

# Overview of World and U.S. Energy Data and Projections

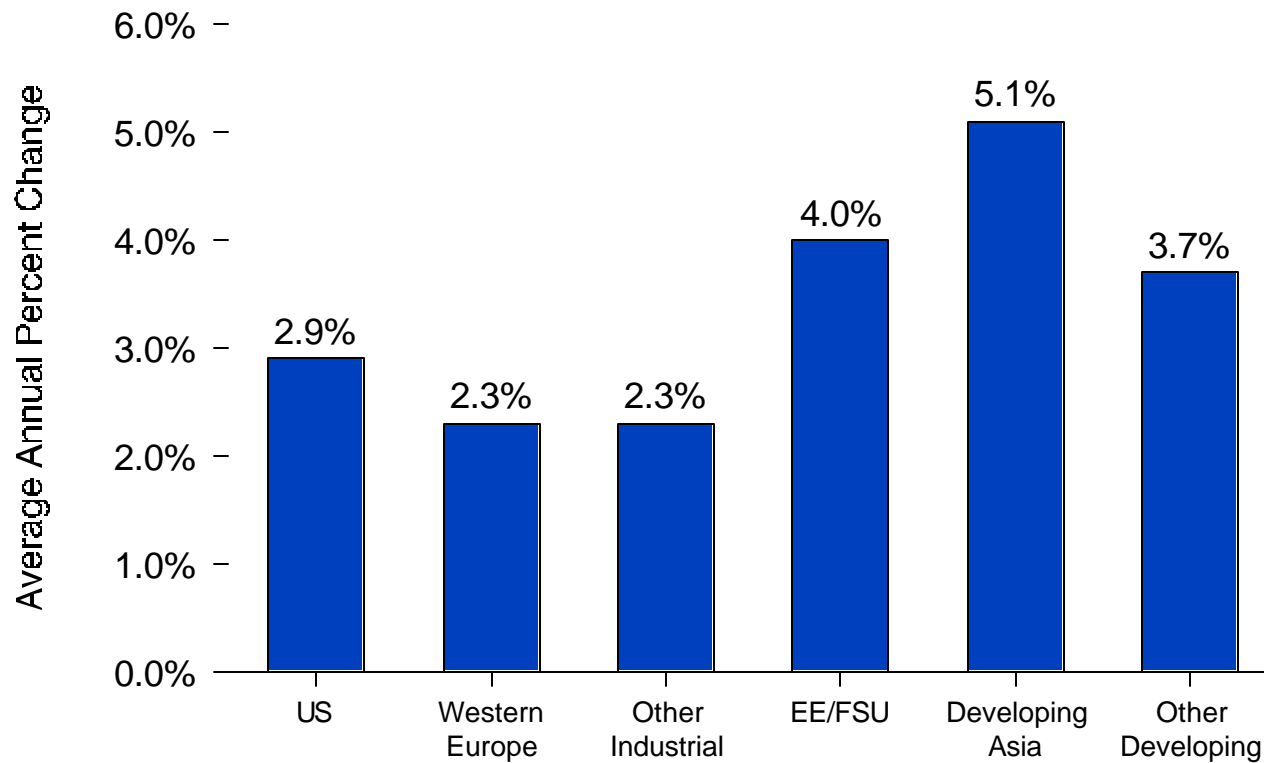
Presentation for  
Nuclear Energy Research Advisory Committee  
November 3, 2003

Howard Gruenspecht  
Deputy Administrator  
U.S. Energy Information Administration

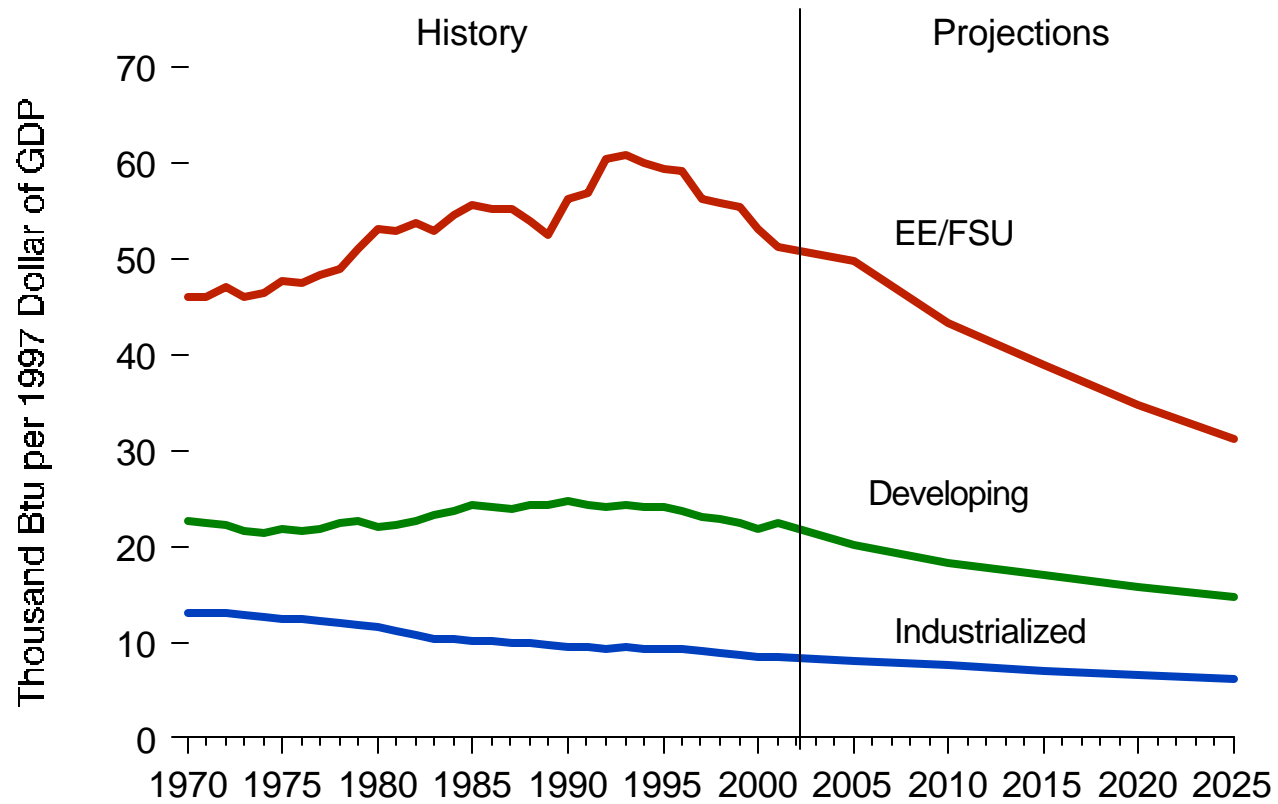
# Outline

- World energy data and projections to 2025
- EIA/IEA nuclear outlook
- Energy security and greenhouse gas implications
- U.S. energy data and projections to 2025
- Scenarios for U.S. nuclear energy
- Key Uncertainties

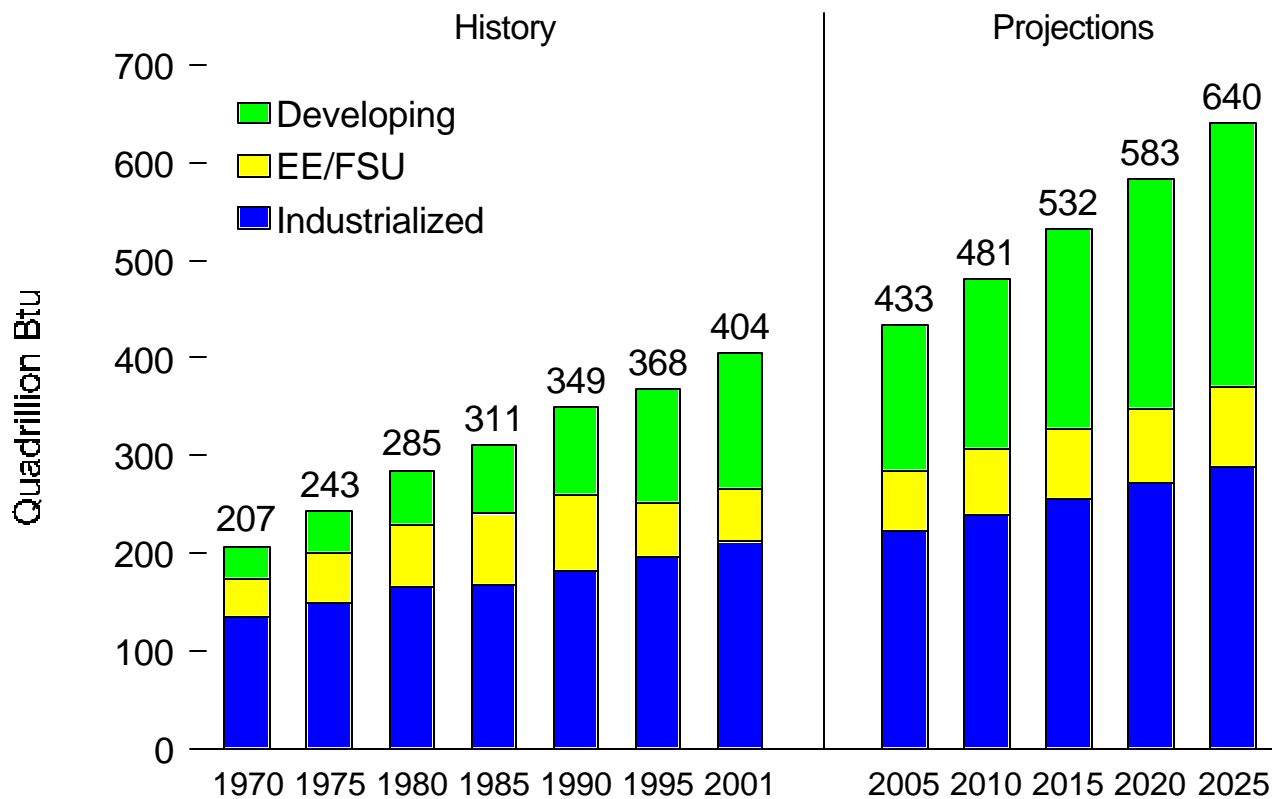
# Average Annual Increase in GDP by Region, 2000-2025



# Energy Intensity by Region, 1970-2025

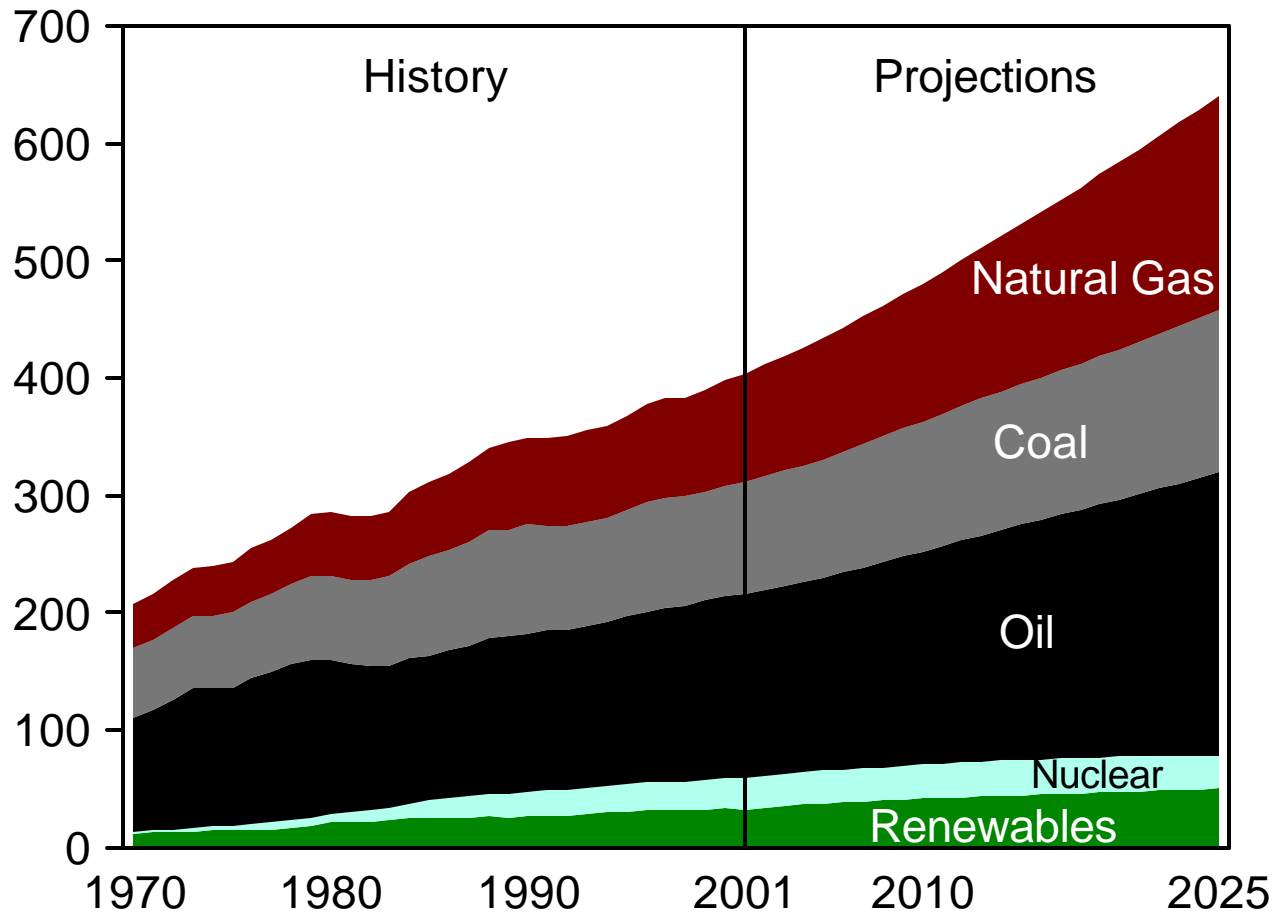


# World Commercial Energy Consumption 1970 - 2025

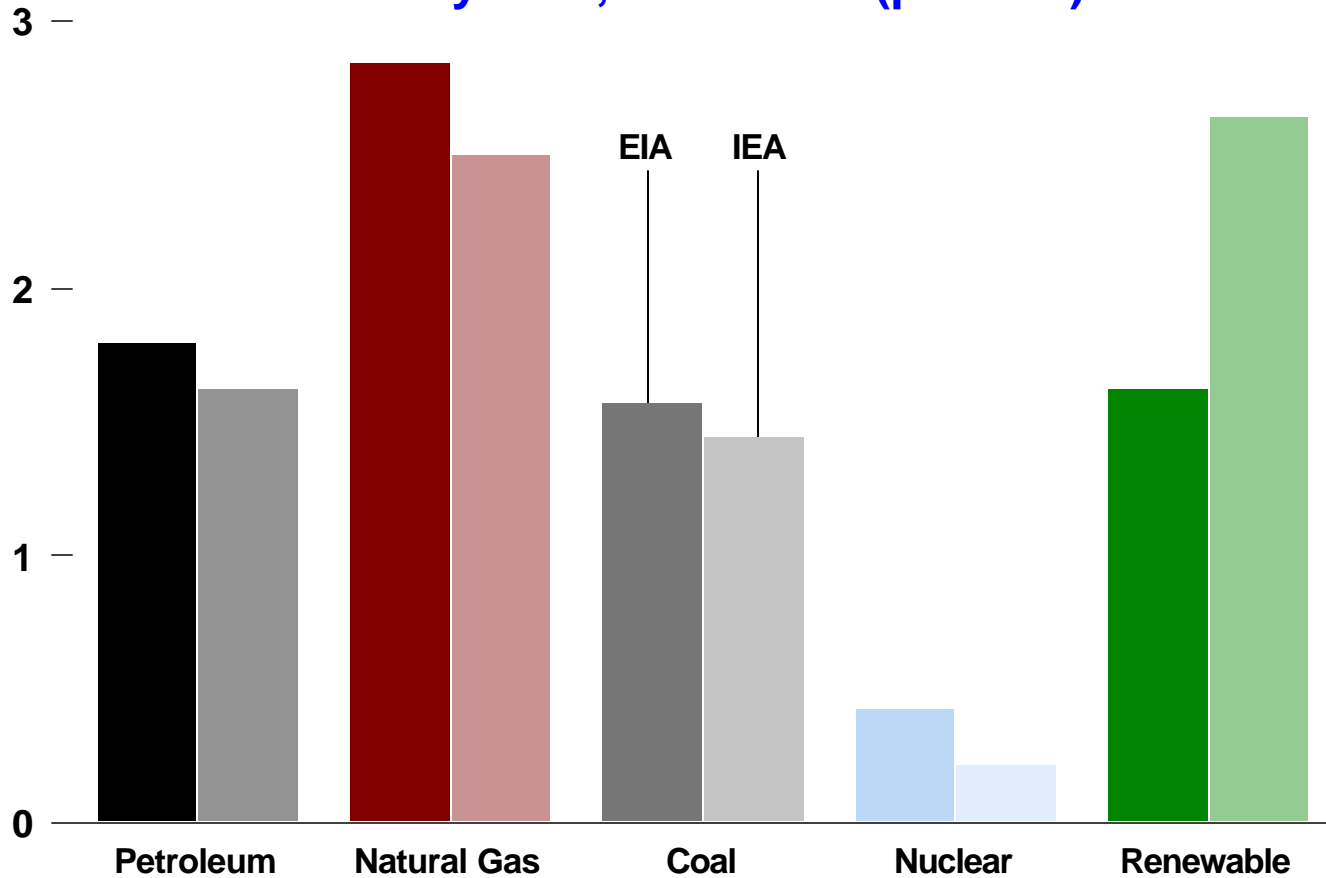


Source: EIA, *International Energy Outlook 2003*

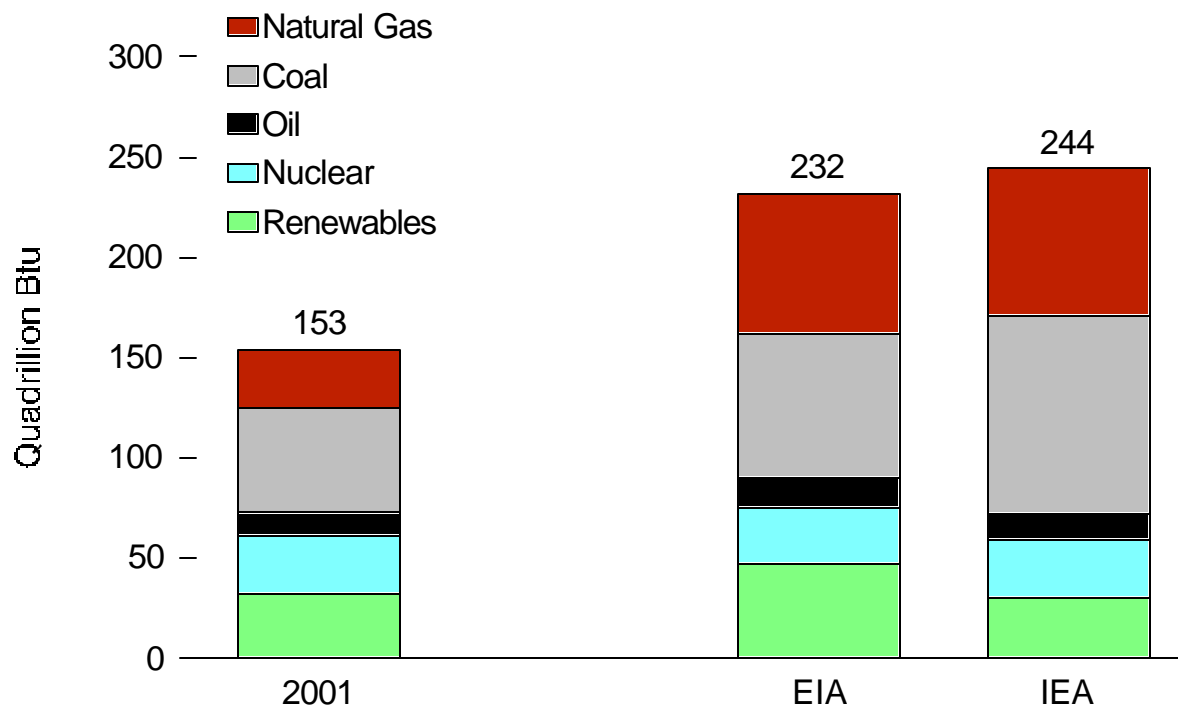
# World Energy Consumption by Fuel, 1970-2025 (quadrillion Btu)



## Two Forecasts of Annual World Energy Consumption Growth by Fuel, 2000-2025 (percent)



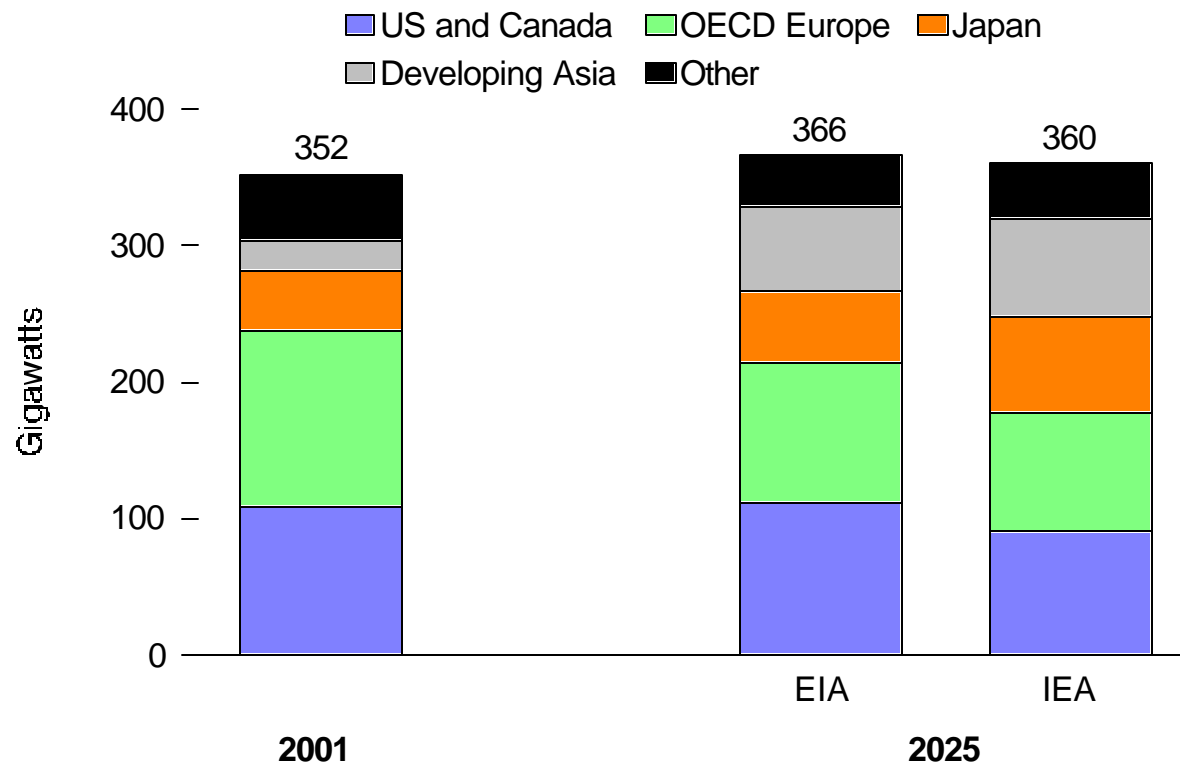
# Primary Energy Consumed for Electricity Generation, 2001 and 2025



Sources: EIA, *International Energy Outlook 2003*  
International Energy Agency, *World Energy Outlook 2002*.

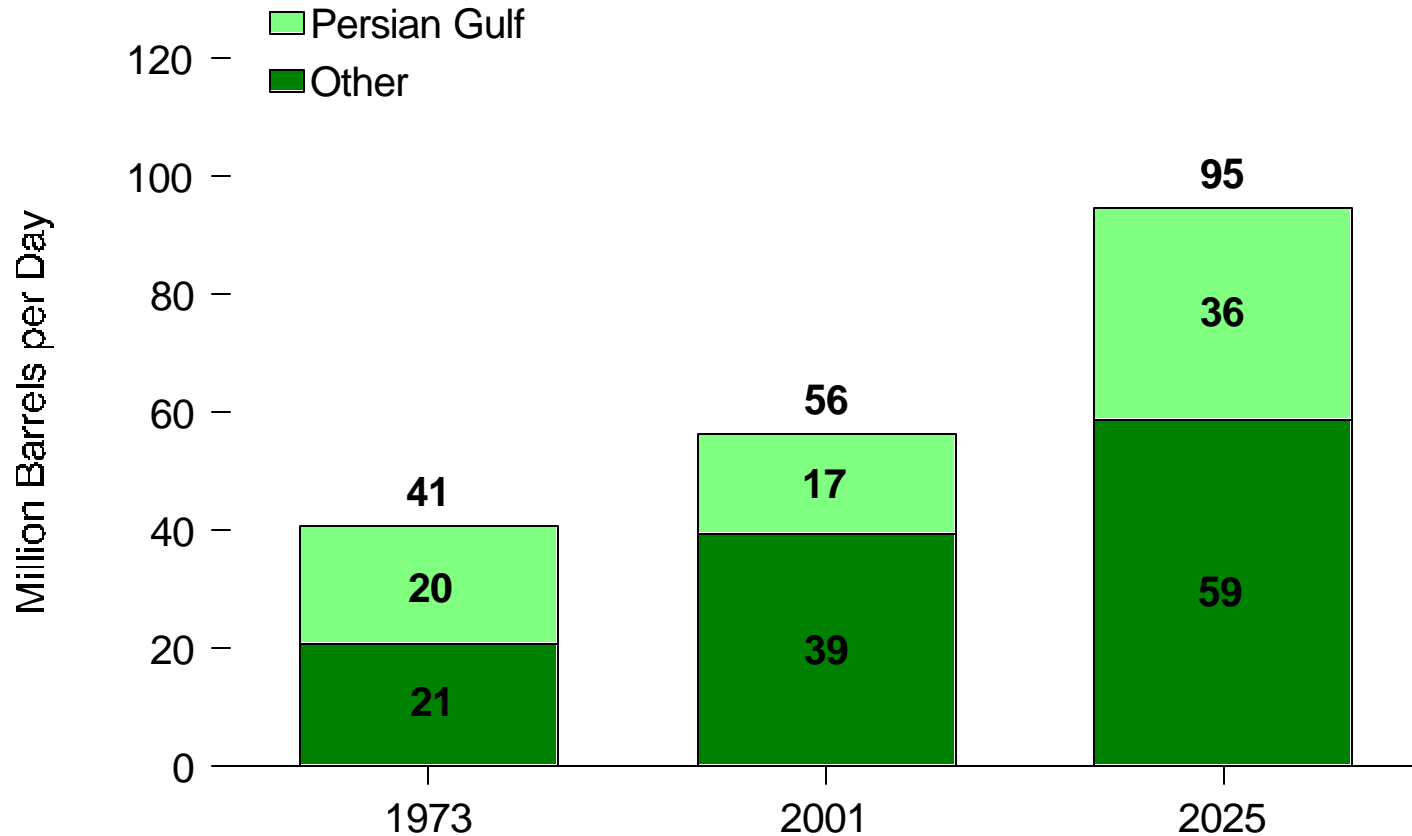


# World Nuclear Capacity, 2001 and Projected 2025



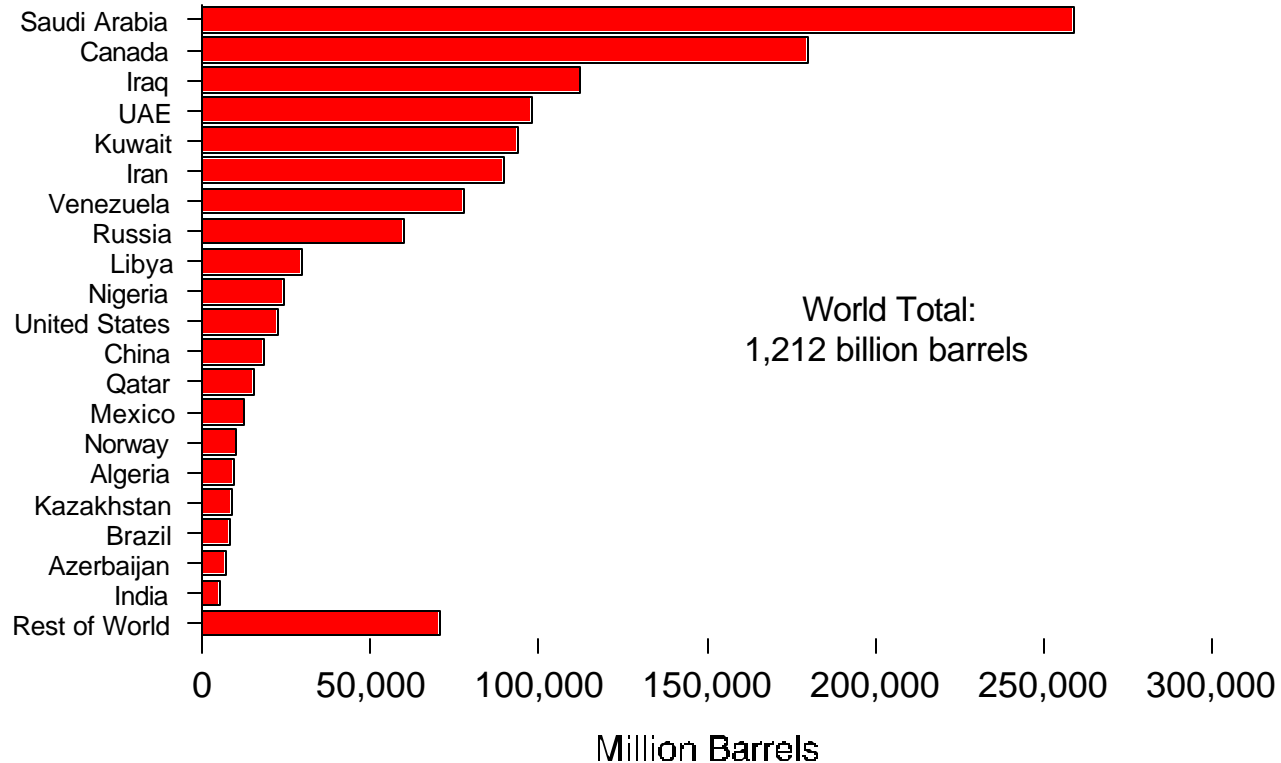
Sources: EIA, *International Energy Outlook 2003*  
International Energy Agency, *World Energy Outlook 2002*.

# World Oil Trade: 1973, 2001 and Projected 2025



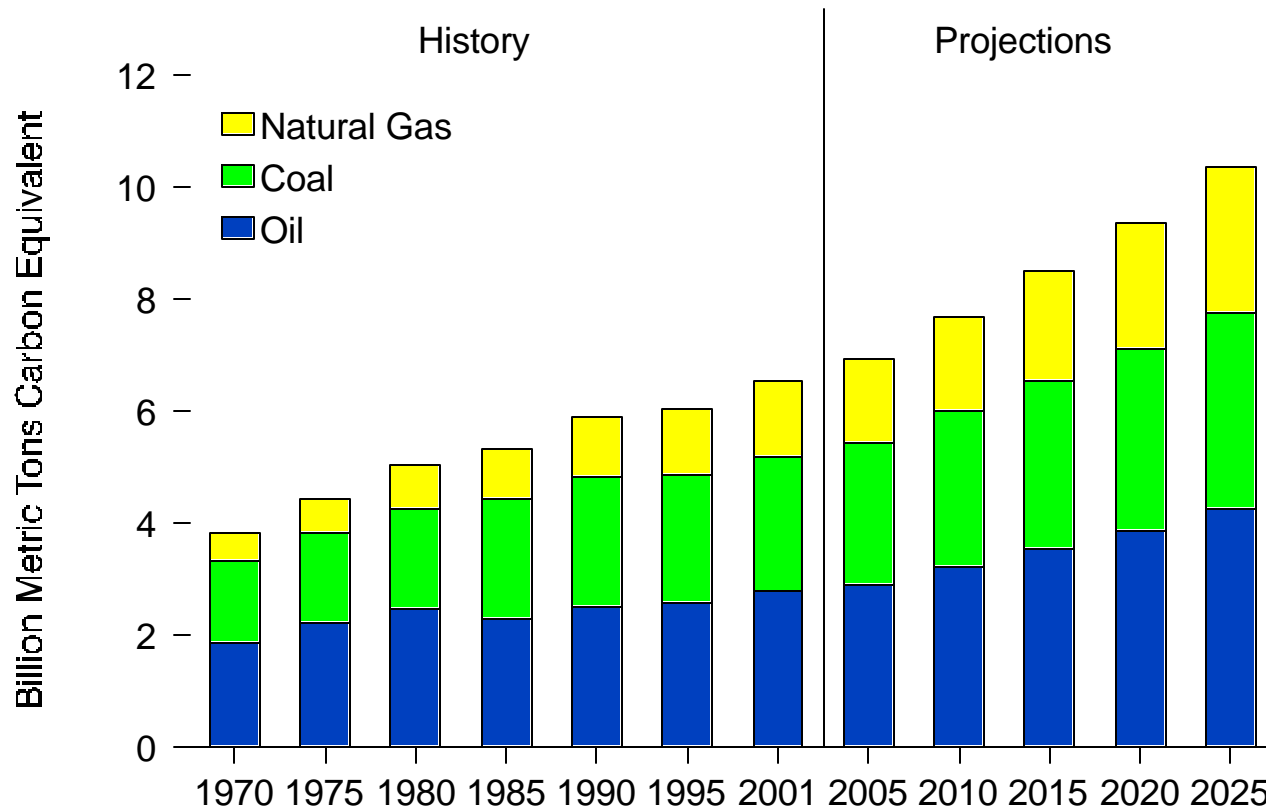
Source: EIA, *International Energy Outlook 2003*.

# World Oil Reserves by Country, as of January 1, 2003

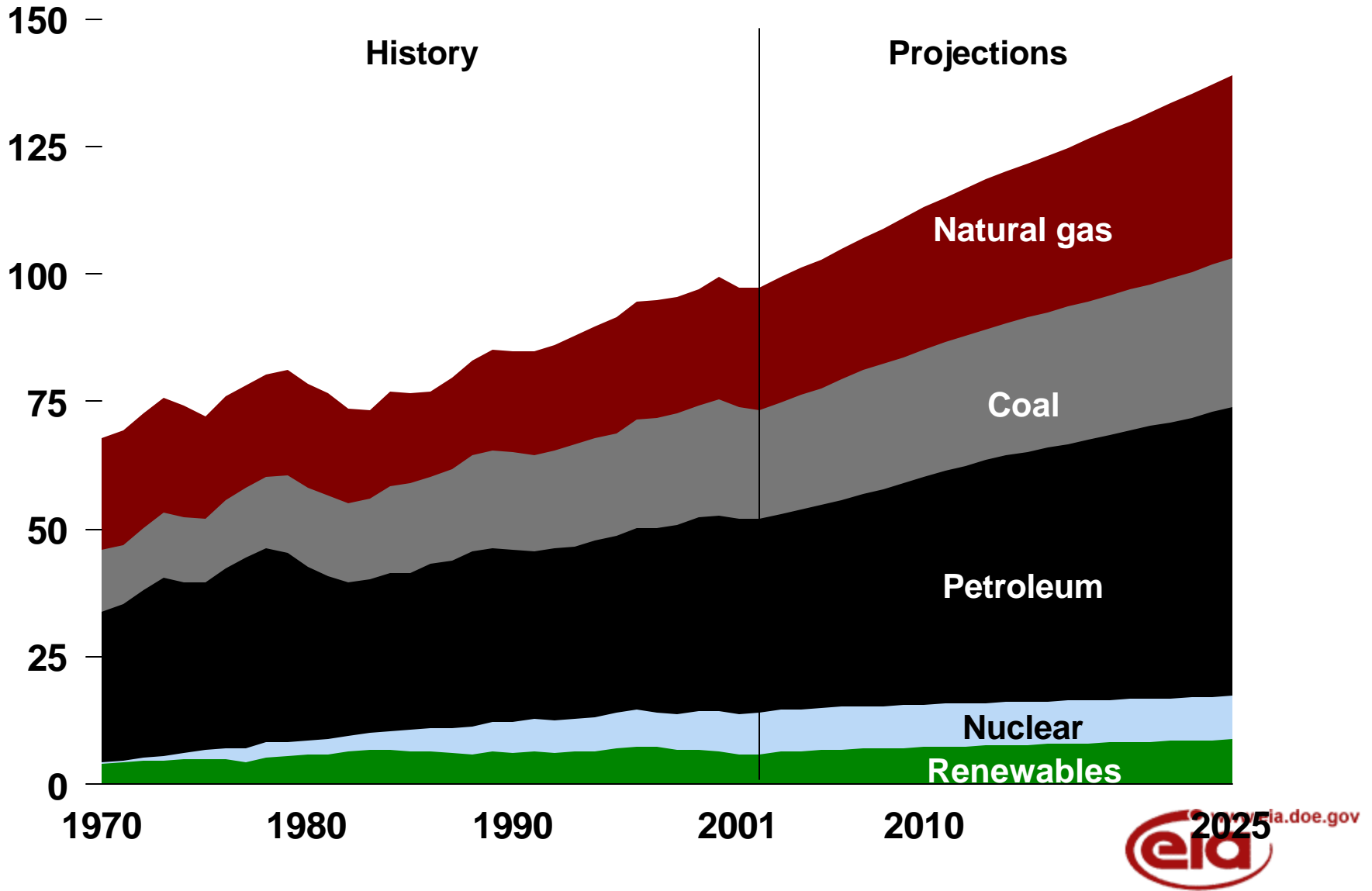


Source: "Worldwide Look at Reserves and Production." *Oil & Gas Journal*, Vol. 100, (December 23, 2003), pp. 114-115.

# World Carbon Emissions by Fossil Fuel Type, 1970-2025

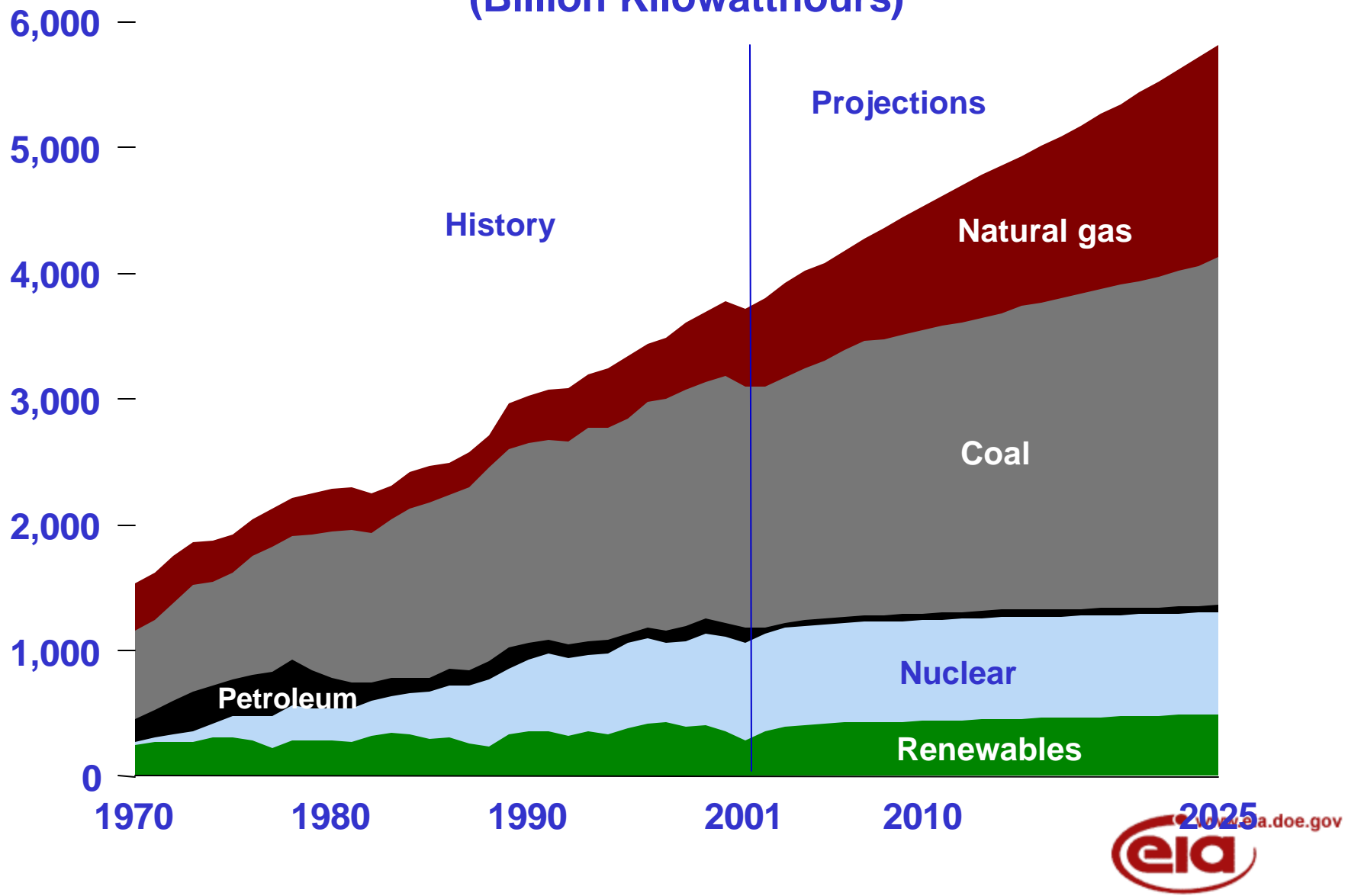


# U.S. Energy Consumption by Fuel, 1970-2025 (quadrillion Btu)

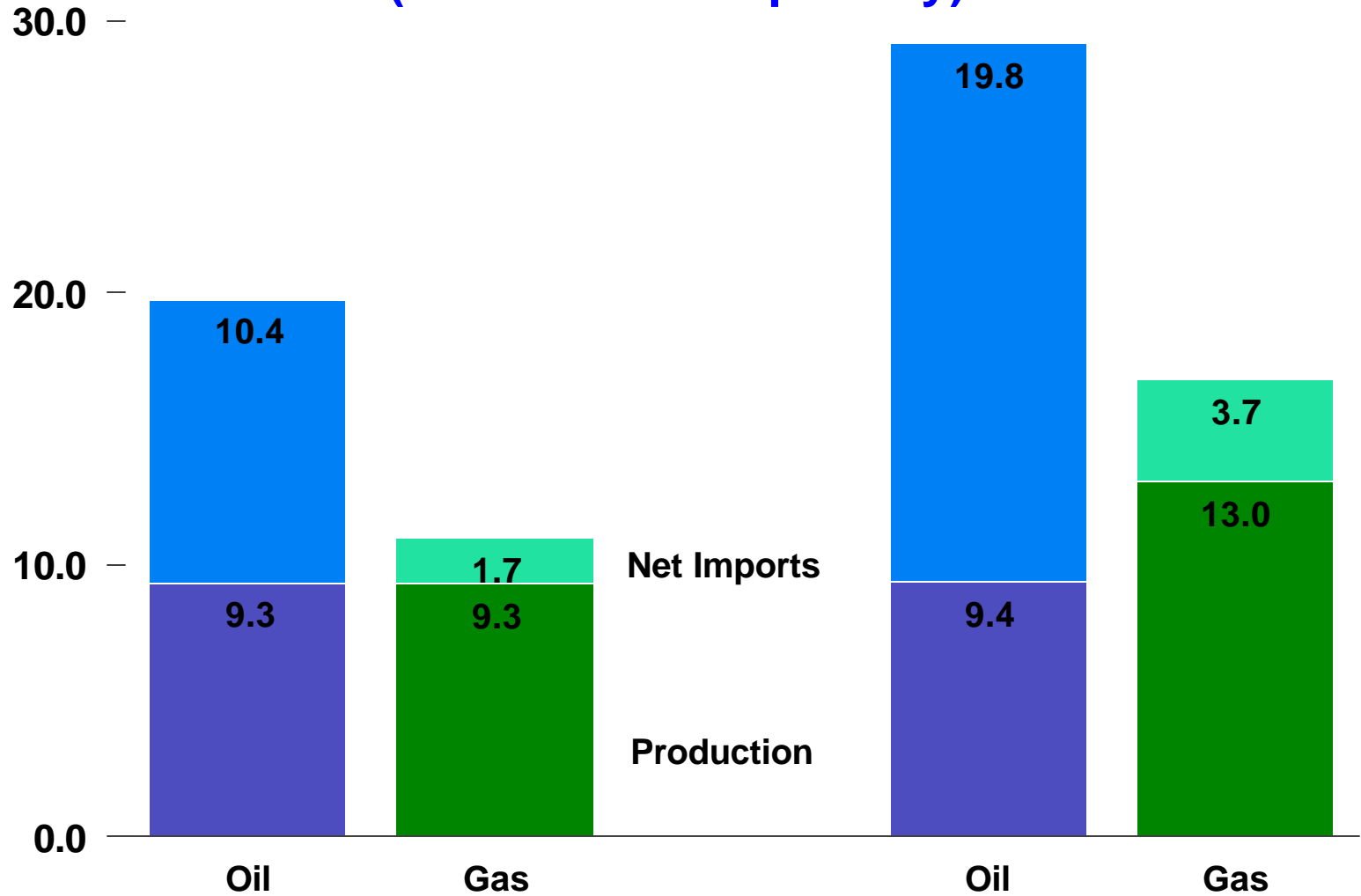


# U.S. Electricity Generation by Fuel History and EIA AEO-2003 Projections

(Billion Kilowatthours)

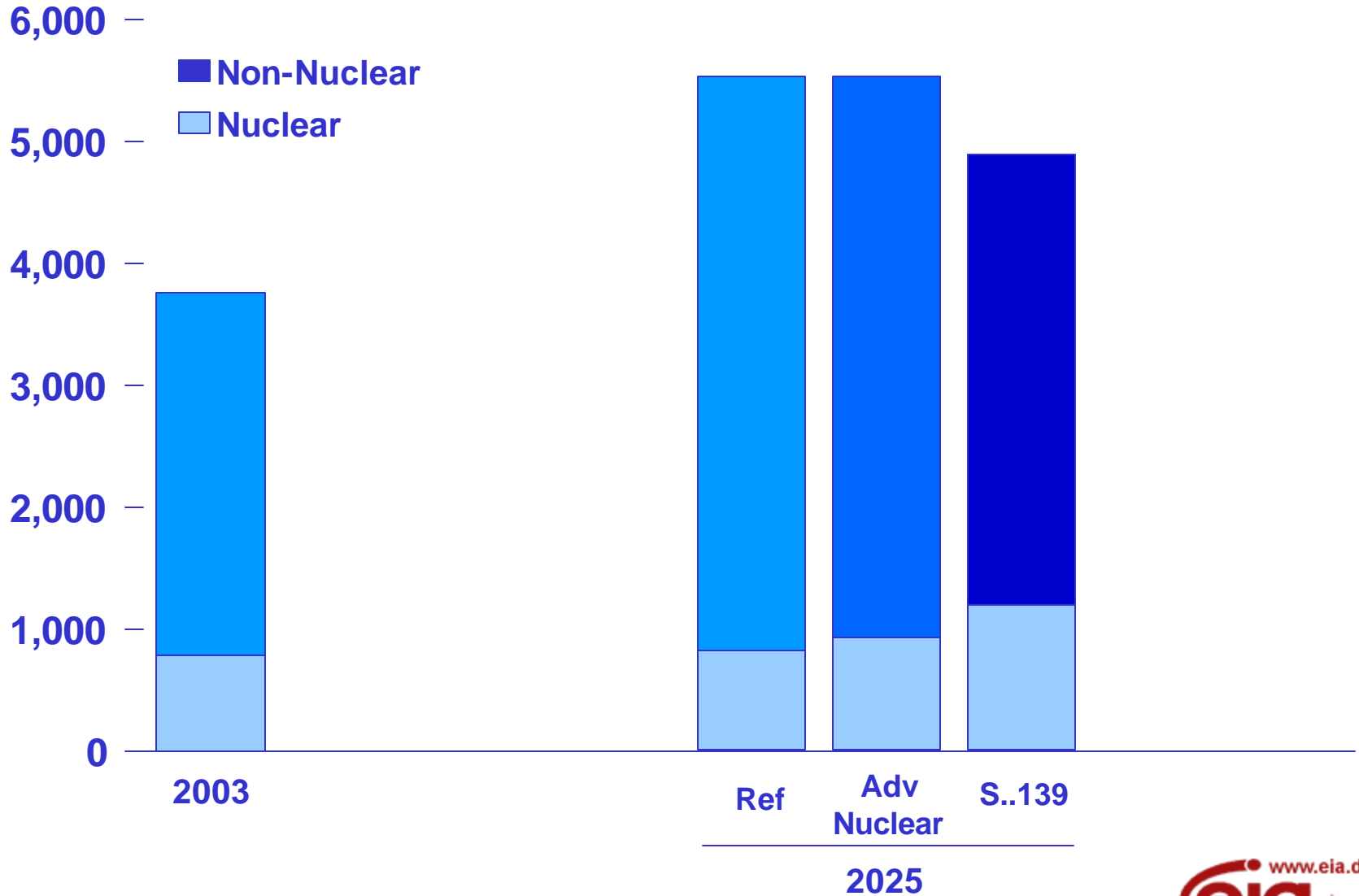


# U.S. Oil and Gas Supply, 2000 and 2025 (million barrels per day)



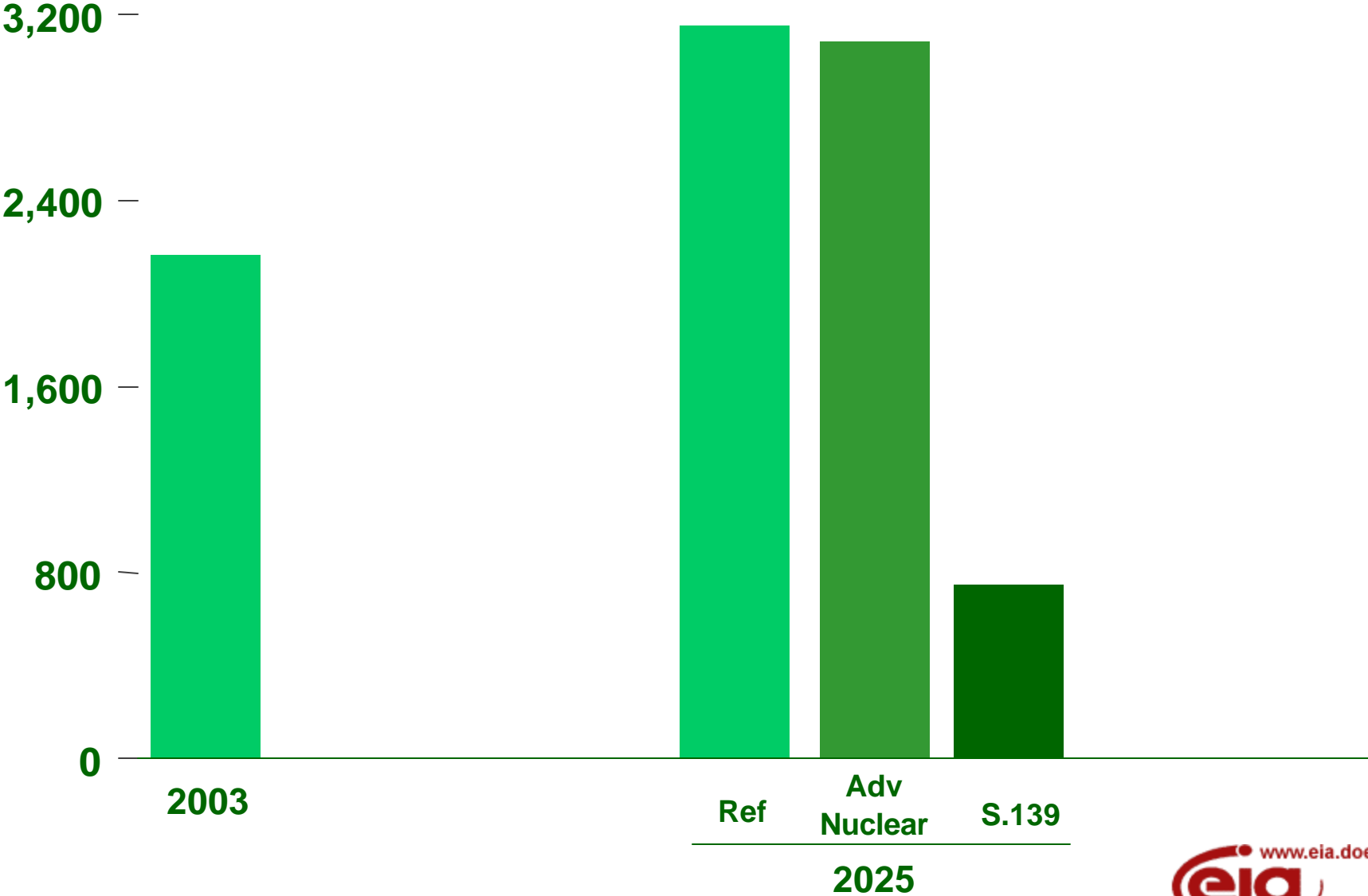
Note: 1 trillion cubic foot of natural gas supply equates to approximately .485 million barrels per day crude oil equivalent.

# U.S. Electricity Generation Scenarios (Billion Kilowatthours)





# Carbon Dioxide Emissions from Electric Power (Million Metric Tons)



# Conclusions

## Implications of EIA/IEA Projections

- Developing countries dominate growth in energy demand
- Growing reliance on oil from the Middle East
- Growing global carbon dioxide emissions from fossil fuels

## Key Uncertainties to 2025

- Oil price and natural gas supply and price – security implications of financial flows
- Technology costs (nuclear, renewables, carbon sequestration)
- Policies (if any) to reduce greenhouse gas emissions
- (2025 and beyond) Hydrogen's role as an energy carrier