

Geopolitical Forces and the Price of Energy

Presentation to:
Colorado Energy Expo
Denver, CO

By:
John Harpole



May 13, 2015





May 13th, 1966









35 Years of Energy Bills



“The test of our progress is not whether we add to the abundance of those who have much. It is whether we provide enough to those who have little.”

- Franklin D. Roosevelt

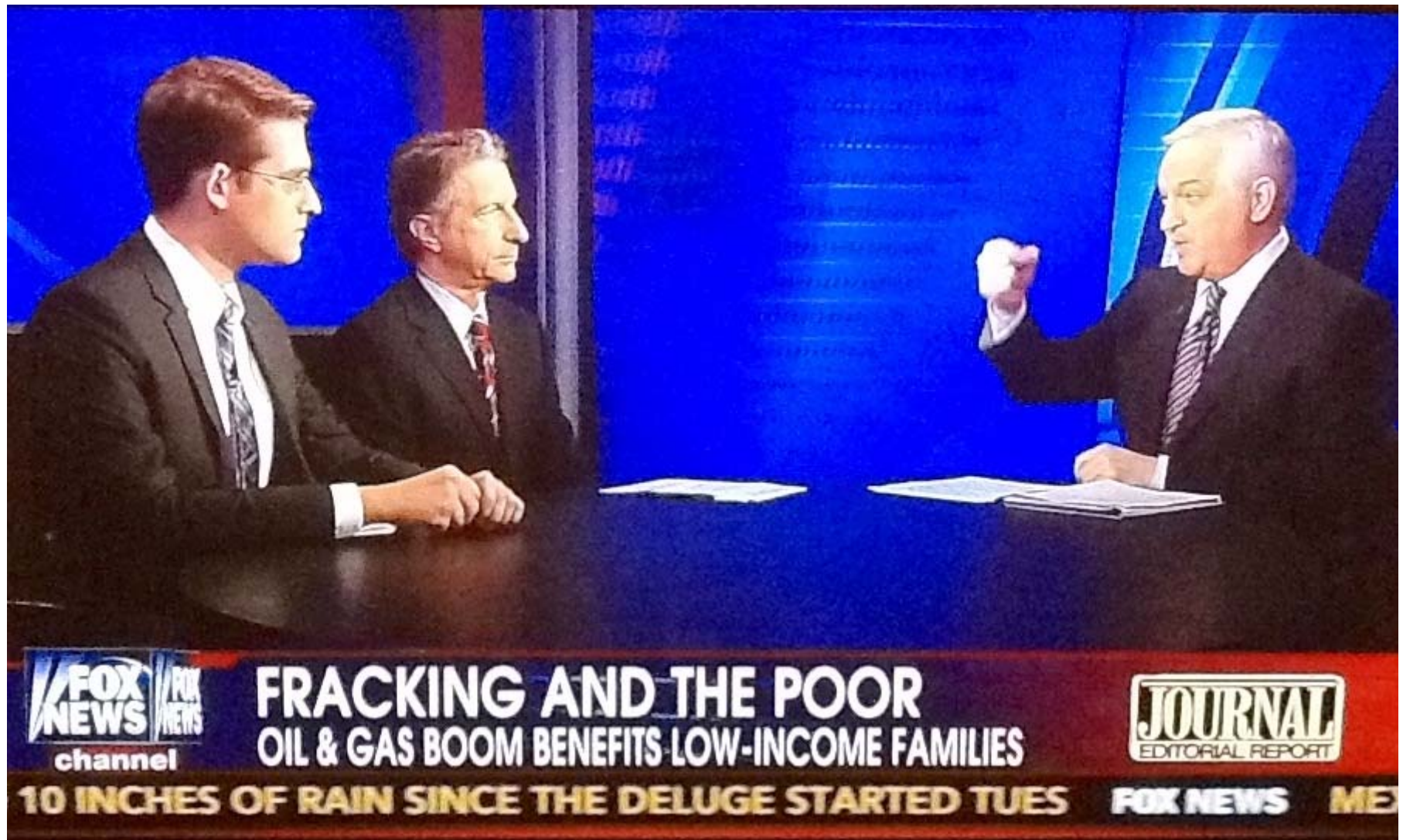
Fracking and the Poor

Wall Street Journal Editorial

September 6, 2013

- “Thanks to the lower price for natural gas, families saved roughly \$32.5 billion in 2012.”
- “The windfall to all U.S. natural gas consumers –industrial and residential— was closer to \$110 billion. This is greater than the annual income of all the residents in 14 states in 2011.”

Fox News - Fracking and the Poor



Mr. Zhou and the Map of China





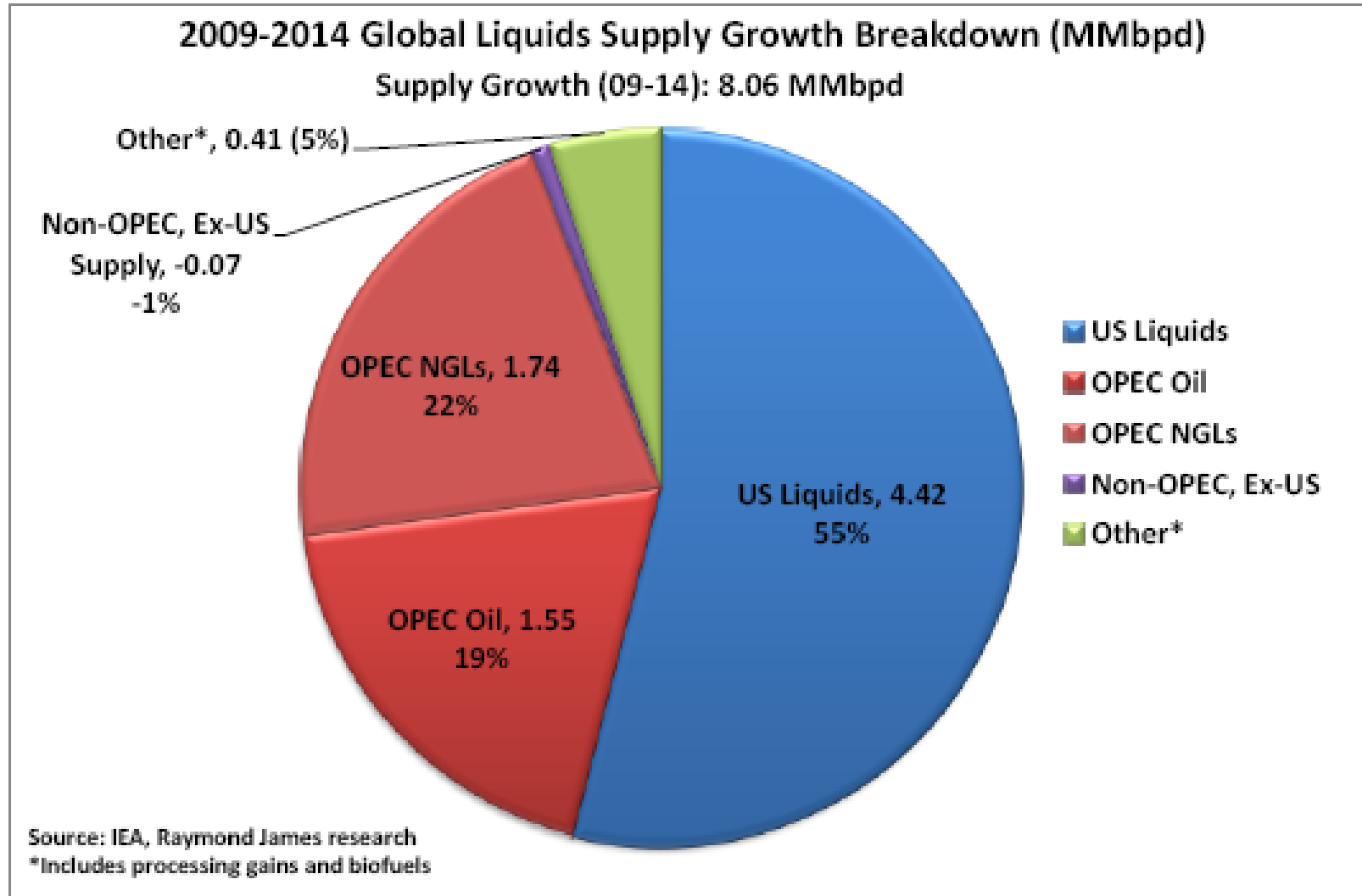




Presentation Outline

- What is Happening? Why?
 - The recent collapse in crude oil prices.
 - The reasons for the price collapse.
- What does it mean for worldwide and U.S. production?

The House of Saud's Motivation



The Production War is on!

- On November 27, 2014 at an OPEC meeting in Vienna, the Saudis said,

“Yakfee!”

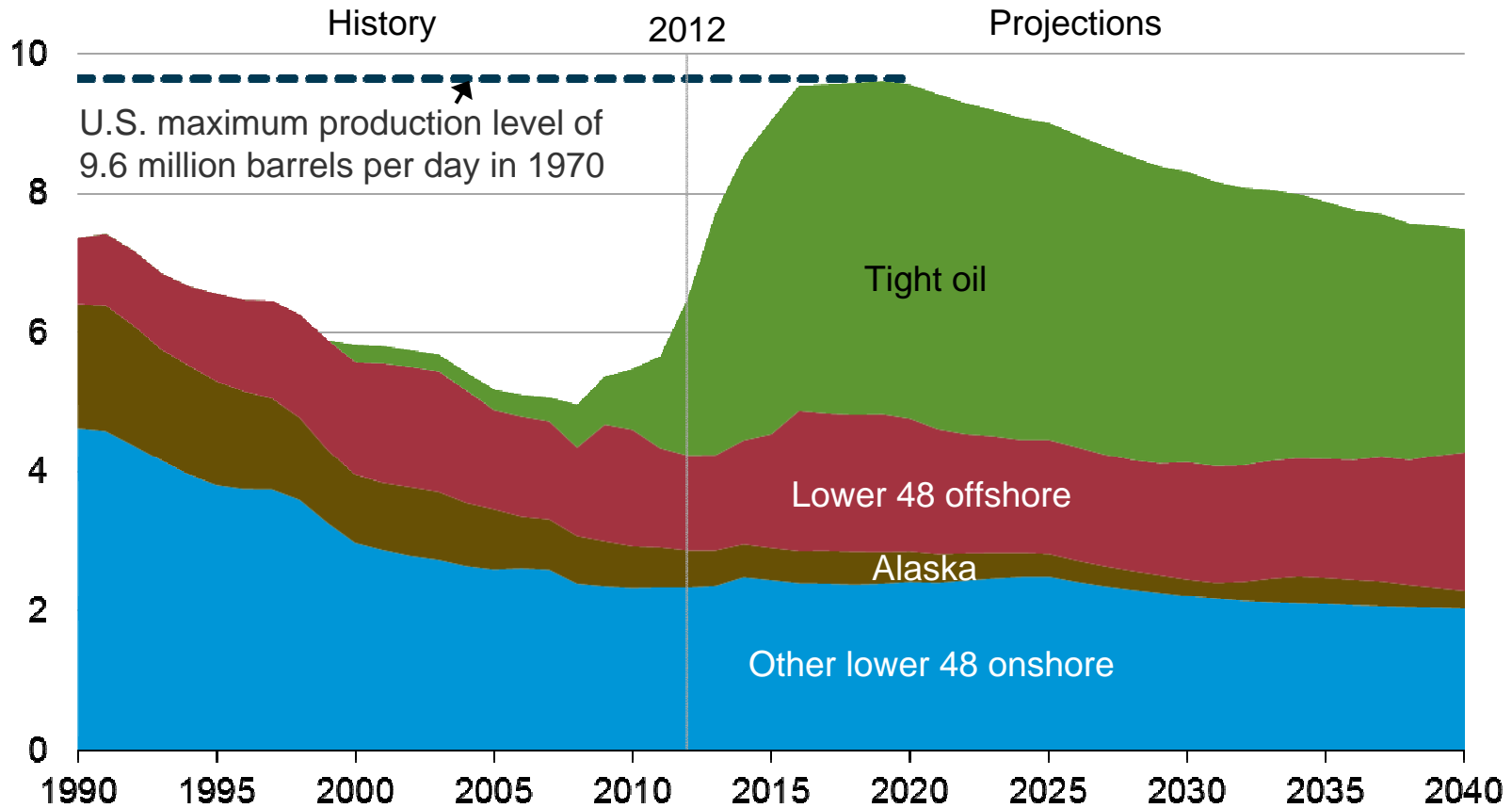
or

“Enough!”

- They resisted calls from OPEC members Iran, Iraq and Venezuela to reduce the production target of 30 million barrels per day.

Growing tight oil and offshore crude oil production drive U.S. output close to historical high

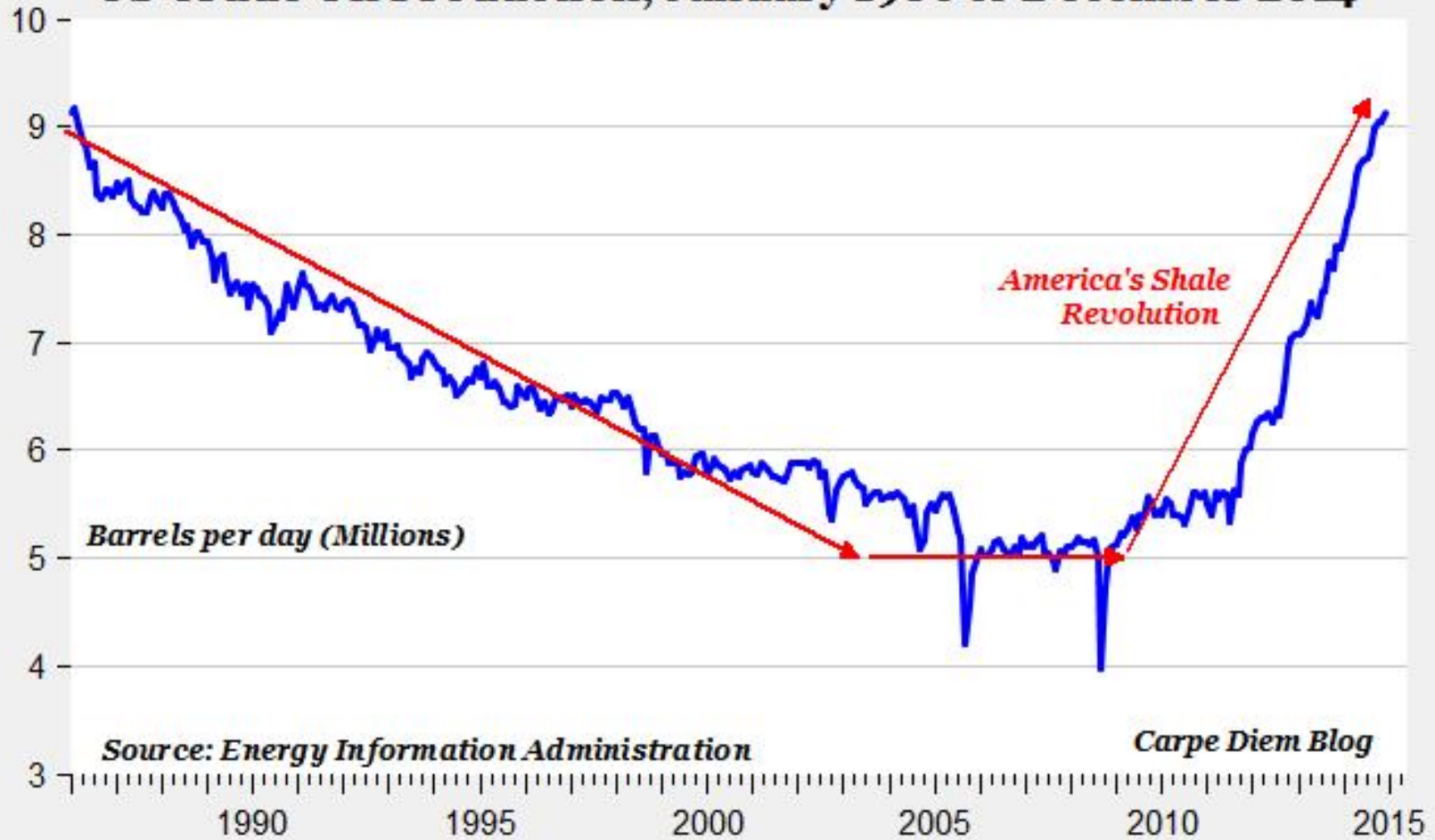
U.S. crude oil production
million barrels per day



Source: EIA, Annual Energy Outlook 2014 Reference case

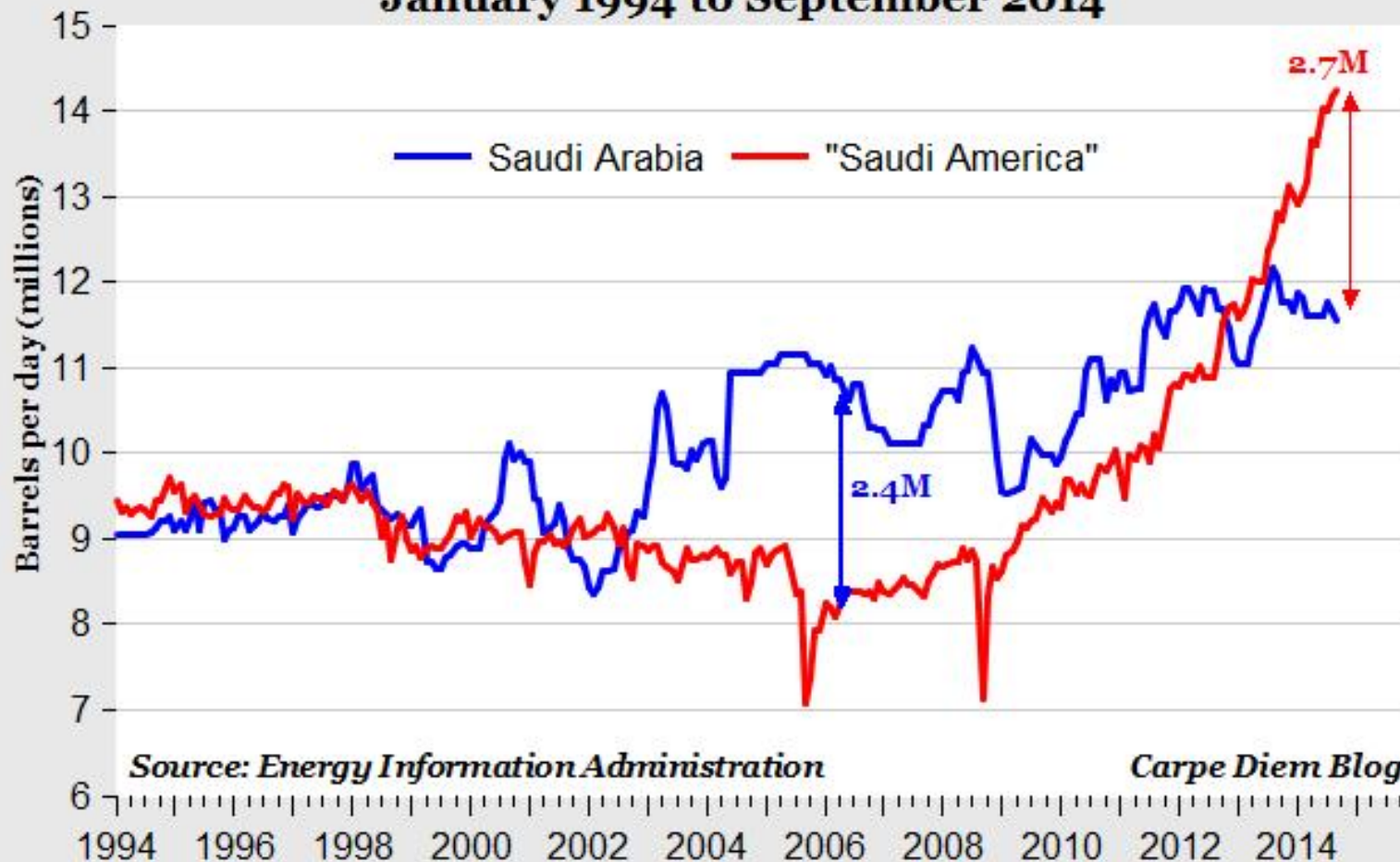
Source: U.S. oil and natural gas outlook, Adam Sieminski, EIA Administrator, Presentation to IAEE International Conference, June 16, 2014

US Crude Oil Production, January 1986 to December 2014

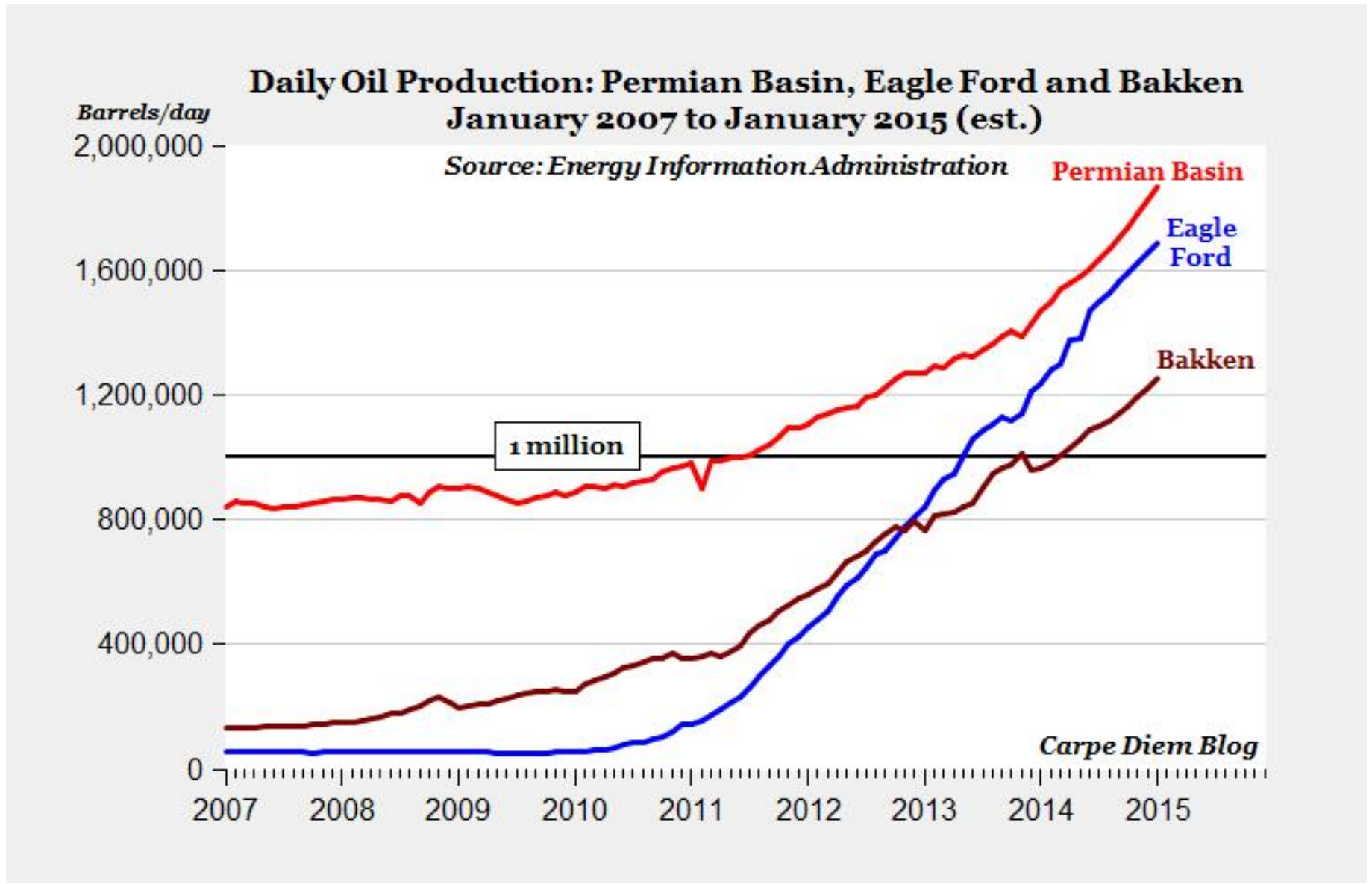


Source: My top ten energy charts of the year for 2014, Mark J. Perry, American Enterprise Institute, January 5, 2015

Total Petroleum Production: Saudi Arabia vs. US January 1994 to September 2014

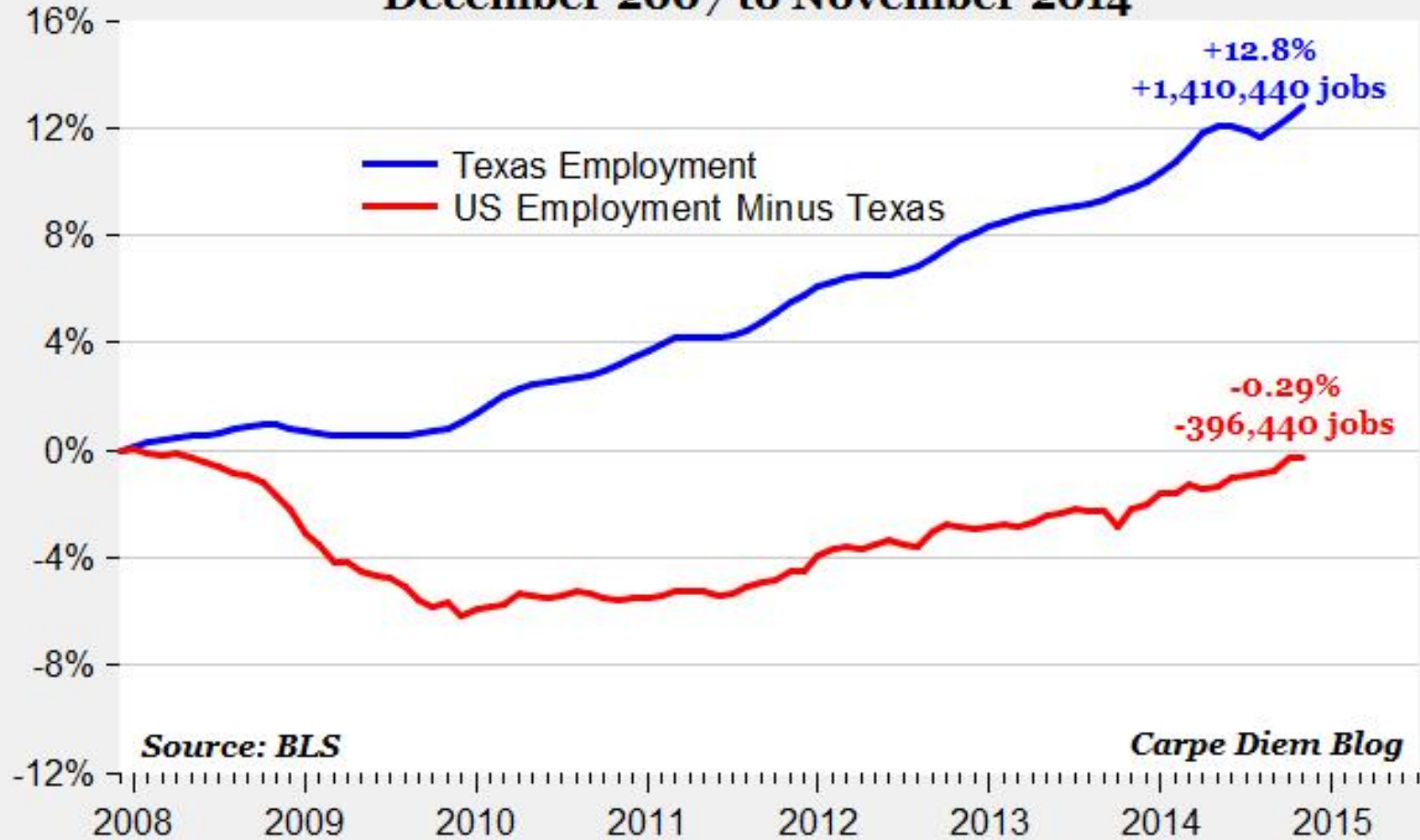


Source: My top ten energy charts of the year for 2014, Mark J. Perry, American Enterprise Institute, January 5, 2015



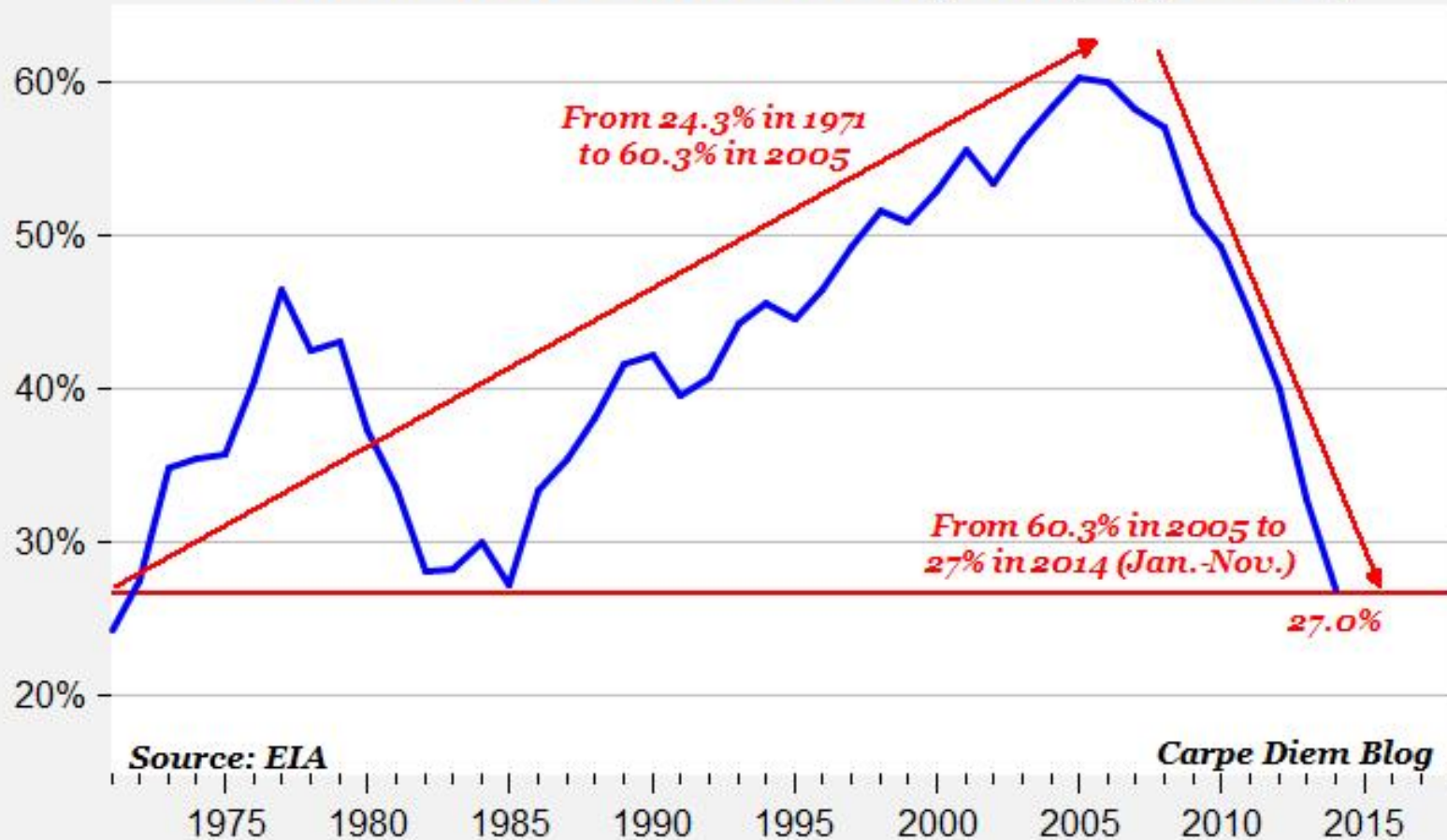
Source: My top ten energy charts of the year for 2014, Mark J. Perry, American Enterprise Institute, January 5, 2015

Percent Change in Employment: Texas vs. US Minus Texas December 2007 to November 2014



Source: My top ten energy charts of the year for 2014, Mark J. Perry, American Enterprise Institute, January 5, 2015

America's Net Petroleum Imports, 1971-2014



Source: My top ten energy charts of the year for 2014, Mark J. Perry, American Enterprise Institute, January 5, 2015

What is the Motivation for Saudi Arabia?

- Is this a shot across our bow?
- Are we victims of our own success?
- Who is the real target of their price war?

OPEC Strategy?













“The reason, according to Iranian Oil Minister, Bijan Namdar Zanganeh, ***was to keep prices low enough and long enough to threaten the U.S. shale oil industry and restore OPEC’s market share in America.*** Shale extraction requires expensive methods such as fracking and horizontal drilling, and many observers say it isn’t profitable if the price of oil drops below \$65 per barrel.”



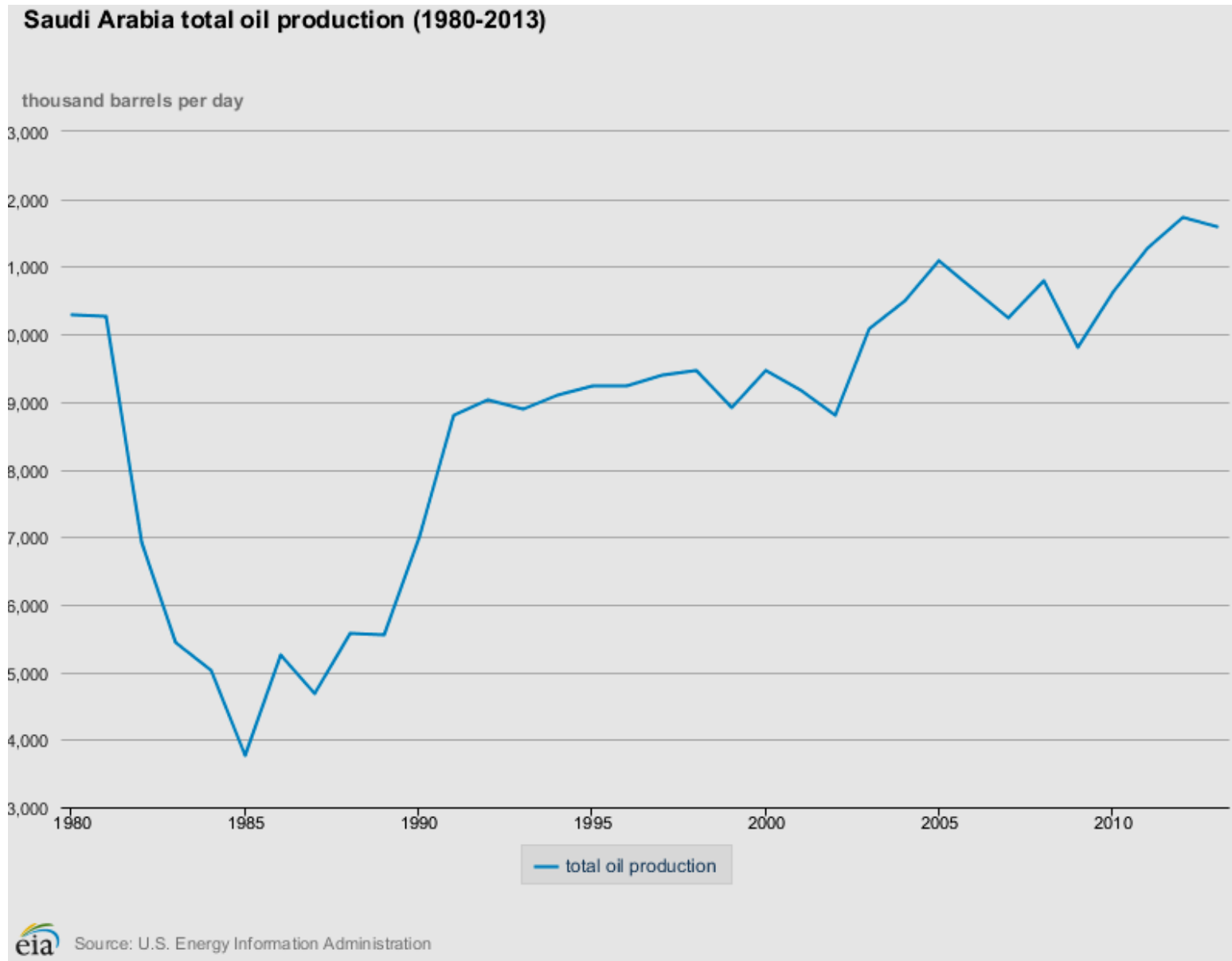
Source: Real Money, The Street Ratings, By: Oilprice.com, December 11, 2014

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OPEC Member States

Country		Region	Joined OPEC ^[1]	Population (July 2008) ^[2]	Area (km ²) ^[3]
Algeria		Africa	1969	33,779,668	2,381,740
Angola		Africa	2007	12,531,357	1,246,700
Ecuador		South America	2007 ^[A 1]	13,927,650	283,560
Iran		Middle East	1960 ^[A 2]	75,875,224	1,648,000
Iraq		Middle East	1960 ^[A 2]	28,221,180	437,072
Kuwait		Middle East	1960 ^[A 2]	2,596,799	17,820
Libya		Africa	1962	6,173,579	1,759,540
Nigeria		Africa	1971	146,255,300	923,768
Qatar		Middle East	1961	824,789	11,437
Saudi Arabia		Middle East	1960 ^[A 2]	28,146,656	2,149,690
United Arab Emirates		Middle East	1967	4,621,399	83,600
Venezuela		South America	1960 ^[A 2]	26,414,816	912,050
Total				369,368,429	11,854,977 km²

It's About Geopolitical Power & Market Share for the Saudis



A Game of Chicken?

Nation	Oil price per barrel required to break even or balance budget
US producers	\$38-\$77
Qatar	\$58
Kuwait	\$59
UAE	\$90
Saudi Arabia	\$92
Angola	\$94
Russia	\$101
Iraq	\$116
Venezuela	\$117
Algeria	\$119
Ecuador	\$122
Nigeria	\$124
Iran	\$136

According to data compiled by Bloomberg, ***“prices have dropped below the level needed by at least 9 OPEC member states to balance their budgets.”***

Source: Reuters, *The Saudi Arabian Oil Conspiracy and What it Might Mean for Your Portfolio*, The Motley Fool, Adam Galas, January 18, 2015

Survival of fittest as oil tumbles below \$65, Bloomberg News, December 1, 2014

Monday, February 9, 2015

Moscow Times

- If the U.S. supplied arms to the Ukraine, ***“it would be viewed as an act of war”***
- It would also force the Kremlin to ***“respond asymmetrically against Washington or its allies on other fronts”***
- ***“We can also encourage Iran, or even back Iran in a fight – a military operation – with Saudi Arabia, so then the prices for oil will skyrocket”***
 - Quoting a member of the Russian Defense Ministry’s public advisory board



Source: Russian official: We could help Iran attack Saudi Arabia if US arms Ukraine, Rob Garver, The Fiscal Times



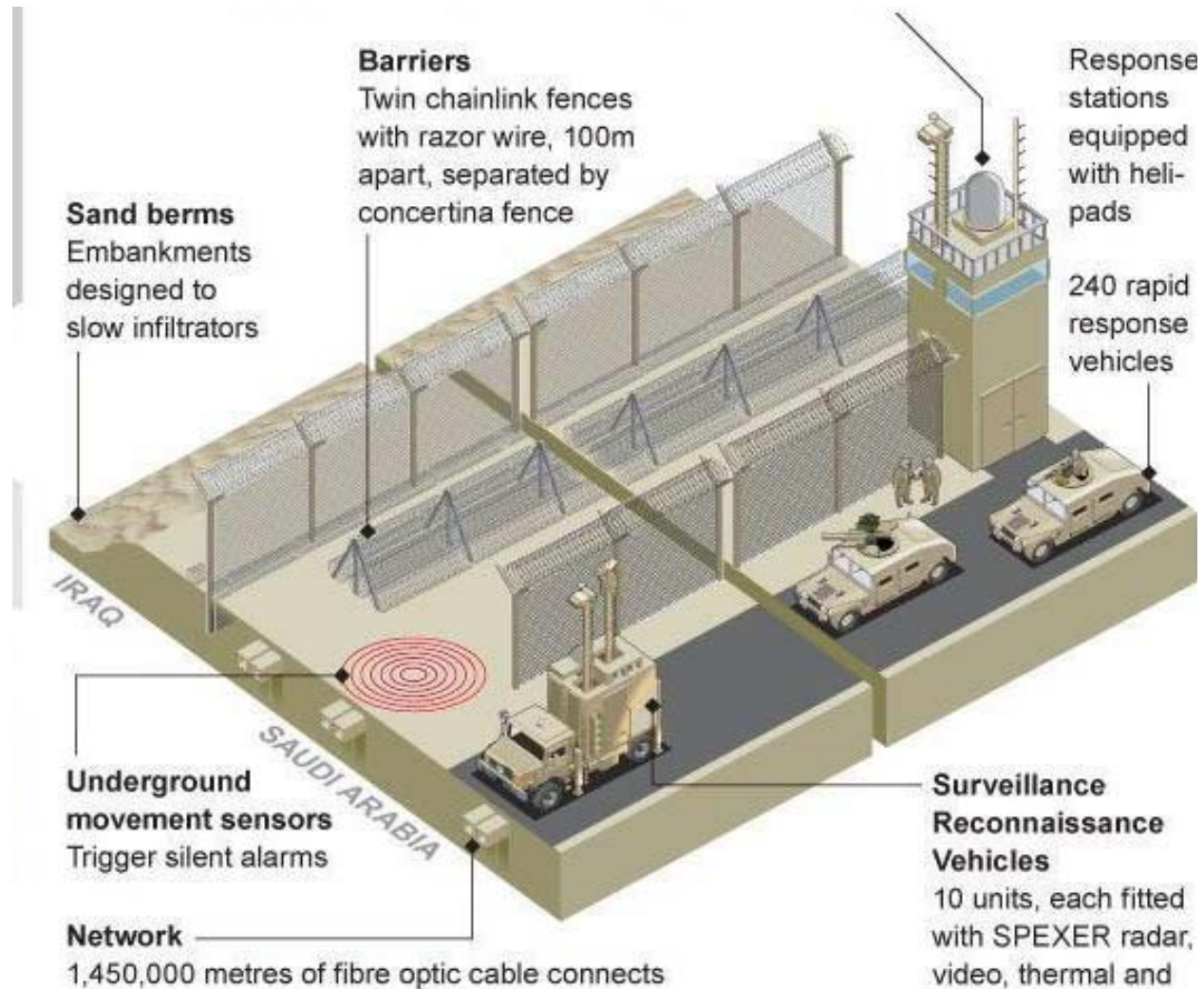
Saudi Arabia to Erect a 600 Mile “Great Wall” to Fend off ISIS



Saudi Arabia Builds Giant Yemen Border Fence – 1,100 miles

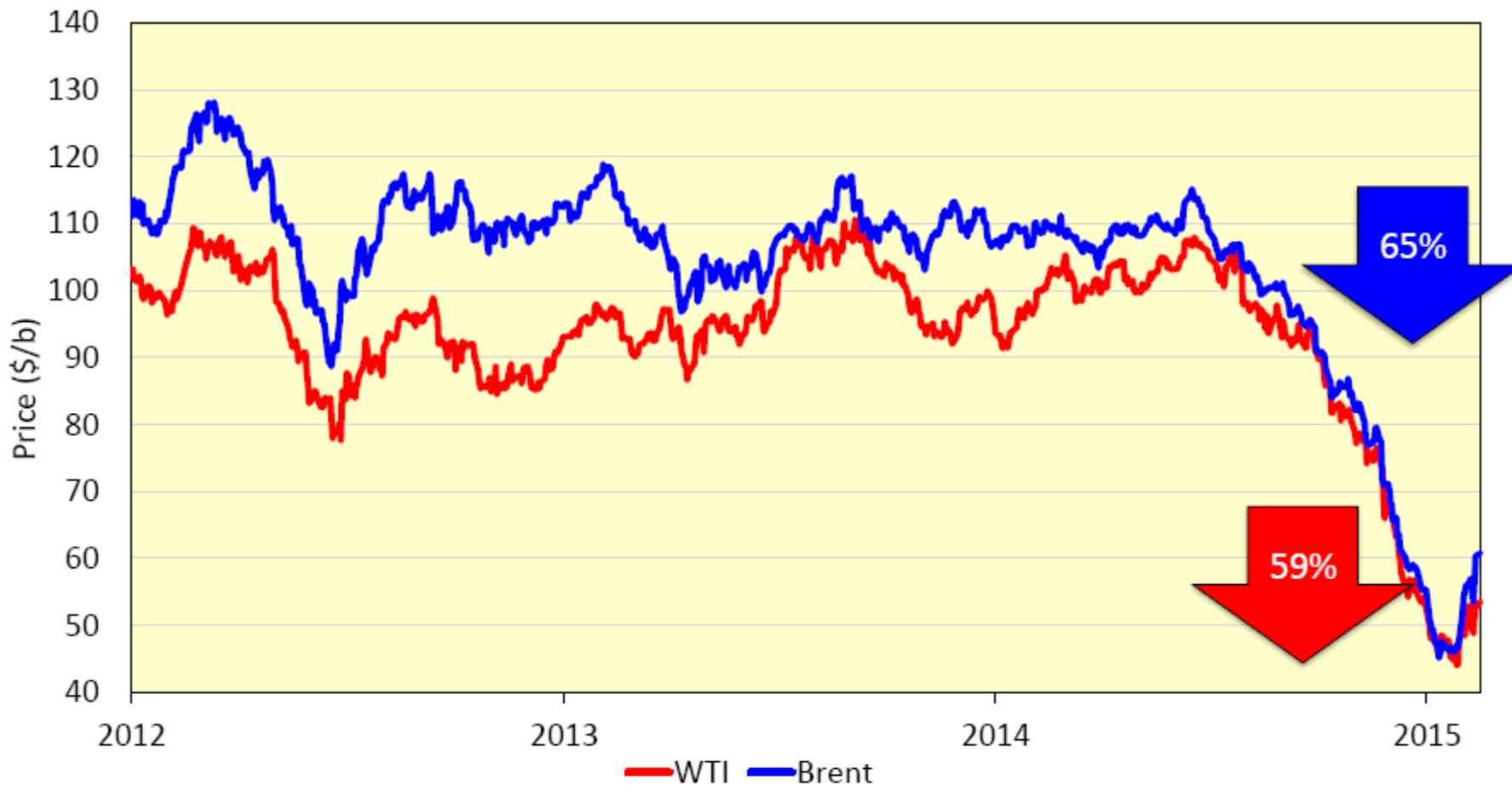


Fortress Saudi Arabia



Commodity Prices: Oil Prices Distressed: What Is Happening?

Global crude oil oversupply has pushed prices down both in the U.S. & abroad.

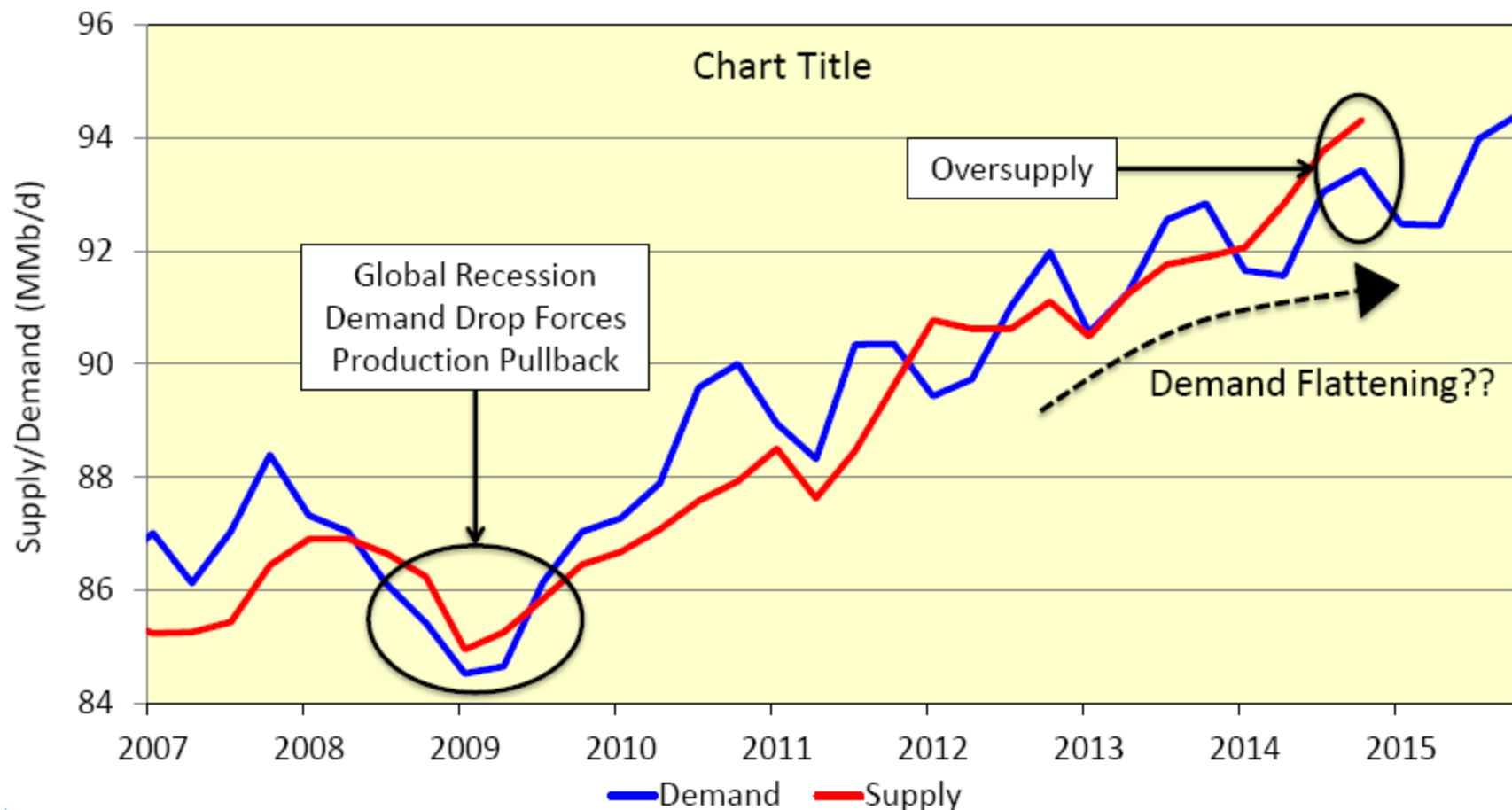


Sources: *The Outlook for U.S. Crude: Implications for Colorado*, Bernadette Johnson, Ponderosa Advisors and EIA

Global Supply/Demand Balance

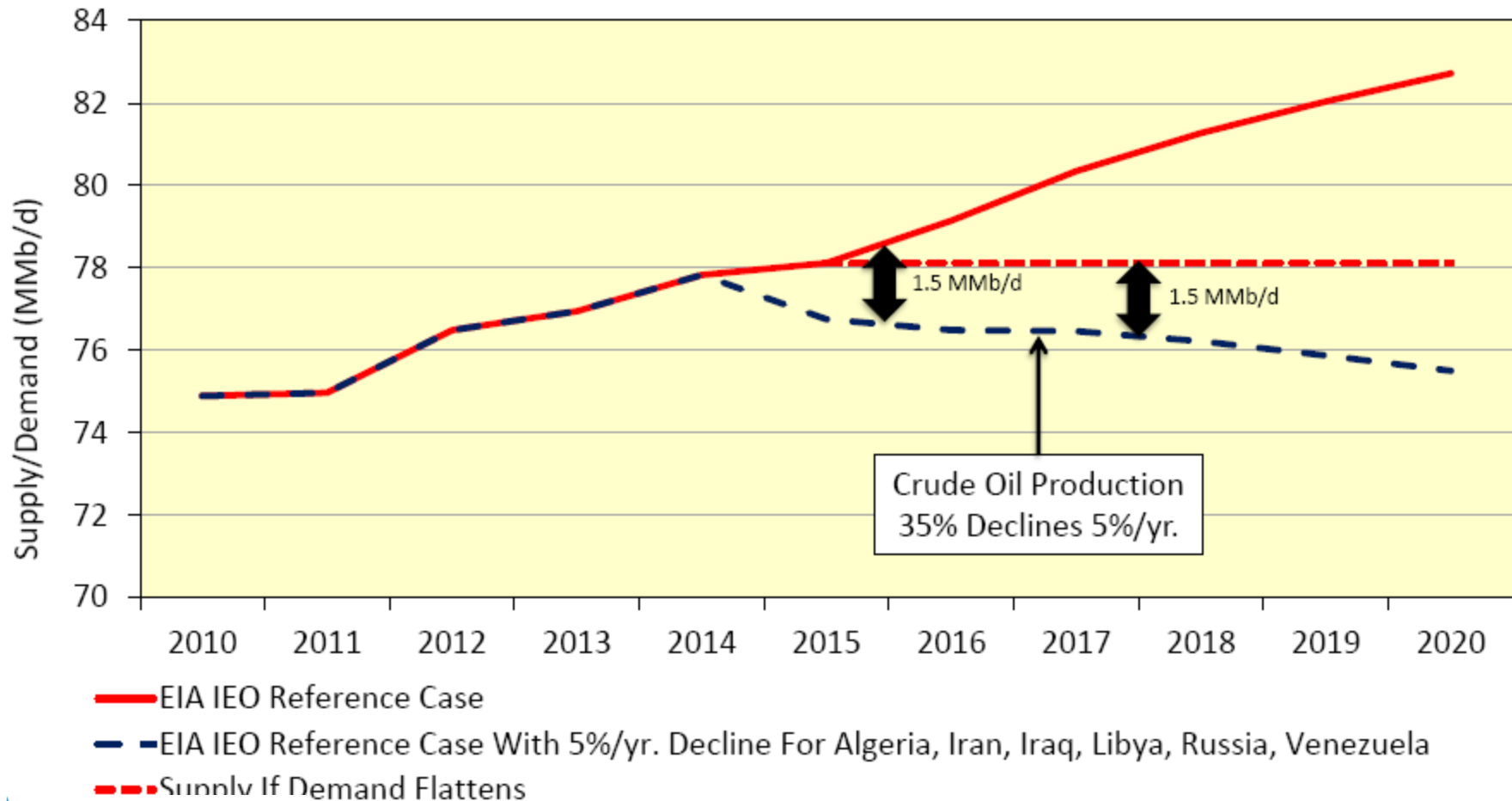
Lower Prices A Function of Global Oversupply

Supply is nearly 1.5 MMb/d over demand. Supply has been higher than demand briefly in the past without price drops (inventory build), however the current oversupply is at a time where demand is also at its peak.



Global Crude Oil Over-Supply 'Pain Period' Will Last 1 to 3 Years

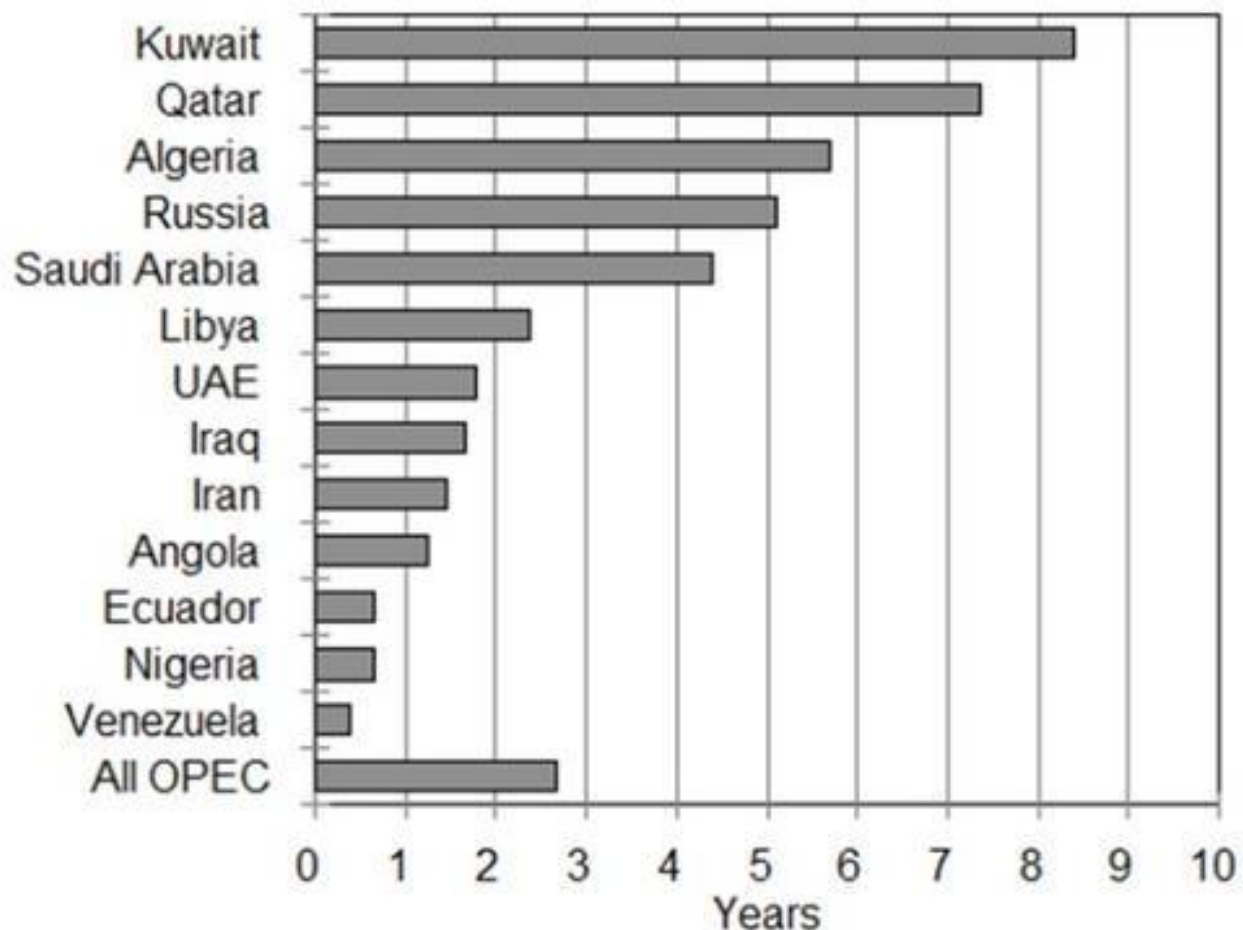
If lower prices force natural declines in high cost producing countries, global production could fall by 1.5 MMb/d by 2016.



Sources: *The Outlook for U.S. Crude: Implications for Colorado*, Bernadette Johnson, Ponderosa Advisors
 EIA International Energy Outlook

Survival of the Fittest?

DURATION OF FOREIGN RESERVES @ \$50/BBL DEFICIT



Saudis have staying power; \$750 billion in foreign country reserves



Source: Oilprice.com, *The Saudi Arabian Oil Conspiracy and What it Might Mean for Your Portfolio*, The Motley Fool, Adam Galas, January 18, 2015

Iran Wary of Oil 'Shock Therapy' as OPEC Vies for Market

Iran relies on oil sales for 60% of its foreign revenue.



President of Iran Hassan Rouhani



Source: Golnar Motevalli, Bloomberg, December 1, 2014

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OPEC: Iran blames falling oil price on ‘political plot’

Will their response be 1) war-like resistance or 2) the pursuit of a nuclear settlement?



Iran Oil Minister Bijan Namdar Zanganeh

“High prices are a disadvantage to OPEC’s market share,” he said. “If you want to increase your share, you have to reduce prices, ***but you can’t do it through ‘shock therapy’ over the course of three months if you want to change everything.***”

Source: Andrew Critchlow, Commodities Editor, Telegraph.co.uk/newsbysector

Iran Wary of Oil ‘Shock Therapy’ as OPEC Vies for Market, Golnar Motevalli, Bloomberg, December 1, 2014

Garry Kasparov and Putin

How popular is Putin?



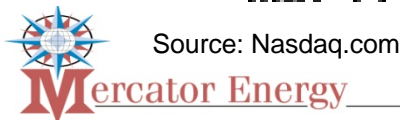
Repercussions for the U.S. Energy Story



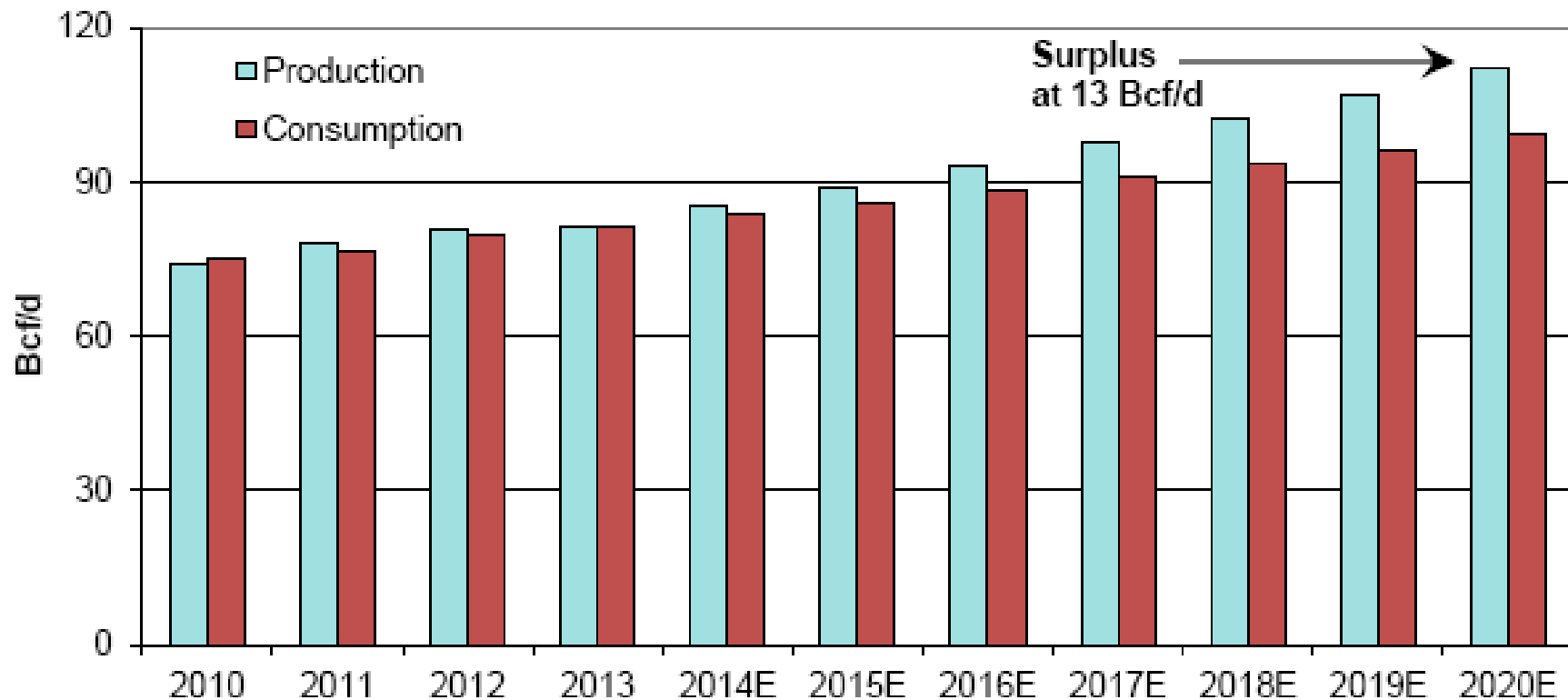
NGK15 - Natural Gas (NYMEX)



Source: Nasdaq.com, End of day Commodity Futures Price Quotes for Natural Gas (NYMEX)



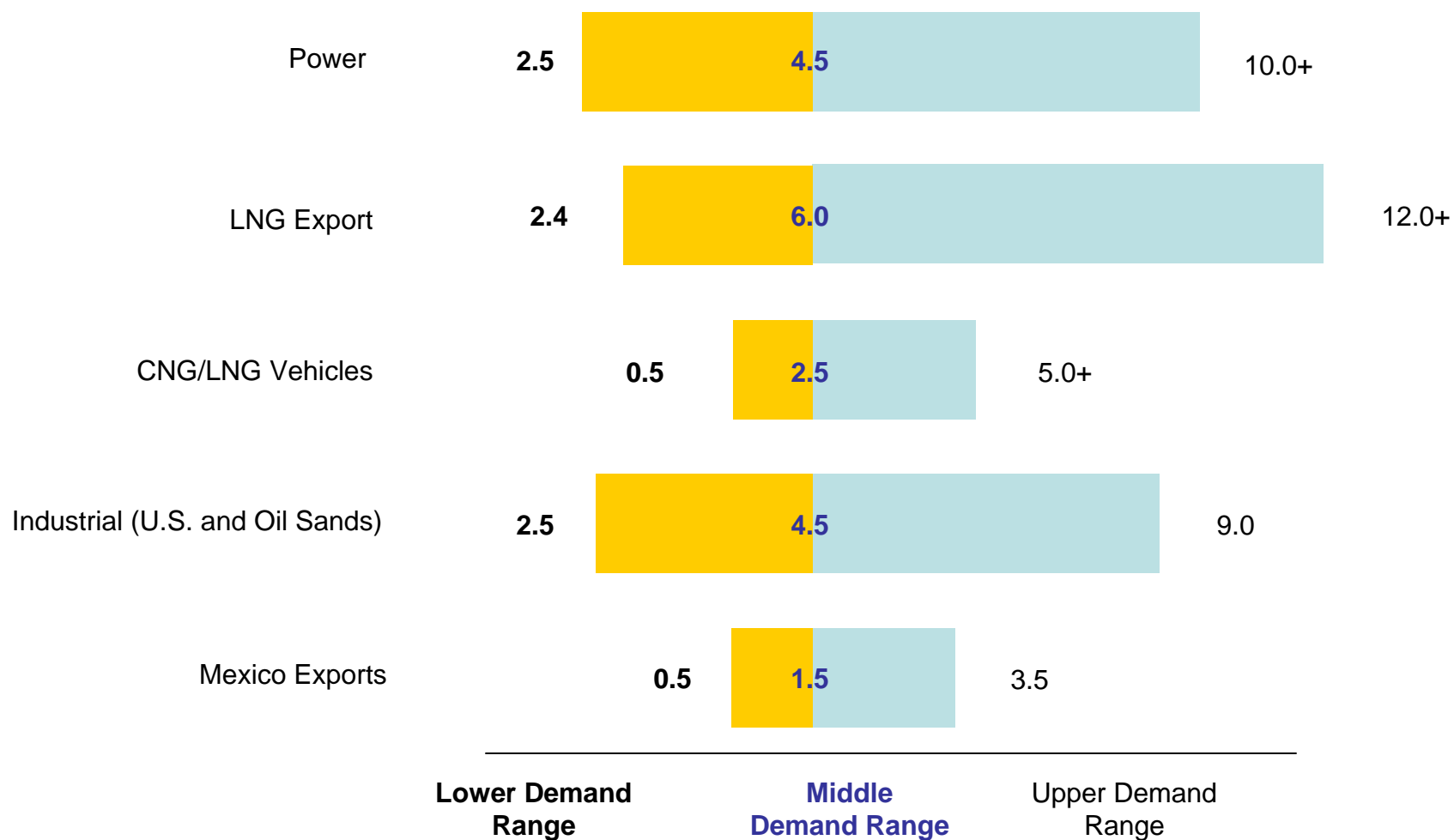
U.S. and Canada: Natural Gas Production vs. Consumption



Source: BP Statistical Review, Raymond James research

North American Natural Gas Demand Ranges by Selected Sector

Significant demand growth is possible in the LNG, transportation/HHP and power sectors through 2020 in Bcf per day.



World LNG Estimated October 2014 Landed Prices



Source: Waterborne Energy, Inc. Data in \$US/MMBtu

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January 2015 World LNG Prices (\$U.S./MMBtu)



Source: Waterborne Energy, Inc. Data in \$US/MMBtu

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Estimated April 2015 World LNG Prices (\$U.S./MMBtu)



Source: Waterborne Energy, Inc. Data in \$US/MMBtu

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Is the U.S. LNG Price Arbitrage/Advantage Over?

The Japanese Crude Cocktail Story

The Oil Derivative LNG Contract

- LNG prices in Pacific Basin (ie – Japan, South Korea, China) are closely tied to crude oil prices
- On a Btu equivalent
 - Crude oil at \$100 per barrel translates to a JCC price of \$14.85 for LNG delivered to Asia (Japan, South Korea, China) (Rule of Thumb LNG Asia - 14.85% of Brent Crude)
- The oil price decline has eliminated the U.S. LNG export advantage

Is the U.S. LNG Price Arbitrage/Advantage Over?

- U.S. LNG prices delivered to Asia can't compete at \$50 oil = \$7.42 per MMBtu

\$4.00/MMBtu	3 year Henry Hub price forecast
\$1.00/MMBtu	ppl cost of transport to LNG facility
\$2.00/MMBtu	liquefaction cost
\$2.00/MMBtu	shipping cost
<hr/>	
\$9.00 MMBtu	Delivered cost to Asia

- U.S. needs \$60-65 crude oil price to breakeven

“First Four” LNG Projects Still Moving Forward

- Sabine Pass LNG (Louisiana)
- Cameron LNG (Louisiana)
- Freeport LNG (Texas)
- Cove Point (Maryland)



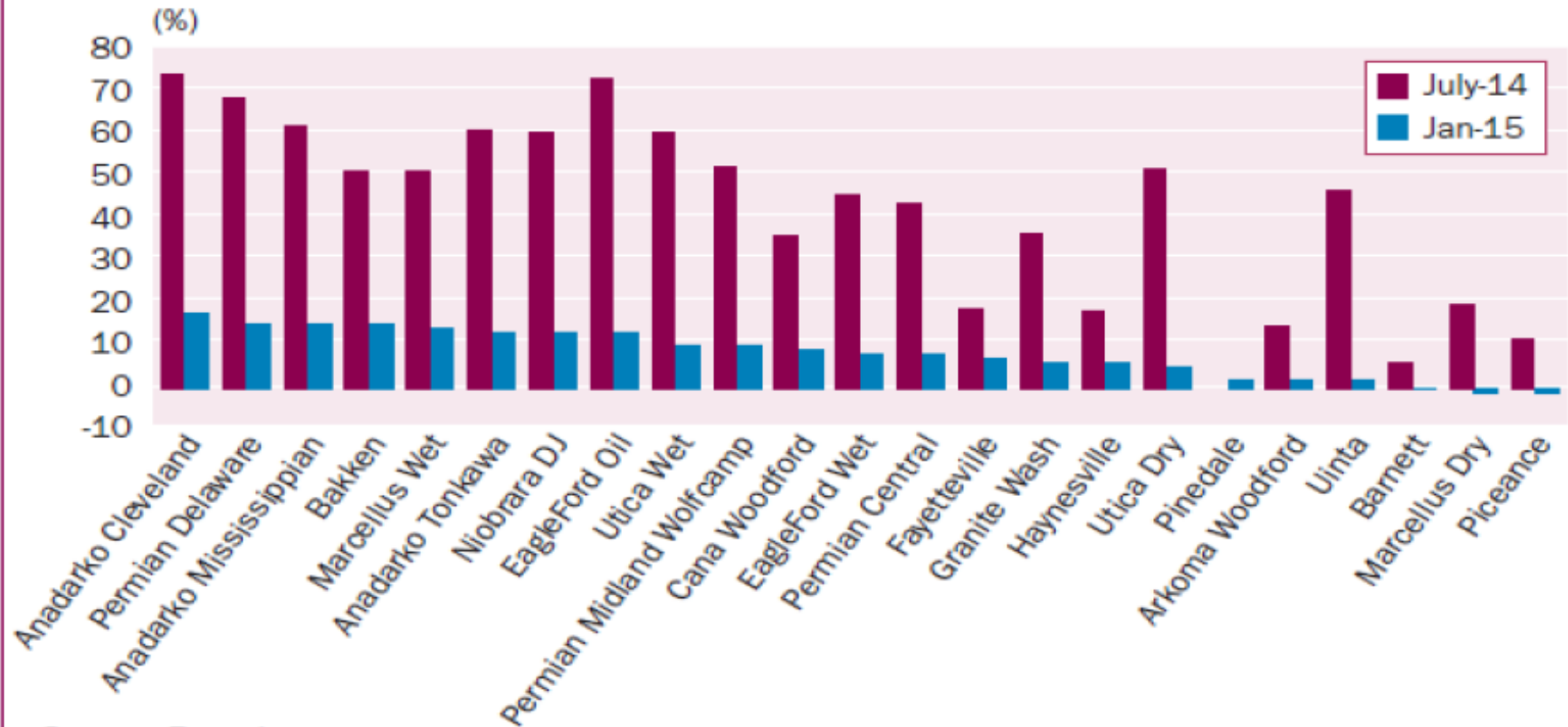
Source: *Is That All There Is? Will an LNG Surplus and Cheap Oil Cap LNG Exports?* Rusty Brazier, RBN Energy, January 26, 2015

What Basins are Competitive in This Price Environment?



Source: U.S. Energy Information Administration based on data from various published studies. Canada and Mexico plays from ARI.
 Updated: May 9, 2011

Internal Rates of Return per Well by Basin/Play (January 2015 versus July 2014)

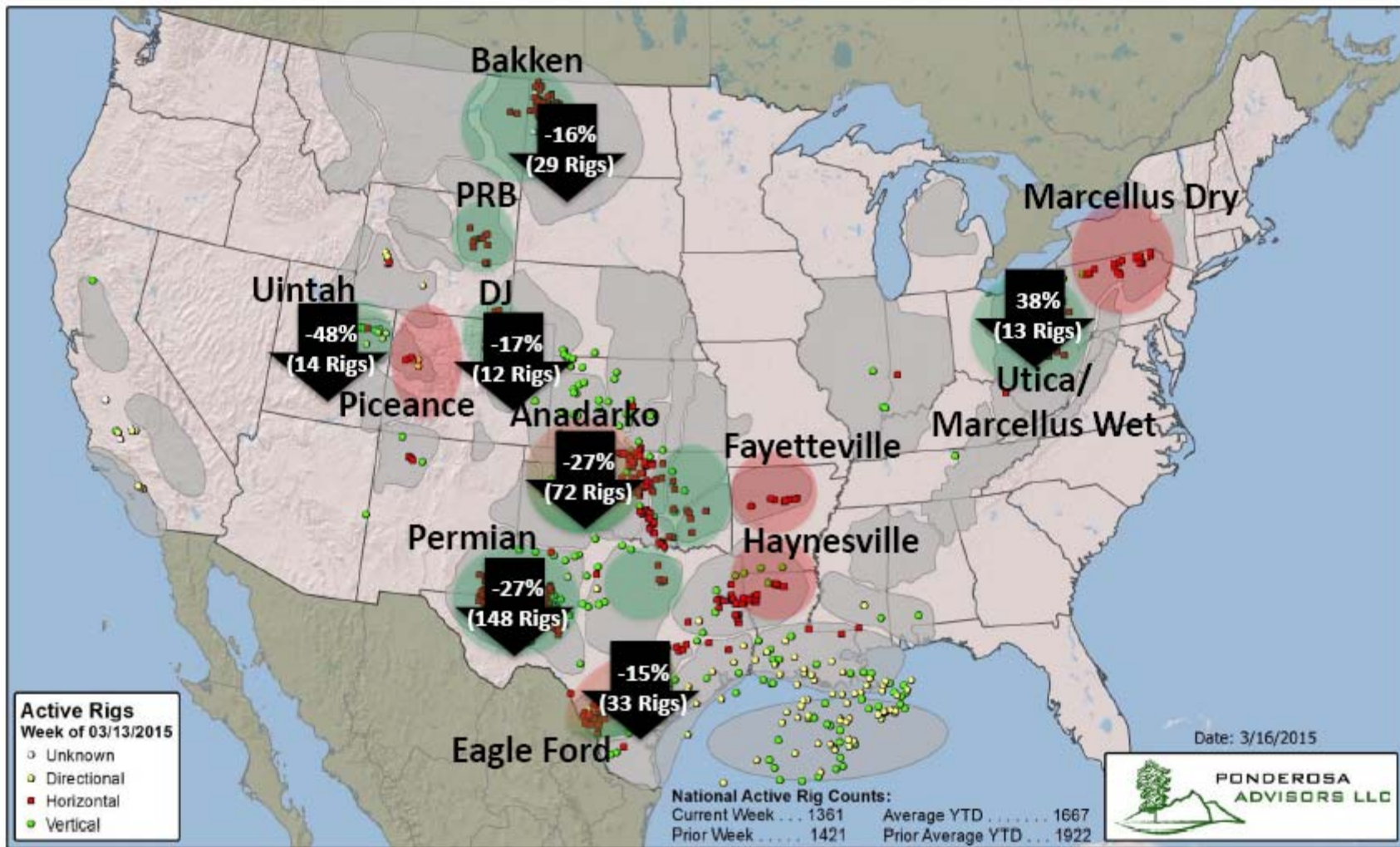


Source: Bentek

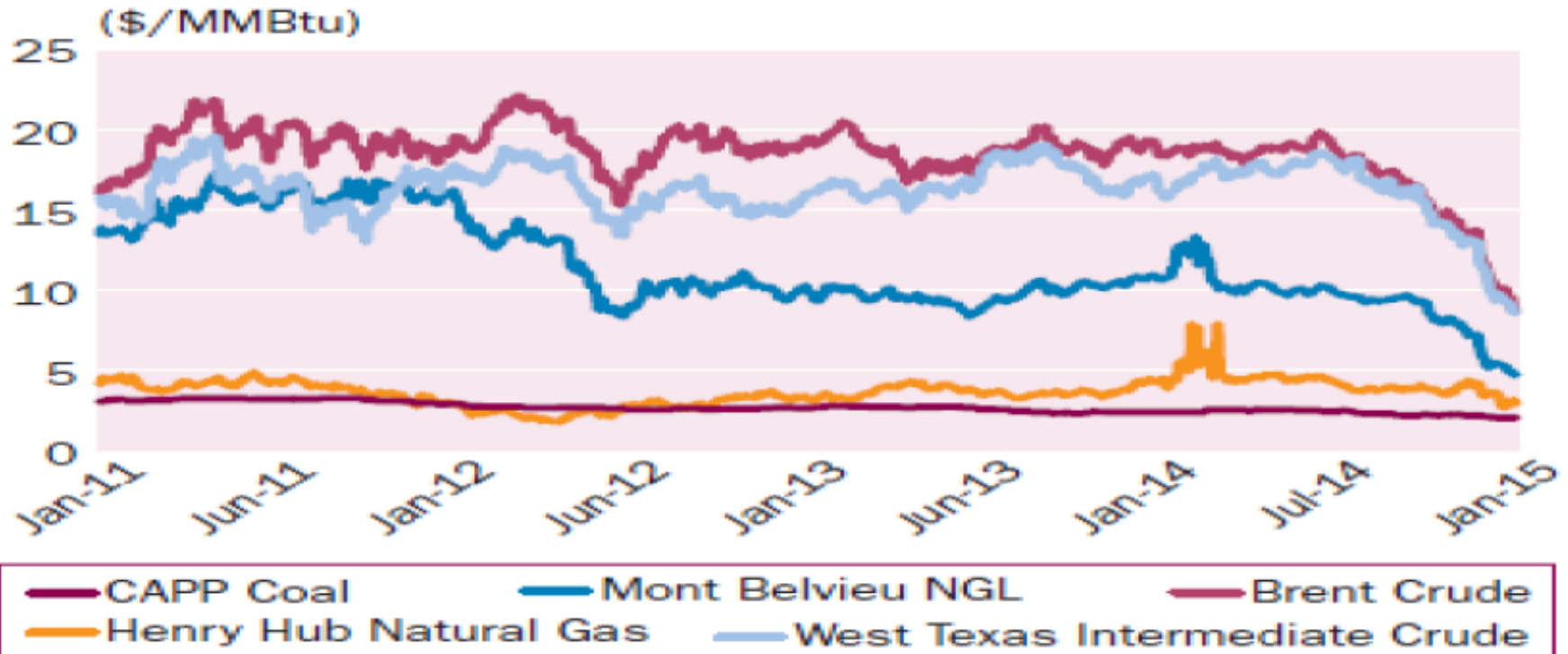


Source: *Shale economics challenged as prices plummet*, Arjun Sreekumar, Platts Gas Daily Volume 32 / Issue 7 / Monday, January 12, 2015

The Active Rig Count Is Already Down 25% From the Peak & Will Continue To Fall



Energy Commodity Price Comparison



Source: Bentek



Source: *Shale economics challenged as prices plummet*, Arjun Sreekumar, Platts Gas Daily Volume 32 / Issue 7 / Monday, January 12, 2015

Wyoming and Colorado Crude Oil Pricing Comparison

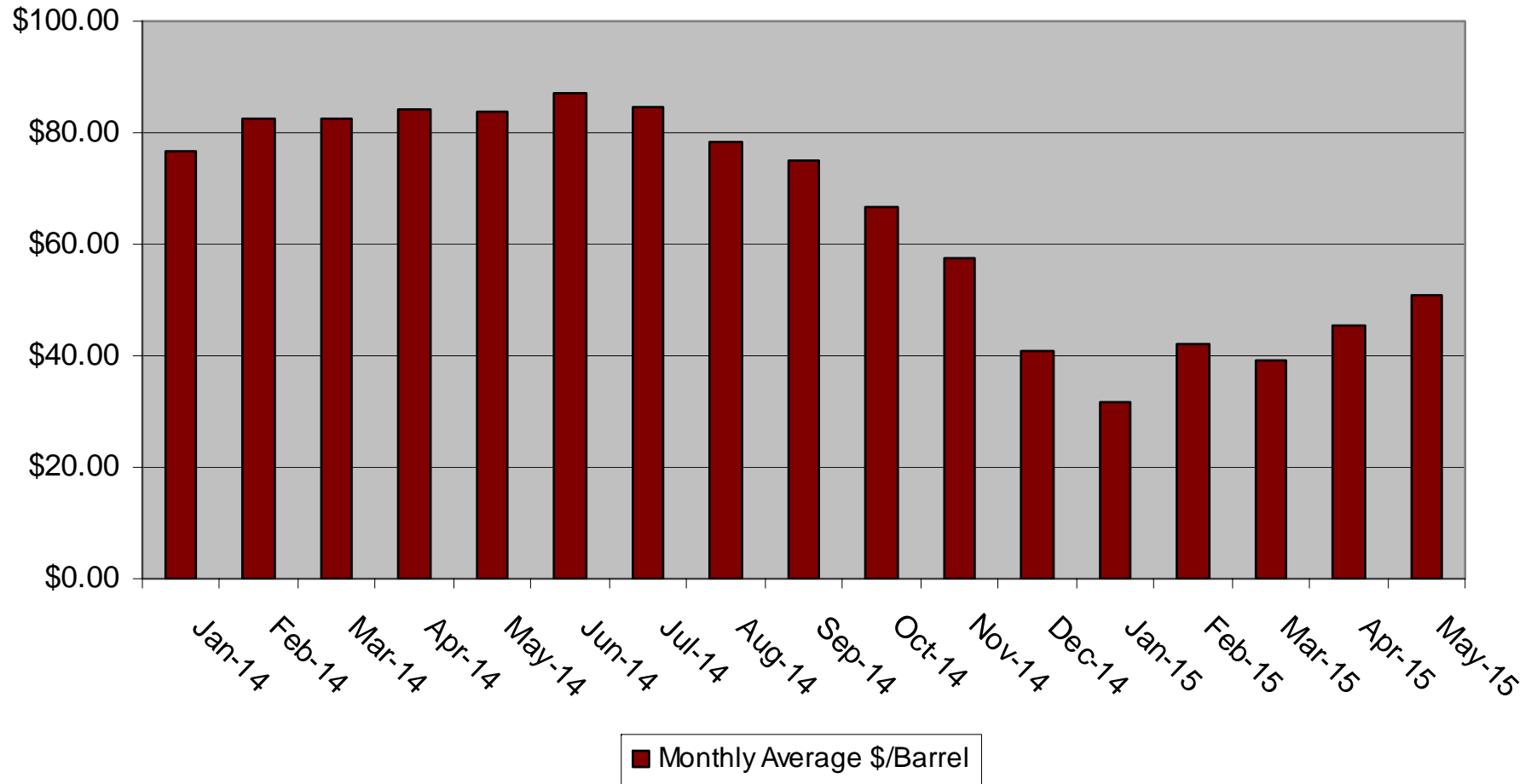
	August 1, 2014 (price per barrel)	May 6, 2015 (price per barrel)
WY Asphalt Sour	\$68.50	\$39.50
WY General Sour	\$69.50	\$40.50
WY Heavy Sour	\$74.34	\$50.38
WY Medium Sour	\$75.59	\$46.63
WY Southwest	\$85.88	\$50.93
WY Sweet (Other)	\$82.88	\$49.08
CO Eastern Sweet	\$82.38	\$48.58



Source: Shell Energy Connect, Shell Trading (US) Company posted prices

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Uinta Basin Black Wax



Source: Chevron Crude Oil Marketing, Chevron Posting, May 7, 2015

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Comparative Rockies Rig Count

	2014 Average	Quarter 1, 2015	Quarter 2, 2015
DJ Niobrara	54	44	32
Piceance Basin	12	10	10
Uinta Basin	28	14	8
Powder River Basin	34	23	11
Greater Green River Basin	17	13	12
Williston Basin	186	135	95



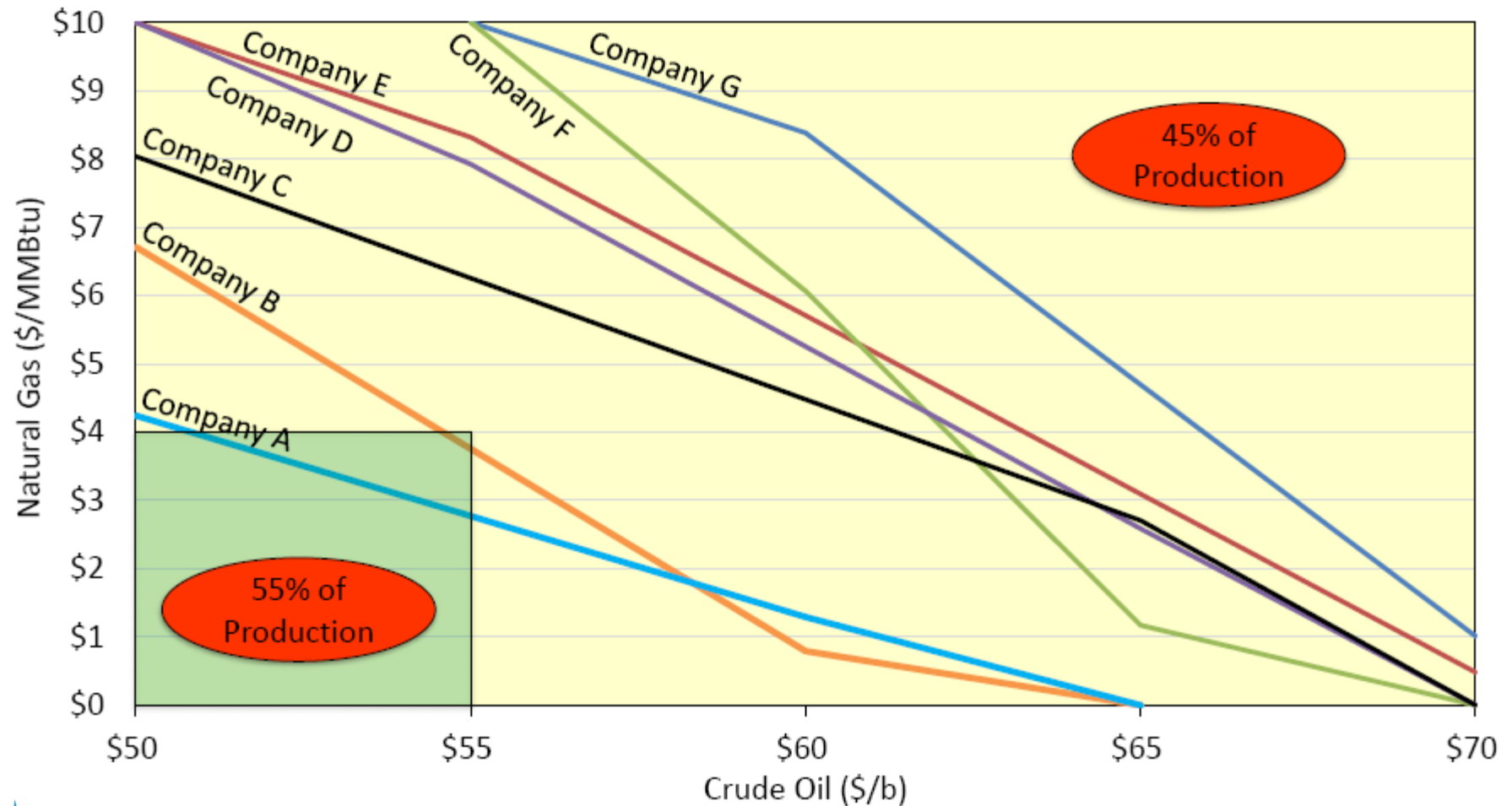
Source: Tudor Pickering Holt & Co. Weekly Rig Roundup, February 23, 2015 and April 24, 2015

Impact on Colorado?

Denver-Julesburg Producer Economics

55% of DJ Crude Production is Viable at \$55/b

Only a couple of producers can produce in the DJ at these low prices.



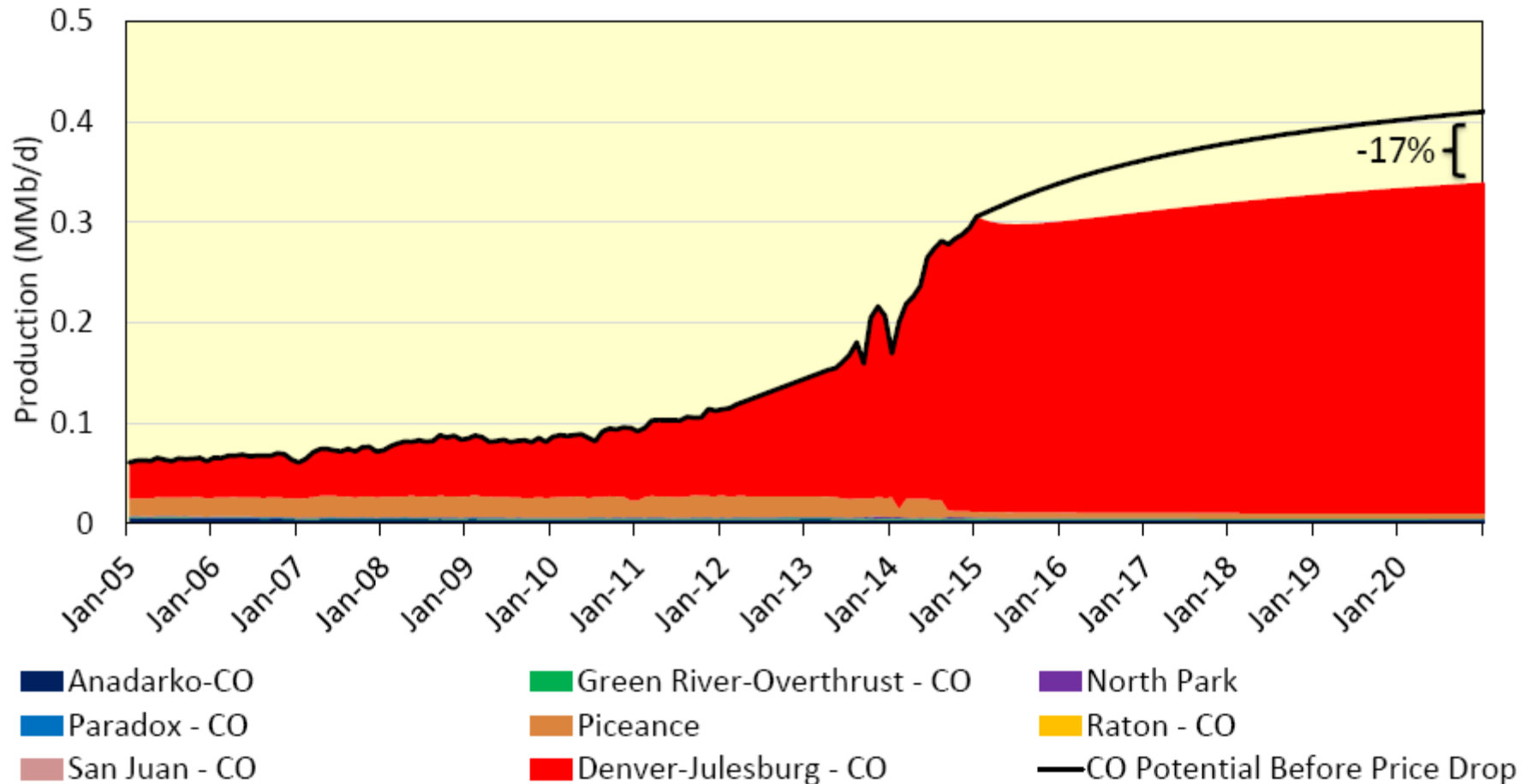
Sources: *The Outlook for U.S. Crude: Implications for Colorado*, Bernadette Johnson, Ponderosa Advisors

*Realized Price

All Lines Reflect 10%
Half-Cycle Returns

Colorado Crude Production Forecast

Difference of 70 Mb/d by 2020 between current trajectory & Ponderosa forecast.



Sources: *The Outlook for U.S. Crude: Implications for Colorado*, Bernadette Johnson, Ponderosa Advisors

Why Does This Matter...Tax Revenue & Jobs

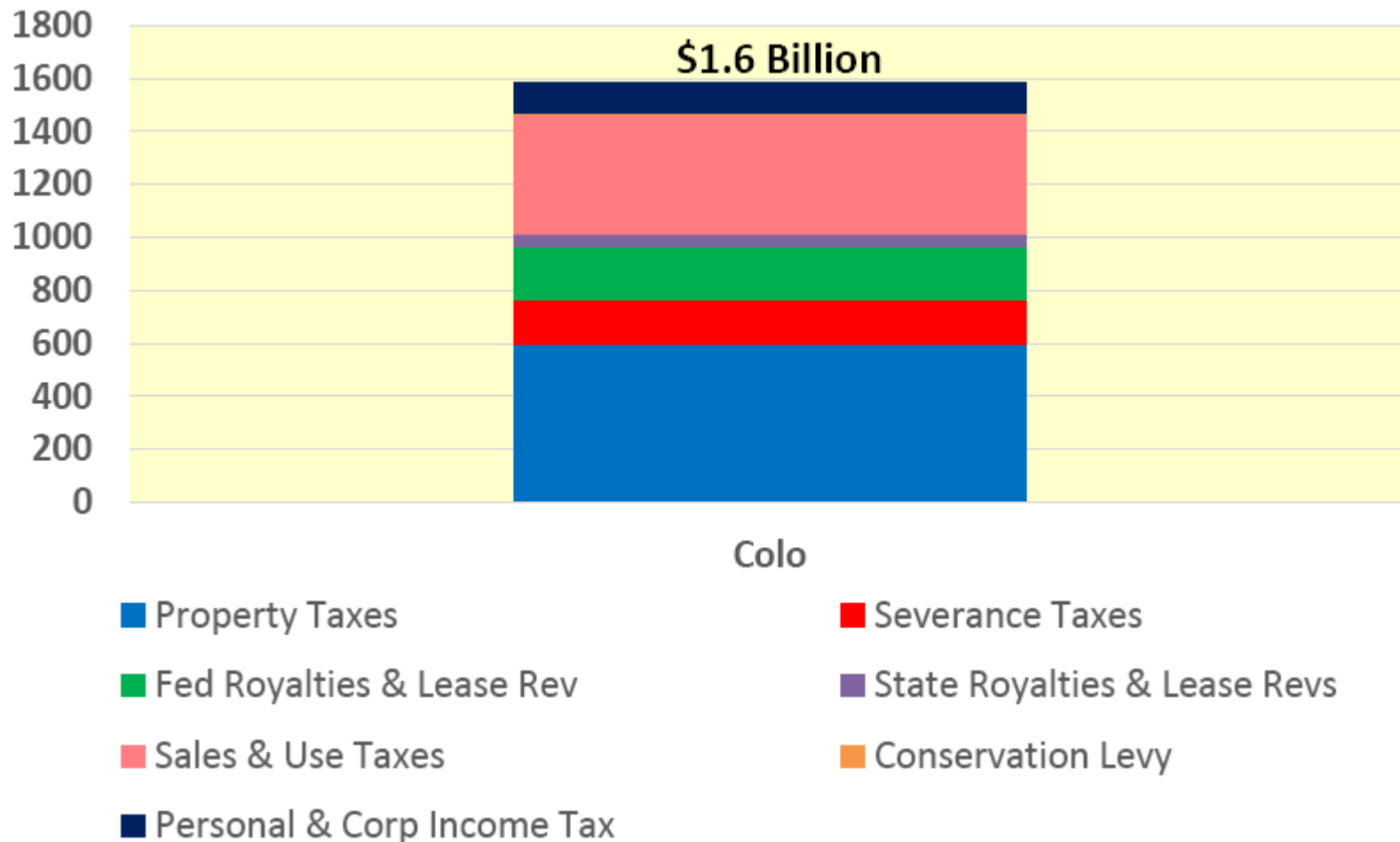
	Decreased Drilling Activity*	Decreased Volumes	Lower Crude Prices
State Severance Tax		↓	↓
Local Taxes		↓	↓
State Income Taxes		↓	↓
Royalty Payments		↓	↓
Federal Income Taxes		↓	↓
Jobs	↓	↓	↓
Wages	↓	↓	↓

*Severance vs Ad Valorem Timing Misalignment Can Impact State Severance For Specific Years



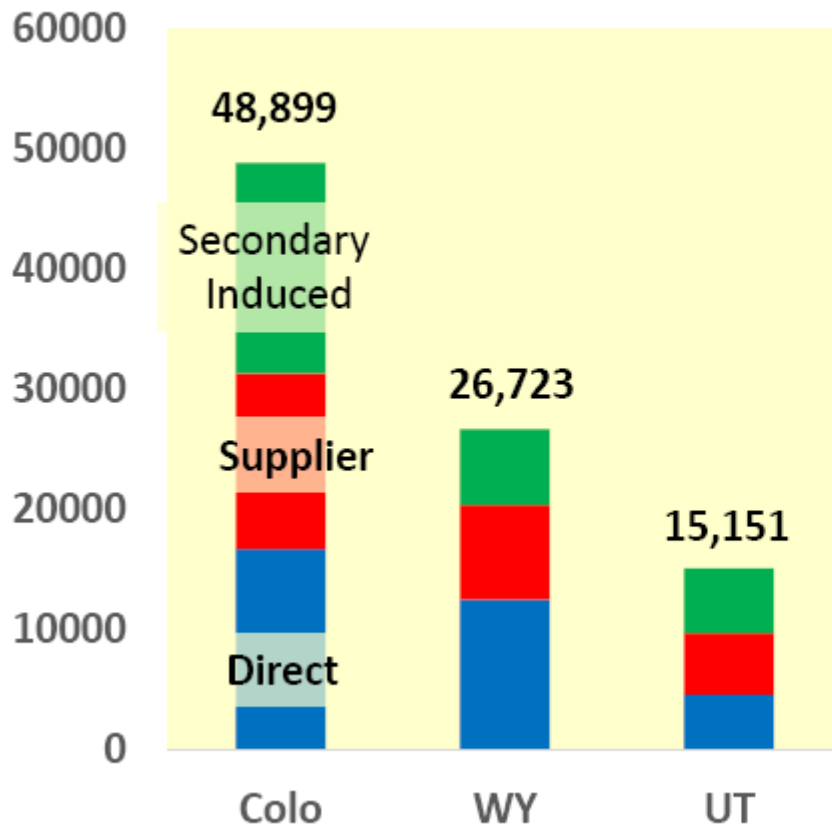
Sources: *The Outlook for U.S. Crude: Implications for Colorado*, Bernadette Johnson, Ponderosa Advisors

The Oil & Gas Industry Contributes Mightily To State And Federal Revenues

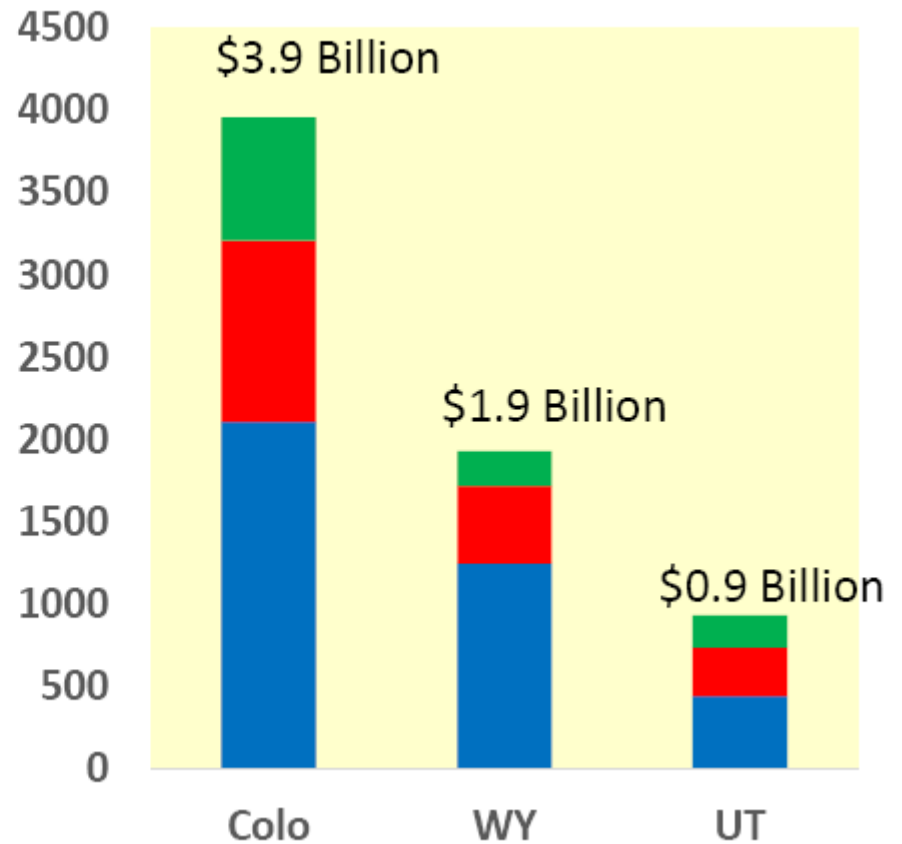


Oil & Gas Jobs and Wages

Oil & Gas Related Jobs



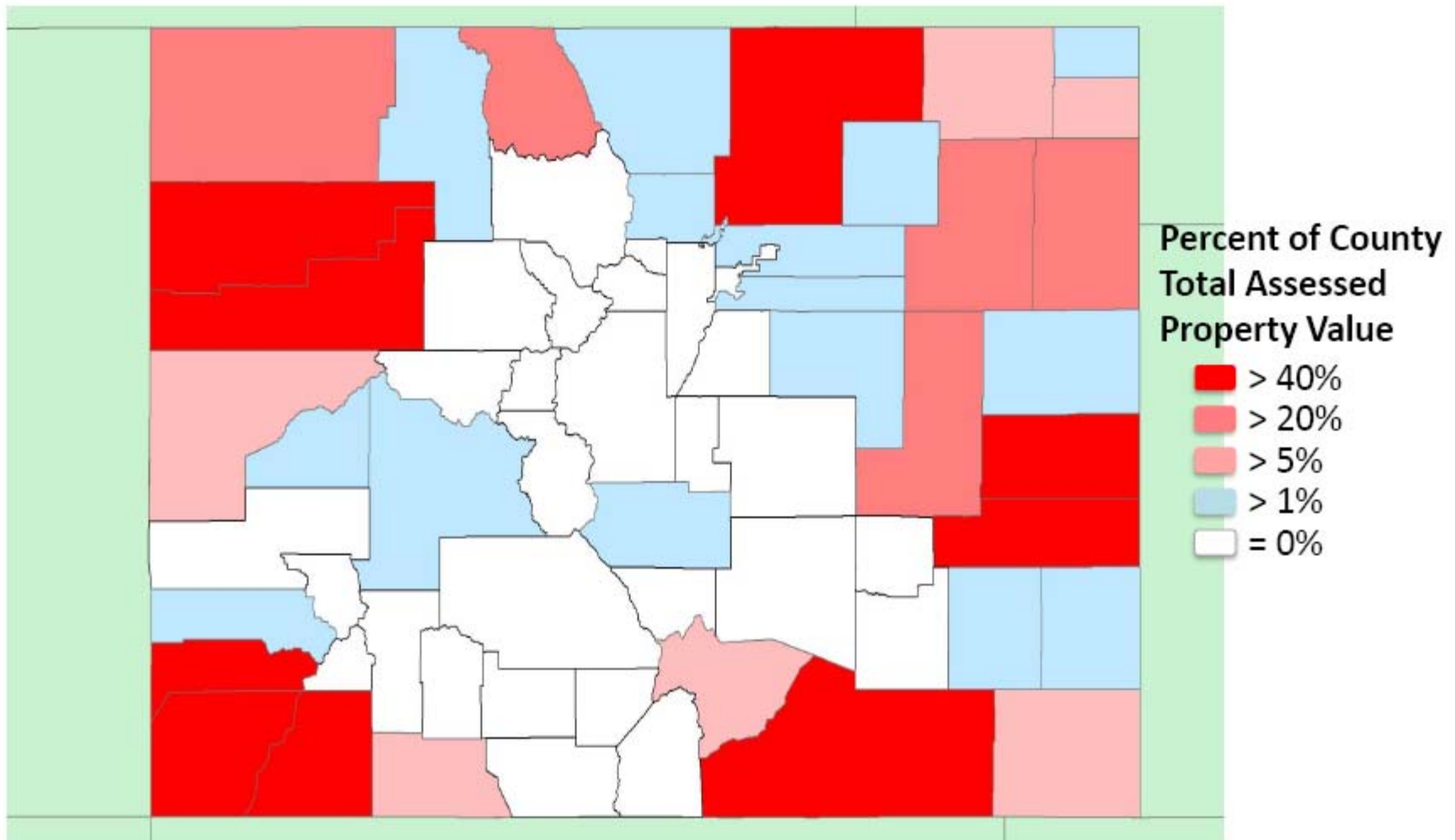
Oil & Gas Related Wages



Source: *The Outlook for U.S. Crude: Implications for Colorado*, Bernadette Johnson, Ponderosa Advisors

Western Energy Alliance

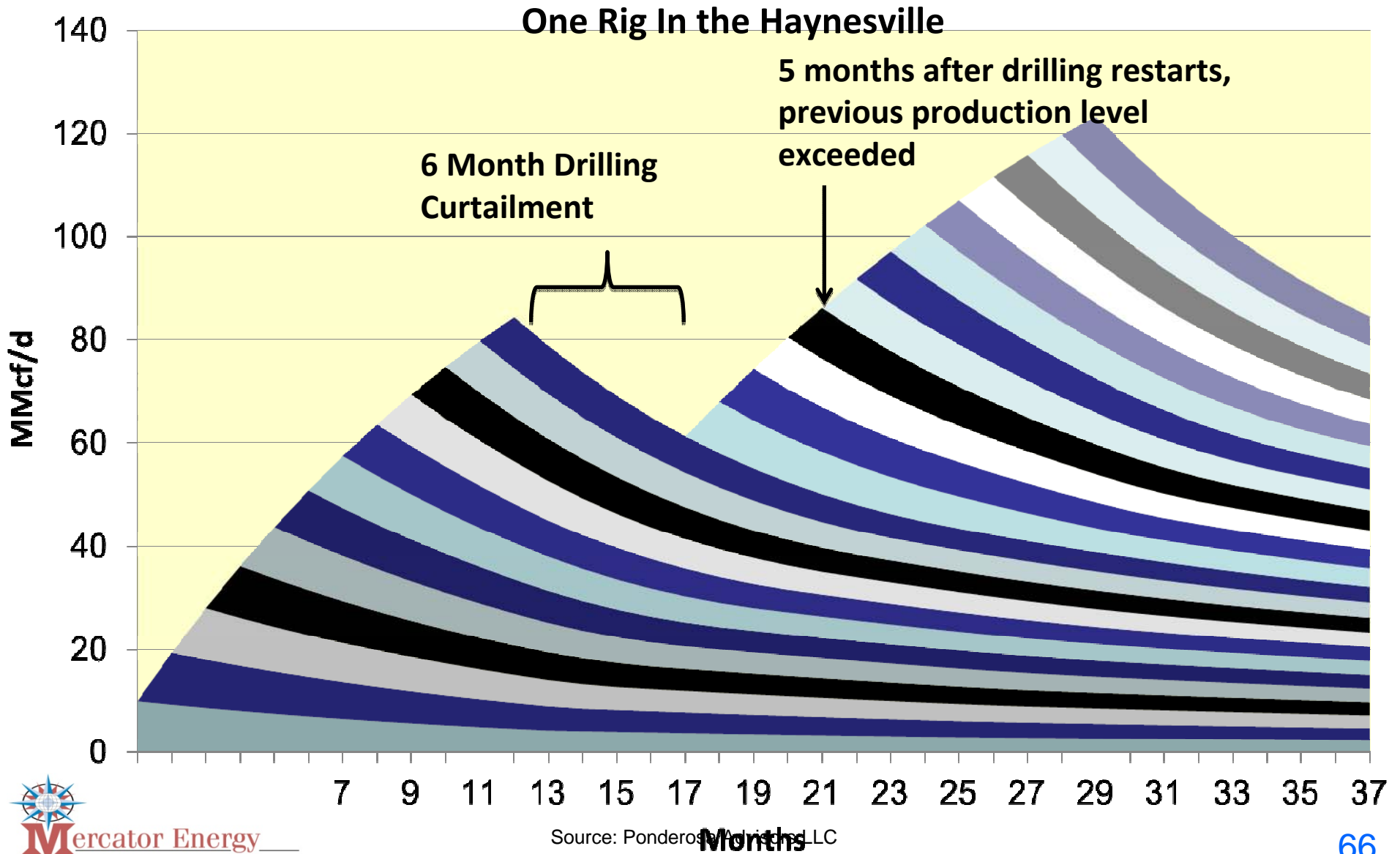
Many Counties Are Highly Dependent On Oil & Gas Industry Property Taxes



Sources: *The Outlook for U.S. Crude: Implications for Colorado*, Bernadette Johnson, Ponderosa Advisors

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The "Ferrari" Affect Substantially Reduces The Likelihood Of Price Spikes



Winners

- China/Asia
- Consumer growth; consumer spending
- U.S. nitrogen fertilizer industry
- Steel producers
- Refiners
- Chemical producers
- Aluminum smelters
- Natural gas fired electric generators

Losers

- U.S. Energy Security
- State and local governments in oil & gas producing states
- Oil & gas E&P's
- Oil & gas employment
- Oil & gas service companies
- U.S. LNG exporters who have not made an FID
- MLP's
- Retirement funds
- Renewable energy sector – cheap energy could destroy the “Green Revolution”
- Russia, Iran, Venezuela

Conclusions

- Crude and NGL prices won't recover for at least 2 years
- U.S. crude, NGL & natural gas production won't decline as quickly as OPEC expects
- U.S. producers will allocate capital to their highest valued (Internal Rate of Return) projects
- U.S. "short cycle" drilling (dependent on near term quarter cash flow) will result in U.S. drillers feeling most of the pain
- The "recovery time" will exceed any hedge terms

How Long Will We Be Stuck in This Ditch?



What Will Help Us Get Out?



Citations for Report

All of the information utilized for this report is a compilation of information pulled from the following data sources:

Energy Information Administration (EIA)
Bentek Energy, Jack Weixel
Ponderosa Advisors LLC
Office of Energy Projects
Bloomberg
U.S. Department of Energy
Raymond James and Associates, Inc.
Wikipedia
LNG Blog
Platts Gas Daily Report, A McGraw Hill Publication
Platts Inside FERC Gas Market Report, A McGraw Hill Publication
American Enterprise Institute
Oilprice.com
Rueters
LNG World News
The Motley Fool
Chevron
Encana Corporation
Waterborne Energy, Inc.
King & Spalding
Midwest Energy Logistics, LLC
National Energy Board
NERA Economic Consulting
LNG Business Review
Colorado Interstate Gas, George Wayne
Tea Party Command Center
Tudor Pickering Holt & Co.
OPIS

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