EIA's Energy Outlook 2016

for
International Energy Forum
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by
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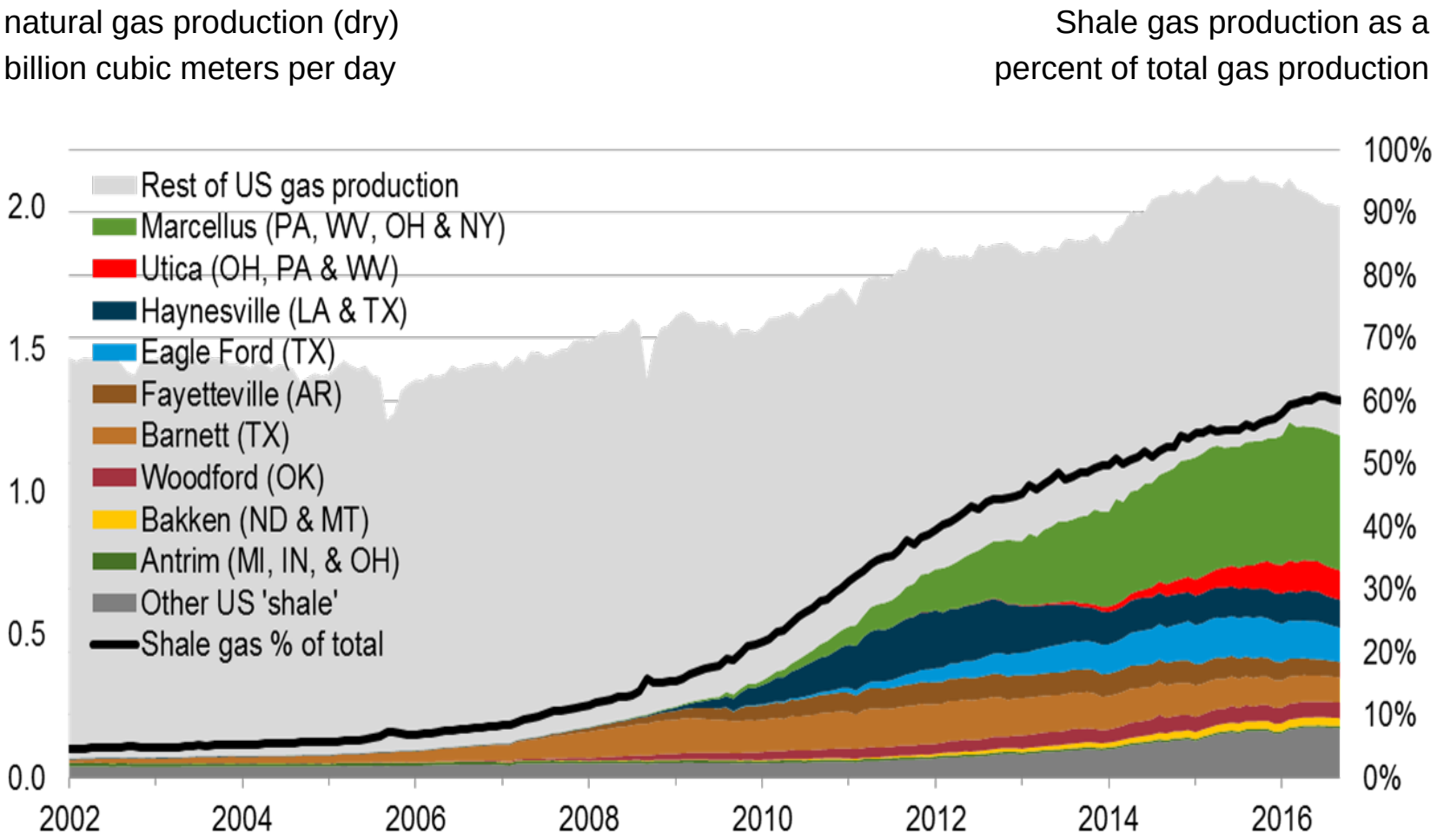
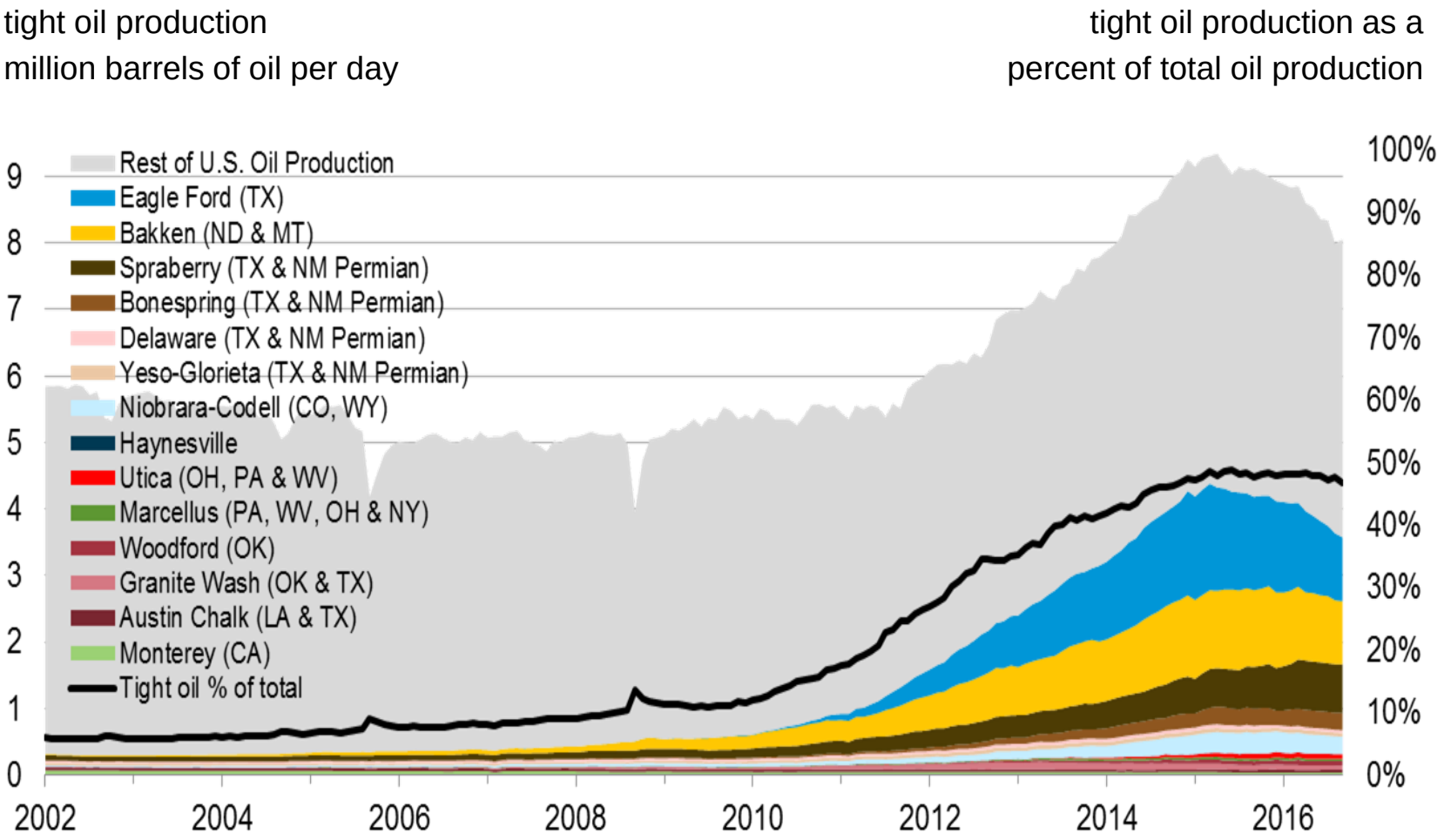
U.S. short term oil and natural gas outlook

Estimated U.S. shale gas production was 1.2 Bcm/d in September 2016 about 60% of total U.S. dry production (2.0 Bcm/d)



Sources: EIA Natural Gas Monthly, STEO through September 2016 and DrillingInfo.

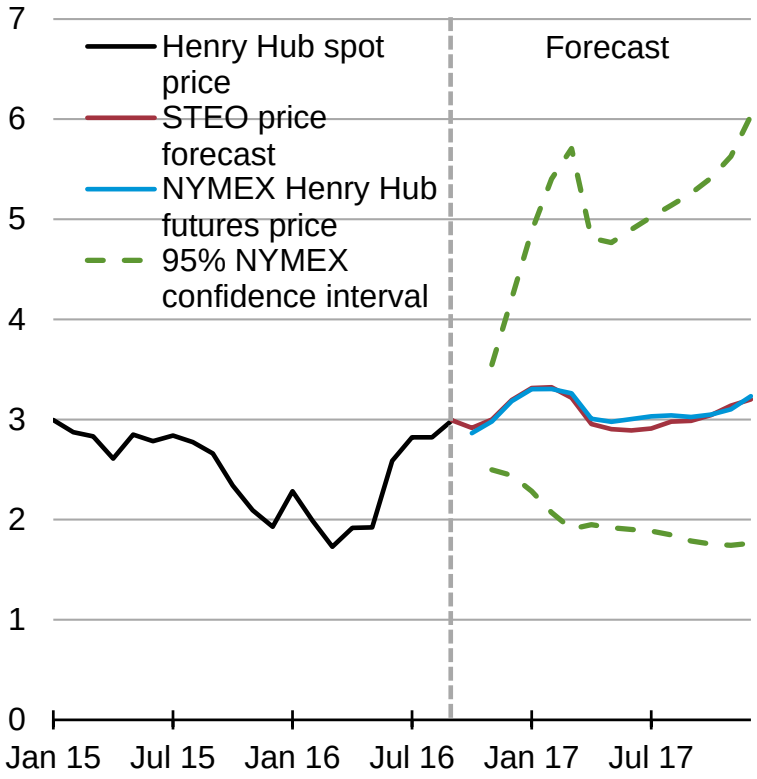
Estimated U.S. tight oil production was 3.9 MMbbl/d in September 2016 about 47% of total U.S. oil production (8.4 MMbbl/d)



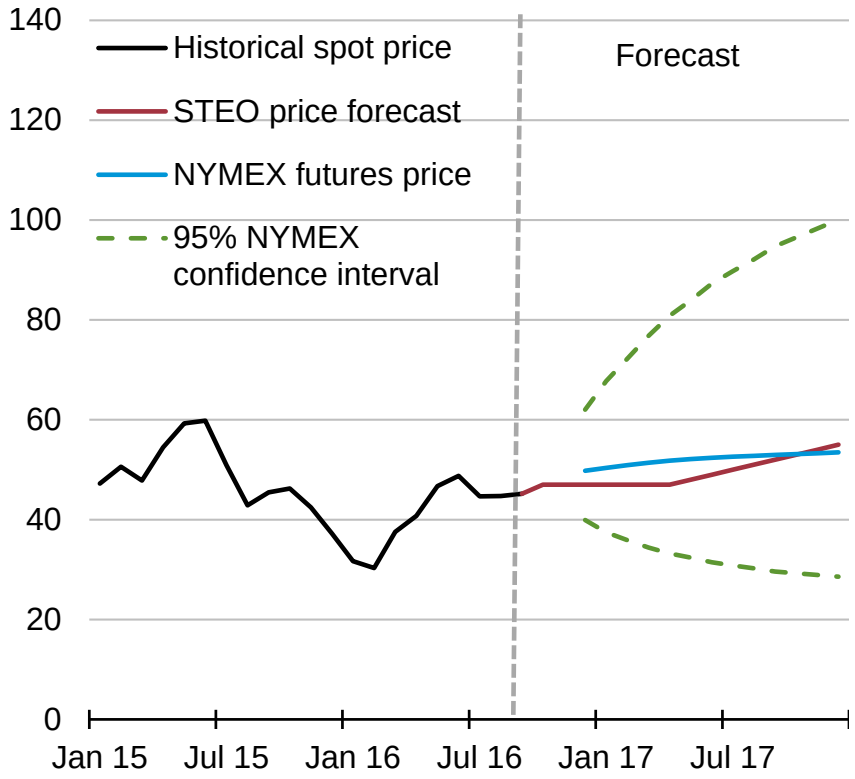
Sources: EIA derived from state administrative data collected by DrillingInfo Inc. Data are through September 2016 and represent EIA's official tight oil estimates, but are not survey data. State abbreviations indicate primary state(s).

EIA forecasts Henry Hub spot prices to average $3.15/MMBtu and West Texas intermediate crude oil to average $47/b this winter

Henry Hub natural gas price
dollars per million Btu



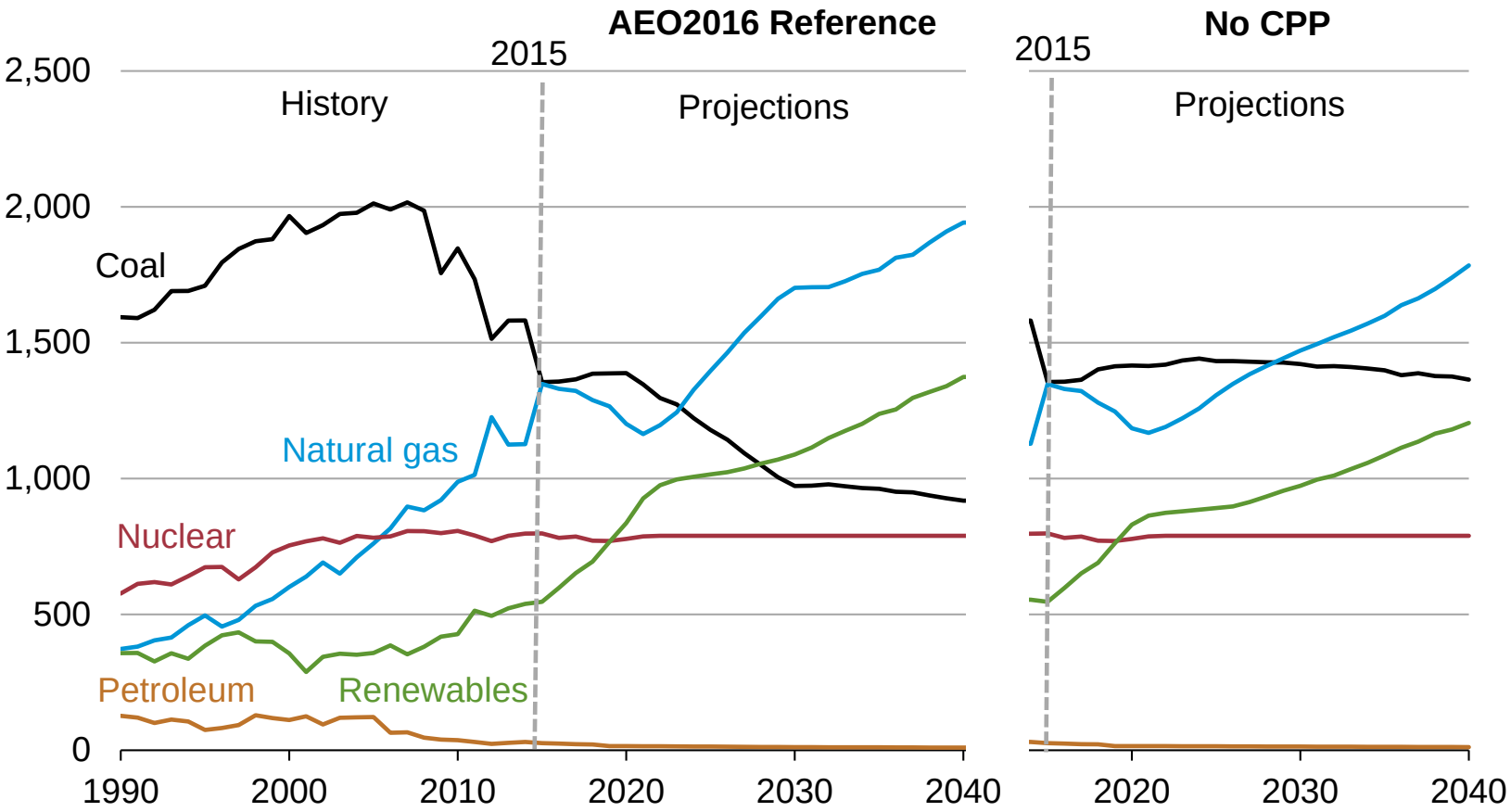
West Texas intermediate (WTI) crude oil price
dollars per barrel



Note: Confidence interval derived from options market information for the 5 trading days ending October 6, 2016
Intervals not calculated for months with sparse trading in near-the-money options contracts.
Source: EIA Short-Term Energy Outlook, October 2016, and CME Group.

Both natural gas and renewable generation surpass coal by 2030 in the Reference case, but only natural gas does so in the No CPP case

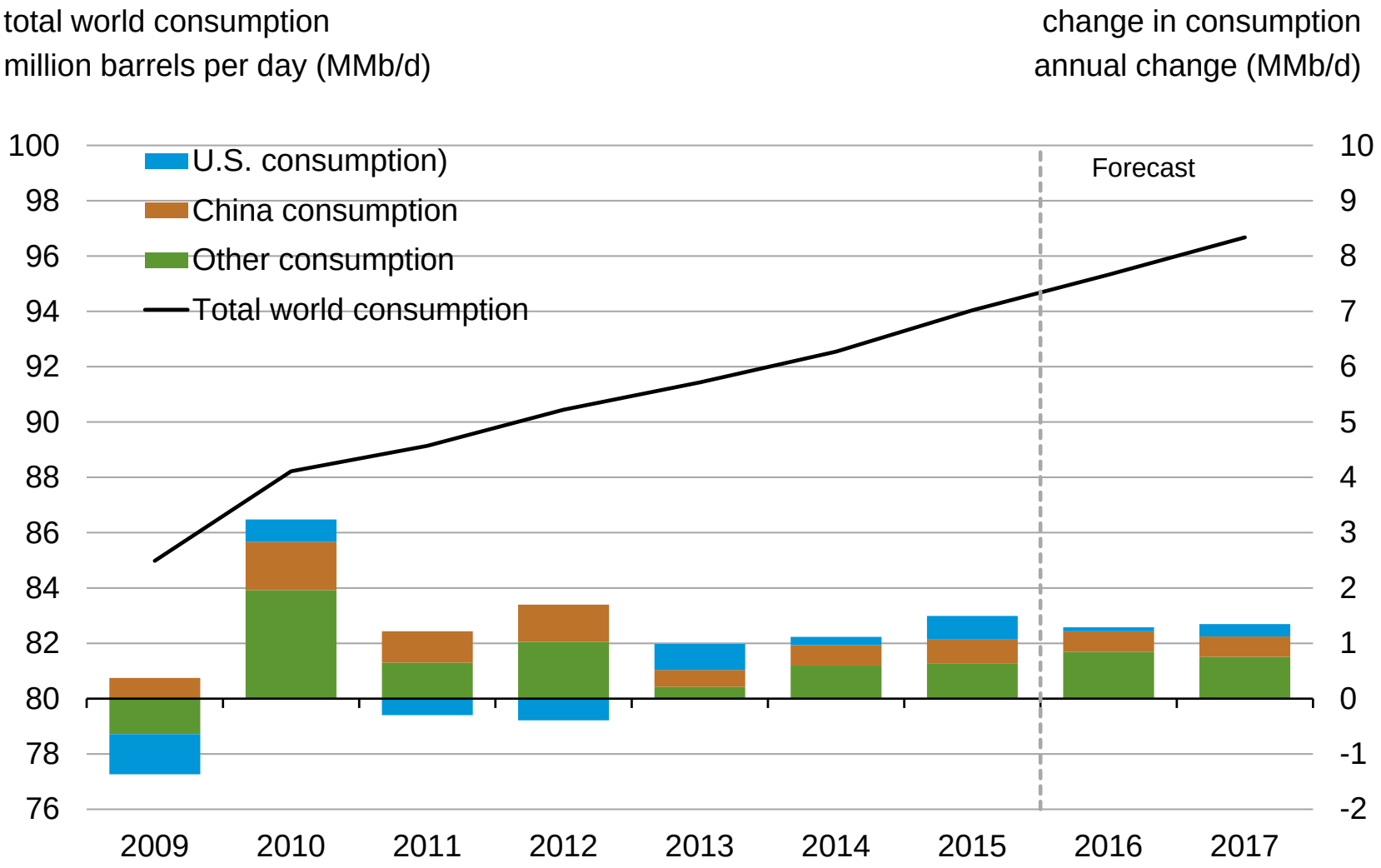
net electricity generation
billion kilowatthours



Source: EIA, Annual Energy Outlook 2016

International short term energy outlook

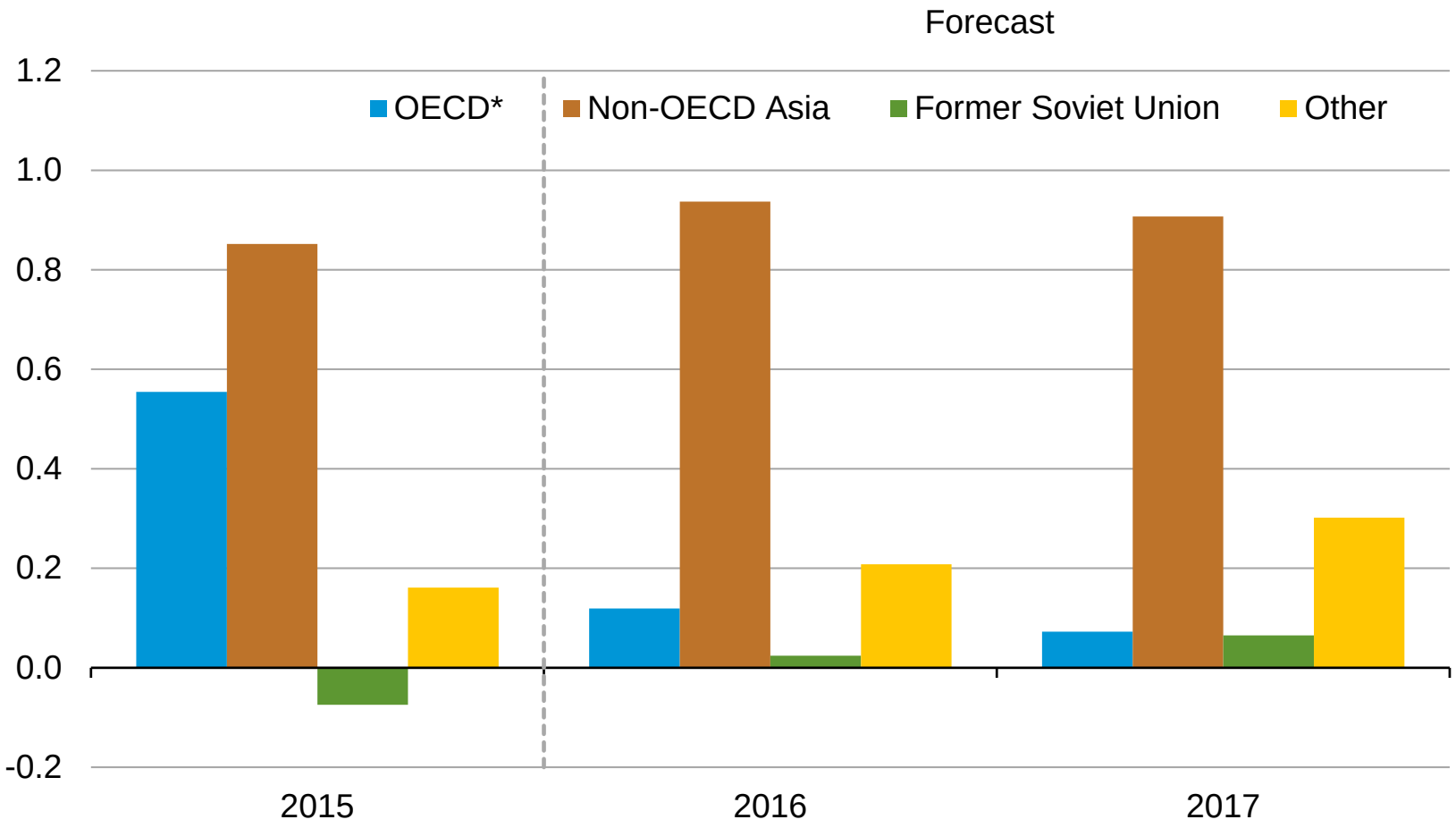
World liquid fuels consumption



Source: Short-Term Energy Outlook, October 2016.

World liquid fuels consumption growth

million barrels per day



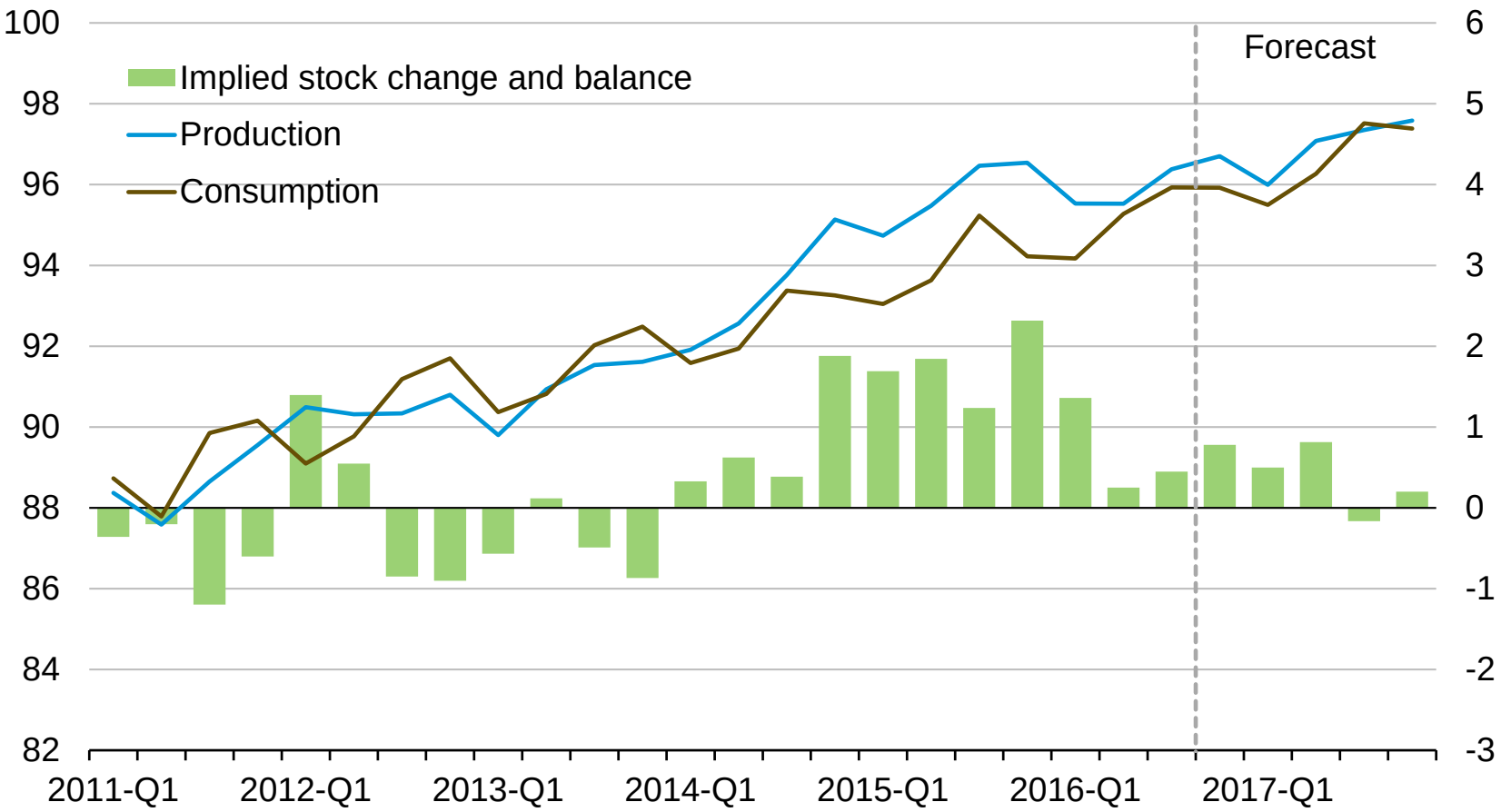
*Note: * Countries belonging to the Organization for Economic Cooperation and Development*

Source: Short-Term Energy Outlook, October 2016.

World liquid fuels production and consumption balance

world production and consumption
million barrels per day (MMb/d)

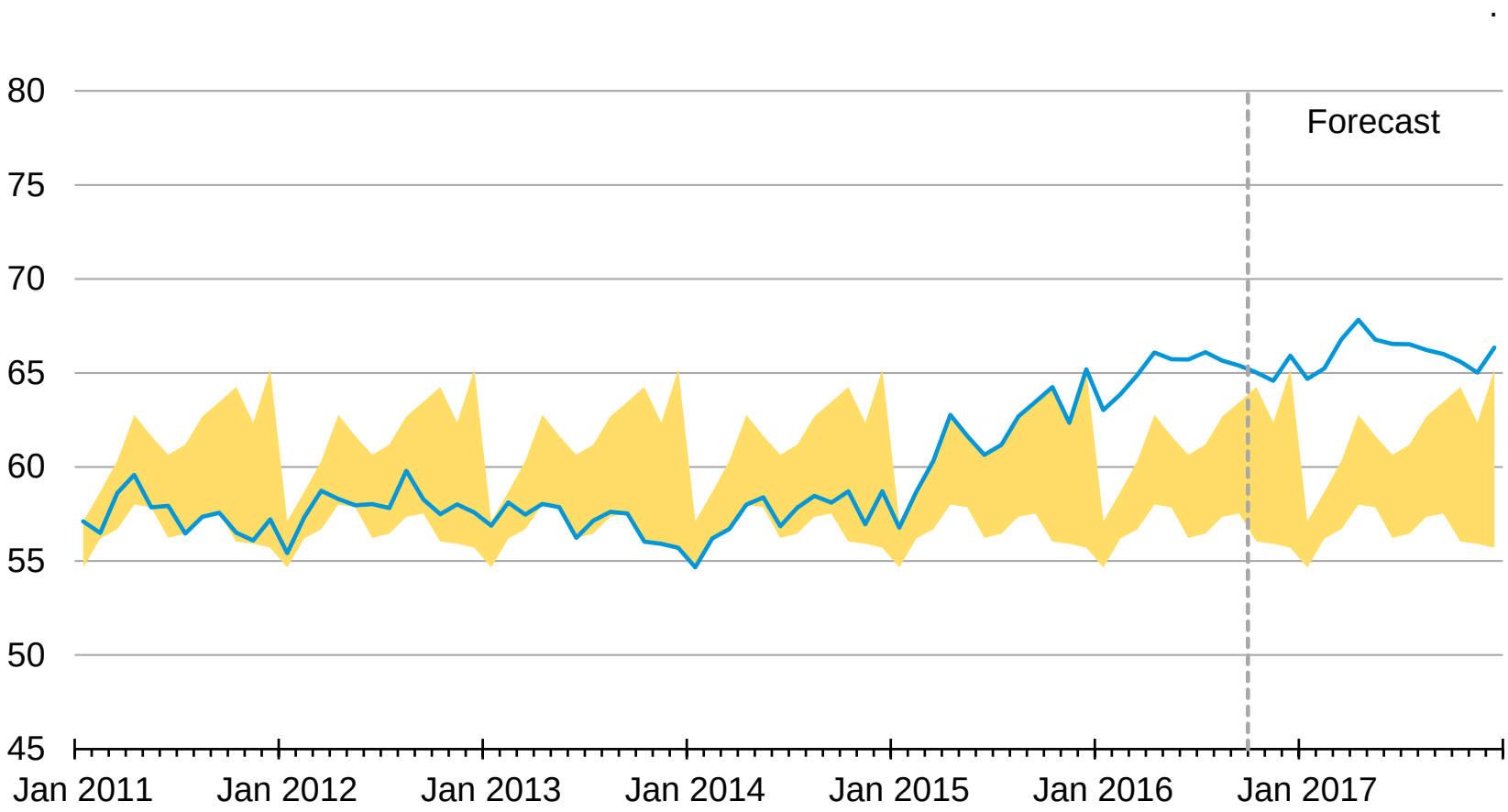
implied stock change and balance
million barrels per day (MMb/d)



Source: Short-Term Energy Outlook, October 2016.

OECD commercial stocks of crude oil and other liquids

days of supply



Note: Colored band around days of supply of crude oil and other liquids stocks represents the range between the minimum and maximum from Jan. 2011 - Dec. 2015.

Source: Short-Term Energy Outlook, October 2016

International long-term energy outlook

Key findings in EIA's long-term global outlook (IEO2016)

- World energy consumption increases from 549 quadrillion Btu in 2012 to 629 quadrillion Btu in 2020 and then to 815 quadrillion Btu in 2040, a 48% increase (1.4%/year). Non-OECD Asia (including China and India) account for more than half of the increase. Population grows 0.9%/year.

- The industrial sector continues to account for the largest share of delivered energy consumption; the world industrial sector still consumes over half of global delivered energy in 2040.

- Renewable energy is the world's fastest-growing energy source, increasing by 2.6%/year; nuclear energy grows by 2.3%/year, from 4% of the global total in 2012 to 6% in 2040.

- Fossil fuels continue to supply more than three-fourths of world energy use in 2040.

Key findings in the IEO2016 (continued)

- Among the fossil fuels, natural gas grows the fastest. Coal use plateaus in the mid-term as China shifts from energy-intensive industries to services and worldwide policies to limit coal use intensify. By 2030, natural gas surpasses coal as the world's second largest energy source.

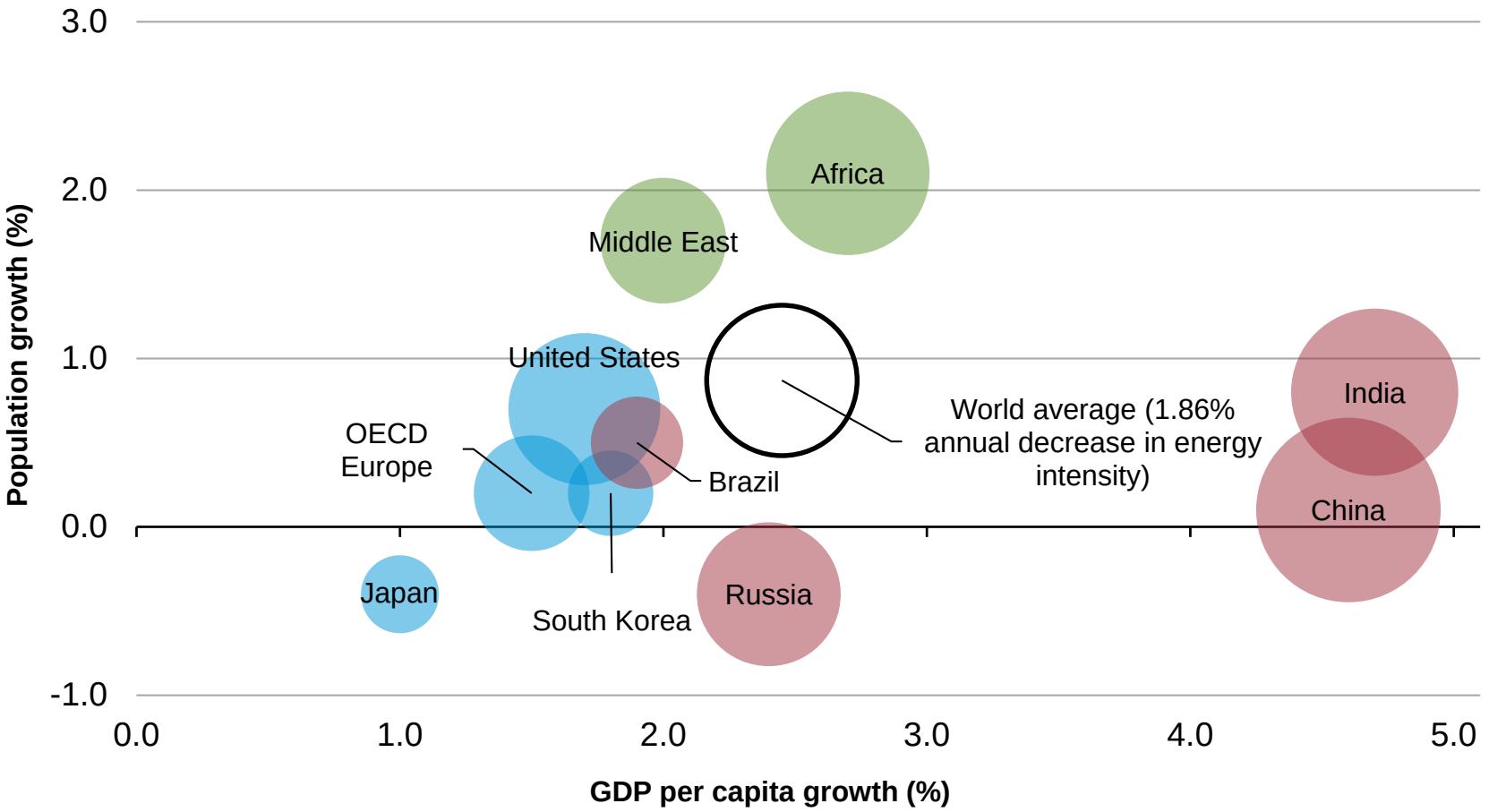
- In 2012, coal provided 40% of the world's total net electricity generation. By 2040, coal, natural gas, and renewable energy sources provide roughly equal shares (28-29%) of world generation.

- With current policies and regulations, worldwide energy-related carbon dioxide emissions rise from about 32 billion metric tons in 2012 to 36 billion metric tons in 2020 and then to 43 billion metric tons in 2040, a 34% increase.

Economic activity and population drive increases in energy use; energy intensity (E/GDP) improvements moderate this trend

average annual percent change (2012–40)

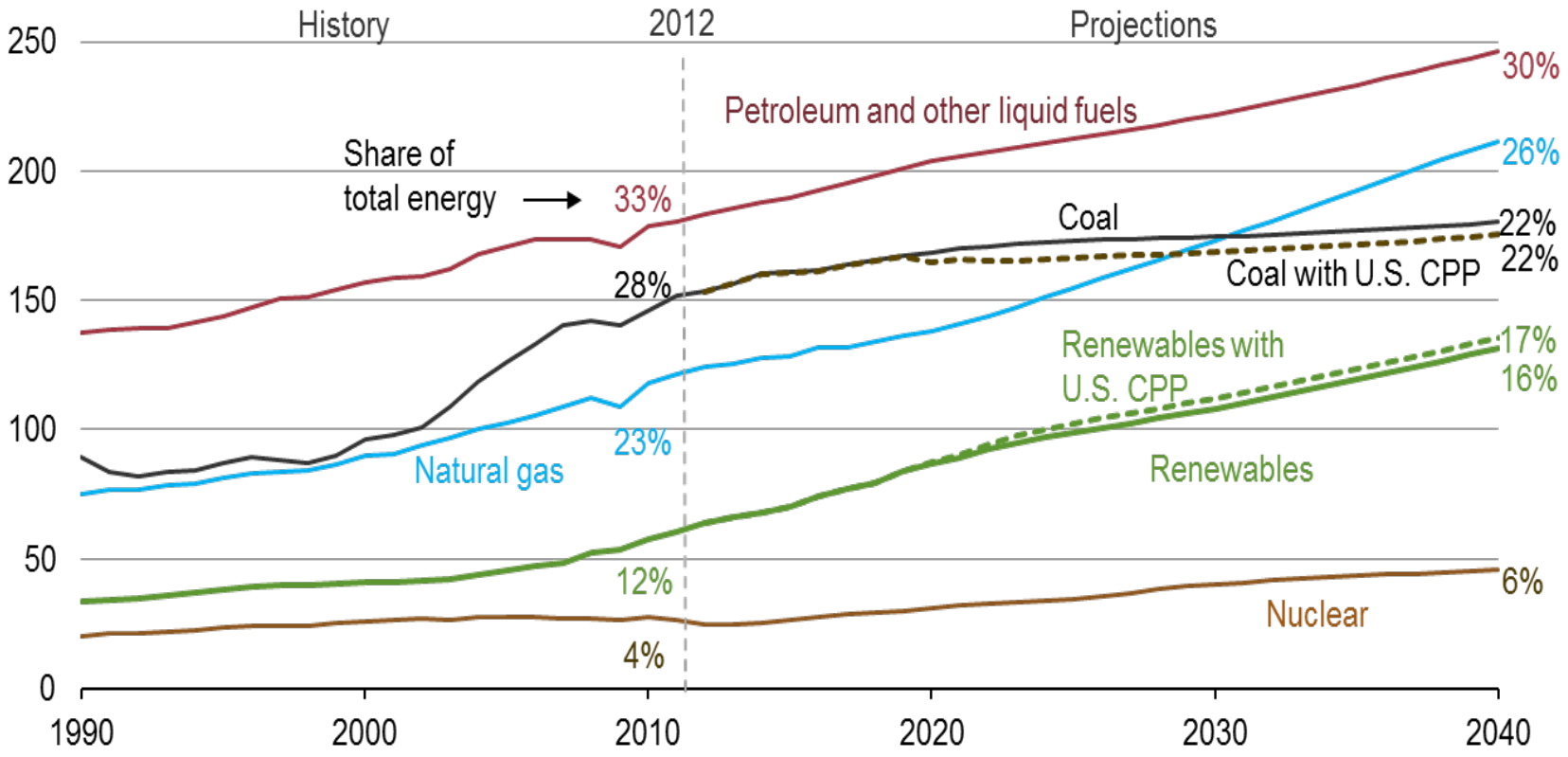
percent per year



Source: EIA, International Energy Outlook 2016

Global energy shares: renewables grow fastest, coal use plateaus, natural gas surpasses coal by 2030, and oil maintains its leading share

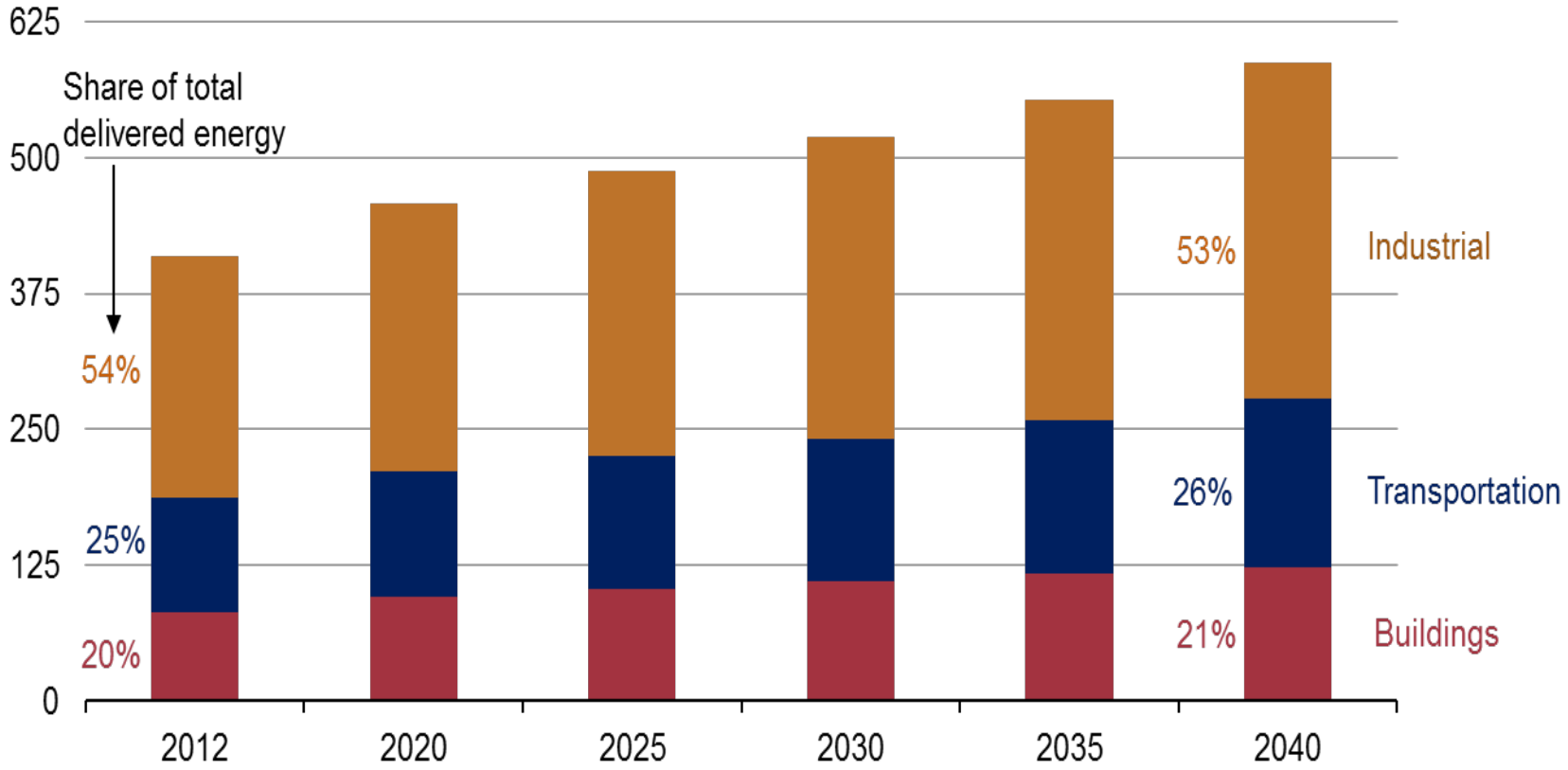
world energy consumption
quadrillion Btu



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

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

world delivered energy consumption by end-use sector
quadrillion Btu

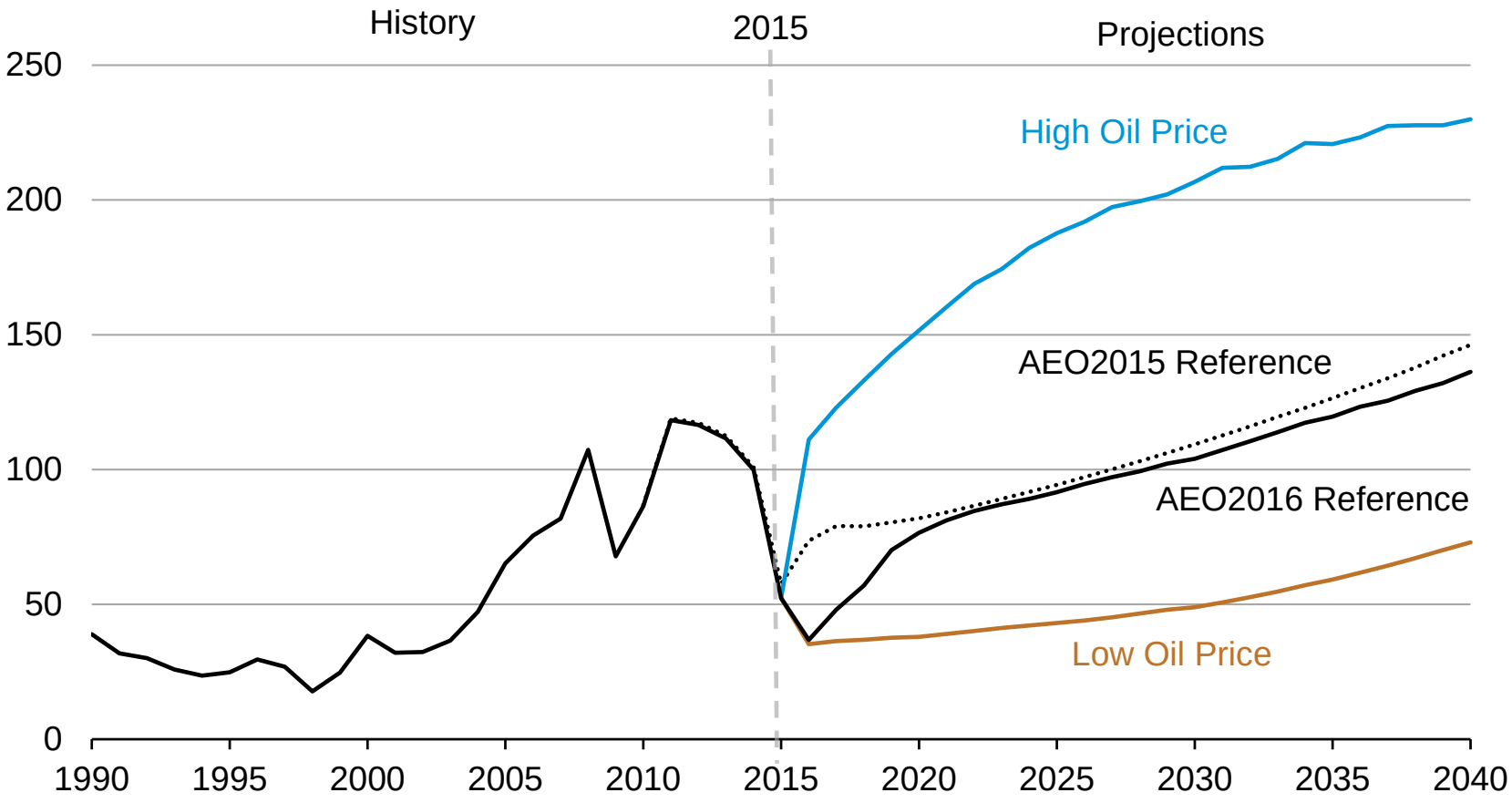


Source: EIA, International Energy Outlook 2016

Liquid fuels markets

Near-term crude oil price scenario is lower in AEO2016

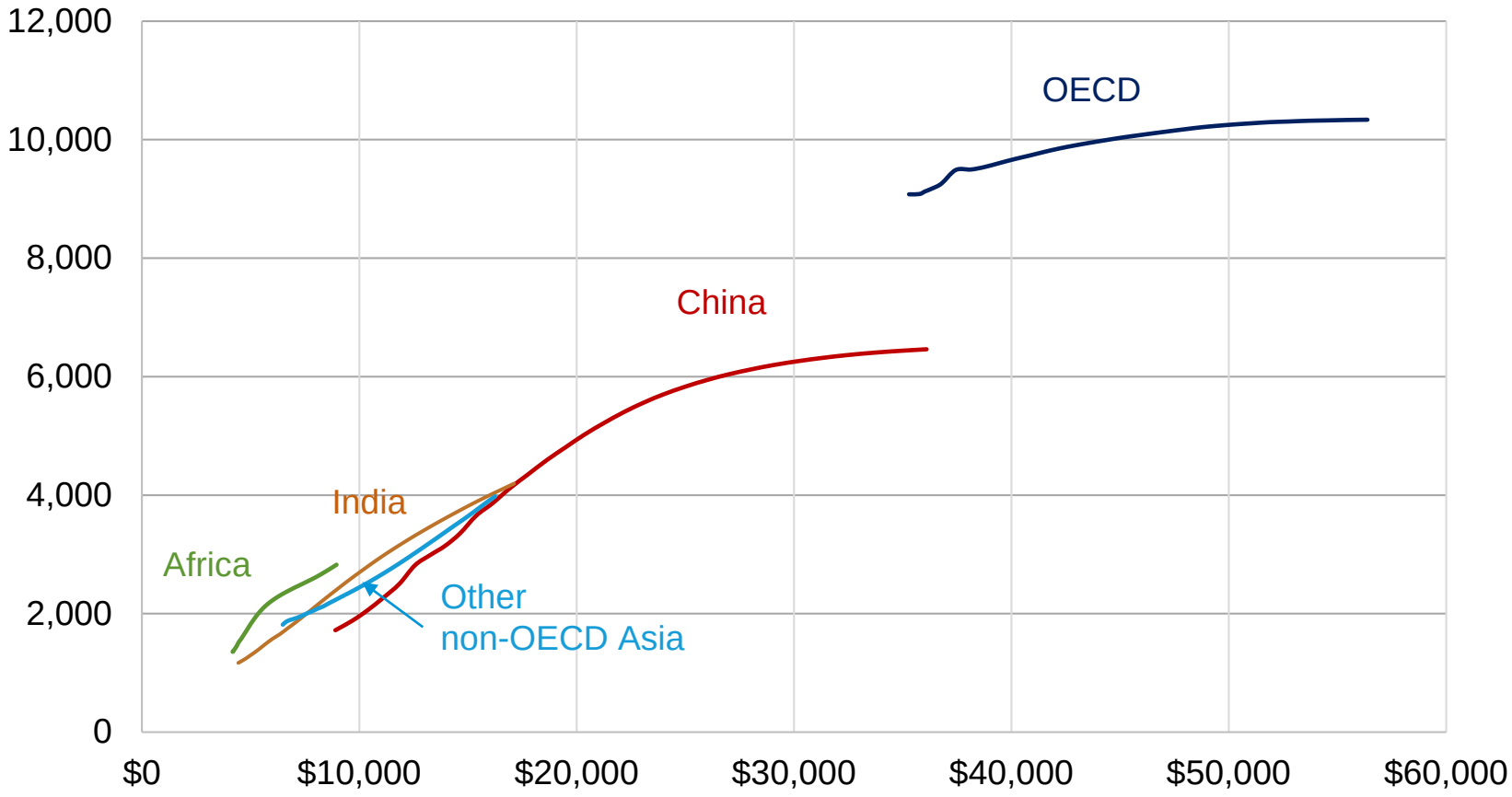
Brent crude oil spot price
2015 dollars per barrel



Source: EIA, Annual Energy Outlook 2016 Reference case and Annual Energy Outlook 2015 Reference case

Passenger-miles per person will rise as GDP per capita grows; travel growth is largely outside the OECD

passenger-miles per capita (left-axis) and GDP per capita (horizontal-axis) for selected country groupings 2010–40



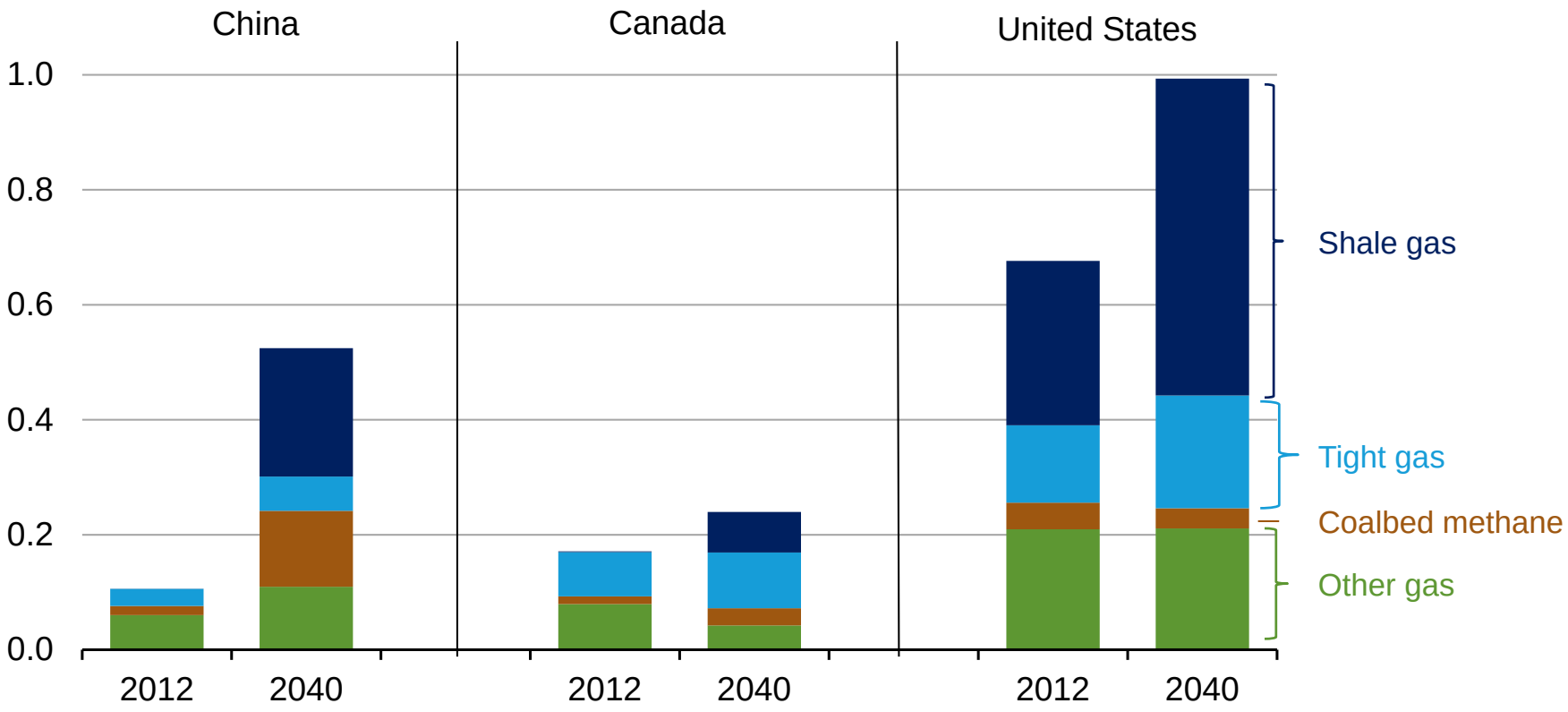
Source: EIA, International Energy Outlook 2016

Natural gas markets

Shale gas, tight gas, and coalbed methane will become increasingly important to gas supplies, not only for the U.S., but also China and Canada

natural gas production by type

trillion cubic meters



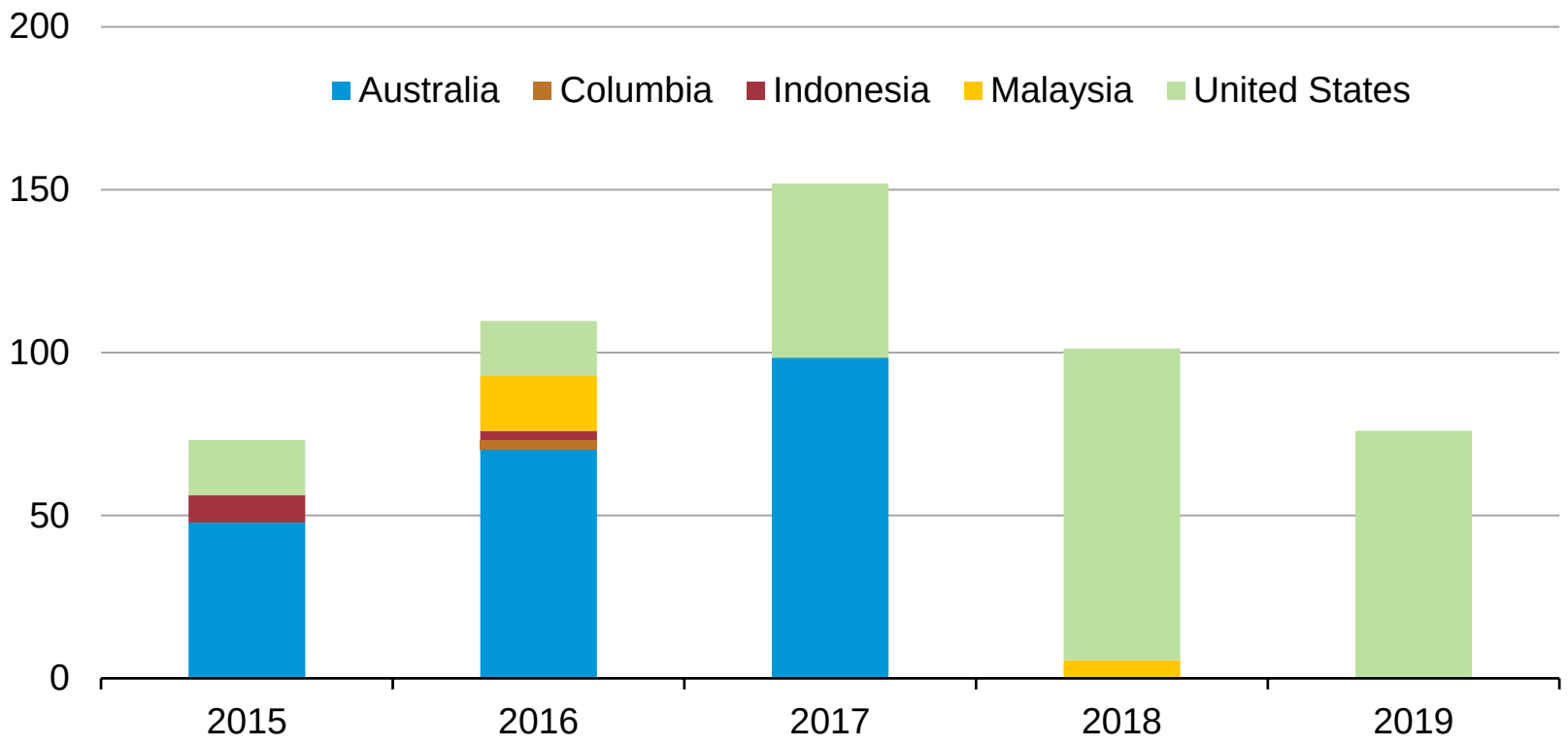
Note: Other natural gas includes natural gas produced from structural and stratigraphic traps (e.g. reservoirs), historically referred to as 'conventional' production.

Source: EIA, International Energy Outlook 2016

Liquefaction capacity additions over the 2015-19 time period will increase global capacity by over 30%

LNG capacity additions

million cubic meters per day



Note: Capacity additions in 2015-19 include projects currently under construction, and represent nameplate capacity, not adjusted for ramp-up.

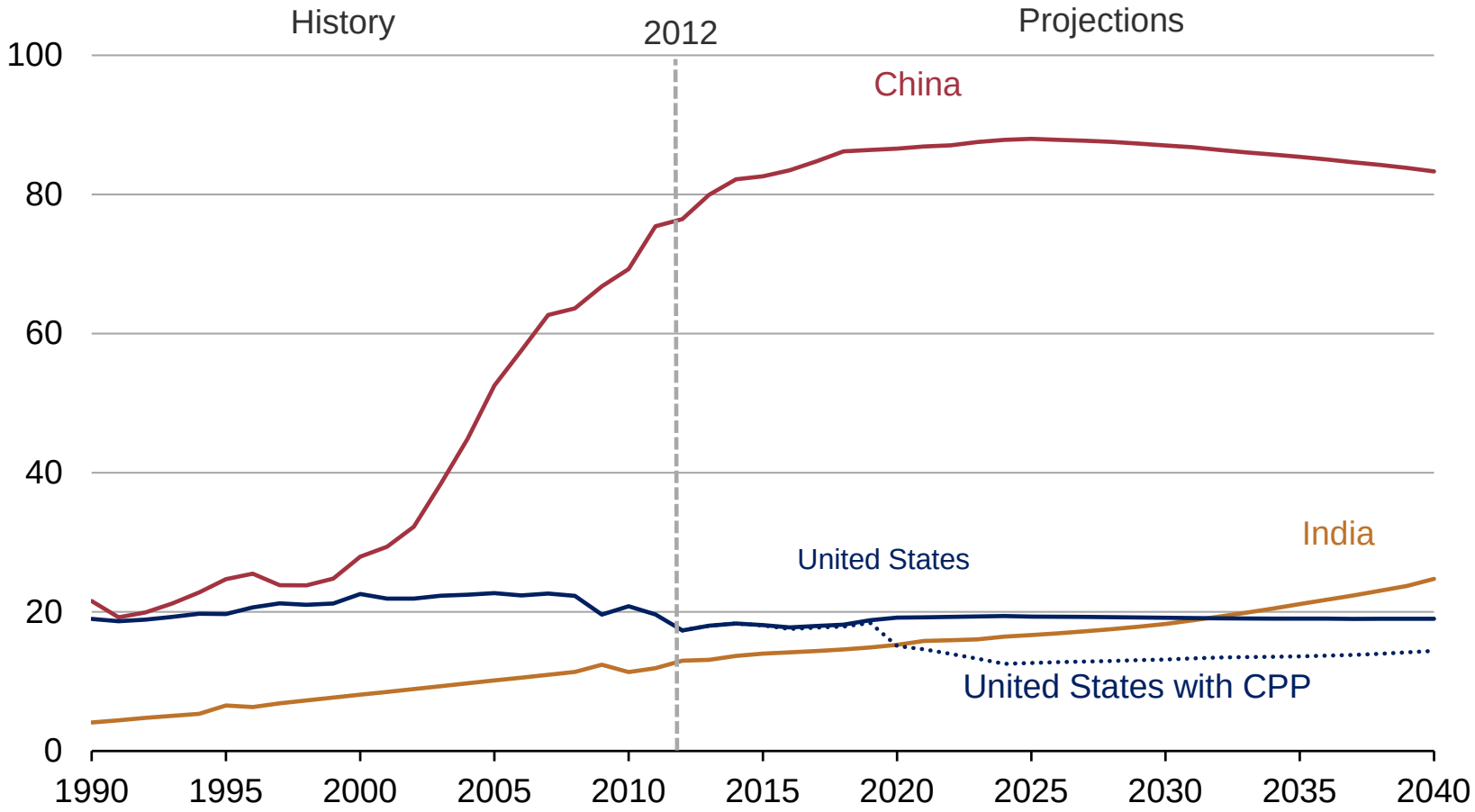
Source: U.S. Energy Information Administration estimates based on trade press.

Electricity markets

Of the world's three largest coal consumers, only India is projected to continue to increase throughout the projection

coal consumption in the US, China, and India

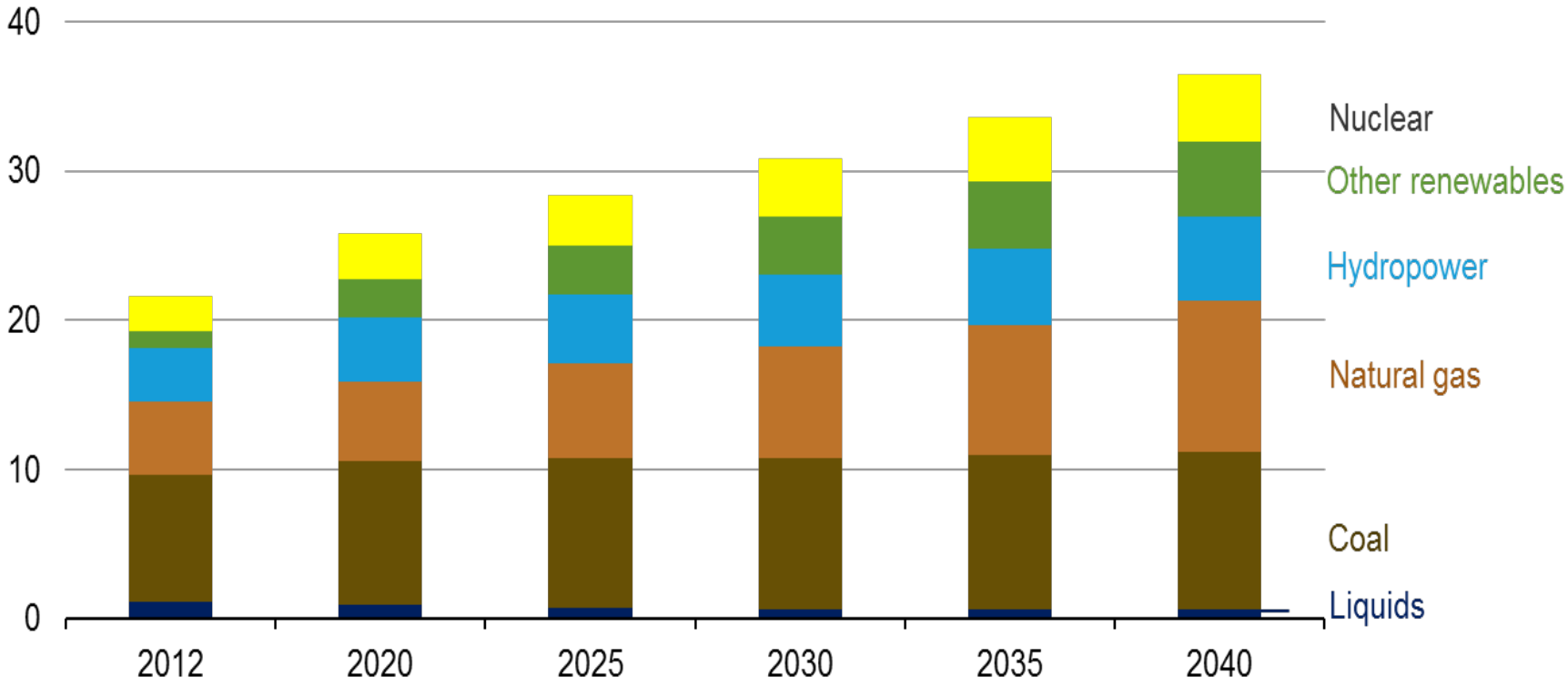
quadrillion Btu



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

Renewables, natural gas, and coal all contribute roughly the same amount of global net electricity generation in 2040

world net electricity generation by source
trillion kilowatthours



Source: EIA, International Energy Outlook 2016

For more information

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

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

U.S. Annual Energy Outlook | www.eia.gov/aeo

International Energy Outlook | www.eia.gov/ieo

Monthly Energy Review | www.eia.gov/mer

Today in Energy | www.eia.gov/todayinenergy

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