U.S. Energy Outlook

By
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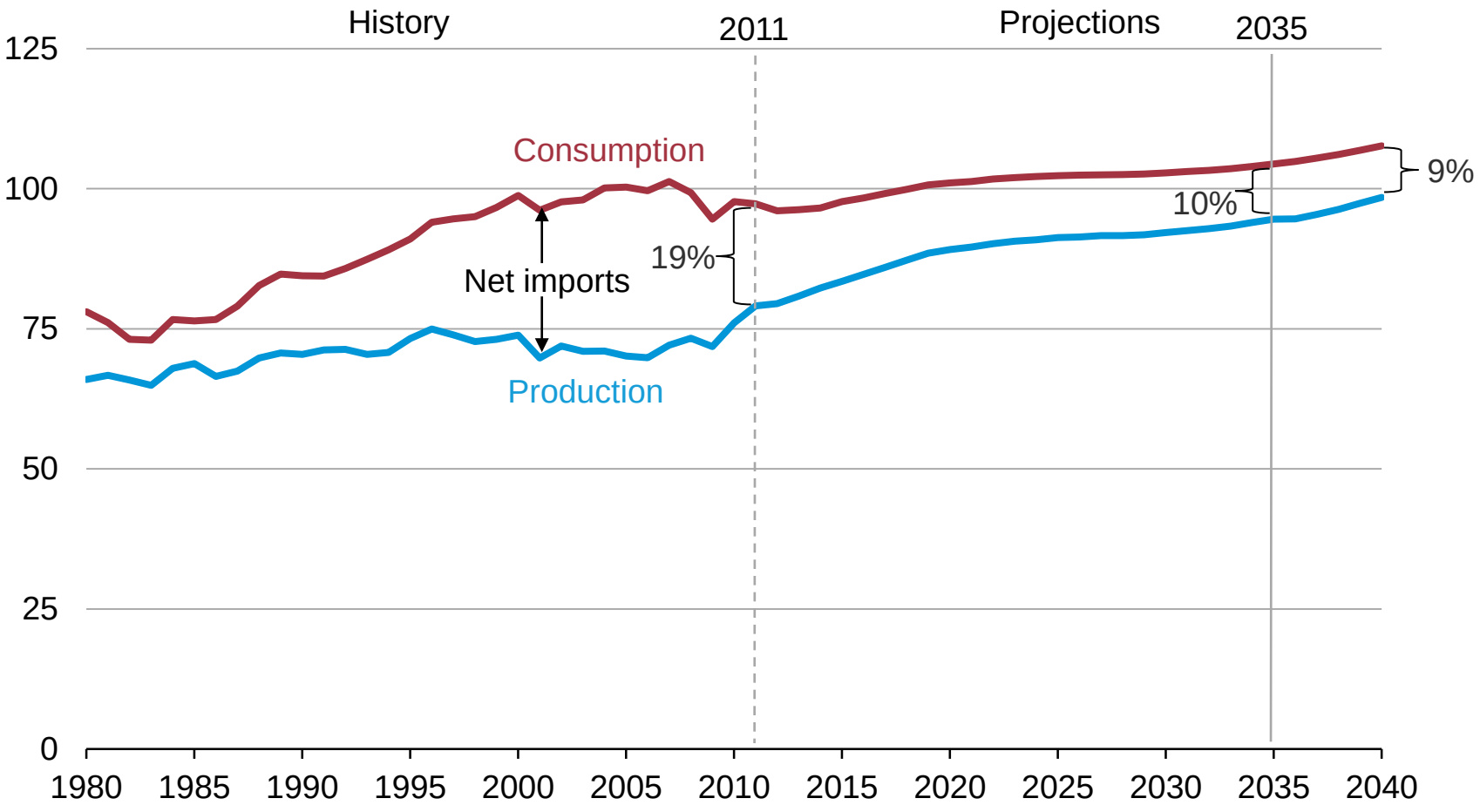
Annual Energy Outlook 2013 projections to 2040

- Growth in energy production outstrips consumption growth
- Crude oil production rises sharply over the next decade
- Motor gasoline consumption reflects more stringent fuel economy standards
- The U.S. becomes a net exporter of natural gas in the early 2020s
- U.S. energy-related carbon dioxide emissions remain below their 2005 level through 2040

Growth in energy production outstrips growth in consumption leading to reduction in net imports

U.S. energy production and consumption
quadrillion Btu

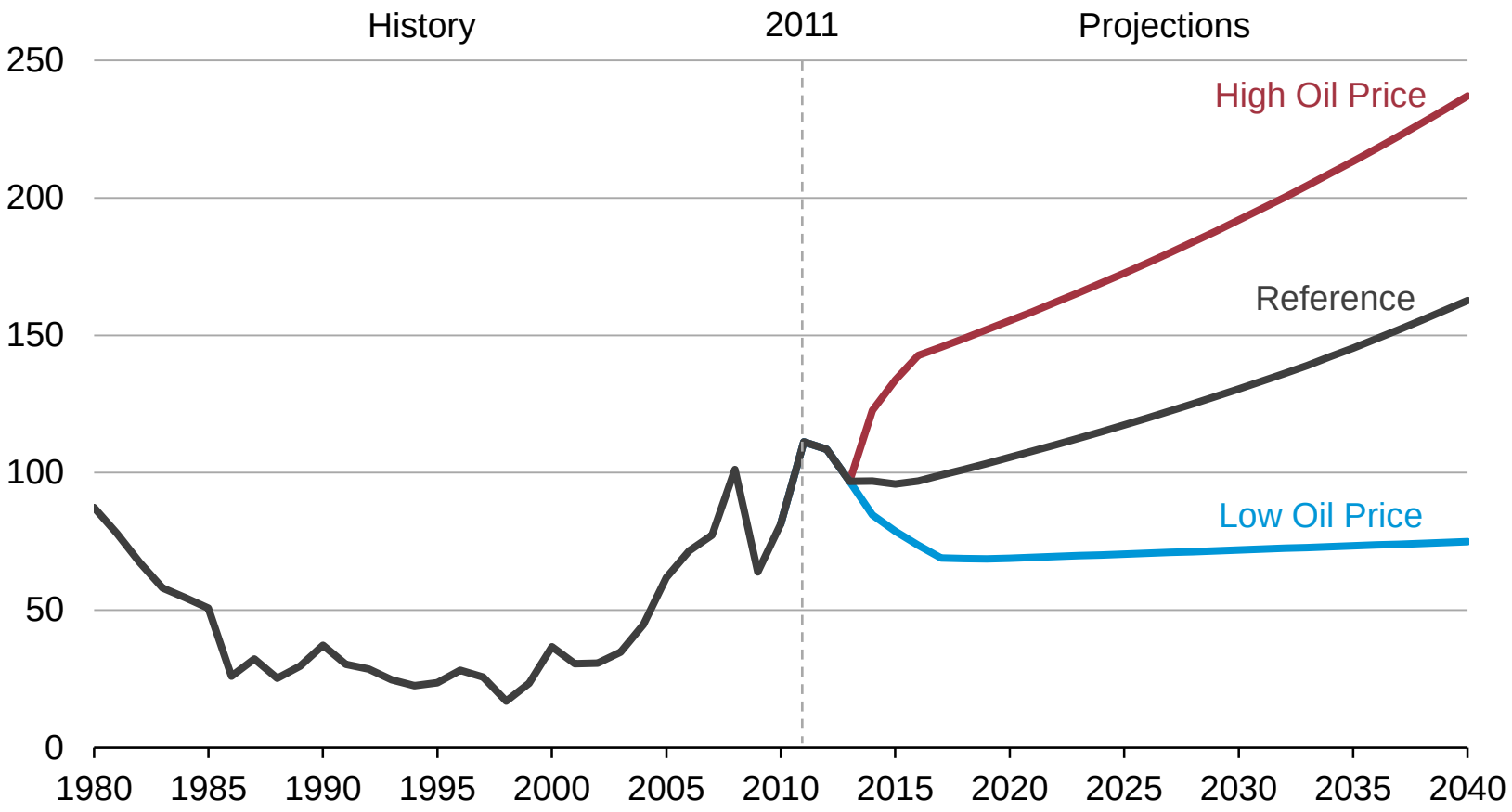


Source: EIA, Annual Energy Outlook 2013 Early Release

Petroleum

Reference case oil price initially drops and then rises steadily, but there is uncertainty about the future trajectory

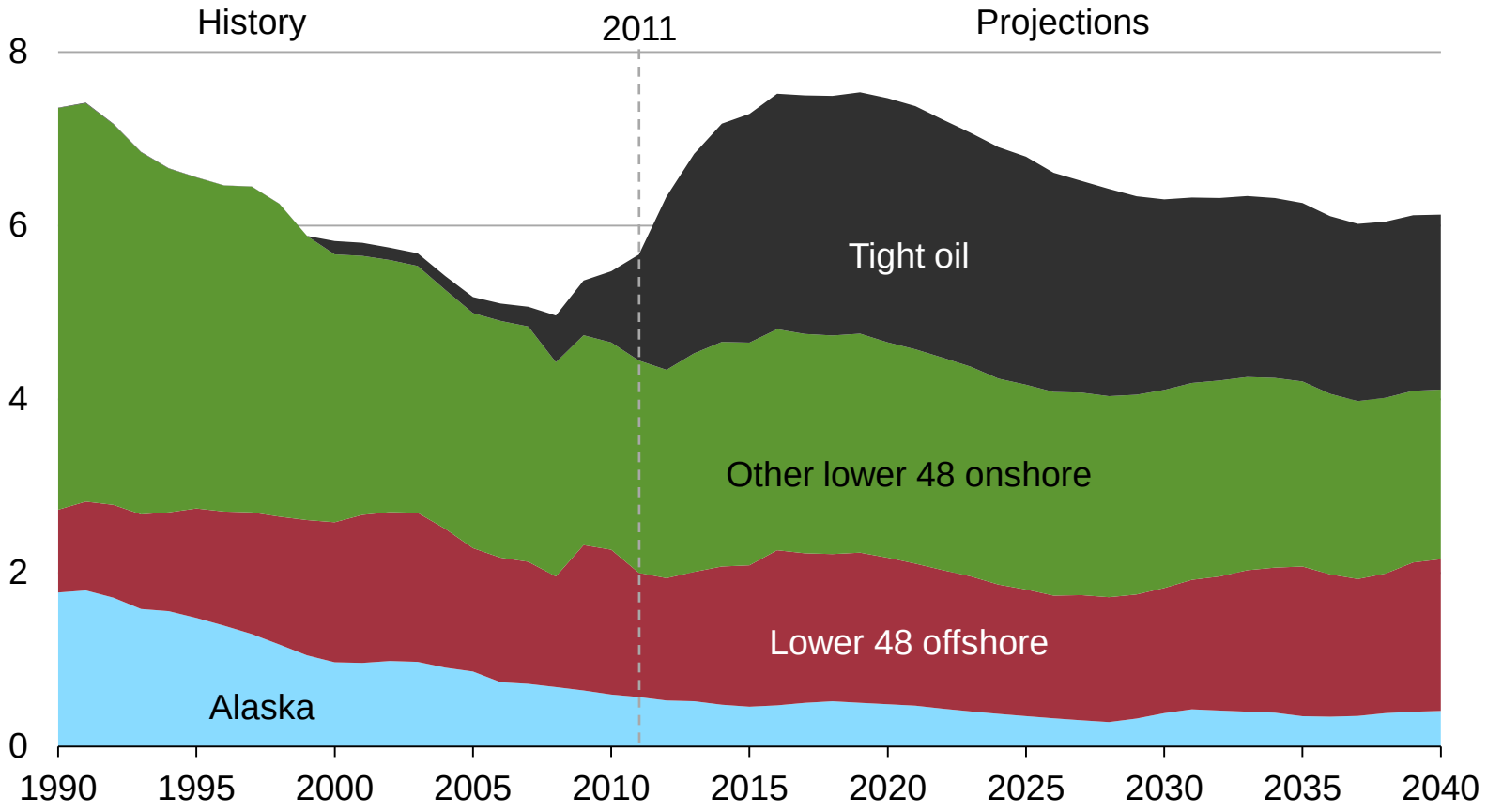
Annual average spot price of Brent crude oil
2011 dollars per barrel



Source: EIA, Annual Energy Outlook 2013 Early Release

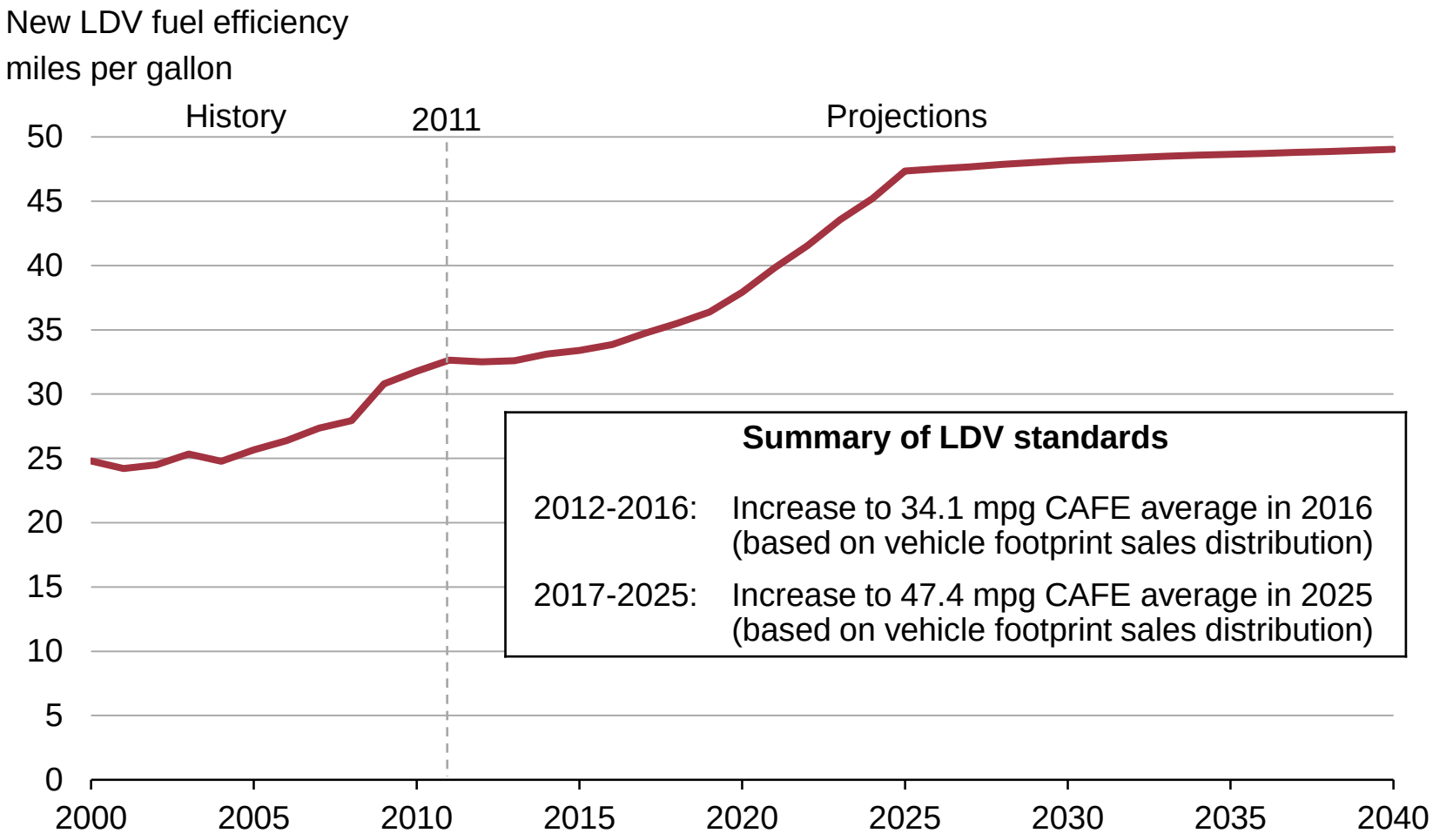
U.S. tight oil production leads a growth in domestic production of 2.6 million barrels per day between 2008 and 2019

U.S. crude oil production
million barrels per day



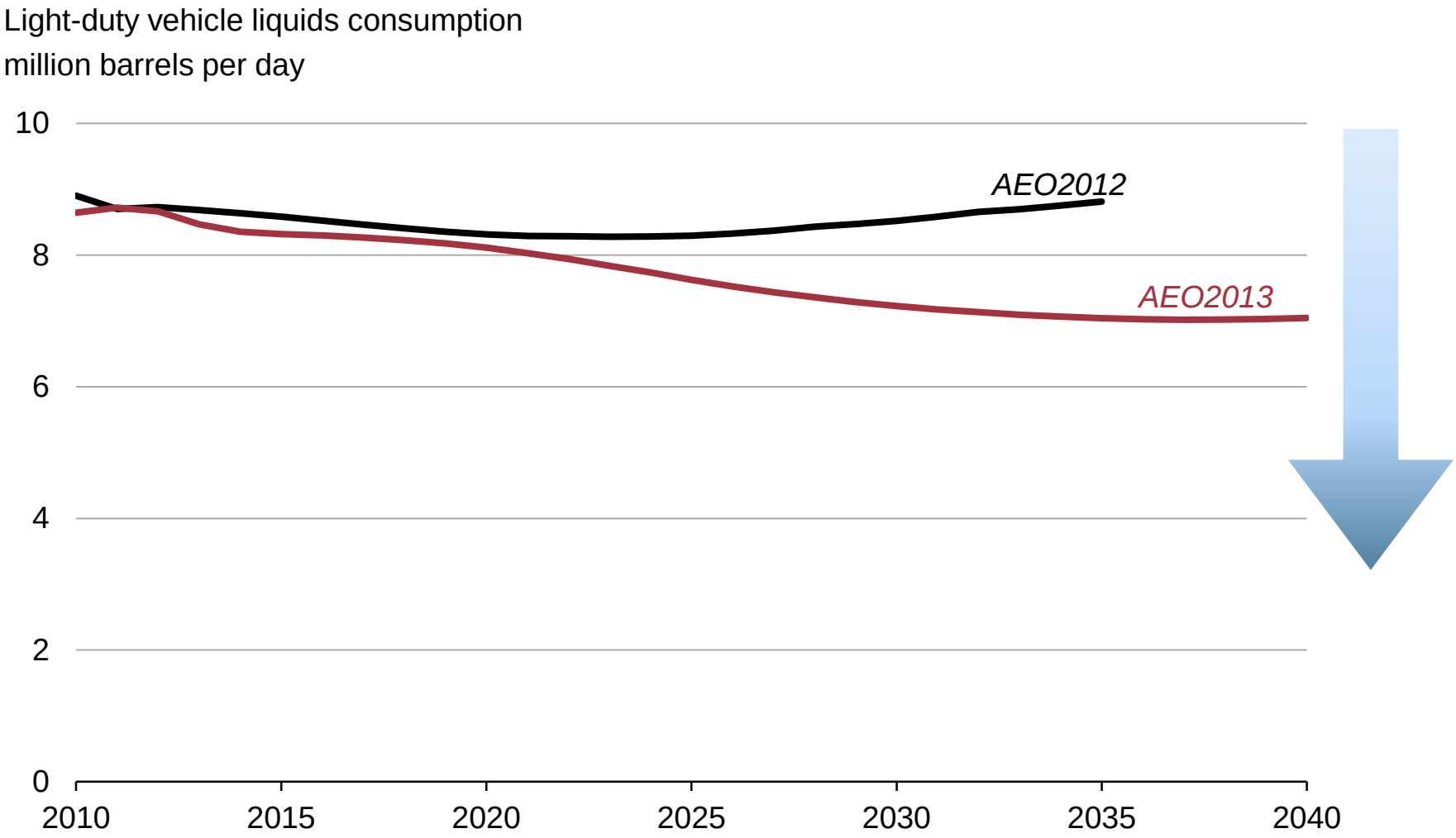
Source: EIA, Annual Energy Outlook 2013 Early Release

New light-duty vehicle fuel economy approaches 50 mpg by 2040



Source: EIA, Annual Energy Outlook 2013 Early Release

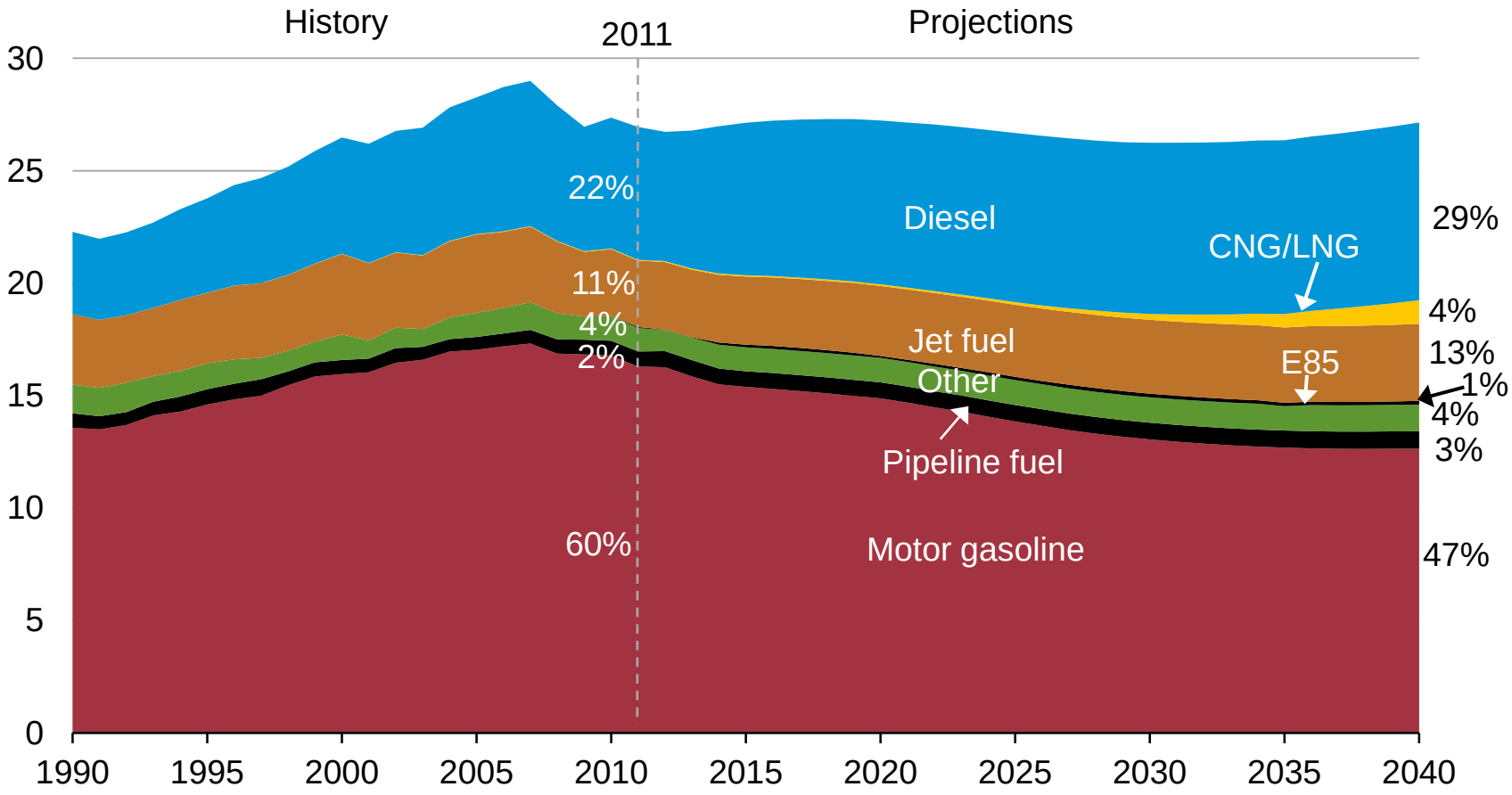
Light-duty vehicle liquids consumption is lower primarily due to more stringent CAFE standards



Source: EIA, Annual Energy Outlook 2013 Early Release

Transportation sector motor gasoline demand declines

Transportation energy consumption by fuel
quadrillion Btu

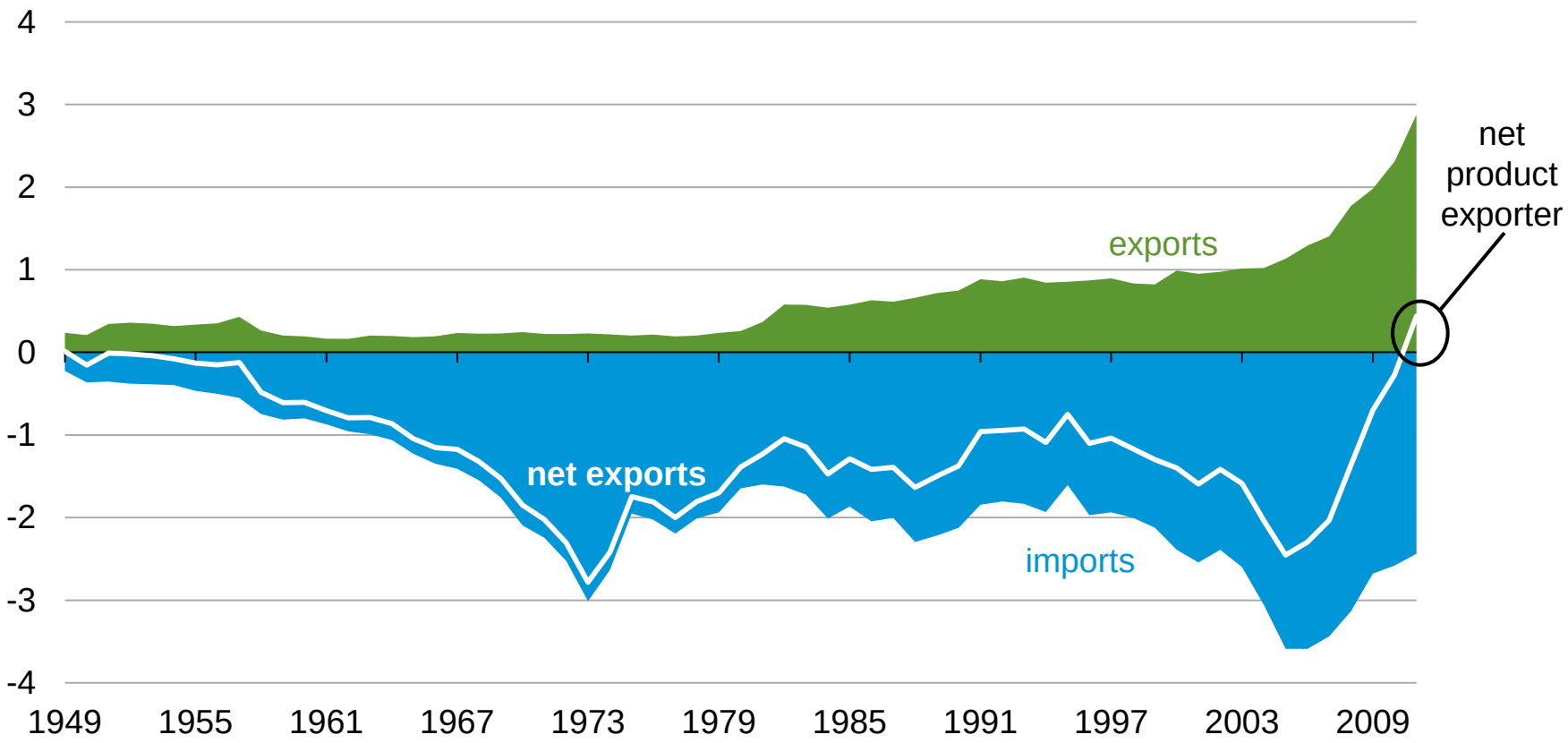


Source: EIA, Annual Energy Outlook 2013 Early Release

U.S. petroleum product exports exceeded imports in 2011 for first time in over six decades

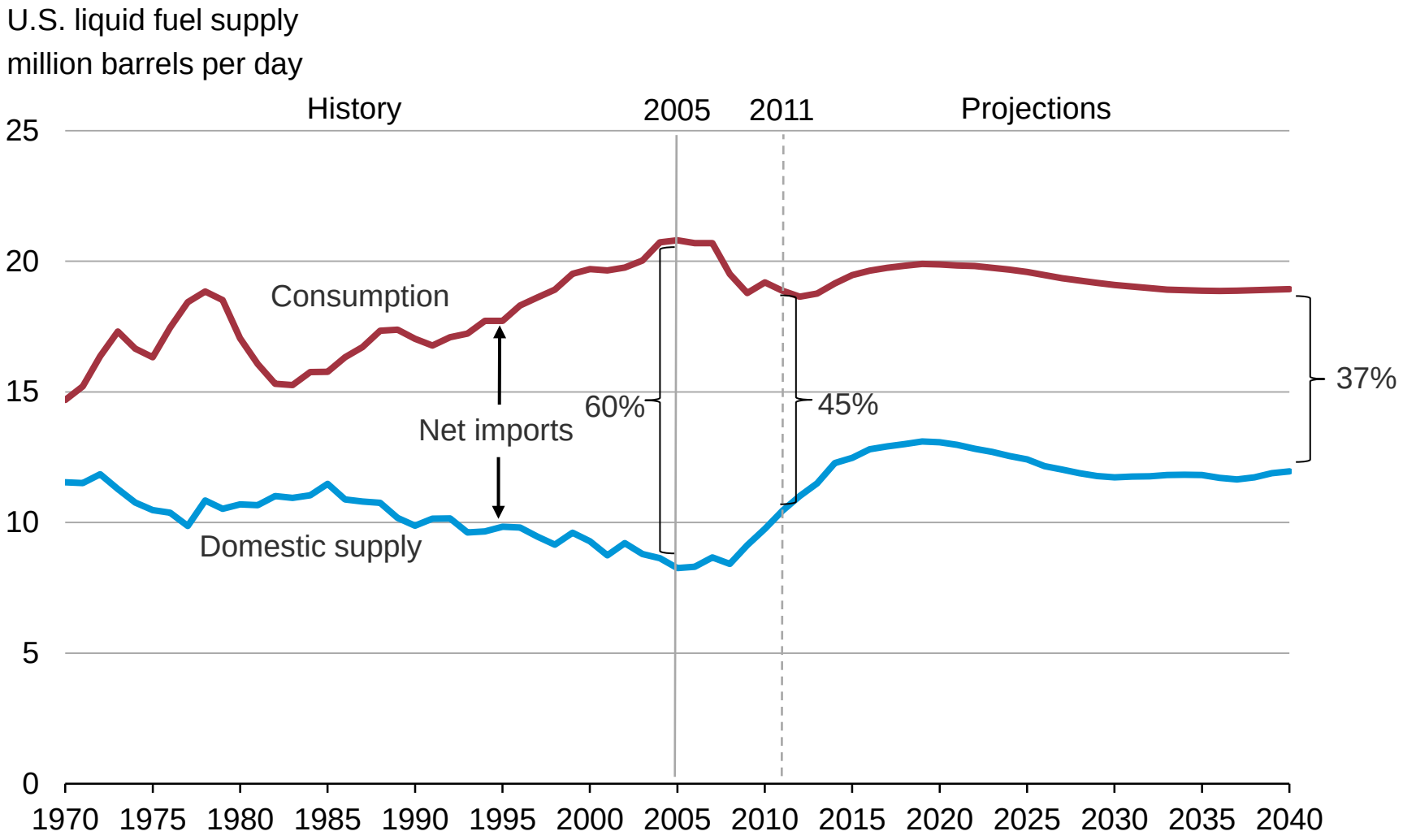
Annual U.S. net exports of total petroleum products, 1949 – 2011

million barrels per day



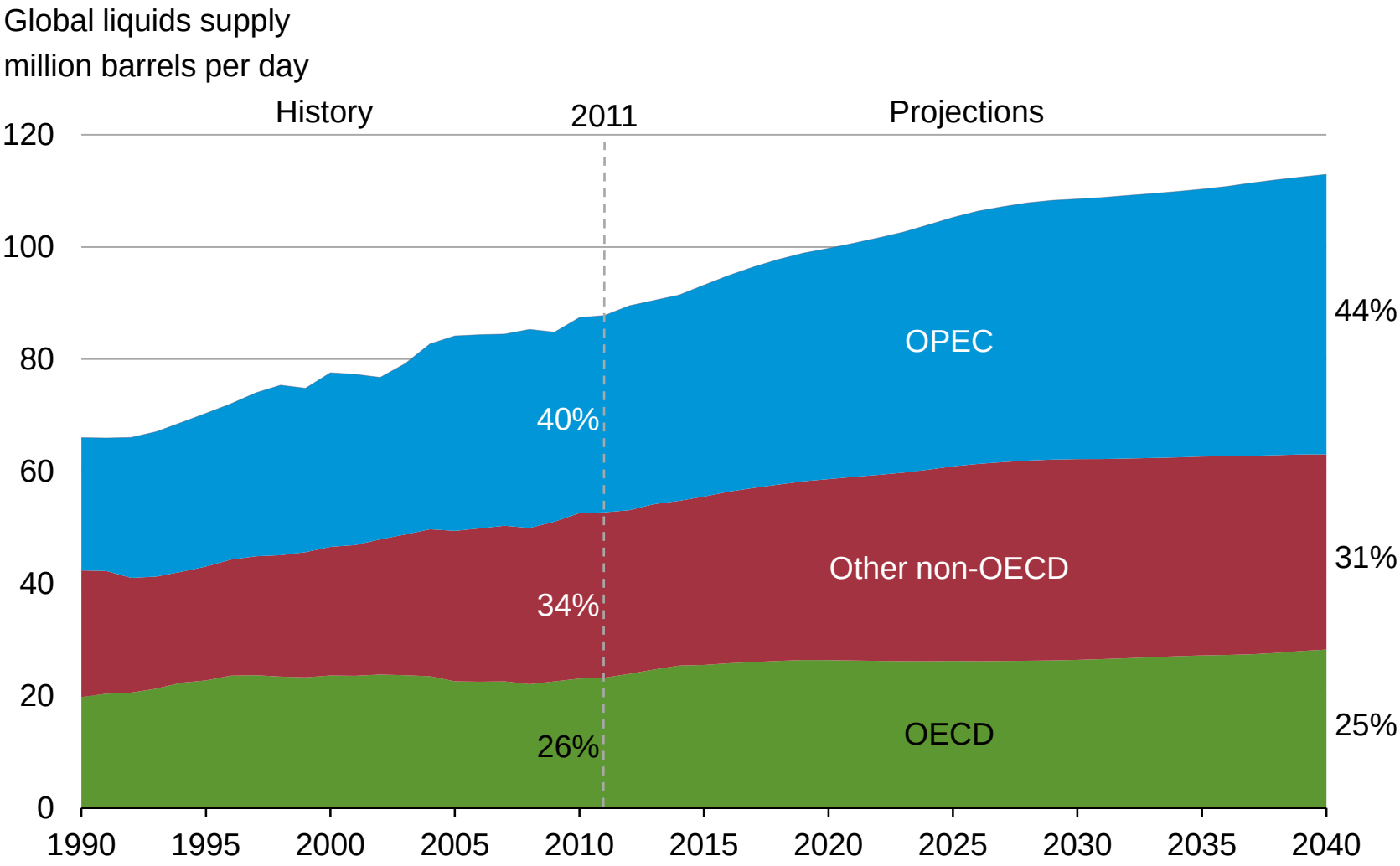
Source: EIA, Petroleum Supply Monthly

U.S. dependence on imported liquids declines



Source: EIA, Annual Energy Outlook 2013 Early Release

Global liquids supply increases 26 percent with regional market shares relatively stable

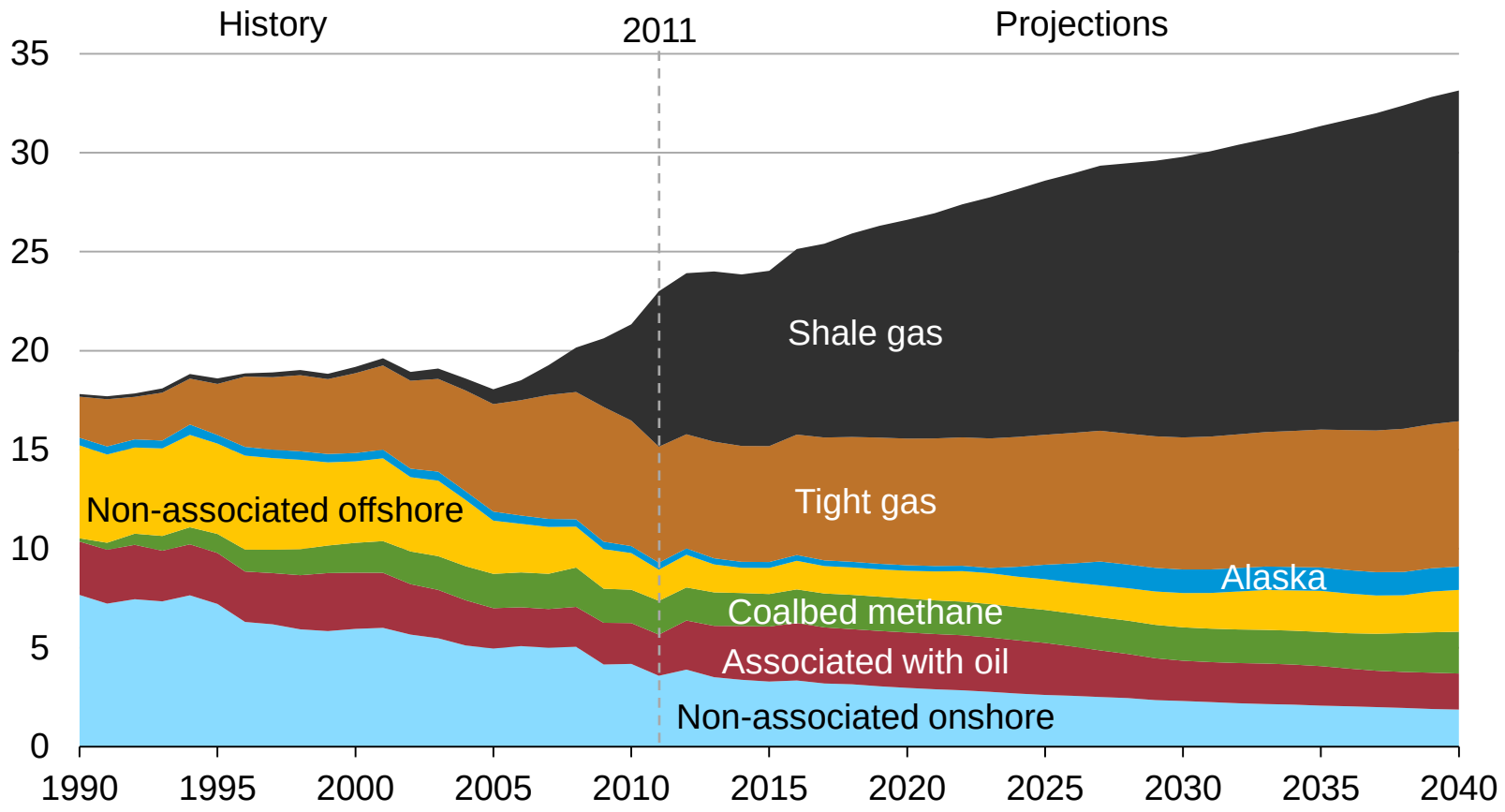


Source: EIA, Annual Energy Outlook 2013 Early Release

Natural Gas

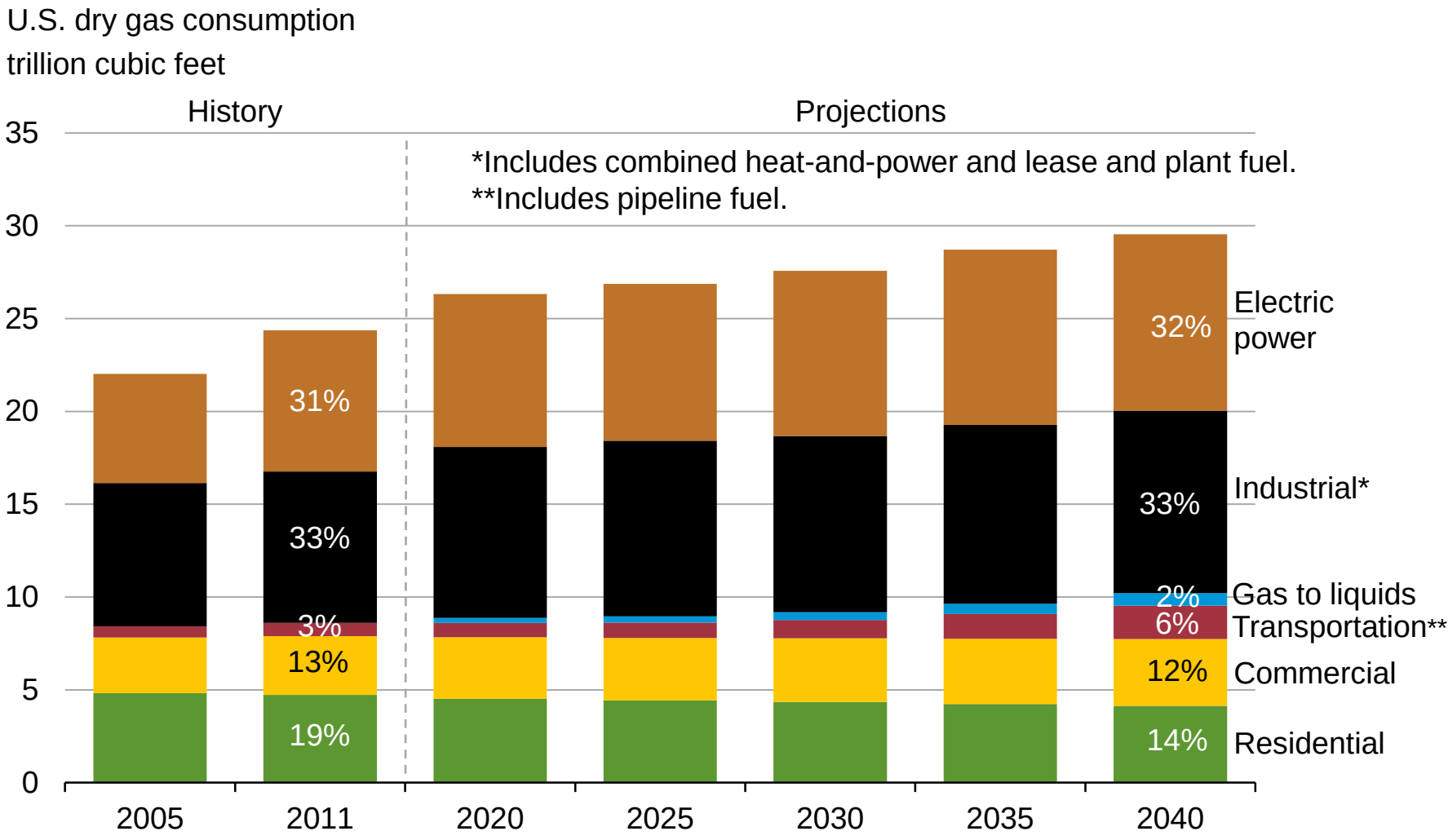
Shale gas production leads growth in production through 2040

U.S. dry natural gas production
trillion cubic feet



Source: EIA, Annual Energy Outlook 2013 Early Release

Natural gas consumption is quite dispersed with electric power, industrial, and transportation use driving future demand growth

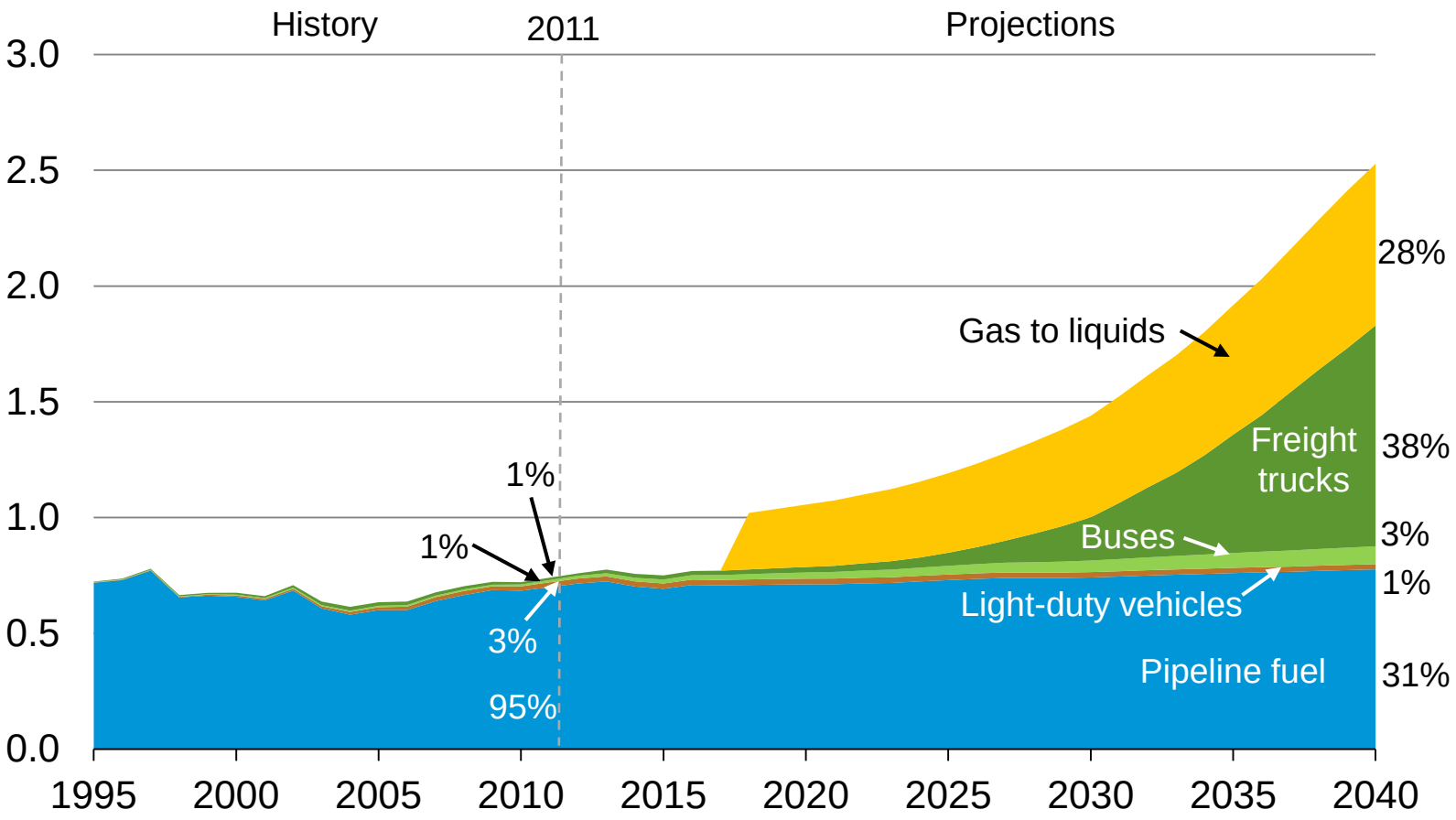


Source: EIA, Annual Energy Outlook 2013 Early Release

Growth of natural gas in transportation led by heavy duty trucks (LNG) and gas to liquids (diesel)… marine and rail to come?

U.S. natural gas consumption

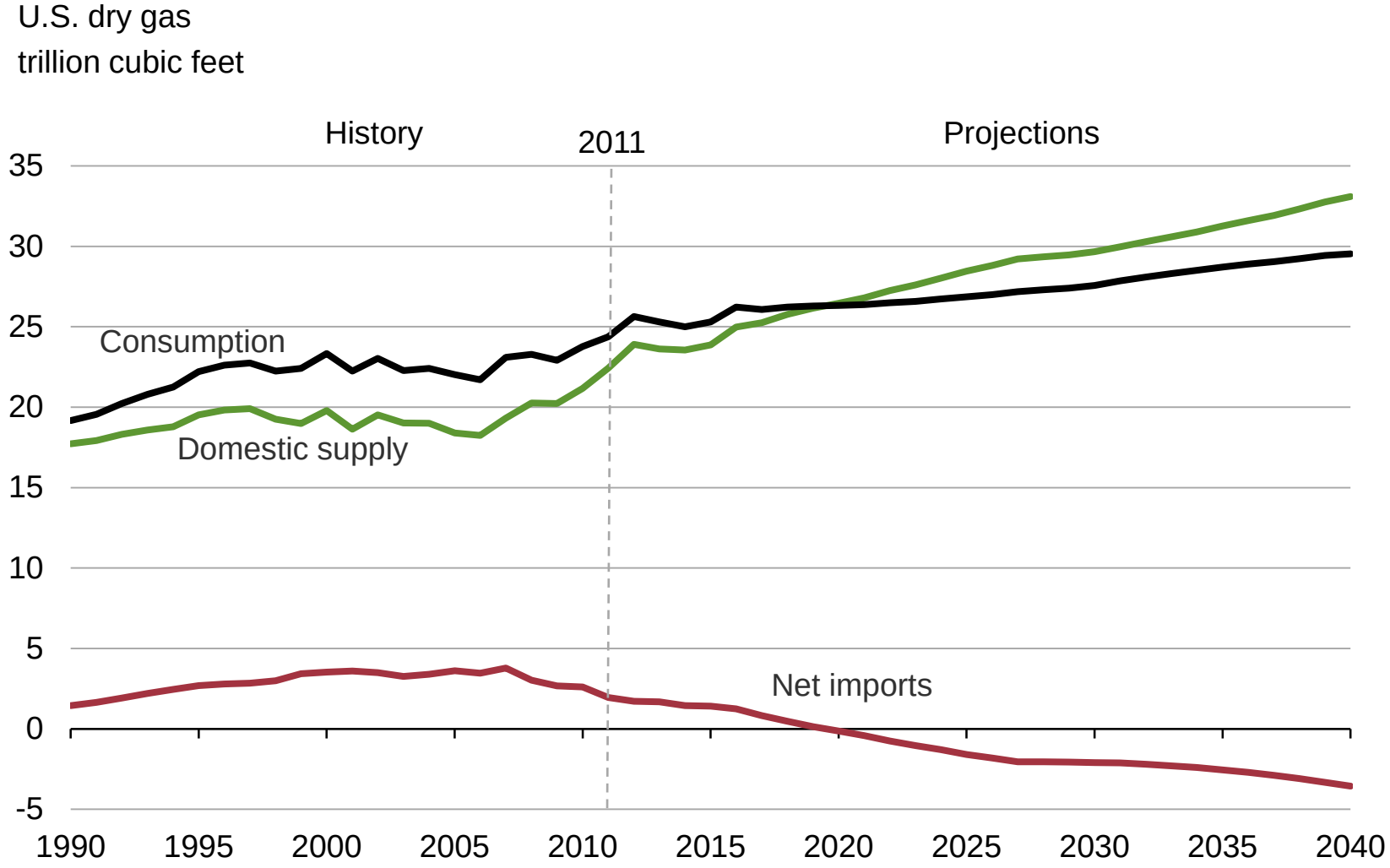
quadrillion Btu



Note: Gas to liquids includes heat, power, and losses.

Source: EIA, Annual Energy Outlook 2013 Early Release

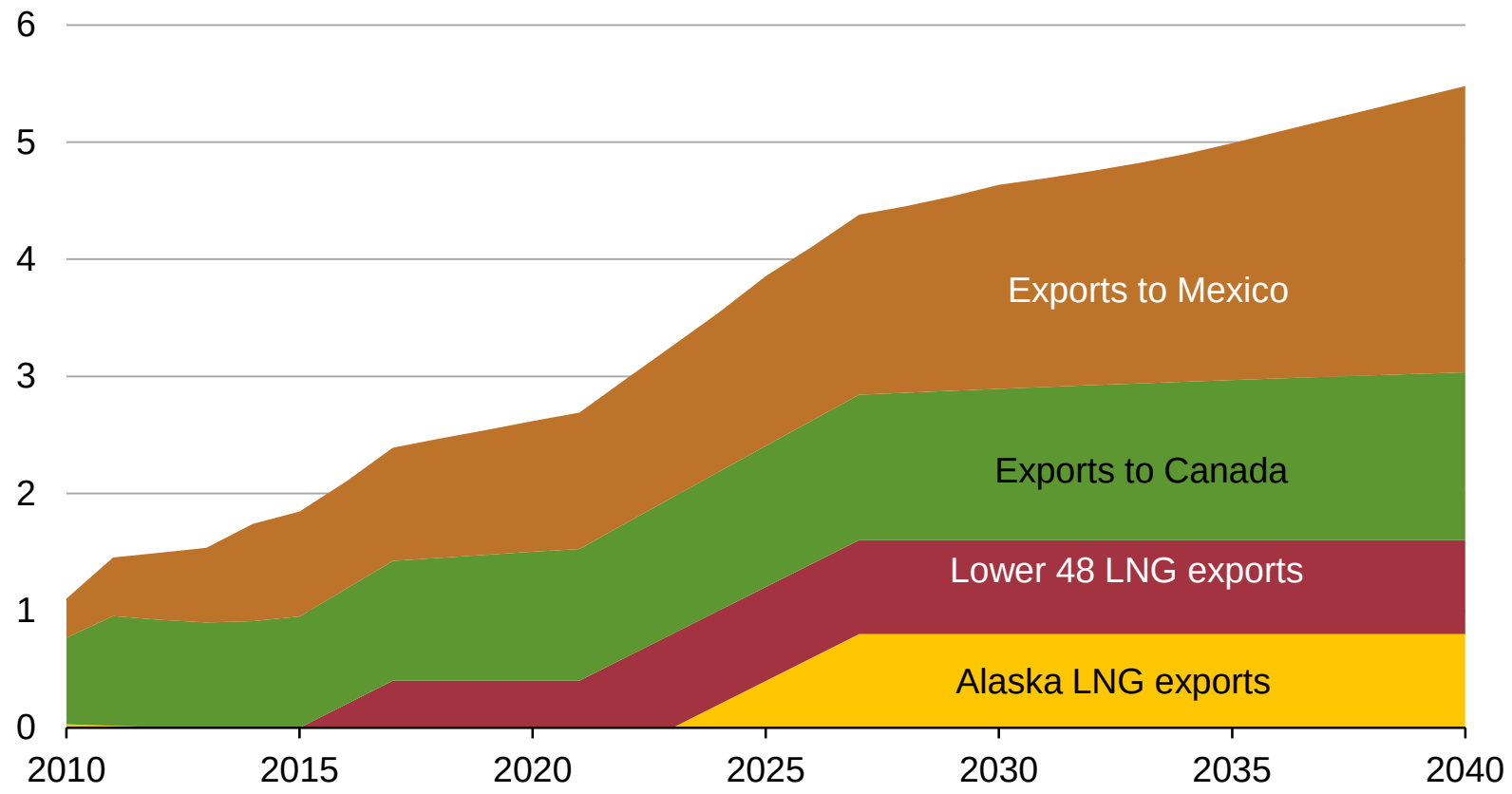
Domestic natural gas production grows faster than consumption and the U.S. becomes a net exporter of natural gas around 2020



Source: EIA, Annual Energy Outlook 2013 Early Release

Total natural gas exports nearly quadruple by 2040 in the *AEO2013* Reference case

U.S. natural gas exports
trillion cubic feet

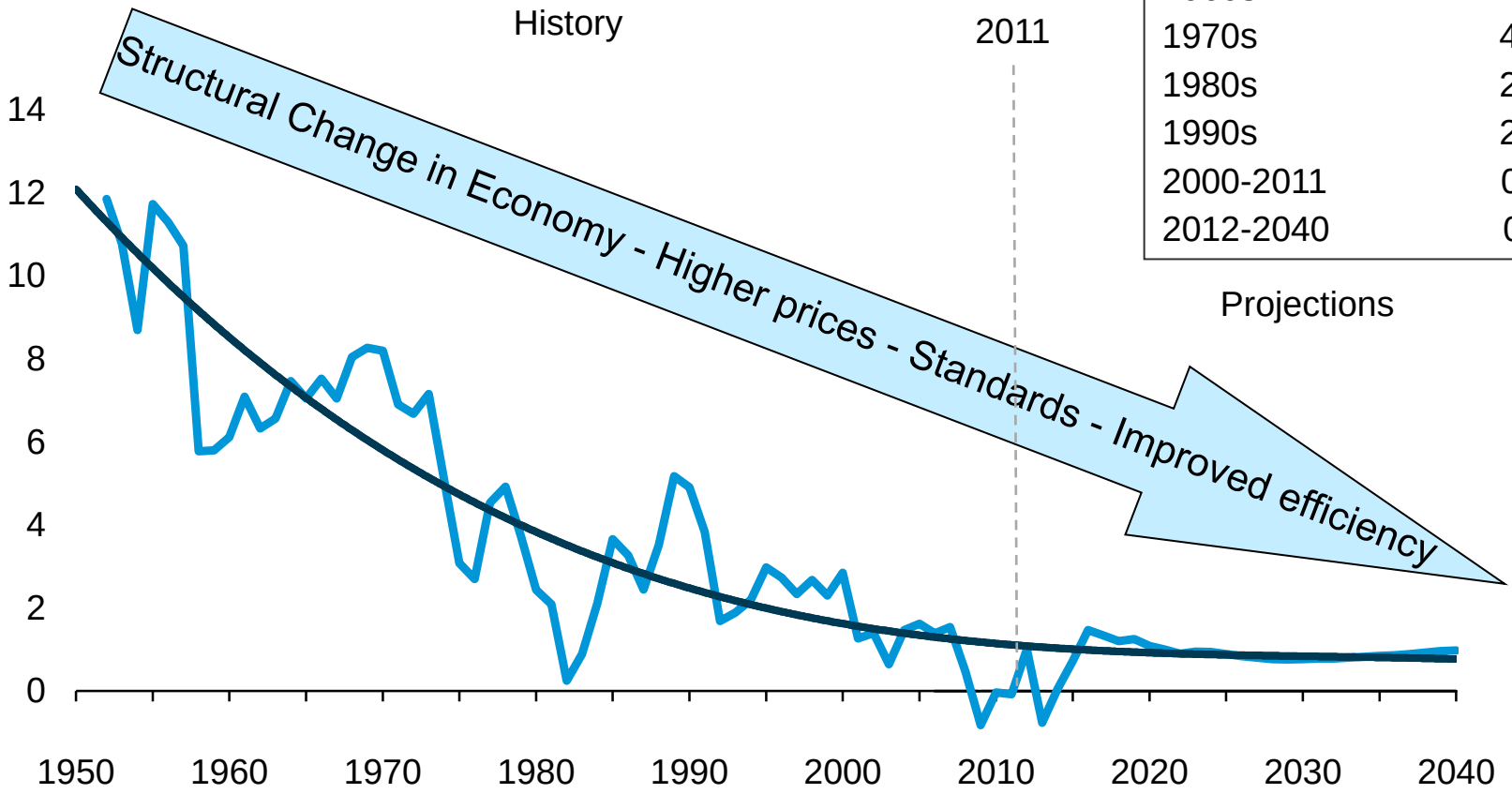


Source: EIA, Annual Energy Outlook 2013 Early Release

Coal and Electricity

Growth in electricity use slows, but still increases by 28% from 2012 to 2040

U.S. electricity use
percent growth (3-year rolling average)

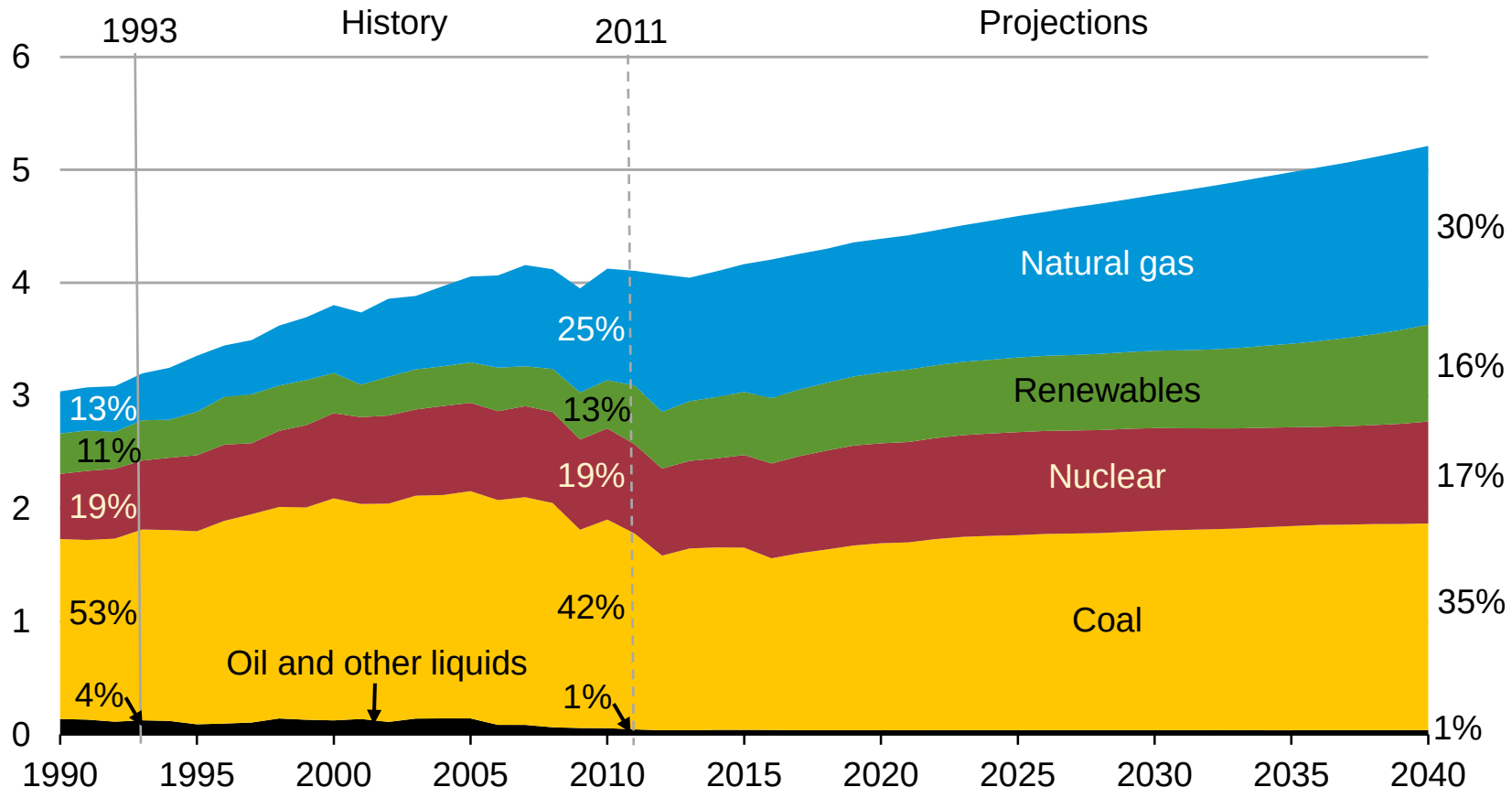


Period	Annual Growth
1950s	9.8
1960s	7.3
1970s	4.7
1980s	2.9
1990s	2.4
2000-2011	0.9
2012-2040	0.9

Source: EIA, Annual Energy Outlook 2013 Early Release

Over time the electricity mix shifts toward natural gas and renewables, but coal remains the largest fuel source

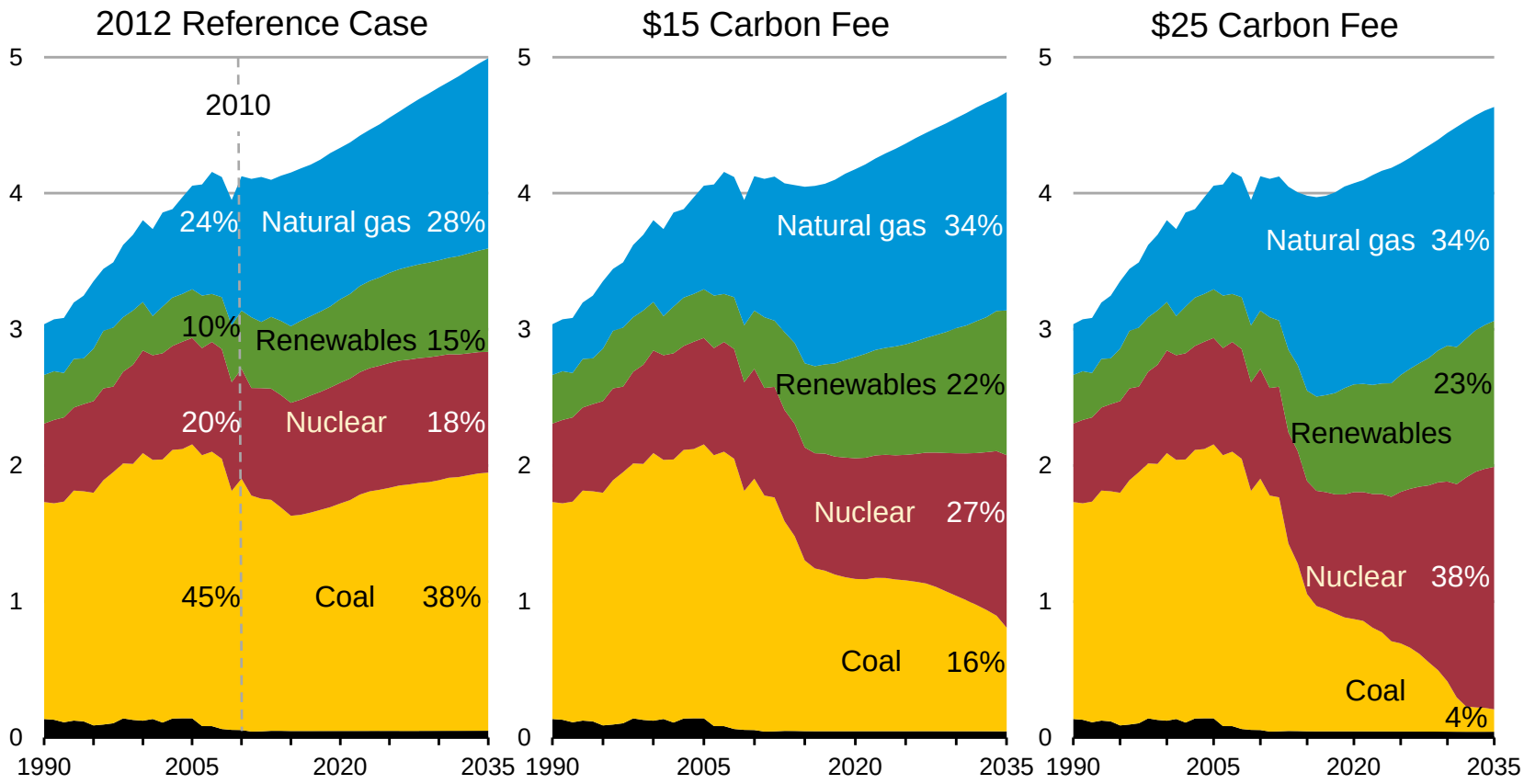
U.S. electricity net generation
trillion kilowatthours



Source: EIA, Annual Energy Outlook 2013 Early Release

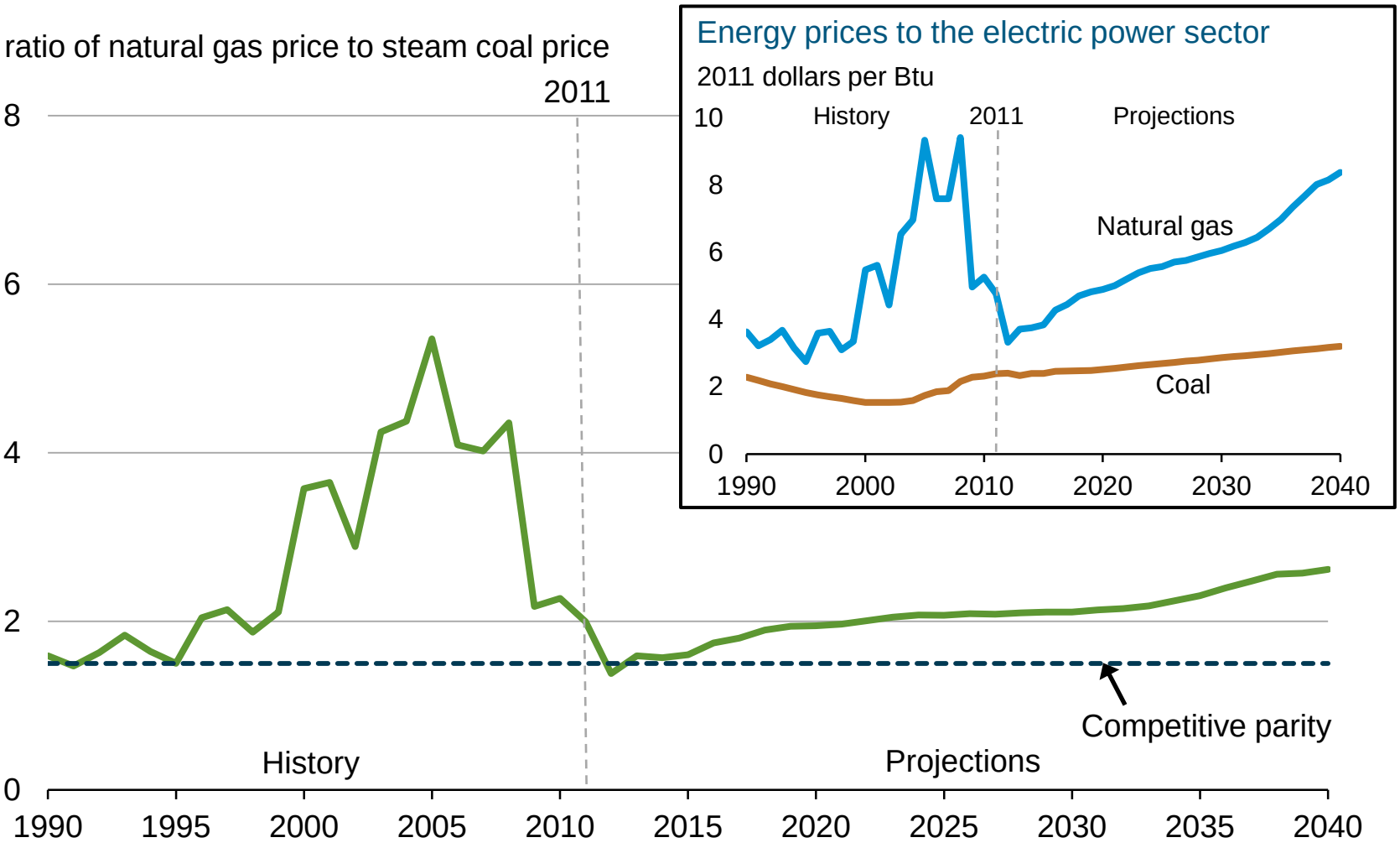
Changing electricity generation mix in *AEO2012* reference case and carbon fee allowance side cases

U.S. electricity net generation
trillion kilowatthours



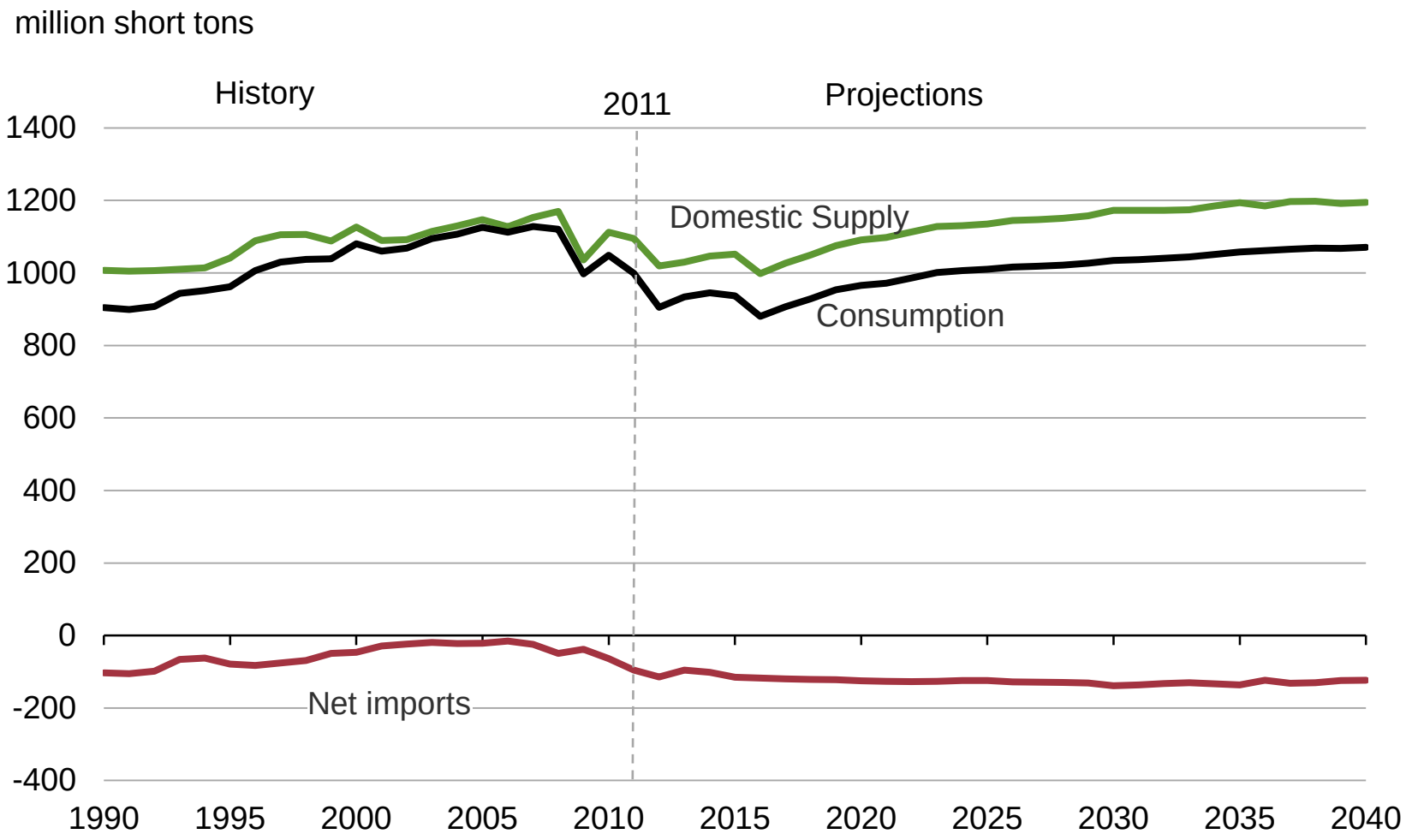
Source: EIA, Annual Energy Outlook 2012

Coal regains some competitive advantage relative to natural gas over time on a national average basis



Source: EIA, Annual Energy Outlook 2013 Early Release

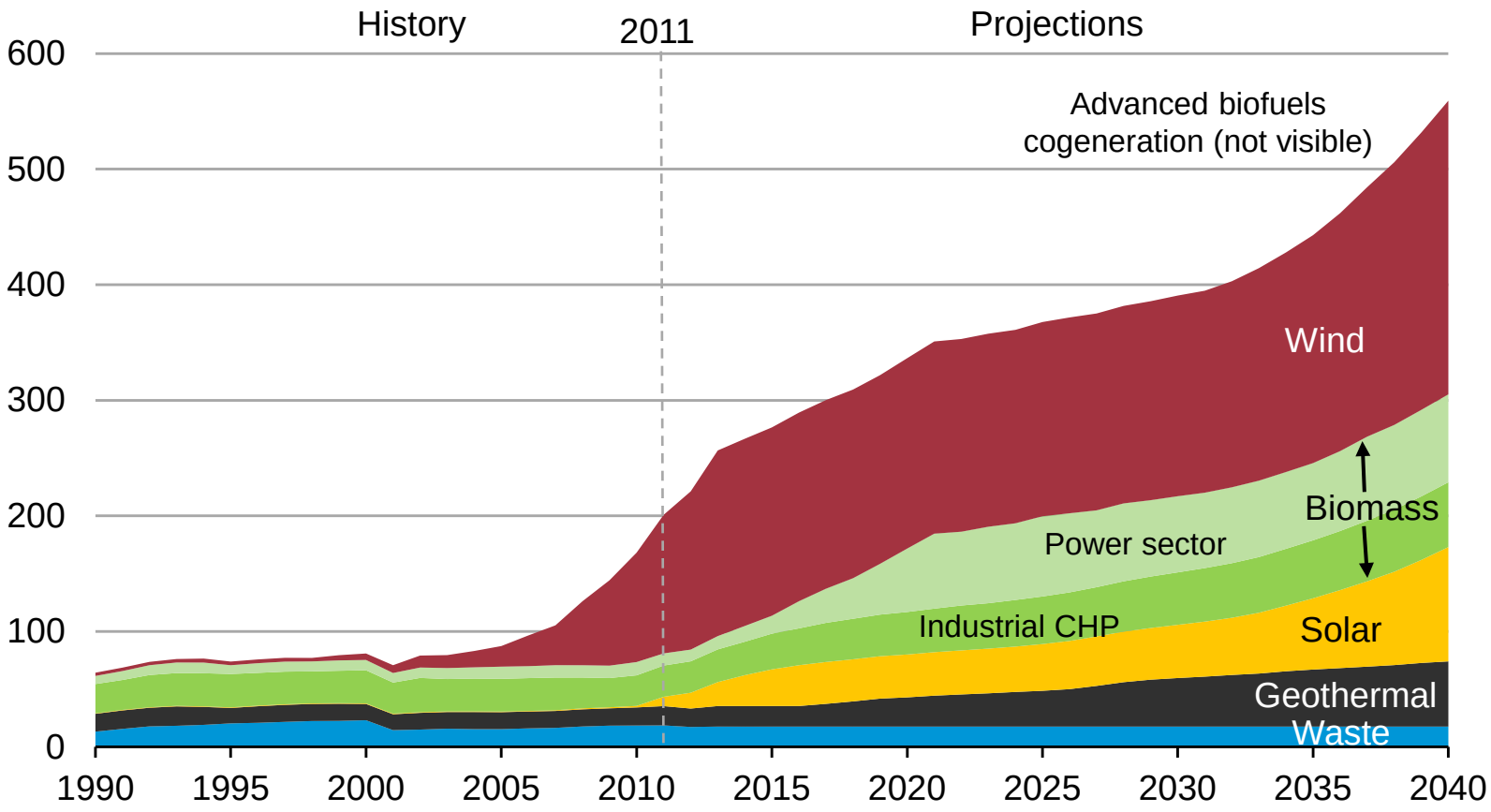
U.S. continues to be a net exporter of coal



Source: EIA, Annual Energy Outlook 2013 Early Release

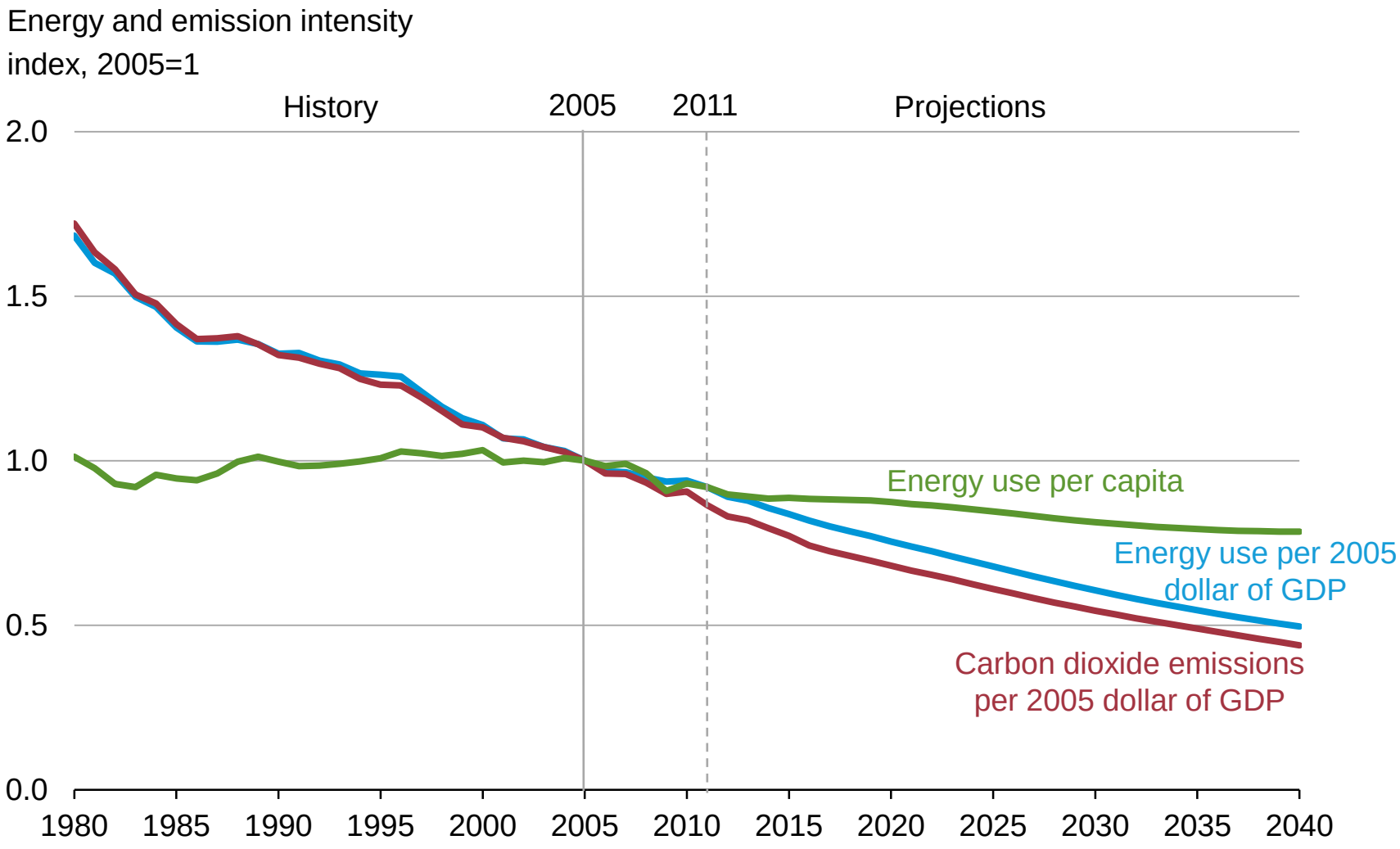
Non-hydro renewable generation more than doubles between 2011 and 2040

Non-hydropower renewable generation
billion kilowatthours per year



Source: EIA, Annual Energy Outlook 2013 Early Release

Energy and CO_2 per dollar of GDP continue to decline; per-capita energy use also declines

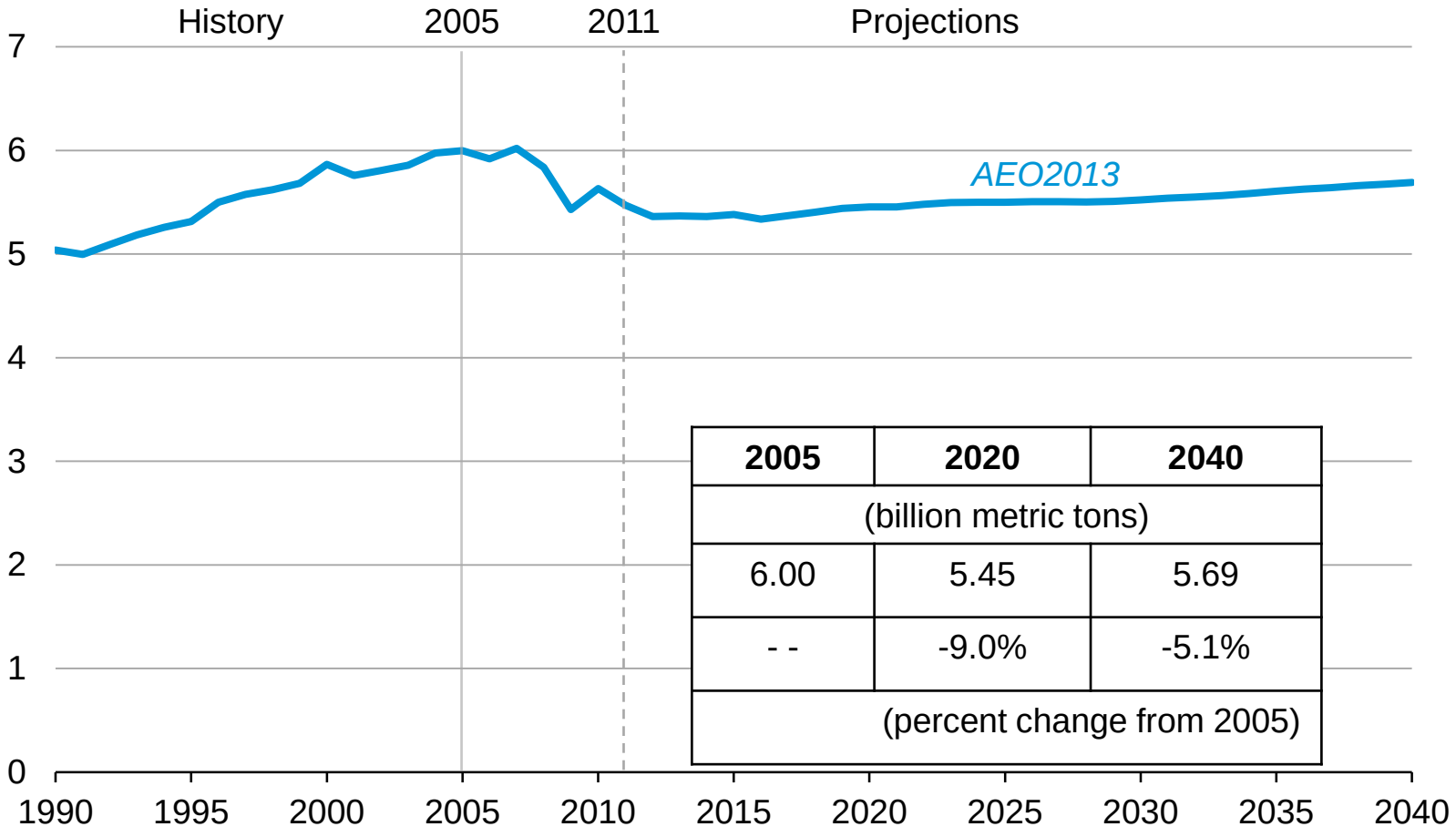


Source: EIA, Annual Energy Outlook 2013 Early Release

In the *AEO2013* Reference case, energy-related CO_2 emissions never get back to their 2005 level

Carbon dioxide emissions

billion metric tons



2005	2020	2040
(billion metric tons)		
6.00	5.45	5.69
- -	-9.0%	-5.1%
(percent change from 2005)		

Source: EIA, Annual Energy Outlook 2013 Early Release

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

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