

Comment for Panel Session on

# CO<sub>2</sub> Capture and Sequestration: What Goes Up ... Could Go Down

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# What Is It ?

- CO<sub>2</sub> Capture and Sequestration (CCS) is a technology to remove carbon dioxide (CO<sub>2</sub>) from the gas stream of an industrial process or power plant, and transport it to a permanent storage or disposal site, typically a deep geological reservoir
- This is a method to prevent the release of CO<sub>2</sub> to the atmosphere
- The dominant source of CO<sub>2</sub> is the combustion of fossil fuels (coal, oil and gas) that supply roughly 85% of the world's energy

# Why Is CCS Important ?

- CO<sub>2</sub> is the dominant “greenhouse gas” linked to global climate change
- CCS is important since it allows continued use of fossil fuels without major climate impacts while alternative (more sustainable) energy sources are being developed and deployed on a wide scale
- CCS potentially can minimize the cost of stabilizing greenhouse gas levels in the atmosphere over the next century, according to recent studies

# How Feasible Is It ?

- Each component of a CCS system— i.e., CO<sub>2</sub> capture, transport, and underground storage — is practiced widely in industry today
- Current technology is deployed for commercial reasons (e.g., natural gas production and enhanced oil recovery), not for environmental control
- CCS still needs to be demonstrated at the scale of a large (e.g., 500 MW) coal-based power plant; geologic reservoir capacity is adequate for ~100 years of storage
- Cost, public acceptance, and lack of GHG policy requirements are key barriers to implementation

# What is CMU's Role ?

- We are a major player in the (rapidly growing) U.S. and worldwide programs to determine the feasibility, costs and impacts of CCS
- We have developed a widely-used computer model to assess the engineering, economic, and environmental aspects of current and advanced CCS technologies and power generation systems
- We have international collaborations in several areas
- Recent funding from USDOE of \$3M over past 5 years. New funding from International Energy Agency and CMU Electricity Industry Center

# Related Activities

- ESR is a Lead Author of a “Special Report on CO<sub>2</sub> Capture and Storage” being conducted for 166 world governments by the International Panel on Climate Change (IPCC). This report will play a major role in shaping the international response to CCS as a climate change mitigation option
- Also Chief Editor of the first peer-reviewed edition of the major international conference Proceedings on greenhouse gas control technologies (in press, 2005)

# Where Are We Headed ?

- We want to expand the **international dissemination** of our **analysis tools** for use by industry, governments, academia, NGOs, and other organizations involved in the climate change issue
- We want to **expand the capabilities** of those tools to analyze advanced technologies, risks, and payoffs
- We want to apply our tools to **develop new insights** important to the technical and policy communities
- We want to **expand our collaborations** with other groups in the U.S. and internationally