Department of Energy Quadrennial Technology Review
Capstone Workshop
Wednesday, July 13, 2011
Washington Hilton – Washington, DC

8:00-8:30 **Registration & Continental Breakfast**

8:30-9:00 **Welcome:** Dr. Steven Koonin

IBR East Under Secretary for Science, U.S. Department of Energy

Opening Remarks: Dr. John Holdren

Assistant to the President for Science and Technology, Director of the White House Office of Science and Technology Policy, and Co-Chair of the President's Council of Advisors on Science and Technology

9:00-10:25 **Panel 1: Transportation**

IBR East **Introduction:** David Sandalow

Assistant Secretary for Policy & International Affairs, U.S. DOE

Panelists: Stephen Brand (ConocoPhillips), Andrew Brown (Delphi), Bill Provine (DuPont), David Vieau (A123)

10:25-10:45 **Break**

10:50-12:15 **Panel 2: Stationary**

IBR East **Introduction:** Patricia Hoffman

Assistant Secretary for the Office of Electricity Delivery and Energy Reliability, U.S. DOE

Panelists: Ron Binz (Colorado PUC, retired), Mark Brownstein (EDF), Richard Cowart (Regulatory Assistance Project), Mike McQuade (UTC)

12:15-12:45 **Lunch**

IBR West

12:45-2:30 **Keynote:** Dr. Steven Chu, Secretary of Energy

IBR West **Panel 3: Role of DOE: Technology Policy**

Panelists: Bill Brinkman (DOE), Kathleen McGinty (Element, LLC), Daniel Schrag (Harvard), David Terry (ASERTTI), Sue Tierney (Analysis Group)

2:30-2:45 **Break**

2:45-4:15 **Panel 4: Balancing the Portfolio**

IBR East **Introduction:** Dr. Arun Majumdar

Senior Advisor to the Secretary/ARPA-E Director, U.S. DOE

Panelists: Eileen Claussen (Pew Center), Ernie Moniz (MIT), Dennis McGinn(ACORE), Phil Sharp (RFF),

4:15-5:00 **Closing:** Dr. Steven Koonin

IBR East Under Secretary for Science, U.S. Department of Energy

Speakers

Dr. Steven Chu

Secretary of Energy

As United States Secretary of Energy, Dr. Steven Chu is charged with helping implement President Obama's ambitious agenda to invest in clean energy, reduce our dependence on foreign oil, address the global climate crisis, and create millions of new jobs.

Dr. Chu is a distinguished scientist and co-winner of the Nobel Prize for Physics (1997). He has devoted his recent scientific career to the search for new solutions to our energy challenges and stopping global climate change - a mission he continues with even greater urgency as Secretary of Energy.

Prior to his appointment, Dr. Chu was the Director of the Department of Energy's Lawrence Berkeley National Lab, where he led the lab in pursuit of alternative and renewable energy technologies. He also taught at the University of California as a Professor of Physics and Professor of Molecular and Cell Biology. Previously, he held positions at Stanford University and AT&T Bell Laboratories.

Dr. Chu's research in atomic physics, quantum electronics, polymer and biophysics includes tests of fundamental theories in physics, the development of methods to laser cool and trap atoms, atom interferometry, the development of the first atomic fountain, and the manipulation and study of polymers and biological systems at the single molecule level. While at Stanford, he helped start Bio-X, a multi-disciplinary initiative that brings together the physical and biological sciences with engineering and medicine.

The holder of 10 patents, Dr. Chu has published nearly 250 scientific and technical papers. He remains active with his research group and has recently published work on general relativity and single molecule biology and biophysics that includes sub-nanometer molecular imaging with optical microscopy, cadherin adhesion, neural vesicle fusion, and nerve growth factor transport. About 30 alumni of his research group have gone on to become professors in their own right and have been recognized by dozens of prizes and awards.

Dr. Chu is a member of the National Academy of Sciences, the American Philosophical Society, the Chinese Academy of Sciences, Academia Sinica, the Korean Academy of Sciences and Technology and numerous other civic and professional organizations. He received an A.B. degree in mathematics, a B.S. degree in physics from the University of Rochester, and a Ph.D. in physics from the University of California, Berkeley as well as honorary degrees from 15 universities.

Dr. Chu was born in Saint Louis, Missouri in 1948. He is married to Dr. Jean Chu, who holds a D.Phil. in Physics from Oxford and has served as chief of staff to two Stanford University presidents as well as Dean of Admissions. Secretary Chu has two grown sons, Geoffrey and Michael, by a previous marriage.

In announcing Dr. Chu's selection, President Obama said, "The future of our economy and national security is inextricably linked to one challenge: energy. Steven has blazed new trails as a scientist, teacher, and administrator, and has recently led the Berkeley National Laboratory in pursuit of new alternative and renewable energies. He is uniquely suited to be our next Secretary of Energy as we make this pursuit a guiding purpose of the Department of Energy, as well as a national mission." Dr. Chu was sworn into office as the 12th Secretary of Energy on January 21, 2009.

Dr. John P. Holdren

Assistant to the President for Science and Technology

Director of the White House Office of Science and Technology Policy

Co-Chair of the President's Council of Advisors on Science and Technology (PCAST)

Dr. John P. Holdren is Assistant to the President for Science and Technology, Director of the White House Office of Science and Technology Policy, and Co-Chair of the President's Council of Advisors on Science and Technology (PCAST). Prior to joining the Obama administration Dr. Holdren was Teresa and John Heinz Professor of Environmental Policy and Director of the Program on Science, Technology, and Public Policy at Harvard University's Kennedy School of Government, as well as professor in Harvard's Department of Earth and Planetary Sciences and Director of the independent, nonprofit Woods Hole Research Center. Previously he was on the faculty of the University of California, Berkeley, where he co-founded in 1973 and co-led until 1996 the interdisciplinary graduate-degree program in energy and resources. During the Clinton administration Dr. Holdren served as a member of PCAST through both terms and in that capacity chaired studies requested by President Clinton on preventing theft of nuclear materials, disposition of surplus weapon plutonium, the prospects of fusion energy, U.S. energy R&D strategy, and international cooperation on energy-technology innovation.

Dr. Holdren holds advanced degrees in aerospace engineering and theoretical plasma physics from MIT and Stanford. He is a member of the National Academy of Sciences, the National Academy of Engineering, and the American Academy of Arts and Sciences, as well as foreign member of the Royal Society of London. He served as a member of the MacArthur Foundation’s Board of Trustees from 1991 to 2005, as Chair of the National Academy of Sciences Committee on International Security and Arms Control from 1994 to 2005, and as Co-Chair of the independent, bipartisan National Commission on Energy Policy from 2002 to 2009. A former president of the American Association for the Advancement of Science, his awards include a MacArthur Foundation Prize Fellowship, the John Heinz Prize in Public Policy, the Tyler Prize for Environmental Achievement, and the Volvo Environment Prize. In December 1995 he gave the acceptance lecture for the Nobel Peace Prize on behalf of the Pugwash Conferences on Science and World Affairs, an international organization of scientists and public figures in which he held leadership positions from 1982 to 1997.

Dr. Steven E. Koonin

Under Secretary for Science

Dr. Steven E. Koonin was confirmed by the Senate on May 19, 2009 as the second Undersecretary for Science in the U.S. Department of Energy (DOE). Dr. Koonin brings to the post a distinguished career as a university professor and administrator at the California Institute of Technology (Caltech) as well as experience in industry.

Under Secretary Koonin joined the Caltech faculty in 1975, was a research fellow at the Neils Bohr Institute during 1976 - 1977, and was an Alfred P. Sloan Foundation Fellow during 1977 - 1979. He became a professor of theoretical physics at Caltech in 1981 and served as Chairman of the Faculty from 1989 - 1991. Dr. Koonin was the seventh provost of Caltech (from 1995 - 2004). In that capacity, he was involved in identifying and recruiting 1/3 of the Institute's professorial faculty and left an enduring legacy of academic and research initiatives in the biological, physical, earth, and social sciences, as well as the planning and development of the Thirty-Meter Telescope project.

As the Chief Scientist at BP between 2004 and early 2009, Dr. Koonin developed the long-range technology strategy for alternative and renewable energy sources. He managed the firm's university-based research programs and played a central role in establishing the Energy Biosciences Institute at the University of California Berkeley, the Lawrence Berkeley National Laboratory, and the University of Illinois at Urbana-Champaign.

Dr. Koonin was a member and past chair of the JASON Study Group, advising the U.S. Government on technical matters of national security. He has served on numerous advisory committees for the Department of Energy, the National Science Foundation, and the Department of Defense, including the Defense Science Board and the CNO's Executive Panel. He is a member of the Council on Foreign Relations and a fellow of the American Physical Society, the American Association for the Advancement of Science, and the American Academy of Arts and Sciences, and a former member of the Trilateral Commission.
In 1985, Dr. Koonin received the Humboldt Senior U.S. Scientist Award and, in 1998 the Department of Energy's E. O. Lawrence Award for " his broad impact on nuclear many-body physics, on astrophysics, and on a variety of related fields where sophisticated numerical methods are essential; and in particular, for his breakthrough in nuclear shell model calculations centered on an ingenious method for dealing ,with the huge matrices of heavy nuclei by using path integral methods combined with the Monte Carlo technique." He was elected to membership in the US National Academy of Sciences in 2010.

Dr. Koonin's research interests have included nuclear astrophysics; theoretical nuclear, computational, and many-body physics; and global environmental science. He has been involved in scientific computing throughout his career and is a strong advocate for research into renewable energies and alternate fuel sources. His academic research in computational and nuclear physics has impacted the direction of science both nationally and internationally. He has supervised more than 25 PhD students, produced more than 200 peer-reviewed research publications, and authored or edited 3 books, including a pioneering textbook on Computational Physics in 1985.
Born in Brooklyn, New York, Dr. Koonin received his B.S. in Physics from Caltech in 1972, worked as a summer graduate student at Los Alamos from 1972-1975 and received his Ph.D. in Theoretical Physics from the Massachusetts Institute of Technology (MIT) in 1975. Dr. Koonin married his wife, Laurie, in 1975. They have three grown children, Anna, Alyson, and Benjamin.

Panelists

Transportation:

Stephen R. Brand
ConocoPhillips

Stephen R. Brand is currently a member of SM Energy Board of Directors, an Advisory Board member and Senior Executive Advisor for Welltec, an Advisory Board member for Glori Oil and a Senior Advisor for Clean Range Ventures.

He began his career with Phillips Petroleum Company in 1976 as a geologist for Exploration and Production (E&P). In 1980, he transferred to Denver as a geologist for the Minerals Group. He became supervisor of North America E&P in Houston in 1982. In 1989, he transferred to Bartlesville, Oklahoma, as a staff director for E&P and held that position until 1992. Beginning in 1992, he served as Canada region manager of North American E&P where he was also president of Phillips Petroleum Resources, Ltd. In 1995, he served as manager Worldwide Business Development, E&P. In 1998, he was named general manager, Australia division. Following the ConocoPhillips merger in 2002, Brand became president, Australasia, and then in 2005 was named vice president, Worldwide Exploration and Business Development, E&P. He assumed the role of senior vice president, Technology (R&D) in October 2007.

While president of Australasia he was responsible for the development of the Bayu-Undan integrated offshore gas condensate production facility and its onshore LNG plant. During his tenure as exploration vice president, significant prospects were identified and captured with subsequent significant discoveries made in deepwater Gulf of Mexico and the Browse Basin offshore northwest Australia as well as early entry into the Eagle Ford resource play. As senior vice president of Technology, innovative research programs were developed and initiated in nanotechnology, algae biofuels, low carbon hydrogen, organic solar cells, CO2 capture technology and dieselization.

He is currently Technology Task Group Chair for the National Petroleum Council's Future Transportation Fuels Study; a member of the Accenture Global Energy Board; and a member of the Biofuels Technical Review Panel, National Renewable Energy Laboratory.

He was born in Owatonna, Minnesota in 1949 and graduated from the University of Minnesota in 1971 with a Bachelor of Arts degree in Geology. He received a Master of Science degree in Geology in 1973 and a doctorate in 1976, both from Purdue University. In 2010, he was recognized as Distinguished Alumnus by both the University of Minnesota and Purdue University.

Dr. Andrew Brown
Delphi Corporation

Andrew Brown is Executive Director & Chief Technologist for Delphi Corporation. Delphi is a leading global supplier of mobile electronics and transportation systems, including powertrain, safety, steering, thermal, and controls & security systems, electrical/electronic architecture, and in-car entertainment technologies. Engineered to meet and exceed the rigorous standards of the automotive industry, Delphi technology is also found in computing, communications, consumer electronics, energy and medical applications. Headquartered in Troy, Michigan, Delphi has approximately 169,500 employees and operates 156 wholly owned manufacturing sites in 34 countries with sales of $22.3 billion in 2007.

As Executive Director & Chief Technologist, Dr. Brown provides leadership on corporate innovation and technology issues to help achieve profitable competitive advantage. He also represents Delphi globally in outside forums on matters of innovation and technology including government and regulatory agencies, customers, alliance partners, vendors, contracting agencies, academia, etc. Prior to this assignment, Dr. Brown had responsibility for common policies, practices, processes and performance across Delphi's 17,000 member technical community globally and its budget of $2.0 billion, including establishing Delphi's global engineering footprint with new centers in Poland, India, China, Mexico, etc.

Dr. Brown was recently appointed by the National Research Council (NRC) to serve as chair of the Committee on Fuel Economy of Medium and Heavy Duty Vehicles. As part of the Energy Independence and Security Act of 2007, his 18 person committee composed of noted experts and consultants from industry, academia and government policy will develop a report evaluating medium-duty and heavy-duty fuel economy standards. The report will include an assessment of technologies and costs for improving such vehicles.

He is also the only Delphi member of the National Academy of Engineers and is also a member of the NRC Board on Energy and Environmental Systems and the SAE Foundation Board of Trustees.

Dr. William D. Provine
DuPont

Dr. William D. Provine is currently Director for DuPont's Biochemical Science and Engineering – BioFuels division of Central Research and Development. In his current role, Dr. Provine has responsibility for DuPont's biofuels research programs including the biobutanol and cellulosic ethanol development efforts. Dr. Provine also serves on the board of directors for Butamax Advanced Biofuels LLC and on the Technical Steering Committee for DuPont Danisco Cellulosic Ethanol LLC – two key joint ventures of DuPont. He joined DuPont in 1992 and has served in a variety of research, marketing, business development, and operations leadership roles including oversight for commercialization efforts in DuPont BioFuels as well as establishing and managing key strategic collaborations for DuPont.

David Sandalow
Assistant Secretary for Policy and International Affairs

As Assistant Secretary for Policy & International Affairs, David Sandalow helps coordinate policy and manage international activities at the U.S. Department of Energy. Prior to being confirmed as Assistant Secretary, Mr. Sandalow was Energy & Environment Scholar and a Senior Fellow in the Foreign Policy Studies Program of the Brookings Institution, as well as Energy & Climate Change Working Group Chair at the Clinton Global Initiative. He is the author of Freedom from Oil (McGraw-Hill, 2008) and editor of Plug-In Electric Vehicles: What Role for Washington? (Brookings Press, 2009). Mr. Sandalow has written widely on energy and environmental policy, including op-eds in the New York Times, Washington Post, Financial Times and other publications. Previously, he served as Assistant Secretary of State for Oceans, Environment & Science; Senior Director for Environmental Affairs, National Security Council; Associate Director for the Global Environment, White House Council on Environmental Quality; and Executive Vice President, World Wildlife Fund-US. Mr. Sandalow is a graduate of Yale College (BA Philosophy) and the University of Michigan Law School (JD).

David Vieau
A123

David Vieau is the president and CEO of A123 Systems. He brings more than 30 years of experience and leadership in developing rapid-growth technology and component businesses. Applying his expertise to A123 Systems, Mr. Vieau has led the expansion of the company from its initial creation to more than 1,700 employees globally. Under his leadership, A123 Systems has received nearly $350 million in private financing and $349 million in government grants and loans. Mr. Vieau also led the company through its initial public offering in September of 2009.

Prior to joining A123 Systems, Mr. Vieau held corporate officer positions at American Power Conversion serving as vice president of marketing and vice president of worldwide business development. During his nine years at American Power Conversion, Mr. Vieau helped grow the company from $50 million in revenue to $1.5 billion, making it the world leader in power protection for IT markets and employing 6,000 people globally.

Mr. Vieau earned a bachelor's degree in mechanical engineering from Syracuse University in 1972.

Stationary:

Ron Binz
Colorado PUC, retired

Ron Binz was appointed as Chairman of the Colorado Public Utilities Commission by Governor Bill Ritter in January 2007.

Prior to his appointment, Ron was President of Public Policy Consulting, a consultancy specializing in policy and regulatory issues in the telecommunications and energy industries. Ron also served until 2003 as President of the Competition Policy Institute (CPI), in Washington, D.C., a non-profit “consumer think tank” dedicated to bringing competition to telecommunications and energy markets in ways that benefit consumers.

For eleven years, until 1995, Ron directed the Colorado Office of Consumer Counsel, the state's utility consumer advocate. He was President of the National Association of State Utility Consumer Advocates (NASUCA) and chaired the group's Telecommunications Committee.

On behalf of NASUCA, CPI and NARUC, Chairman Binz has testified before Congressional committees sixteen times.

Ron served as the Co-Chair of the North American Numbering Council which advises the Federal Communications Commission on telephone numbering policies and served on the FCC’s Network Reliability Council.

Ron received a B.A. in Philosophy from St. Louis University in 1971 and an M.A. in Mathematics from the University of Colorado in 1977. He also completed course work for a Masters Degree in Economics from the University of Colorado.

Mark Brownstein
Environmental Defense Fund

Mark Brownstein is deputy director of Environmental Defense Fund's national energy program. Mark leads EDF's efforts on smart grid deployment, transmission development, wholesale and retail electric market design, and the environmentally sustainable siting of both renewable and conventional utility scale generation.

Mark was one of two EDF staff leads on the United States Climate Action Partnership, a coalition of the nation's leading corporations and environmental groups championing immediate action on federal legislation to cap and substantially reduce greenhouse gas pollution across the U.S. economy. He is co-author of the Carbon Principles, a set of enhanced due diligence principles for investment banks considering the financing of coal fired power plants.

Prior to joining EDF, Mark was director of Enterprise Strategy for Public Service Enterprise Group (PSEG), where he worked directly with PSEG's senior leadership in crafting and implementing the corporation's business strategy. Over his nearly 10-year career with PSEG, Mark served the company in a variety of environmental management roles, including director of Environmental Strategy and Policy. Mark was active in numerous environmental legislative and regulatory proceedings including efforts to develop federal legislation limiting emissions of sulfur dioxide, nitrogen oxides, mercury, and carbon dioxide from power plants, and the Environmental Council of States' (ECOS) 37-state Ozone Transport Assessment Group (OTAG) process, which developed specific recommendations to address the persistent problem of ozone transport in the eastern United States. Mark was also an active member of the U.S. EPA's Clean Air Act Advisory Committee and New Jersey’s Renewable Energy Task Force.

Richard Cowart
Regulatory Assistant Project

Richard Cowart is a Director of The Regulatory Assistance Project, a nonprofit technical and policy institute that advises governmental decision-makers on energy and environmental issues.

One of the nation’s most experienced regulatory commissioners, Mr. Cowart served as Commissioner and Chair of the Vermont Public Service Board (PSB) for thirteen years under three Governors (1986-1999). He was elected President of the New England Conference of Public Utility Commissioners, and Chair of the NARUC's national Committee on Energy Resources and the Environment. He also served for four years as Chair of the National Council on Competition and the Electric Industry, an association of state and federal officials and legislators responsible for power sector restructuring in the U.S.

Before his appointment to the Vermont PSB, Mr. Cowart was Assistant Professor and director of the program in Planning and Law at the University of California, Berkeley (1980-85), and Executive Officer and General Counsel of the Vermont Environmental Board (1978-80). He received his B.A. from Davidson College, and the J.D. and Master of City Planning degrees from UC Berkeley, where he was Editor-in-Chief of the Ecology Law Quarterly (1976-77).

Mr. Cowart lives in Calais Vermont, where he manages a family Christmas tree farm and a timberland land trust.

Patricia Hoffman
Assistant Secretary for the Office of Electricity Delivery and Energy Reliability

Patricia A. Hoffman was named Assistant Secretary for the Office of Electricity Delivery and Energy Reliability (OE) at the United States Department of Energy (DOE) in June 2010 after serving as Principal Deputy Assistant Secretary since November 2007. The focus of her responsibility is to provide leadership on a national level to modernize the electric grid, enhance the security and reliability of the energy infrastructure and facilitate recovery from disruptions to the energy supply both domestically and internationally. This is critical to meeting the Nation's growing demand for reliable electricity by overcoming the challenges of our Nation's aging electricity transmission and distribution system and addressing the vulnerabilities in our energy supply chain.

Prior to her current position, Ms. Hoffman served in a dual capacity as Deputy Assistant Secretary (DAS) for Research and Development (R&D) and Chief Operating Officer (COO) within OE. During her tenure as the DAS for R&D, she developed the long-term research strategy and improved the management portfolio of research programs for modernizing and improving the resiliency of the electric grid. This included developing and implementing sensors and operational tools for wide-area monitoring, energy storage research and demonstration and the development of advanced conductors to increase the capacity and flexibility of the grid. She also initiated a new research effort focused on integrating and distributing renewable energy through the electric grid, such as promoting plug-in hybrid electric vehicles and implementing smart grid technologies to maintain system reliability. As COO, she managed the OE business operations, including human resources, budget development, financial execution, and performance management.

Prior to joining OE, she was the Program Manager for the Federal Energy Management Program within the Office of Energy Efficiency and Renewable Energy at DOE. This program guides the Federal government to "lead by example" promoting energy efficiency, renewable energy and smart energy management. Complementing her building energy efficiency experience, she also was the Program Manager for the Distributed Energy Program, which conducted research on advanced natural gas power generation and combined heat and power systems. Her accomplishments included the successful completion of the Advanced Turbine System program resulting in a high-efficiency industrial gas turbine power generation product.

Ms. Hoffman holds a Bachelor of Science and a Master of Science in Ceramic Science and Engineering from Pennsylvania State University.

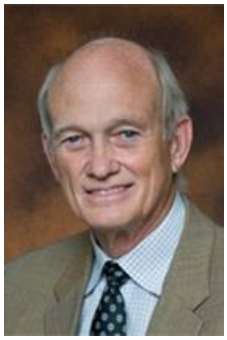
Dr. J. Michael McQuade
UTC

Dr. J. Michael McQuade was named senior vice president, science and technology in September 2006. His responsibilities include overseeing UTC Power and UTC's Research Center and providing strategic oversight and guidance for research and development activities throughout the corporation.

McQuade has held senior R&D and general management positions with technology development oversight at 3M and Eastman Kodak. Beginning in 2002, he was vice president of 3M's Medical Division.. Previously, he was president of Eastman Kodak's Health Imaging business, including responsibility for its research laboratories. Prior to 1998, McQuade held several positions at Imation Corp. both before and after its spinoff from 3M in 1996.

McQuade holds a doctorate, master of science and bachelor of science degrees in physics from Carnegie Mellon University.

Role of DOE: Technology Policy:



Dr. William F. Brinkman
Director of the Office of Science, Department of Energy

Dr. William F. Brinkman was confirmed by the Senate on June 19, 2009 and sworn in on June 30, 2009 as the Director of the Office of Science in the U.S. Department of Energy. He joins the Office of Science at a crucial point in the Nation's history as the country strives toward energy security – a key mission area of the Department of Energy.

Dr. Brinkman brings decades of experience in managing scientific research in government, academia, and the private sector to the post. He leaves a position as Senior Research Physicist in the Physics Department at Princeton University where he played an important role in organizing and guiding the physics department's condensed matter group for the past eight years.

He joined Bell Laboratories in 1966 and after a brief sojourn as the Vice President of Research at DOE's Sandia National Laboratories, where he oversaw the expansion of its computer science efforts, Dr. Brinkman returned to Bell Laboratories in 1987 to become the executive director of its physics research division. He advanced to the Vice President of Research in Bell Laboratories in 2000, where he directed research to enable the advancement of the technology underlying Lucent Technologies' products. Brinkman led a research organization that developed many of the components and systems used in communications today, including advanced optical and wireless technologies.

He was born in Washington, Missouri and received his BS and Ph.D. in Physics from the University of Missouri in 1960 and 1965, respectively. Since this time, he has served as a leader of the physics community. He has spent one year as a National Science Foundation postdoctoral fellow at Oxford University. He has served as president of the American Physical Society and on a number of national committees, including chairmanship of the National Academy of Sciences Physics Survey and their Solid-State Sciences Committee. He is a member of the American Philosophical Society, National Academy of Sciences, and the American Academy of Arts and Sciences.

Hon. Kathleen McGinty
Element, LLC

The Honorable Kathleen A. McGinty is founding partner, Peregrine Technology Partners LLC, a firm focused on the commercialization of clean technologies. She is also a Director at NRG Energy, Inc., a leading wholesale power company.

Ms. McGinty recently stepped down as Secretary of the Pennsylvania Department of Environmental Protection and as Chair of the Pennsylvania Energy Development Authority. During her tenure, she helped lead the state's successful effort to attract market-leading renewable energy companies to headquarter and manufacture in Pennsylvania, bringing more than $1 billion in new investment and creating some 3,000 new jobs.

Previous to her service in Pennsylvania, Ms. McGinty was Bill Clinton's Chair of the White House Council on Environmental Quality and Legislative Assistant and Environmental Advisor to then-Senator Al Gore. She also was a Senior Visiting Fellow for a year in New Delhi, India at TERI, the Tata Energy Research Institute. Ms. McGinty holds a Bachelor of Science degree in Chemistry from Saint Joseph's University and a Juris Doctor from Columbia University School of Law. She and her husband Dr. Karl Hausker have three daughters and live in Camp Hill, Pennsylvania.

Professor Daniel Schrag
Harvard University

Professor Daniel Schrag studies climate and climate change over the broadest range of Earth history. He has examined changes in ocean circulation over the last several decades, with particular attention to El Niño and the tropical Pacific. He has worked on theories for Pleistocene ice-age cycles including a better determination of ocean temperatures during the Last Glacial Maximum, 20,000 years ago.

Dan also helped develop the Snowball Earth hypothesis, proposing that a series of global glaciations occurred between 750 and 580 million years ago that may have led to the evolution of multicellular animals. Currently he is working with economists and engineers on technological approaches to mitigating future climate change.

David Terry
National Association of State Energy Officials
Association of State Energy Research and Technology Transfer Institutions

David Terry is the Executive Director of both the National Association of State Energy Officials (NASEO) and the Association of State Energy Research and Technology Transfer Institutions (ASERTTI). Mr. Terry has worked with NASEO in a variety of capacities since 1996. He leads NASEO's programs in support of the nation's 56 State and Territory Energy Offices which are focused on developing transformative energy policies, advancing energy related economic development, and fostering technology deployment. The organization communicates the states' views on virtually all national energy issues, including electricity policy, energy efficiency market transformation, renewable energy development, energy assurance and reliability, building codes and efficiency, and transportation.

Mr. Terry has also served as Executive Director of NASEO's "sister" association ASERTTI since 2004. ASERTTI's members are state public interest institutions focused on applied research in the energy efficiency and renewable energy sectors. Members include such institutions as NYSERDA, Desert Research Institute, GTI, EPRI, and National Laboratories. The organization is launching a new initiative to engage university based energy commercialization centers and enhance collaboration with State Energy Offices, private investors, and other public-sector research institutions.

Mr. Terry has 22 years of experience working on a range of energy issues for such organizations as the Governors' Wind Energy Coalition, Energy Services Coalition, Governors' Biofuels Coalition, National Academy of Sciences, and the U.S. Department of Energy. He serves on the Board of Directors of several national non-profit organizations and owns an energy consulting firm focused on state energy issues and analysis.

Prior to working in the energy area, Mr. Terry was a statistical analyst for a market research firm, a transportation analyst with the National Academy of Sciences, and a researcher for The Washington Post. He received a BA degree from Bowling Green State University, Bowling Green, Ohio, and he has completed graduate coursework in statistics and marketing at Virginia Tech, Blacksburg, Virginia.

Sue Tierney
Analysis Group

Dr. Tierney, a Managing Principal at Analysis Group, is an expert on energy economics, regulation and policy, particularly in the electric and gas industries. She has consulted to business, industry, government, and other organizations on energy markets, economic and environmental regulation and strategy, and energy facility projects. Her expert witness, business consulting and arbitration services have involved market analyses, wholesale and retail market design, contract disputes, resource planning and analysis, asset valuations, regional transmission organizations, the siting of generation and transmission and natural gas pipeline projects, natural gas markets and policy, competitive power procurement design and monitoring, electric system reliability, ratemaking policy, energy efficiency and renewables, climate change policy, and other environmental policy and regulation. She has participated as an expert and advisor in civil litigation cases, regulatory proceedings before state and federal agencies, arbitrations, negotiations, mediations, and business consulting engagements.

Prior to joining Analysis Group, she was Senior Vice President at Lexecon. She also served as the Assistant Secretary for Policy at the U.S. Department of Energy, appointed by President Bill Clinton and confirmed by the U.S. Senate. Previously, she was the Secretary for Environmental Affairs in Massachusetts under Governor William Weld, and Commissioner at the Massachusetts Department of Public Utilities, appointed by Governor Michael Dukakis. She served as Chairman of the Board of the Massachusetts Water Resources Authority, and executive director of the Massachusetts Energy Facilities Siting Council. She recently chaired the Massachusetts Ocean Management Task Force and the Massachusetts Oceans Advisory Commission. She co-chaired the Department of Energy Agency Review Team for the Obama/Biden Presidential Transition Team.

Dr. Tierney has authored numerous articles and speaks frequently at industry conferences. She serves on a number of boards of directors and advisory committees, including chairing the Policy Subgroup of the National Petroleum Council's on-going study of the natural gas and oil resource base in North America. She is a member of the U.S. Secretary of Energy Advisory Board, and chairs the External Advisory Council of the National Renewable Energy Laboratory (NREL). She is also a director of Evergreen Solar, Inc.; a director of EnerNOC, Inc.; a director of Ze-gen, Inc. She chairs the board of directors of the Energy Foundation; is a director of Clean Air – Cool Planet, the World Resources Institute, the Clean Air Task Force, and the Northeast States Clean Air Foundation; and is a member of the China Sustainable Energy Program's Policy Advisory Council. Previously, she co-chaired the National Commission on Energy Policy, and was chair of the Electricity Innovations Institute, a director of Catalytica Energy Systems Inc., a director of the Electric Power Research Institute, a member of the Advisory Council of the New England Independent System Operator, a member of the Environmental Advisory Council of the New York Independent System Operator, a member of the Massachusetts Renewable Energy Trust Advisory Council. She has taught at the Department of Urban Studies and Planning at MIT, and at the University of California at Irvine, and she earned her Ph.D. and M.A. degrees in regional planning at Cornell University and her B.A. at Scripps College.

Balancing the Portfolio:

Hon. Eileen Claussen
Pew Center on Global Climate Change and Strategies for the Global Environment

Eileen Claussen is the President of the Pew Center on Global Climate Change and Strategies for the Global Environment. Ms. Claussen is the former Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs.

Prior to joining the Department of State, Ms. Claussen served for three years as a Special Assistant to the President and Senior Director for Global Environmental Affairs at the National Security Council. She has also served as Chairman of the United Nations Multilateral Montreal Protocol Fund.

Ms. Claussen was Director of Atmospheric Programs at the U.S. Environmental Protection Agency, where she was responsible for activities related to the depletion of the ozone layer; Title IV of the Clean Air Act; and the EPA's energy efficiency programs, including the Green Lights program and the Energy Star program.

Ms. Claussen is a member of the Council on Foreign Relations, the Ecomagination Advisory Board, the Harvard Environmental Economics Program Advisory Panel, and the U.S. Commodity Future Trading Commission's Advisory Committee. She is the recipient of the Department of State's Career Achievement Award and the Distinguished Executive Award for Sustained Extraordinary Accomplishment. She also served as the Timothy Atkeson Scholar in Residence at Yale University.

Dr. Arun Majumdar
Senior Advisor to the Secretary
Director of the Advanced Research Projects Agency - Energy (ARPA-E)

Dr. Arun Majumdar became the first Director of the Advanced Research Projects Agency - Energy (ARPA-E), the country's only agency devoted to transformational energy research and development, in October 2009. Dr. Majumdar also currently serves as Senior Advisor to the Secretary.

Prior to joining ARPA-E, Dr. Majumdar was the Associate Laboratory Director for Energy and Environment at Lawrence Berkeley National Laboratory and a Professor of Mechanical Engineering and Materials Science and Engineering at the University of California, Berkeley. His highly distinguished research career includes the science and engineering of energy conversion, transport, and storage ranging from molecular and nanoscale level to large energy systems. In 2005, Dr. Majumdar was elected a member of the National Academy of Engineering for this pioneering work.

At Berkeley Labs and UC Berkeley, Dr. Majumdar helped shape several strategic initiatives in the areas of energy efficiency, renewable energy, and energy storage. He also testified before Congress on how to reduce energy consumption in buildings. Dr. Majumdar has also served on the advisory committee of the National Science Foundation's engineering directorate, was a member of the advisory council to the materials sciences and engineering division of the Department of Energy's Basic Energy Sciences, and was an advisor on nanotechnology to the President's Council of Advisors on Science and Technology.

Additionally, Dr. Majumdar has served as an advisor to startup companies and venture capital firms in the Silicon Valley.

He received his bachelor's degree in Mechanical Engineering at the Indian Institute of Technology, Bombay in 1985 and his Ph.D. from the University of California, Berkeley in 1989.

VADM Dennis McGinn
ACORE

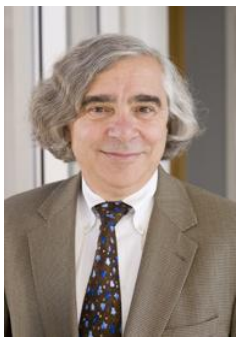
Retired Vice Admiral Dennis V. McGinn took the helm in 2008 as Chairman and CEO of RemoteReality, a high technology optical and software research firm. He was previously with Battelle Memorial Institute, the world's largest nonprofit independent research and development organization, where he was a corporate officer and led the energy, transportation and environment division. Additional assignments with Battelle included serving as VP of strategic planning and national security business development, and as a director on the board of Brookhaven Science Associates.

Admiral McGinn served 35 years with the U.S. Navy as a naval aviator, test pilot, aircraft carrier commanding officer, and national security strategist. His last assignment with the Navy was Deputy Chief of Naval Operations for Warfare Requirements and Programs at the Pentagon, where he oversaw the development of future U.S. Navy capabilities. In a previous operational leadership role, he commanded the U.S. Third Fleet, responsible for some 50 million square miles of the eastern and northern Pacific Ocean. As Third Fleet Commander, he was recognized for leading great advances in operational innovation, rapid prototyping of sea-based information technology, and international naval force experimentation and coordination.

Admiral McGinn is actively engaged in efforts at the national level to highlight the close link between energy, climate and national security. He is a strong advocate for innovative government policy, public and private partnerships, and investments that will promote clean energy growth and innovation. He has testified before the U.S. Congress on the national and economic security implications of climate change and our dependence on fossil fuels, highlighting the need for action on clean energy.

Admiral McGinn serves as co-chairman of the CNA Military Advisory Board, as a director of the National Conference on Citizenship, as a senior policy advisor to the American Council on Renewable Energy, and as an international security senior fellow at the Rocky Mountain Institute. He is a widely recognized energy and national security expert, who has interviewed with major news networks and national journalists. He is regularly asked to participate in public forums about energy and national security and has been published in newspaper articles and opinion pages across the country.

Admiral McGinn previously served as chairman of the board of directors of the U.S. Naval Institute and as a commissioner on the National Commission on Disabled Veterans' Benefits in Washington, D.C. He received a B.S. degree in naval engineering from the U.S. Naval Academy, attended the national security program at the Kennedy School of Government, Harvard University, and was a Chief of Naval Operations strategic studies fellow at the U.S. Naval War College.



Dr. Ernie Moniz
Massachusetts Institute of Technology

Ernest J. Moniz is the Cecil and Ida Green Professor of Physics and Engineering Systems, Director of the Energy Initiative, and Director of the Laboratory for Energy and the Environment at the MIT Department of Physics, where he has served on the faculty since 1973. Professor Moniz served as Under Secretary of the Department of Energy from 1997 until January 2001 and, from 1995-97, as Associate Director for Science in the Office of Science and Technology Policy in the Executive Office of the President.

At MIT, Prof. Moniz served as Head of the Department of Physics and as Director of the Bates Linear Accelerator Center. His principal research contributions have been in theoretical nuclear physics and in energy technology and policy studies. He currently serves on President Obama's Council of Advisors for Science and Technology (PCAST).

Professor Moniz received a Bachelor of Science degree summa cum laude in physics from Boston College, a doctorate in theoretical physics from Stanford University, and honorary doctorates from the University of Athens, the University of Erlangen-Nurenburg, and Michigan State University. He was a National Science Foundation Postdoctoral Fellow at Saclay, France, and at the University of Pennsylvania. Professor Moniz is a Fellow of the American Association for the Advancement of Science, the Humboldt Foundation, and the American Physical Society and a member of the Council on Foreign Relations. He received the 1998 Seymour Cray HPCC Industry Recognition Award for vision and leadership in advancing scientific simulation and, in 2008, the Grand Cross of the Order of Makarios III for contributions to development of research, technology and education in Cyprus and the wider region.

Rep. Phil Sharp
Resources for the Future

Phil Sharp became President of Resources for the Future on September 1, 2005. His career in public service includes ten terms as a member of the U.S. House of Representatives from Indiana, and a lengthy tenure on the faculty of the John F. Kennedy School of Government and the Institute of Politics at Harvard University. He will be serving, effective immediately, on the National Academy of Sciences Committee on America's Climate Choices.

Prior to his service in Congress from 1975 to 1995, Sharp taught political science at Ball State University from 1969 to 1974. Following his decision not to seek an eleventh consecutive term in the House, Sharp joined Harvard's Kennedy School, where he was a Lecturer in Public Policy from 1995 to 2001. He served as Director of Harvard's Institute of Politics from 1995 to 1998 and again from 2004 until August 2005. He also was a Senior Research Fellow in the Environmental and Natural Resources Program from 2001 to 2003.

During his 20-year congressional tenure, Sharp took key leadership roles in the development of landmark energy legislation. He was a driving force behind the Energy Policy Act of 1992, which led to the restructuring of the wholesale electricity market, promoted renewable energy, established more rigorous energy-efficiency standards, and encouraged expanded use of alternative fuels. He also helped to develop a critical part of the 1990 Clean Air Act Amendments, providing for a market-based emissions allowance trading system.

After leaving Congress, Sharp was a member of the National Research Council's Committee on Effectiveness and Impact of Corporate Average Fuel Economy (CAFE) Standards, which issued its report in 2001. He chaired the Secretary of Energy's Electric Systems Reliability Task Force, which issued its report in 1998.

Born in Baltimore in 1942, Sharp was raised in Elwood, Indiana. After a year at DePauw University, he transferred to Georgetown University's School of Foreign Service, where he graduated cum laude in 1964. He spent the summer of 1966 at Oxford University and received his Ph.D. in government from Georgetown in 1974.