LONG-TERM OUTLOOK FOR ENERGY MARKETS

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Energy Information Administration

U.S.-Japan Workshop on Nuclear Energy
The Energy Future: Strategies and Challenges

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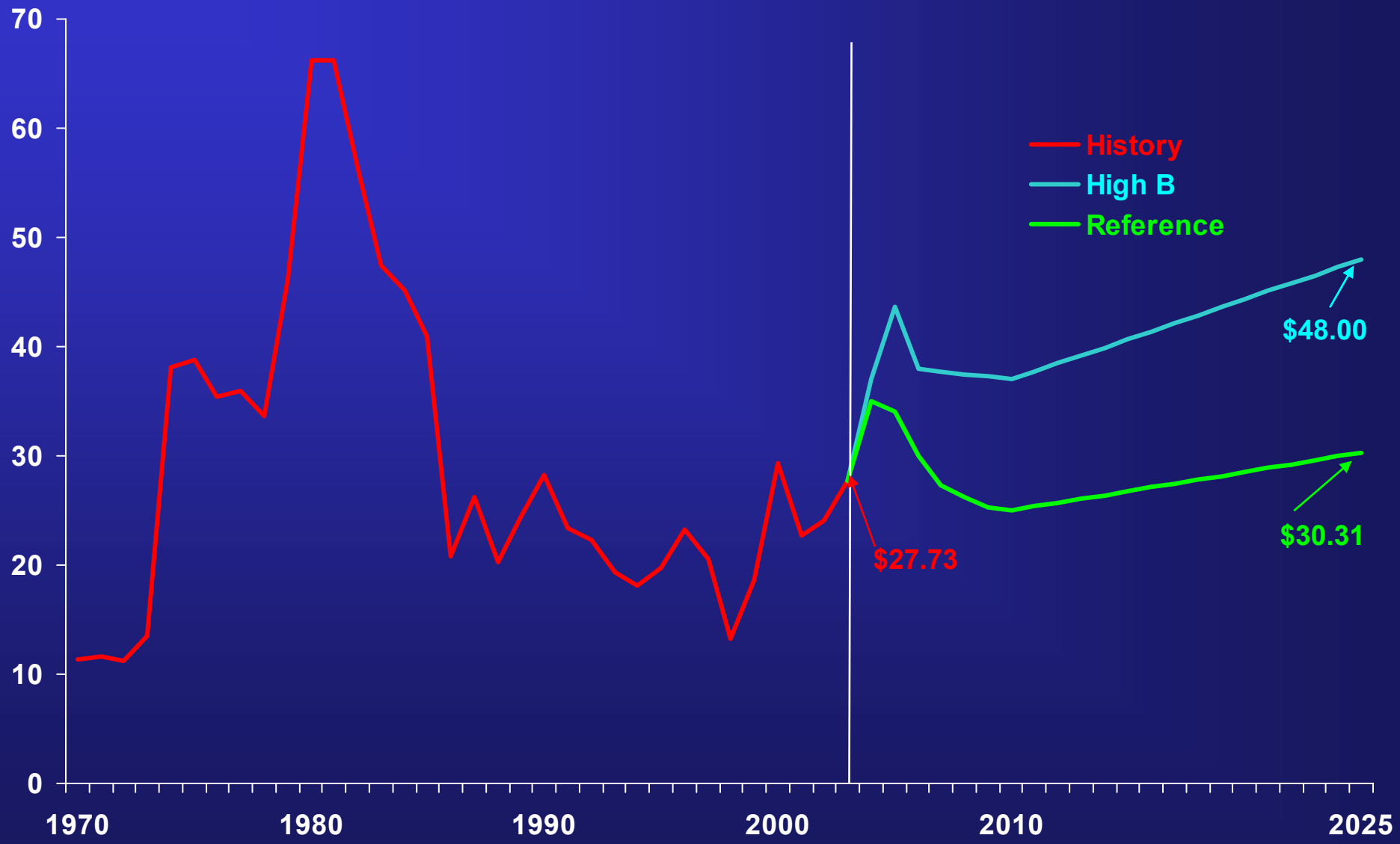
Annual Energy Outlook 2005 indicates that over the next two decades....

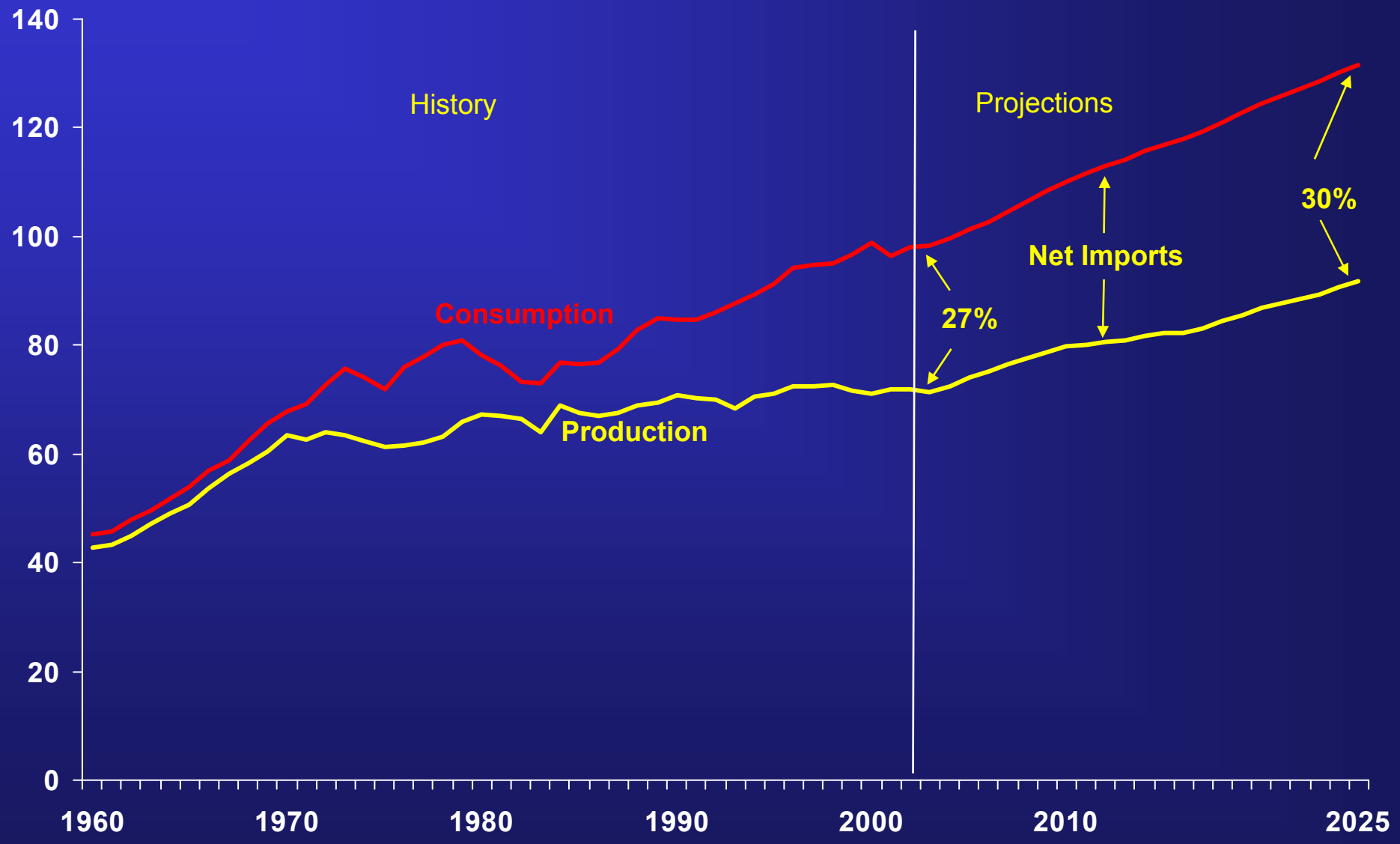
- U.S. energy demand will grow at an average annual rate of 1.3 percent, using the scenario with the highest assumed world oil prices
- The energy efficiency of the economy will increase at an average annual rate of 1.7 percent
- Future growth in U.S. natural gas supplies will depend on unconventional domestic production, natural gas from Alaska, and liquefied natural gas imports
- U.S. oil import dependency will grow from 56 percent to 58 percent
- The real price of electricity will drop from 7.4 cents to a low of 6.7 cents in 2011 before reaching 7.4 cents per kilowatthour again in 2025
- Nuclear capacity and generation will increase due to existing plant expansions and performance improvements

World Oil Price, 1970-2025
(2003 dollars per barrel)



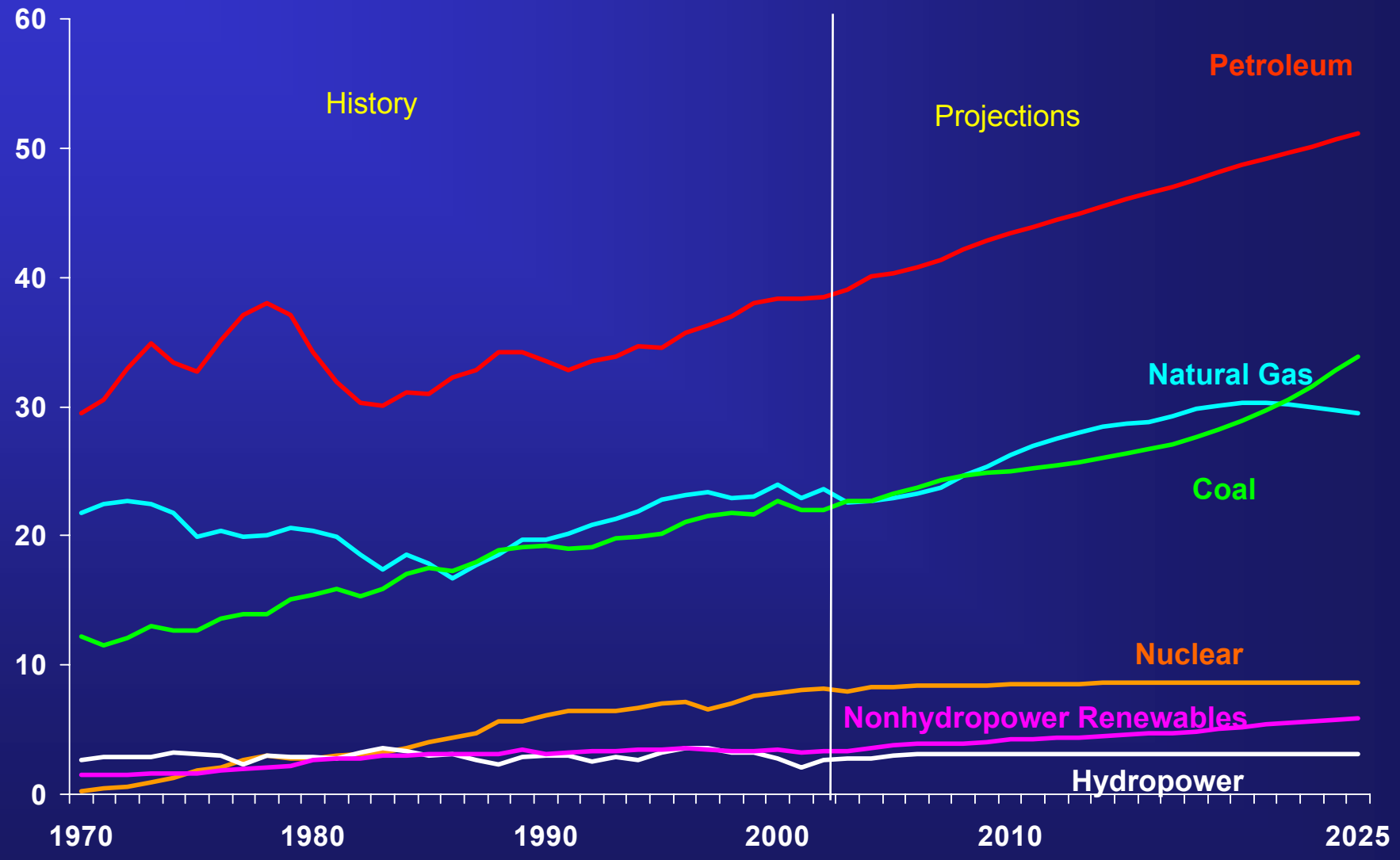
Annual Energy Outlook 2005

U.S. Energy Production, Consumption, and Net Imports, 1960-2025 (quadrillion Btu)



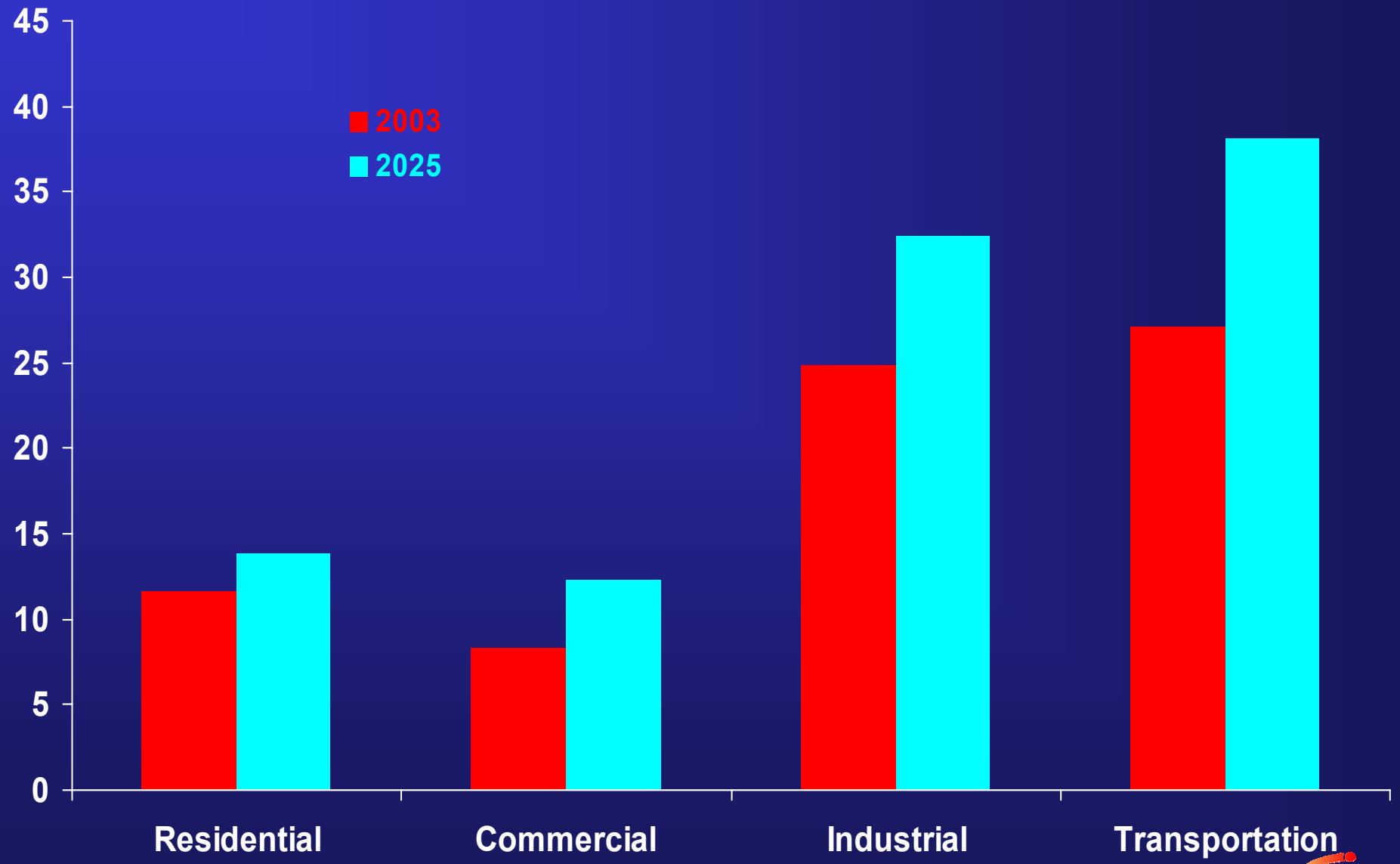
Annual Energy Outlook 2005

U.S. Energy Consumption by Fuel, 1970-2025 (quadrillion Btu)



Annual Energy Outlook 2005

U.S. Delivered Energy Consumption by Sector, 2003 and 2025 (quadrillion Btu)



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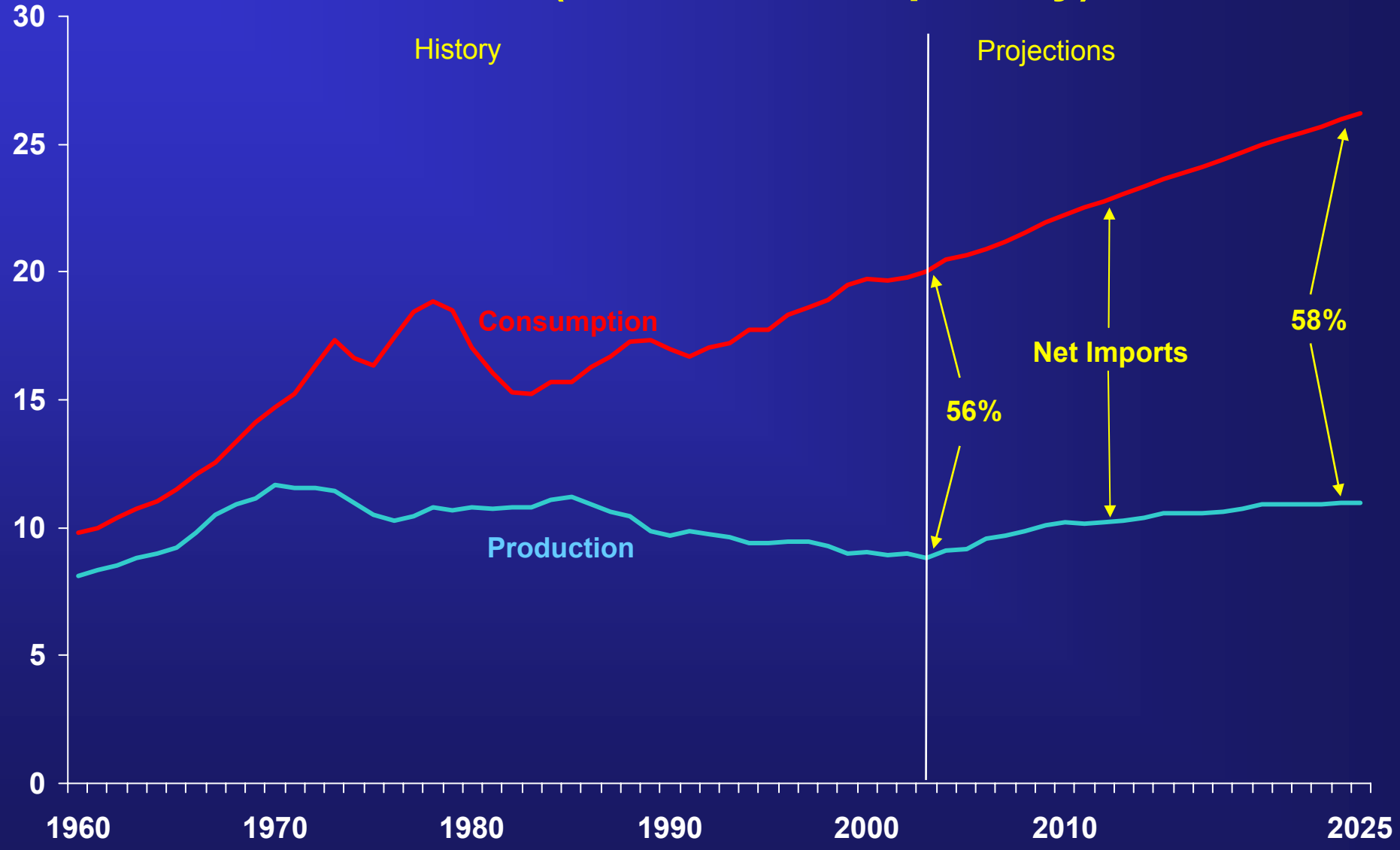
U.S. Petroleum Production, Consumption, and Net Imports, 1960-2025 (million barrels per day)



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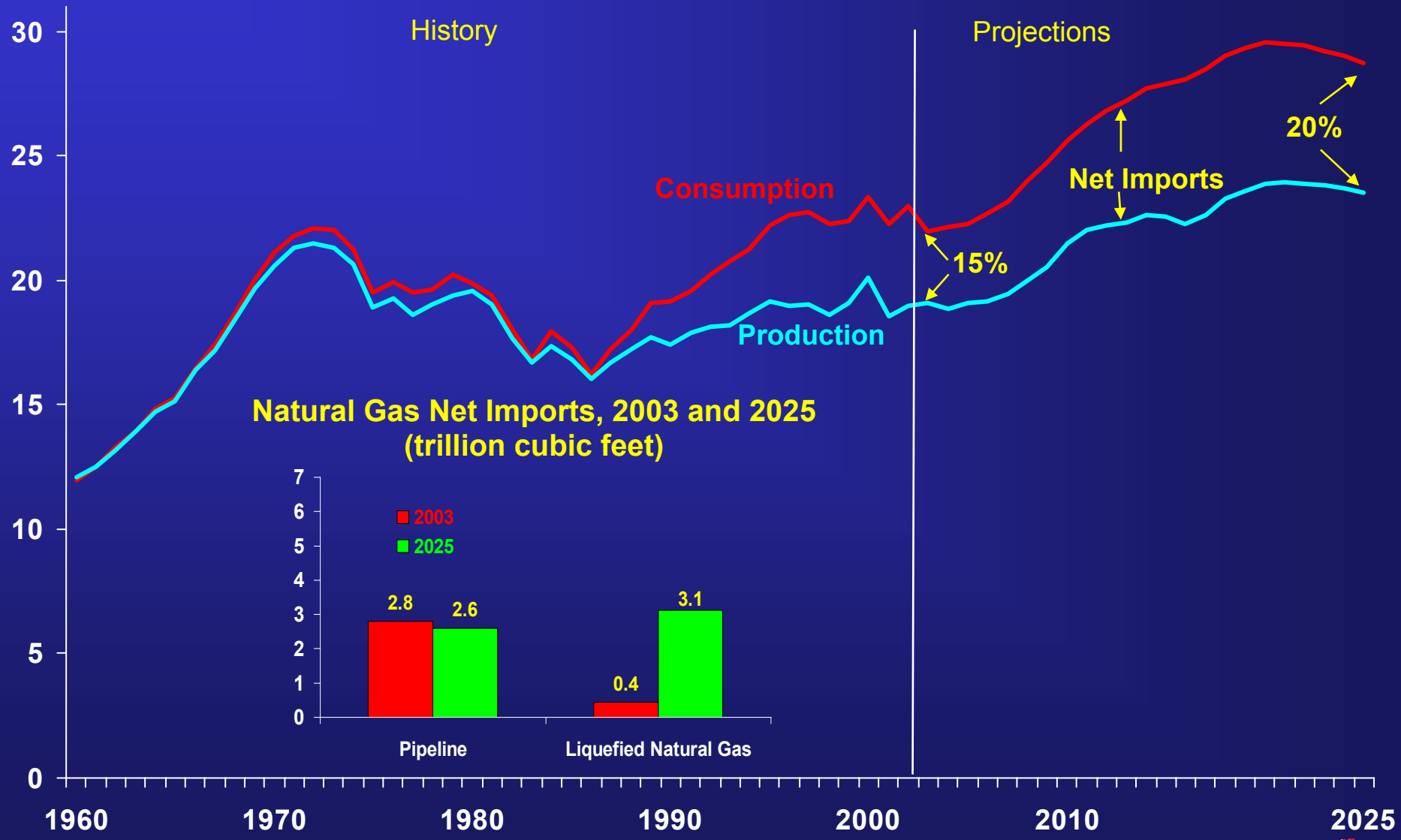
U.S. Natural Gas Production, Consumption, and Net Imports, 1960-2025 (trillion cubic feet)



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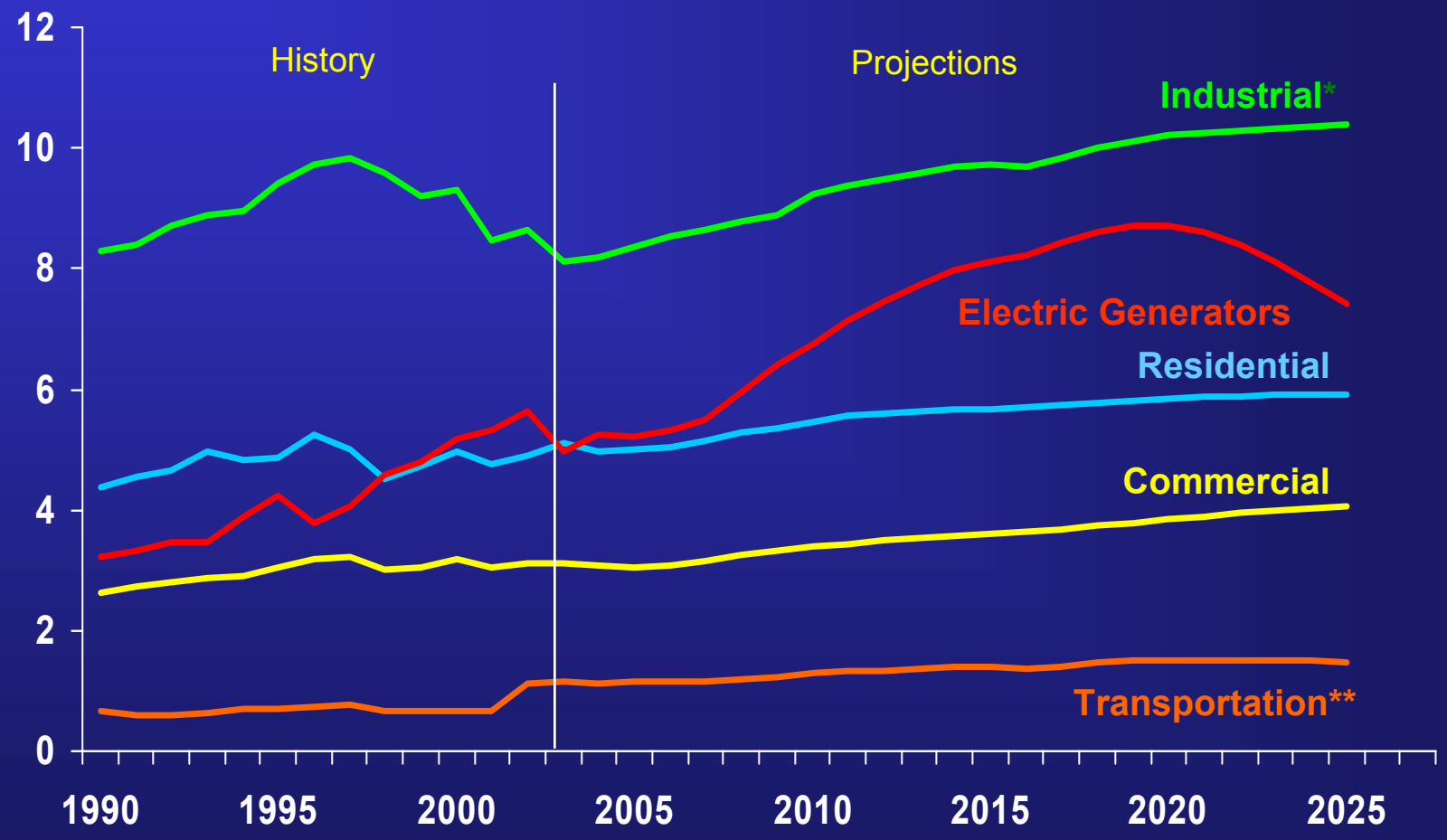
U.S. Natural Gas Consumption by Sector, 1990-2025 (trillion cubic feet)



* Includes lease and plant fuel
** Includes pipeline fuel

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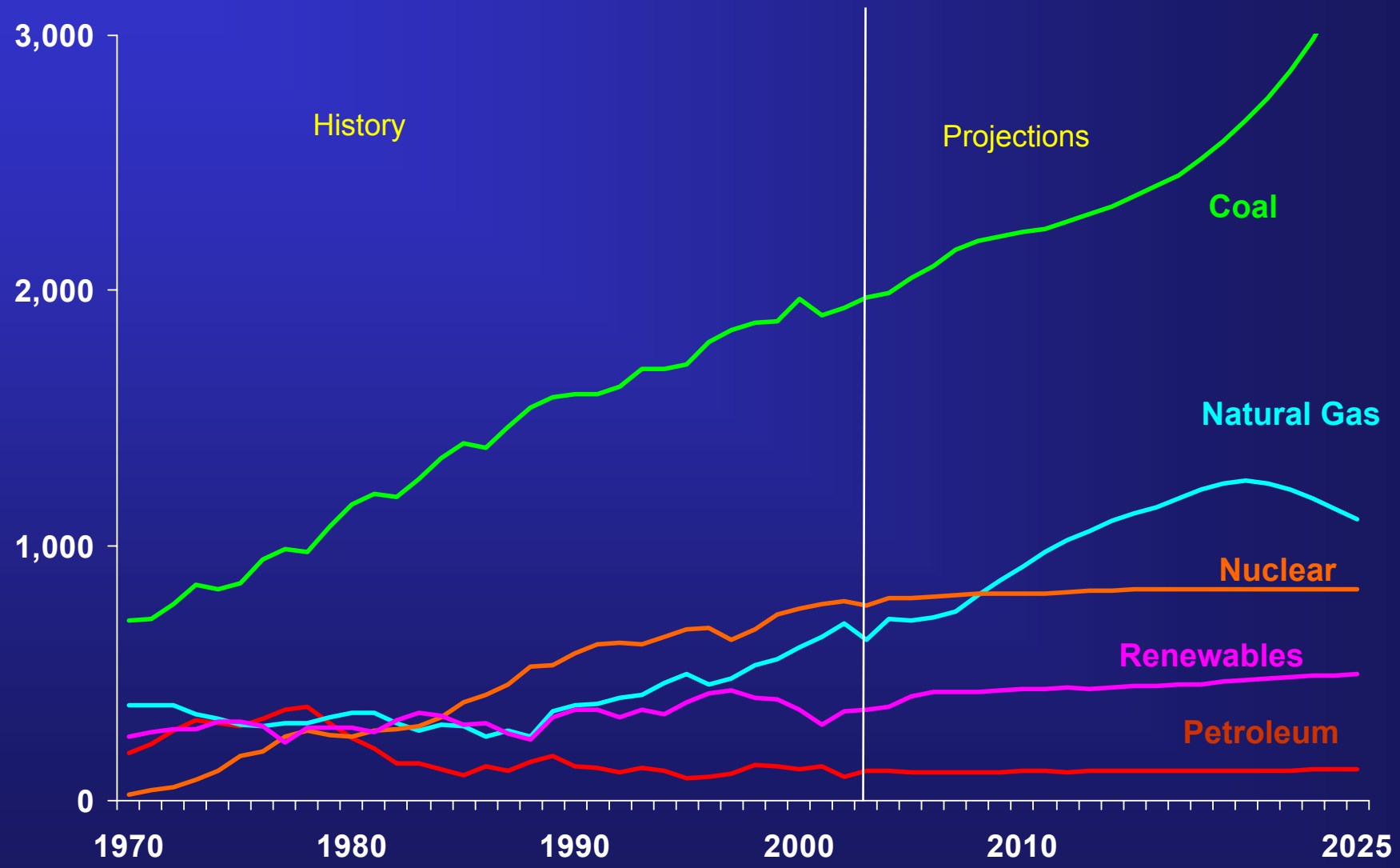
U.S. Electricity Generation by Fuel, 1970-2025 (billion kilowatthours)



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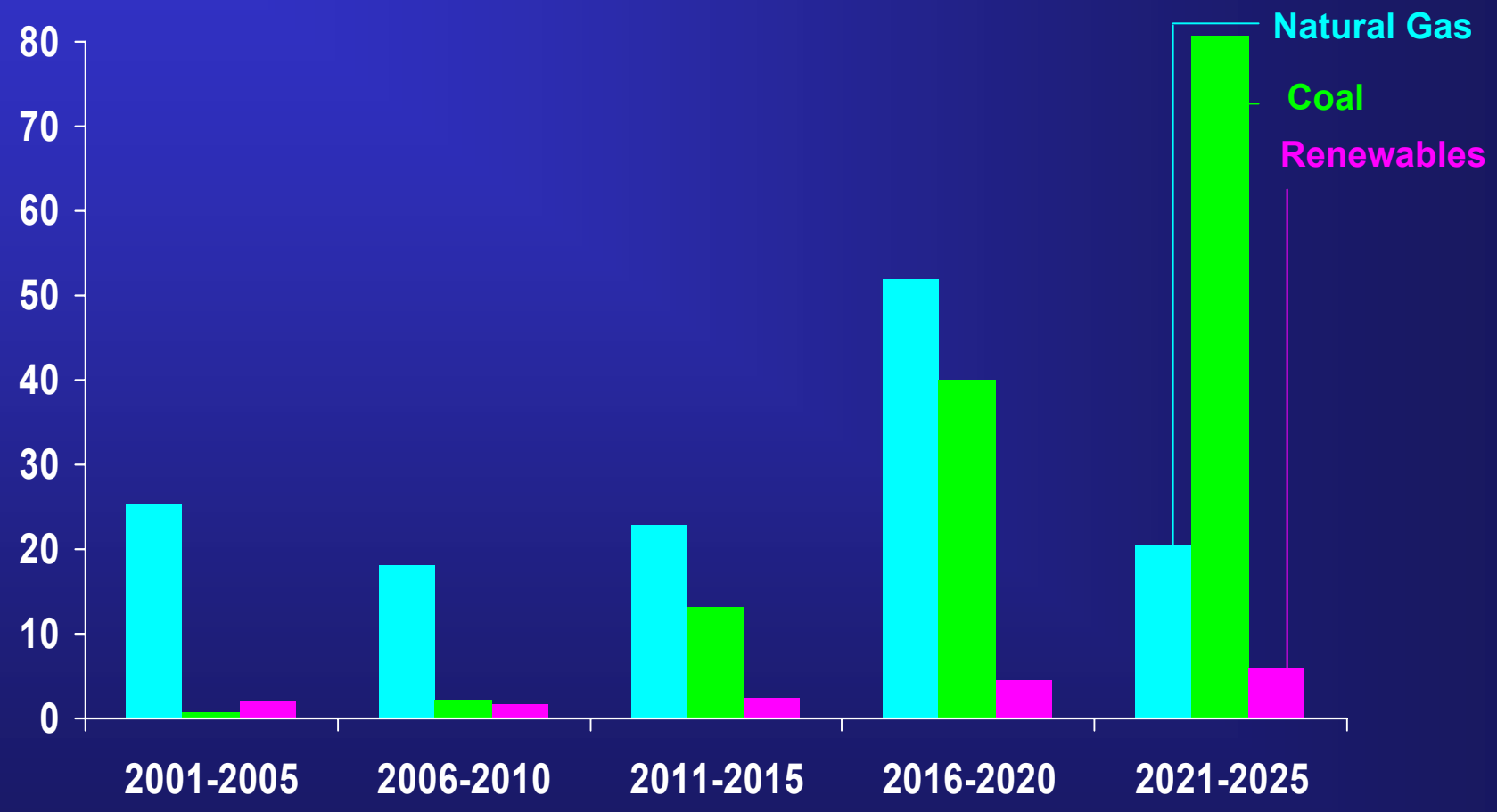
U.S. Electricity Generation Capacity Additions by Fuel Type, 2001-2025 (gigawatts)



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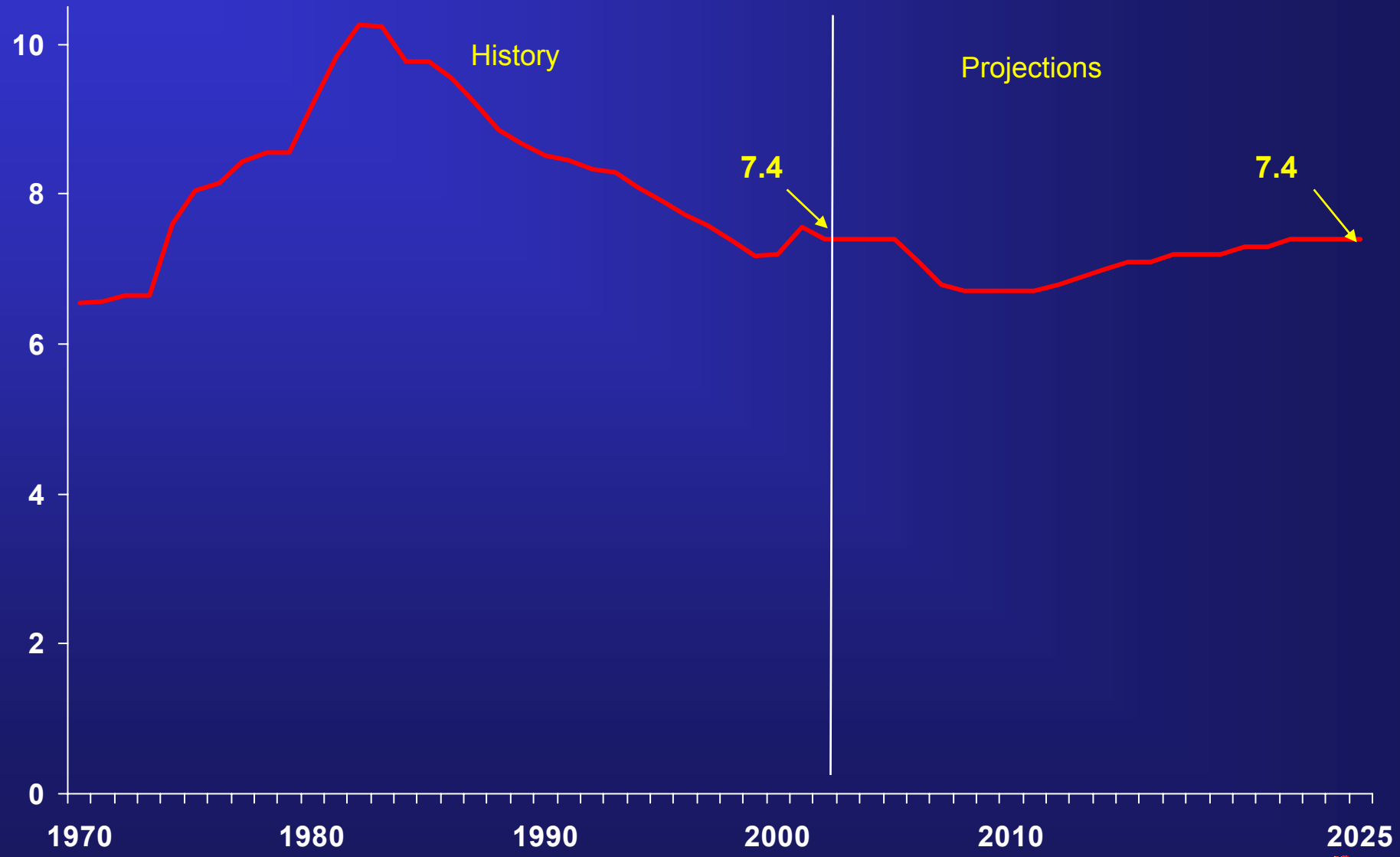
U.S. Average Electricity Price, 1970-2025
(2003 cents per kilowatthour)



Annual Energy Outlook 2005

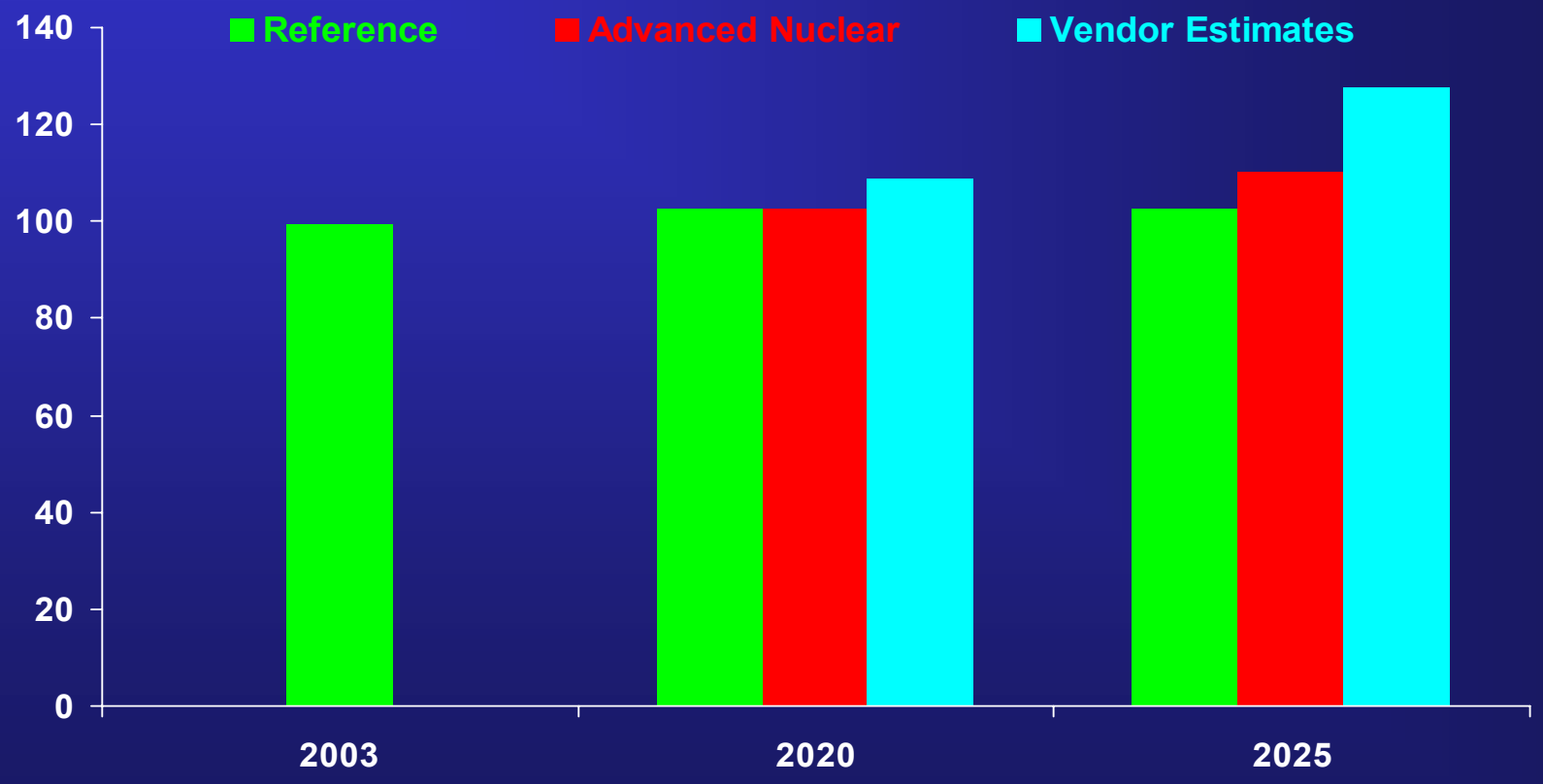
Energy Policy Act of 2005

- Impacts of the new energy legislation will be included in *Annual Energy Outlook 2006*
- Legislation contains numerous provisions affecting energy markets
- Most significant provisions for electricity are the new appliance efficiency standards, which will reduce the demand for electricity, and the incentives for new nuclear plants

Nuclear Outlook in *AEO2005*

- The *AEO2005* does not include the incentives for nuclear power in the Energy Policy Act of 2005
- All existing nuclear plants will continue operating through 2025
- While new nuclear plants are not expected, nuclear capacity will grow as existing plants are upgraded
  - Between 2003 and 2025, 3,500 megawatts of capacity upgrades are added, expanding capacity by 4 percent
- Nuclear generation increases by 66 billion kilowatthours, or 9 percent, between 2003 and 2025
- The nuclear share of electricity generation declines from 20 percent in 2003 to 14 percent in 2025
- Natural gas, coal, and renewable technologies are expected to be the most competitive options for meeting growing electricity needs

U.S. Nuclear Capacity in Three Cases (thousand megawatts)

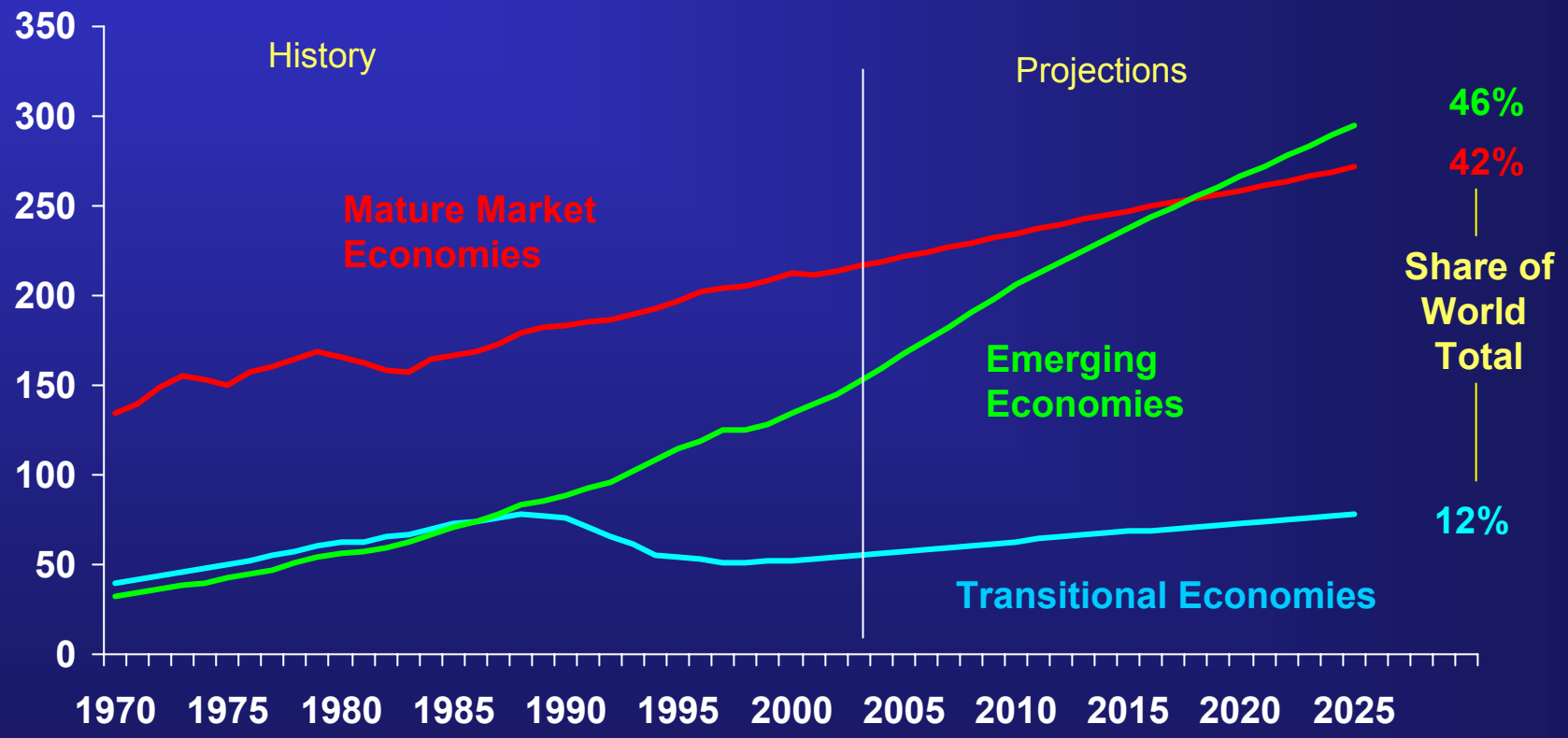


Annual Energy Outlook 2005

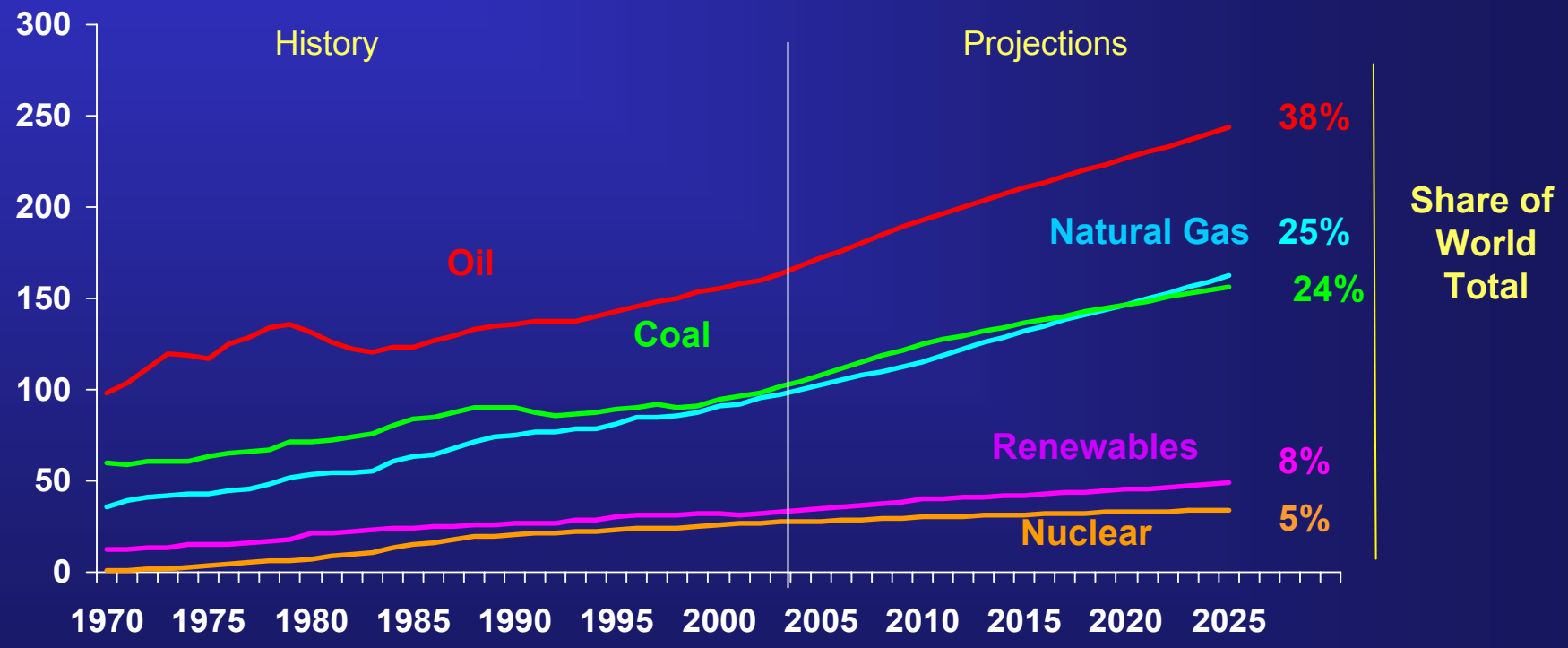
International Energy Outlook 2005 indicates that over the next two decades…

- Worldwide energy consumption will grow by 57 percent between 2002 and 2025, an average annual growth rate of 2 percent, with the strongest growth in the emerging economies, particularly in Asia
- World oil demand will grow from 78 to 119 million barrels per day, with the United States and emerging Asia, including China and India, accounting for 64 percent of the growth
- Natural gas will be the fastest growing energy source worldwide, at a average growth rate of 2.3 percent
- Although the slowest growing energy source, nuclear power will increase, particularly in emerging Asia, where its use will triple

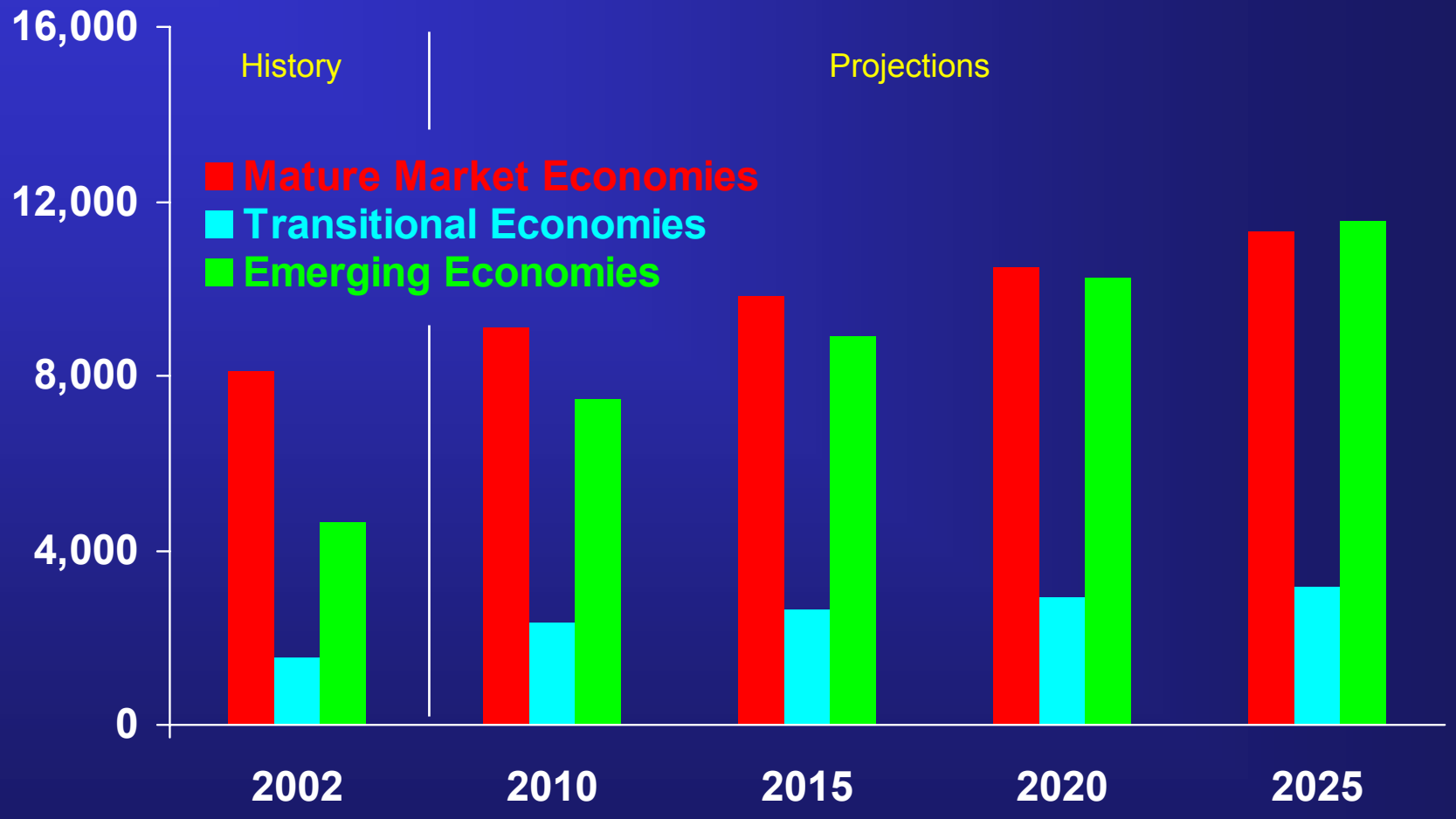
World Marketed Energy Consumption by Region, 1970-2025 (quadrillion Btu)



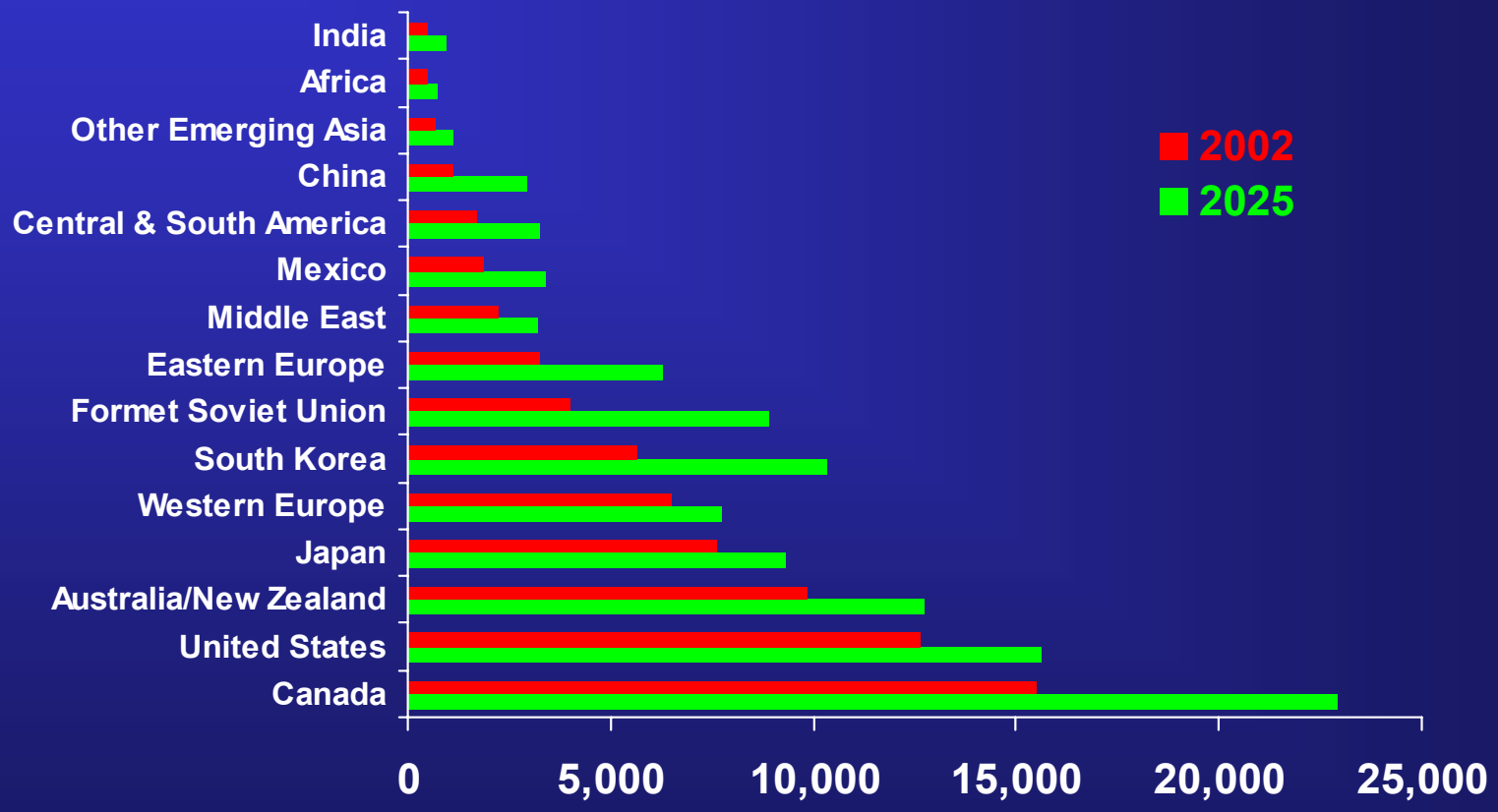
World Primary Energy Consumption by Fuel, 1970-2025 (quadrillion Btu)



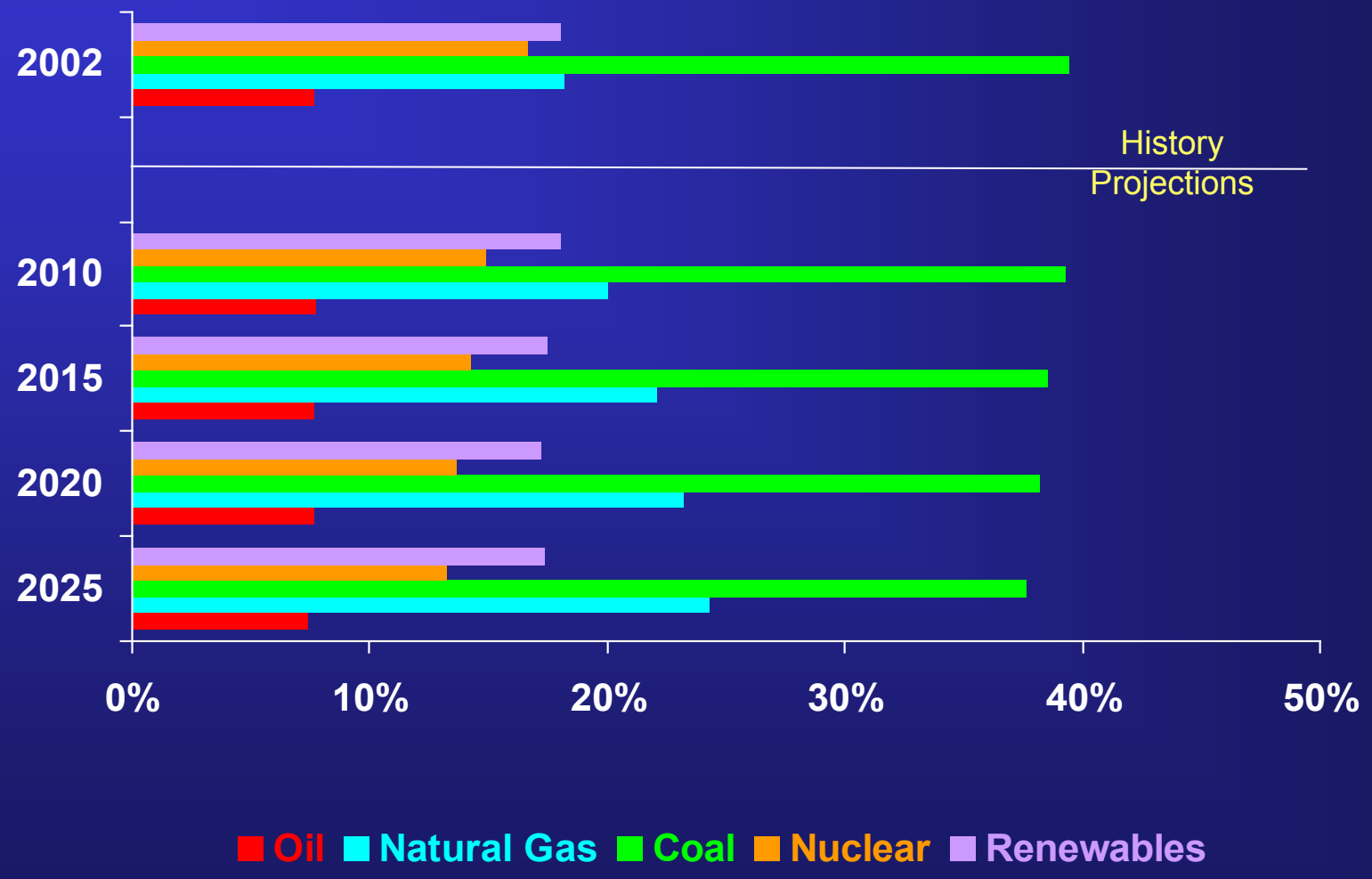
World Net Electricity Consumption by Region, 2002-2025 (billion kilowatthours)



World Electricity Consumption per Capita by Country Group, 2002 and 2025 (kilowatthours per person per year)

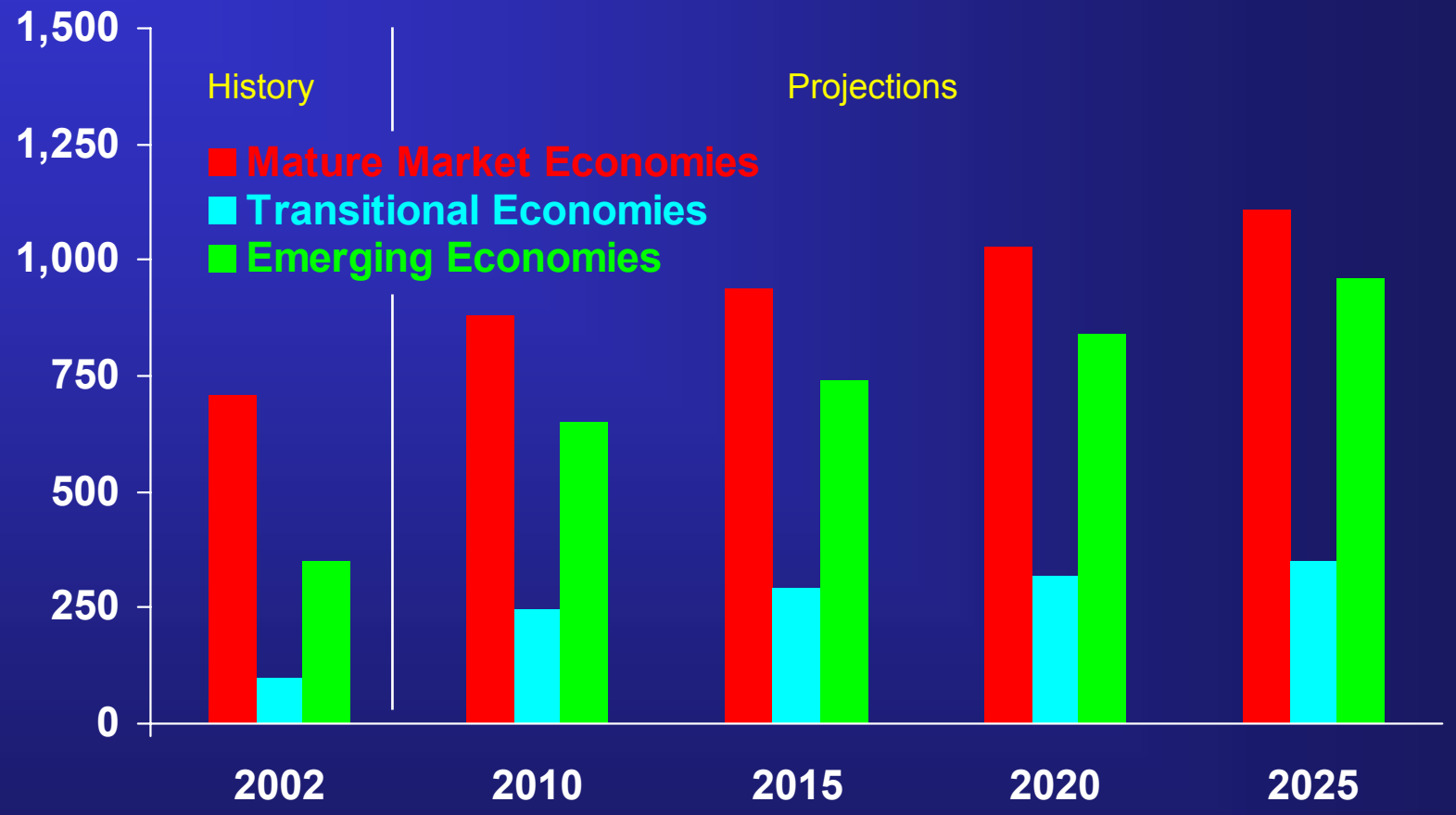


World Shares of Energy Use for Electricity Generation, 2002-2025 (percent)



International Energy Annual 2003 and *International Energy Outlook 2005*

World Nuclear Power Generation Capacity by Region, 2002-2025 (gigawatts)



International Energy Outlook 2005

Periodic Reports

Petroleum Status and Natural Gas Storage Reports, weekly

Short-Term Energy Outlook, monthly

Annual Energy Outlook 2005, December 2004

International Energy Outlook 2005, July 2005

Examples of Special Analyses

Renewable Fuels Legislation Impact Analysis, July 2005

Assessment of Selected Energy Efficiency Policies, May 2005

www.eia.doe.gov

www.eia.doe.gov/fuelelectric.html

www.eia.doe.gov/fuelnuclear.html

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