



Outlook for Oil and Natural Gas Markets

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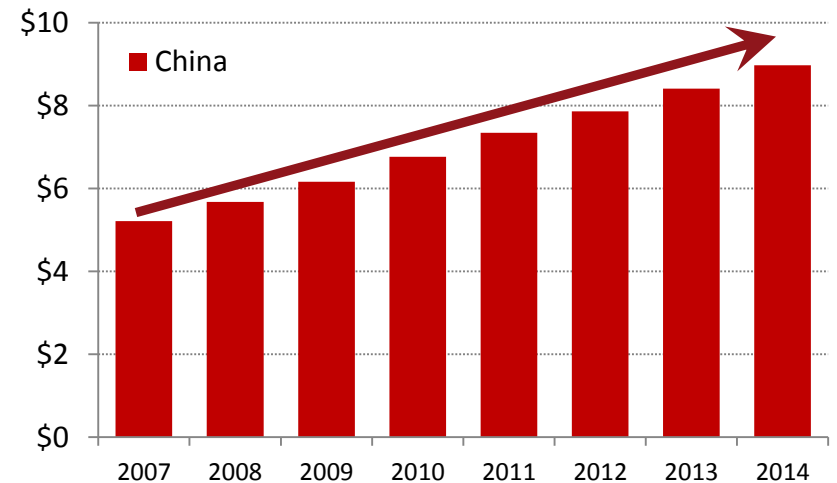
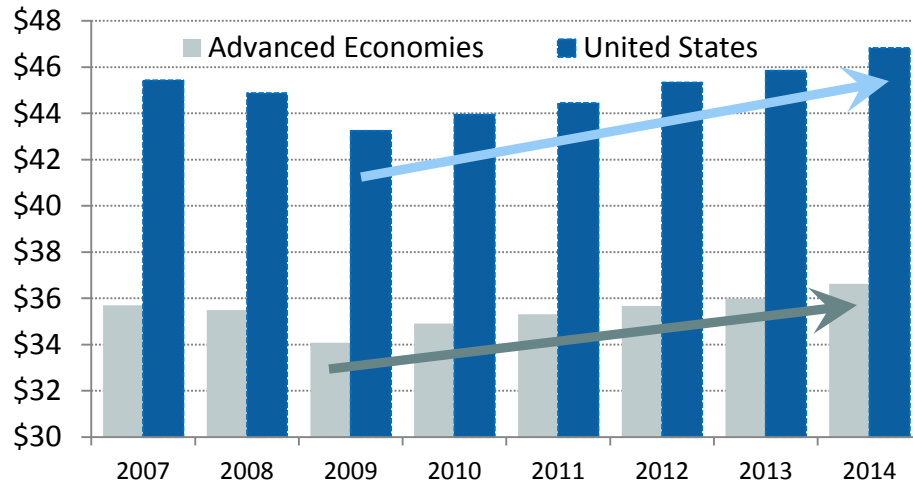
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- ❖ **Economic Fundamentals**
- ❖ **Natural Gas Markets**
- ❖ **Oil Markets**

Global income exceeds pre-Recession levels

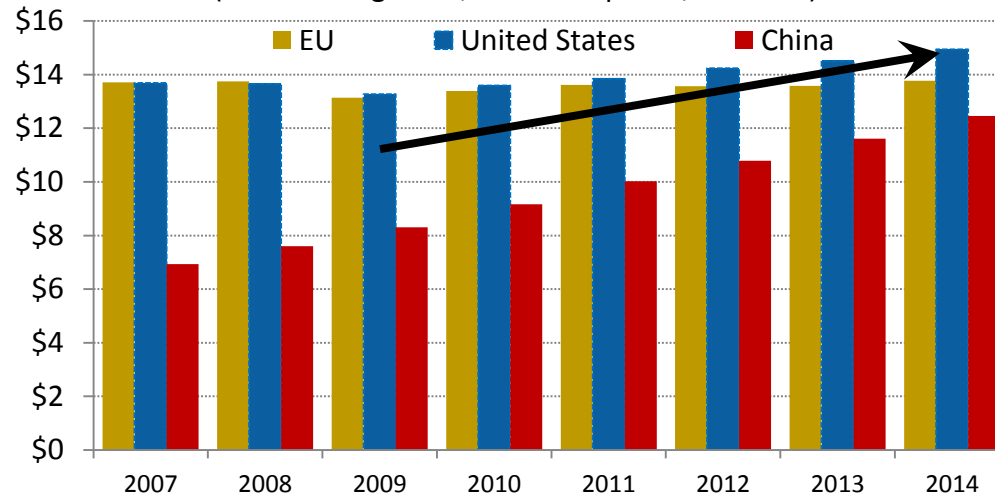
Per-capita GDP

(PPP exchange rate, nominal, Thousand \$)



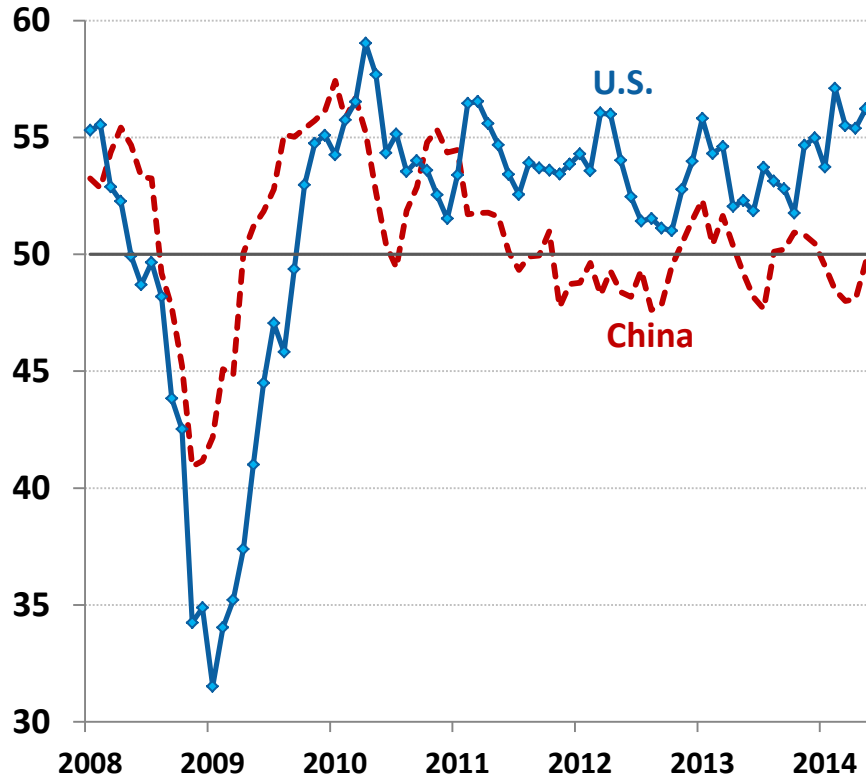
Total Gross Domestic Product

(PPP exchange rate, real 2005 prices, Trillion \$)

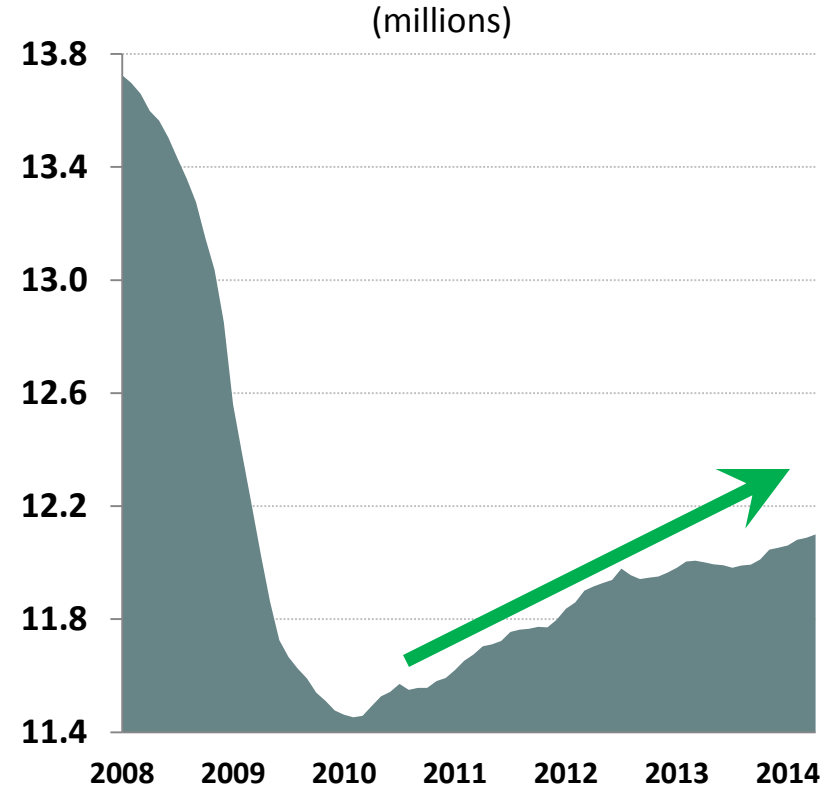


Migration of manufacturing: U.S. Re-shoring

U.S. Manufacturing PMI consistently ahead vs China since early 2011



U.S. Manufacturing Employment: gained over a half-million jobs since 2010



The renaissance of North American gas and oil production is the critical supply-side trend affecting global energy markets over the long term.

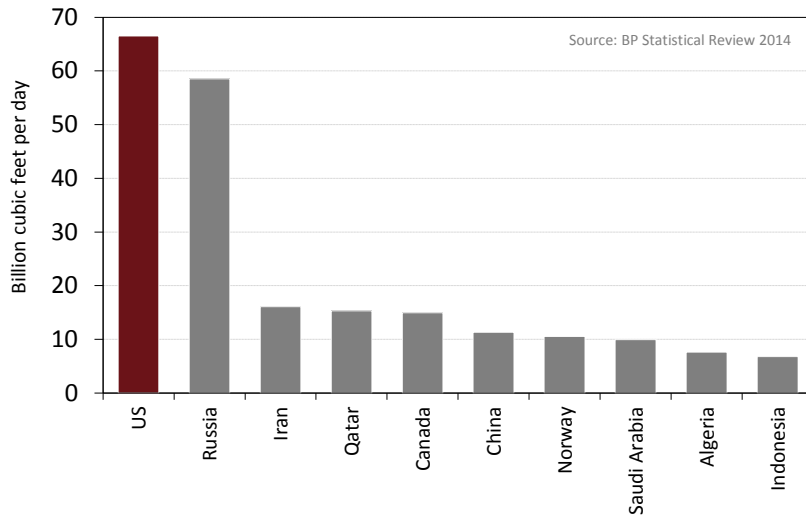
North American supply growth is redefining global energy markets.

THE SHALE RESOURCE REVOLUTION

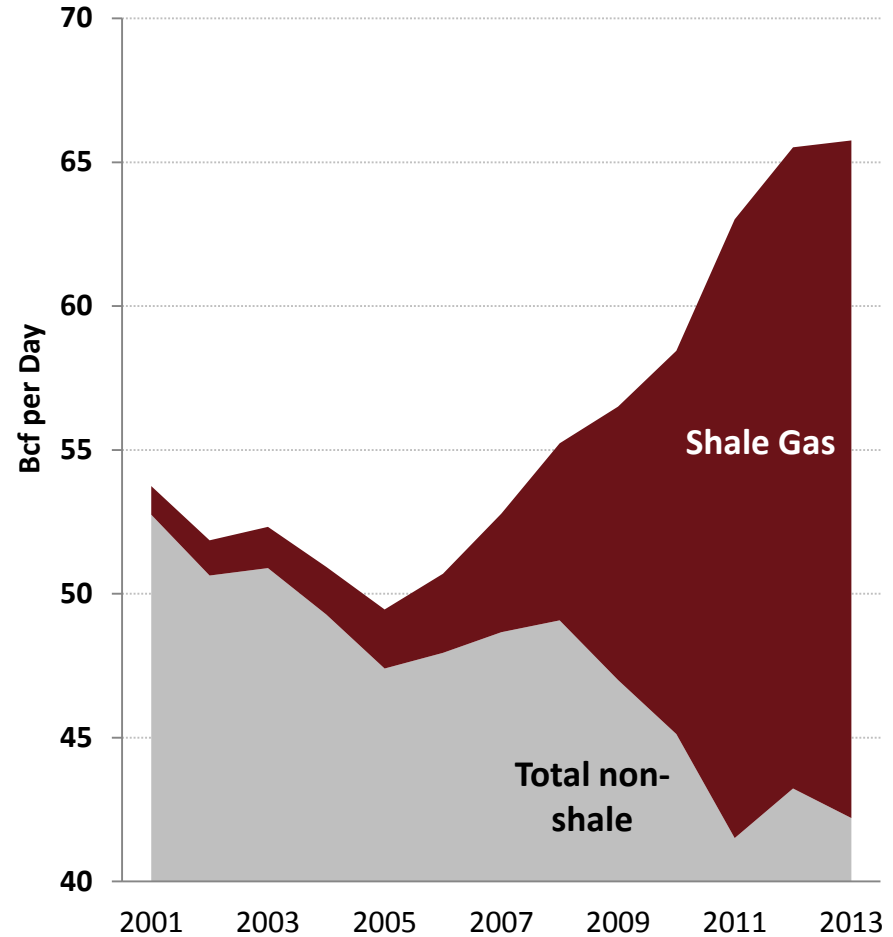


Shale gas transformed the North America market

The U.S. was the largest natural gas producer in 2013

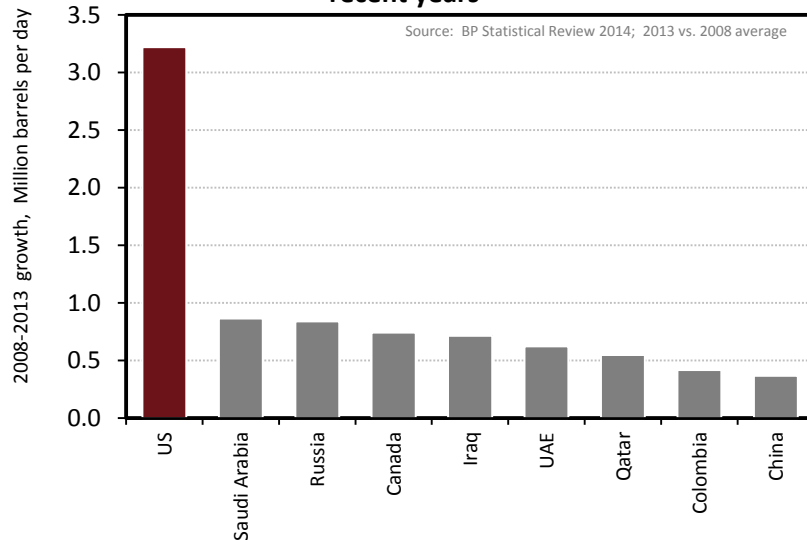


Shale gas grew from less than 1% of U.S. production in 1995 to about 40% in 2013



Shale gas is affecting global gas balances and enables future North America LNG exports

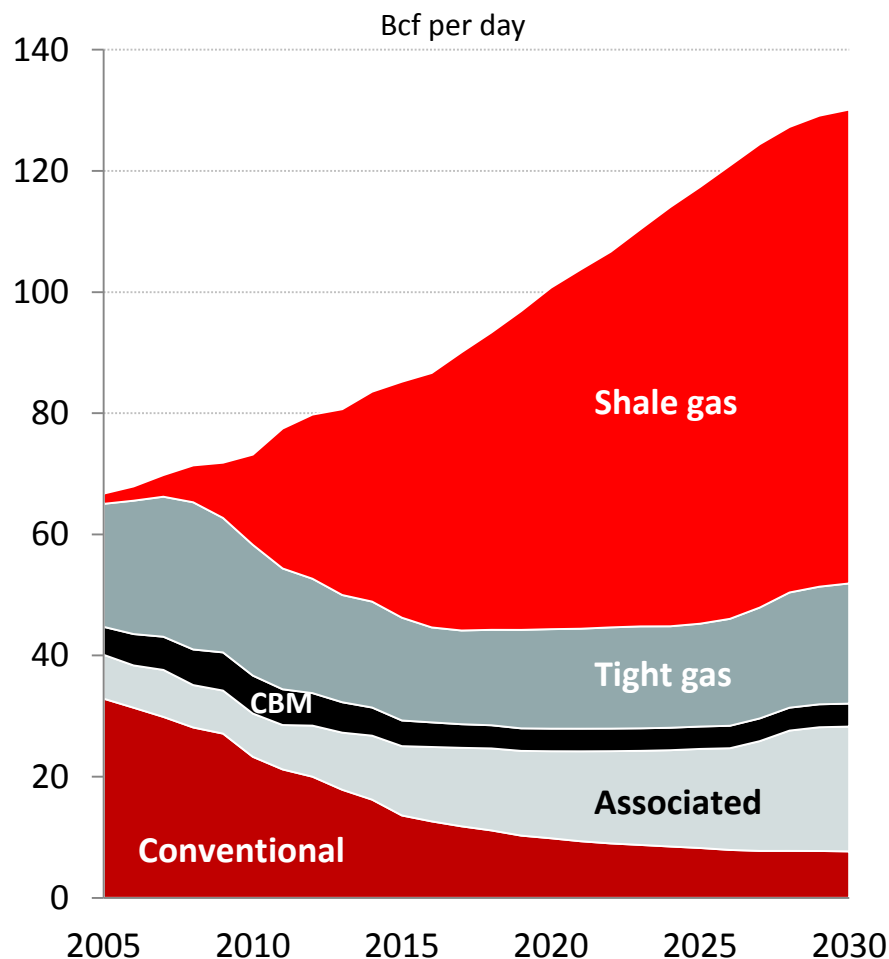
U.S. crude oil production growth surpassed all others in recent years



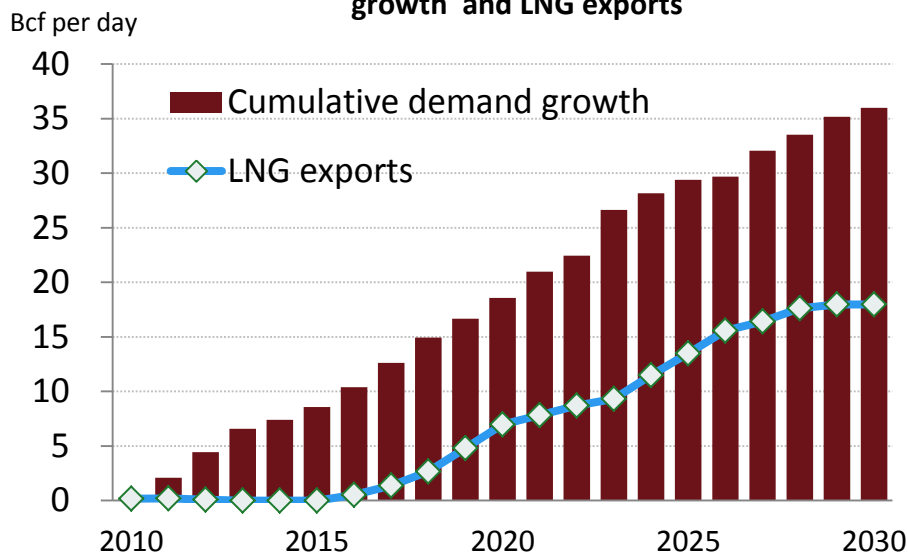
Source: Energy Information Administration

North America's shale gas abundance can fuel demand here and abroad

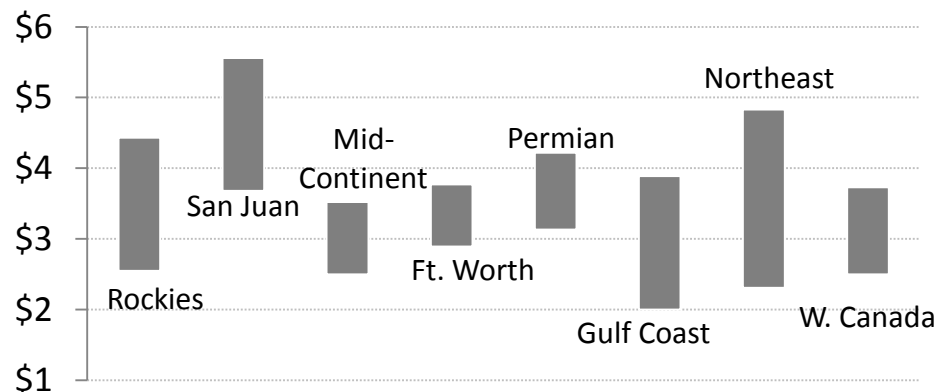
Led by shale resources, N.A. natural gas production may increase 25% by 2020 and another 30% by 2030



... providing clean fuel for domestic demand growth and LNG exports



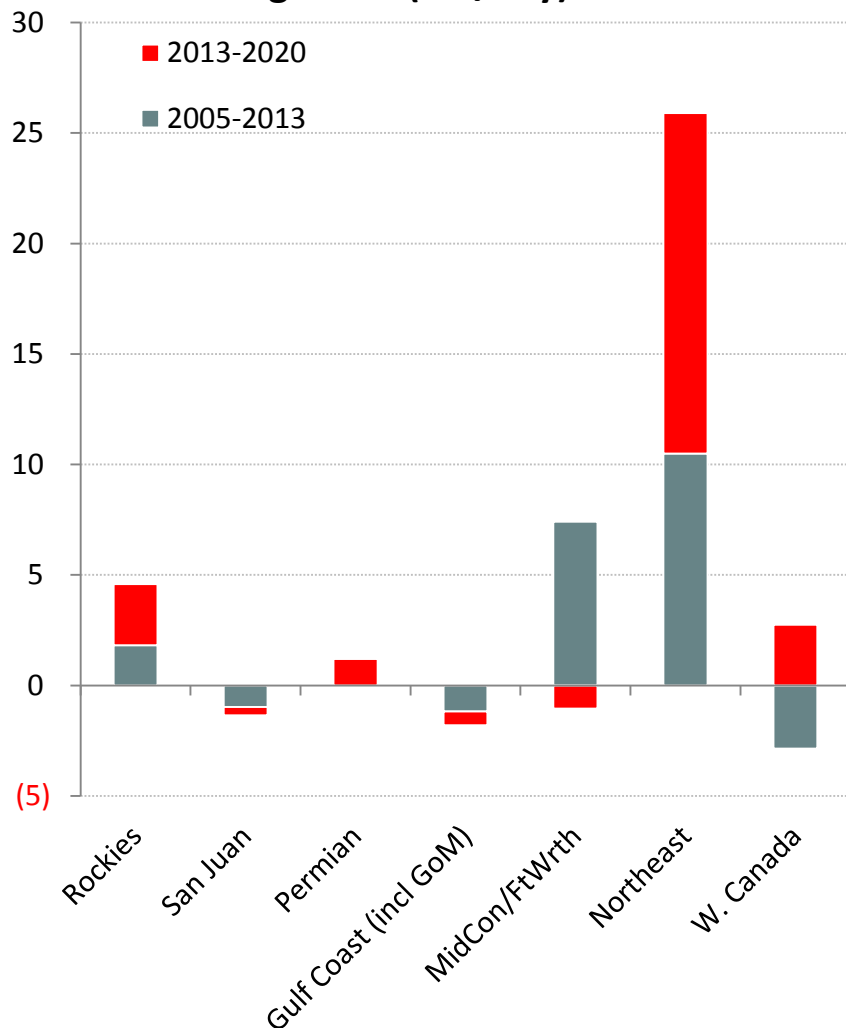
Economical breakevens can mitigate upward price pressures
2014 Breakevens for non-associated gas



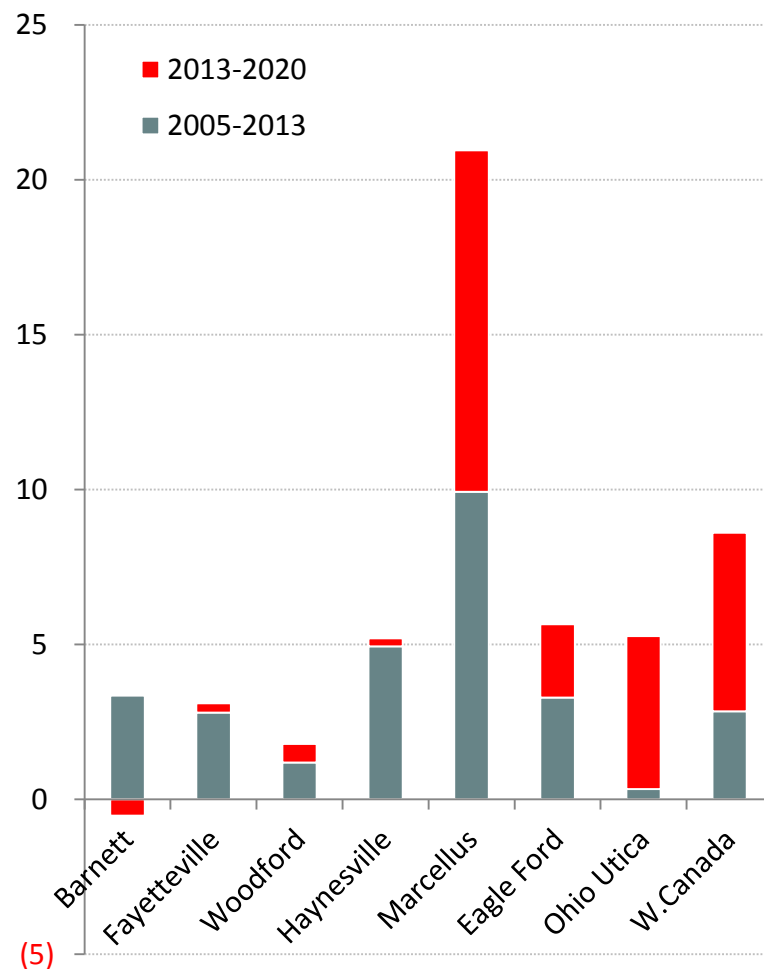
Source: Wood Mackenzie. North America here includes U.S. and Canada; U.S. demand includes net exports to Mexico.

North America natural gas production by region

Shale plays dominate production growth (Bcf/day)

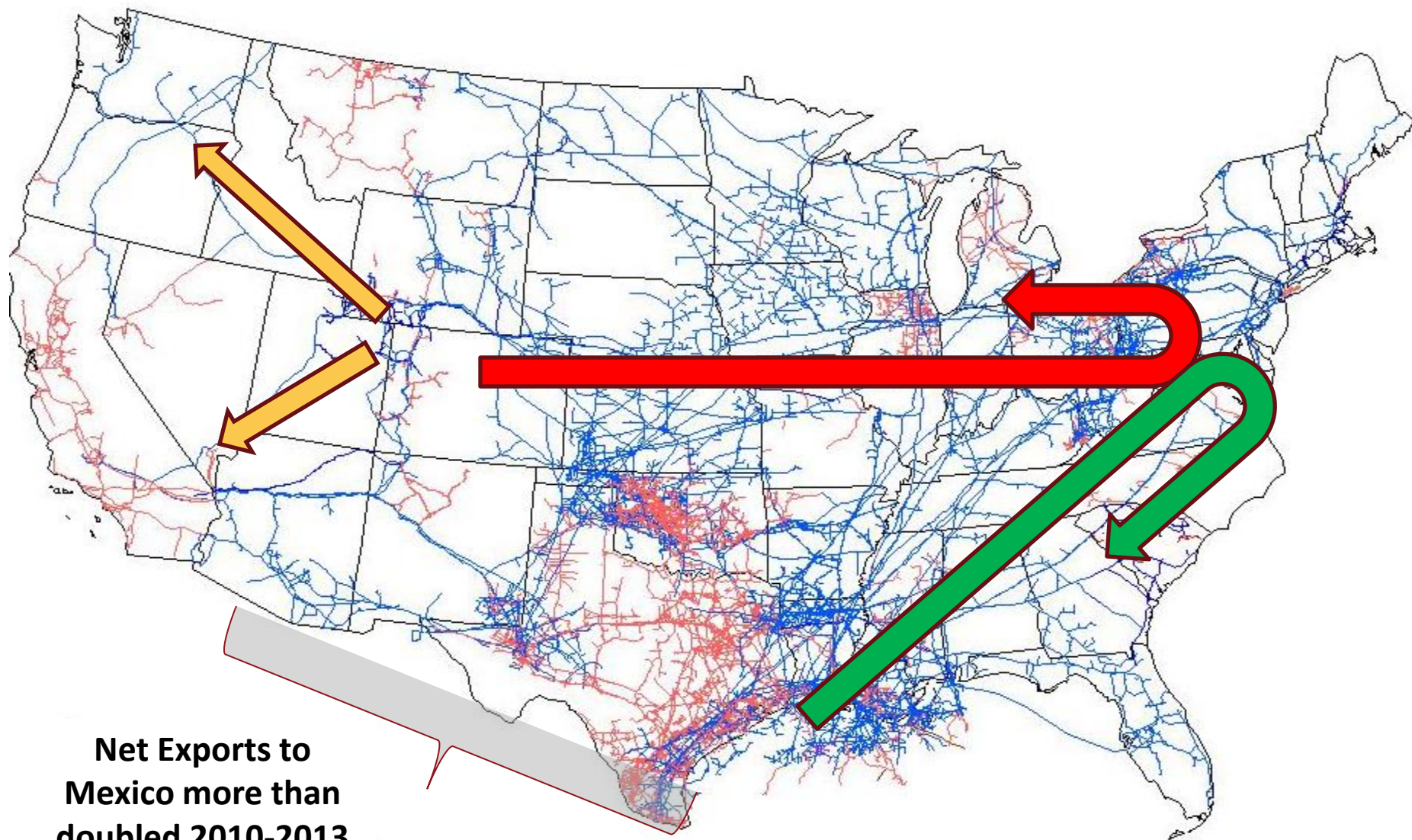


Future shale growth concentrated in Eastern U.S. and W. Canada (Bcf/day)



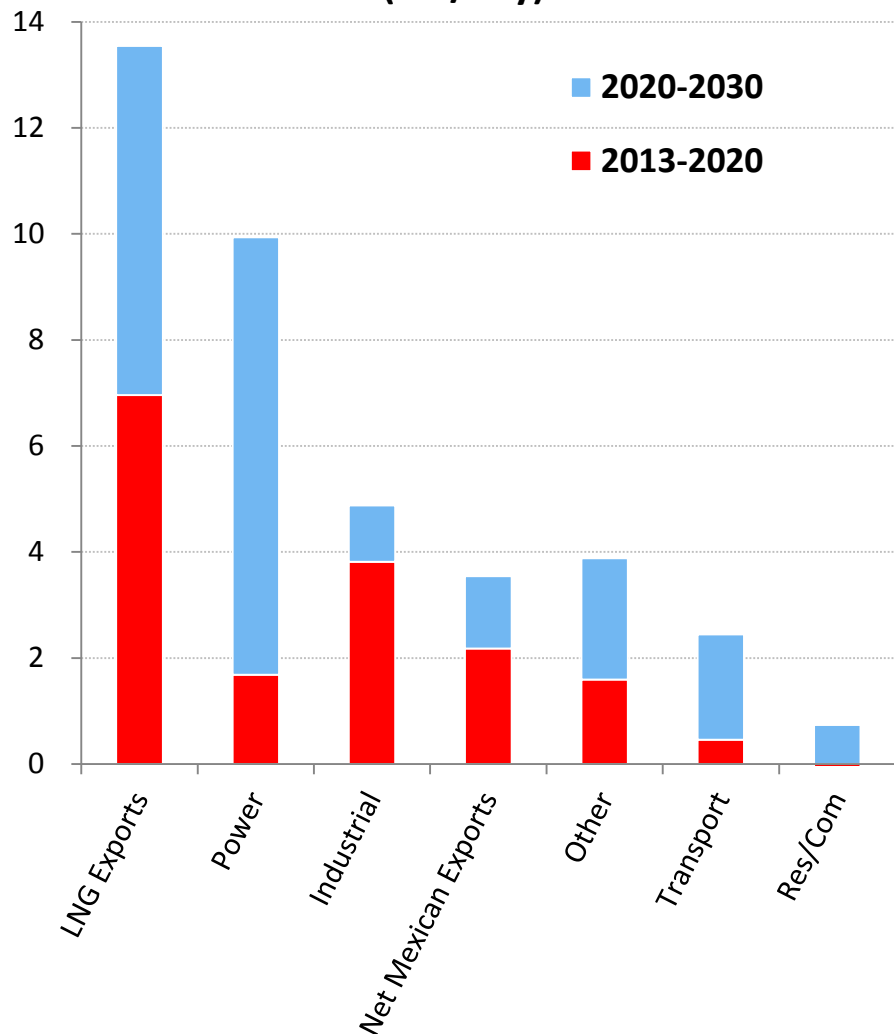
Source: Wood Mackenzie. North America here includes U.S. and Canada;

Natural Gas: Lower-48 flows redirected

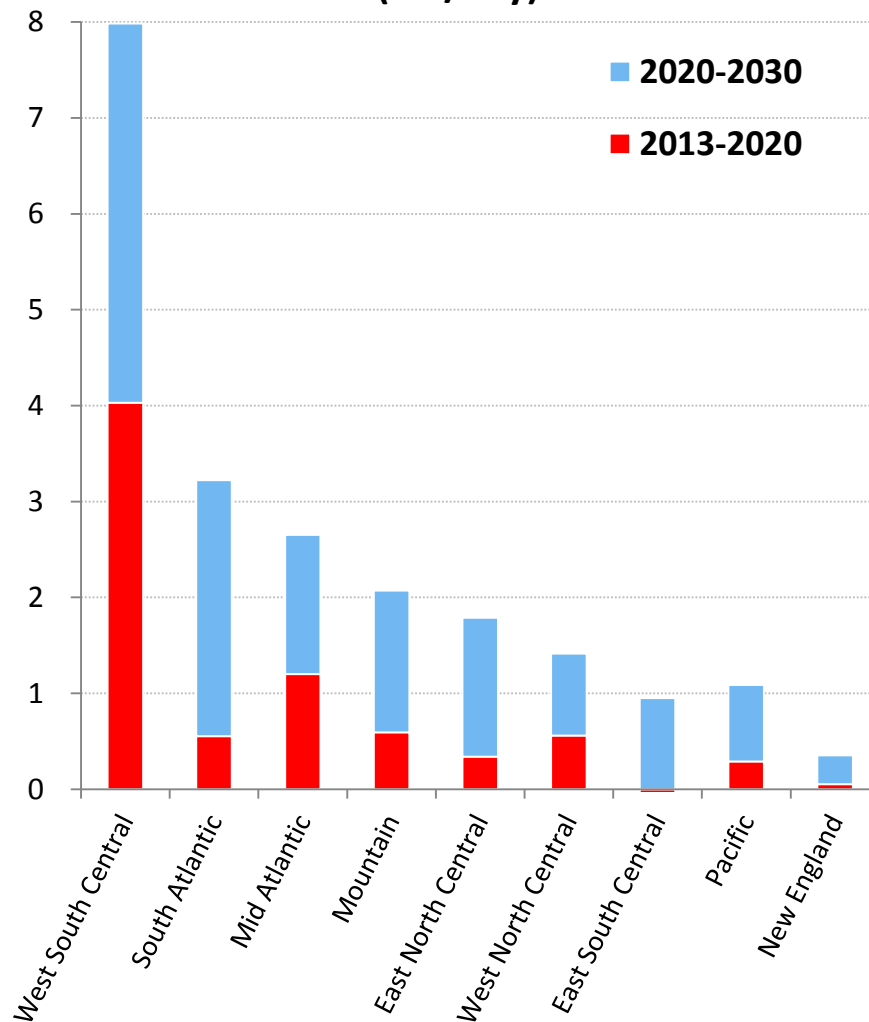


U.S. natural gas demand by region and sector

**Greater demand from multiple sectors
(Bcf/day)**



**Growth centers in South/Southeast
(Bcf/day)**



Proposed Natural Gas Liquefaction & Export Projects



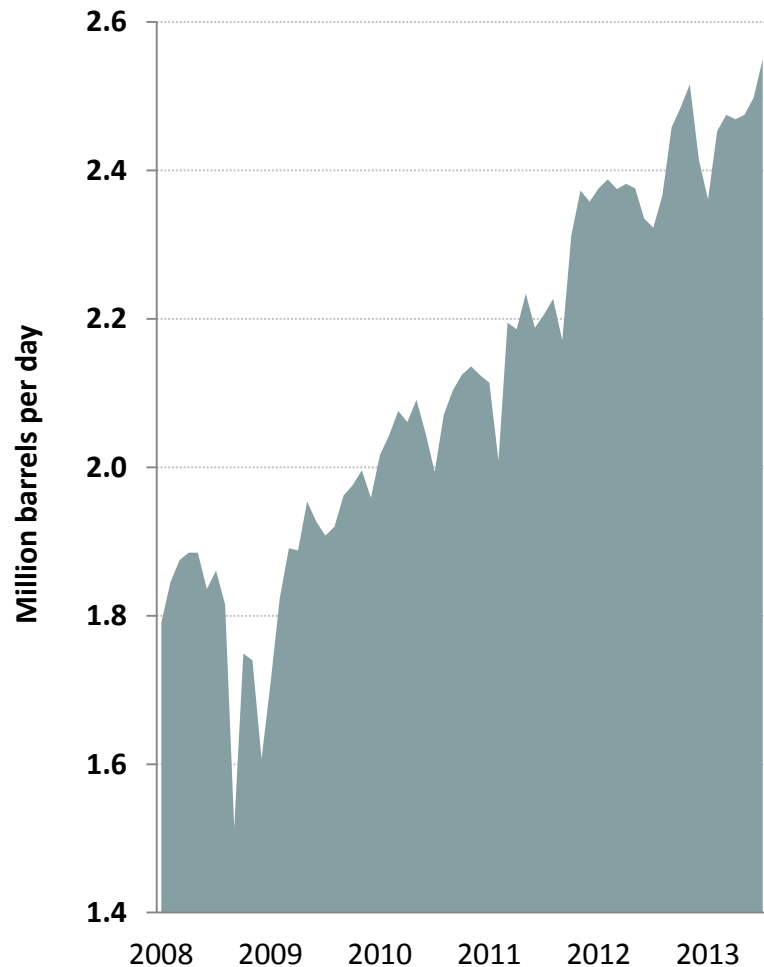
- ~40 export projects have filed with authorities* in North America
- The U.S. DOE has permitted 7 projects (or >9 BCFD) for exports to non-Free Trade Agreement countries
- Sabine Pass is the only project under construction
- Global LNG demand and competing supplies will restrict the number of projects built

>400 MTPA (54 BCFD) of potential exports filed with authorities

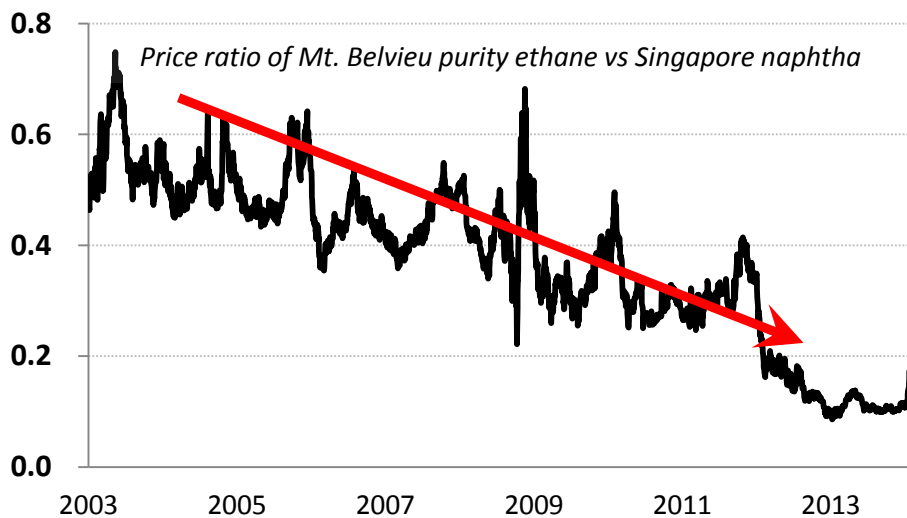
*Filed with U.S. Federal Energy Regulatory Commission as or Canada National Energy Board as of January 2014.

Natural Gas Liquids are a key component in revitalizing U.S. manufacturing

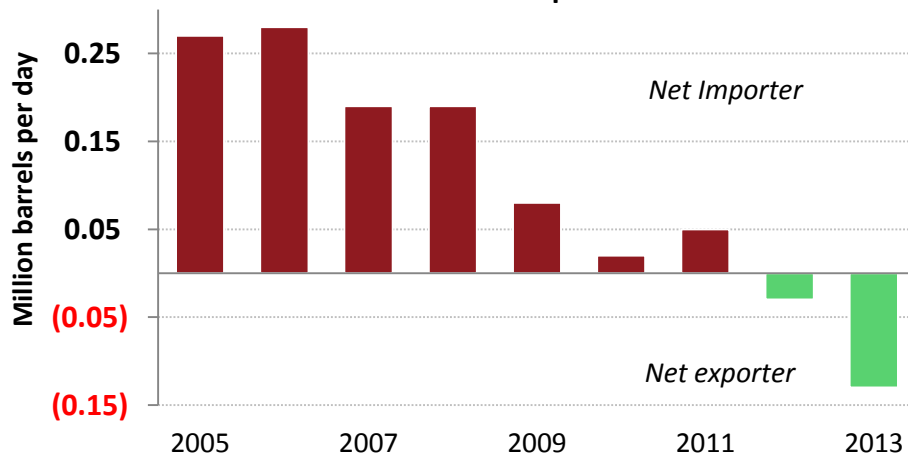
NGL output grew 40% 2008 - 2013



Chemicals feedstock costs favor U.S.



U.S. is now a net exporter of LPGs



Plentiful and more affordable feedstocks for manufacturers and export markets

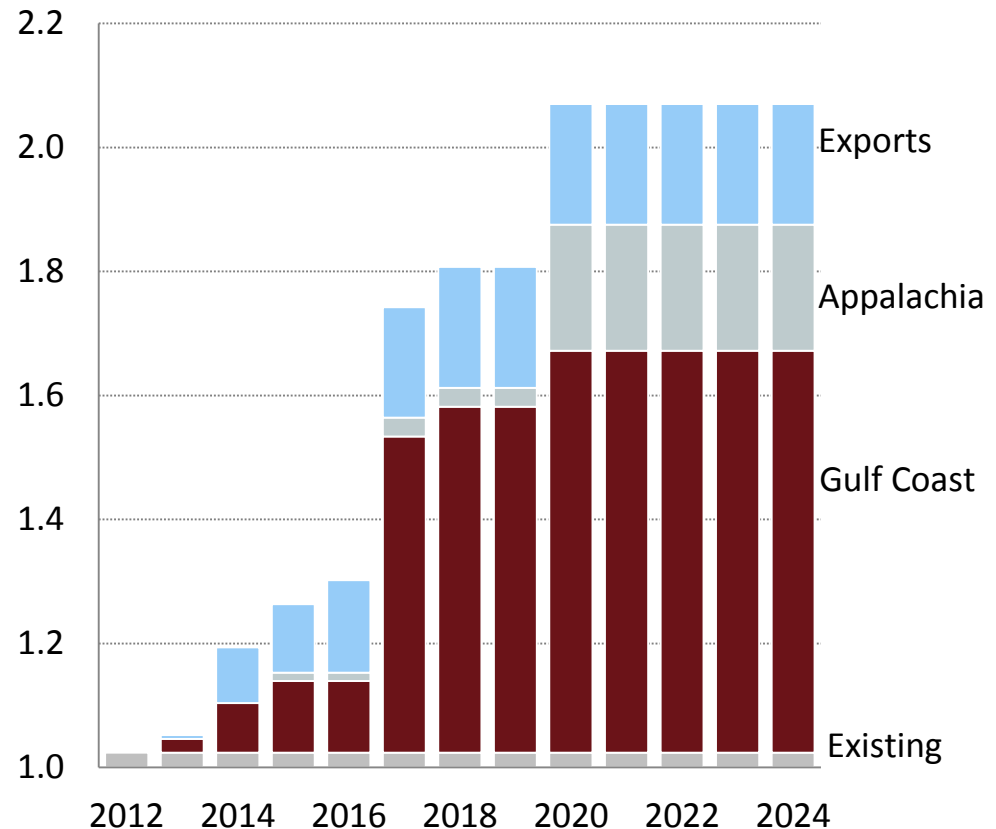
Source: EIA Field Production of natural gas liquids and LPG net imports. Bloomberg Mt. Belvieu ethane and Singapore naphtha prices.

Shale gas production is spurring investment in chemicals and affiliated manufacturing in the U.S. and Canada

American Chemistry Council report on nearly 100 chemical industry investment projects valued at **\$72 billion**:

*“By 2020, the projects can lead to **46,000 new chemical industry jobs**, another **264,000 jobs in supplier industries** and **226,000 ‘payroll induced’ jobs** in communities where workers spend their wages, and can generate **\$20 billion in federal, state and local tax revenue**. Nearly 1.2 million additional, temporary jobs can be created between 2010 and 2020, during the capital investment phase.”*

New U.S. Ethane cracking & export capacity by region
(million barrels per day)

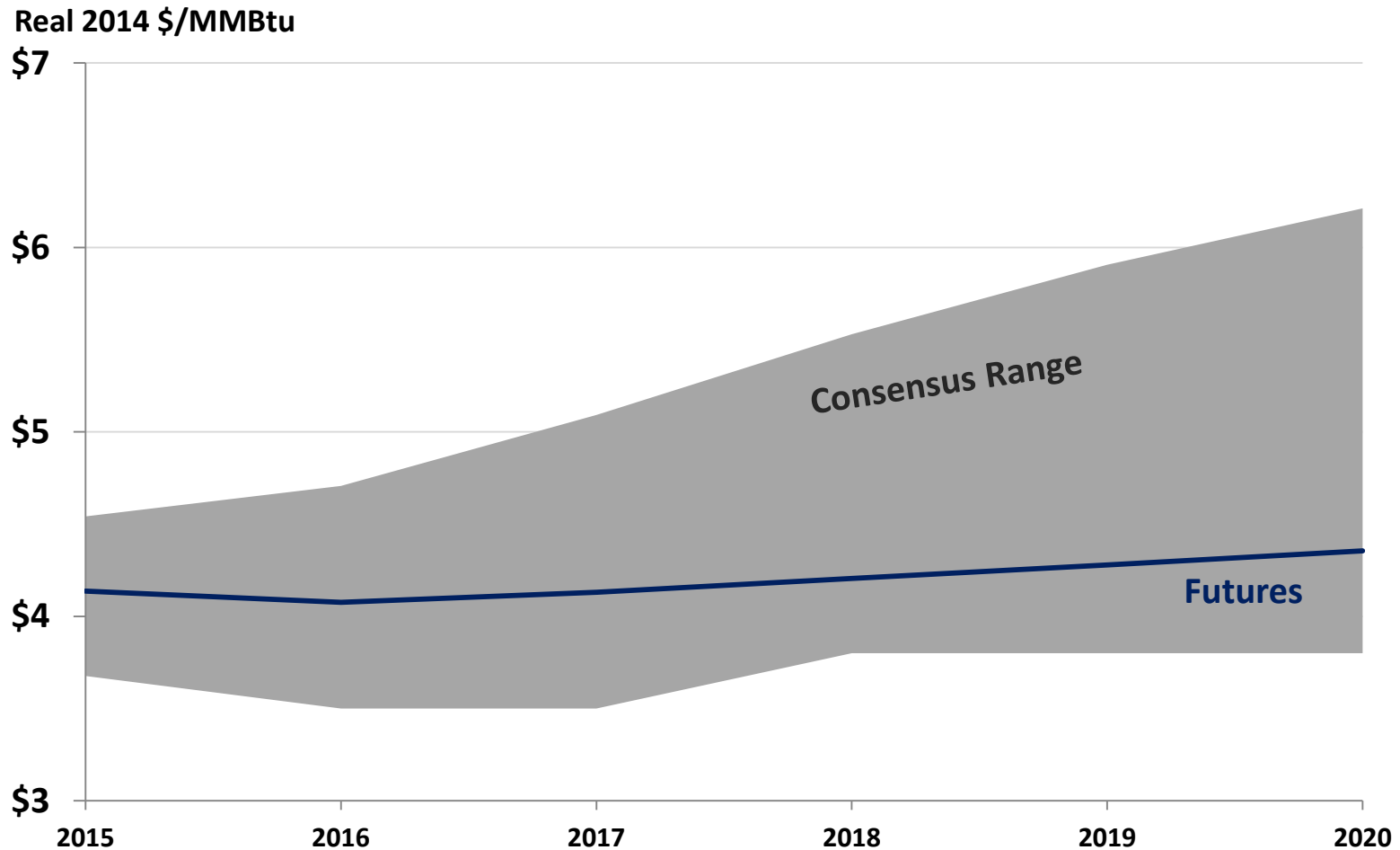


U.S. ethane cracking capacity set to almost double by end of this decade

Source: Bentek Energy. Capacity projects include Brownfield, Greenfield, and Debottlenecking additions.

Henry Hub Price views

Henry Hub Price Perspectives: Futures market, Industry commentators

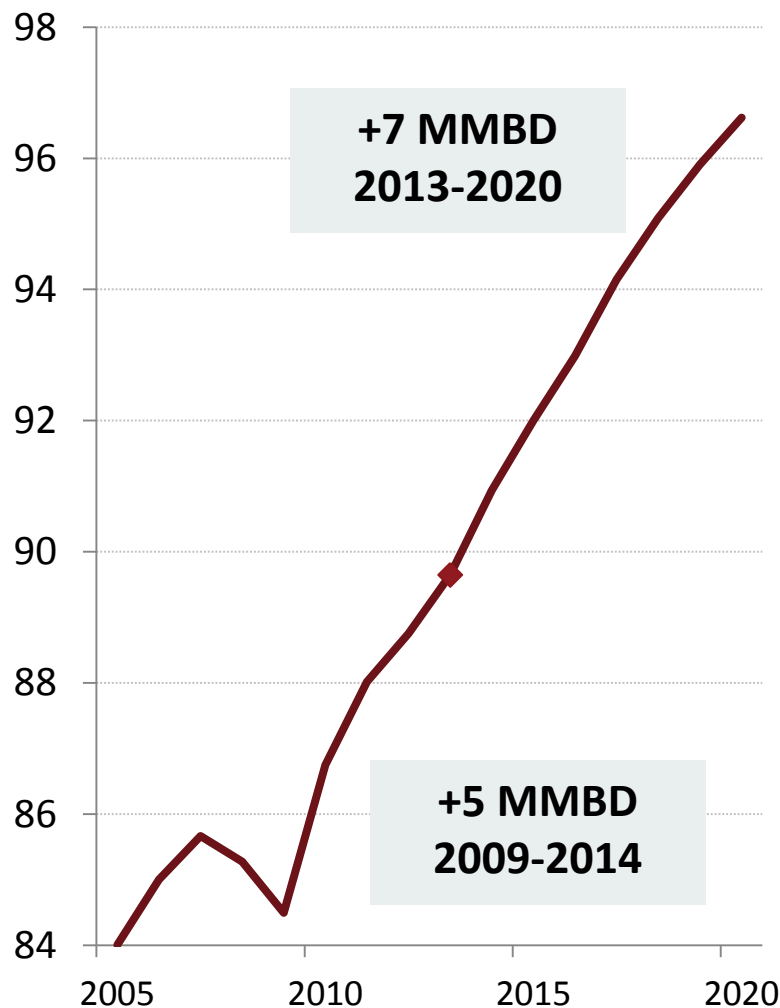


Henry Hub futures as of 6/30/2014. Expert range includes banks, consultants, and EIA Annual Energy Outlook 2014.

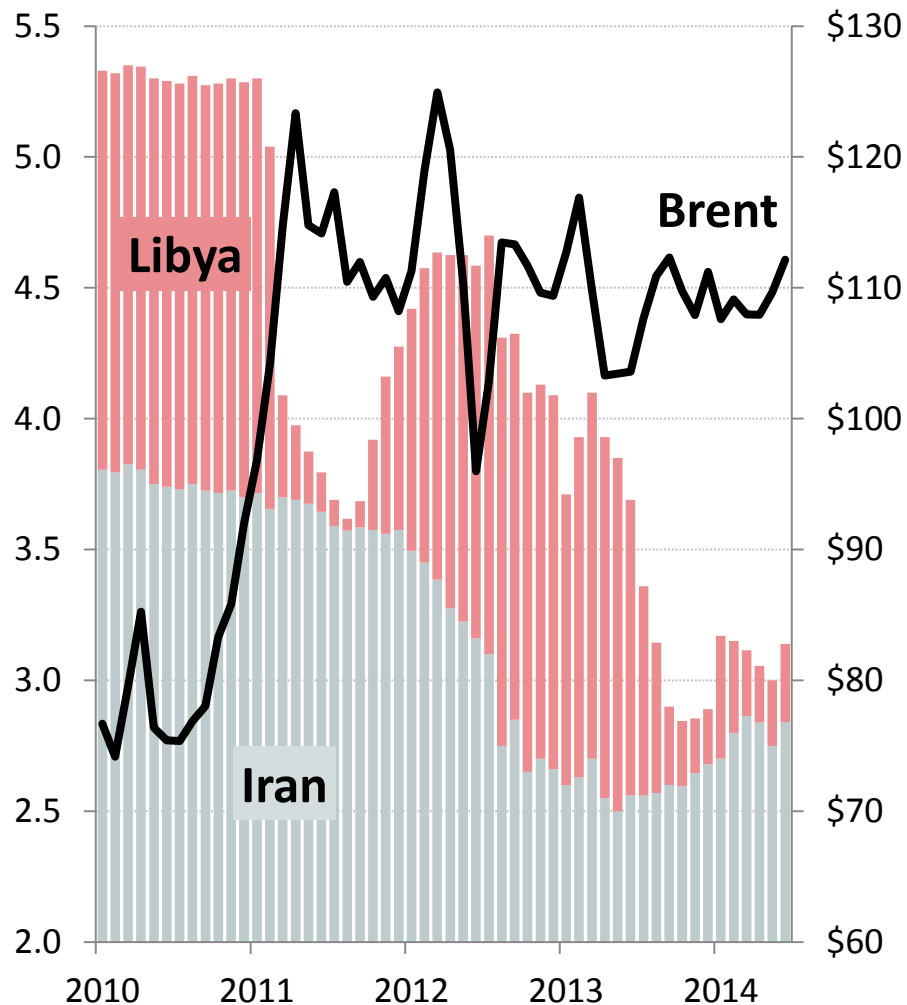
Oil Markets

World oil prices supported by demand growth and supply disruptions

Liquids demand resilient to sluggish GDP growth (MMBD)



Supply disruptions reduce OPEC spare capacity and lift prices (left axis = MMBD; right axis = \$/bbl)



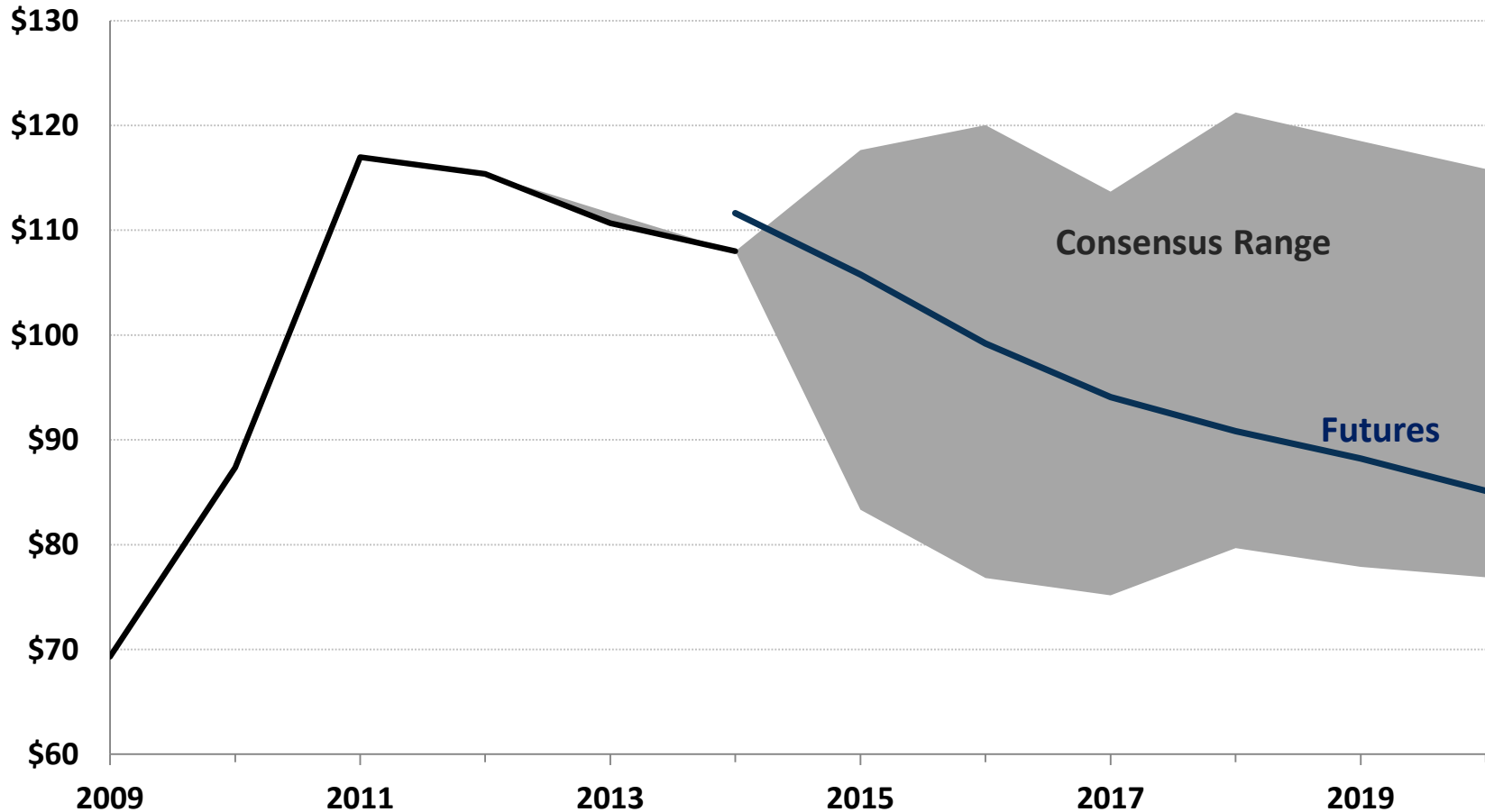
Source: U.S. Energy Information Administration, IEO 2013

Source: Bloomberg

World oil price environment

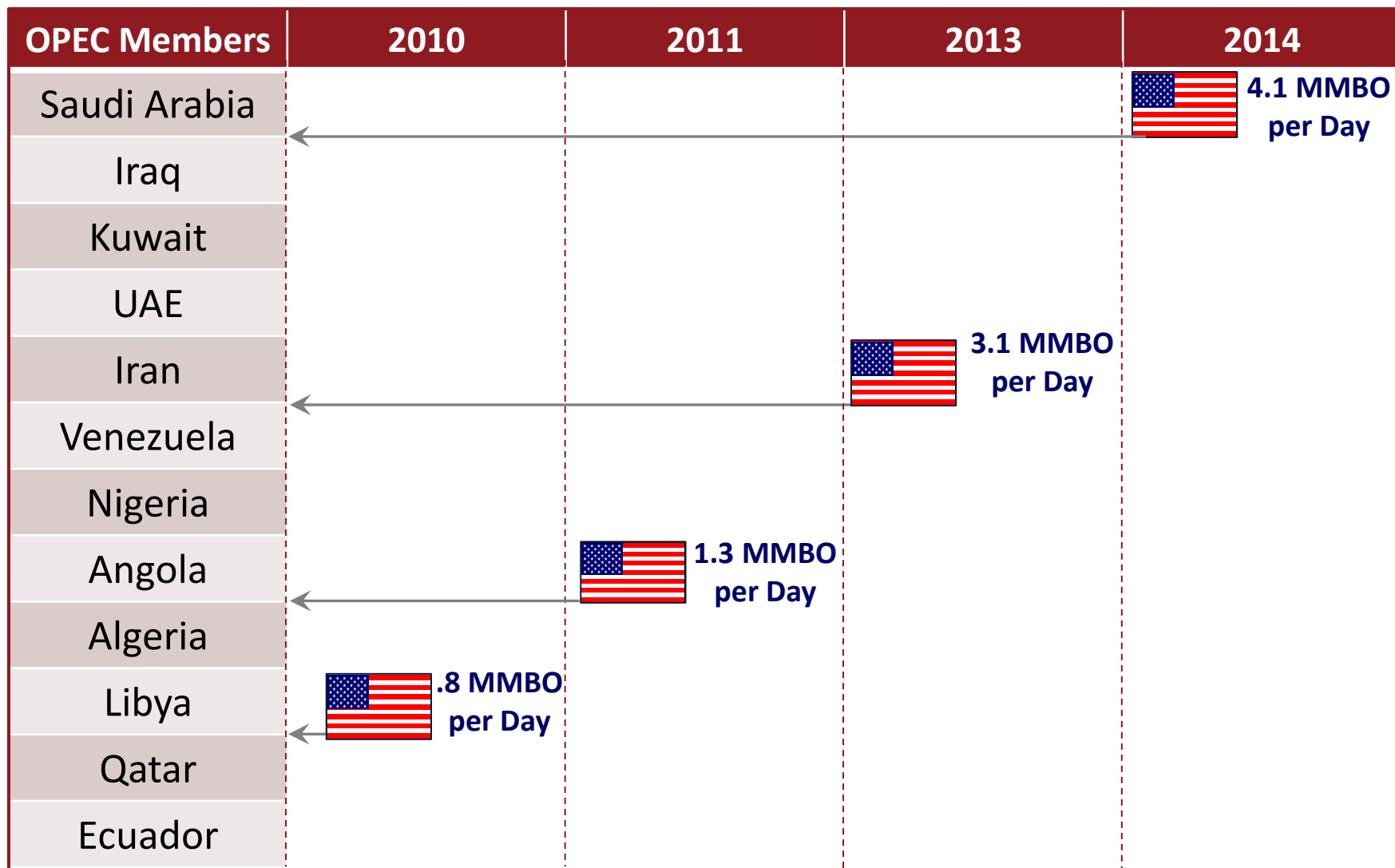
Brent Price Perspectives: Futures market, Industry commentators

Real 2014 \$ per Barrel



Brent futures as of 6/30/2014. Expert range includes banks, consultants, and EIA Annual Energy Outlook 2014.

U.S. Tight Oil: a globally significant source of supply

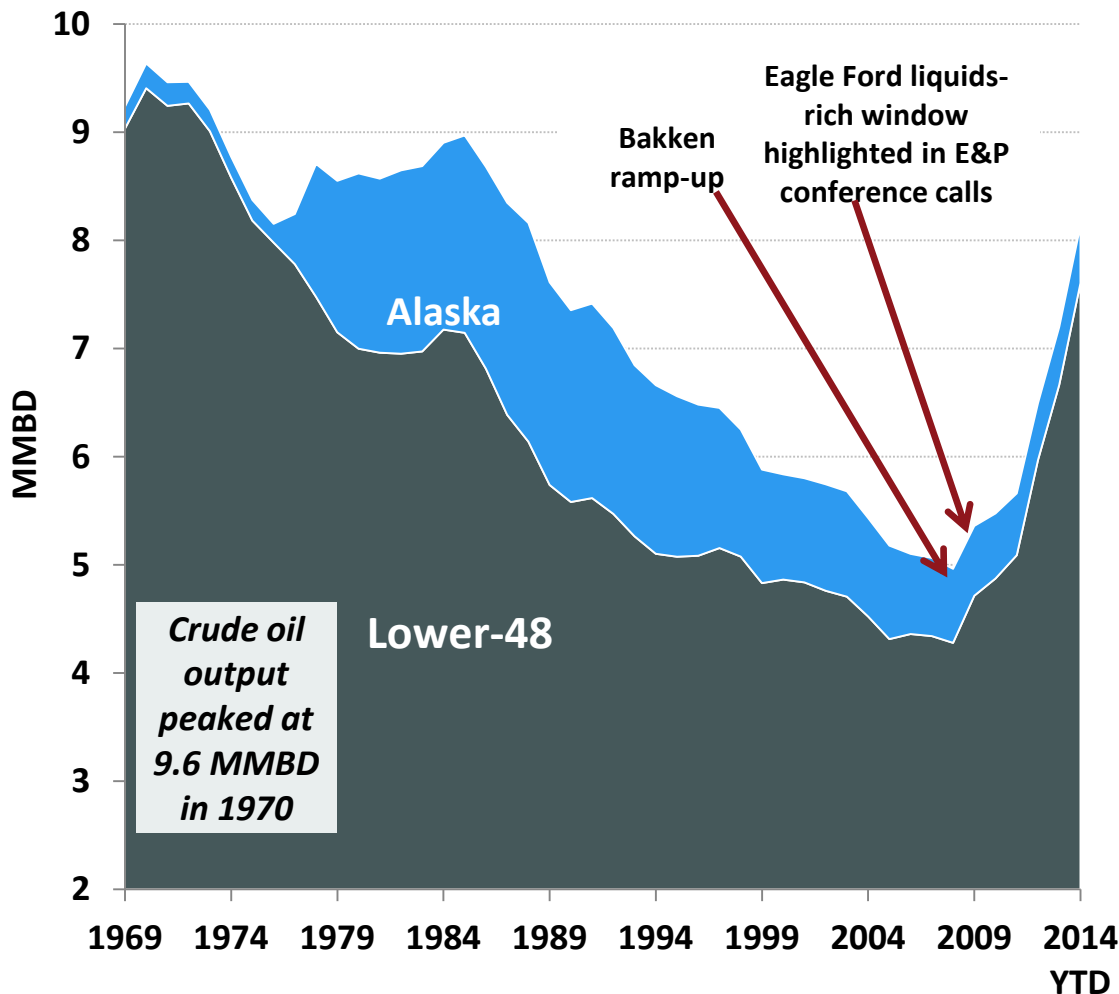


U.S. tight oil production alone is larger than production in most OPEC nations

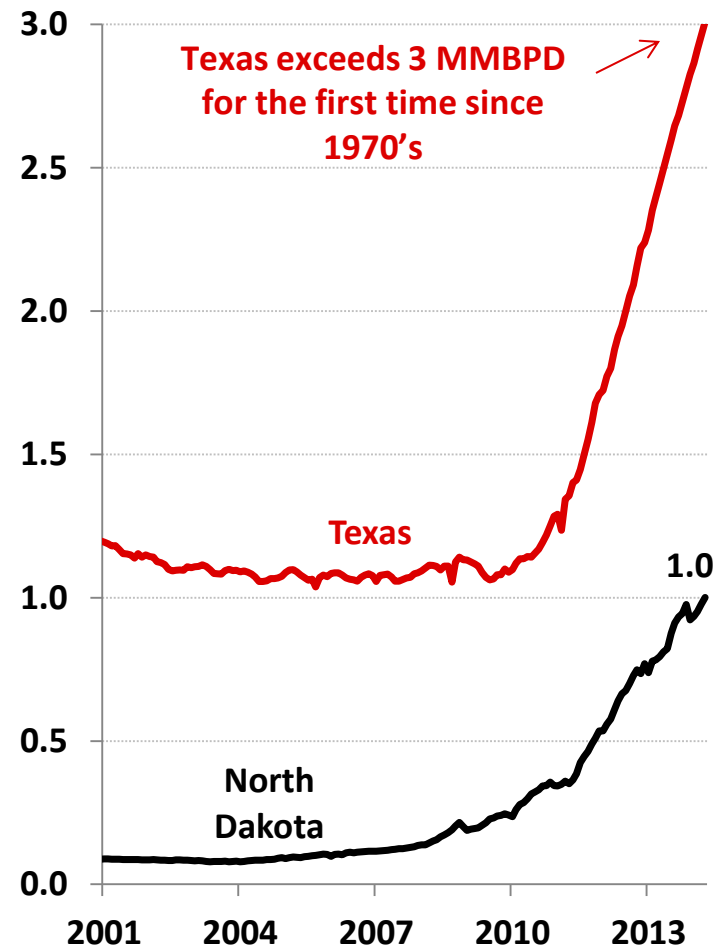
OPEC Production ranked from highest (Saudi Arabia) to lowest per 2013 IEA reported production volumes. OPEC Neutral Zone production split between Saudi Arabia and Kuwait.
Sources: IEA for OPEC production; EIA Annual Energy Outlook and Rystad Energy for U.S. Tight Oil. NOTE: Data include liquids from tight gas plays.

U.S. liquids production: the unexpected turnaround

U.S. Crude oil production grew 50%
from 2008-2013



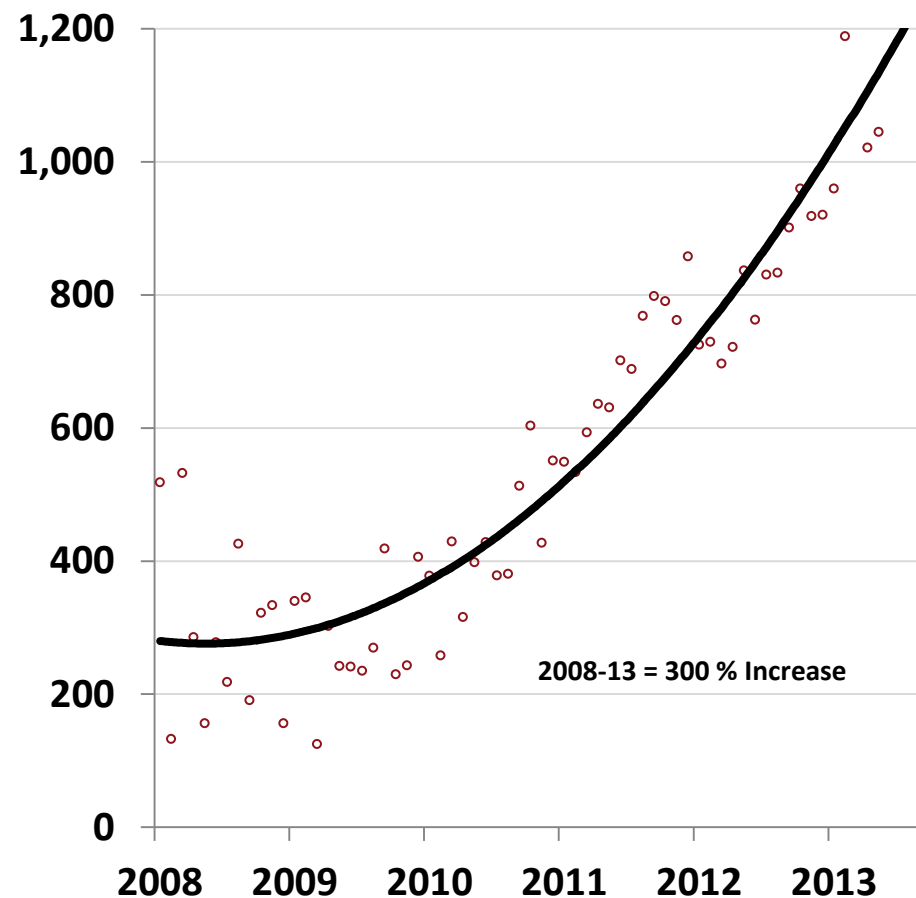
Texas and North Dakota experienced
the largest output growth



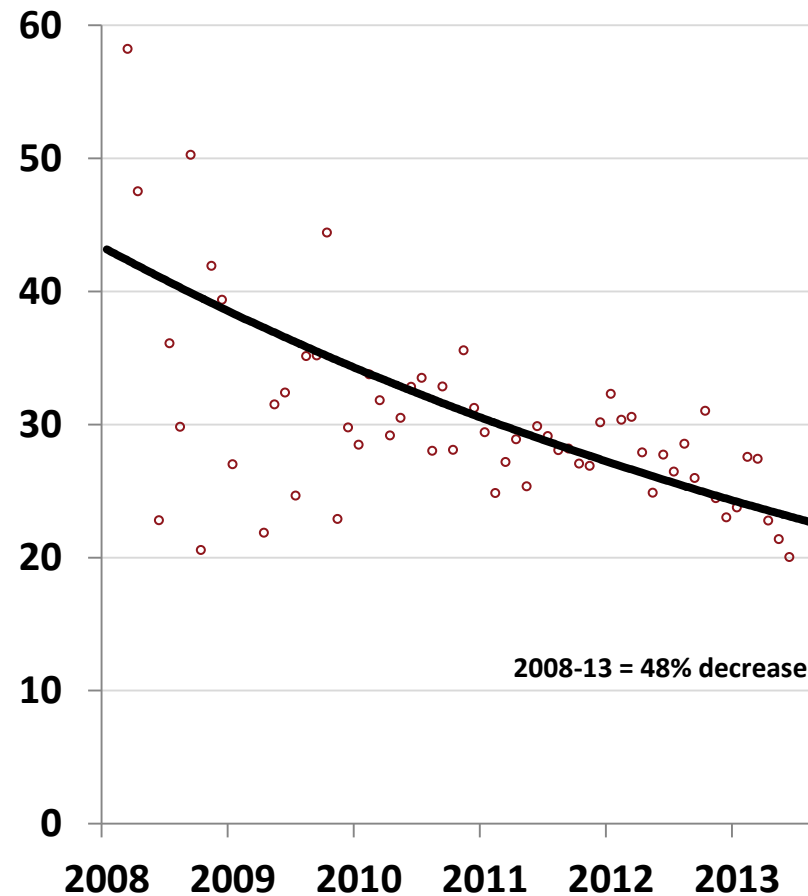
U.S. oil production now exceeds 8.0 MMBD for the first time since 1988

Drilling efficiency improvements continue: examples from Eagle Ford

Oil Initial Production Rate (Barrels per Day)



Drilling Days (Spud to Rig Release)

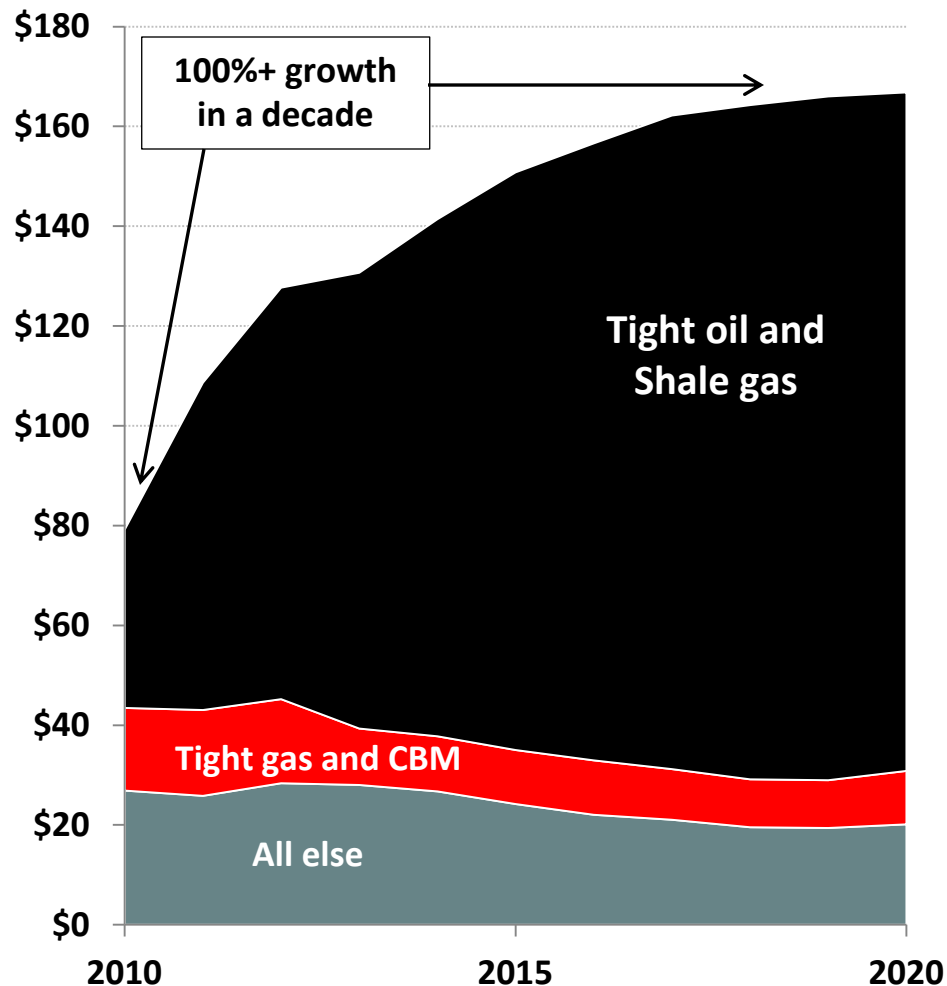


Increases in initial production rates and reductions in drilling days observed

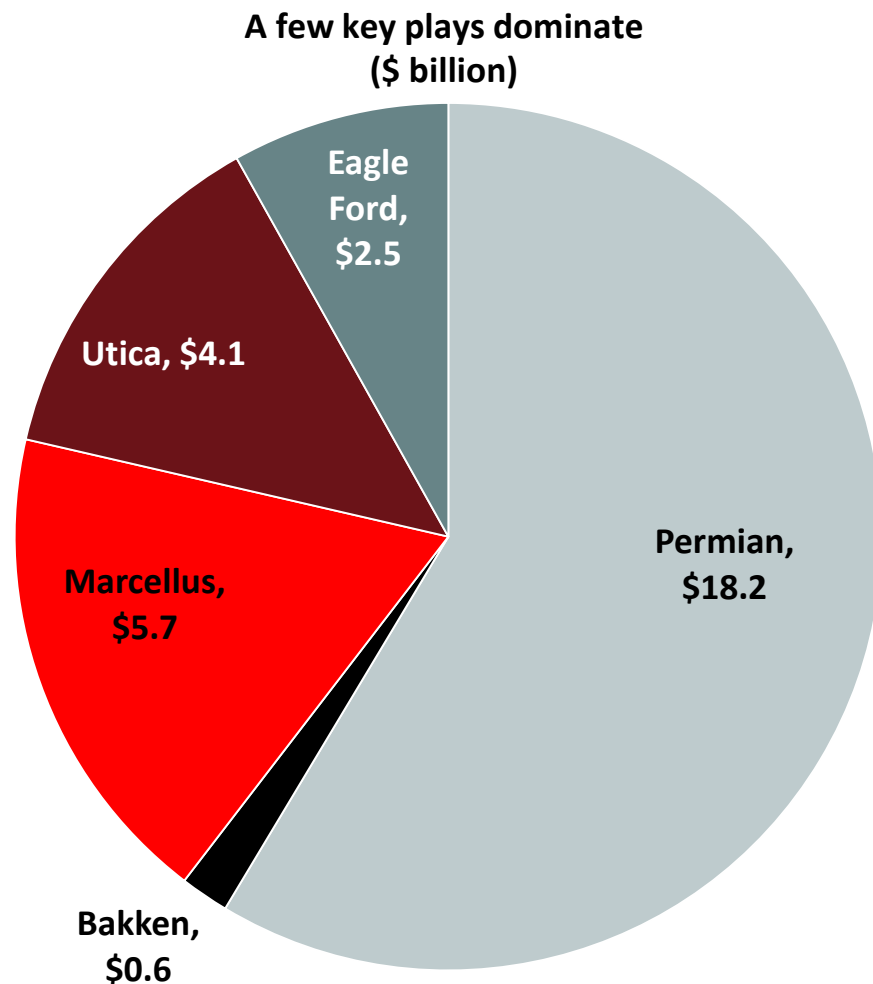
Source: IHS Inc. Use of this content authorized in advance by IHS; further use or redistribution strictly prohibited without written permission from IHS. All rights reserved.
Enerdeq Database 8/9/13. Play level month averages. IP rate – Initial 24 hour production rate for wellhead crude.

Production growth supported by efficiency gains and capital

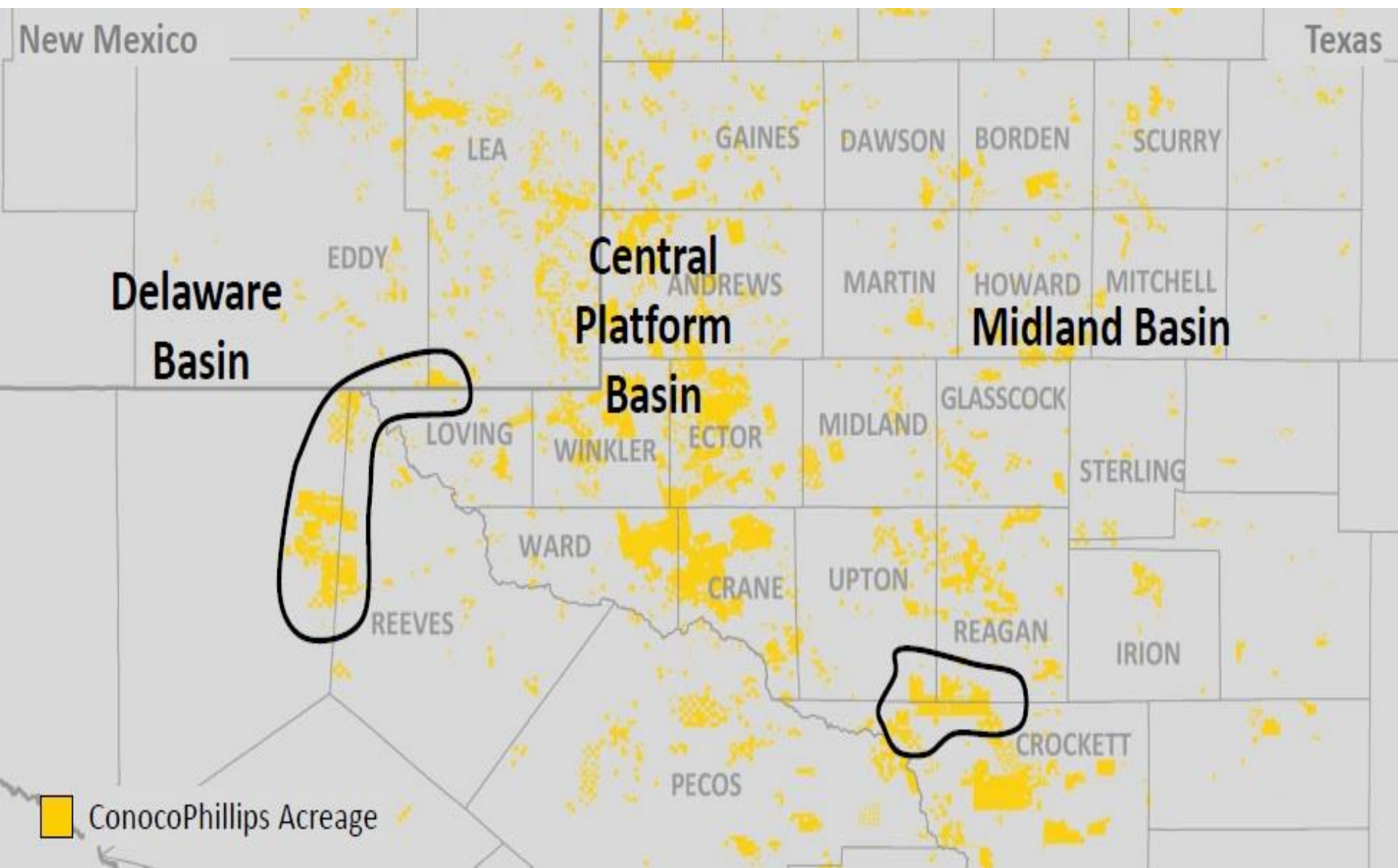
U.S. Lower-48 and Gulf of Mexico shelf Upstream Capital Spending (\$ billion)



Growth in Upstream Capital Spending: 2020 vs 2013



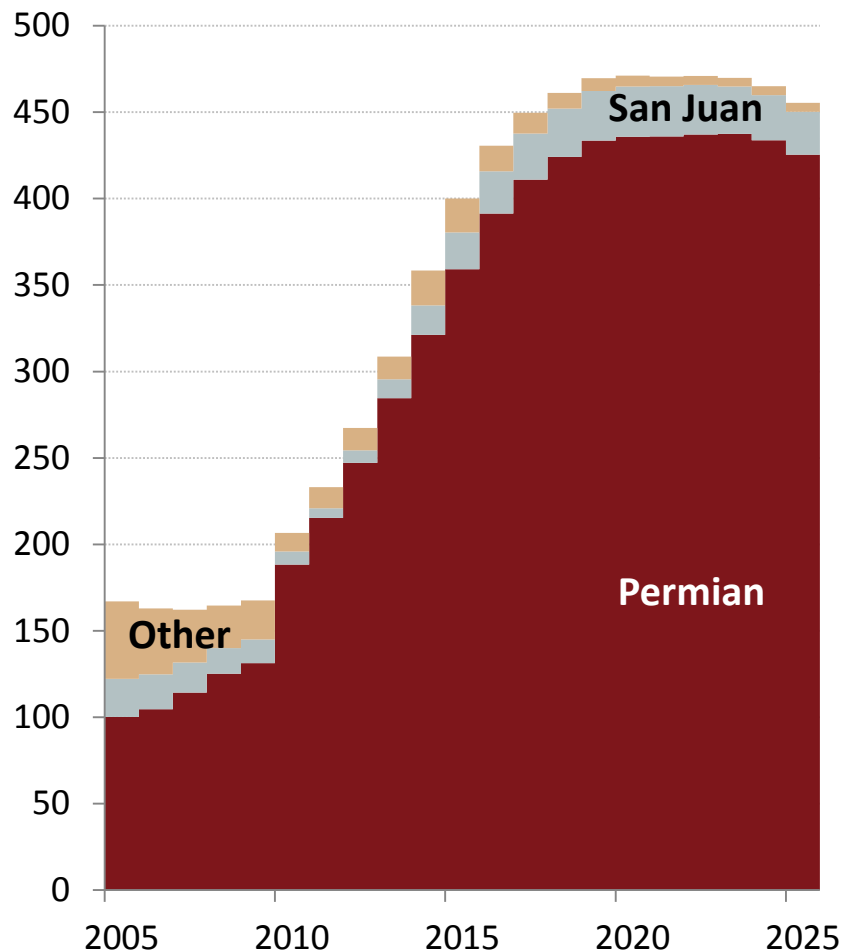
Permian Basin activity



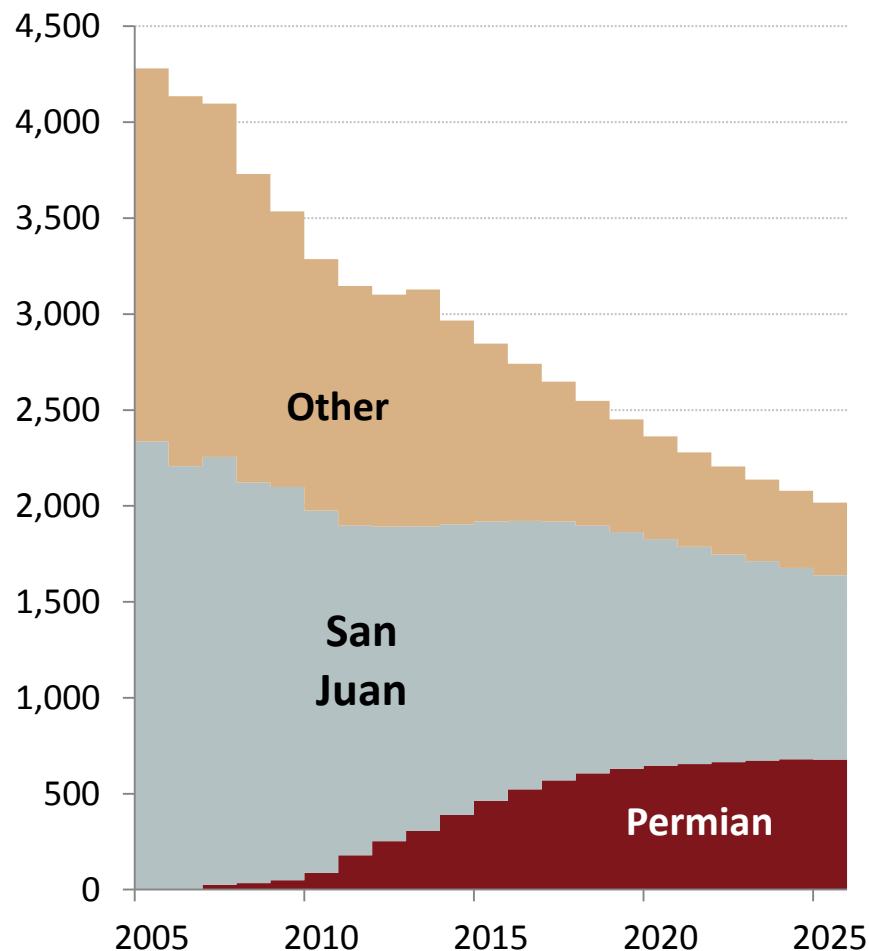
Permian is poised to lead future production growth in New Mexico

New Mexico Oil and Natural Gas production

Liquids production (MBD)

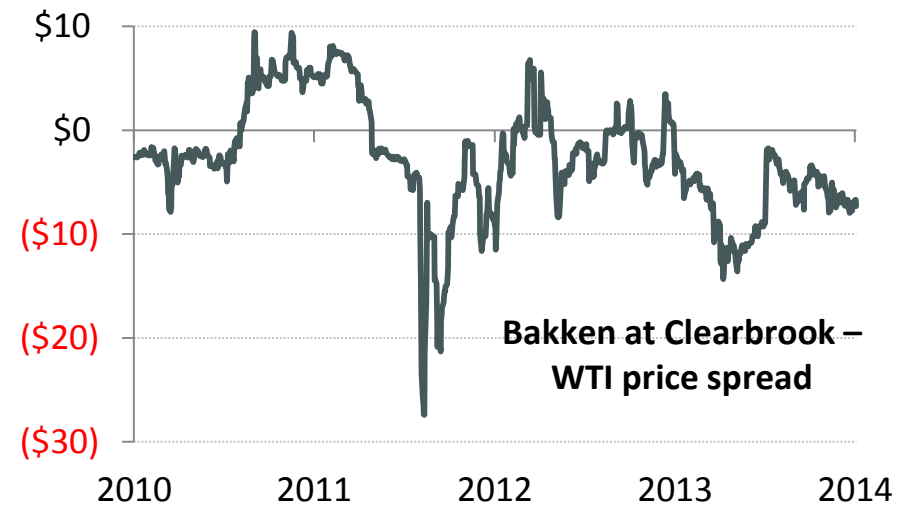
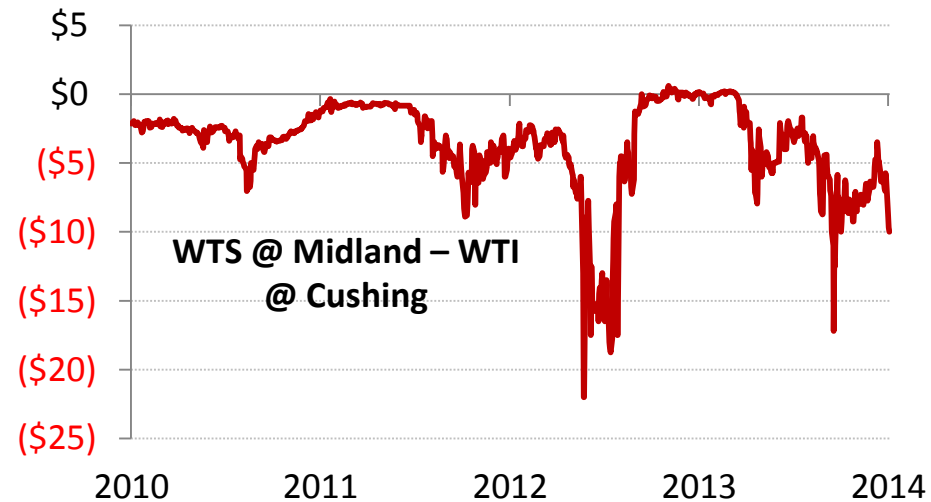
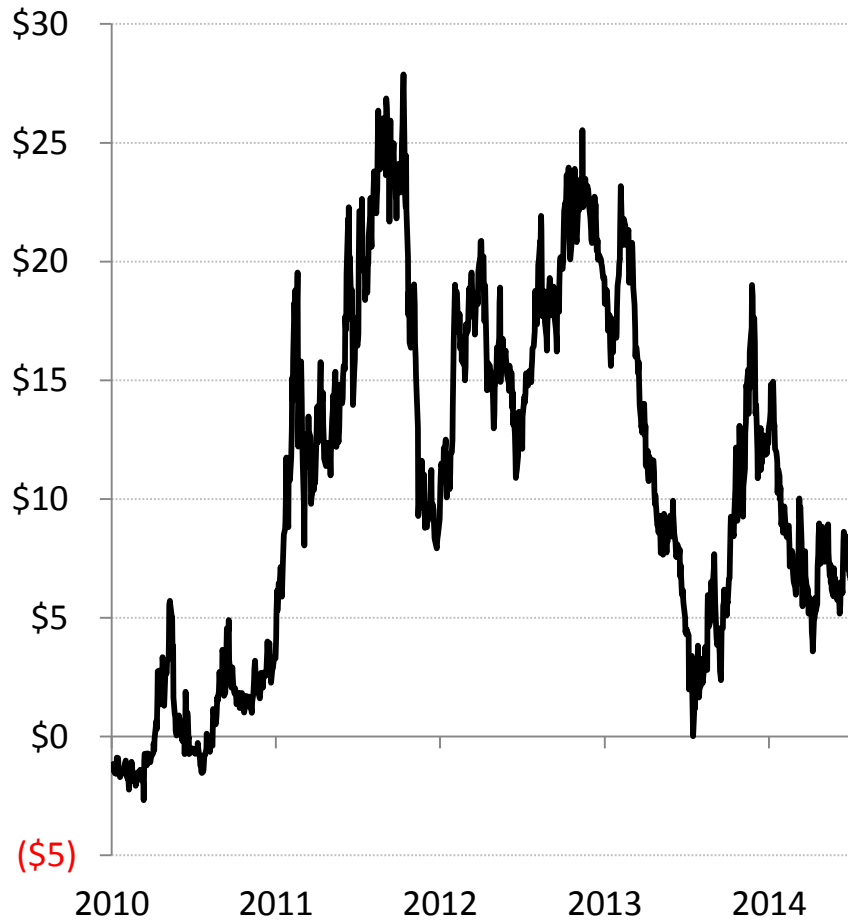


Natural gas output by area (dry, MMCFD)



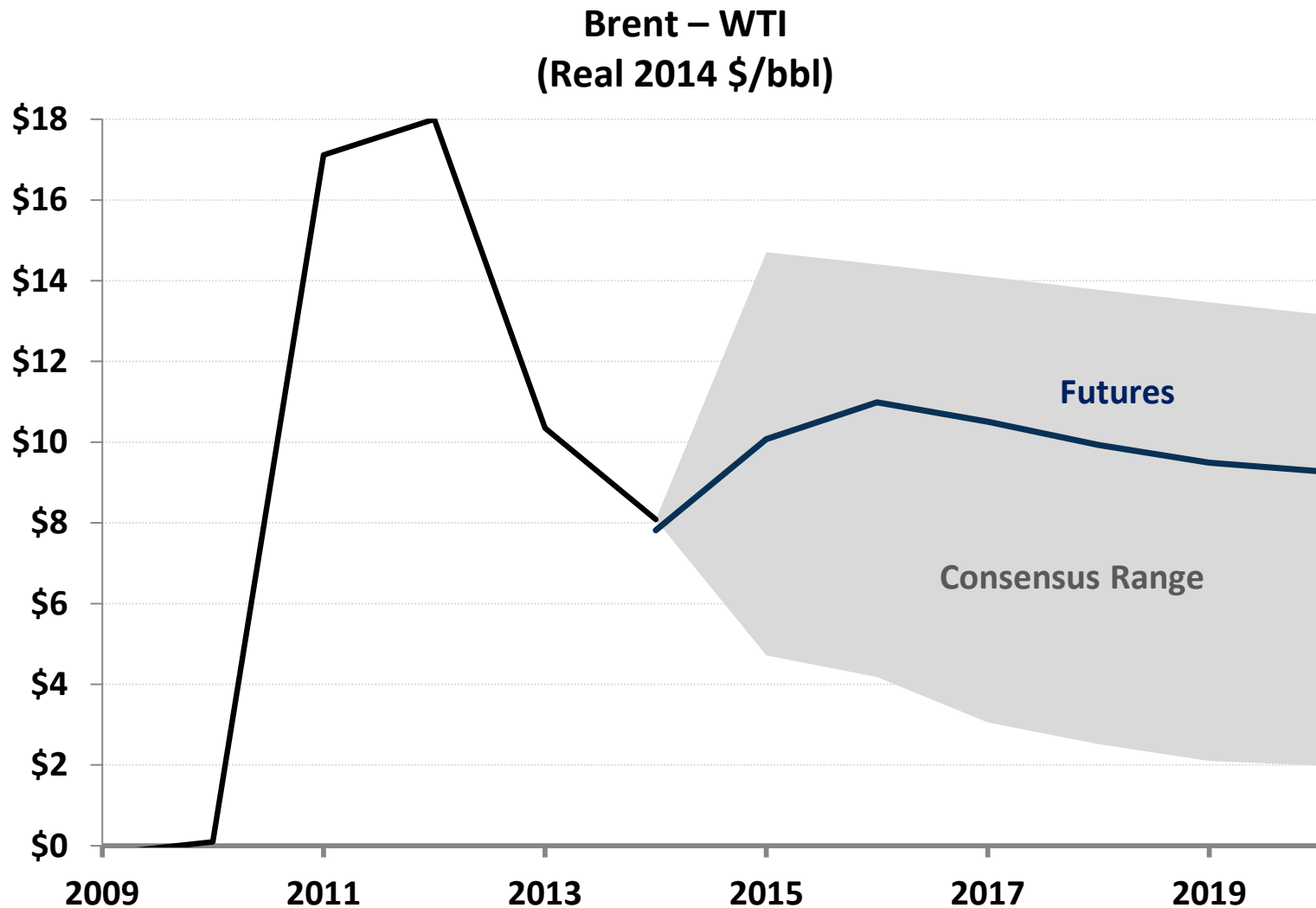
Implications of production successes on U.S. oil prices

**Brent – WTI price spread
(nominal \$/bbl)**



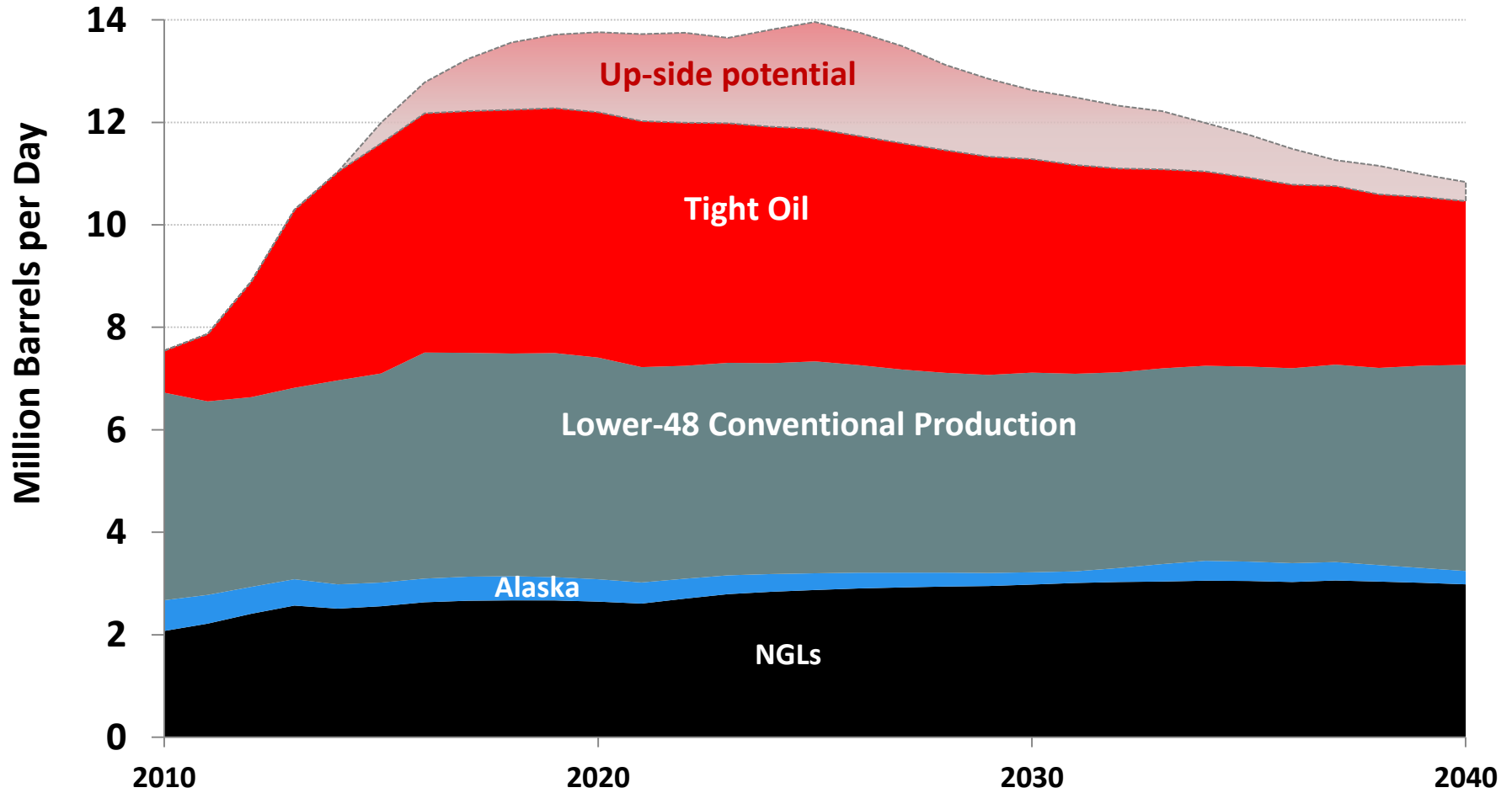
New infrastructure build-out and greater regional volatility in refinery turnaround seasons

Forward views on U.S. vs global oil prices



Futures as of 6/30/2014. Expert range includes banks, consultants, and EIA Annual Energy Outlook 2014.

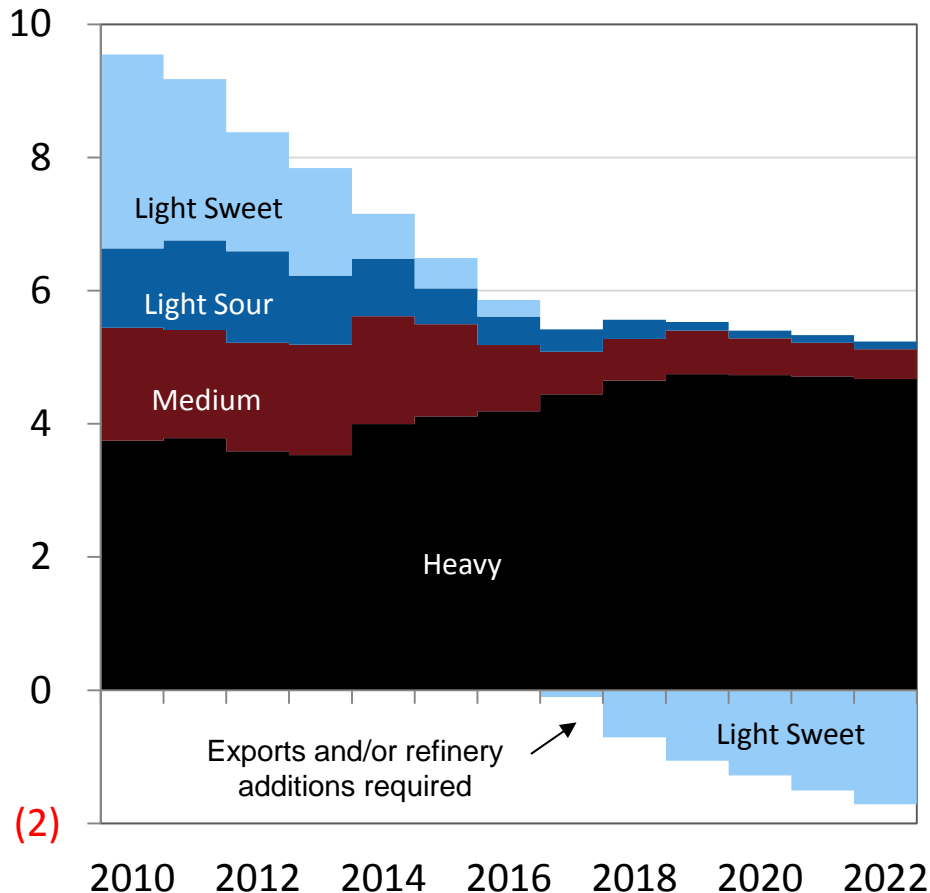
U.S. oil production is projected to grow further



U.S. liquids production could exceed 12 MMBD by the end of the decade

The evolving composition of U.S. crude oil imports

U.S. Crude Oil Imports
(million barrels per day)

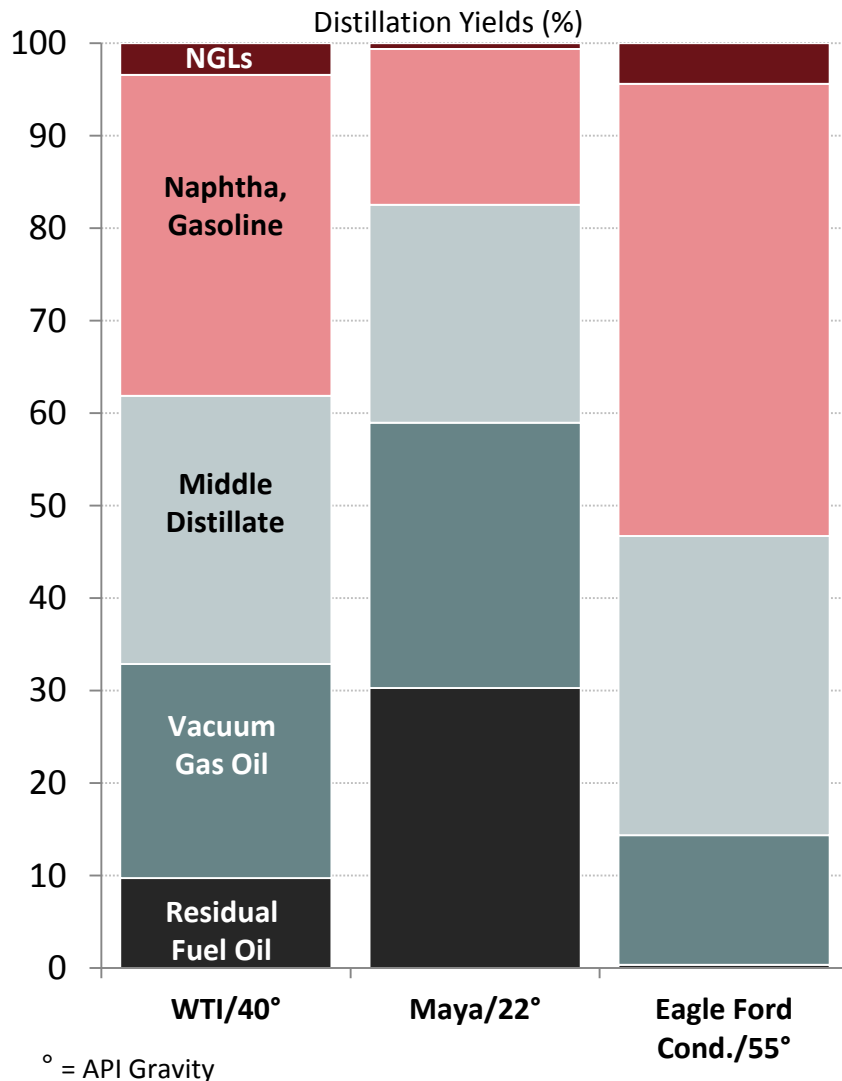


- Declining light, sweet crude imports, with year round exports needed by 2017
 - Condensates and super light crudes are already in surplus
 - Seasonal exports needed before then during U.S. refinery turnarounds / outages
- Eventual reductions in light, sour and medium crude imports
- U.S. likely to maintain heavy crude imports that better matches domestic refinery configuration

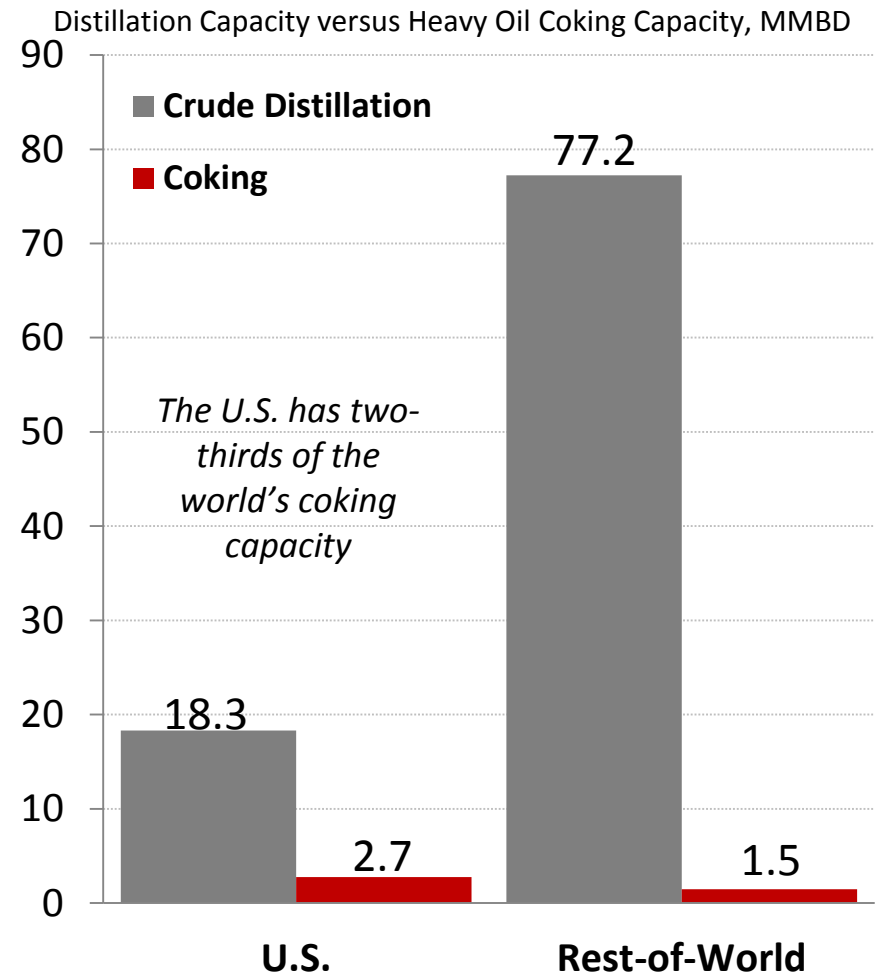
Light, sweet crudes are already in surplus seasonally

Tight Oil quality vs U.S. refining configuration: the “mis-match”

Product yields differ significantly

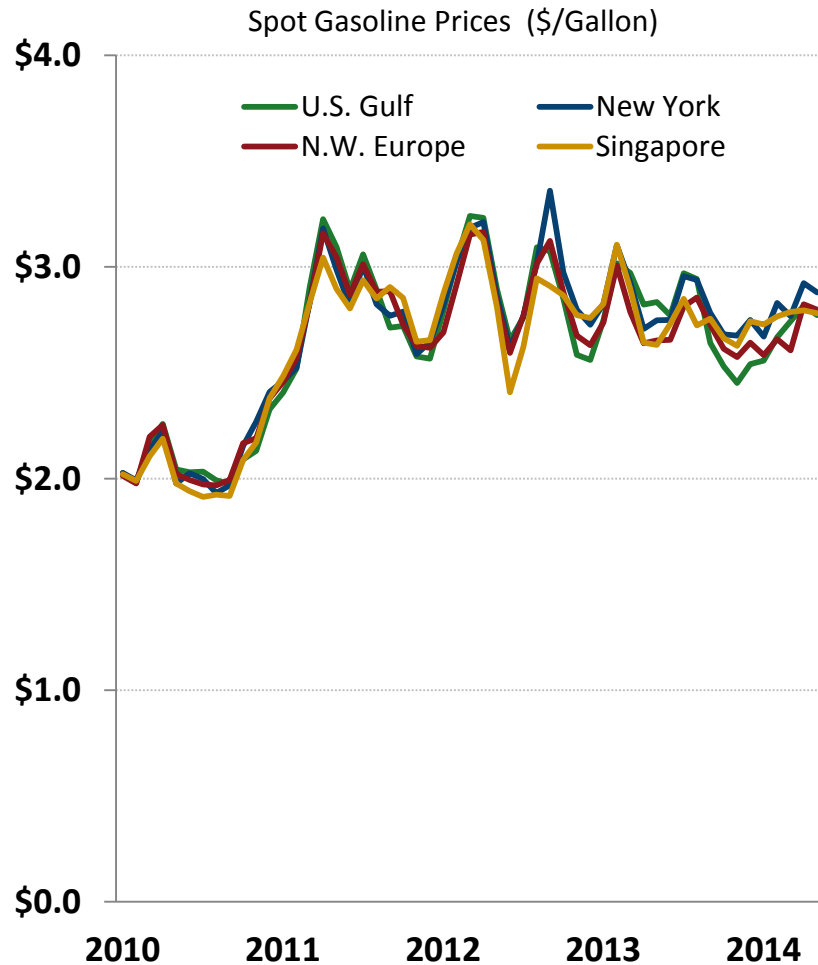


Blending U.S. tight oil into larger world pool is a more efficient allocation

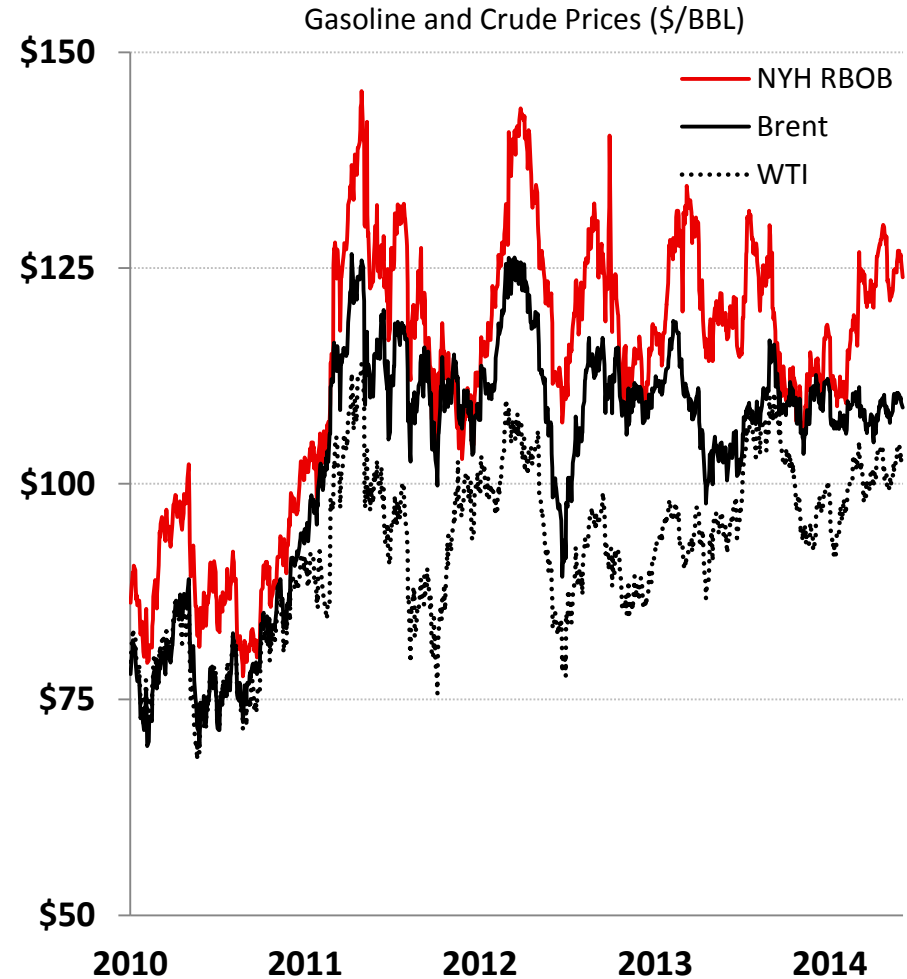


Gasoline prices are set globally by international crude prices

Refined product prices are set globally ...



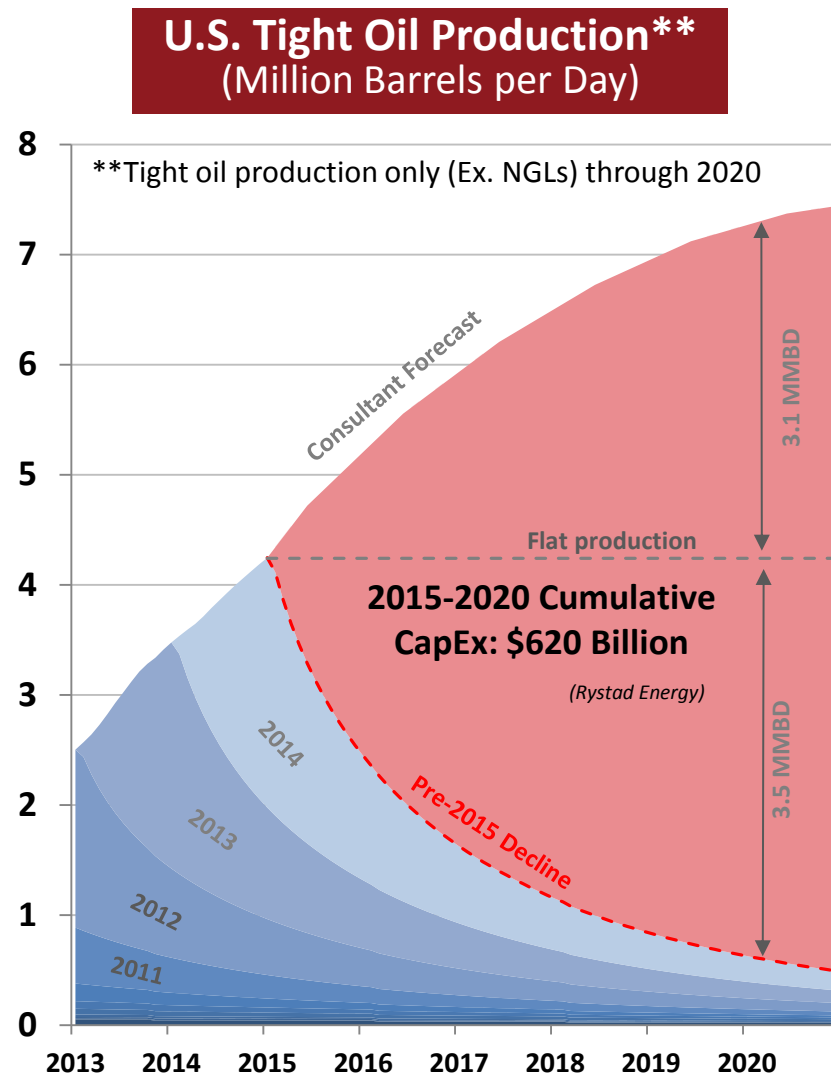
... and track global crude prices



U.S. crude exports should lower U.S. gasoline prices

Inability to Export Crude Will Lower U.S. Oil Production

- Domestic crude price discounts would reduce investment in new production
 - Some wells and plays become uneconomic
 - Reduced cash flow to invest
- Without crude exports, IHS* estimates that:
 - Cumulative oil production-related investment through 2030 would be \$750 billion - \$1 trillion lower
 - U.S. crude production would be 1.2-2.3 MMBD lower*



Substantial investment needed to grow tight oil production

Source: ConocoPhillips, for decline rates, Rystad for forecast and cumulative CapEx.;

*IHS Global Inc., "U.S. Crude Oil Export Decision: Assessing the Impact of the Export Ban and Free Trade on the U.S. Economy," May 29, 2014

Benefits of U.S. crude oil exports

- Lowers consumers fuel costs at the pump by \$18 billion annually
- U.S. economy could gain \$135 billion and about one million jobs at its peak
- Reduces nation's oil import bill by \$67 billion annually
- Increases government revenues by \$1.3 trillion between 2016-2030
- Strengthens U.S. geopolitical position



More jobs and economic development from continued growth in U.S. oil production



Thank You