

# *Long-Term United States and World Energy Market Trends*

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Administrator  
Energy Information Administration**

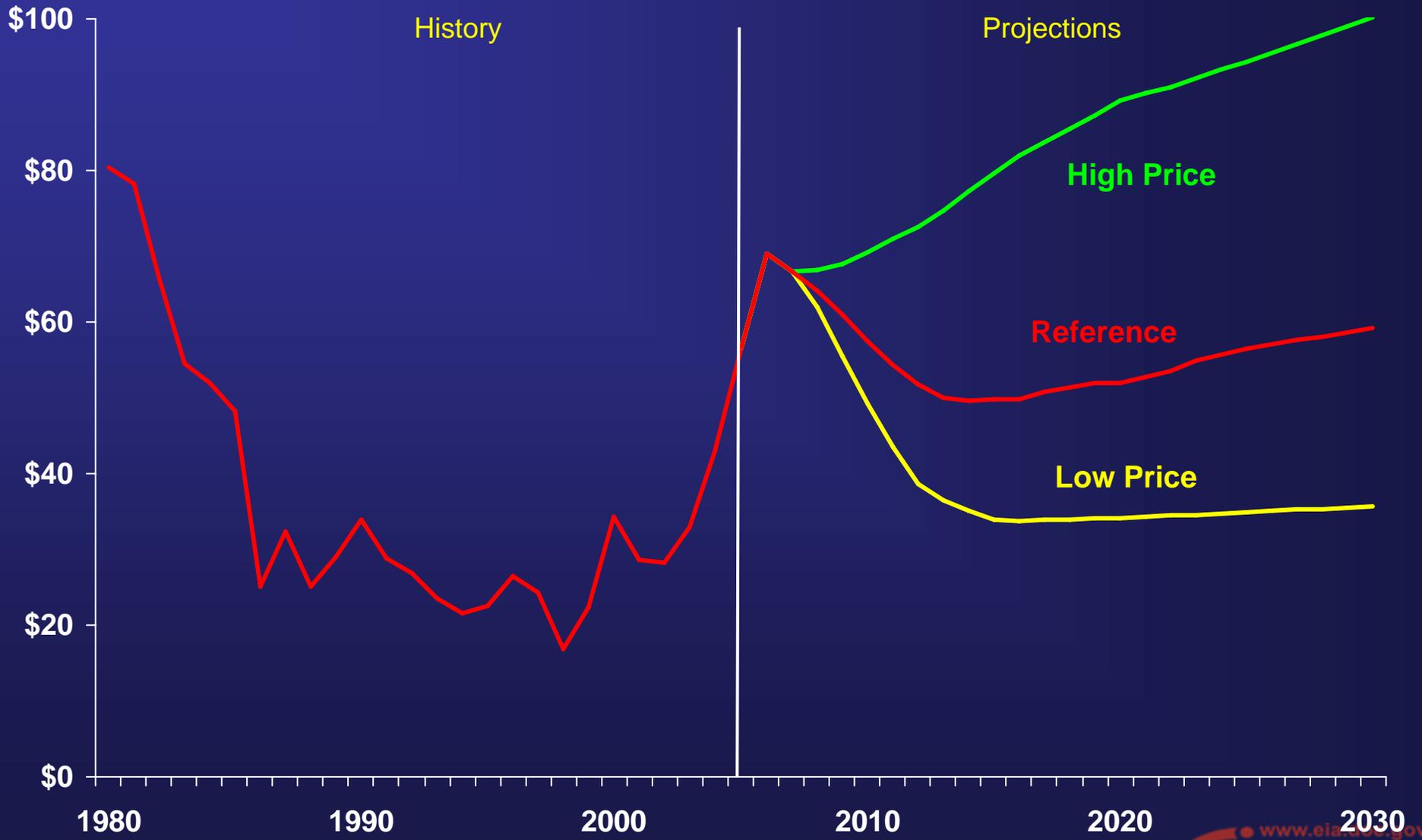
**Seminar with  
Japan Oil, Gas and Metals National Corporation**

**September 13, 2007**

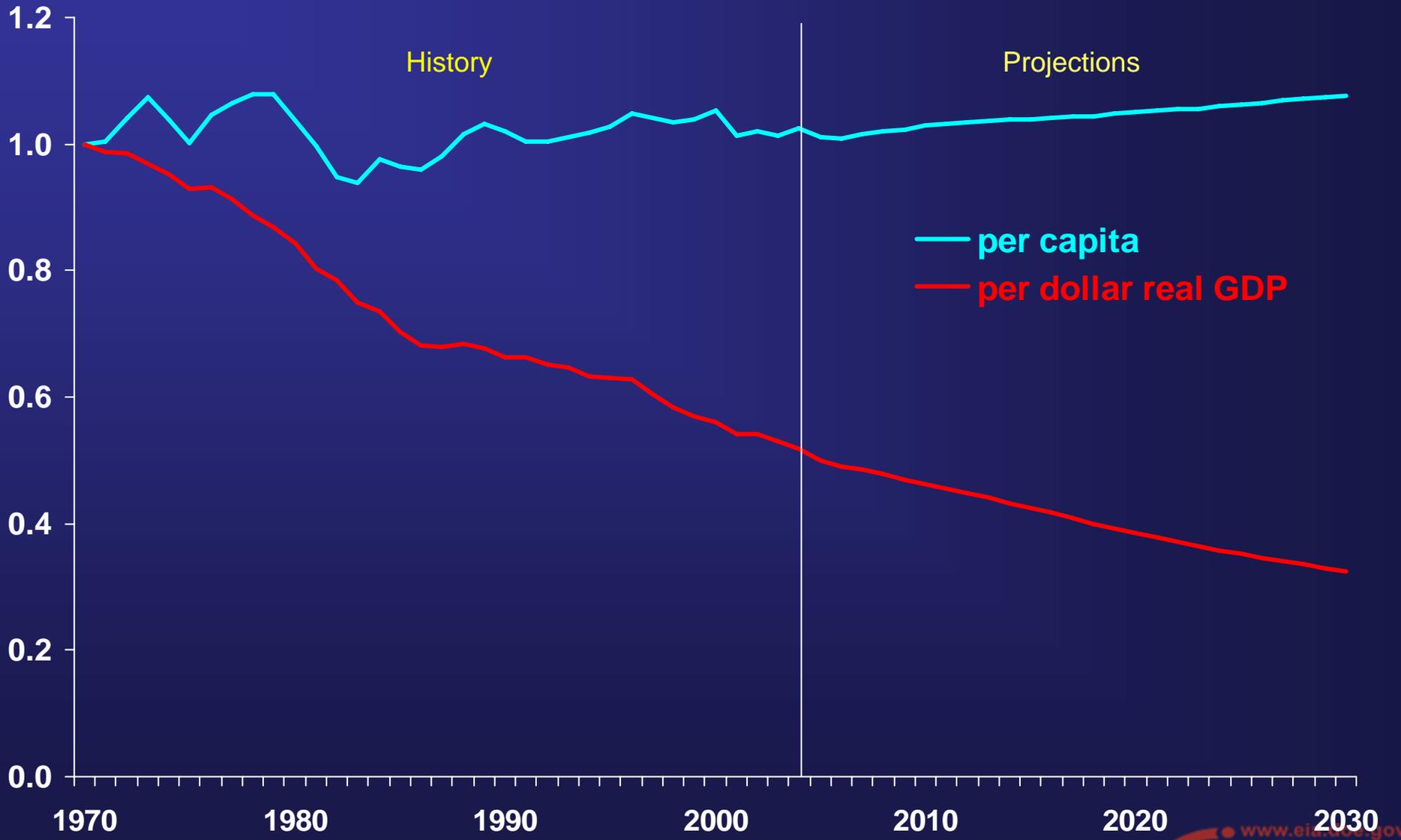
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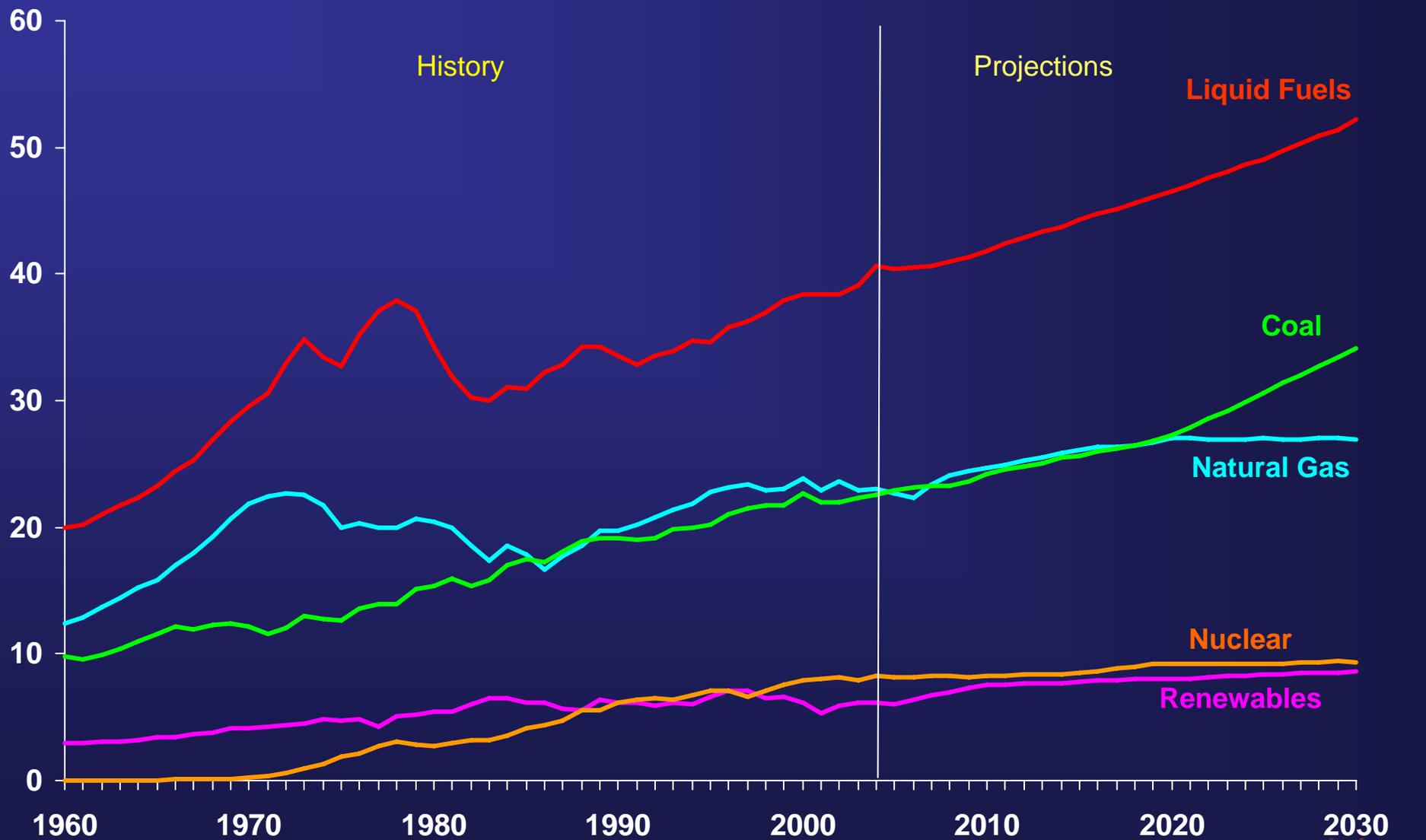
# World Oil Price, 1980-2030 (2005 dollars per barrel)



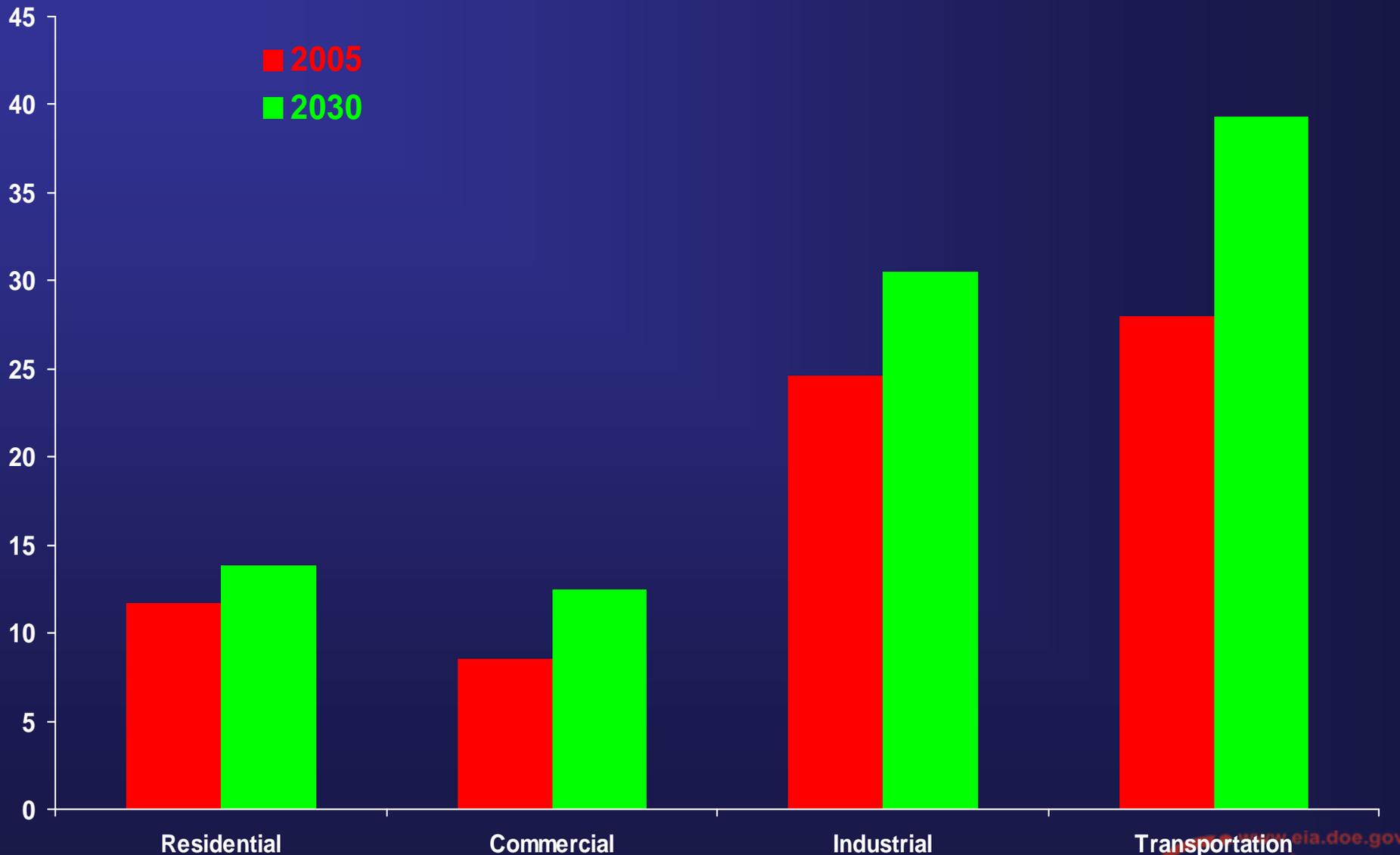
# U.S. Energy Use per Capita and per Dollar of Real Gross Domestic Product, 1970-2030 (index, 1970 = 1)



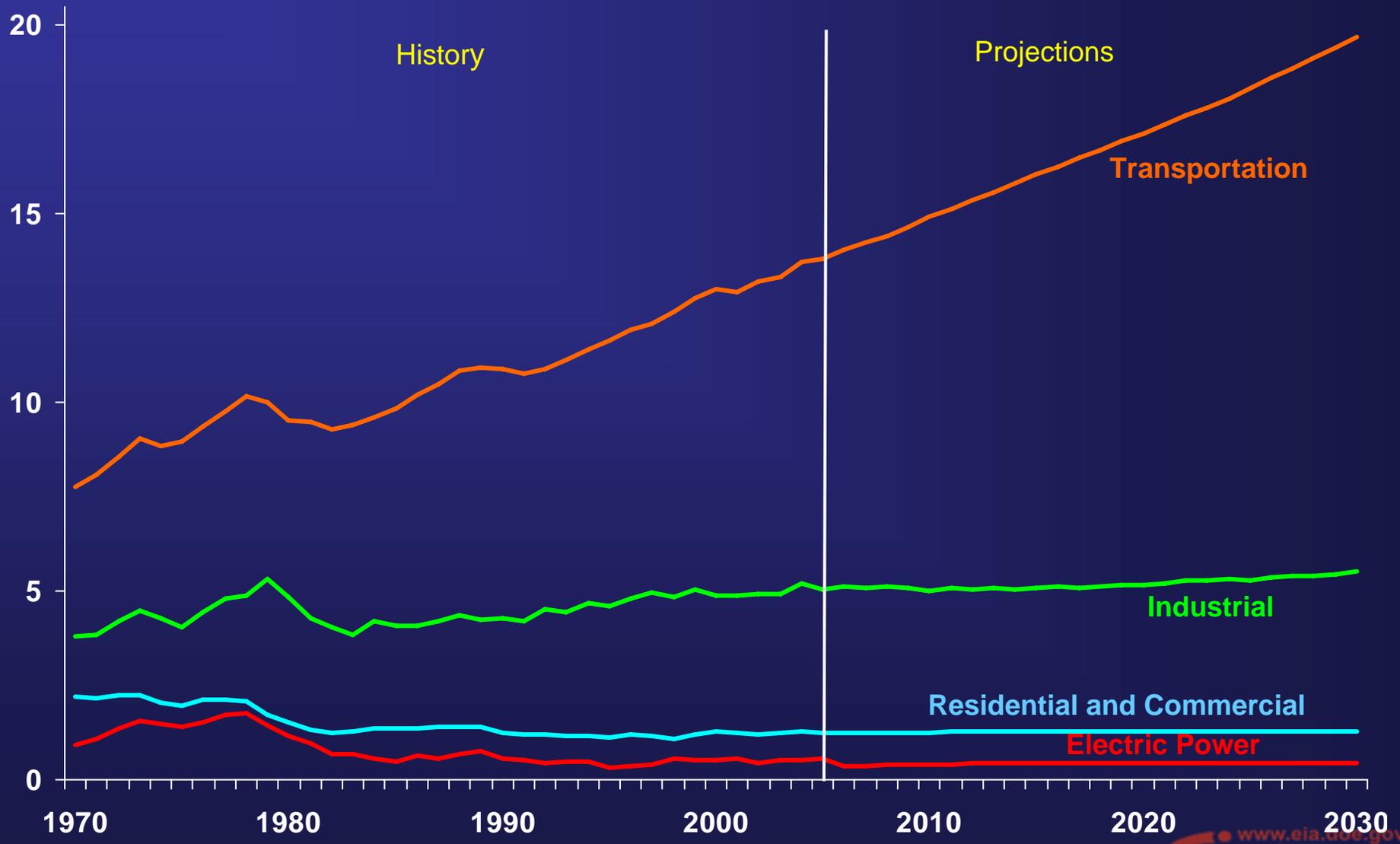
# U.S. Primary Energy Consumption by Fuel, 1960-2030 (quadrillion Btu)



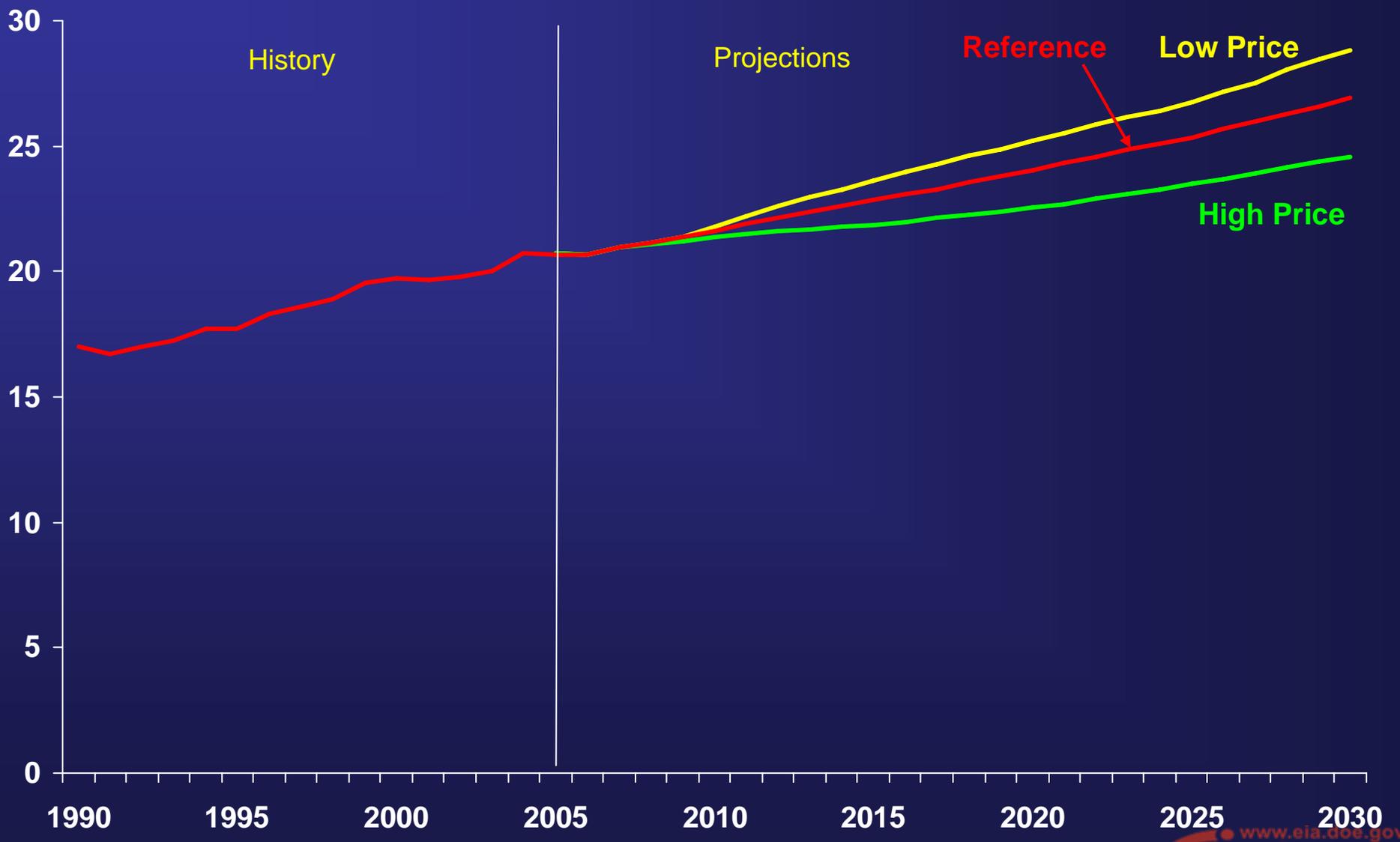
# U.S. Delivered Energy Consumption by Sector, 2005 and 2030 (quadrillion Btu)



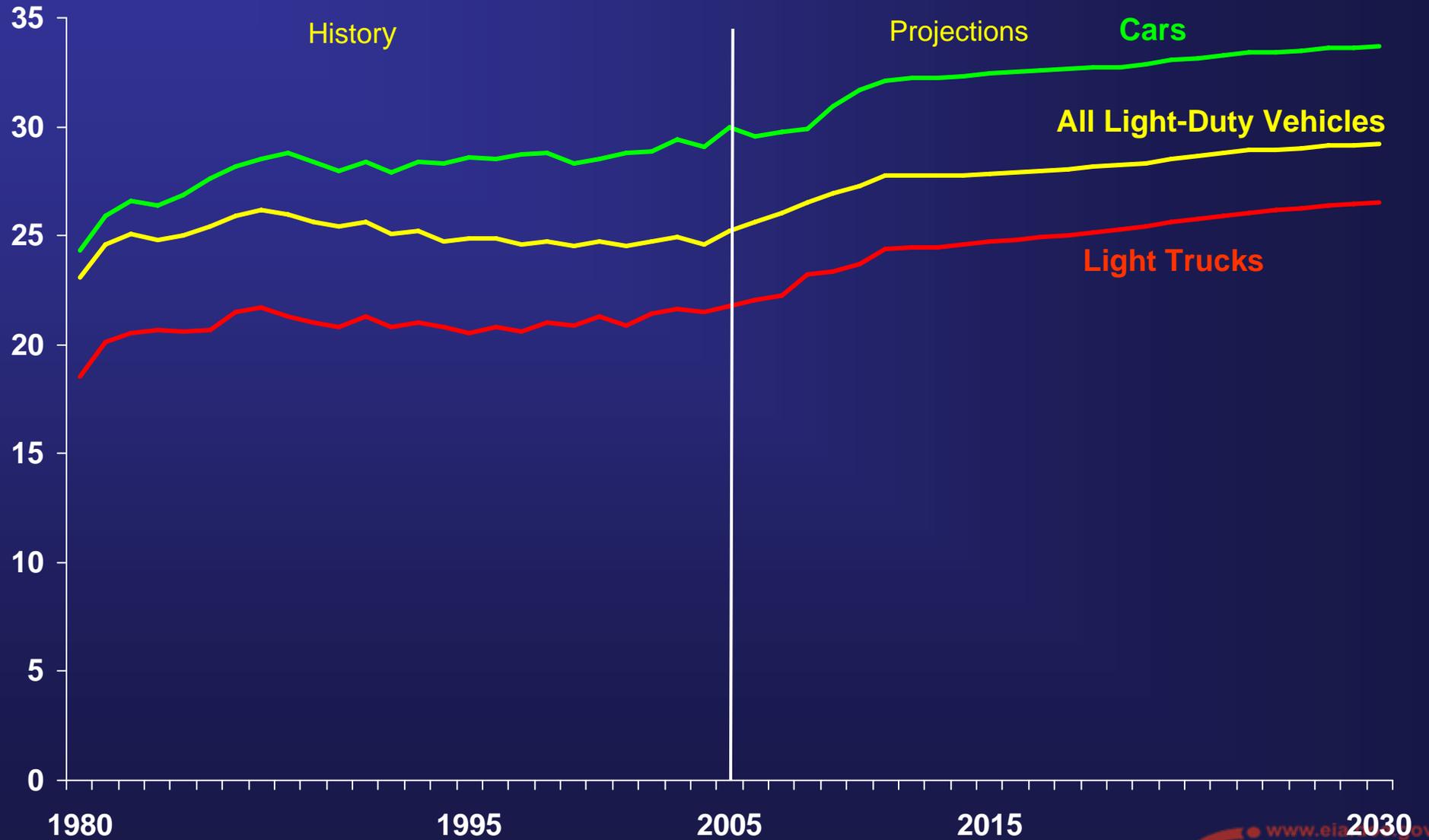
# U.S. Liquid Fuels and Other Petroleum Consumption by Sector, 1970-2030 (million barrels per day)



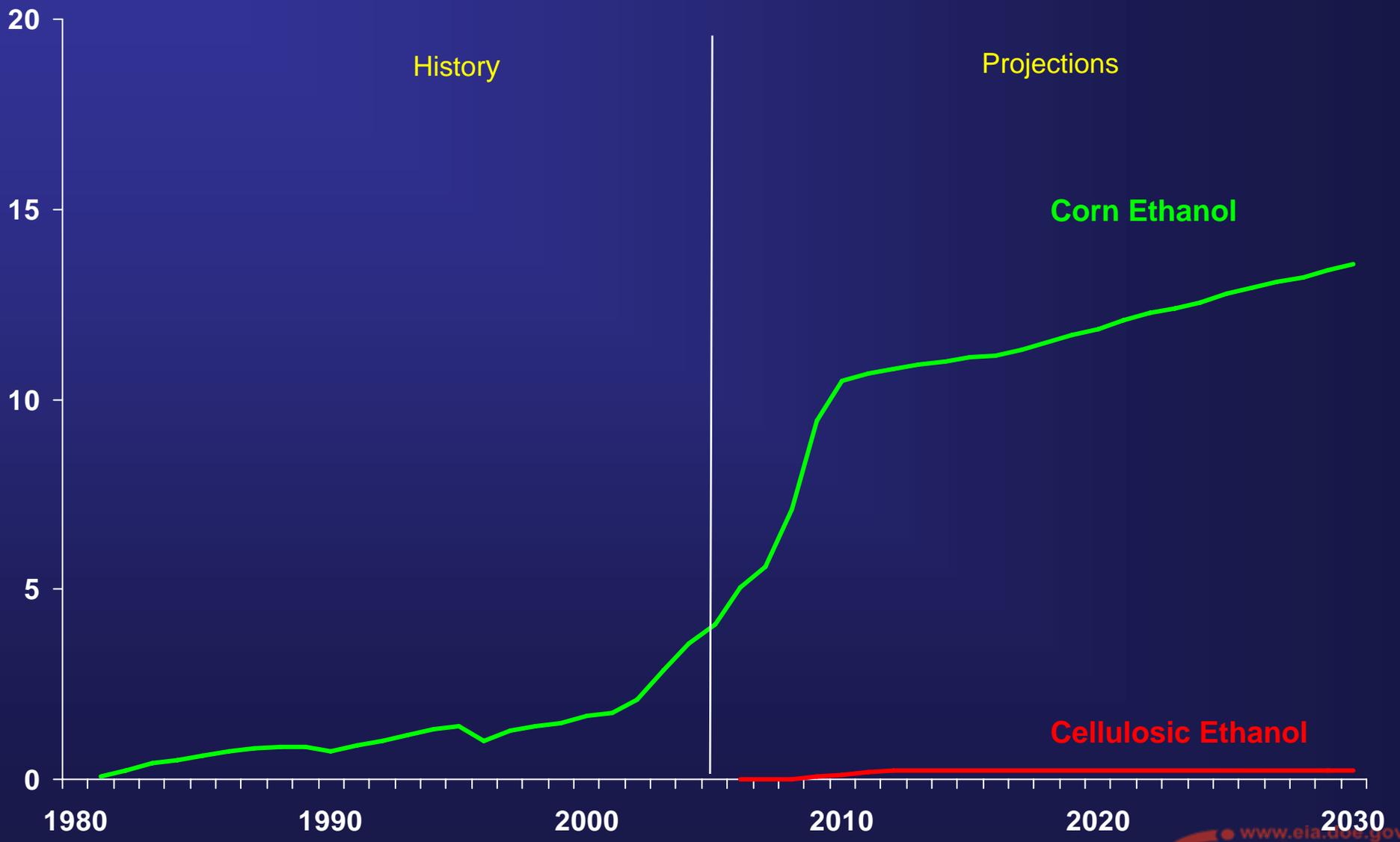
# Liquid Fuels and Other Petroleum Consumption in Three Price Cases, 1990-2030 (million barrels per day)



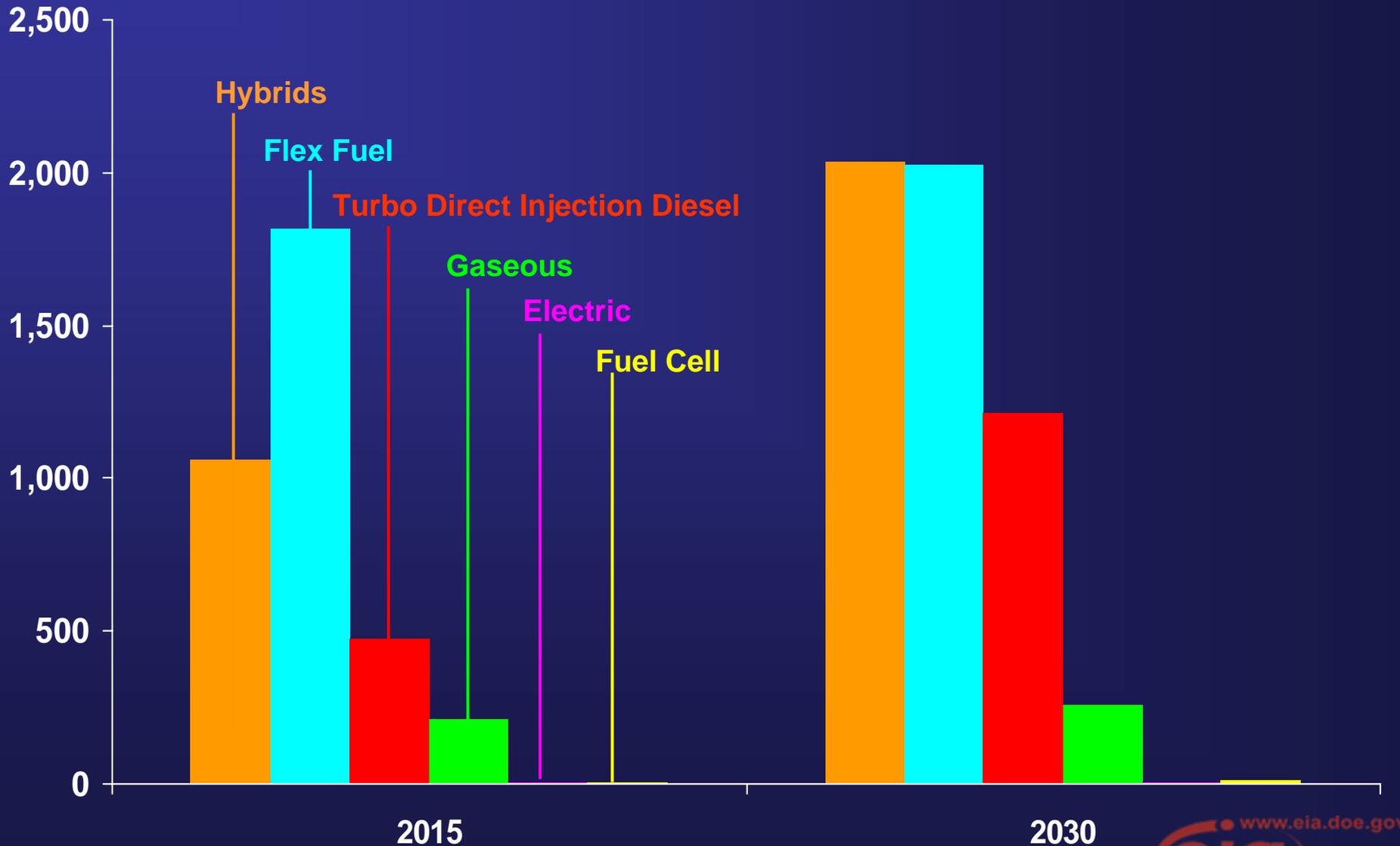
# Average Fuel Economy of U.S. New Light-Duty Vehicles, 1980-2030 (miles per gallon)



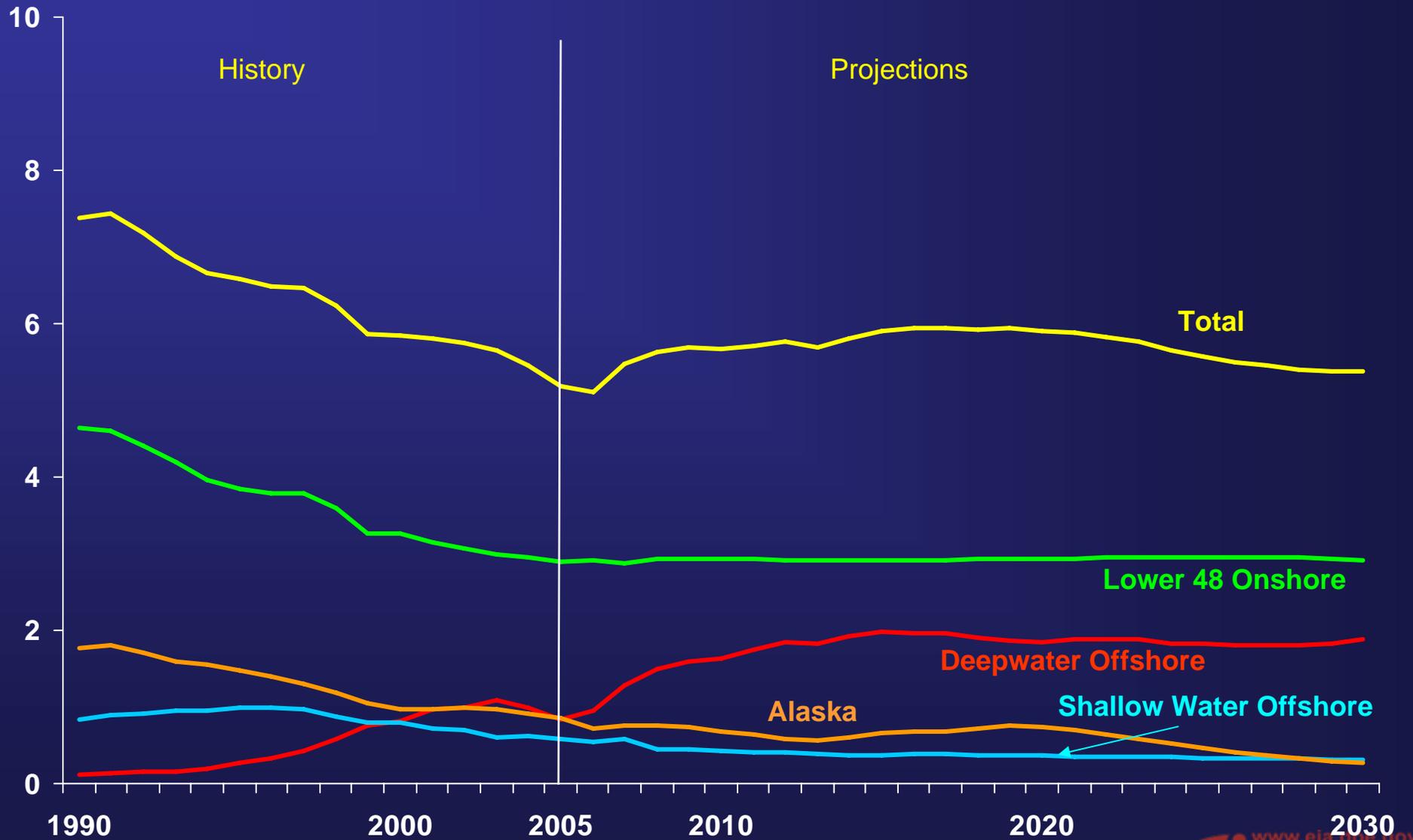
# U.S. Ethanol Production, 1981-2030 (billion gallons)



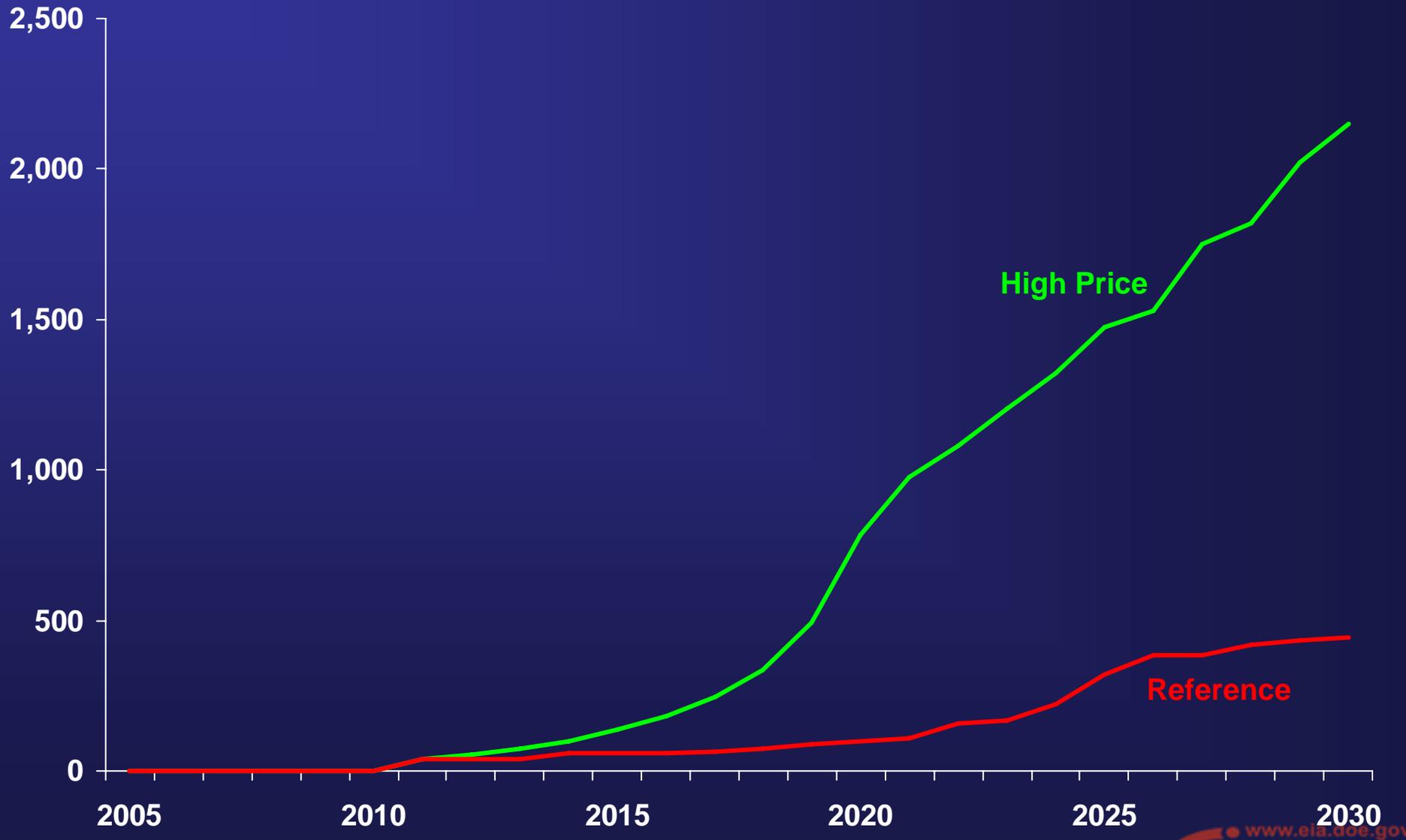
# U.S. Sales of Unconventional Light-Duty Vehicles, 2015 and 2030 (thousand vehicles sold)



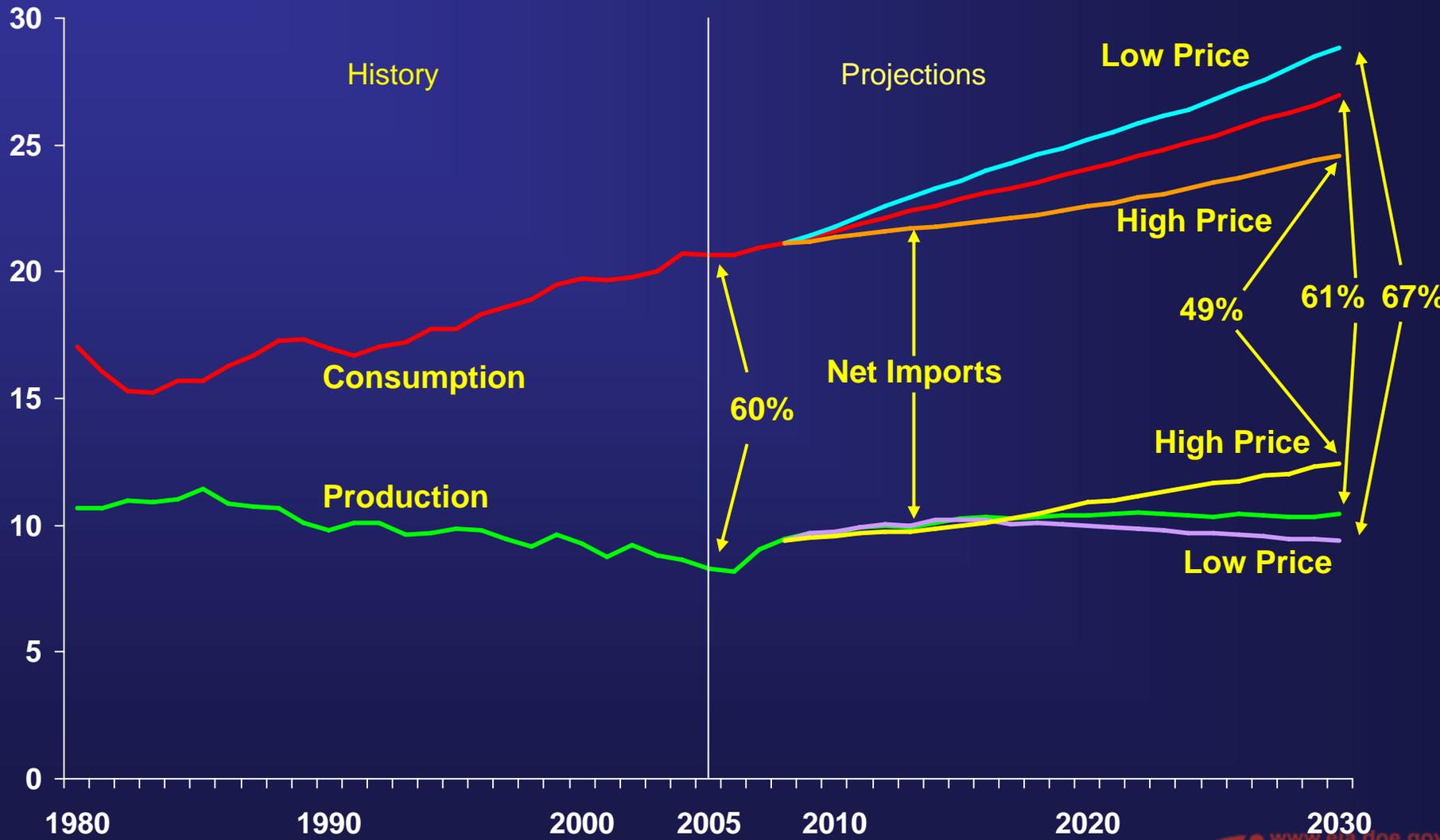
# U.S. Crude Oil Production by Source, 1990-2030 (million barrels per day)



# Total U.S. Unconventional Oil Production in Two Cases, 2005-2030 (thousand barrels per day)



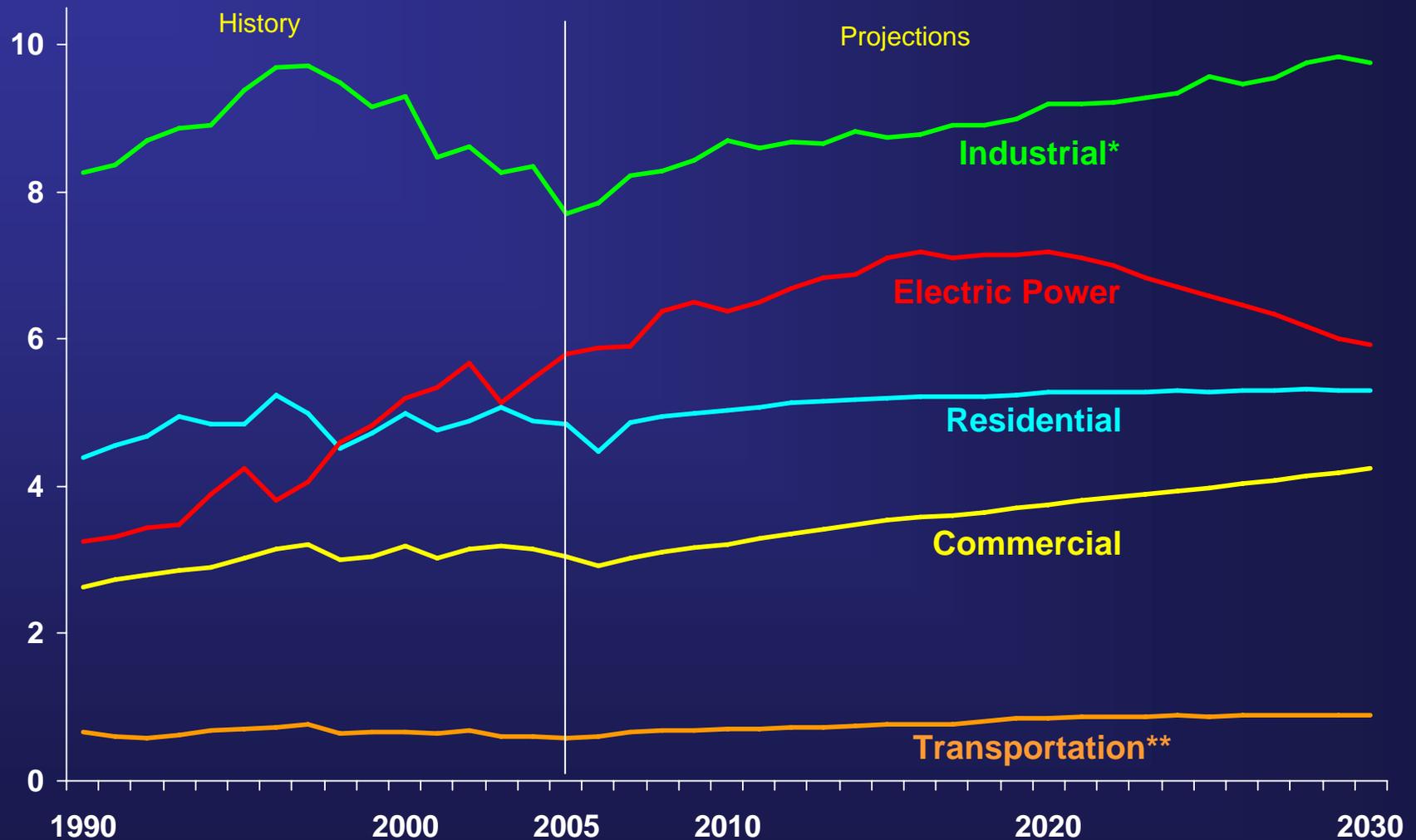
# Liquid Fuels Supply, Consumption, and Imports (million barrels per day)



# Lower 48 Wellhead Natural Gas Prices, 1990-2030 (2005 dollars per thousand cubic feet)



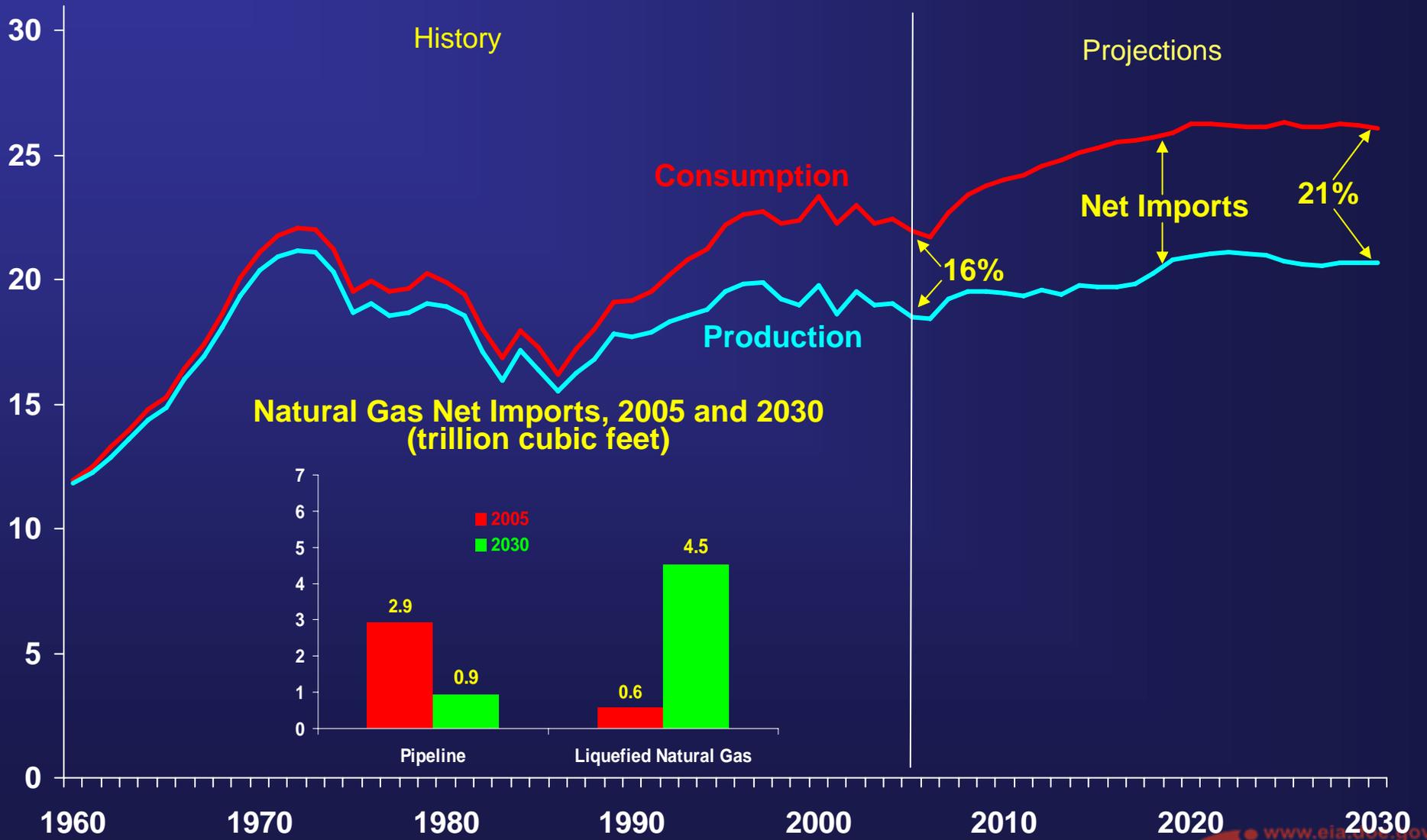
# U.S. Natural Gas Consumption by Sector, 1990-2030 (trillion cubic feet)



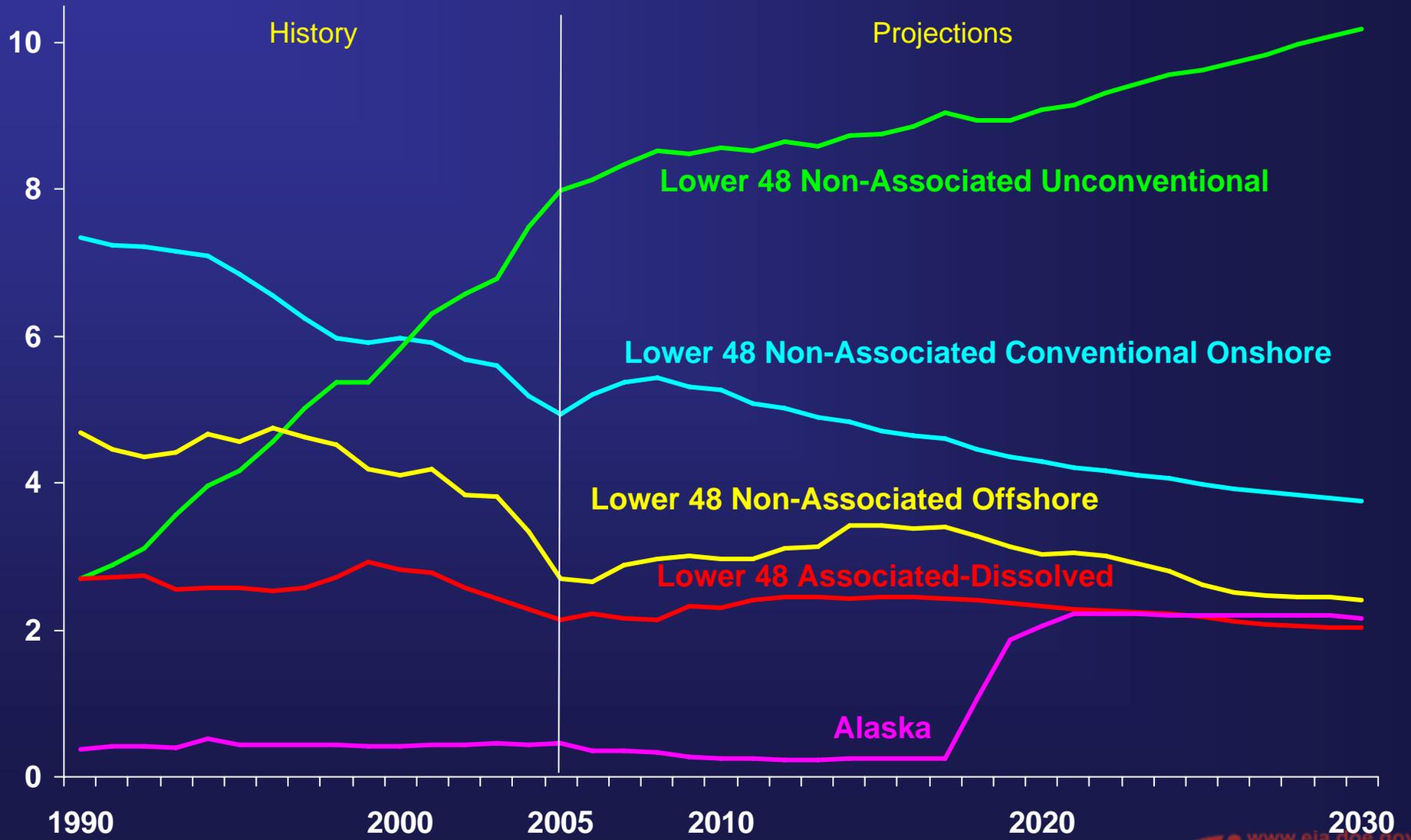
\* Includes lease and plant fuel

\*\* Includes pipeline fuel

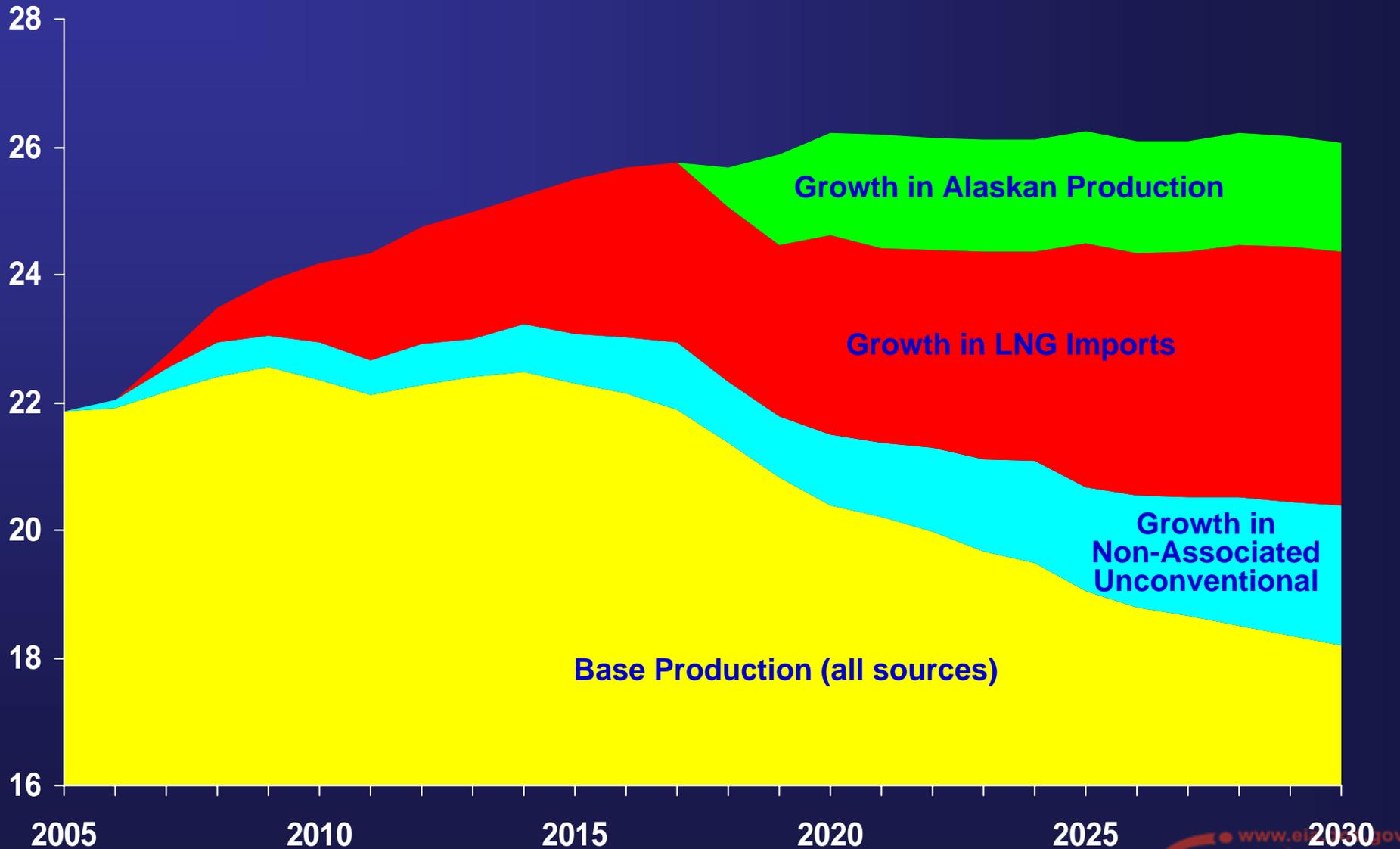
# U.S. Natural Gas Production, Consumption, and Net Imports, 1960-2030 (trillion cubic feet)



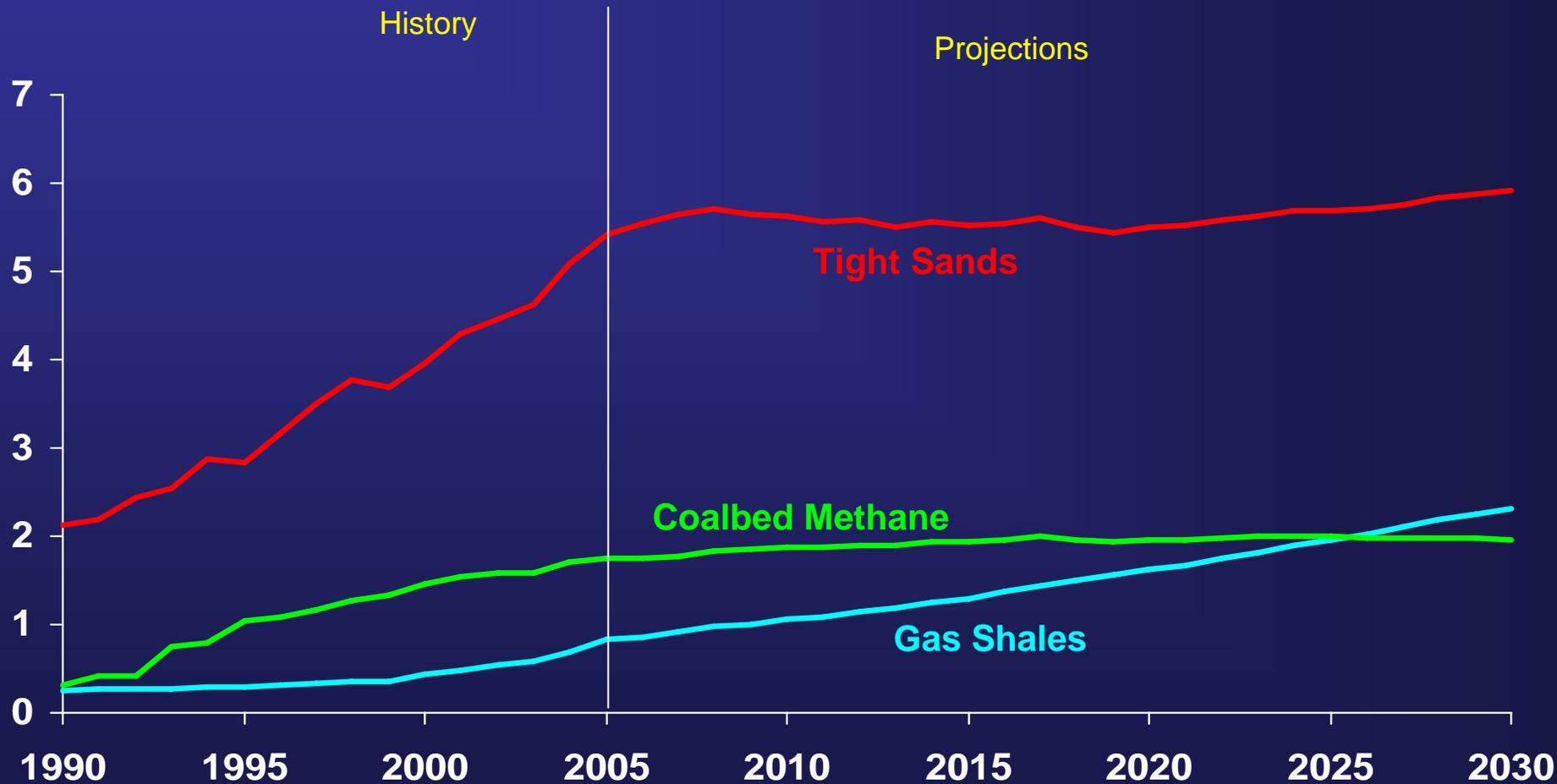
# U.S. Natural Gas Production by Source, 1990-2030 (trillion cubic feet)



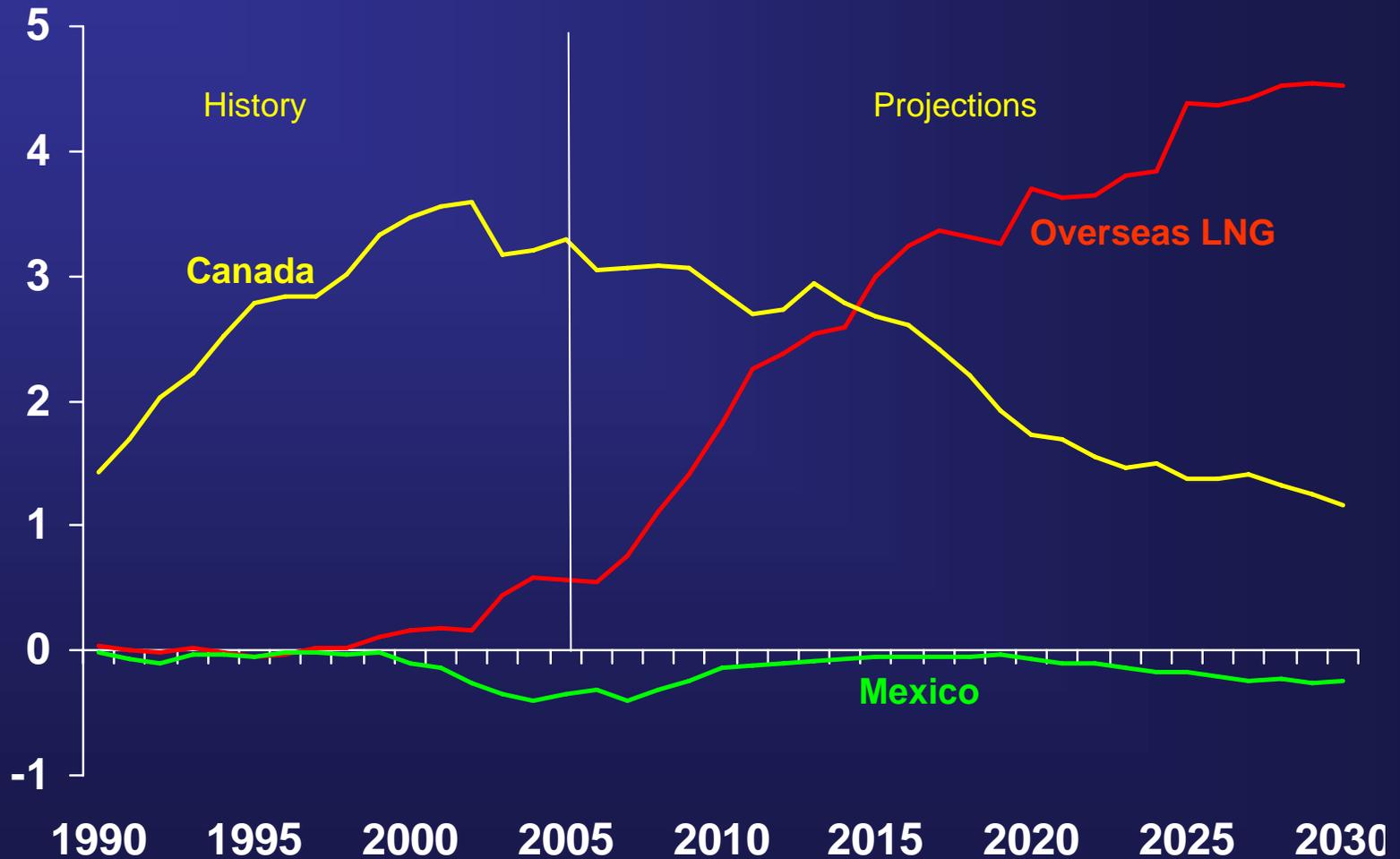
# Major Sources of Incremental U.S. Natural Gas Supply, 2005-2030 (trillion cubic feet)



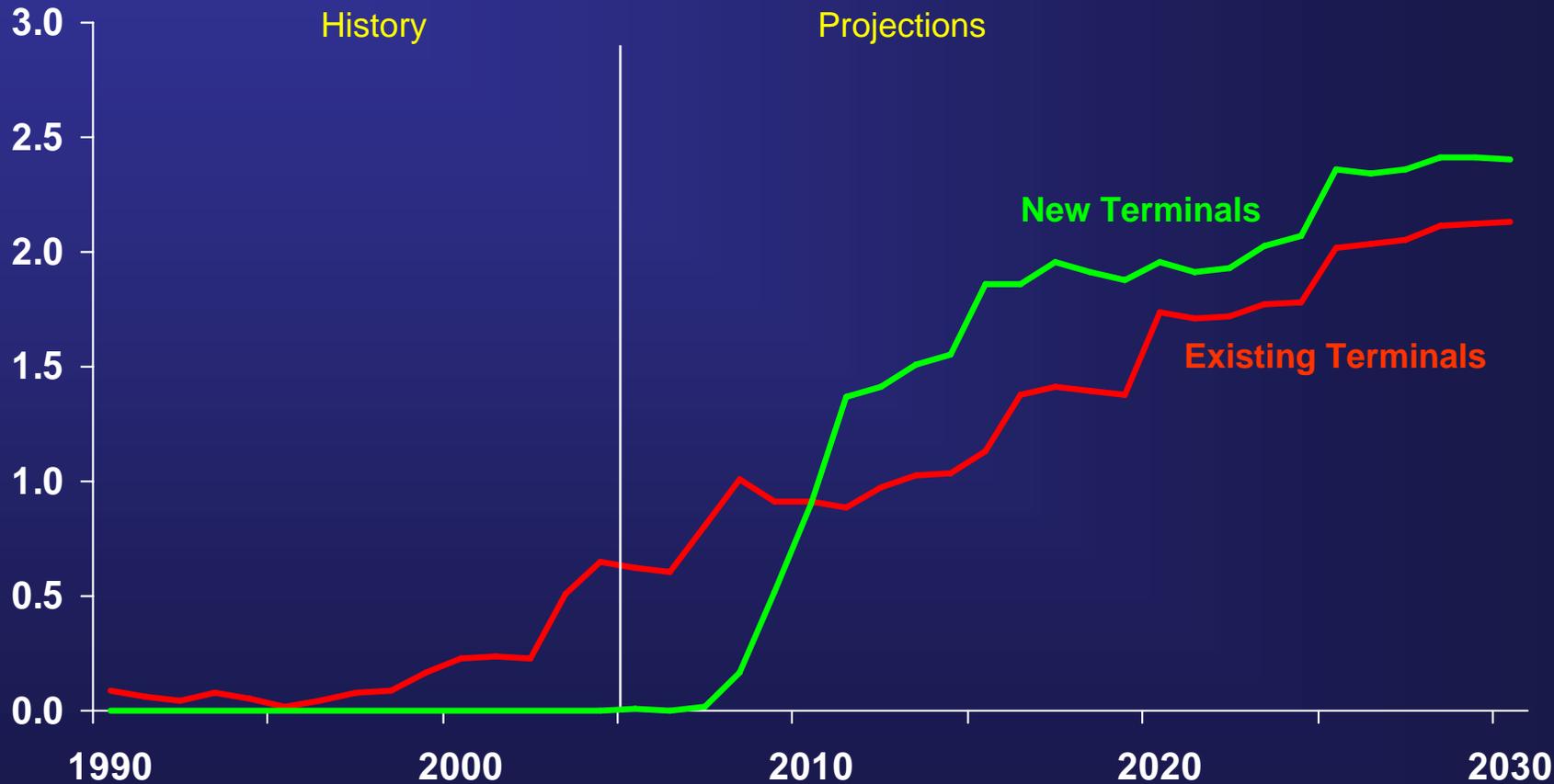
# U.S. Unconventional Natural Gas Production, 1990-2030 (trillion cubic feet)



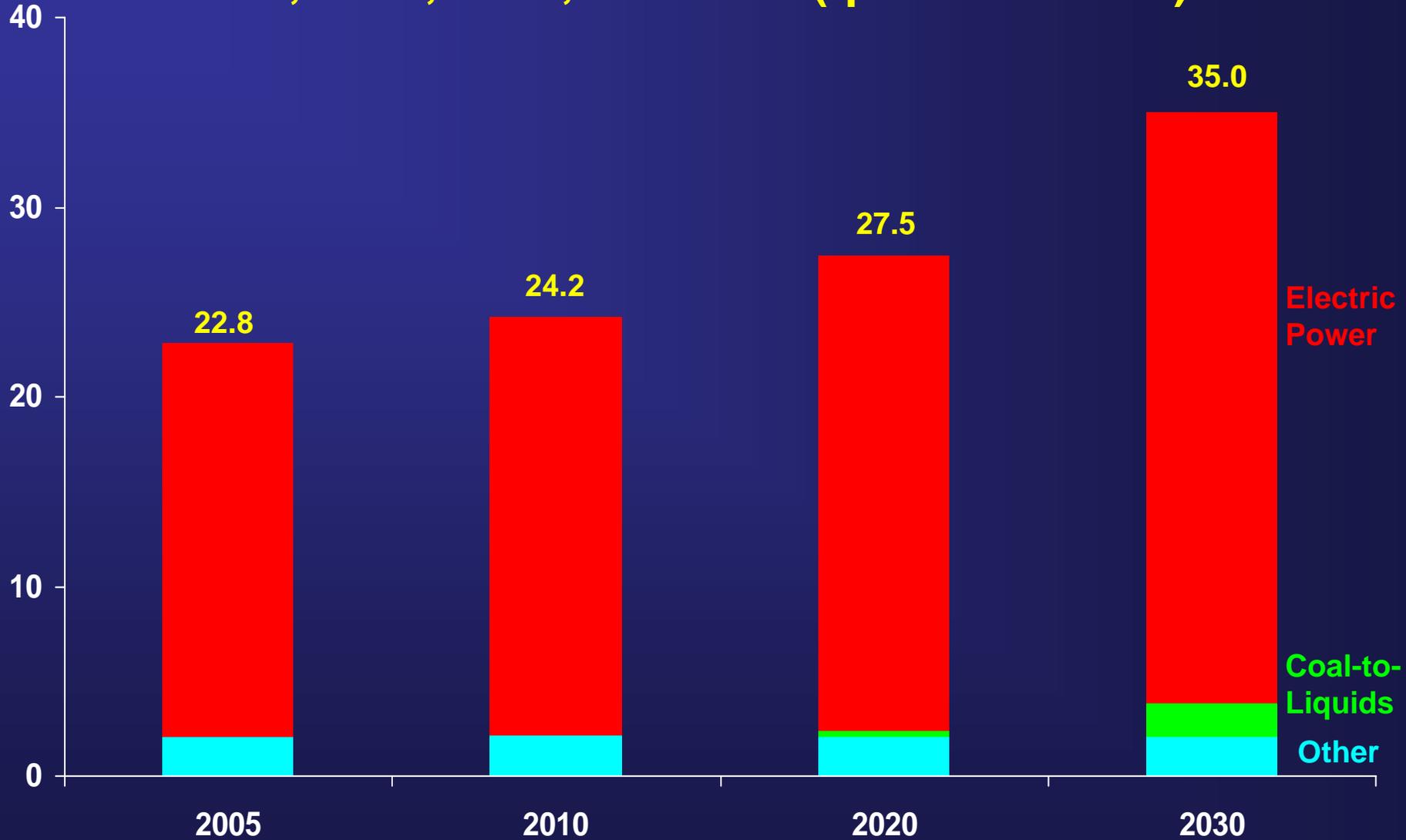
# U.S. Net Imports of Natural Gas, 1990-2030 (trillion cubic feet)



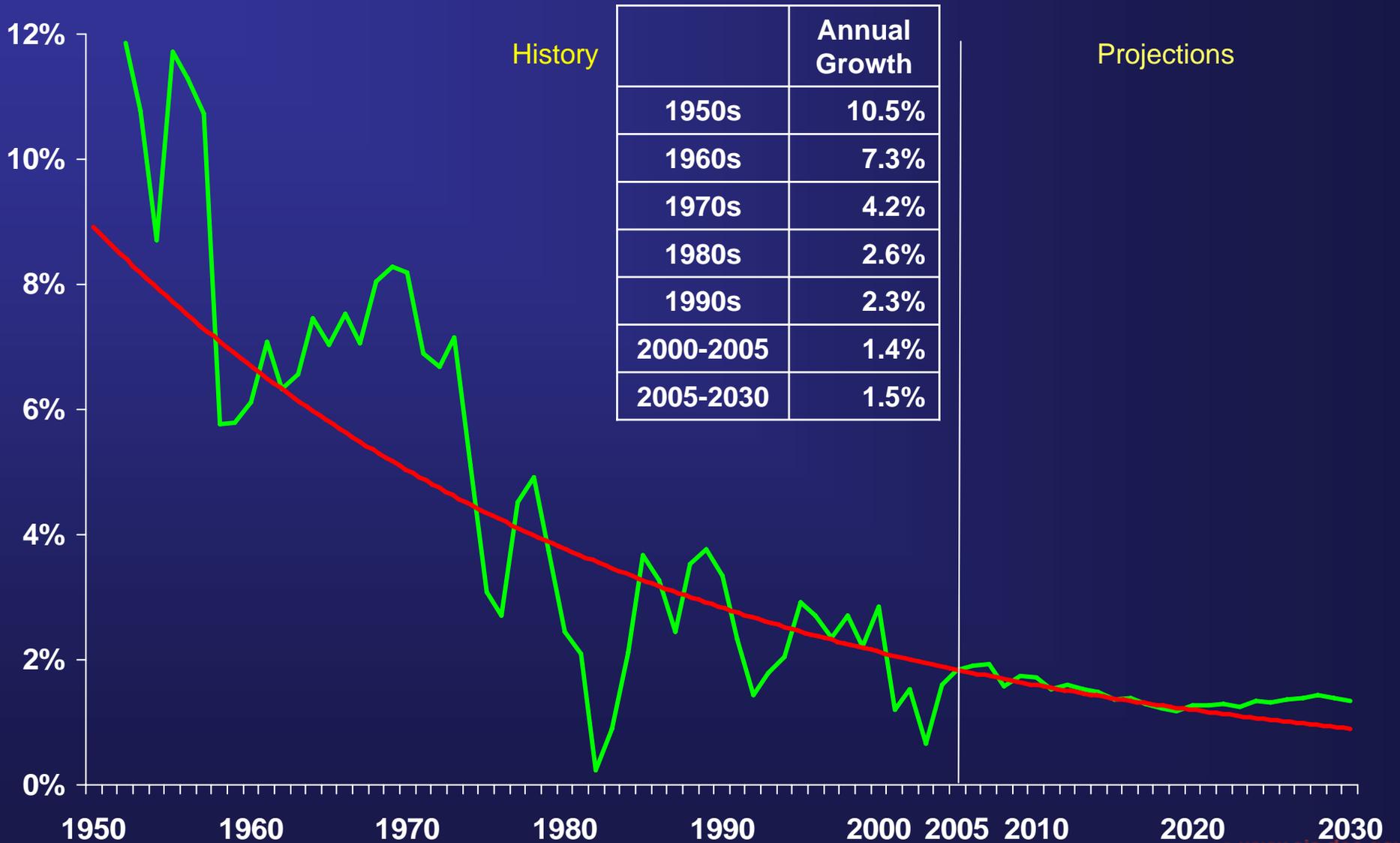
# U.S. LNG Imports, 1990-2030 (trillion cubic feet)



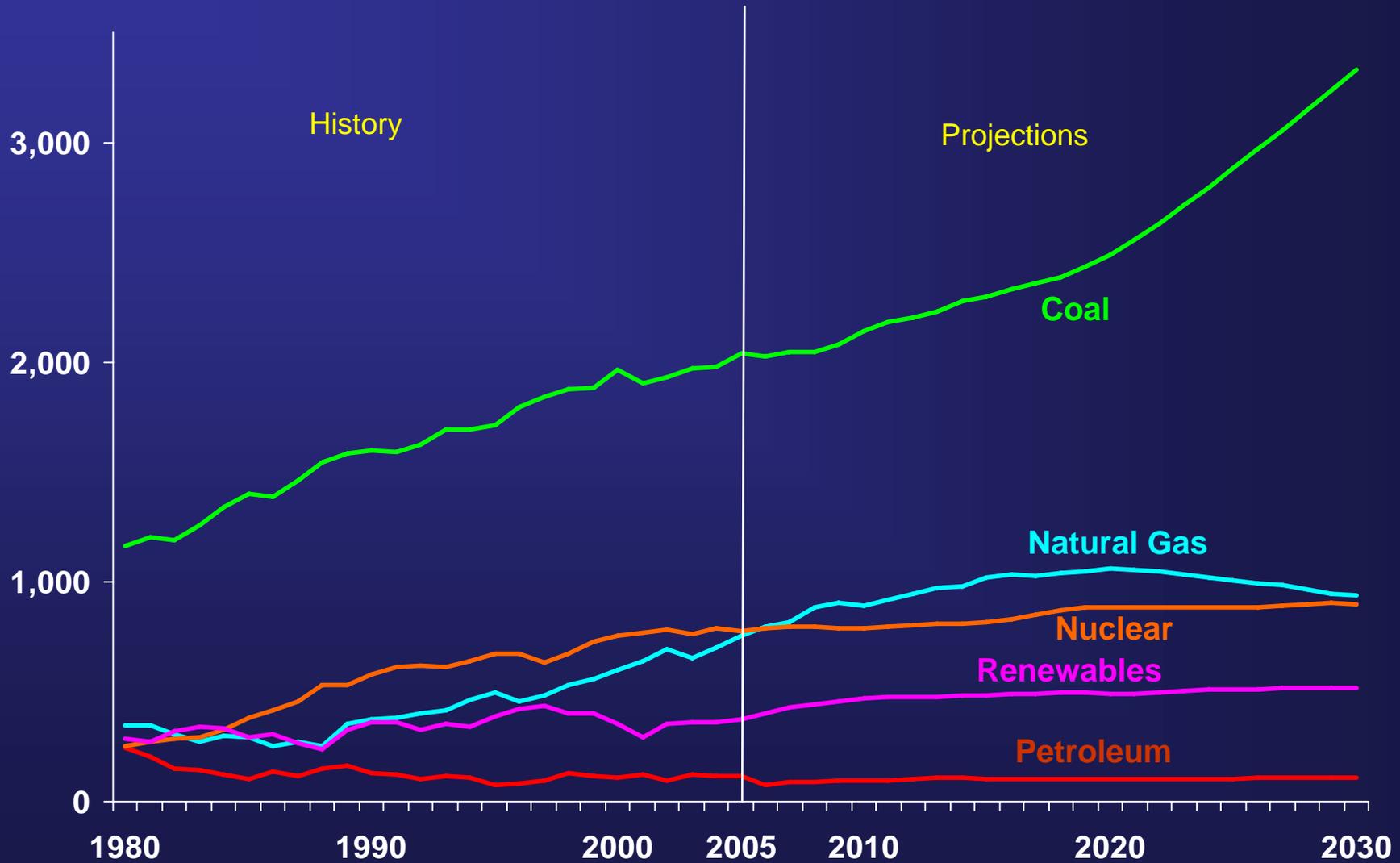
# U.S. Coal Consumption by Sector, 2005, 2010, 2020, and 2030 (quadrillion Btu)



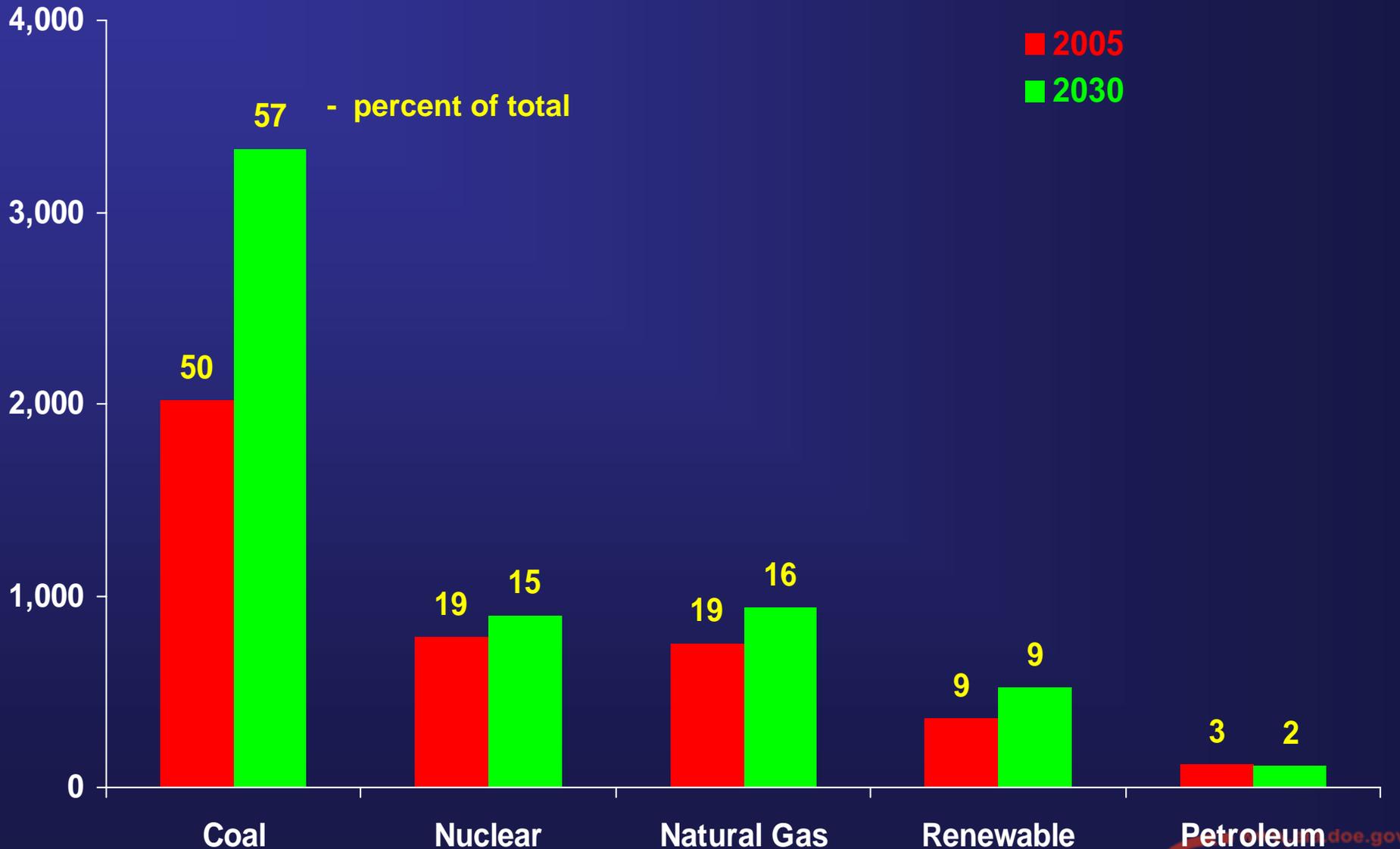
# 3-Year Rolling Average U.S. Electricity Demand Growth (with exponential trend line)



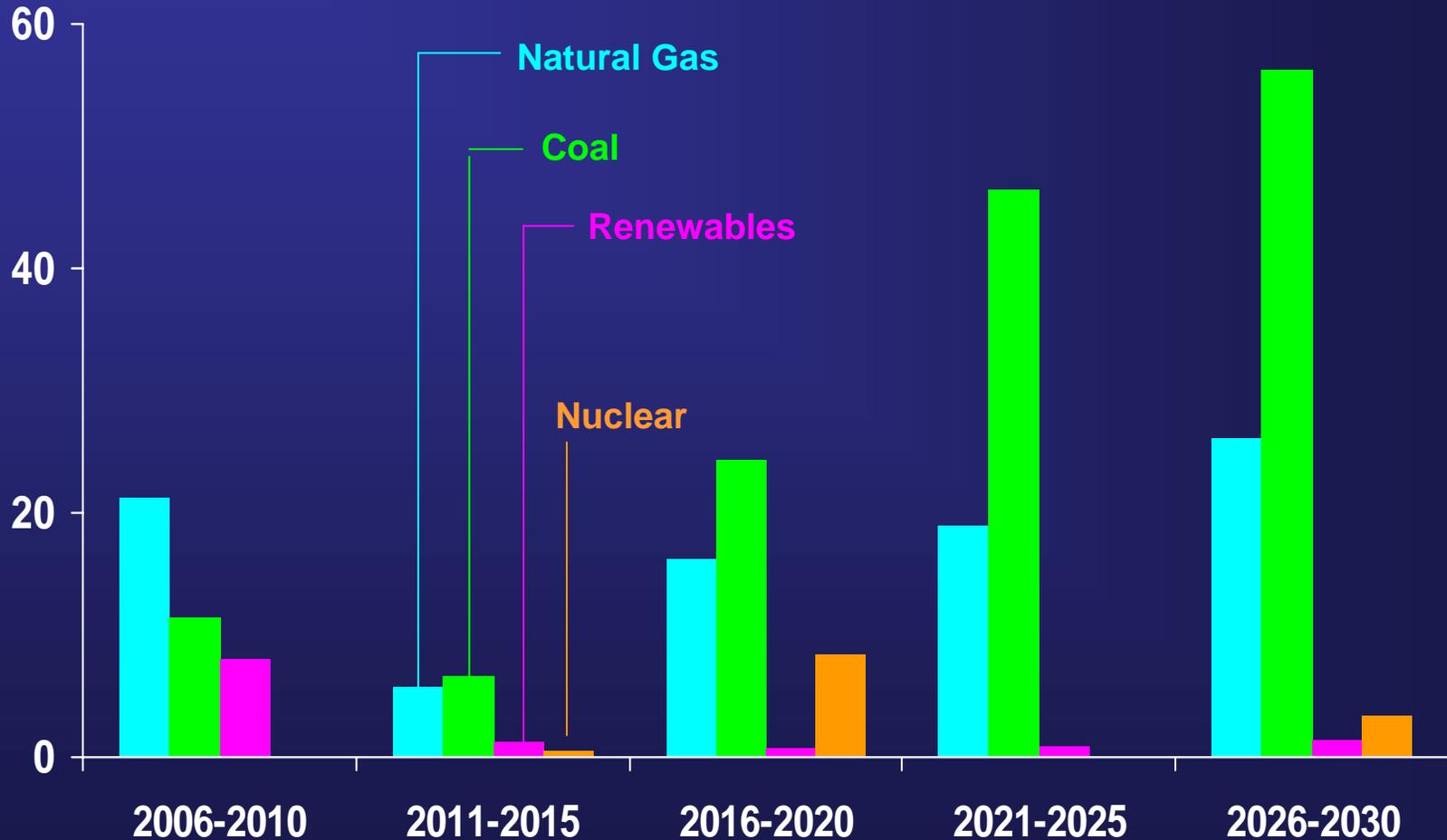
# U.S. Electricity Generation by Fuel, 1980-2030 (billion kilowatthours)



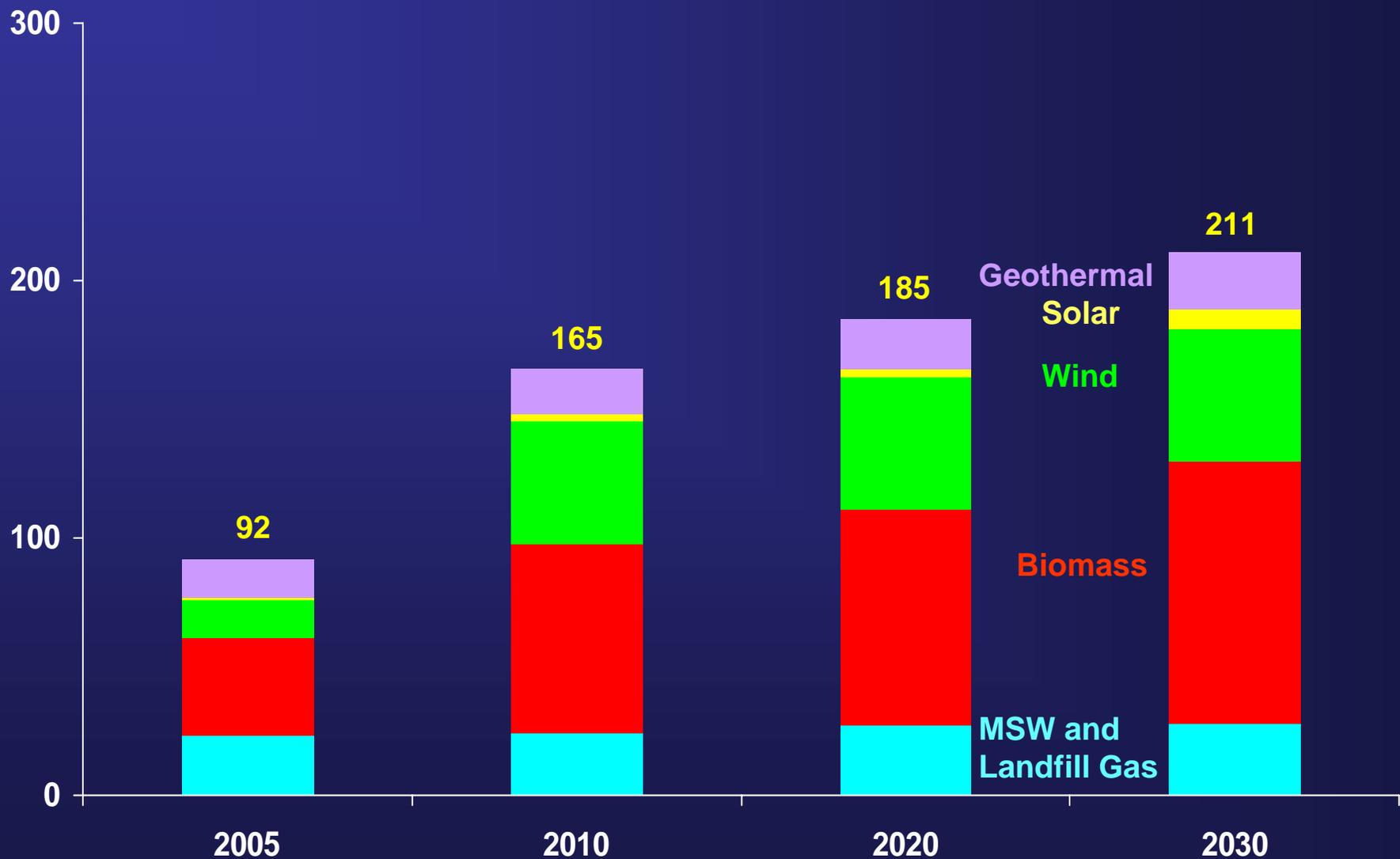
# U.S. Electricity Generation by Fuel, 2005 and 2030 (billion kilowatthours)



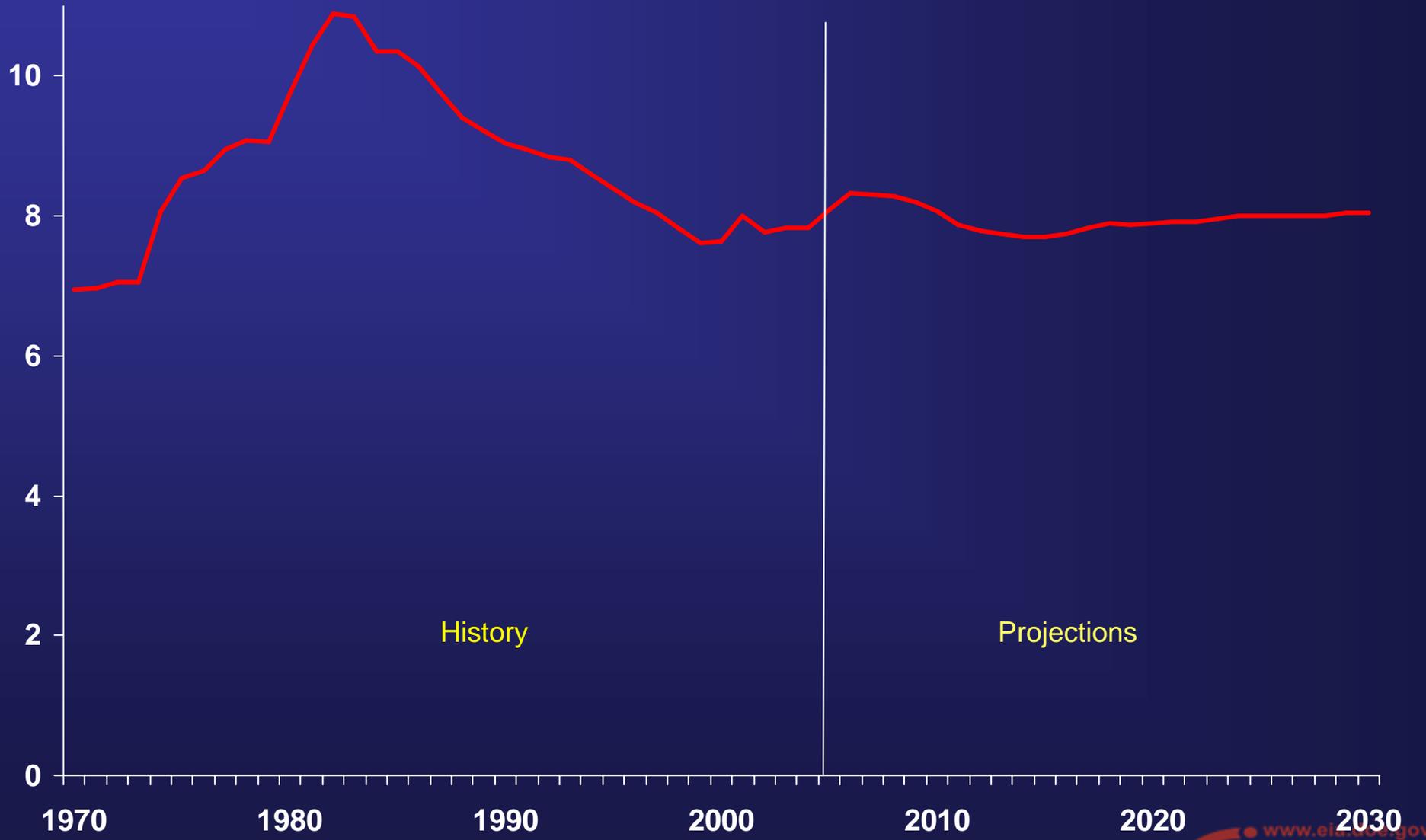
# U.S. Electricity Generation Capacity Additions by Fuel, 2006-2030 (gigawatts)



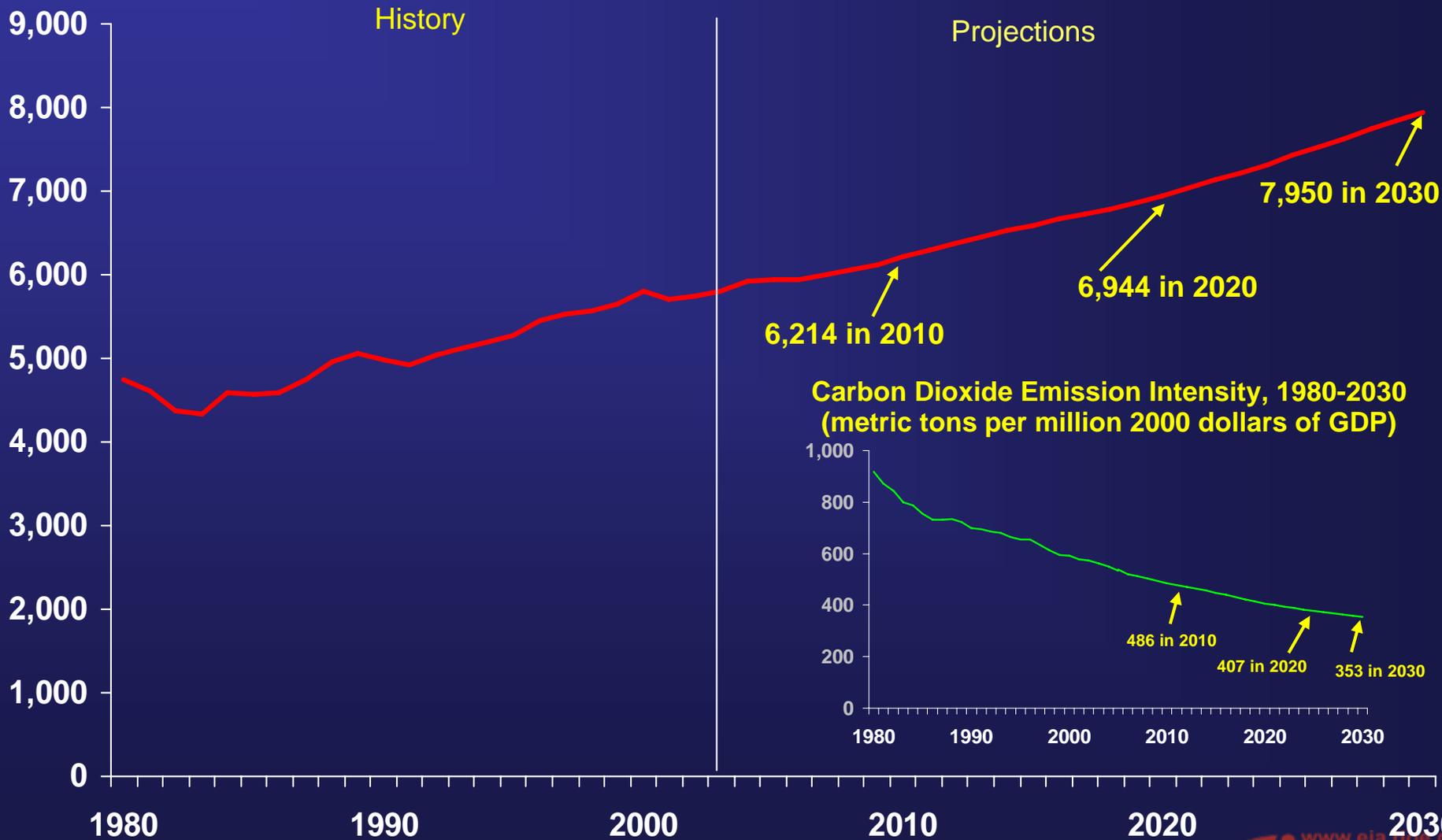
# U.S. Nonhydroelectric Renewable Electricity Generation, 2005, 2010, 2020, and 2030 (billion kilowatthours)



# U.S. Electricity Price, 1970-2030 (2005 cents per kilowatthour)



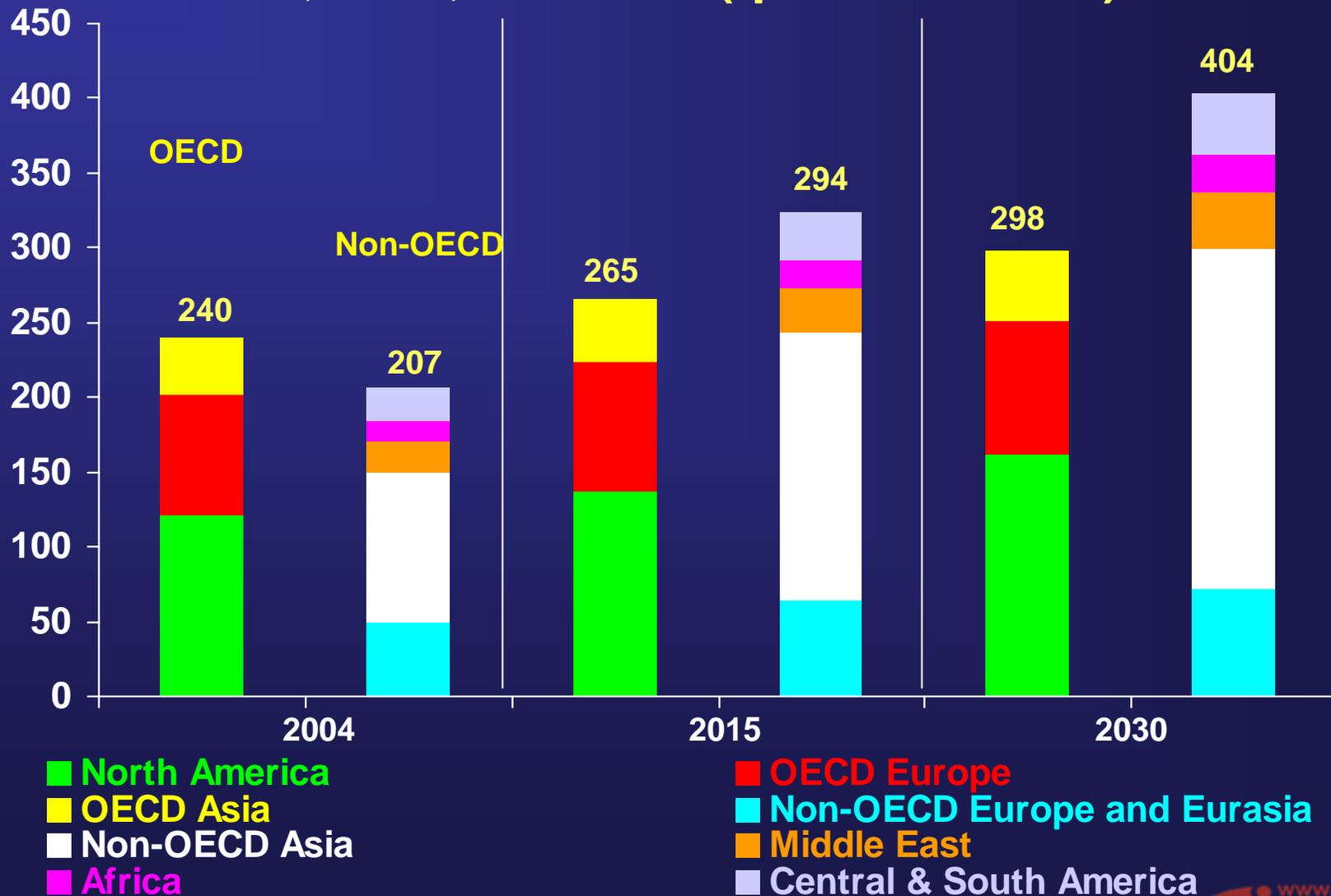
# U.S. Energy-Related Carbon Dioxide Emissions, 1980-2030 (million metric tons)



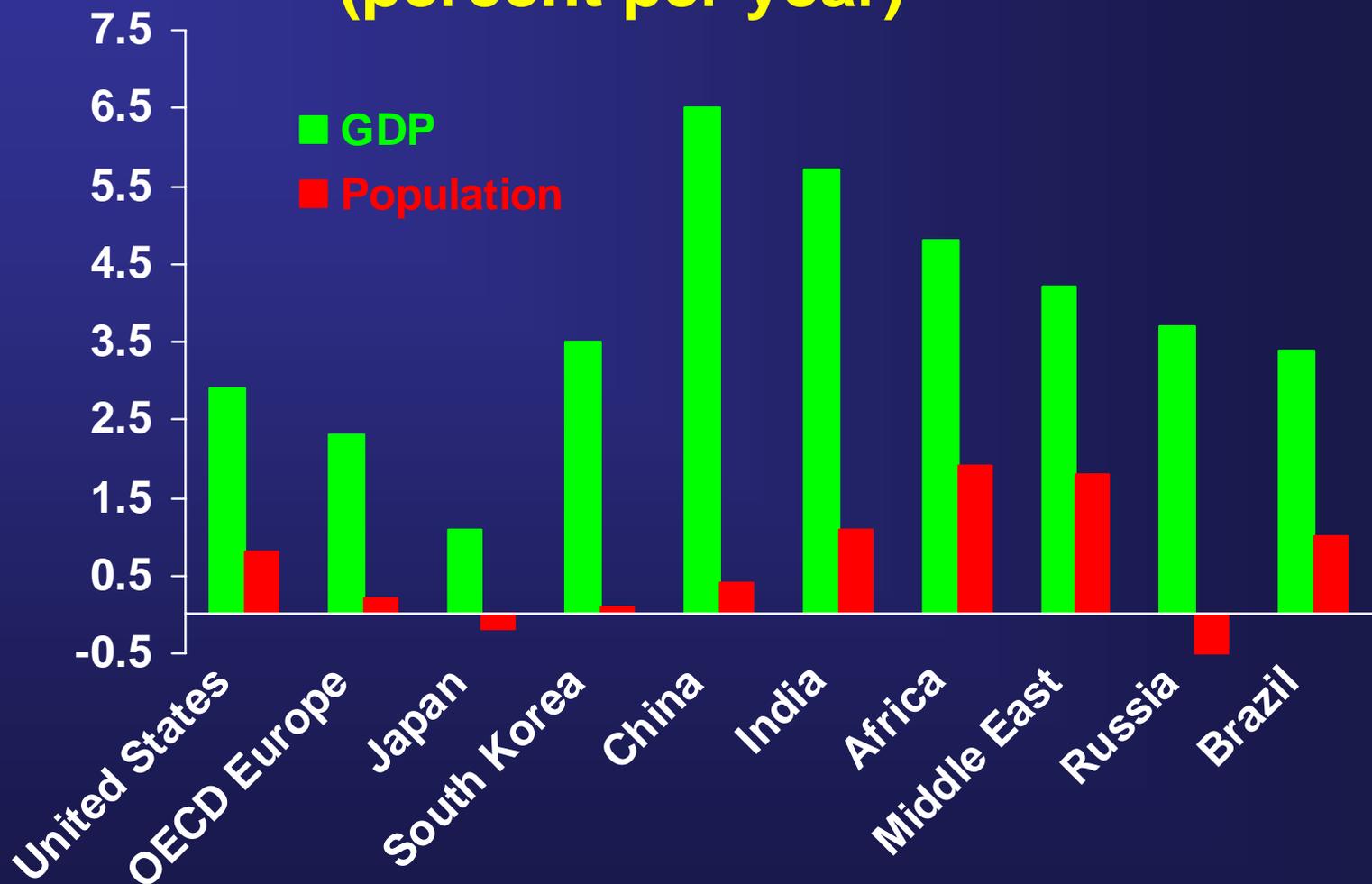
## ***Annual Energy Outlook 2007* reference case indicates that through 2030....**

- Traditional fossil fuels are expected to continue to meet the bulk of energy requirements over the projection period
- U.S. energy demand is projected to grow at an average annual rate of 1.1 percent
- The energy efficiency of the economy is projected to increase at an average annual rate of 1.8 percent
- U.S. oil import dependence, measured as a share of U.S. oil use, is not expected to increase over the next 25 years
- U.S. natural gas use is projected to be level off over the last decade of the projection
- Future growth in U.S. natural gas supplies depends on unconventional domestic production, natural gas from Alaska, and liquefied natural gas imports
- Carbon dioxide emissions from energy are projected to grow at an average annual rate of 1.2 percent

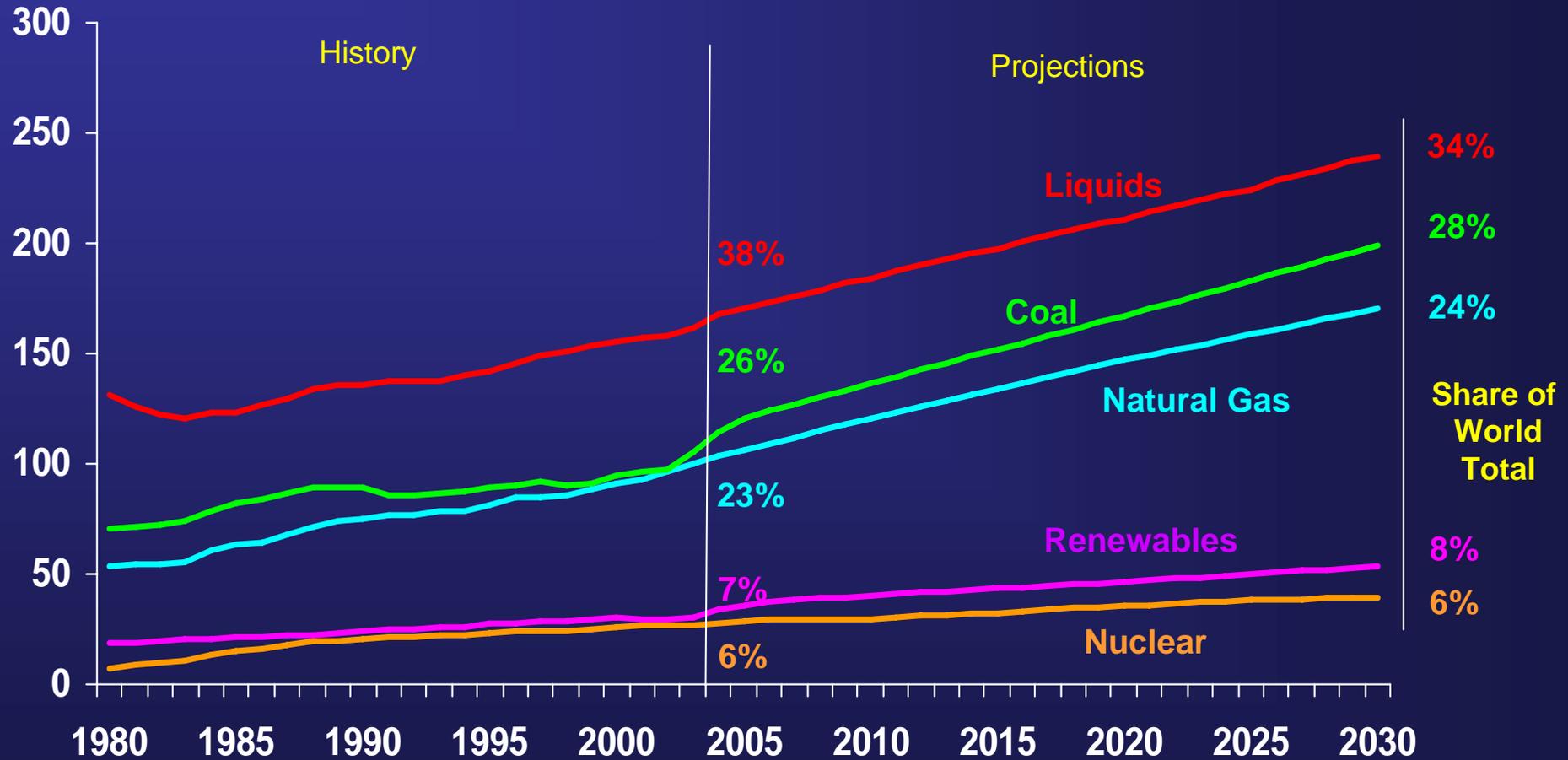
# World Energy Consumption, 2004, 2015, and 2030 (quadrillion Btu)



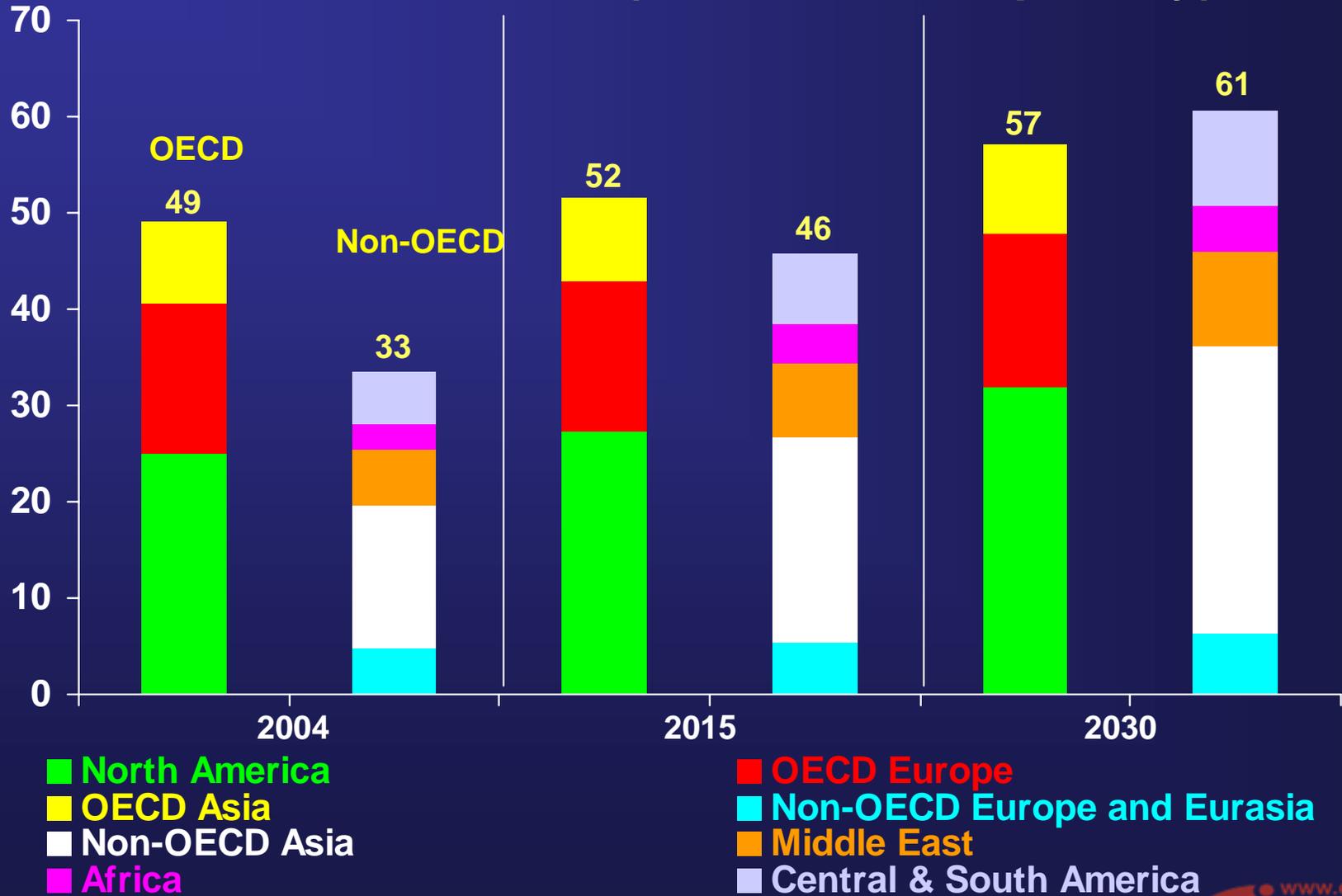
# Average Annual GDP and Population Growth for Selected Regions, 2004-2030 (percent per year)



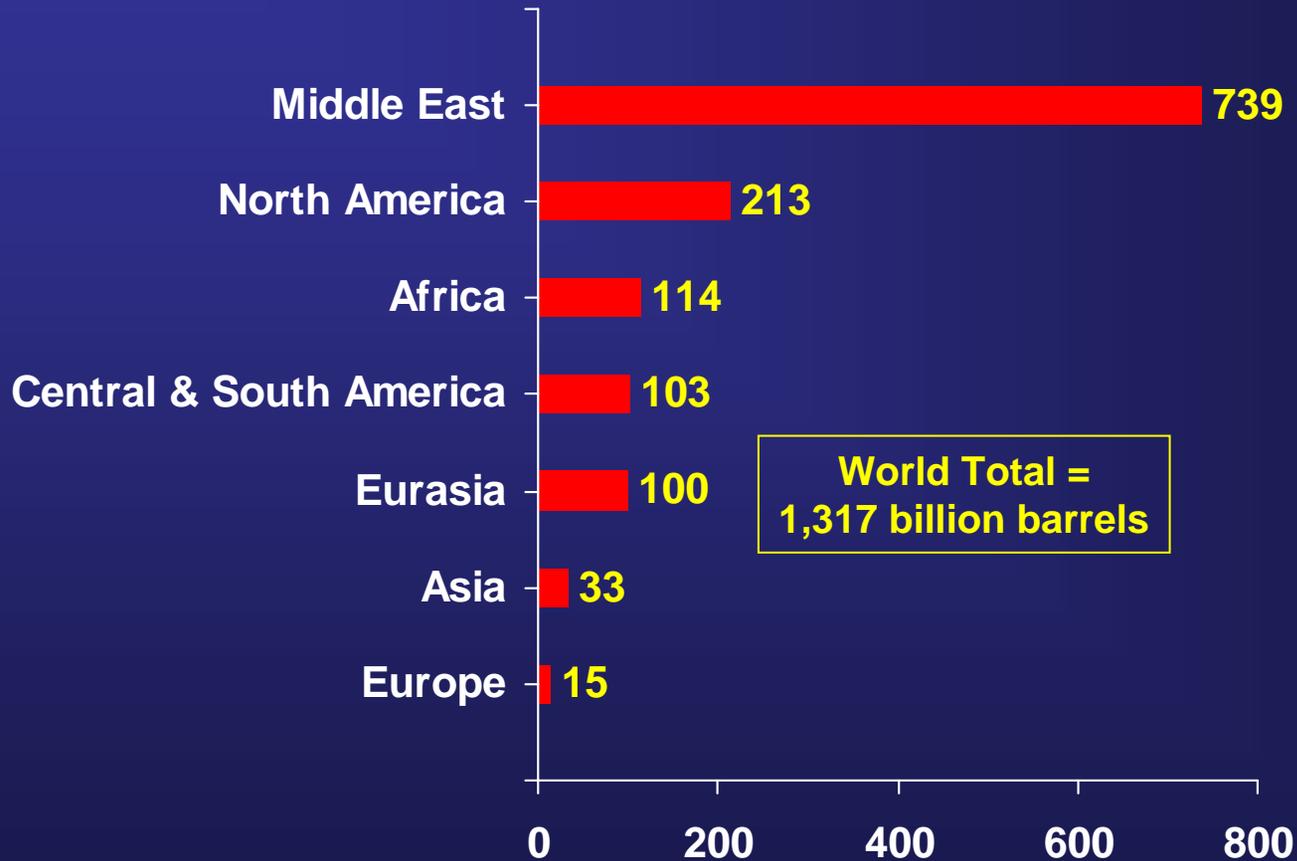
# World Marketed Energy Use, 1980-2030 (quadrillion Btu)



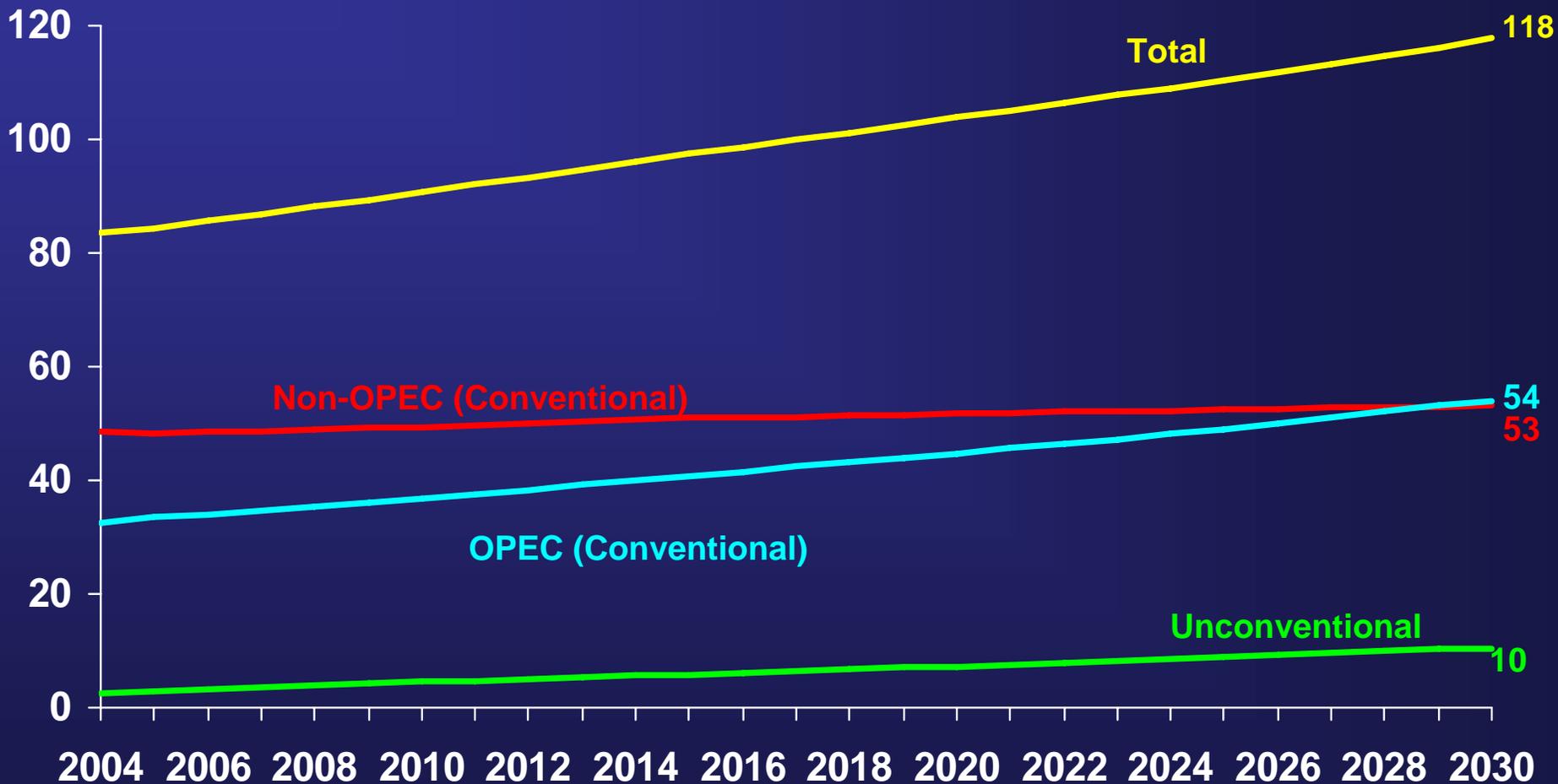
# World Liquids Consumption, 2004, 2015, and 2030 (million barrels per day)



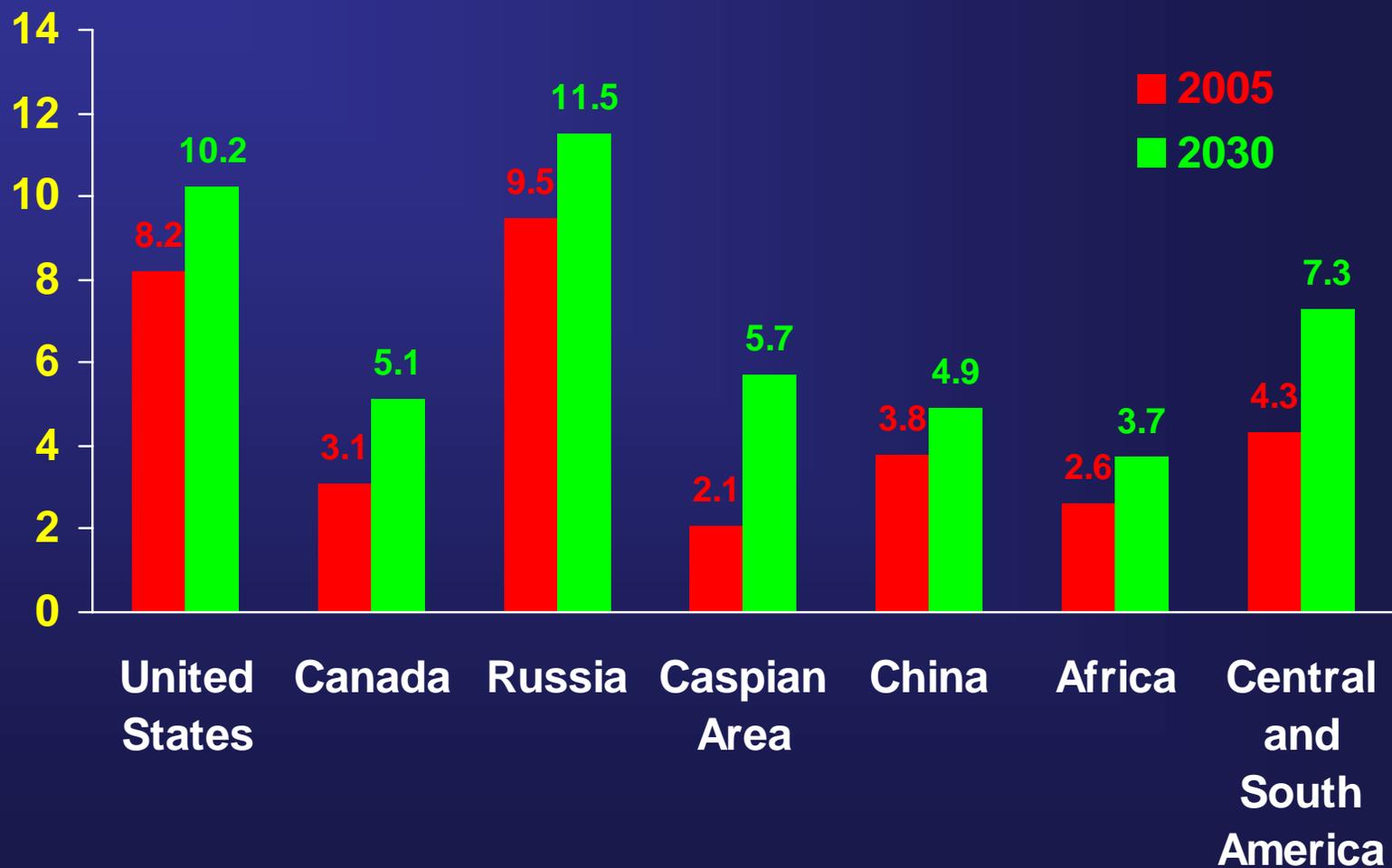
# World Proved Oil Reserves, as of January 1, 2007 (billion barrels)



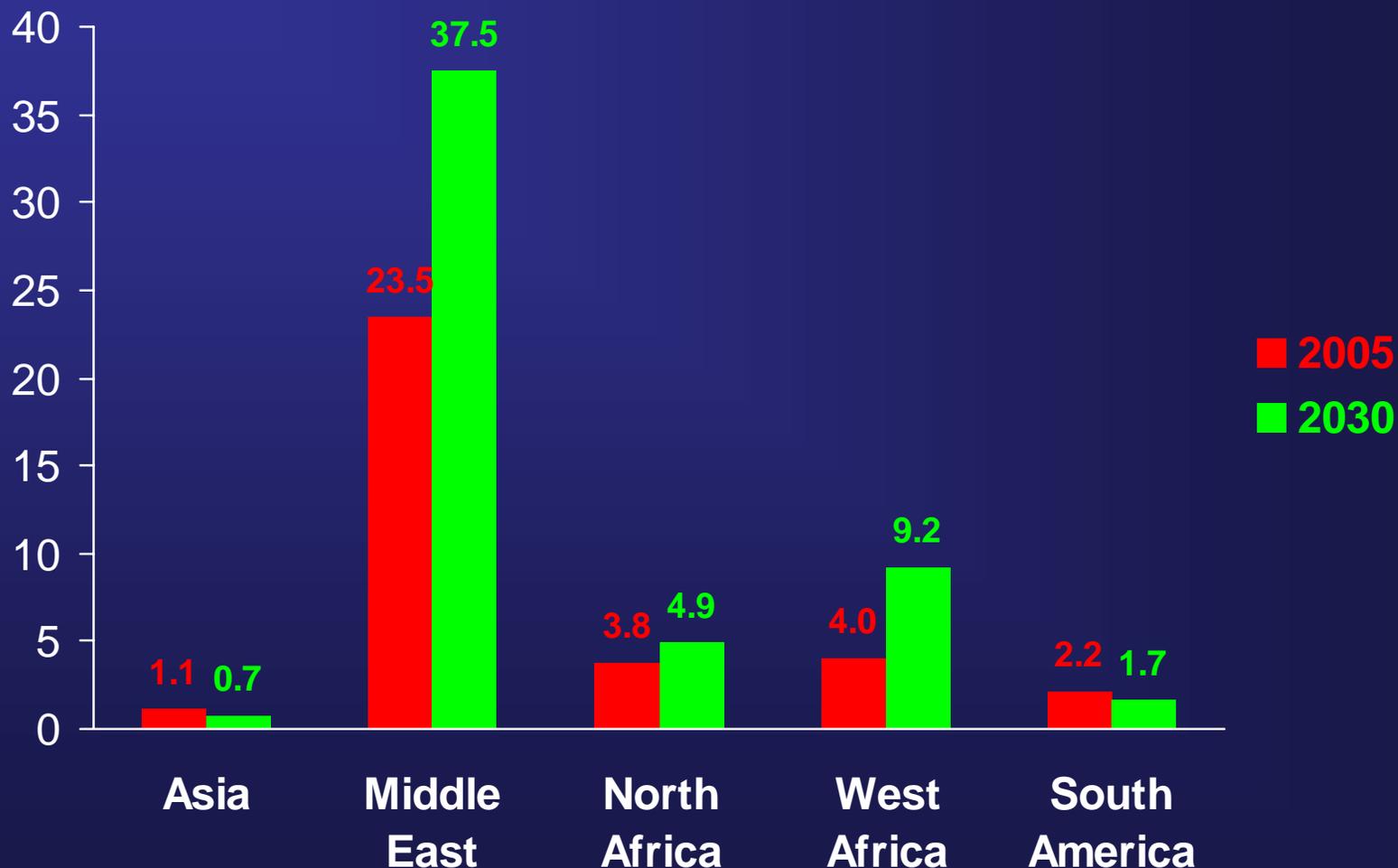
# World Liquids Production, 2004-2030 (million barrels per day oil equivalent)



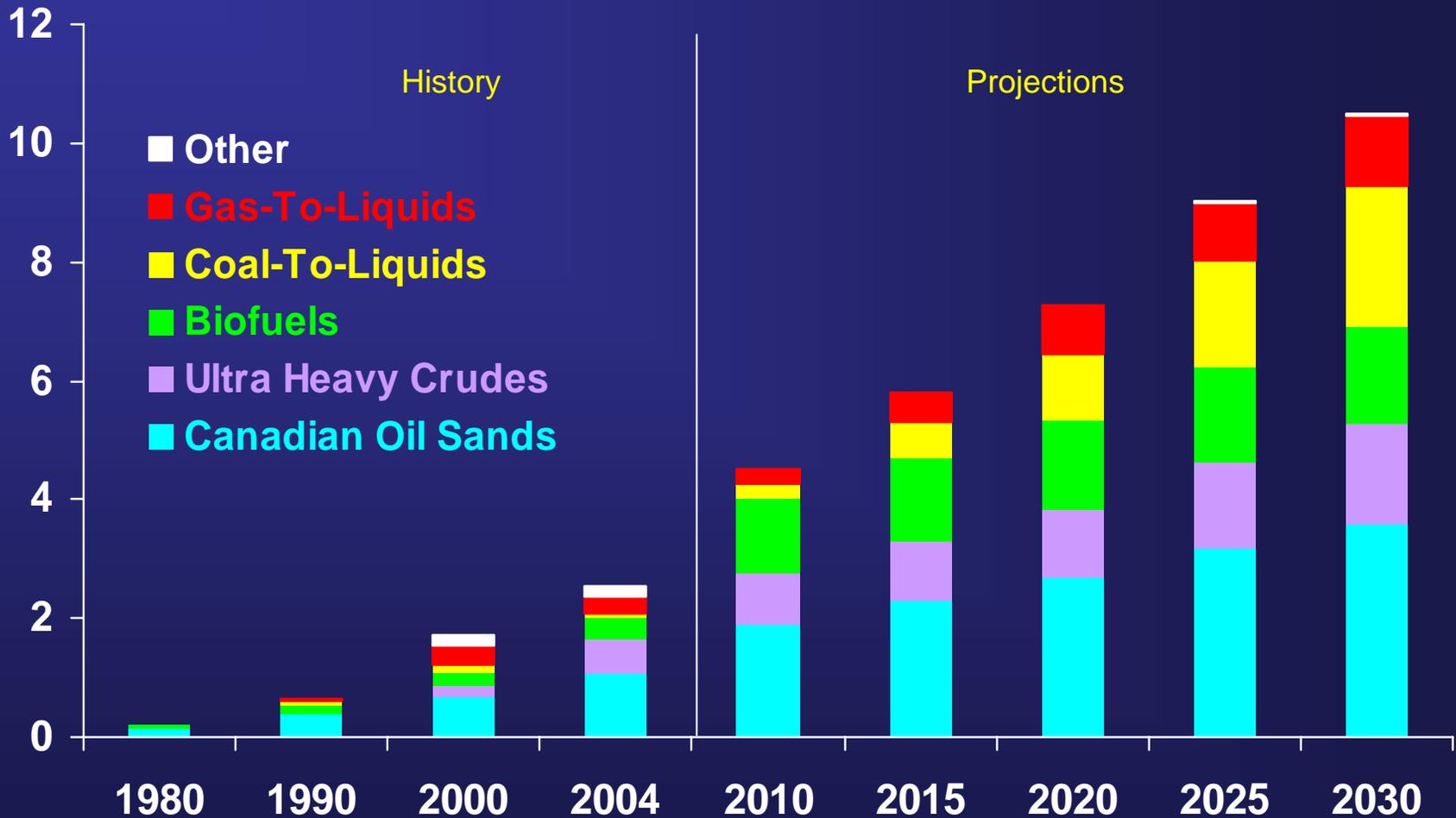
# Non-OPEC Producing Regions with More than a One-Million-Barrel-per-Day Increase in Production, (million barrels per day oil equivalent)



# OPEC Conventional Liquids Production (million barrels per day)

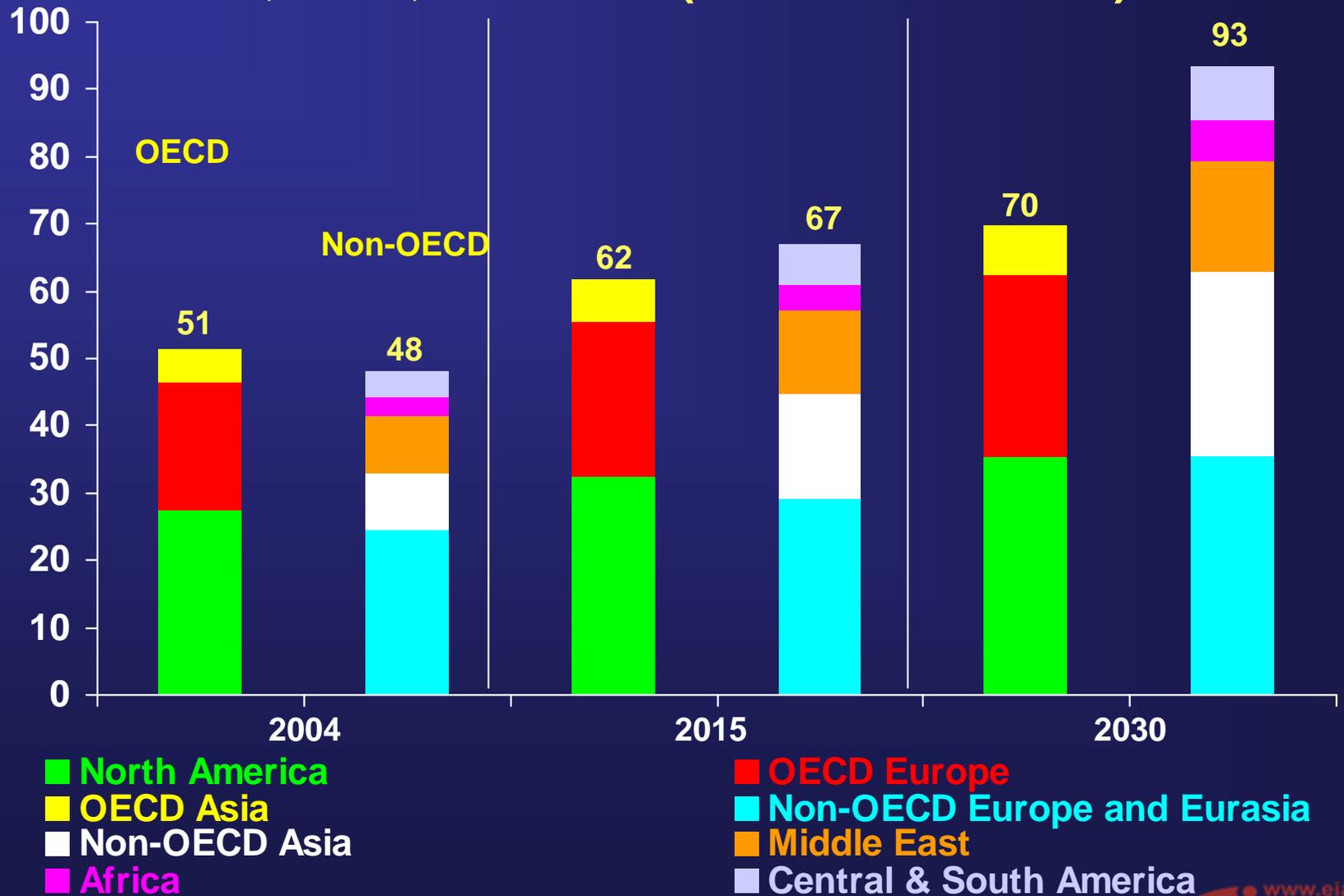


# World Unconventional Liquids Production, 1980-2030 (million barrels per day oil equivalent)

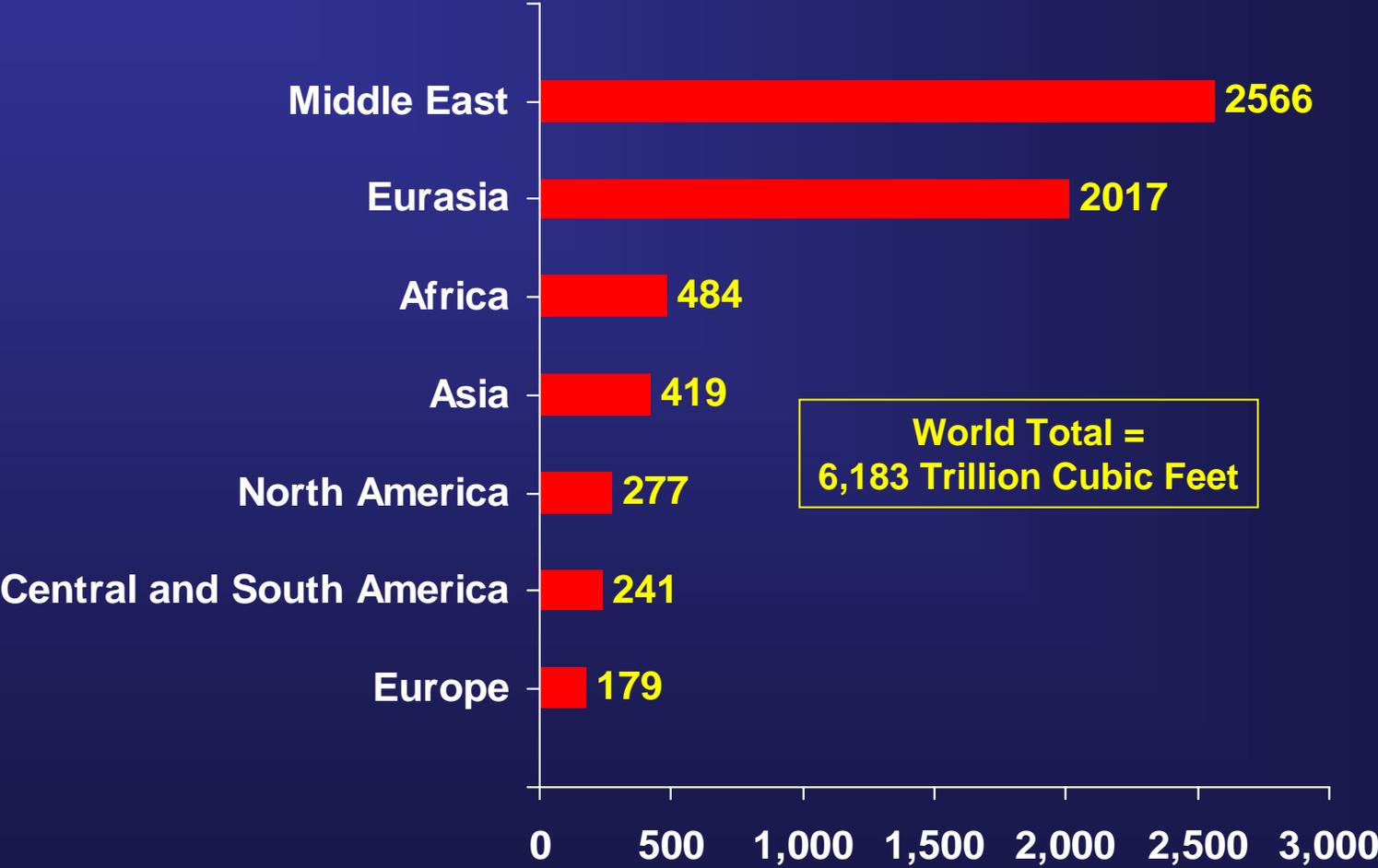


Other includes shale oils and other unidentified sources of unconventional liquid fuels.

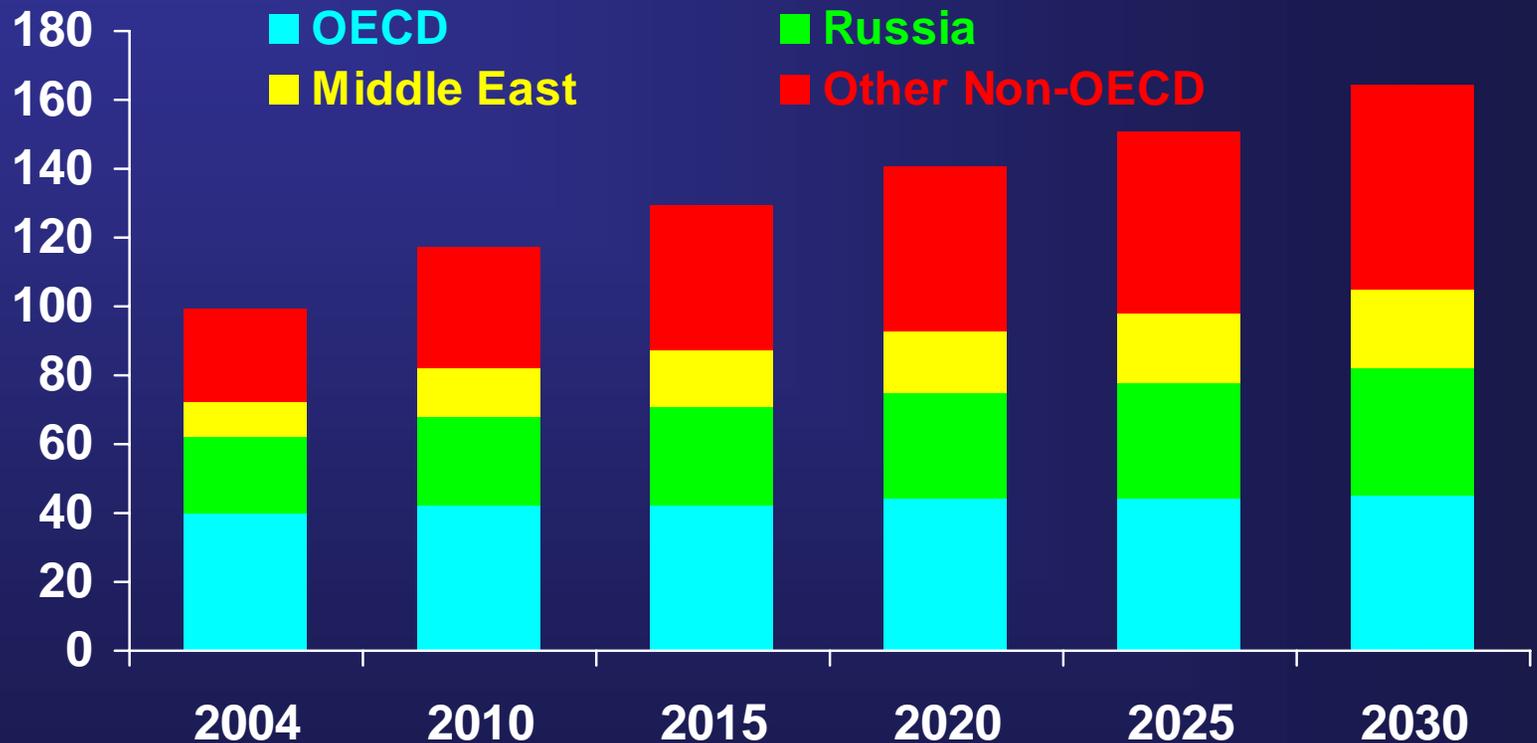
# World Natural Gas Consumption, 2004, 2015, and 2030 (trillion cubic feet)



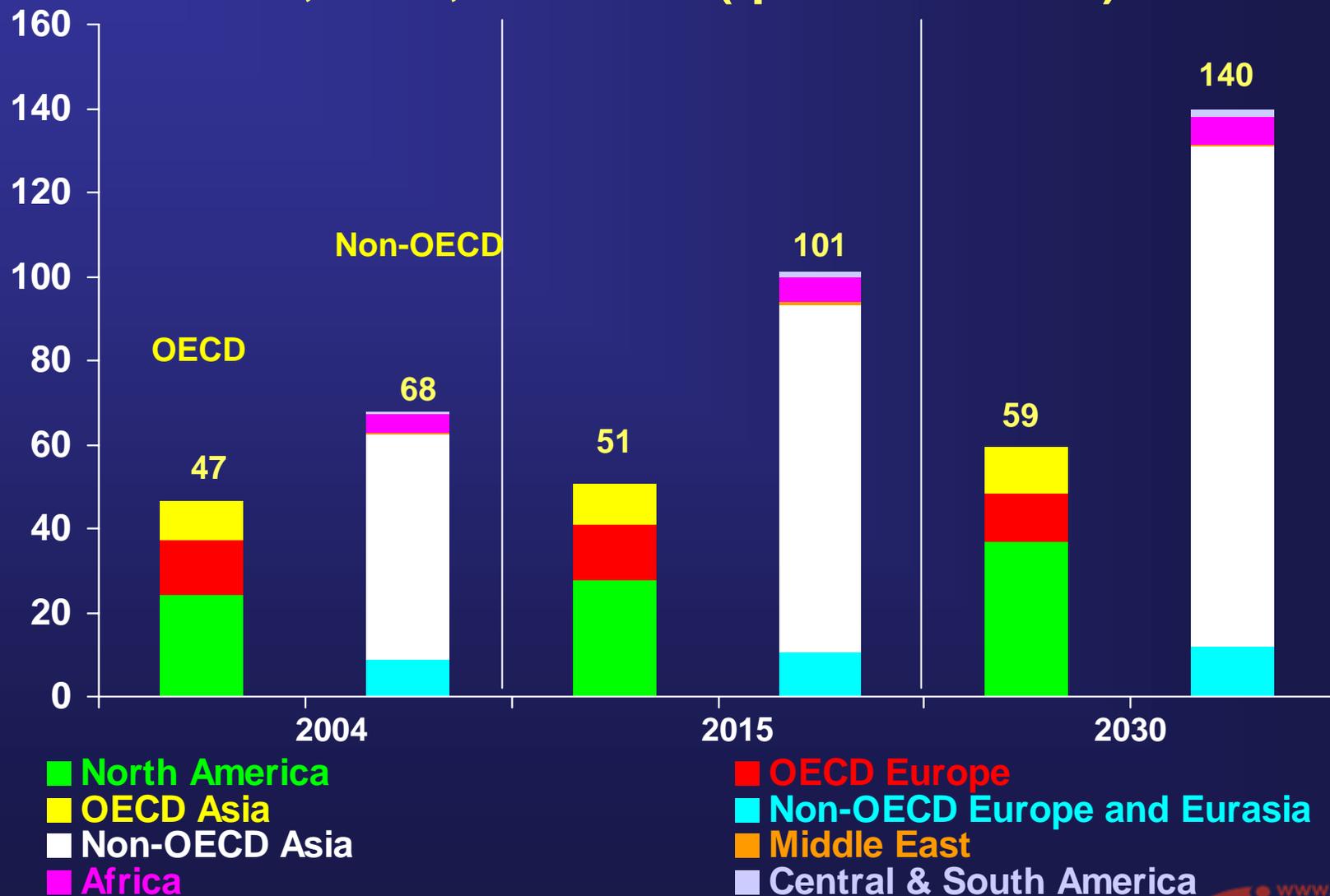
# World Natural Gas Reserves by Region, as of January 1, 2007 (trillion cubic feet)



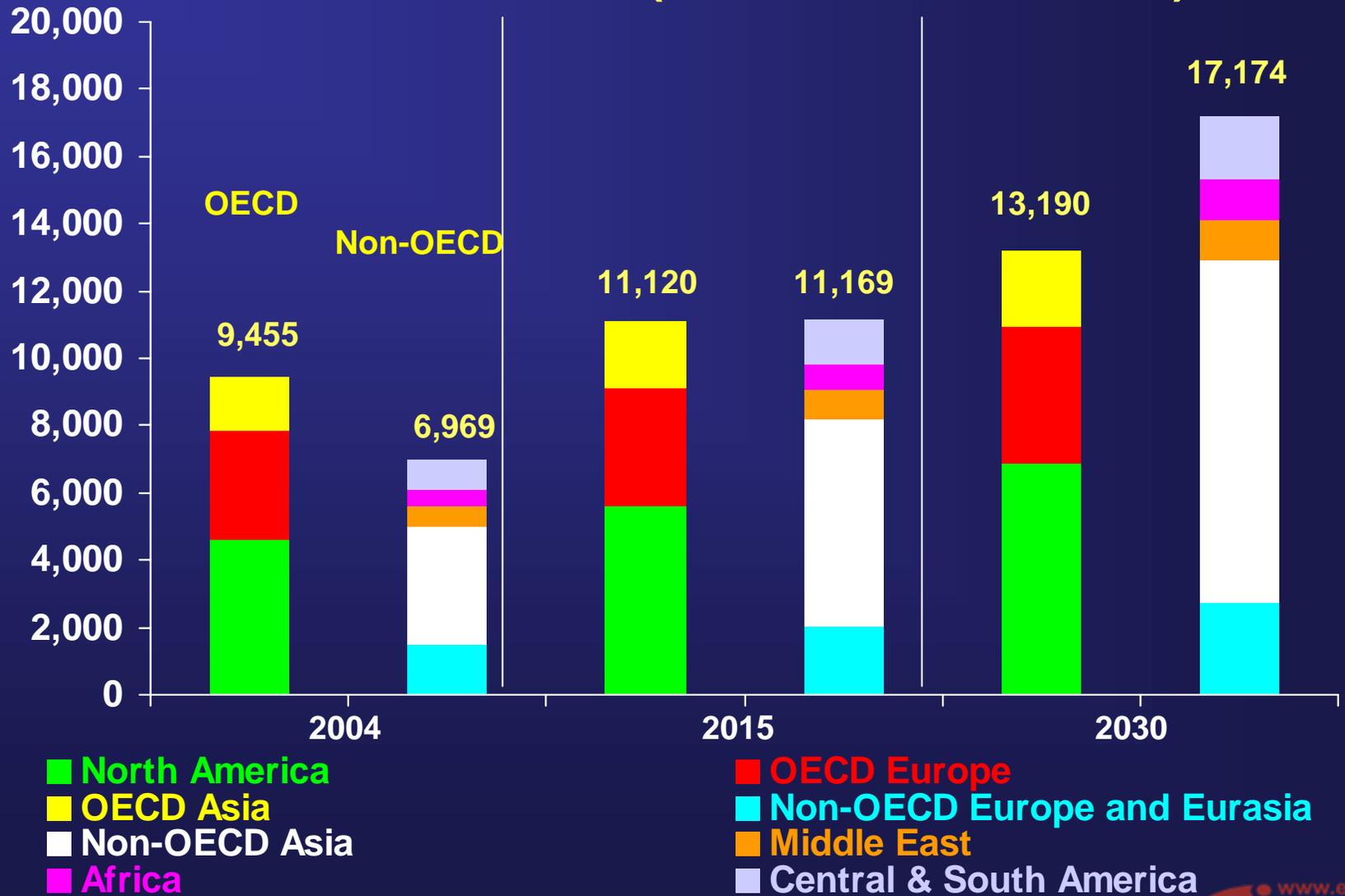
# World Natural Gas Production, 2004-2030 (trillion cubic feet)



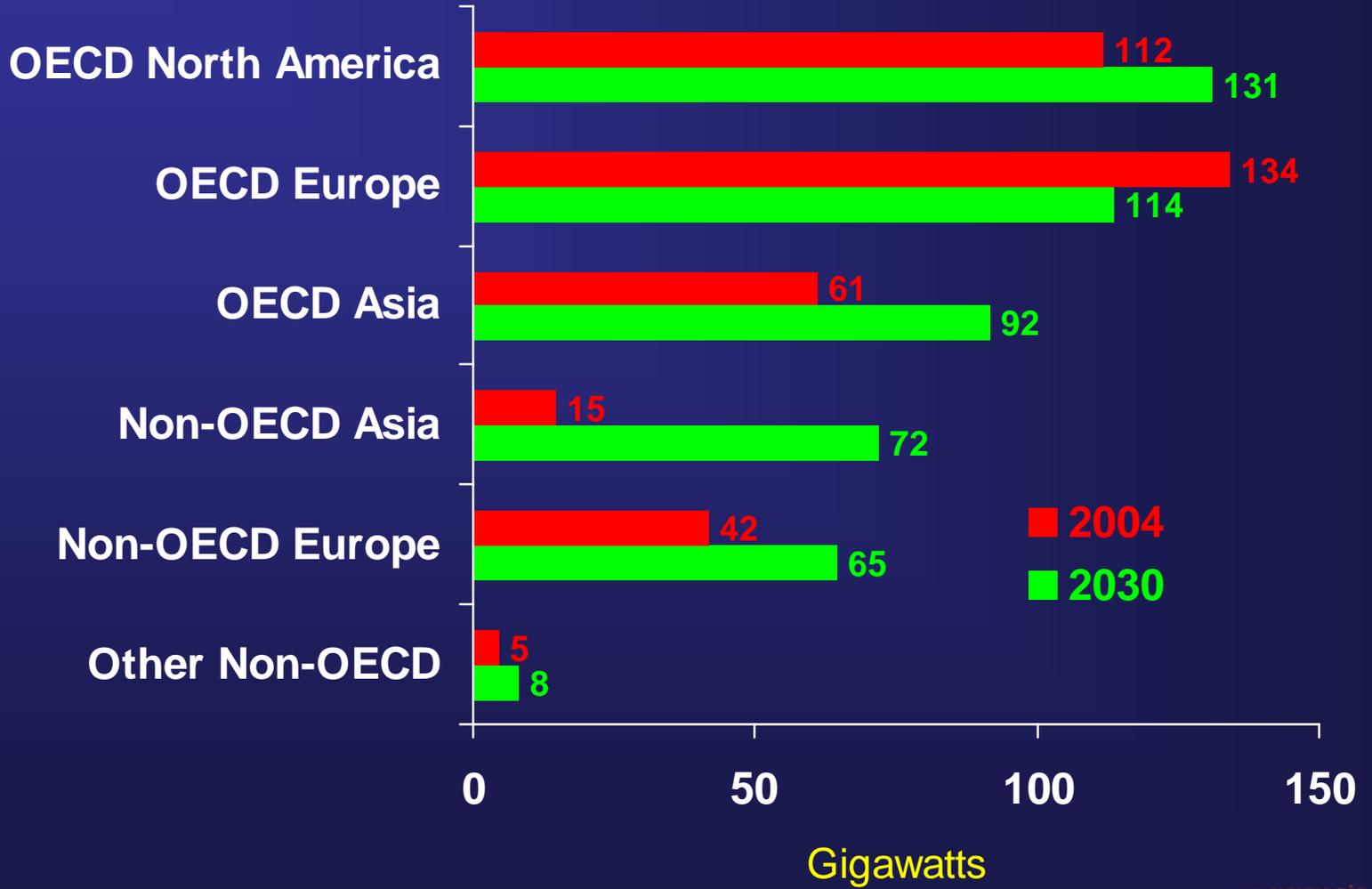
# World Coal Consumption, 2004, 2015, and 2030 (quadrillion Btu)



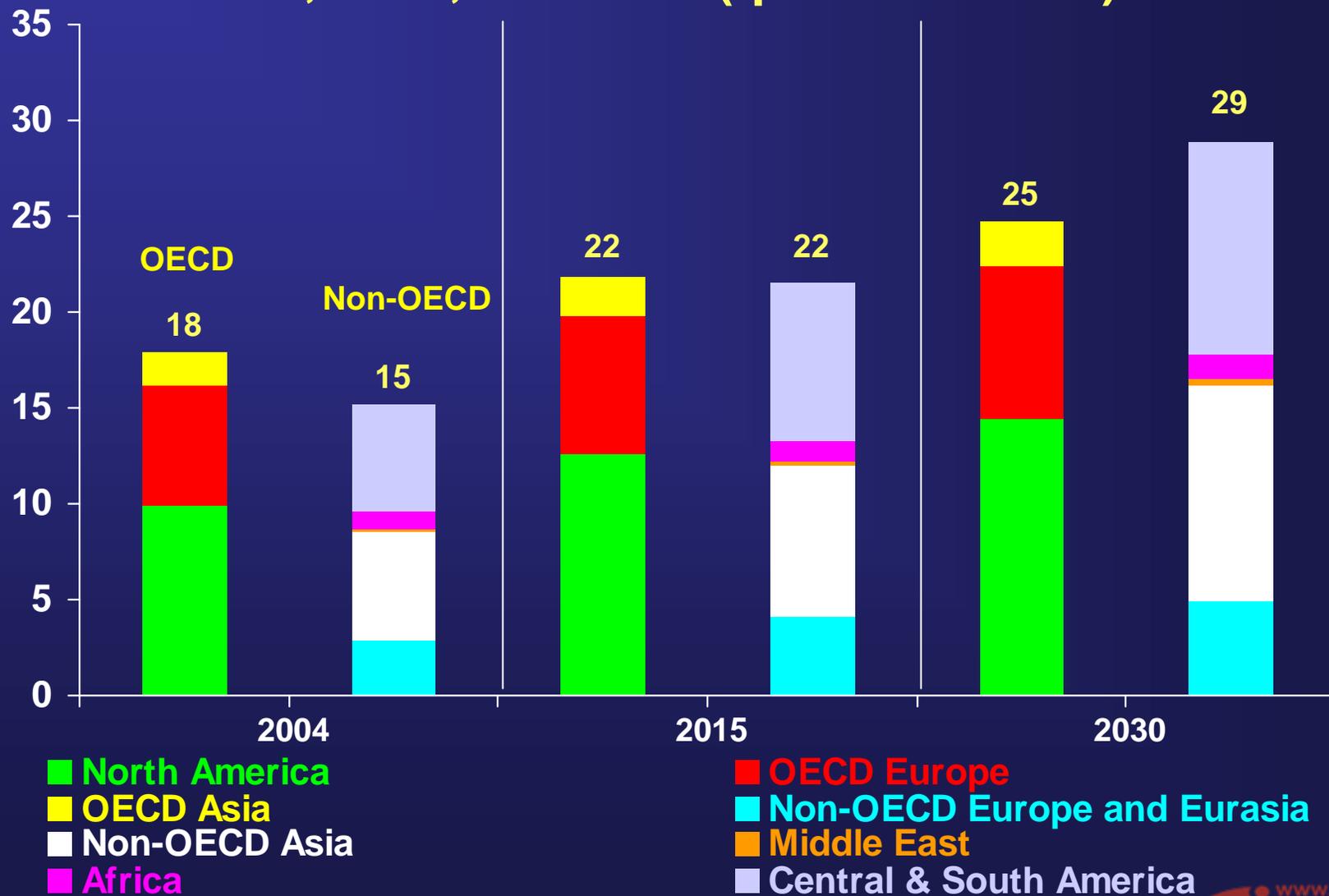
# World Net Electricity Generation, 2004, 2015, and 2030 (billion kilowatthours)



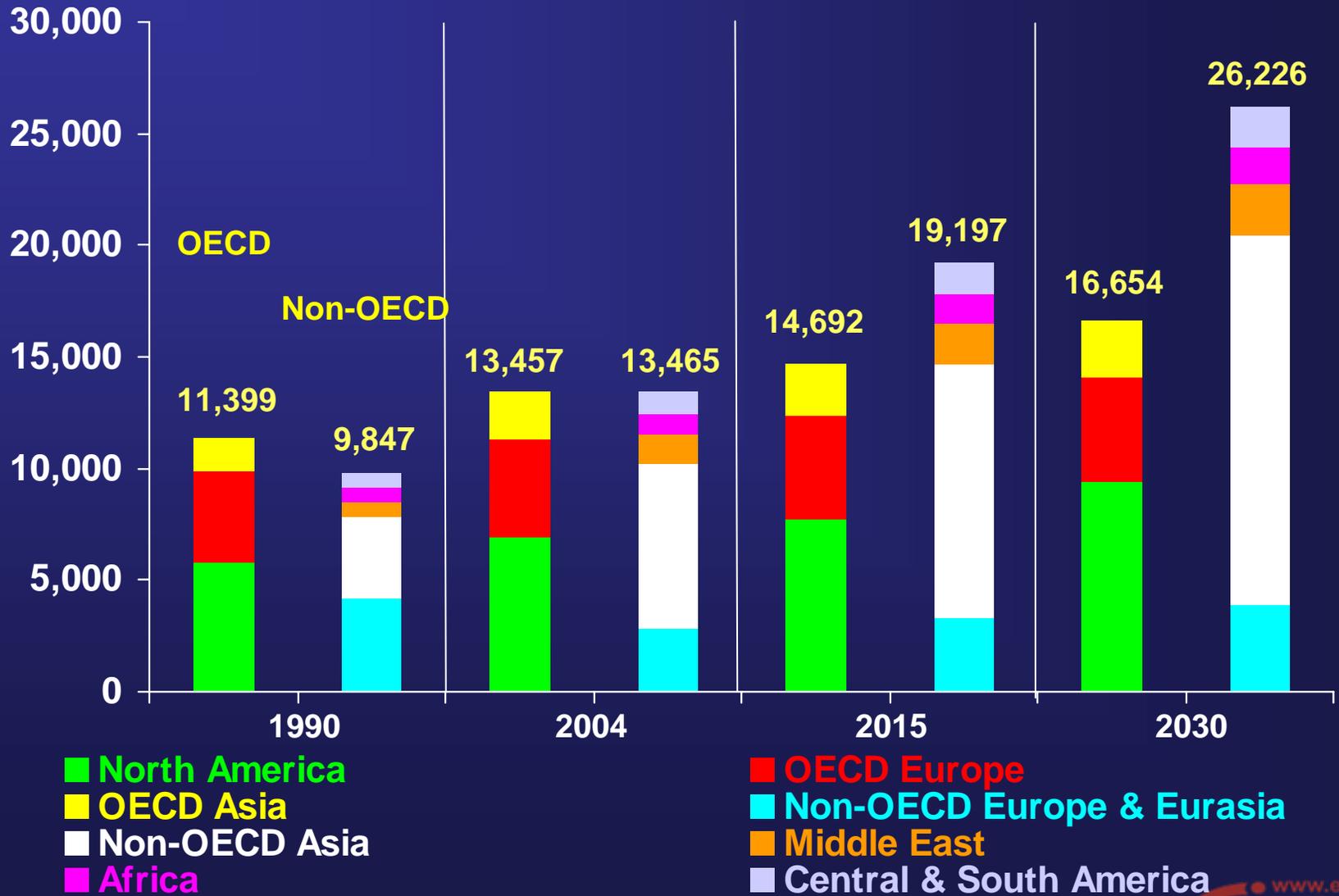
# World Nuclear Generating Capacity, 2004 and 2030 (gigawatts)



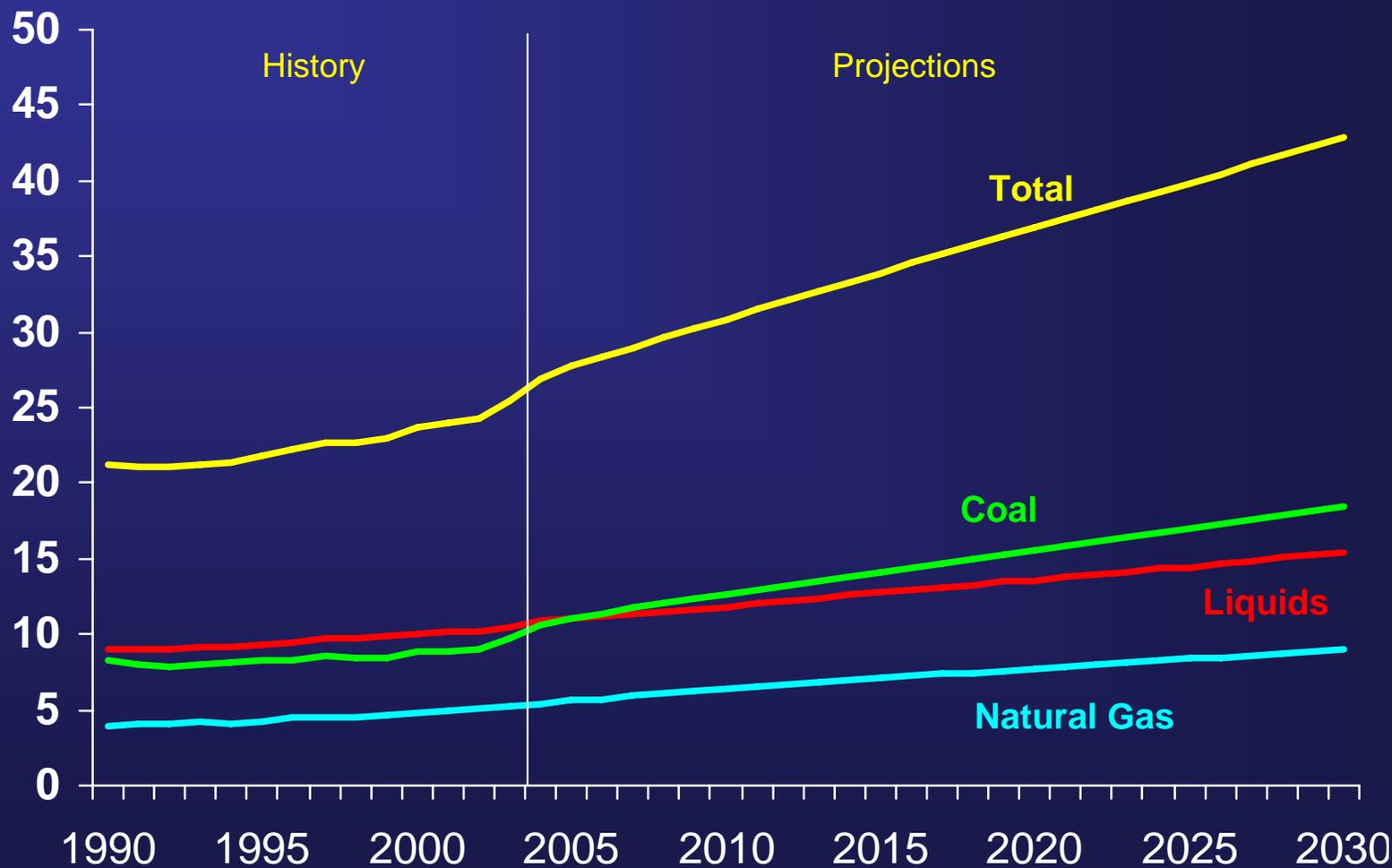
# World Renewables Consumption, 2004, 2015, and 2030 (quadrillion Btu)



# World Energy-Related Carbon Dioxide Emissions, 1990-2030 (million metric tons)



# World Energy-Related Carbon Dioxide Emissions, 1990-2030 (billion metric tons)



## ***International Energy Outlook 2007* reference case indicates that through 2030...**

- Worldwide marketed energy consumption grows by 57 percent, with the highest growth projected for the developing countries.
- World unconventional production (including biofuels, coal-to-liquids, and gas-to-liquids) accounts for 9 percent of the world liquids supply in 2030.
- Coal is the world's fastest-growing fuel source, increasing by 2.2 percent per year, remaining an attractive fuel for nations with access to ample resources, like China, India, and the United States, which account for 86 percent of the projected increase in world coal demand.
- Higher fossil fuel prices, energy security concerns, improved reactor designs, and environmental considerations are expected to improve the prospects for nuclear power generation.
- Energy-related carbon dioxide emissions are projected to rise from 26.9 billion metric tons in 2004 to 42.9 billion metric tons in 2030.

## Periodic Reports

*Petroleum Status and Natural Gas Storage Reports, weekly*

*Short-Term Energy Outlook, monthly*

*Annual Energy Outlook 2007, February 2007*

*International Energy Outlook 2007, May 2007*

## Examples of Special Analyses

*“Economic Effects of High Oil Prices,” Annual Energy Outlook 2006*

*Analysis of Oil and Gas Production in the Arctic National Wildlife Refuge,*

*March 2004*

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

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

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