

# Clemson University

South Carolina Institute for Energy Studies

## Energy Independence: A South Carolina Perspective



Southeast Environmental Management Association

9<sup>th</sup> Conference, 04/18/07

Dr. Nicholas C. Rigas, Director

## *Our Mission:*

Develop South Carolina's clean indigenous energy resources to promote economic development, energy security and improve the quality of life for its citizens.

*Energy has become a global issue with global factors that have global consequences.*

*Energy is crucial to economic development and drives the economic engines of the world.*

*Development of clean, renewable energy across the globe is crucial for environmental and societal sustainability.*

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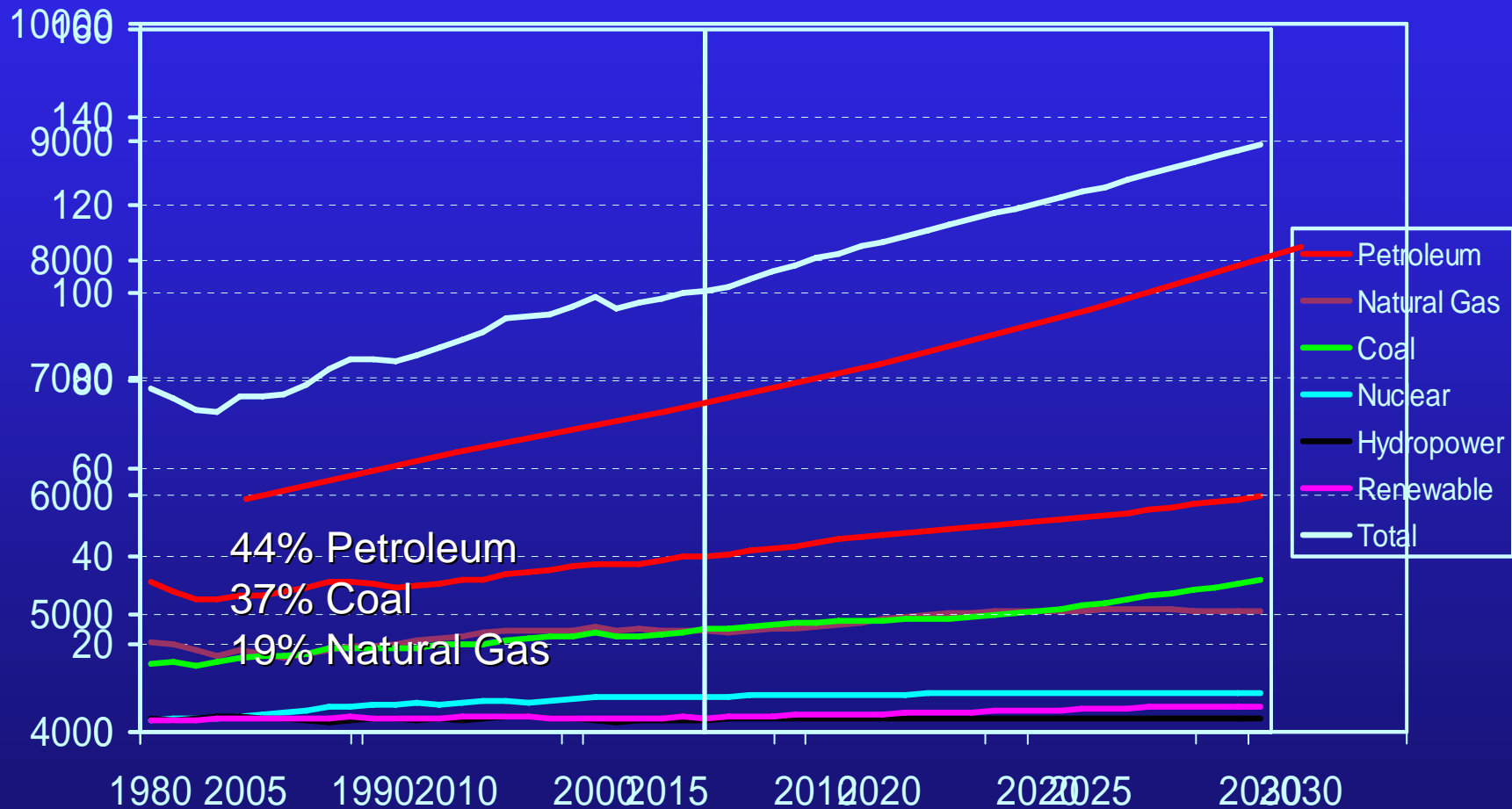
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- World Energy Consumption: ~412 Quad BTU and expected to grow to over 720 Quad BTU by 2030
- USA Consumption ~97 Quad BTU (5% of population) growing to over 130 Quad BTU by 2030
- On a US per capita consumption, worldwide demand would be over 1,800 Quad BTU
- Global carbon emissions in 2004 were over 27Bn metric tons with China and US accounting for one third

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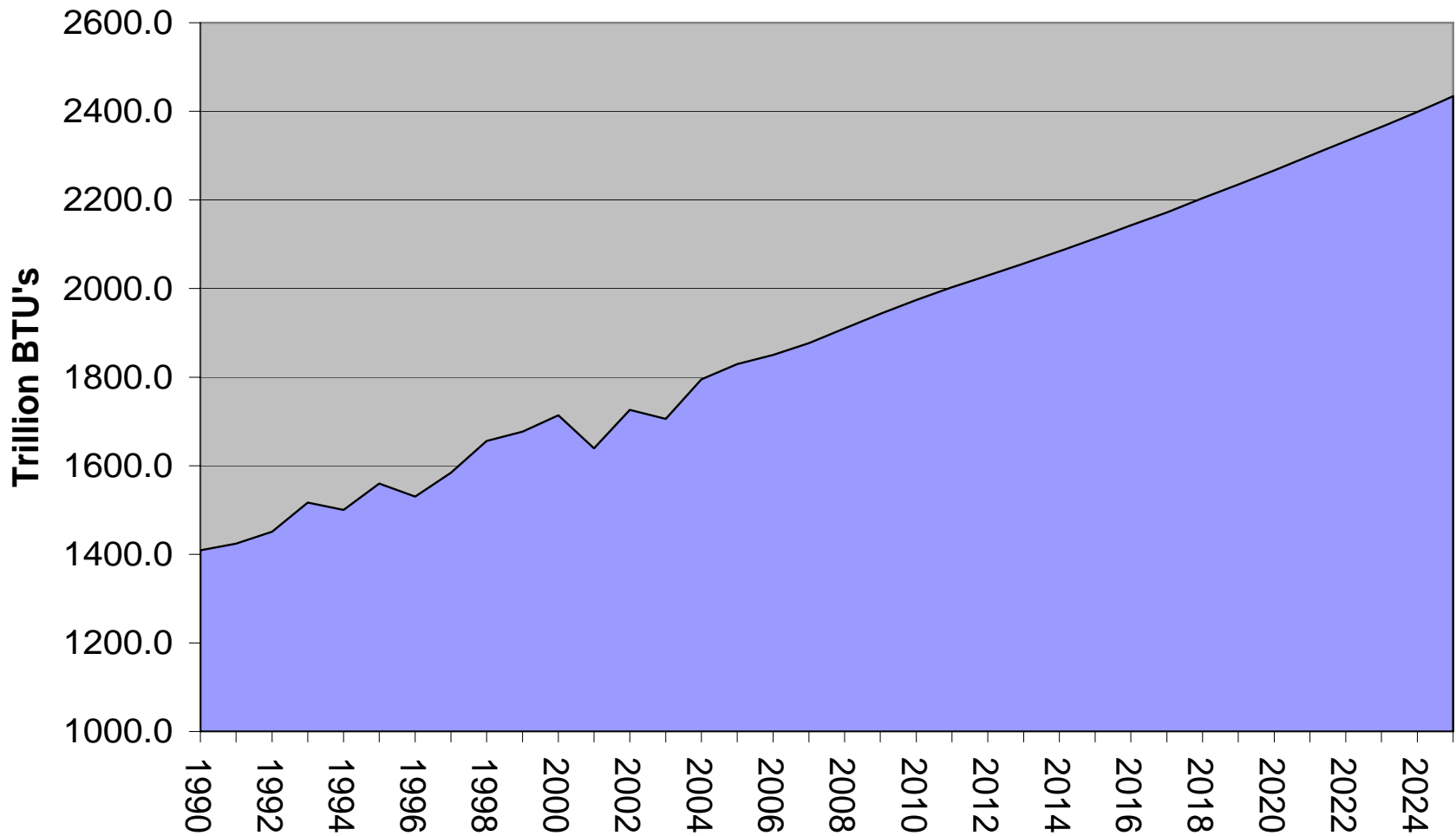
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US Energy Supply and CO<sub>2</sub> Emissions (Qs and MBTU/Year)

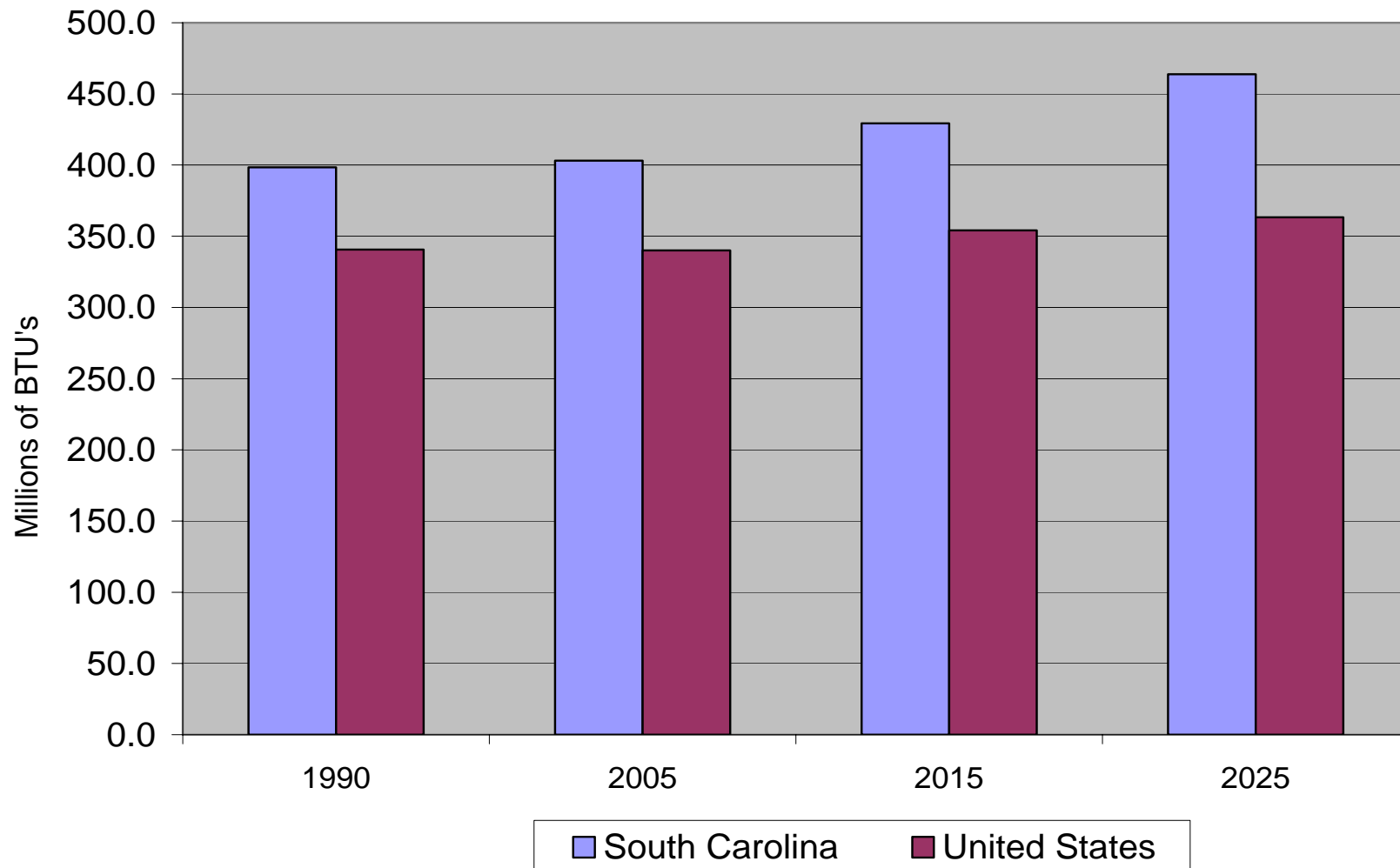


2006 Annual Energy Outlook, Energy Information Administration, DOE.

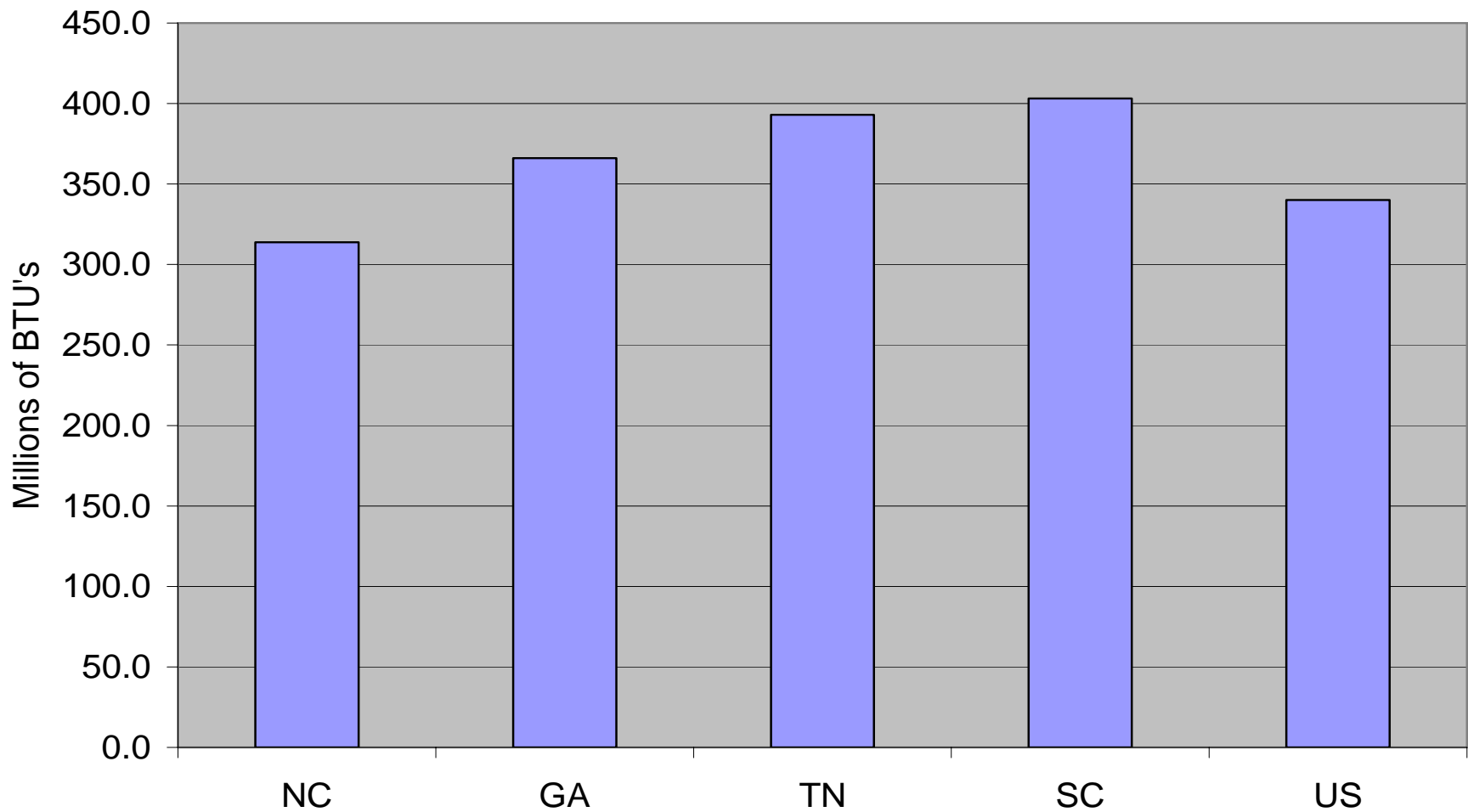
### South Carolina Total Energy Consumption, 1990 to 2025



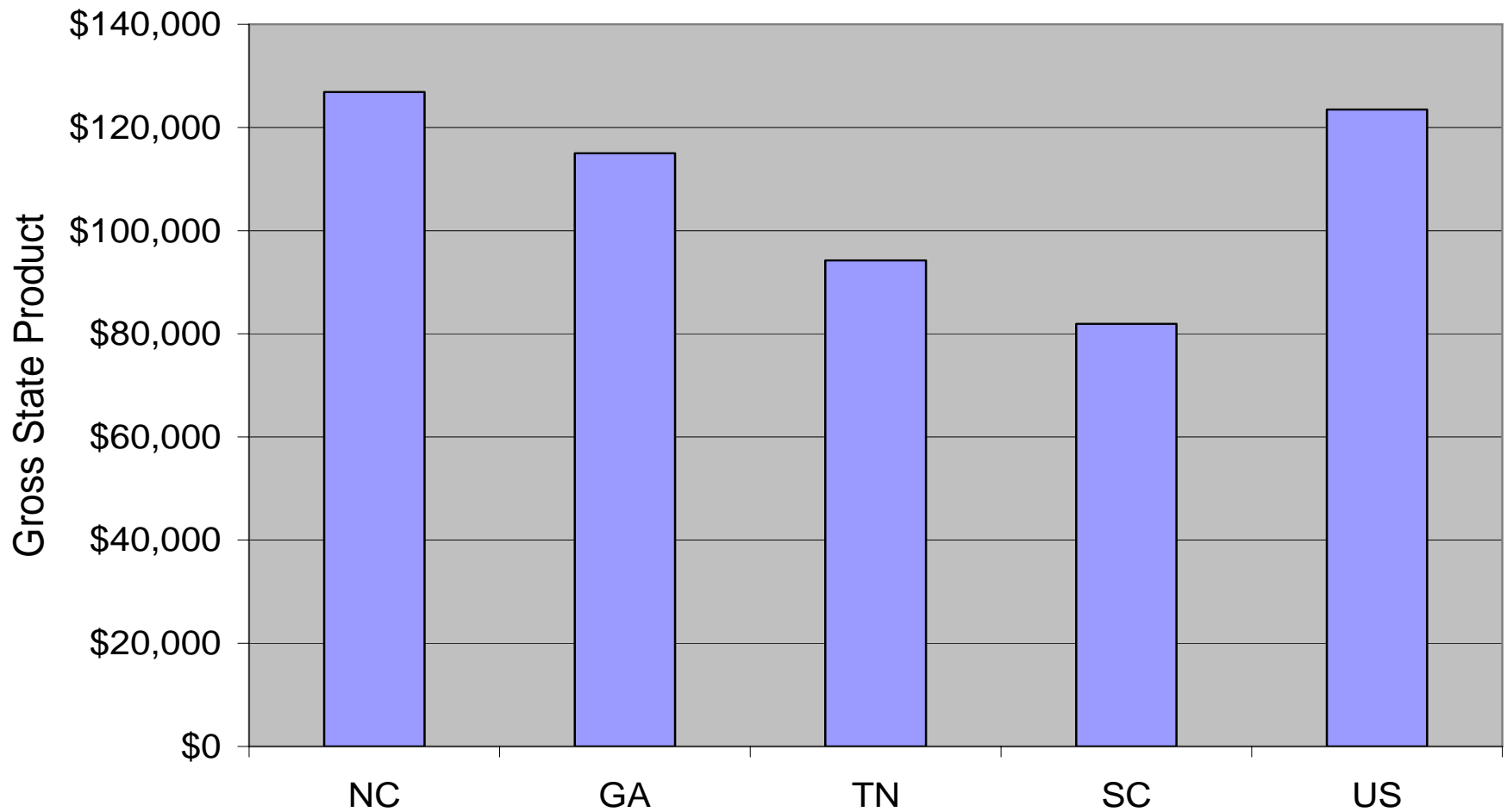
### Per Capita BTU Consumption, 1990 to 2025



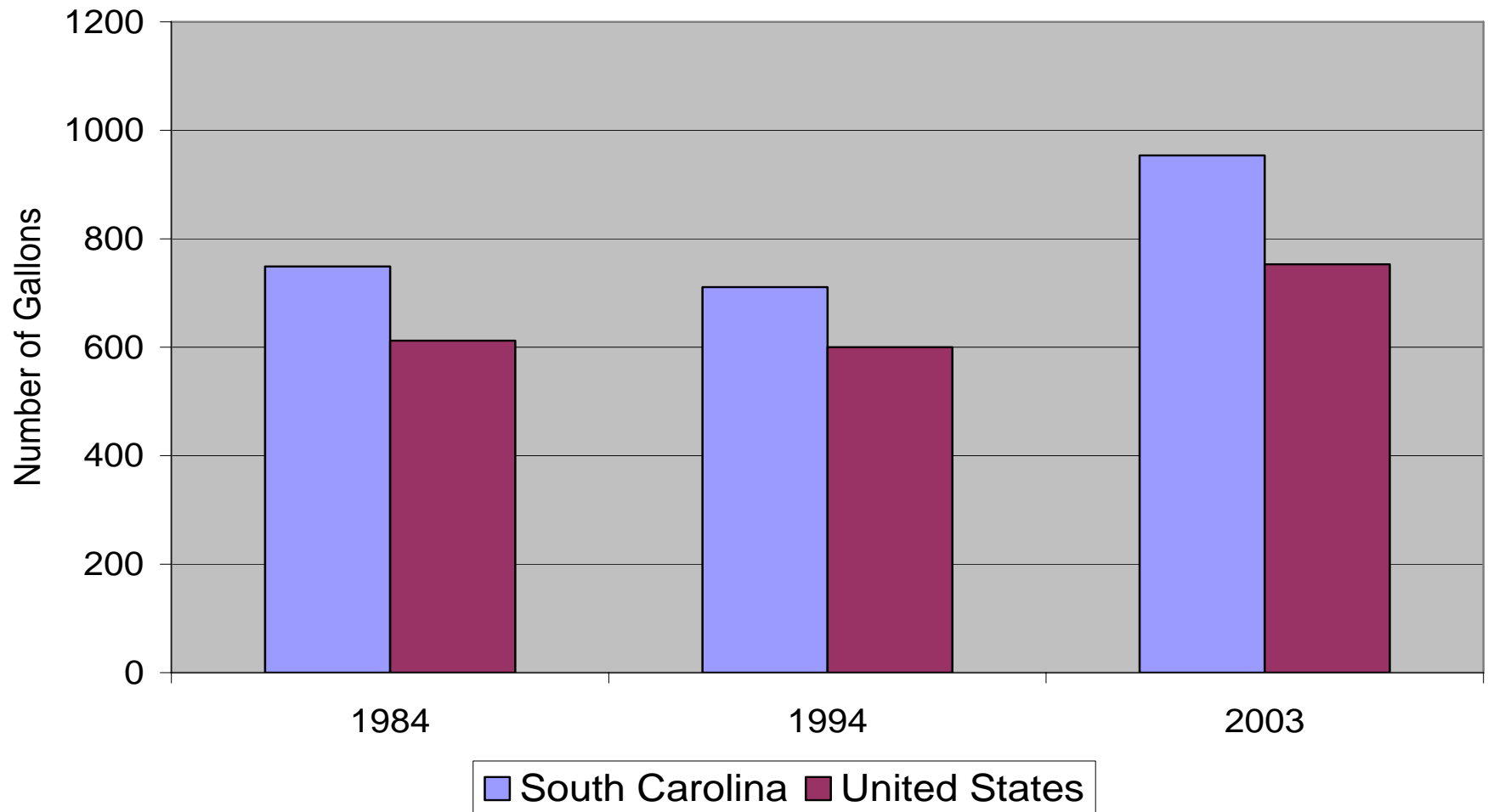
Per Capita BTU Consumption in the Southeast, 2005



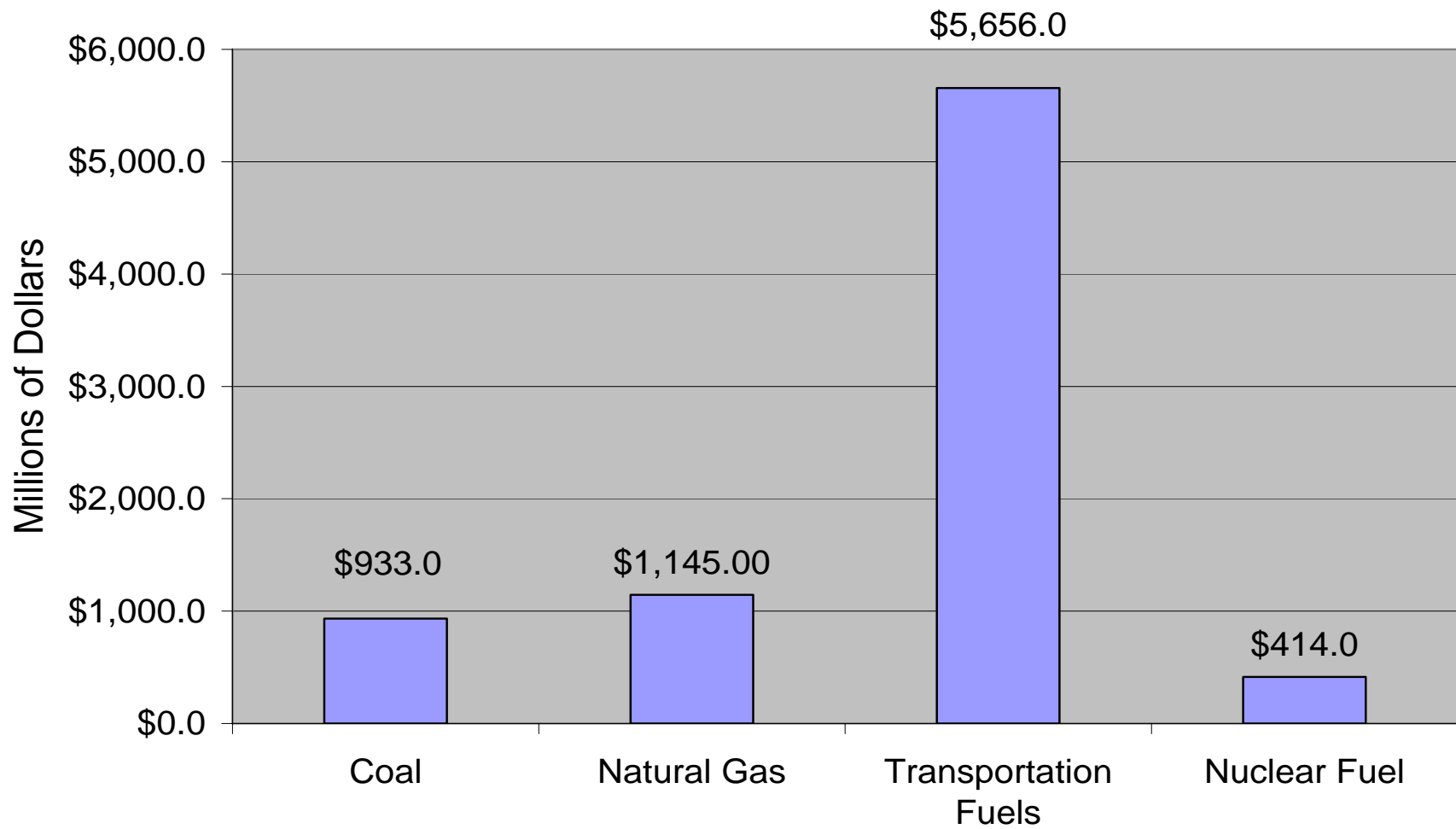
## GSP per Million BTU, 2005



## Petroleum Consumption per Registered Vehicle



## 2006 Expenditures for Imported Energy Resources



## *Why is this important?*

- SC has no indigenous fossil fuel reserves
- In 2006 South Carolinians spent \$18B on energy
- Over \$8.1Bn left the state to pay for primary energy resources
- South Carolinians spend 18% more on energy than the national average
- SC GSP per MBTU is 33% lower than the national average

## *As a result?*

- Loss of jobs
- Loss of tax revenues
- Loss of economic development
- State economy more susceptible to volatile energy markets

*Similar issue for other states in the region*

## *What are SC's Indigenous Energy Resources?*

- Cellulosic Biomass
- Solar
- Offshore wind potential
- Energy Efficiency

## *What are SC's Strengths in Energy?*

- Experience and acceptance of Nuclear Power
- Research Institutions
- Agricultural History and Experience

## *Where should South Carolina head?*

- Energy Efficiency: immediate impact
- Nuclear: solid history, federal permitting
- Biofuels: technology and infrastructure needed
- Offshore Wind Power: reduced cost and public acceptance
- Solar: reduced cost and public acceptance
- Hydrogen: technology and infrastructure need

## *South Carolina's Current Efforts?*

- Hydrogen: SCHFCA, CHR, USC, CU-ICAR, etc.
- Nuclear: SRNL, public acceptance is high
- Biomass/Biofuels: SC Biomass Council, Bioenergy Collaborative, USC Program, SRNL, Santee Cooper
- Offshore Wind Power: SC Coastal Wind Working Group, SC Coastal Winds for School Program
- Solar: Santee Cooper Solar Schools Program
- Greenpower: Santee Cooper

## *What is needed?*

- Leadership at the state level
- Coordinated state program to support alternative energy development
- Public outreach, awareness and education
- K-12 education on sustainability, energy efficiency and renewable energy

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Questions? Comments?