



The Fayetteville Shale: An Update on Natural Gas Production

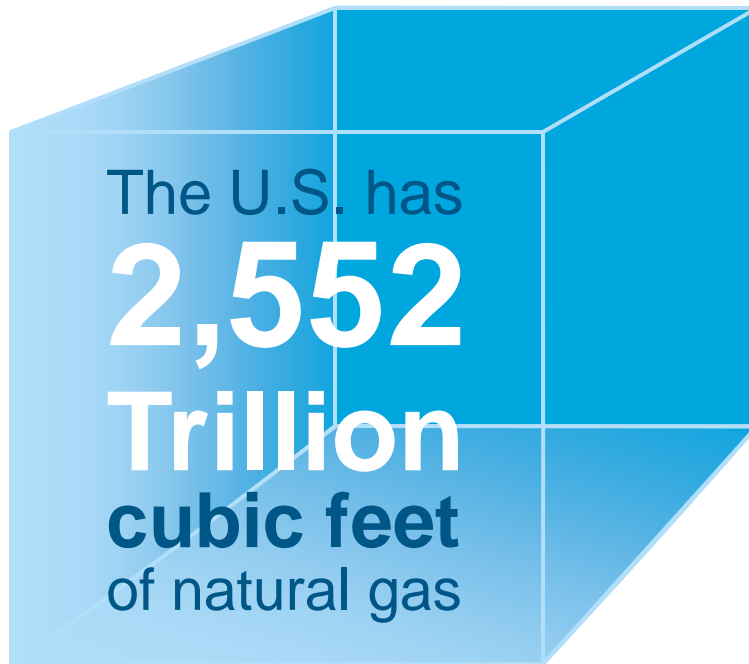
Andy Miller

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Southwestern Energy Company



The Case for Natural Gas

Abundant



America has as much natural gas as Saudi Arabia has oil.

Enough for more than

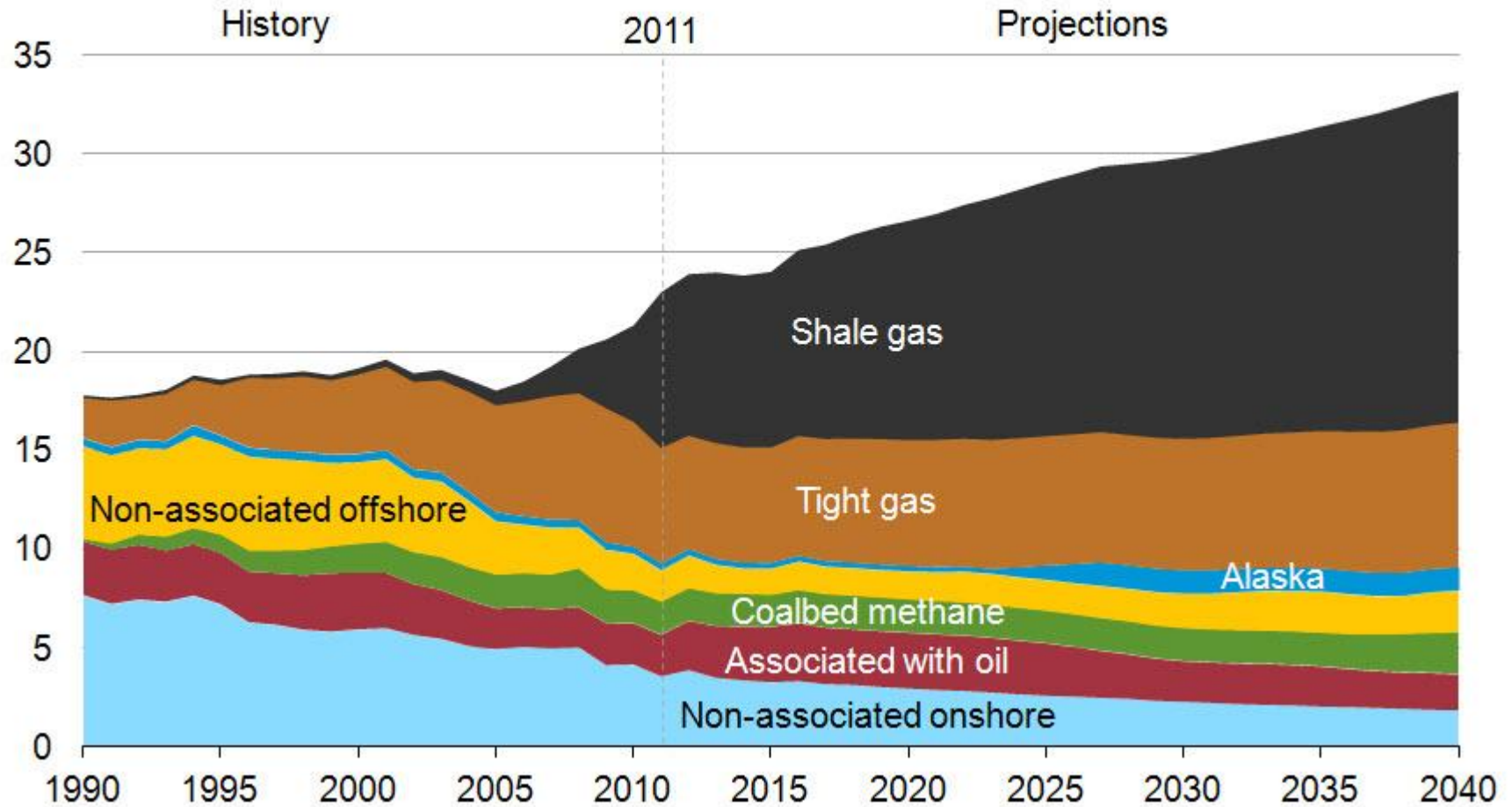
100

YEARS

YEARS

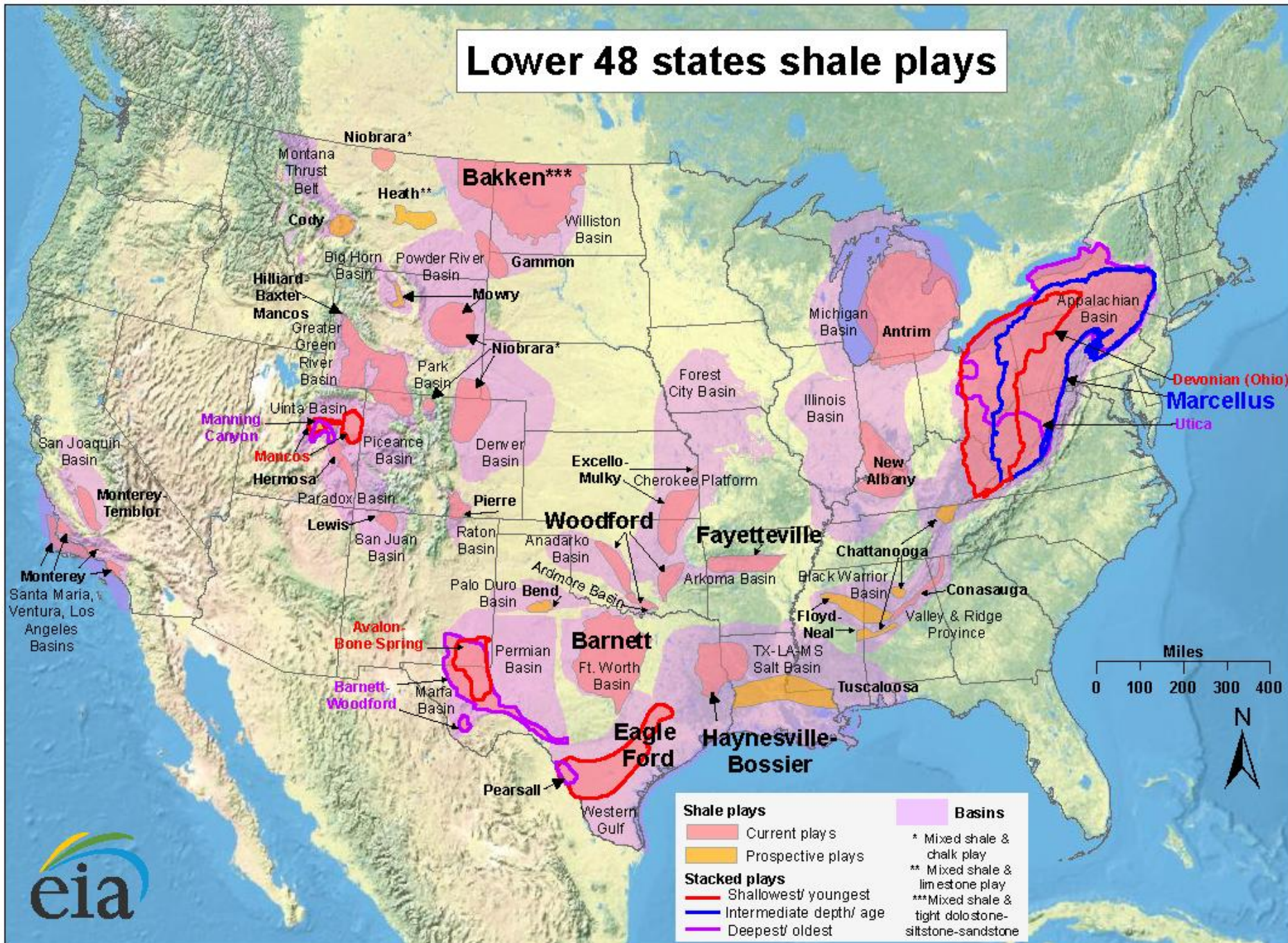
Unconventional Gas will Become the Standard

U.S. dry natural gas production
trillion cubic feet

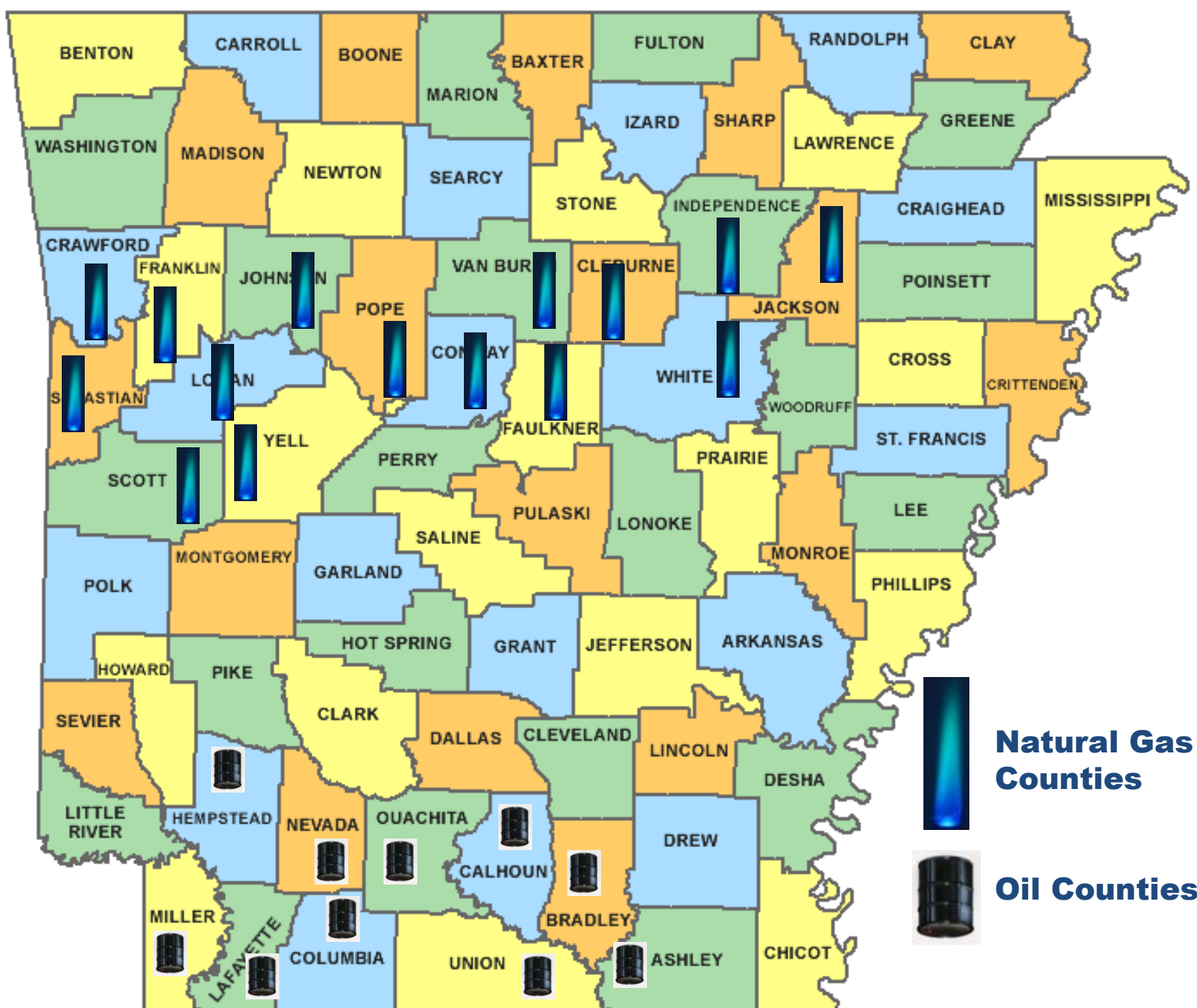


Source: EIA, Annual Energy Outlook 2013 Early Release

Lower 48 states shale plays



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

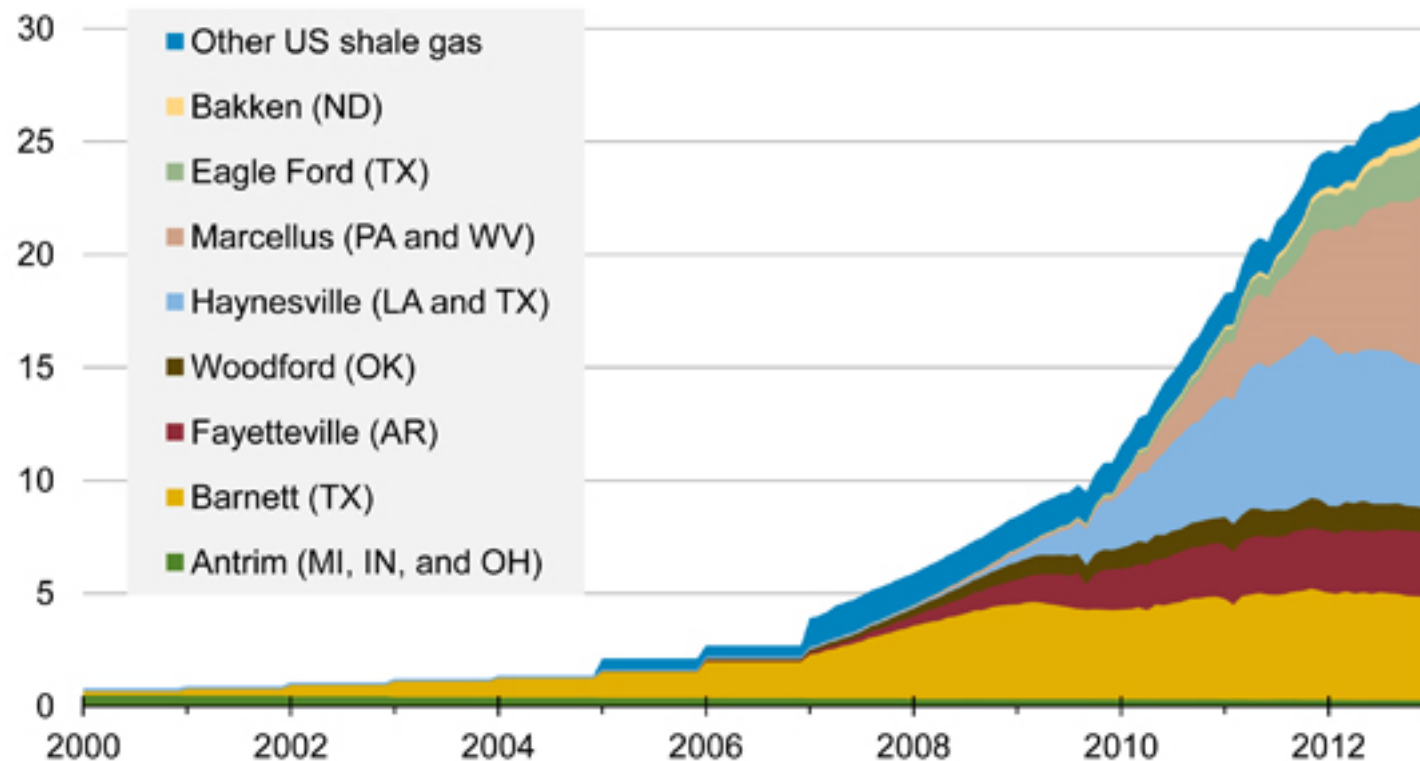


**Natural Gas
Counties**

Oil Counties

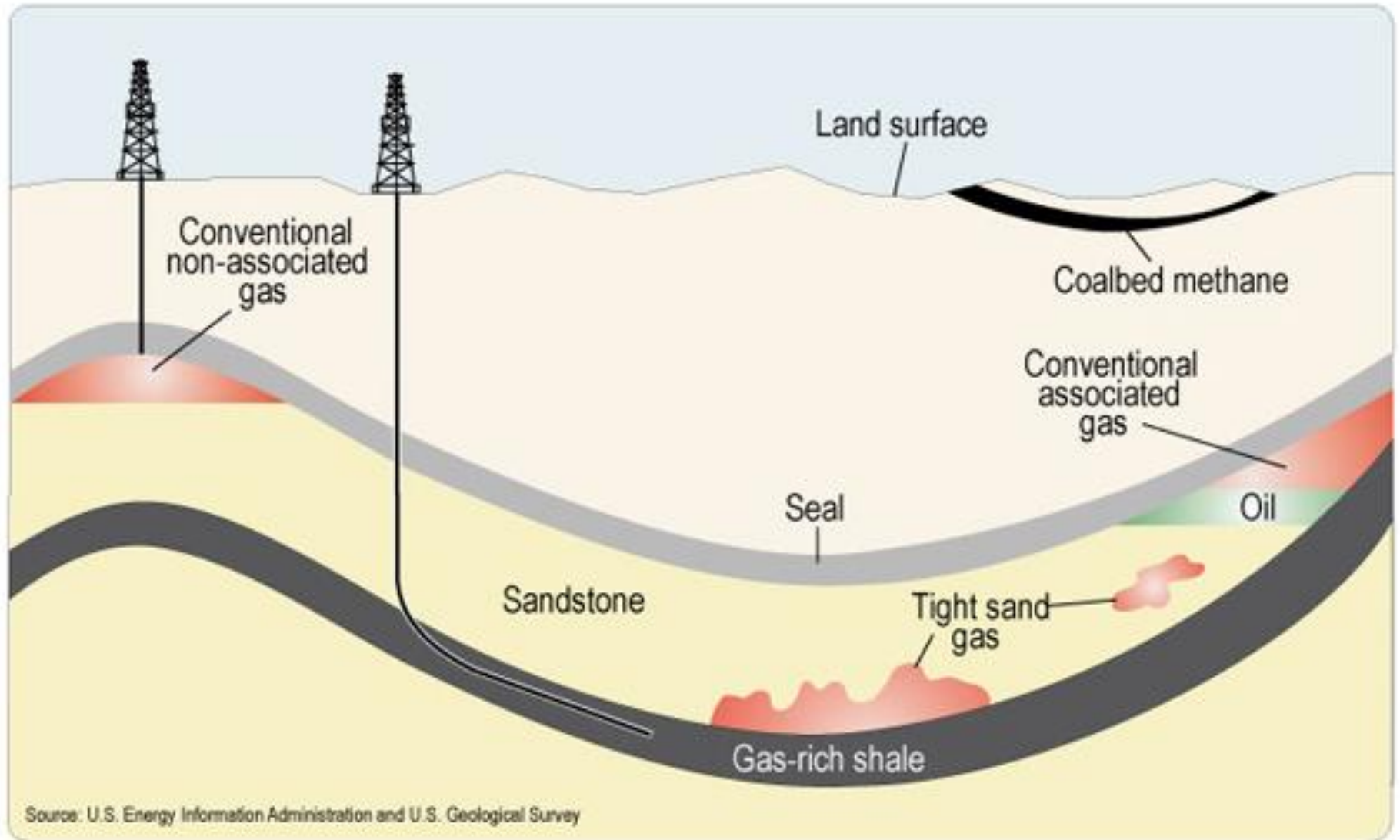
Production of Shale Plays

shale gas production (dry)
billion cubic feet per day



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.

Geology of Natural Gas Resources



Natural Gas Production Information

- **Production Information:**

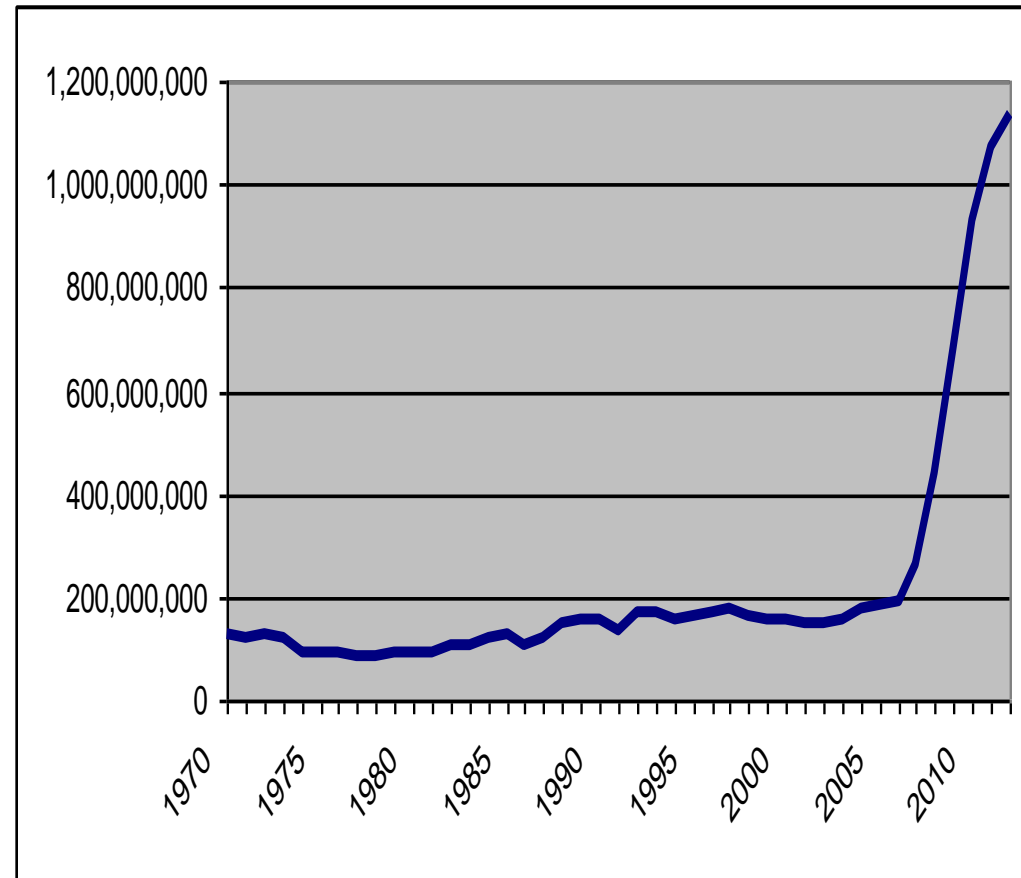
- 2006 – less 200 Bcf. 2011 - over 1 Tcf. Approximately 88% from the Fayetteville Shale, 12% from the Arkoma Basin.
 - AR - consume less than 250 bcf per year.

- **# of Producing Gas wells in AR:**

- 2012 8538

- **# of Producing Wells in FS:**

- 2006 165
- 2007 574
- 2008 1290
- 2009 2138
- 2010 3033
- 2011 3835
- 2012 4406



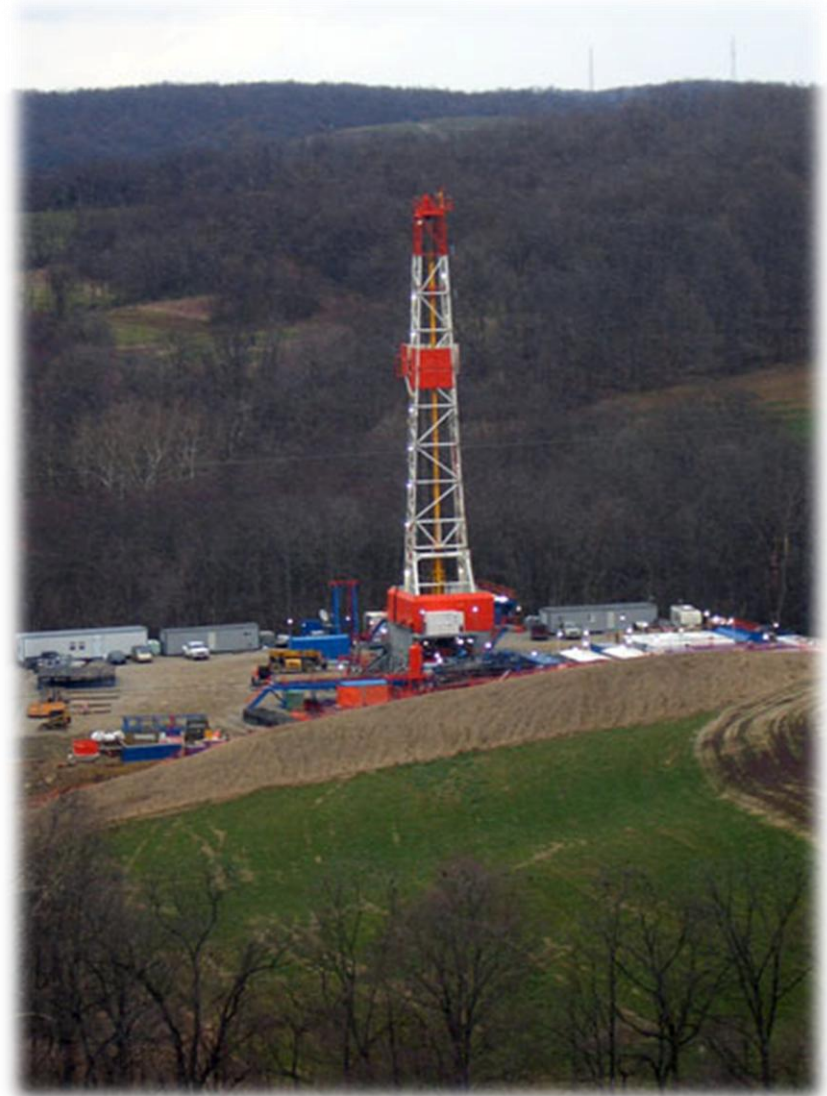
U.S. Economic Impact

\$76.9 Billion

Shale gas industry contributed
to US GDP in 2010

600,000 Jobs

Shale gas industry contributed
to US economy in 2010



Economic Impact in Arkansas

“... from 2001 to 2010, the state of Arkansas experienced only tepid growth in employment. Without the employment associated with the exploration and development of the Fayetteville Shale, Arkansas would have suffered a ‘lost decade’ where employment at the end of the period was lower than employment at the beginning.”

- Kathy Deck, director of the Center for Business and Economic Research, U of A

Economic Impact in Arkansas

\$18.5 Billion

Total economic activity (2008-2011)

22,499 Total Jobs

Employment impact (2011)

\$74,555

Average salary of employees in the oil and natural gas industry (2010) – **twice the average pay of all industries in the state.**



Economic Impact in Arkansas

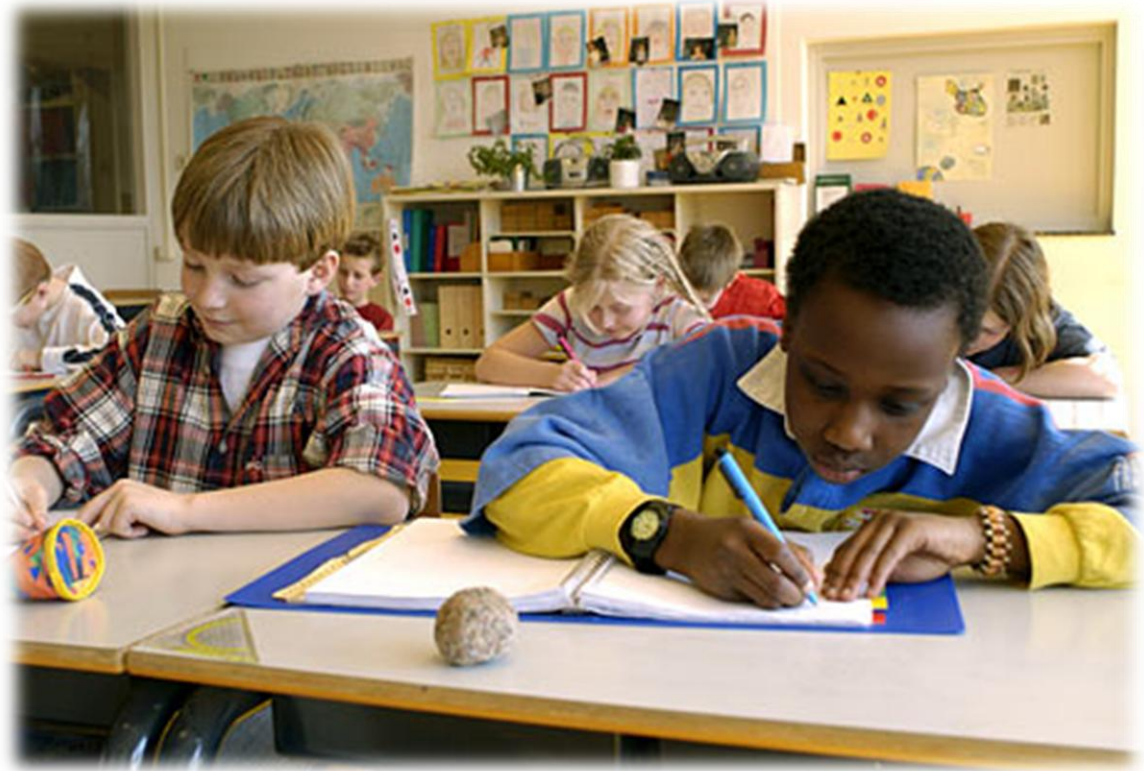


more than
\$2 Billion

Revenue in state and local taxes

More Property Tax Revenue for our Schools

\$109.2
Million



Property tax revenues generated from
natural gas industry in the Fayetteville Shale
(2008-2011)

Others sharing in the Revenue



Mineral owners:

Over **\$1.5 BILLION** paid to Arkansans in
bonus & royalty payments from 2008-2012

Impact on Arkansas Utility Rate Payers

Total Utility Cost Savings by Class, 12 Mos. Ended December 2011

	Residential	Commercial	Industrial	Total
Gas Costs Savings Thousands of \$	\$68,493	\$59,594	\$166,299	\$294,386
Electric Savings, Thousands of \$	\$82,701	\$53,389	\$74,989	\$211,079
Total Savings, Thousands of \$	\$151,194	\$112,983	\$241,288	\$505,465

Source: Navigant Consulting


U.S. energy-related CO₂ emissions in early 2012 lowest since 1992

U.S. carbon dioxide (CO₂) emissions during the first quarter of 2012 were the lowest in two decades for any January-March period. CO₂ emissions during January-March 2012 were low due to a combination of factors including:

- **A decline in coal-fired electricity generation and an increase in natural gas-fired electricity generation, due largely to historically low natural gas prices**

The Case for Natural Gas

Clean



**Compressed
Natural Gas**
Compared to
gasoline or diesel

CO₂ Reduced emissions
20-30%

CO Reduced emissions
70-90%

NO_x Reduced emissions
75-95%

**Particulate
Matter** Reduced emissions
90%

VOC Reduced emissions
89%

American Energy Independence, American Jobs

Right here in Arkansas

