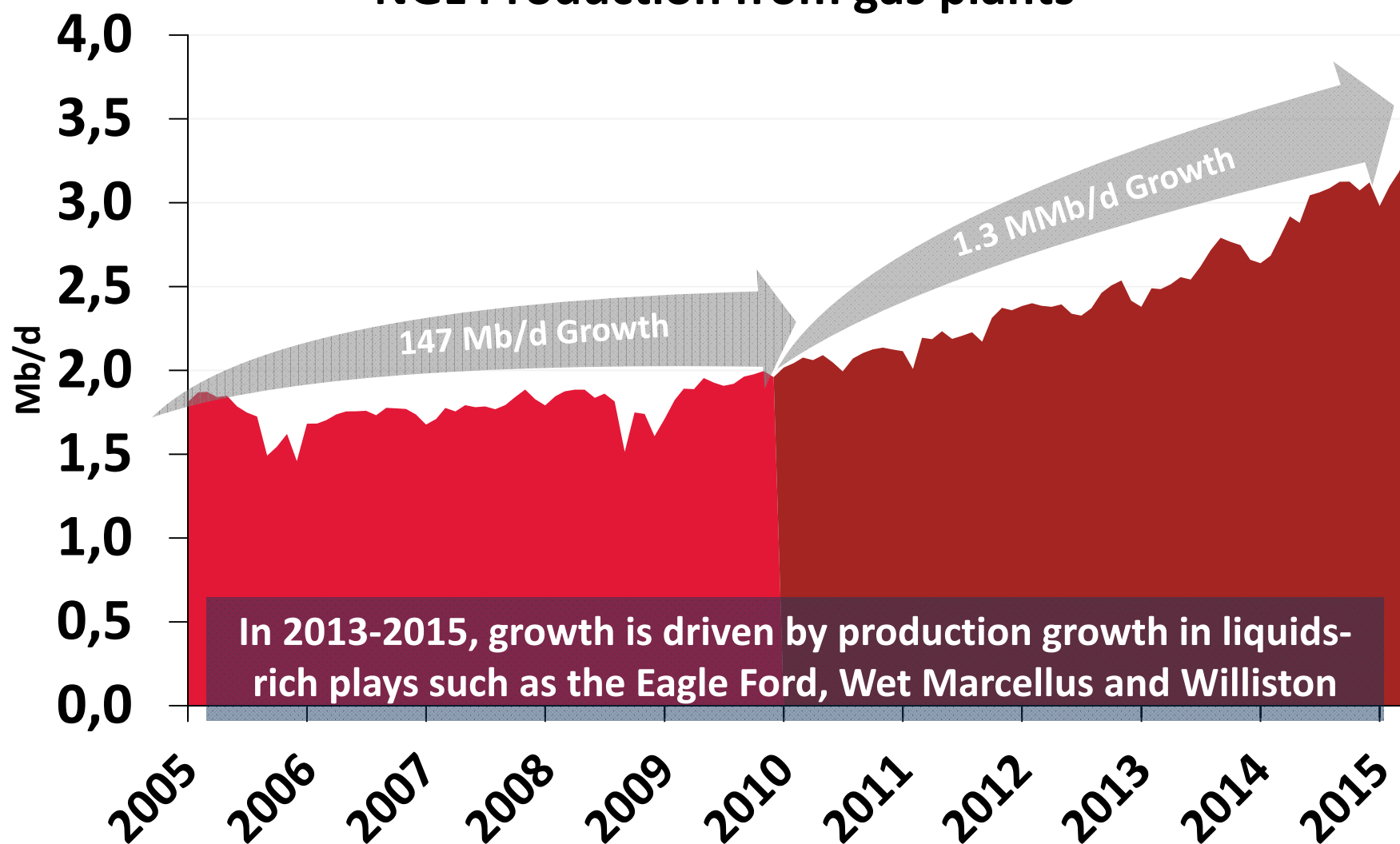


US NGLs Battle for Global Demand



US NGL Production Continues to Reach Record Highs

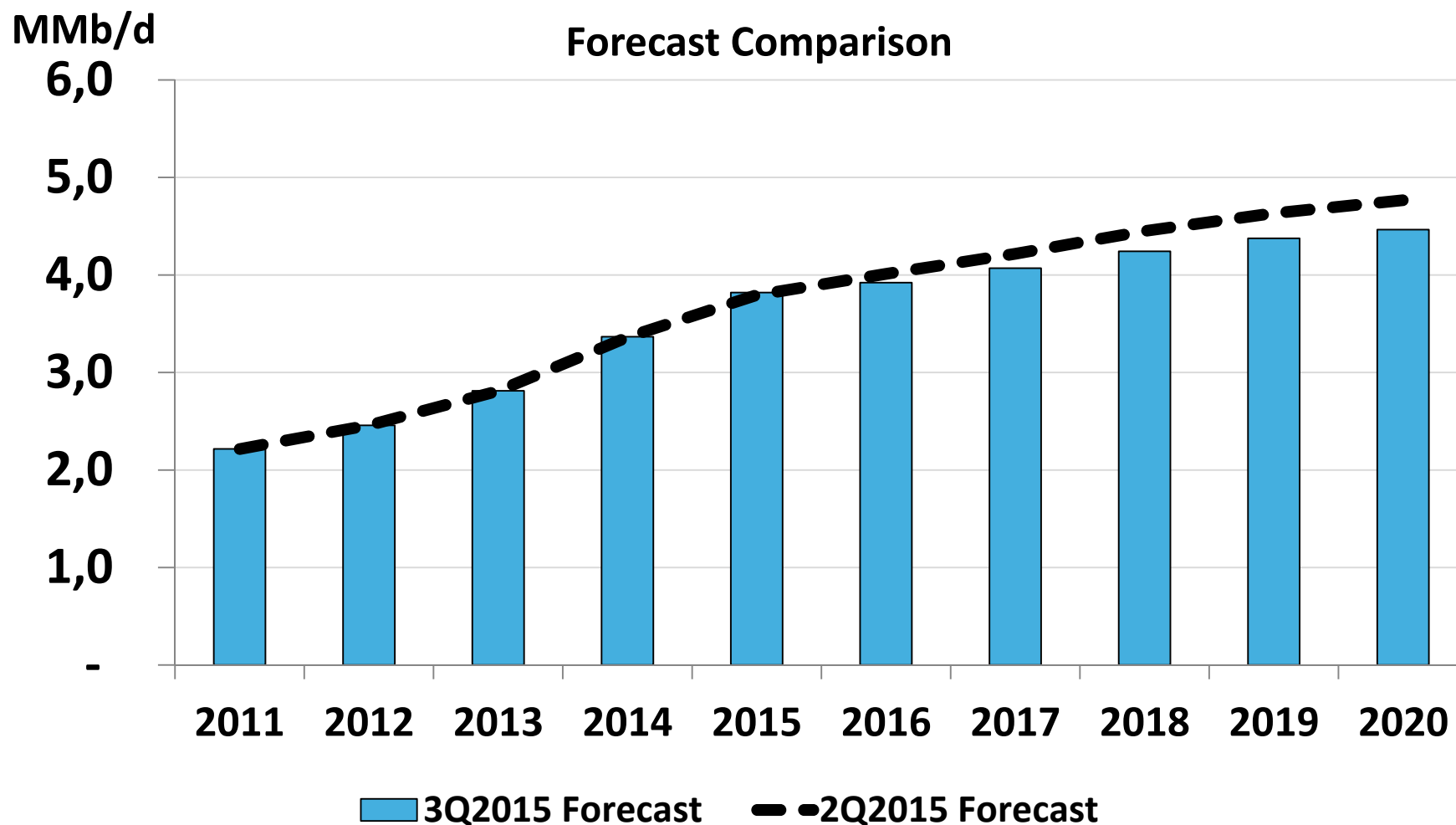
NGL Production from gas plants



Source: EIA

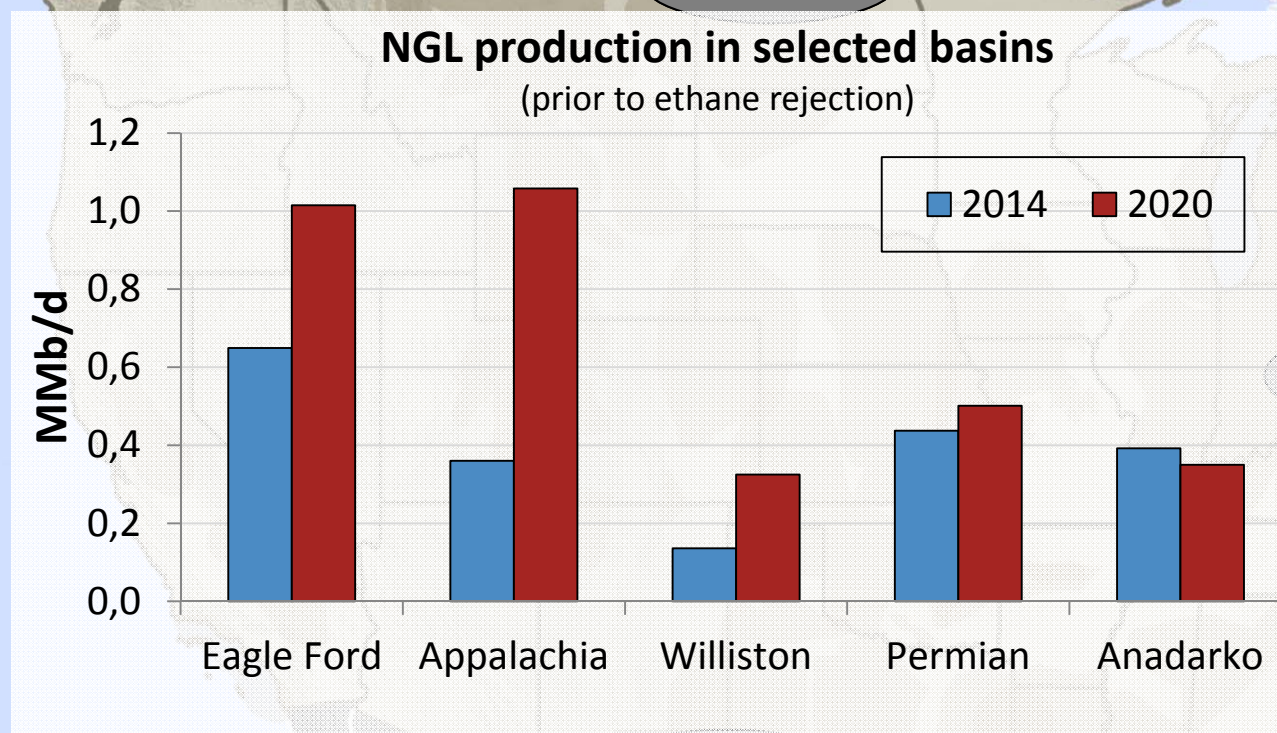
A lower price environment has not
tempered enough production growth

NGL Production from Gas Plants Forecast Comparison



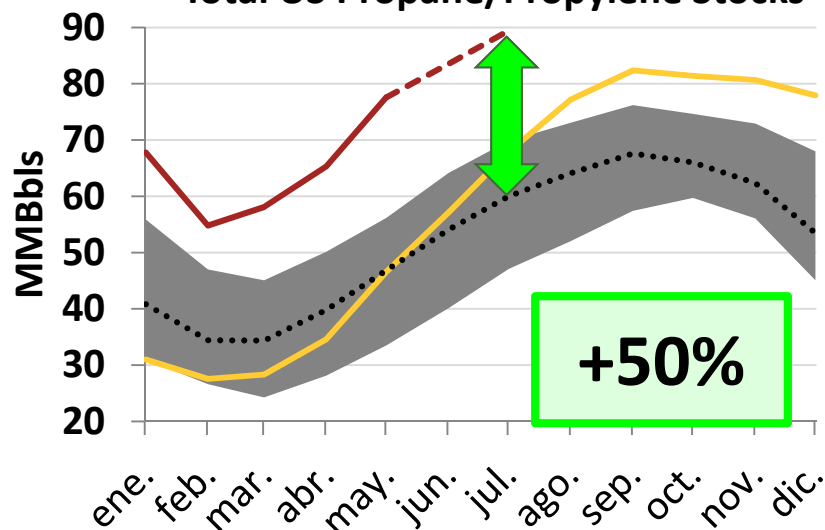
Source: Bentek *Market Call: North American NGLs 3Q2015*

NGL Growth Driven by Key Basins: Eagle Ford, Marcellus/Utica, Williston

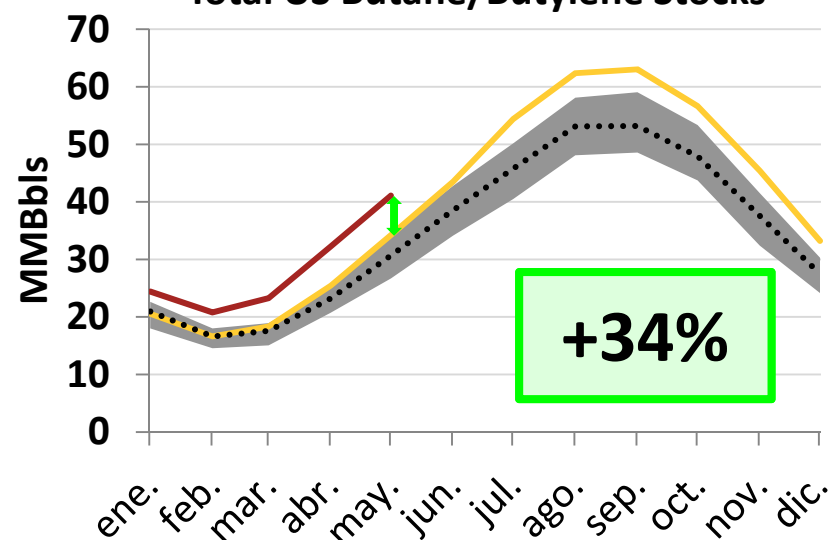


The storage surplus is an indication of LPG supply outpacing demand

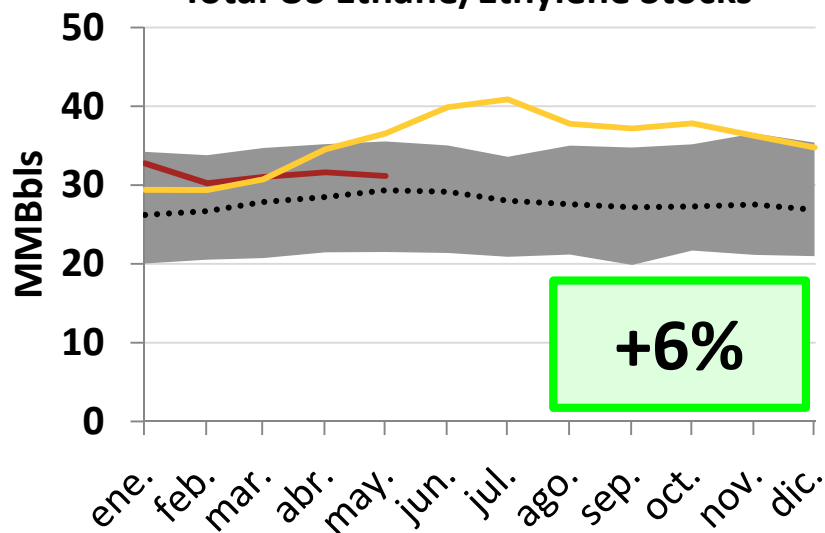
Total US Propane/Propylene Stocks



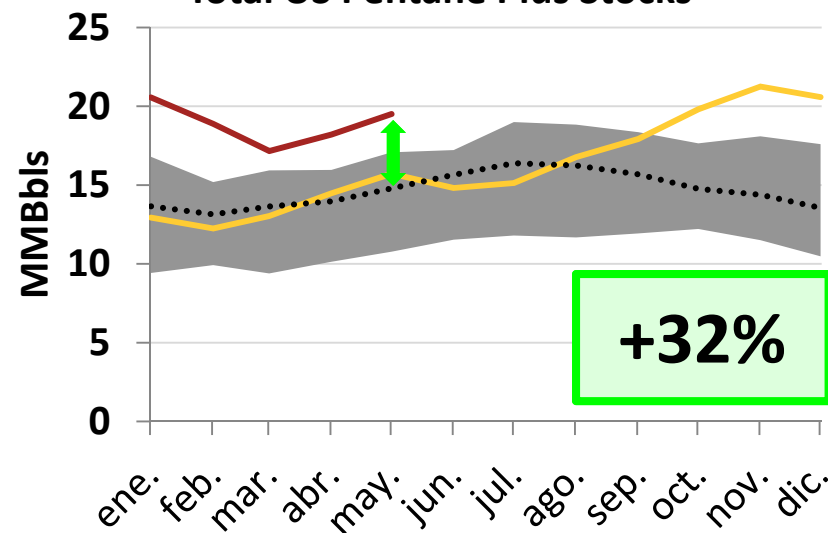
Total US Butane/Butylene Stocks



Total US Ethane/Ethylene Stocks



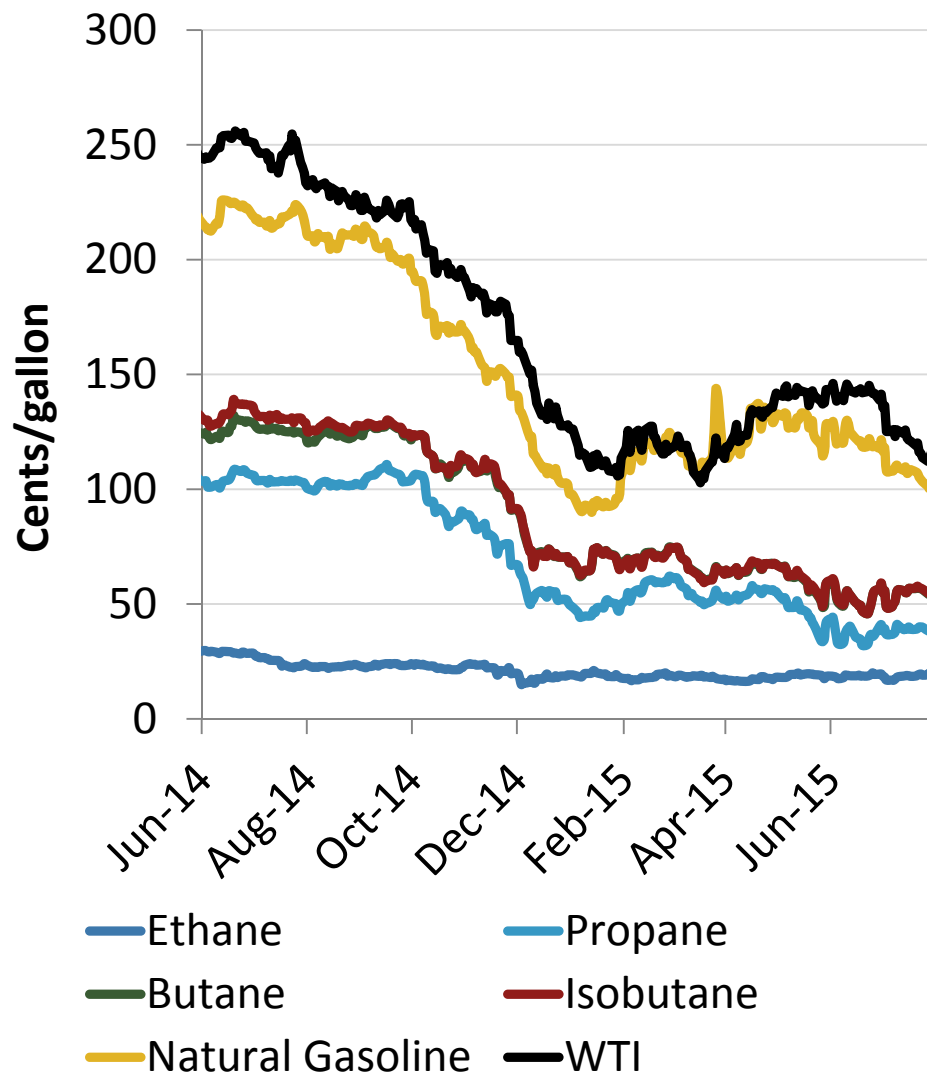
Total US Pentane Plus Stocks



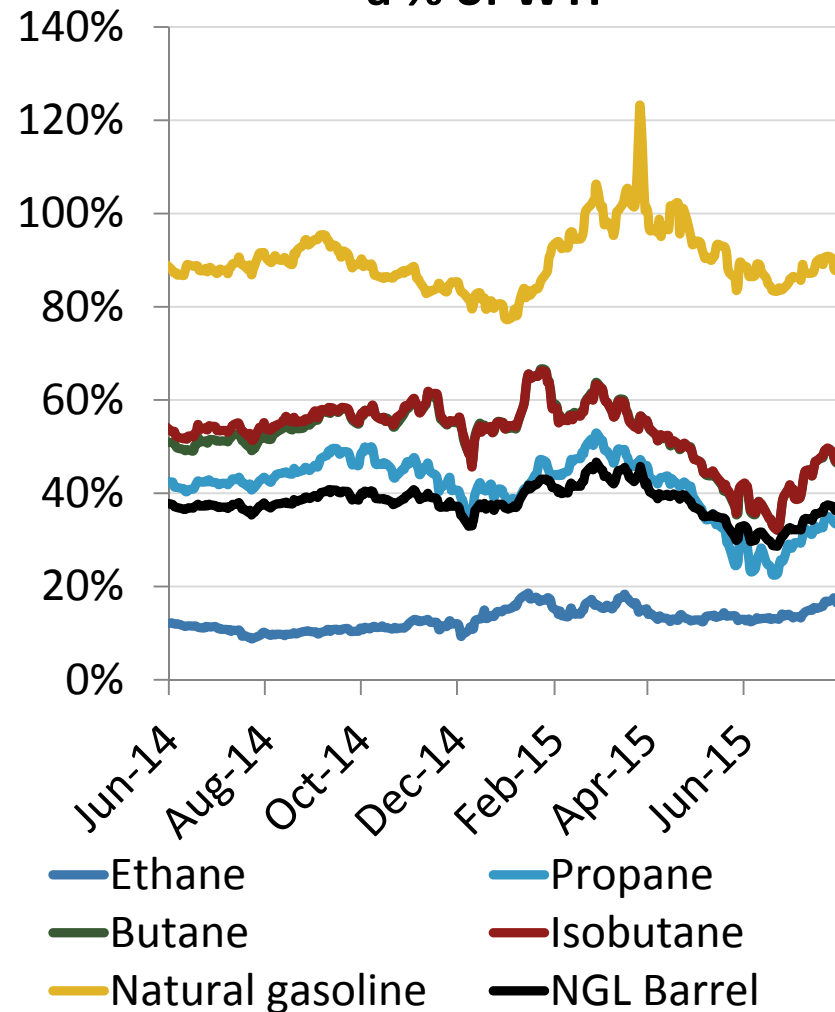
Min — 2015 — 2014 5-yr Avg - - - Weekly

NGL prices have disconnected from crude oil prices

Mont Belvieu NGL Prices

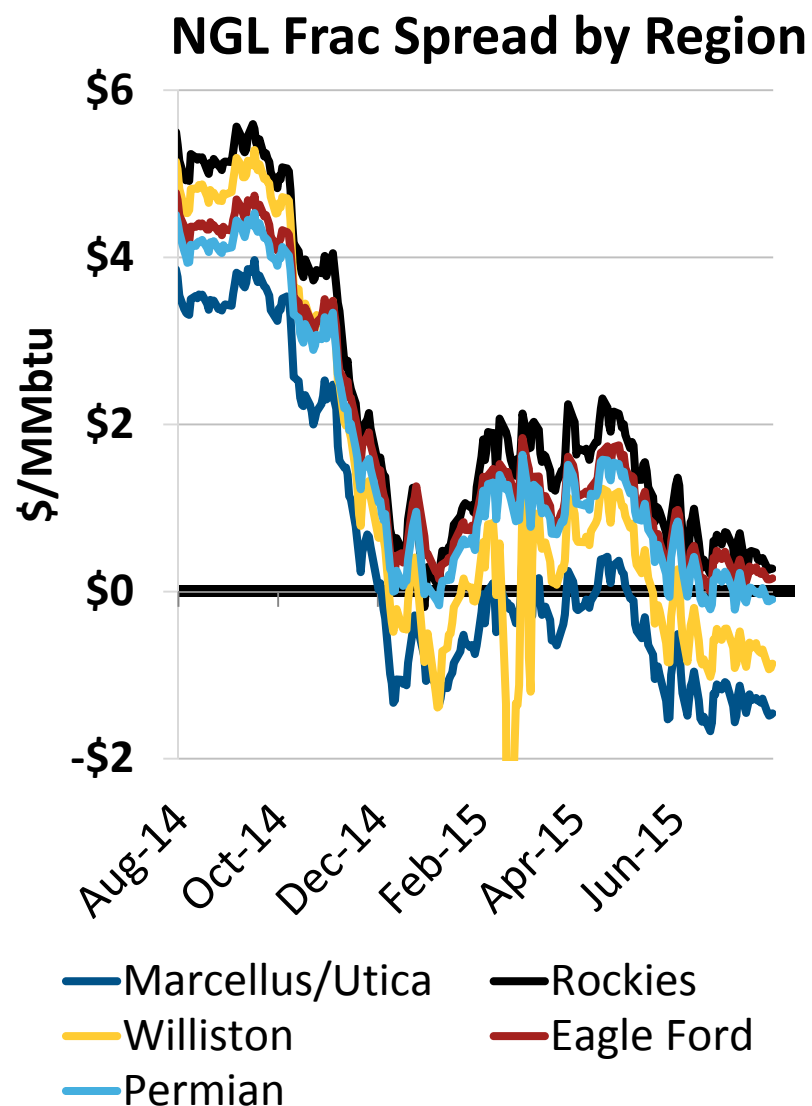


Mont Belvieu NGL Prices as a % of WTI



Source: Platts; Prices until July 30, 2015

The economics of developing new NGL assets are challenging



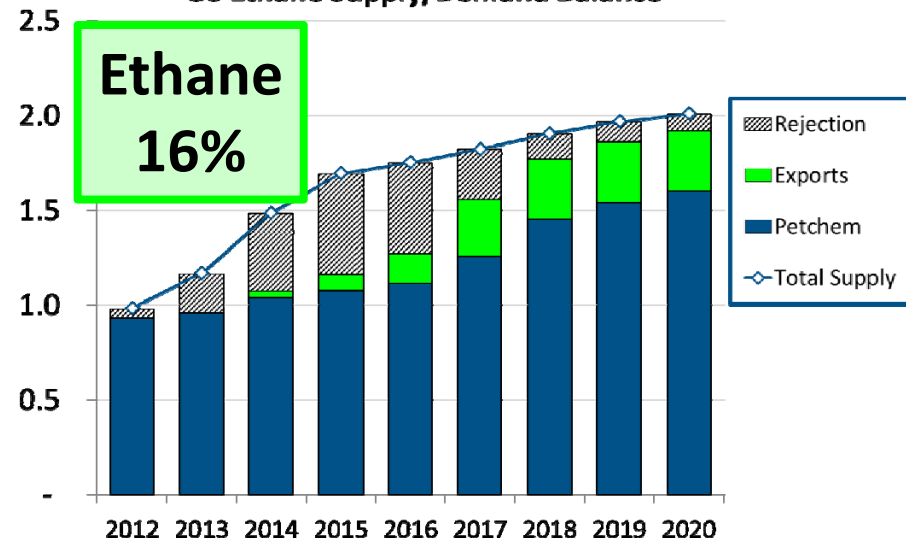
Cancelled & Delayed Processing Projects

Plant Name	Owner/Operator	Region	Capacity (MMcf/d)
Petersburg I/II	Blue Racer	Northeast	400
Buffalo*	Martin	Permian	200
Knox	ONEOK	Anadarko	200
Demicks Lake	ONEOK	Williston	200
Bronco	ONEOK	Powder River	100

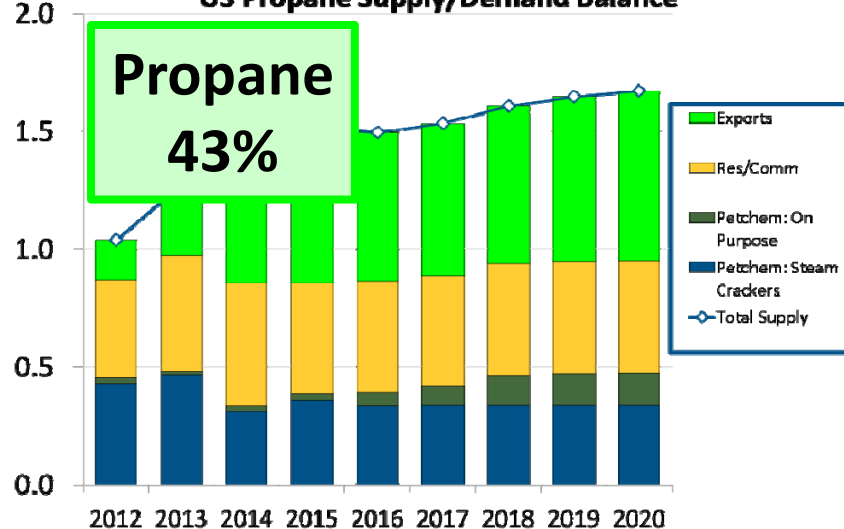
* Delayed until 2016

Too much of a good thing? US NGL growth relies on exports

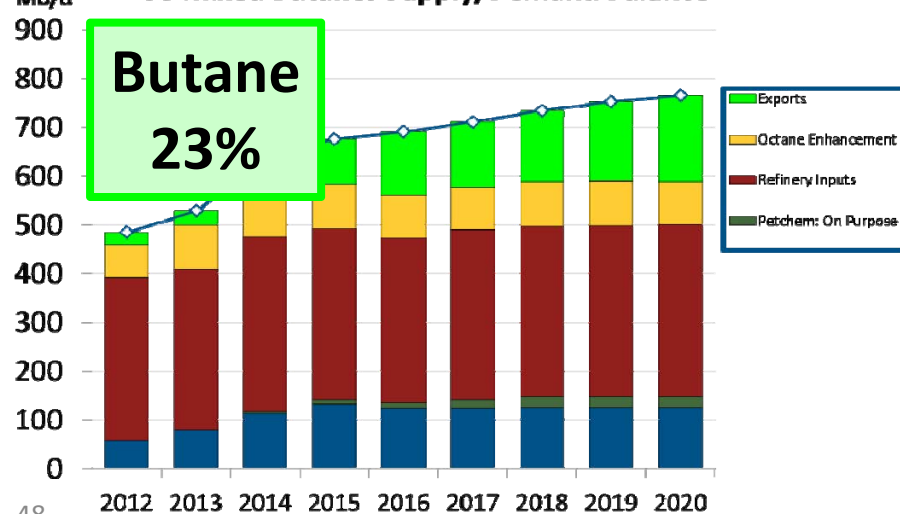
MMb/d US Ethane Supply/Demand Balance



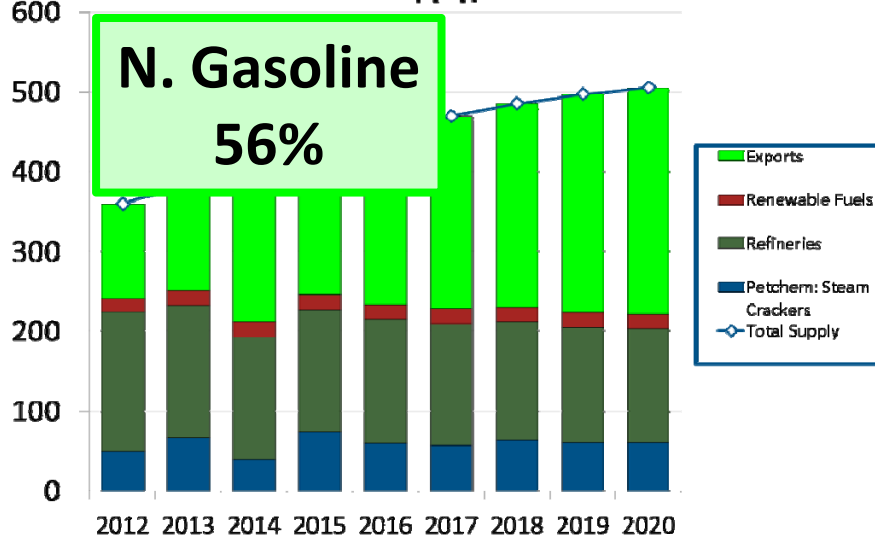
MMb/d US Propane Supply/Demand Balance



Mb/d US Mixed Butanes Supply/Demand Balance



MMb/d US Natural Gasoline Supply/Demand Balance



Bentek is tracking 16 projects to build greenfield crackers in the US

Badlands NGL, ND

Shell, PA

Odebrecht/
Braskem, WV

PTT Global Chemical
& Marubeni

Shintech

Williams Geismar 2, LA

Total Petrochemicals, TX

Axial &
Lotte

Sasol

ExxonMobil

ChevronPhillips

Dow

Formosa

Oxy

Under
Construction

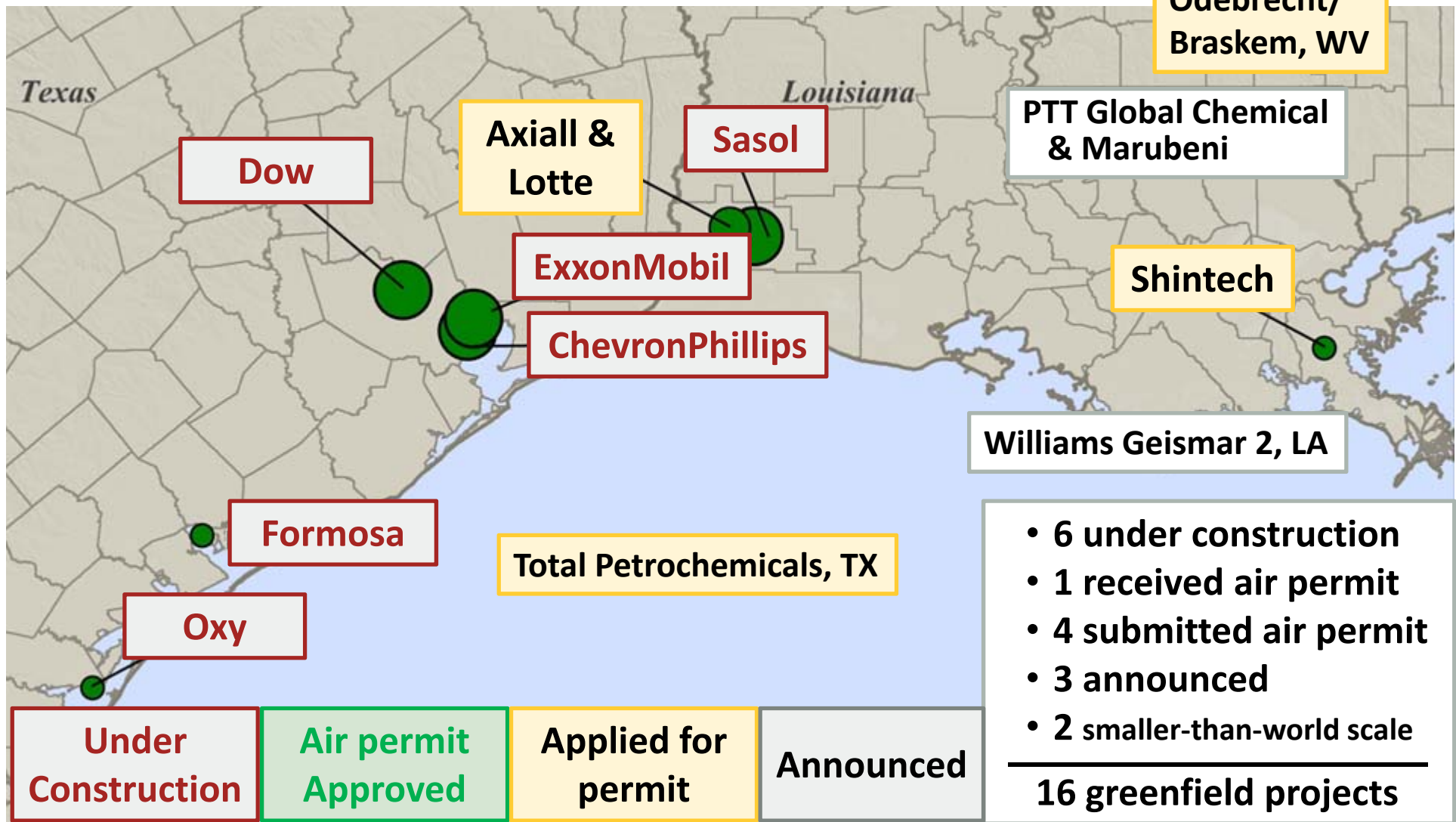
Air permit
Approved

Applied for
permit

Announced

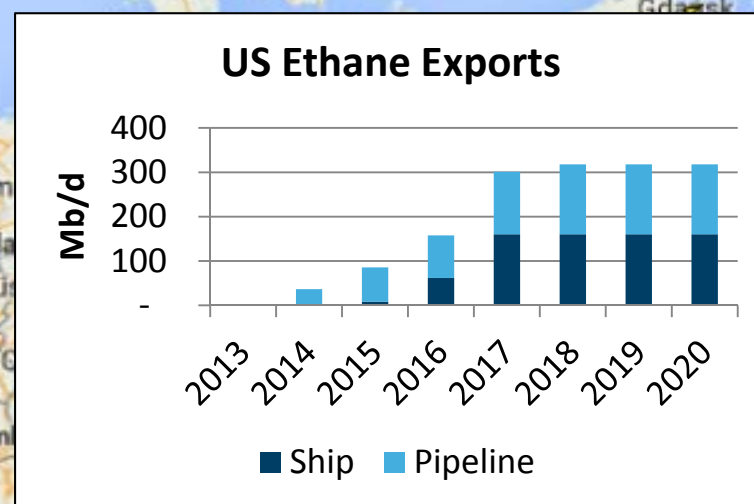
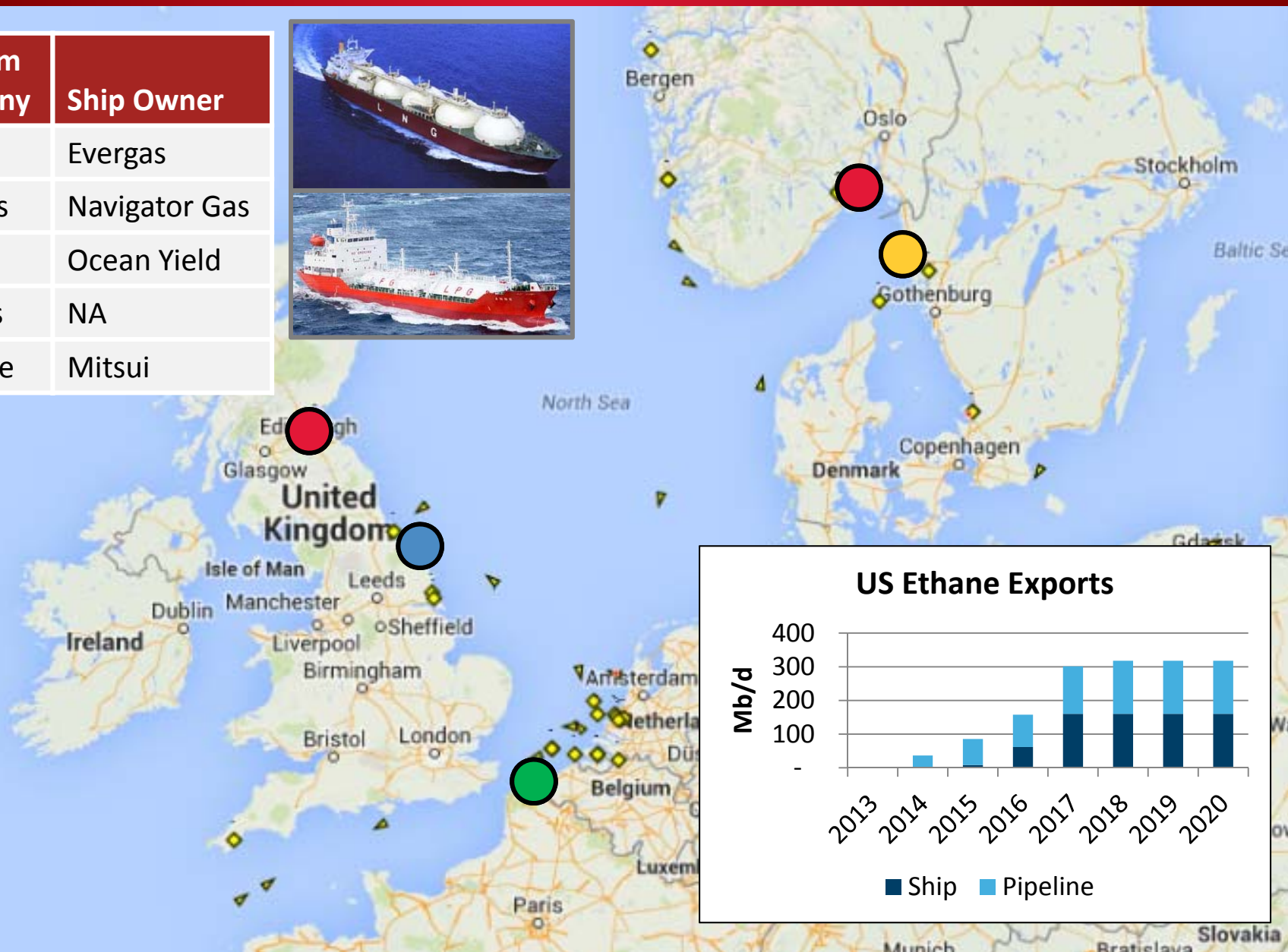
- 6 under construction
- 1 received air permit
- 4 submitted air permit
- 3 announced
- 2 smaller-than-world scale

16 greenfield projects

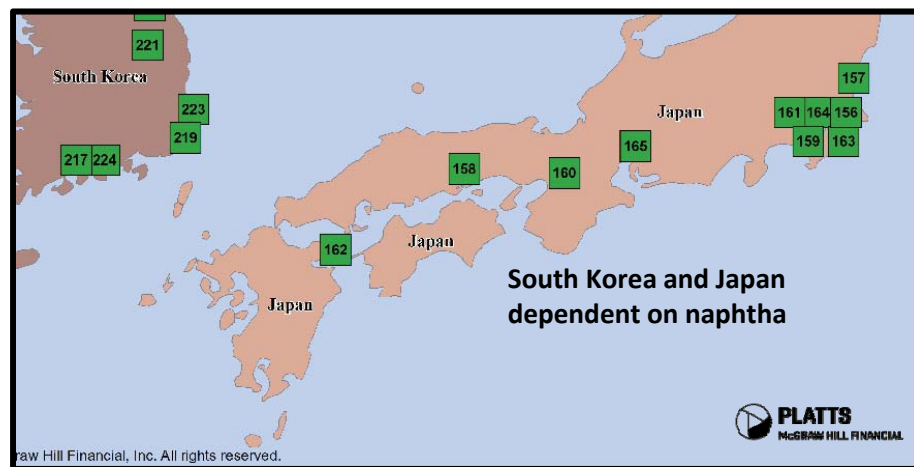
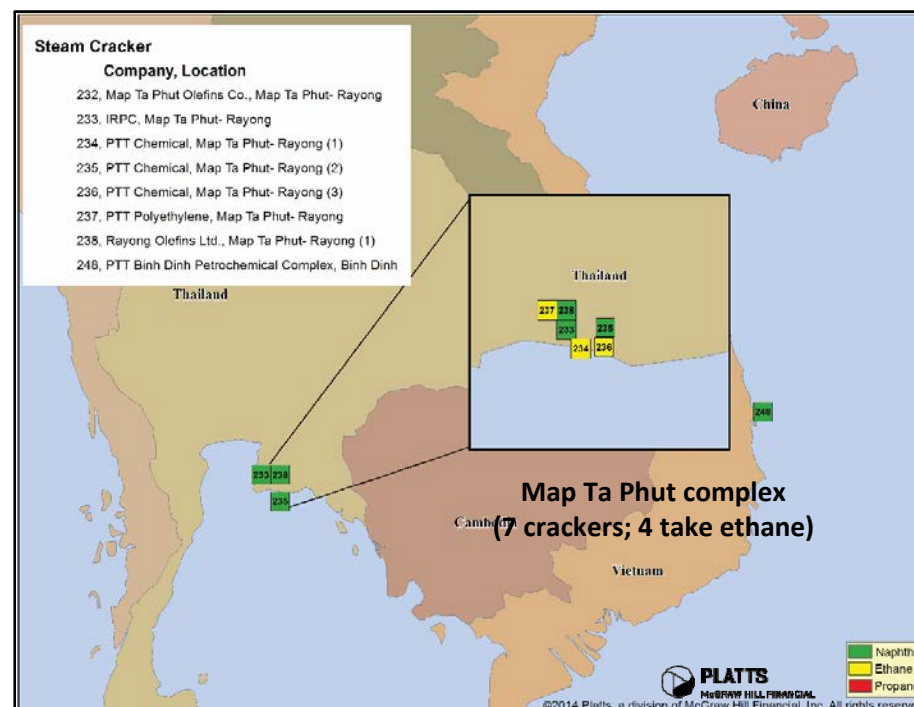


Adrift in a Sea of Ethane: Waterborne ethane exports to begin in 2015

Petchem Company	Ship Owner
INEOS	Evergas
Borealis	Navigator Gas
SABIC	Ocean Yield
Versalis	NA
Reliance	Mitsui

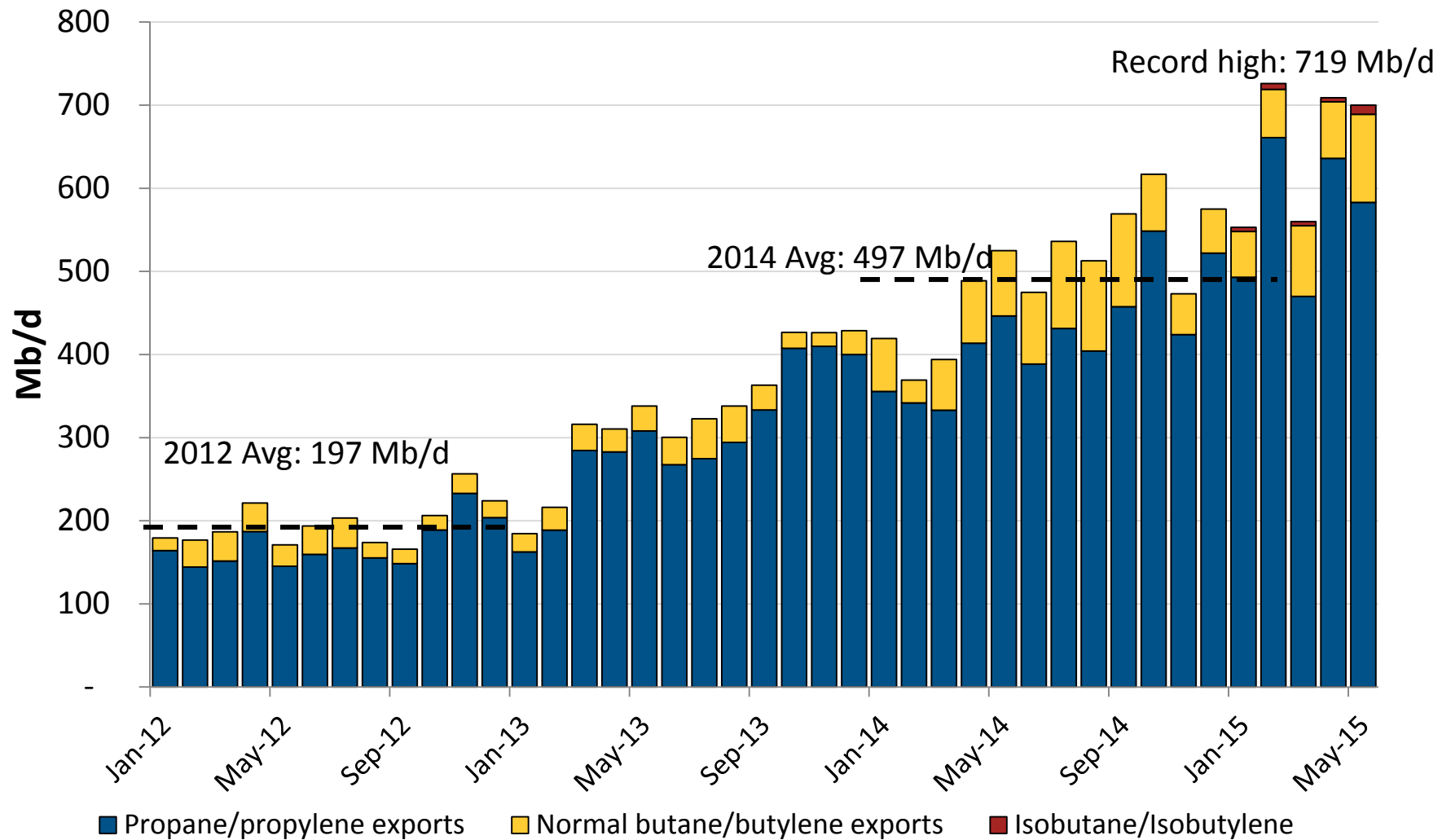


Lower crude-to-gas ratio creates risk for further ethane export projects



LPG exports peaked at 719 Mb/d in February 2015

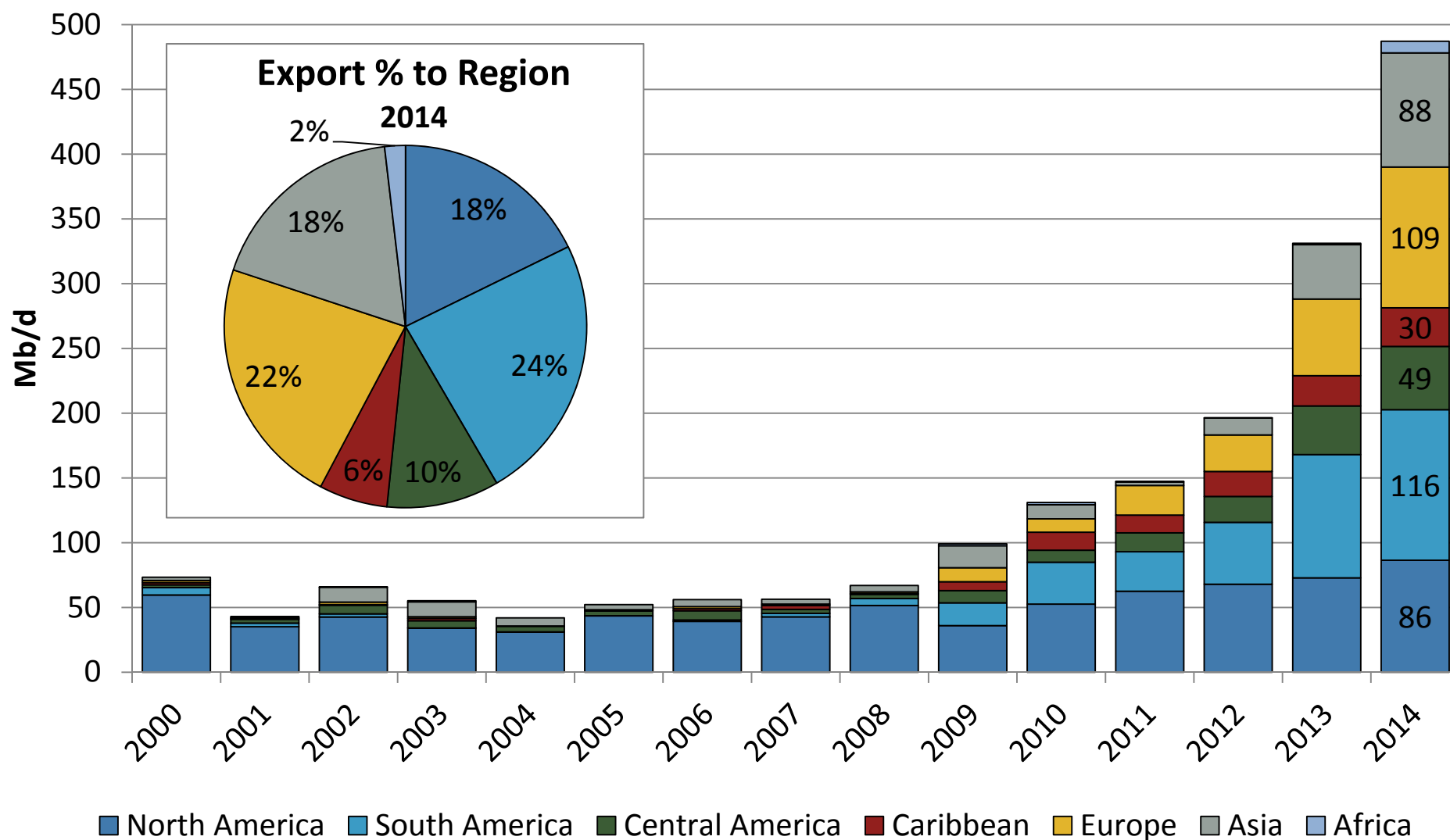
Propane and Butane Exports



Source: EIA, Bentek

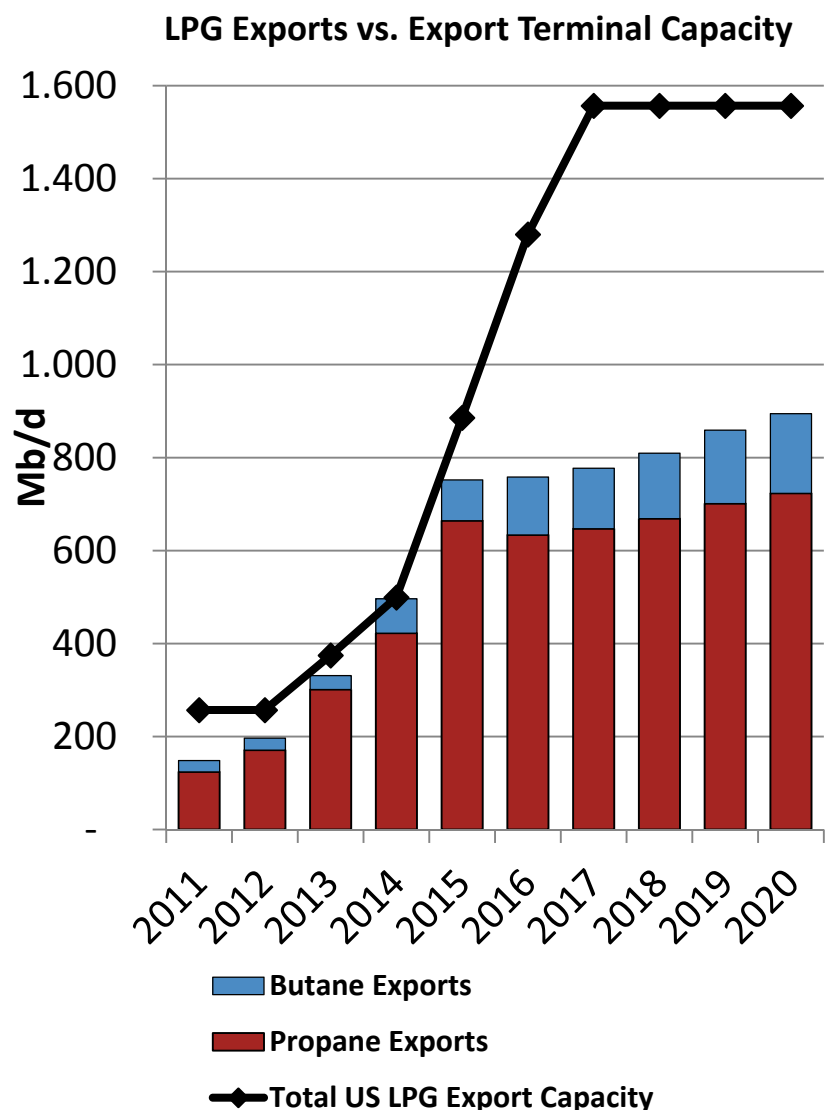
Increased US LPG exports have been mostly destined for Latin America

US LPG Exports to Region



Source: EIA Note: North America includes Canada and Mexico

LPG export terminal constraints to be alleviated this year



Company	Project Name	State	Capacity (Mb/d)	ISD
---------	--------------	-------	-----------------	-----

Existing LPG Export Terminals

812

Enterprise	Enterprise	TX	130	NA
Enterprise	Enterprise Expansion I	TX	120	2013
Enterprise	Enterprise Expansion II	TX	50	2015
Targa	Galena Park	TX	50	NA
Targa	Galena Park Expansion I	TX	83	2013
Targa	Galena Park Expansion II	TX	84	2014
Sunoco Logistics	Marcus Hook	PA	17	NA
Sunoco Logistics	Marcus Hook Expansion I	PA	~40	2015
DCP Midstream	Chesapeake	VA	8	2015
Petrogas	Ferndale	WA	30	NA
Sunoco Logistics	Mariner South	TX	200	2015

Brownfield Expansions

481

Enterprise	Enterprise Expansion III	TX	233	2015
Sunoco Logistics	Marcus Hook Expansion II	PA	~248	2016

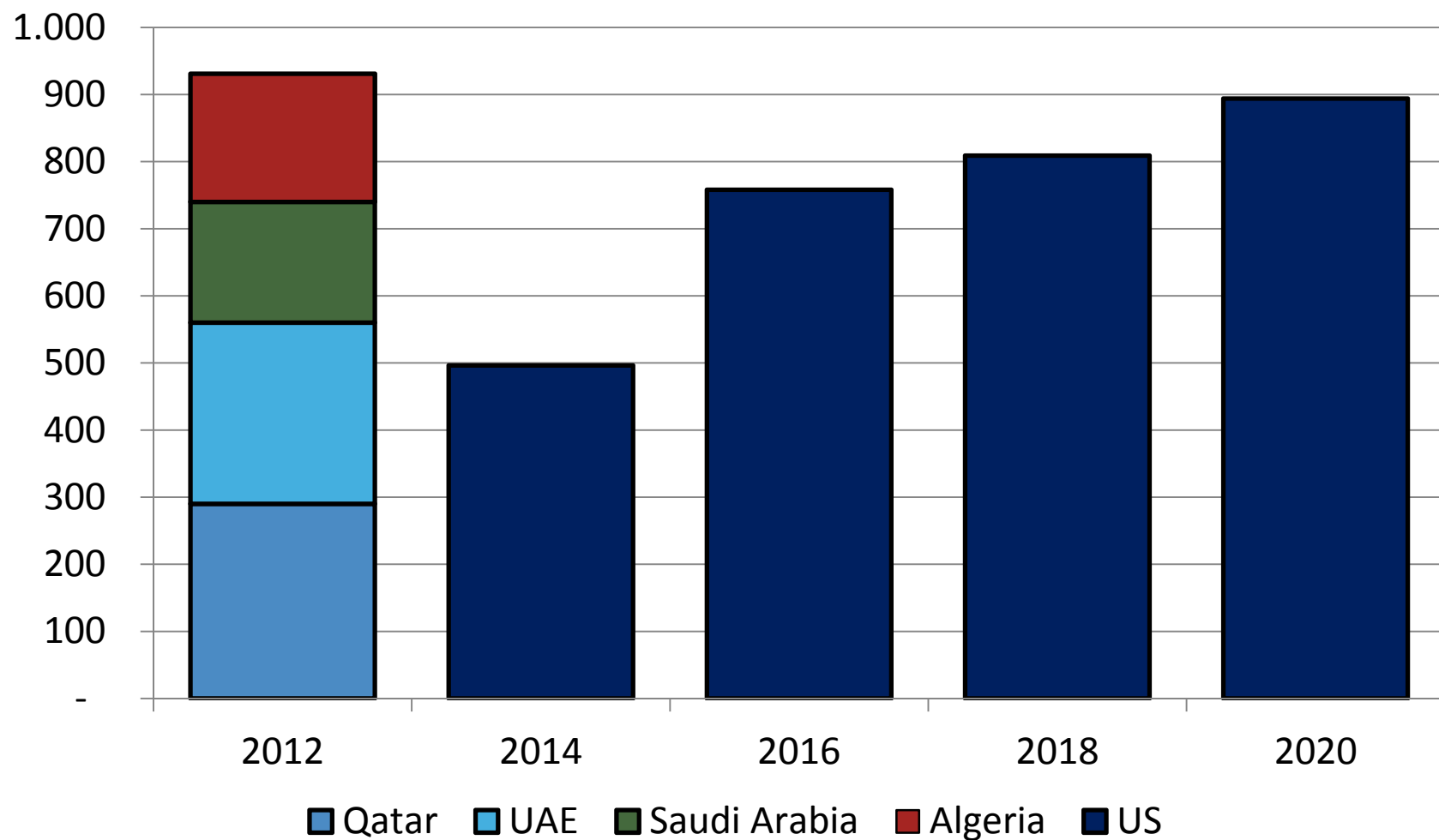
Greenfield -- New Builds

284

Occidental Chemical	Ingleside	TX	100	2015
Pembina	West Coast Terminal	OR	37	2018
Phillips 66	Freeport LPG	TX	147	2016

Source: Bentek's *Market Call: North American NGLs*, 3Q2015, Bentek *NGL Facilities Databank*, company reports

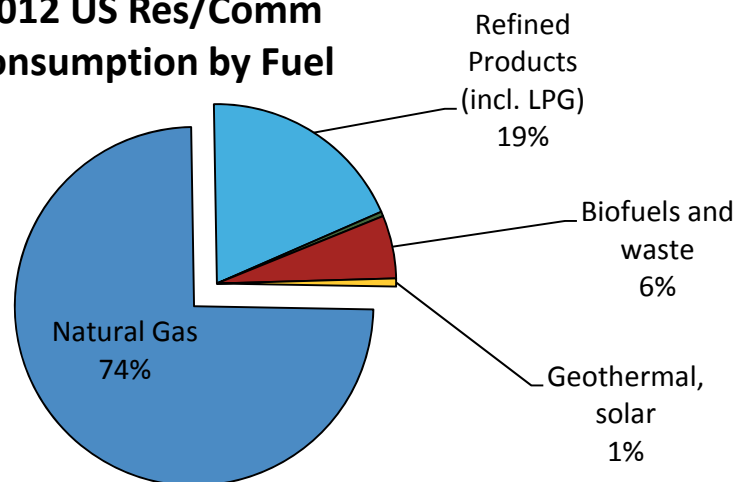
US Poised To Dominate The LPG Export Market



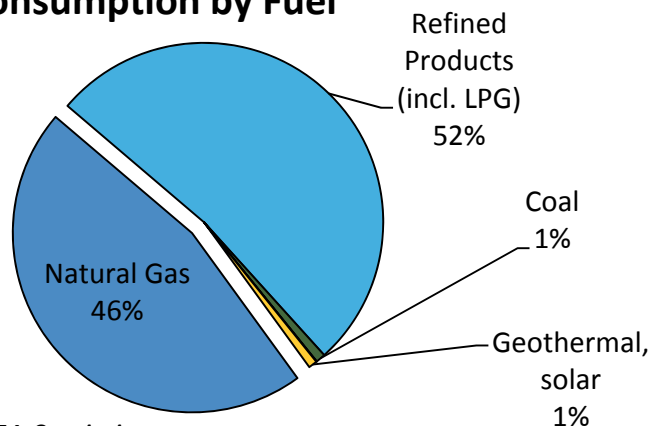
Despite growing res/comm demand for LPG, developing countries are still dependent on solid biofuels

Developed countries like **US** and **Japan** primarily use fuels like **natural gas & LPG** for residential use

2012 US Res/Comm Consumption by Fuel



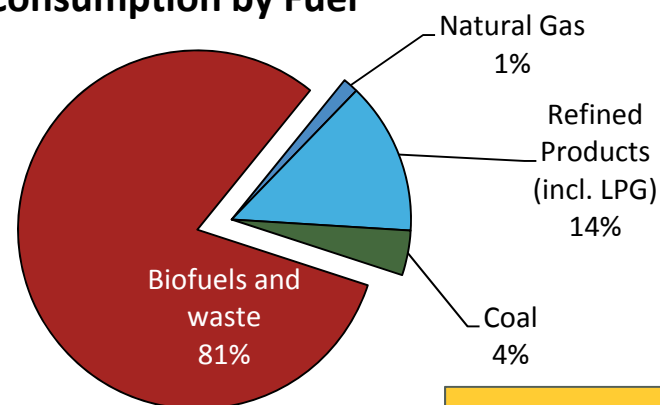
2012 Japan Res/Comm Consumption by Fuel



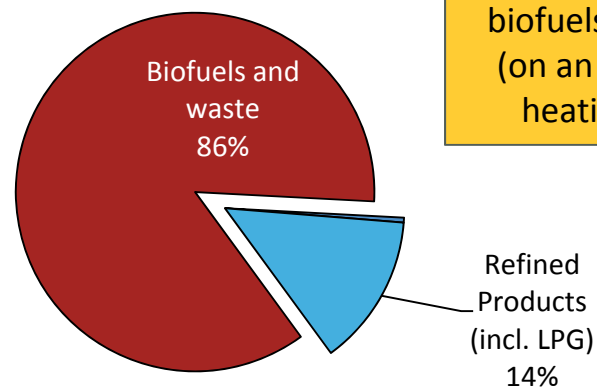
Source: IEA Statistics

Emerging economies like **India** and **Indonesia** rely heavily on **solid biofuels** for residential use

2012 India Res/Comm Consumption by Fuel

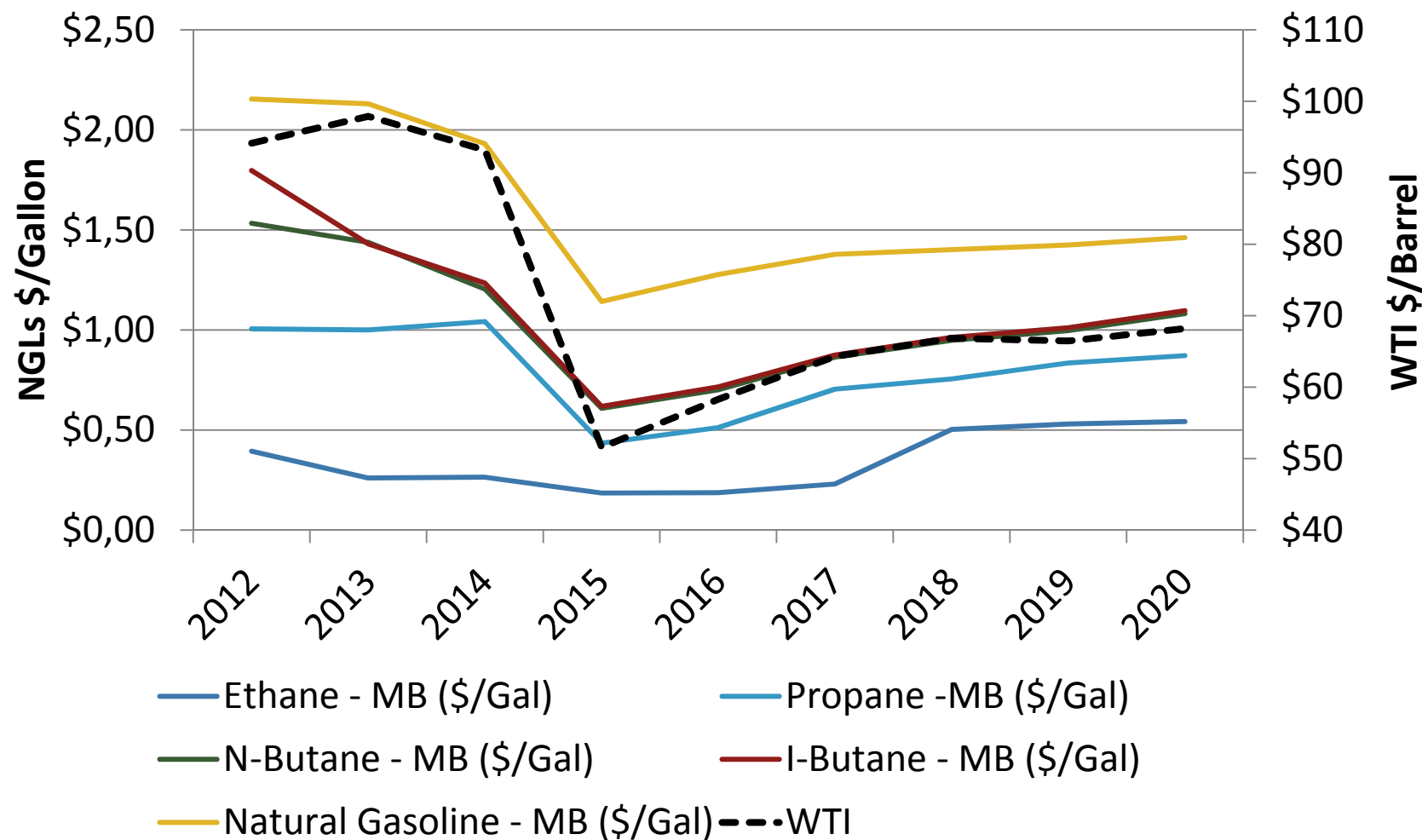


2012 Indonesia Res/Comm Consumption by Fuel



Over **80%** of fuel consumed for res/comm use in India and Indonesia is biofuels and waste (on an equivalent heating value)

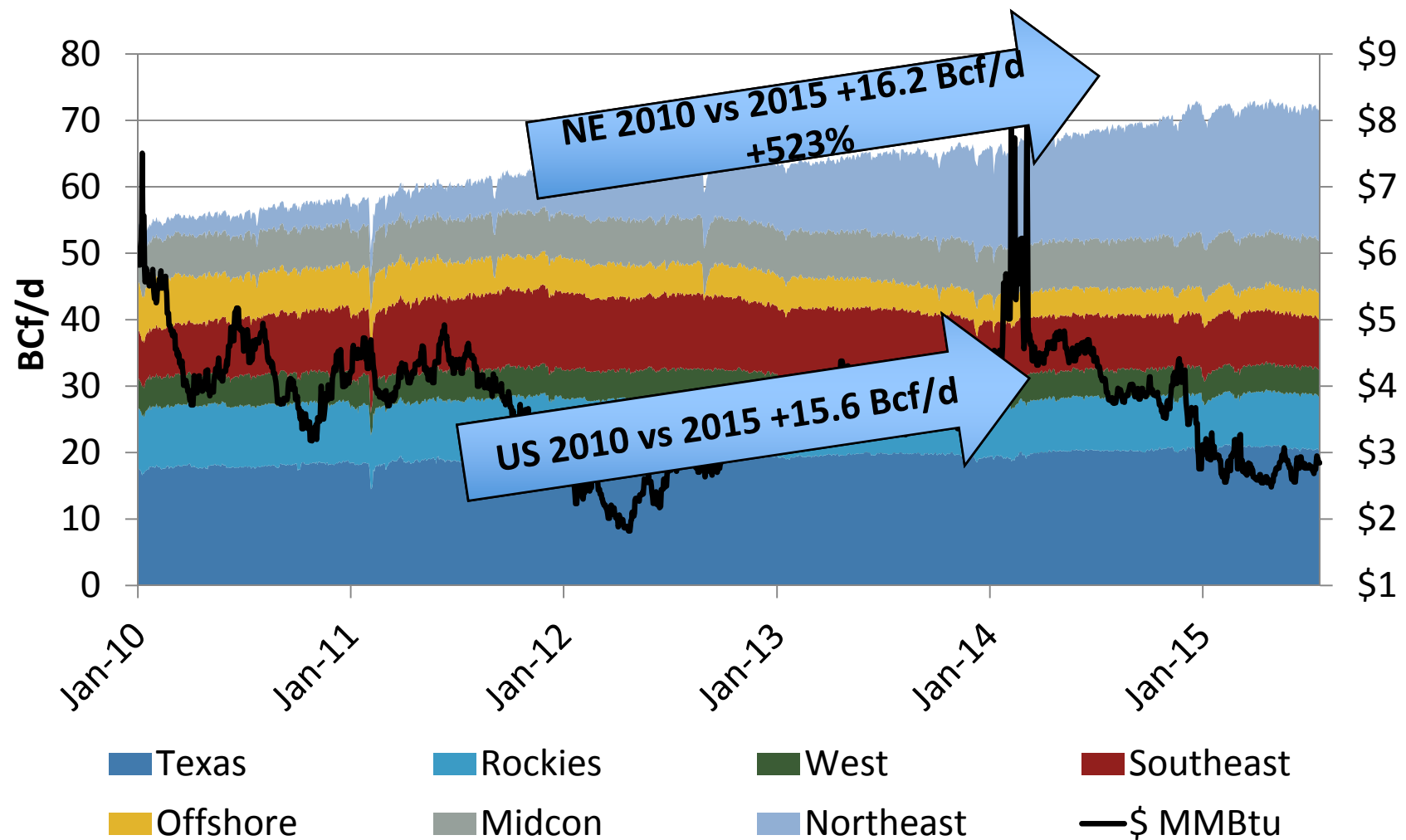
NGLs @ Mount Belvieu



Natural Gas and LNG

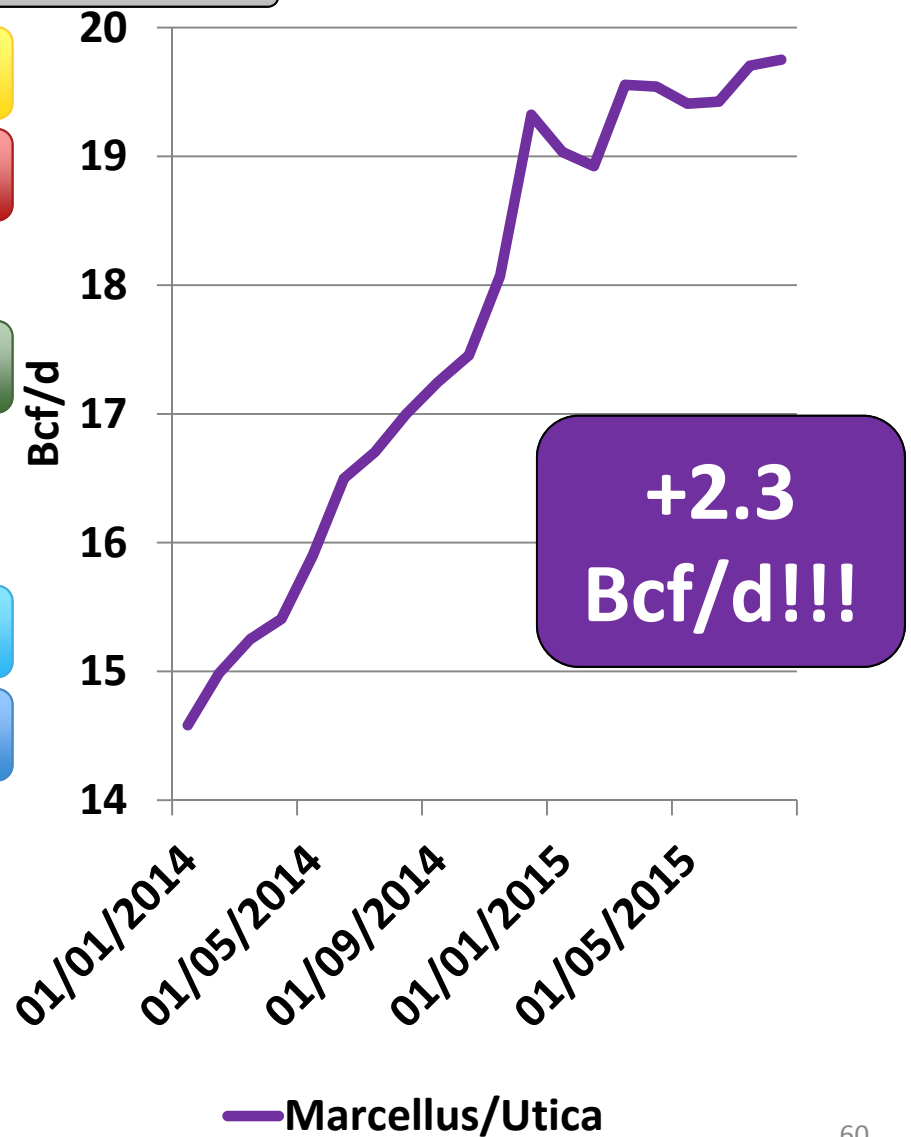
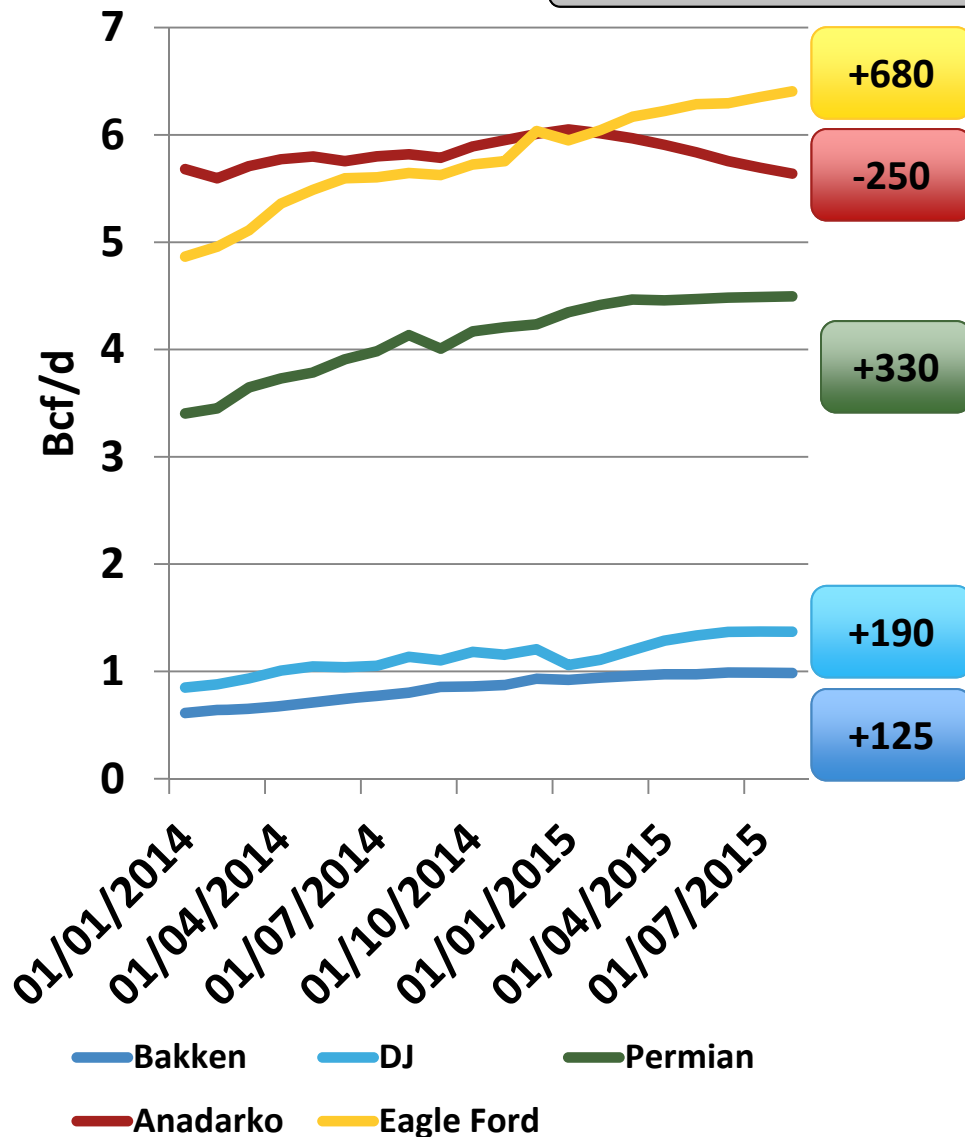


Despite Low Price Environment – US NG Production Continues to Grow

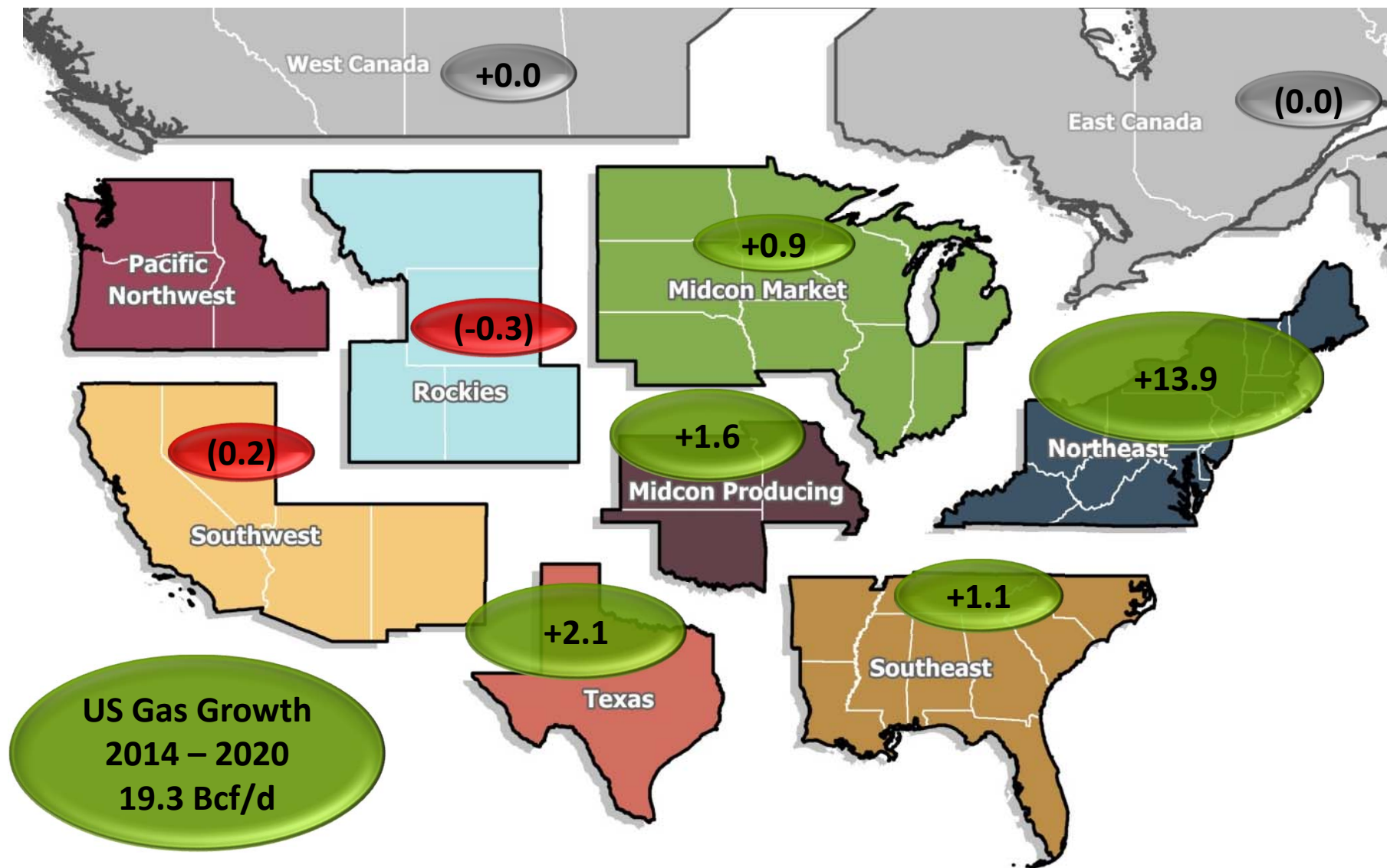


Marcellus/Utica leading production gains since Late 2014 Price Collapse

Incremental Growth Since Oct 2014

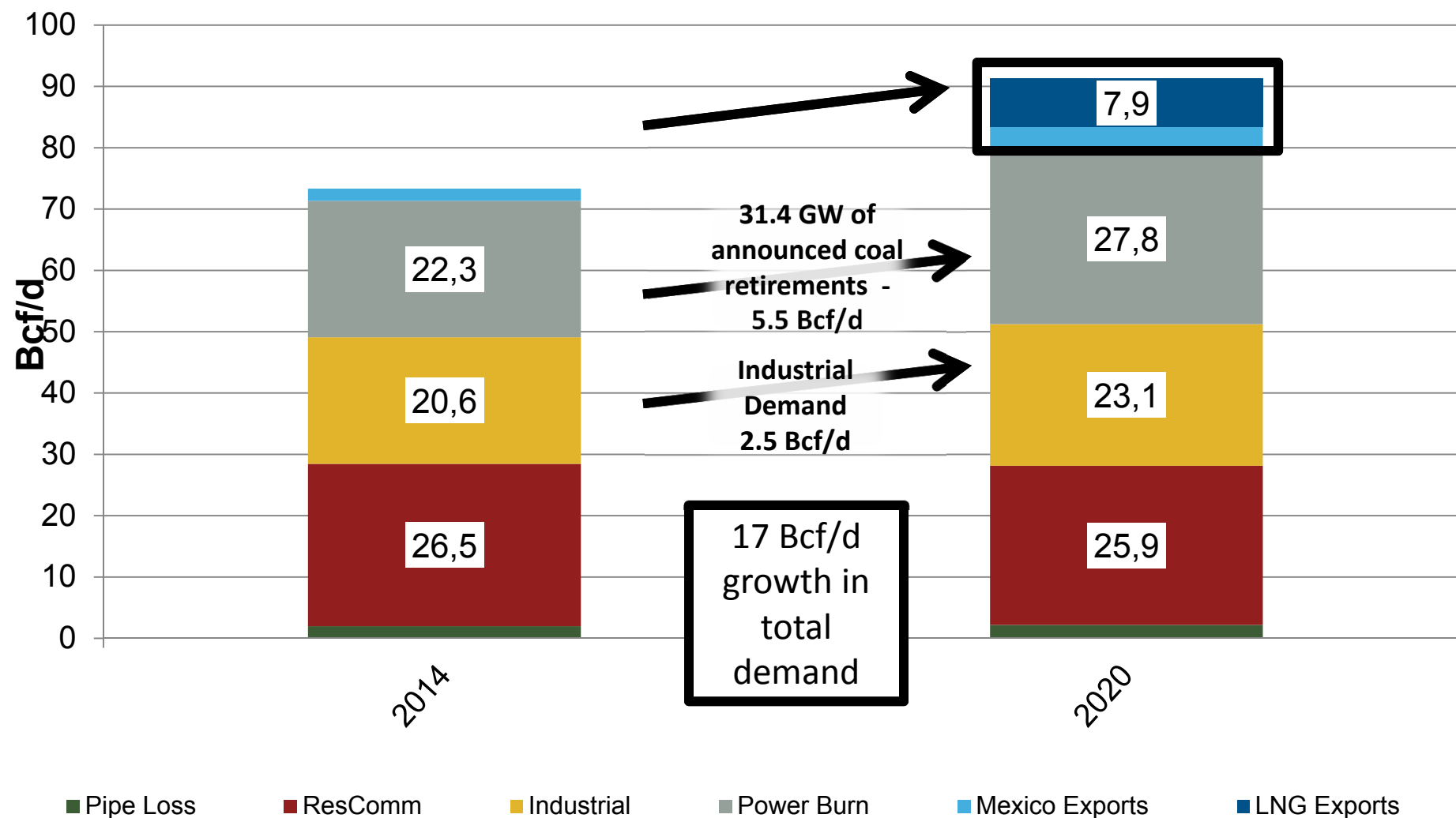


US Production Expected To Reach 88 Bcf/d By 2020, Driven By Northeast

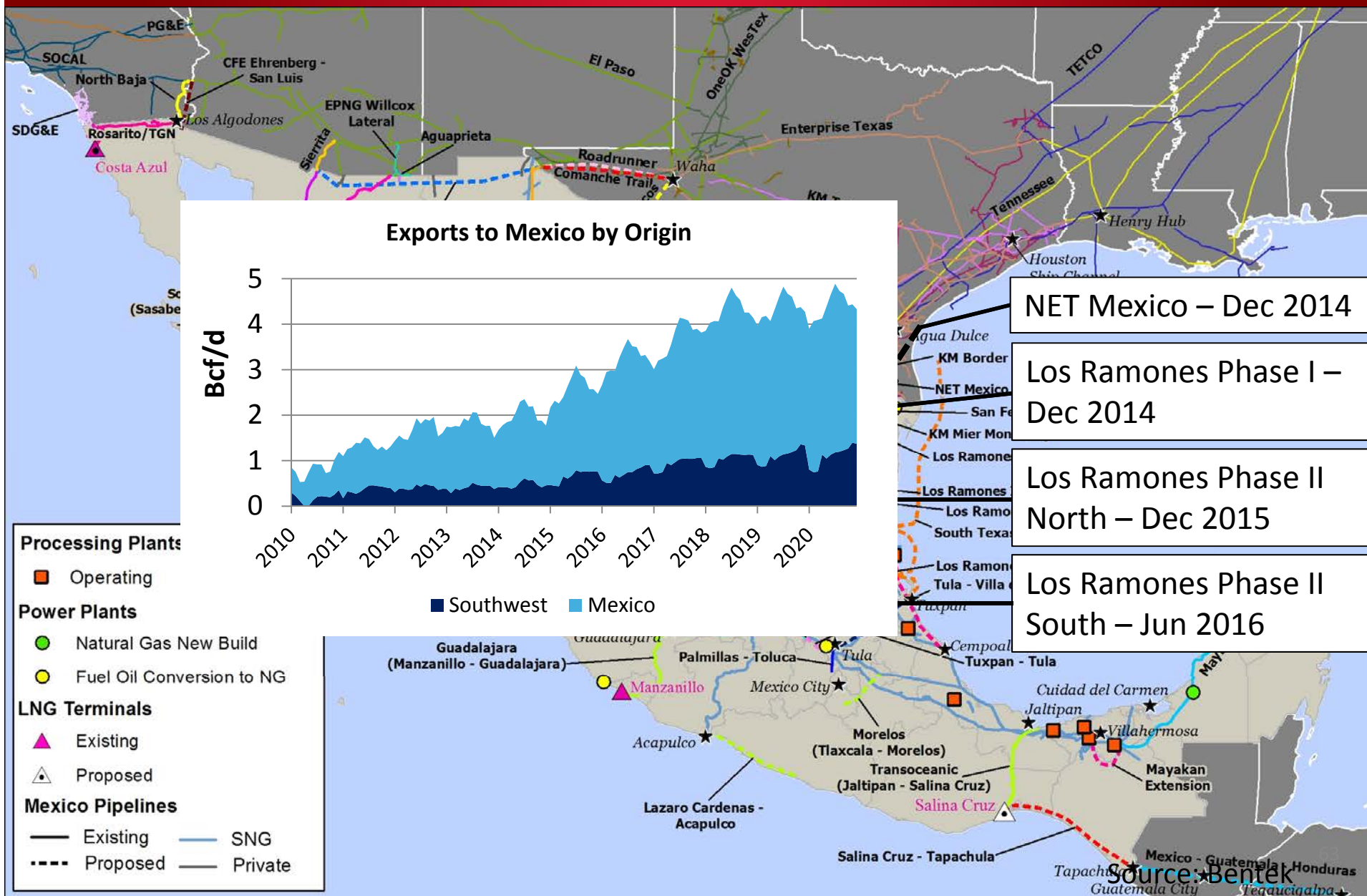


Growth In Power Burn & Exports Mandatory For Continued Production Growth

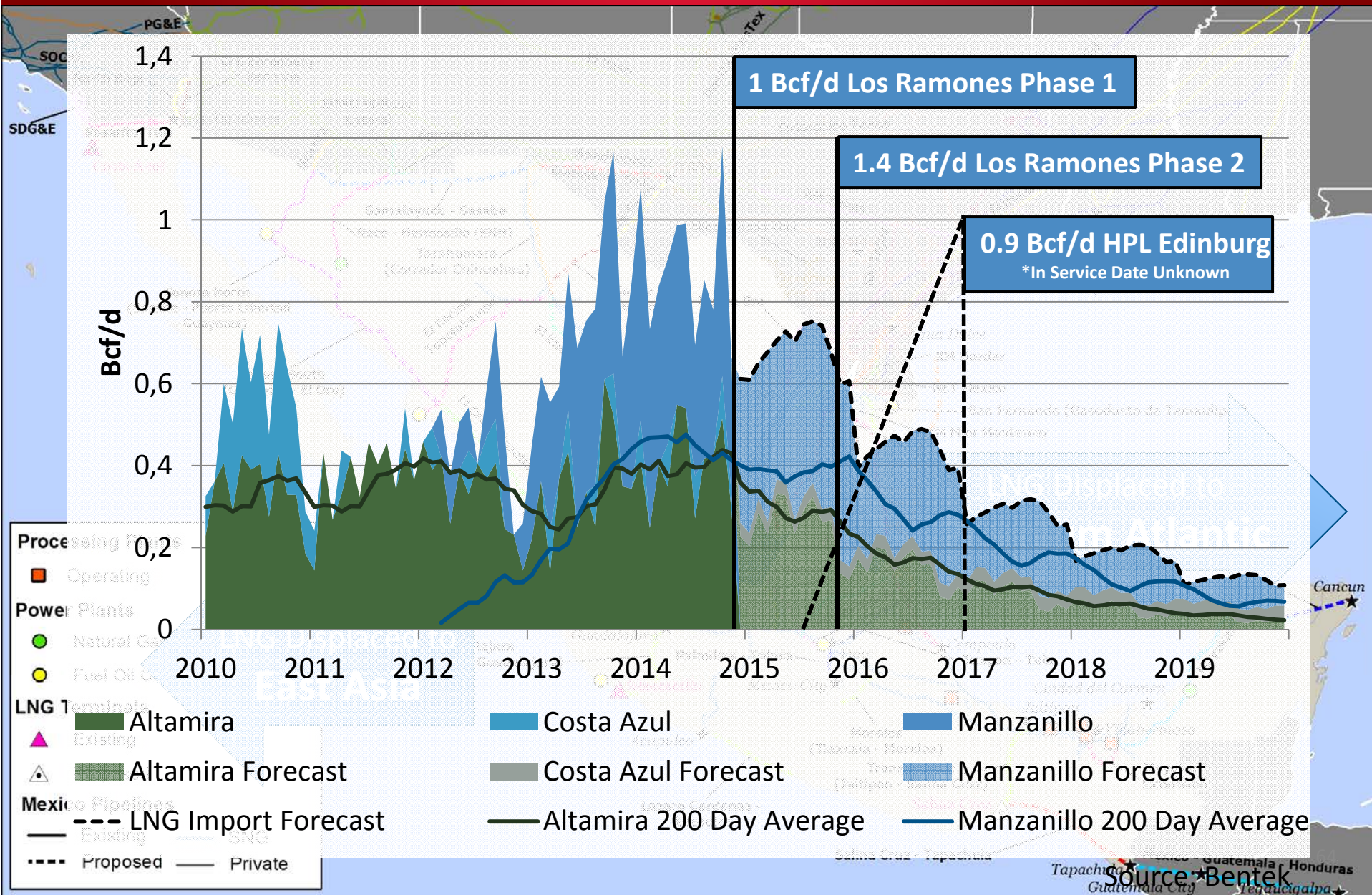
Demand Growth by Sector (2014-2020)



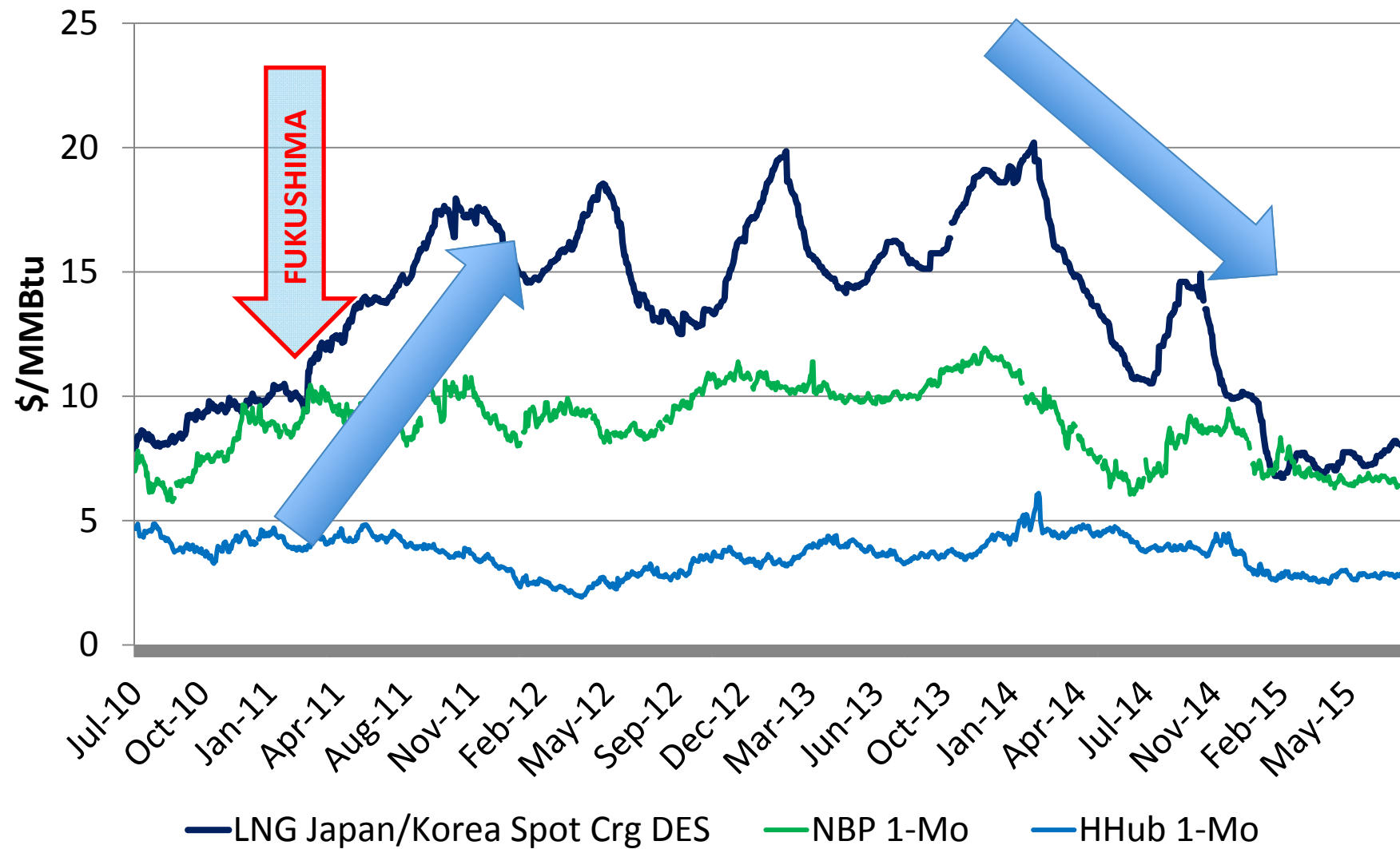
Exports to Mexico More Than Double by 2020



US Natural Gas Into Mexico Illustrates LNG/Btu Displacement

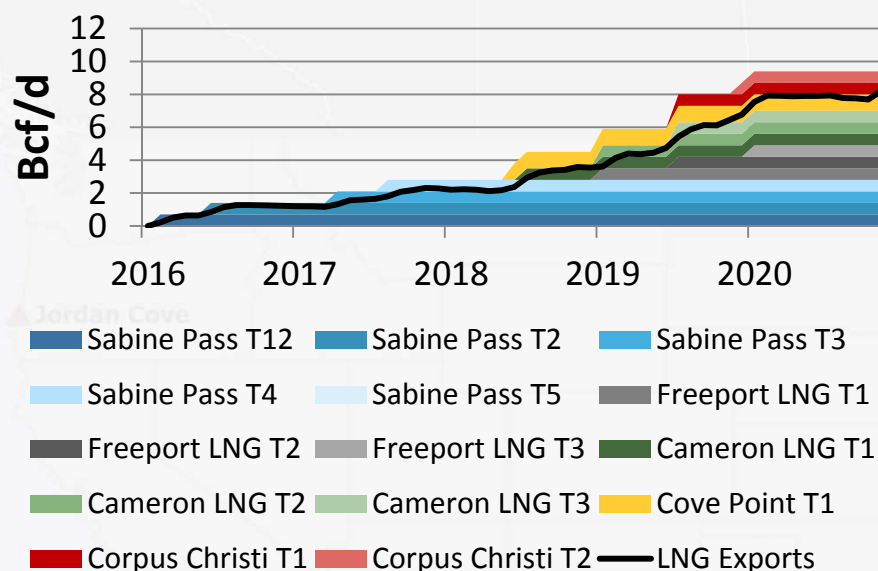


LNG prices also tumble lower



Bentek LNG Export Capacity Forecast

Base US Liquefaction Capacity



47.05 Bcf/d of proposed capacity...

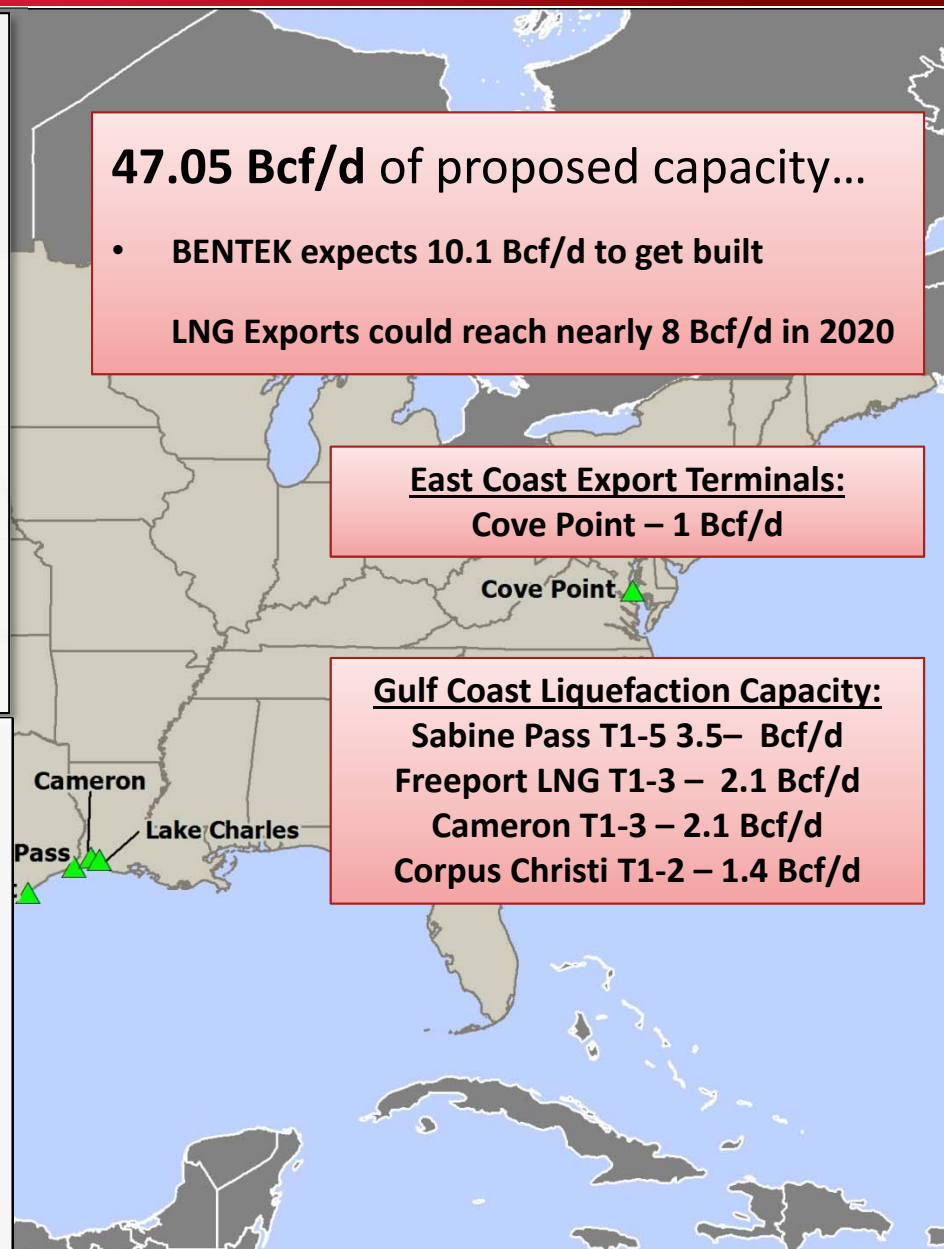
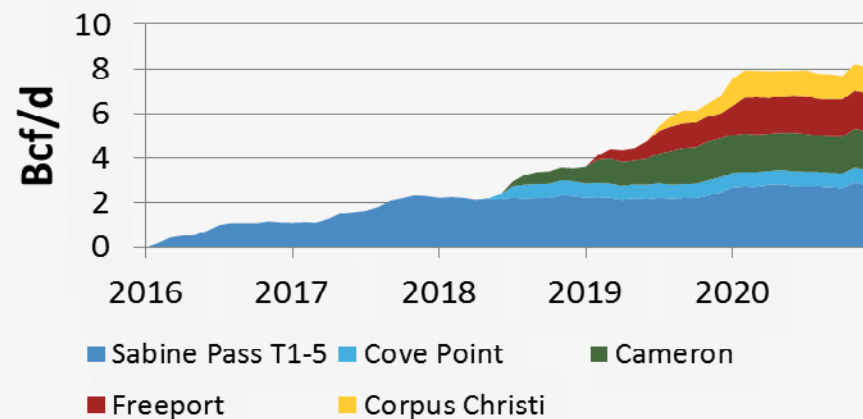
- BENTEK expects 10.1 Bcf/d to get built

LNG Exports could reach nearly 8 Bcf/d in 2020

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

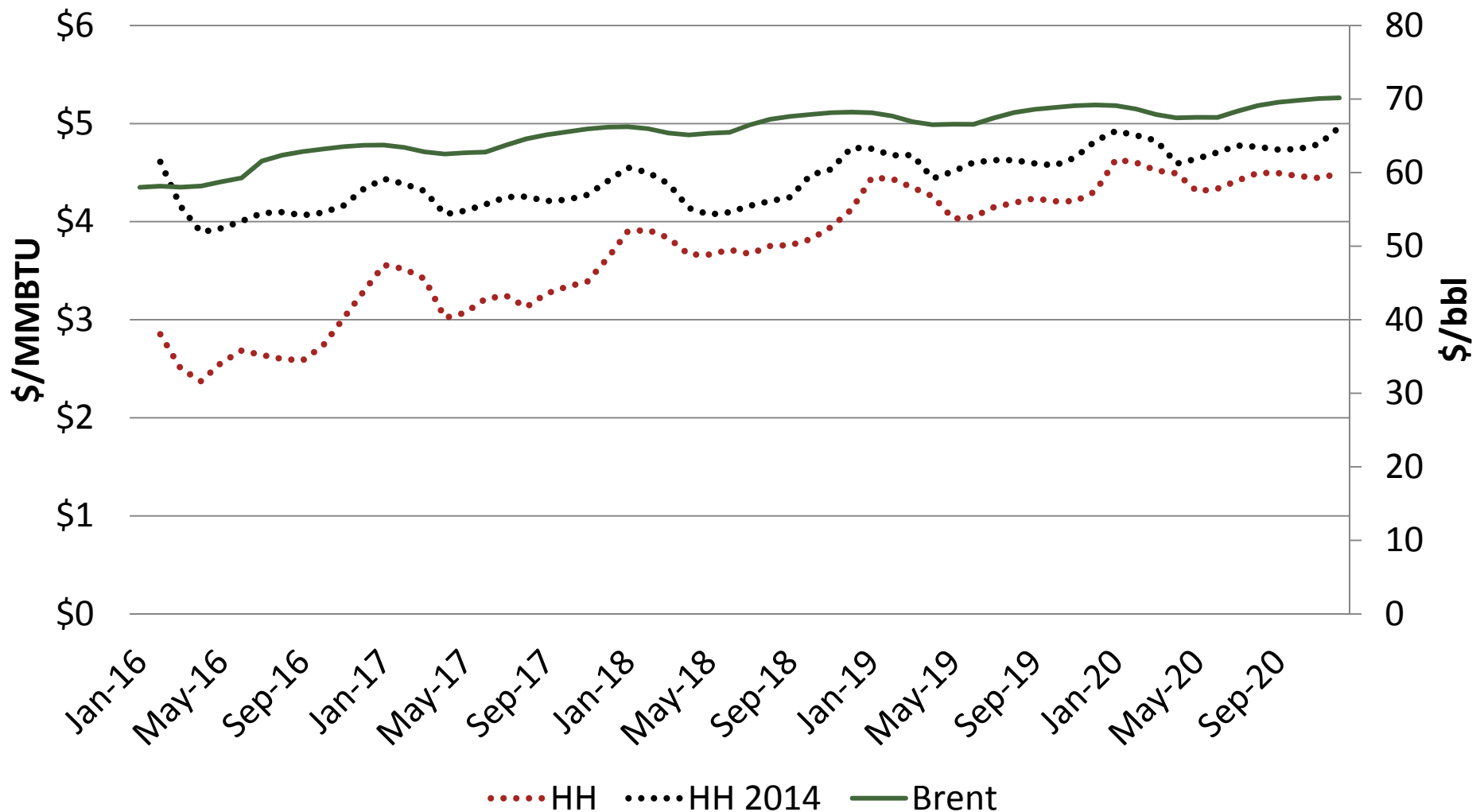
US LNG Export Forecast



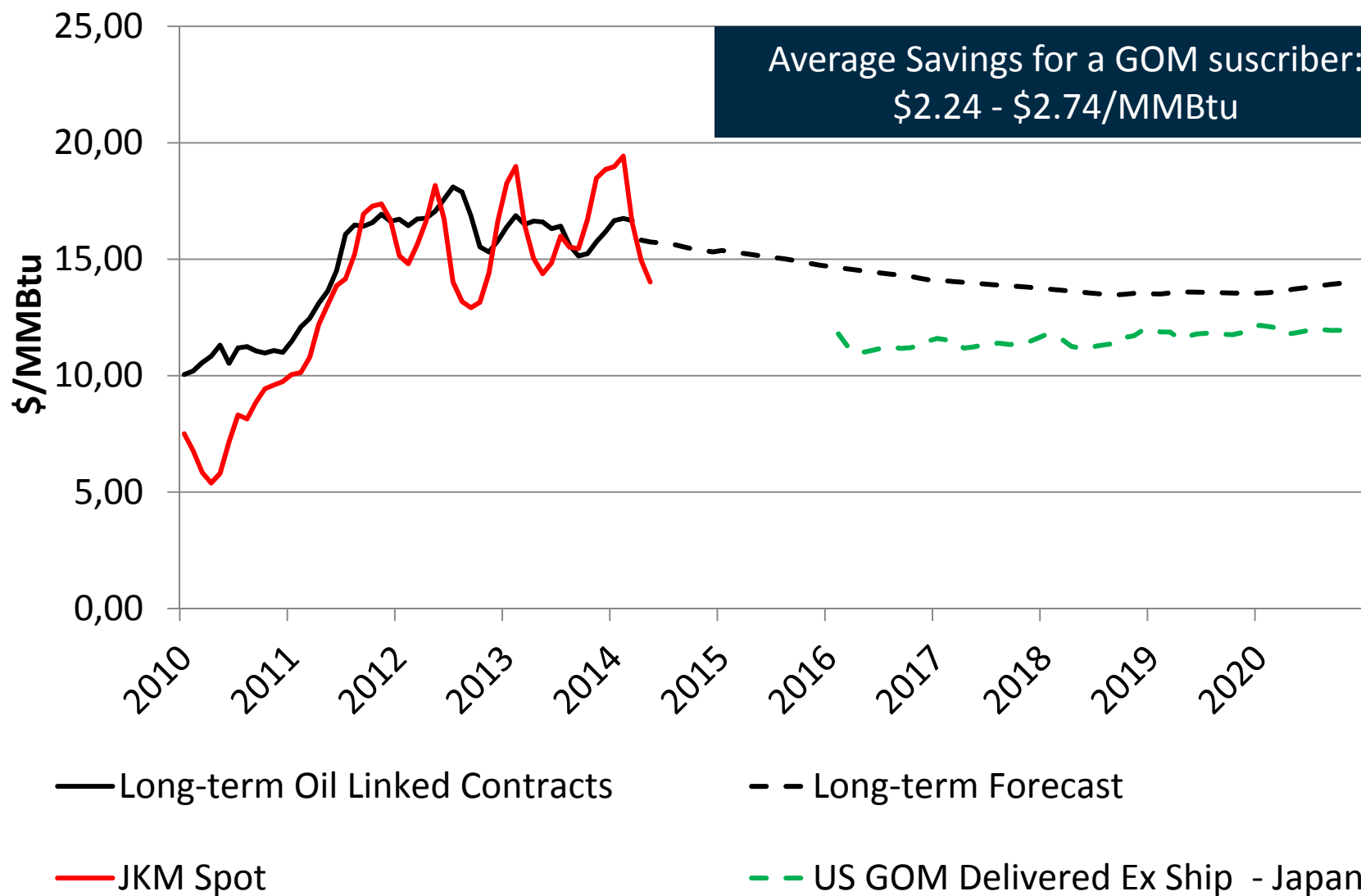
Bentek's Price Forecast



Crude Price & Natural Gas Forecasts

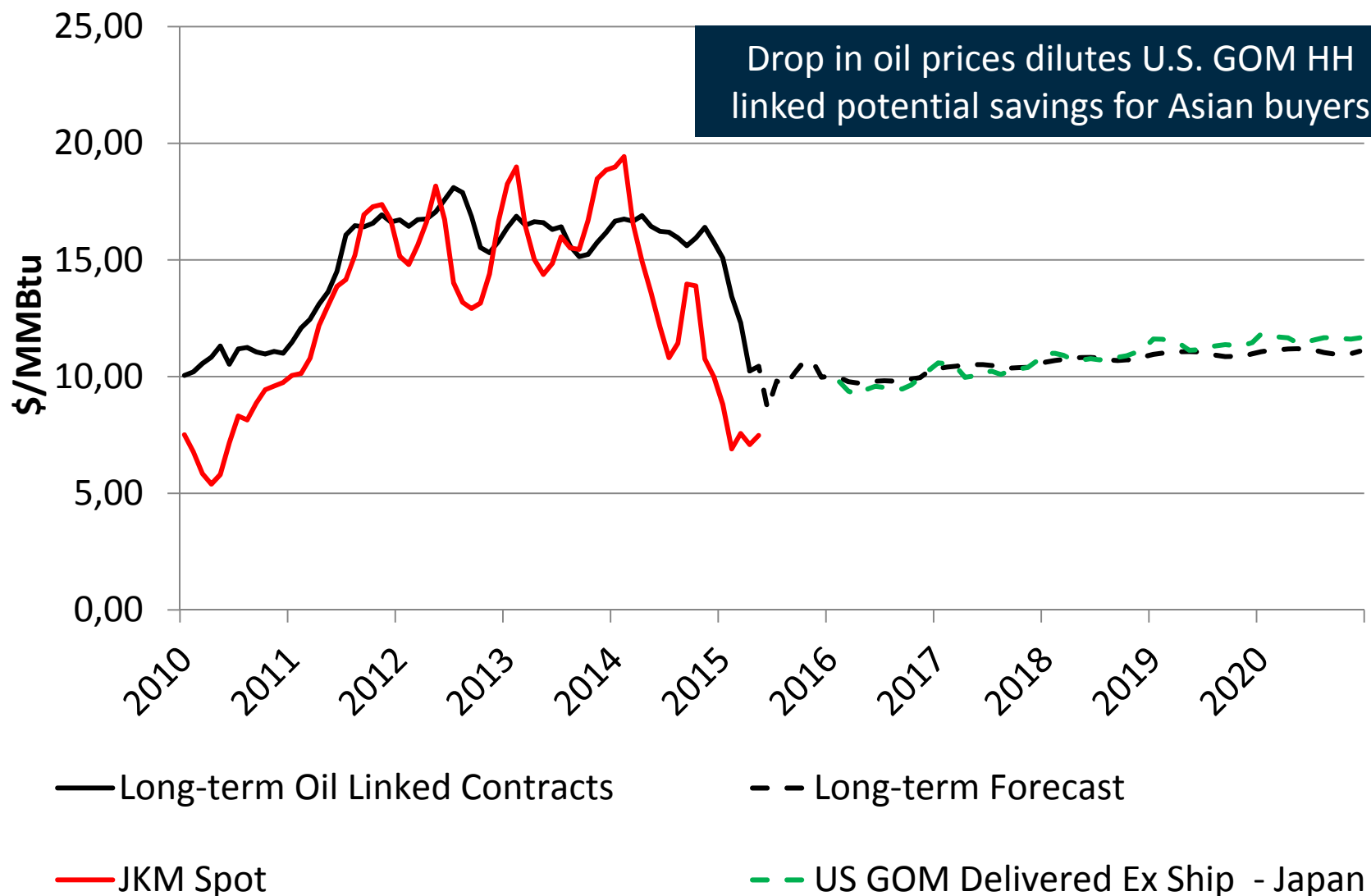


JKM Spot Price Forecast vs. LT Oil Index vs. U.S. Gulf of Mexico DES – Japan / May 2014



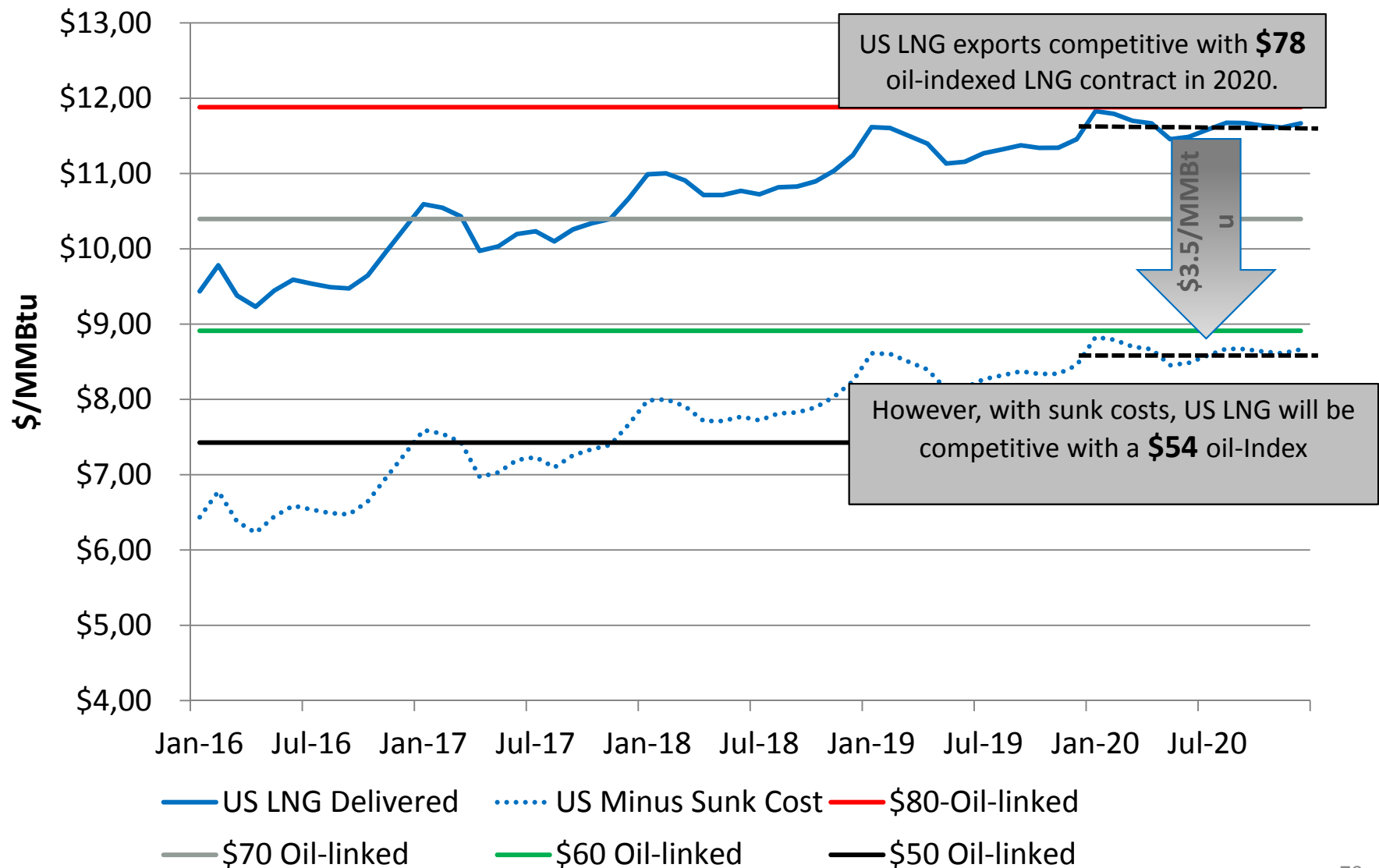
Source: Bentek, Platts

JKM Spot Price Forecast vs. LT Oil Index vs. U.S. Gulf of Mexico DES – Japan / May 2015

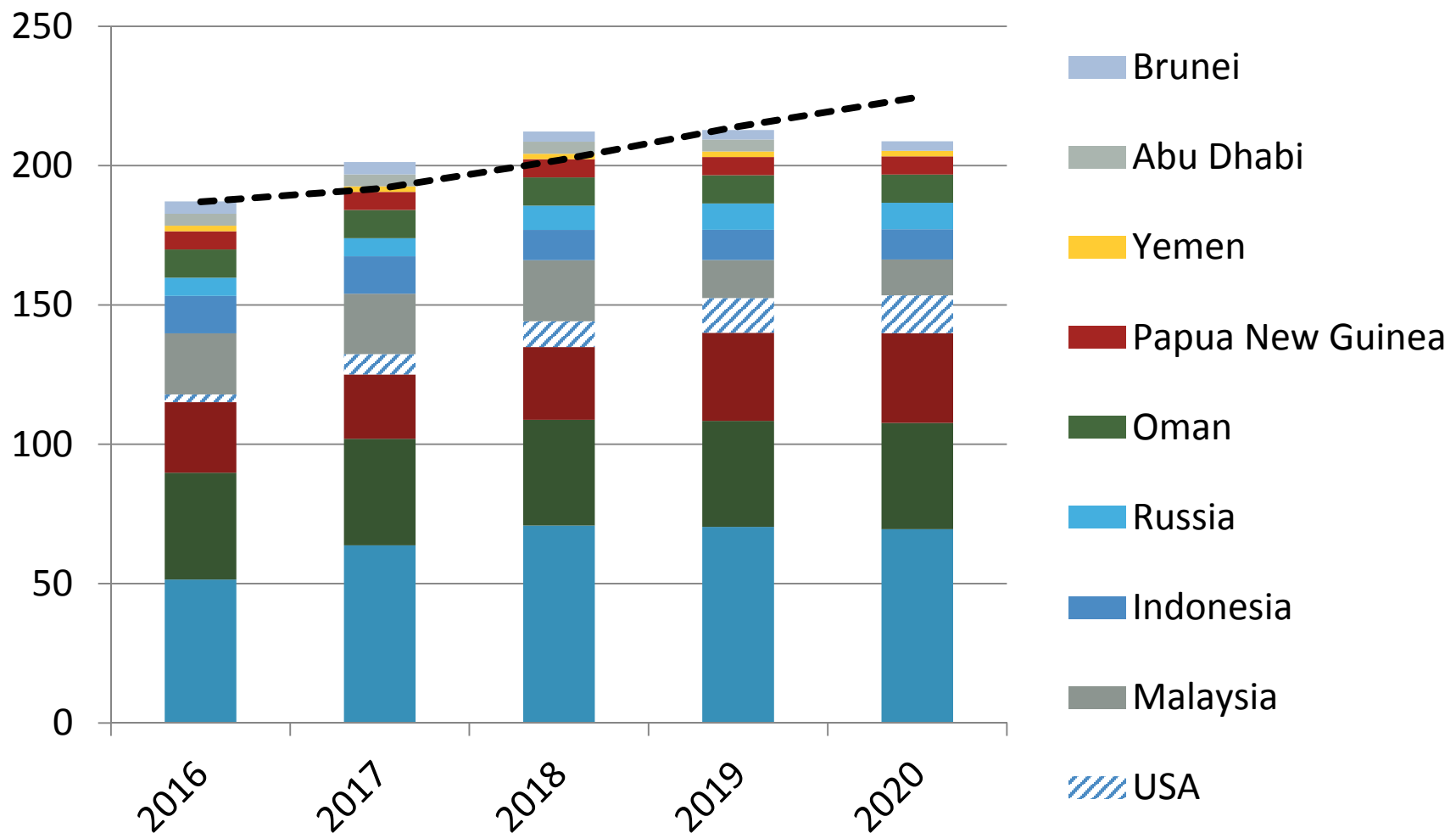


Source: Bentek, Platts

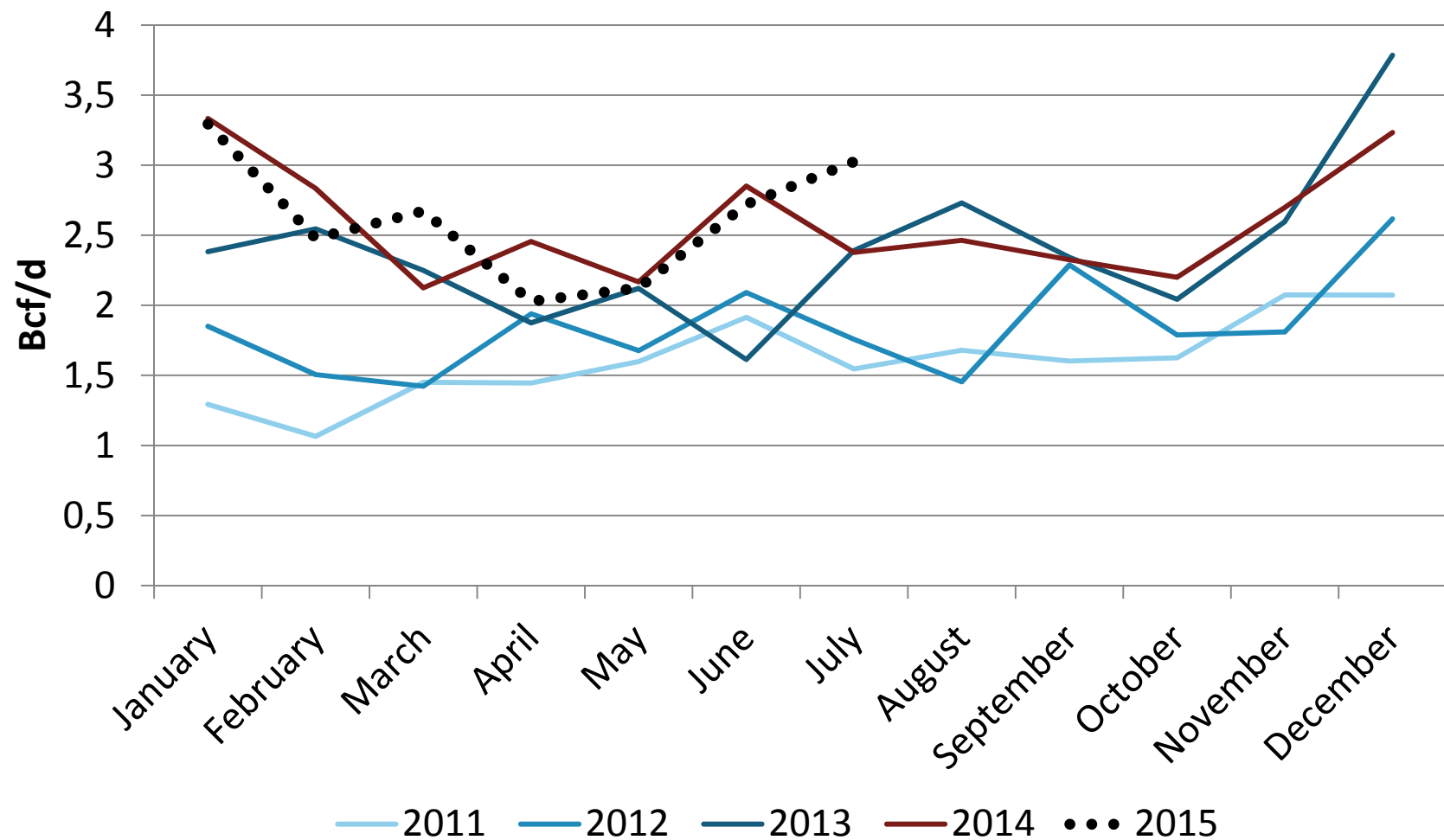
US Competitiveness in the Global LNG Market



Asia Oversupplied Near Term - Potential Long Term Opportunity

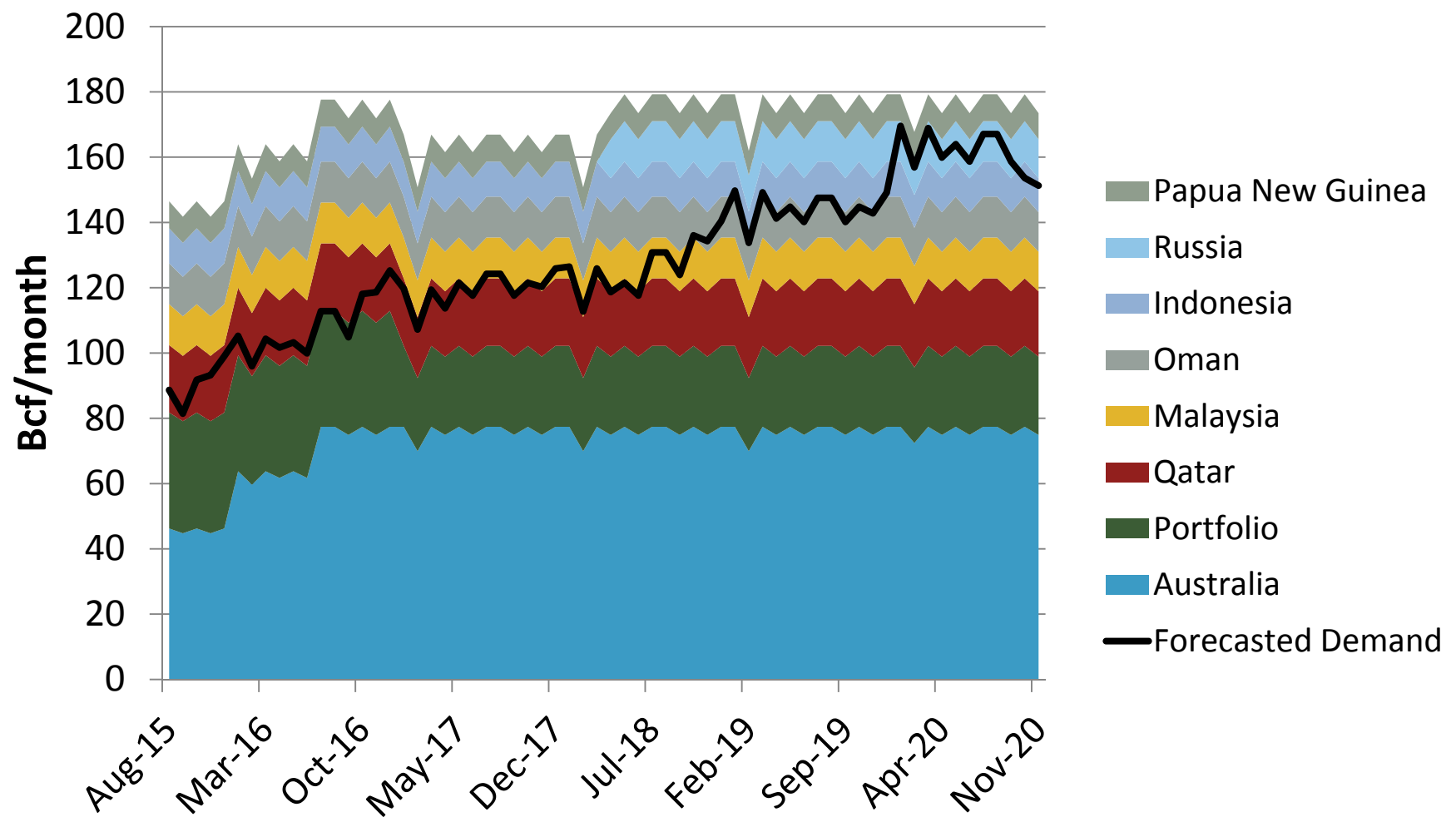


China LNG Monthly Imports



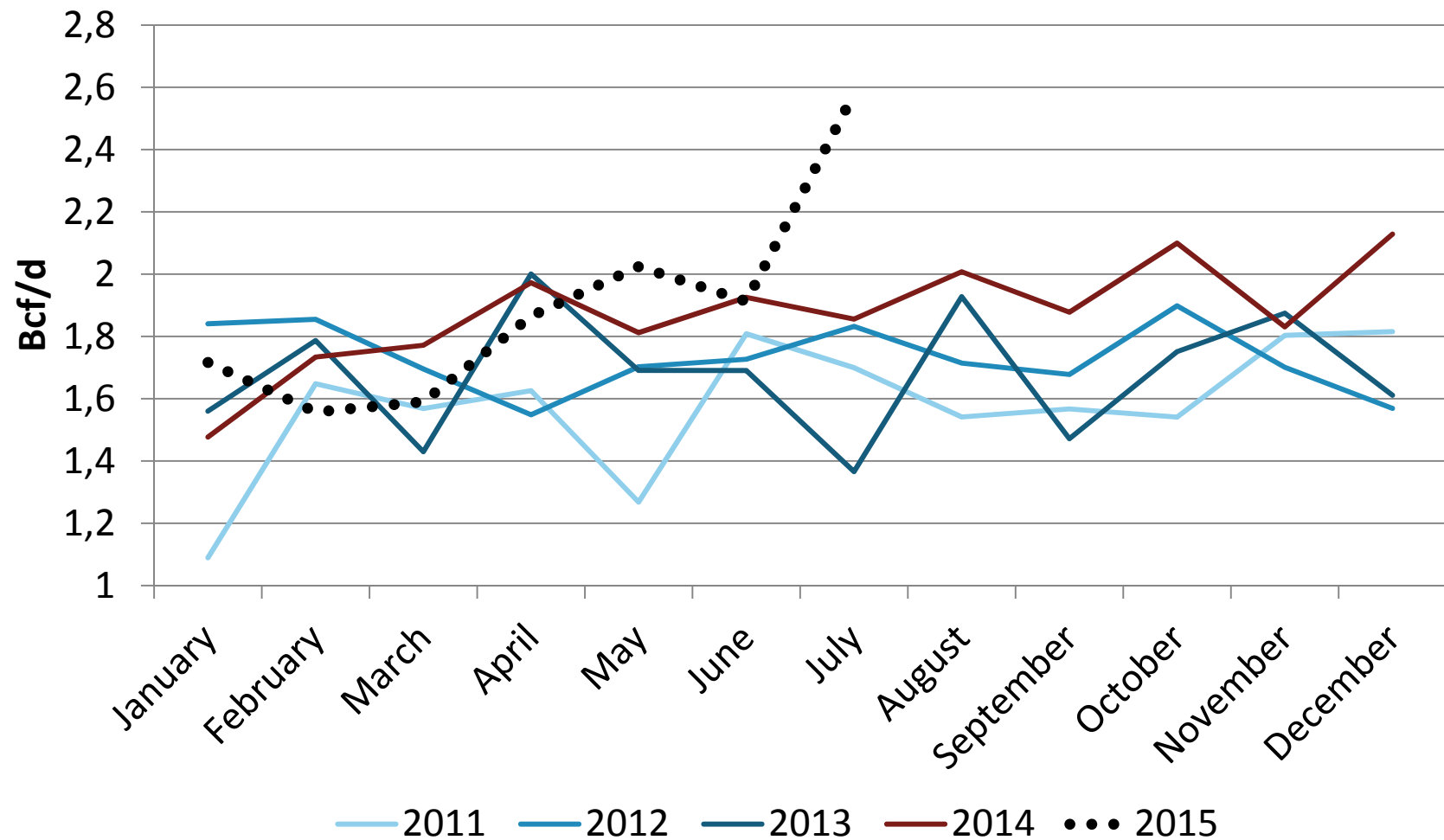
Source: Bentek, Eclipse

China Demand Forecast vs. Contracts



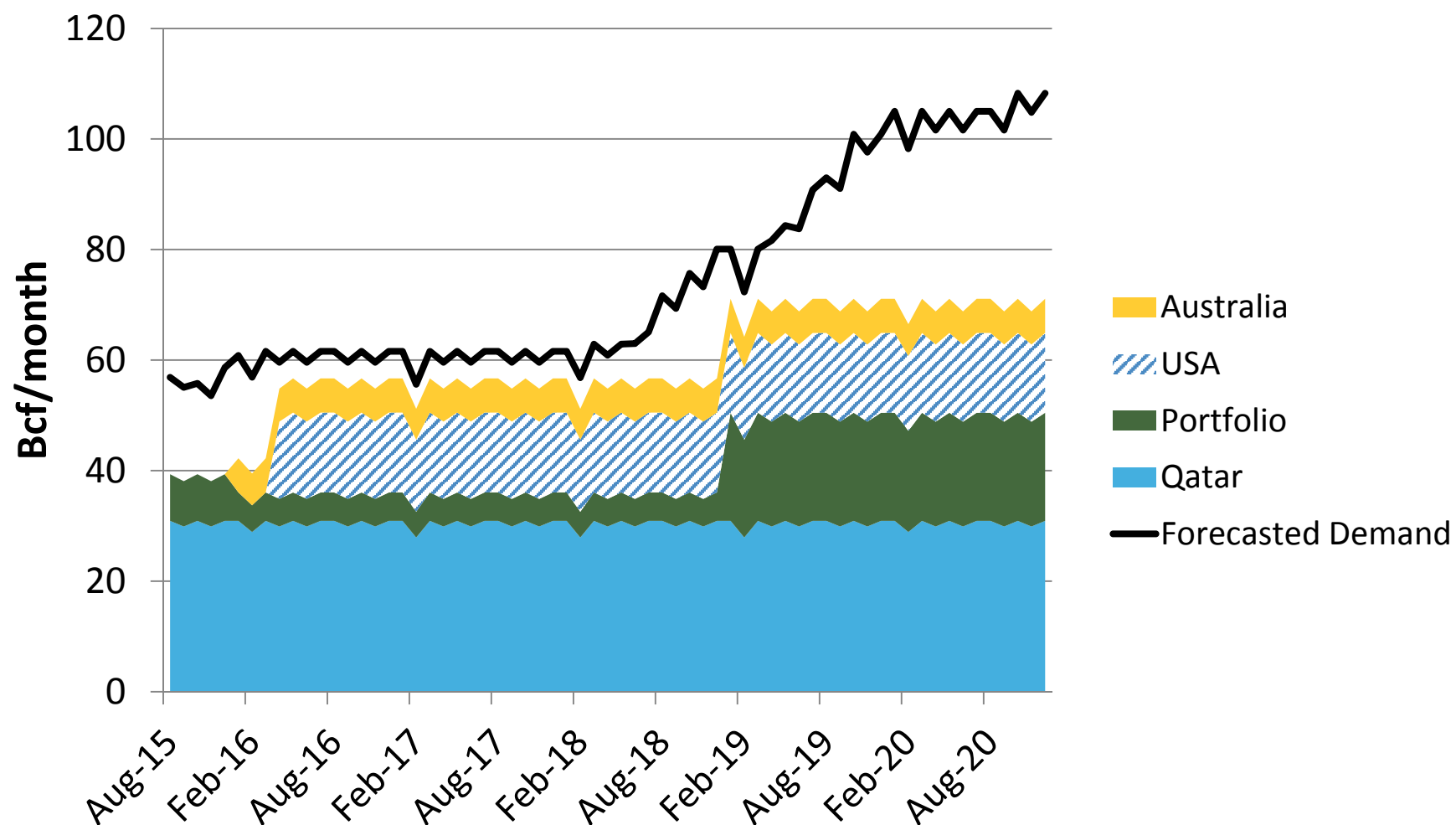
Source: Bentek, Eclipse

India LNG Monthly Imports



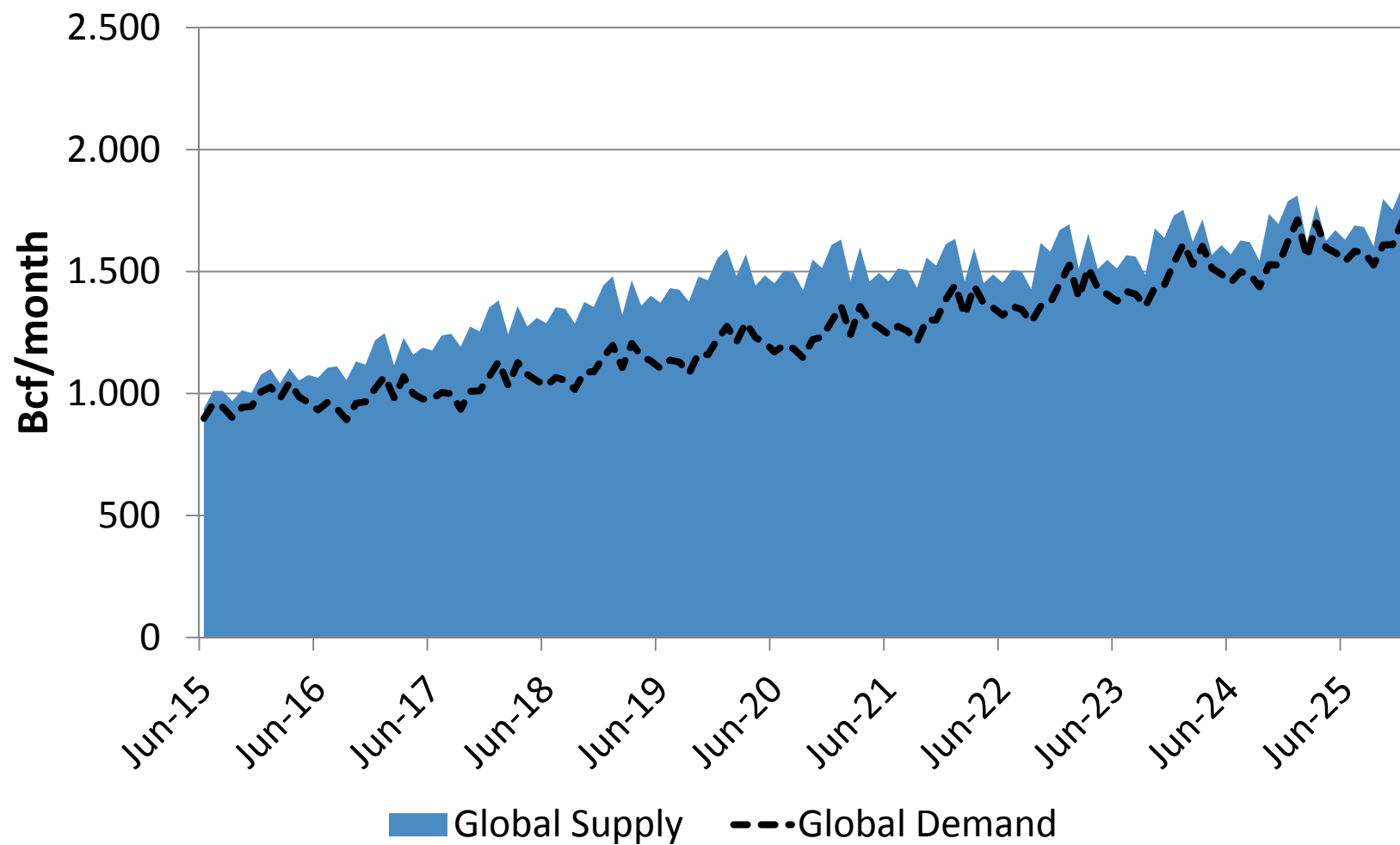
Source: Bentek, Eclipse

India Demand Forecast vs. Contracts



Source: Bentek, Eclipse

Global LNG Balance Anticipated to Remain Long For Foreseeable Future



Source: Bentek, Eclipse

Talking Points

- The US producer can continue to produce even at reduced prices due to increased efficiencies, high-grading, and falling drilling costs
- US production growth of all BTUs displaces BOE back into a currently oversupplied global market
- As US producers continue to prove resilient, the US becomes a potential price setter rather than marginal supplier
- Anticipate lower prices for longer - incremental demand must appear globally – the technology & geology that the US has brought to the market has changed the playing field



Key Takeaways

- Bentek's current projection expects oil production in the US and Canada to grow from 12.3 MMbbls in 2014 to 15 MMbbls in 2020
- NGL production from gas plants will continue to increase, reaching 4.5 MMb/d by 2020
- Longer term, propane and butane prices will depend on the global market's ability (emerging market economic growth) to consume incremental exports from the US
 - Increased res/comm demand from emerging markets in Asia and Latin America
 - Additional petchem demand, notably from China
- Bentek expects U.S. Gas Production 88 Bcf/d, Henry Hub to stay below \$5/MMBtu by 2020



Gracias!

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