

Annual Energy Outlook 2012

Early Release Reference Case



AEO2012 Early Release Rollout Presentation

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Key results from the *AEO2012* Reference case, which assumes current laws remain unchanged

- Projected growth of energy use slows over the projection period reflecting an extended economic recovery and increasing energy efficiency in end-use applications
- Domestic crude oil production increases, reaching levels not experienced since 1994 by 2020
- With modest economic growth, increased efficiency, growing domestic production, and continued adoption of nonpetroleum liquids, net petroleum imports make up a smaller share of total liquids consumption
- Natural gas production increases throughout the projection period and exceeds consumption early in the next decade
- Renewables and natural gas fuel a growing share of electric power generation
- Total U.S. energy-related carbon dioxide emissions remain below their 2005 level through 2035

What is included (and excluded) in developing EIA's "Reference case" projections?

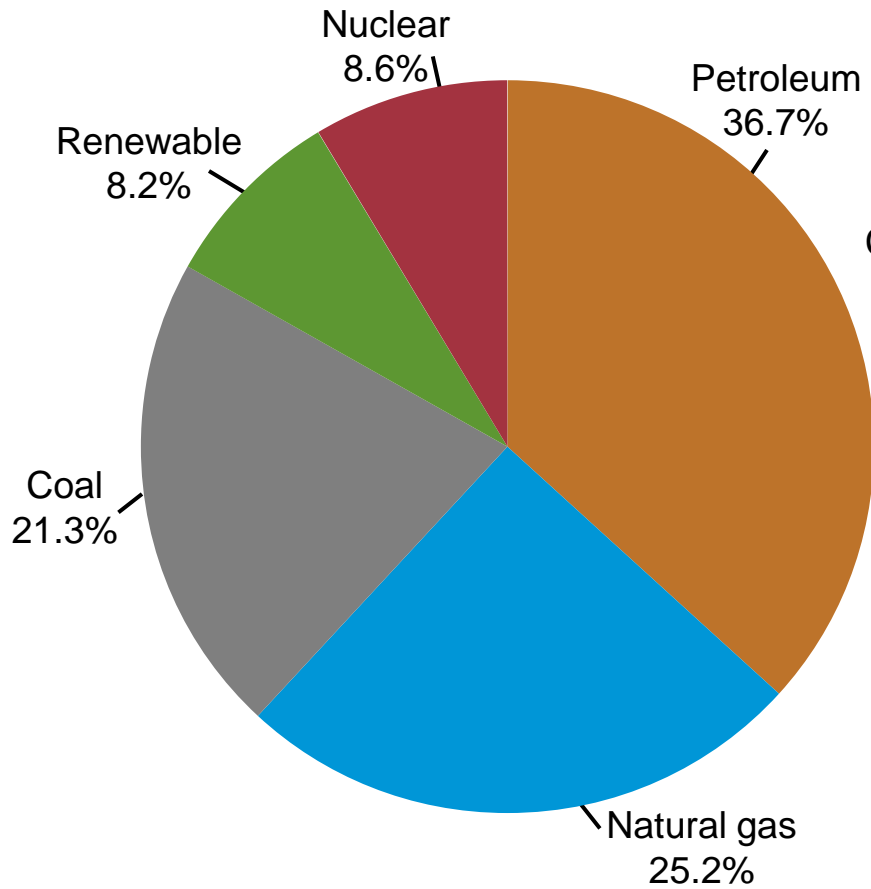
- Generally assumes current laws and regulations
 - excludes potential future laws and regulations (e.g., proposed greenhouse gas legislation and proposed fuel economy standards are not included)
 - provisions generally sunset as specified in law (e.g., renewable tax credits expire)
- Some grey areas
 - adds a premium to the capital cost of CO₂-intensive technologies to reflect current market behavior regarding possible future policies to mitigate greenhouse gas emissions
 - assumes implementation of existing regulations that enable the building of new energy infrastructure and resource extraction
- Includes technologies that are commercial or reasonably expected to become commercial over next decade or so
 - includes projected technology cost and efficiency improvements, as well as cost reductions linked to cumulative deployment levels
 - does not assume revolutionary or breakthrough technologies

Overview of U.S. energy supply and demand

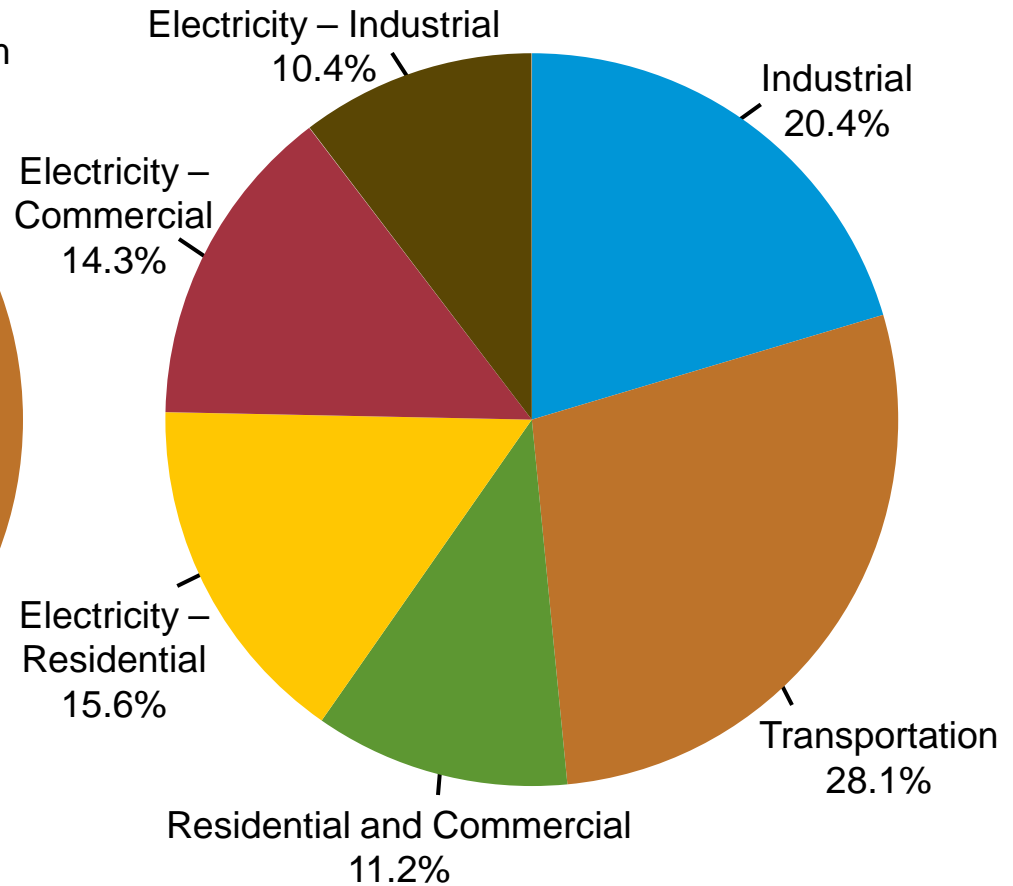
Current U.S. energy supply is 83% fossil fuels; demand is broadly distributed among the major sectors

2010 total U.S. energy use = 98.0 quadrillion Btu

Primary energy demand by fuel



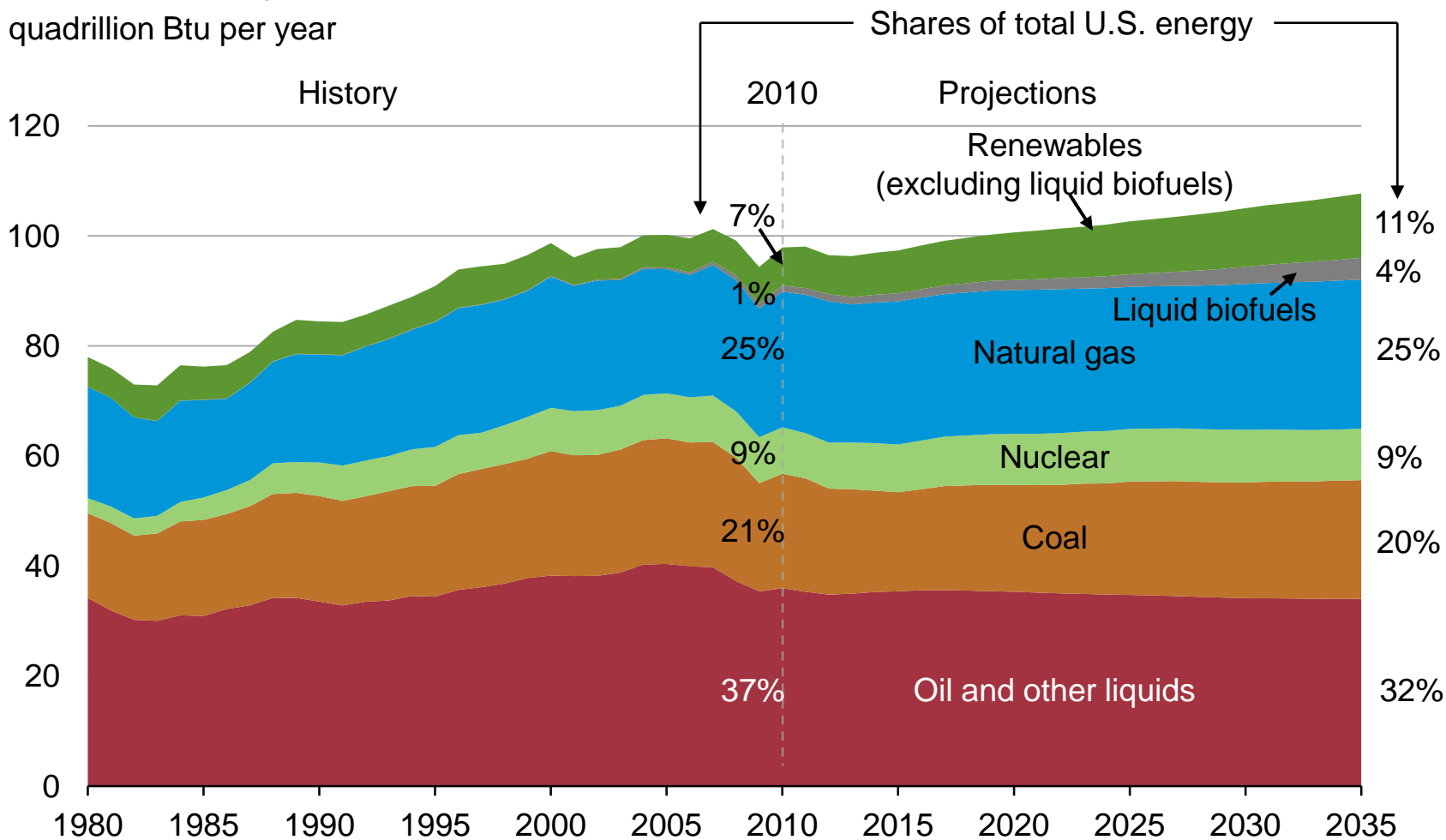
Primary energy demand by sector



Source: EIA, Annual Energy Outlook 2012 Early Release

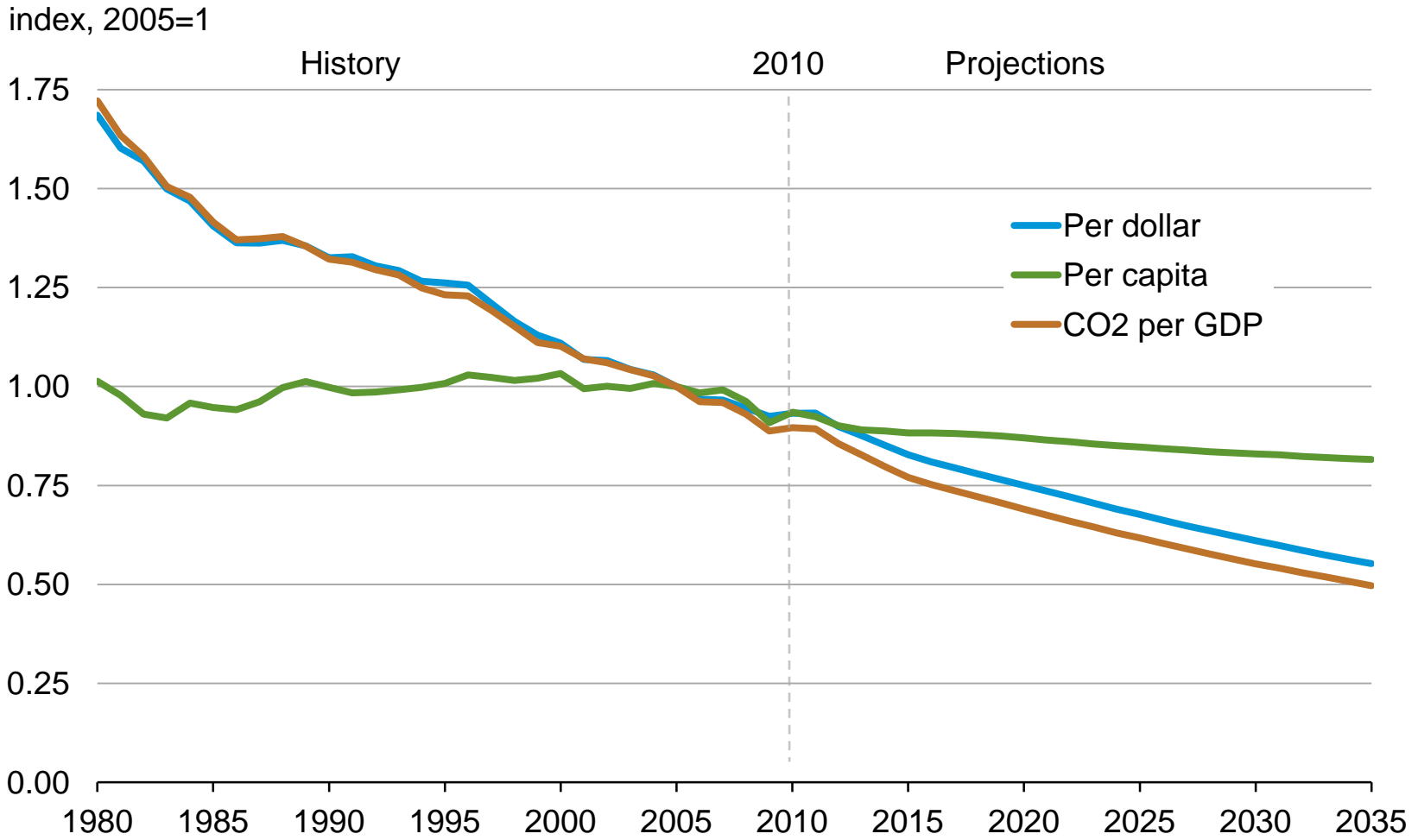
Energy use grows slowly over the projection in response to a slow and extended economic recovery and improving energy efficiency

U.S. primary energy consumption
quadrillion Btu per year



Source: EIA, Annual Energy Outlook 2012 Early Release

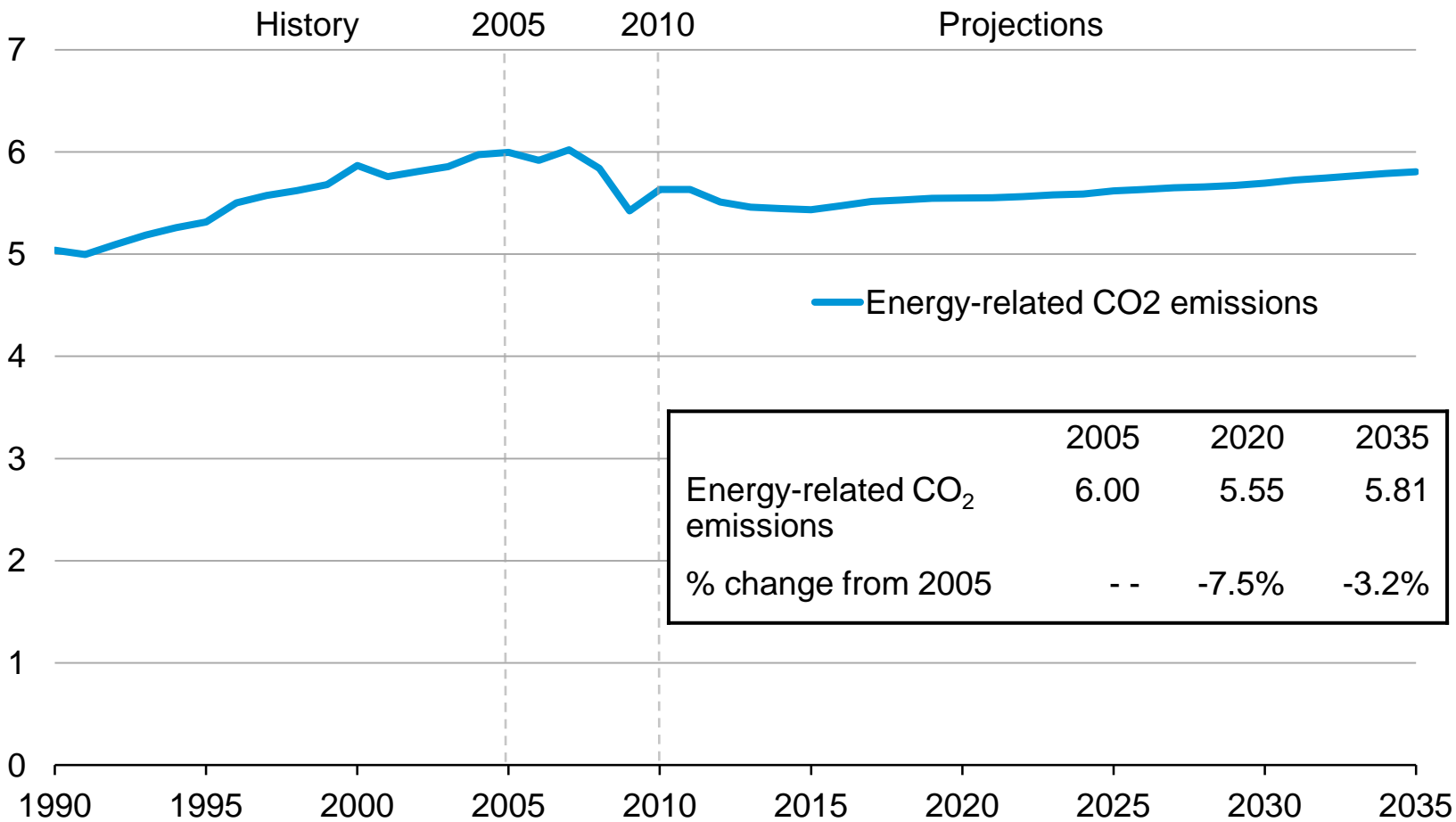
Energy and CO₂ per dollar of GDP continue to decline; per-capita energy use also declines



Source: EIA, Annual Energy Outlook 2012 Early Release

In the *AEO2012* Reference case, energy-related CO₂ emissions never get back to pre-recession levels by 2035

billion metric tons carbon dioxide

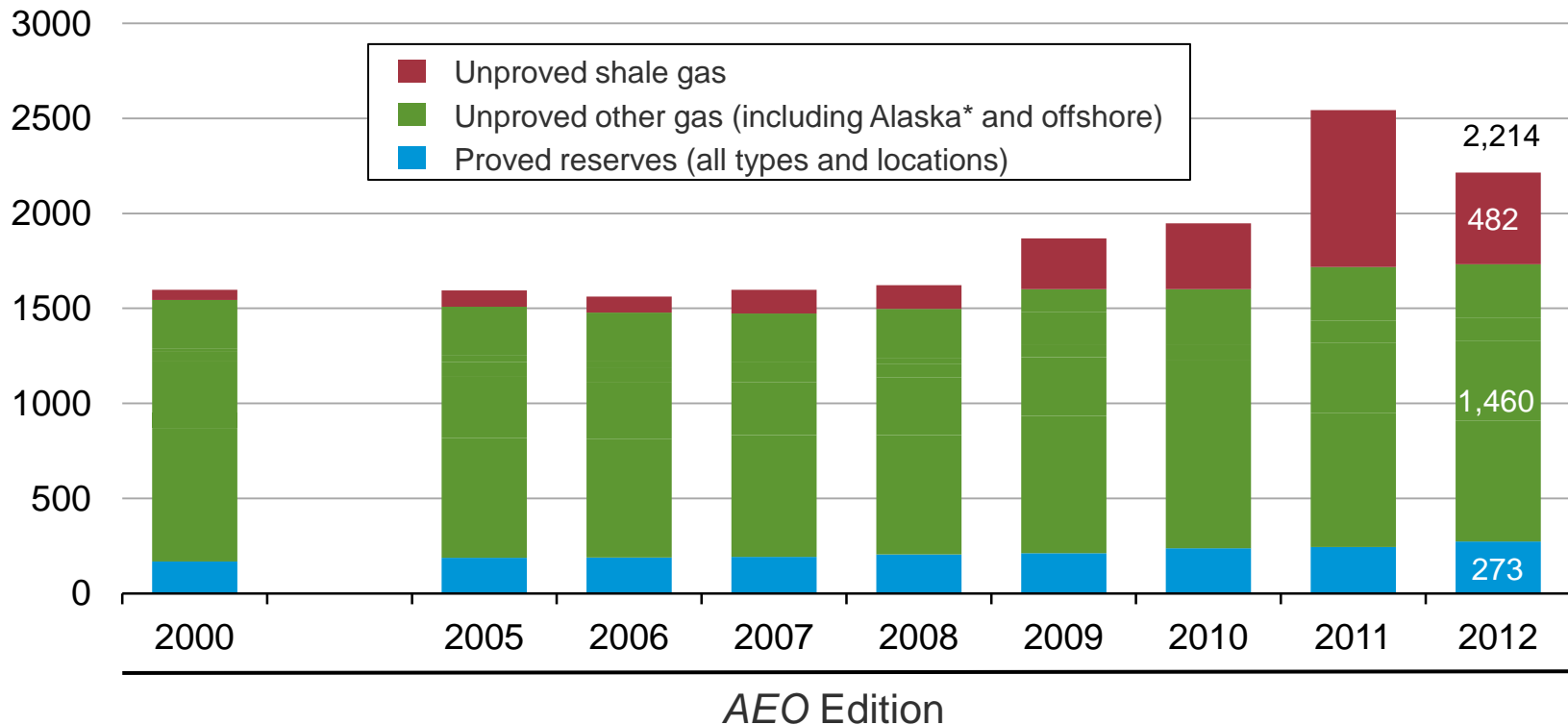


Source: EIA, Annual Energy Outlook 2012 Early Release

Natural Gas

Technically recoverable natural gas resources reflect updated assessments

U.S. dry gas resources
trillion cubic feet

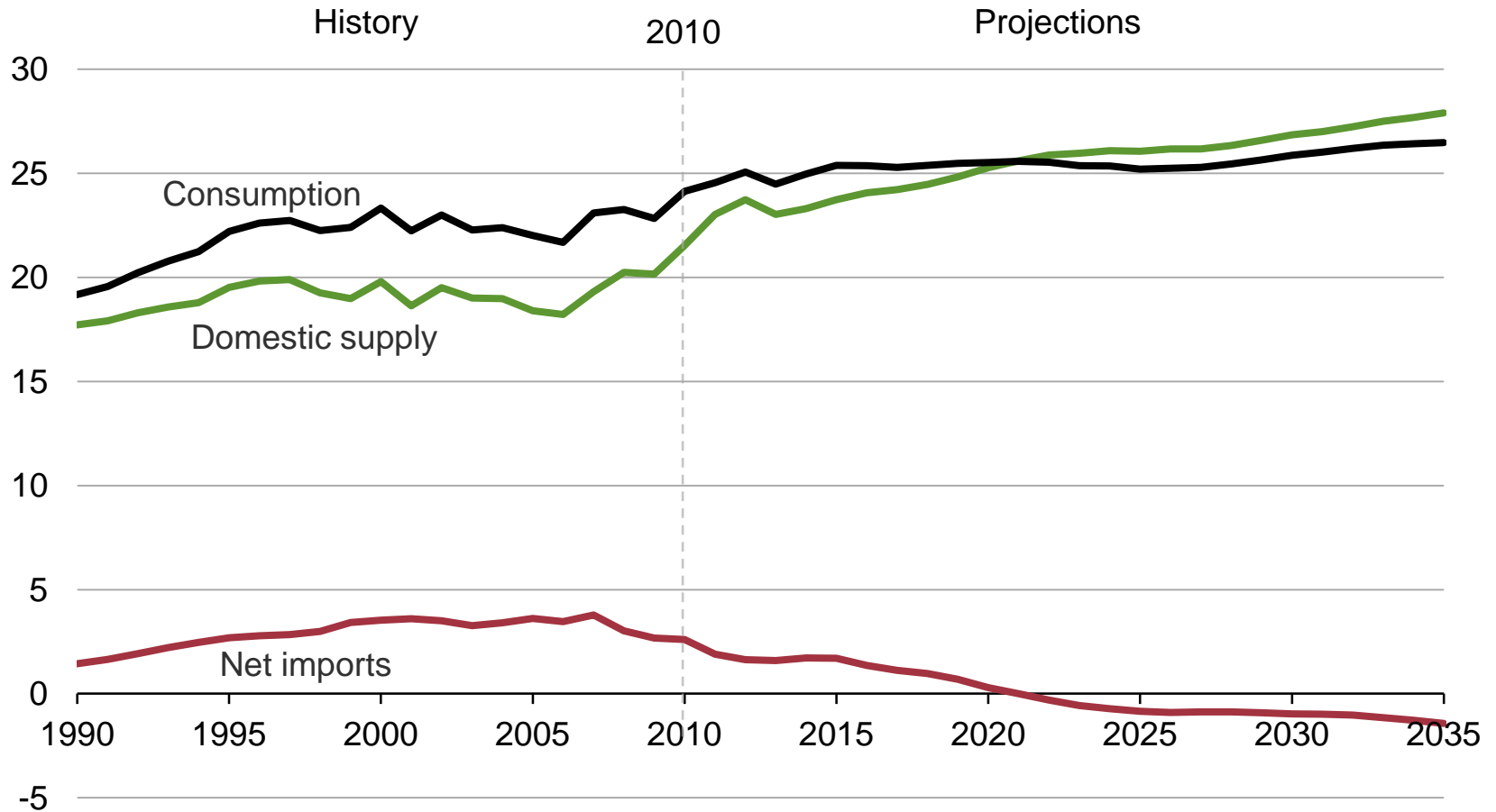


*Alaska resource estimates prior to AEO2009 reflect resources from the North Slope that were not included in previously published documentation.

Source: EIA, Annual Energy Outlook

Domestic natural gas production grows faster than consumption

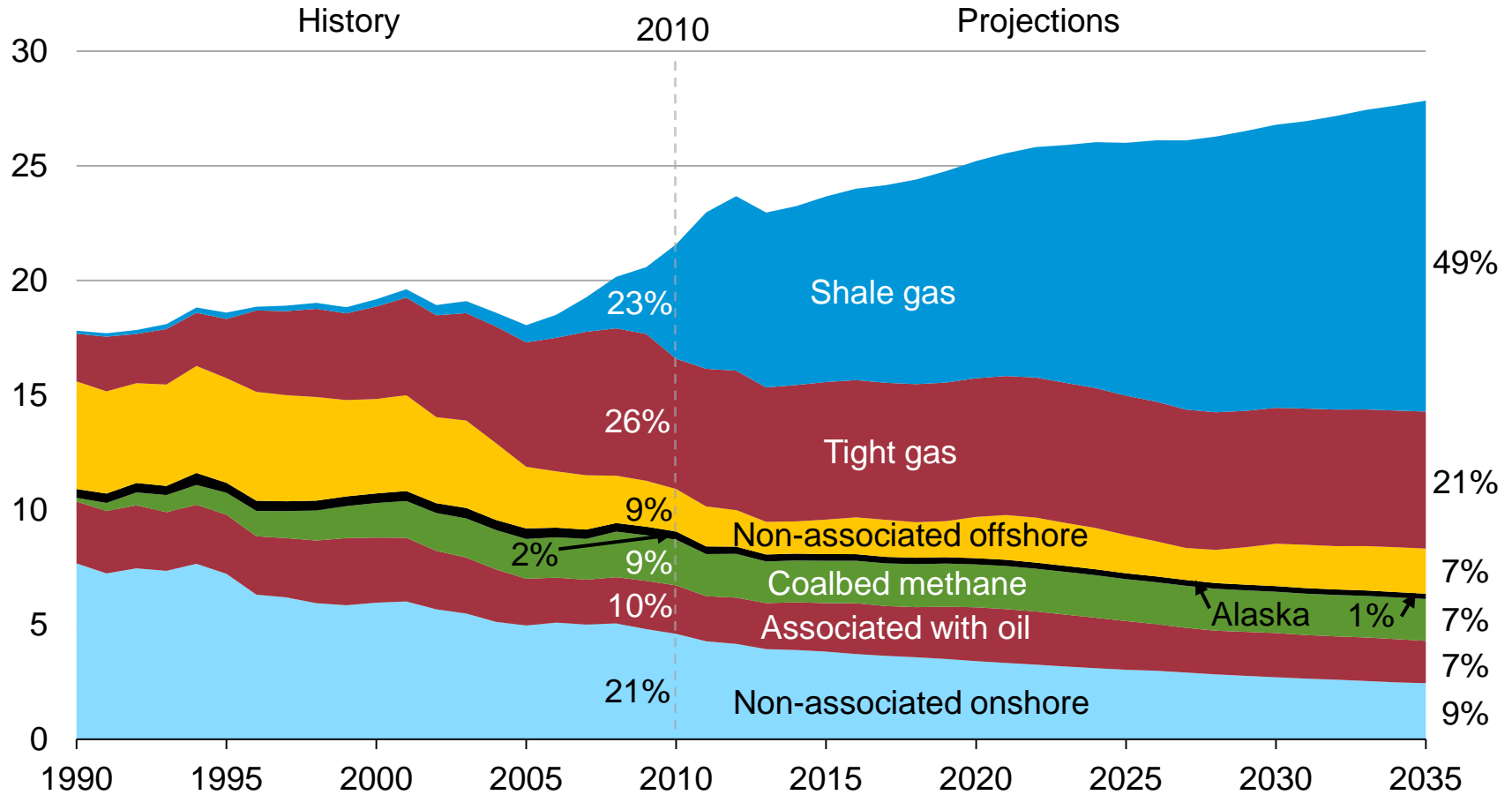
U.S. dry gas
trillion cubic feet per year



Source: EIA, Annual Energy Outlook 2012 Early Release

Shale gas offsets declines in other U.S. natural gas production sources

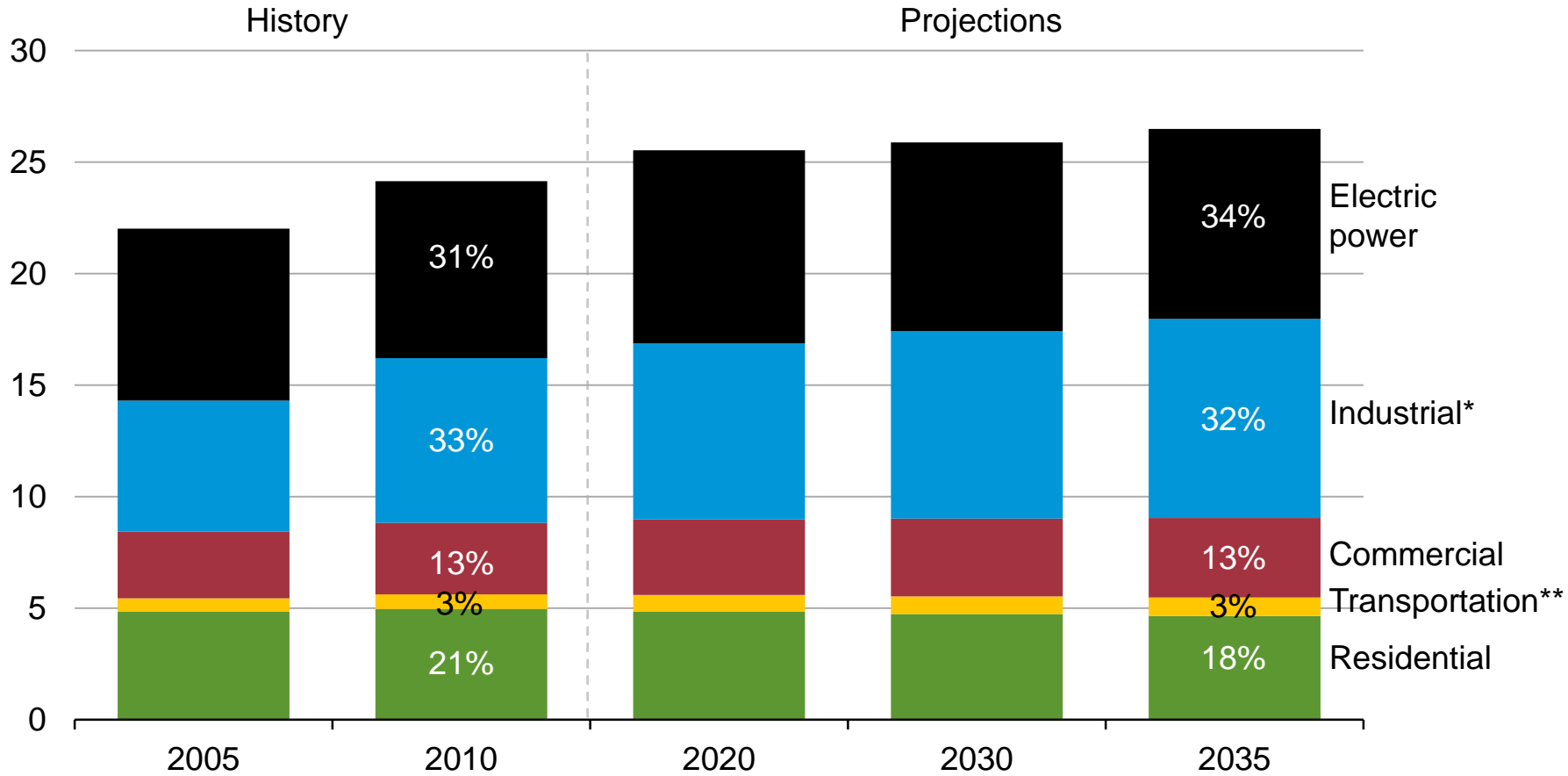
U.S. dry gas production
trillion cubic feet per year



Source: EIA, Annual Energy Outlook 2012 Early Release

Natural gas consumption is quite dispersed; electric power and industrial use drives much of the future demand growth

U.S. dry gas consumption
trillion cubic feet per year

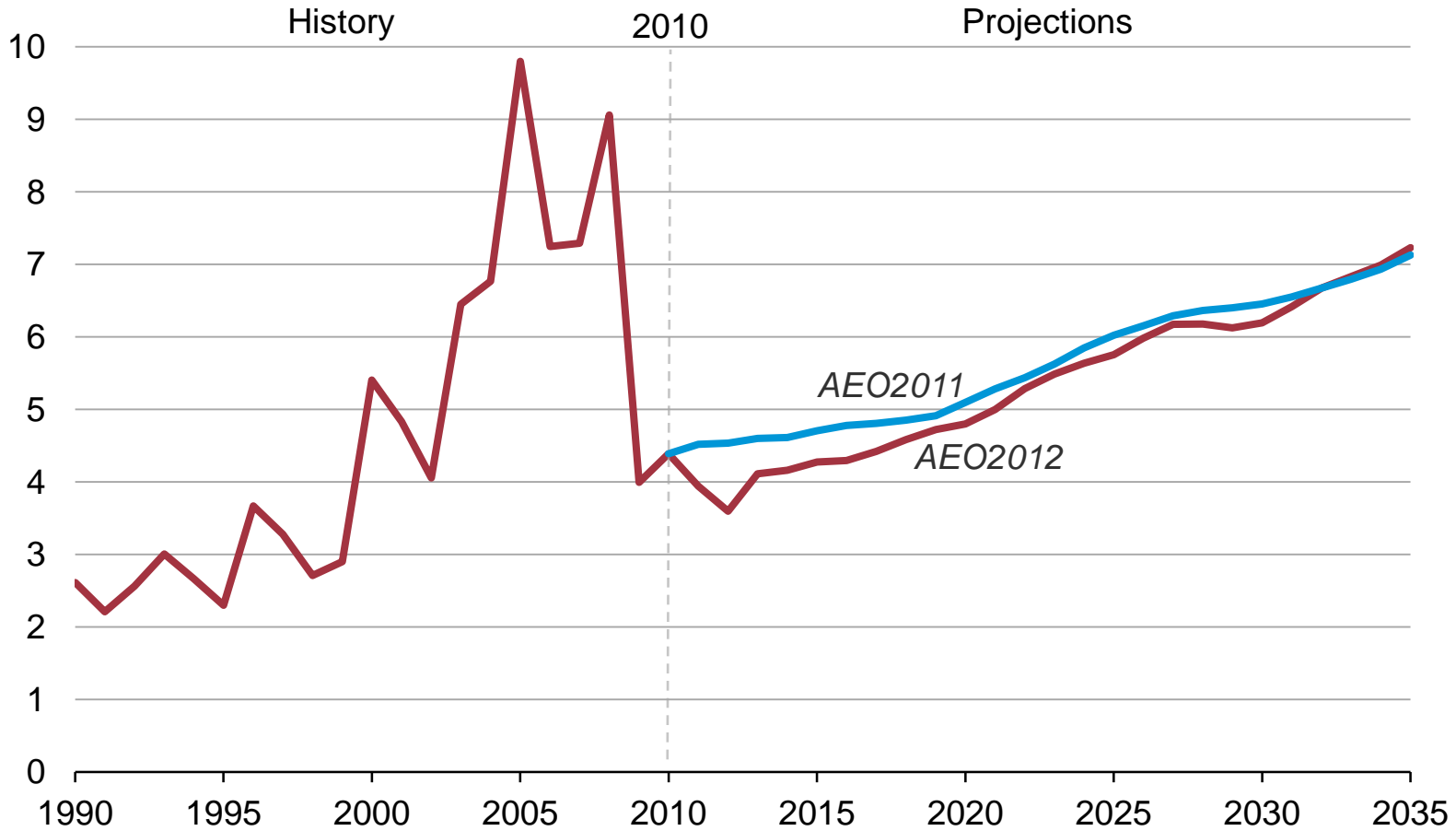


*Includes combined heat-and-power and lease and plant fuel. **Includes pipeline fuel.

Source: EIA, Annual Energy Outlook 2012 Early Release

Natural gas price projections are lower than in *AEO2011*, consistent with recent market developments

natural gas spot price (Henry Hub)
2010 dollars per million Btu

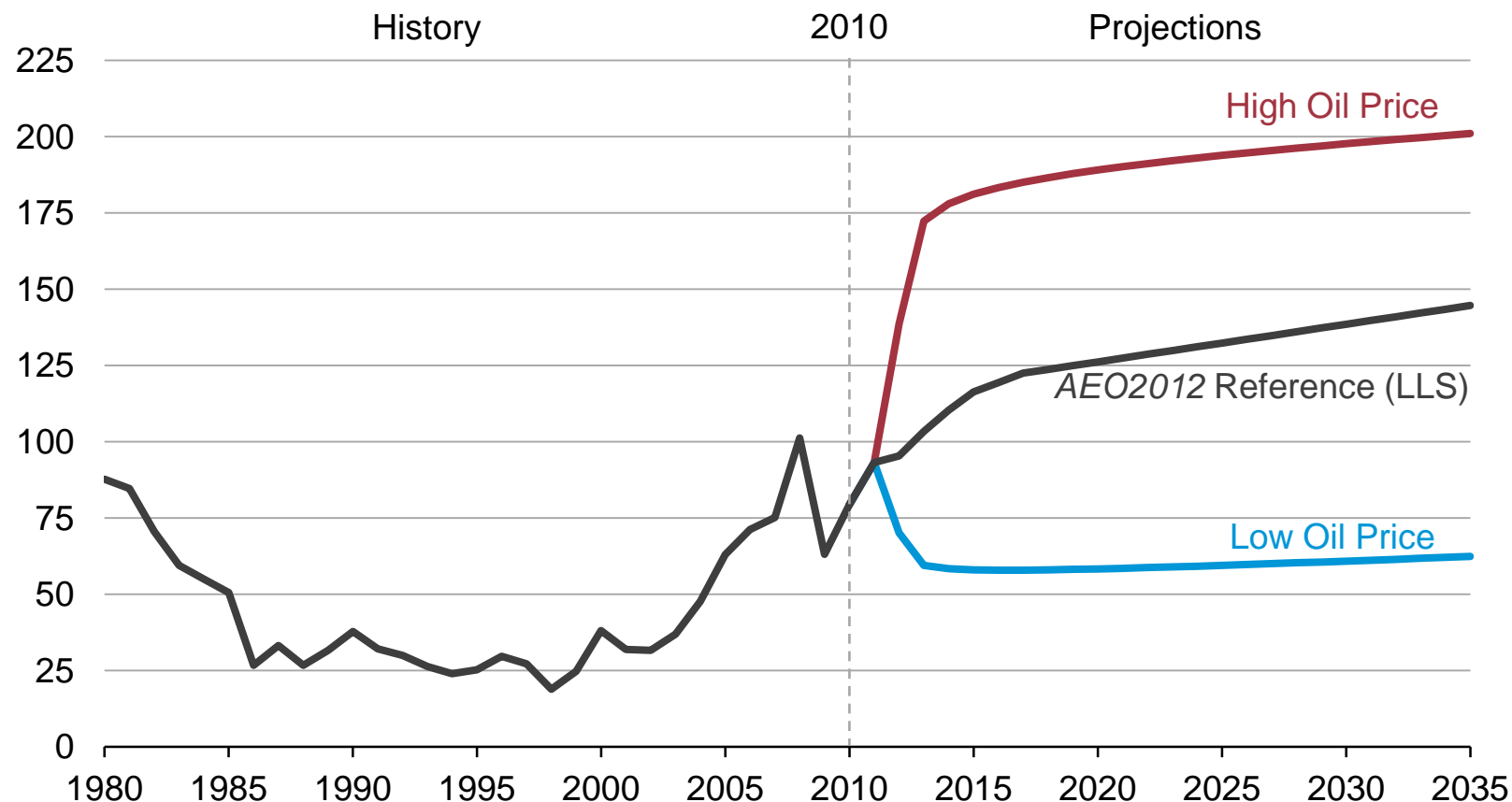


Sources: EIA, Annual Energy Outlook 2012 Early Release and EIA, Annual Energy Outlook 2011

Petroleum and other liquid supply

Oil prices in the Reference case rise steadily; the full *AEO2012* will include a wide range of oil prices

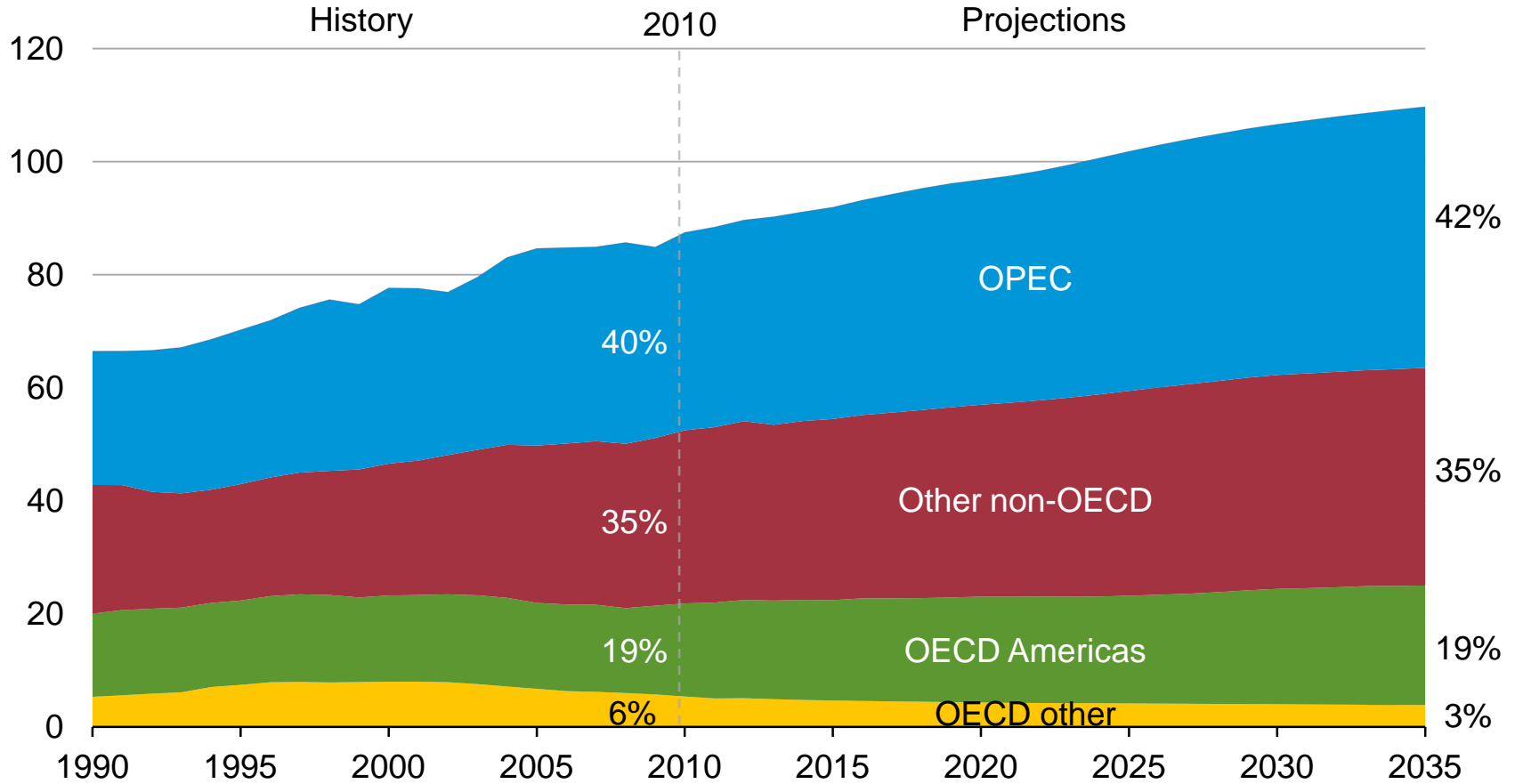
annual average price of light low sulfur (LLS) crude oil
real 2010 dollars per barrel



Source: EIA, Annual Energy Outlook 2012 Early Release

Global liquids supply increases 25% while market shares hold relatively stable

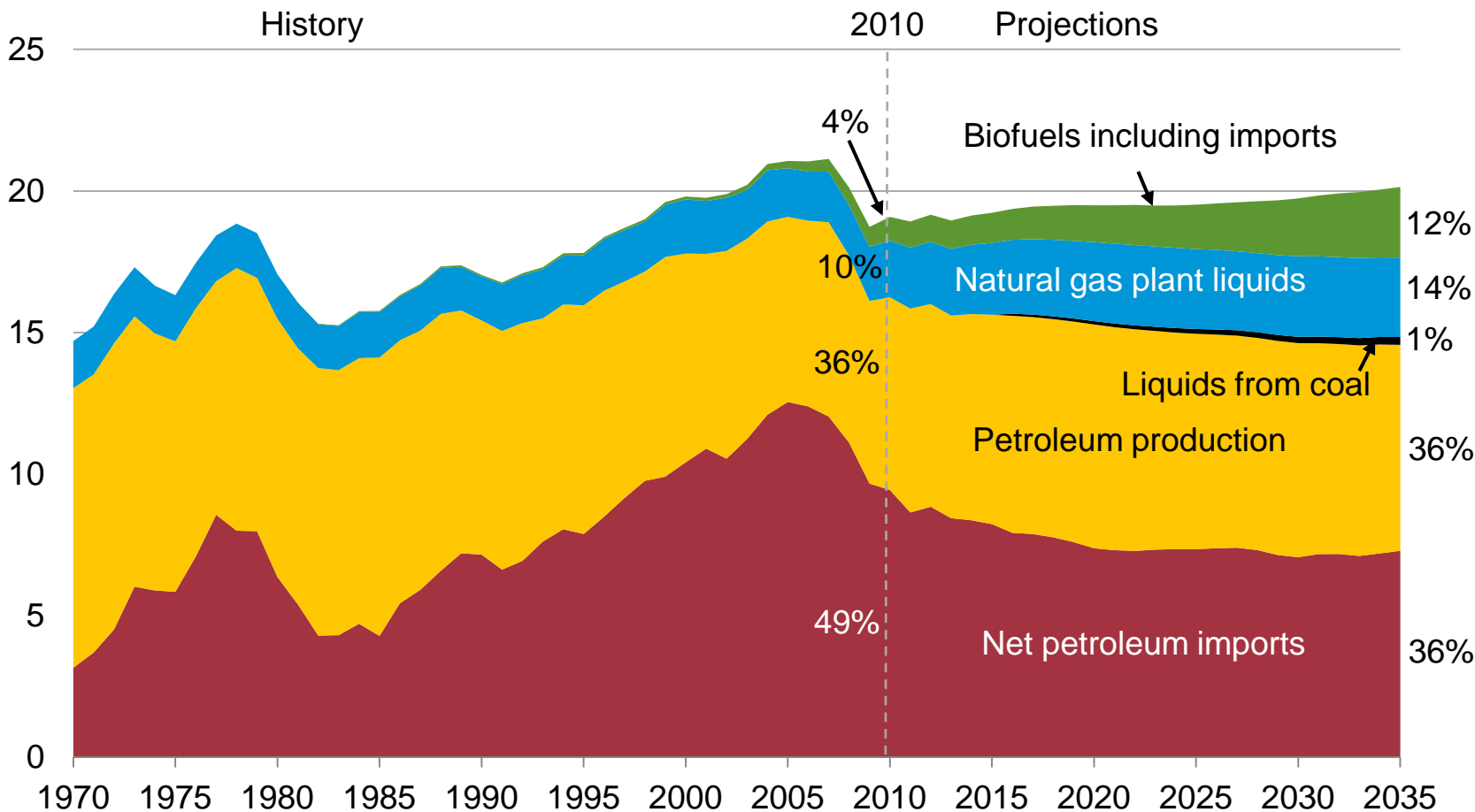
liquids supply
million barrels per day



Source: EIA, Annual Energy Outlook 2012 Early Release

U.S. imports of liquid fuels continue to decline due to increased production of gas liquids and biofuels and greater fuel efficiency

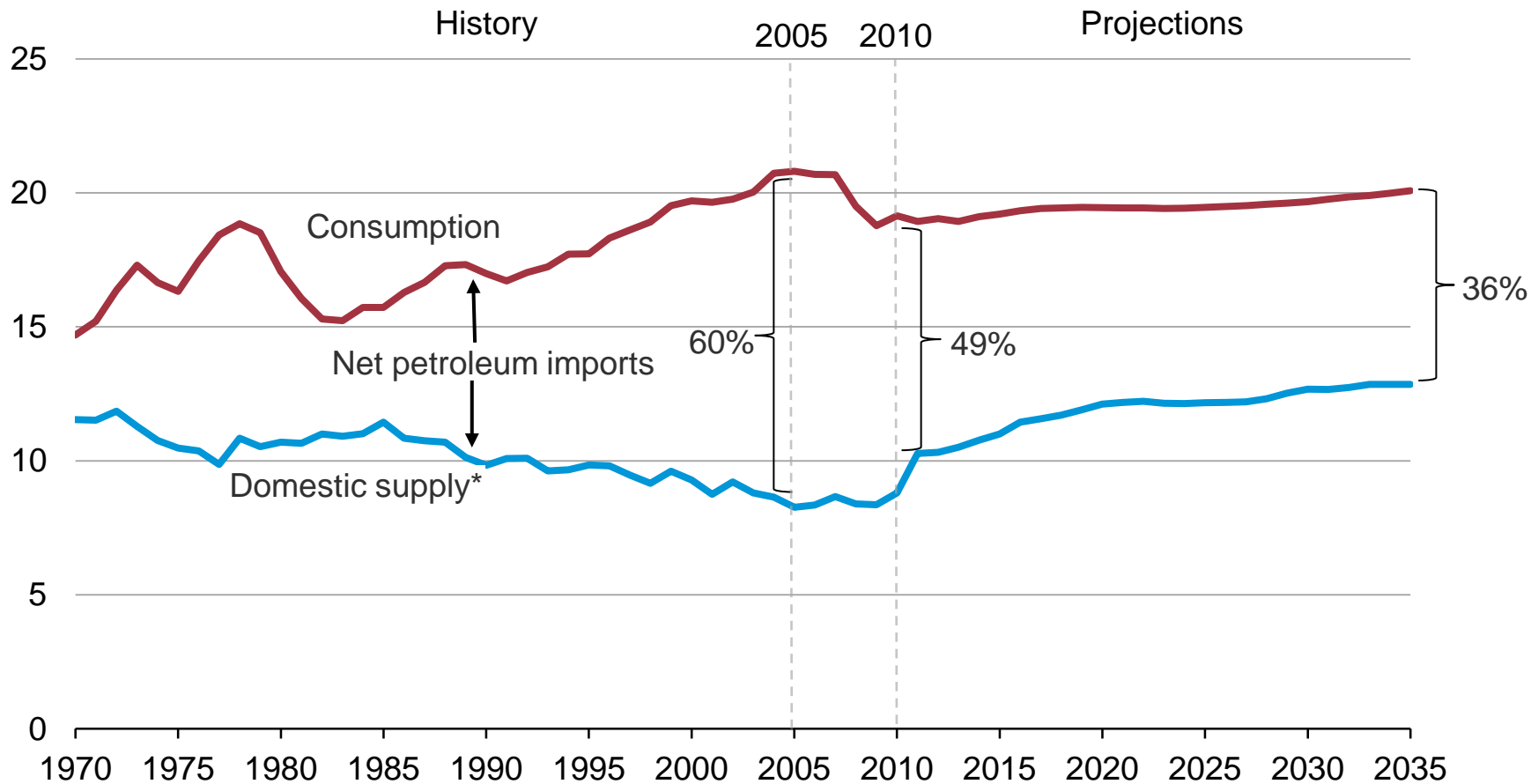
U.S. liquid fuels supply
million barrels per day



Source: EIA, Annual Energy Outlook 2012 Early Release

U.S. dependence on imported petroleum continues to decline

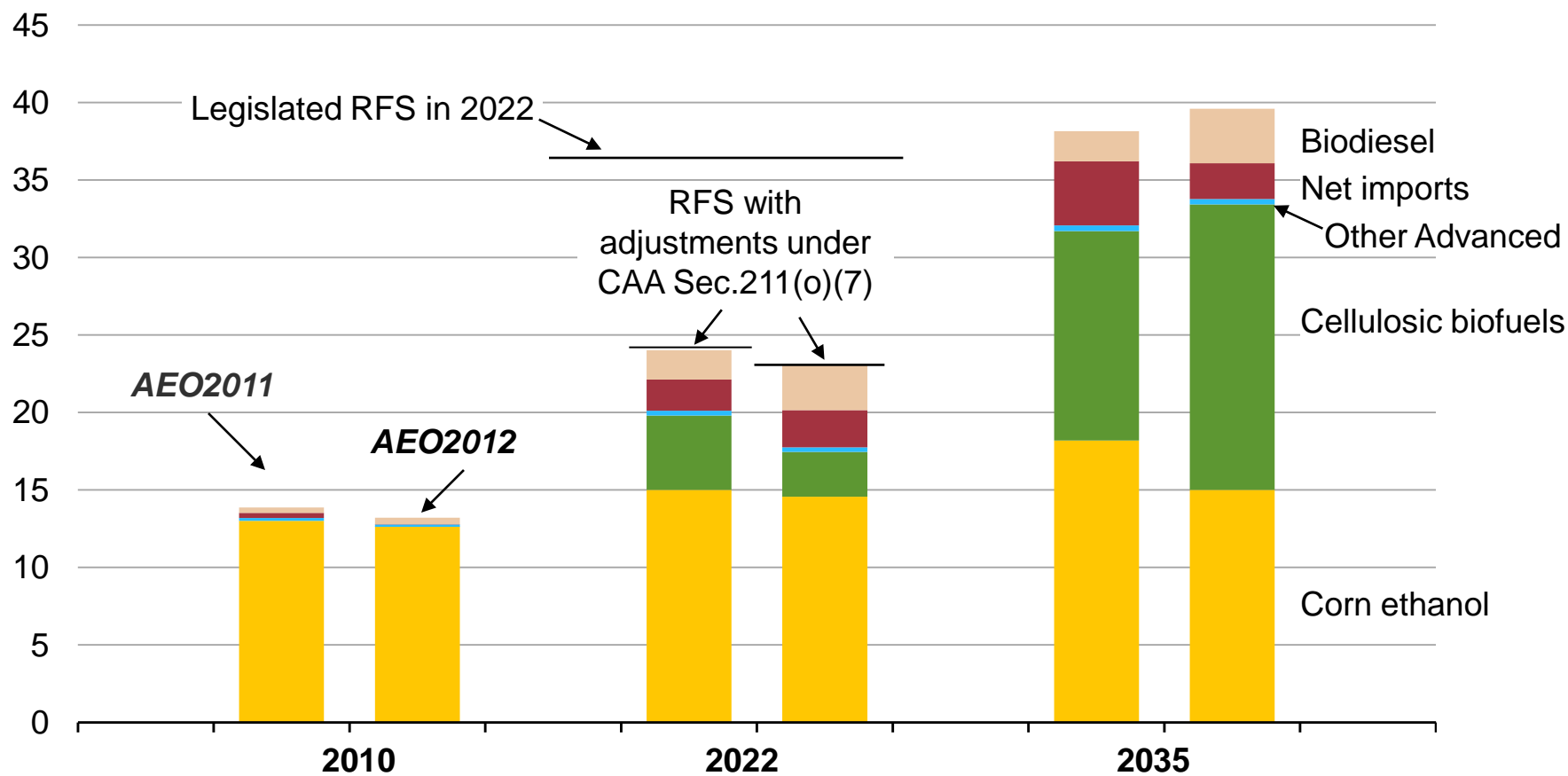
U.S. liquid fuel supply
million barrels per day



Source: EIA, Annual Energy Outlook 2012 Early Release

Biofuels fall short of the RFS target in 2022, but exceed 36 billion gallons by the early 2030s

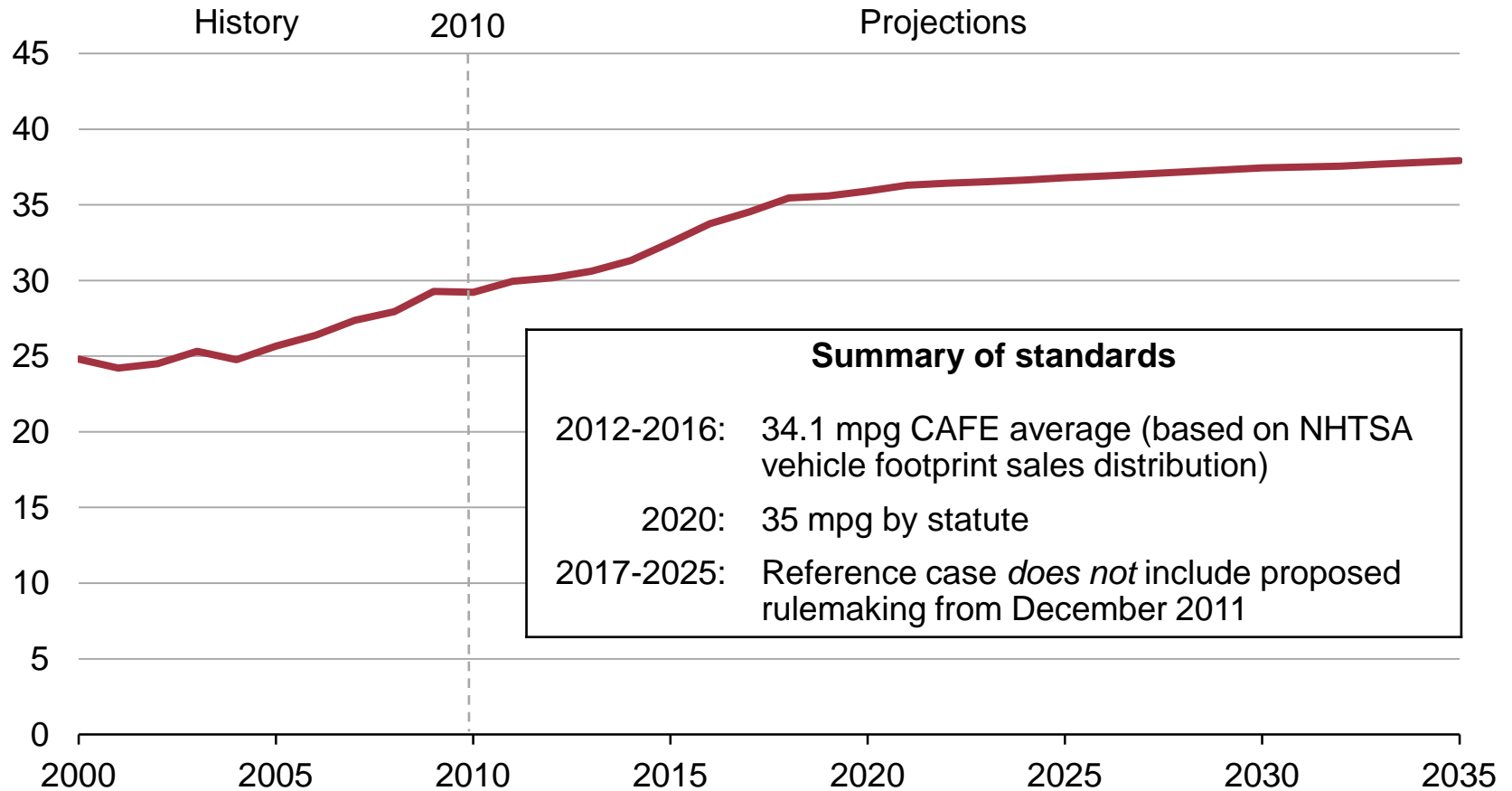
billions ethanol-equivalent gallons



Source: EIA, Annual Energy Outlook 2012 Early Release, Annual Energy Outlook 2011

New light duty vehicle fuel economy reaches almost 38 mpg by 2035 in the Reference case, which does not include proposed standards for MY2017 to MY2025 vehicles

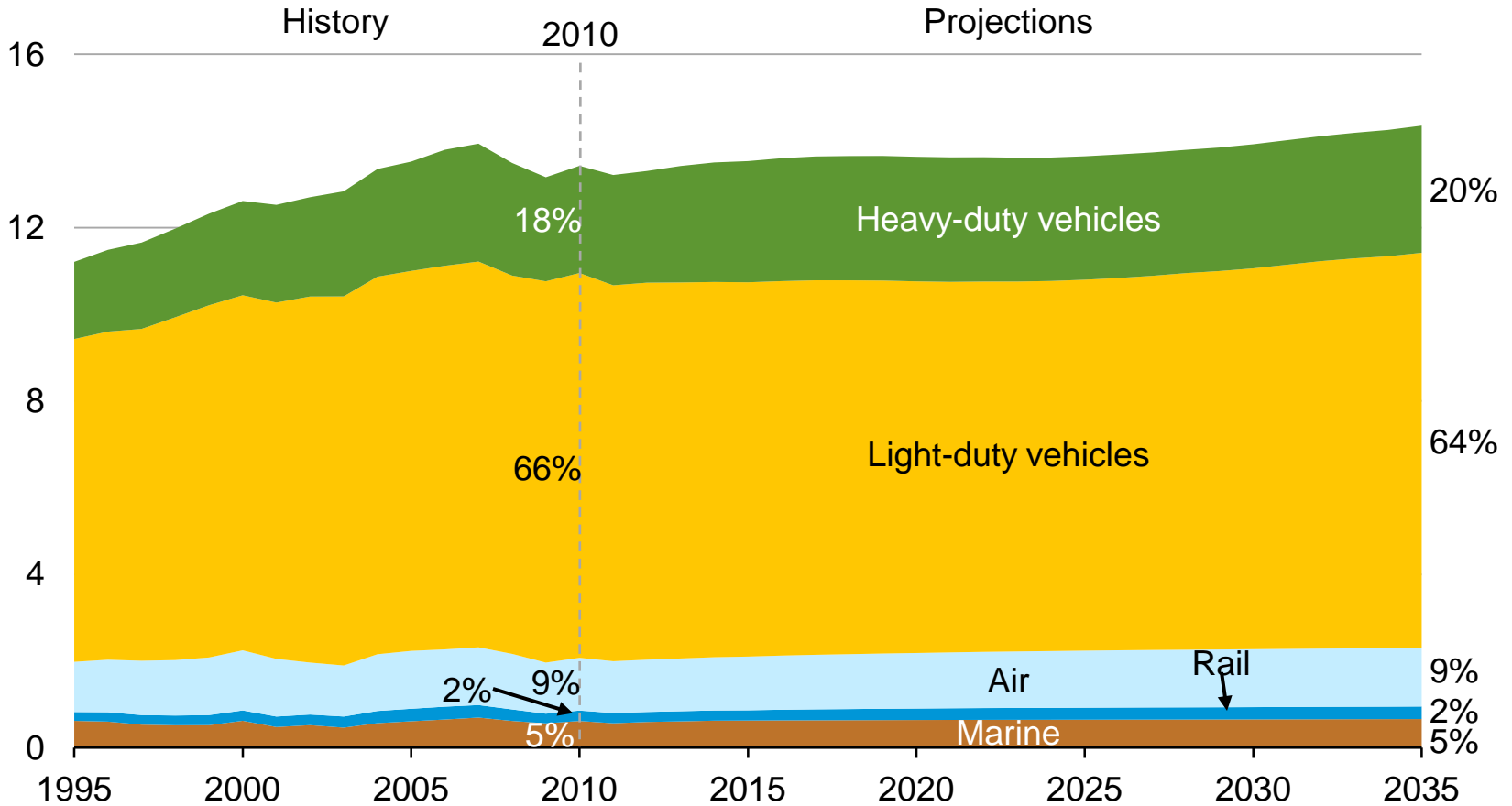
miles per gallon



Source: EIA, Annual Energy Outlook 2012 Early Release

Most transport fuel consumption is in light and heavy duty vehicles

U.S. transportation energy consumption
million barrels per day oil equivalent



Source: EIA, Annual Energy Outlook 2012 Early Release

Efficiency improvements mostly offset underlying drivers of growth in transportation services

	2010	2035	Growth (2010-2035)
Light duty vehicles			
Fuel consumption (million barrels per day oil equivalent)	8.6	8.8	2%
Number of licensed drivers (millions)	209	265	27%
Miles per licensed driver	12,700	13,600	7%
Efficiency of vehicle stock (mpg)	20.4	27.8	36%*
Heavy duty vehicles			
Fuel consumption (million barrels per day oil equivalent)	2.4	2.8	18%
Manufacturing output (billion 2005 dollars)	4,260	6,270	47%
Number of freight trucks (millions)	9.3	13.4	44%
Miles per vehicle	25,300	25,700	1.3%
Efficiency of vehicle stock (mpg)	6.7	8.2	23%**

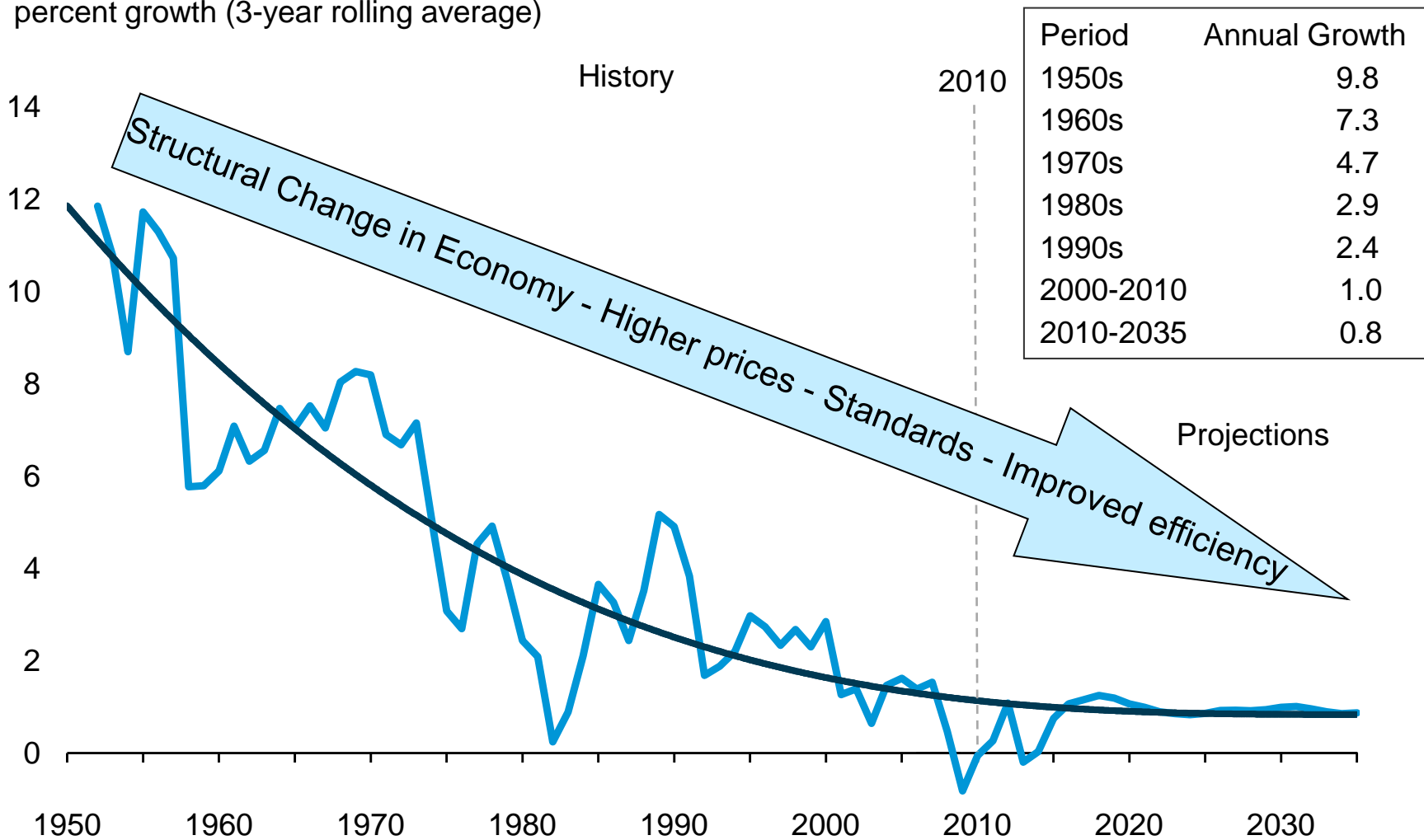
* Equal to a 27% reduction in fuel use per mile. ** Equal to an 19% reduction in fuel use per mile.

Source: EIA, Annual Energy Outlook 2012 Early Release

Electricity

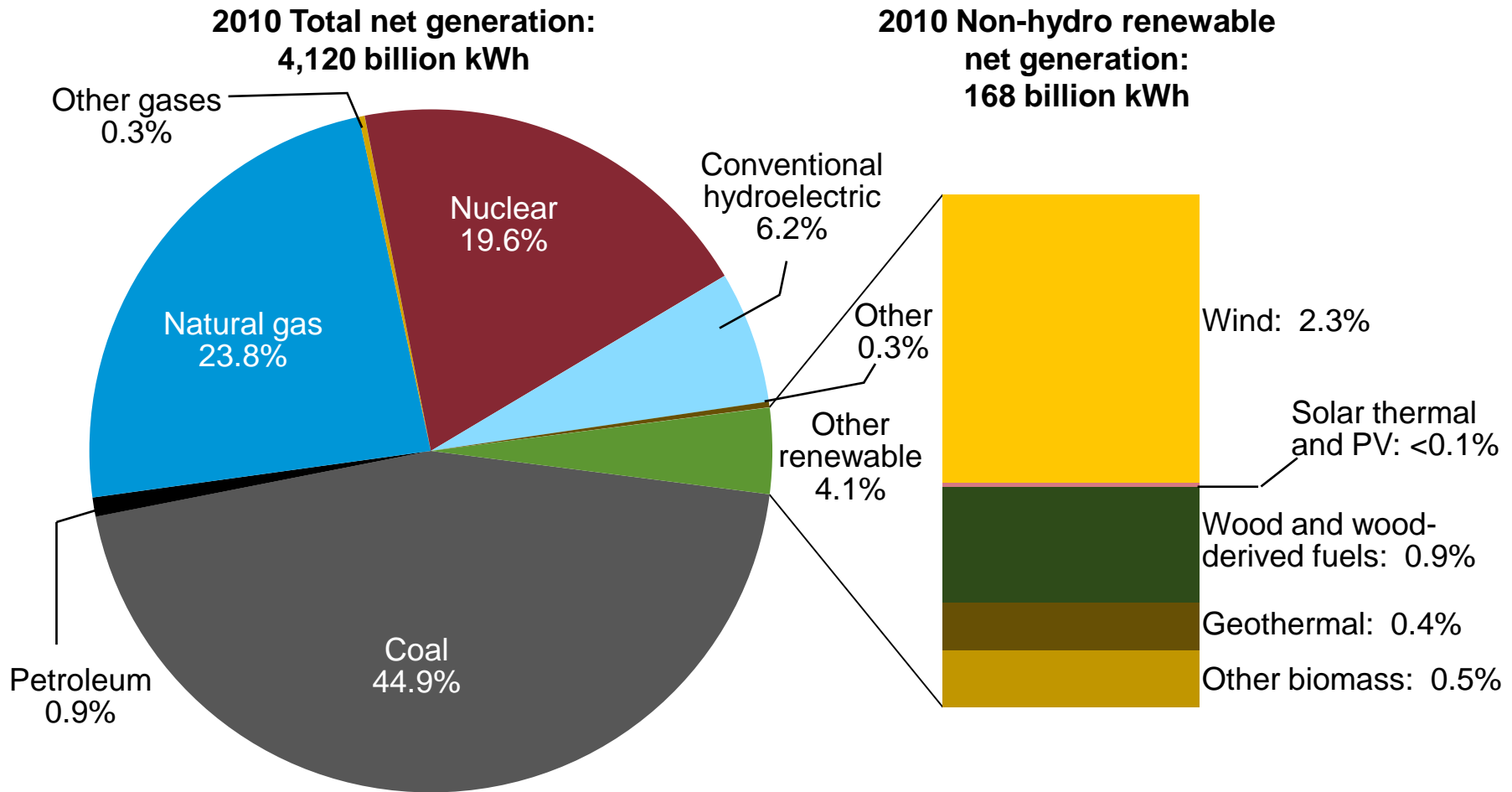
While electricity consumption grows by 23% over the projection, the annual rate of growth slows

percent growth (3-year rolling average)



Source: EIA, Annual Energy Outlook 2012 Early Release

In 2010, U.S. electricity generation was 70% fossil fuels, 20% nuclear, and 10% renewable

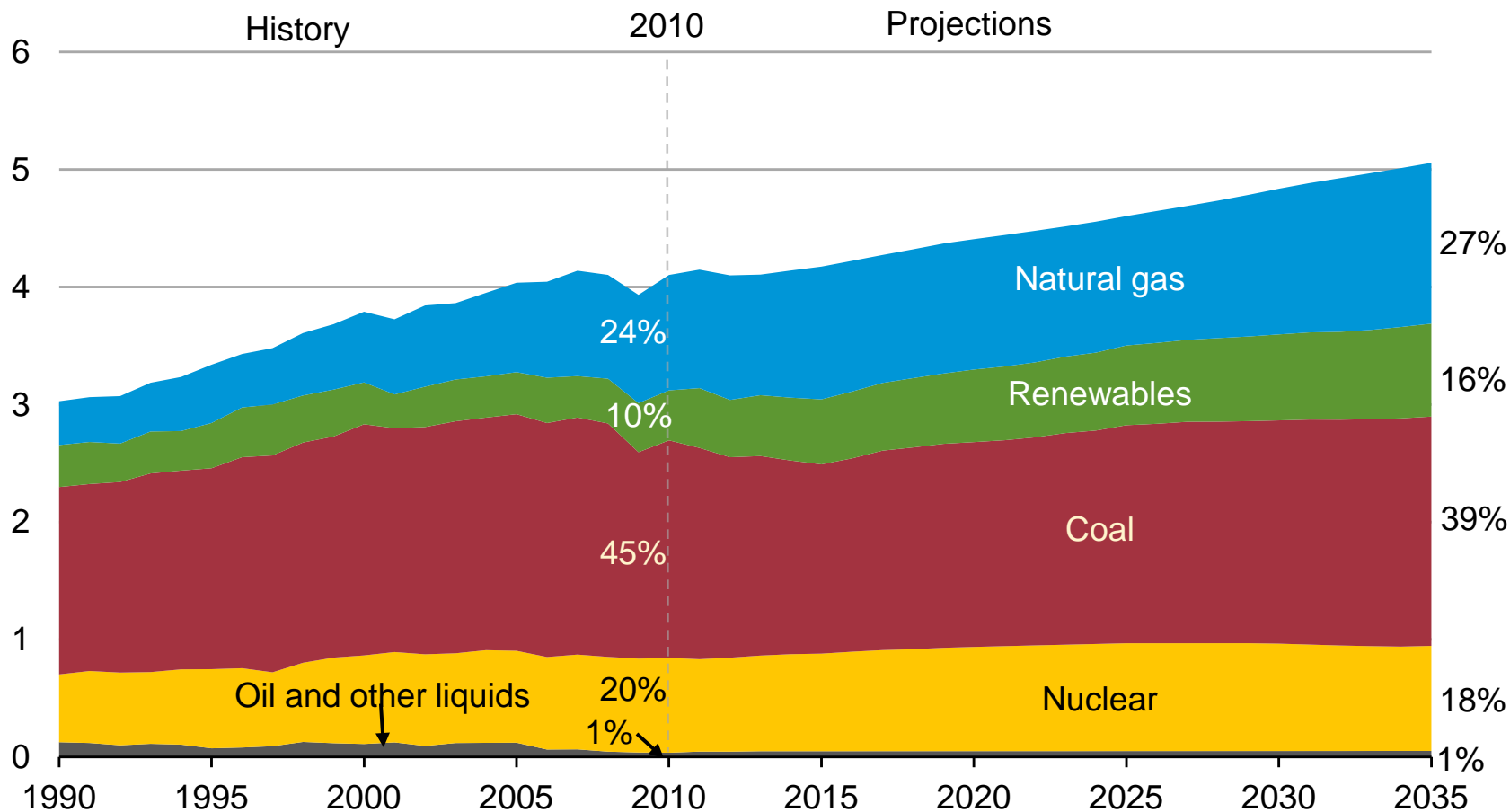


Source: EIA, Annual Energy Review, October 2011

Electricity mix gradually shifts to lower-carbon options, led by growth in renewables and natural gas

electricity net generation

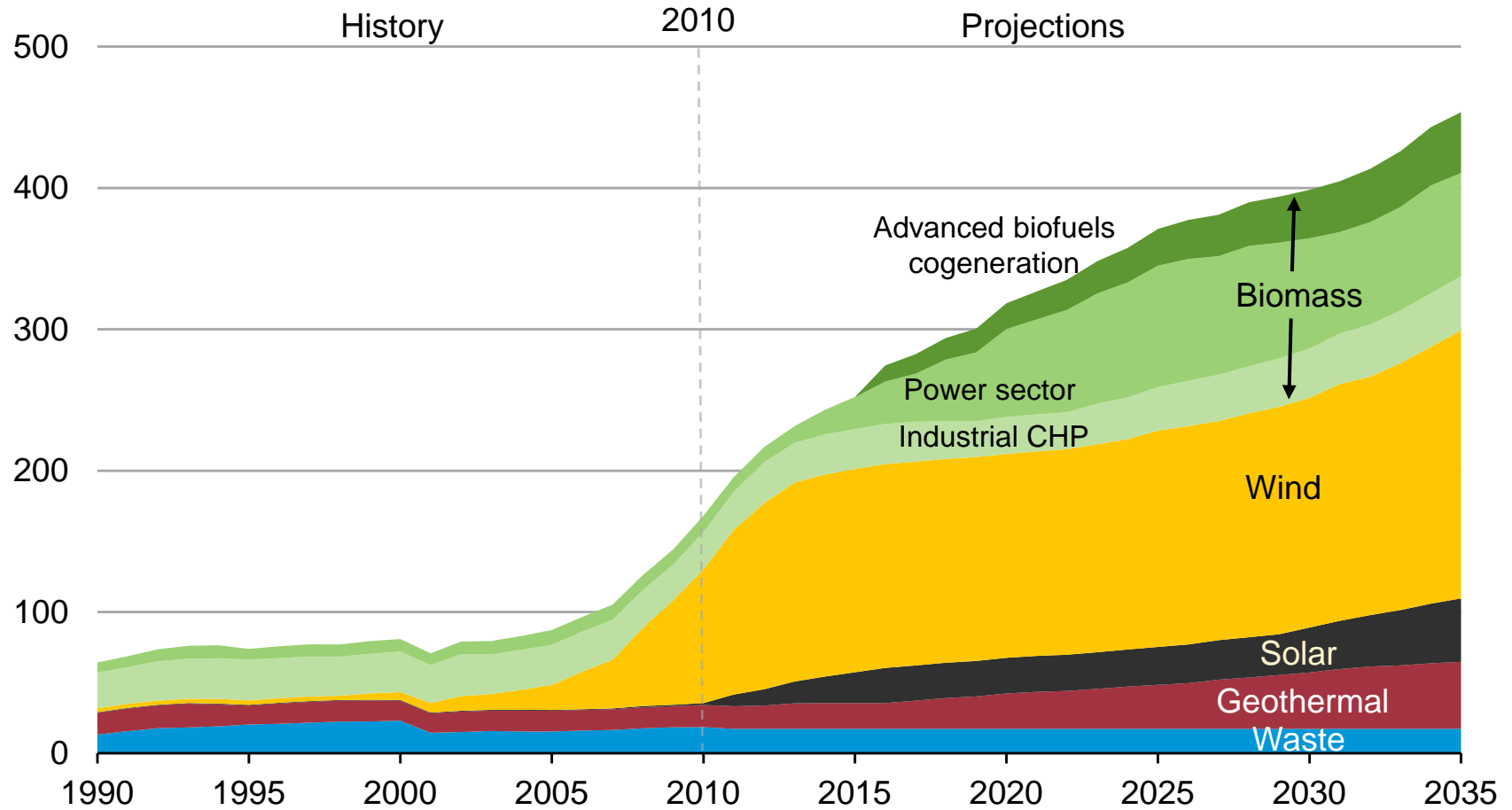
trillion kilowatthours per year



Source: EIA, Annual Energy Outlook 2012 Early Release

Non-hydro renewable sources more than double between 2010 and 2035

non-hydropower renewable generation
billion kilowatthours per year



Source: EIA, Annual Energy Outlook 2012 Early Release

Expected changes in the *AEO2012* Reference case for the complete release

- Incorporation of Mercury and Air Toxics Standards (MATS) issued by EPA in December, 2011
- Updated historical data and equations in the transportation sector, based on revised data from the National Highway Traffic Safety Administration (NHTSA) and Federal Highway Administration
- Revised long-term macroeconomic projection based on an updated long term projection from IHS Global Insight, Inc.
- New model for cement production in the industrial sector
- Updated handling of biomass supply

For more information

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

Annual Energy Outlook | www.eia.gov/forecasts/aeo

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

International Energy Outlook | www.eia.gov/forecasts/ieo

Monthly Energy Review | www.eia.gov/totalenergy/data/monthly

Annual Energy Review | www.eia.gov/totalenergy/data/annual