Shale Shock: The Revolution in Shale Gas Recovery, Electricity Markets and the Green Agenda

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www.epsa.org
“I know nothing about the subject, but I’m happy to give you my expert opinion.”
What is the Future for Natural Gas?

“*America’s Natural Gas Revolution*”  (Yergin & Ineson, Wall Street Journal, 11/2/09)

“The biggest innovation of the decade is natural gas – more specifically what is called “unconventional” natural gas. Some call it a revolution.”

“*An Energy Answer in the shale below?*”  (Washington Post, front page, above fold, 12/3/09)

“New technology opens vast stores of natural gas, and the land rush is on”

**OR**

“*A Shrinking Role for Gas-Fired Generation?* ”  (Crandell, Barclays Capital, 8/26/09)

“The ability of gas to displace coal this year has been driven by unsustainably low gas prices, suggesting that coal plants should again displace gas when gas prices recover. This raises the prospect that output growth from the surge of renewable facilities could keep pace with muted power demand growth. Should this occur, growth of gas-fired power output would likely stall. This would slow the spread of gas as the marginal, price-setting resource during many hours of the day, and cool the natural gas industry’s sole source of demand growth.”
Gas Controversies Already Ongoing

“At Odds Over Land, Money and Gas” (New York Times, Nov. 28, 2009)

“In New York City, natural gas exploration is largely seen as a threat to the drinking water the city gets from watersheds to the north in the Catskills. But in the rural communities above the shale, the reaction has been far more mixed – and far more contentious.

“Some residents welcome the drilling as a modern-day gold rush and salvation from economic doldrums that they say have chased jobs and young people away from their area. Others express concerns about the environment and quality-of-life issues like noise and heavy-truck traffic.

“In some cases, the issue has pitted neighbor against neighbor or spouse against spouse.”
Recent Headlines Recall Mistakes of Past

“Awash in Ethanol
U.S. May Be Hard Pressed to Use all Congress Ordered”
(New York Times, Nov. 27, 2009)

“A Growing Disaster”
(Russell Harding, New York Times Op-Ed, Nov. 28, 2009)
“The Ethanol Industry, once the darling of corn growers, environmentalists and the auto industry, has fallen on hard times.”
I’d Rather Not Walk the Plank
Talking About One Fuel
Competitive Suppliers Aren’t Just Gas Plants

Percentages of fuels used to generate electricity by competitive suppliers:

- 35% coal
- 32% natural gas
- 25% nuclear
- 4% non-hydro renewables
- 2% hydro
Competitive Sector Developments

- Competitive suppliers built the vast majority of new generation over the last decade and are working to do so again (gas was 2/3rds of power growth 1997-2007)
  - In 2010, the average competitive supplier will spend nearly $900 million in capital expenditures
  - Many will spend over $1 billion on power plant projects alone
  - Pursuing all technologies not just natural gas
  - Some competitive and utility generators closing old coal plants
Impact of Major Shale Production

• Natural gas prices are low after a recent sharp increase
• These low prices are sending price signals to the market
• Gas continues to have it’s historical advantages of being cleaner than other fossil fuels, more easy to site, faster to build and flexible to dispatch
• Increase of variable generation has highlighted the ramping capabilities of the natural gas generation fleet
Impact on RTO/ISO Markets

Gas sets marginal clearing price

✓ Over 90% of the time for the last five years in key NEPOOL and ERCOT Hubs

✓ Steady growth in PJM West with only 45% in 2005 jumping to between 70-80% in 2007 and 2008 (Barclays Capital, Energy Focus – A Shrinking Role for Gas-Fired Generation?” Aug. 26, 2009)

Wholesale electricity prices are sharply down – over 50% in many regions

➢ Forward winter peak prices from ’09 to ’10 are down

✓ 21% in NYC Hub

✓ 18% in Massachusetts Hub

Impact on Vertically Integrated Utilities

Utility prudence reviews and pending projects

- “Merchants Battle Entergy Arkansas Over Fate of Coal Plant” (Platts, Nov. 24, 2009) – “Entergy Arkansas’ plan to invest more than $600 million on scrubbers and other emission-control equipment at the 1,655-MW White Bluff coal station is being challenged by several merchant generators who assert that it may well be more cost-effective for the utility to shut down the nearly 30-year-old facility and buy power from the merchant’s underutilized generation assets in the region.”

- “AMP Scraps Coal Plant, Citing Higher Price Tag, Not Politics” (Platts, Nov. 30, 2009)

- “Duke: IGCC Plant Price Tag Rises by $150 Million” (Platts, Nov. 25, 2009)

- Other examples of fuel switching from lower demand and changing economics in Florida, Georgia, North Carolina and South Carolina
Price Signals Need to Be Right

Questions on specifics of capacity markets, scarcity pricing and demand response:

• Are resources being treated fairly and comparably?
  ➢ Not just opportunities but also penalties

• Are both existing and new resources recognized?

• Are we picking technology, fuel or locational winners?
Of Course There is The Elephant in the Room…
What About Carbon and Energy Policy?

- Impact of how free allowances are allocated in any bill
- If EPA regulates carbon, what is BACT?
- Every fuel/technology wants its own bill title/subsidy!
- What do natural gas producers want (old/new plants)?
- Where will carbon emission reductions come from?

*Not likely to see major long-term infrastructure investments until there is more policy certainty*
Picking Winners is Dangerous In An Industry With A History Of Faulty Forecasts
Uncertainty About Future Electricity Prices:
Forecasted Average Electricity Prices (U.S. – Retrospective Review)
(Nominal Cents/kWh)

Notes:
1. Average electricity price forecasts are based on Annual Energy Outlook mid-price or reference case values.
2. Forecasted series begin in the year of the listed AEO publication.
Uncertainty about Future Electricity Demand Levels:
Annual Differences of Forecasts of 2007 Electricity Sales
Compared to the Actual 2007 Electricity Sales

(Billion kWh)

Forecast as of 1992
Actual demand in 2007
Forecast as of 2000
Forecast as of 2004
Forecast as of 2007
Forecasts prepared in the early 2000s overestimated actual 2007 demand
Forecasts prepared in the early 1990s underestimated actual 2007 demand
Forecast as of 1996

Notes:
1. Each bar represents the difference between the actual 2007 sales value (3,748 billion/kWh) and the forecasted sales value made in that year.
3. Electricity sales forecasts are based on Annual Energy Outlook mid-price or reference case values.
Markets React to Policy Choices

• Allow the power markets to react to accurate price signals
• Get electricity market design right, set a price on CO2 and avoid forcing pre-determined outcomes for any one fuel
• Avoid making matters worse – pressing example is push to deny electricity suppliers and others with commercial risks cost-effective access to OTC derivatives products
Bottom Line:

Let’s try harder this time around to avoid picking favored fuels
Let's Not Put All of Our Eggs in One Basket – Should Allow Fuels/Technologies to Compete to Meet Policy Goals
Questions?

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