

**COAL'S ROLE IN ACHIEVING ECONOMIC GROWTH AND
ENVIRONMENTAL STABILITY:**

**An Interpretive Report on Recent Global Climate Change Studies
with a Long Range and Strategic Perspective on Enabling Technologies**

The National Coal Council

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EXECUTIVE SUMMARY

The Executive Summary introduces the report, summarizes the major conclusions, and sets forth the National Coal Council's (NCC) recommendations to the Department of Energy. The scope of this study was to develop an interpretive report on recent global climate change studies with a long range and strategic perspective on enabling technologies.

INTRODUCTION

The Secretary of Energy authorized this study by the NCC to explore the role of coal in helping to continue U.S. economic growth while fostering global environmental stability.

The report is divided into four parts:

Part 1 – Coal's Position in the Economy – discusses current environmental and economic challenges facing coal, and the domestic and international environmental policies affecting the use of coal.

Part 2 – Enabling Technologies – reviews electric generation technologies and discusses efficiency improvements, knowledge gaps, and competition from other fuels and generation sources.

Part 3 – Five Labs Study – briefly reviews the recent Five Labs Study and its significance.

Part 4 – Alternate Carbon Emission Reduction Scenarios/Sequestration – describes reduction scenarios achievable using various fuel and technology options, and summarizes the status of some carbon sequestration technologies and their potential.

CONCLUSIONS

Coal's Role. Because of its abundance and stable price, coal has been and will continue to be an essential energy component for long-term sustainable economic development in the U.S. and around the world. However, in order to maintain the potential for continued economic growth while simultaneously protecting the environment from excessive accumulation of anthropogenic greenhouse gases (GHG) and other air emissions, a technology-based transition in coal utilization is necessary. This transition will be driven by more efficient generation of electricity, by the

commercialization of technologies developed and demonstrated over the past two decades, and by the continuing electrification of the economy.

Fuel diversity. No single fuel can or should dominate U.S. energy use or electricity production. Preserving a diverse spectrum of fuel sources (coal, oil, gas, nuclear, biomass, and other renewables) and energy conversion options (central station steam boiler, combustion turbine, distributed generation, synergistic combination systems) is essential to the United States' competitiveness, economic health, societal growth, and world leadership role. Coal's low cost and reliable supply will be increasingly important in the selection of fuels and electric generation options.

Technology portfolio. Technology advancements are essential to optimizing U.S. responses to global climate change issues and commitments. Economic analyses do not identify a single preferred technology but rather demonstrate the advantages of the technology portfolio approach. These analyses also underscore the need to keep and enhance coal's role in the technology mix by optimizing electric generation in the existing fleet; gasifying coal with exit gas cleanup; co-firing coal with biomass; capturing CO₂ exit gas with sequestration; integrating methane capture, coal cleaning, CO₂ injection at the mine, and ash utilization; and sequestering carbon through land and forest management. Near-term investment in coal-based generation technology development provides long- and short-term payoffs. Such investments also improve the efficiency and reduce the cost of co-firing, integration, sequestration, and other later-developing technologies.

Carbon sequestration. Many non-agricultural, non-forest carbon sequestration technologies are still in their infancy. Sequestration has the potential to reduce atmospheric carbon loads without suddenly abandoning our existing energy infrastructure. However, only modest CO₂ reductions will be achieved in the near term from nascent sequestration technologies. Significant reductions related to their commercial application will be realized only as technologies mature over the next generation.

RECOMMENDATIONS

Coal's role. Near-term climate change responses should take into account the existing U.S. energy infrastructure in order to be economically feasible and practical.

The Department should continue and strengthen the development of sound, realistic assumptions for the relative roles of coal, nuclear, hydro and other renewables, and natural gas in energy production in near-, mid-, and long-term scenarios for the U.S.

Fuel diversity. The Department should continue to support U.S. and world coal usage and the enabling advanced clean coal technology improvements both in the near- and mid-term. This strategy will preserve a range of fuel options and thus protect against production upsets, interruptions, and price increases in other fuel sources.

Technology portfolio. The Department should maintain a vigorous clean coal utilization research and development program to continue to reduce the cost of clean electric generation. Successful partnerships with private industry to develop and implement coal technology advances on a timely schedule will depend on equitable structuring of costs, risks, and rewards. The Department should exploit its leadership role to support such arrangements.

Carbon sequestration. The Department should participate technically and financially in establishing and carrying out an aggressive research and development program for CO₂ capture, transport, sequestration, and trading.

A well thought out and carefully implemented global reductions trading program is crucial to developing the flexibility required to achieve emissions goals at acceptable economic impact. An international trading program should incorporate credit for early actions including reductions from forestation and agricultural practices.