Prospects for U.S. Oil & Natural Gas

for
The Aspen Institute: Global Energy Forum
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by
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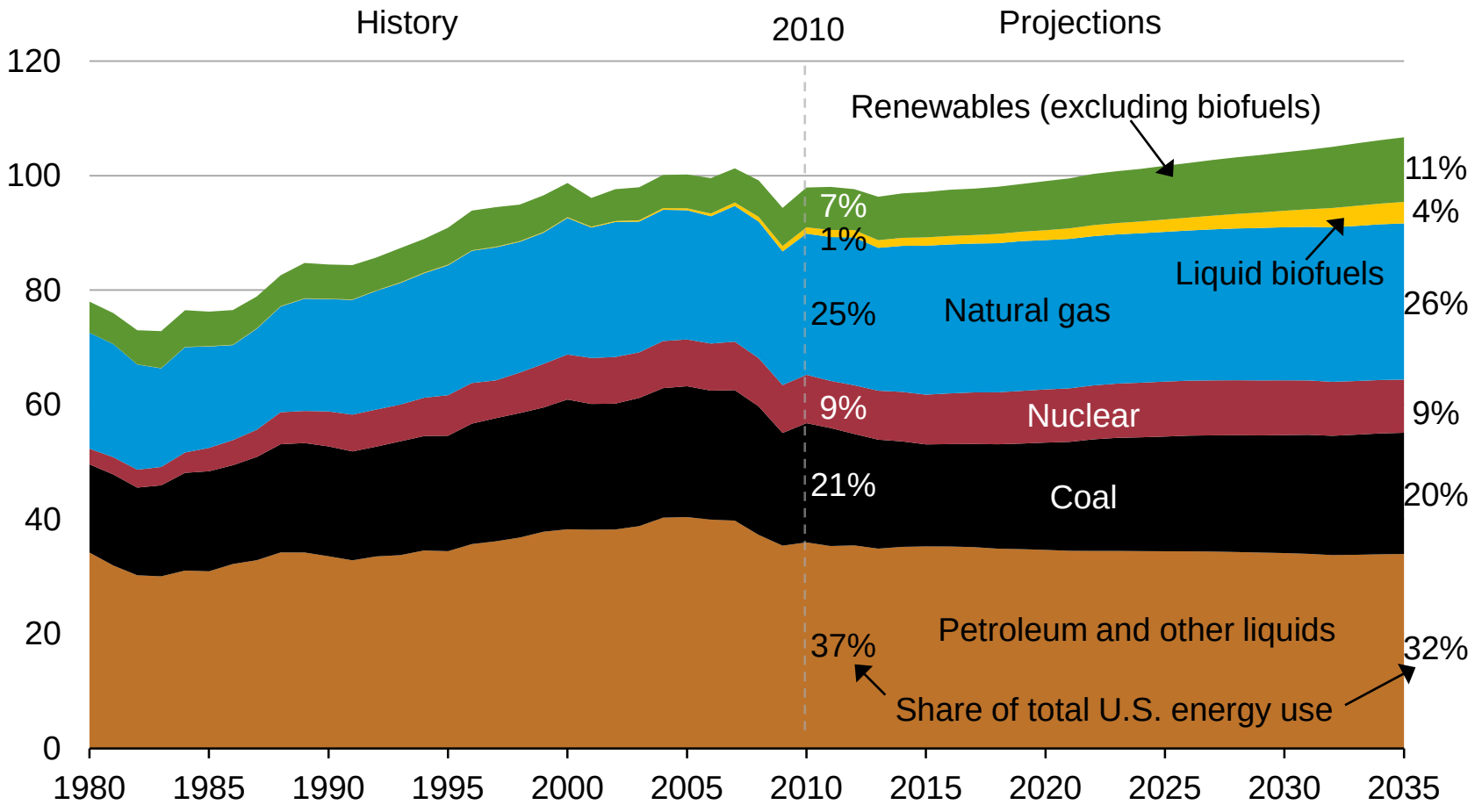
Primary energy use by fuel, 1980-2035
…in absolute terms, all fuels grow except petroleum liquids

U.S. energy consumption
quadrillion Btu

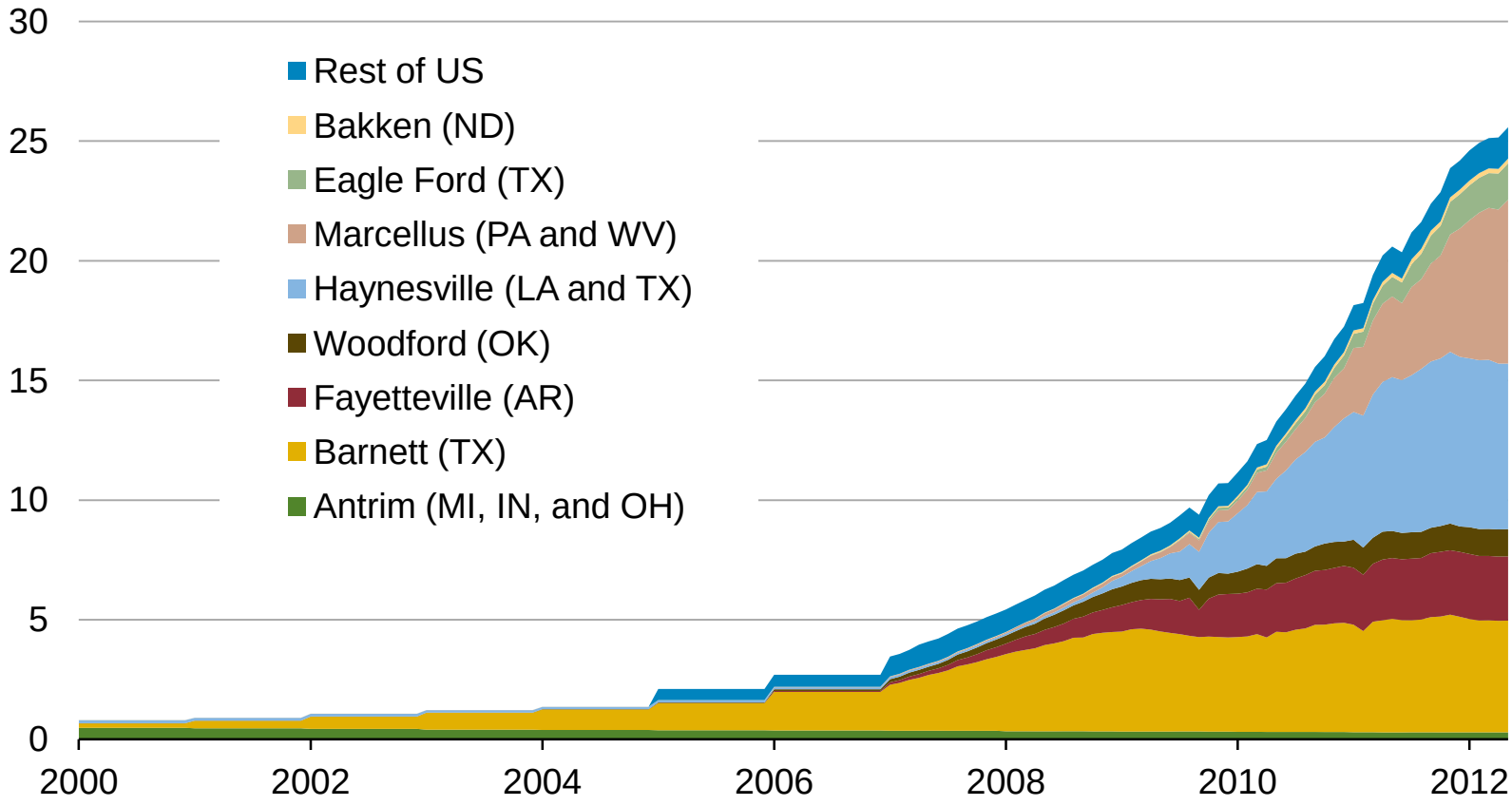


Source: EIA, Annual Energy Outlook 2012

U.S. shale gas production comprised over 30 percent of total U.S. dry production in 2011

shale gas production (dry)

billion cubic feet per day

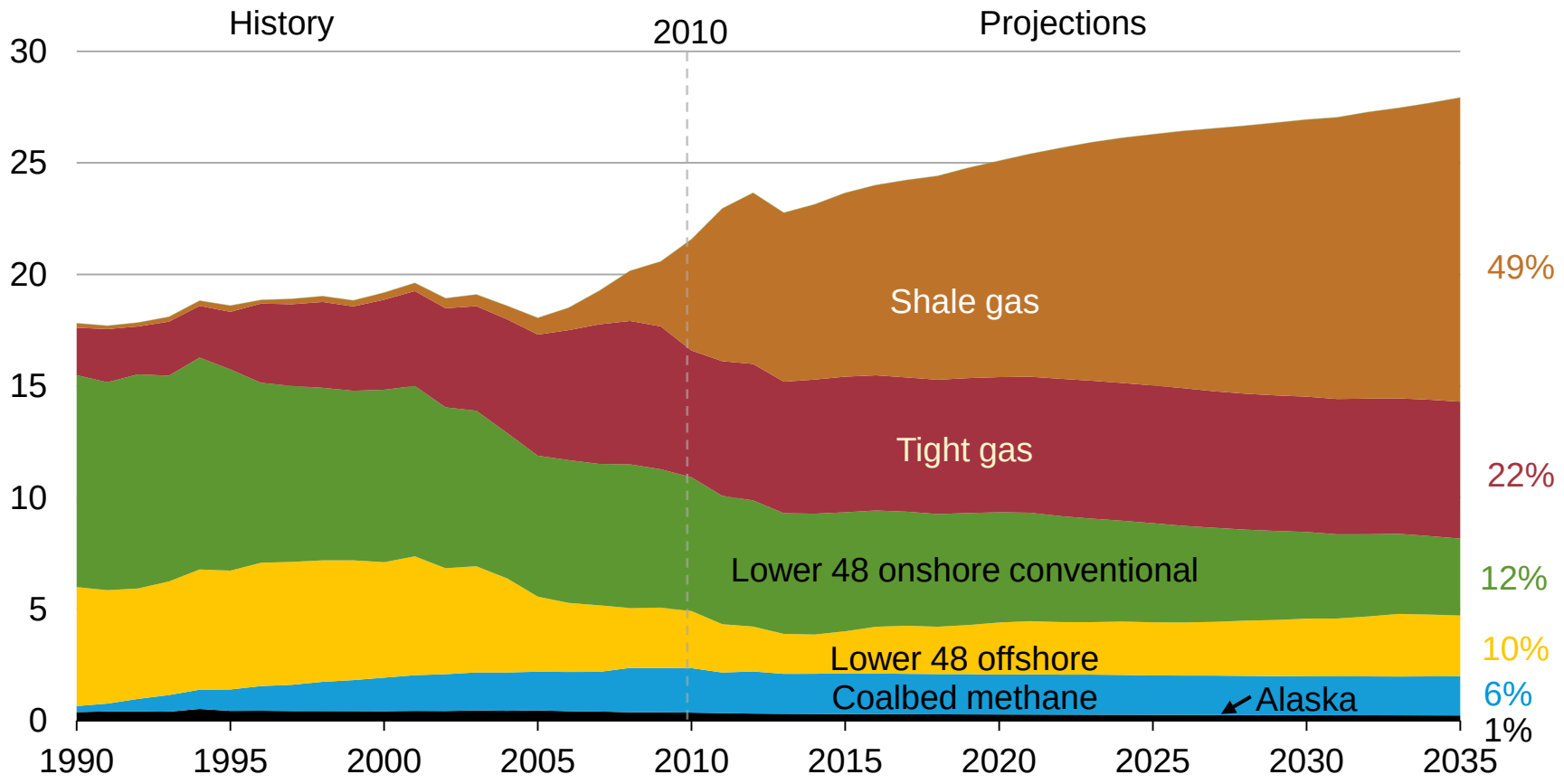


Sources: Lippman Consulting, Inc. gross withdrawal estimates as of May 2012 and converted to dry production estimates with EIA-calculated average gross-to-dry shrinkage factors by state and/or shale play.

Shale gas grows from under a quarter to about half of U.S. gas production from 2010-2035

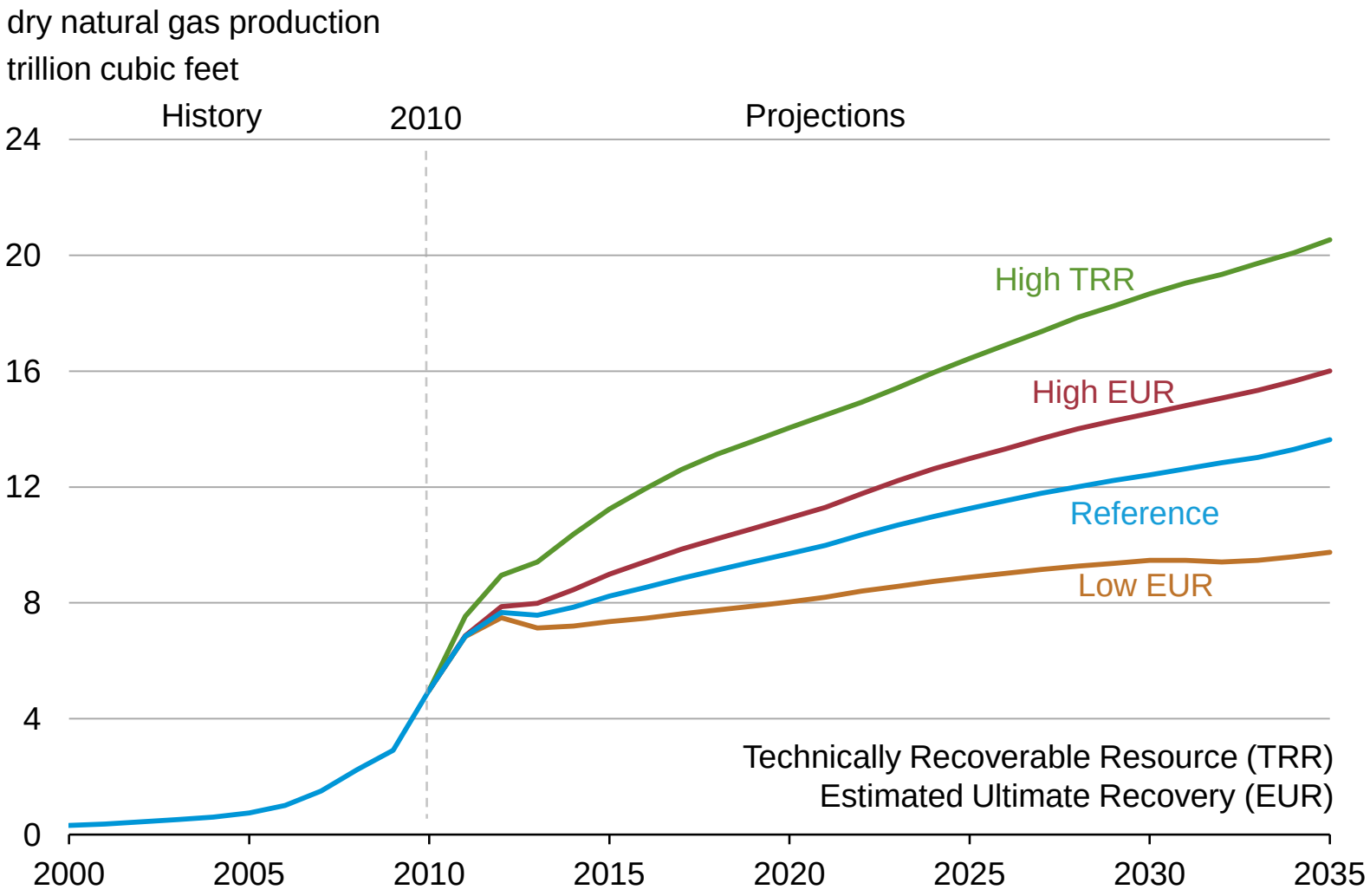
U.S. dry natural gas production

trillion cubic feet



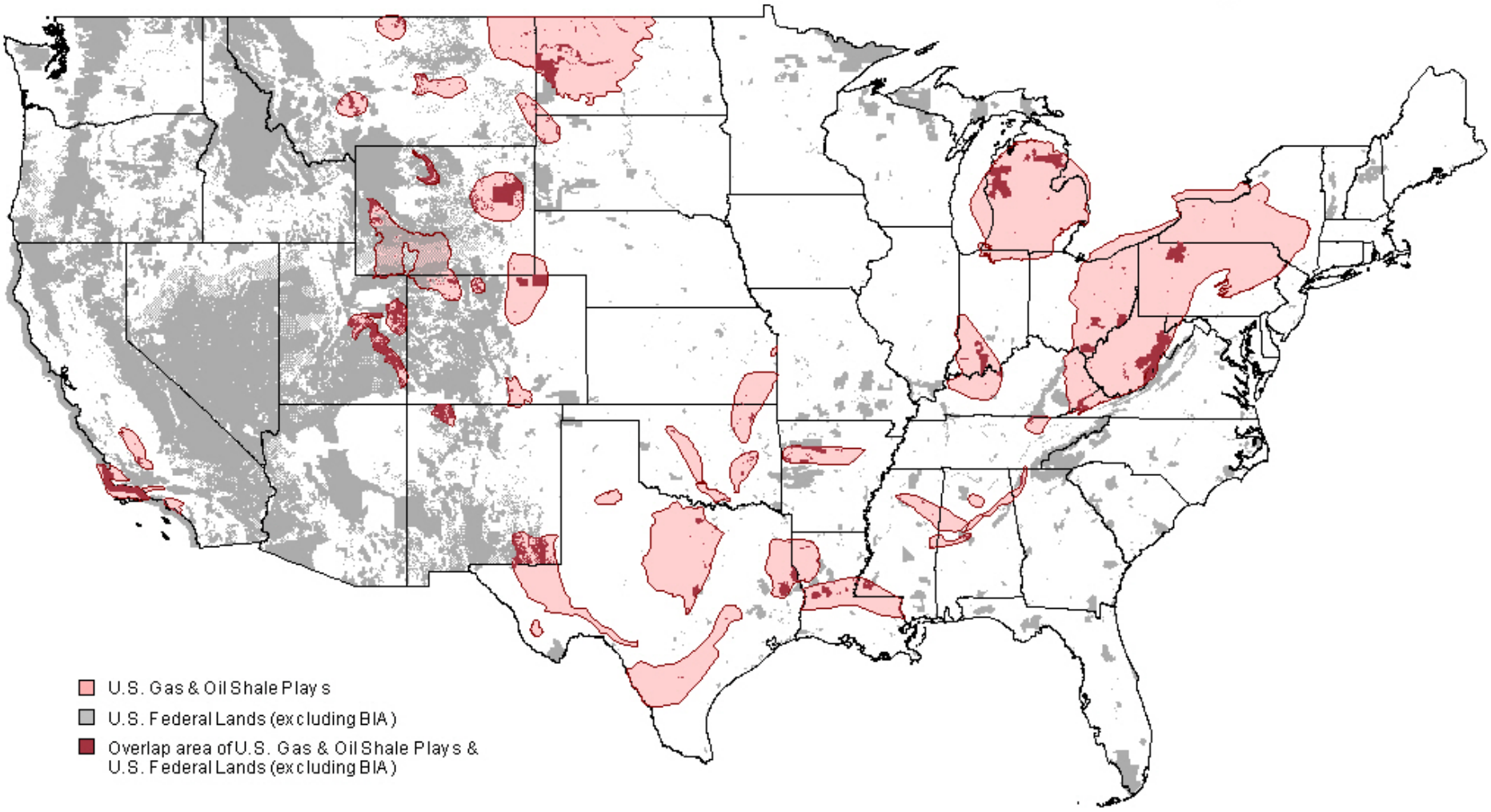
Source: EIA, Annual Energy Outlook 2012

U.S. production of shale gas in four cases, 2000-2035



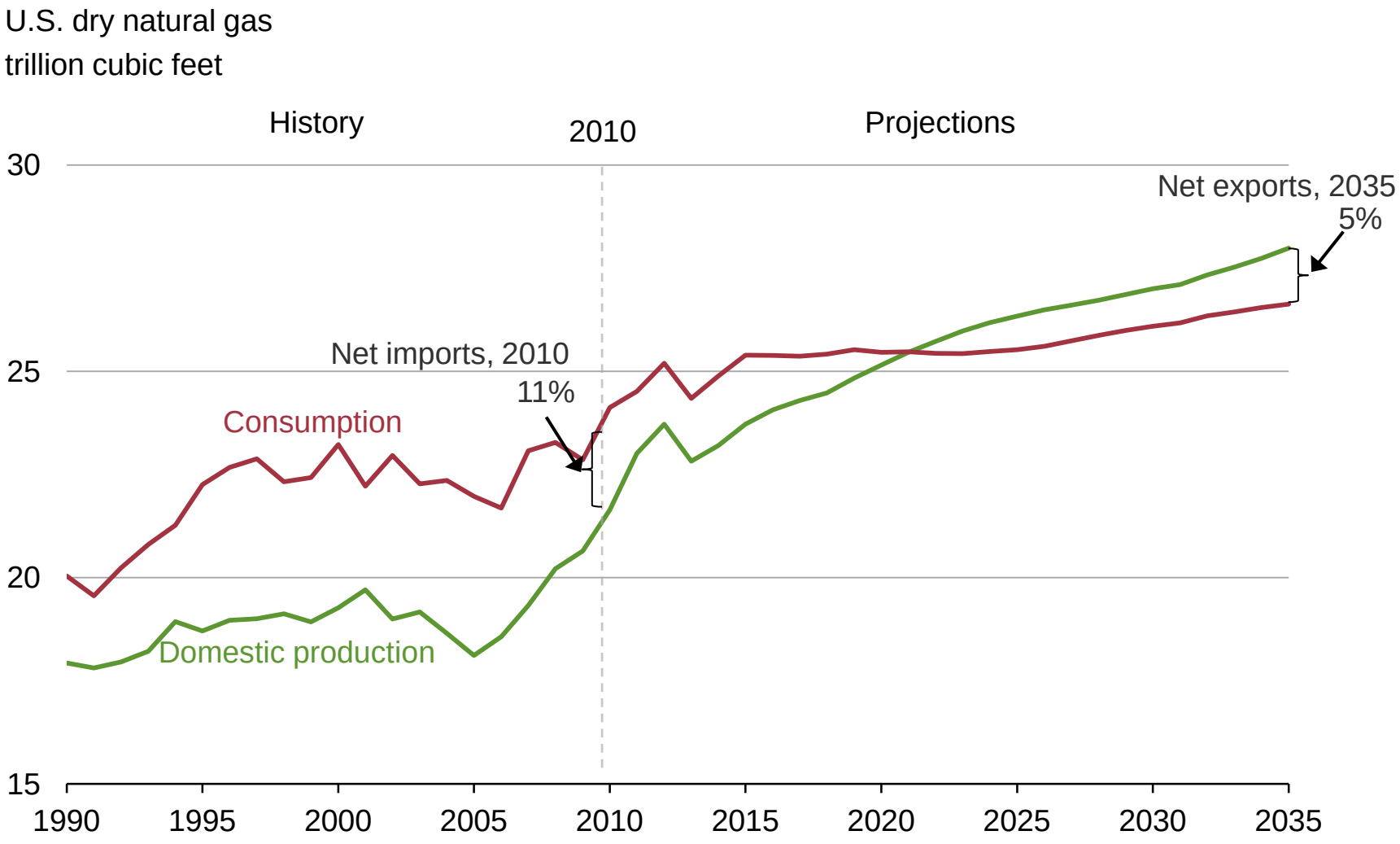
Source: EIA, Annual Energy Outlook 2012

Lower 48 oil and gas shale plays and federal lands



Source: EIA

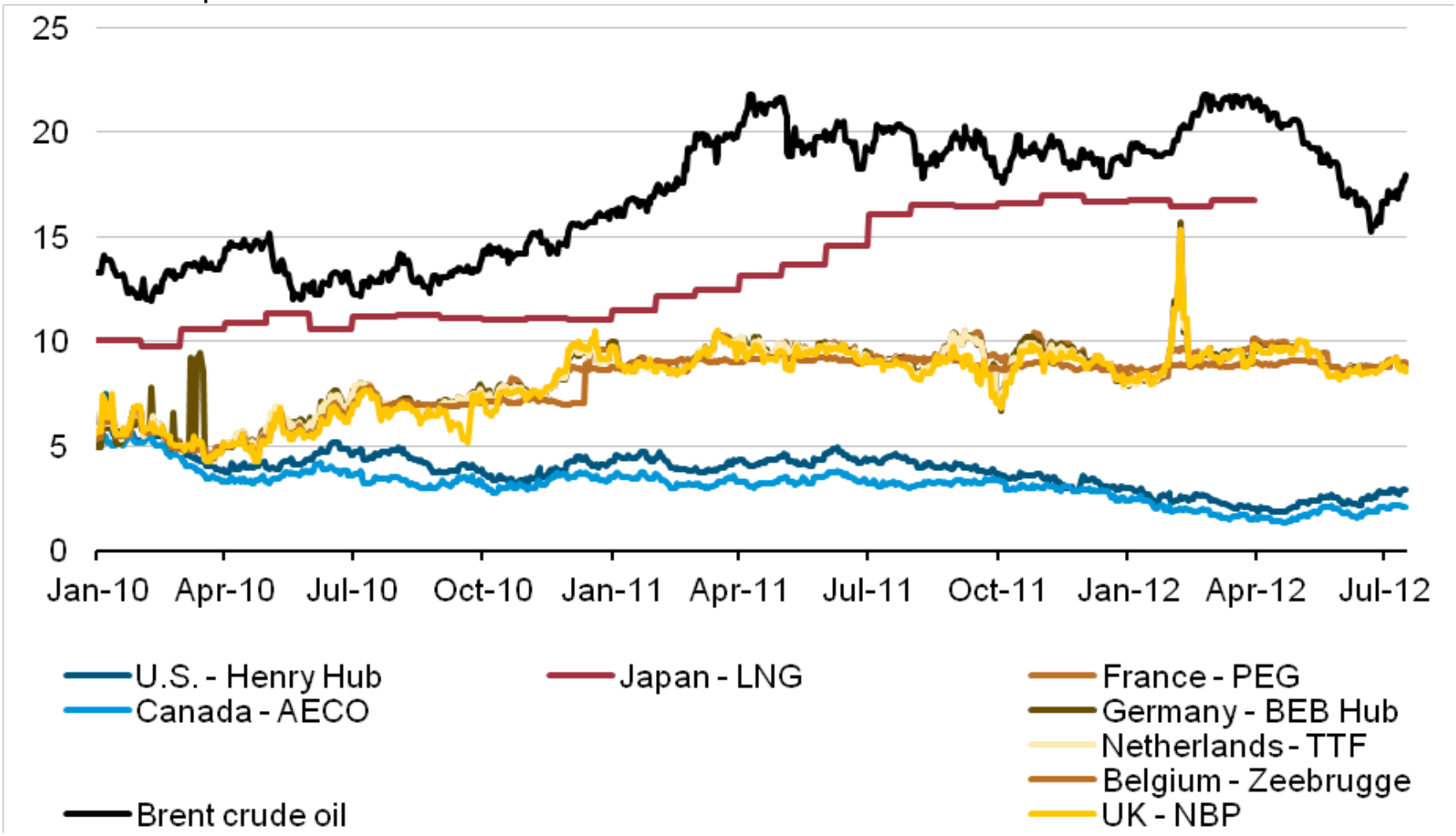
U.S. becomes a net natural gas exporter in 2022



Source: EIA, Annual Energy Outlook 2012

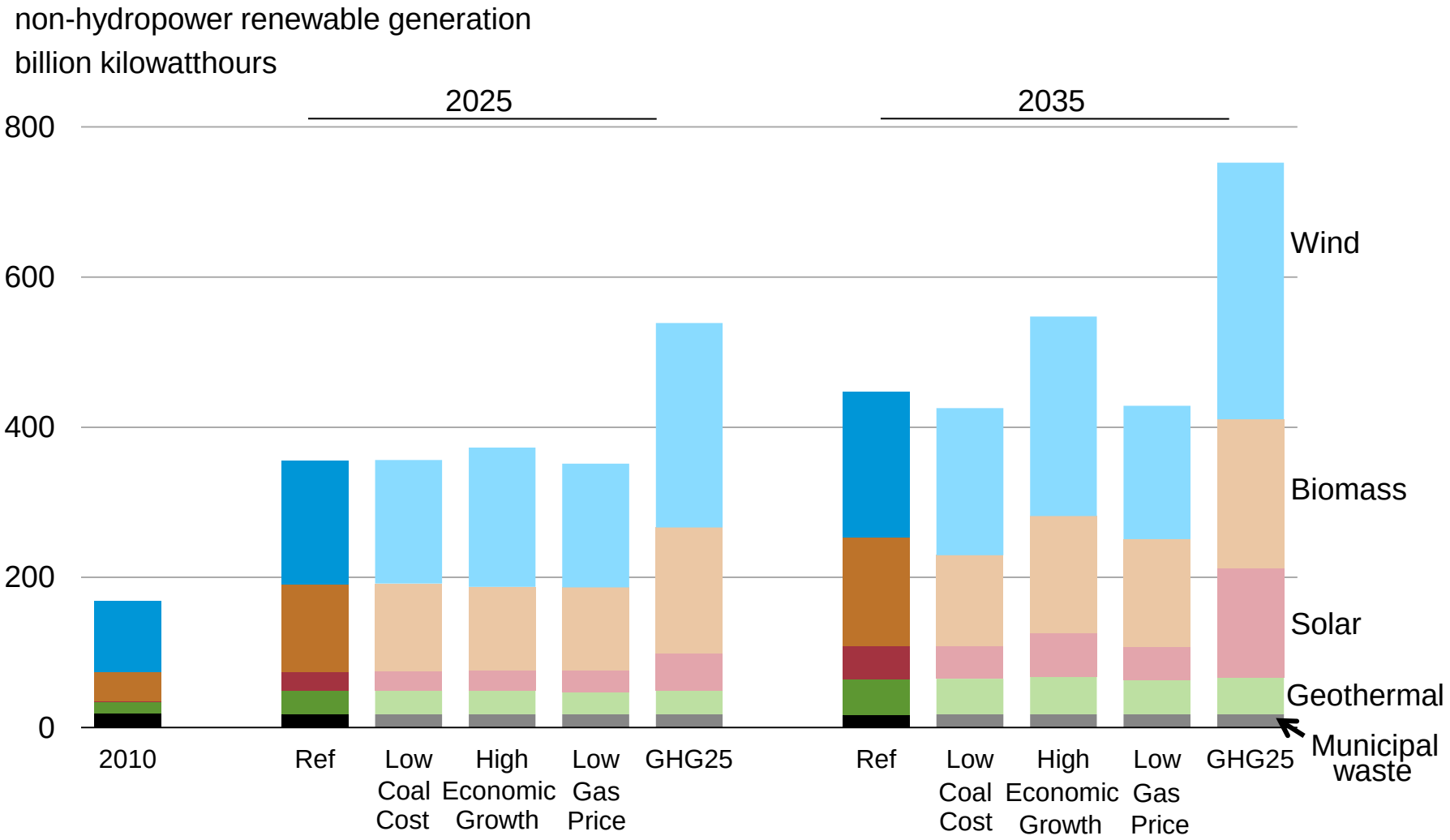
U.S. natural gas spot prices are very low compared to prices in other regions and oil prices

global spot natural gas and crude oil prices
U.S. dollars per million British thermal unit



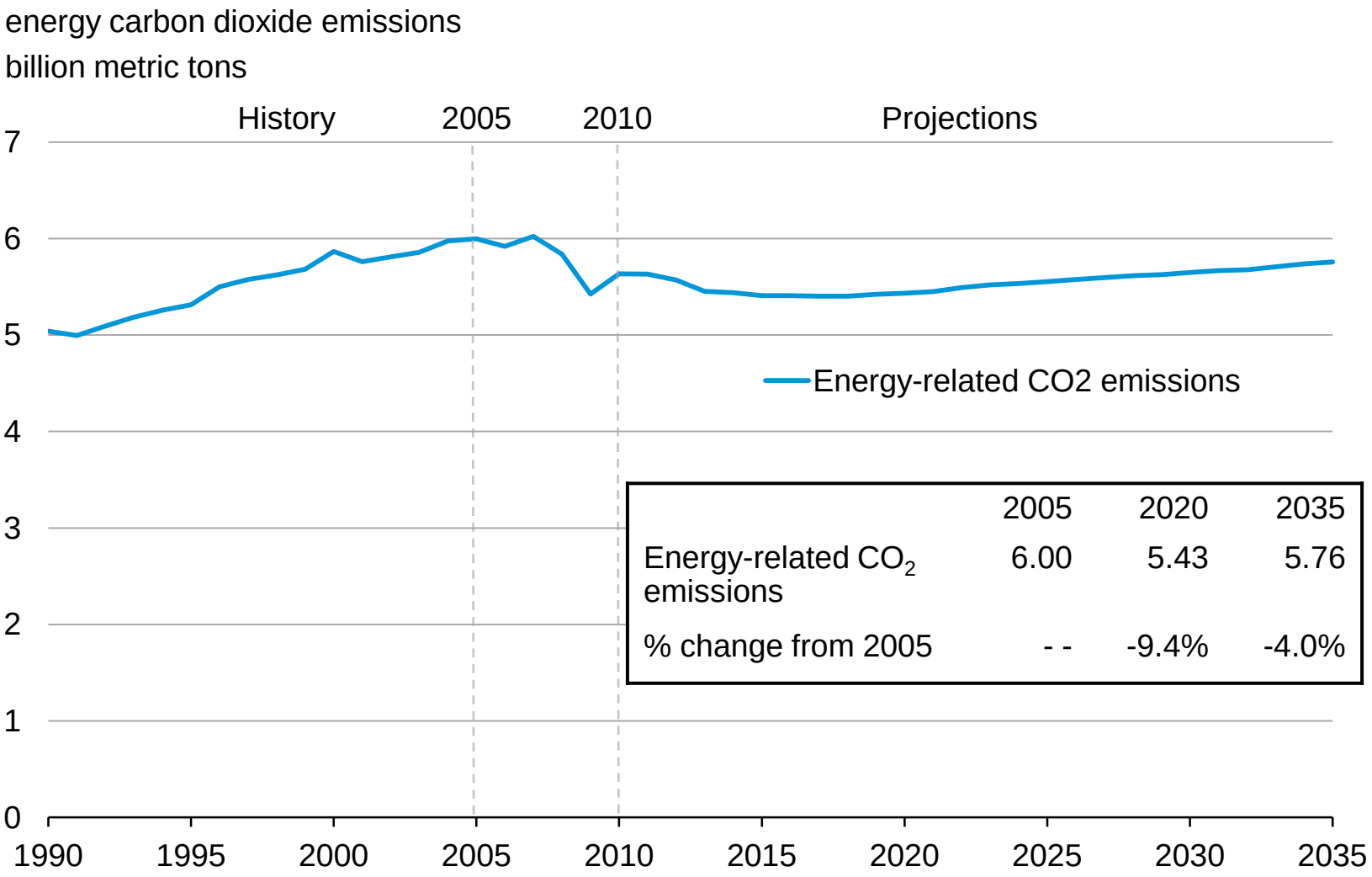
Sources: EIA, Bloomberg, as of July 17, 2012

Non-hydro renewable sources grow nearly three-fold by 2035; growth climbs nearly five-fold with a price on CO_2



Source: EIA, Annual Energy Outlook 2012

Energy-related CO_2 emissions never get back to pre-recession levels in the *AEO2012* Reference case

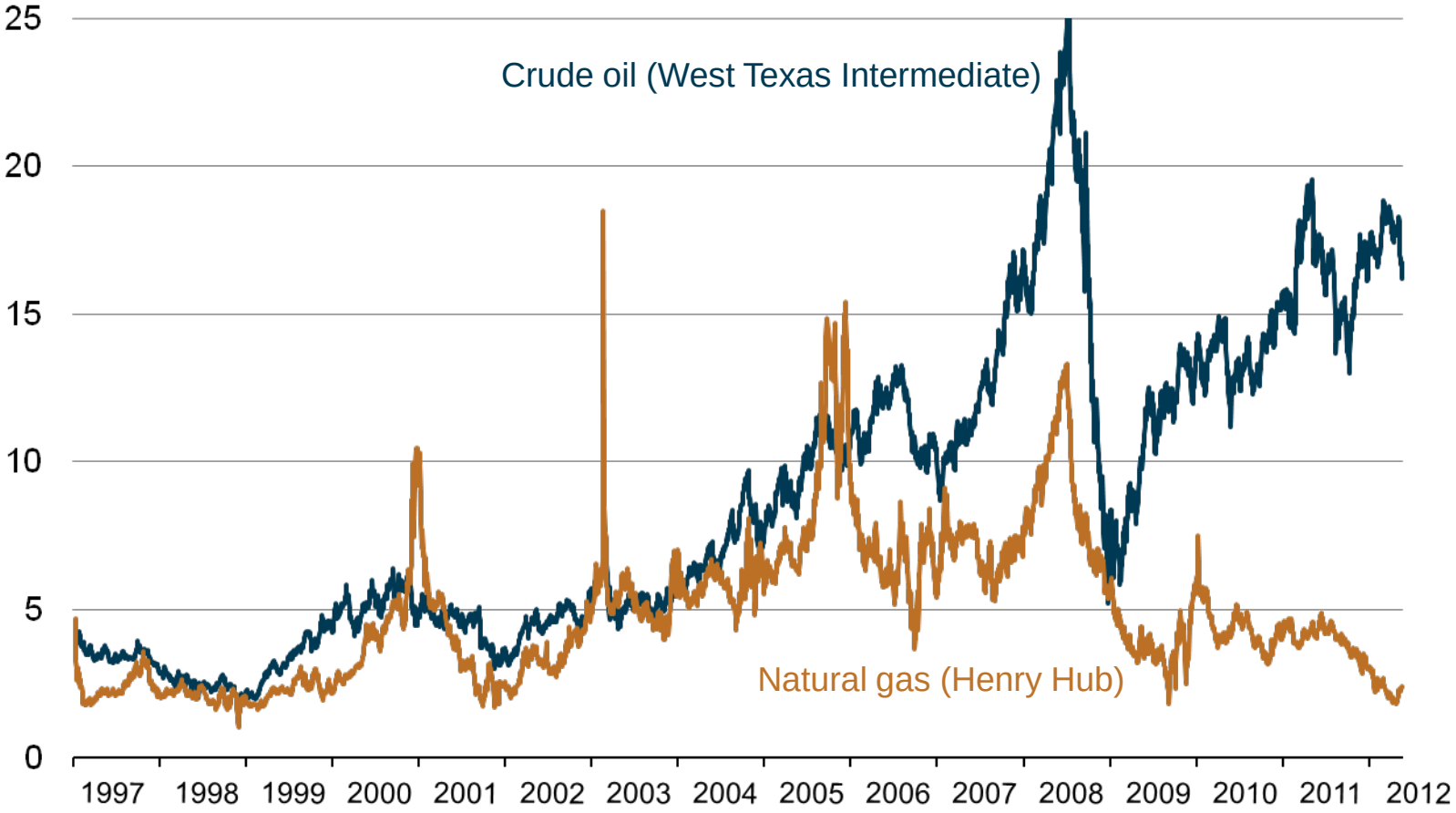


Source: EIA, Annual Energy Outlook 2012

U.S. natural gas prices separate from crude oil price equivalency

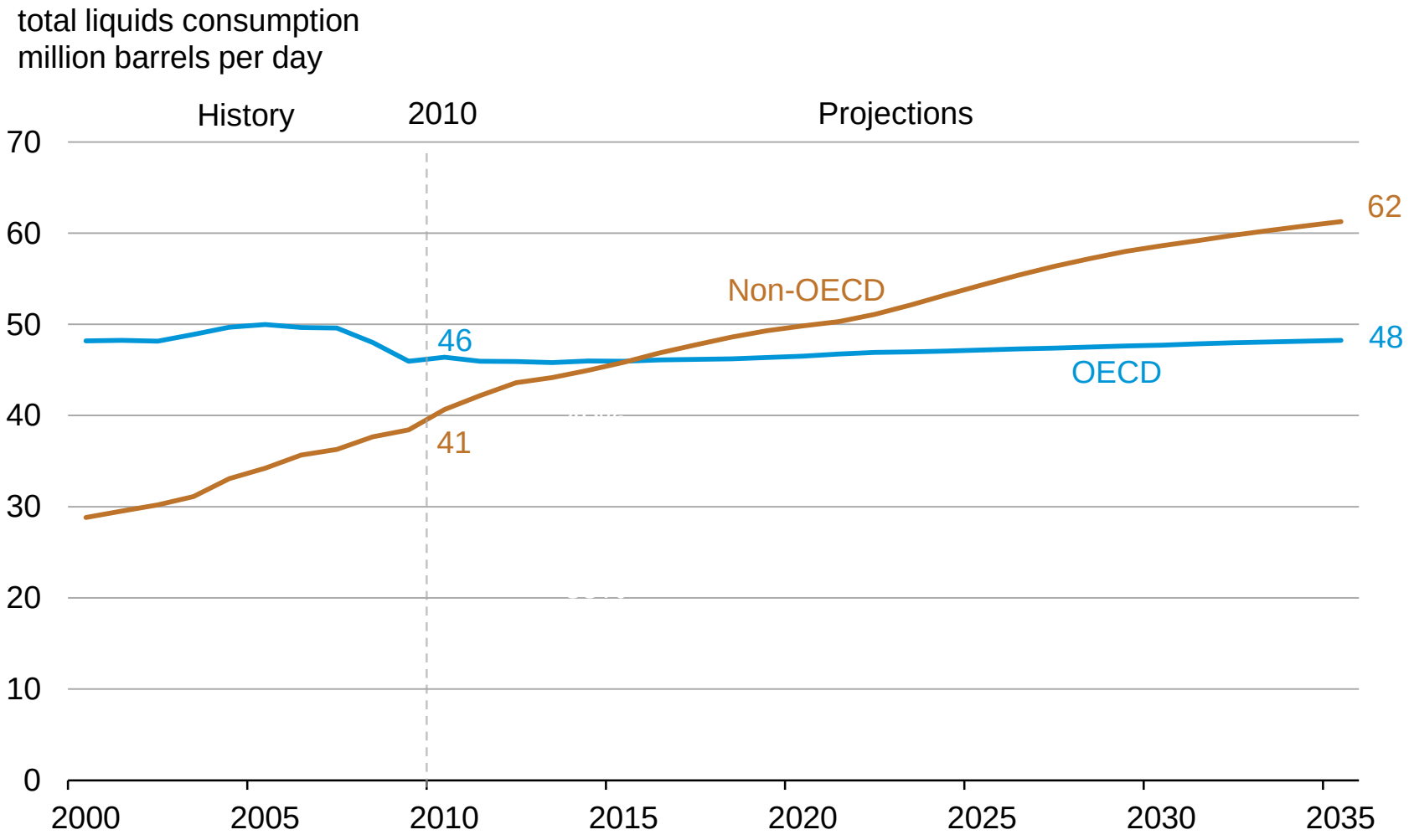
spot market prices

2010 dollars per million Btu



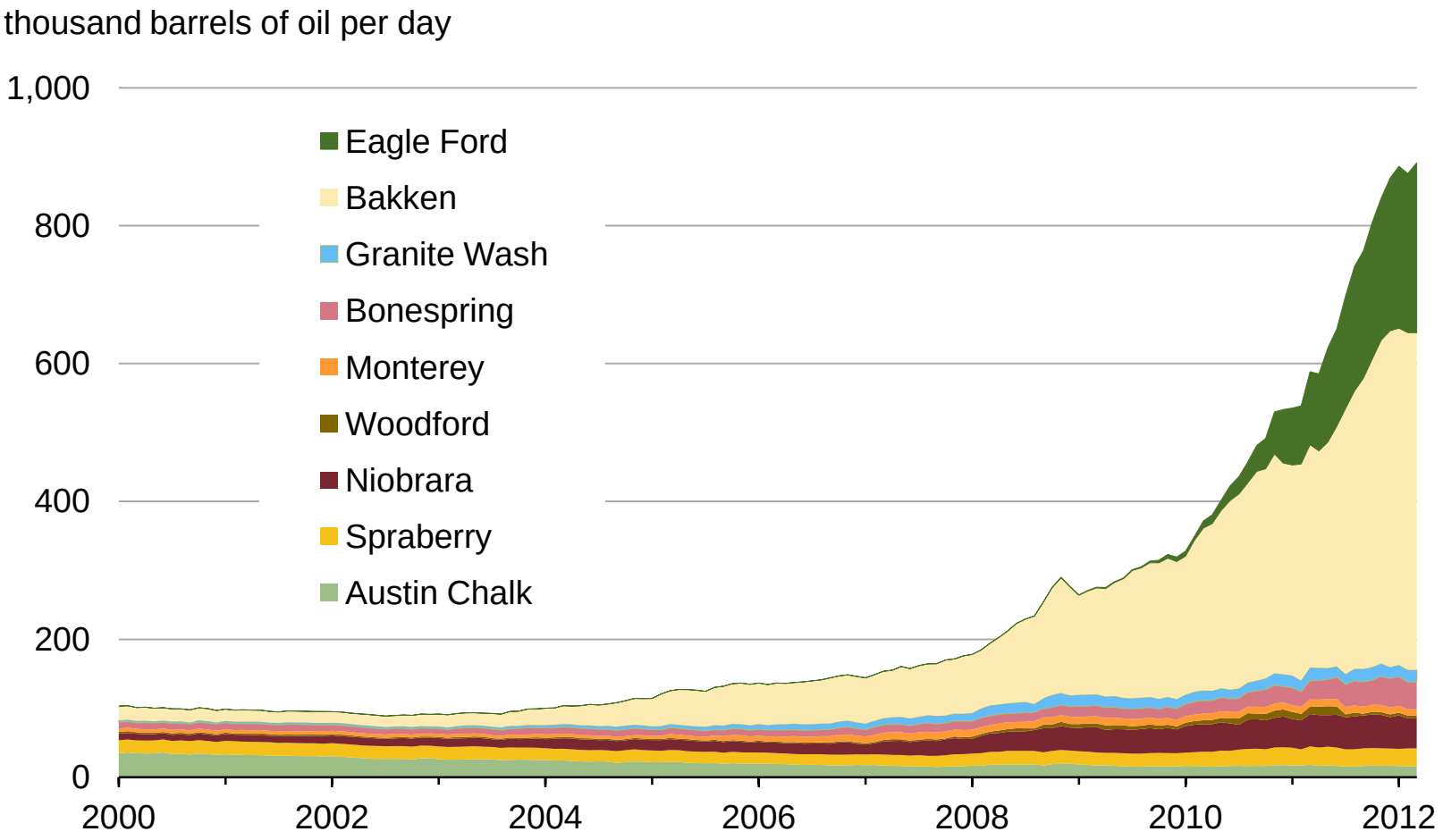
Source: EIA, Bloomberg

Non-OECD liquid fuels use is expected to surpasses almost flat OECD liquid fuels use in the near future



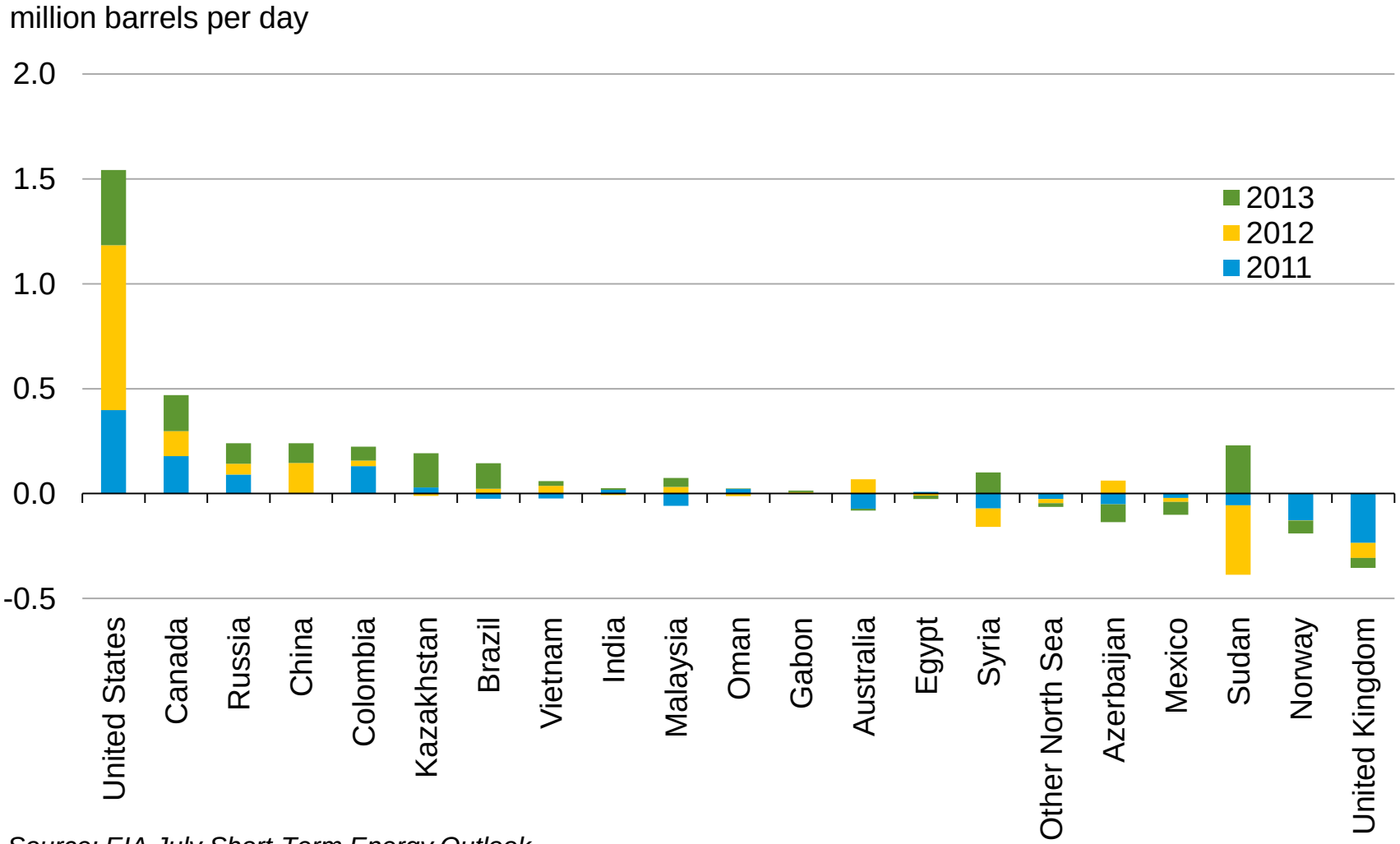
Source: EIA, Annual Energy Outlook 2012

Tight oil production for selected plays approaches 900,000 barrels per day in March 2012



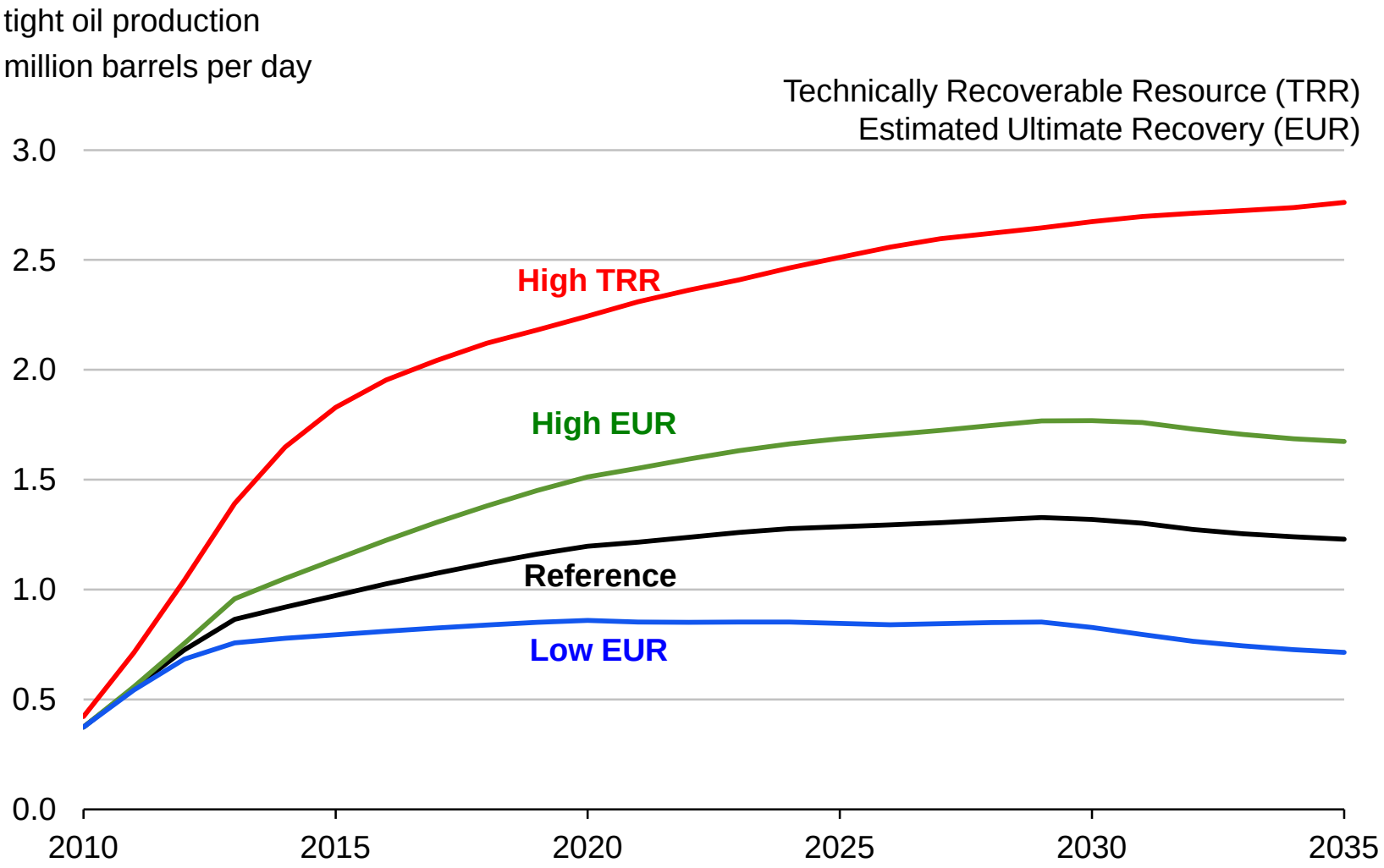
Source: HPDI, Texas RRC, North Dakota department of mineral resources, and EIA, through March, 2012.

U.S. leads the league table for non-OPEC crude oil and liquid fuels growth 2011-13



Source: EIA July Short-Term Energy Outlook

Tight oil resource potential and production remain highly uncertain

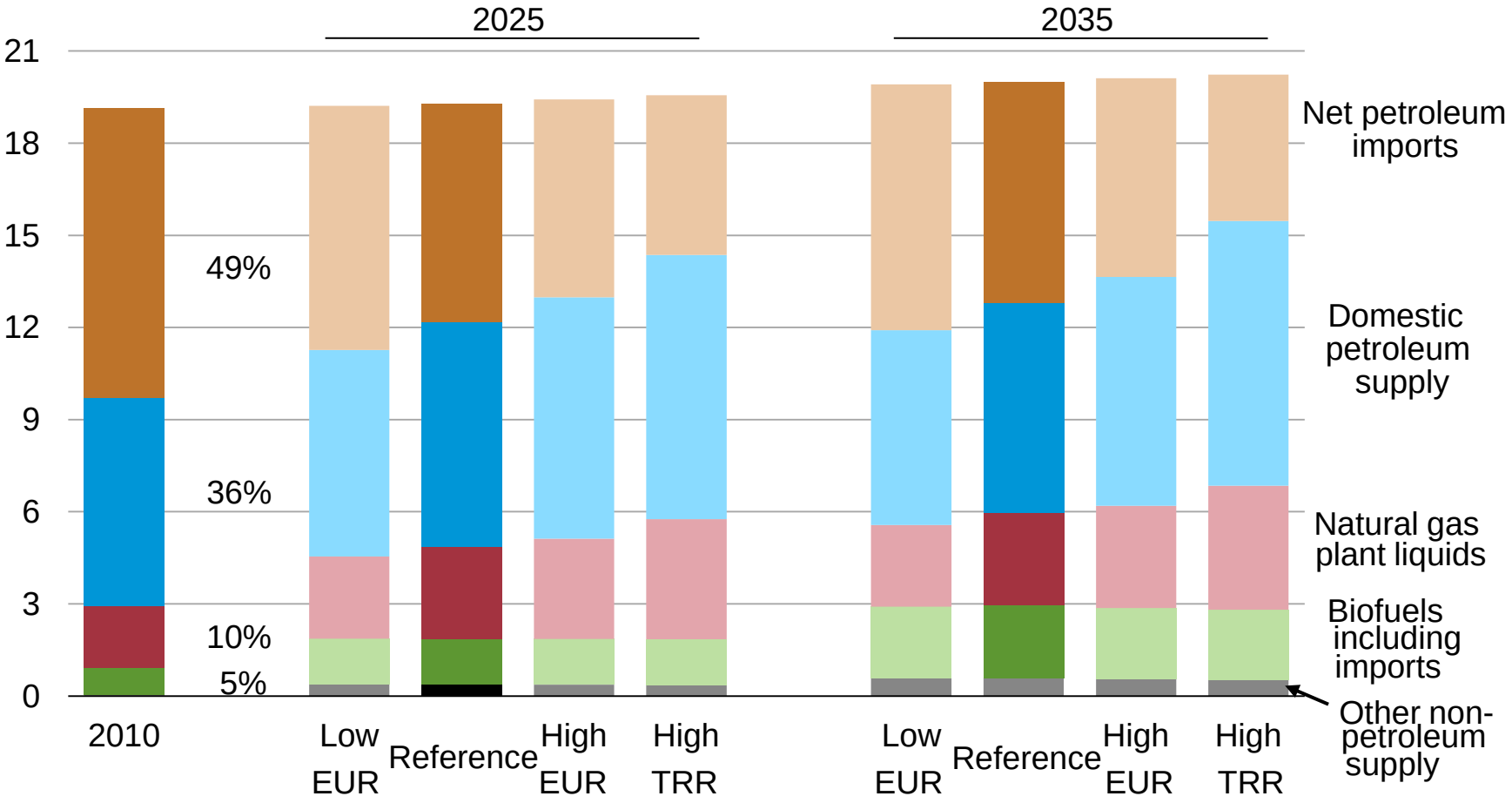


Source: EIA, Annual Energy Outlook 2012

U.S. imports of liquid fuels fall due to increased domestic production – including biofuels – and greater efficiency

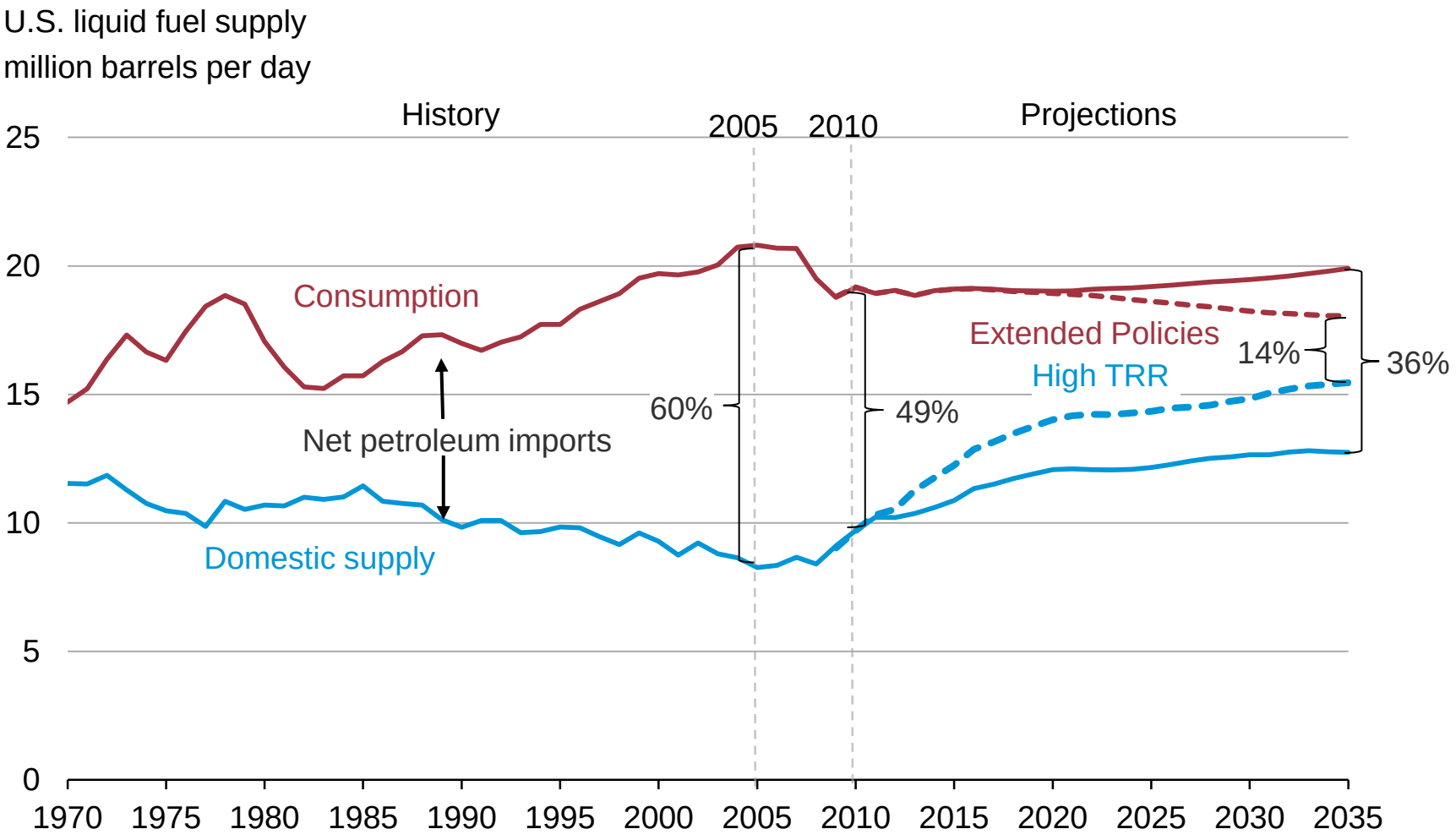
U.S. liquid fuels consumption

million barrels per day



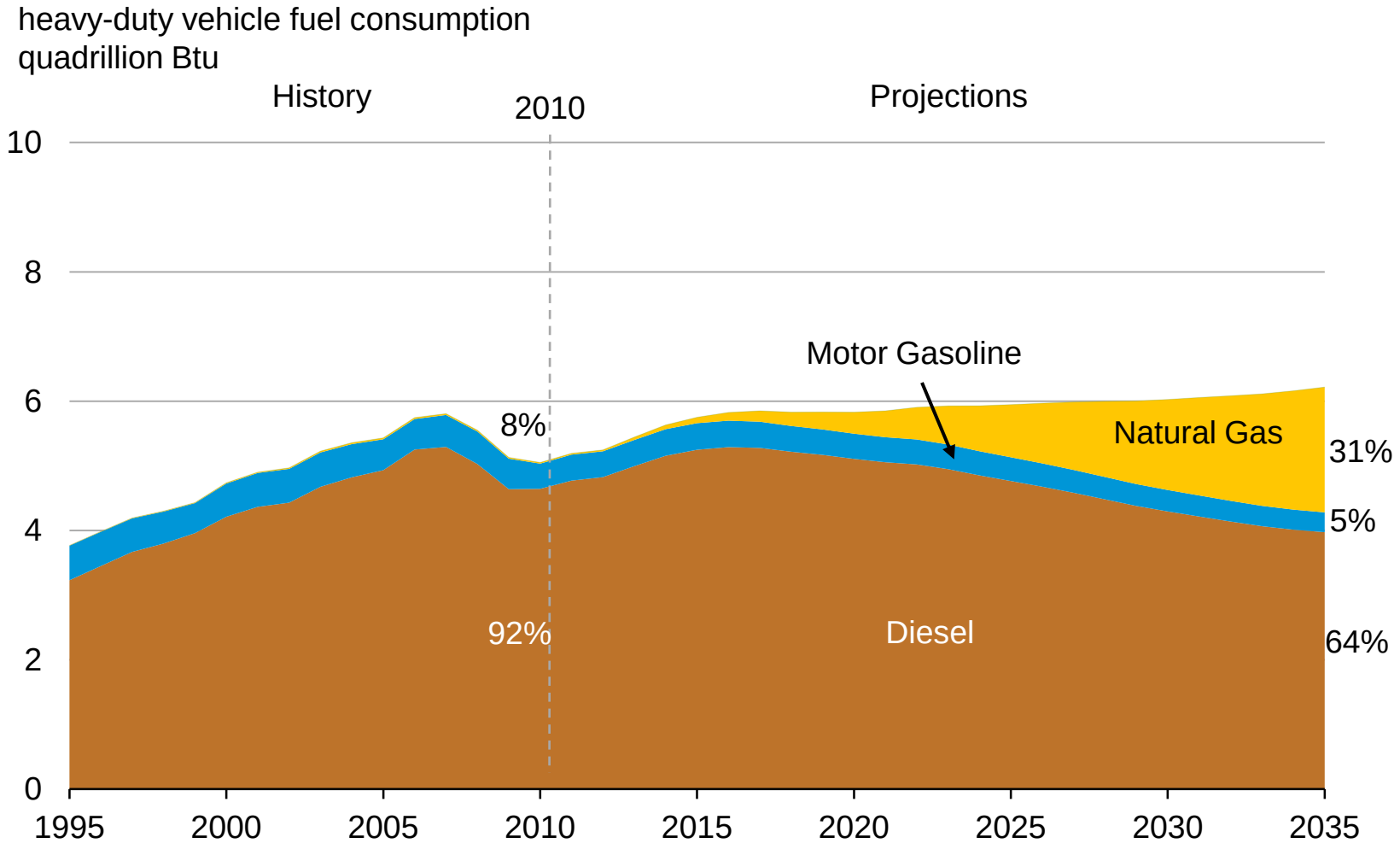
Source: EIA, Annual Energy Outlook 2012

U.S. dependence on imported petroleum declines …moves even lower in various "side case" scenarios



Source: EIA, Annual Energy Outlook 2012

Heavy-duty vehicle natural gas consumption grows substantially in an AEO2012 side case



Source: EIA, Annual Energy Outlook 2012 (heavy-duty natural gas vehicle case)

AEO2012 scenarios show wide range of outcomes

- Reference case
- High and low economic growth
- High and low oil price
- High and low estimated ultimate recovery cases and high technically recoverable resources
- Integrated high and low technology (demand, renewables, electric power, refining, nuclear)
- Policy related: Extended Policy, No Sunset, No Greenhouse Gas Concern, carbon dioxide allowance fee ($15 and $25), and 5-year investment recovery with reference and with low natural gas prices
- Proposed light-duty vehicle CAFE standards; advanced battery technology; heavy-duty truck natural gas potential

Independence does not eliminate interdependence

"…quasi oil self-sufficiency will neither insulate the United States from the rest of the global oil market (and world oil prices), nor diminish the critical importance of the Middle East to its foreign policy."

Source: Harvard Kennedy School, Oil: the Next Revolution, June 2012

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

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