

Outlook for U.S. Coal and Nuclear Electricity Generation



for

2013 EIA Energy Conference

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by

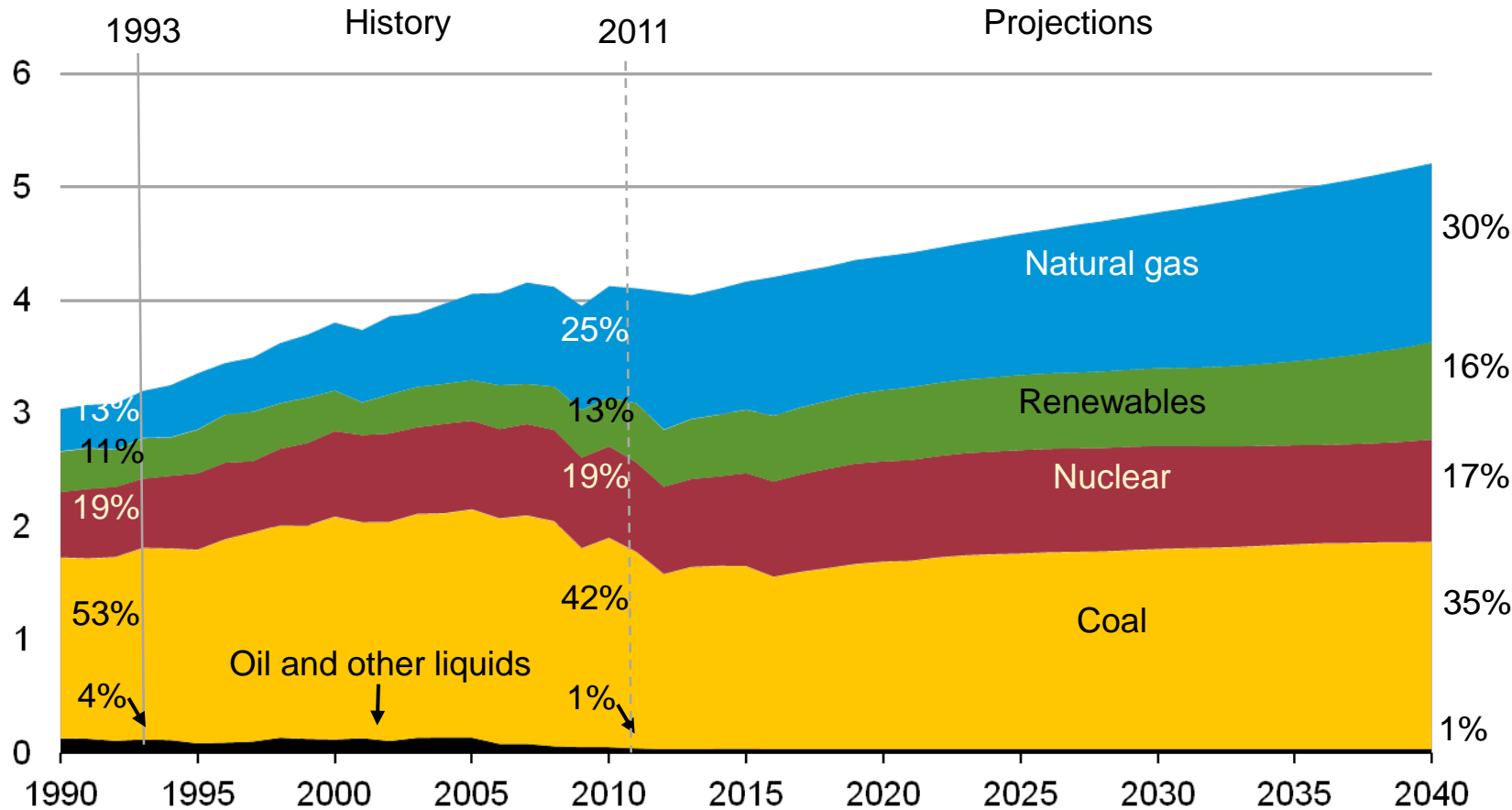
Jim Diefenderfer, Office of Electricity, Coal, Nuclear & Renewables Analysis

U. S. Energy Information Administration

Over time the electricity mix gradually shifts to lower-carbon options, led by growth in natural gas and renewable generation

U.S. electricity net generation

trillion kilowatthours

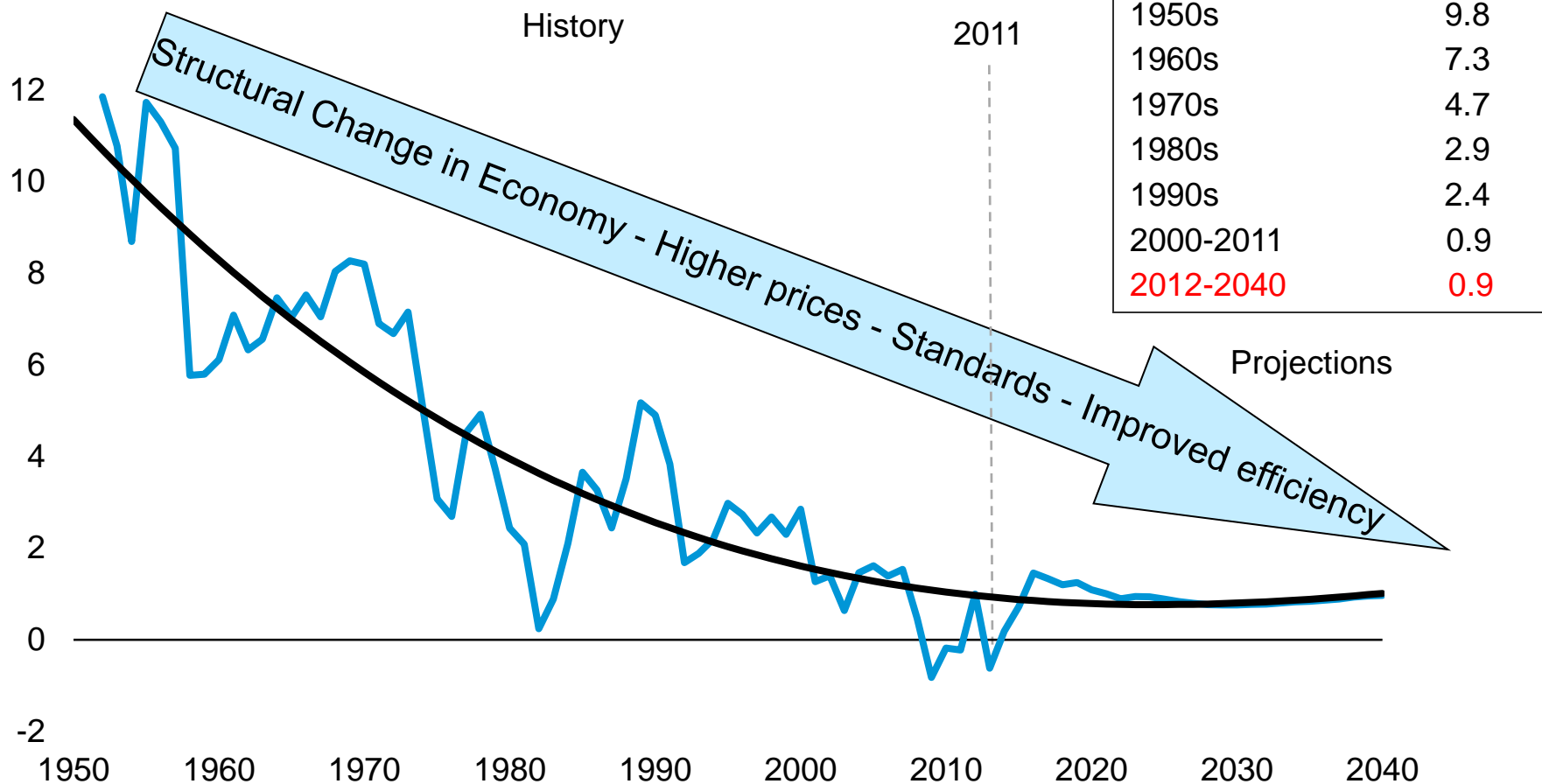


Source: EIA, Annual Energy Outlook 2013

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

U.S. electricity use

percent growth (3-year rolling average)

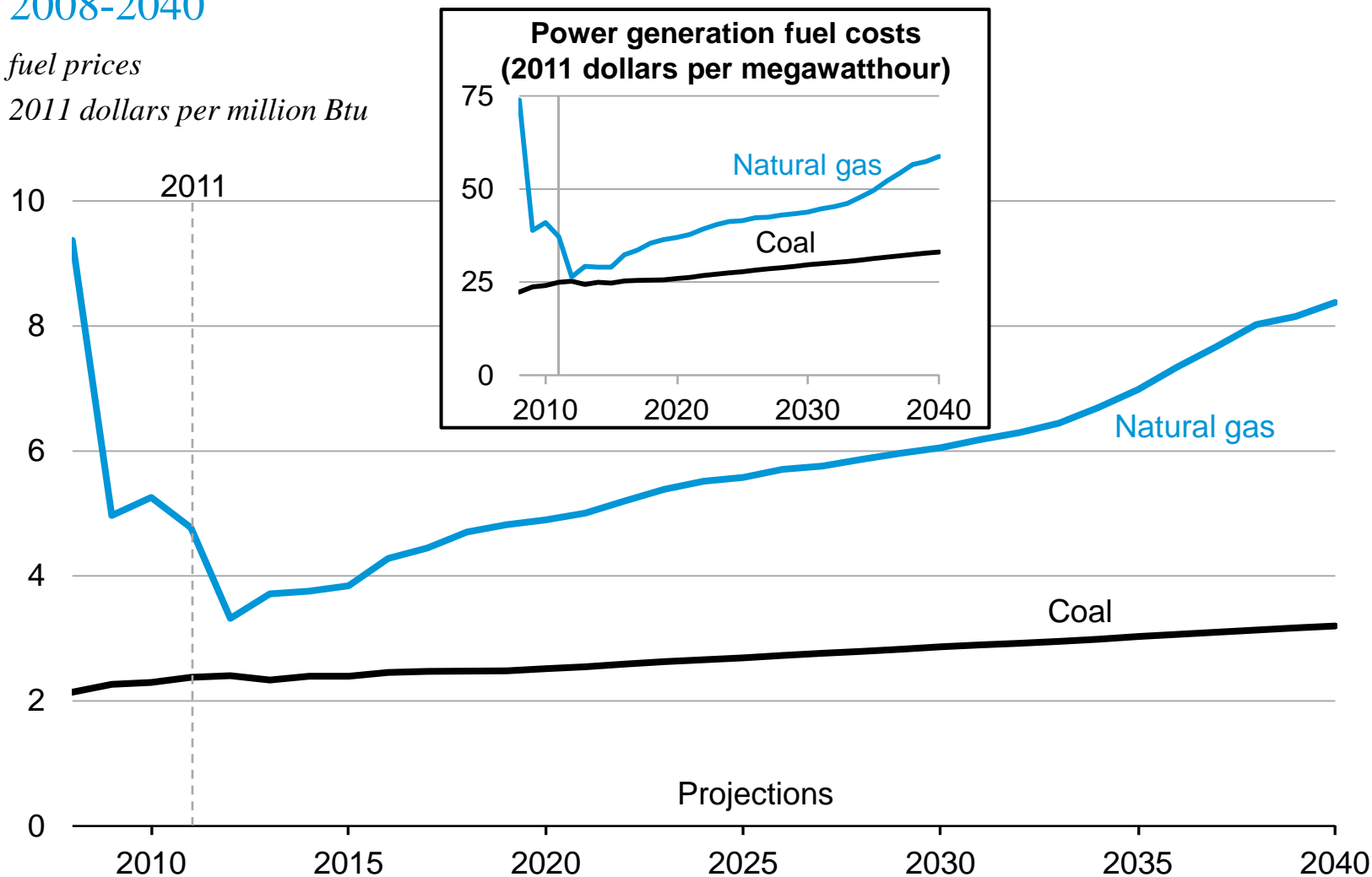


Source: EIA, Annual Energy Outlook 2013

Average delivered fuel prices to electric power plants in the Reference case, 2008-2040

fuel prices

2011 dollars per million Btu

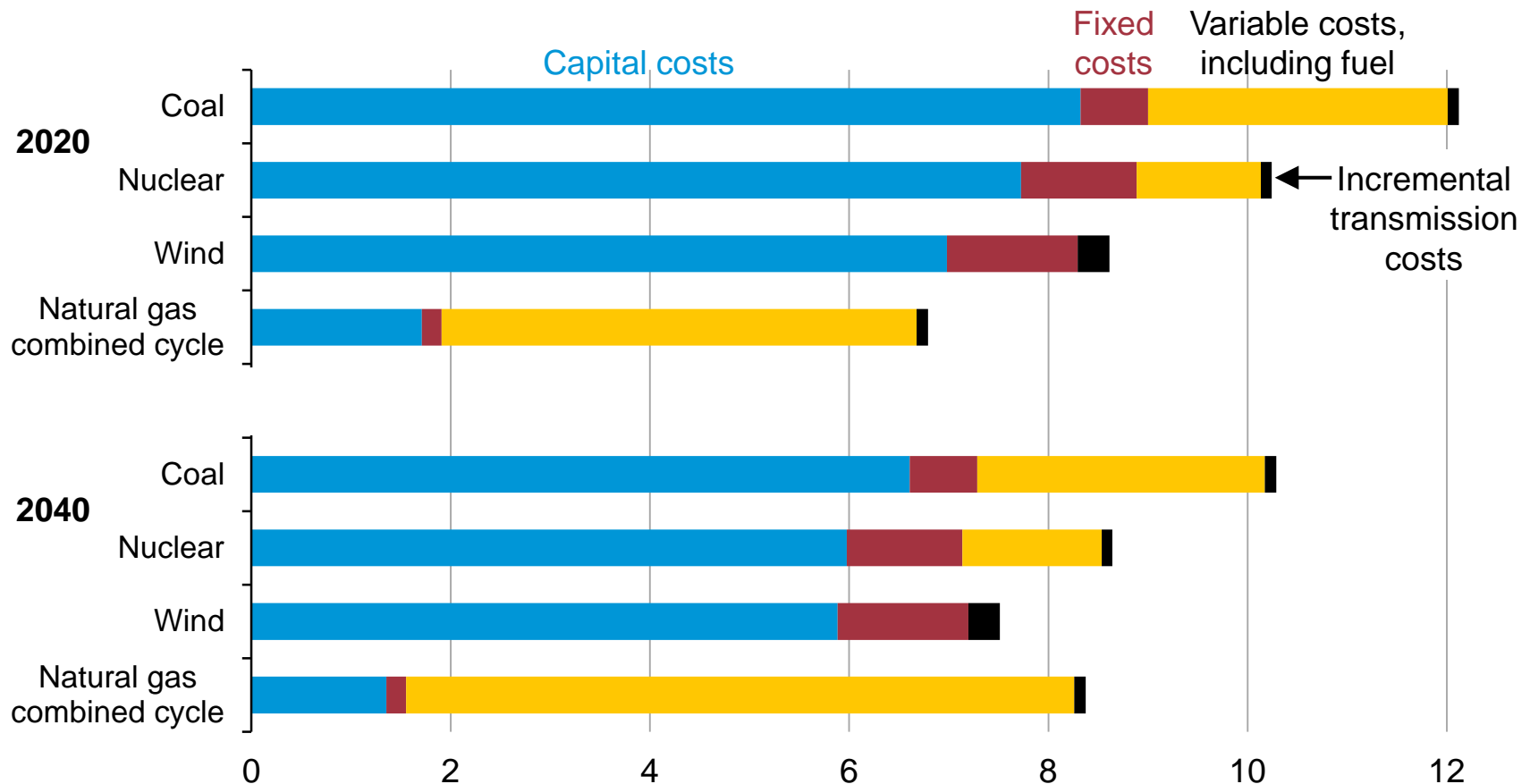


Source: EIA, Annual Energy Outlook 2013

Levelized electricity costs for new power plants, excluding subsidies, 2020 and 2040

new power plant costs

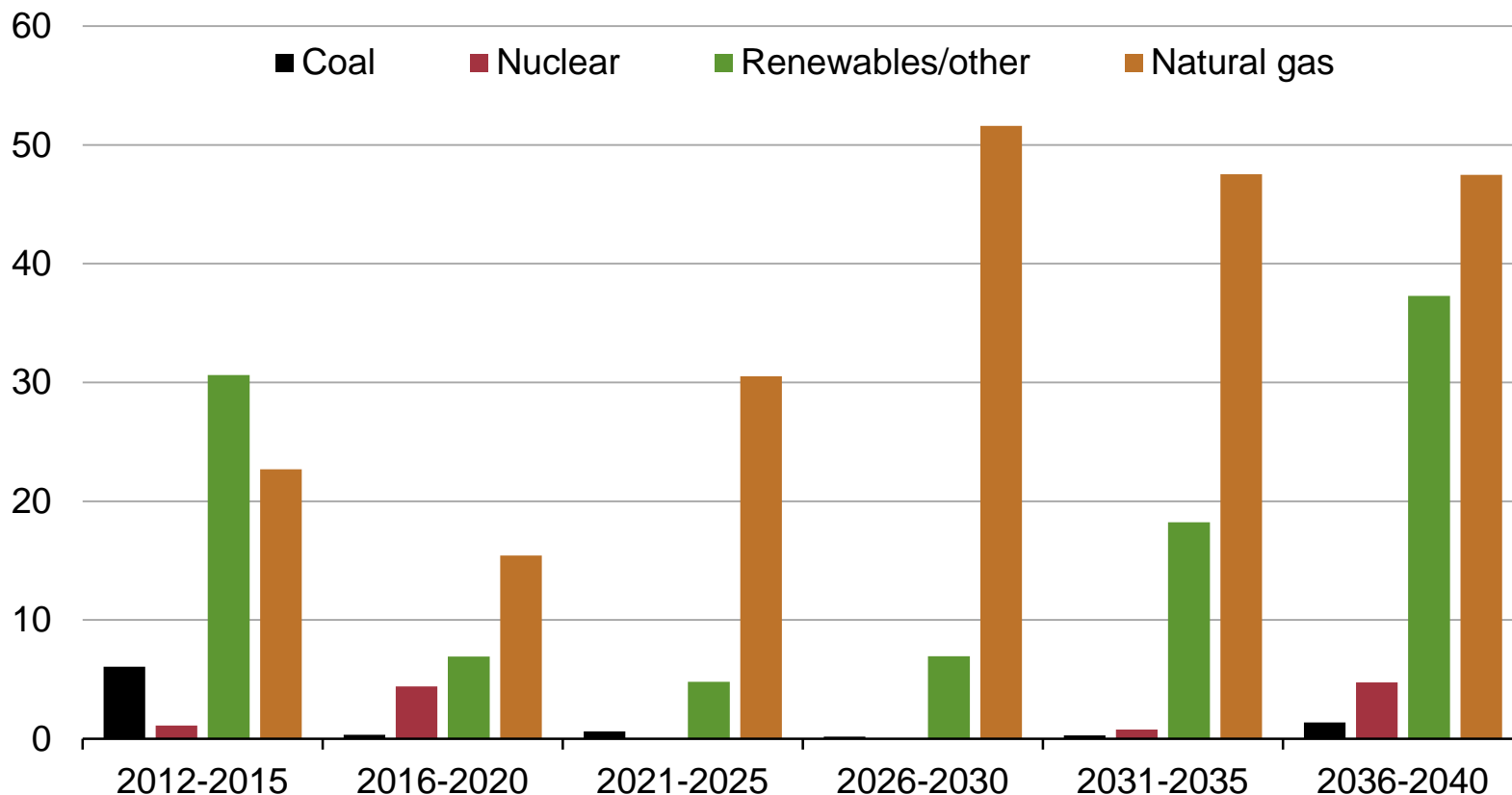
2011 cents per kilowatthour



Source: EIA, Annual Energy Outlook 2013

Electricity generation capacity additions by fuel type, including combined heat and power, 2012-2040

*capacity additions
gigawatts*



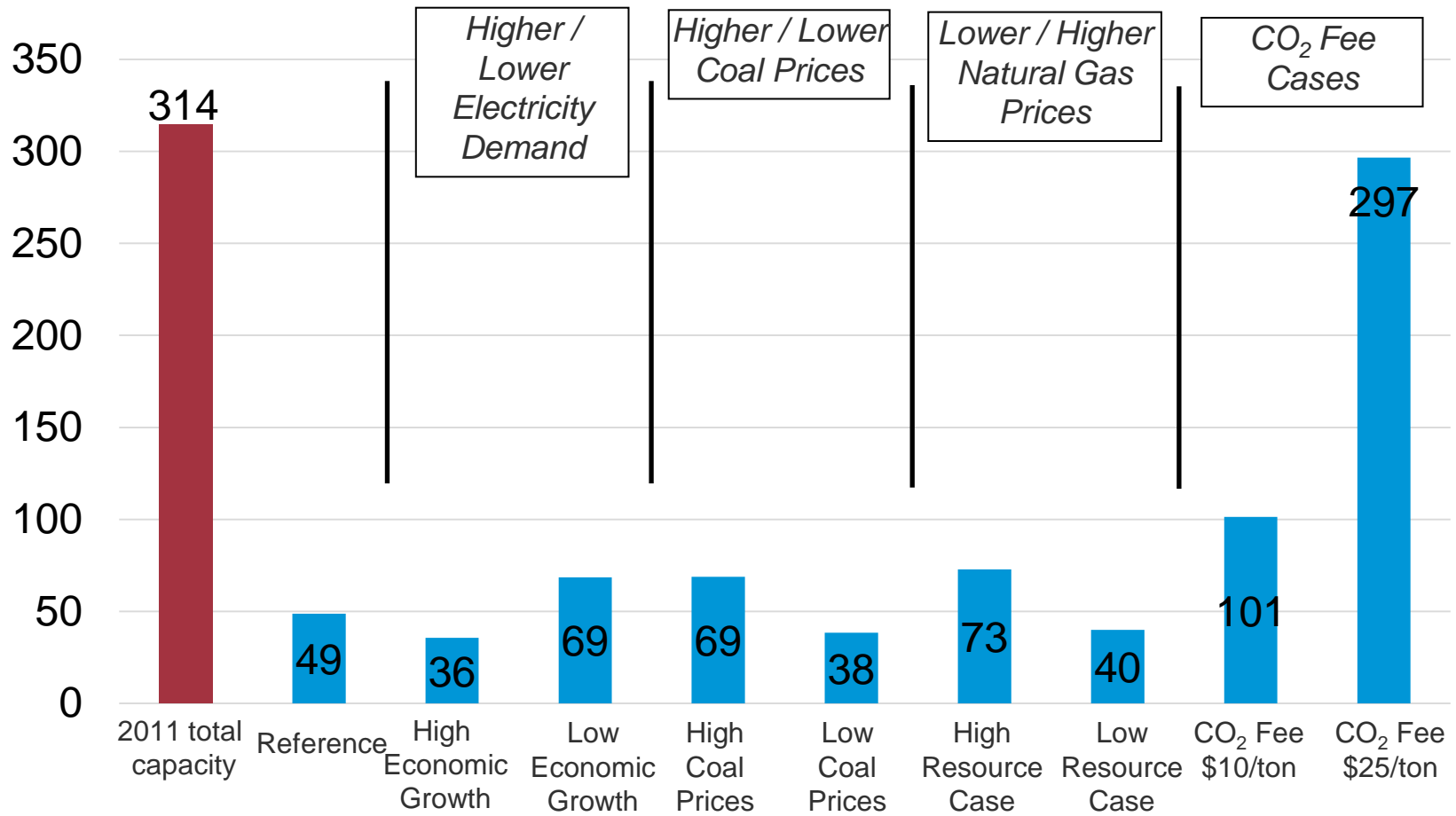
Source: EIA, Annual Energy Outlook 2013

AEO2013 Side Cases: Coal Focus

- *High/low coal prices*
- *High/low economic growth*
- *High/low oil and gas resource*
- *CO₂ fee cases*

Coal plant retirements

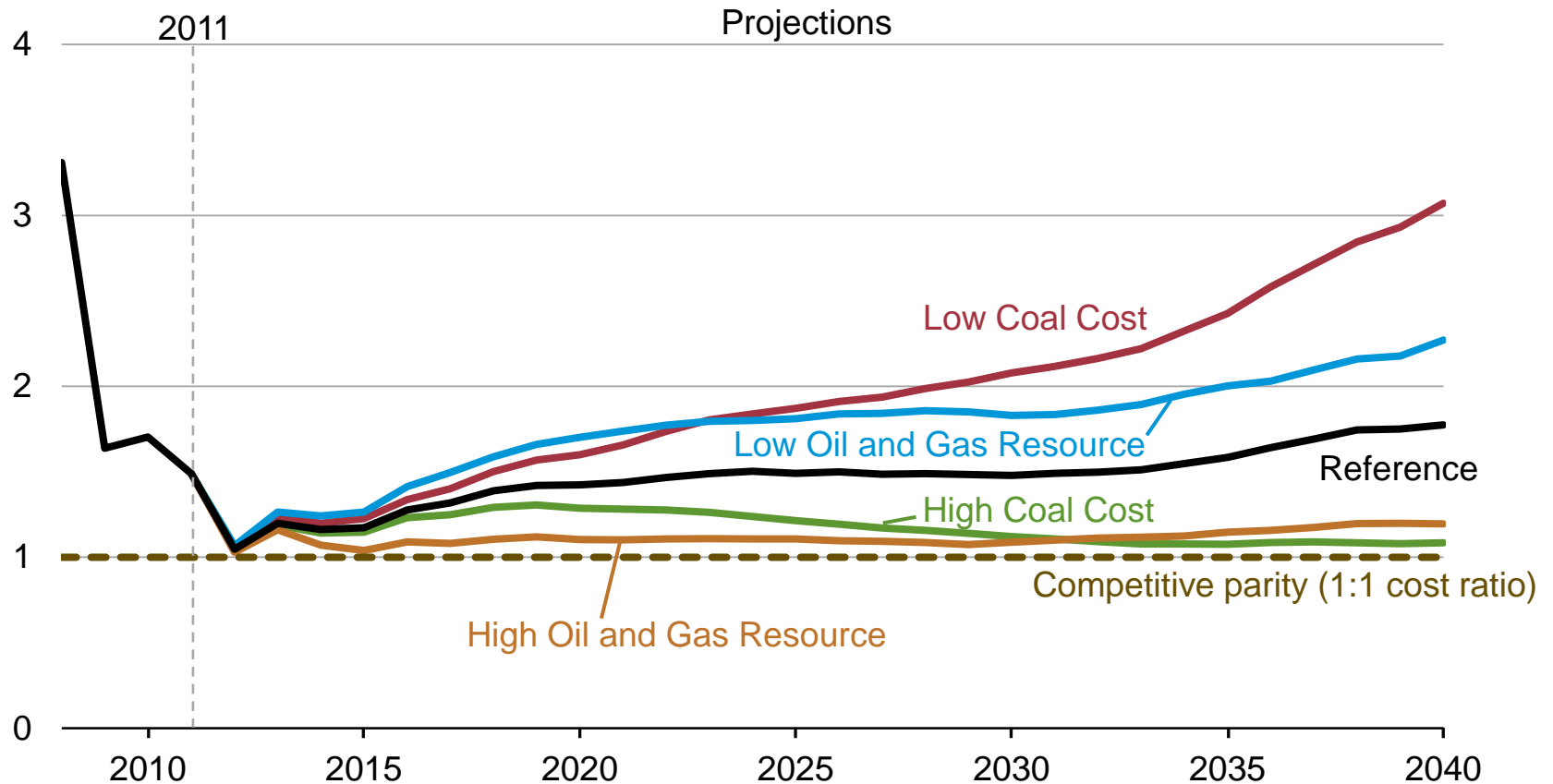
gigawatts



Source: EIA, Annual Energy Outlook 2013

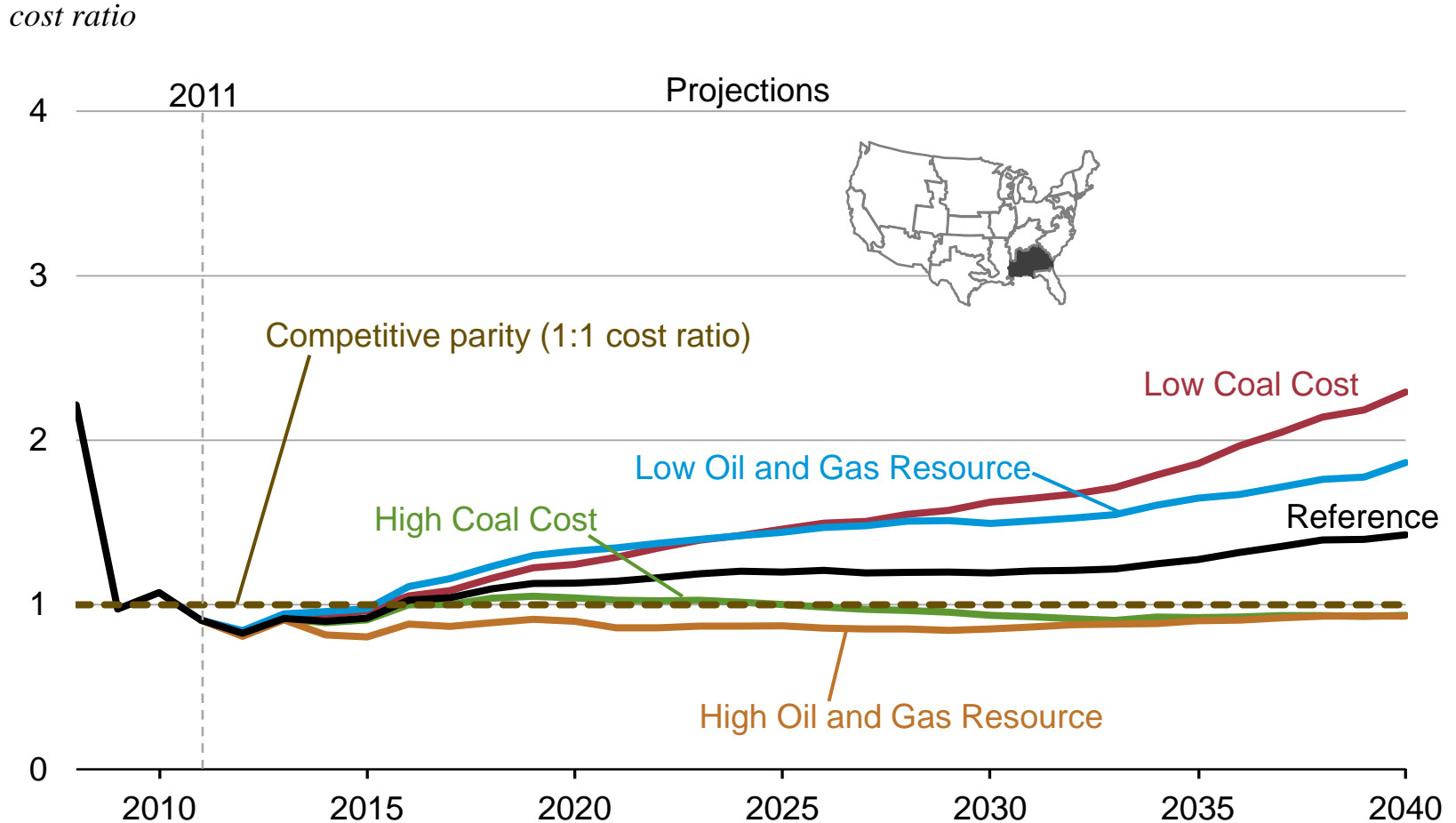
Ratio of average per megawatt-hour fuel costs for natural gas combined-cycle plants to coal-fired steam turbines in five cases, 2008-2040

cost ratio



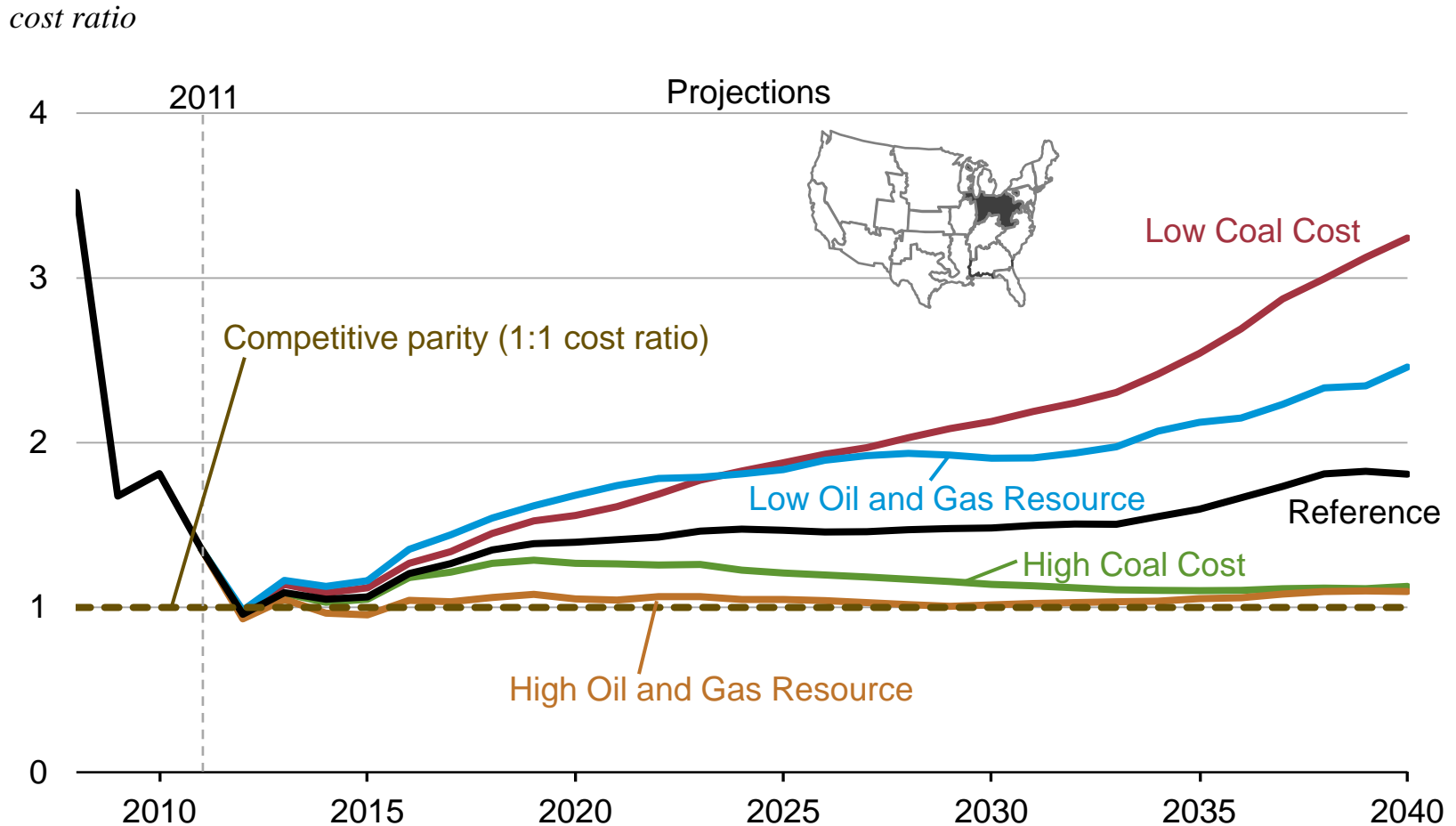
Source: EIA, Annual Energy Outlook 2013

Ratio of average per megawatt-hour fuel costs for natural gas combined-cycle plants to coal-fired steam turbines in the SERC Southeast subregion in five cases, 2008-2040



Source: EIA, Annual Energy Outlook 2013

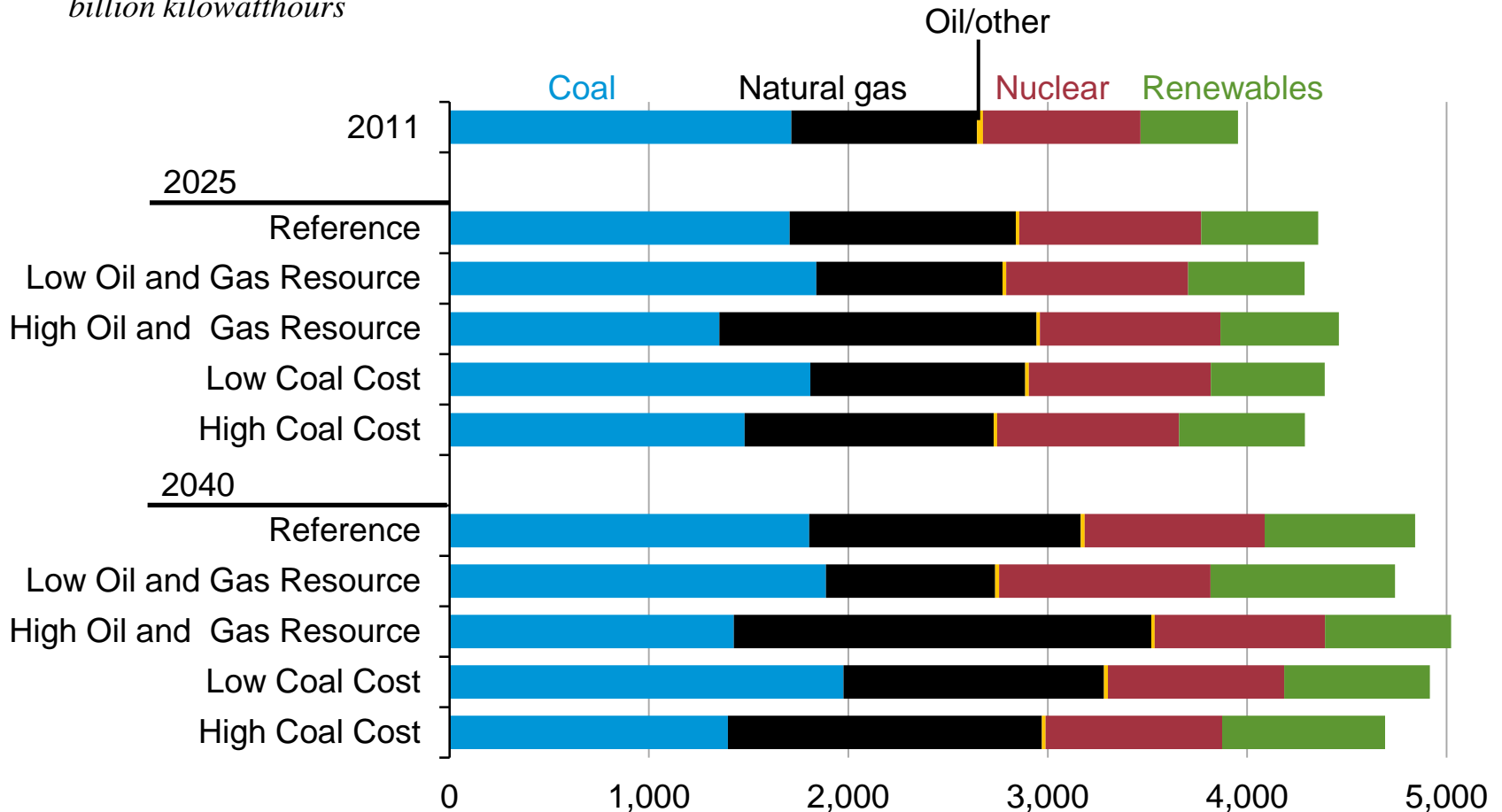
Ratio of average per megawatt-hour fuel costs for natural gas combined-cycle plants to coal-fired steam turbines in the RFC West subregion in five cases, 2008-2040



Source: EIA, Annual Energy Outlook 2013

Power sector electricity generation by fuel in five cases, 2011, 2025, 2040

*electricity net generation
billion kilowatthours*



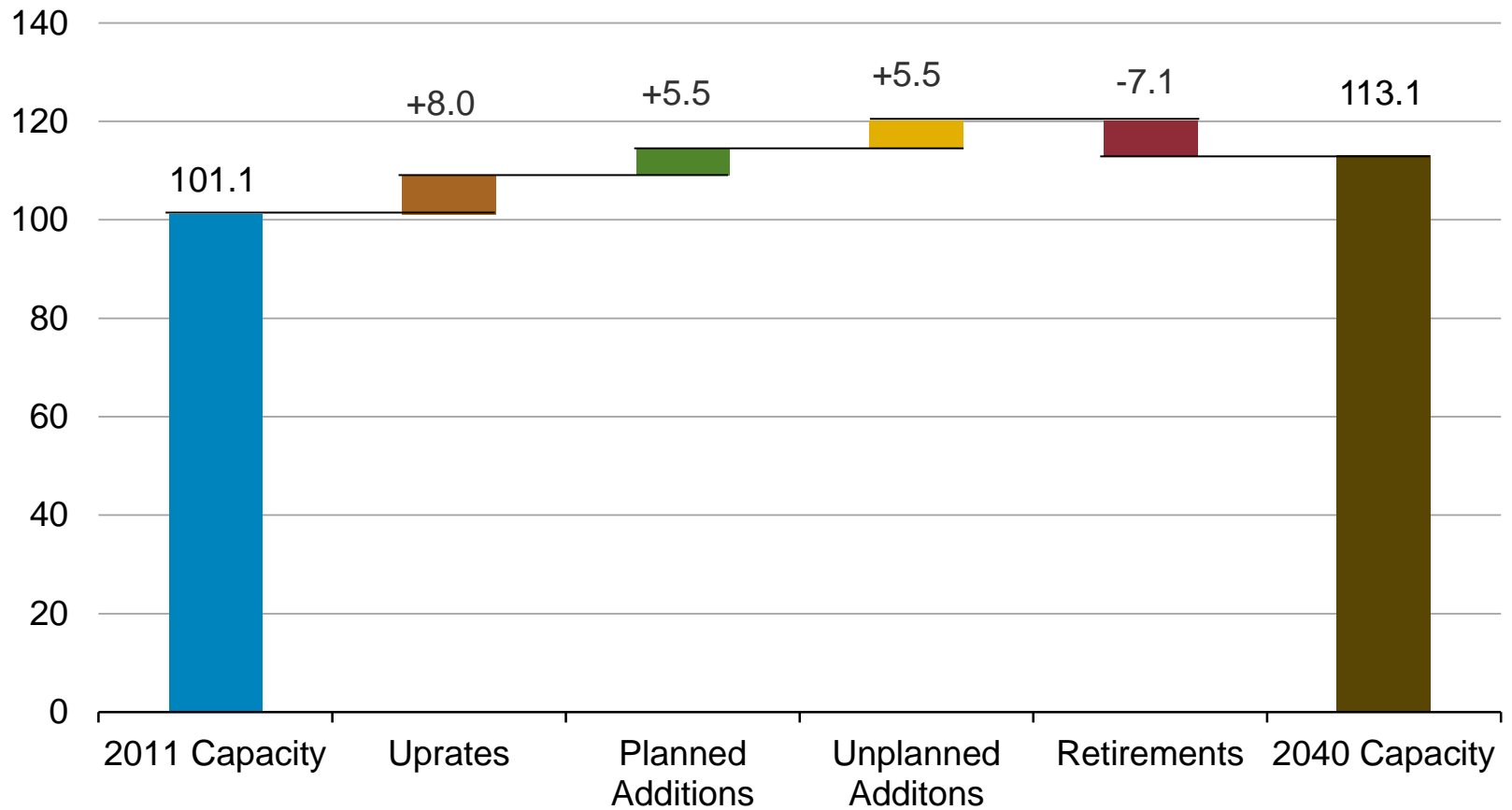
Source: EIA, Annual Energy Outlook 2013

AEO2013 Side Cases: Nuclear Focus

- *High/low nuclear*
- *High/low oil and gas resource*
- *High/low economic growth*
- *CO₂ fee cases*

Changes in nuclear capacity for the *AEO2013* reference case

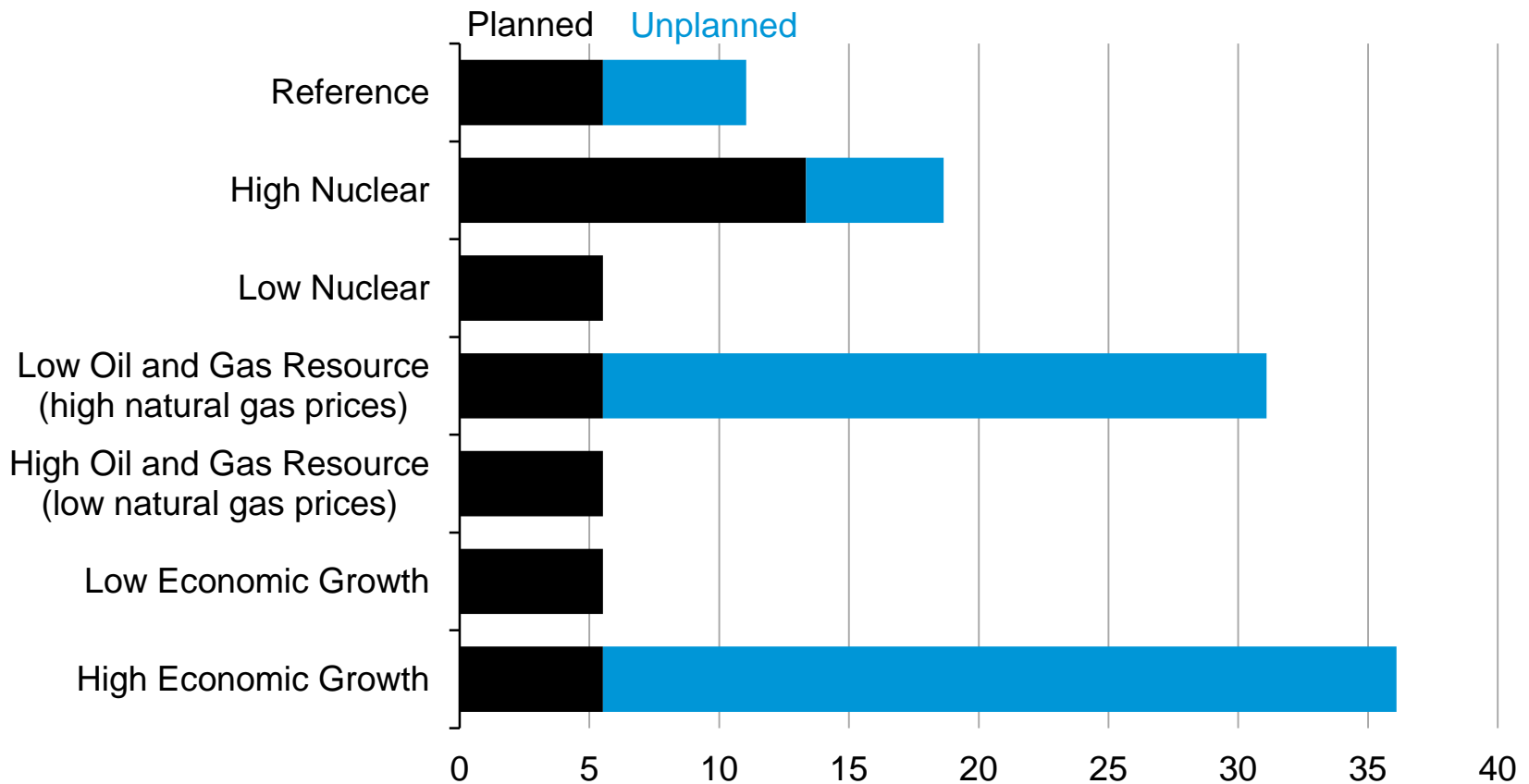
Gigawatts



Source: EIA, Annual Energy Outlook 2013

Nuclear capacity additions in five cases, 2011-2040

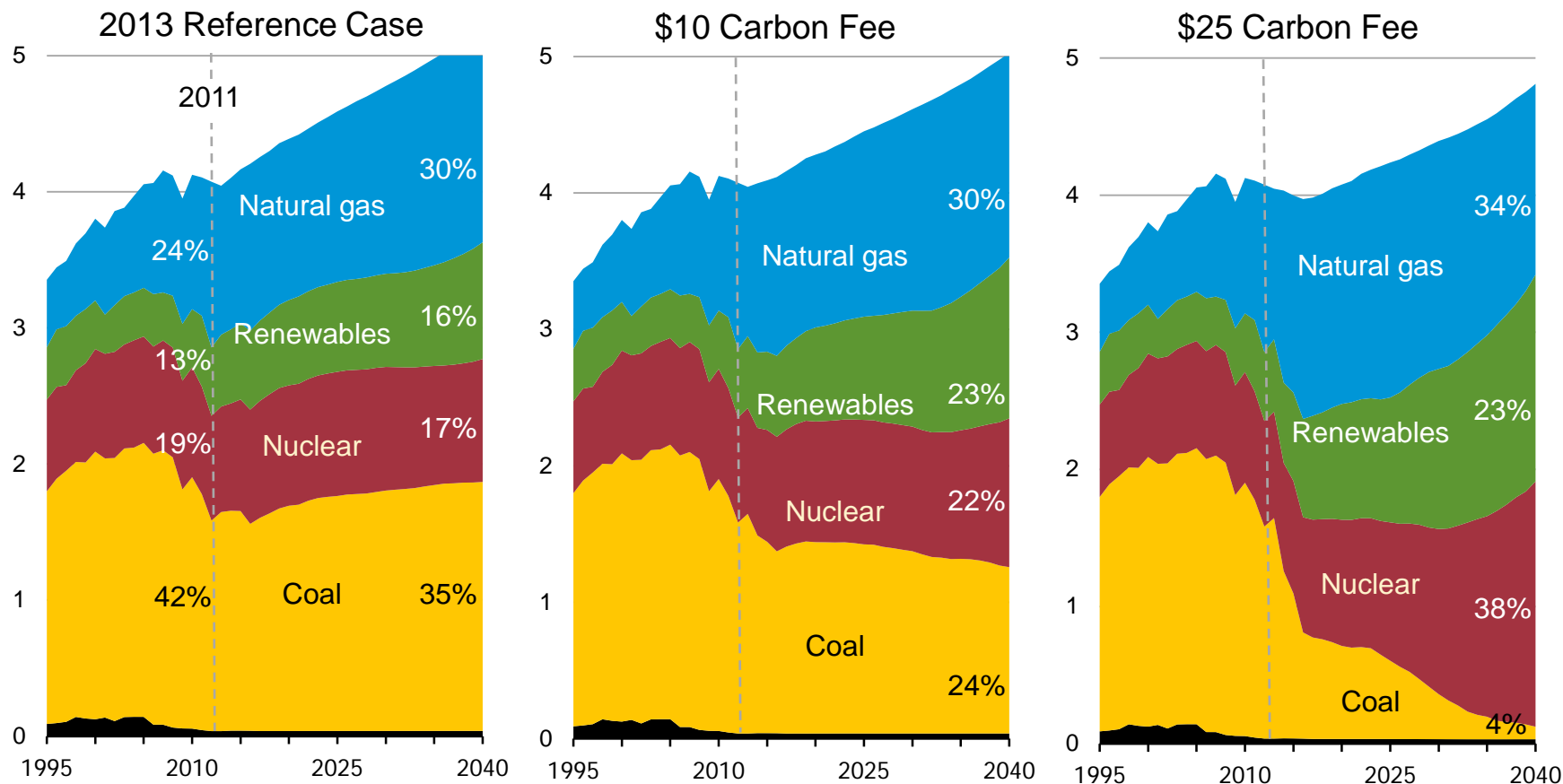
capacity additions
gigawatts



Source: EIA, Annual Energy Outlook 2013

Changing electricity generation mix in *AEO2013* reference case and carbon fee allowance side cases

U.S. electricity net generation
trillion kilowatthours



Source: EIA, Annual Energy Outlook 2013

For more information

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

Annual Energy Outlook | www.eia.gov/aeo

Issues in Focus:

Competition between coal and natural gas in the electric power sector | http://www.eia.gov/forecasts/aeo/IF_all.cfm#coal_gas

Nuclear power in AEO2013|
http://www.eia.gov/forecasts/aeo/IF_all.cfm#nuclear_power