

# *Annual Energy Outlook 2012*



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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 CO<sub>2</sub>-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

## Key updates included in the *AEO2012* Reference case

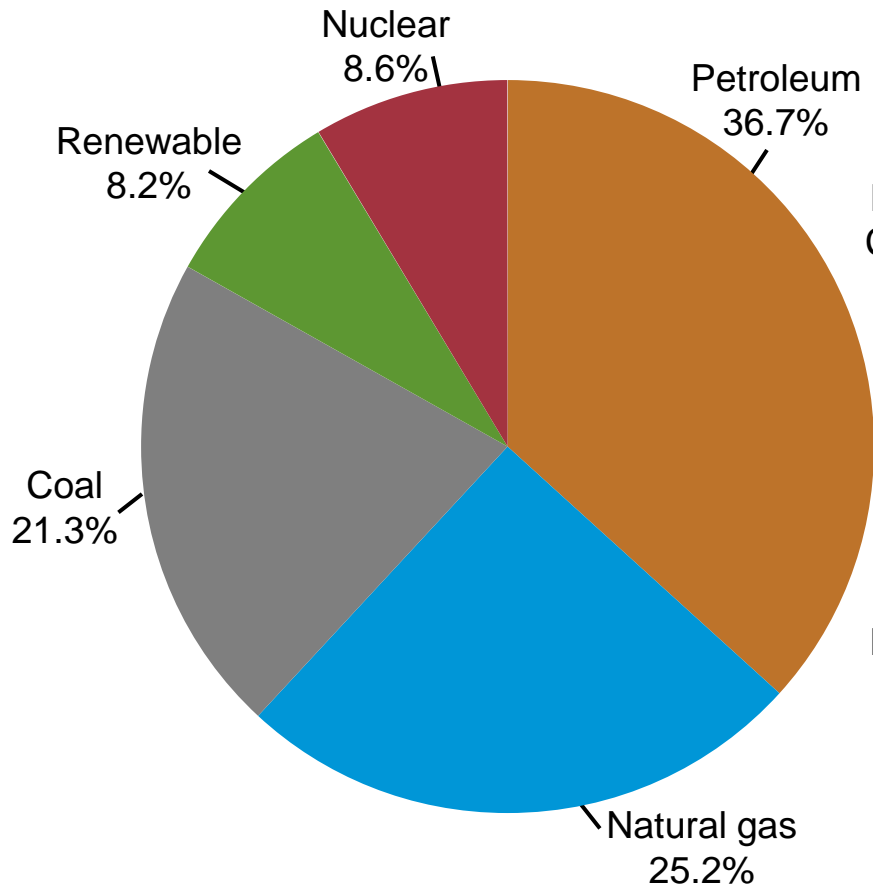
- Industrial cogeneration was updated with historical rather than assumed capacity factors for new units and with updated investment decision procedures
- New heavy-duty vehicle model was adopted that includes greater detail on size classes and end-use vehicle types
- Light-duty fleet model was updated to include a new algorithm for consumer purchase choice
- EIA shale gas resource estimates were updated using resource assessments recently released by the USGS
- Electricity module was updated to incorporate the CSAPR as finalized in July 2011 by the U.S. EPA

# Overview of U.S. energy supply and demand

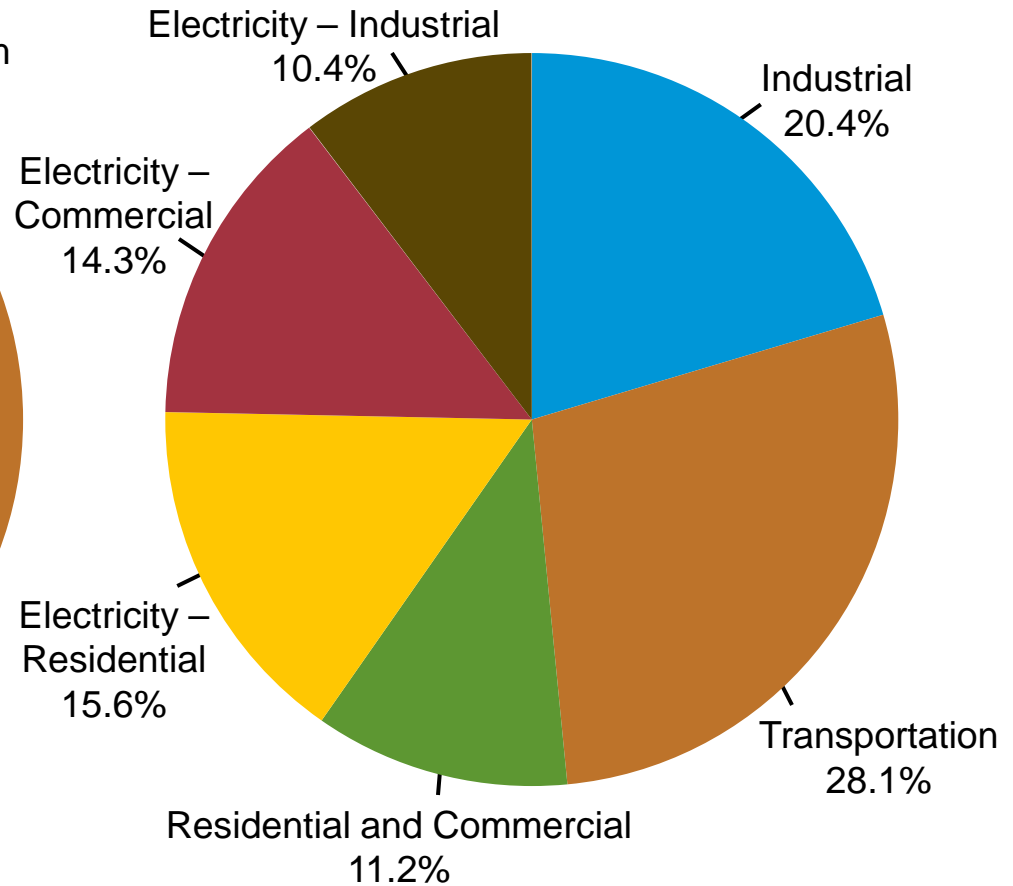
# Current U.S. energy supply is 83% fossil fuels; demand is broadly distributed among the major sectors

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

Primary energy demand by fuel



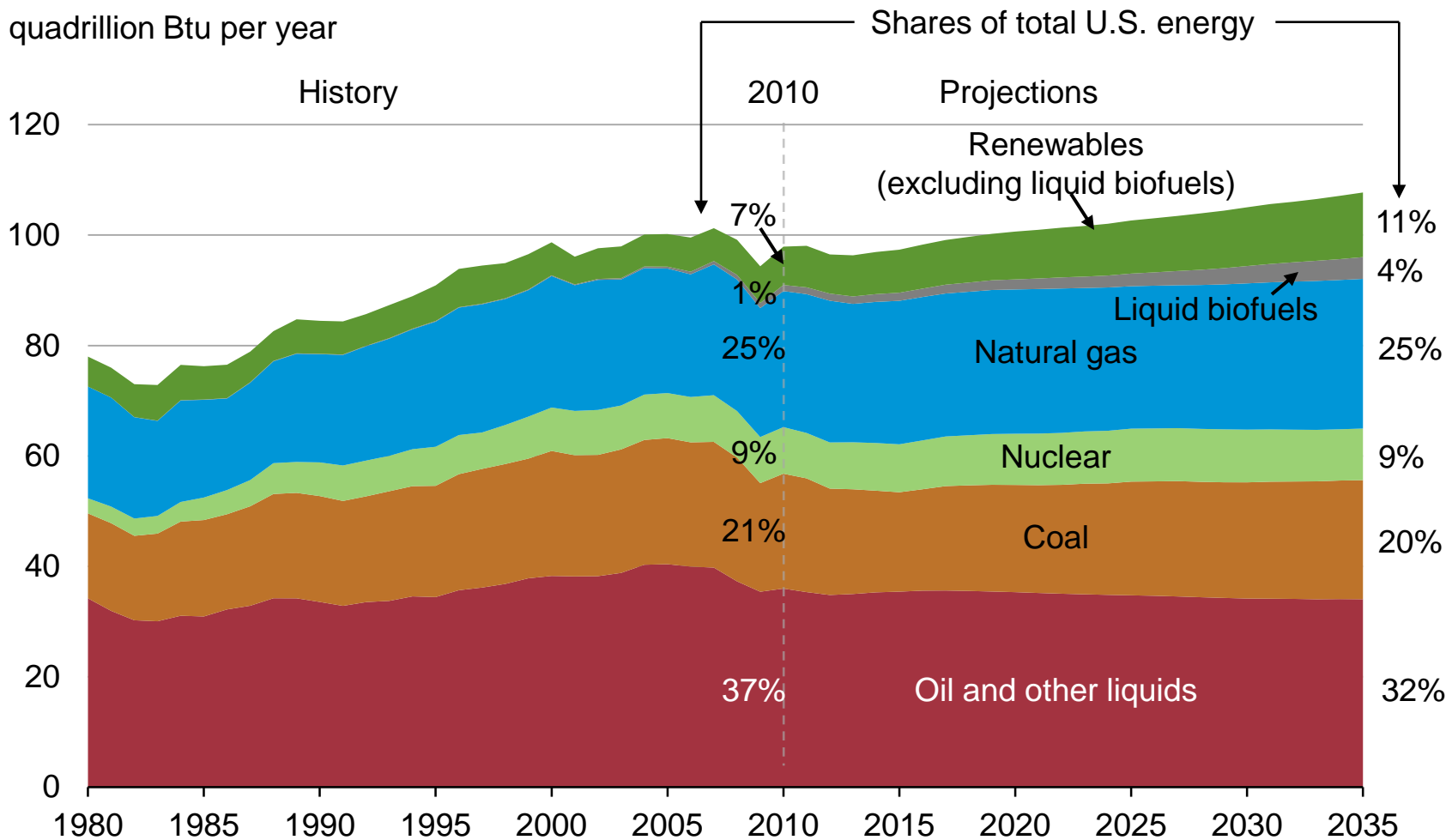
Primary energy demand by sector



Source: EIA, Annual Energy Outlook 2012 Early Release

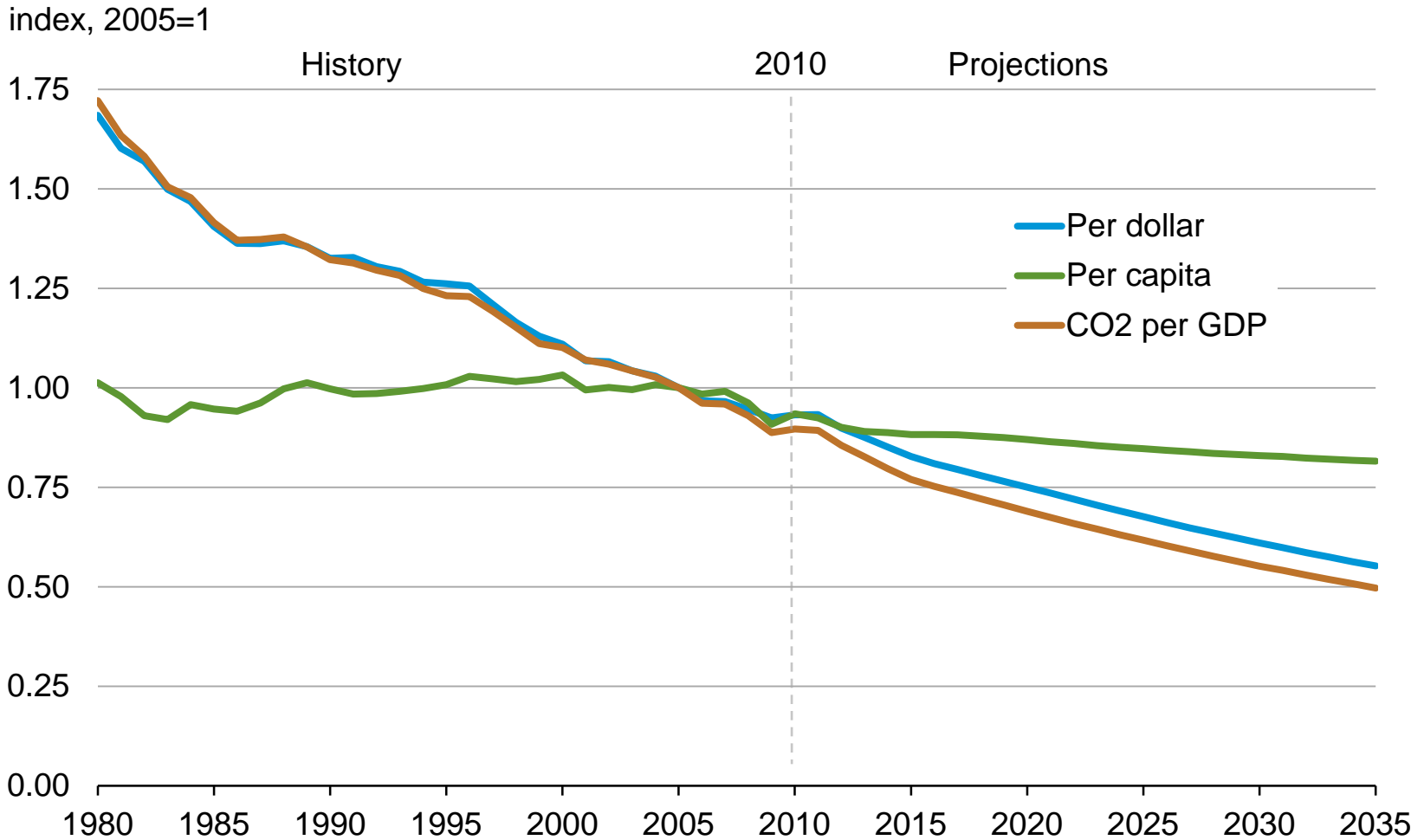
# Energy use grows slowly over the projection in response to a slow and extended economic recovery and improving energy efficiency

U.S. primary energy consumption  
quadrillion Btu per year



Source: EIA, Annual Energy Outlook 2012 Early Release

# Energy and CO<sub>2</sub> per dollar of GDP continue to decline; per-capita energy use also declines

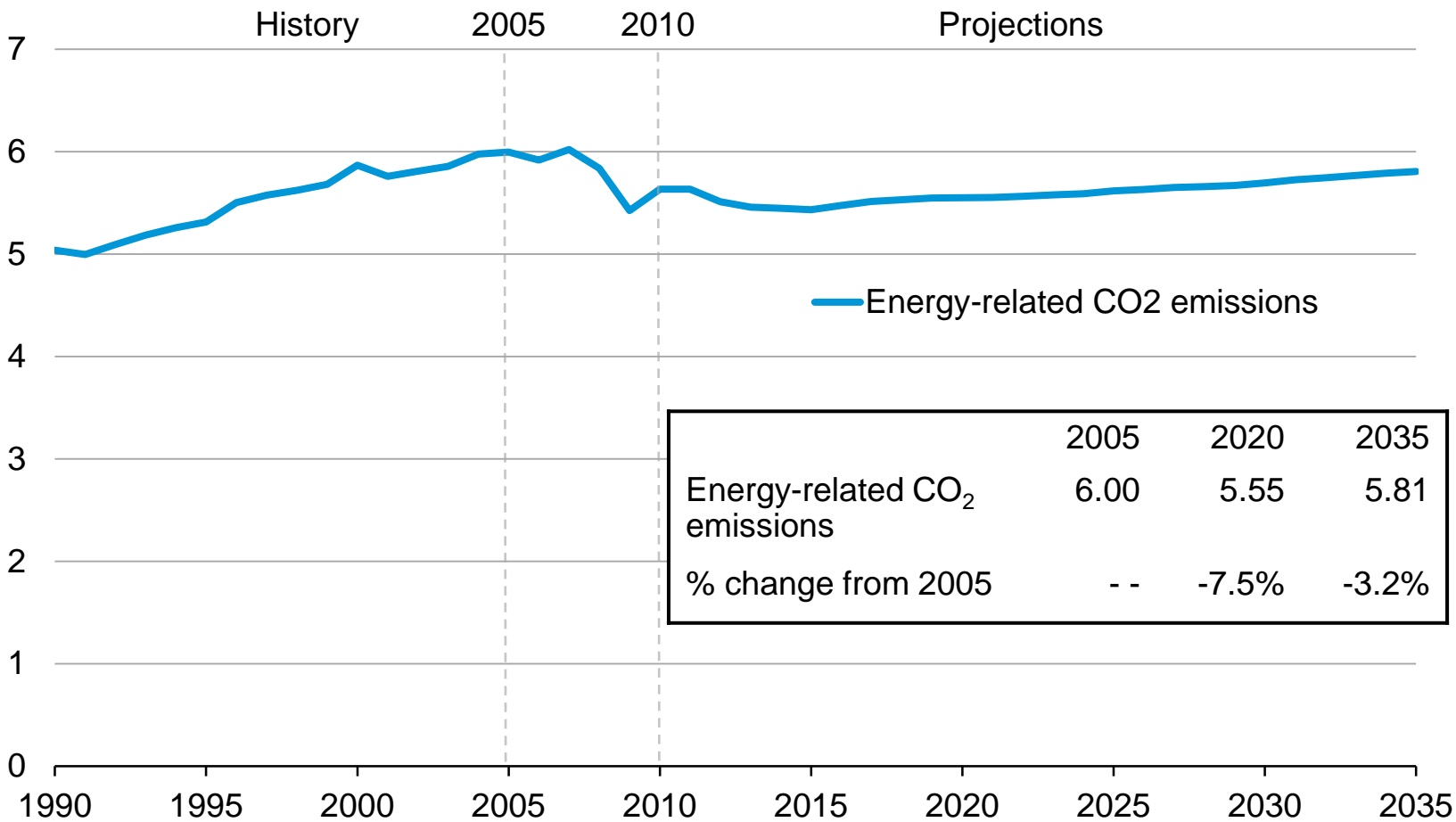


Source: EIA, Annual Energy Outlook 2012 Early Release



# In the *AEO2012* Reference case, energy-related CO<sub>2</sub> emissions never get back to pre-recession levels by 2035

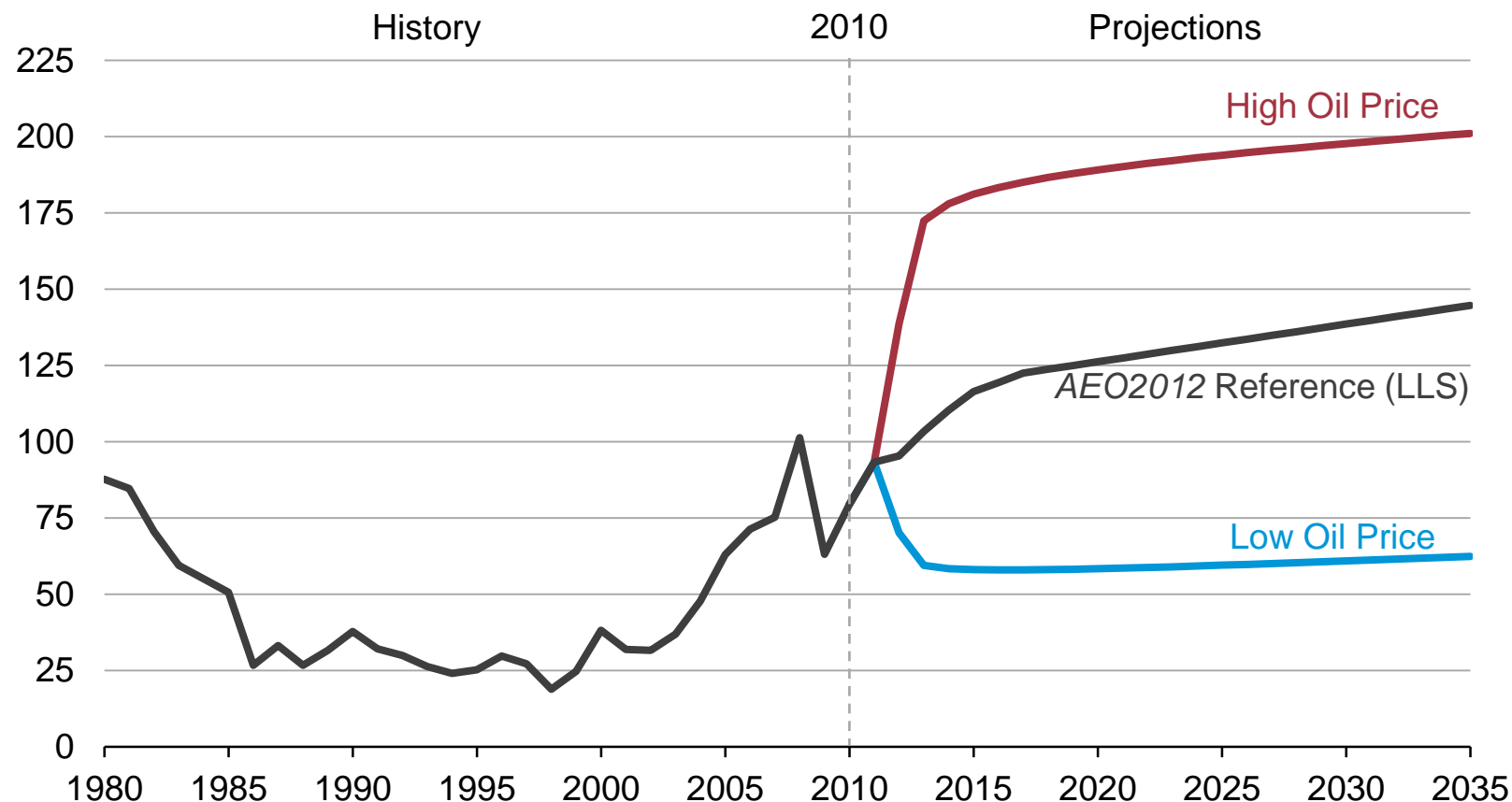
billion metric tons carbon dioxide



Source: EIA, Annual Energy Outlook 2012 Early Release

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

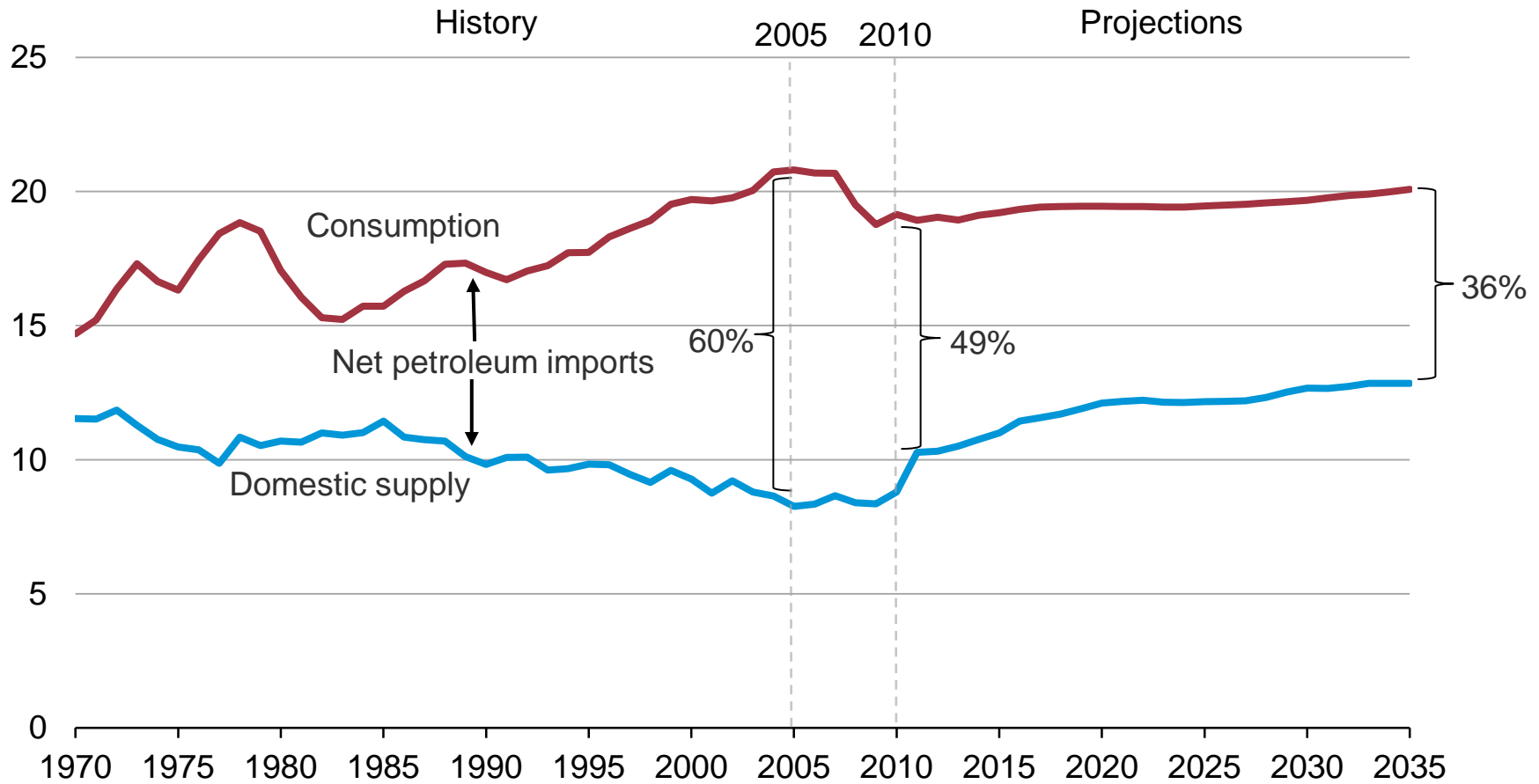
annual average price of light low sulfur (LLS) crude oil  
real 2010 dollars per barrel



Source: EIA, Annual Energy Outlook 2012 Early Release

# U.S. dependence on imported petroleum continues to decline

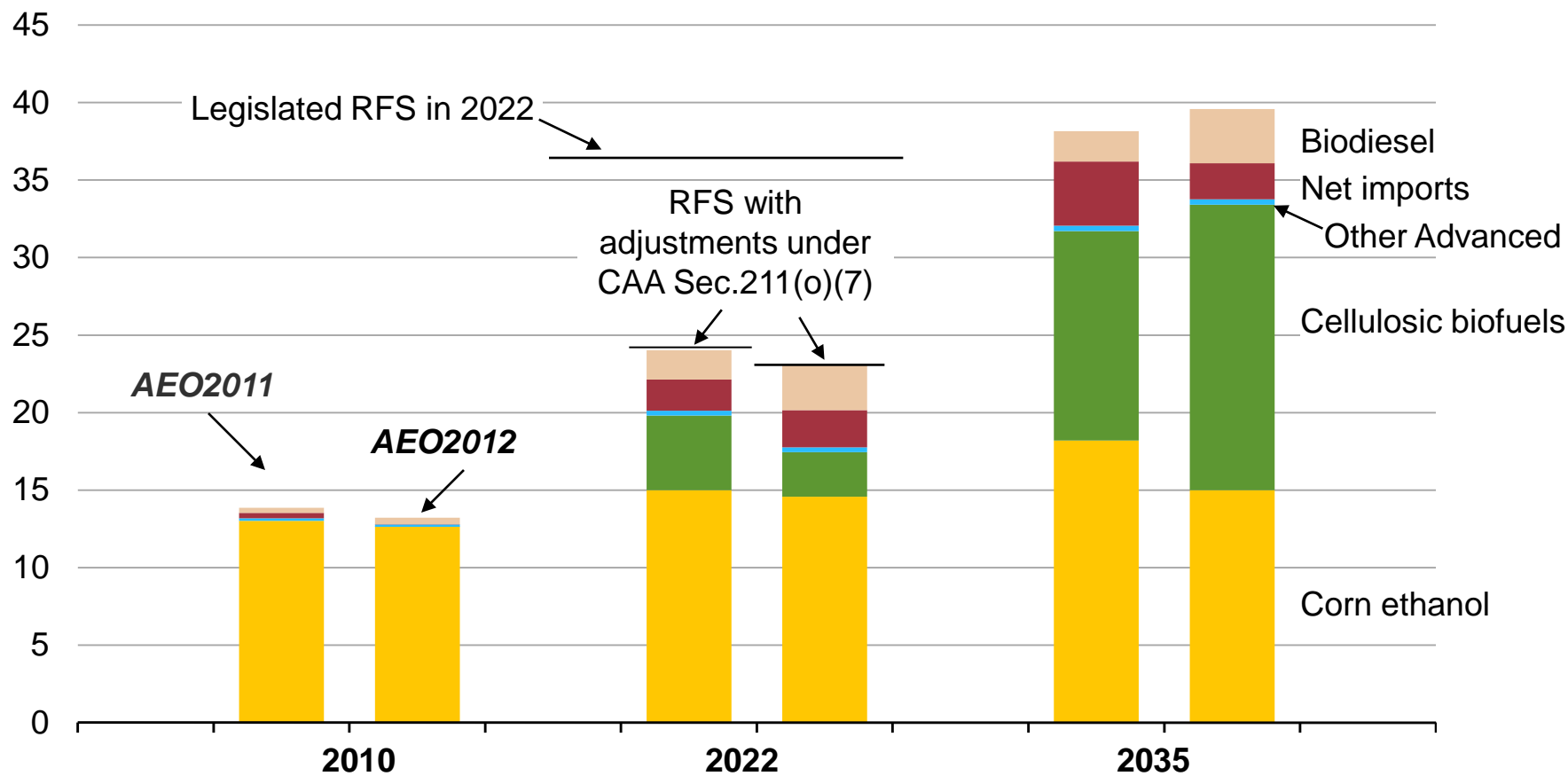
U.S. liquid fuel supply  
million barrels per day



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

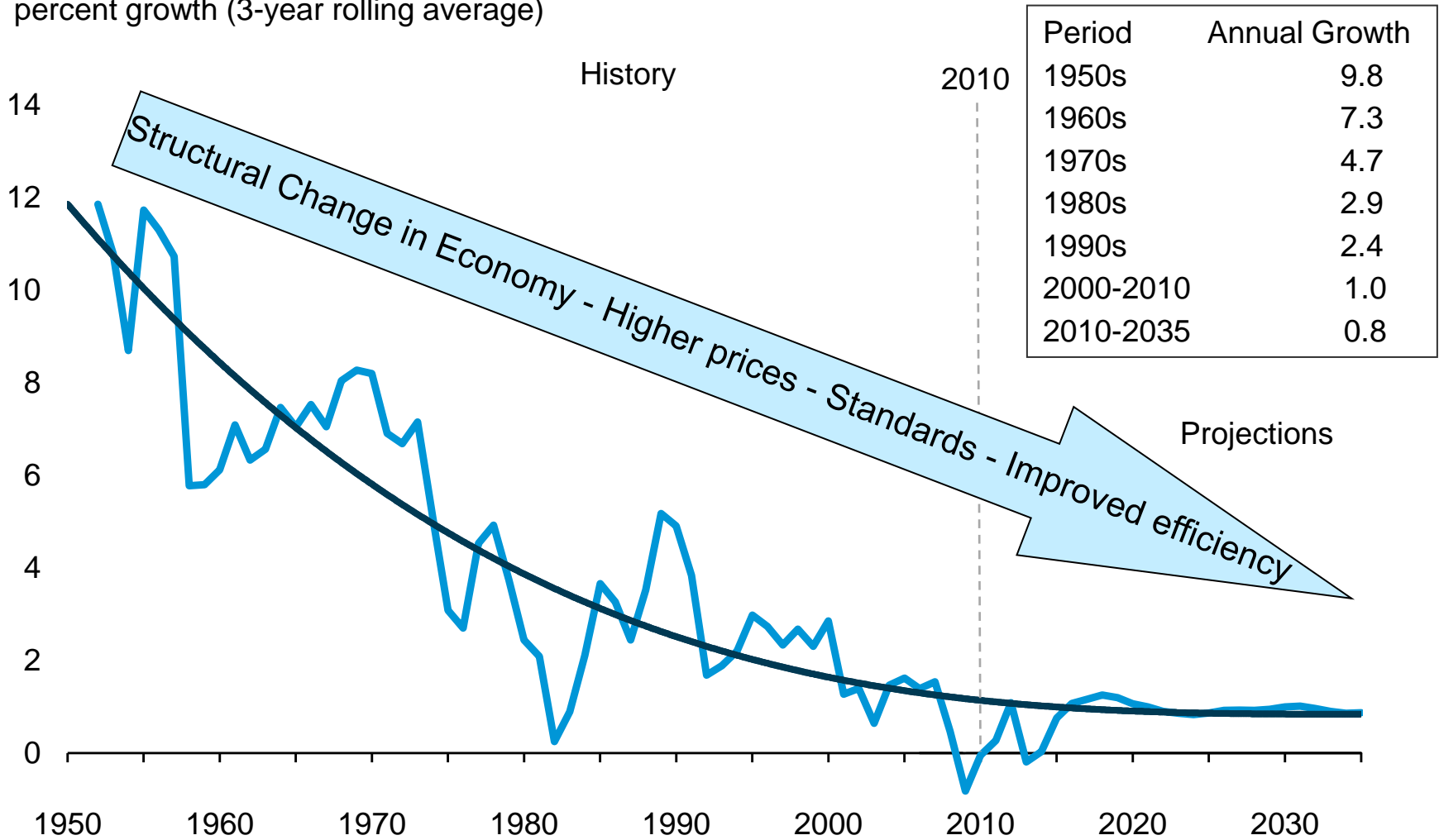


Source: EIA, Annual Energy Outlook 2012 Early Release, Annual Energy Outlook 2011

# Electricity

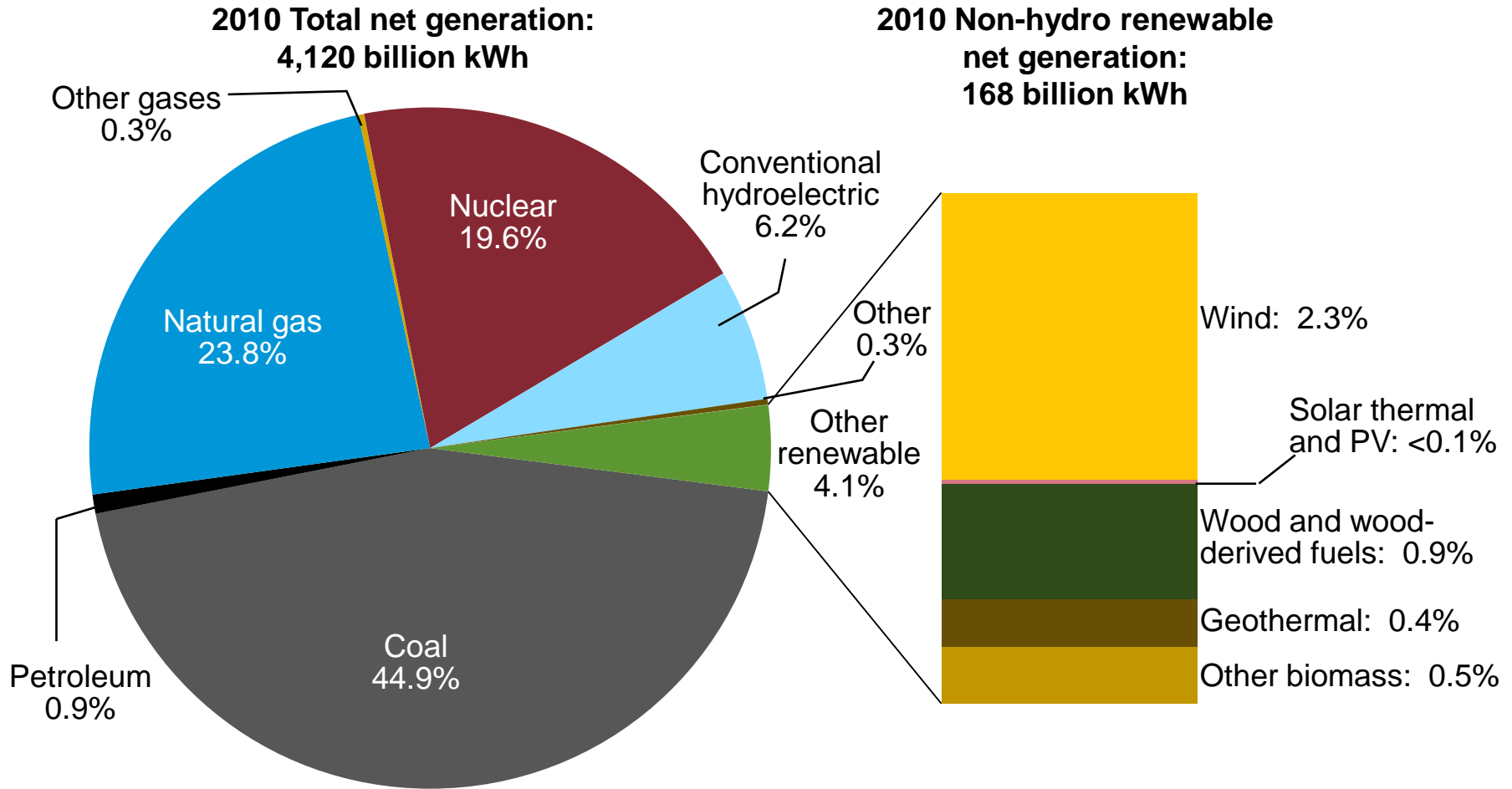
# While electricity consumption grows by 23% over the projection, the annual rate of growth slows

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

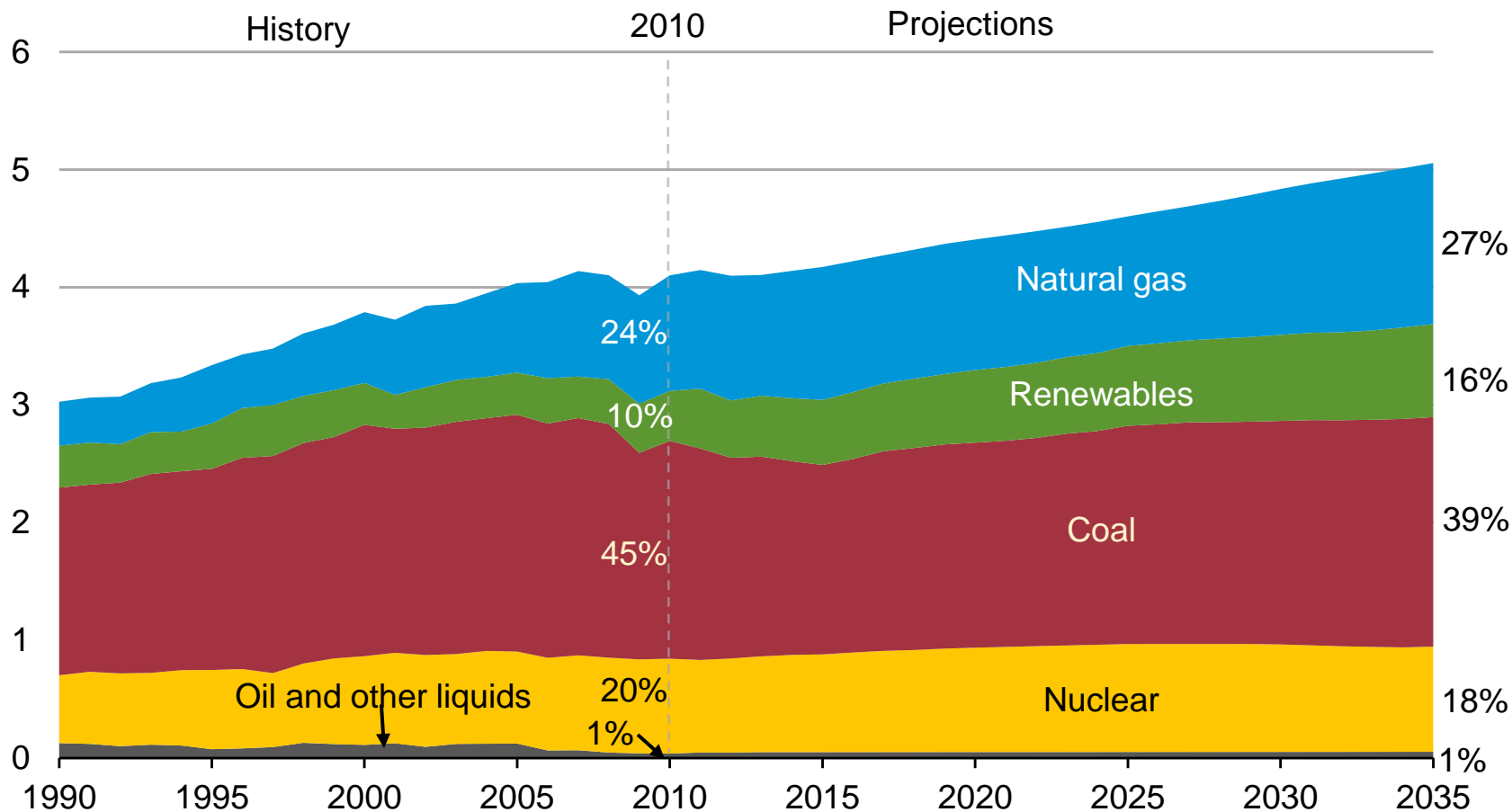


Source: EIA, Annual Energy Review, October 2011

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

electricity net generation

trillion kilowatthours per year

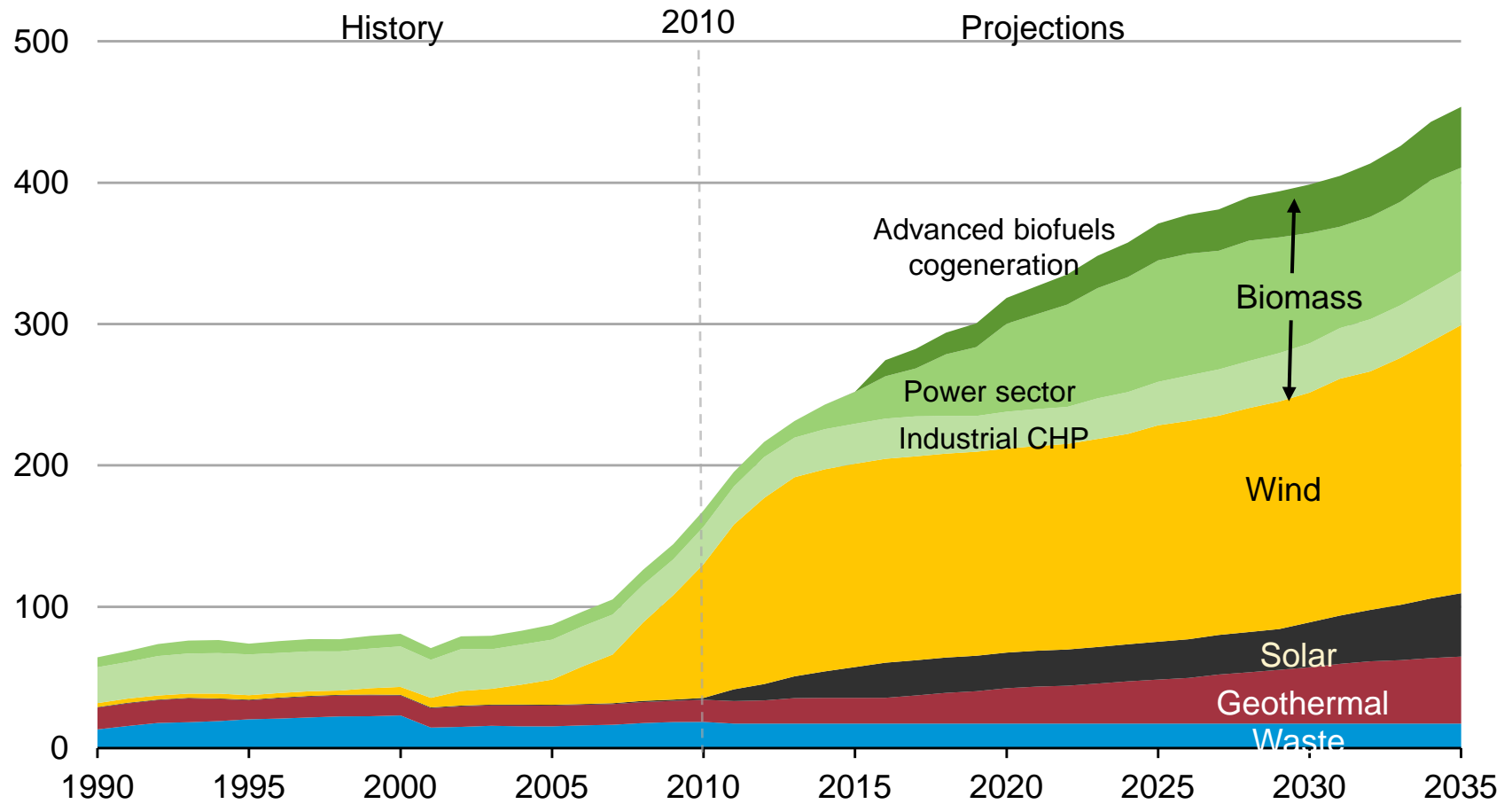


Source: EIA, Annual Energy Outlook 2012 Early Release



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

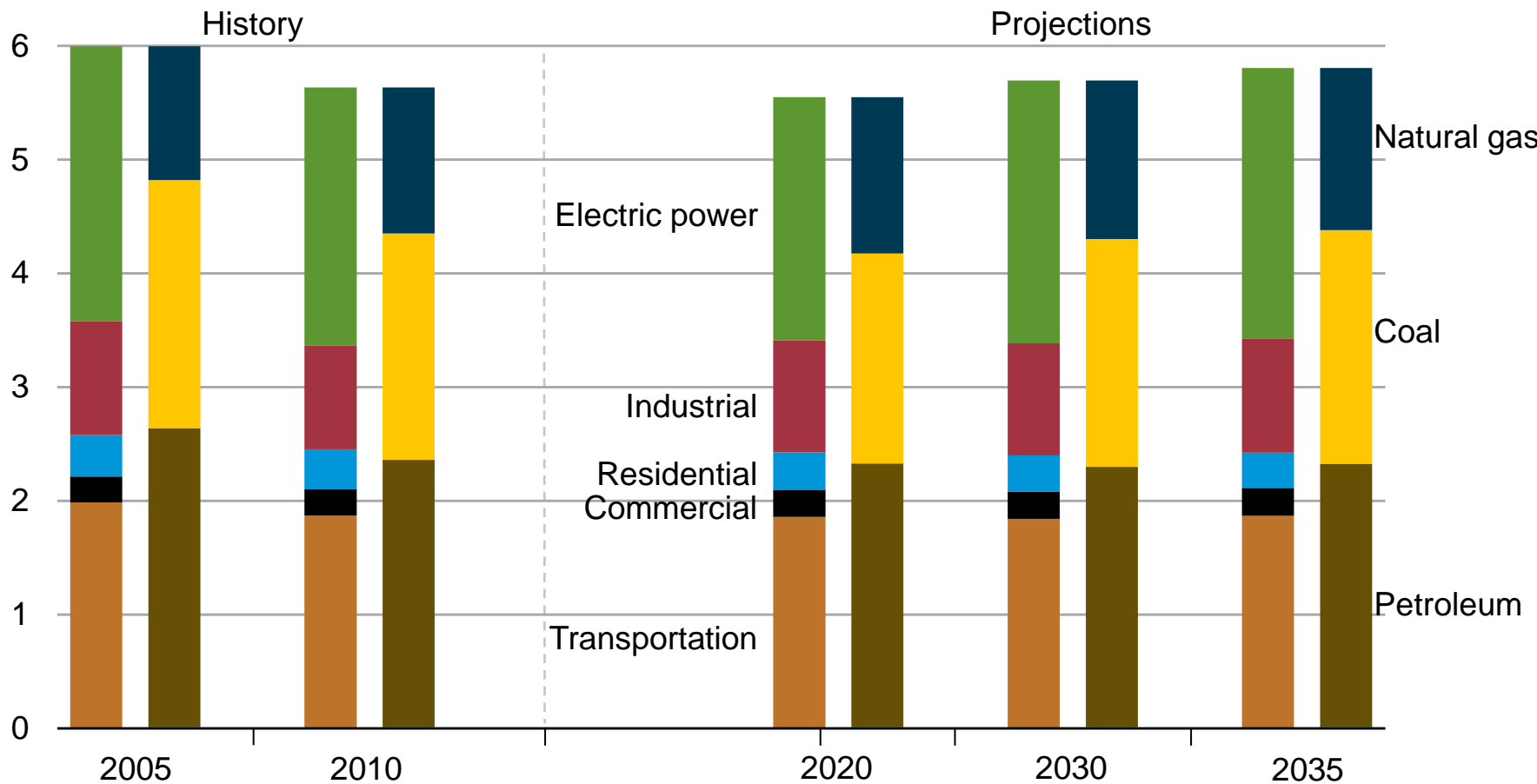
non-hydropower renewable generation  
billion kilowatthours per year



Source: EIA, Annual Energy Outlook 2012 Early Release

# In the *AEO2012* Reference case, energy-related CO<sub>2</sub> emissions never get back to pre-recession levels by 2035

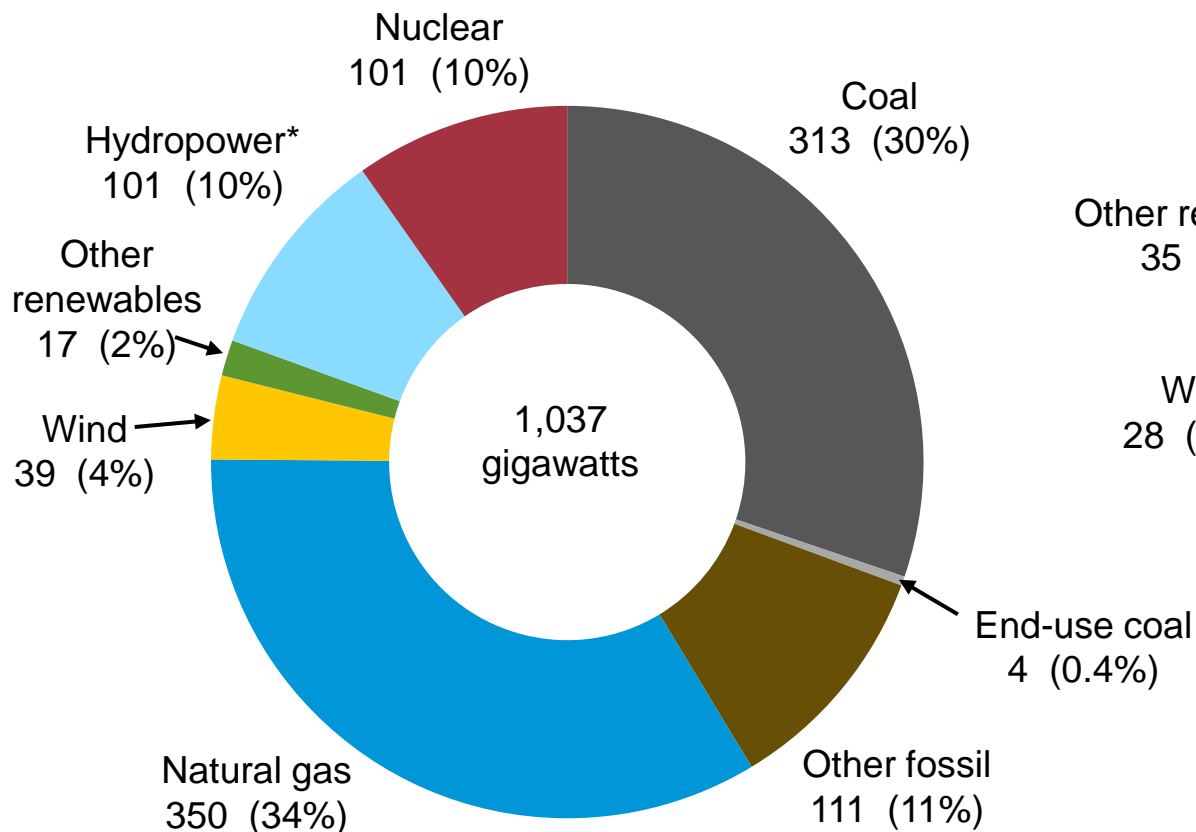
billion metric tons carbon dioxide



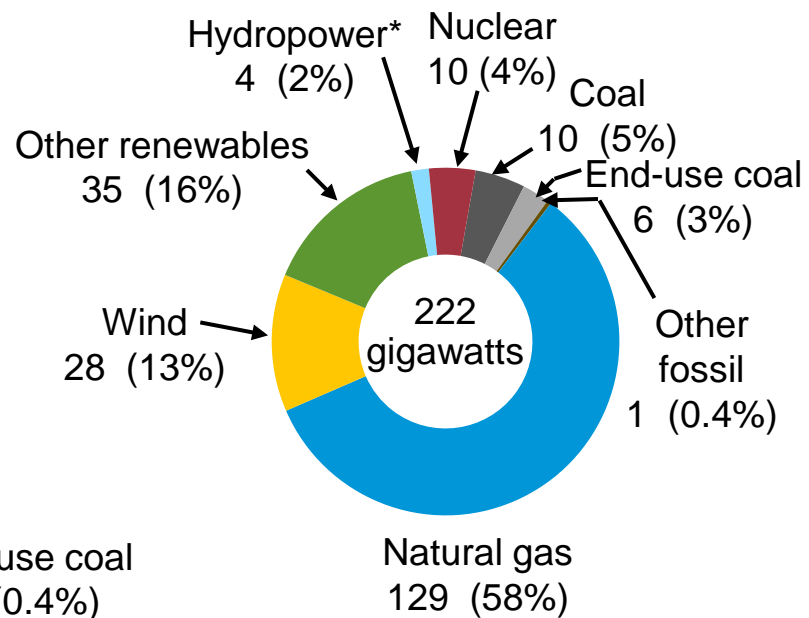
Source: EIA, Annual Energy Outlook 2012 Early Release

# Natural gas, wind and other renewables account for the vast majority of capacity additions from 2010 to 2035

**2010 capacity**



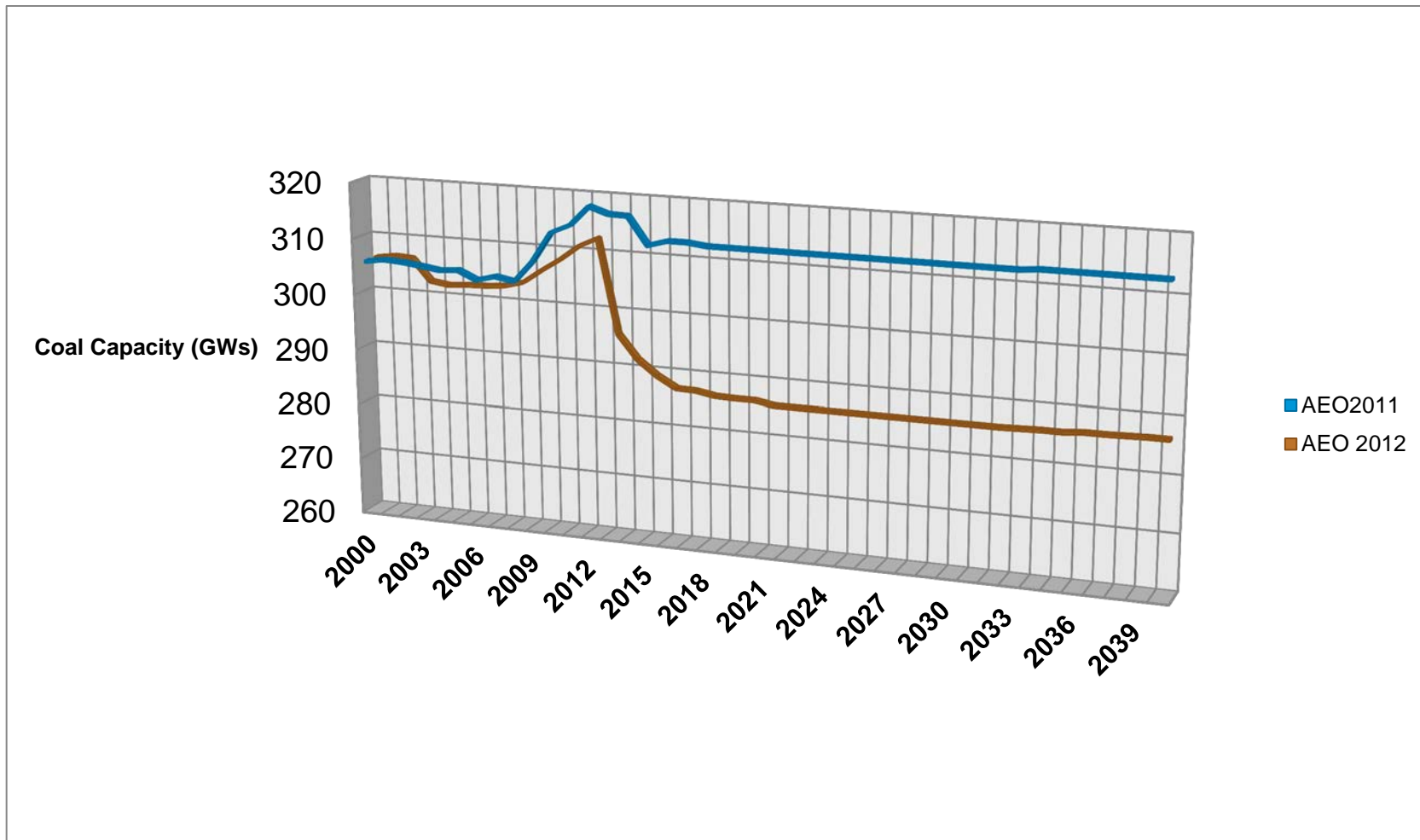
**Capacity additions 2010 to 2035**



\* Includes pumped storage

Source: EIA, Annual Energy Outlook 2012 Early Release

# CSAPR Leads to Coal Plant Retirements – Over 30 Gigawatts of Capacity Retired by 2016



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

# For more information

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U.S. Energy Information Administration home page | [www.eia.gov](http://www.eia.gov)

Annual Energy Outlook | [www.eia.gov/forecasts/aeo](http://www.eia.gov/forecasts/aeo)

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