



Natural Gas Markets – Promise out of Disarray

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Bethesda, Maryland, USA

CIBO 31st Annual Meeting

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Agenda

- Introduction – purpose
- Supply
- Demand
- Price
- Conclusions.

About BSA...

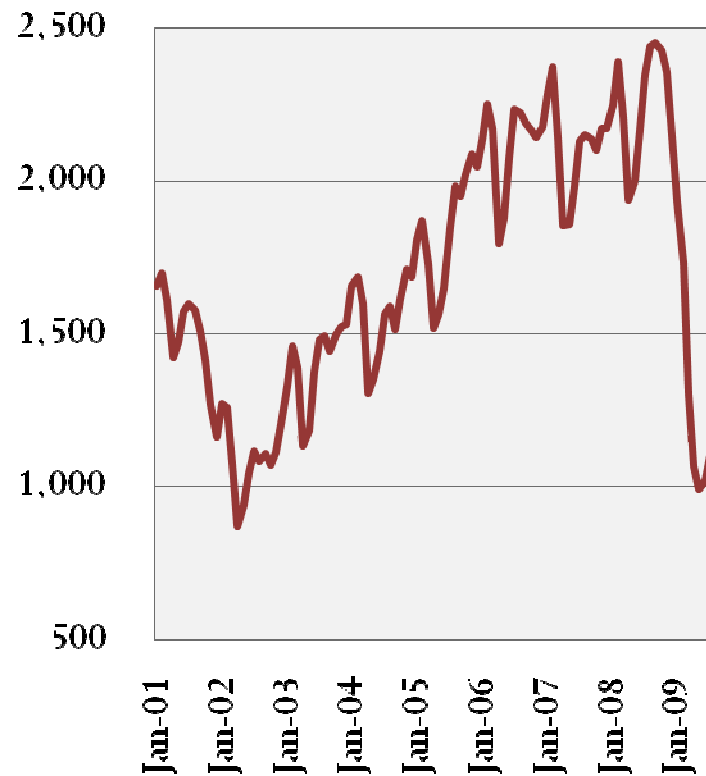
- Independent consultants on energy economics, supply, contracting, pricing, rate design, system costs, regulatory and lender risks worldwide
- Major practice areas:
 - *Market research*, energy analysis and forecasting
 - *Commercial advice* for industrial users, power plants
 - *Due diligence* for lenders and investors on fuel risks in power projects, and gas storage and pipeline financings
 - *Expert witness* on gas markets, pricing, rates, market power, cost of capital, contract issues in 16 jurisdictions.
- 500 assignments since founding in March 1984.
- A part of the Galway Group, L.P. of Houston, TX.

Gas well drilling has responded to changing gas prices.

Henry Hub Gas, \$/MMBtu



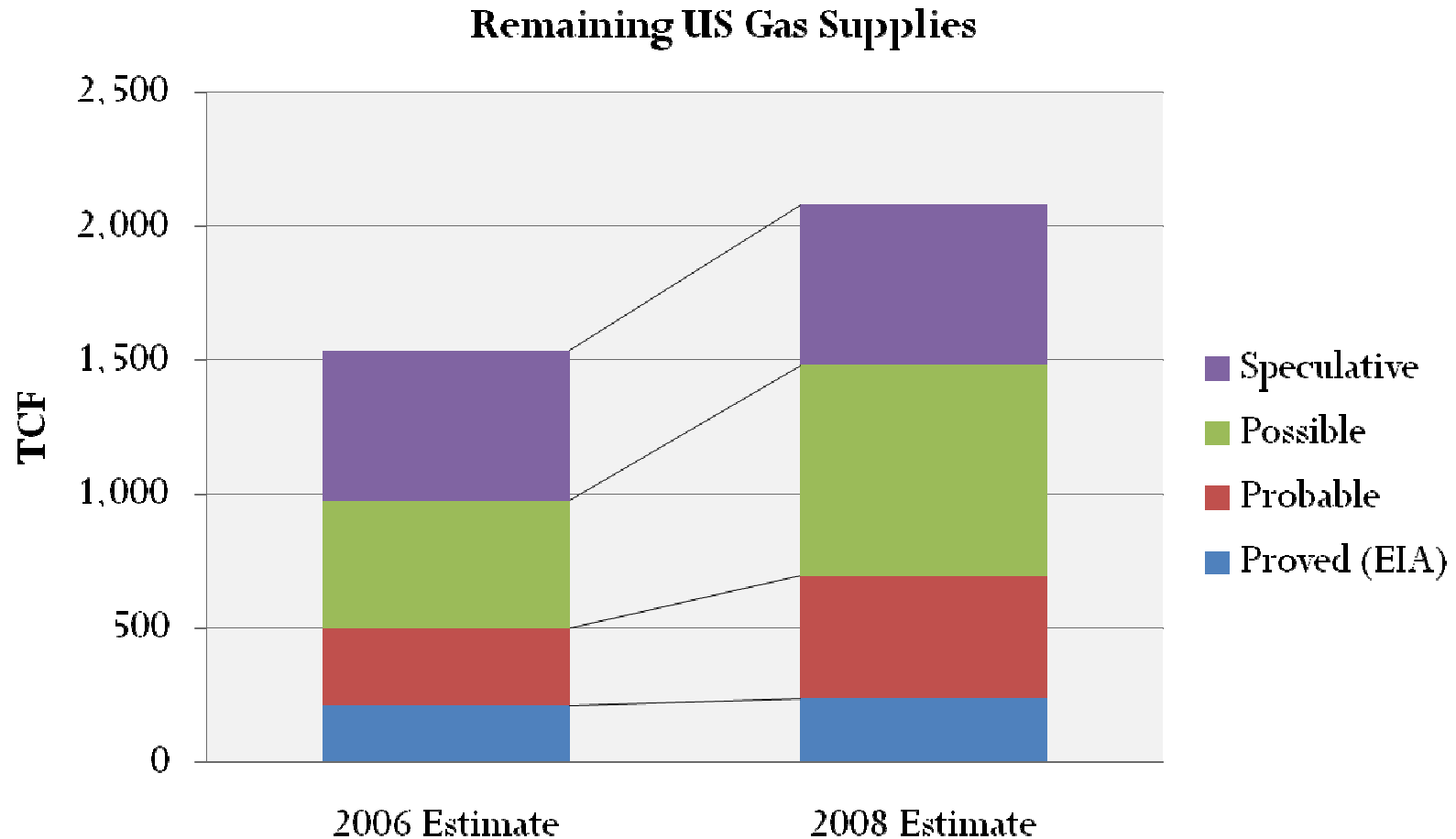
North American Rig Count



Shale and other unconventional gas resources are rising.

- Shale gas
 - Barnett Shale (East Texas)
 - Alabama/Oklahoma (Haynesville, Fayetteville)
 - Appalachian (Marcellus, Utica)
- Coal-bed methane
 - Rockies/San Juan
 - Gulf Coast
 - Alberta
- Tight sands in the West, Texas, other.

The U.S.'s shale gas bounty is mostly classified from p50 to p90.

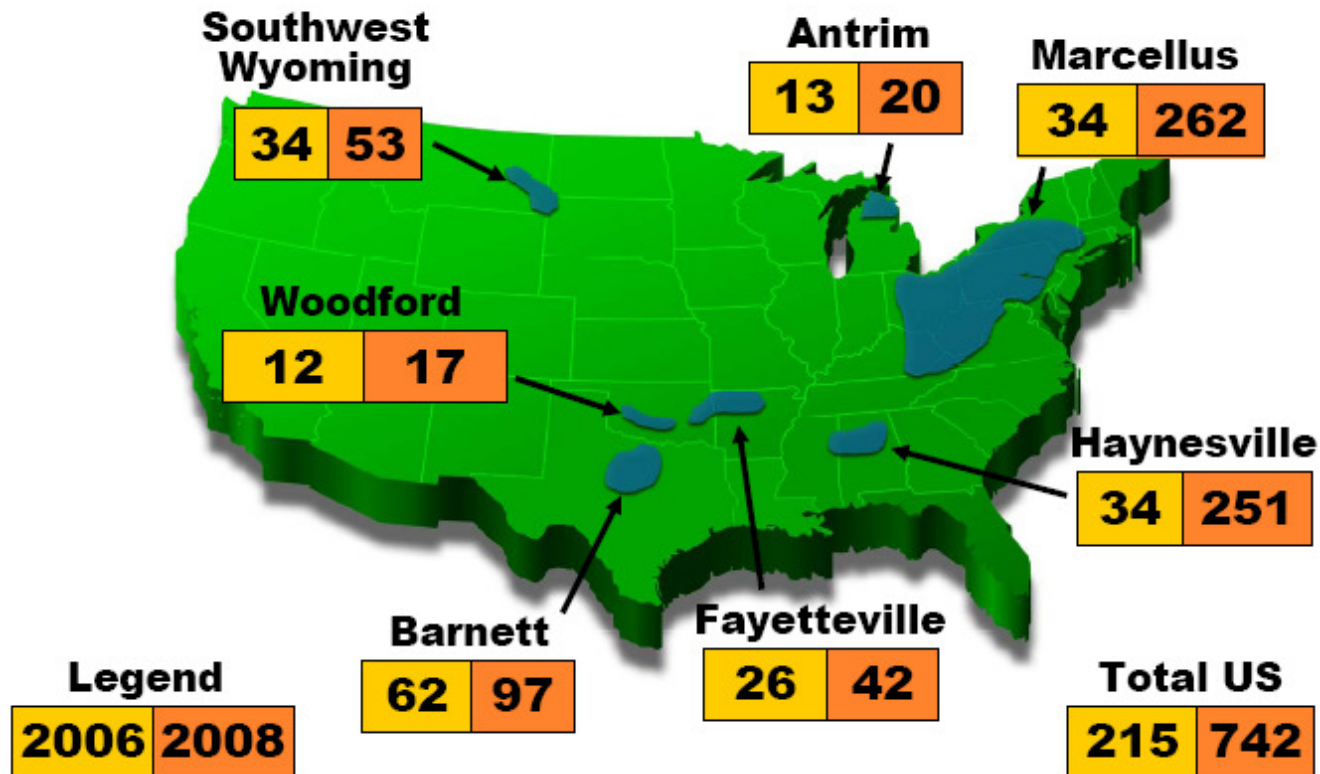


Spectacular shale gas growth in the Fayetteville and Marcellus formations.

Natural Gas Market Overview: Estimated Recoverable US Shale Gas

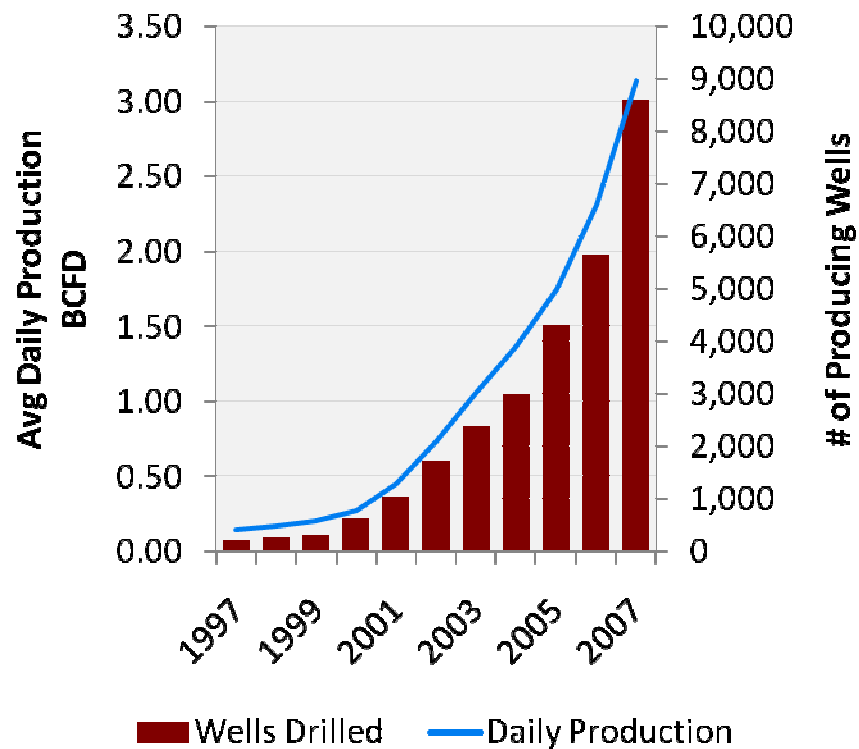
Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

Estimated Recoverable NG For Select Shale Basins (TCF)

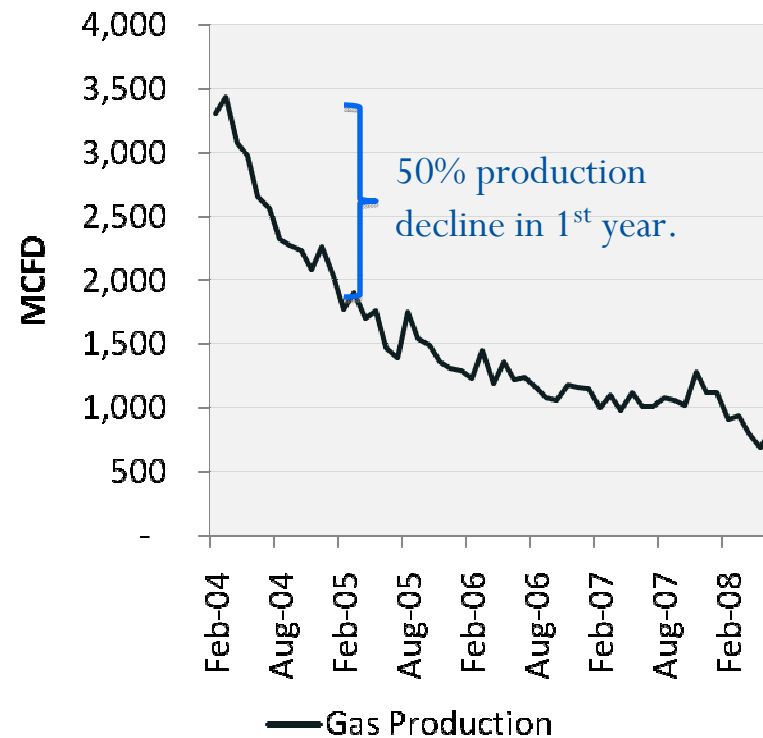


Drilling in 2009 has been insufficient to sustain growth in shale gas.

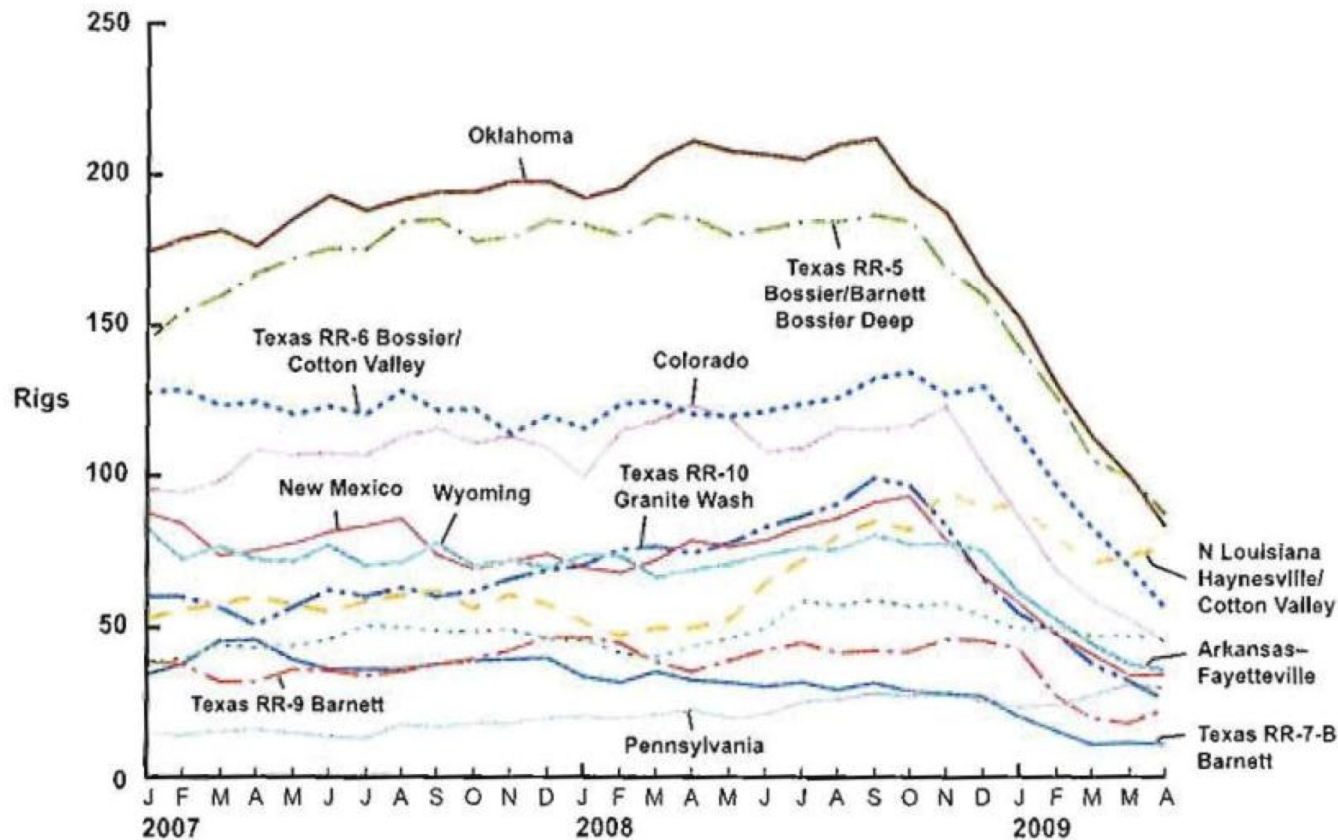
Barnett Shale Production Peaked Early This Year...



Sample Barnett Well Production Profile (Hugh #1)



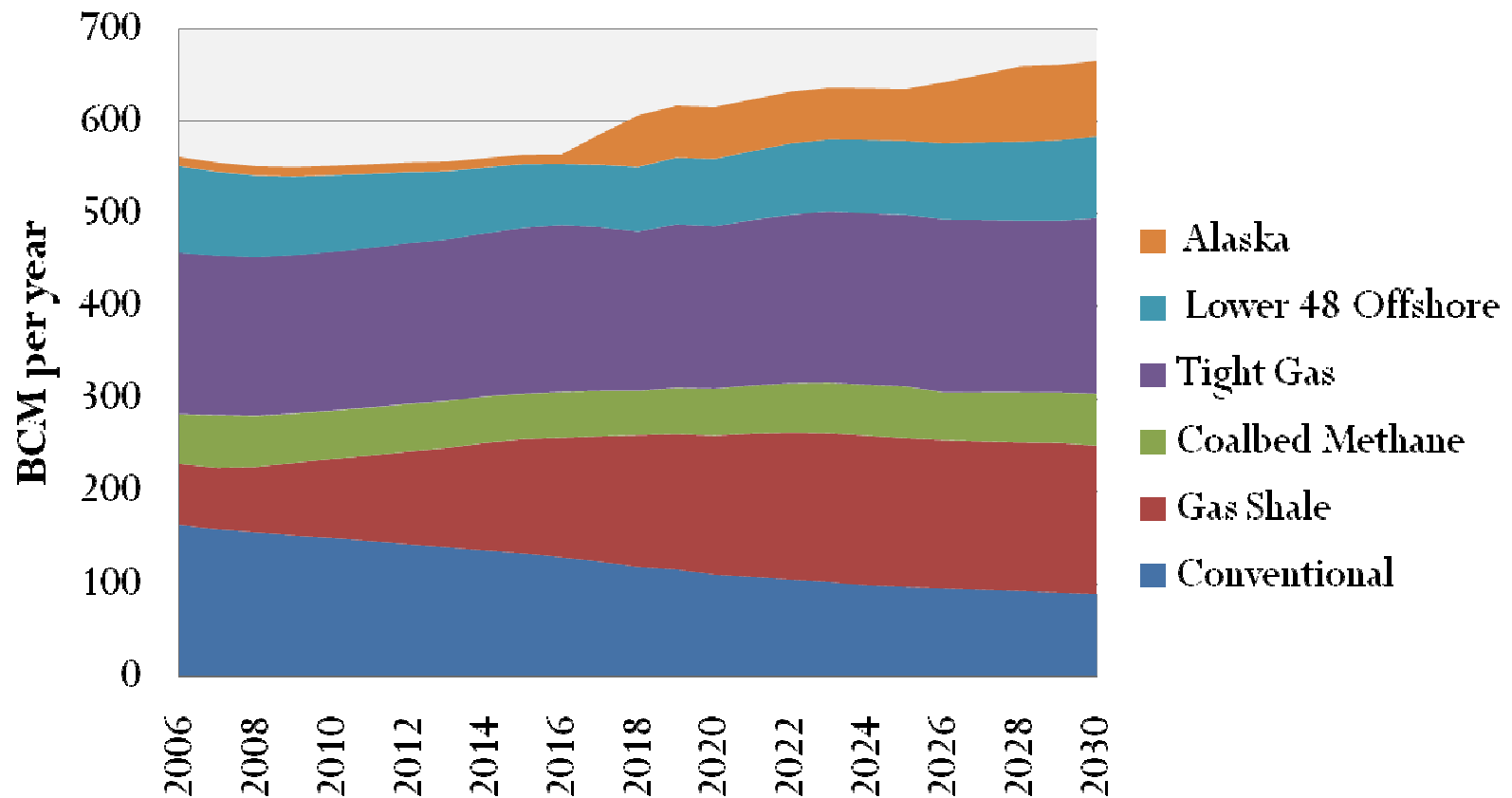
Declining unconventional drilling will reduce US production in 2010+.



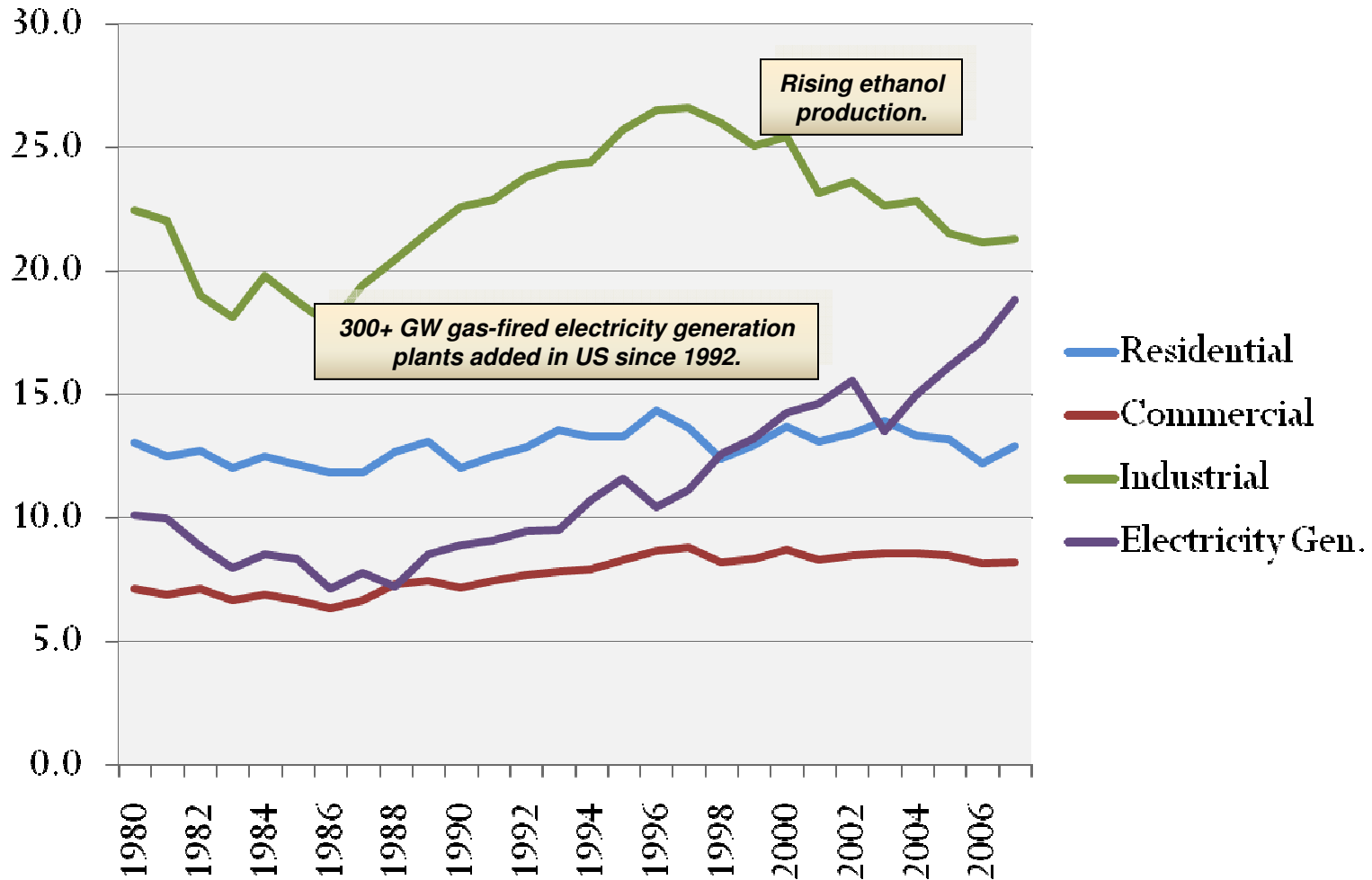
Source: IHS Cambridge Energy Research Associates, Baker Hughes.
Note: May 2009 through Friday, May 22.
70202-2_2605

In the 2020s, the U.S.'s 'baby Siberia' will replace leveling unconventional.

Projected Sources of US Gas Production



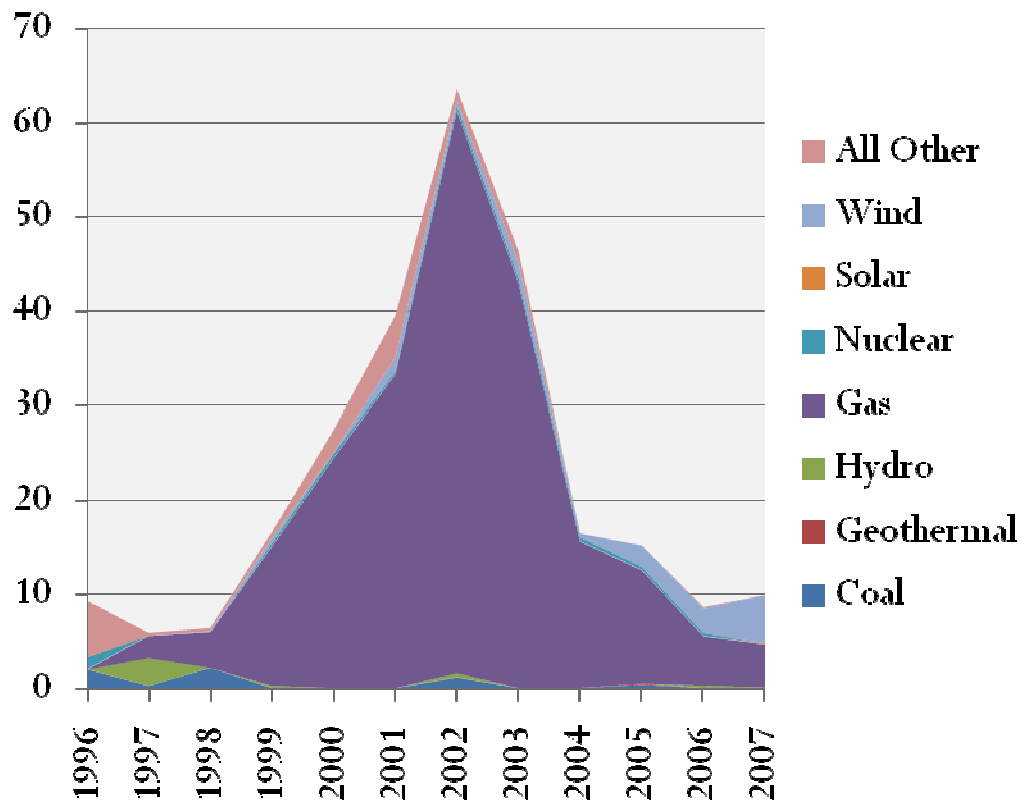
The gas demand profile is shifting toward more storage-intensive uses.



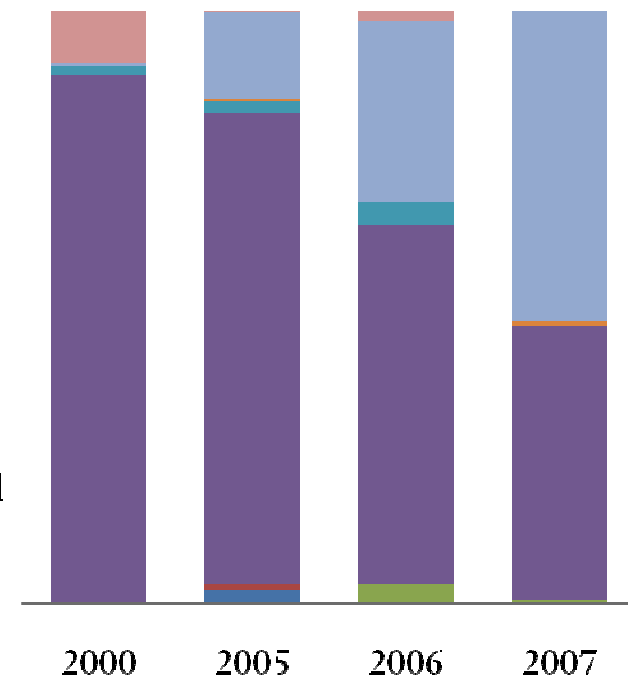
Source: BSA 2008, from EIA.

U.S. recently completed a massive build of gas-fired power plants.

Annual Capacity Additions, GW



Gas Market Share, %



Source: BSA 2009, from EIA data.

Coal's heading over a cliff in North America.

- TU, WE, many others have cancelled major coal-fired plants needed in near-term.
- Gas, wind and solar will fill the gap in the next decade.
 - Gas has fastest entry to service
 - Lowest capital cost.
- US gas demand could gain 10 Bcf/day by 2020.

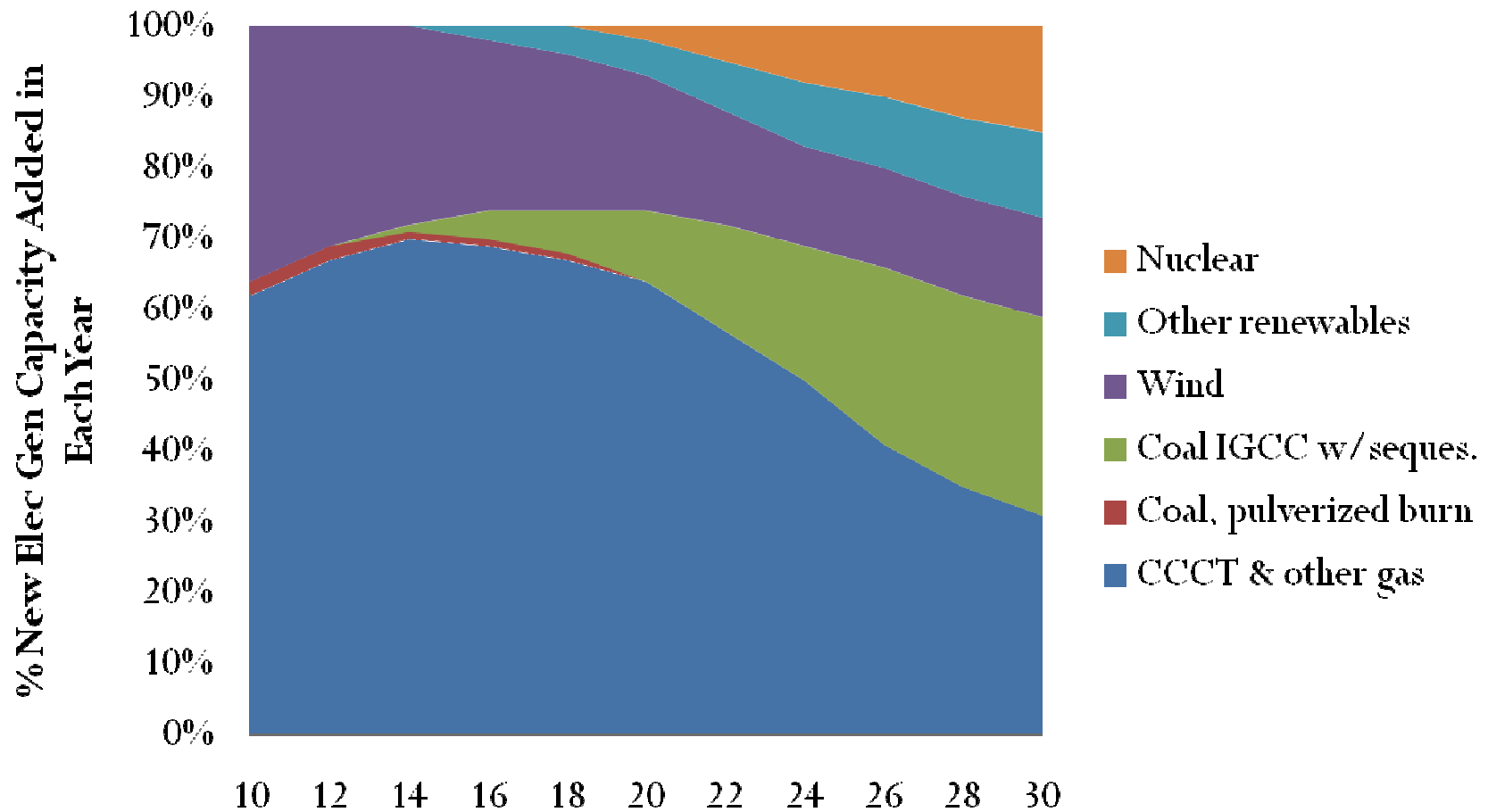


Cliffs of Moher
County Clare, Ireland

Actually, this was our foggy snapshot!

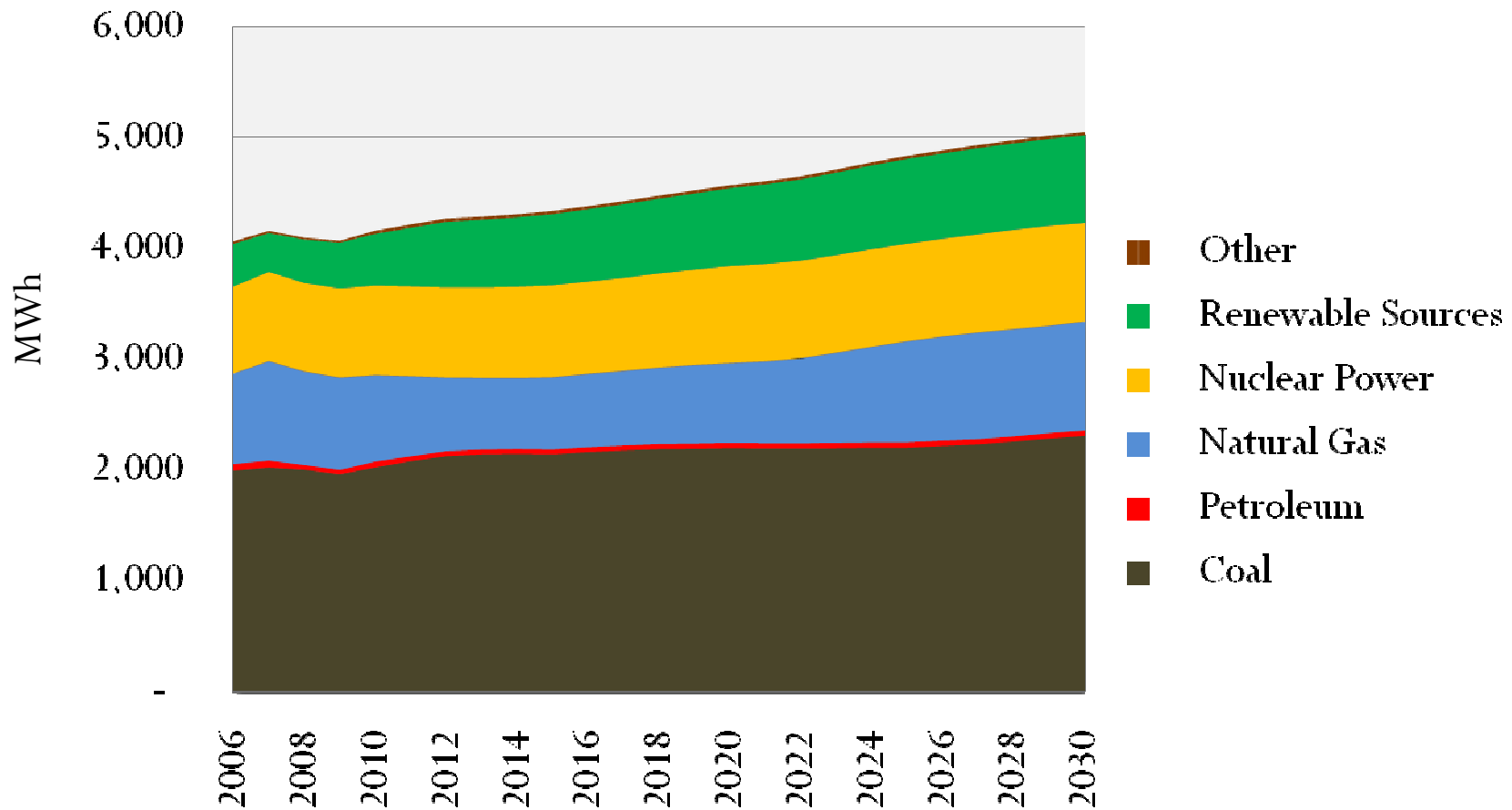


New builds will be mainly gas and renewables through the 2010s.



EIA is projecting that gas demand will level off.

Fuels Used to Generate Electricity in AEO09

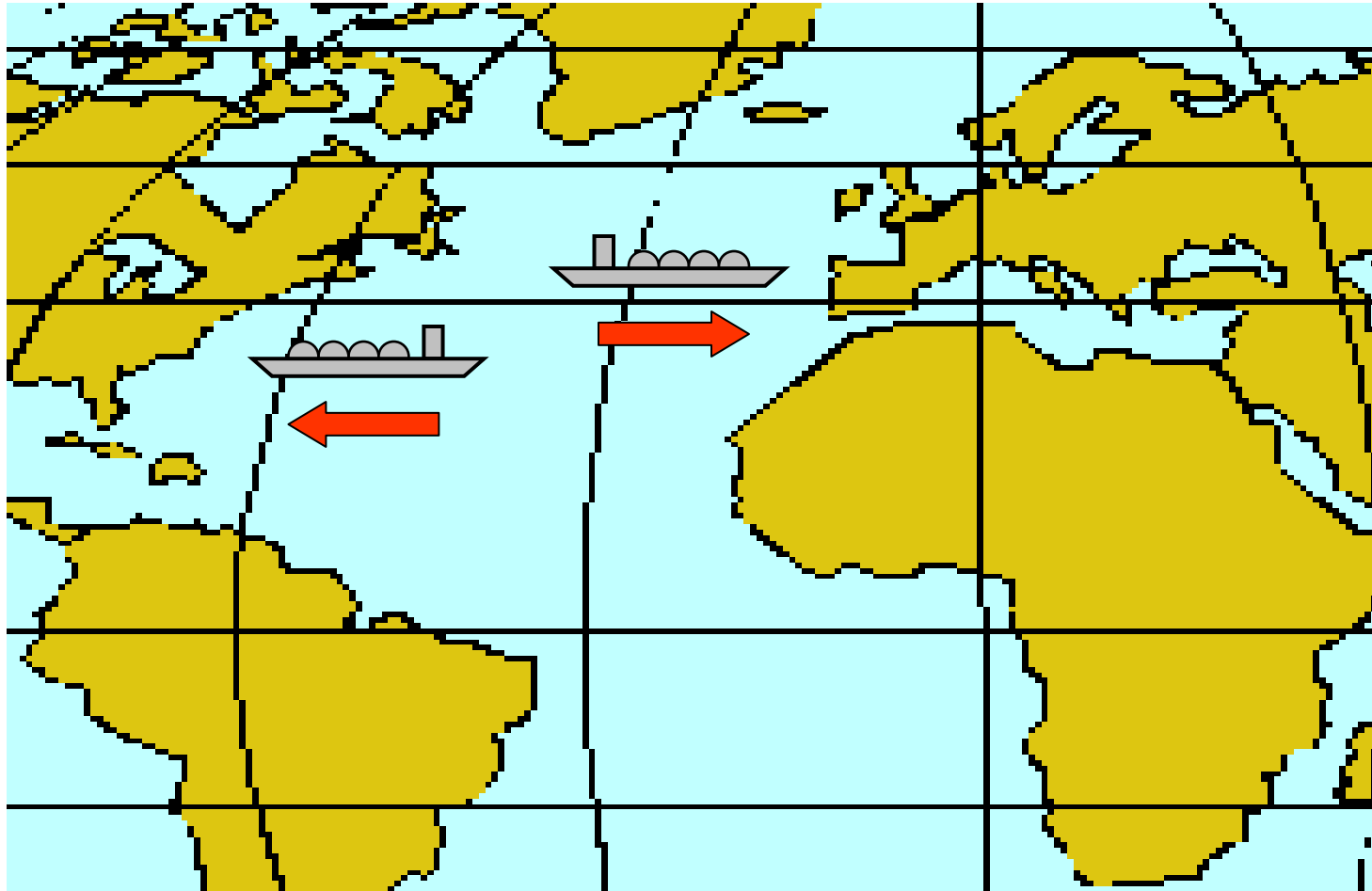


Who is right?

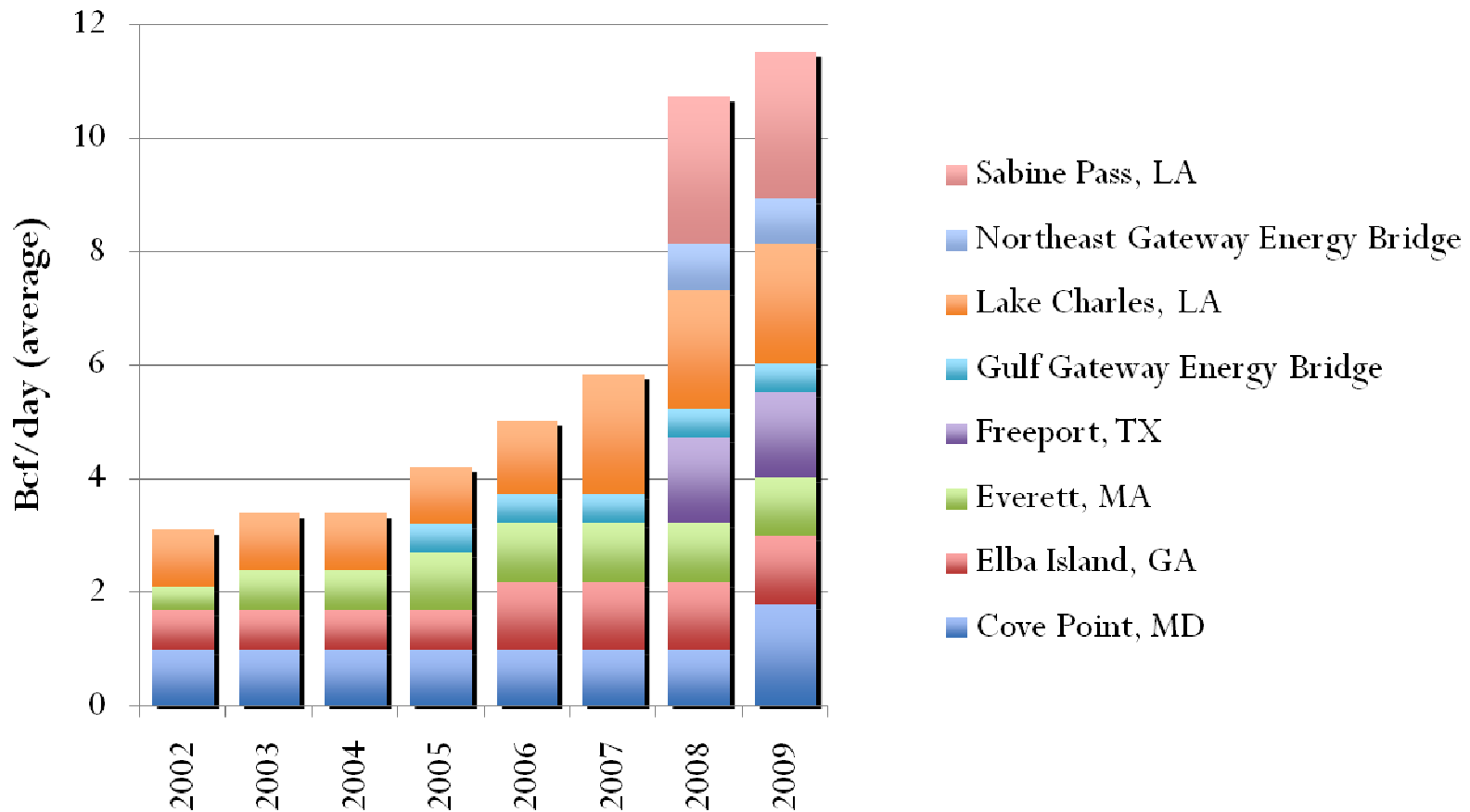
- The Obama Administration
- Timothy Geithner
- EIA
- Potential Gas Committee
- Schlesinger??



If we all are, then the U.S. is going to trade a lot of LNG!

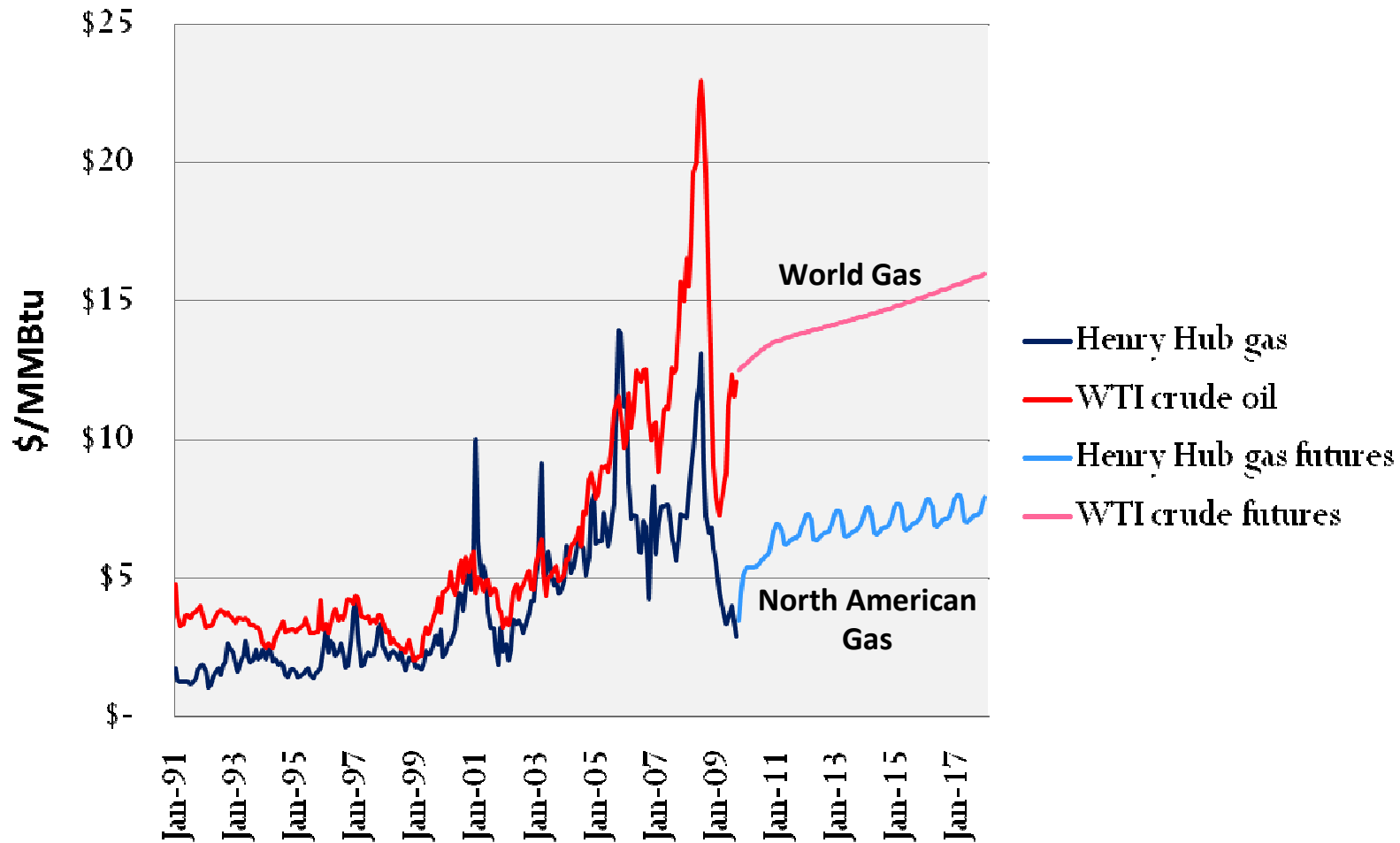


Current US round of LNG import capacity additions is nearly complete.

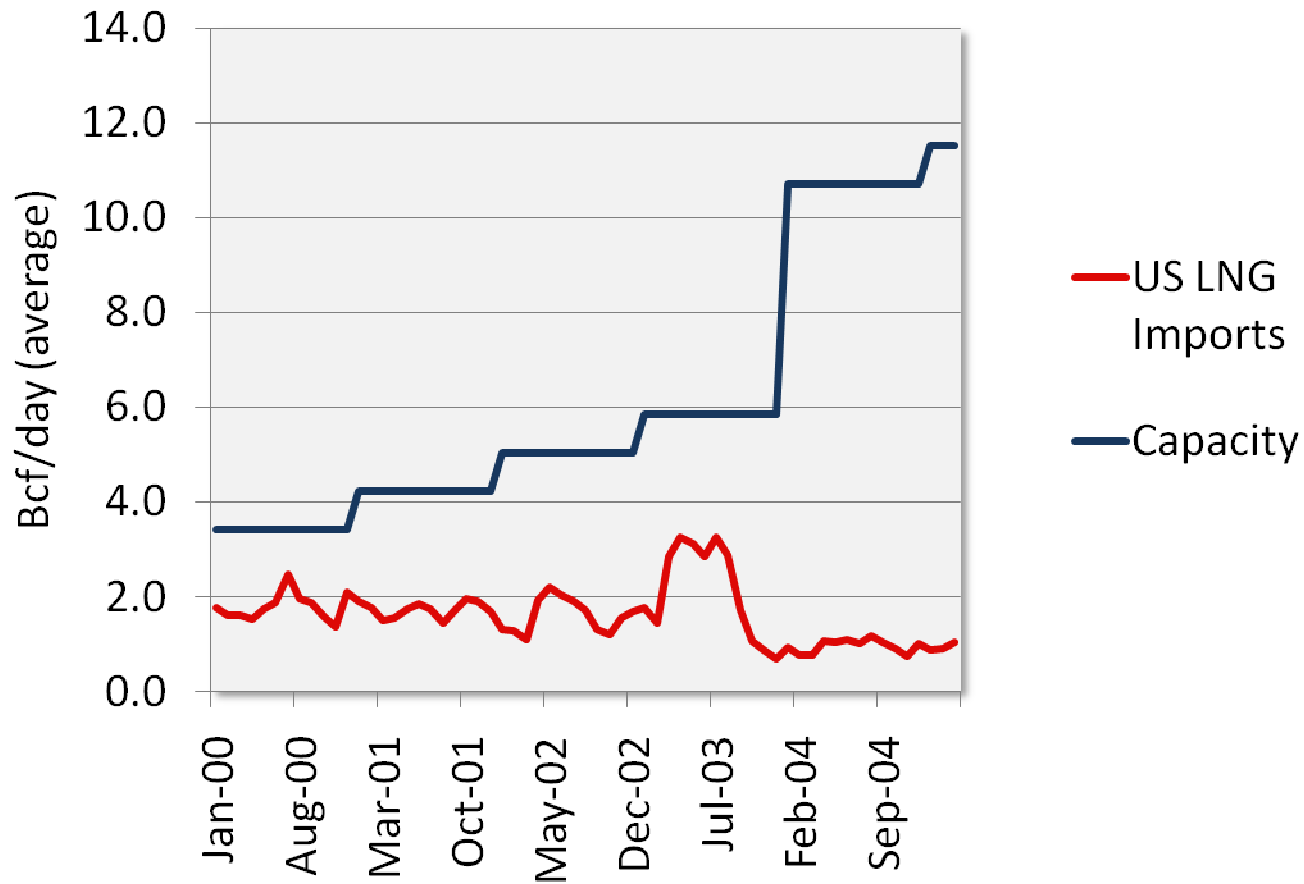


Source: BSA 2009, from trade press.

Most gas prices are indexed to oil markets, North America's differs.

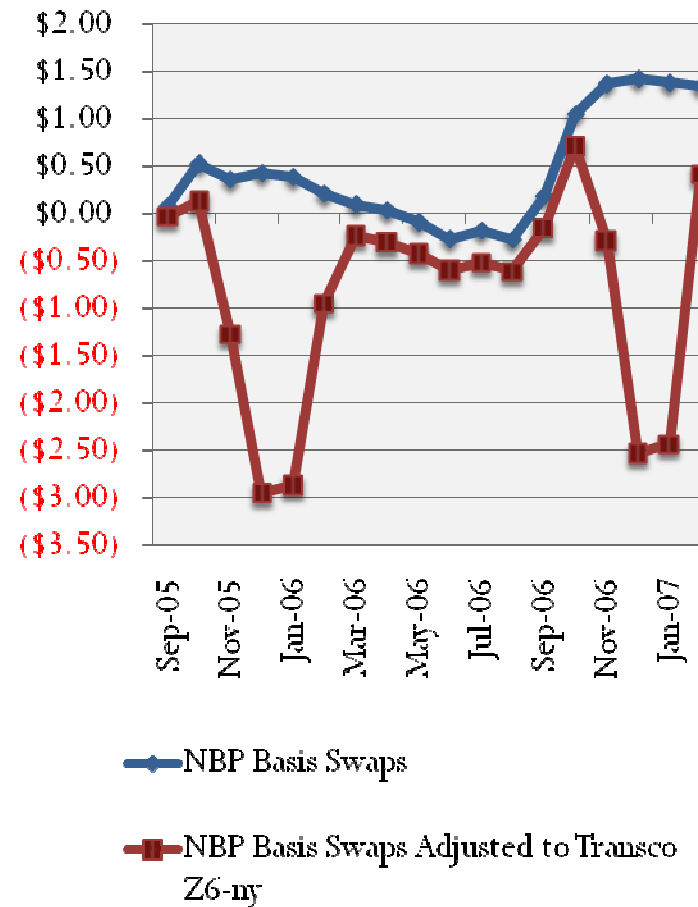


US LNG imports falling as terminal capacity rises.



LNG flow reversal is in our future.

- Markets expect LNG will move away from Gulf Coast toward Europe (high blue line).
 - Especially true during Winter 2010-11.
- But Northeast basis reverses the pattern (red line sharply, i.e., NBP generally cheaper than Transco Z6-NY in winter).



Recession realities...

- Global gas supplies are long, e.g., North American shale, but demand is down.
- Pipeline constraints holding shale off US markets.
- Meanwhile, world gas markets will increasingly affect US buyers:
 - Major new LNG projects entering service
 - Europe's buyers' take-or-pay contract crisis – shades of the U.S. in 1984.
- Result: low gas prices through 2011-12, followed by price swings/volatility like the early 2000s.

Schlesinger's rules for the 2010s...

- Never make a bet against gas supply.
- Lock margins.
- Call for help!





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