

## Kevin Doran, J.D.

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### BRIEF NARRATIVE

From October 15, 2014 to October 15, 2015, Professor Doran is serving as Special Advisor to the Undersecretary of Science and Energy at the U.S. Department of Energy. During his assignment in Washington, D.C., Professor Doran is co-leading the development of the Department's Science and Energy Plan, a long-term plan to establish strategies and priorities for the Department's fundamental and applied research portfolio, national laboratory engagement, external stakeholder interactions, and overall program evolution. He also serves as part of the federal team leading the 2015 Quadrennial Technology Review (QTR), a comprehensive assessment of research opportunities that will inform the Department's programs and capabilities, budgetary decisions (FY17), industry engagements, and national lab activities. Professor Doran is a staff member of the Under Secretary for Science and Energy (US/SE) Principles' Group, which consists of Departmental Assistant Secretaries and the Director of the Office of Science, and the US/SE Executive Steering Committee, which consists of Deputy Assistant Secretaries and senior program leadership. He is actively involved in the developing the Department's programmatic research crosscuts on exascale computing, supercritical CO<sub>2</sub>, energy and water, clean energy manufacturing, grid modernization, and subsurface technology and engineering. He is also part of the senior federal team working to integrate outcomes from the 2015 Quadrennial Energy Review (QER), the 2015 QTR, and the National Laboratory Big Ideas Summit into Departmental policy and budgets.

Professor Doran's current research (2014/2015) involves development of a standardized research protocol for estimating methane emissions from onshore oil and gas systems (including both bottom-up inventories and top-down measurements)—NETL/RPSEA; development of a voluntary certification and tracking process for responsibly produced natural gas, including compliance standards for methane reductions, water quality and quantity impacts, and air emissions—NRDC/Hewlett; development of a detailed comparative assessment of U.S. western governance regimes directed at water impacts resulting from unconventional gas production—NSF; analysis regarding the potential for incorporating GHG reductions and other sustainability achievements resulting from natural gas systems into federal, state and local compliance regimes—Argosy Foundation; and assessing the policy and institutional challenges of grid integration of renewable energy in the western U.S.—NREL/JISEA.

### APPOINTMENTS

Special Advisor, Office of the Under Secretary for Science and Energy, U.S. Department of Energy (October 2014 - Present). Select activities and responsibilities include:

- Federal Co-Lead for developing the U.S. Department of Energy's Science and Energy Plan.
- Chief Editor for the U.S. Department of Energy's 2015 Quadrennial Technology Review (QTR); also part of the senior federal leadership team guiding the QTR's development.
- Lead Organizer, Quadrennial Technology Review Cornerstone Workshop, December 4-5, 2015, Arlington, Virginia (~200 attendees).
- Lead Organizer, Quadrennial Technology Review Capstone Workshop, April 15-16, 2015, Arlington, Virginia (Keynote Speakers: Secretary Ernest Moniz; Dr. John Holdren, Director, White House Office of Science and Technology Policy; and Mr. Adam Sieminski, Administrator, Energy Information Administration).
- Co-Lead Organizer, National Laboratories Big Ideas Summit (BIS), April 16-17, 2015, Arlington, Virginia. BIS is the Department's mechanism for soliciting new and potentially transformative research ideas from the National Laboratories.
- Part of the senior federal leadership team that finalized the FY16 Departmental budget.

- Part of the senior federal leadership team currently developing the FY17 Departmental budget.
- Part of the senior federal leadership team supervising the development of programmatic research crosscuts (research that cuts across DOE Program Offices and the Office of Science) and incorporation of these crosscuts into Departmental budgets.
- Part of the senior federal leadership team working to incorporate outcomes from the 2015 QER and QTR into Departmental Budgets.
- Part of the senior federal leadership team working to implement a Memorandum of Understanding with the Department of Defense related to energy security relevant research.
- Senior federal representative for the Office of the Under Secretary of Science and Energy to the Department of Energy's Jobs council—established by the Secretary to accelerate the growth of and access to jobs in all sectors of the United States energy economy while meeting the goals of the Administration's Climate Action Plan.
- Speechwriter for the U.S. Secretary of Energy Ernest Moniz.
- Speechwriter for the U.S. Under Secretary for Science and Energy Lynn Orr.
- Federal supervisor overseeing a national laboratory team comprised of senior national laboratory personnel (deputy and associate directors, and program directors) engaged writing the national laboratory sections of the Science and Energy Plan.
- Federal Co-lead for the Concept of Operations for the Office of the Under Secretary of Science and Energy.

Institute Fellow, Renewable and Sustainable Energy Institute (2009 - Present).  
Reelected to a second four-year term in 2014.

Assistant Professor (Research), Renewable and Sustainable Energy Institute, a joint institute of the U.S. National Renewable Energy Laboratory and the University of Colorado Boulder (2011 - Present); Group Lead, RASEI Law and Policy Group (2012 - Present).

Managing Director, Carbon Management Center, a research center of the Colorado Renewable Energy Collaboratory (NREL, CSM, UCB, and CSU) (2007 - Present) (formal research faculty appointment with CSM, 2011 - Present).

Senior Research Fellow, Center for Energy and Environmental Security, University of Colorado Law School (2007 - 2010).

Research Fellow, Energy and Environmental Security Initiative, University of Colorado Law School (2004 - 2007).

Senior Research Associate and Attorney, Natural Resources Law Center, University of Colorado Law School (2003 - 2004).

**SELECT FUNDED  
RESEARCH  
PROPOSALS**

*Implementing a Standards-Based Approach to Rewarding Sustainability in the Natural Gas Supply Chain*; funded by the Natural Resources Defense Council and the Hewlett Foundation; July 2014: \$117,000—Principal Investigator.

*Hydrocarbon Emissions Reduction Network (HERON): Reconciliation of Top-Down and Inventory-Based Methane Emissions from Oil and Gas Systems through Development of a Standard Protocol*; funded by NETL/RPSEA; July 2014: \$4,250,000—Investigator and Project Manager.

*Charting U.S. Western Energy Sustainability in the Era of Cheap Gas*; funded by the Argosy Foundation; July 2013: \$50,000—Principal Investigator.

*Routes to Sustainability for Natural Gas Development and Water and Air Resources in the Rocky Mountain Region*; funded by the U.S. National Science Foundation; January 2013: \$12,000,000—Key Personnel (PI, Joseph Ryan). Member, Water Quantity Team; Member, Data Management Team.

*Integrated Assessment of Geologic Carbon Capture and Sequestration: Regulatory Regimes, Jurisdiction, Liability, Ownership, and Infrastructure*; funded by the U.S. Department of Energy; October 2011: \$153,925—Principal-Investigator (expansion and extension of previous award).

*Smart Grid Technology Workshop: Major Technological Barriers, Research Issues, and Measurement Challenges*; funded by the National Institute of Standards and Technology; October 2011: \$125,000—Principal Investigator.

*Pumped Storage Optimization—Implications of Ancillary Services and Regulatory Constraints*, funded by Alstom Power; June 2011: \$120,000—Principal Investigator.

*Geologic Carbon Storage in the Western United States*, funded by the U.S. Department of Energy; June 2011: \$153,761—Principal Investigator.

*Smart Grid Security and Privacy*, funded by the U.S. Department of Energy; January 2011: \$101,000—Principal Investigator.

*Presidential Executive Orders and Climate Change*, funded by the Presidential Climate Action Plan; July 2010: \$10,000—Principal Investigator.

*Smart Grid White Paper for Colorado*, funded by the Governor's Energy Office; June 2010: \$15,990—Co-Principal Investigator.

*North American Biochar Development Initiative*, funded by the Packard Foundation; October 2009: \$94,990—Principal Investigator.

*Integrated Assessment of Geologic Carbon Capture and Sequestration: Regulatory Regimes, Jurisdiction, Liability, Ownership, and Infrastructure*; funded by the U.S. Department of Energy; October 2009: \$220,925—Principal-Investigator.

*Assessment of Scale on Pore-Volume and Permeability Estimates for Geologic Storage of CO<sub>2</sub> in Saline Aquifers and Depleted Petroleum Reservoirs*; funded by the U.S. Department of Energy (DOE); October 2009: \$70,000—Principal-Investigator.

*Methane Emissions from Abandoned Coal Mines in China*, funded by the U.S. Environmental Protection Agency (EPA); October 2009: \$400,000—Principal-Investigator.

*Women's Energy Justice Network—CDM Financing and Microlending for Appropriate Technology*; funded by the Renewable Energy and Energy Efficiency Partnership, Vienna, Austria; August 2009: \$134,272—Principal-Investigator.

*Smart Grid: Regulatory Opportunities for Retail Electricity Rates*; funded by the Renewable and Sustainable Energy Institute; January 2009: \$12,500—Principal-Investigator.

*Smart Grid: Environmental Signals*; funded by the Renewable and Sustainable Energy Institute; January 2009: \$12,500—Principal-Investigator.

*Legal Issues Involved in the Deployment of Carbon Capture and Sequestration Technologies*; funded by CAMCO Global; October 2008: \$8,000—Principal-Investigator.

*The Boundaries of Executive Authority: An Evaluation of Priority Proposals from the Presidential Climate Action Plan*; July 2008: \$45,000—Principal Investigator.

*Executive Authority in the Domain of Climate Change*, funded by the Presidential Climate Action Plan; May 2007: \$45,000—Principal Investigator.

*U.S. Climate Change Policies*, funded by the Presidential Climate Action Plan; May 2007: \$5,000—Principal Investigator.

*Colorado Energy Profile*, funded by the Colorado Governor's Energy Office; June 2007: \$316,000—Principal Investigator.

*Technology, Policy, and Regulation Best Practices to Implement Utility Scale Energy Storage*, funded by the University of Colorado at Boulder Energy Initiative, Seed Grant Competition, April 2007: \$20,000—Co-Principal Investigator.

*The International Project on Energy Commitments and Compliance (ClimatePledges)*, funded by the Argosy Foundation; April 2007: \$300,000—Principal Investigator.

*Renewable Energy and Storage—Law and Policy Dimensions in Colorado*, funded by the Colorado Department of Agriculture; April 2007: \$15,000—Principal Investigator.

*The Presidential Climate Action Plan*, funded by the Lewis Family Foundation and the Wirth Chair in Environmental and Community Development Policy, University of Colorado at Denver, Denver, Colorado; October 2006: \$45,000—Principal Investigator.

*The International Sustainable Energy Assessment—Implementation and Impact Phase*, funded by the Renewable Energy and Energy Efficiency Partnership, Vienna, Austria; September 2006: \$87,000—Co-Principal Investigator.

*International and Domestic Carbon Markets: Risks and Opportunities for Colorado*, funded by the Colorado Department of Public Health and Environment, Denver, Colorado; August 2006: \$35,000—Principal Investigator.

*An Integrated Analysis of Colorado's Sustainable Energy Strengths*, funded by the Colorado Energy Research Institute, Colorado School of Mines, Golden, Colorado; September 2005: \$35,000—Principal Investigator

*A New Framework: Post-Kyoto Energy and Environmental Security*, funded by the University of Colorado at Boulder, Provost's Office, Boulder, Colorado; June 2005: \$50,000—Co-Principal Investigator.

*The International Sustainable Energy Assessment*, funded by the Renewable Energy

and Energy Efficiency Partnership, Vienna, Austria; April 2005: \$85,000—Co-Principal Investigator.

**PUBLICATIONS:  
BOOKS**

INTERNATIONAL ENVIRONMENTAL LAW IN A NUTSHELL (3d. edition, 721 pages) (West Publishing 2007) (with Lakshman Guruswamy).

**SELECT  
PUBLICATIONS:  
ARTICLES &  
REPORTS**

*Hydraulic Fracturing and the Impact on Water: A Strategic Analysis of the Feasibility of Voluntary Certification Standards*, (2015; produced for the Natural Resources Defense Council and the Hewlett Foundation) (with Adam Reed, David Bernell, Jackson Cassidy, Angela Cifor, and Stuart Feldman)

*Methane Emissions in the Production, Transmission and Distribution of Natural Gas: A Strategic Analysis of the Feasibility of Voluntary Certification Standards* (2015; produced for the Natural Resources Defense Council and the Hewlett Foundation) (with Adam Reed, David Bernell, Adriane Busby, Jackson Cassidy, and Stuart Feldman).

*Shale Gas Development and the Regulatory Landscape: A Strategic Analysis of the Feasibility of Voluntary Certification Standards* (2015; produced for the Natural Resources Defense Council and the Hewlett Foundation) (with Adam Reed, David Bernell, Jackson Cassidy, and Stuart Feldman).

*Technology, Measurement and Standards Challenges for the Smart Grid*, National Institute of Standards and Technology and RASEI (RASEI Lead Editor, March 2013).

*Strategic R&D Opportunities for the Smart Grid: Advancing Measurement Science and Standards for Smart Grid Technologies*, National Institute of Standards and Technology and RASEI (RASEI Lead Editor, March 2013).

*Learning from Loopholes: Unconventional Energy, Hydraulic Fracturing, and the Safe Drinking Water Act*, PROCEEDINGS OF THE 2013 WESTERN ENERGY POLICY CONFERENCE (2013).

*Natural Gas and Its Role in the U.S.'s Energy Endgame*, Yale Environment 360, (2012) (with Adam L. Reed).

*Does the Federal Government Own the Pore Space Under Private Lands in the West? Implications of the Stock-Raising Homestead Act of 1916 for Pore Space Ownership*, 42 ENVIRONMENTAL LAW 527 (with Angela Cifor, 2012).

*Carbon Capture and Storage: Federal Ownership of Mineral Rights Under Private Land*, in PROCEEDINGS OF THE TENTH ANNUAL CONFERENCE ON CARBON CAPTURE & SEQUESTRATION (2011).

*Privacy—the Achilles Heel of Smart Grid*, in RENEWABLE ENERGY READER (K.K. DuVivier ed., Carolina Academic Press, 2011).

*Privacy and Smart Grid: When Progress and Privacy Collide*, 41 UNIVERSITY OF TOLEDO LAW REVIEW 909 (2010).

SMART GRID AND COLORADO: CHALLENGES AND OPPORTUNITIES, *Report for the Colorado Governor's Energy Office* (ed., 2010) (117 pages).

*Consumer Privacy*, in SMART GRID AND COLORADO: CHALLENGES AND OPPORTUNITIES, Chap. 3, *Report for the Colorado Governor's Energy Office*, (with Elias Leake Quinn, 2010).

*Regulatory Optimization Opportunities for the Development of Commercial-Scale Geologic Carbon Capture and Sequestration*, in PROCEEDINGS OF THE NINTH ANNUAL CONFERENCE ON CARBON CAPTURE & SEQUESTRATION (2010).

*Climate Change and Risk Disclosure: A Sector by Sector Analysis of SEC 10-K Filings from 1995-2008*, 34 NORTH CAROLINA JOURNAL OF INTERNATIONAL LAW AND COMMERCIAL REGULATION 722 (2009).

RECLAIMING TRANSPARENCY IN A CHANGING CLIMATE: TRENDS IN CLIMATE RISK DISCLOSURE BY THE S&P 500 FROM 1995 TO THE PRESENT (with Elias Quinn and Martha Roberts, 2009); published by Environmental Defense Fund and CERES (report covered by the New York Times, Forbes, Business Week, Chicago Tribune, etc.).

*International Environmental Law 2008 Annual Report*, in AMERICAN BAR ASSOCIATION ENVIRONMENT, ENERGY AND RESOURCES LAW: THE YEAR IN REVIEW (2009) (with Julie Teel and Lakshman Guruswamy).

*U.S. Climate Policy: Using Market-Based Strategies to Achieve Greenhouse Gas Emissions Reductions*, 3 ENVIRONMENTAL & ENERGY LAW & POLICY JOURNAL 31 (2008) (with Alaine Ginnochio).

THE BOUNDARIES OF EXECUTIVE AUTHORITY: AN EVALUATION OF PRIORITY PROPOSALS FROM THE PRESIDENTIAL CLIMATE ACTION PLAN, *Report for the Presidential Climate Action Plan* (2008) (187 pages).

THE BOUNDARIES OF EXECUTIVE AUTHORITY: USING EXECUTIVE ORDERS TO IMPLEMENT FEDERAL CLIMATE CHANGE POLICY, *Report for the Presidential Climate Action Plan* (2008) (213 pages).

*International Environmental Law 2007 Annual Report*, in AMERICAN BAR ASSOCIATION ENVIRONMENT, ENERGY AND RESOURCES LAW: THE YEAR IN REVIEW (2008) (with Lakshman Guruswamy).

PRESIDENTIAL AUTHORITY IN THE DOMAIN OF CLIMATE CHANGE, *Report for the Presidential Climate Action Plan* (2007) (202 pages).

ASSESSING THE IMPACT OF INTERNATIONAL ENERGY LAW ON RENEWABLE ENERGY AND ENERGY EFFICIENCY, *Report for the Renewable Energy International Law (REIL) Project*, Yale University (2007).

IMPLEMENTATION OF INTERNATIONAL ENERGY COMMITMENTS, *Report for the Renewable Energy and Energy Efficiency Partnership* (2007).

U.S. FEDERAL CLIMATE CHANGE POLICY: PROPOSALS FOR CHANGE, *Report for the Presidential Climate Action Plan* (2007) (225 pages).

THE COLORADO CLIMATE CHANGE MARKETS ACT, *Report to the Colorado Department of Public Health and Environment* (2007).

INTERNATIONAL AND DOMESTIC CARBON MARKETS: RISKS AND OPPORTUNITIES FOR COLORADO, *Report to the Colorado General Assembly* (2007). *U.S. Sub-federal Climate Change Initiatives: An Irrational Means to a Rational End?* 26 VIRGINIA ENVIRONMENTAL LAW JOURNAL (2007) (SSRN Top Ten download list for FSNP: State Politics & Policy; FSNP: Philosophy of Language).

*National Climate Policy*, in THE PRESIDENTIAL CLIMATE ACTION PLAN 1–55 (2007).

*The Effectiveness and Impacts of International Energy Treaties*, in FROM BARRIERS TO OPPORTUNITIES: RENEWABLE ENERGY ISSUES IN LAW AND POLICY 89 (Coppock et al. eds., Yale 2007) (initially delivered as an invited paper to “Renewable Energy and International Law,” Symposium, Yale School of Forestry and Environmental Studies).

*International Environmental Law 2006 Annual Report*, in AMERICAN BAR ASSOCIATION ENVIRONMENT, ENERGY AND RESOURCES LAW: THE YEAR IN REVIEW 72 (2007) (with Jane Luxton and Lakshman Guruswamy).

*Can the U.S. Achieve a Sustainable Energy Economy From the Bottom-Up? An Assessment of State Sustainable Energy Initiatives*, 7 VERMONT JOURNAL OF ENVIRONMENTAL LAW 95 (2006).

“International Environmental Law” in ENVIRONMENT, ENERGY AND RESOURCES LAW: THE YEAR IN REVIEW: 2005, v. 22 (American Bar Association: Section of Environment, Energy and Resources, 2006) (with Lakshman Guruswamy and Vail Thorne).

*Kyoto, Hydrocarbons and Sustainable Energy*, 1 THE INTERNATIONAL ENVIRONMENTAL LAW COMMITTEE NEWSLETTER 15 (2005) (with Lakshman Guruswamy).

“International Environmental Law” in INTERNATIONAL LEGAL DEVELOPMENTS IN REVIEW: 2004 (with David Wagner and William Thomas), 39 International Lawyer 191 (2005).

“International Environmental Law” in ENVIRONMENT, ENERGY AND RESOURCES LAW: THE YEAR IN REVIEW: 2004, v. 21 (American Bar Association: Section of Environment, Energy and Resources, 2005) (with Lakshman Guruswamy and Vail Thorne).

PRIVATE LANDS CONSERVATION IN THE BAHAMAS; BELIZE; BRITISH VIRGIN ISLANDS; DOMINICAN REPUBLIC; FEDERATED STATES OF MICRONESIA; GRENADA; GUAM; NORTHERN MARIANAS ISLANDS; MARSHALL ISLANDS; PAPUA NEW GUINEA; PUERTO RICO; SOLOMON ISLANDS; ST. VINCENT AND

THE GRENADINES; U.S. VIRGIN ISLANDS (published as fourteen separate reports by the Natural Resources Law Center, 2004).

## **OTHER RELATED ACTIVITIES**

Lead Author, Energy Curriculum, U.S. Academic Decathlon, (2013 - 2014).

IT Project Coordinator, Center for Oil Shale Technology and Research, Colorado School of Mines, (2010 - Present).

External Ph.D. Reviewer, University of Vasa, Finland: Candidate Alireza Aslani, "Evaluation of Renewable Energy Development in Power Generation: A System Dynamics Approach," (2014).

Co-Chair (with Doug MacDonald, Former Senior VP, Vestas), North American Wind Energy Academy, Policy Working Group (NREL, NCAR, NOAA, RASEI, Cornell, UT-Austin, UMass) (2011).

Project Lead, 2011 Smart Grid Technical Workshop, a joint workshop of the National Institute of Standards and Technology and the Renewable and Sustainable Energy Institute (2011).

Project Lead, Grid Innovation Impact Area, the Renewable and Sustainable Energy Institute (2011): [www.gridinnovation.org](http://www.gridinnovation.org) (seven working groups: smart grid, microgrids, electric vehicles, buildings, consumers, system optimization, and distributed energy).

RASEI By-Laws Committee; Affiliates Committee (2010 - Present).

Faculty Sponsor and Organizer, University of Colorado Law Review, Volume 81, Natural Resources Issue (focused on multi-state renewable energy and transmission planning) (2010).

Faculty Supervisor, Externship Program, University of Colorado Law School, LAW 7939, 2 credits (Fall Semester 2009).

Faculty Placement Supervisor, Cornell Law School, Full Term Externship Program, Law 7831, 12 credits (Fall 2007 & Spring 2008).

Faculty Supervisor, Externship Program, University of Colorado Law School, LAW 7939, 3 credits (Spring, Summer and Fall semesters 2007; Fall Semester 2008).

Instructor, International Environmental Law, Law 6510-002, University of Colorado Law School (Fall Semester 2007).

Instructor, International Agreements and Sustainable Energy, Workshop (required for CEES research assistants and externs, 15 classes, Summer Semester 2007).

Instructor, International Agreements and Sustainable Energy, Workshop (required for CEES research assistants and externs, 24 classes, Spring Semester 2007).



Guest Instructor (4 classes), Energy Insecurity and Sustainable Energy, LAW 7132, University of Colorado Law School (Spring Semester 2007).

Guest Instructor (4 classes), Oil and International Relations, LAW 8320, University of Colorado Law School (Fall Semester 2006).

Guest Instructor (6 classes), International Environmental Law, LAW 6510, University of Colorado Law School (Fall Semester 2006).

Guest Instructor (4 classes), International Environmental Law, LAW 6510, University of Colorado Law School (Fall Semester 2005).

**OTHER  
RELATED  
EMPLOYMENT**

Research Assistant, Byron White Professor of Constitutional Law, Pierre Schlag (2002 - 2003). Acknowledged *in* Pierre Schlag, *The Aesthetics of American Law*, 115 HARV. L. REV. 1047 (2002).

Research Assistant, Nicholas Doman Professor of International Law, Lakshman Guruswamy (2003). Acknowledged *in* Lakshman Guruswamy, *Jurisdictional Conflicts Between International Tribunals: A Framework for Adjudication and Implementation*, in NEW LAW TO OCEAN WATERS 297 (David D. Caron & Harry N. Schreiber eds., 2004); acknowledged in and contributor to, LAKSHMAN GURUSWAMY, INTERNATIONAL ENVIRONMENTAL LAW IN A NUTSHELL (2003); contributor to *Environmental Law*, in OXFORD ENCYCLOPEDIA OF AMERICAN LAW (2004).

**EDUCATION**

J.D., University of Colorado Law School (2003)

Academic Honors and Activities:

University of Colorado Law Review, Editor

Rothgerber Appellate Court Competition, Semi-Finalist

President, Environmental Law Society (2002 - 2003)

B.A., English Lit., Andrews University, College of Arts and Sciences (1996)

Academic Honors and Activities:

University Scholar

National Academic Honor Society

**SELECT  
LECTURES &  
PRESENTATIONS**

“The Impact of Shale Gas on Renewable Energy Deployment and Climate, American Meteorological Society Annual Meeting, Washington D.C., (Apr. 2013).

“Methane from Abandoned Coal Mines in China” Invited Speaker, 2011 11th International Symposium on CBM/CMM in China, organized by the State Administration for Coal Mine Safety, People’s Republic of China, and the U.S. EPA, Beijing, China (Dec. 2011).

“Policy Implications of the Smart Grid” Invited Speaker, 2011 Meeting of the Minds Conference, Boulder, Colorado (Sept. 2011).

“Federal Ownership of Pore Space in the West” Invited Speaker, 2011 Western Energy Policy Conference, Boise, Idaho (Aug. 2011) (Chair, Transmission and Renewable Siting Panel).

“Does the Federal Government Own the Pore Space Under Private Lands in the West? Implications of the Stock-Raising Homestead Act of 1916 for Geologic Storage of Carbon Dioxide” Invited Speaker at the Tenth Annual Conference on Carbon Capture and Sequestration, organized by the U.S. National Energy Technology Laboratory, Pittsburgh, Pennsylvania (May 2011).

“Scaffolding the Market: Renewable Fuels Law and Policy” Invited Speaker, Center for Biorefining and Biofuels (C2B2) Professional Short Course, Golden, Colorado (March 2011).

“Does the Federal Government Own the Pore Space in the West” Invited Speaker, EUEC 14th Annual Conference, Phoenix, Arizona (Feb. 2011).

“Carbon Capture and Sequestration: Regulatory and Public Policy Issues” Invited Speaker, Chevron Young Leaders Program, organized by the Chevron Center of Research Excellence, Golden, Colorado (May 2010).

Chair, 5th CCS Risk Assessment Network Meeting, International Energy Agency Greenhouse Gas R&D Programme (IEAGHG), Regulatory Requirements Panel, Golden, Colorado (May 2010).

“CCS and Long-Term Liability,” Invited Presenter, 5th CCS Risk Assessment Network Meeting, IEAGHG, Golden, Colorado (May 2010).

“Regulatory Optimization Opportunities for the Development of Commercial-Scale Geologic Carbon Capture and Sequestration” Invited Speaker at the Ninth Annual Conference on Carbon Capture and Sequestration, organized by the U.S. National Energy Technology Laboratory, Pittsburgh, Pennsylvania (May 2010).

“GHSPs and Energy Security” Keynote Presentation at the Geothermal Academy Summit, organized by the Geothermal Academy, Golden, Colorado (Apr. 2010).

“Smart Grid for Dummies? When Progress and Privacy Collide” Invited Speaker at Climate Change and the Future of Energy, organized by the University of Toledo College of Law, Toledo, Ohio (Mar. 2010).

“Carbon Capture and Sequestration in the West” Invited Speaker at CCS in the West, organized by Camco International, Denver, Colorado (May 2009).

“U.S. Biofuels Policy” Invited Lecturer, Colorado Center for Biorefining and Biofuels (C2B2) Short Course, Colorado State University, Fort Collins, Colorado (May 2009).

“International Cooperation, Geopolitics and Global Climate Change” Invited Speaker at the Western Climate Policy Forum, organized by The Climate Registry, Denver, Colorado (Mar. 2009).

“Energy Demand vs. Global Warming” Invited Speaker at CU Boulder’s Fall Convocation, Boulder, Colorado (Oct. 2008).

“The Future of U.S. Transportation: Gridlock or Grid?” Invited Speaker and Moderator at “Breakthroughs in Vehicle Technologies: The Revolution is On,” Colloquium Organized by the Rocky Mountain Institute and the Center for Energy & Environmental Security, Boulder, Colorado (Nov. 2007).

“Mitigation vs. Adaptation,” Invited Panelist at “Building Bridges to Care for Creation,” Colloquium Organized by the C.S. Lewis Foundation and the UCB Energy Initiative, Boulder, Colorado (Oct. 2007).

“State Climate Change Initiatives: An Irrational Means to a Rational End?” Symposium—Individual, Private Sector, and State Responses to Global Climate Change, Virginia Environmental Law Journal, University of Virginia School of Law, Charlottesville, Virginia (March 2007).

“Pragmatic Functionalism and International Law: Voluntary Instruments International Energy Treaties,” Hubert H. Humphrey Fellowship Colloquy: Global Energy and Environmental Challenges, Denver, Colorado (Feb. 2007).

“Greenhouse Gas Emission Trading: A New Market Emerges,” Colorado Dept. of Public Health and Environment, Pollution Prevention Advisory Board, Denver, Colorado (Jan. 2007).

“The Geopolitics of Energy Security,” Energy & Environmental Security Initiative, University of Colorado Law School, Boulder, Colorado (Sept. 2006).

“An Evaluation of the Potential for State Climate Change and Clean Energy Initiatives to Facilitate a Sustainable U.S. Energy Economy,” Rocky Mountain Natural Gas 2006, Technical Session: Frontiers in Global Energy, Denver, Colorado (August 2006).

“Evaluating the Impact of International Law on Energy Efficiency and Renewable Energy,” Alliance to Save Energy, Washington D.C. (June 2006).

“The International Sustainable Energy Assessment,” REEEP Regional Partners Meeting, North American Secretariat, Washington D.C. (June 2006).

“Can the U.S. Achieve a Sustainable Energy Economy from the Bottom-Up?” Symposium—Energy and the Environment: Transmitting Ideas for Change, Vermont School of Law (March 2006).

“Building a Sustainable Energy Future for Colorado,” Colorado General Assembly Forum for Colorado’s Energy Future, Denver, Colorado (November 2005).

“Building a Strategic Energy Plan for Colorado,” Economic Developers’ Council of Colorado Fall 2005 Conference, Keystone, Colorado (October 2005).

“The Future of the Traditional Energy Industry and Economic Development,” Colorado House Committee on Economic Development, Denver, Colorado (October 2005).

“Private Land Conservation in Pacific Rim and Caribbean Countries,” 6th Inter-American Private Conservation Congress, Santiago, Chile (April 2004).

**SELECT  
MEDIA  
INTERVIEWS**

Interview by Colorado Public Radio (interview by Ben Markus): Smart Grid Boulder City Experiment—The One Year Anniversary (Sep. 6, 2011).

Interview by 91.7 KALW, San Francisco Public Radio (“Your Call”), (interview by Matt Martin): Are the Benefits of Smart Meters Worth the Risk? (Aug. 29, 2011).

Interview by Living On Earth, Public Radio International (interview by Bruce Gellerman): Smart Meter, Big Brother (Feb. 25, 2011).

Interview by TalkStandards.com (interview by Mattias Ganslandt): Accelerating Inter-Operability for the Smart Grid (with George Arnold and Ajit Jaokar) (Nov. 24, 2010).

Interview by The Wall Street Journal (interview by Stephanie Simon): Even Boulder Finds It Isn’t Easy Going Green (Feb. 13, 2010).

**SELECT  
RELEVANT  
SERVICE**

Member, Public Policy Committee for the Clean Energy Committee, Denver Metro Chamber of Commerce (2014 - Present).

Ad Hoc Reviewer, Energy Policy (Elsevier) (2009 - Present).

Chair, Advisory Board; Chair, Sustainability Committee; New Sky Energy, Boulder, Colorado (2009 - Present): <http://www.newskyenergy.com>.

Co-Chair, Science and Policy Technical Review Committee, North American Biochar Conference 2009, International Biochar Initiative (2009).

Governing Board, National Association of Environmental Law Societies (2006 - 2008).

Western Governors’ Association, Solar Energy Task Force, Clean and Diversified Energy Initiative (2005 - 2006).

**PROFESSIONAL  
MEMBERSHIPS**

American Bar Association, Section on Environment, Energy and Resources, Committee on International Environmental Law; Colorado Bar Association

**LAW LICENSE**

State of Colorado Attorney Registration Number 35638

**REFERENCES**

*(additional references  
available on request)*

Frank Barnes  
Distinguished Professor (emeritus)  
Department of Electrical and Computer Engineering  
University of Colorado at Boulder  
(303) 492-8225  
frank.barnes@colorado.edu

Fred Glover  
Distinguished Professor (emeritus)  
Leeds School of Business  
University of Colorado at Boulder  
(303) 492-8589  
fred.glover@colorado.edu

Pierre Schlag  
Distinguished Professor  
University of Colorado Law School  
(303) 492-3110  
Pierre.Schlag@colorado.edu