

Natural Gas Supply Domestic Abundance and The Role of Shale

The National Energy Policy Institute

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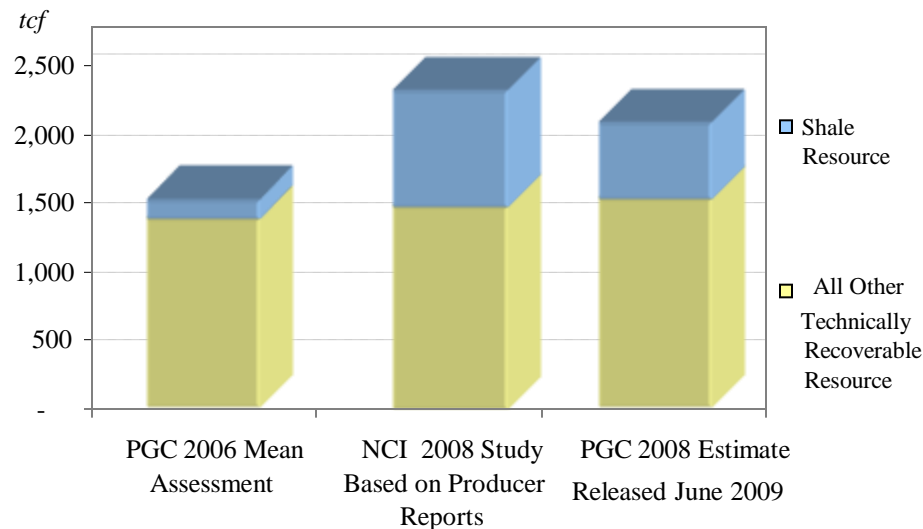
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NCI Conclusions vs. Potential Gas Committee» Total Gas Supply

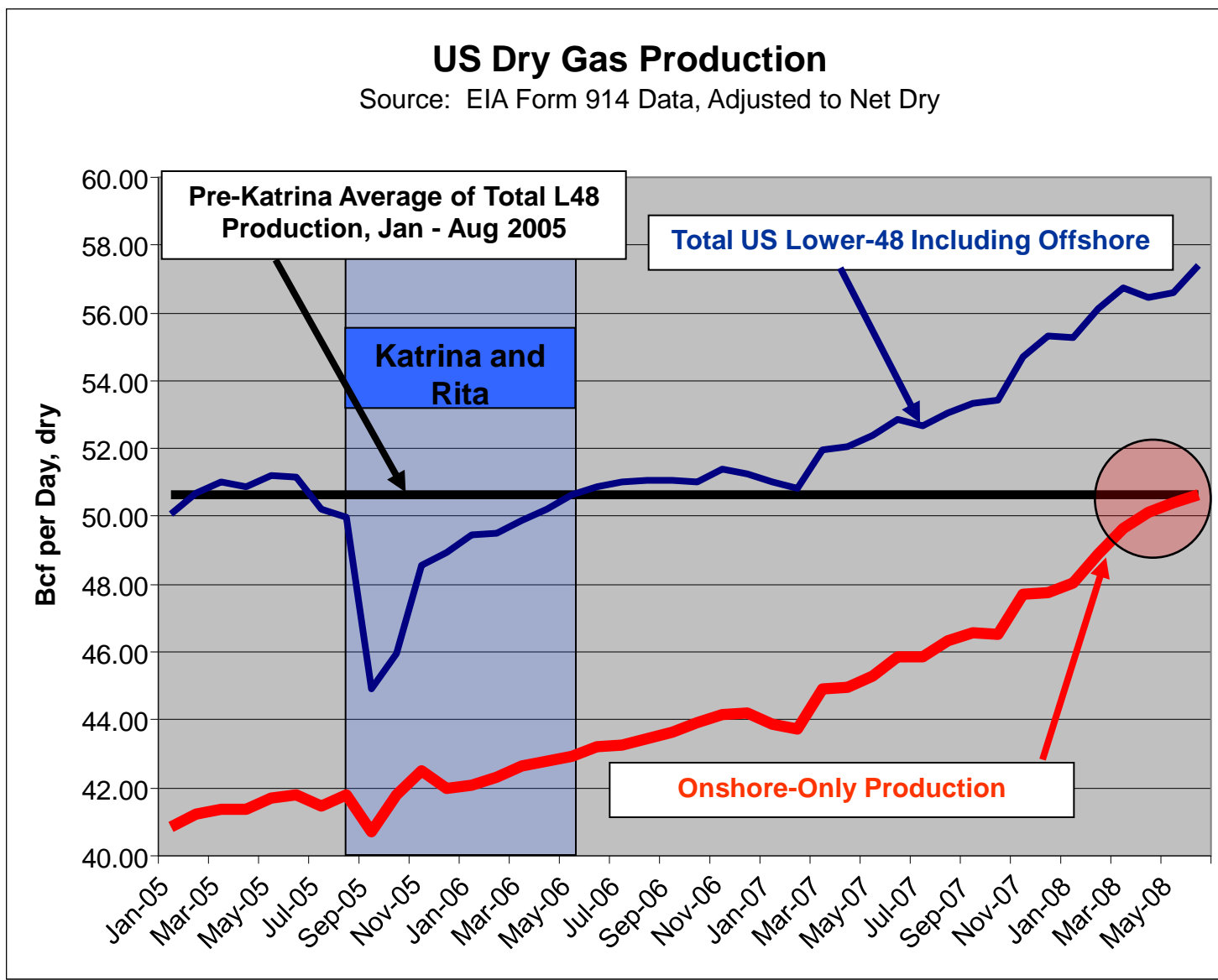
Proved Reserves Plus Assessed Resources – Life of the Gas Resource

- The 2006 PGC Report's Resource estimate was reported at 1,530 Tcf, inclusive of about 137 Tcf of shale gas. At that year's U.S. Production Rate, this is 82 years' worth of gas supply.
- In 2008, NCI performed the North American Natural Gas Supply Assessment for the American Clean Skies Foundation. This study concentrated on shale gas as evaluated according to producer reports collected by NCI. The resulting total supply estimate was 2,247 Tcf, including 842 Tcf of shale gas. This would have been 118 years of production at 2007 levels.
- Now, in June 2009, PGC has issued its updated study.

U.S. Total Gas Supply (Tcf)



Meanwhile, Production Increased Rapidly.-----As of June 2008, Onshore Production by itself Reached the Pre-Katrina Value for Total Lower 48 Production



U.S. Natural Gas Shale Basins Align with the Nationwide Pipeline Grid



Sources: EIA, US Natural Gas Pipeline Network

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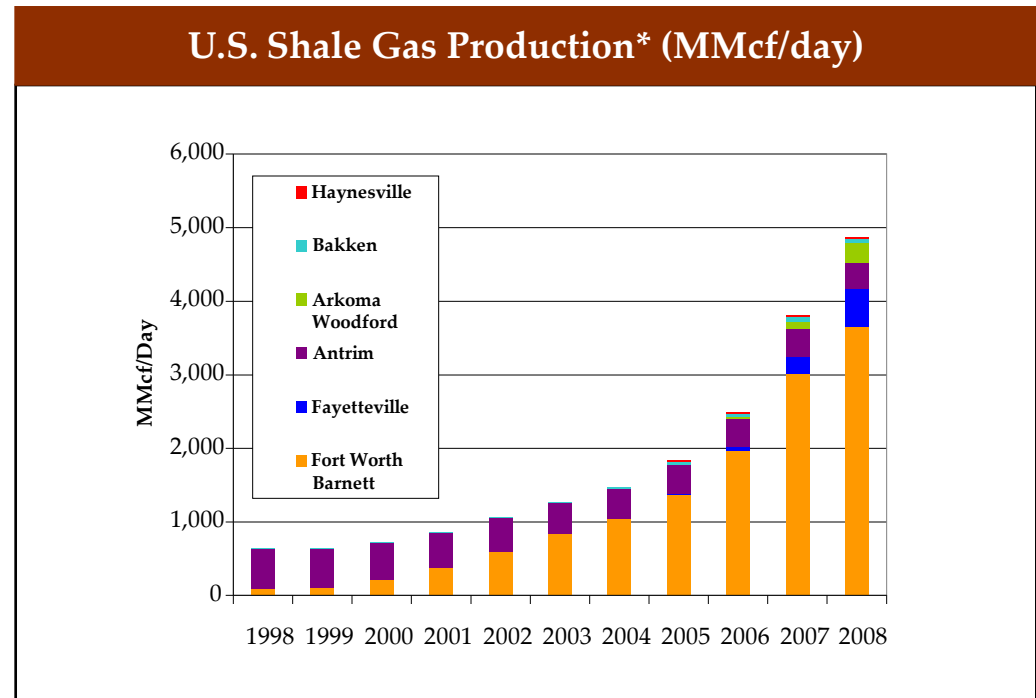
American Clean Skies Foundation

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U.S. Gas Shales » Shale Production by Play

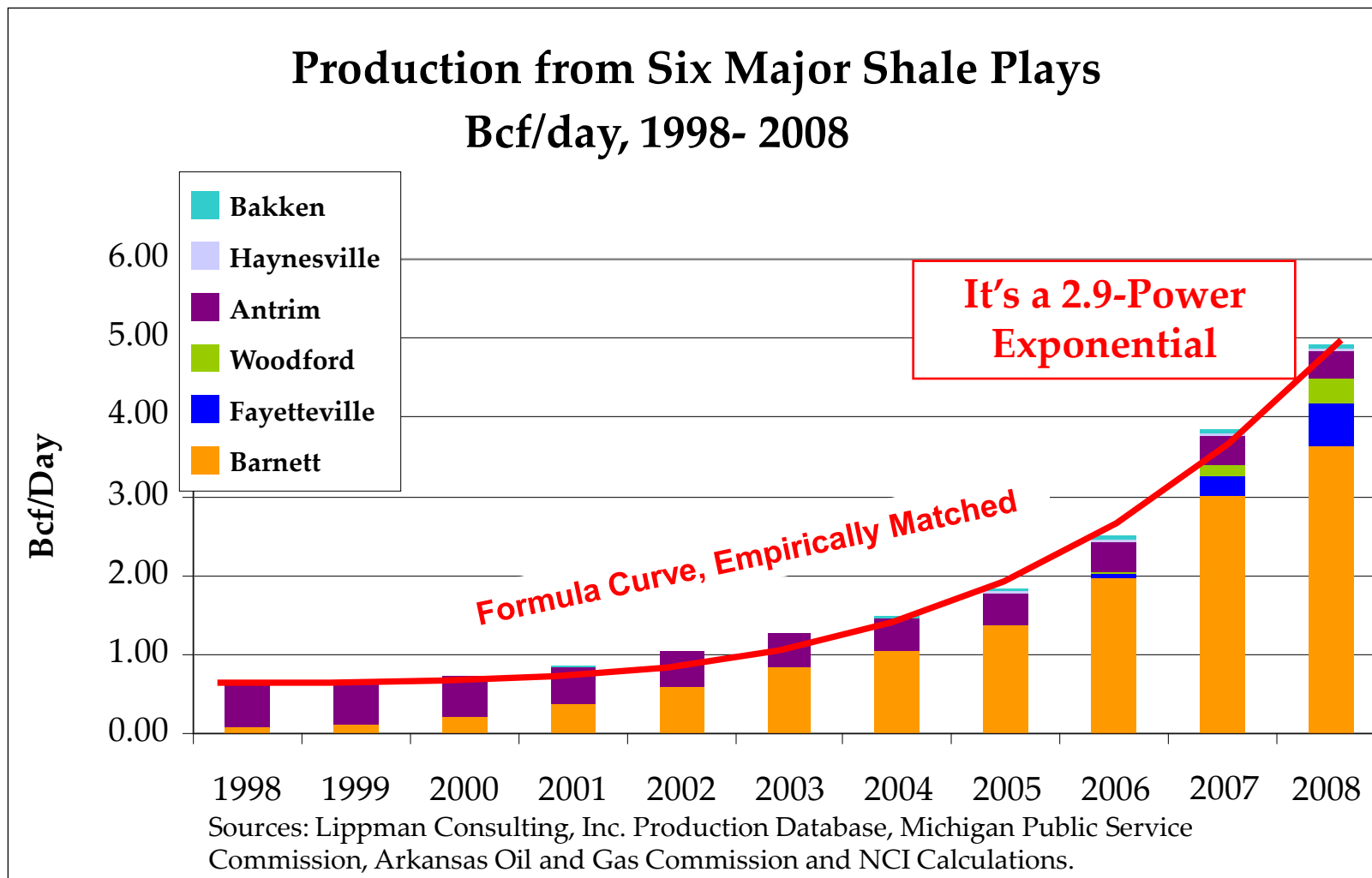
Gas Shale Production has Experienced Tremendous Growth in Recent Years with Barnett Leading the way and Signs of Early Followers

- Barnett has grown from 94 MMcf/day production levels in 1998 to 3,014 MMcf/day in 2007; an increase of more than 3000%.
- Fayetteville, Haynesville and Woodford are all showing similar signs of ramping production. Marcellus will be next.
- Technology has allowed access to and economic production of a vastly greater resource base. Specifically, improved hydraulic fracturing techniques and greatly improved horizontal drilling have allowed tight, geographically diffuse reserves to be developed in large volumes.
- Producer estimates placed the “Big 6” plus Marcellus at 27 to 39 Bcfd upon full development.



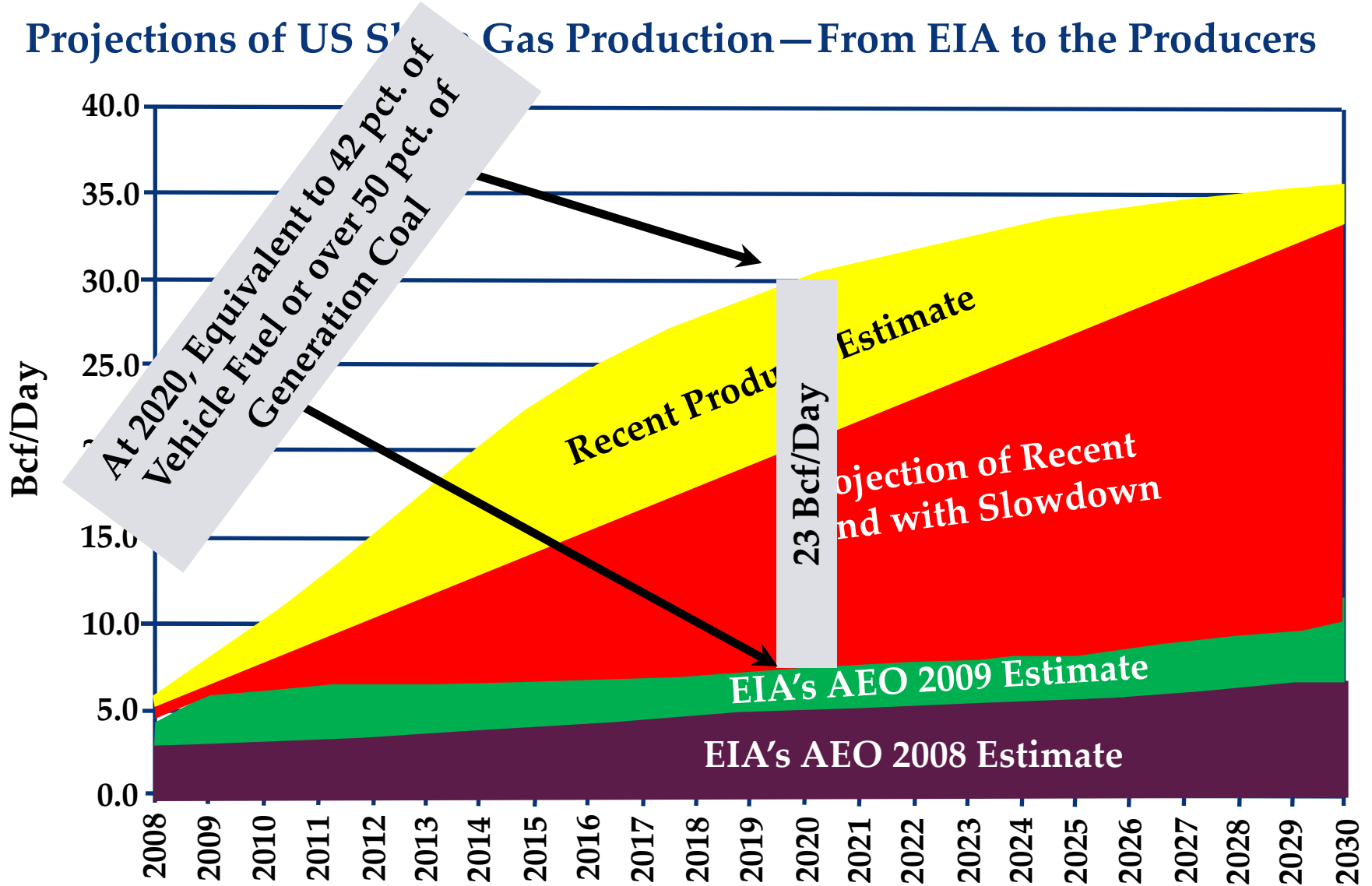
Sources: Lippman Consulting, Inc. Production Database, Michigan Public Service Commission, Arkansas Oil and Gas Commission and NCI Calculations.

The Accelerating Run-Up in Shale Production—An Exponential Curve



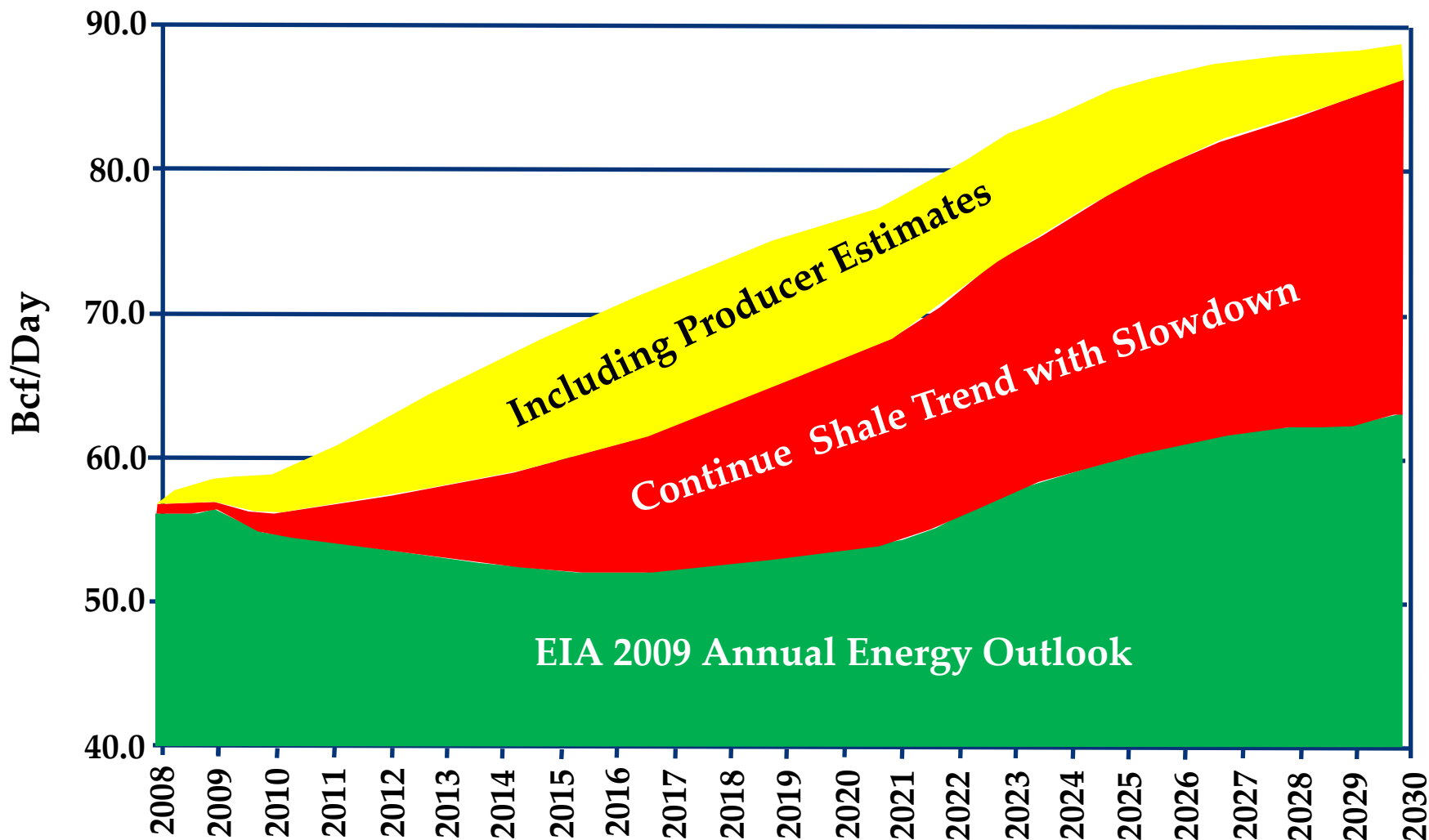
The Variation in Shale Production Estimates is Large

Projections of US Shale Gas Production—From EIA to the Producers



The Impact on Domestic U.S. Natural Gas Production

From the mid-50s to almost 90 Bcfd in just over 20 years

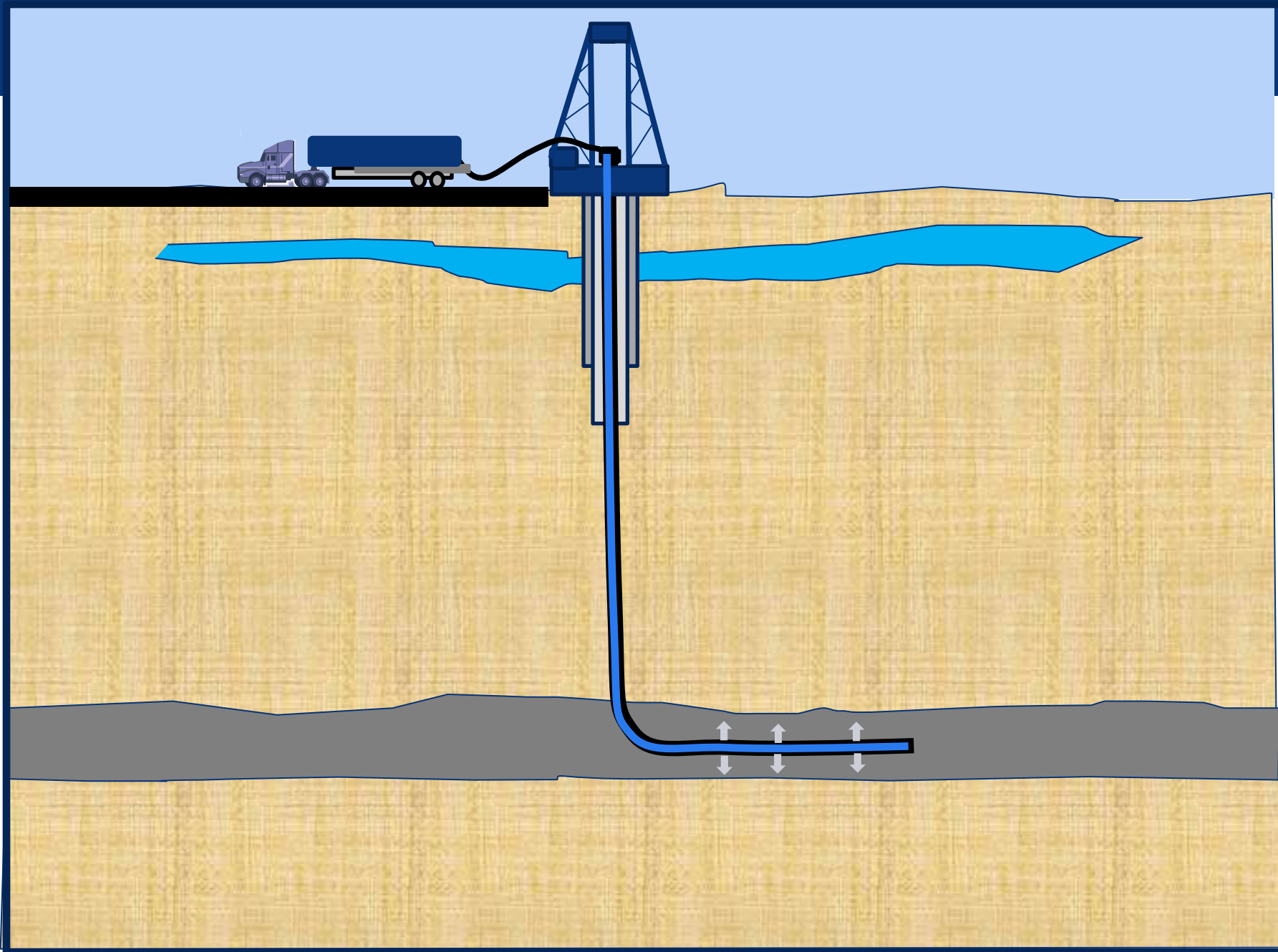


So the Potential is Substantial

- The development does not take stimulus money.
- Unlike oil, it does not take expanded land or offshore access.
- All it takes is Demand at a stable price, and Endorsement, in the form of a positive political environment

That's What Shale Could Do, But There Are Issues/Questions

- Market demand—It's like a manufacturing business, so if you don't want it, it won't be produced.
- Price—Does it take \$13? No. Will it work at \$3.00? No. Probably around \$6 to \$7
- Meanwhile, shale development requires hydraulic fracturing of the extremely tight formations.
 - Concerns about high-pressure fracturing are causing legal/legislative uncertainty at both Federal and state levels
 - The industry must quiet these concerns through a combination of effective communication and embracing of best practices.
 - The more forward-thinking producers are already doing both, aggressively.



- There can be many reasons to use or not to use natural gas in any given application.
- But—Assuming a resource constraint is not a valid basis for the policy choice—there is no resource constraint.
- Failure to recognize this abundance of supply has shown up in Secretary Chu’s reaction to CNG vehicles (positing deliverability tension if use is expanded), in the Administration’s budget package (saying that preserving the intangible drilling cost deduction will cause “over-production, endangering future national security,” and in EPA Administrator Jackson’s recent statement that expanding gas use would forego future feedstock use. These views are simply wrong.