

Annual Energy Outlook 2009 Early Release

Energy Information Administration
December 17, 2008

www.eia.doe.gov

Energy Information Administration
Official Energy Statistics from the U.S. Government

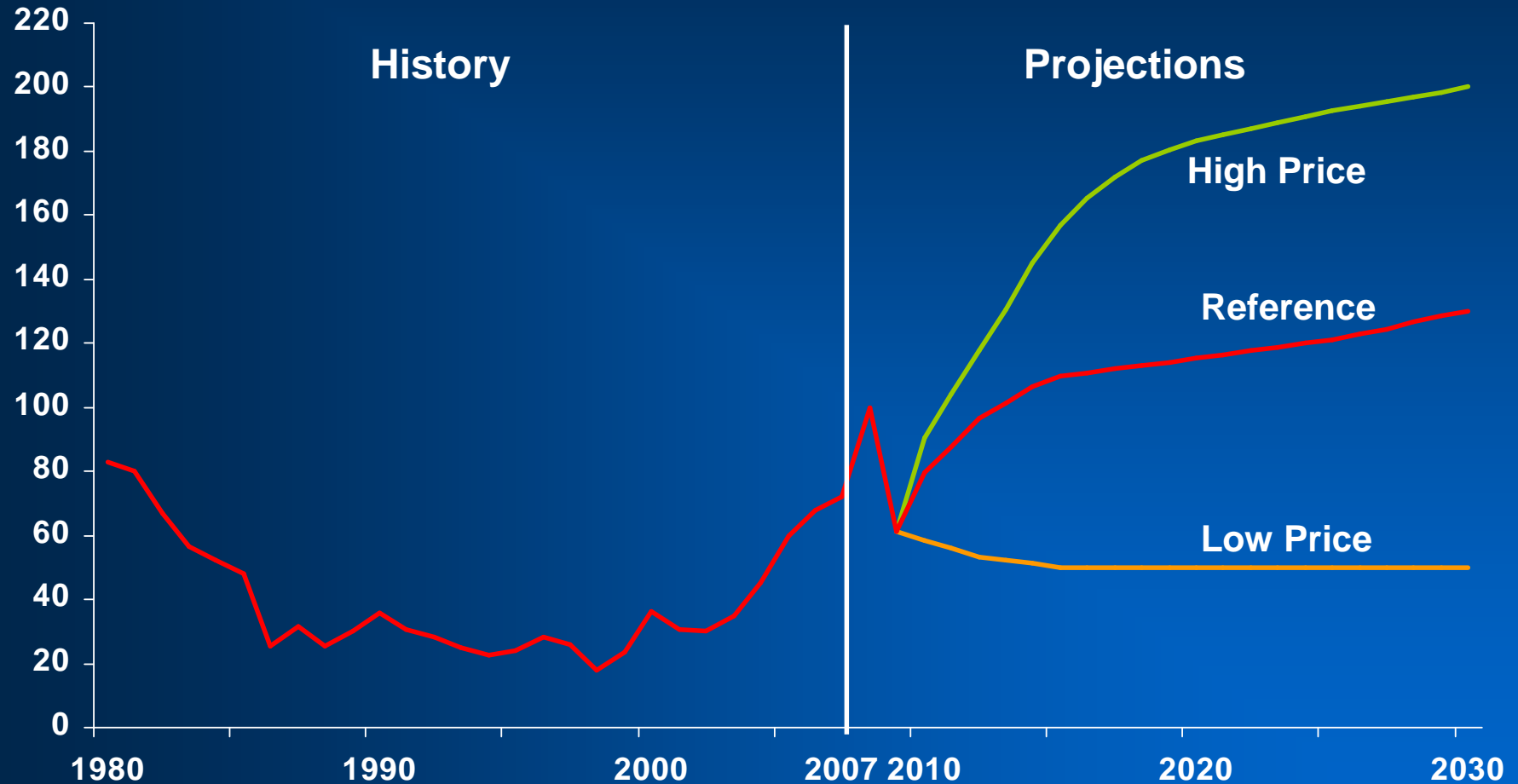


The economy, oil prices, resources, policies, and behavior drive the AEO2009 reference case

- Long-term economic growth averages about 2.5 percent per year between 2007 and 2030
- World crude oil prices recover from a near-term decline and reach \$130 per barrel (in 2007 dollars) by 2030
- A robust domestic natural gas resource base allows for a steady expansion of production given projected growth in demand and prices
- Recently-enacted policies and concerns over greenhouse gas (GHG) emissions, combined with high energy prices, moderate projected growth in energy consumption and emissions

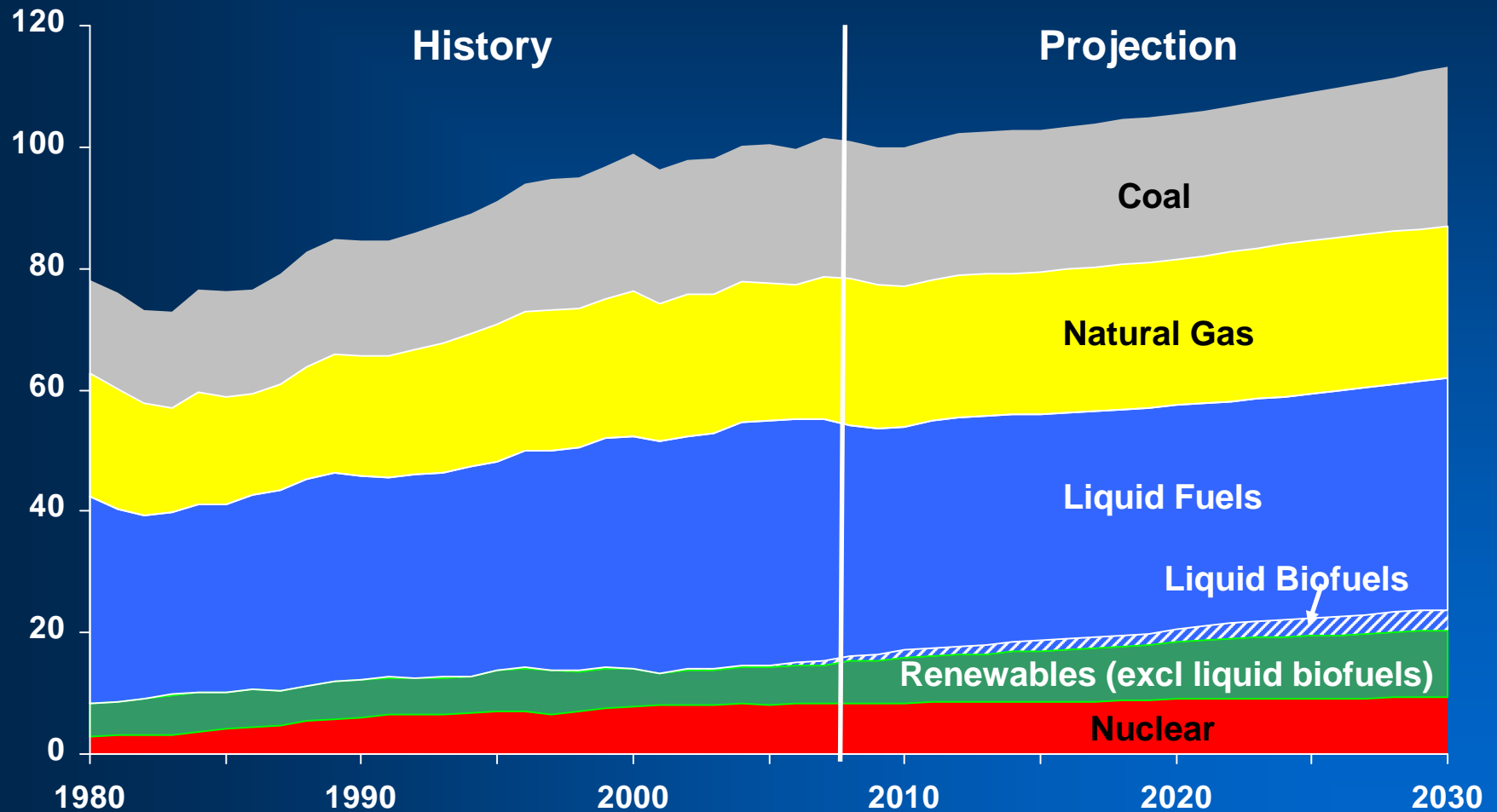
Oil prices in the reference case rise steadily; the full AEO includes a wide range of price cases

2007 dollars per barrel



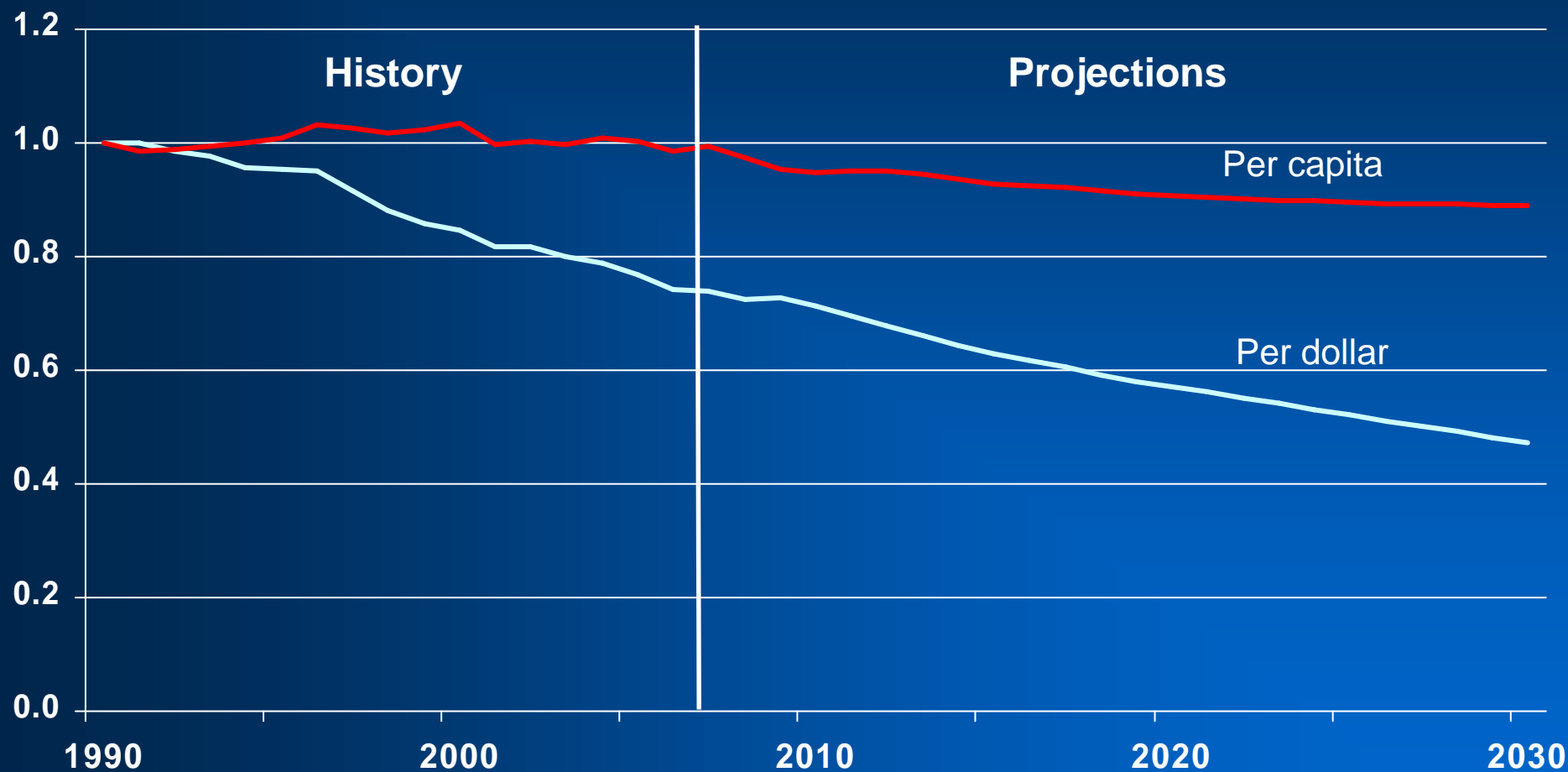
Non-fossil energy use grows rapidly, but fossil fuels still provide 79 percent of total energy use in 2030

quadrillion Btu



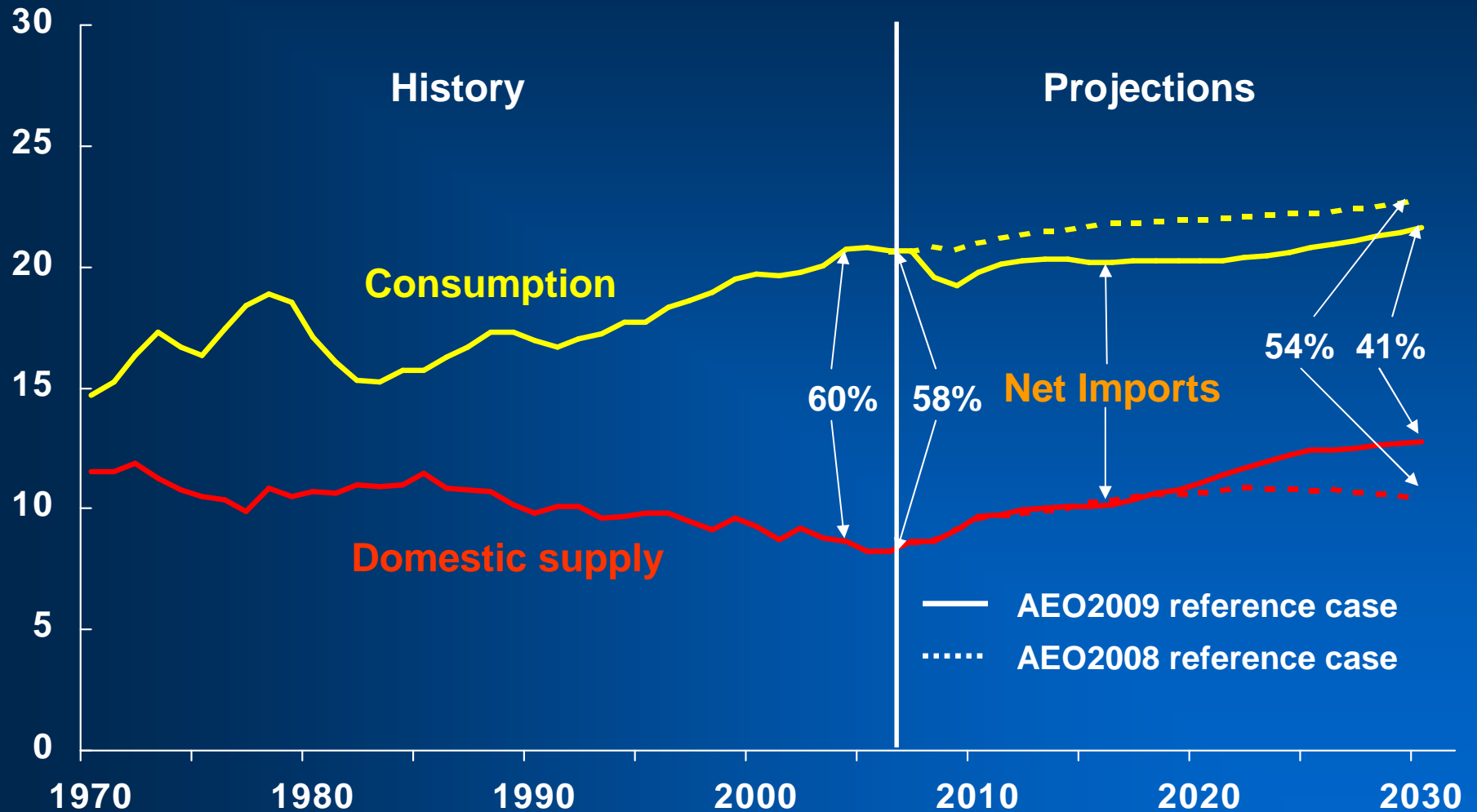
Energy use per dollar of GDP continues to decline; per capita energy use also declines

index, 1990=1.0



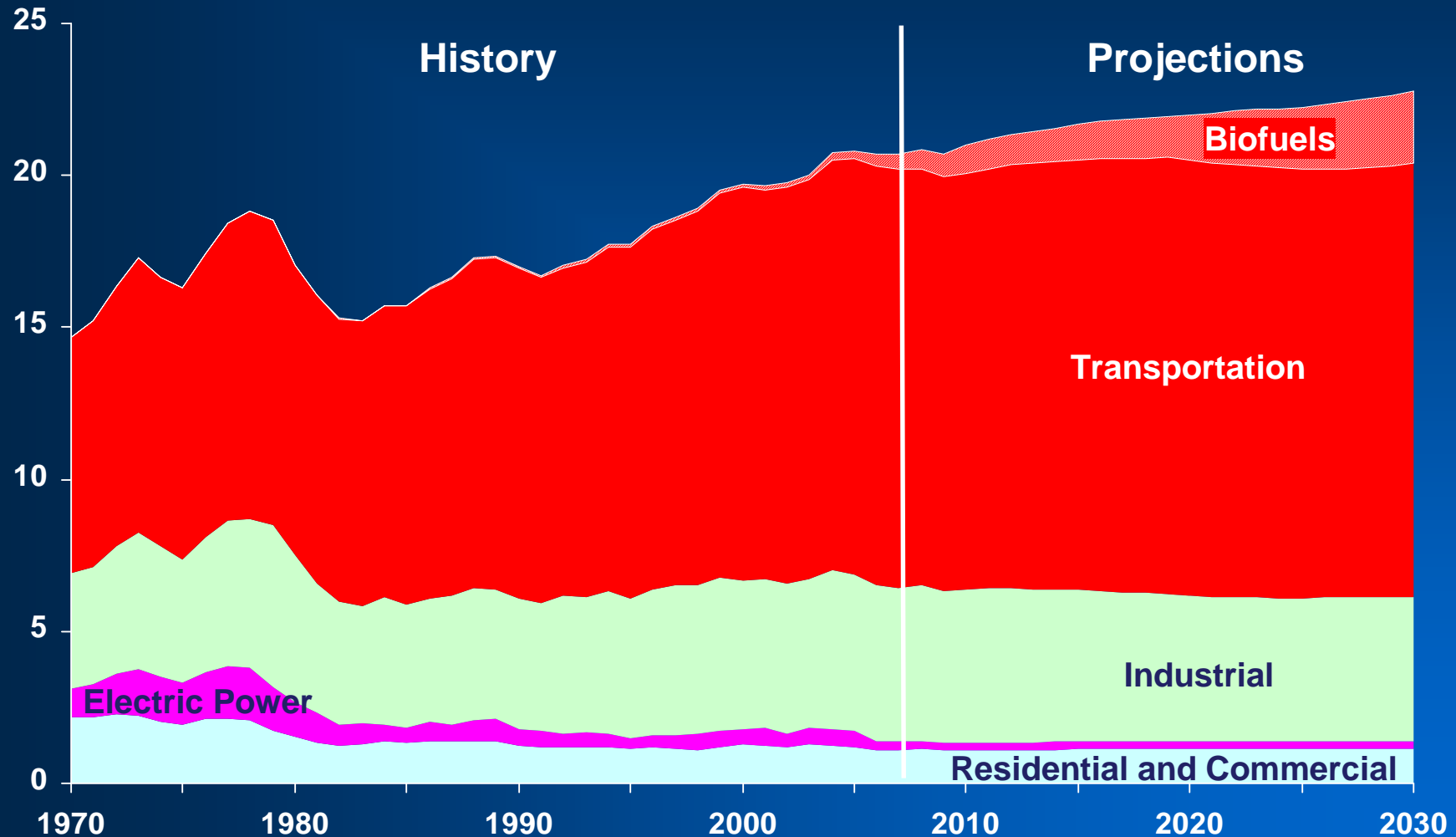
Net dependence on imported liquids declines dramatically over the next 20 years

million barrels per day



Petroleum-based liquids consumption is projected to be flat as biofuels use grows

million barrels per day

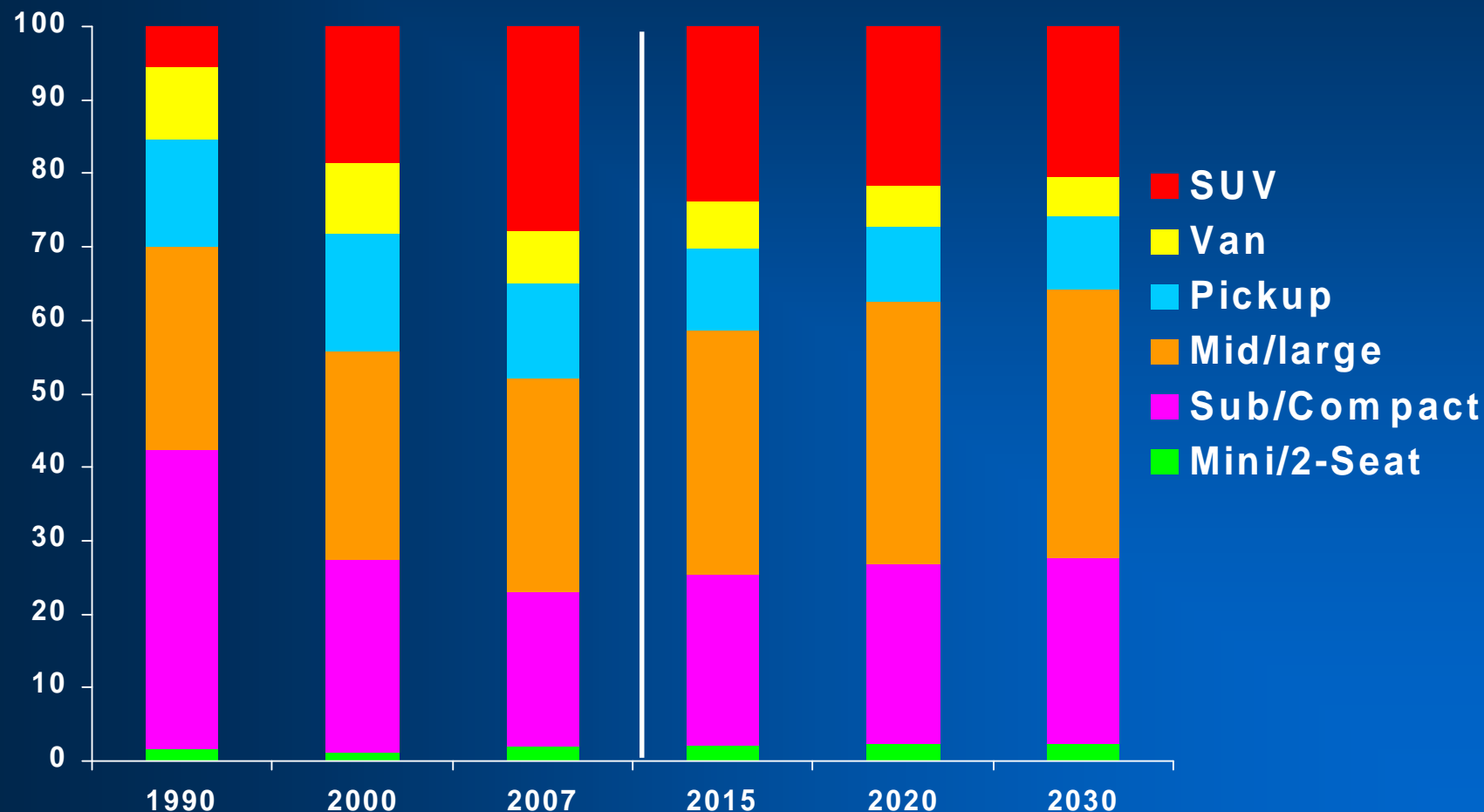


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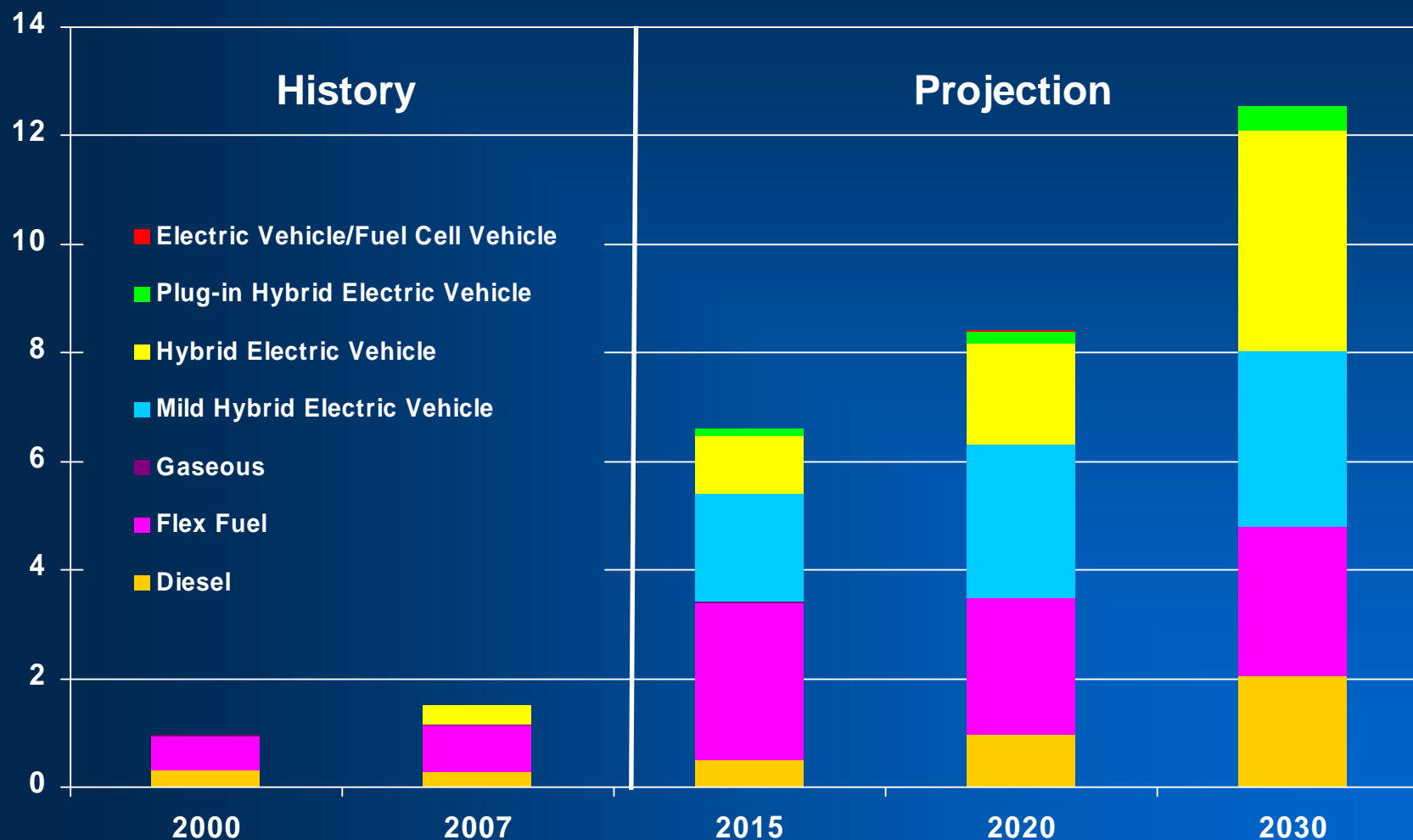
New light-duty vehicle sales shift from light trucks back to cars

percent of total sales



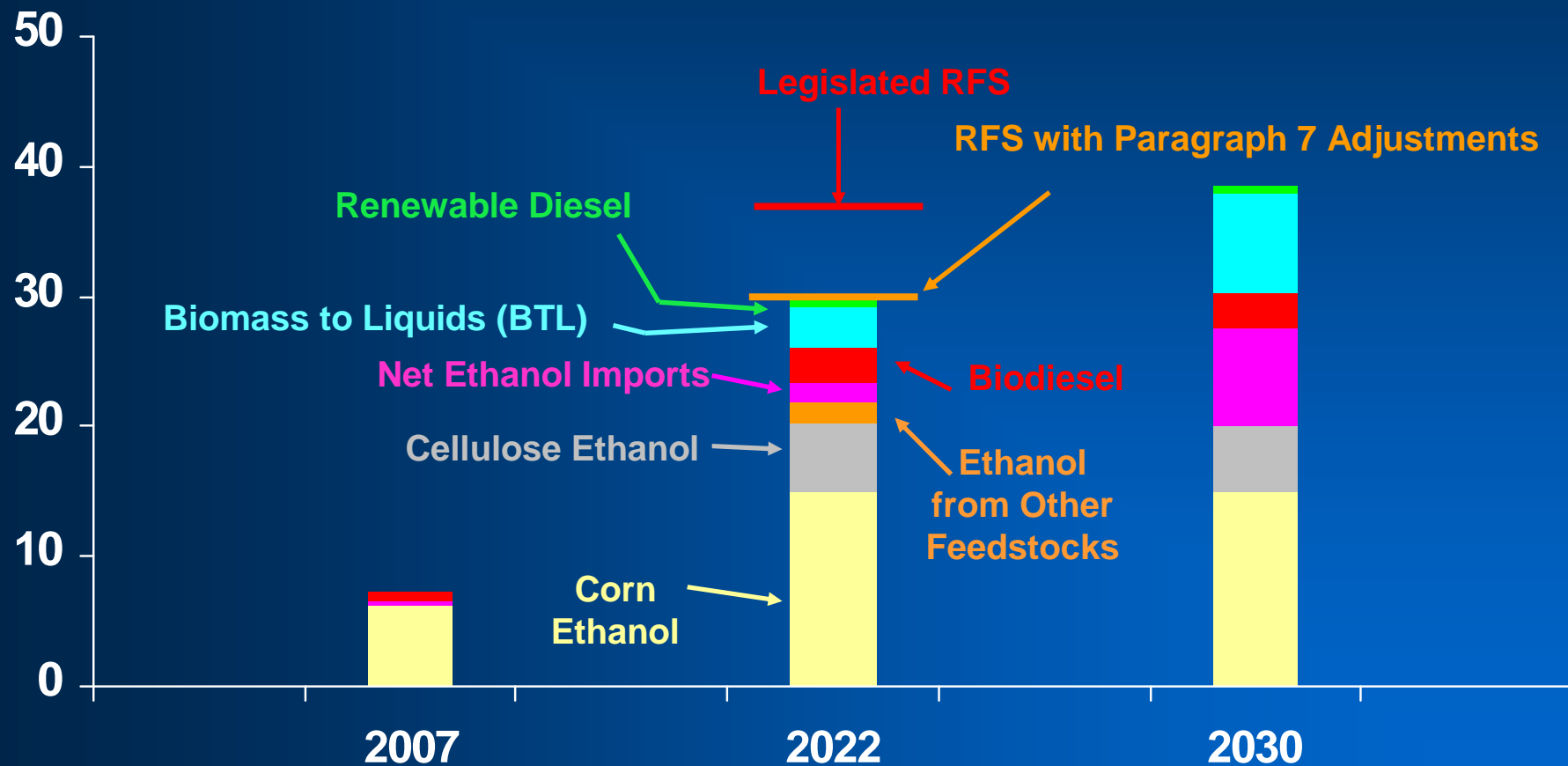
Mild and full hybrid systems dominate new light-duty vehicle sales by 2030

millions of sales



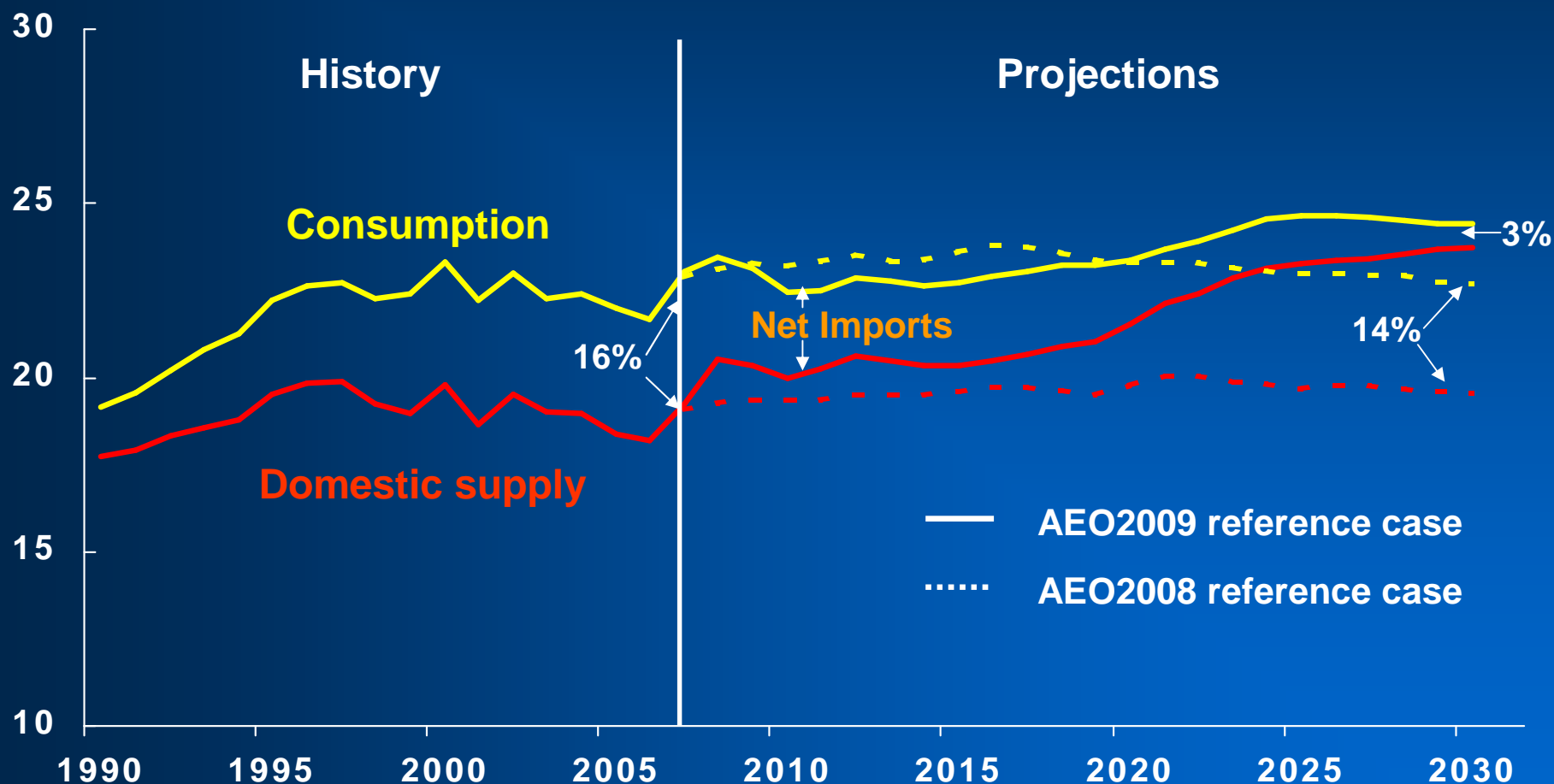
Biofuels use falls short of the 36 billion gallon RFS target in 2022, but exceeds it by 2030

billion credits



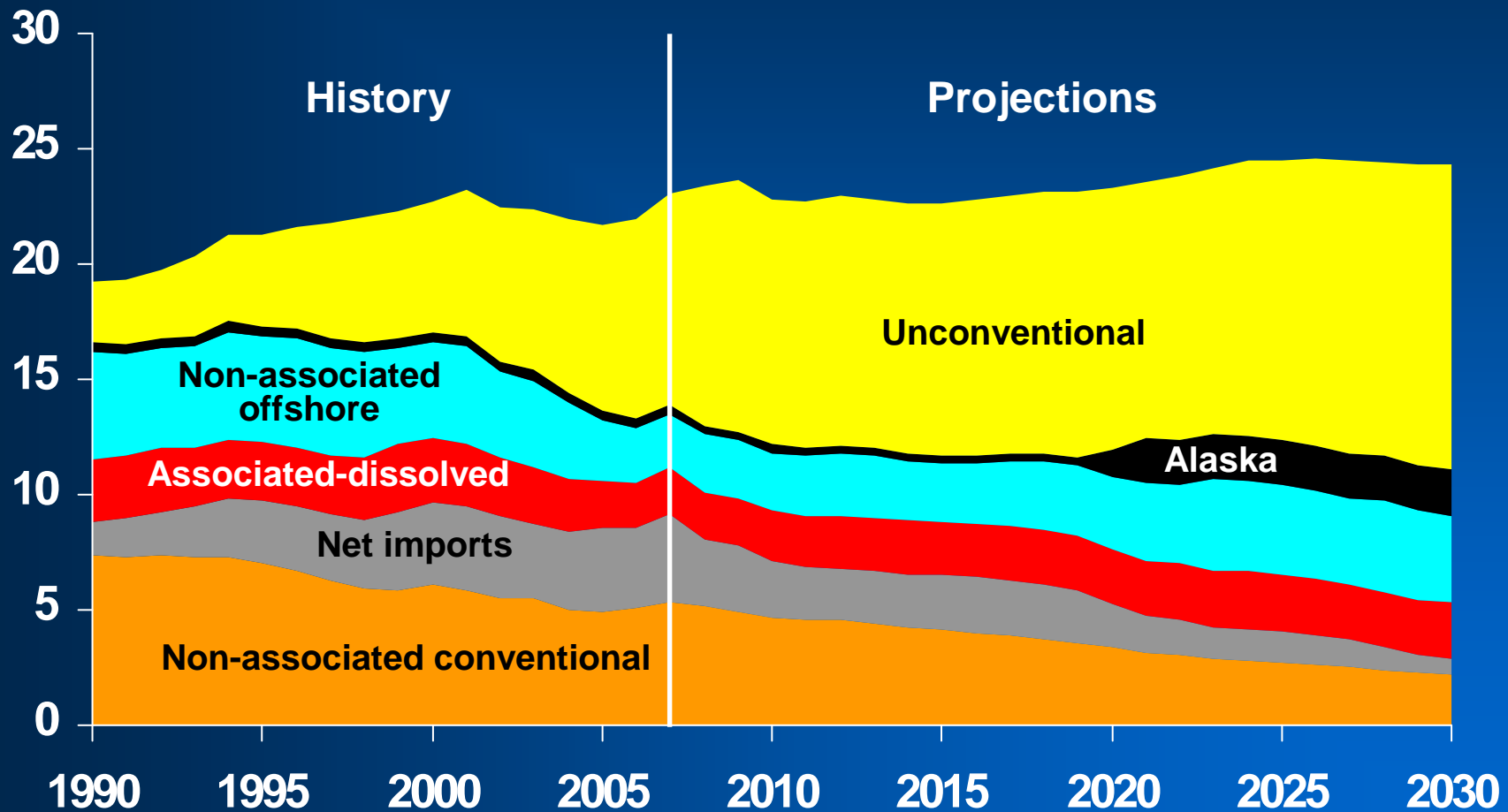
The import share of natural gas supply declines sharply as domestic supply grows

trillion cubic feet



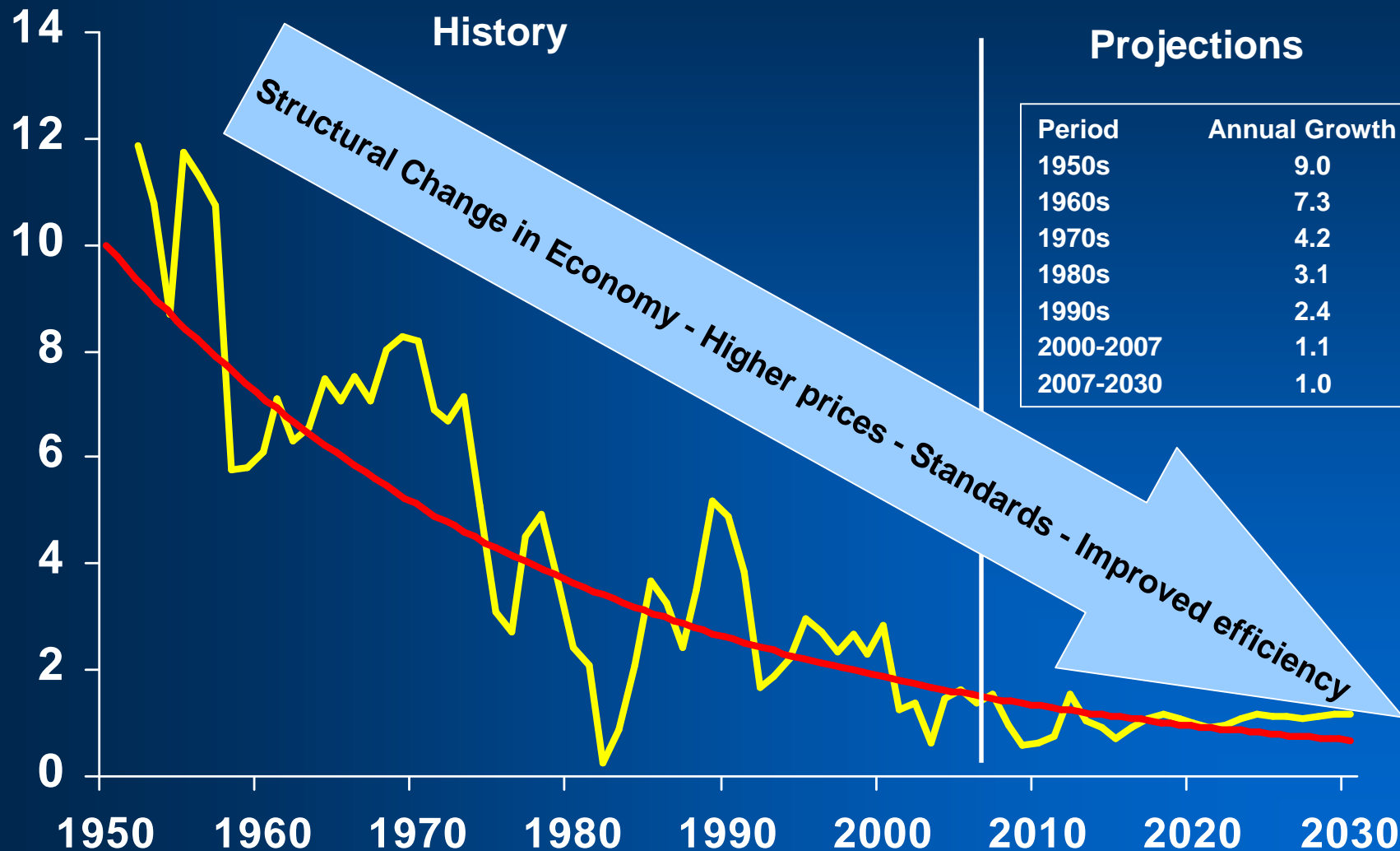
Unconventional production meets most growth in natural gas demand and offsets the decline in conventional production and imports

trillion cubic feet



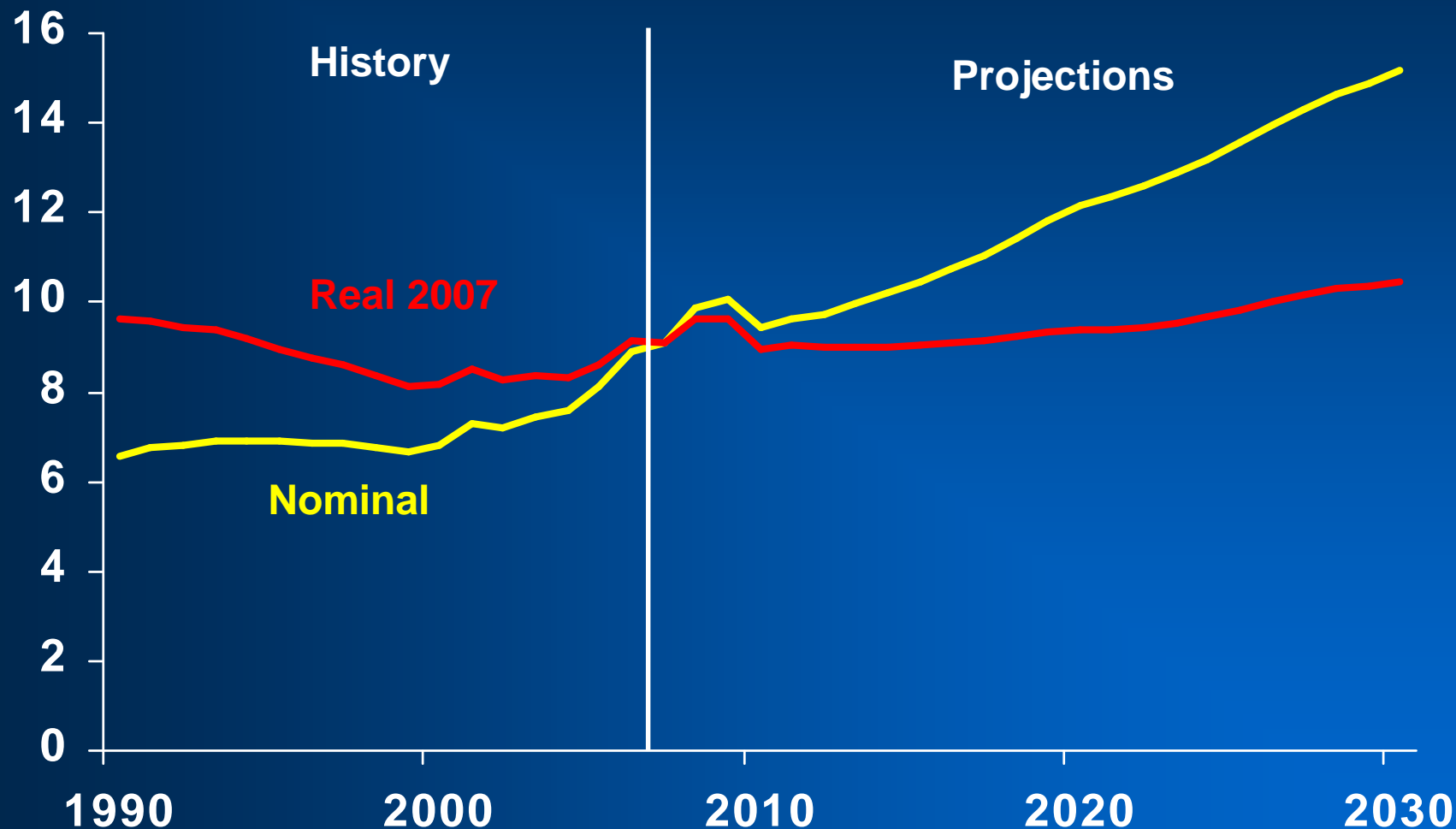
Growth in electricity use continues to slow

3-year rolling average percent growth



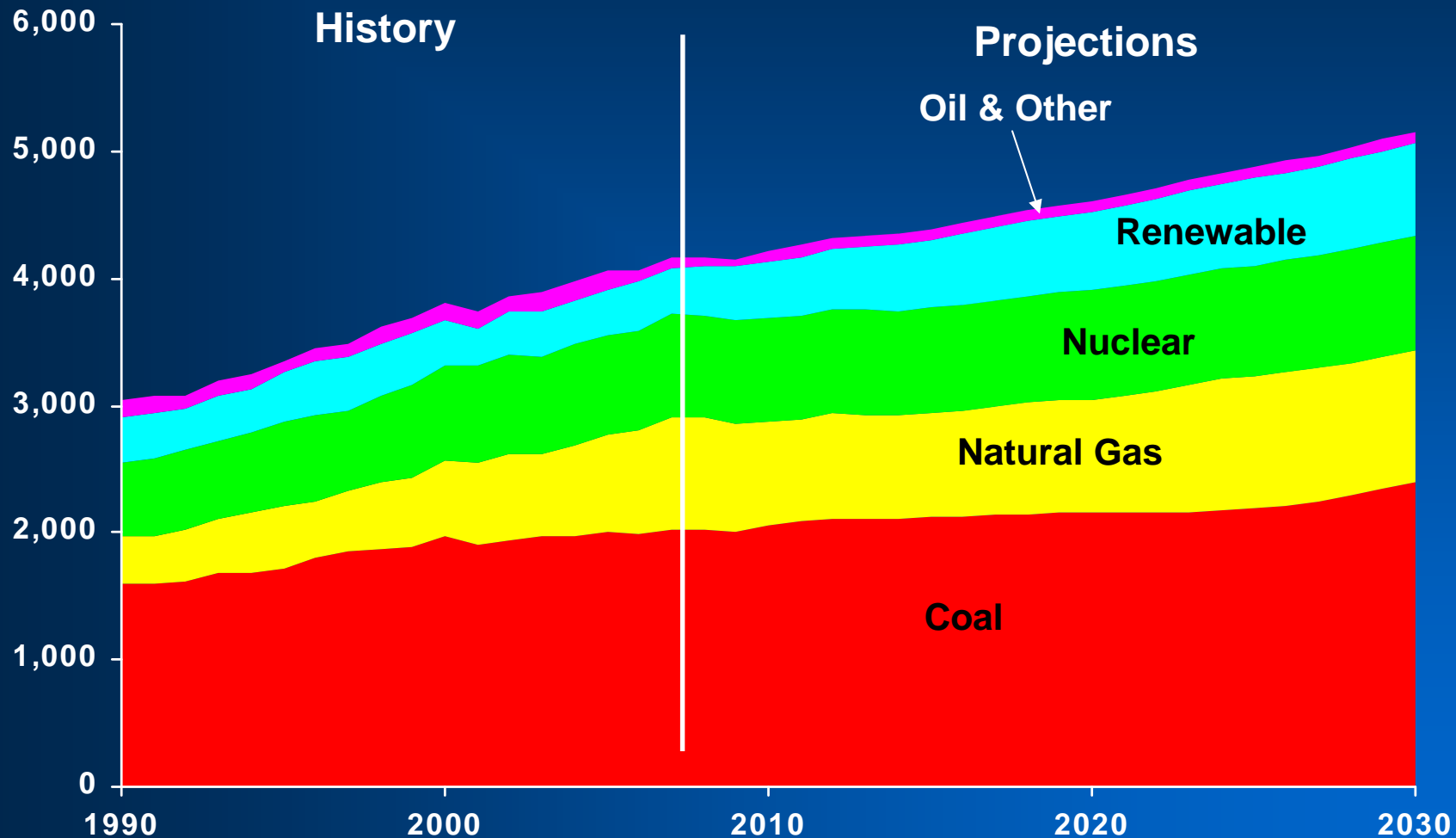
Electricity prices rise with higher capital and fuel costs and growing demand

cents per kilowatthour



Generation mix gradually shifts to lower carbon options

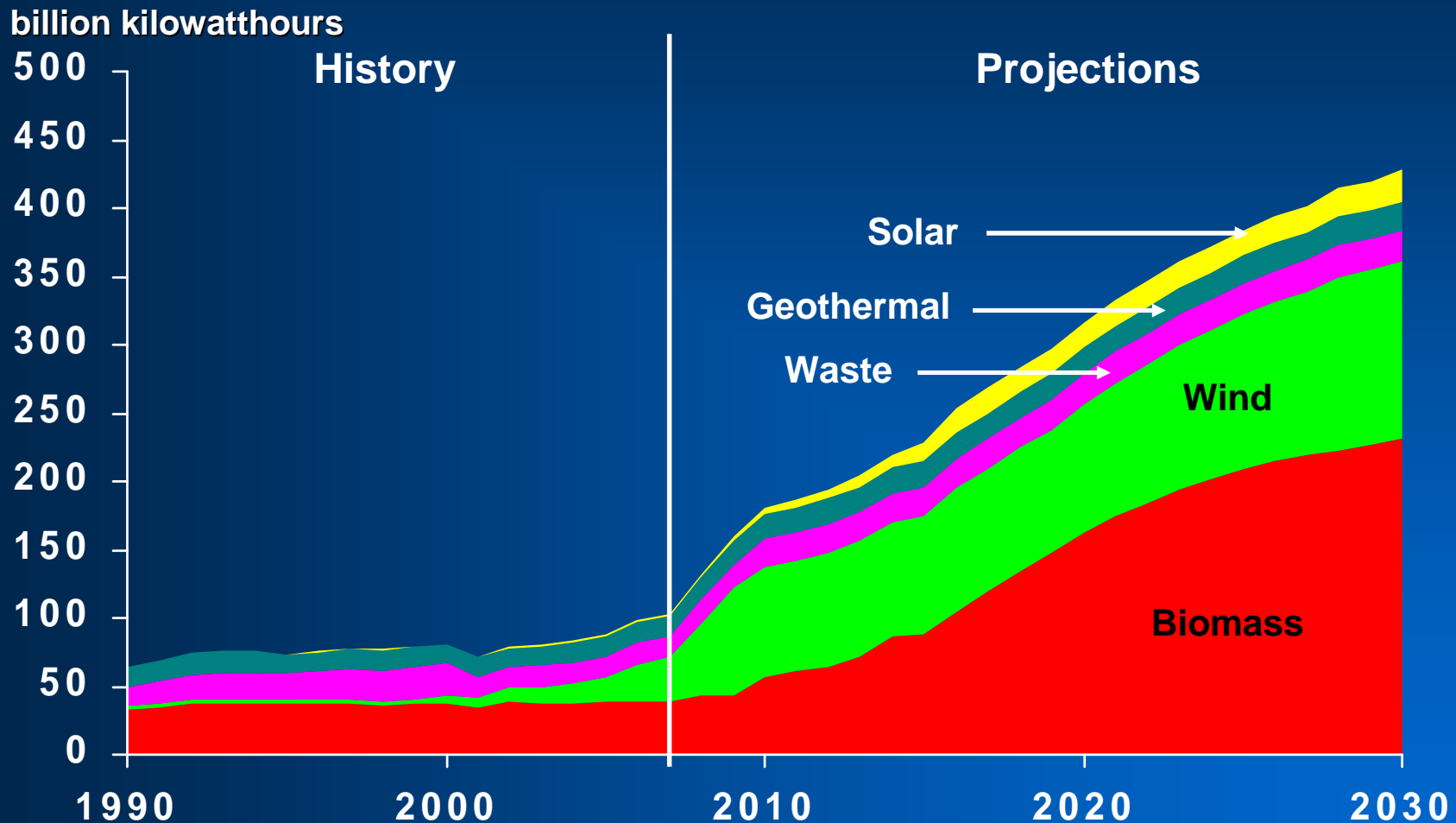
billion kilowatthours



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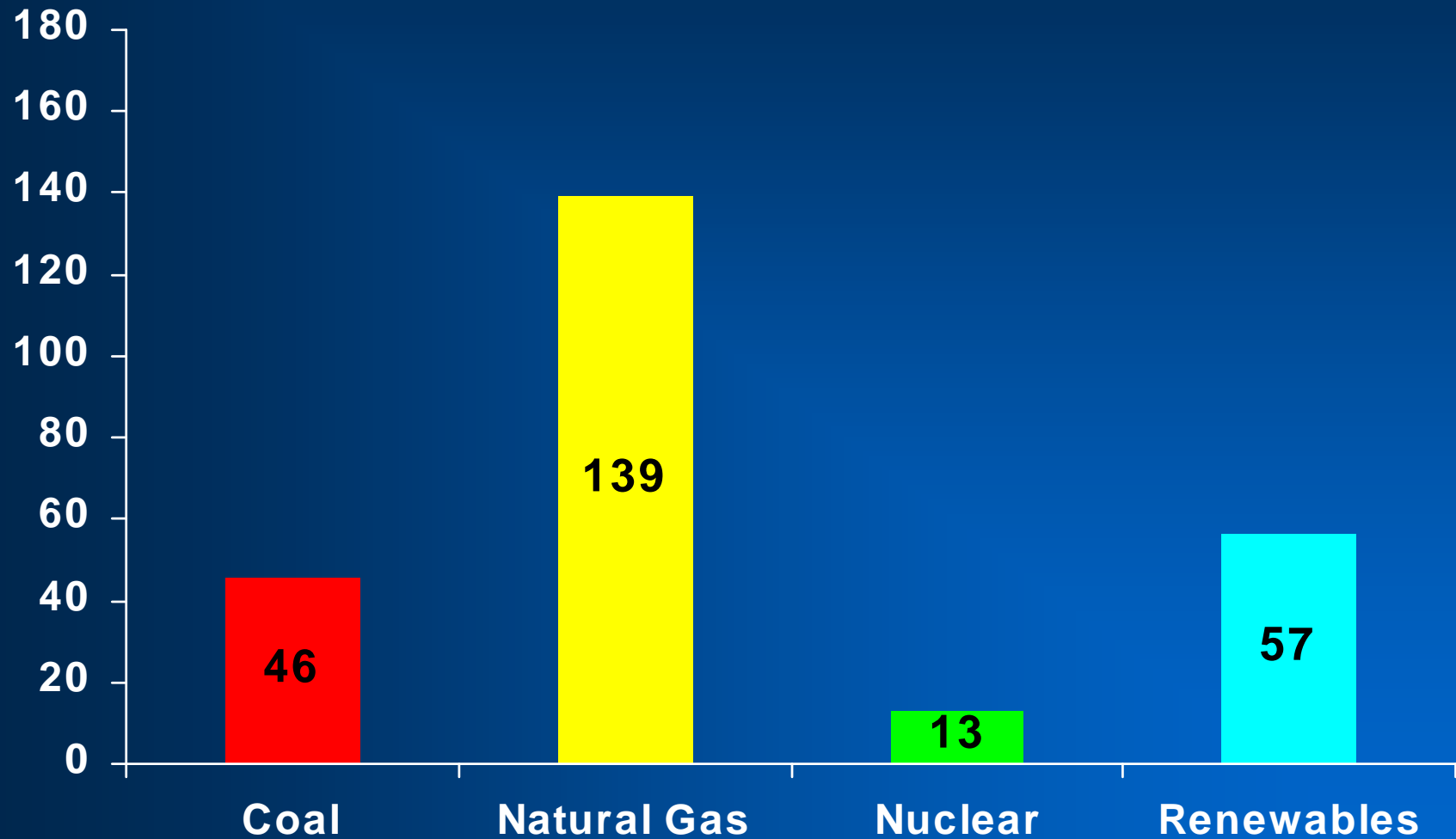


Nonhydropower renewable power meets 33% of total generation growth between 2007 and 2030

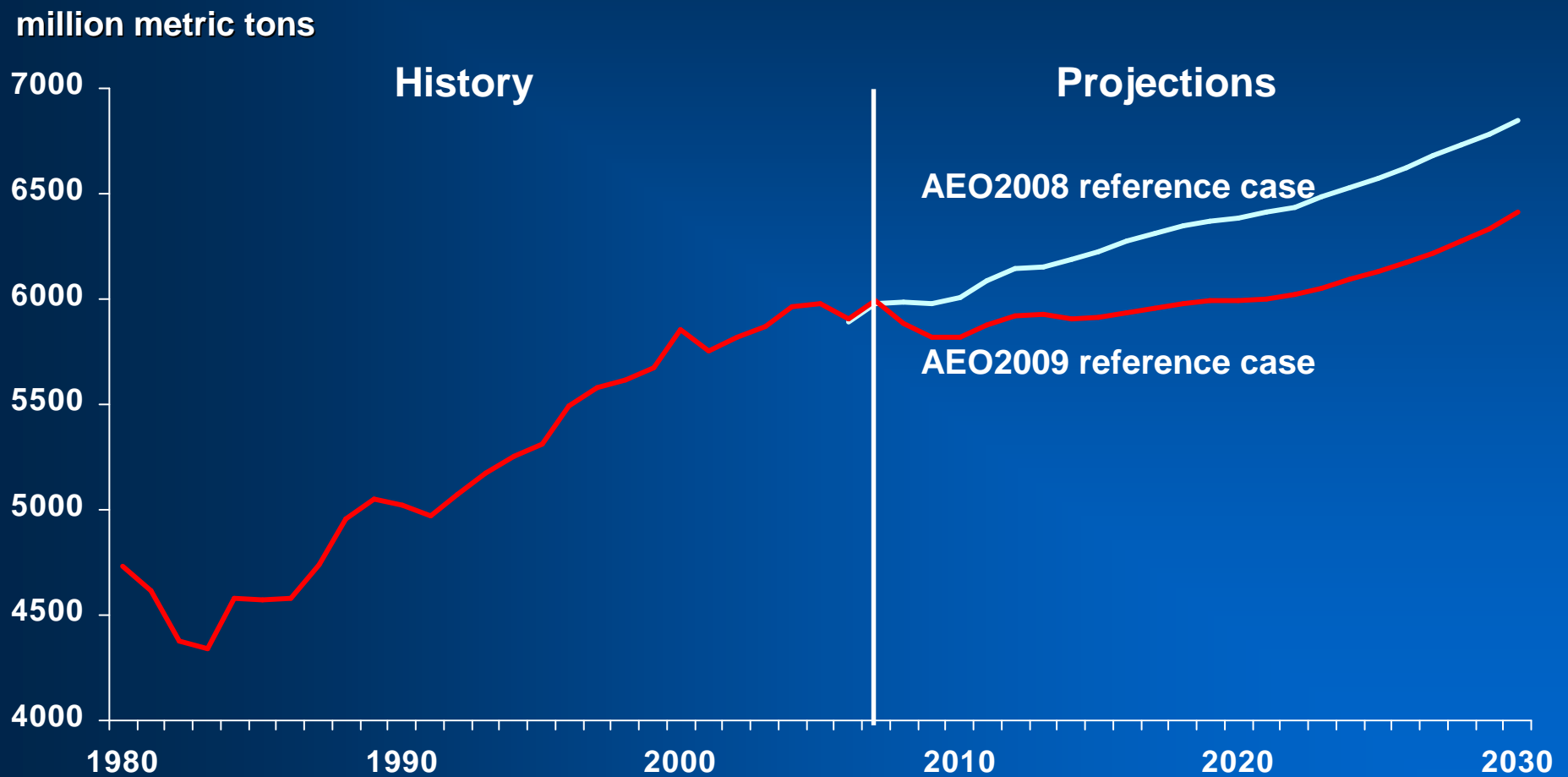


Natural gas and renewables provide most of the generating capacity added between 2007 and 2030

gigawatts

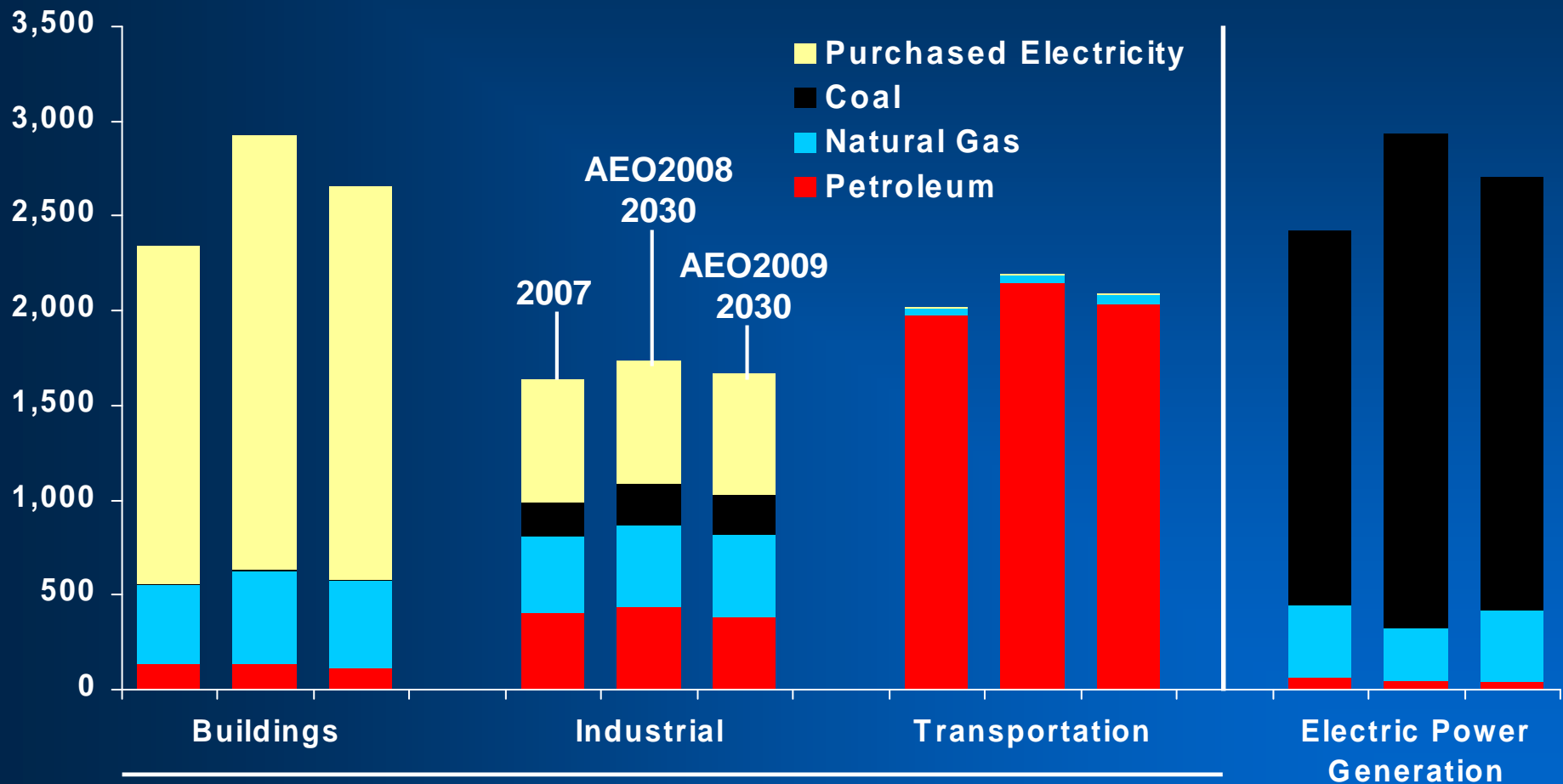


Growth in energy-related CO₂ emissions slows with slowing growth in energy use and a shift to less carbon-intensive fuels



Electricity generation is the dominant source of CO₂ emissions growth

million metric tons



Delivered, including losses in electricity generation

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Key results from AEO2009 reference case

- World oil prices rise to higher levels due to growth in world demand and more limited access to resources
- U.S. oil use remains near its present level through 2030 as modest growth in overall liquids demand is met by biofuels
- U.S. dependence on imported oil, measured as a share of U.S. liquids use, is expected to decline sharply over the next 25 years
- Natural gas import share of total supply also declines sharply due to increased domestic production with higher prices
- Unconventional natural gas production, lead by gas shales, is expected to provide the majority of growth in gas supply
- Energy-related CO₂ emissions grow at 0.3 percent per year, absent any new policy to control emissions

Periodic Reports

Petroleum Status and Natural Gas Storage Reports, weekly

Short-Term Energy Outlook, monthly

Annual Energy Outlook 2009, December 2008/ February 2009

International Energy Outlook 2008, August 2008

U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2007, October 2008 (Advance Summary), January 2009 (Full Report)

Examples of Special Analyses

Analysis of Crude Oil Production in the Arctic National Wildlife Refuge, May 2008

Energy Market and Economic Impacts of S.2191, the Lieberman-Warner Climate Security Act of 2007, April 2008

“Impacts of Increased Access to Oil and Natural Gas Resources in the Lower 48 Federal Outer Continental Shelf,” Annual Energy Outlook 2007

The Global Liquefied Natural Gas Market: Status and Outlook, December 2003

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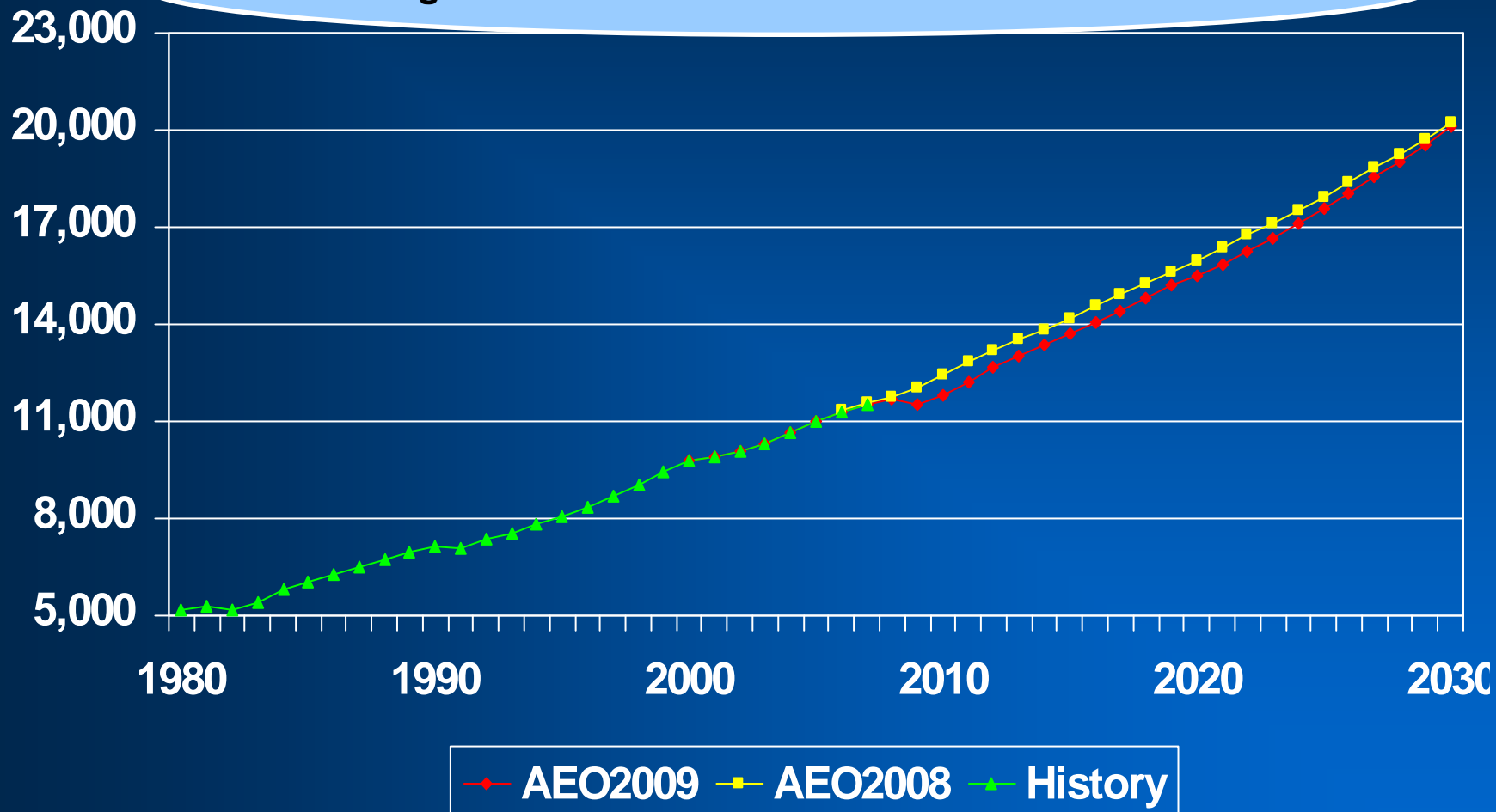


GHG regulatory uncertainty in the AEO2009

- Although no Federal legislation has been passed, regional groups and State regulators are enacting regulations and the financial community is behaving as if they anticipate regulations
- Energy companies are being encouraged to shift investments towards less GHG-intensive technologies
- To represent this behavior in the *AEO2009* reference case, a 3-percentage-point cost of capital penalty has been added when evaluating investments in GHG-intensive technologies
- This penalty is meant to represent the implicit cost being added to GHG-intensive projects to account for the risk that they may have to purchase allowances or make other investments in the future to offset GHG emissions

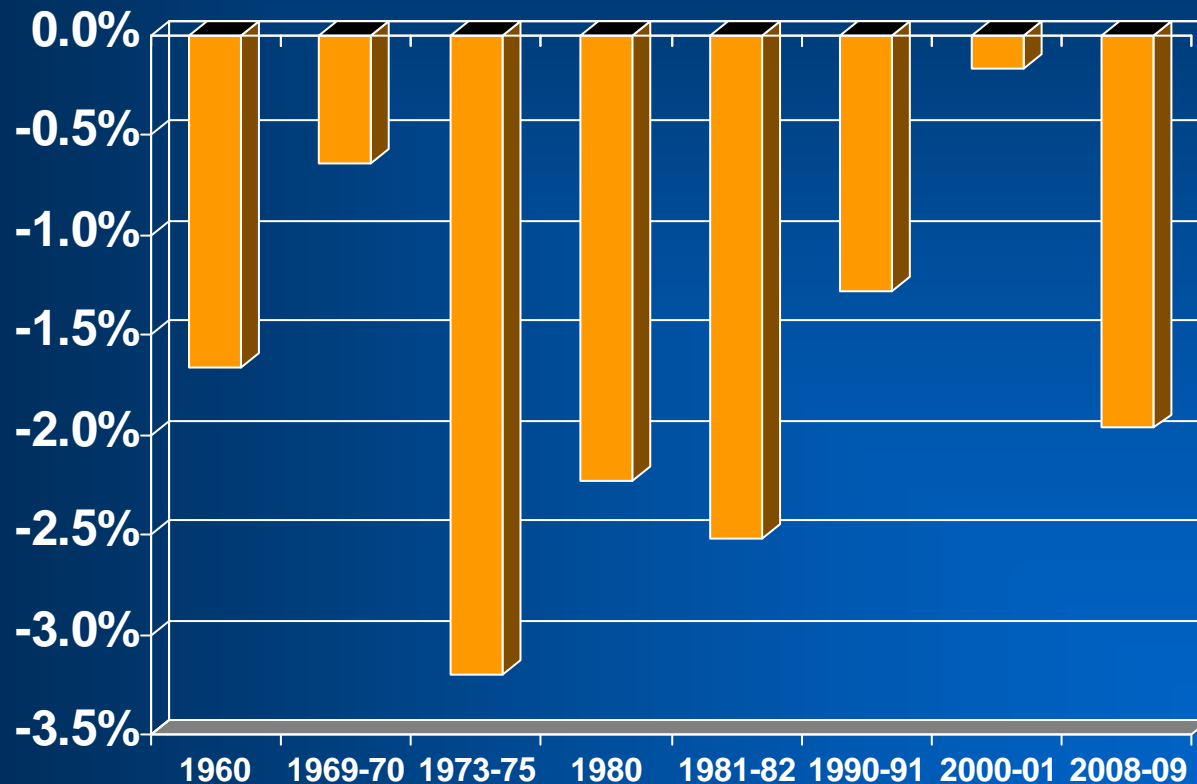
U.S. Gross Domestic Product (billion 2000 chain-weighted dollars)

Economic growth returns to trend after near term slow down



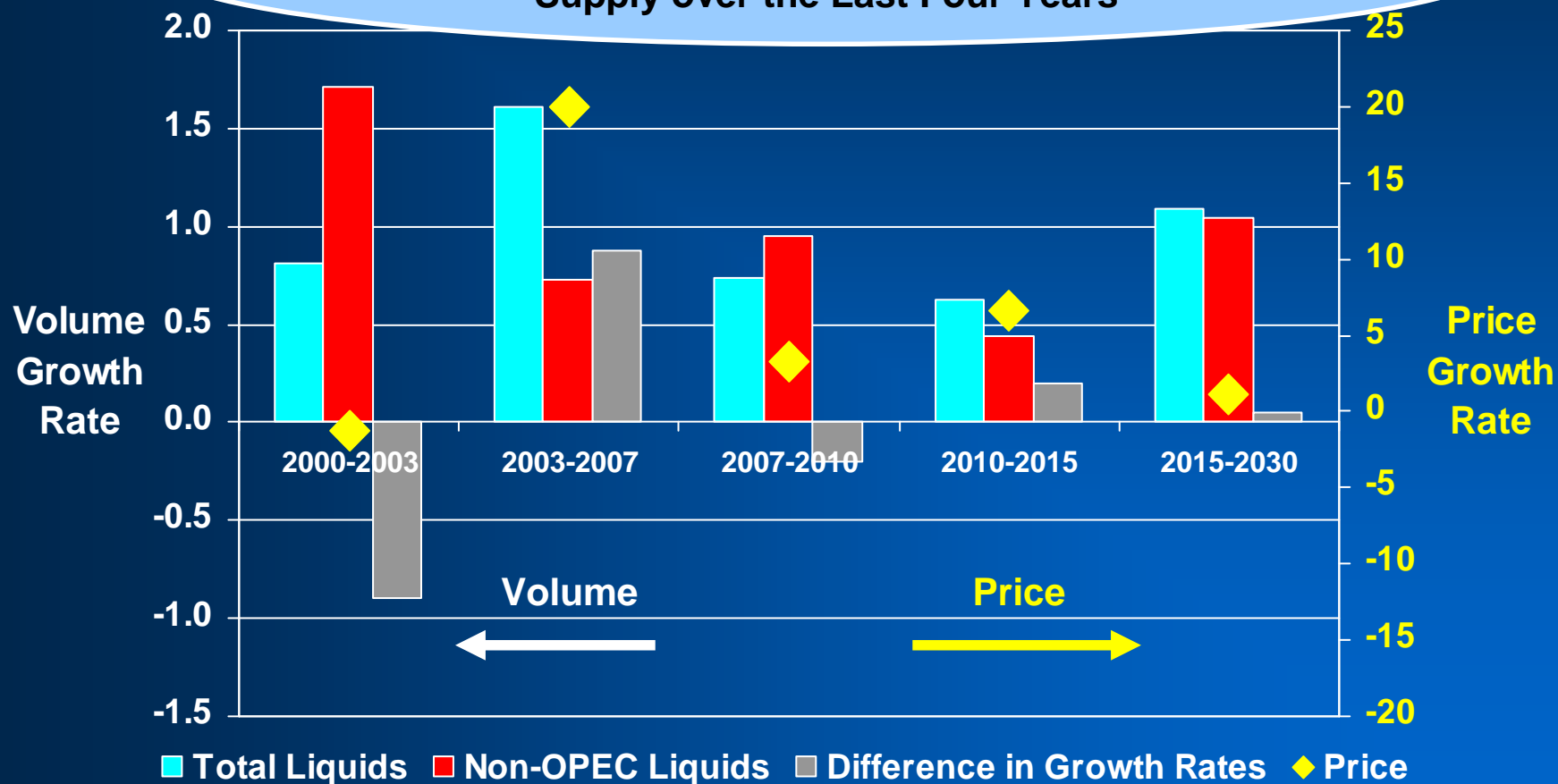
Peak to Trough Change in Real GDP (Percent)

Reference Case Assumes Current Recession is Worse than
Past Two Recessions

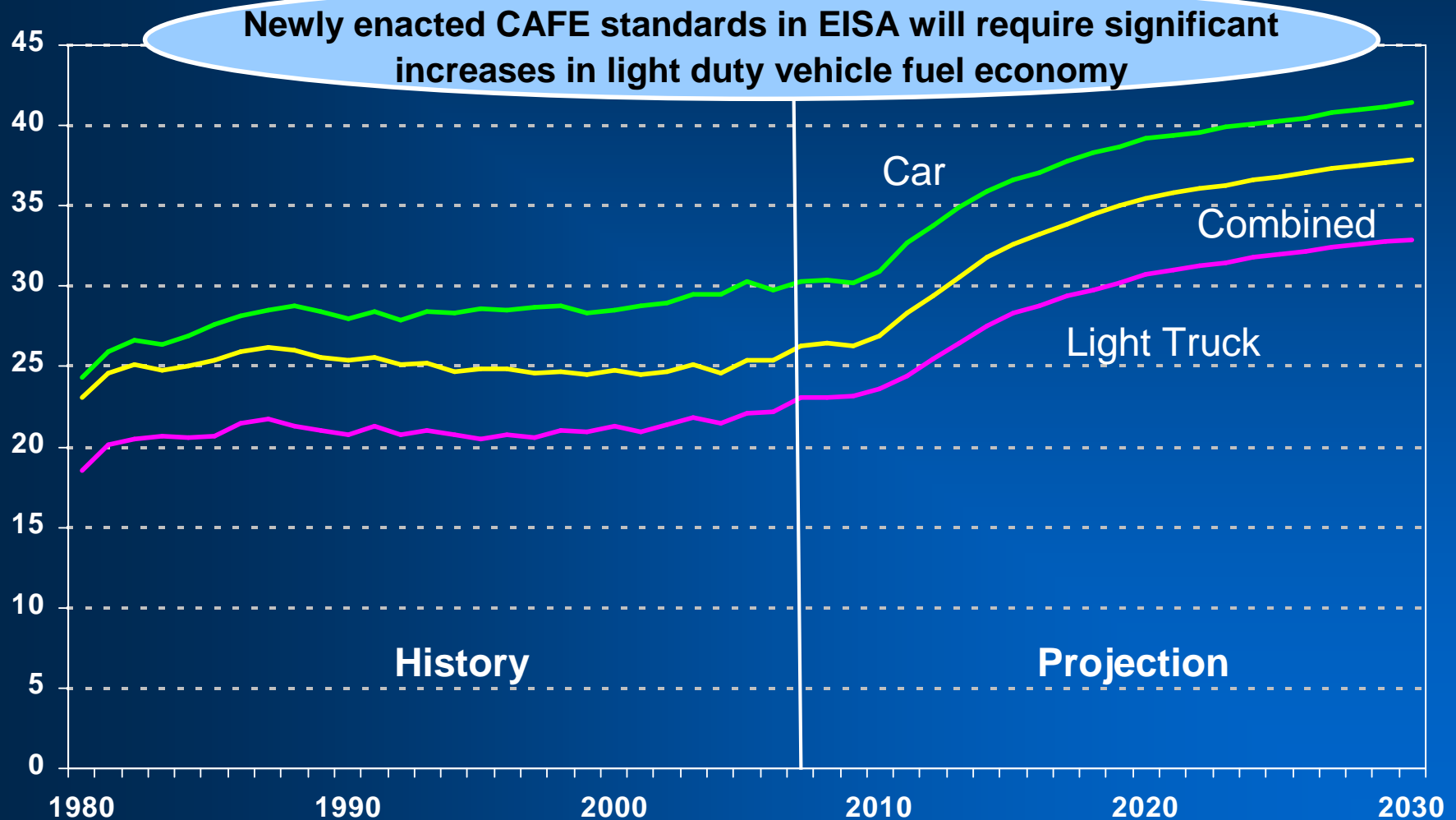


Growth In Liquids Supply And Price (Average Percent Per Year)

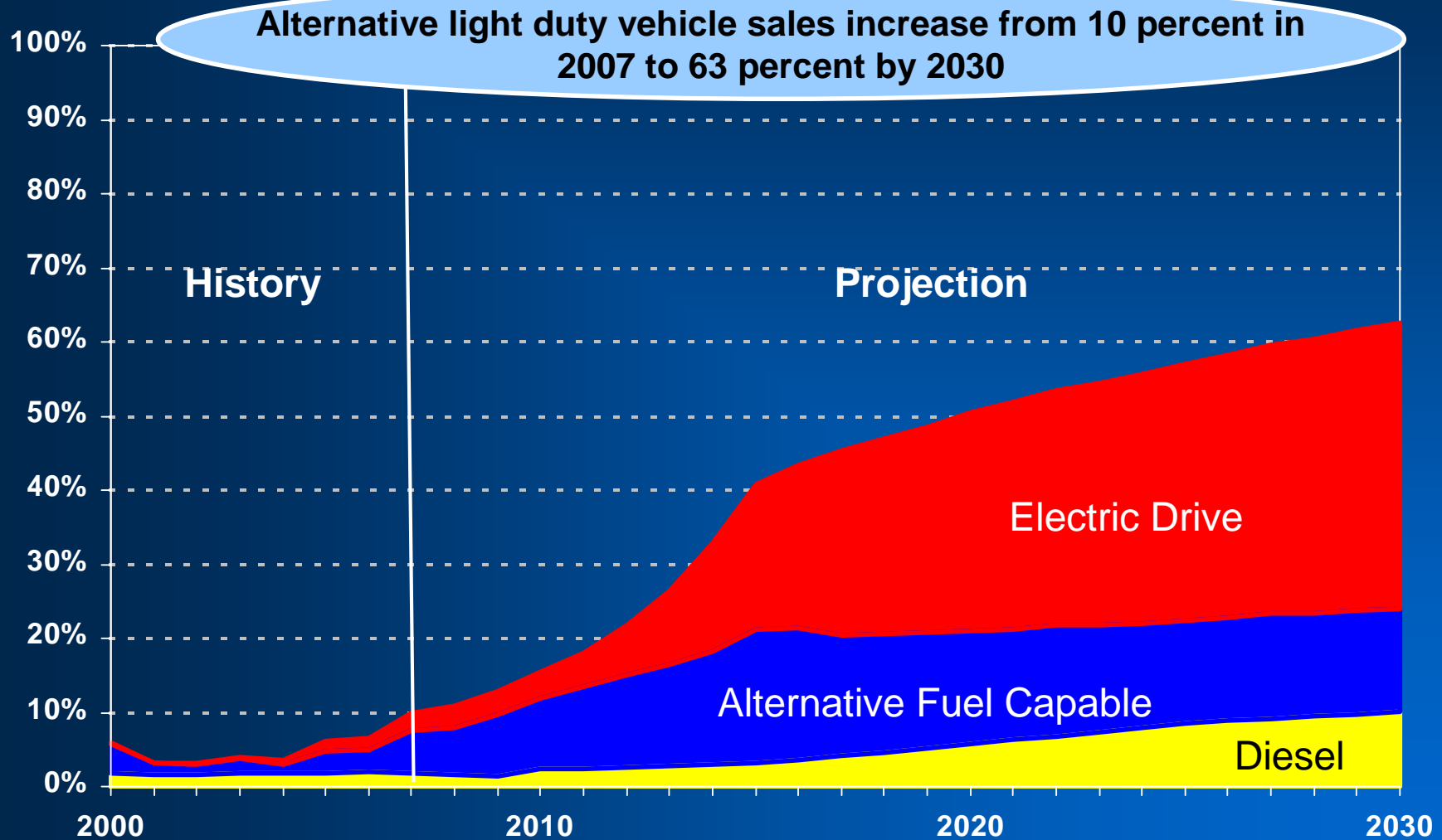
Demand for Liquid Fuels Grew More Rapidly than Non-OPEC Supply over the Last Four Years



New Light Duty Vehicle Fuel Economy (miles per gallon, based on CAFE test)

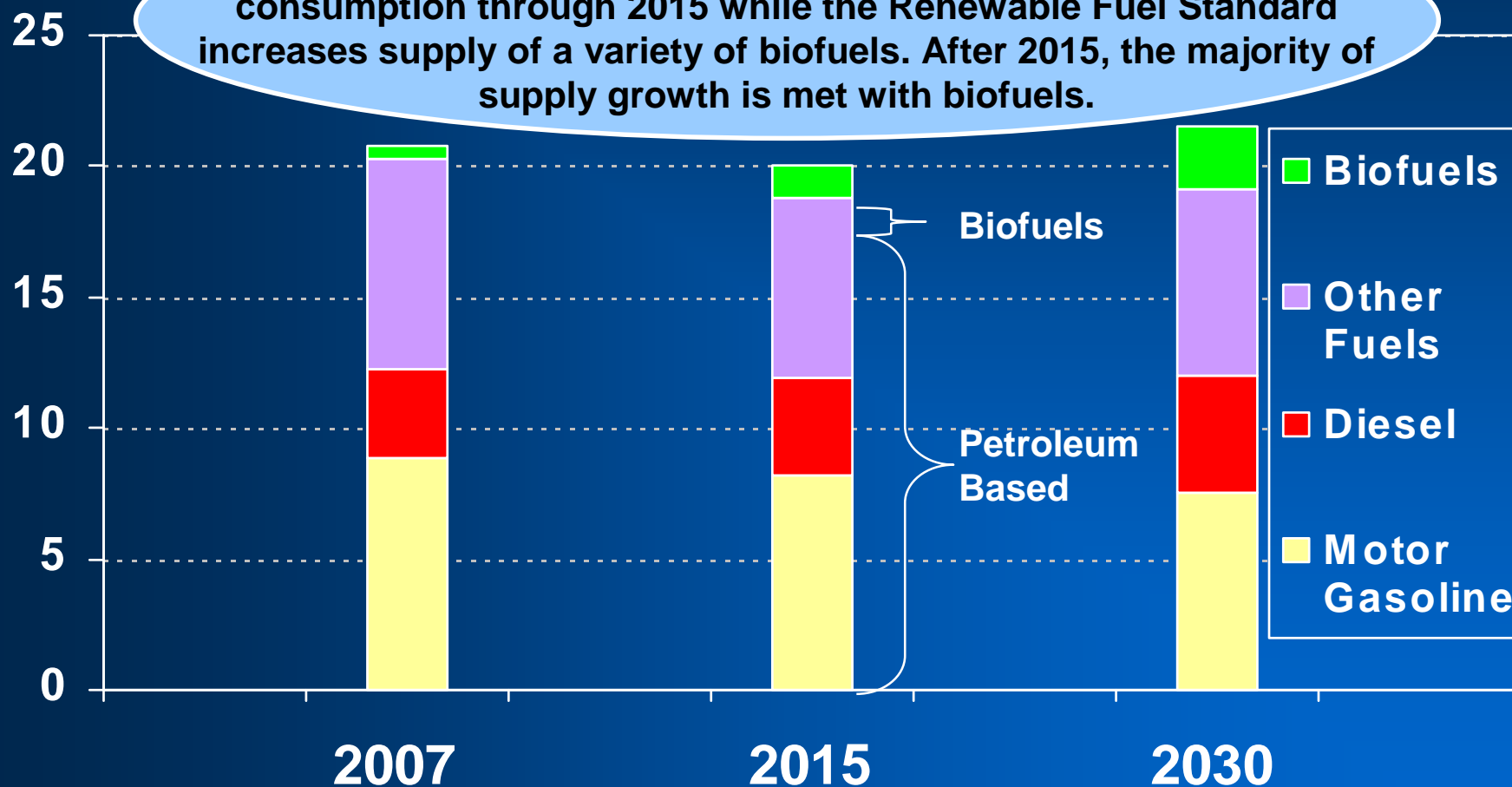


New Alternative Light Vehicle Sales (percent of total sales)



Components of Liquid Fuels (million barrels per day)

Higher world oil prices and technology dampen liquids consumption through 2015 while the Renewable Fuel Standard increases supply of a variety of biofuels. After 2015, the majority of supply growth is met with biofuels.



Commercial electricity sales drive growth

billion kilowatthours

