6-7-2006

AGENDA: Climate Change and the Future of the American West: Exploring the Legal and Policy Dimensions

University of Colorado Boulder. Natural Resources Law Center

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Climate Change and the Future of the American West
Exploring the Legal and Policy Dimensions

June 7-9, 2006
Twenty-Seventh Summer Conference
University of Colorado Law School
Natural Resources Law Center
Fleming Law Building
Boulder, Colorado

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Natural Resources Law Center
University of Colorado School of Law
June 7-9, 2006

Climate Change and the Future of the American West:
Exploring the Legal and Policy Dimensions

“Global warming exists and we have to do something about it.”
John H. Marburger III, Science Adviser to President George W. Bush
Princeton University, Spring, 2005

Day One  Wednesday, June 7, 2006

7:00 a.m.  Registration and Coffee

8:00 a.m.  Welcomes and Announcements
Dean David Getches, University of Colorado School of Law
Professor Mark Squillace, Director, Natural Resources Law Center

Session 1. UNDERSTANDING CLIMATE CHANGE

8:15 a.m.  Opening Address
Why should we care about climate change?
Ray Dempsey, VP & Commercial Manager - Western Hemisphere Region, BP America, Inc

8:45 a.m.  New Thinking in Climate Science
Moderator: Professor William Travis, University of Colorado,
Department of Geography
Dr. Gerald Meehl, Senior Scientist, National Center for Atmospheric Research
Dr. Warren Washington, Senior Scientist, National Center for Atmospheric Research

9:45 a.m.  Break

Session 2. COPING WITH CLIMATE CHANGE IN THE AMERICAN WEST

10:15 a.m.  A. Climate Change and Water Resources
Moderator: Doug Kenney, Natural Resources Law Center,
Brad Udall, Executive Director, CIRES Western Water Assessment
Jeanine Jones, California Department of Water Resources
Dr. Richard Palmer, Professor and Director, Water Resources Management and Drought Planning Group, University of Washington

11:30 a.m.  B. Climate Change and Agriculture
Moderator, Denise Fort, Professor, University of New Mexico School of Law, Albuquerque
Dr. Tadeusz (Tad) Patzek, Professor of Petroleum Engineering, University of California at Berkeley, Berkeley, CA
Dr. David Carlson, President, Resource Analysis, Inc, Denver, CO

12:30 p.m. Lunch Program: The Bush Administration and Climate Change
Trigg Talley, Acting Director, Office of Global Change, U.S. Department of State

2:00 p.m.  B. Climate Change and the Ecological Resources of the West
Dr. Christopher Field, Director, Department of Global Ecology, Carnegie Institution of Washington, DC

2:45 p.m. Break

3:15 p.m. D. Climate Change and its Implications for Land Use Planning and Transportation
Moderator: Professor Nestor Davidson, University of Colorado School of Law
Robert Yuhnke, Robert E. Yuhnke & Associates, Boulder, CO
John Casey, Land Use Attorney, Robinson & Cole, Hartford, CT

4:30 p.m. The Ethical Dimension: Ethics and Climate Change
Dr. Dale Jamieson, New York University, New York NY
Commentator, Dr. Michael (Mickey) Glantz, Center for Capacity Building, National Center for Atmospheric Research, Boulder, CO
Day Two: Thursday, June 8, 2006

Session 3.  CLIMATE CHANGE AND ENERGY

8:15 a.m.  Energy Technologies and Strategies for Addressing Climate Change
Moderator:  Professor Lakshman Guruswamy, Director, Energy Environment Security Initiative (EESI), Professor of International Environmental Law, University of Colorado School of Law
Dr. Robert Williams, Senior Research Scientist, Princeton University, Princeton, NJ
Dr. Martin Hoffert, Department of Physics, New York University

9:45 a.m. Break

Session 4.  FINDING SOLUTIONS

10:15 a.m.  A.  Beyond Kyoto: Climate Change and International Law
Moderator:  Gary Bryner, Research Associate, NRLC
Fabio Feldmann, Executive Secretary, São Paulo Forum on Global Climate Changes and Biodiversity, Brazil
Annie Petsonk, Environmental Defense, Washington, DC
James Reilly, Senior Energy & Environment Advisor, British Embassy, Washington DC

11:30 a.m.  Lunch on your own & tours of the new Wolf Law Building

1:00 p.m.  B.  Climate Change and Federal Law
Moderator:  Sarah Krakoff, Associate Professor, University of Colorado School of Law
Kyle W. Danish, Van Ness Feldman, Washington, DC
Peter Lehner, Chief, Environmental Protection Bureau, New York Attorney General’s Office
Dr. Jana Milford, Associate Professor in Mechanical Engineering and the Center for Combustion and Environmental Research, Director of the Environmental Engineering Program, University of Colorado at Boulder

2:15 p.m.  C.  State and Local Initiatives
Moderator, Dr. Roger Pielke, Jr, CIRES, University of Colorado
Franz T. Litz, Climate Change Policy Coordinator, New York State Department of Environmental Conservation
Fran Pavley, California Assemblywoman
Randy Udall, Community Office for Resource Efficiency (CORE)
3:15 p.m.  Break

3:45 p.m.  D.  Climate Change and Private Sector Initiatives
Moderator: Alison Peters, University of Colorado Leeds School of
Business
Tom Arnold, Terrapass, Inc., Menlo Park, CA
Evan Evans, P.E., Vice President and Director of Engineering,
Econergy International, Boulder, CO
Joe Siegel, Senior Attorney, Environmental Protection Agency,
Region 2, New York

5:00  Reception (Fleming Law Building lobby)

Day Three  Friday, June 9, 2006

Session 5.  “Doing Something” About Climate Change

8:30 a.m.  A.  Adapting to Climate and Climatic Change
Dr. Roger Pulwarty, Research Scientist, National Oceanic and
Atmospheric Administration /CIRES, Boulder

9:15 a.m.  B.  A Rocky Mountain Greenhouse Gas Initiative: A Climate
Agenda for the American West
Moderator: Dr. Michele Betsill, Department of Political Science,
Colorado State University
Jim Norton, Director, Environmental Protection Division, New Mexico
Environment Department
Steve Owens, Director, Arizona Department of Environmental Quality
Heidi VanGenderen, Wirth Chair in Environmental and Community
Development Policy, University of Colorado Denver

10:30 a.m.  Break

11:00 a.m.  C.  Taking the Long View: Climate Change and the Future of the
American West
Moderator: David Getches, University of Colorado School of Law
Maggie Fox, President, America Votes, Boulder, CO
Dr. Susan Avery, Interim Provost and Executive Vice-Chancellor for
Academic Affairs, University of Colorado
Dr. Roger Pielke, Jr., Professor, Environmental Studies, Center for
Science and Technology Policy Research, University of Colorado

12:00 p.m. Questions, Comments and Discussion
CONFERENCE CONCLUDES
**SPEAKER BIOS**

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Tom is a 2005 Honors MBA graduate of the Wharton School. At Wharton, he was co-chair of the Wharton Technology Conference and a VP in the Wharton Technology Club and Wharton Outdoor Club. He also participated in the first Wharton Leadership Venture to Antarctica where he learned first hand the impact of global warming on higher latitude ecosystems. Tom is a recovering technologist. Prior to Wharton, Tom held Senior Manager positions at Redback Networks and spent two years on strategic technology issues at Mercer Management Consulting. In addition to his professional pursuits, Tom is also active in the community, most recently as a business advisor for Pacific Community Ventures, a non-profit organization offering capital and services to low-income businesses in California. Tom is also an avid outdoorsman, athlete, and cyclist. Notable accomplishments include a solo walk across Spain (800km) and a 10:32 double century. Tom holds an AB in Economics from Dartmouth College.

**Susan K. Avery, Provost**
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Avery received her Ph.D. from the University of Illinois in Atmospheric Science in 1978 and joined the University of Colorado faculty in 1982. She is currently serving as Interim Provost, a post she has had since April 2005. Prior to this she briefly served as Vice Chancellor for Research and Dean of the Graduate School and was Director of the Cooperative Institute for Research in Environmental Sciences (CIRES) for 10 years. She is a Professor of Electrical and Computer Engineering and a Fellow in CIRES.

Her interdisciplinary research includes radar studies of atmospheric circulations and precipitation, climate information and decision support, and science communication. She has over 75 articles in the refereed literature. She is a Fellow in the Institute of Electrical and Electronics Engineers and the American Meteorological Society, of which she also served as President. University of Colorado awards include the Robert L. Stearns, the Elizabeth Gee Memorial Lectureship Award, and the Margaret Willard Award. She was recently recognized by the University of Illinois by receiving the Distinguished Ogura Lectureship and the LAS Alumni Achievement Award.

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Michele Betsill is Assistant Professor of Political Science at Colorado State University. Her teaching and research interests are in the areas of international relations and global environmental politics, with a particular focus on the governance of global climate change. She is co-author (with Harriet Bulkeley) of Cities and Climate Change: Urban Sustainability and Global Environmental Governance (Routledge 2003).

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Gary C. Bryner joined the Natural Resources Law Center in August 1999. He has Bachelor's and Master's degrees in Economics from the University of Utah, a Ph.D from Cornell University in Government, and a J.D. from Brigham Young University. He has been a guest fellow at the Brookings Institution, The National Academy of Public Administration, and the Natural Resources Law Center. He is a member of the steering committee of the National Clean Air Network. Before coming to the Center, he directed the Public Policy program at Brigham Young University. His research interests include international environmental law and policy, air pollution law, and public lands and wilderness policy and law.

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David Carlson is President of Resource Analysis, Inc. – a consulting firm in agriculture and natural resources trends and analysis. Recent clients include the Governor’s Office of Energy Management and Conservation, the Colorado Department of Agriculture, and the Western Dairyfarmers’ Promotion Association.

Dr. Carlson also is an adjunct faculty member at the University of Colorado-Denver in the Civil Engineering Department, focusing on environmental economics. In addition, he is a student in the Joint Ph.D. Program in Religious and Theological Studies at the University of Denver and the Iliff School of Theology. His chief interest is ethical and theological perspectives on economic and environmental policy.

Dr. Carlson retired from the Colorado Department of Agriculture in May 2003 after 27 years as a resource analyst. During that time, he directed studies and projects in agricultural land conversion and growth, the future of the Ogallala Aquifer, irrigation water demand, renewable energy, and wildlife habitat protection. In his work, he has consistently favored voluntary, incentive-based, and cooperative approaches to resolve conflicts and enhance the future of agriculture.
From 1992 to 2004, Dr. Carlson served as Executive Director of the Colorado Agricultural Outlook Forum. Since its inception, the Forum has held an annual conference in February for 350 or more leaders on cutting-edge issues and opportunities facing Colorado agriculture. ‘Energy and Agriculture’ was the focus of the 2004 Forum; recent Forums have addressed water and drought, immigration and migrant labor issues, technology, environmental markets, and international trade.

In 1983, Dr. Carlson founded the Colorado Agricultural and Rural Leadership Program and served as its first Executive Director until 1989. More than 200 leaders have graduated from this program; many now serve in leadership positions in state and national agricultural organizations and in their communities.

Dr. Carlson graduated from the University of Colorado-Boulder with a Ph.D. in mathematics in 1971. He and his wife Bonnie live in Denver.

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John Casey is a member of Robinson & Cole LLP's Land Law Section and its Land Use and Zoning Group. He concentrates his practice on land use and environmental matters, with particular emphasis on planning, zoning, and wetlands permits and approvals, as well as litigation related to land use permitting and real property disputes. Mr. Casey has a particular interest in coastal development projects and is a member of Robinson & Cole's Coastal Resources Management Center. Prior to joining the firm, Mr. Casey was a lieutenant in the U.S. Navy, Judge Advocate General's Corps, fulfilling various legal duties while stationed at the Naval Submarine Base in Groton, Connecticut. After completing his military service, he worked for a litigation firm in New London, Connecticut, before coming to Robinson & Cole. Mr. Casey is admitted to practice in Connecticut, Rhode Island, and the U.S. District Court for the District of Connecticut. He earned his J.D., summa cum laude, from American University's Washington College of Law in Washington, D.C., and his B.A. in economics from the University of Connecticut.

Beth Conover, Special Advisor to the Mayor and Director
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Beth Conover is Special Advisor to the Mayor and Director of the Mayor’s Sustainable Development Initiative in Denver. Ms. Conover has worked for 20 years on issues of resource conservation and development.

She worked on community development and reforestation projects in Zimbabwe, southern Africa from 1989-91. From 1994 – 97 she was co-author of the Stapleton Development Plan for the redevelopment of the former airport in Denver, Colorado, and Director of Parks and
Environment for the Stapleton Development Corporation. From 1998 – 2003 she was the owner of Headwaters Consulting, LLC, providing strategic planning and program development services to a wide range of public, private and non-profit clients, including the Green Industries of Colorado, the State of Colorado, The Nature Conservancy, Cherry Creek Stewardship Partners and Mayor Webb’s South Platte River Commission. She joined the Hickenlooper Administration as a policy aide in 2003 and became Special Advisor for Sustainable Development in 2005.

She is a graduate of Denver Public Schools (1982), has a B.A. from Brown University (1987) and dual Master’s Degrees in Environmental Studies and Public/Private Management from Yale University (1994). She lives in Denver with her husband, Ken Snyder, and two sons.

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Nestor Davidson joined the CU School of Law faculty in 2004. Professor Davidson attended Columbia Law School, serving as Articles Editor on the Columbia Law Review and receiving the John Ordronaux Prize. After law school, Professor Davidson clerked for Judge David S. Tatel of the United States Court of Appeals for the District of Columbia Circuit and for Justice David H. Souter of the Supreme Court of the United States. Professor Davidson then served as Special Counsel to the Secretary of the U.S. Department of Housing and Urban Development, and practiced with the firm of Latham & Watkins LLP, focusing on commercial real estate, affordable housing, and community economic development. Professor Davidson’s scholarship focuses on property, land use, and affordable housing.

Professor Davidson has an A.B. Magna cum laude from Harvard College and a J.D. from Columbia Law School.

Ray Dempsey Jr., Vice President & Commercial Director
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Ray and his wife Alysia have four daughters, and they reside in Naperville, Illinois. He enjoys spending time with his family, traveling, and “being walked” by his dog, BJ.

Ray is currently the Vice President & Commercial Director for the Western Hemisphere Region, with responsibility for Crisis Management, Environmental Policy, Planning, Control, and Strategy. In addition, Ray serves as the Regional Director for Latin America, responsible for regional coordination of External Affairs activities. Prior to his current role, Ray held strategic and human resources roles in BP’s London corporate headquarters. Ray has spent 16 years
working in various engineering, environmental, strategy, and finance roles in BP’s refining, retail, and corporate staff organizations.

Ray holds a Bachelor’s degree in Industrial Engineering from Kansas State University, in Manhattan, Kansas, and a Master’s degree in Business Administration from Northwestern University’s Kellogg Graduate School of Management in Evanston, Illinois.

Ray is a member of the Board of Directors for the BP Foundation, and is a member of the Dean’s Advisory Council for the College of Engineering at his alma mater, Kansas State University. Ray is also a member of the BP Advisory Board for the National Society of Black Engineers.

**Evan A. Evans, Vice President and Director of Engineering**

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Evan A. Evans is a Vice President and the Director of Engineering for Econergy International Corporation, a global renewable energy and greenhouse gas management company based in Boulder. Beginning in 1979, his career has been exclusively focused on energy efficiency and renewable energy. Since 1997, he has been deeply engaged in applying this knowledge to the greenhouse gas emissions (GHG) mitigation field worldwide. This work involves developing GHG inventories for corporations and governments; designing corporate and government GHG mitigation plans, strategies, and programs; and providing technical support to individual GHG mitigation project developers.

Prior to joining Econergy in 1998, Mr. Evans was an owner of two energy consultancies, a staff engineer at two Denver-area energy engineering firms, and a systems analyst at the Solar Energy Research Institute (now the National Renewable Energy Laboratory).

He holds a BS degree in Urban Studies from Southern Methodist University and an MS degree in Energy Systems Engineering from the University of Colorado, Boulder.

**Fabio Feldmann, Director**

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Born in São Paulo, Brazil, on May 14th, 1955, Fabio Feldmann was elected as a federal legislator from the state of São Paulo for three consecutive terms (1986 – 1998) and was also appointed Secretary for the Environment of the State of São Paulo from January 1995 until 1998. Throughout his mandates in Congress he worked to promote awareness as well as to establish consistent policies and rules in all fields of sustainable development and human rights protection. One of his major legislative contributions is the creation of one of the world's most advanced constitutional texts with respect to environmental protection and the rights of indigenous people.
He was appointed Executive Secretary on the Brazilian Forum on Climate Change in 2000, and soon after was selected as the Presidential adviser for the World Summit on Sustainable Development. In 2005 he helped to create the Paulista Forum on Global Climate Change and Biodiversity, of which he is the Executive Secretary. For that he is active in promoting capacity building in the area of climate change, as well contributing to the drafting of a Brazilian Political Strategy for Climate Change so as to allow Brazil to achieve its objectives, thus, complying with its commitments under the United Nations Climate Change Convention and the Kyoto Protocol.

As an active environmentalist at Law School, he became one of the founding members of many of Brazil’s main environmental organizations, such as OIKOS, the S.O.S. Mata Atlântica Foundation (of which he was the first president), Funatura, and Biodiversitas, making him an exemplary leader for the environmental cause. In addition, he assisted International NGOs such as Greenpeace to establish a base in Brazil. In addition, provided counsel to many International NGOs such as Conservation International, The Nature Conservancy, LEAD International, Global Reporting Initiative (GRI), Ecological Footprint and the IAG board of the International Union for the Conservation of Nature (IUCN). In many cases he also served as a board member of these important organizations.

In addition, Mr. Feldmann has organized, written and sponsored several innovative publications on sustainable development issues, as an environmentalist, member of Congress, Secretary for the Environment of São Paulo, the head of the Brazilian Climate Change Forum and special advisor to President Cardoso on sustainable development issues. As an active participant in both Brazilian and Global Sustainable Development Issues, his statement was included in the Brundtland Commission’s final report. He has also lectured at various prestigious academic institutions, as well as places including the World Bank and has lectured once at the United States Congress.

Currently, Mr. Feldmann directs Fabio Feldmann Consultores, a consulting firm that specializes in sustainable development and environmental issues.

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Professor Fort is on the faculty of the University of New Mexico School of Law, where she teaches environmental law and related subjects. Her writing addresses water policy, river restoration, and the economics of water use. Fort has extensive experience in environmental and natural resources law and policy. She chaired the Western Water Policy Review Advisory Commission, a Presidential commission that prepared a seminal report on western water policy concerns.

Prior to her appointment at the Law School, Fort served as Director of the State of New Mexico's Environmental Improvement Division, as the Governor's representative to the National Governors Association, as an environmental attorney with New Mexico PIRG and Southwest Research and Information Center, as Executive Director of Citizens for a Better Environment (CA), and in other capacities concerned with environmental and natural resource matters. She writes extensively about water policy, and served two terms as a member of the National
Research Council’s Water, Science, and Technology Board. Currently, she is a member of a NRC committee preparing a report on the storage and recovery of groundwater. Professor Fort was the Secretary of New Mexico's Finance and Administration.

**David Getches, Dean**  
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David Getches became the fourteenth Dean of the University of the Colorado School of Law in July 2003. He is also the Raphael J. Moses Professor of Natural Resources Law and has taught and written in water law, public land law, environmental law, and Indian law for many years. Dean Getches has published several books including: *Water Resource Management*, with Tarlock and Corbridge (2002); *Water Law in a Nutshell* (1997); *Searching Out the Headwaters: Change and Rediscovery in Western Water Law and Policy*, with Bates, MacDonnell and Wilkinson (1993); *Controlling Water Use: The Unfinished Business of Water Quality Control*, with MacDonnell and Rice (1991); and *Federal Indian Law*, with Wilkinson and Williams (2005). He has written articles and book chapters, including several on Colorado River issues.

From 1983-1987, Dean Getches served as Executive Director of the Colorado Department of Natural Resources under Governor Richard D. Lamm. He also was the founding Director of the Native American Rights Fund (NARF). Dean Getches has consulted widely concerning indigenous peoples with governmental agencies and non-governmental organizations throughout the United States and in several foreign countries.

He received an AB from Occidental College in 1964 and J.D. from University of Southern California Law School in 1967.

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Lakshman Guruswamy, the Nicholas Doman Professor of International Environmental Law, was born in Sri Lanka, and is one of the world’s recognized experts in International Environmental Law. He teaches International Law, International Environmental Law, and U.S. Environmental Law at CU, and is widely published in these subjects in legal and scientific journals. Prior to joining the University of Colorado in 2001, he taught in Sri Lanka, the UK, and the Universities of Iowa and Arizona. Guruswamy, is a frequent speaker at scholarly meetings around the country and the world, and was among 20 distinguished international law scholars (and 3 Americans) specially chosen by the International Court of Justice to speak at the symposium celebrating the 50th anniversary of the ICJ or the World Court. He is the author of: *International Environmental Law in a Nutshell* (2d ed. 2003), *Legal Control of Land Based Sea Pollution* (1982), and the co-author of: *International Environmental Law and World Order* (2nd. 1999), *Biological Diversity: Converging Strategies* (1998), *Arms Control and the Environment* (2001).
Guruswamy is also the Director of the Energy Environment Security Initiative (EESI) of the University of Colorado. This is an ambitious interdisciplinary project that seeks to find renewable energy solutions for the energy deficits confronting not only the United States, but more particularly the developing countries of the world. He has organized numerous interdisciplinary symposiums including: "Energy and the Environment: Intersecting Global Issues," (1992), "Biological Diversity: Exploring the Complexities," (1994) "Redefining Environmental Protection" (1997), "Bioinvestment, Biobanks and Bioproperty" (1998), "Arms and the Environment: Preventing the Perils of Arms Control" (1999), and "The Cartography of Governance: Exploring the Province of Environmental NGO's" (2001). He is the author of over 30 scholarly articles published in law reviews as well as peer reviewed journals.

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Martin I. Hoffert is Professor Emeritus of Physics and former Chair of the Department of Applied Science at New York University. His academic background includes a B.S. (1960) in Aeronautical Engineering from the University of Michigan, Ann Arbor; M.S. (1964) and Ph.D. (1967) from the Polytechnic Institute of Brooklyn (now the Polytechnic Institute of New York) in Astronautics; and a Master of Arts in Liberal Studies, M.A.L.S. (1969) from the New School for Social Research where he did graduate work in sociology and economics. He has been on the research staff of the Curtiss-Wright Corporation, General Applied Science Laboratories, Advanced Technology Laboratories, Riverside Research Institute and National Academy of Sciences Senior Resident Research Associate at the NASA/Goddard Institute for Space Studies.

Prof. Hoffert has published broadly in fluid mechanics, plasma physics, atmospheric science, oceanography, planetary atmospheres, environmental science, solar and winds energy conversion and space solar power. His work in geophysics aimed at development of theoretical models of atmospheres and oceans to address environmental issues, including the ocean/climate model first employed by the UN Intergovernmental Panel on Climate Change (IPCC) to assess global warming from different scenarios of fossil fuel use. His early model of the evolving CO₂ greenhouse in Mars’ atmosphere is also of interest today -- providing both an explanation of Mars’ riverbed-like channels formed in the distant past and a motivation for terraforming its atmosphere for human habitability in the future. His research in alternate energy conversion includes wind tunnel and full-scale experiments on innovative wind turbines, photovoltaic generation of hydrogen and wireless power transmission (WPT) applied to solar power satellites. His present efforts focus on energy technologies that could stabilize climate change from the fossil fuel greenhouse -- including (but not limited to) space solar power. He is a Member of the American Geophysical Union (AGU), the American Institute of Aeronautics and
Astronautics (AIAA) was elected Fellow of the American Association for the Advancement of Science (AAAS). He is presently a consultant to Lawrence Livermore National Laboratory and Versatility Software, Inc.

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Dale Jamieson teaches Environmental Studies, Philosophy, and Law and New York University. From 1980-1998 he taught at the University of Colorado, where he was the only faculty member to win both the Chancellor's award for writing in the humanities, and the Dean's award for research in the social sciences. Since the late 1980s, he has worked extensively on the epistemology and ethics of climate change. His most recent book is Morality's Progress: Essays on Humans, Other Animals, and the Rest of Nature (Oxford, 2002).

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Jeanine Jones, P.E. is the Department's Interstate Resources Manager, where she spends much of her time representing the Department on Colorado River-related matters. She was previously the Department's Drought Preparedness Manager; her more than 25 years experience with the Department includes directing the statewide planning program and working on interstate water negotiations.

She has published numerous technical articles, taught water-related courses for UC Berkeley Extension, serves on the Western States Water Council, and is an alternate member of the Colorado River Board of California. She is a registered professional engineer in California and Nevada, has a BS and MS in civil engineering, and is a member of ASCE and AWWA.

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Doug Kenney is a Senior Research Associate with the Natural Resources Law Center and a Management Team member of the Western Water Assessment, University of Colorado. His research and publications are highly interdisciplinary, focused primarily on issues of western water, public lands, and natural resources governance. He has a Bachelor's degree in Biology from the University of Colorado, a Master's degree in Natural Resources Policy and Administration from the University of Michigan, and a Ph.D. in Renewable Natural Resource Studies from the University of Arizona.

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Prior to joining the CU School of Law in 1996, Sarah Krakoff spent three years living and working on the Navajo Nation, as a founder and director of the DNA's Youth Law Project in Tuba City, Arizona. In this position, she litigated class action discrimination cases in federal court on behalf of Native American schoolchildren, obtaining favorable settlements for her clients. She also drafted a "Street Law" program for Native American Youth. In 1996, she became the director of CU Law School's Indian Law Clinic. In this position, Professor Krakoff expanded the Clinic's efforts to support Native American jurisprudence, involving students in projects that summarized opinions of tribal courts or aided tribes in the creation of their own legislation. One of her major achievements as director was obtaining permanent University funding for the Clinic, funding that ensures its future. She became an associate professor in 1999. Professor Krakoff's scholarship focuses on Indian law and natural resources issues, from a variety of perspectives. Her current projects include a book that examines the social, legal, philosophical and environmental consequences of the enormous increase in outdoor recreation, and a law review article on the development of the Navajo Nation's legal system.

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L. Hunter Lovins, Esq., is the president and founder of Natural Capitalism, Inc. and co-creator of the Natural Capitalism concept. In 1982 she co-founded Rocky Mountain Institute and led that organization as its CEO for Strategy until 2002. Under her leadership, RMI grew into an internationally recognized research center, widely celebrated for its innovative thinking in energy and resource issues. By the time Hunter left, the institute had grown to a staff of 50 people and a $7 million annual budget, half of it earned through programmatic enterprise.

In 2001, Hunter was named one of four people from North America to serve as a delegate to the United Nations Prep Conference for Europe and North America for the World Summit on Sustainable Development. She served as a Commissioner in the State of the World Forum's Commission on Globalization, co-chaired by Mikhail Gorbachev, and Jane Goodall.
Lovins has co-authored nine books and dozens of papers, and was featured in the award-winning film, Lovins On the Soft Path. Her latest book, Natural Capitalism, co-authored with Amory Lovins and business author Paul Hawken, was released in September 1999. It has been translated into a dozen languages and was the subject of a Harvard Business Review summary. Recent articles by Hunter have appeared in World Link, World Business Academy Review, American Prospect and Los Angeles Times.

Trained as a lawyer (JD, Loyola University School of Law, Los Angeles), Lovins has managed international non-profits, created several corporations, and is in great demand as a speaker and consultant. Her areas of interest and expertise include Natural Capitalism, globalization, economic development, governance, land management, energy, water, green real-estate development and community economic development. She has taught at dozens of universities, including an engagement as the Henry R. Luce Visiting Professor at Dartmouth College. She is currently Professor of Business at Presidio School of Management in the first accredited MBA program in Sustainable Management.

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The Bureau enforces state and federal environmental laws, defends state agencies when sued on environmental matters, and recovers the costs incurred in state hazardous waste cleanups. Recent initiatives include lawsuits to slow global warming, reduce pollution from coal-fired power plants, improve energy efficiency, protect community gardens, clean up the Bronx River, Hudson River and New York City watershed, and prevent entry of invasive species into the Great Lakes. The Bureau has also been on the forefront of efforts to prevent rollback of federal air and water pollution protections.

Peter worked previously for five years at the Natural Resources Defense Council, where he was senior attorney and director of the Clean Water Project. From 1985-1994, Peter worked with the New York City Law Department in the Affirmative Litigation and Environmental Law Divisions. He also teaches environmental law at Columbia Law School.

Peter obtained his J.D. from Columbia Law School in 1984, and his B.A. from Harvard College. He clerked for Chief Judge James Browning of the U.S. Court of Appeals for the North Circuit.

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Franz T. Litz is the Climate Change Policy Coordinator for the New York State Department of Environmental Conservation. Mr. Litz heads the agency's climate change policy office, which coordinates the design and implementation of climate change policies within the agency's
jurisdiction. He also serves as the agency’s liaison to other New York cabinet departments on climate issues.

Franz is New York’s principal representative to the Regional Greenhouse Gas Initiative ("ReGGIe"), an effort by 8 Northeast states to implement a flexible, market-based cap-and-trade program covering carbon dioxide emissions from power plants in the region. He also chairs the group of Northeast state staff representatives (the “RGGI Staff Working Group”) conducting the RGGI discussions.

Before assuming his current role, Franz served a senior attorney representing the New York environmental agency in various proceedings related to energy generating facilities, particularly with respect to air regulatory and environmental impact review issues. Prior to entering public service in New York, he practiced environmental law with Brown Rudnick, a large Boston law firm, where he represented private corporate clients on a wide range of environmental permitting and enforcement matters. He is a graduate of Boston College Law School, cum laude, where he served as Executive Editor of the Boston College Environmental Affairs Law Review, and a graduate of Union College, magna cum laude.

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Jim Norton is the lead staff person for Governor Bill Richardson’s Climate Change Initiative. He also spearheaded the addition of climate change to the work of the Western Regional Air Partnership composed of 14 western states and helped to develop the Southwest Climate Change Initiative between New Mexico and Arizona.

As Director of the Environmental Protection Division at the New Mexico Environment Department, Mr. Norton is responsible for four major programs in addition to climate change: air quality, solid waste, petroleum storage tanks and occupational health and safety.

Mr. Norton has two decades of experience working with environmental groups including The Wilderness Society, The Nature Conservancy and 1000 Friends of New Mexico. He led legislative campaigns to add 2.5 million acres to the National Wilderness Preservation System.

Prior to joining the staff of the Environment Department in 2003, Mr. Norton was a teacher at the Santa Fe Public Schools. He has a BA in Biology and Environmental Studies from Williams College (1978), attended the graduate program at the Yale School of Forestry and Environmental Studies (1981), and earned a Teaching Certificate from the University of New Mexico (1997). While not at work he enjoys outdoor activities such as gardening, hiking, camping and river rafting. He is the founder of the Santa Fe Old-timers Ice Hockey Club and has a wicked slap shot.

Richard Palmer, Professor of Civil and Environmental Engineering
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Richard Palmer is a Professor of Civil and Environmental Engineering at the University of Washington, where he has taught since 1979. His primary areas of interest are in the application of structured planning approaches to water resources. This includes impacts of climate change on water resources, drought planning, real-time water resource management, and the application of decision support to civil engineering management problems. He developed the field of “shared vision modeling” in water resources planning and pioneered the use of “virtual drought exercises.”

Dr. Palmer received his Ph.D. from the Johns Hopkins University in 1979, his Master’s of Science in Environmental Engineering from Stanford University in 1973. He received the “Service to the Profession” Award from the Water Resources Planning and Management Division of American Society of Civil Engineers (ASCE) in 1998. He was awarded the “Certificate of Recognition” for his editorial services to the Journal of Water Resources Planning and Management of ASCE in 1997, for which he was editor from 1993-1997. He was awarded the Huber Award for Research Excellence by the American Society of Civil Engineers (ASCE) in 1992. This honor was based upon his innovative application of simulation and optimization techniques to issues in water resource management. He received recognition for the Best Practice-Oriented Paper of the Year in the Journal of Water Resources Planning and Management by the ASCE in 1989. During his Ph.D. research he was a member of a team at Johns Hopkins University and the Interstate Commission on the Potomac River Basin recognized as a finalist by ASCE for Engineering Achievement of the Year in 1983. In 2006, he received from ASCE the Julian Hinds Award for his contributions to water resources planning and his research related to the impacts of climate change on water resources.

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Prior to joining Berkeley in 1990, he was a researcher at Shell Development in Bellaire, Houston, where he worked on the enhanced oil recovery methods and evaluated the future of U.S. energy supply from tar sands, heavy oil, oil shale, and coal. Shell Development was created and managed for 20 years by Dr. M. King Hubbert, who in 1956 predicted that oil production in the U.S. would peak in 1970. He has a Ph.D. degree in chemical engineering from the Silesian Technical University in Poland, where he also studied engineering physics. His Ph.D. thesis was on optimization and control of chemical reactors. He came to the U.S. as a Fulbright fellow at the University of Minnesota to work on computational fluid mechanics.

Patzek’s current research involves mathematical modeling of earth systems with emphasis on fluid flow in soils and rocks. He is also working on the thermodynamics of energy supply schemes for humanity. Currently, he teaches courses in hydrology, ecology and energy supply, computer science, and mathematical modeling of earth systems at micro and mega scales. He is an Editor for Transport of Porous Media, the best-known journal of multiphase flow in rocks and soils. Patzek is a coauthor of 181 papers and reports, and is currently writing three books.
Two of his three children just graduated from U.C. Santa Cruz with B.S. in cellular & molecular biology and biochemistry. The youngest daughter is in the pre-med program at U.C. Santa Cruz.

**Fran Pavley, Assemblywoman**  
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Fran Pavley is serving her 3rd term in the State Assembly and represents portions of Los Angeles and Ventura Counties. She has earned a reputation as one of the brightest and most highly respected members in California’s State Legislature. Currently, she serves as Chair of the Budget Committee on Resources and is a member of the Budget, Education, Transportation, and Water Parks and Wildlife committees.

In 2002, Assemblymember Pavley was named by Scientific American magazine as one of their 50 Top Technology Leaders for her landmark global warming bill, AB 1493. As one of the global leaders on this issue, she has been invited to speak to members of the Canadian Parliament, met with high-ranking officials in Japan and with members of the German Parliament because of their interest in her work on reducing greenhouse gas emissions. Other states, as well as other countries are already looking to follow California’s lead and adopt “the Pavley Bill.”

Pavley’s priorities include improving our schools; preserving our natural resources and quality of life; investing in transportation, infrastructure, and public safety; bringing new arts and sports facilities here to California; supporting the tourism and recreation industries; supporting international trade at our ports; and helping to stop runaway TV and film production that is threatening California's economic wellbeing.

Pavley has also carried bills that have been signed into law that have limited mercury in children's vaccines, required cell-phone recycling, protect the public from identity theft, created standards for truck emissions, included environmental education in the K-12 curriculum, and provided money to clean up storm water pollution on California’s beaches, among many others.

Prior to serving in the Assembly, Fran was elected as the first, youngest, and ultimately four-time Mayor of the newly incorporated City of Agoura Hills. In order to be as effective as possible, she returned to school and earned a Master's Degree in Planning. She also holds a California teaching credential, and taught history and government for 25 years at Chaparral Middle School in the Moorpark Unified School District. Fran's husband Andy is also a public school teacher. They have two grown children – their daughter Jenny and their son David.

**Alison Peters, Sustainable Venturing Coordinator**  
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Alison Peters is the Sustainable Venturing Coordinator for the Deming Center of Entrepreneurship at CU’s Leeds School of Business. She is responsible for designing and implementing a sustainable business program, including curriculum development; research and writing on climate change strategies for business; working with the campus-wide Energy Initiative to promote business partnerships and technology commercialization; developing internship and student project opportunities; and working with public and private partners such as the Colorado Cleantech Initiative, NREL, and Sun Microsystems on sustainable business development opportunities.

Ms. Peters has consulted with a variety of businesses and nonprofit agencies on strategic planning, financial analysis, market development, and sustainable systems. Her work has covered areas such as solar development incentives, alternative transportation, land conservation, and microenterprise development in the U.S. and abroad. She is a board member of CORE, Colorado's sustainable business trade association.

Ms. Peters formerly served as Environmental Affairs Director for the City of Boulder. In that role, she worked with local industry to develop a strategic plan to reduce toxic air emissions; initiated the PACE program for small businesses to reduce energy, resources, and toxic materials use in cost-effective ways; and redesigned the city's Green Points program, an incentive system for builders to use more energy-efficient and sustainable building methods and materials. She has worked as a legislative assistant to a U.S. Congressman, where she covered banking, international trade, and agriculture; and served as a researcher on economic renewal at Rocky Mountain Institute. She has a B.A. from Yale University and an M.A. in economics from Stanford.

**Annie Petsonk, International Counsel**

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Annie Petsonk is International Counsel for Environmental Defense, a 400,000-member advocacy organization that develops innovative, economically sensible solutions to environmental problems. Environmental Defense’s motto is, “Finding the Ways that Work.” Ms. Petsonk works to create new markets that drive innovation. The goal is to reward companies, countries, and communities that find better, cheaper, faster ways to cut global warming pollution. She was closely involved in the design, negotiation, adoption and entry into force of the Kyoto Protocol. She is currently working to implement carbon markets in key countries and expand markets so that more nations are encouraged to join.

Prior to coming to Environmental Defense, Annie worked in the administrations of Presidents George H.W. Bush and Bill Clinton; in the United Nations Environment Programme (Nairobi); and at the firm of Holme Roberts & Owen in Denver and Colorado Springs. A graduate of The Colorado College and Harvard Law School, Annie was awarded an honorary degree by Colorado College in 2003. She currently teaches trade and sustainable development law at the George Washington University, and she misses Colorado very much.

**Roger S. Pulwarty, Physical Scientist**

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Roger S. Pulwarty is a Physical Scientist at the National Oceanic and Atmospheric Administration Earth Systems Research Laboratory and at the CIRES/Climate Diagnostics Center in Boulder. His interests are in climate and weather, their role in society-environment interactions, and in the design of policies and practices to manage associated risks. His research and program development foci are on climate impacts and decision-making in the Western U.S., Latin America, and the Caribbean. From 1998 to 2002 Roger directed the NOAA/Regional Integrated Sciences and Assessments (RISA) Program. He holds a PhD in Geography/ Climatology from CU- Boulder. Roger is the deputy-Director of the Western Water Assessment and is a lead author on the forthcoming IPCC Fourth Assessment Report on Impacts, Adaptation and Vulnerability.

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A member of the embassy's Global Issues Group, Jim works to advance key UK - US environment and energy policies and partnerships. Recent projects included supporting the UK's dual 2005 presidencies of both the G8 and the European Union where discussions of climate change will have high profile. Prior to working for Britain, Jim served as legislative advisor to U.S. Senator Tom Carper (D-DE) on a broad list of environmental, energy, and agricultural issues including debates on multi-pollutant power plant legislation, climate change, fuel efficiency, and energy independence. Other positions held include Finance Director for the Carper 2000 Senate campaign, and legislative fellow on the Senate Oceans and Fisheries subcommittee. After graduating with a Masters in Coastal Environmental Management from the Duke University School of the Environment, Jim worked for the South Carolina Sea Grant Consortium in Charleston, SC.

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Joseph Siegel is a Senior Attorney with the Region 2 office of the United States Environmental Protection Agency where he has worked on air pollution law and policy for nearly 20 years. Since 2000, he has been an adjunct professor at the Pace University School of Law, Center for Environmental Legal Studies, where he teaches a seminar on air pollution, climate change, and emissions trading. He also taught environmental law for 11 years at CUNY Law School at Queens College. Mr. Siegel is a Vice Chair of both the ABA Committee on Sustainability, Ecosystems, and Climate Change, and the ABA Committee on Renewable Energy Resources. He is a frequent lecturer on climate change and other environmental topics and has published numerous articles on matters involving air pollution, the Regional Greenhouse Gas Initiative and
other climate change issues, public access to information and prevention of terrorist acts at chemical facilities. He is also a volunteer community mediator with the Westchester Mediation Center.

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Professor Mark Squillace is the Director of the Natural Resources Law Center at the University of Colorado School of Law. Before coming to Colorado, Professor Squillace taught at the University of Toledo College of Law where he was the Charles Fornoff Professor of Law and Values. Prior to Toledo, Professor Squillace taught at the University of Wyoming College of Law, where he served a three-year term as the Winston S. Howard Professor of Law. He is a former Fulbright scholar, and the author or co-author of numerous articles and books on natural resources and environmental law. In 2000, Professor Squillace took a leave from law teaching to serve as Special Assistant to the Solicitor at the U.S. Department of the Interior. In that capacity he worked directly with the Secretary of the Interior Bruce Babbitt, on variety of legal and policy issues.

Brad Udall, Executive Director  
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Brad Udall is the Western Water Assessment's Managing Director. From being a Grand Canyon river guide in college to being a water engineer for ten years, water has always been an important theme in Brad’s life. He was educated at Stanford (B.S. Engineering) and at Colorado State (MBA). Out of college in the 1980s, he worked in the young computer industry writing software. He later joined Hydrosphere Resource Consultants where he was able to combine his engineering background and computer skills. During his ten years at the firm, he became one of four partners while the firm grew to over twenty employees. Brad spent the last four years of the 1990s in Vail starting up the Eagle Valley Land Trust and conserving land. Over the years, he has been active in numerous non-profit endeavors in health, outdoor recreation, and conservation.

One little known fun fact about Brad: he is a descendant of John D. Lee, the colorful founder of Lee’s Ferry and nowadays the all-important dividing line between the Upper and Lower basins of the Colorado River.

Randy Udall, Director  
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Since August 1994, Randy Udall has directed the Community Office for Resource Efficiency (CORE), a nonprofit organization in western Colorado. Udall lectures widely on energy issues, including keynote presentations to the American Solar Energy Society and American Wind Energy Associations. In 2005, Udall co-founded the U.S. chapter of the Association for the Study of Peak Oil.

CORE promotes renewable energy and energy efficiency in partnership with Holy Cross Energy, a rural electric utility serving 50,000 customers. Holy Cross leads U.S. utilities in the percentage of its customers who buy wind power, and its renewable energy and energy efficiency programs will keep one billion pounds of greenhouse gases out of the atmosphere over the next 20 years.

In 1998, CORE started the first “solar production incentive” program in the United States; the program pays customers who install PV systems 25¢/kilowatt-hour for their energy. In 2000, CORE started the world’s first Renewable Energy Mitigation Fund, which has collected $4,000,000 in building permit fees by assessing the world’s highest carbon dioxide tax of $320 per ton.

Articles about CORE’s work have appeared in Public Power, the New York Times, Christian Science Monitor, Environmental Building News, the Denver Post and Rocky Mountain News.

Three years ago, Udall installed a grid-connected photovoltaic system and solar hot water heating system on his own home. This solar retrofit keeps 20,000 pounds of carbon dioxide, the chief greenhouse gas, out of the atmosphere each year.

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Heidi serves as Senior Associate to the Wirth Chair in Environmental and Community Development Policy at the University of Colorado where she organizes, researches and writes about issues relating to sustainable development. The Chair’s mission is to bridge the gap between the theory and practice of public policy as it relates to sustainability. The Chair conducts forums, seminars and workshops, as well as collaborative projects with a broad array of community partners.

As primary staff to the Energy Program of the Chair, Heidi has focused on energy and carbon policy and in that capacity has expanded particular knowledge about the policy and politics of energy and greenhouse gas emissions. She has an over twenty year work history on natural resource issues and in politics with work experience ranging from service to the United Nations Environment Programme to serving as Congressional staff. She is a graduate of Carleton College and is a third-generation Colorado native.
Warren M. Washington, Senior Scientist
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Warren M. Washington is a senior scientist and head of the Climate Change Research Section at the National Center for Atmospheric Research (NCAR).

Washington earned a bachelor's degree in physics and a master's degree in meteorology from Oregon State University. After completing his doctorate in meteorology at Pennsylvania State University, he joined NCAR in 1963 as a research scientist. Washington's areas of expertise are atmospheric science and climate research, and he specializes in computer modeling of the earth's climate. He has published more than 100 papers in professional journals. His book *An Introduction to Three-Dimensional Climate Modeling*, co-authored with Claire Parkinson (NASA), is a reference on climate modeling. The second edition was published in May, 2005.

Washington is consultant and advisor to a number of government officials and committees on climate-system modeling. From 1978 to 1984, he served on the President's National Advisory Committee on Oceans and Atmosphere. He participated in several panels of the National Research Council and chaired its Advisory Panel for *Climate Puzzle*, a film produced for the 1986 PBS television series *Planet Earth*. Washington held the office of President of the American Meteorological Society (AMS) in 1994. In 1998, he was appointed to the National Oceanic and Atmospheric Agency's Science Advisory Board.

In May of 1995, he was appointed by President Clinton to a six-year term on the National Science Board, which has the oversight of the National Science Foundation and advises the Executive Branch and Congress on science related matters. In March 2000 he was nominated by President Clinton for a second six-year term and was confirmed by the Senate in September 2000. The National Science Board elected Washington as its Chair in 2004. He was re-elected as Chair to a second term in May of 2004. His tenure on the Board ended in May 2006.

He is a Fellow of the AMS and a Fellow of the American Association for the Advancement of Science (AAAS), and from 1991 to 1995 he was a member of the AAAS Board of Directors. He is a Distinguished Alumnus of Pennsylvania State University and Oregon State University, an Alumni Fellow of Pennsylvania State University and Oregon State University. In 1999, Washington was awarded the Dr. Charles Anderson Award from the American Meteorological Society "for pioneering efforts as a mentor and passionate support of individuals, educational programs, and outreach initiatives designed to foster a diverse population of atmospheric scientists."

Also, in February 2002, the National Academy of Engineering (NAE) elected Washington to its membership "for pioneering the development of coupled climate models, their use on parallel supercomputing architectures, and their interpretation." On April 26, 2003 Washington was elected to the American Philosophical Society.

In August 2004 Washington received the Vollum Award for Distinguished Accomplishment in Science and Technology from Reed College in Portland, Oregon. The Vollum Award was created in 1975 as a tribute to the late C. Howard Vollum, a 1936 Reed graduate and lifelong friend of the college. Winners are selected for the perseverance, fresh approach to problems and solutions, and creative imagination that characterized Vollum's career.
In January 2006 Washington was awarded Honorary Membership to the American Meteorological Society and in June 2006 he will be the commencement speaker and receive an honorary doctorate from Oregon State University.