

Energy Forecasting in Volatile Times



*Federal Forecasters Conference – The Value of Government Forecasts
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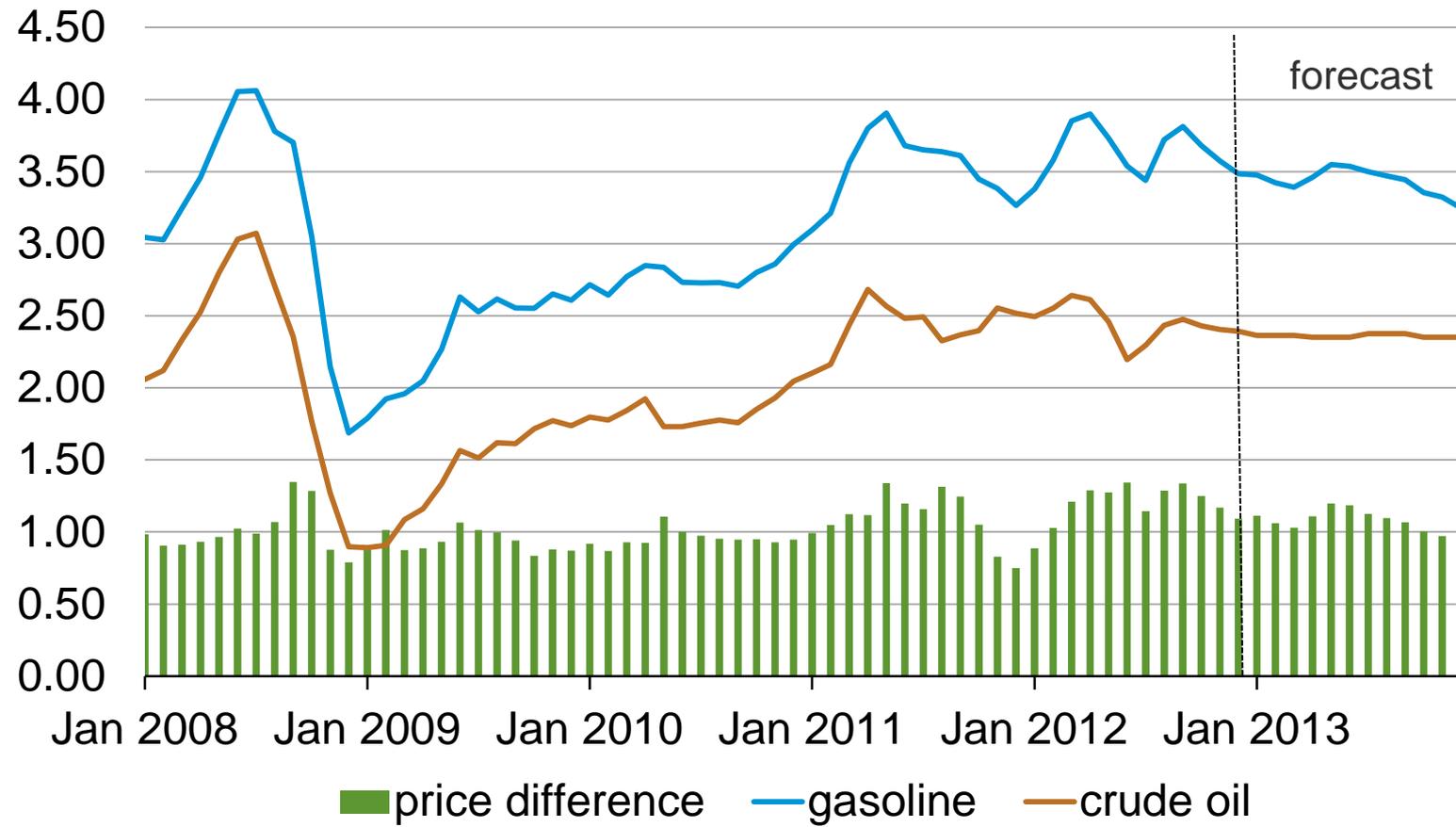
About EIA

The U.S. Energy Information Administration (EIA) collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment.

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Short-Term Energy Outlook: U.S. retail gasoline and crude oil prices

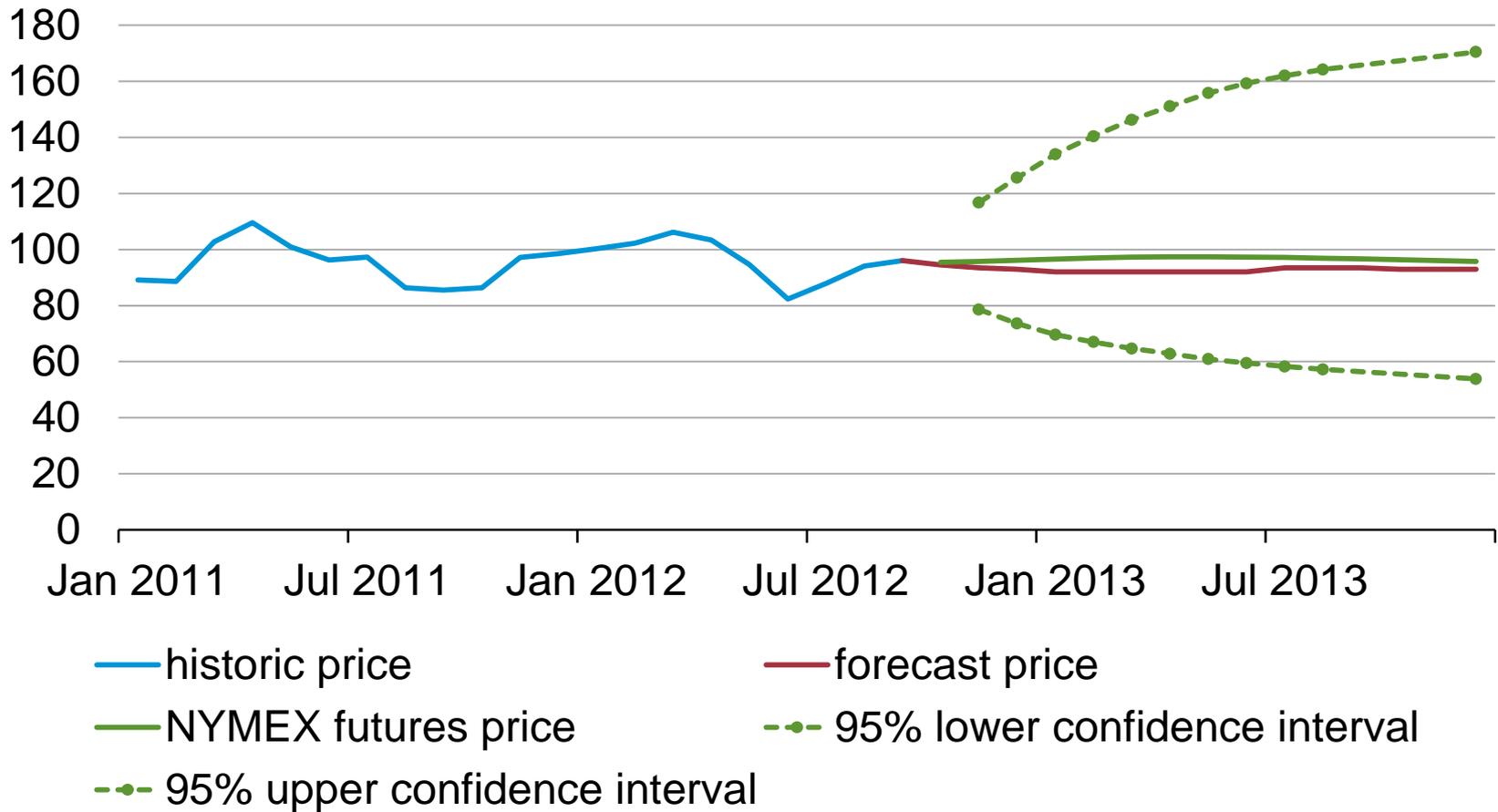
dollars per gallon



Source: U.S. Energy Information Administration Short-Term Energy Outlook, September 2012

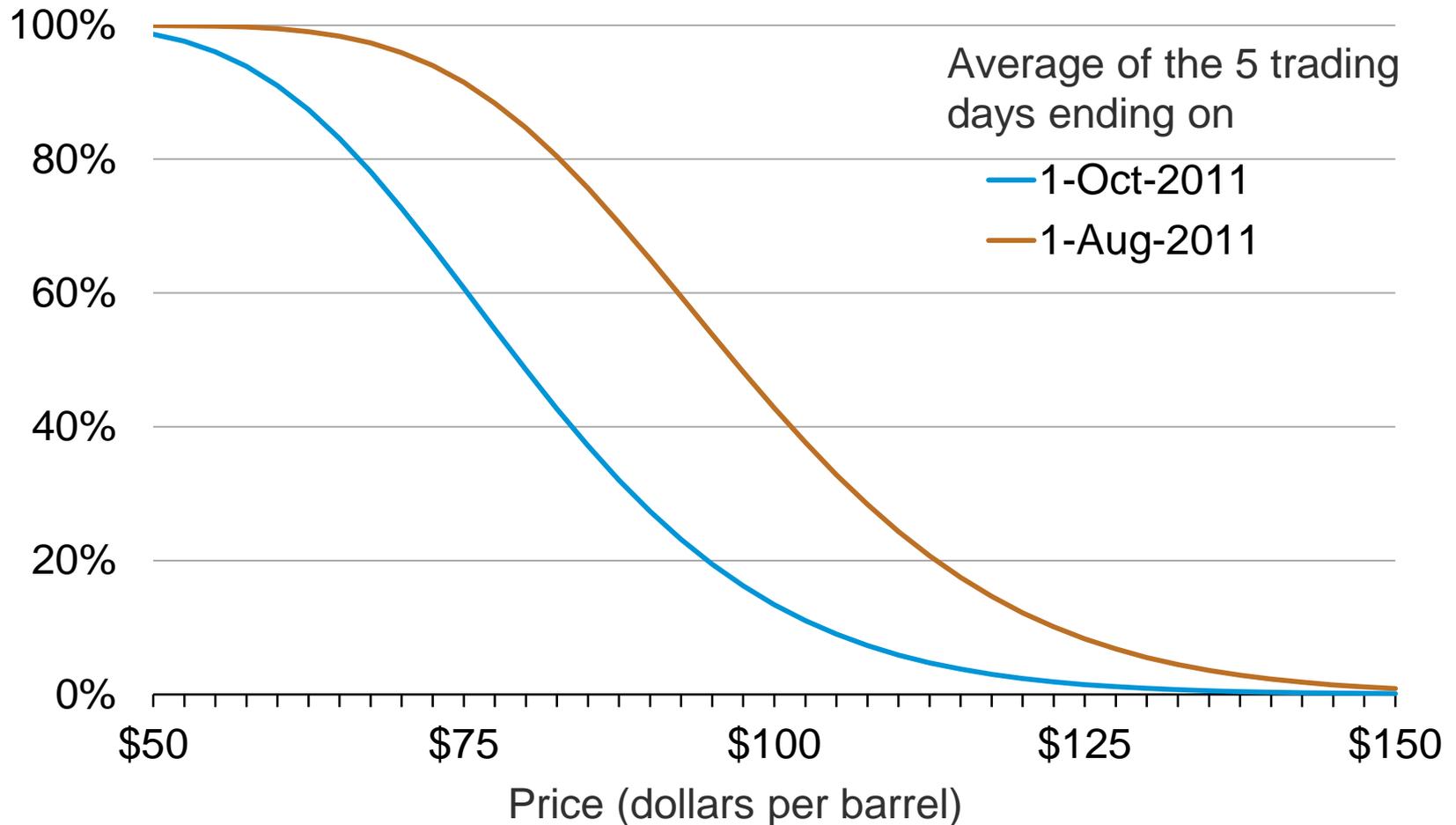
Energy price forecasts are inherently volatile

West Texas Intermediate crude oil price
dollars per barrel



Source: U.S. Energy Information Administration Short-Term Energy Outlook, September 2012

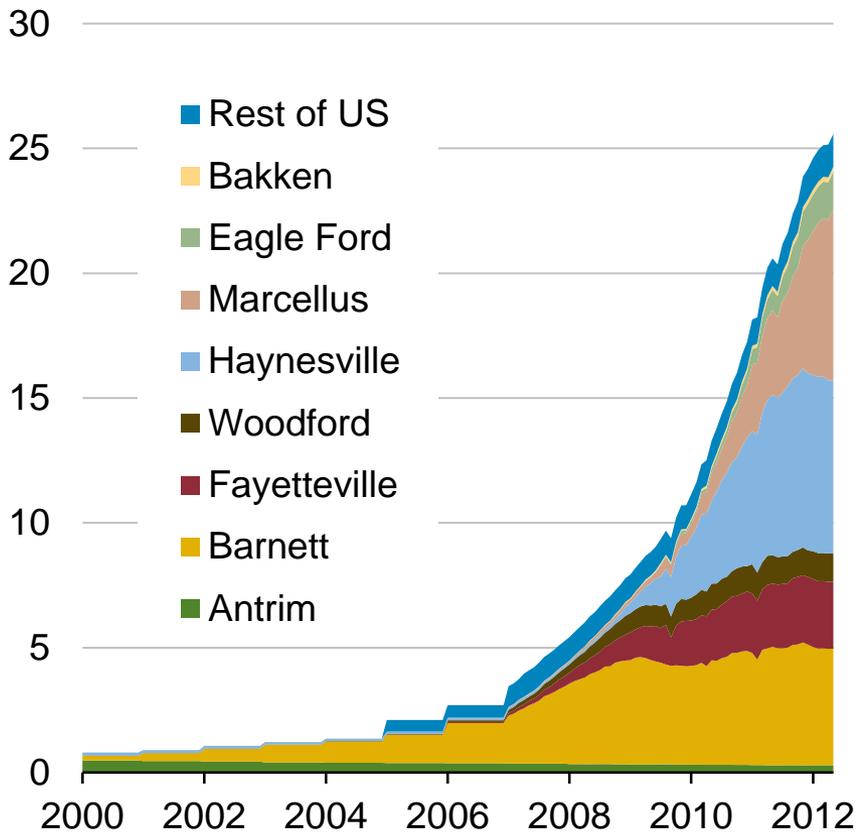
Probability of December 2012 WTI contract expiring above different price levels



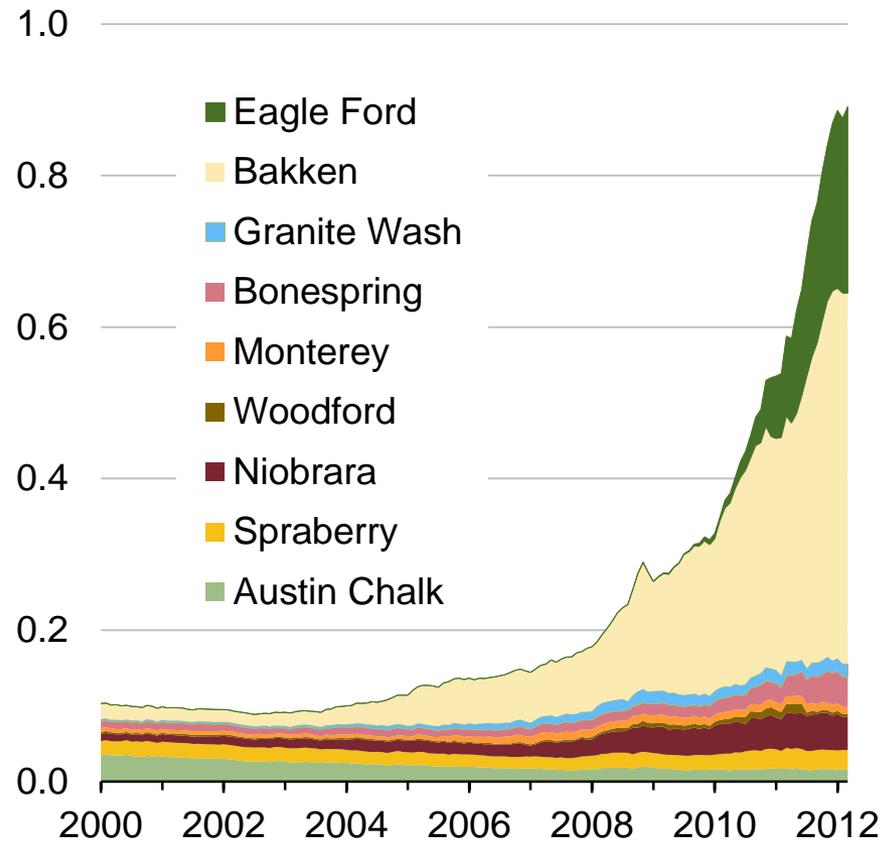
Source: U.S. Energy Information Administration Short-Term Energy Outlook, September 2012

Domestic production of shale gas and tight oil has grown dramatically over the past few years

shale gas production (dry)
billion cubic feet per day



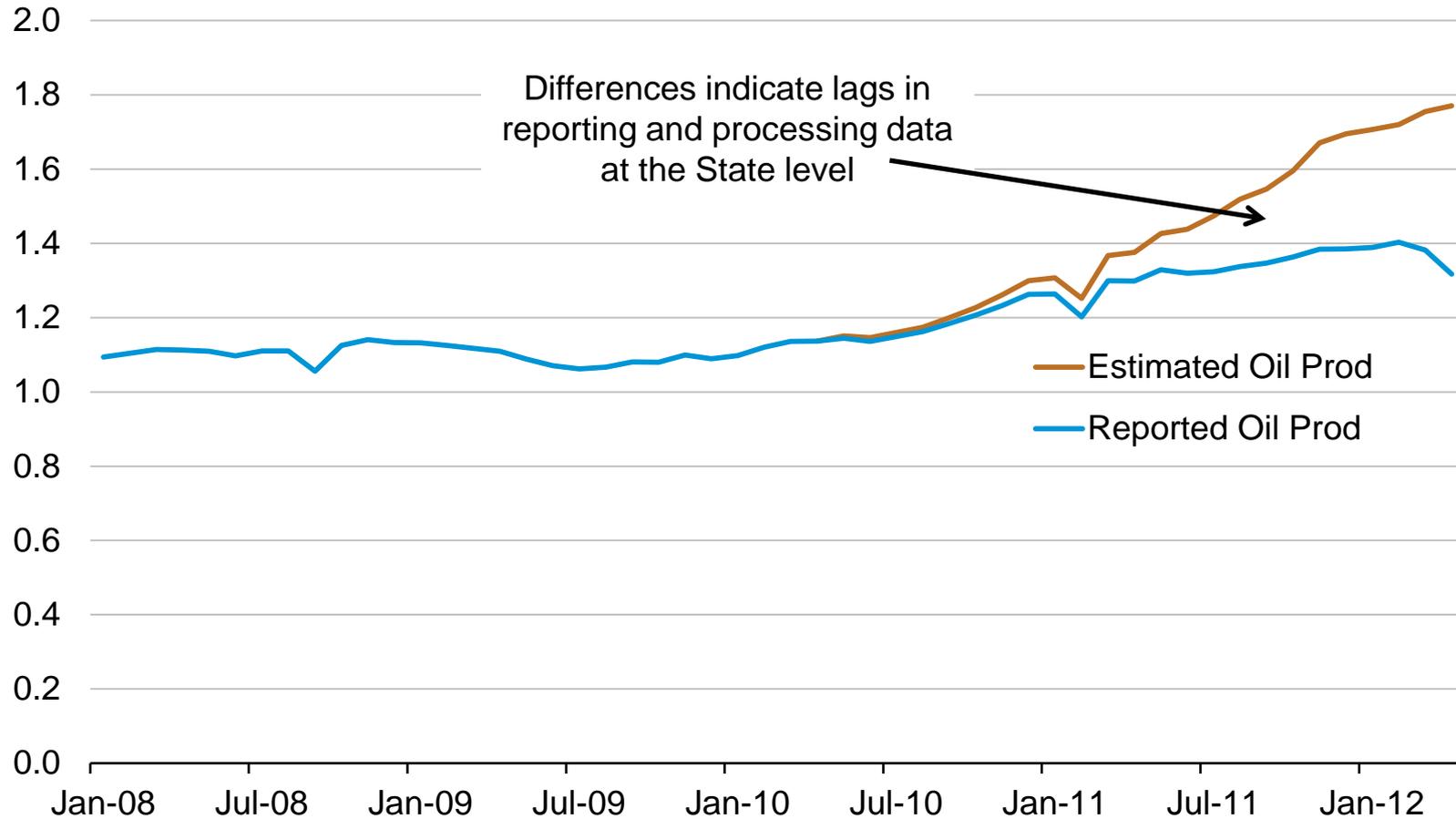
tight oil production for select plays
million barrels of oil per day



Source: HPDI, Texas RRC, North Dakota department of mineral resources, and EIA, through March, 2012.

Speed of development raises new data collection issues

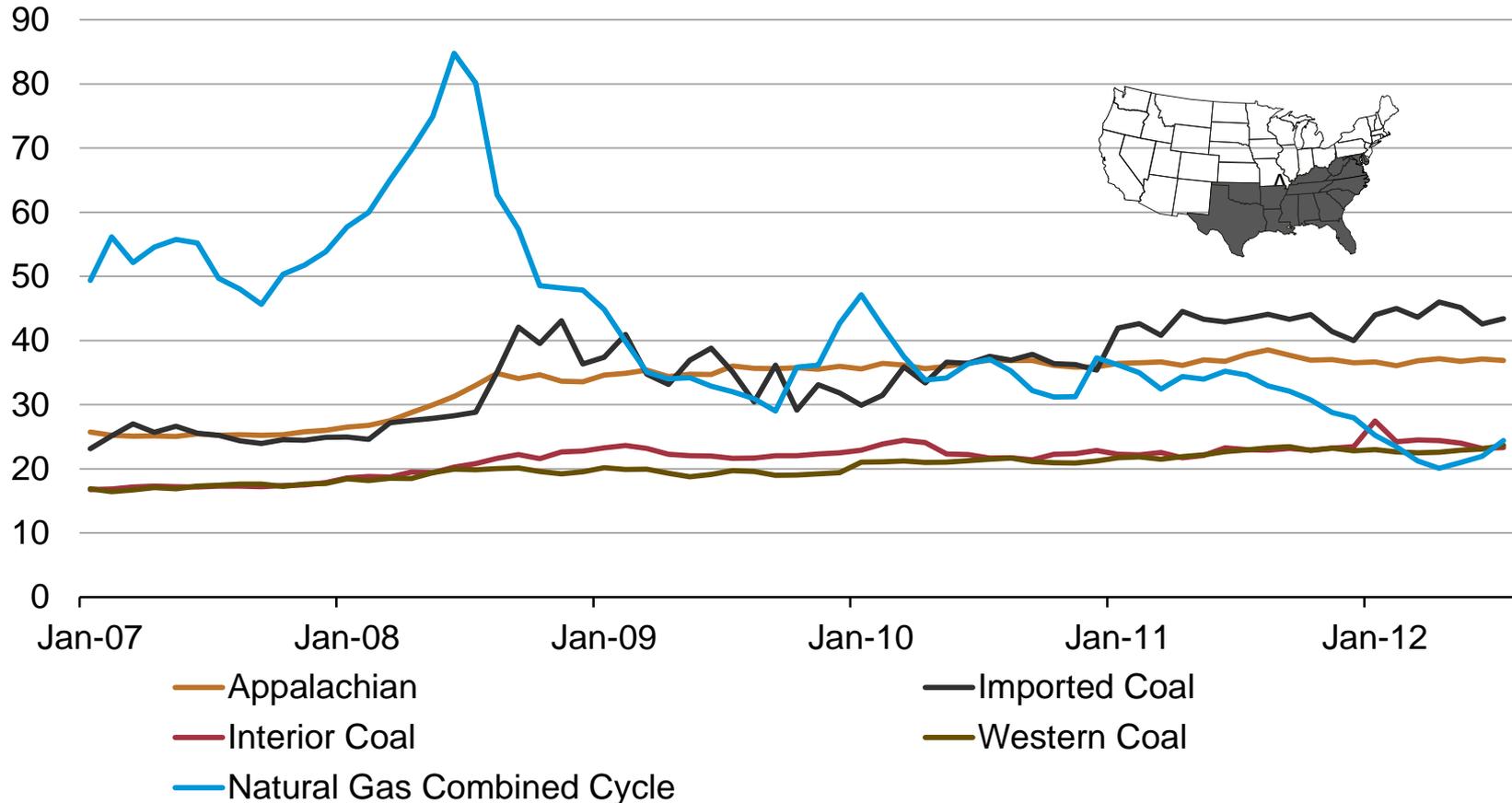
Texas oil production
million barrels per day



Source: Hydrocarbon Production Database Incorporated (HPDI), EIA, State of Texas. Data through April, 2012

Increased natural gas production lowered prices power plants paid for this fuel

South delivered fuel prices
dollars per megawatt-hour

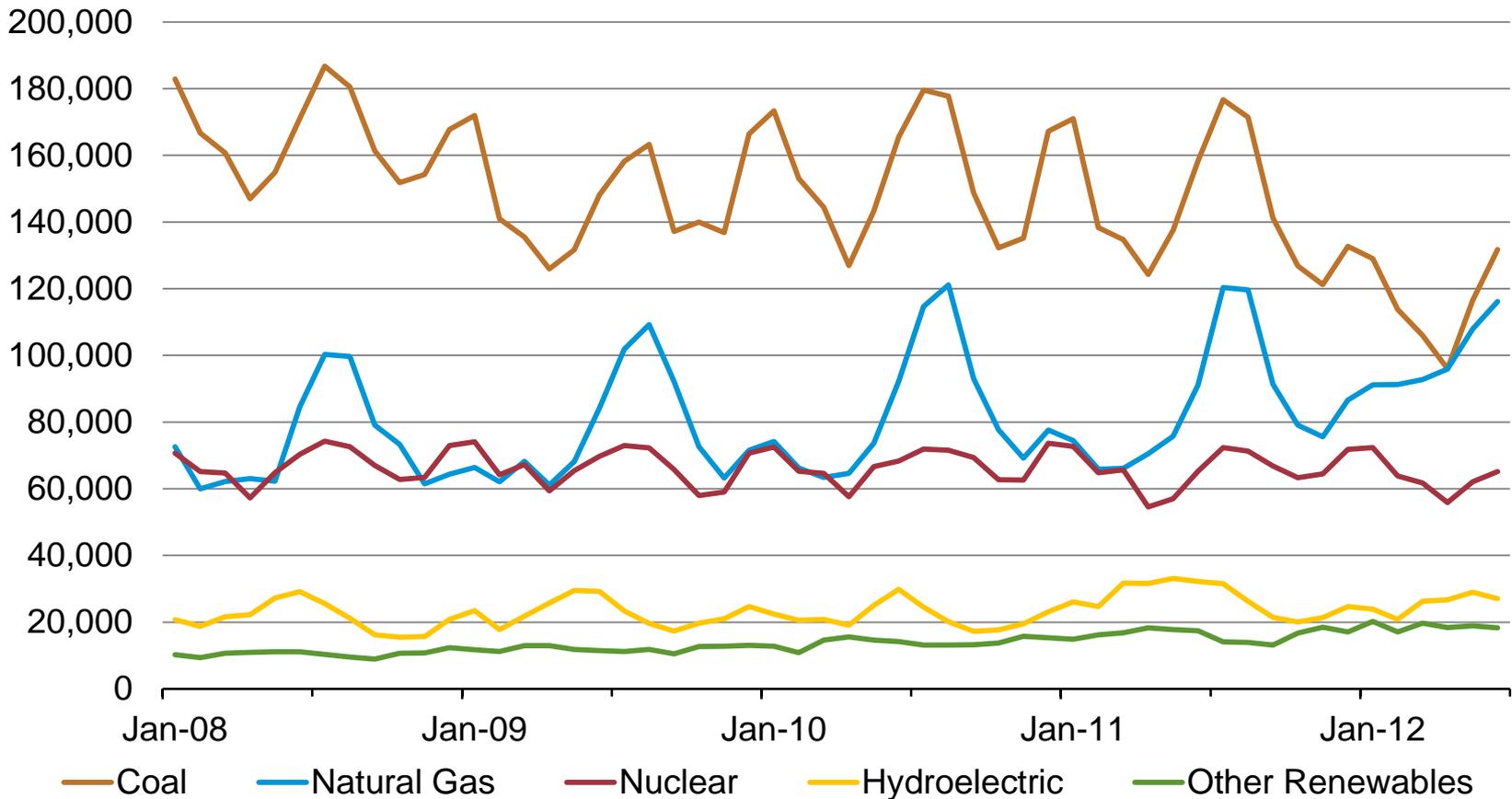


Note: Data for 2011 and 2012 are preliminary. Assumes heat rates of 7,000 Btu/kWh for natural gas combined cycle generators and 10,500 Btu/kWh for coal generators

Source: U.S. Energy Information Administration, Power Plant Operations Report

Lower natural gas prices at power plants lead to increased natural gas use for power generation

Monthly generation from major fuels
thousand megawatthours



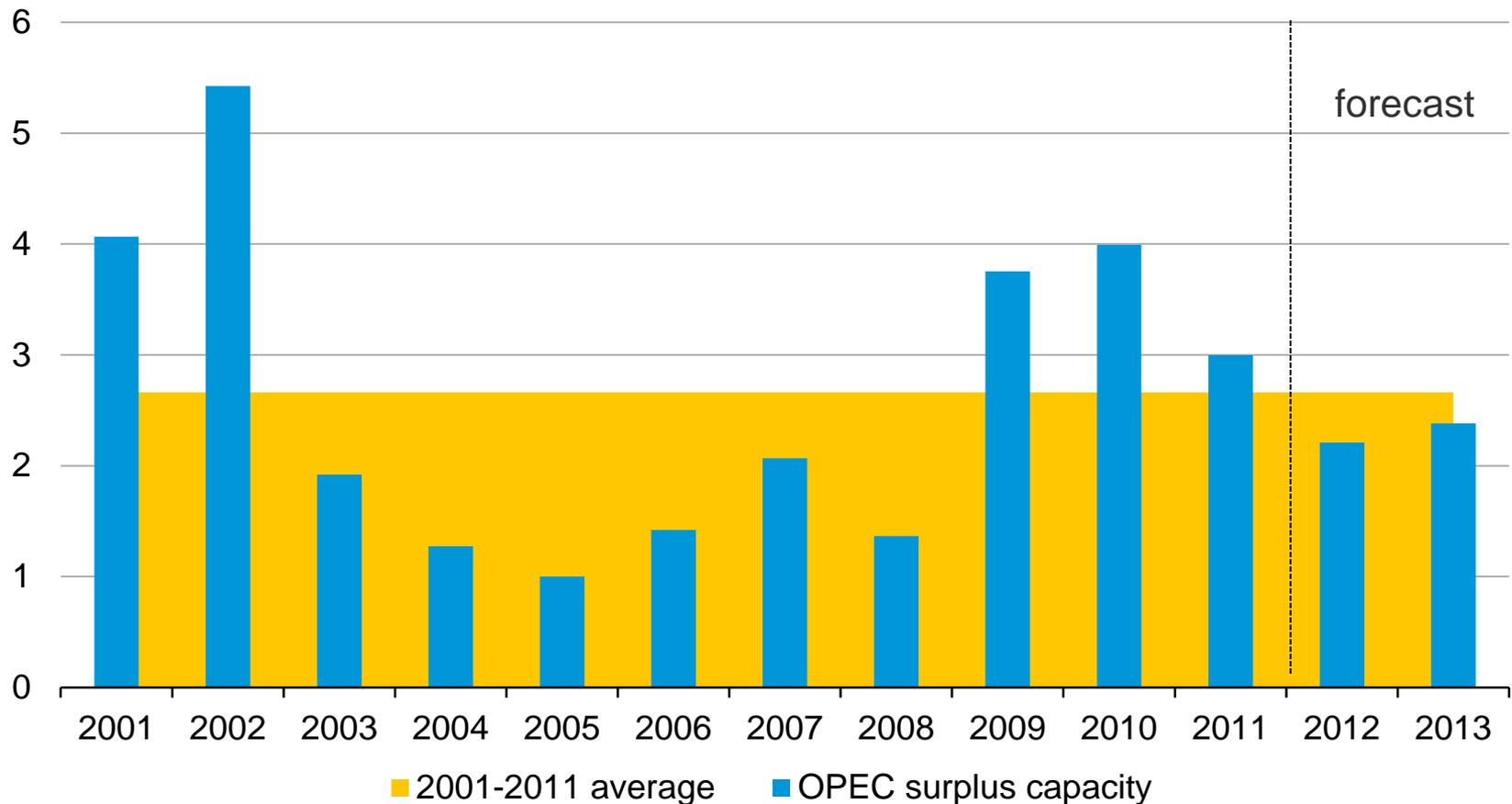
Source: U.S. Energy Information Administration, Power Plant Operations Report

Challenges in providing official forecasts and projections to policymakers:

- Focus on the near-term
- Complicated models
- Uncertainties in the impact of policy changes

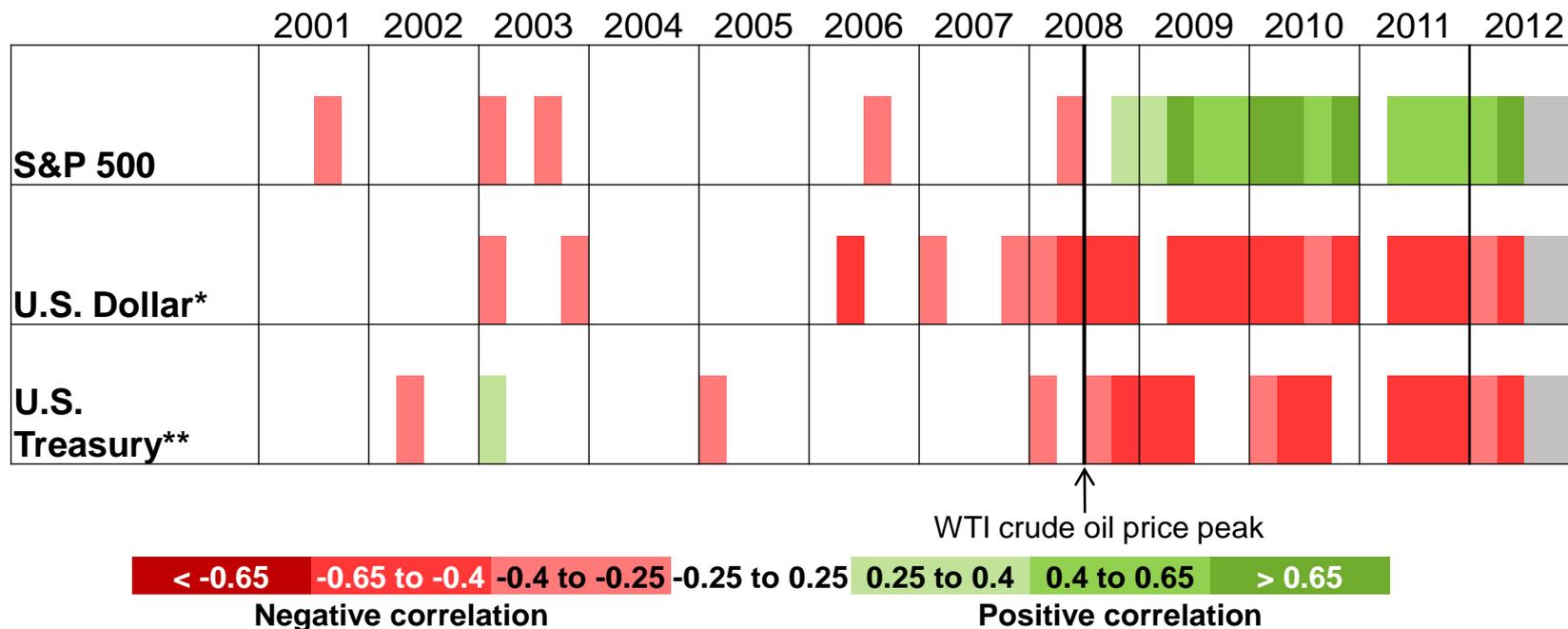
Accurate forecasts in global markets require global inputs

OPEC surplus capacity and historic average
million barrels per day



Source: U.S. Energy Information Administration Short-Term Energy Outlook, September 2012

Correlations (+ or -) between daily returns on crude oil futures and financial investments have also strengthened



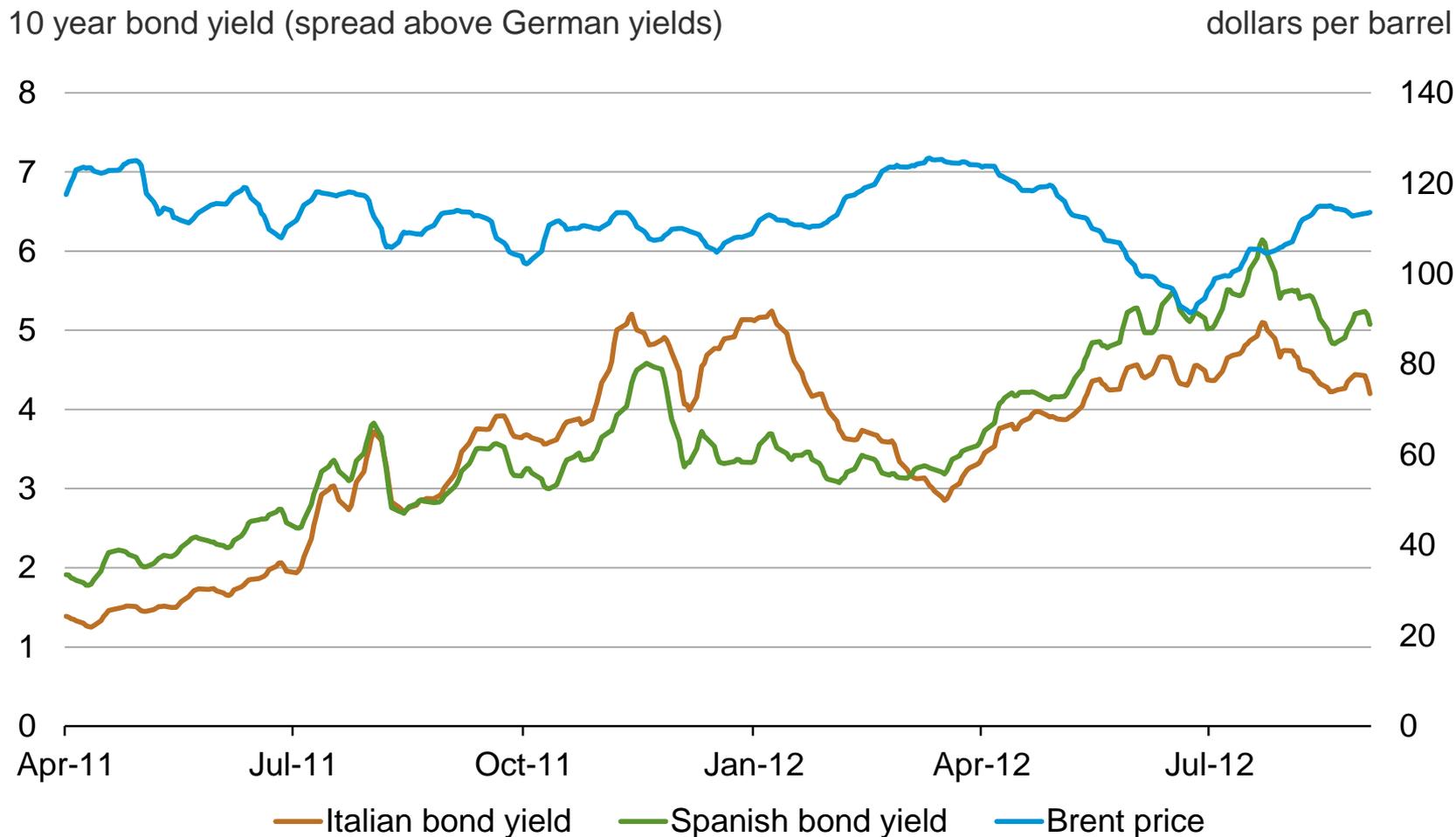
* U.S. Dollar Index (DXY), which is a weighted index of a basket of currencies, per U.S. dollar. As the dollar strengthens against other currencies, the value of the index rises.

** U.S. Treasury is based on the negative of the change in yield on 30-year U.S. government bonds because as yields rise, bond prices fall.

Note: Correlations computed quarterly

Source: U.S. Energy Information Administration

Accurate forecasts also require monitoring of events outside of model inputs



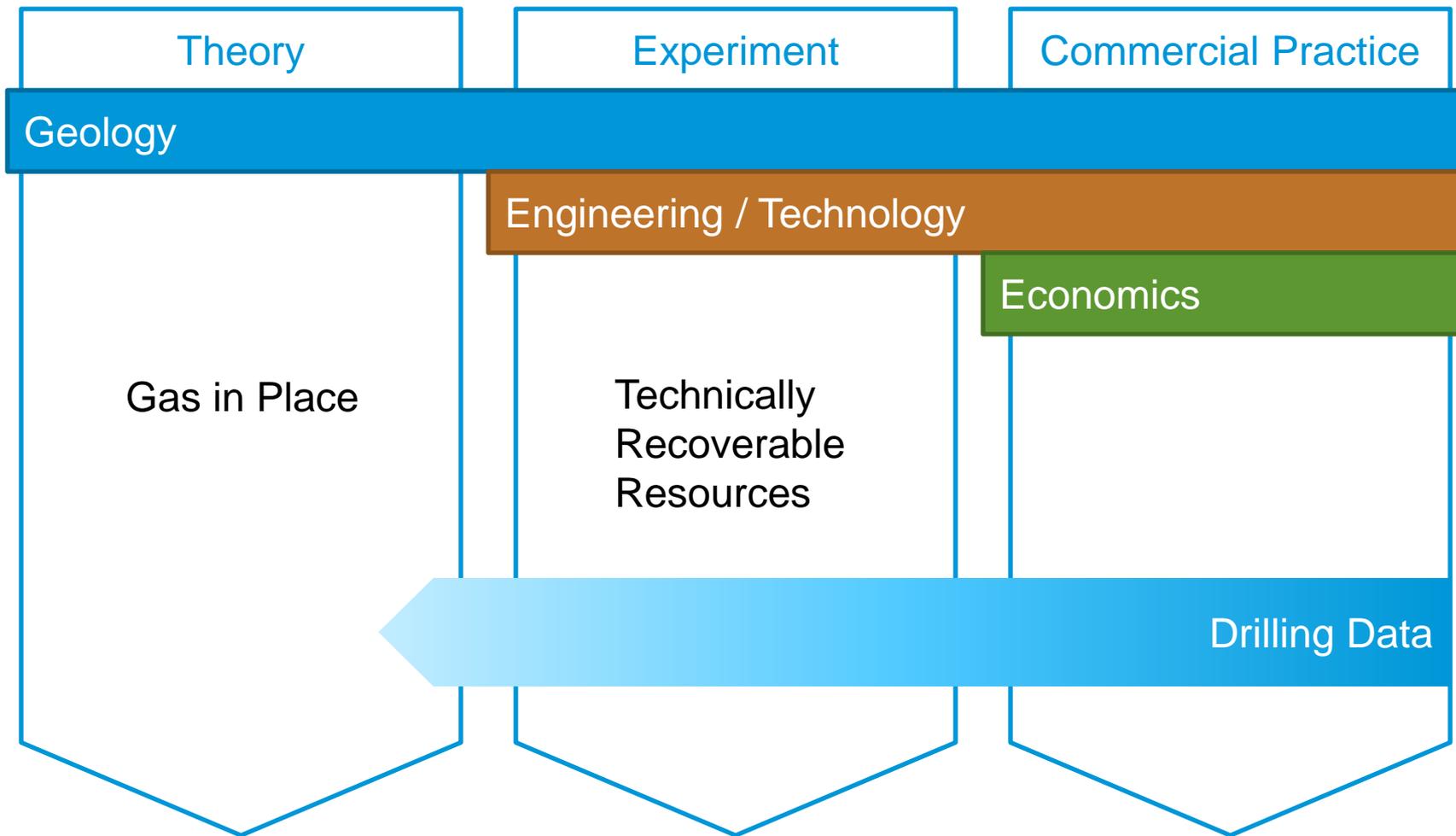
Source: Intercontinental Exchange, Bloomberg LLC

Long-term Projections

The shale gas & tight oil technology story is only beginning, with much yet to be written

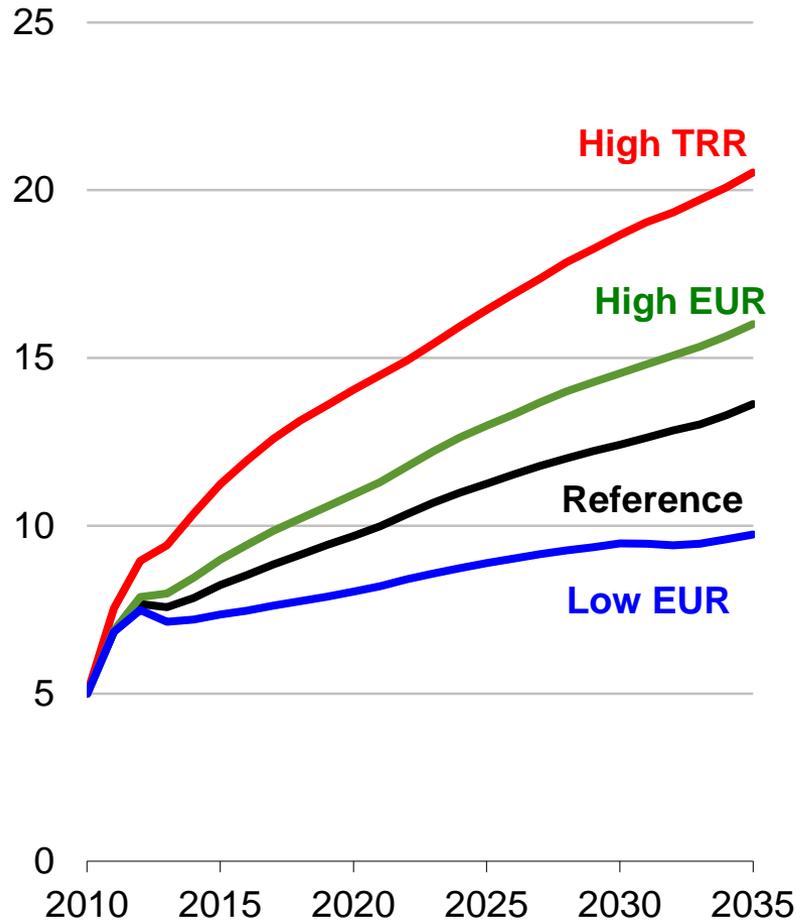
- Technology is creating new resources out of source rocks
- Production data provides a rearview mirror perspective
 - see the changes, but with a delay
 - EIA does not anticipate step changes in technology applications
 - EIA does recognize and incorporate long-term technological change
- Annual re-estimating of U.S. plays is necessary
 - new data is providing significant new detail of what production is possible
- Broad implications exist for world wide oil and gas production

Changing understanding of geology, technology and economics



Shale gas resource potential and related costs remain highly uncertain

Shale gas production
trillion cubic feet



Source: U.S. Energy Information Administration, Annual Energy Outlook 2012

Three alternate cases

High Technically Recoverable Resource (TRR) case

assumes High EUR case with wells closer together (80 acres per well), and it could represent finding more plays.

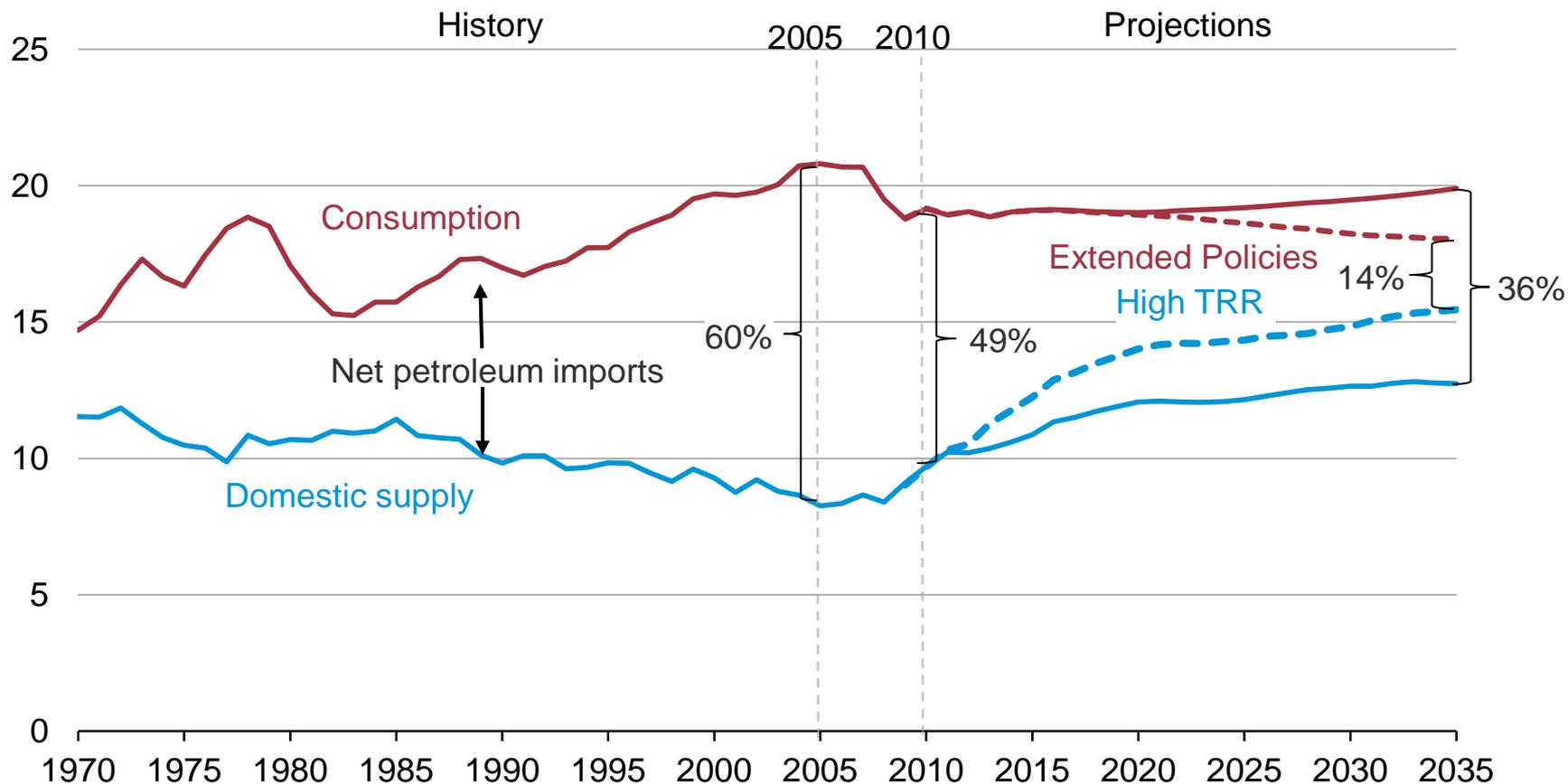
High Estimate Ultimate Recovery (EUR) case

assumes an EUR per shale gas well set 50% higher than in the Reference case. Results in lower per Mcf costs.

Low EUR case is like High EUR but lower.

Annual Energy Outlook 2012: U.S. dependence on imported petroleum declines

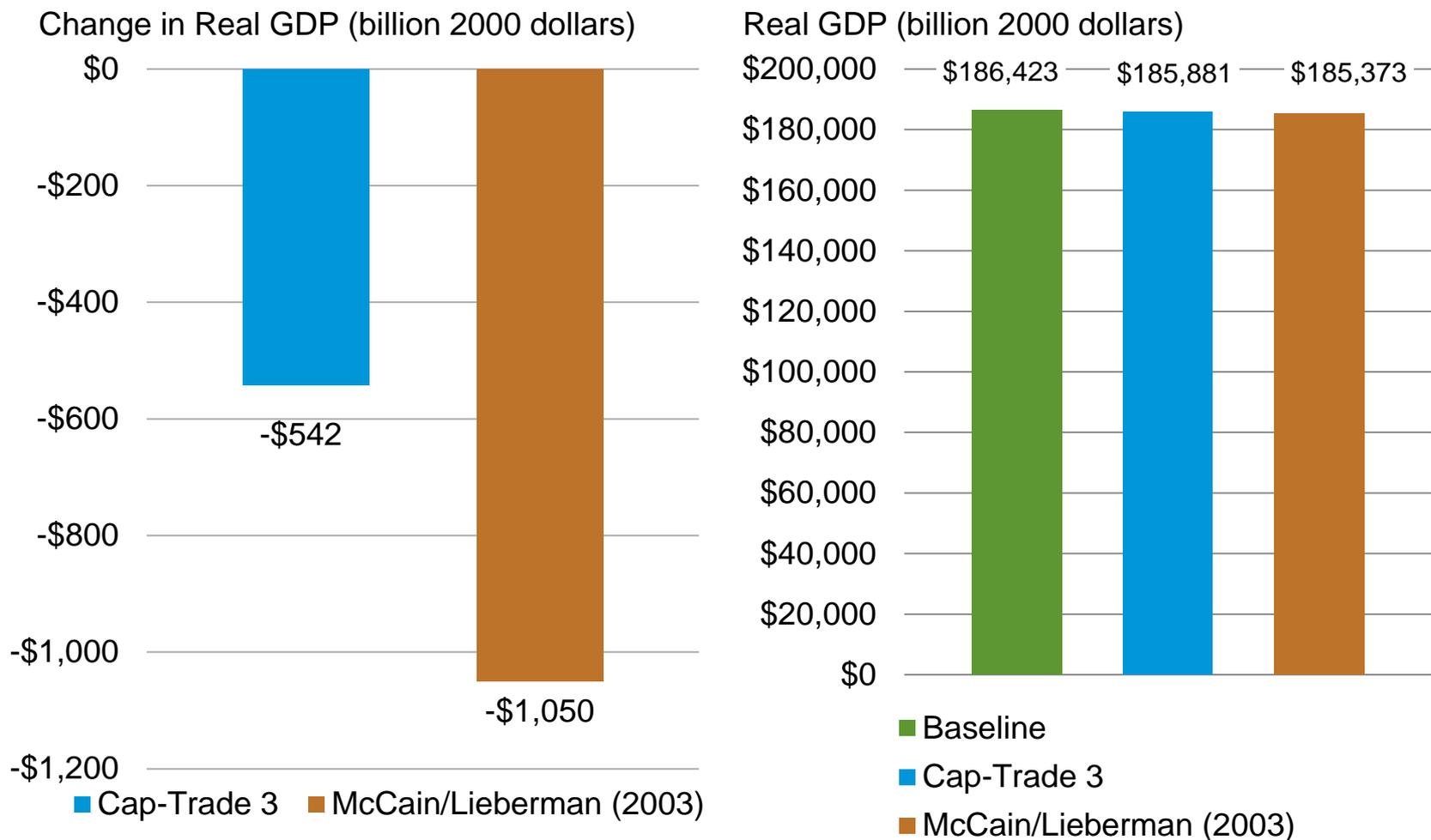
U.S. liquid fuel supply
million barrels per day



Source: U.S. Energy Information Administration, Annual Energy Outlook 2012

Framing outcomes is an important consideration for forecasters

Economic impact of greenhouse gas reduction between 2010 and 2025



Source: U.S. Energy Information Administration

For more information

U.S. Energy Information Administration home page / www.eia.gov

Short-Term Energy Outlook / www.eia.gov/steo

Annual Energy Outlook / www.eia.gov/aeo

International Energy Outlook / www.eia.gov/ieo

Monthly Energy Review / www.eia.gov/mer

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