Making CCS Work: Economics and Critical Issues

Monday, March 31, 2008
1:00 pm – 4:00 pm
Dirksen Senate Building Room 366

Speaker Biographies

Welcome and Opening remarks

***Senator Jeff Bingaman,* Chairman, Senate Energy & Natural Resources Committee**
Jeff Bingaman grew up in Silver City in a family with deep New Mexico small town roots. His father was a science professor at Western New Mexico University, and his mother taught in the public schools. He graduated from high school in Silver City. After graduating from Harvard University, he earned a law degree at Stanford. There he met fellow law student Anne Kovacovich. After graduation, they married and returned to New Mexico, where they both practiced law, and their son, John, was born. Jeff was elected New Mexico Attorney General in 1978. In 1982, he won election to the United States Senate, and in 2006, was re-elected to serve a fifth term. He is chairman of the Senate Energy and Natural Resources Committee.

***Frank Verrastro,* Director and Senior Fellow, CSIS Energy and National Security Program**
Frank Verrastro is senior fellow and director of the CSIS Energy and National Security Program. His energy-related experience includes over 25 years in energy policy and project management positions in both the U.S. government and the private sector. His government service includes staff positions in the White House (Energy Policy and Planning Staff) and the Departments of Interior and Energy, including serving as deputy assistant secretary for international energy resources. In the private sector, Verrastro served as director of refinery policy and crude oil planning for TOSCO (formerly the nation's largest independent refiner) and more recently as senior vice president for Pennzoil. His responsibilities at Pennzoil included government relations, both domestic and international; corporate planning; international risk assessment; and negotiations. He also served on the company's management and operating committees, as well as on the Environmental Safety and Health Leadership Council.

***Bob Simon,* Staff Director, Senate Energy & Natural Resources Committee**
Dr. Robert M. Simon is the Staff Director of the Committee on Energy and Natural Resources of the United States Senate. Since January 1999, he has either been the overall Staff Director for the committee, when the Democratic Party has been in the majority in the Senate, or the Democratic Staff Director for the committee, when Democrats were the minority party in the Senate. Dr. Simon has had a long professional career in Washington at the interface of science and public policy, including 7 years on the staff of the National Academy of Sciences, 4 years in the Department of Energy. For the last 14 years, he has been in the United States Senate, first as a detailed technical expert, then as a member of the staff of the Joint Economic Committee, and finally in his current position. His original training was in chemistry, an area in which he holds a doctorate degree from the Massachusetts Institute of Technology. In 2006, he was elected a Fellow of the American Association for the Advancement of Science, the world's largest general scientific society, for his contributions to integrating science with public policy.

Session I: The Business Case for CCS

***Gardiner Hill*, CCS Technology Director, BP Alternative Energy International Ltd.**
Mr. Hill is Director of Technology in Alternative Energy Technology, responsible for BP group wide aspects of CO_2 Capture and Storage (CCS) technology development, demonstration and deployment. He is the BP manager responsible for the BP/Ford/Princeton Carbon Mitigation Initiative (CMI), at Princeton University as well as the BP manager responsible for the BP/Harvard partnership on the Energy Technology Innovation Project (ETIP). In addition to this, Gardiner is Chairman of the board for the International Joint Industry cooperative project, called the CO_2 Capture Project (CCP), Vice-Chair of the EU Technology Platform for Zero Emissions Fossil Fuel Power Plants and Chairman of the UK Industry Association for CO_2 Capture and Storage , the CCSA. Prior to his current position, he held a number of senior roles in BP Group Technology, including Manager of the BP Group Environmental Technology program, responsible for developing strategies and new technologies that the business could implement to support delivery of BP's commitments on environmental performance and brand values.

***Bruce Braine*, Vice President of Strategic Policy Analysis, American Electric Power**
Bruce H. Braine is vice president for strategic policy analysis for American Electric Power Service Corp. In this position, he focuses on analysis of federal and state energy and environmental policy as well as analysis and development of long-term environmental and energy strategy for AEP. Braine joined AEP in 1997 as senior vice president – analysis for AEP Energy Services, an AEP subsidiary. He was named vice president – strategic policy analysis in 2000. Braine has a bachelor's degree from Brown University and a master's degree in business administration from Stanford, where he graduated from Stanford's Public Management Program. Before joining AEP Energy Services in 1997, Braine was a principal in the Washington, D.C., economic and management-consulting firm of Putnam, Hayes and Bartlett.

***Craig S. Hansen*, Vice President, Washington Operations, The Babcock and Wilcox Company**

Craig S. Hansen joined Babcock & Wilcox (formerly known as BWX Technologies ("BWXT"), Washington Operations office in 2002 as Manager, Government Programs, becoming Vice President in 2005. In this capacity, Mr. Hansen oversees B&W's substantial interests with Federal, international and state governments across a broad spectrum of energy and environmental technologies. As a leading manufacturer of nuclear, coal, biomass and solar power plants, as well as one of the world's premier providers of environmental control solutions and power plant upgrades, B&W's expertise and capability will play a key role in defining solutions to some of our Nation's challenging problems, and subsequently in turning complex plans into reality. Currently Mr. Hansen is playing a leading role in developing comprehensive solutions to energy security issues and climate change; organizing nuclear supplier groups and agendas; and developing achievable and realistic clean coal technologies in Washington, D.C.

***Stephen Kaufman*, Chair, Integrated CO2 Network (ICO2N) and Director for Business Development, Suncor Energy**

Stephen Kaufman is Director of Business Development – Natural Gas and Renewable Energy for Suncor Energy where he manages CO2 mitigation efforts, electric power planning, and natural gas business opportunities.. Stephen has a B.A.Sc in Chemical Engineering from the University of Waterloo, and an MBA from the Ivey School. Stephen has a 25 year background in the upstream petroleum and service sectors including operations, facility development, marketing and corporate development. Stephen has been with Suncor since 1995 in roles that included leading an E&P business effort in South America, and the management of a Coalbed Methane group. In his current role, a large focus of his team's work has been on CO2 capture and storage related concept development. He is currently the Chair of the Integrated CO2 Network, an alliance of 18 industrial companies working to create the right policy and economic conditions for CCS to be deployed in Canada

Session II: Sequencing the Deployment

***David Pumphrey*, Deputy Director and Senior Fellow, CSIS Energy and National Security Program**

David Pumphrey is a senior fellow and deputy director of the CSIS Energy and National Security Program. He has extensive public-sector experience in international energy security issues. He was most recently deputy assistant secretary for international energy cooperation at the Department of Energy. During his career with the federal government, he led the development and implementation of policy initiatives with individual countries and multilateral energy organizations. He was responsible for policy engagement with numerous key energy-producing and energy-consuming countries, including China, India, Canada, Mexico, Russia, Saudi Arabia, and the European Union. Pumphrey represented the U.S. government on the technical

committees of the International Energy Agency and the Energy Working Group of the Asia Pacific Economic Cooperation forum. He also represented the Department of Energy in the negotiations of the energy-related sections of the U.S.-Canada Free Trade Agreement and the North American Free Trade Agreement.

***Jan Panek*, Head, Coal & Oil Unit, Directorate-General for Energy & Transport, European Commission**

Jan Panek is the Head of Unit "Coal and Oil" in the Directorate-General for Energy and Transport of the European Commission in Brussels. He joined the European Commission in October 2005 after a diplomatic service at the Czech Ministry of Foreign Affairs during which he held positions in the Ministry' headquarters as well as in Czech diplomatic missions in Tokyo and Brussels. He also spent several years in the 1990s with the Boston Consulting Group in its London and Central European offices. He has a B.Sc. in Applied Geophysics from Charles University in Prague and an M.A. in International Economics and Foreign Policy from The Johns Hopkins University - SAIS in Washington, D.C. He is also a CFA (Chartered Financial Analyst) charter holder.

***Jon Gibbins*, Energy Technology for Sustainable Development Group, Mechanical Engineering Department, Imperial College London**

Jon Gibbins has worked on coal and biomass gasification and combustion for over 25 years, at Foster Wheeler and then Imperial College, London. He is the Principal Investigator for the UK Carbon Capture and Storage Consortium (www.ukccsc.co.uk) and a member of the UK BERR Advisory Committee on Carbon Abatement Technology. He is involved in a number of other academic, industrial and government projects on CCS in the UK and overseas, including the UK-China Near Zero Emissions Coal (NZEC) project. He recently participated in an IEA GHG study on 'CO_2 capture ready plants' and is closely involved with the development and deployment of capture ready concepts to avoid carbon lock in during the transition to full CCS as well in promoting rapid technology deployment for 'learning by doing'.

***Jim Dooley*, Senior Staff Scientist, Pacific Northwest National Laboratory**

Jim Dooley leads the Joint Global Change Research Institute's and the Global Energy Technology Strategy Project's research related to carbon dioxide capture and storage and the role of this class of technologies in addressing climate change. He is also a senior member of the Joint Global Change Research Institute's Integrated Assessment modeling team and in this capacity has principally been focused on the set of economic incentives needed for the development and large scale commercial adoption of advanced carbon management technologies. Dooley was both a Lead Author for Costs and Economic Potential and the Cross-Cutting Chairman for Market Deployment for the recently released Intergovernmental Panel on

Climate Change's *Special Report on Carbon Dioxide Capture and Storage*. He is also on the Editorial Board for the *International Journal of Greenhouse Gas Control*, the first peer reviewed journal to focus on carbon dioxide capture and storage technologies. Dooley is the co-developer of a state-of-the-art geographic information based model for examining the large-scale deployment of carbon management technologies in the United States. He also shares responsibility for developing Battelle's private sector businesses relating to Carbon Management.

Session III: Economics, Infrastructure, & Scale Issues

***Shirley Neff,* President and Chief Executive Officer, Association of Oil Pipe Lines**
Shirley Neff is the President and CEO of the Association of Oil Pipe Lines in Washington, DC. She is on the Advisory Board of the Center for Energy Economics at the Bureau of Economic Geology, University of Texas, Austin and is an Adjunct Professor in the graduate School of International and Public Affairs at Columbia University. She has extensive public and private energy sector experience. For seven years, she was the economist for the U.S. Senate Committee on Energy and Natural Resources. Prior to the Senate, she worked for Shell, the Interstate Natural Gas Association of America (INGAA) and a pipeline company in Dallas. She is a past President and Senior Fellow of the U.S. Association for Energy Economics (USAEE).

***Kevin Book,* Senior Analyst, Friedman, Billings, Ramsey Group, Inc.**
FBR Senior Analyst Kevin Book forecasts and interprets domestic and global economic and policy trends likely to impact energy sector investments. Mr. Book also analyzes macro-level factors that influence crude oil prices and covers a broad spectrum of environmental policy and alternative energy issues, including alternative power, alternative and renewable liquid fuels and greenhouse gas regulation. Mr. Book holds an M.A. in law and diplomacy from the Fletcher School of Law and Diplomacy and a B.A. in economics from Tufts University.

***Rachel Crisp,* Deputy Director, CCS Demonstration Project and International CCS, Dept for Business, Enterprise and Regulatory Reform (BERR), UK**
Rachel Crisp is a Deputy Director of the Cleaner Fossil Fuels Unit in the Department of Business and Enterprise (the UK Government Department that is responsible for energy policy). She leads work on the UK Government's international CCS strategy and policy development relating to the UK CCS demonstration project.

***Vince Hahn*, Principal & Vice President, Global Asset Consulting, R.W. Beck, Inc.**
Mr. Hahn is a Principal and Vice President in R.W. Beck's Global Asset Consulting Sector. His areas of expertise include business strategy and project restructuring, including asset valuation, contract review and identification of commercial risks. In addition, he managed M&A due diligence efforts for single and multi-asset power projects in excess of $7 billion (U.S.) in the last two years. In the business strategy and restructuring arena, his responsibilities entail both short-term and long-term business planning, including asset valuation, contract review and identification of commercial risks. Mr. Hahn also manages due diligence efforts for single and multi-asset power projects, where he interfaces with project lenders, sponsors, rating agencies, counsel and other advisors. As part of these responsibilities, Mr. Hahn performs contract reviews over a wide range of project-agreements, and focuses his efforts on proposing solutions to issues identified. Mr. Hahn earned his Bachelor of Science in Mechanical Engineering from Carnegie Mellon University and his Masters of Science from the University of Michigan.