



# 2016 Energy Outlook

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# EIA Analysis and Projections



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*For  
Deloitte Energy Conference  
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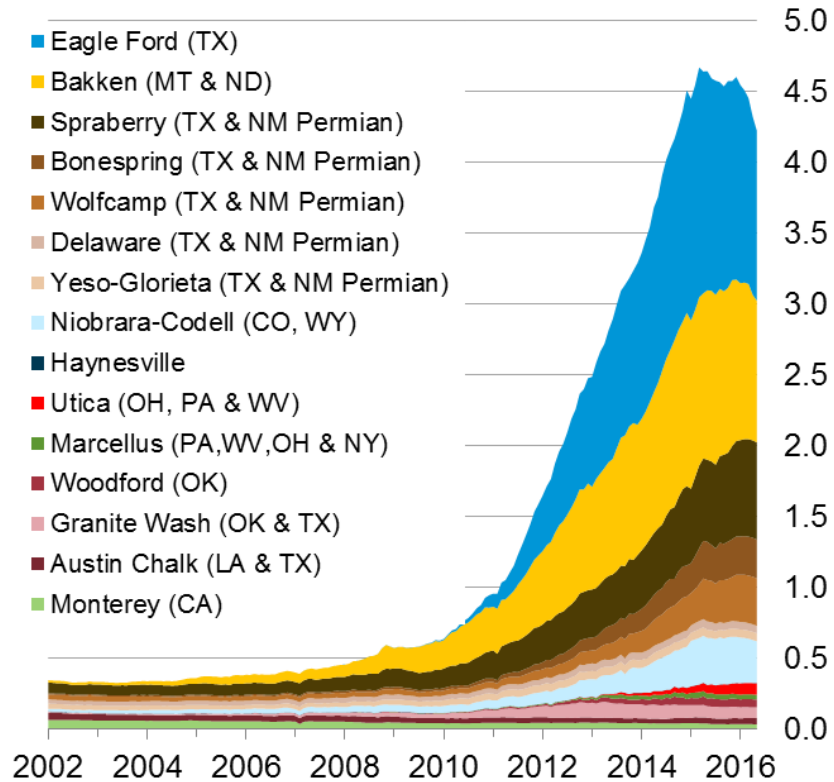
*By  
Adam Sieminski, Administrator*

# Short-Term Energy Outlook

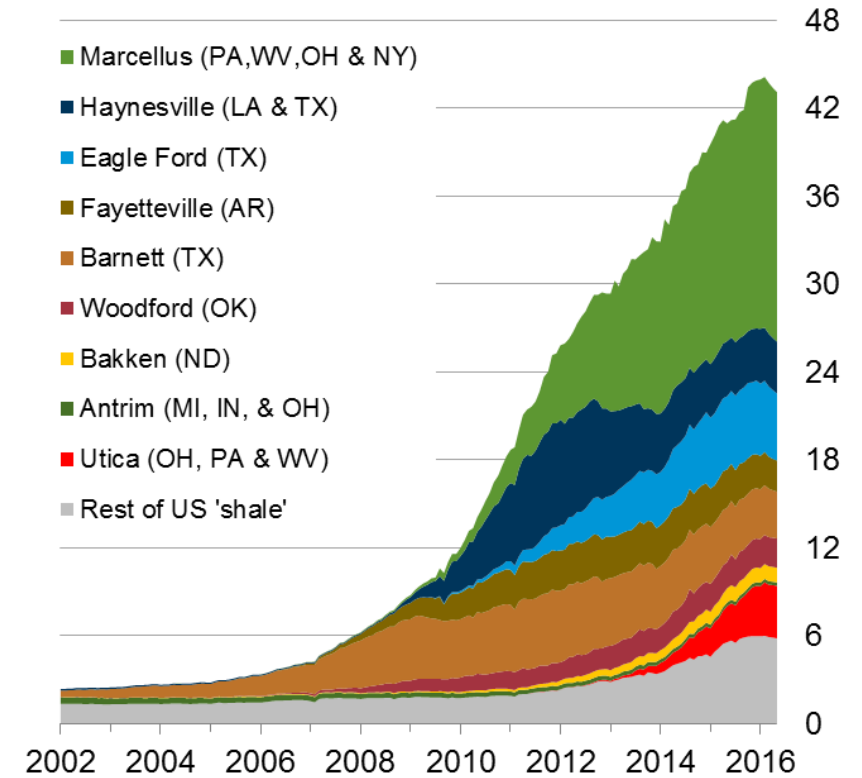


# The U.S. has experienced a rapid increase in natural gas and oil production from shale and other tight resources

U.S. tight oil production million barrels of oil per day

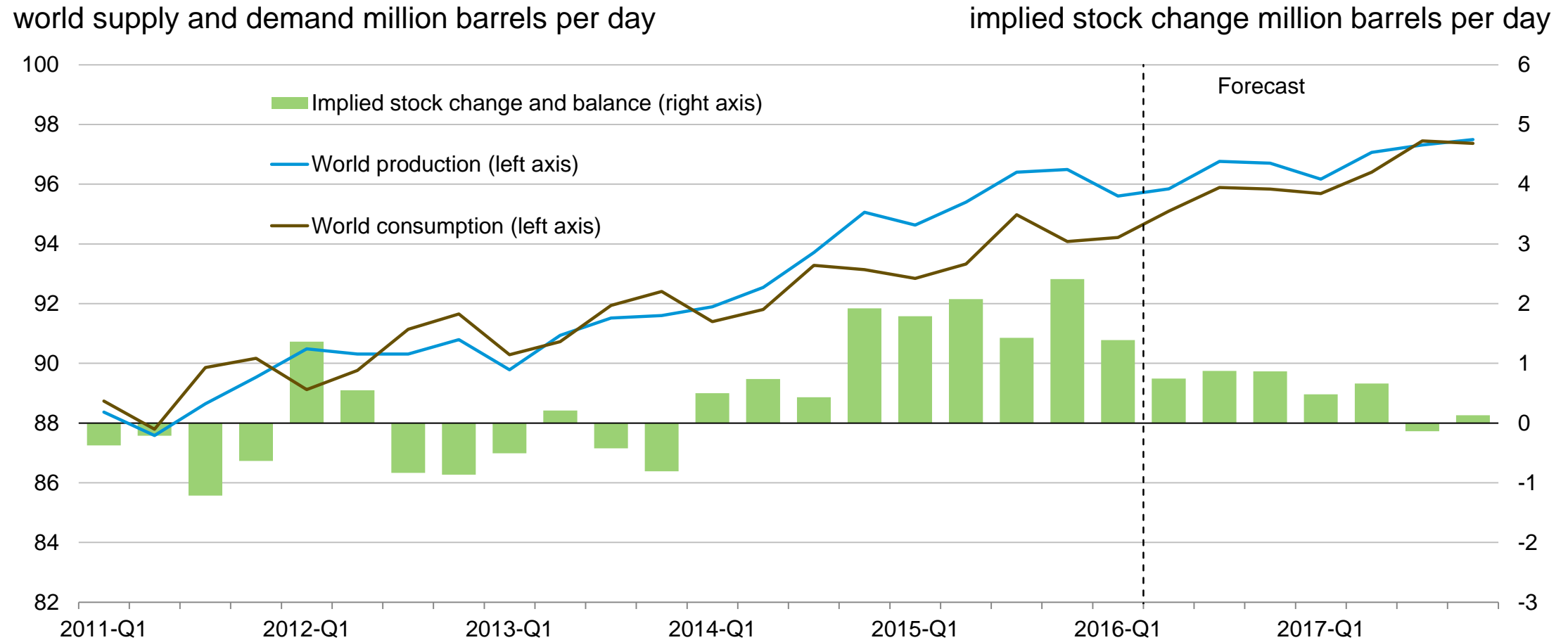


U.S. dry shale gas production billion cubic feet per day



Sources: EIA derived from state administrative data collected by DrillingInfo Inc. Data are through May 2016 and represent EIA's official tight oil & shale gas estimates, but are not survey data. State abbreviations indicate primary state(s). Note: Scales are presented at approximate barrel of oil equivalent.

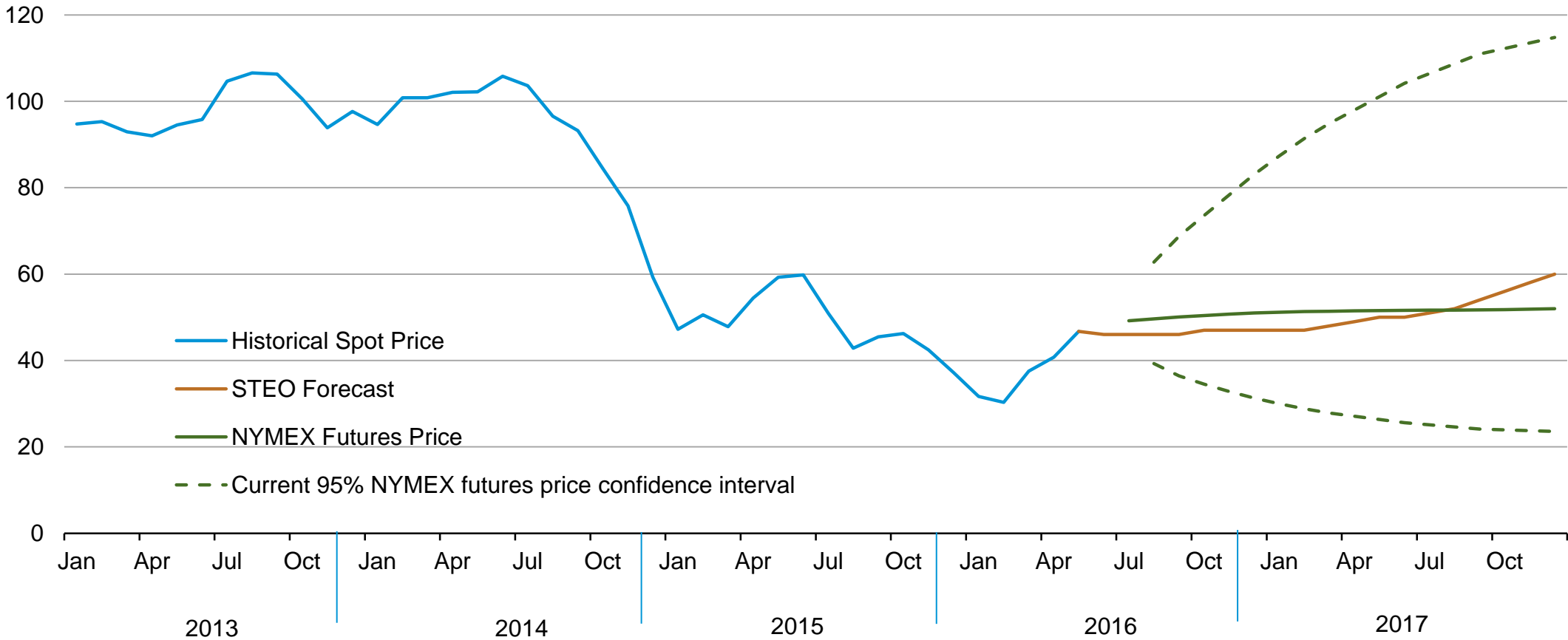
# Global supply has consistently exceeded demand since the start of 2014; EIA forecasts a return to market balance in the second half of 2017



Source: EIA, Short-Term Energy Outlook, June 2016

# EIA expects WTI oil prices to remain low compared to recent history, but the market-implied confidence band is very wide

WTI price dollars per barrel

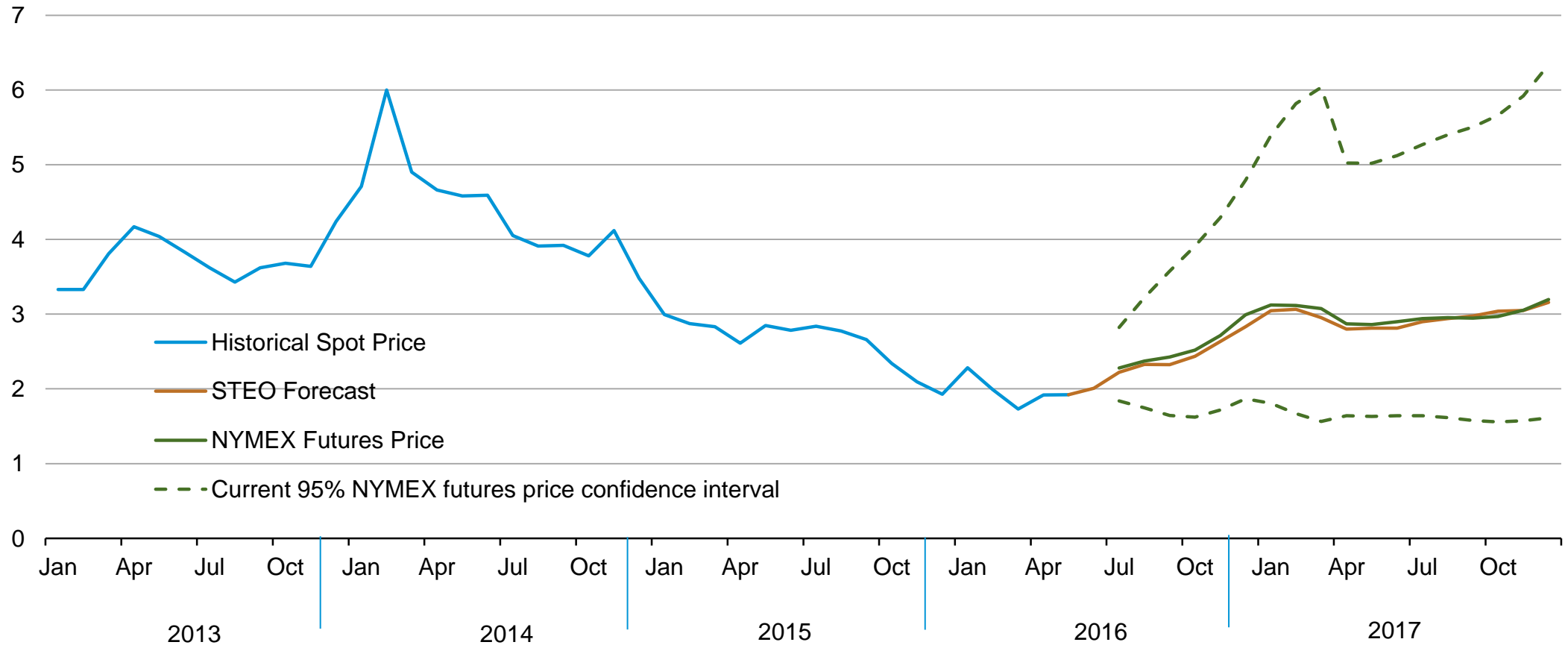


Source: EIA, Short-Term Energy Outlook, June 2016



# EIA expects Henry Hub natural gas prices to rise to early 2015 levels

Henry Hub price dollars per million Btu



Source: EIA, Short-Term Energy Outlook, June 2016

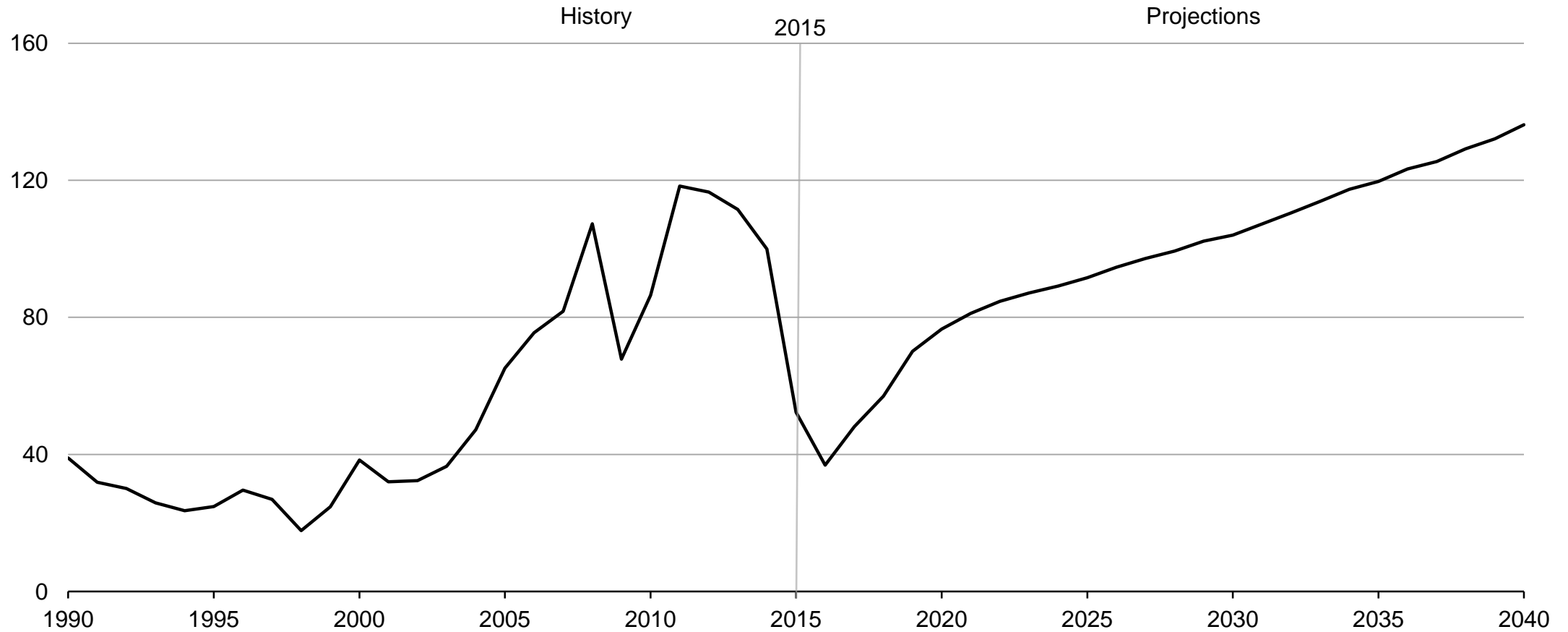
# Annual Energy Outlook





# Reference case crude oil prices exceed \$130 in 2040

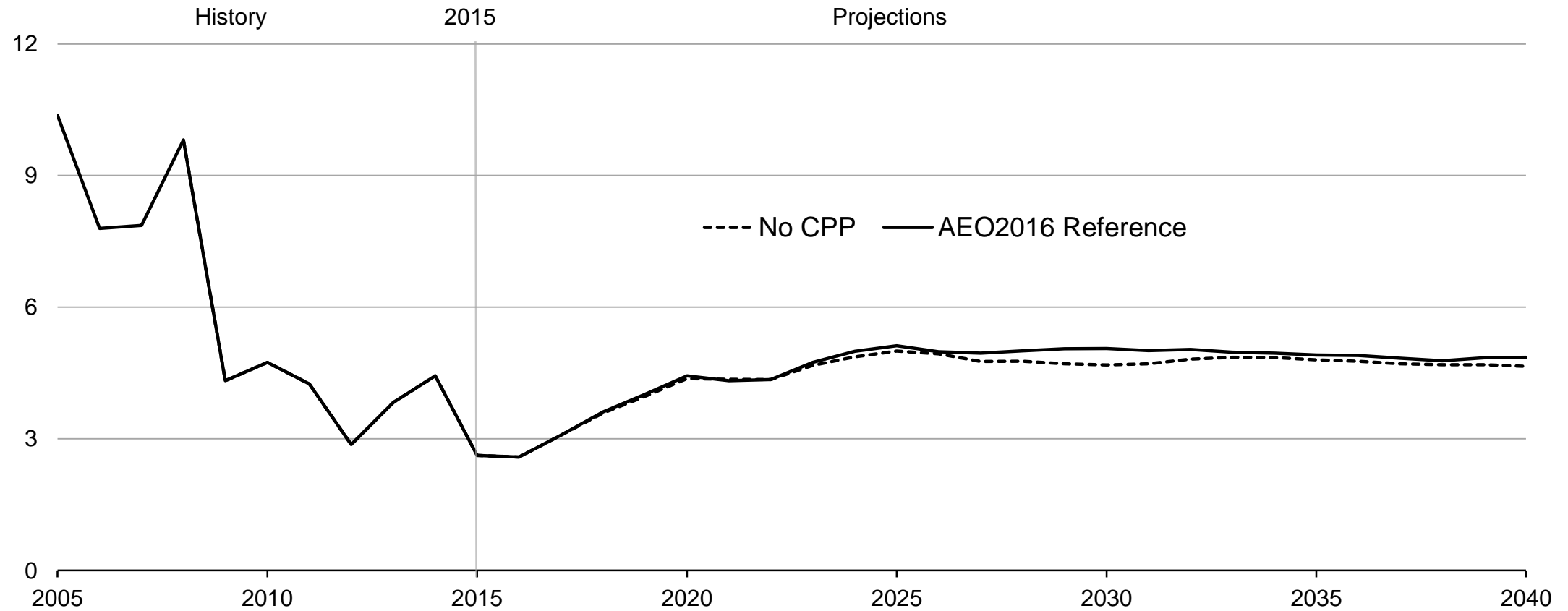
Brent crude oil spot price, 2015 dollars per barrel



Source: EIA, Annual Energy Outlook 2016 Reference case

# Natural gas prices are projected to remain below \$5 per million British thermal units through most of the projection period with or without the Clean Power Plan

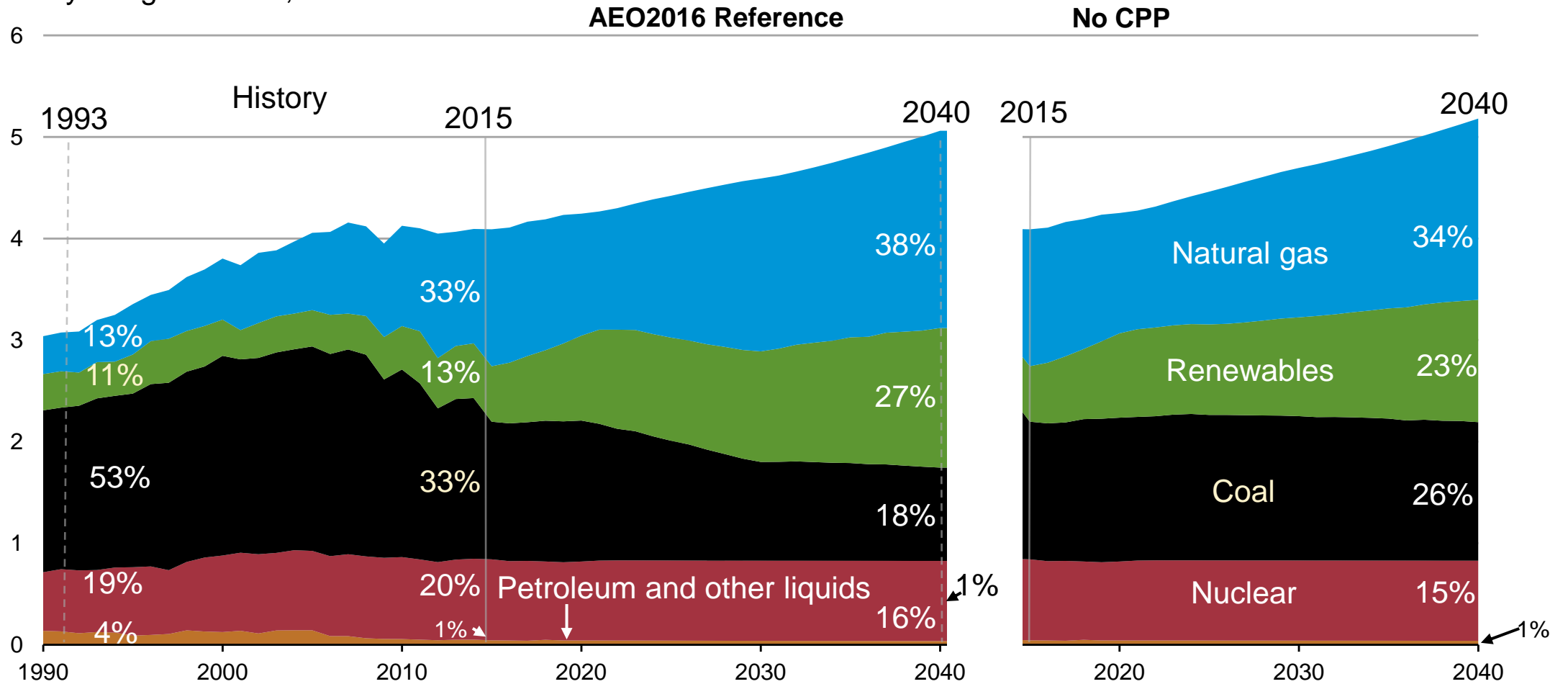
average Henry Hub spot prices for natural gas, 2015 dollars per million Btu



Source: EIA, Annual Energy Outlook 2016

# Clean Power Plan accelerates shift to lower-carbon options for generation, led by growth in renewables and gas-fired generation; results are likely sensitive to CPP implementation approach

electricity net generation, trillion kilowatt hours

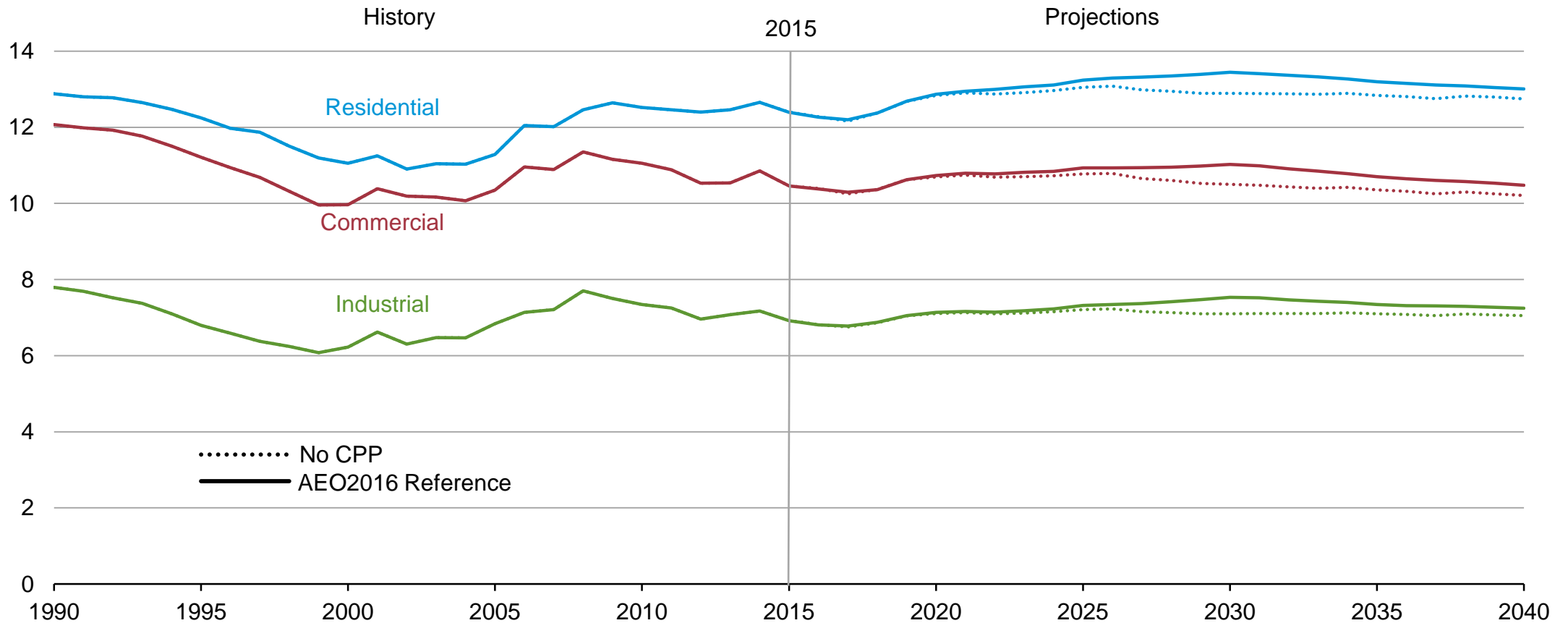


Source: EIA, Annual Energy Outlook 2016



# Electricity prices increase with rising fuel costs and expenditures for electric transmission and distribution infrastructure

average retail electricity prices, 2015 cents per kilowatt hour



Source: EIA, Annual Energy Outlook 2016

# Technology improvements, largely driven by federal standards, help to increase energy efficiency within the end-use sectors

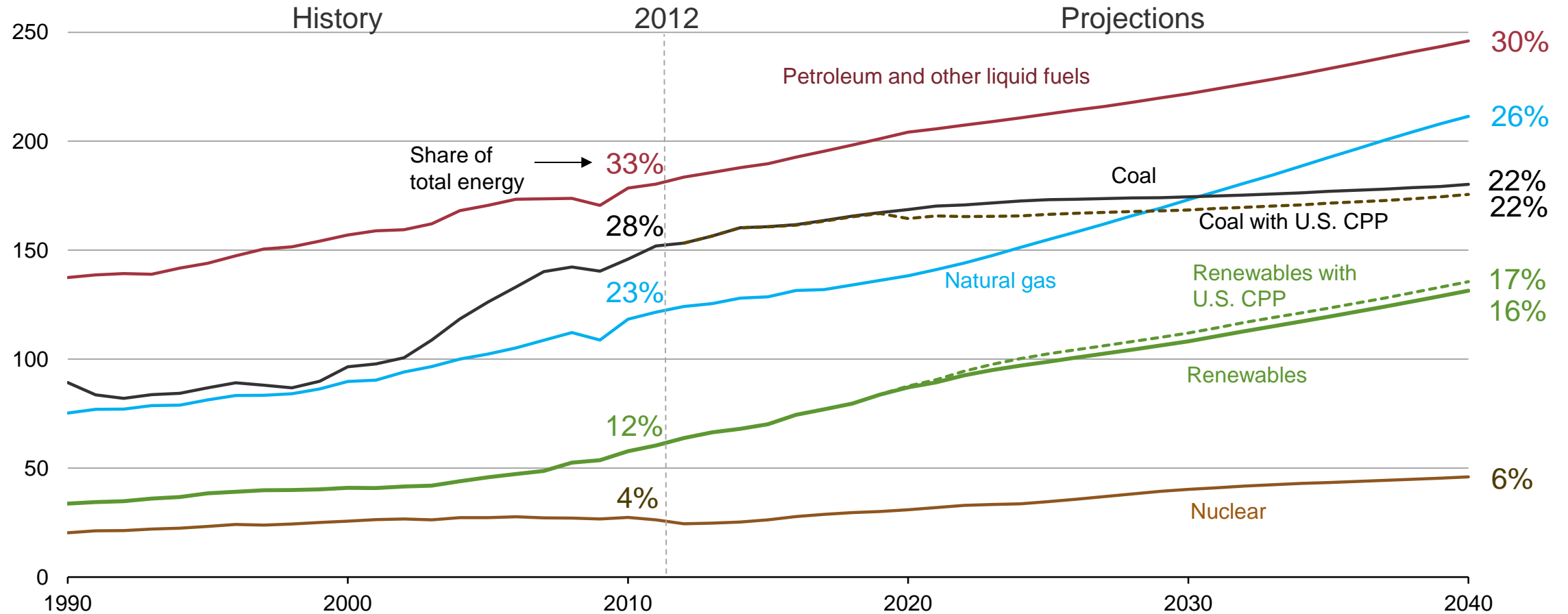
- **Buildings**
  - lighting
  - space heating and cooling
  - refrigeration
  - water heating
  - miscellaneous electric loads (MELs) and other end uses
- **Industrial**
  - electric motors
  - combined heat and power
- **Transportation**
  - light-duty vehicles
  - heavy-duty vehicles

# International Energy Outlook



# Renewables grow fastest, coal use plateaus, natural gas surpasses coal by 2030, and oil maintains its leading share

world energy consumption, quadrillion Btu

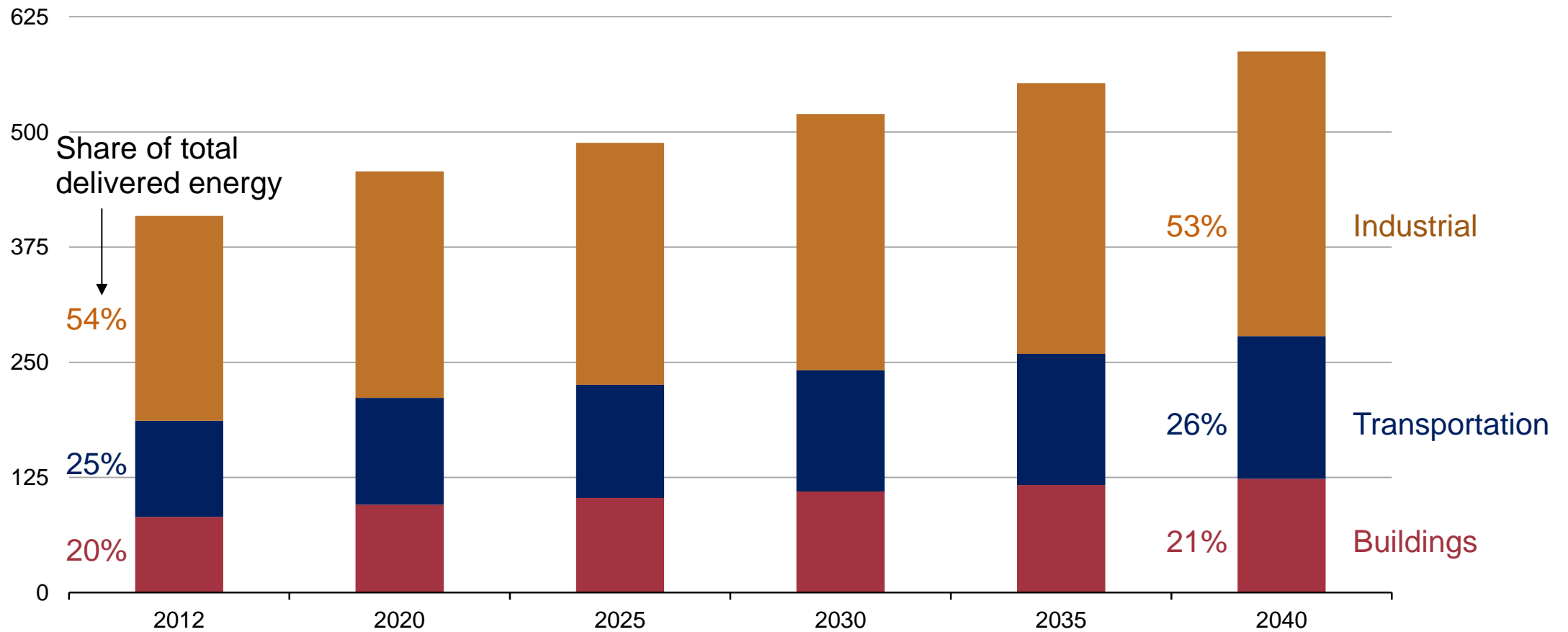


Source: EIA, International Energy Outlook 2016 and EIA, Analysis of the Impacts of the Clean Power Plan (May 2015)



# As total energy consumption grows, shares by end-use sector remain relatively unchanged

world delivered energy consumption by end-use sector quadrillion Btu



Source: EIA, International Energy Outlook 2016



# Many global issues increase uncertainty...

- Economic growth in key economies (China, Brazil, Russia, among others)
- Implementation and strength of climate policies
- Technology improvement rates (both supply and demand)
- Future of nuclear generating capacity
- Geopolitical events

# Continuous improvement highlights at EIA

- Brent crude used as marker price and revived the International Energy Outlook
- U.S. Drilling Productivity Report
- U.S. crude export analysis
- Monthly solar PV capacity and generation
- U.S. movements of crude by rail
- Expanded natural gas production survey; added oil
- Data browsers, application programming interface, and Excel add-in

# For more information

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

Short-Term Energy Outlook | [www.eia.gov/steo](http://www.eia.gov/steo)

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

International Energy Outlook | [www.eia.gov/ieo](http://www.eia.gov/ieo)

Monthly Energy Review | [www.eia.gov/mer](http://www.eia.gov/mer)

Today in Energy | [www.eia.gov/todayinenergy](http://www.eia.gov/todayinenergy)

Drilling Productivity Report | <http://www.eia.gov/petroleum/drilling/>

Excel Data Add-In | <http://www.eia.gov/opendata/excel/>