The Shale Gas Revolution in the United States

United Nations

Economic Commission for Europe

Committee on Sustainable Energy

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on behalf of

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SECTION I

THE MISSION AND ACCOMPLISHMENTS OF ACSF

The American Clean Skies Foundation

AMERICAN CLEAN SKIES FOUNDATION

www.cleanskies.org

ACSF was founded in 2007 to advance America's energy independence and a cleaner, low-carbon environment through expanded use of natural gas, renewables and efficiency.

Gregory C. Staple, CEO

...stands by the back-lit Earth image in the Foundation's lobby.

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Major Initiatives of ACSF

- 2008: Commissioned the Turning-Point Assessment of North American Natural Gas Supply.
- 2008 – 2010: Sponsored the Massachusetts Institute of Technology comprehensive study, "The Future of Natural Gas."
- 2009: At the UN Convention on Climate Change in Copenhagen, joined the UN Foundation and the Worldwatch Institute to sponsor a side forum focused on natural gas as a tool to address carbon.
- 2010: With the National Commission on Energy Policy, is sponsoring an 18-month examination of natural gas price volatility and potential responses.
- Then there is "Shale Gas and America's Future," released just this month. . .

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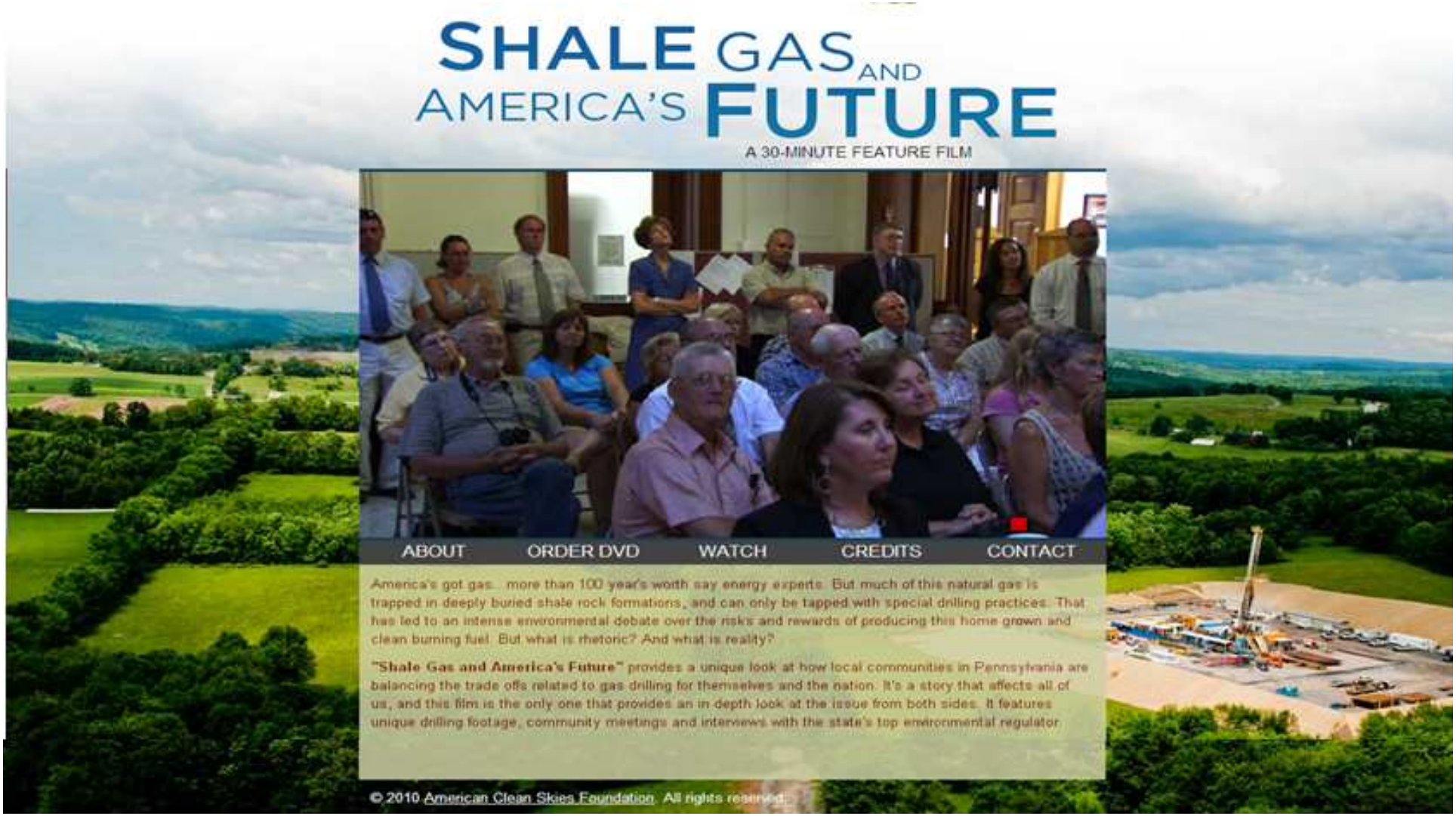
"Shale Gas and America's Future"—a 30-Minute Feature film about how the US natural gas industry is meeting the environmental challenge of shale gas production



Available at: http://www.shalegasfuture.com

May be streamed on line, or ordered in disk form at no charge.

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SECTION II

U.S. NATURAL GAS DEVELOPMENT AND ABUNDANCE

There Is Now Known to Be a Very Large Gas Resource-- The Recognition Started with ACSF and Its 2008 Study

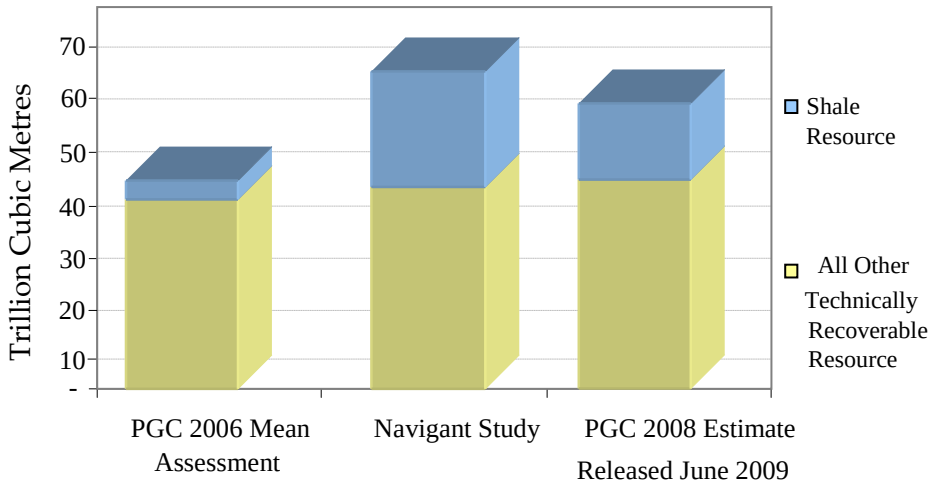
Proved Reserves Plus Assessed Resources—Life of the Gas Resource

- In 2006, the Potential Gas Committee (PGC) estimated 43.3 TCM of total Recoverable Resource.

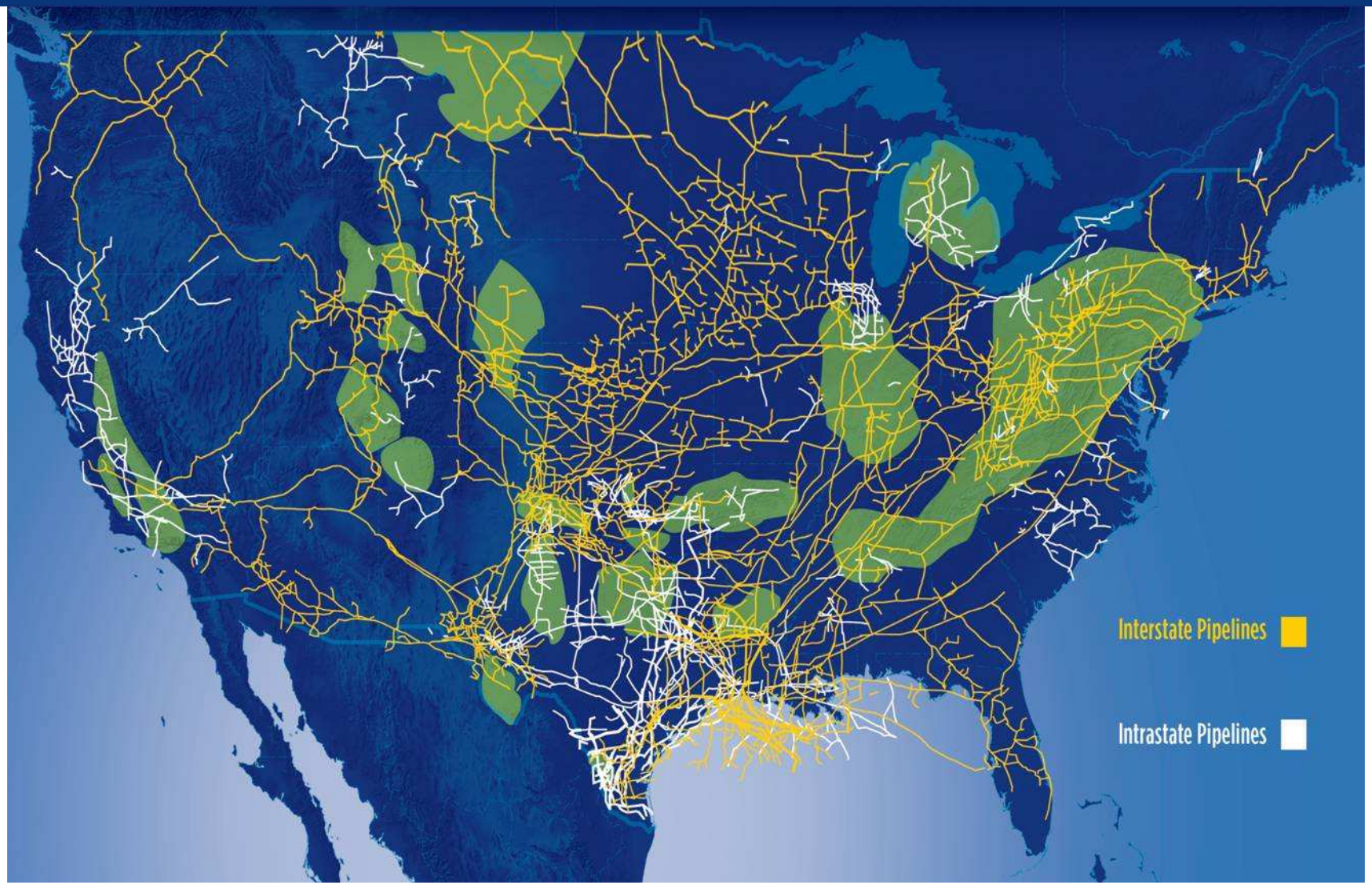
- In 2008, ACSF had Navigant perform the North American Natural Gas Supply Assessment. This study found that shale and other unconventional supplies had increased the resource to as much as 63.6 TCM, including 23.8 TCM of shale gas.. This would be 118 years of production at 2007 levels.

- In June 2009, PGC issued its 2008 updated study—58.8 TCM, including 17.4 TCM of shale, also over 100 years' worth.

U.S. Total Gas Supply (TCM)



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



Sources: EIA, US Natural Gas Pipeline Nework

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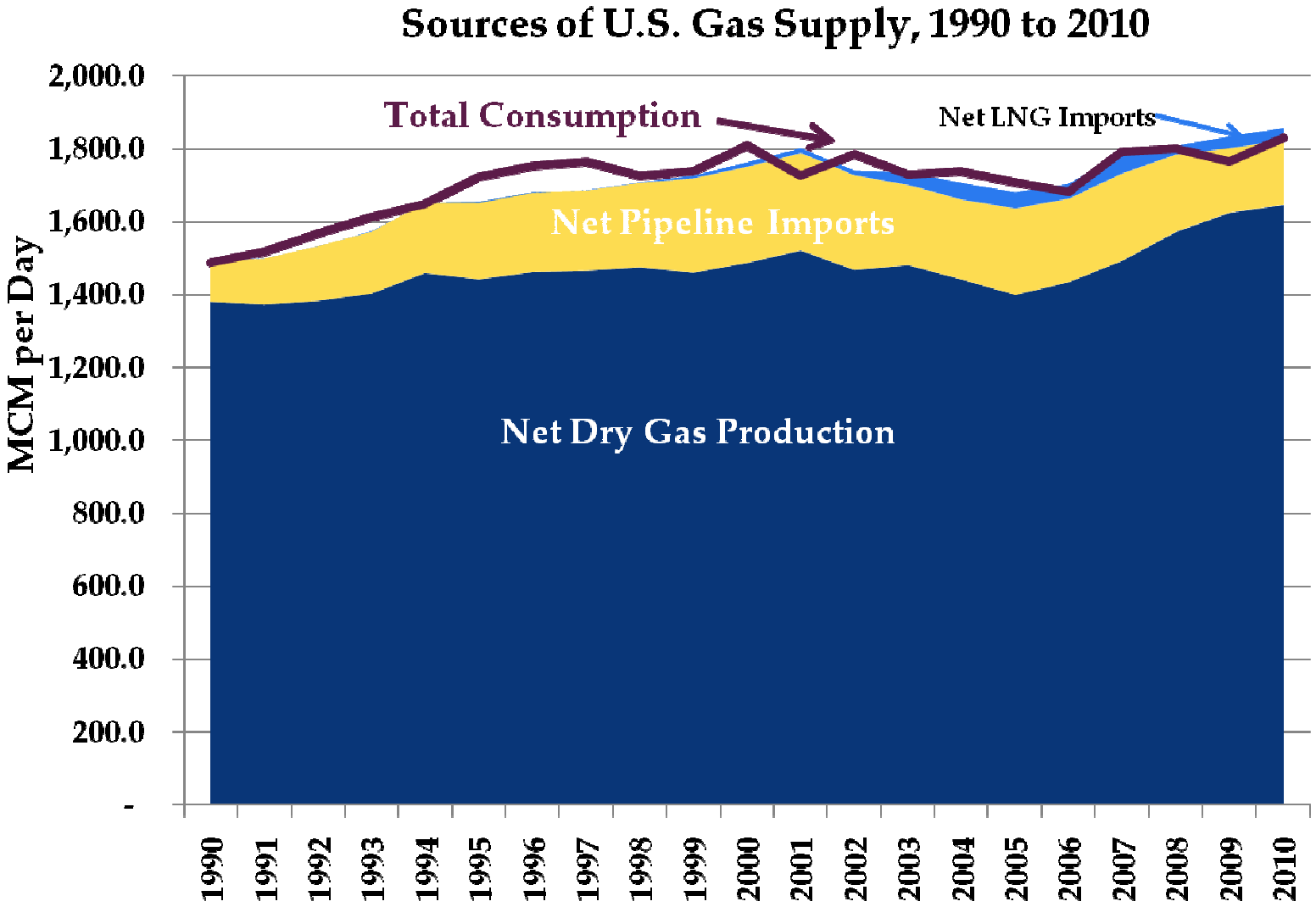
Total US Gas Supply: For 15 years, Domestic Production was Flat, with Growing Imports—Then in 2005, the Ramp-up Began



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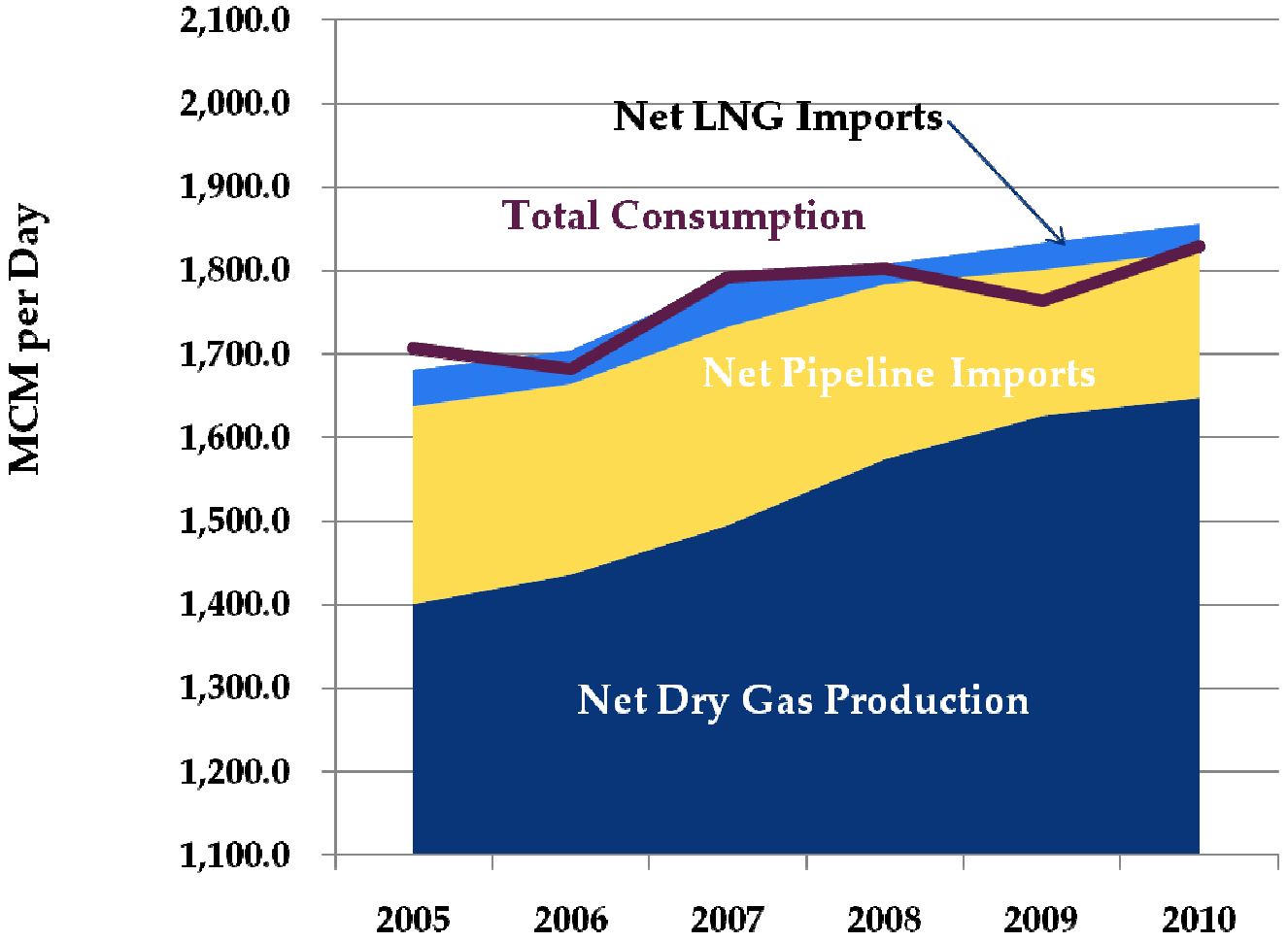
The Last Five Years Have Been Very Different—Thanks to Domestic Growth, Supply Now Exceeds Demand, and Imports are Shrinking

The Rapid Change from 2005



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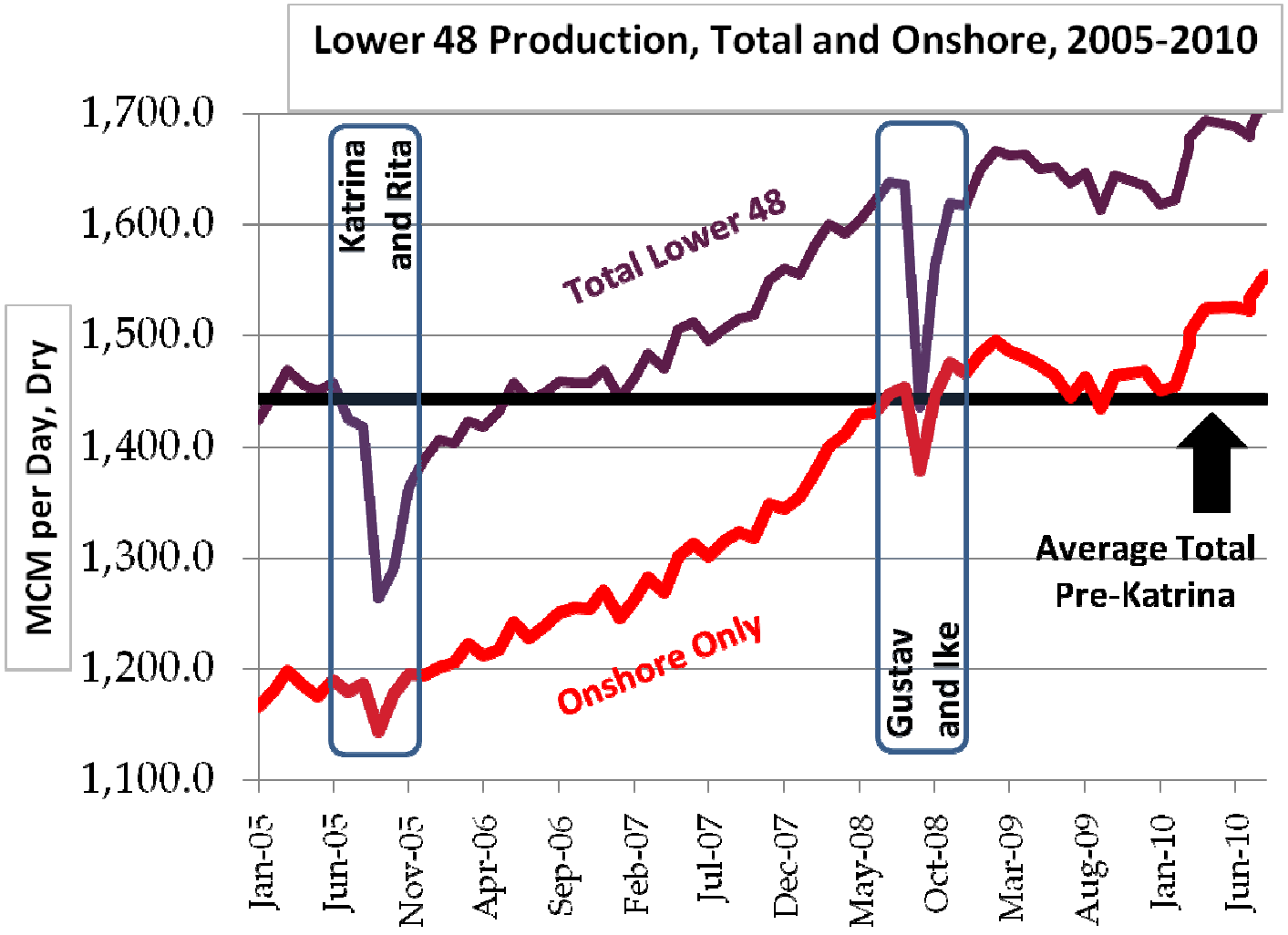
The Really Dramatic Story is Onshore, where Between 2005 and 2008, Enough Production Was Added to Replace Offshore



From 2005 to 2008, the daily energy added from onshore sources exceeds the thermal content of all the oil we import from Saudi Arabia.

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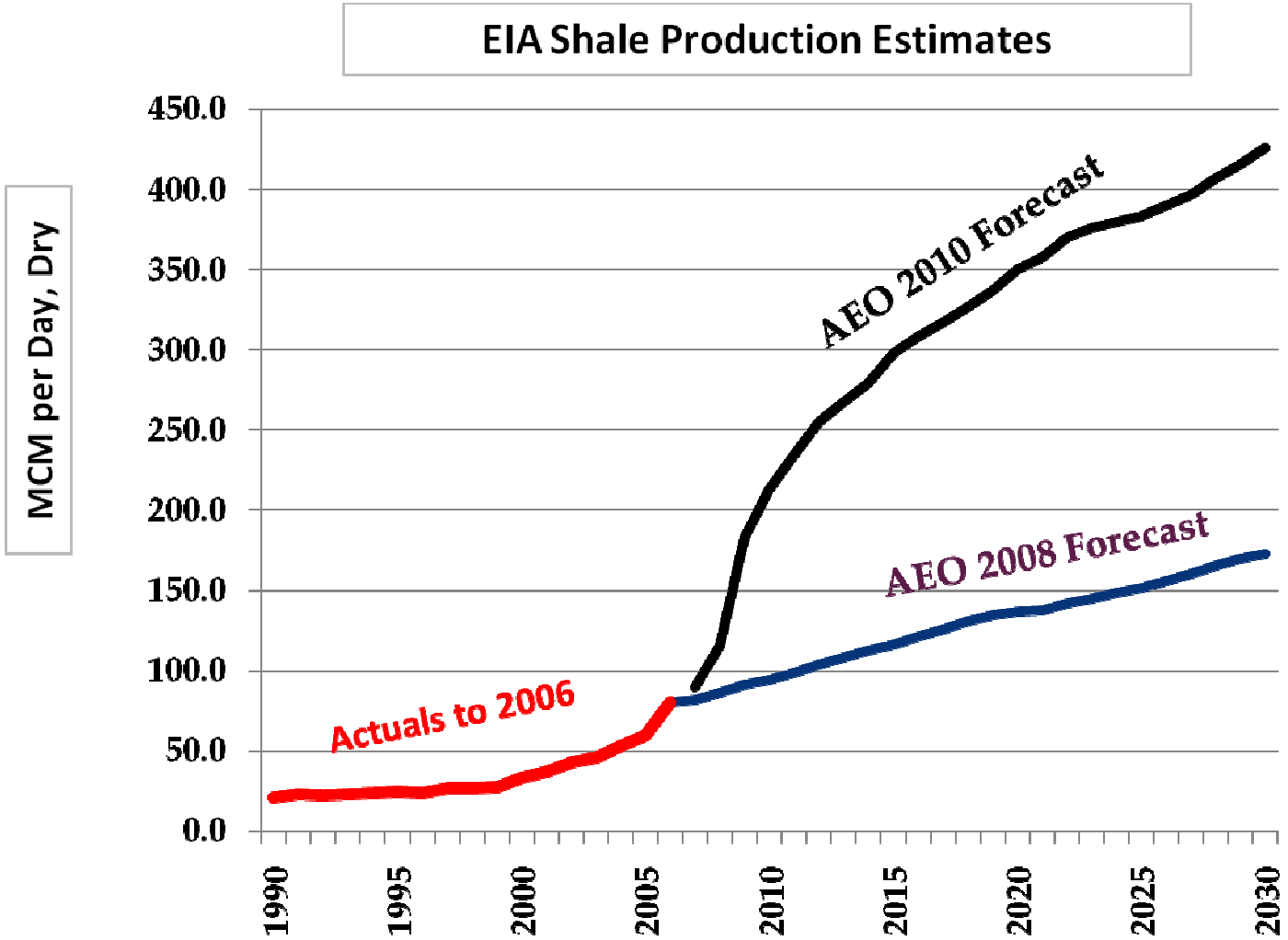
What about Shale Gas? The U.S. Energy Information Administration Developed a Robust Forecast in 2010, Compared with its 2008 View



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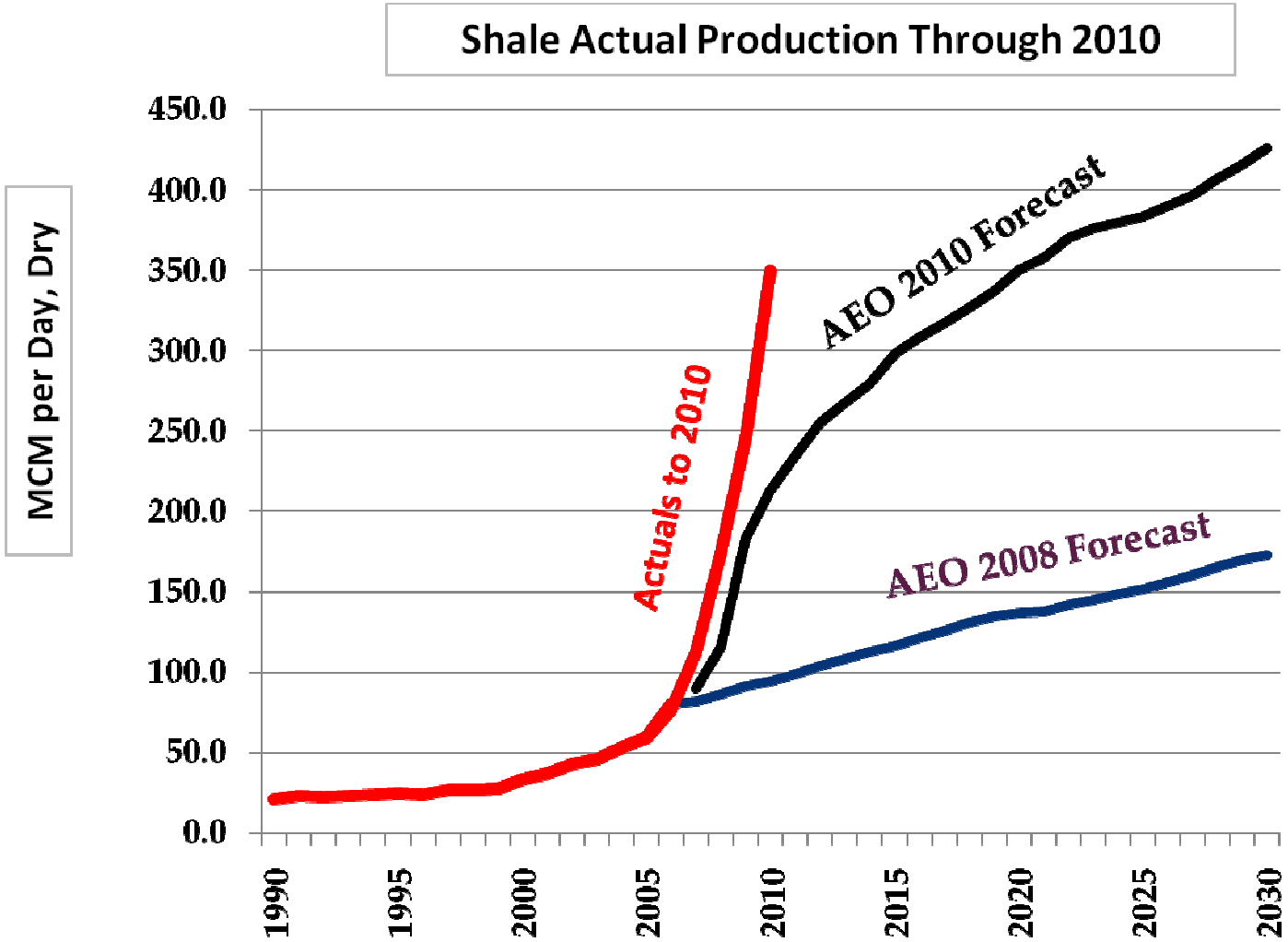
But Actual Production has Far Exceeded Even the Aggressive 2010 Forecast



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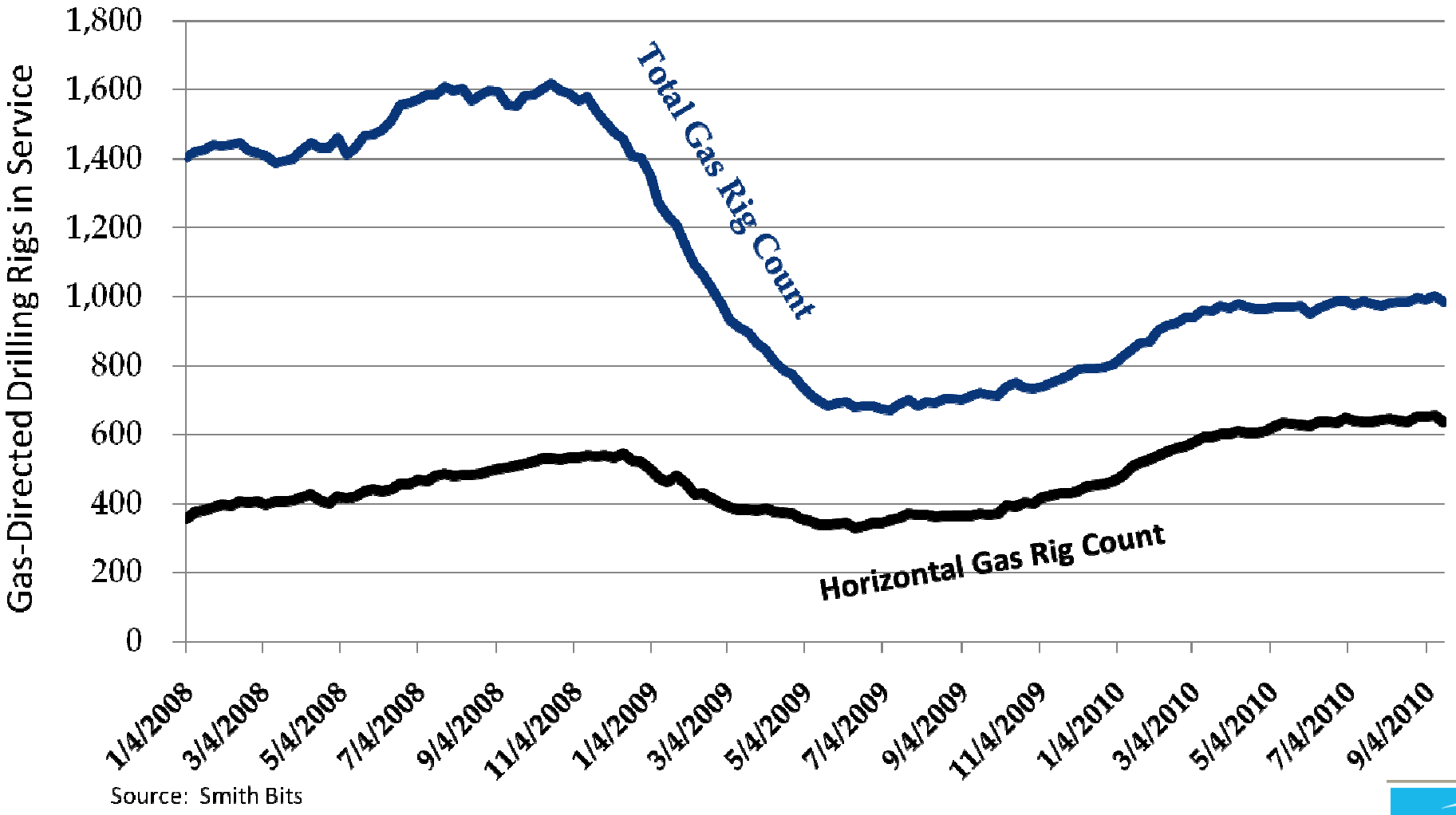
Why? Didn't drilling drop off a lot since 2008?

Yes, in total—but horizontal drilling for gas is above 2008 levels. . .



Source: Smith Bits

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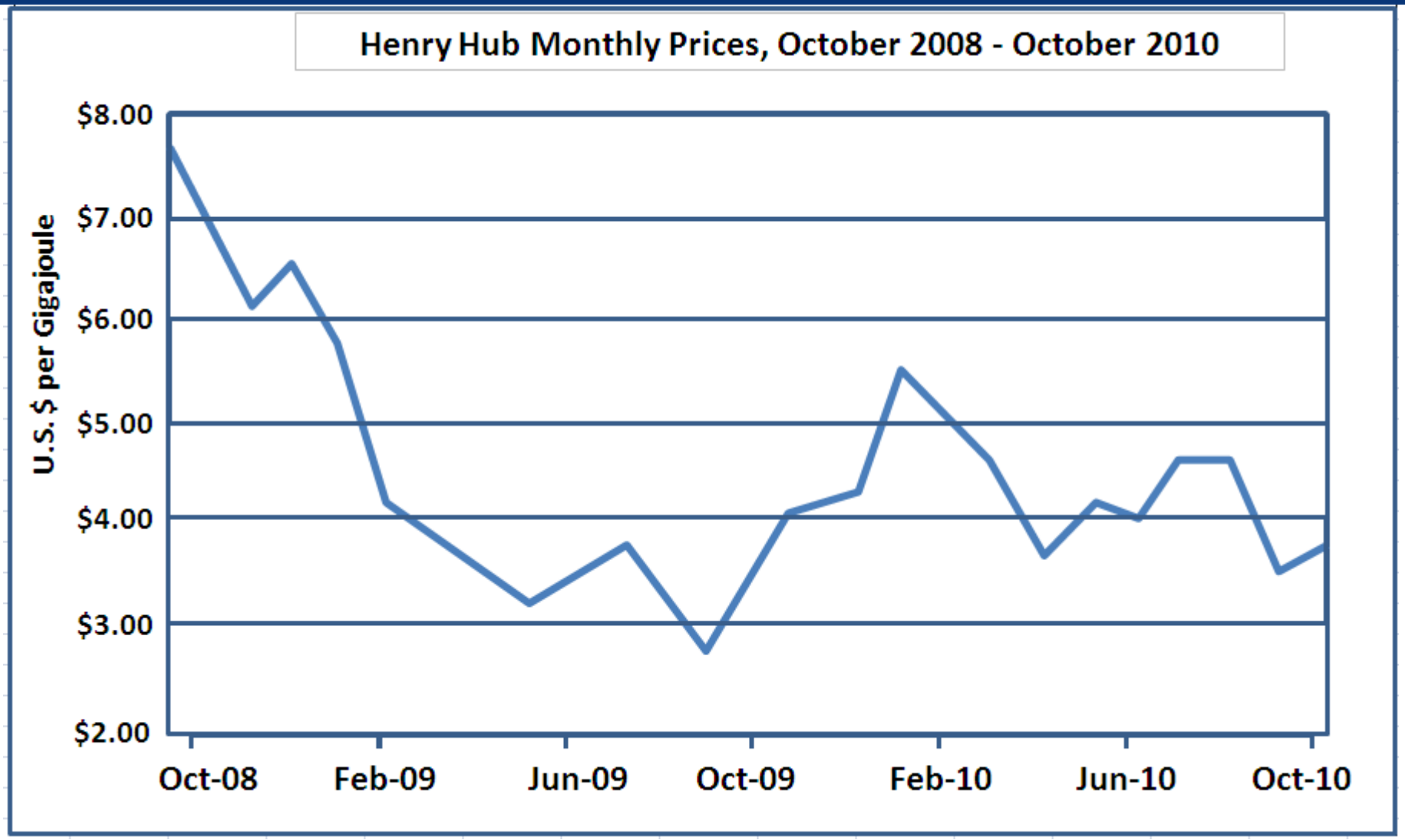
Prices Have Stabilized in a Modest Range



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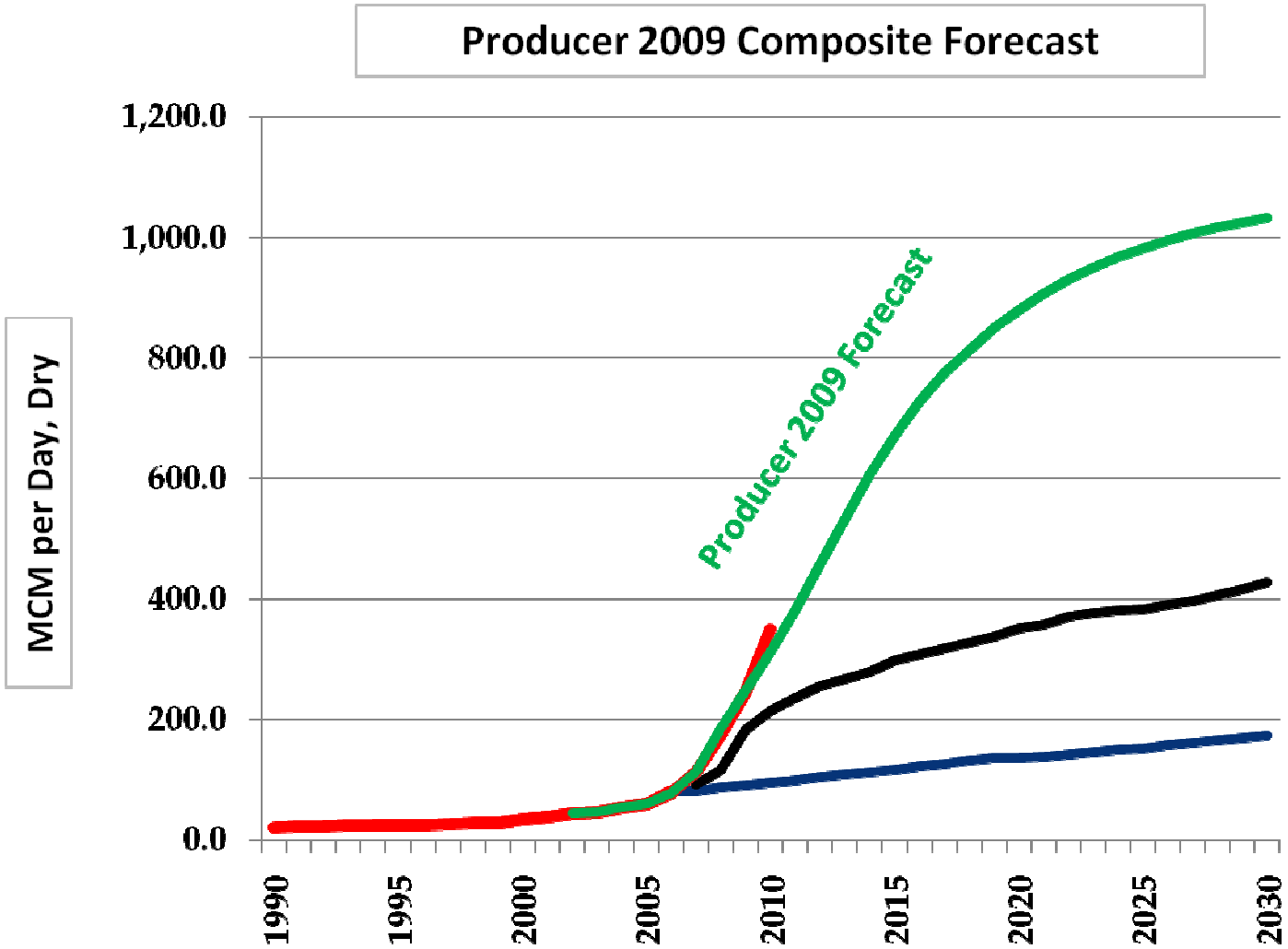
Looking Forward, Producers Expect the Trend to Continue if There's a Demand for the Gas—2010 Actuals Exceeded Even the Producers' 2009 Forecast



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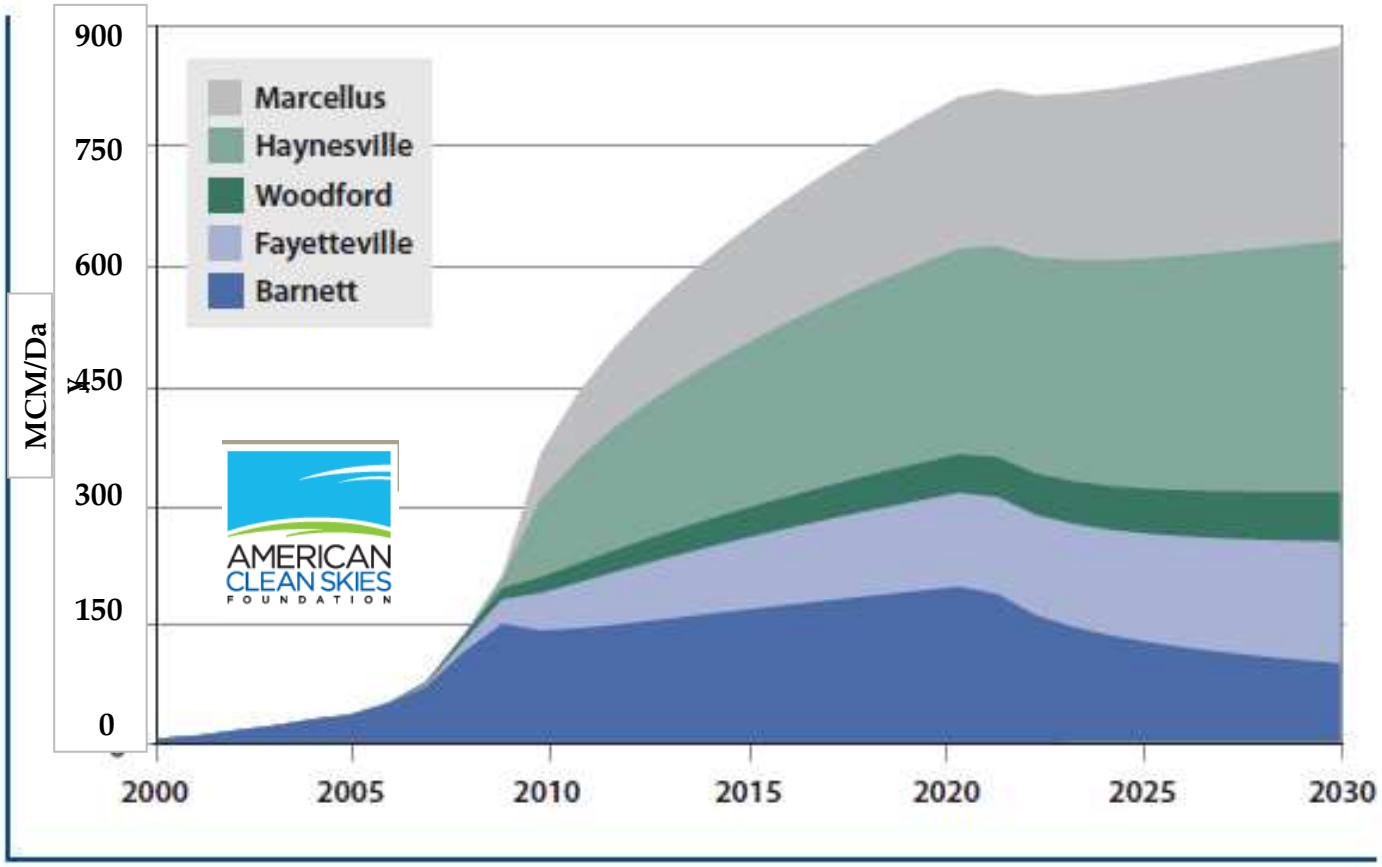
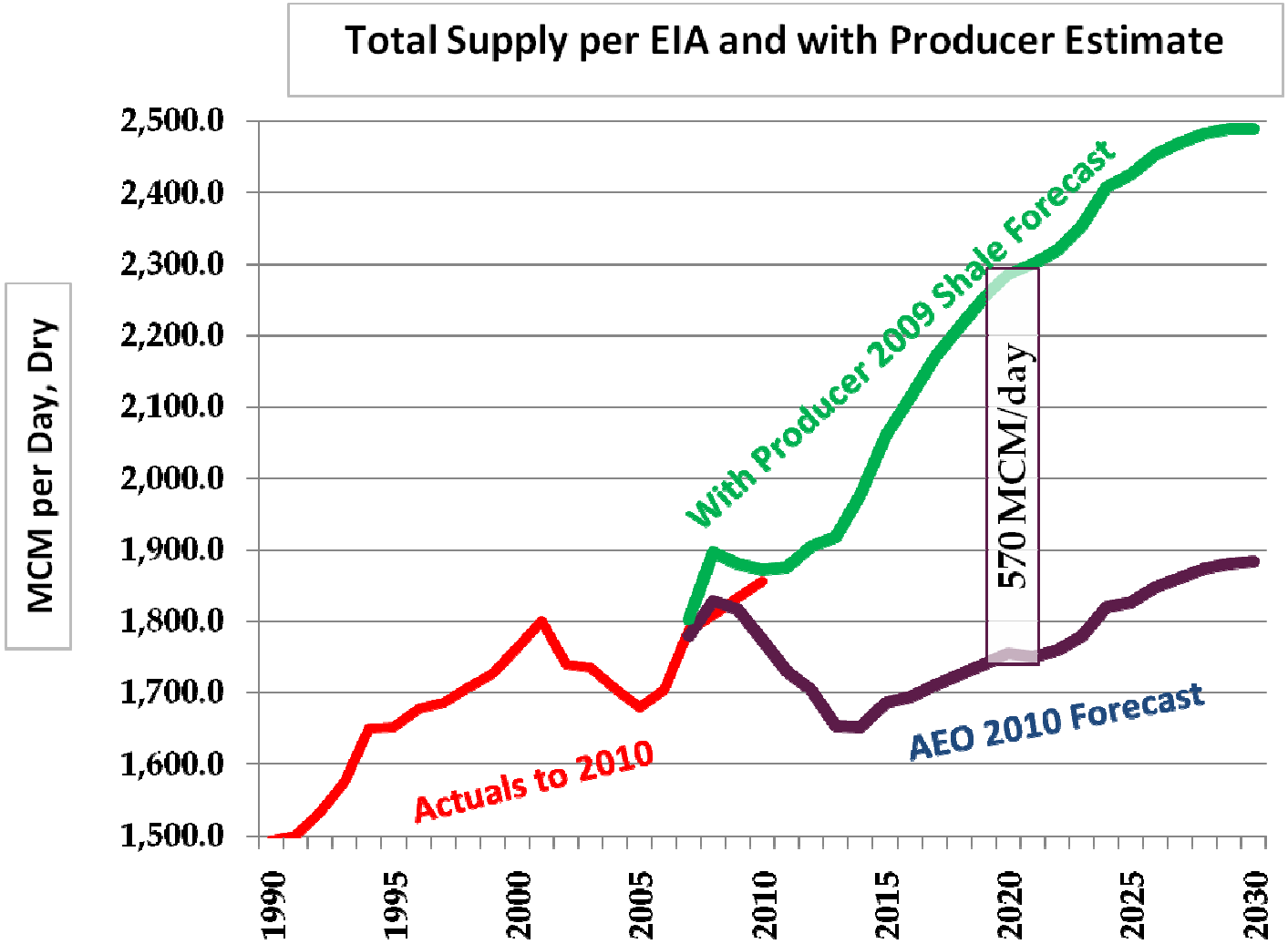
The Recent MIT Gas Study Sponsored by ACSF Shows Similar Rates of Increase, at least to 2020

Figure 2.6 Potential Production Rate that Could Be Delivered by the Major U.S. Shale Plays Up To 2030 – Given Current Drilling Rates and Mean Resource Estimates[8]



Source: "The Future of Natural Gas, Massachusetts Institute of Technology, 2010

Based on that Producer Forecast, There Would Be Enough Additional Supply by 2020 to Displace Over Half of All U.S. Coal-Fired Generation



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Challenges Faced in the United States

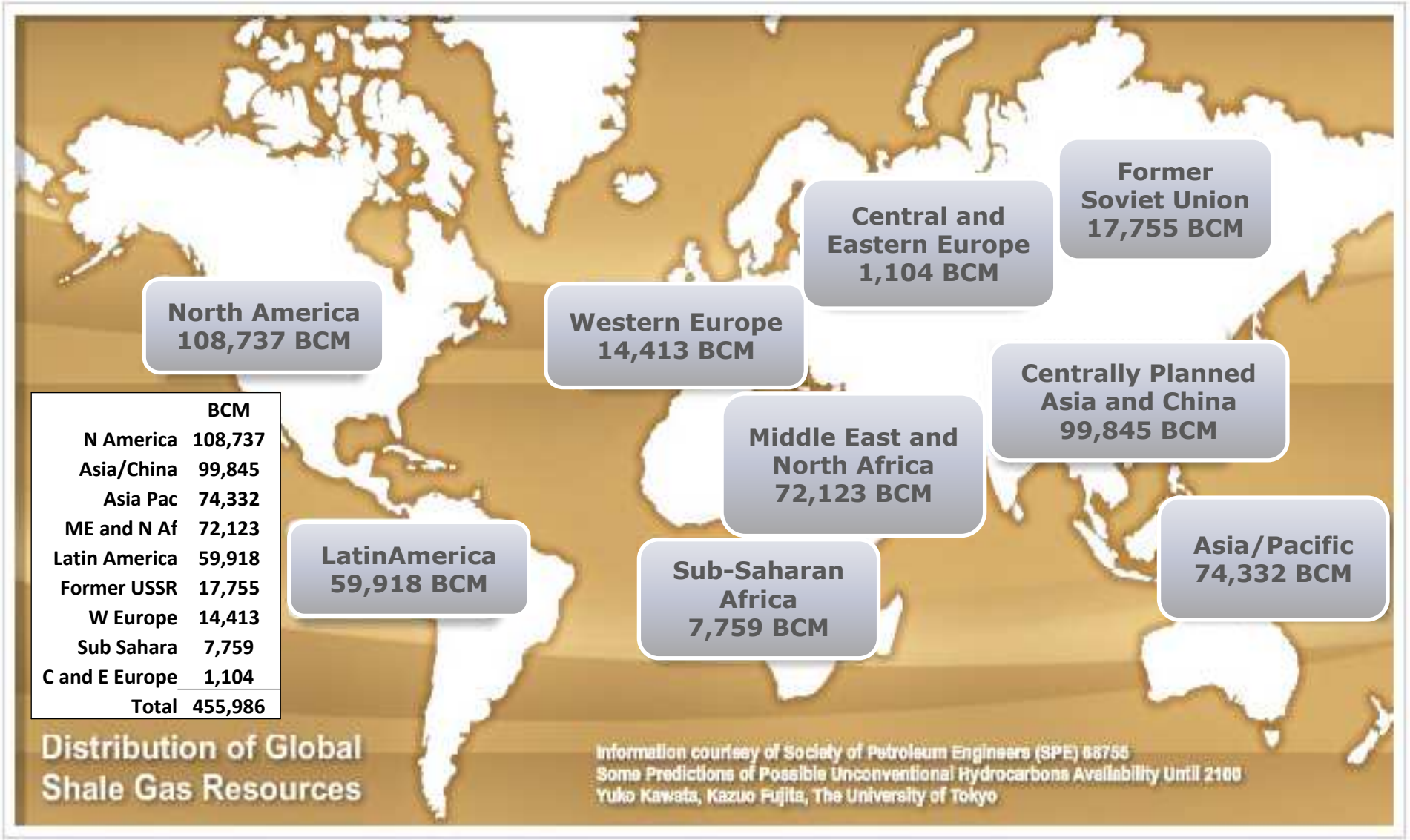
Market Impact

- The Market is oversupplied—So prices have been in the $3 to $4 range, when most think it takes $6 for full development—We need more demand.
  - — Until now, lease retention, NGL production, and being in the "Sweet Spots" has kept development going at a high pace.
  - — But without a stronger market, the industry will redirect toward oil, slowing the pace of development .
- The added supply, on top of EIA's highest estimates, is enough to replace half of all coal use by 2020! This is a huge opportunity, but it is also a huge amount of supply to accommodate.

Development Impact

- Meanwhile, land impact, water questions around hydraulic fracturing, and road impacts are causing opposition to development.
- Of all those issues, hydraulic fracturing has been the most controversial—water supply and produced-water handling are the biggest environmental issues faced by the industry.

Meanwhile, of course, Shale is a Global Resource—Where is the Next Major Development?



	BCM
N America	108,737
Asia/China	99,845
Asia Pac	74,332
ME and N Af	72,123
Latin America	59,918
Former USSR	17,755
W Europe	14,413
Sub Sahara	7,759
C and E Europe	1,104
Total	455,986

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