Fracking & the Poor

Presentation to:

17th Annual Wyoming Oil & Gas Fair

By:
John Harpole

Mercator Energy

September 19th, 2013

Who I Am

- 33 years in the Oil & Gas Industry
- Appointed by Gov. Owens to **Low Income Energy Commission** in 1998
- **Energy Outreach Colorado Board Member** since 2006
- Author of **RIK-LIHEAP 2005 Energy Policy Act**
- Friend of many low income energy advocates
- Son of Phil & Mary

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A critique of the energy industry's response to the anti-fracking craze

- "Quite honestly John, you guys sound like a bunch of engineers responding to an insurance company audit."
- "You spend too much time on abstract ideology or get lost in the policy weeds."
- "Tell people how your industry helps them."

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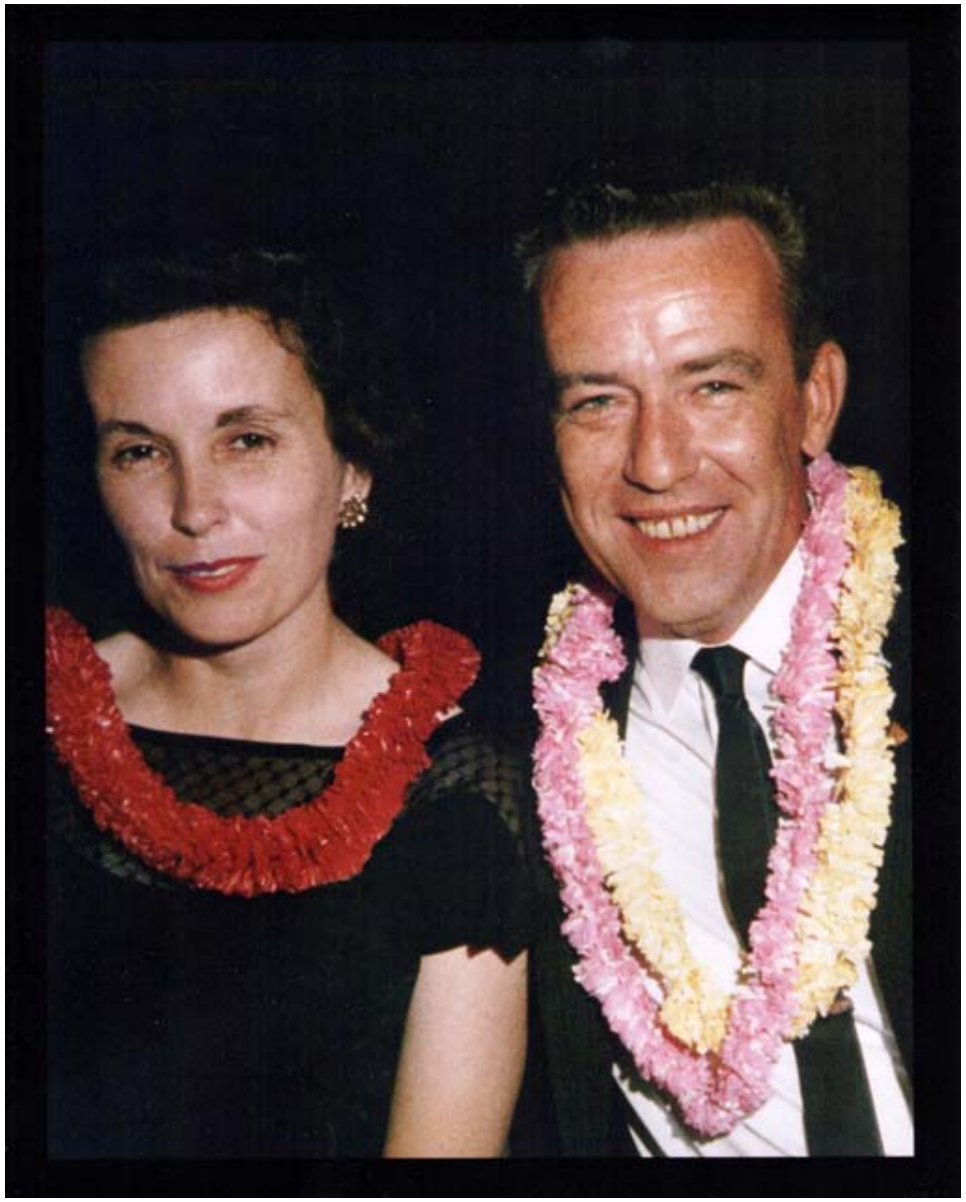

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May 13th, 1966

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35 Years of Energy Bills

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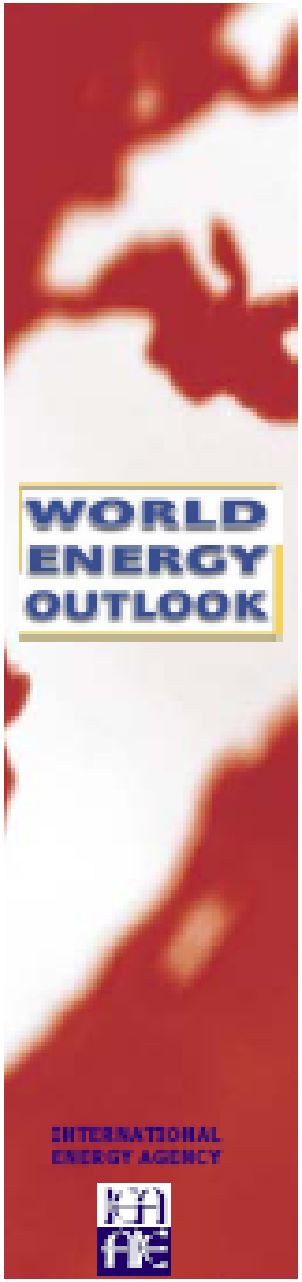
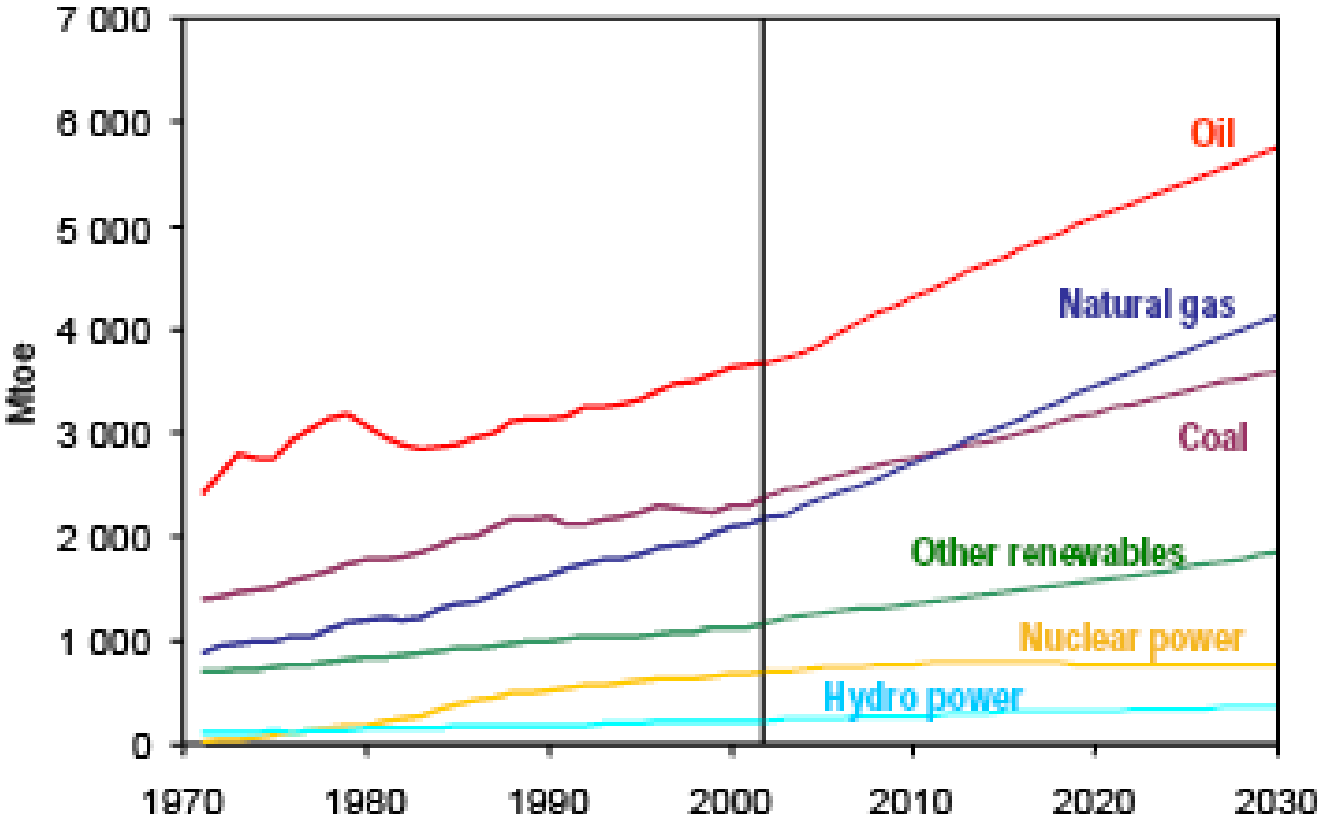


World Primary Energy Demand



Fossil fuels account for almost 90% of the growth in energy demand between now and 2030

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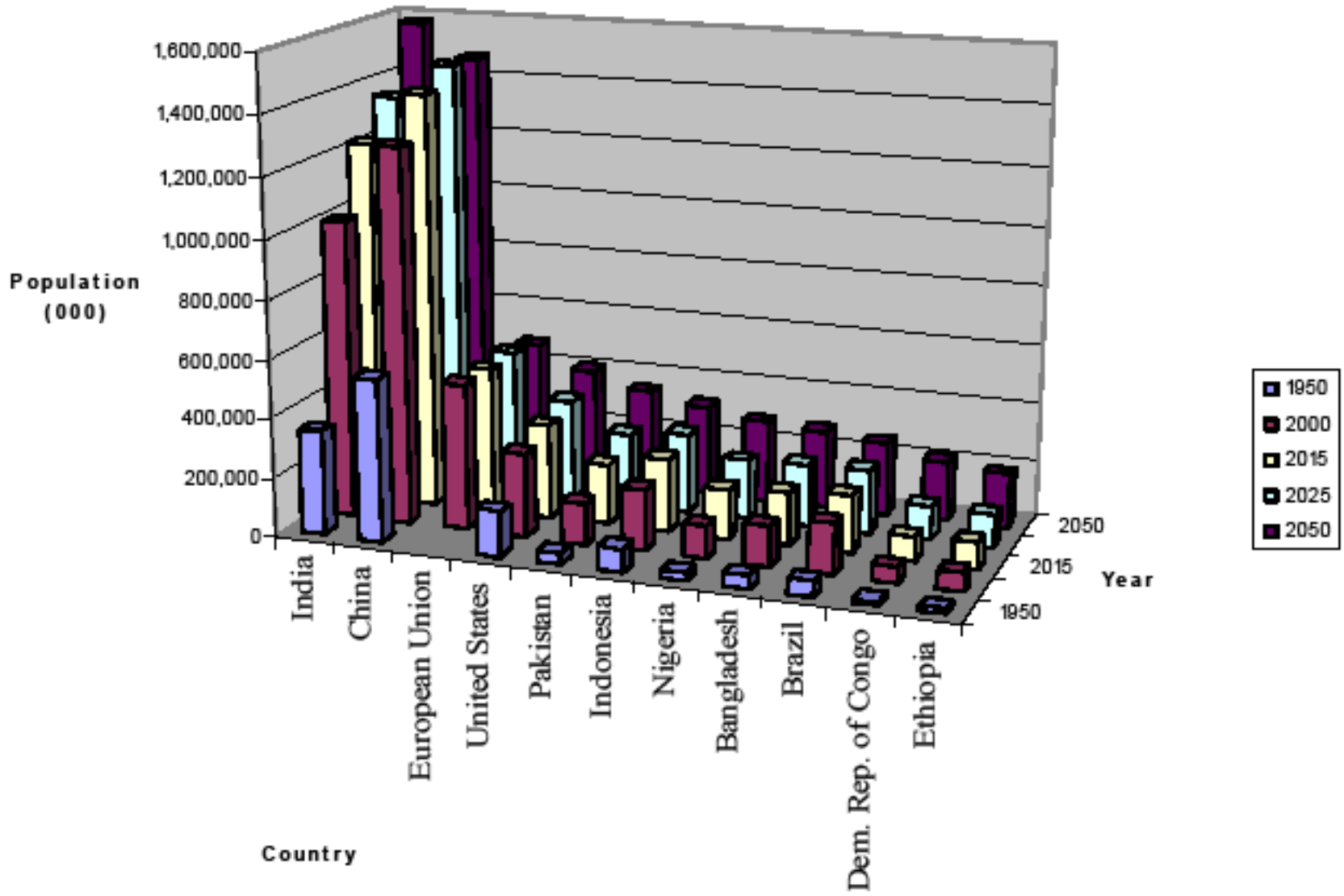
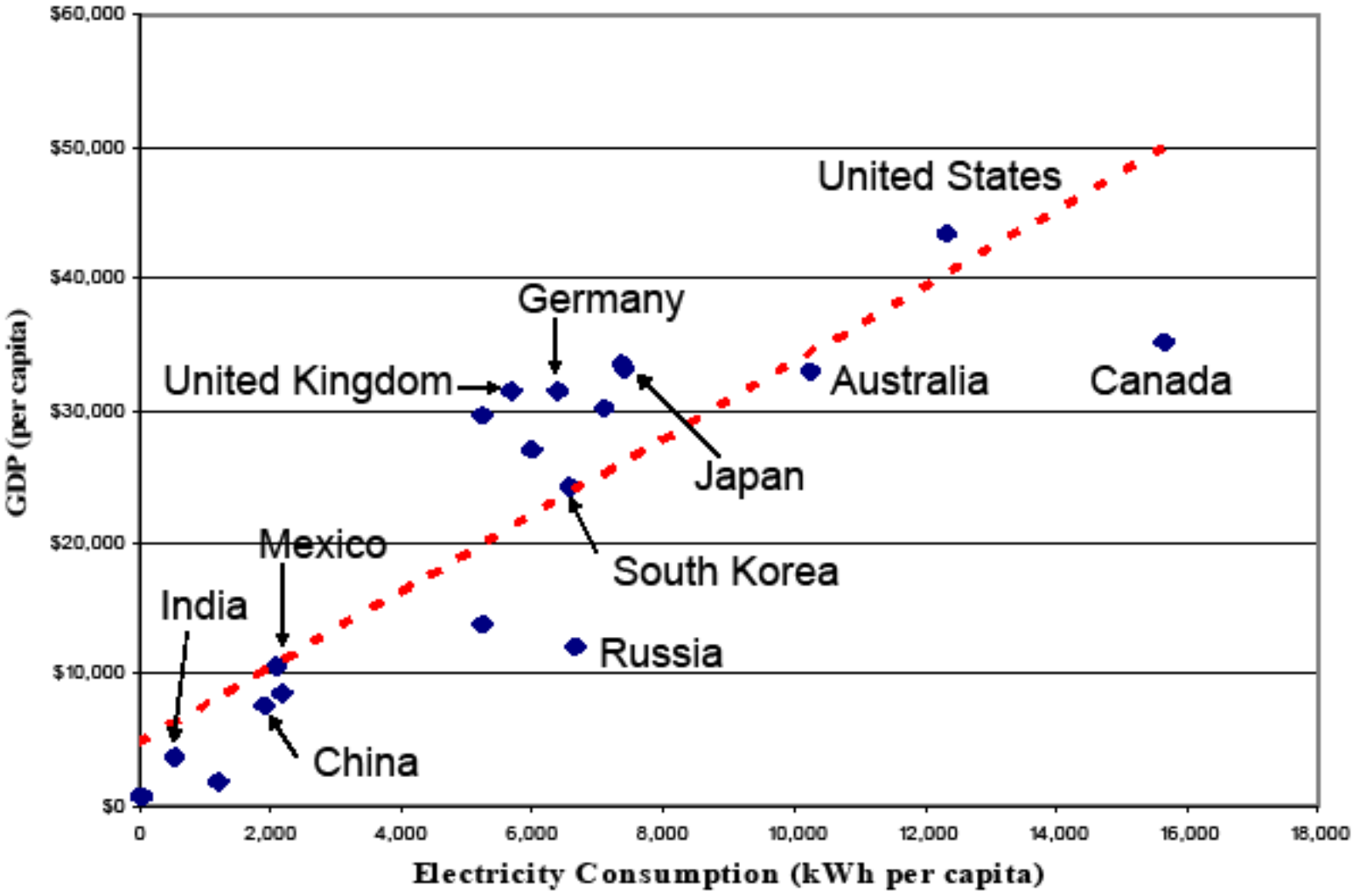
Population Growth from 1950-2050



Quality of Life is Strongly Correlated with Electricity Consumption



Source: CIA World Factbook, 2007

Russia, Iran and Qatar Form Natural Gas Cartel

10/21/2008 in Tehran, Iran

Qatar's Deputy Premier and Minister of Energy and Industry, Abdullah bin Hamad Al-Attiya

Iranian Oil Minister, Gholam Hossein Nozari

Alexei Miller, Chief of Russia's state gas monopoly - Gazprom

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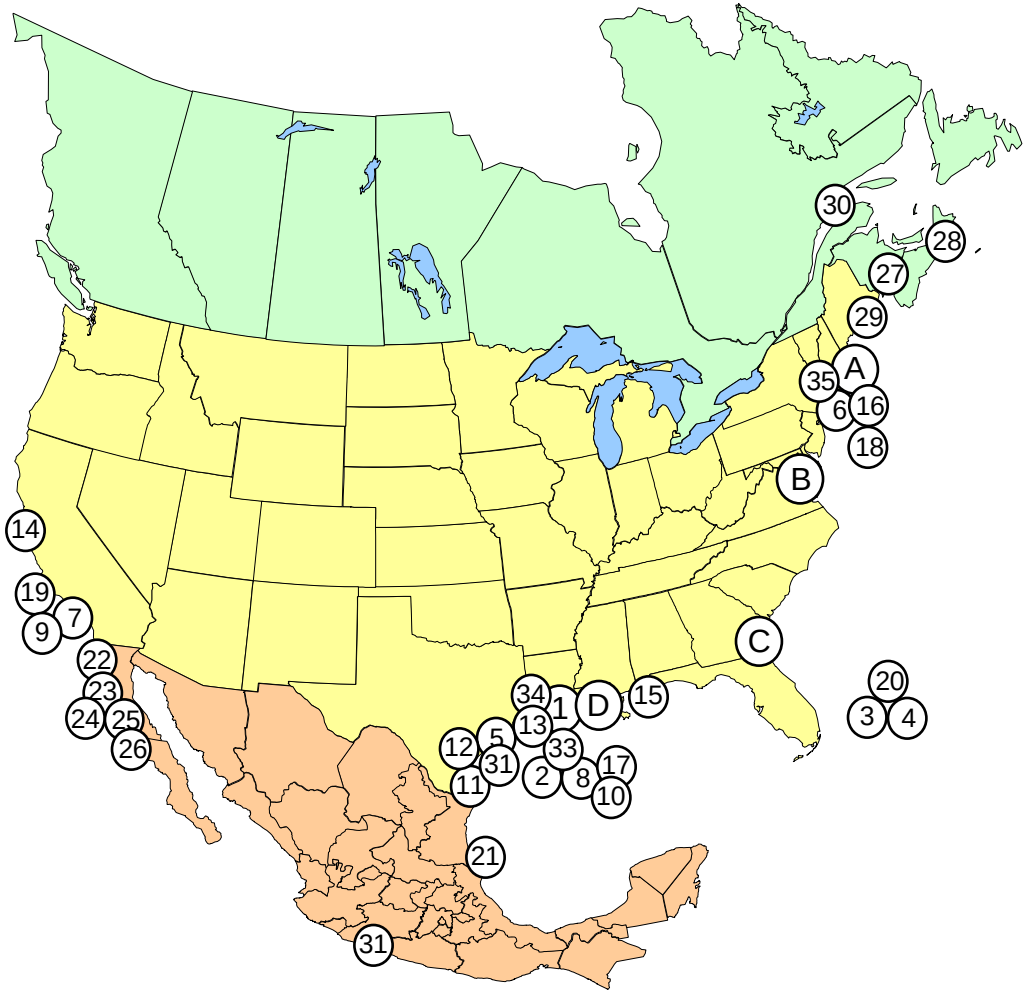
Existing and Proposed Lower-48 LNG Terminals



December 2003

Source: Pat Wood, Federal Energy Regulatory Commission, LNG Ministerial Conference Presentation

Existing Terminals with Expansions

A. Everett, MA : 1.035 Bcfd (Tractebel)
B. Cove Point, MD : 1.0 Bcfd (Dominion)
C. Elba Island, GA : 1.2 Bcfd (El Paso)
D. Lake Charles, LA : 1.2 Bcfd (Southern Union)

Approved Terminals

1. Hackberry, LA : 1.5 Bcfd, (Sempra Energy)
2. Port Pelican: 1.0 Bcfd, (Chevron Texaco)

Proposed Terminals – FERC

3. Bahamas : 0.84 Bcfd, (AES Ocean Express)
4. Bahamas : 0.83 Bcfd, (Calypso Tractebel)
5. Freeport, TX : 1.5 Bcfd, (Cheniere / Freeport LNG Dev.)
6. Fall River, MA : 0.4 Bcfd, (Weaver's Cove Energy)
7. Long Beach, CA : 0.7 Bcfd, (SES/Mitsubishi)

Proposed Terminals – Coast Guard

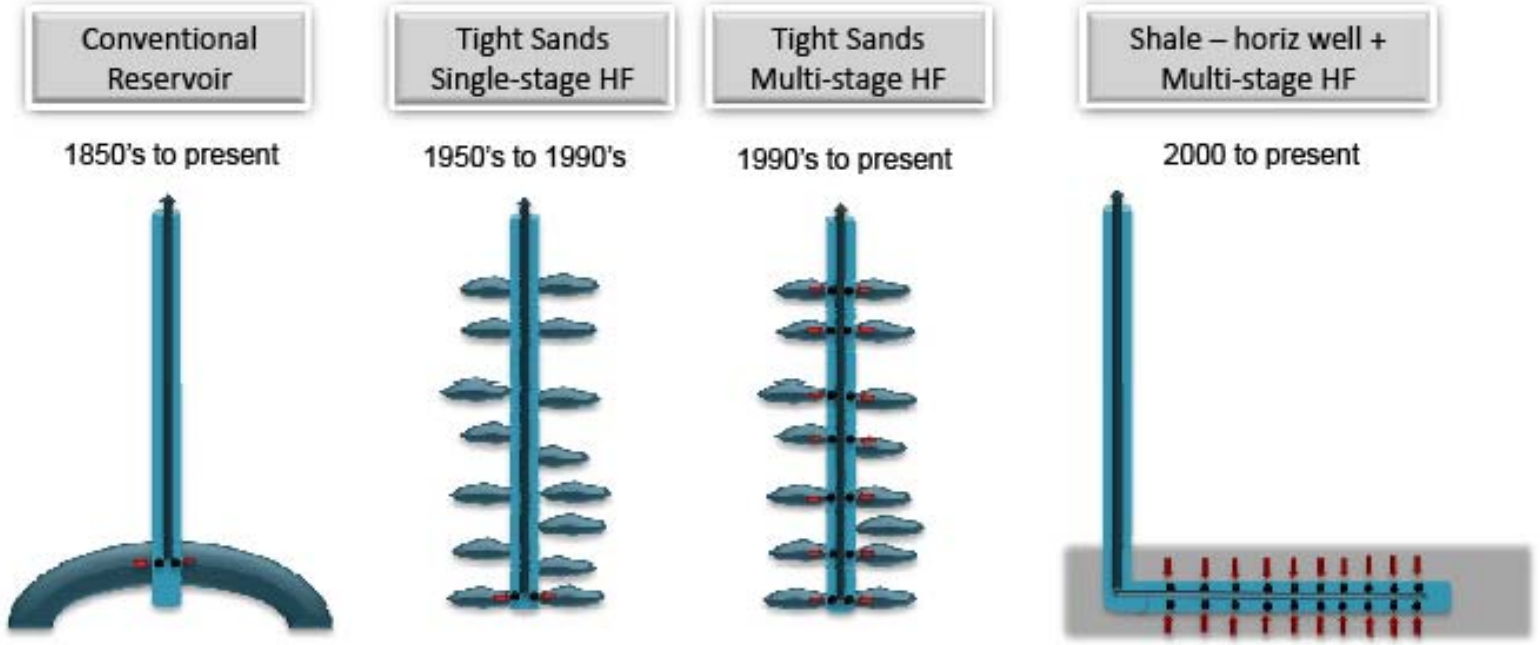
8. Gulf of Mexico: 0.5 Bcfd, (El Paso Global)
9. California Offshore: 1.5 Bcfd, (BHP Billiton)
10. Louisiana Offshore : 1.0 Bcfd (Gulf Landing – Shell)

Planned Terminals

11. Brownsville, TX : n/a, (Cheniere LNG Partners)
12. Corpus Christi, TX : 2.7 Bcfd, (Cheniere LNG Partners)
13. Sabine, LA : 2.7 Bcfd (Cheniere LNG)
14. Humboldt Bay, CA : 0.5 Bcfd, (Calpine)
15. Mobile Bay, AL: 1.0 Bcfd, (ExxonMobil)
16. Somerset, MA : 0.65 Bcfd (Somerset LNG)
17. Louisiana Offshore : 1.0 Bcfd (McMoRan Exp.)
18. Belmar, NJ Offshore : n/a (El Paso Global)
19. So. California Offshore : 0.5 Bcfd, (Crystal Energy)
20. Bahamas : 0.5 Bcfd, (El Paso Sea Fare)
21. Altamira, Tamulipas : 1.12 Bcfd, (Shell)
22. Baja California, MX : 1.3 Bcfd, (Sempra)
23. Baja California : 0.6 Bcfd (Conoco-Phillips)
24. Baja California - Offshore : 1.4 Bcfd, (Chevron Texaco)
25. Baja California : 0.85 Bcfd, (Marathon)
26. Baja California : 1.3 Bcfd, (Shell)
27. St. John, NB : 0.75 Bcfd, (Irving Oil & Chevron Canada)
28. Point Tupper, NS 0.75 Bcf/d (Access Northeast Energy)
29. Harpswell, ME : 0.5 Bcf/d (Fairwinds LNG – CP & TCPL)
30. St. Lawrence, QC : n/a (TCPL and/or Gaz Met)
31. Lázaro Cárdenas, MX : 0.5 Bcfd (Tractebel)
32. Corpus Christi, TX : 1.0 Bcfd (ExxonMobil)
33. Gulf of Mexico : 1.0 Bcfd (ExxonMobil)
34. Sabine, LA : 1.0 Bcfd (ExxonMobil)
35. Providence, RI ; 0.5 Bcfd (Keyspan & BG LNG)

AMERICA'S NATURAL GAS ALLIANCE

EVOLUTION IN GAS WELL COMPLETEION TECHNOLOGY - THE KEY TO TODAY'S NATURAL GAS REVOLUTION



Multi-stage hydraulic fracture stimulation (HF) unlocks gas in unconventional reservoirs

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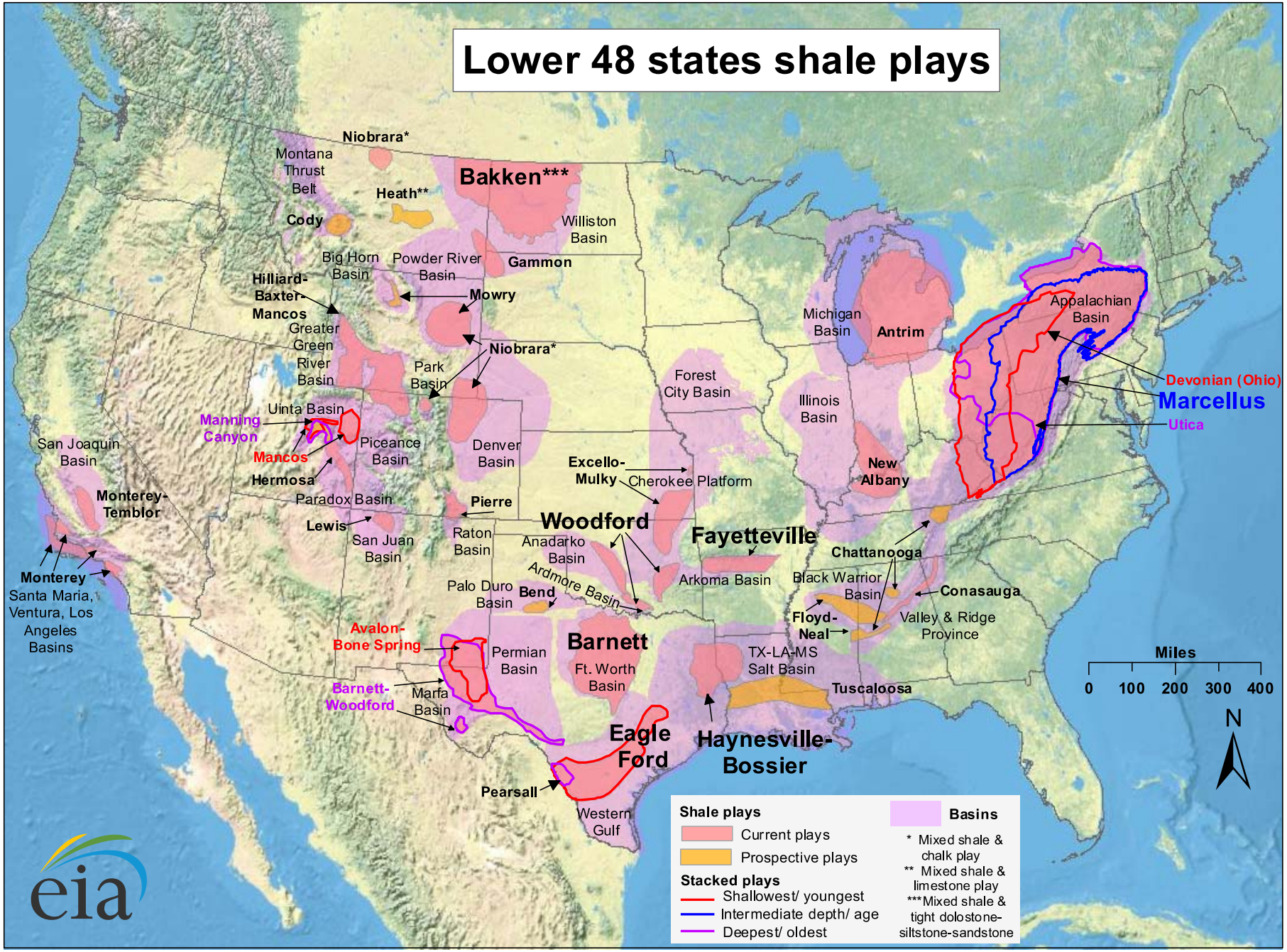
Source: *America's New Natural Gas,* America's Natural Gas Alliance



Source: Energy Information Administration based on data from various published studies.
Updated: May 9, 2011

Fracture Treatment in 1949

12 Miles East of Duncan, OK

Source: Platts Gas Daily, April 15, 2013

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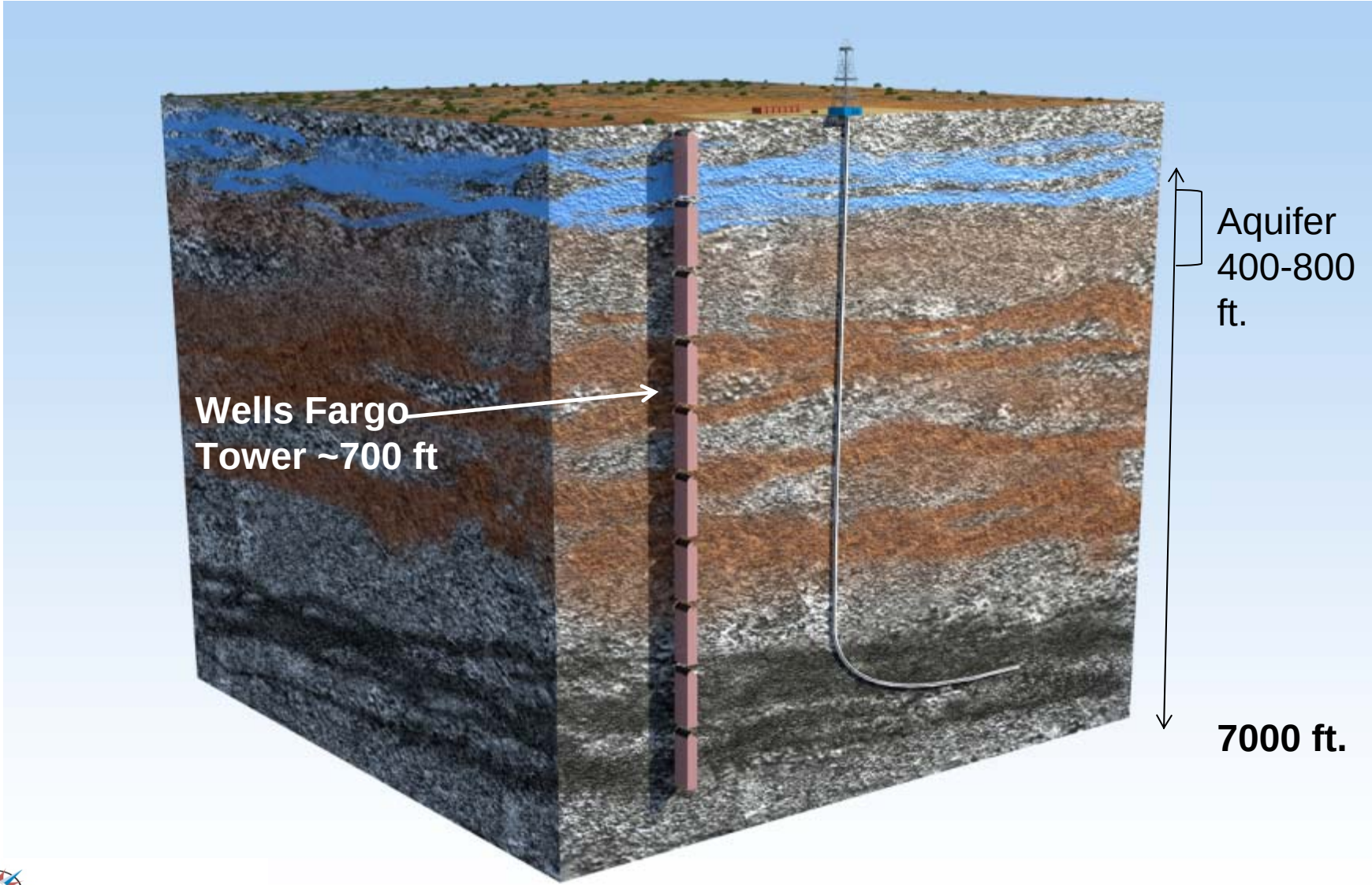
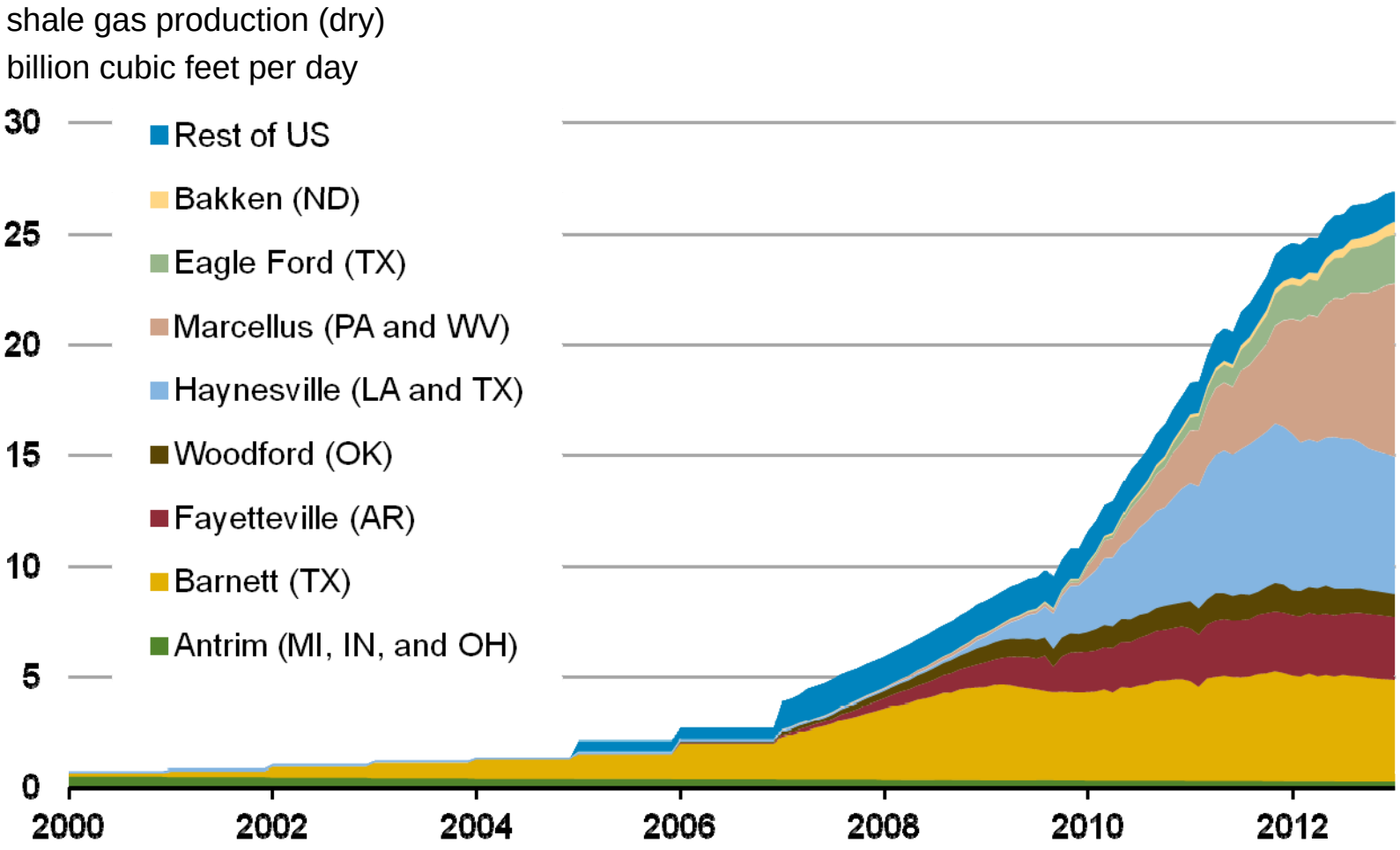
Drilling Distance



Source: Colorado Oil & Gas Association, *Hydraulic Fracturing and Water*

Domestic production of shale gas has grown dramatically over the past few years



Sources: LCI Energy Insight gross withdrawal estimates as of January 2013 and converted to dry production estimates with EIA-calculated average gross-to-dry shrinkage factors by state and/or shale play.

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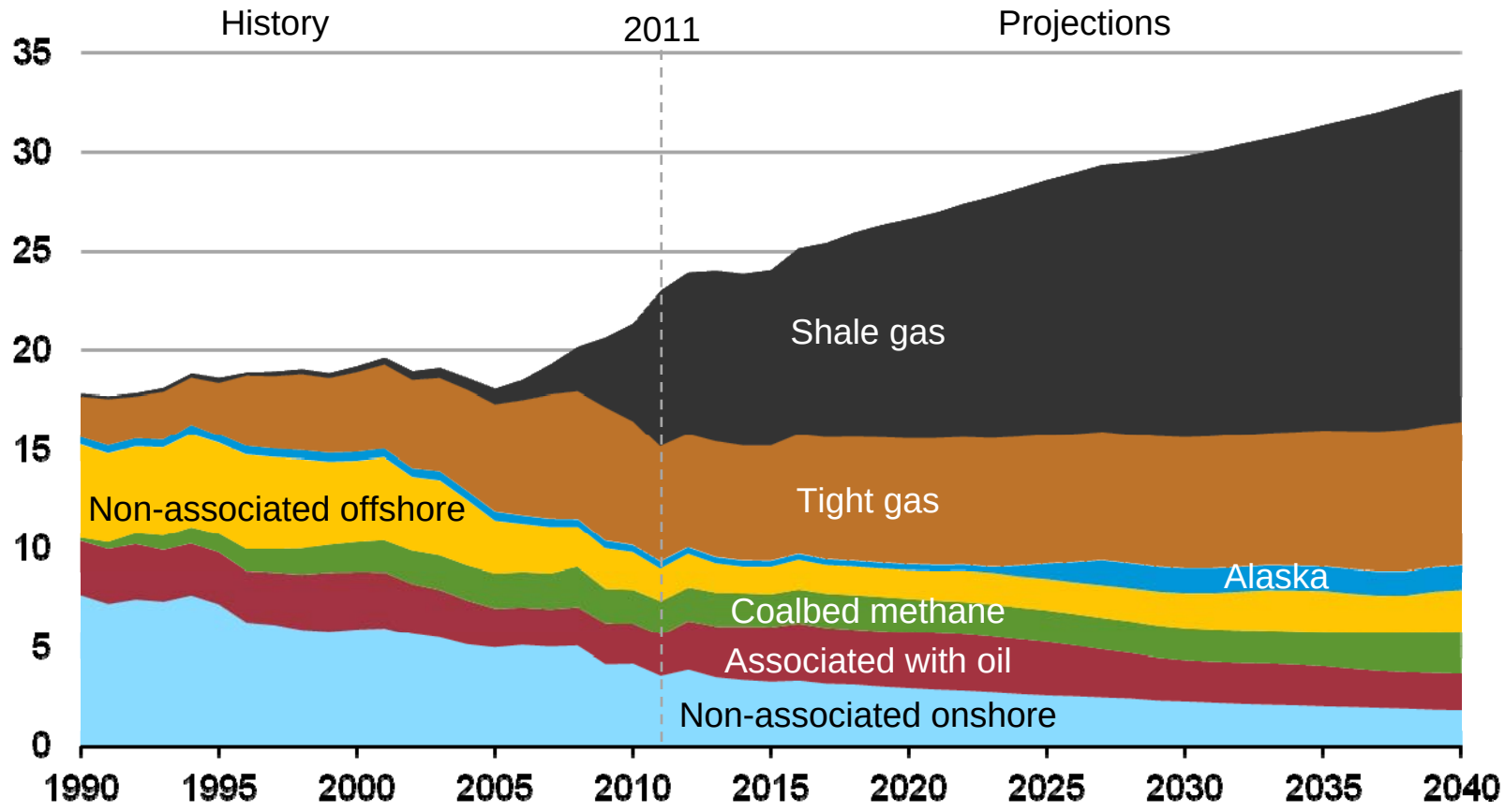
Shale gas leads growth in total gas production through 2040

U.S. dry natural gas production
trillion cubic feet



Source: EIA, Annual Energy Outlook 2013 Early Release

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Forecasts for Shale Gas Resource?

- 2008 - **347 TCF** - Energy Information Administration (EIA)
- 2008 - **840 TCF** - Navigant for Clean Skies Foundation
- 2009 - **616 TCF** - Potential Gas Committee (PGC)
- 2011 - **827 TCF** - Energy Information Administration (EIA)
- 2013 – **1,073 TCF** - Potential Gas Committee (PGC)

Source: Various resource estimates

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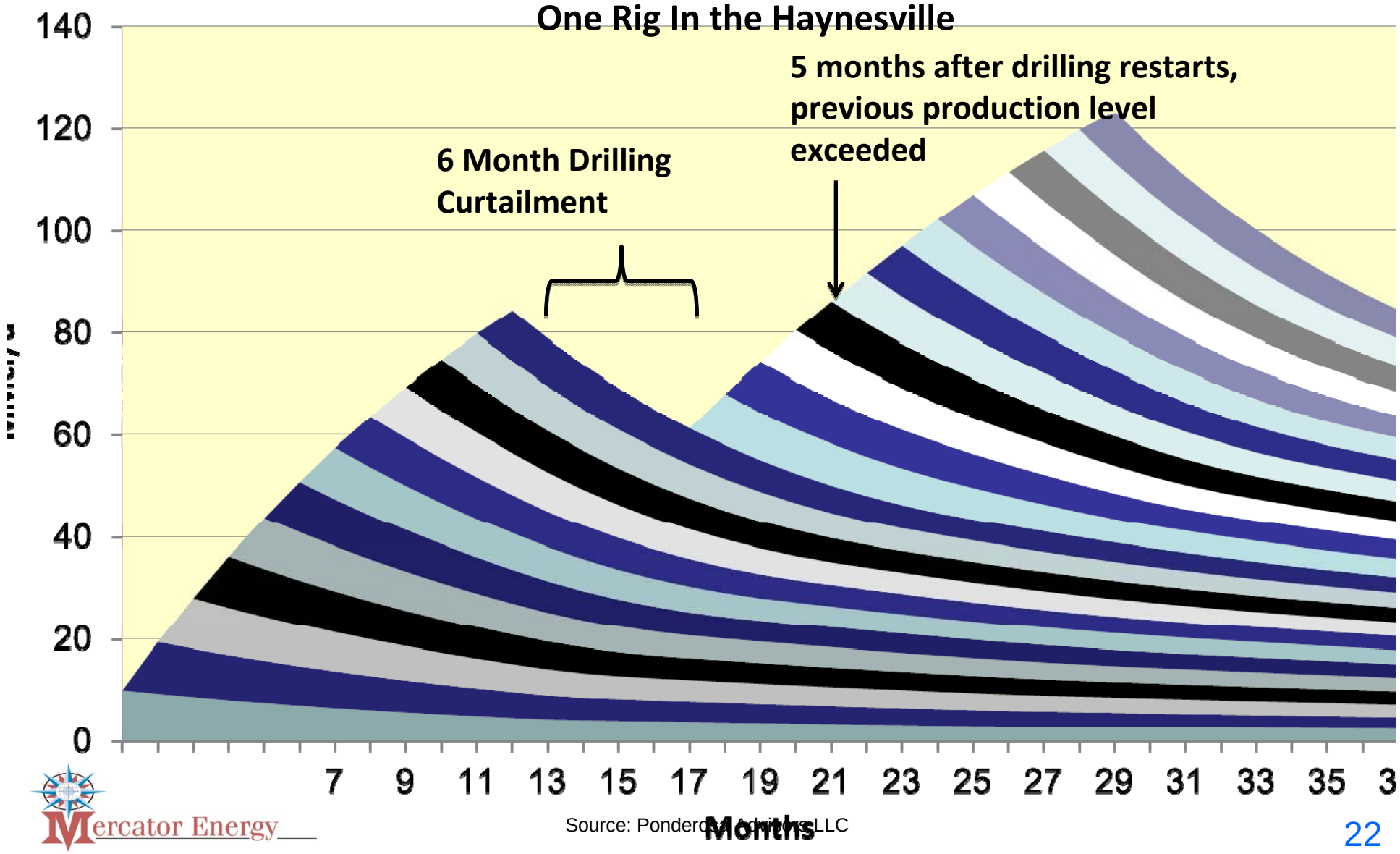
THE SUPPLY CURVE HAS MOVED

According to the Potential Gas Committee, during the last two years, the future gas supply estimate for the US rose nearly 25% to a 48-year record of **2,688 TCF**.

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



Source: Ponderosa Advisors LLC

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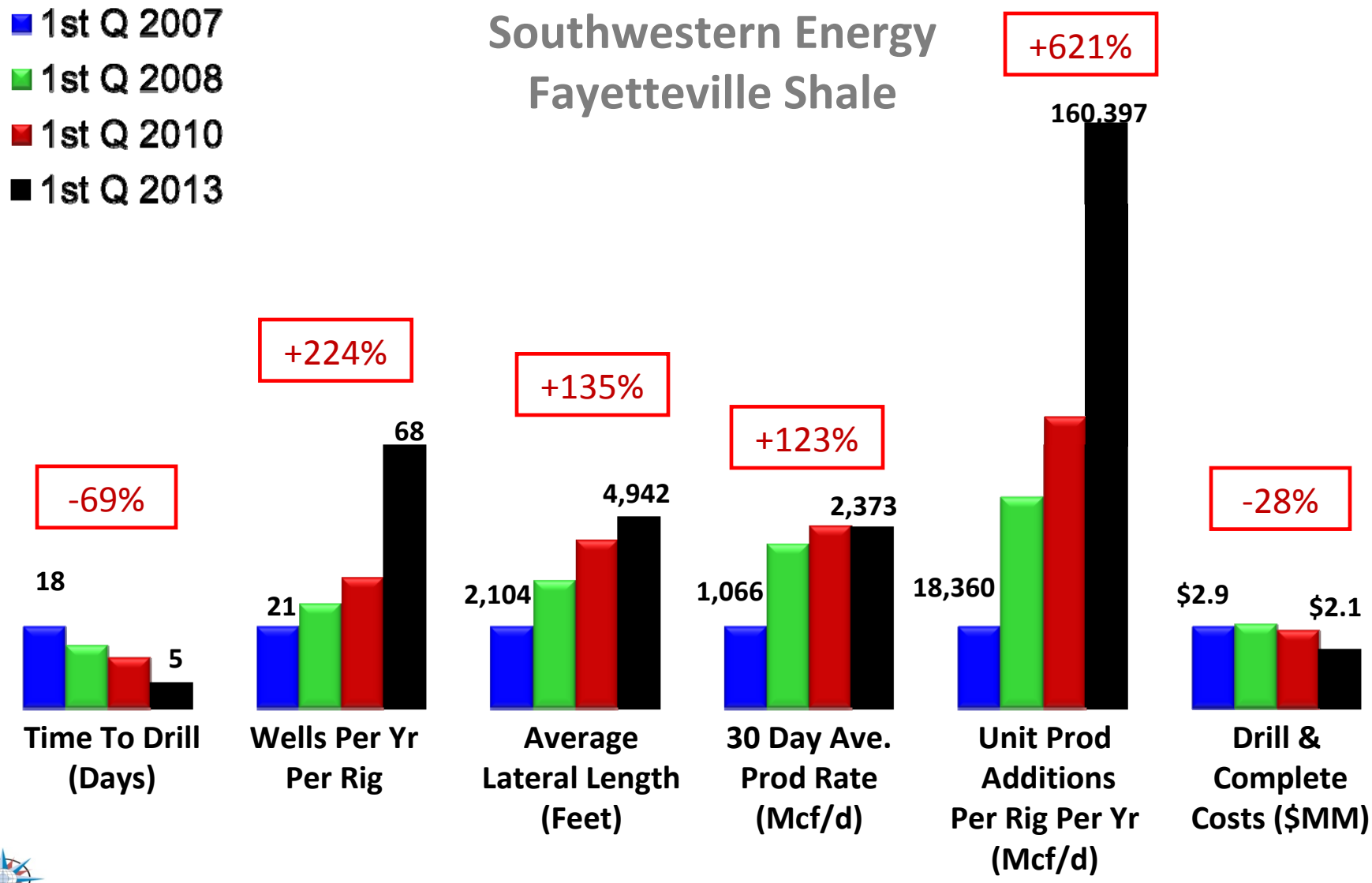
Drilling Rig Productivity Continues To Improve



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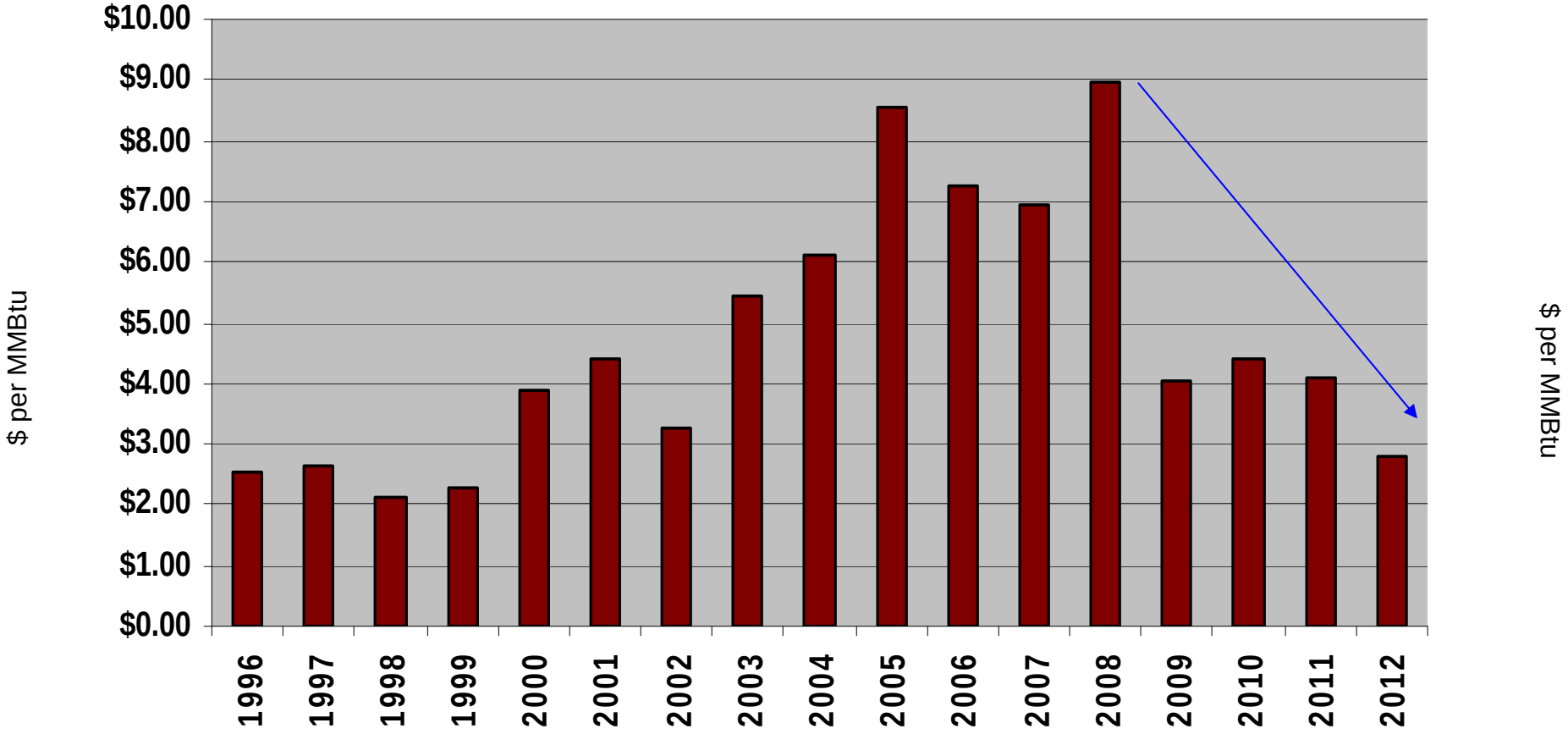
Source: Southwestern Energy Financials

NYMEX Henry Hub Natural Gas Price*
1996 - 2012 Actual



Source: *Average of last three days of trading as published in the Platts Gas Daily Report

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World LNG Estimated June 2013 Landed Prices

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

Updated Mayl 23, 2013

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Perspective: Residential Gas Usage

In a single year, the average US home uses 84 MCF of natural gas.

Source: Natural Gas Supply Association

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The Effect of Fracking on Residential Gas Cost

Xcel Energy®
RESPONSIBLE BY NATURE™

PUBLIC SERVICE COMPANY OF COLORADO *
P O BOX 840
DENVER, CO. 80201
(800) 895-4999 Español: (800) 687-8778

Page 1 of 1

Customer Name	Service Address	Account No.	Date Due	Amount Due
[redacted]	[redacted]	[redacted]	Dec 26, 2012	$37.75

Account Activity

Date of Bill	Dec 5, 2012
Number of Payments Received	1
Number of Days in Billing Period	34
Statement Number	349691134
Premise Number	300801460

Previous Balance	$29.26
Total Payments	($29.26)
Balance Forward	$0.00
+ Current Bill	$37.75
Current Balance	**$37.75**

Gas Service - Account Summary

Invoice Number	0227514926		
Meter No.	00000R471013		
Rate	RG	Residential	
Days in Bill Period	34		
Current Reading	7720	Actual	12/05/2012
Previous Reading	7668	Actual	11/01/2012
Measured Usage	52		
Therm Multiplier	0.8606		
Therms Used	45.0		

Residential		
Usage Charge	45 therms x 0.090444	$4.07
~~Interstate Pipeline~~	~~45 therms x 0.000020~~	~~$0.01~~
Natural Gas 4 Qtr	45 therms x 0.355870	$16.01
~~Pipe Sys Int Adj~~	~~45 therms x 0.016880~~	~~$0.76~~
Service & Facility		$11.94
Subtotal		**$36.65**
Franchise Fee	3.00%	$1.10
~~Sales Tax~~		~~$0.00~~
Total Amount		**$37.75**

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The Effect of Fracking on Residential Gas Cost

- With the gas cost in **Spain** of **$10.05/MMBtu**, the total residential bill would have been:

$67.84 **80% Increase**

- With the gas cost in **China** of **$13.70/MMBtu**, the total residential bill would have been:

$82.29 **118% Increase**

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What Fracking Means to Households

2003-2008 NYMEX[1] Avg. Price[2]/MMBtu	**$7.21**	**61% Drop**
2012 NYMEX[1] Avg. Price/MMBtu	**$2.80**	
Price Differential/MMBtu	**$4.41**	
Residential Home Heating and Electricity Usage[3]/MMBtu	**x 7,400,000,000**	

Residential Cash Savings **= $32,634,000,000**

1 NYMEX – Average last 3 days of close of Natural Gas Contract as reported in Platts Gas Daily Report

2 See Addendum A for supporting documentation

3 Residential Gas Usage – Energy Information Administration

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Wall Street Journal Editorial September 6, 2013

- Families saved roughly $32.6 billion in 2012
- Windfall to U.S. natural gas consumers (industrial and residential) was closer to $110 billion
- That is greater than the annual income of all of the residents in 14 states in 2011

Fracking and the Poor, Steve Moore ,Wall Street Journal Editorial, September 6, 2013

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What Fracking Means to Low Income Households

- Roughly 40 million U.S. residential households (36% of 114 million total[4]) are estimated to qualify for LIHEAP assistance[5]

2012 Residential Cash Savings	**= $32,634,000,000**
Percent of households LIHEAP eligible	**x .36**
2012 LIHEAP Eligible Cash Savings	**= $11,748,240,000**
2012 LIHEAP Total Cash Assistance	**= $3,500,000,000**

4 US Census Bureau State and County Quickfacts

5 LIHEAP Home Energy Notebook for FY 2009: Appendix B: Income Eligibility Household Estimates; See Addendum A

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Wall Street Journal

Editorial Page

9/7/2013

Fracking and the Poor

By now even the Obama Administration has recognized that the natural gas drilling boom has led to more high-wage jobs, more secure energy supplies and lower manufacturing costs. But one of the biggest benefits from fracking and other new drilling technologies is often overlooked: the windfall to American consumers, especially the poor.

A new study by the Colorado-based energy broker Mercator Energy quantifies the multi-billion-dollar annual savings to American households through lower utility bills from the fall in natural gas prices.

From 2003-08, shortly before the fracking revolution took hold, the price of natural gas averaged about $7.20 per million BTUs. By 2012 after new drilling operations exploded across the U.S.—from West Texas to Pennsylvania to North Dakota—the increase in natural gas production had slashed the price to $2.80 per million BTUs.

Mercator examined Department of Energy data on natural gas usage to find out how this 61% price decline translated into lower home-heating and electricity bills. According to the federal Energy Information Administration, American households use about 7.4 billion MMBTUs for home heating and residential electricity each year.

Thanks to the lower price for natural gas, families saved roughly $32.5 billion in 2012. (That's 7.4 billion MMBTUs of residential use of natural gas times the $4.40 reduction in price.) 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 of the residents in 14 states in 2011.

Mercator's most notable finding is that the income group helped the most by this bonanza is the poor because energy is a big component of their family budgets. Data from the annual report of the federal Low Income Home Energy Assistance Program (Liheap) show that poor households spend four times more of their income on home energy (10.4%) than do non-poor households (2.6%). That same report says that roughly 40 million households, or 36% of U.S. households, are eligible for Liheap. Though the poor on average spend less overall on heating and electricity, lower natural gas prices have still shaved about $10 billion a year from the utility bills of poor families.

> The natural gas boom may be America's best antipoverty program.

To put it another way, fracking is a much more effective antipoverty program than is Liheap. In 2012, Liheap provided roughly $3.5 billion to about nine million low-income households to subsidize their home-heating costs. New drilling technologies saved poor households almost three times more. Low gas prices benefit nearly all poor households, while Liheap helps fewer than one in four.

These energy savings are especially impressive compared to what residents of other industrialized nations are paying. The natural gas price this summer increased to about $3.70 per million BTUs, but that compares to the roughly $10 that consumers pay in Spain or $13 in China. According to the Mercator analysis, if natural gas prices were that high in the U.S., average home heating bills for millions of Americans would be almost 75% higher.

You'd think that good liberal egalitarians would welcome these financial savings to poor households. Yet most green groups, in particular the Sierra Club, continue to oppose fracking and are using lawsuits and political lobbying to stop it. Rich Hollywood types like Matt Damon propagandize against it. No one is doing more to increase income inequality in America than the affluent environmentalists who oppose natural gas drilling.

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Wall Street Journal Editorial September 6, 2013

- Poor households spend four times more of their income on home energy (10.4%) than do non-poor households (2.6%)
- LIHEAP provided roughly $3.5 billion to about nine million low income households in 2012
- New drilling technologies saved poor households almost 3 times more
- Low gas prices benefit nearly all poor households while LIHEAP helps fewer than one in four

Fracking and the Poor, Steve Moore ,Wall Street Journal Editorial, September 6, 2013

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More on Fracking and the Poor
Wall Street Journal September 10, 2013

- A new report from IHS Global Insight estimates that fracking added the equivalent of approximately $1,200 to real household disposable income on average in 2012
- IHS predicts unconventional oil and gas will contribute more than $2,000 a year by 2015 and $3,500 a year by 2025
- Lower costs for raw materials were passed on to consumers via lower home heating and electricity bills

More on Fracking and the Poor
Wall Street Journal September 10, 2013

- Wages increased from a surge in industrial activity
- Industry lifted economic growth by $283 billion in 2012, estimated to be $533 billion in 2025
- Industry paid $74 billion in federal and state tax payments, estimated to be $138 billion in 2025

Fox News Coverage Last Weekend

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Denver Business Journal 9/17/13

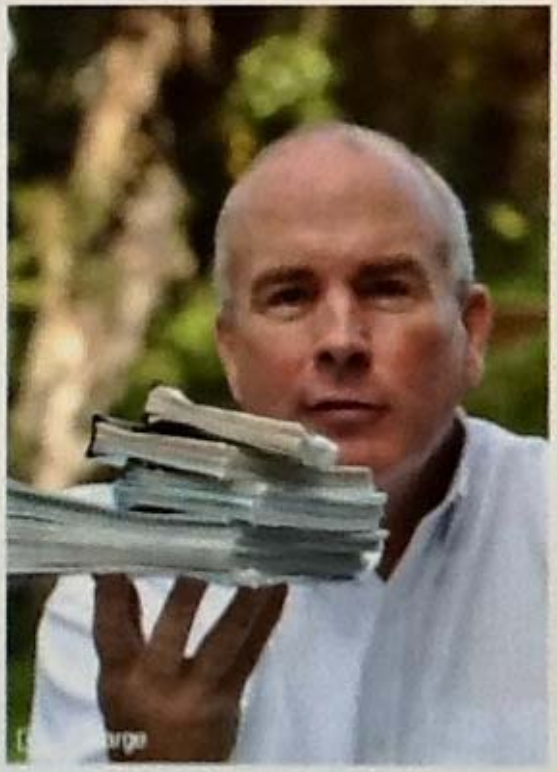
Fracking helps families, cuts heating, power bills by $32.6 billion, Colorado energy exec says

Cathy Proctor
Reporter-
Denver Business Journal
Email | Facebook | Twitter

The mother of John Harpole, a longtime Denver oil and gas executive, kept 35 years of monthly utility bills in a box — making notes in the margins about the weather "in hopes that she could guess what next month's bill might be," her son says.

And it's people like his mother, Mary Harpole — who raised nine children in a home in Denver's Congress Park neighborhood after her husband died in 1966 — that John Harpole thinks of when he talks about how the oil and gas industry's use of hydraulic fracturing (or fracking) cut residential utility bills in the United States by $32.6 billion in 2012.

"There's not a bill in that pile [of utility bills] that is over $90 — maybe a really expensive lunch for some folks — but she



Kathleen Lavine / Denver Business

John Harpole, president of Mercator Energy LLC, a natural gas marketing and research company in Littleton with 35 years of utility bills his mother kept in a box.

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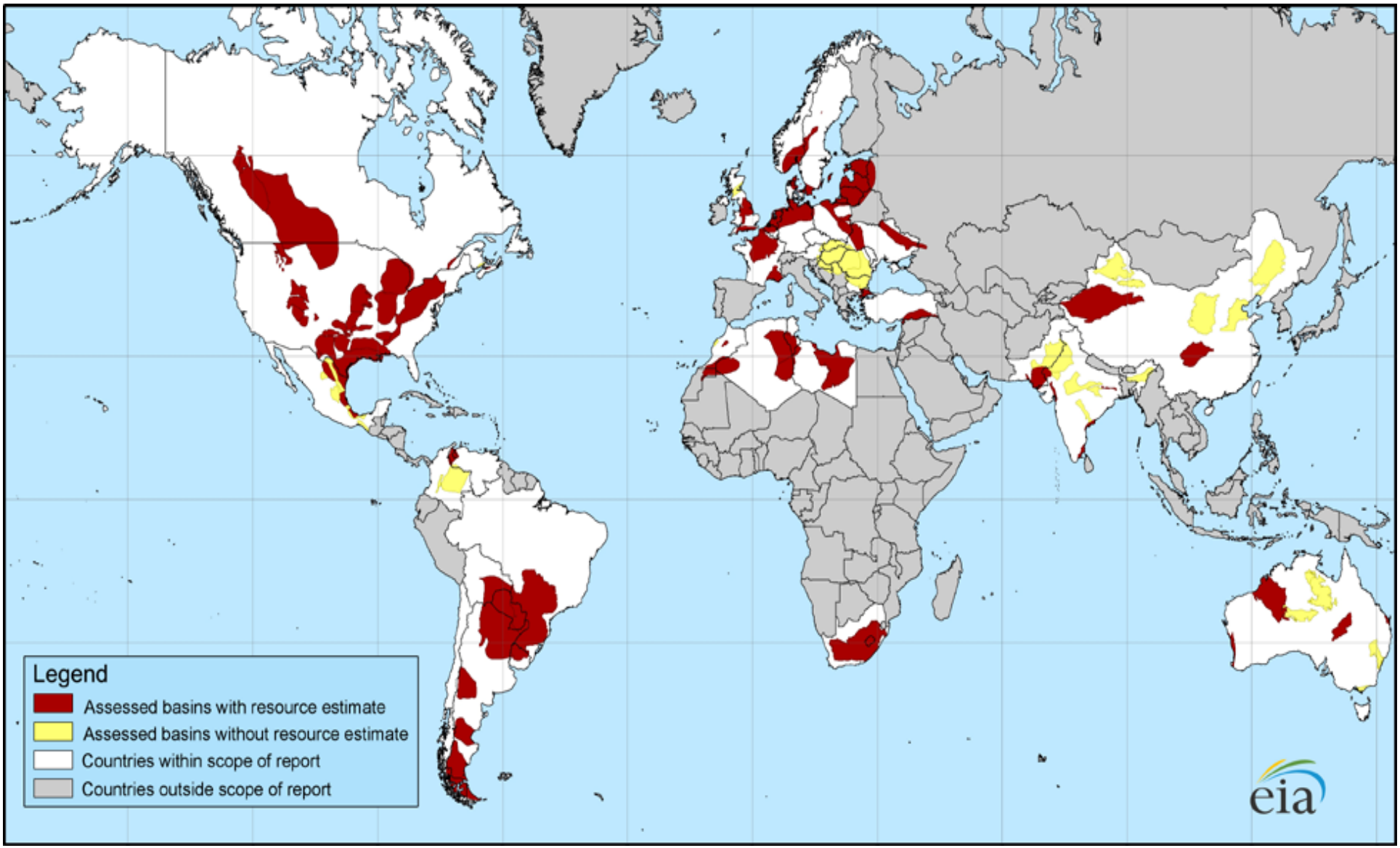
Global Shale Reserves



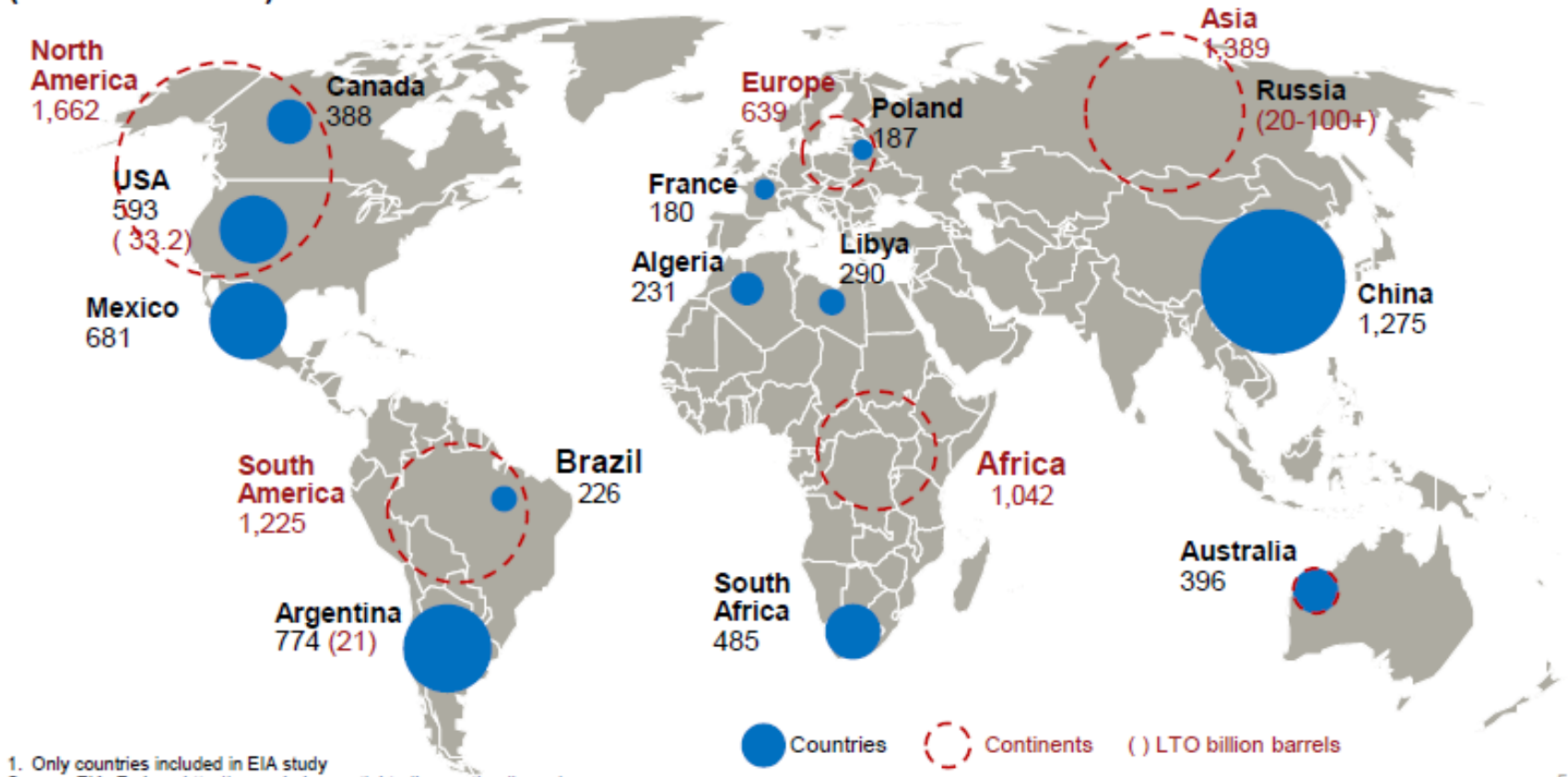
Source: EIA; Dr. Jim Duncan, ConocoPhillips, *Decoding the Relevance of Abundant Supply,* 2011 COGA Presentation

ATKearney

Resource potential in North America is massive – with the Rockies accounting for a significant fraction

Major global shale gas and LTO opportunities[1]

Technically recoverable shale gas (trillion cubic feet) and LTO (Billion barrels) resources



1. Only countries included in EIA study
Source: EIA, Forbes, http://www.shale-gas-tight-oil-argentina-ii.com/

5

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Job Creation

- America's Oil & Natural Gas Industry supports **9.2 million** men and women across the US in a wide range of highly skilled, well-paying professions

Source: energycreation.org article on job creation

Revenue Creation

- The US Oil and Natural Gas industry contributes **$86 million a day** in taxes, royalties and other fees – about **$31 billion a year**

Source: The Energy Stimulus

Conclusions

- Since 1949, **1,400,000 wells** have been hydraulically fractured in the US…No one has ever been able to demonstrate that it is harmful to human health

- Low natural gas prices will **significantly** advance the general public health and welfare
  - Conversion coal to gas, reduced air emissions
  - Energy security, job creation & lower energy costs for low income households

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Conclusions

- Increased industry activity in urbanized areas and environmentally sensitive areas should be addressed in a collaborative manner without **demonizing** oil and gas development

- What is more important to environmental groups, **creating an ideological enemy** (oil & gas development) with an artificial bogeyman (hydraulic fracturing) or advancing society?

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Contact Information

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Citations for Report

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

Ponderosa Advisors LLC
Blue, Johnson Associates, Inc.
Chris Wright, Liberty Resources
Office of Fossil Energy
Office of Oil Gas Global Security Supply
U.S. Department of Energy
Raymond James and Associates, Inc.
Charif Souki, Cheniere Energy Inc.; Cheniere Research
U.S. Federal Energy Regulatory Commission
Institute for Energy Research (IER)
Energy Information Administration (EIA)
Bernstein Research
Western Energy Alliance
Sutherland LNG Blog
Platts Gas Daily Report, A McGraw Hill Publication
Colorado Oil and Gas Association

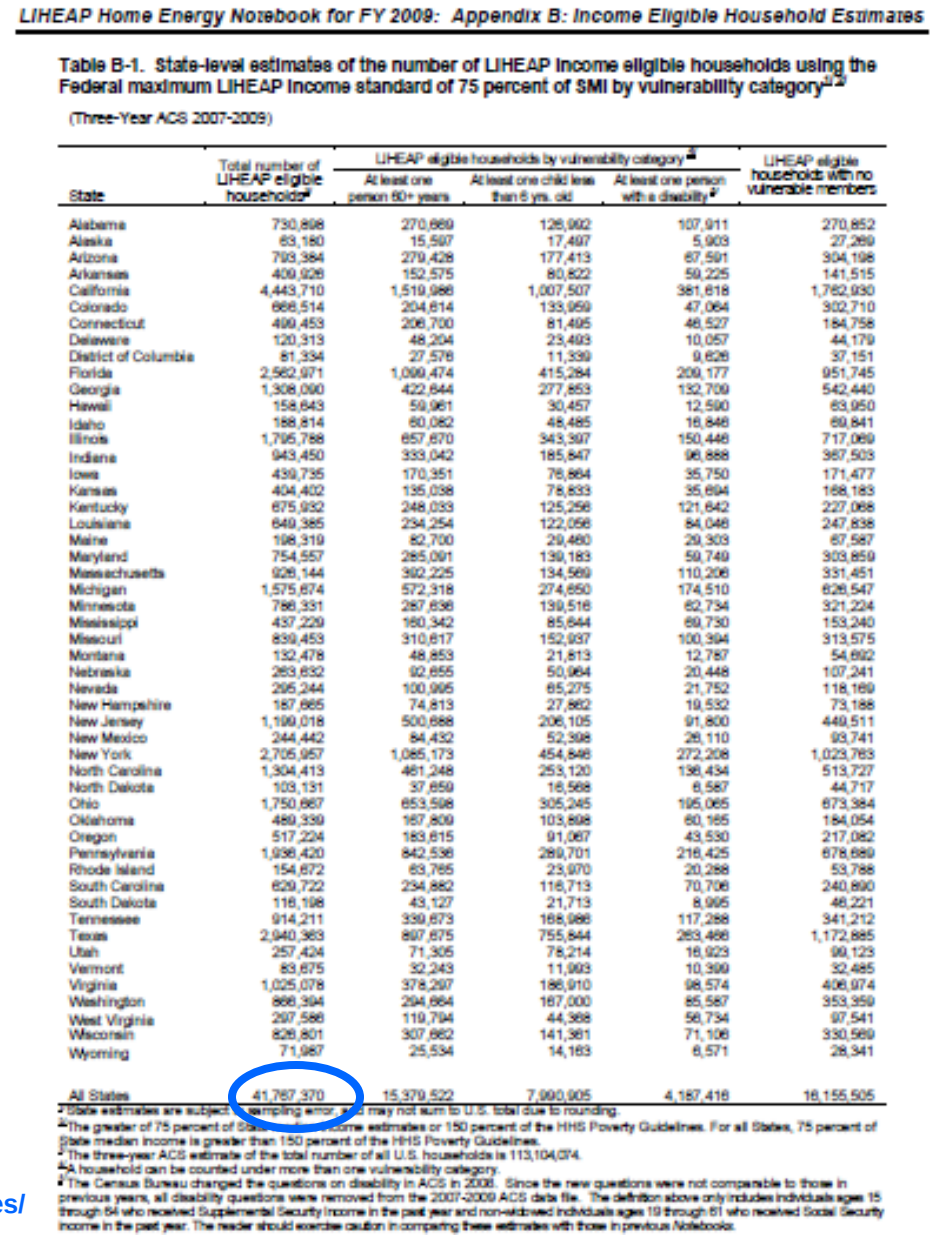
Addendum A

2 Average price calculation between 2003-2008 using NYMEX average pricing

Year	Average Price per MMBtu
2003	$5.441
2004	$6.092
2005	$8.553
2006	$7.261
2007	$6.934
2008	$8.952

2003-2008 NYMEX[1] Avg. Price/MMBtu = **$7.21**

5 LIHEAP Home Energy Notebook for FY 2009: Appendix B: Income Eligibility Household Estimates



LIHEAP Home Energy Notebook for FY 2009: Appendix B: Income Eligible Household Estimates

Table B-1. State-level estimates of the number of LIHEAP income eligible households using the Federal maximum LIHEAP income standard of 75 percent of SMI by vulnerability category[1][2]

(Three-Year ACS 2007-2009)

State	Total number of LIHEAP eligible households[3]	LIHEAP eligible households by vulnerability category[4]			LIHEAP eligible households with no vulnerable members
		At least one person 60+ years	At least one child less than 6 yrs. old	At least one person with a disability[5]	
Alabama	730,898	270,669	126,992	107,911	270,852
Alaska	83,180	15,597	17,497	5,903	27,289
Arizona	793,384	279,428	177,413	67,591	304,198
Arkansas	409,926	152,575	80,822	59,225	141,515
California	4,443,710	1,519,986	1,007,507	381,618	1,762,930
Colorado	666,514	204,614	133,959	47,064	302,710
Connecticut	499,453	206,700	81,495	46,527	184,758
Delaware	120,313	48,204	23,493	10,057	44,179
District of Columbia	81,334	27,576	11,339	9,626	37,151
Florida	2,562,971	1,099,474	415,284	209,177	951,745
Georgia	1,308,090	422,644	277,853	132,709	542,440
Hawaii	158,643	59,961	30,457	12,590	63,950
Idaho	188,814	60,082	48,485	16,846	69,841
Illinois	1,795,788	657,670	343,397	150,446	717,069
Indiana	943,450	333,042	185,847	96,888	367,503
Iowa	439,735	170,351	76,864	35,750	171,477
Kansas	404,402	135,038	78,833	35,694	168,183
Kentucky	675,932	248,033	125,256	121,642	227,068
Louisiana	649,385	234,254	122,056	84,046	247,838
Maine	198,319	82,700	29,460	29,303	67,587
Maryland	754,557	285,091	139,183	59,749	303,859
Massachusetts	926,144	392,225	134,569	110,206	331,451
Michigan	1,575,674	572,318	274,650	174,510	628,547
Minnesota	788,331	287,636	139,516	82,734	321,224
Mississippi	437,229	160,342	85,644	69,750	153,240
Missouri	839,453	310,617	152,937	100,394	313,575
Montana	132,478	48,853	21,813	12,787	54,692
Nebraska	283,632	92,655	50,964	20,448	107,241
Nevada	295,244	100,995	65,275	21,752	118,169
New Hampshire	187,665	74,813	27,862	19,532	73,188
New Jersey	1,199,018	500,688	206,105	91,800	449,511
New Mexico	244,442	84,432	52,398	26,110	93,741
New York	2,705,957	1,085,173	454,846	272,208	1,023,783
North Carolina	1,304,413	461,248	253,120	136,434	513,727
North Dakota	103,131	37,659	16,588	6,587	44,717
Ohio	1,750,667	653,598	305,245	195,065	673,384
Oklahoma	480,339	167,809	103,698	60,165	184,054
Oregon	517,224	183,615	91,067	43,530	217,082
Pennsylvania	1,936,420	842,536	289,701	216,425	678,689
Rhode Island	154,672	63,765	23,970	20,288	53,788
South Carolina	629,722	234,882	116,713	70,706	240,890
South Dakota	116,198	43,127	21,713	8,995	46,221
Tennessee	914,211	339,673	168,986	117,288	341,212
Texas	2,940,363	897,675	755,844	283,466	1,172,885
Utah	257,424	71,305	78,214	16,923	99,123
Vermont	83,675	32,243	11,993	10,399	32,485
Virginia	1,025,078	378,297	186,910	98,574	406,974
Washington	866,394	294,664	167,000	85,587	353,359
West Virginia	297,586	119,794	44,368	56,734	97,541
Wisconsin	826,801	307,662	141,361	71,106	330,569
Wyoming	71,987	25,534	14,183	6,571	28,341
All States	41,767,370	15,379,522	7,990,905	4,187,416	16,155,505

[1] State estimates are subject to sampling error, and may not sum to U.S. total due to rounding.
[2] The greater of 75 percent of State median income estimates or 150 percent of the HHS Poverty Guidelines. For all States, 75 percent of State median income is greater than 150 percent of the HHS Poverty Guidelines.
[3] The three-year ACS estimate of the total number of all U.S. households is 113,104,074.
[4] A household can be counted under more than one vulnerability category.
[5] The Census Bureau changed the questions on disability in ACS in 2008. Since the new questions were not comparable to those in previous years, all disability questions were removed from the 2007-2009 ACS data file. The definition above only includes individuals ages 15 through 64 who received Supplemental Security Income in the past year and non-widowed individuals ages 18 through 61 who received Social Security income in the past year. The reader should exercise caution in comparing these estimates with those in previous Notebooks.

41,767,370 Households

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